

MURATA PRODUCTS

Lineup 2015





p2

Capacitors

Chip Monolithic Ceramic Capacitors for General Purpose	3
Chip Monolithic Ceramic Capacitors for Automotive	11
Lead Type Ceramic Capacitors for General Purpose	15
Lead Type Ceramic Capacitors for Automotive	19
High Voltage Ceramic Capacitors	21
Polymer Aluminum Electrolytic Capacitors	21
Trimmer Capacitors	22



p23

Noise Suppression Products/EMI Suppression Filters

Noise Suppression Filters (Chip Ferrite Bead)	23
Noise Suppression Filters (Chip 3 Terminal Capacitor)	24
Noise Suppression Filters (Chip LC/RC Filter)	25
Noise Suppression Filters (Chip EMIFIL®)	25
Noise Suppression Filters (Chip Common Mode Choke Coil)	26
Noise Suppression Filters (Block Type)	27
ESD Protection Devices	27
Noise Suppression Filters (Lead Type), Others	28



p29

Inductors (Coils)

RF Inductors, Inductors for Power Lines, Inductors for General Circuits	30
---	----



p34

Resistors

High Voltage Resistors	34
Trimmer Potentiometers	35



p36

Timing Devices

Crystal Units	37
Crystal Oscillators	38
Ceramic Resonators CERALOCK®	39



p41

Filters for Audio Visual Equipment

Ceramic Filters CERAFIL®	41
Ceramic Traps	43
Ceramic Discriminators	43
SAW Traps	43



p44

Filters for Communication Equipment

SAW Filters for Mobile Communications	44
Dielectric Filters GIGAFIL®	45
Chip Multilayer LC Filters	46
Ceramic Filters CERAFIL®	46
Ceramic Discriminators	48
Crystal Filters	48



p49

RF Components

Isolators	49	Chip Multilayer Diplexers	51
Baluns	50	High Frequency Coaxial Connectors	52
Couplers	50	Single Layer Microchip Capacitors	53
Chip Multilayer Hybrid Dividers	51	Thin Film Circuit Substrate RUSUB®	55



p56

Sensors

Piezoelectric Infrared Sensors	58	Accelerometers	57
Ultrasonic Sensors	58	Inclinometers	58
Rotary Sensors	58	Gyro Sensors	57
Magnetic Pattern Recognition Sensors	56	Rotary Position Sensors	57
Magnetic Switches (AMR Sensors)	57	Temperature Sensors (Thermistors)	56
Shock Sensors	58		



p60

Thermistors

NTC Thermistors (for Temperature Sensor/Temperature Compensation)	60
NTC Thermistors (for Inrush Current Suppression)	62
PTC Thermistors POSISTOR® (for Overheat Sensing)	62
PTC Thermistors POSISTOR® (for Inrush Current Suppression)	63
PTC Thermistors POSISTOR® (for Overcurrent Protection)	64



p65

Power Supplies/Energy Devices

Micro DC-DC Converters	65
DC-DC Converters	66
High Voltage Transformers	68
High Voltage Power Supplies	68
Switching Power Supplies	69
Electrical Double Layer Capacitors	69



p70

Sound Components

Piezoelectric Sounders	70
Piezoelectric Buzzers	71
Piezoelectric Diaphragms	71



p72

Others

Micromechanics	72	RFID Devices	75
Wireless Communication Modules	73	Wireless Power Transmission Modules	76
Ceramic Applied Products	73		
Ionizer Modules Ionissimo®	74		
Variable Capacitor	74		

Application Guides

Smart Phones	78	MFP (Multi Function Printer/Product/Peripheral)	104
Wearable Devices	80	Televisions	106
Base Stations	82	Set-top Box	108
G-PON	84	HEMS	110
Data Center	85	Smartmeter	112
Automotive		Thermostat	114
Powertrain/Safety	86	Human Detection	115
HEV/PHEV/EV	88	Air Dispenser	116
Information/Comfort/Accessory	89	Thermometer	117
Bike/EV Bike	90	Blood Pressure Monitor	118
Air Conditioner	92	Blood Glucose Meter	119
Refrigerator	94	Diagnostic Imaging Apparatus	120
Washing Machine	95	Lighting	121
Air Purifier	96	Security Camera	122
Microwave Oven	97	Entrance and Exit Management System	124
IH Rice Cooker	98	Electronic POS	125
Vacuum Cleaner	99	Heavy Duty Vehicles	126
Tablet Terminators	100	Industrial Automation	128
Notebook Computers	102	3D Printer	130

p2

p23

p29

p34

p36

p41

p44

p49

p56

p60

p65

p70

p72

p77

Capacitors

The most comprehensive product lineup in the industry, providing ideal solutions, responding to all possible requirements.



Summary

Using Murata's unique material technology, we offer a variety of capacitors covering a wide range of voltages. Murata also offers technical support that includes design kits and a comprehensive set of software tools to simulate virtually any circuit condition, satisfying the demands of many applications.

Lineup

- Ceramic Capacitors (SMD, lead type, mold type)
- Polymer Aluminum Electrolytic Capacitors
- Ceramic Trimmer Capacitors
- Electrical Double Layer Capacitors

WEB Product Search Engine



Search by part number

The applicable capacitors can be searched by alphanumeric characters.



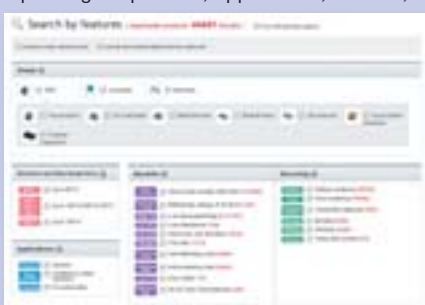
Search by specifications

Capacitors can be searched by various specifications, such as the capacitance, rated voltage, and temperature characteristics.



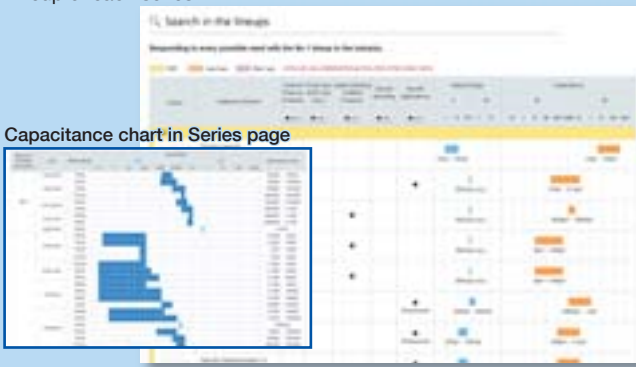
Search by features

The applicable capacitors can be searched by the Shape, Maximum operating temperature, Applications, Benefits, and Mounting.



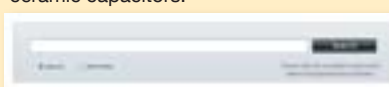
Search in the lineups

Capacitors applicable to the conditions can be searched from the lineup of each series.



Cross reference

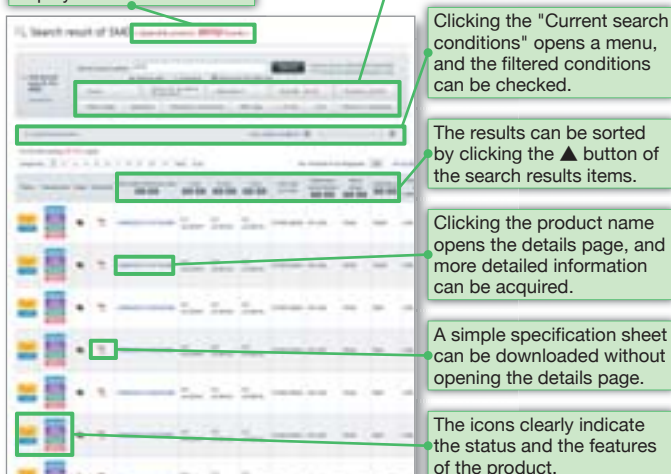
The Murata part number applicable to the assumed specification can be searched using a competitor's part number for chip monolithic ceramic capacitors.



[Search result]

The number of cases applicable to the current search conditions is always displayed in real time.

Click each search condition button to display the menu. The search results will change in real time with the selected conditions.



Chip Monolithic Ceramic Capacitors

For General Purpose

For General Purpose

Temperature Compensating Type



GRM

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRM02	0.4X0.2 <01005>	25	0.20pF	100pF									
		16	0.20pF	100pF									
		10			56pF	100pF							
GRM03	0.6X0.3 <0201>	100	0.10pF	15pF									
		50	0.10pF	220pF									
GRM15	1.0X0.5 <0402>	100	0.10pF	100pF									
		50	0.10pF	1000pF									
		10				1200pF	4700pF						
GRM18	1.6X0.8 <0603>	100	0.50pF	1500pF									
		50	0.50pF	10000pF									
		10				5600pF	22000pF						
GRM21	2.0X1.25 <0805>	250			10pF	5600pF							
		200			10pF	5600pF							
		100				100pF	3300pF						
		50					1200pF	47000pF					
		10						56000pF	0.10μF				
GRM31	3.2X1.6 <1206>	2k			10pF	68pF							
		1k			10pF	1000pF							
		630			10pF	4700pF							
		500			10pF	4700pF							
		250					2700pF	22000pF					
		200					2700pF	10000pF					
		100					1800pF	22000pF					
		50						12000pF	0.10μF				
		25							0.12μF				
GRM32	3.2X2.5 <1210>	16							0.12μF				
		2k				82pF	220pF						
		1k					1200pF	2200pF					
		630					1200pF	10000pF					
		500					1200pF	10000pF					
GRM42	4.5X2.0 <1808>	250						27000pF	47000pF				
		10pF				100pF							
		1k					2700pF	4700pF					
		630					12000pF	22000pF					
		500					12000pF	22000pF					
GRM55	5.7X5.0 <2220>	1k					5600pF	10000pF					
		630					27000pF	47000pF					
		500					27000pF	47000pF					

High Dielectric Constant Type




GRM

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRM02	0.4X0.2 <01005>	16				100pF	1000pF						

Continued on the following page.

Capacitors

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GRM02	0.4X0.2 <01005>	10				100pF	<div><div></div></div>	10000pF						
		6.3					1000pF	<div><div></div></div>	0.10μF					
		4						15000pF	<div><div></div></div>	0.10μF				
		2.5							<div><div></div></div>	0.10μF				
GRM03	0.6X0.3 <0201>	50				100pF	<div><div></div></div>	1500pF						
		35							<div><div></div></div>	0.10μF				
		25				100pF	<div><div></div></div>	0.10μF						
		16					2200pF	<div><div></div></div>	0.10μF					
		10					4700pF	<div><div></div></div>	0.22μF					
		6.3					4700pF	<div><div></div></div>	0.22μF					
		4							<div><div></div></div>	0.22μF				
GRM15	1.0X0.5 <0402>	100				220pF	<div><div></div></div>	4700pF						
		50				220pF	<div><div></div></div>	0.10μF						
		35						0.22μF	<div><div></div></div>	1.0μF				
		25					2200pF	<div><div></div></div>	2.2μF					
		16					3300pF	<div><div></div></div>	2.2μF					
		10					15000pF	<div><div></div></div>	2.2μF					
		6.3						0.10μF	<div><div></div></div>	4.7μF				
		4						0.10μF	<div><div></div></div>	10μF				
		2.5						0.10μF	<div><div></div></div>	10μF				
GRM18	1.6X0.8 <0603>	250				220pF	<div><div></div></div>	2200pF						
		200				220pF	<div><div></div></div>	2200pF						
		100				220pF	<div><div></div></div>	0.10μF						
		50				220pF	<div><div></div></div>	2.2μF						
		35						2.2μF	<div><div></div></div>	4.7μF				
		25					10000pF	<div><div></div></div>	10μF					
		16						0.15μF	<div><div></div></div>	10μF				
		10						0.33μF	<div><div></div></div>	10μF				
		6.3							4.7μF	<div><div></div></div>	22μF			
		4							10μF	<div><div></div></div>	22μF			
GRM21	2.0X1.25 <0805>	500					1000pF	<div><div></div></div>	10000pF					
		250					1000pF	<div><div></div></div>	22000pF					
		200					1000pF	<div><div></div></div>	22000pF					
		100						10000pF	<div><div></div></div>	0.47μF				
		50						10000pF	<div><div></div></div>	4.7μF				
		35							2.2μF	<div><div></div></div>	10μF			
		25						68000pF	<div><div></div></div>	22μF				
		16						0.33μF	<div><div></div></div>	22μF				
		10							2.2μF	<div><div></div></div>	47μF			
		6.3							10μF	<div><div></div></div>	47μF			
		4							10μF	<div><div></div></div>	47μF			
		2.5									47μF			
GRM31	3.2X1.6 <1206>	1k					470pF	<div><div></div></div>	10000pF					
		630					1000pF	<div><div></div></div>	22000pF					
		500						15000pF	<div><div></div></div>	47000pF				
		250						15000pF	<div><div></div></div>	0.10μF				
		200						15000pF	<div><div></div></div>	0.10μF				
		100							0.47μF	<div><div></div></div>	2.2μF			
		50							0.47μF	<div><div></div></div>	10μF			
		35								<div><div></div></div>	10μF			
		25							0.33μF	<div><div></div></div>	22μF			
		16								4.7μF	<div><div></div></div>	22μF		
		10								22μF	<div><div></div></div>	47μF		
		6.3								22μF	<div><div></div></div>	100μF		
		4									47μF	<div><div></div></div>	220μF	
		2.5										220μF		
GRM32	3.2X2.5 <1210>	1k					6800pF	<div><div></div></div>	22000pF					

Continued on the following page. 

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRM32	3.2X2.5 <1210>	630						22000pF	47000pF				
		500						68000pF	0.10μF				
		250						68000pF	0.22μF				
		200						68000pF	0.22μF				
		100							1.0μF	4.7μF			
		80								4.7μF			
		63								10μF			
		50							4.7μF	10μF			
		35								10μF			
		25								10μF	22μF		
		16									22μF	47μF	
		10									47μF	100μF	
		6.3									47μF	100μF	
		4										100μF	
GRM43	4.5X3.2 <1812>	1k						33000pF	47000pF				
		630						68000pF	0.10μF				
		500							0.15μF	0.22μF			
		250							0.15μF	0.47μF			
		200							0.15μF	0.47μF			
GRM55	5.7X5.0 <2220>	1k						68000pF	0.10μF				
		630							0.15μF	0.22μF			
		500							0.33μF	0.47μF			
		250							0.33μF	1.0μF			
		200							0.33μF	1.0μF			

Low ESL Type

LW Reversed Type



LLL

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
LLL15	0.5X1.0 <0204>	6.3							0.10μF	0.22μF			
		4							0.47μF	1.0μF			
LLL18	0.8X1.6 <0306>	50					2200pF	4700pF					
		25					10000pF	22000pF					
		16					22000pF	47000pF					
		10						0.10μF	0.22μF				
		4						0.22μF	2.2μF				
LLL1U	0.6X1.0 <02404>	4									4.3μF		
LLL21	1.25X2.0 <0508>	50					10000pF	22000pF					
		25					22000pF	0.10μF					
		16					47000pF	0.22μF					
		10						0.22μF	1.0μF				
		6.3							0.47μF				
		4							1.0μF	2.2μF			
LLL31	1.6X3.2 <0612>	50					10000pF	0.10μF					
		25					47000pF	0.47μF					
		16						0.22μF	1.0μF				
		10						0.47μF	2.2μF				
		6.3							2.2μF	10μF			

Continued on the following page.

Capacitors

Controlled ESR Type



LLR

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
LLR18	0.8X1.6 <0306>	4								1.0μF				

8 Terminal Type



LLA

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
LLA18	1.6X0.8 <0603>	4							0.10μF	2.2μF				
LLA21	2.0X1.25 <0805>	25						10000pF	47000pF					
		16						47000pF	0.22μF					
		10							0.22μF	0.47μF				
		6.3							0.47μF	1.0μF				
		4							1.0μF	4.7μF				
LLA31	3.2X1.6 <1206>	16							0.22μF	1.0μF				
		10							0.47μF	2.2μF				
		6.3							1.0μF	2.2μF				

10 Terminal Type



LLM

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
LLM21	2.0X1.25 <0805>	6.3							0.22μF	0.47μF				
		4								1.0μF				
LLM31	3.2X1.6 <1206>	16							0.10μF	0.22μF				
		10								0.47μF				
		6.3									2.2μF			

High Q Type for High Frequency



GJM

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GJM02	0.4X0.2 <01005>	25	0.20pF	<div><div></div></div> 22pF										
GJM03	0.6X0.3 <0201>	25	0.20pF	<div><div></div></div> 33pF										
GJM15	1.0X0.5 <0402>	50	0.10pF	<div><div></div></div> 47pF										

High Q Type for High Frequency and High Power



GQM

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GQM15	1.0X0.5 <0402>	200	0.10pF	33pF										
		100			36pF	47pF								

Continued on the following page.

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GQM18	1.6X0.8 <0603>	250		1.0pF	<div><div></div></div> 47pF									
		100		1.0pF	<div><div></div></div> 6.8pF									
		50			7.0pF	<div><div></div></div> 100pF								
GQM21	2.0X1.25 <0805>	250		1.0pF	<div><div></div></div> 100pF									
		100		1.0pF	<div><div></div></div> 18pF									
		50			20pF	<div><div></div></div> 100pF								
GQM22	2.8X2.8 <1111>	500		1.0pF	<div><div></div></div> 100pF									

Product for Bonding/AuSn Soldering



GMD

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GMD03	0.6X0.3 <0201>	25				100pF	<div><div></div></div> 1500pF						
		16					1800pF	<div><div></div></div> 3300pF					
		10						3900pF	<div><div></div></div> 10000pF				
		6.3							56000pF	<div><div></div></div> 0.10μF			
GMD15	1.0X0.5 <0402>	50				220pF	<div><div></div></div> 4700pF						
		25						5600pF	<div><div></div></div> 47000pF				
		16							56000pF	<div><div></div></div> 0.10μF			
		10							0.12μF	<div><div></div></div> 0.47μF			

Top & Bottom Electrode Type for Bonding



GMA

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GMA05	0.5X0.5 <0202>	100				100pF	<div><div></div></div> 1000pF							
		25					1500pF	<div><div></div></div> 4700pF						
		10					6800pF	<div><div></div></div> 22000pF						
		6.3							<div><div></div></div> 0.10μF					
GMA08	0.8X0.8 <0303>	100					1500pF	<div><div></div></div> 6800pF						
		25					10000pF	<div><div></div></div> 22000pF						
		10						33000pF	<div><div></div></div> 0.10μF					
		6.3							<div><div></div></div> 0.47μF					
GMA0D	0.38X0.38 <015015>	10					1000pF	<div><div></div></div> 10000pF						

Resin External Electrode Type



GRJ

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GRJ18	1.6X0.8 <0603>	100					1000pF	<div><div></div></div>	0.10μF				
		50					1000pF	<div><div></div></div>	0.22μF				
		25						47000pF	<div><div></div></div>	1.0μF			
		16							<div><div></div></div>	0.47μF			
		6.3								2.2μF	<div><div></div></div>	4.7μF	
GRJ21	2.0X1.25 <0805>	250					1000pF	<div><div></div></div>	22000pF				
		100						47000pF	<div><div></div></div>	0.10μF			

Continued on the following page.

Capacitors

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GRJ21	2.0X1.25 <0805>	50							47000pF	1.0μF				
		25								2.2μF				
		16								4.7μF				
		10								10μF				
GRJ31	3.2X1.6 <1206>	1k					470pF	10000pF						
		630					1000pF	22000pF						
		250					15000pF	0.10μF						
		100								1.0μF				
		50								1.0μF	4.7μF			
		25								2.2μF	10μF			
		16								2.2μF	10μF			
		10									10μF			
GRJ32	3.2X2.5 <1210>	1k					6800pF	22000pF						
		630					22000pF	47000pF						
		250					68000pF	0.22μF						
		100								2.2μF	4.7μF			
		50								4.7μF	10μF			
		25									10μF			
		16									22μF			
		10									22μF			
GRJ43	4.5X3.2 <1812>	1k					33000pF	47000pF						
		630					68000pF	0.10μF						
		250						0.15μF	0.47μF					
		100						68000pF	0.10μF					
GRJ55	5.7X5.0 <2220>	1k						0.15μF	0.22μF					
		630						0.33μF	1.0μF					
		250												

For LCD Backlight Inverter Circuit Only



GRM

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GRM42	4.5X2.0 <1808>	3.15k			5.0pF	47pF								

High Effective Capacitance & High Ripple Resistance



GR3

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GR321	2.0X1.25 <0805>	250						10000pF	22000pF					
GR331	3.2X1.6 <1206>	630						10000pF	15000pF					
		450						10000pF	47000pF					
		250						33000pF	68000pF					
GR332	3.2X2.5 <1210>	630						22000pF	47000pF					
		450						68000pF	0.10μF					
		250							0.10μF	0.15μF				
GR343	4.5X3.2 <1812>	630							68000pF					
		450							0.15μF					
		250							0.22μF	0.33μF				
GR355	5.7X5.0 <2220>	630							0.10μF	0.27μF				

Continued on the following page.

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GR355	5.7X5.0 <2220>	450							0.22μF	0.56μF				
		250							0.47μF	1.0μF				

For Ethernet LAN & Primary-secondary Coupling of DC-DC Converters



GR4

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GR442	4.5X2.0 <1808>	2k				100pF	1500pF							
GR443	4.5X3.2 <1812>	2k					1800pF	4700pF						
GR455	5.7X5.0 <2220>	2k						10000pF						

For Camera Flash Units Only



GR7

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GR721	2.0X1.25 <0805>	350						10000pF	27000pF					
GR731	3.2X1.6 <1206>	350						10000pF	47000pF					

Safety Standard Certified

■ The Electrical Appliance and Material Safety Law of Japan



GA2

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (V)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GA242	4.5X2.0 <1808>	AC250 (r.m.s.)					470pF	1000pF						
GA243	4.5X3.2 <1812>	AC250 (r.m.s.)					2200pF	47000pF						
GA255	5.7X5.0 <2220>	AC250 (r.m.s.)							0.10μF					

■ Type GF (IEC60384-14 Y2, X1/Y2 Class)



GA3

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (V)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GA342	4.5X2.0 <1808>	AC250 (r.m.s.)			10pF		1000pF							
GA352	5.7X2.8 <2211>	AC250 (r.m.s.)				100pF		1500pF						
GA355	5.7X5.0 <2220>	AC250 (r.m.s.)						1800pF		4700pF				

■ Type GD (IEC60384-14 Y3 Class)



GA3

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (V)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GA342	4.5X2.0 <1808>	AC250 (r.m.s.)			10pF	1500pF							


Continued on the following page.

Capacitors

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (V)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GA343	4.5X3.2 <1812>	AC250 (r.m.s.)					1800pF	4700pF					

GA343	4.5X3.2 <1812>	AC250 (r.m.s.)					1800pF	4700pF					
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Type GB (UL, IEC60384-14 X2 Class)

 GA3

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (V)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GA355	5.7X5.0 <2220>	AC250 (r.m.s.)						10000pF	56000pF					

GA355	5.7X5.0 <2220>	AC250 (r.m.s.)					10000pF	56000pF					
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Metal Terminal Type

High Effective Capacitance



Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
KRM21	2.2X1.25	25										10μF	22μF	
		16										10μF		
KRM31	3.5X1.7	100									1.0μF			
		50									4.7μF			
		35										10μF		
		25										10μF		
	3.6X1.7	50									2.2μF			
	3.7X1.85	100									2.2μF			
KRM55	6.1X5.3	1k							68000pF	0.22μF				
		630							0.15μF	0.47μF				
		250								0.68μF	2.2μF			
		100									4.7μF	15μF		
		63									4.7μF	22μF		
		50									4.7μF	33μF		
		35									10μF	47μF		
		25										15μF	68μF	

High Effective Capacitance & High Ripple Resistance



Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
KR355	6.1X5.3	630							0.10μF	0.56μF				
		450							0.22μF	1.2μF				
		250							0.47μF	2.2μF				

Chip Monolithic Ceramic Capacitors

For Automotive

For Automotive (General Purpose)

Temperature Compensating Type



GCM

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GCM03	0.6X0.3 <0201>	25		1.0pF	<div></div>		100pF						
GCM15	1.0X0.5 <0402>	50		1.0pF	<div></div>		470pF						
GCM18	1.6X0.8 <0603>	100		1.0pF	<div></div>		1500pF						
		50		1.0pF	<div></div>		3900pF						
GCM21	2.0X1.25 <0805>	250				100pF	<div></div>		5600pF				
		100				100pF	<div></div>		3300pF				
		80						15000pF	<div></div>	22000pF			
		63						15000pF	<div></div>	22000pF			
		50					1000pF	<div></div>		22000pF			
GCM31	3.2X1.6 <1206>	1k			10pF	<div></div>		1000pF					
		630			10pF	<div></div>		4700pF					
		250					2700pF	<div></div>	10000pF				
		100					1800pF	<div></div>	10000pF				
		80							33000pF	<div></div>			
		63							33000pF	<div></div>			
		50						3900pF	<div></div>		56000pF		
GCM32	3.2X2.5 <1210>	1k					1200pF	<div></div>	2200pF				
		630					1200pF	<div></div>		10000pF			
GCM43	4.5X3.2 <1812>	1k					2700pF	<div></div>	4700pF				
		630						12000pF	<div></div>	22000pF			
GCM55	5.7X5.0 <2220>	1k						5600pF	<div></div>	10000pF			
		630						27000pF	<div></div>	47000pF			

High Dielectric Constant Type



GCM

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCM03	0.6X0.3 <0201>	25				100pF		1500pF						
		16					2200pF	3300pF						
		10						4700pF	10000pF					
GCM15	1.0X0.5 <0402>	100				220pF		4700pF						
		50				220pF				0.10μF				
		25						10000pF	47000pF					
		16							33000pF	0.22μF				
		10									1.0μF			
GCM18	1.6X0.8 <0603>	100					1000pF	22000pF						
		50					1000pF		0.22μF					
		25						33000pF		1.0μF				
		16							0.10μF	1.0μF				
		6.3									2.2μF			
GCM21	2.0X1.25 <0805>	100						6800pF	0.10μF					
		50						33000pF		1.0μF				
		35								0.68μF	4.7μF			
		25							0.15μF	4.7μF				

Continued on the following page.

Capacitors

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCM21	2.0X1.25 <0805>	16								0.68μF	4.7μF			
		10								2.2μF	10μF			
		6.3									10μF			
GCM31	3.2X1.6 <1206>	100							0.10μF	1.0μF				
		50							0.33μF	4.7μF				
		25								2.2μF	10μF			
		16								4.7μF	10μF			
		10									10μF	22μF		
		6.3										22μF		
GCM32	3.2X2.5 <1210>	50								1.0μF	10μF			
		35									10μF			
		25								4.7μF	10μF			
		16									10μF	22μF		
		10										22μF		
		6.3											47μF	

Resin External Electrode Type



GCJ

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCJ18	1.6X0.8 <0603>	100					1000pF		0.10μF					
		50					1000pF		0.22μF					
		35						33000pF	68000pF					
		25					1000pF			1.0μF				
		16						10000pF		0.47μF				
		10							0.12μF	0.22μF				
		6.3									2.2μF			
GCJ21	2.0X1.25 <0805>	250					1000pF	22000pF						
		100				220pF			0.10μF					
		50				330pF			1.0μF					
		35							0.12μF	0.47μF				
		25				470pF				2.2μF				
		16							0.27μF	4.7μF				
		10								2.2μF	10μF			
GCJ31	3.2X1.6 <1206>	1k					1000pF	10000pF						
		630					1000pF	22000pF						
		250						15000pF	0.10μF					
		100							0.10μF	1.0μF				
		50							0.10μF	4.7μF				
		35								0.56μF	1.0μF			
		25							0.10μF	10μF				
		16								1.0μF	10μF			
		10									6.8μF	22μF		
		6.3										22μF		
GCJ32	3.2X2.5 <1210>	1k						15000pF	22000pF					
		630						6800pF	47000pF					
		250							68000pF	0.22μF				
		100									2.2μF			
		50								4.7μF	10μF			
		25									4.7μF			
		16										22μF		
		6.3											47μF	
GCJ43	4.5X3.2 <1812>	1k						33000pF	47000pF					

Continued on the following page.

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCJ43	4.5X3.2 <1812>	630						33000pF	<div><div></div></div> 0.10μF					
		250							0.15μF	<div><div></div></div> 0.47μF				
GCJ55	5.7X5.0 <2220>	1k						68000pF	<div><div></div></div> 0.10μF					
		630							0.10μF	<div><div></div></div> 0.22μF				
		250							0.33μF	<div><div></div></div> 1.0μF				

Specially Designed Product to Reduce Shorts



GCD

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GCD18	1.6X0.8 <0603>	100					1000pF	<div><div></div></div> 22000pF					
		50					1000pF	<div><div></div></div> 22000pF					
		25						27000pF	<div><div></div></div> 47000pF				
GCD21	2.0X1.25 <0805>	100					1000pF	<div><div></div></div> 0.10μF					
		50					1000pF	<div><div></div></div> 0.10μF					

Specially Designed Product to Reduce Shorts & Resin Electrode Product



GCE

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
GCE18	1.6X0.8 <0603>	100					1000pF	<div><div></div></div> 22000pF					
		50					1000pF	<div><div></div></div> 22000pF					
		25						27000pF	<div><div></div></div> 47000pF				
GCE21	2.0X1.25 <0805>	100					1000pF	<div><div></div></div> 0.10μF					
		50					1000pF	<div><div></div></div> 0.10μF					

Conductivity Adhesive Compatible Type

Temperature Compensating Type



GCG

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCG15	1.0X0.5 <0402>	50				120pF	470pF							
GCG18	1.6X0.8 <0603>	50			10pF		2200pF							
GCG21	2.0X1.25 <0805>	50				100pF	10000pF							

High Dielectric Constant Type



GCG

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCG15	1.0X0.5 <0402>	50				220pF	4700pF							
		25					5600pF	10000pF						
		16						15000pF	0.10μF					

Continued on the following page.

Capacitors

Series	LxW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
GCG18	1.6X0.8 <0603>	100					1000pF		0.10μF					
		50				220pF		0.22μF						
		25				1000pF		0.47μF						
		16					68000pF	0.22μF						
GCG21	2.0X1.25 <0805>	100					10000pF							
		50				10000pF		0.47μF						
		25				10000pF		1.0μF						
		16						0.33μF	4.7μF					
GCG31	3.2X1.6 <1206>	50						0.15μF	0.33μF					
		25						0.15μF	4.7μF					
		16						0.68μF	4.7μF					
GCG32	3.2X2.5 <1210>	25							3.3μF	10μF				

High Effective Capacitance & High Ripple Resistance



GC3

Series	LXW (mm) <Size Code (inch)>	Rated Voltage (Vdc)	Capacitance Range (F)												
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ		
GC321	2.0X1.25 <0805>	250						10000pF	<div><div></div></div> 22000pF						
GC331	3.2X1.6 <1206>	630						10000pF	<div><div></div></div> 15000pF						
		450						10000pF	<div><div></div></div> 47000pF						
		250						33000pF	<div><div></div></div> 68000pF						
GC332	3.2X2.5 <1210>	630						22000pF	<div><div></div></div> 47000pF						
		450						68000pF	<div><div></div></div> 0.10μF						
		250						0.10μF	<div><div></div></div> 0.15μF						
GC343	4.5X3.2 <1812>	630							<div><div></div></div> 68000pF						
		450							<div><div></div></div> 0.15μF						
		250							0.22μF	<div><div></div></div> 0.33μF					
GC355	5.7X5.0 <2220>	630							0.10μF	<div><div></div></div> 0.27μF					
		450							0.22μF	<div><div></div></div> 0.56μF					
		250							0.47μF	<div><div></div></div> 1.0μF					

Metal Terminal Type

High Effective Capacitance



KCM

Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
KCM55	6.1X5.3	100									4.7μF	<div><div></div></div> 15μF		
		63									4.7μF	<div><div></div></div> 22μF		
		50									4.7μF	<div><div></div></div> 33μF		
		35									10μF	<div><div></div></div> 47μF		
		25									15μF	<div><div></div></div> 68μF		

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High Effective Capacitance & High Ripple Resistance



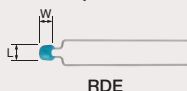
KC3

Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
KC355	6.1X5.3	630								0.10μF	0.56μF			
		450								0.22μF	1.2μF			
		250								0.47μF	2.2μF			

Lead Type Ceramic Capacitors For General Purpose

Radial Lead Type

Temperature Compensating Type



RDE

Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RDE5C	4.0X3.5	100		1.0pF				1500pF					
		50		1.0pF				3900pF					
	4.5X3.5	100					1800pF	3300pF					
		50					4700pF	22000pF					
	5.0X3.5	100		1.0pF				3300pF					
		50		1.0pF				22000pF					
RDE7U	4.5X3.5	250				100pF		4700pF					
		1k			10pF		1000pF						
	5.5X4.0	630			10pF		4700pF						
		250					6800pF	22000pF					
		1k					1500pF	2200pF					
	5.5X5.0	630					6800pF	10000pF					
		250						33000pF	47000pF				
		1k					3300pF	4700pF					
	7.5X5.5	630					15000pF	22000pF					
		1k					6800pF	10000pF					
	7.5X8.0	630						33000pF	47000pF				
		1k							20000pF				
	7.7X13.0	630							94000pF				

High Dielectric Constant Type




Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RDEC7	4.0X3.5	25							0.22μF	1.0μF			
	4.5X3.5	25								2.2μF			
	5.0X3.5	25							0.22μF	2.2μF			
	5.5X4.0	50									4.7μF		
		25									4.7μF	10μF	

Continued on the following page.

Capacitors

Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
RDEC7	5.5X5.0	100								1.5μF	2.2μF			
		50									10μF			
		25									22μF			
	5.5X7.5	100								4.7μF				
		50									22μF			
		25									47μF			
RDED7	5.5X4.0	630					10000pF	15000pF						
		450					10000pF	47000pF						
		250					33000pF	68000pF						
	5.5X5.0	630					22000pF	47000pF						
		450						68000pF	0.10μF					
		250						0.10μF	0.15μF					
	7.5X5.5	630						68000pF						
		450							0.15μF					
		250							0.22μF	0.33μF				
	7.5X7.5	450							0.22μF	0.56μF				
		250							0.47μF	1.0μF				
		630						0.10μF	0.27μF					
	7.7X12.5	450								1.0μF	1.2μF			
		250									2.2μF			
7.7X13.0	630								0.47μF	0.56μF				
	RDEF1	4.0X3.5	50					10000pF		0.1μF				
5.0X3.5		50					10000pF		0.1μF					
RDEF5	4.0X3.5	50					10000pF		0.1μF					
	5.0X3.5	50					10000pF		0.1μF					
RDER7	4.0X3.5	100				220pF		22000pF						
		50				220pF		0.1μF						
		25						0.1μF						
	4.5X3.5	500				1000pF		10000pF						
		250				1000pF		22000pF						
		100						33000pF		0.47μF				
	5.0X3.5	50						0.15μF		0.47μF				
		100				220pF		0.47μF						
		50				220pF		0.47μF						
	5.5X4.0	25							0.1μF					
		1k				470pF		10000pF						
		630				1000pF		22000pF						
	5.5X5.0	500						15000pF		47000pF				
		250						15000pF		0.10μF				
		100							0.15μF		1.0μF			
	5.5X5.0	50							0.68μF		2.2μF			
		1k						6800pF		22000pF				
		630						22000pF		47000pF				
	5.5X5.0	500						68000pF		0.10μF				
		250							0.15μF		0.22μF			
		50									3.3μF			
	7.5X5.5	1k						33000pF		47000pF				
		630						68000pF		0.10μF				
		500							0.15μF		0.22μF			
	7.5X7.5	250							0.33μF		0.47μF			
		500							0.33μF		0.47μF			
		250							0.68μF		1.0μF			
	7.5X8.0	1k						68000pF		0.10μF				
		630							0.15μF		0.22μF			
	7.7X12.5	500							0.68μF		1.0μF			
		250							1.0μF		2.2μF			
	7.7X13.0	1k								0.22μF				

Continued on the following page. 

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RDER7	7.7X13.0	630								0.47μF			

Disc Type (Medium High Voltage)



DES/DEH/DEA/DEB/DEC

High Temperature Guaranteed Low Loss Type (Low Heat Generation)

Series	D (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DESD3	6.0 to 17.0	1k				100pF		4700pF						
	6.0 to 14.0	500				100pF		4700pF						

High Temperature Guaranteed Low Loss Type

Series	D (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DEHC3	6.0 to 14.0	500				330pF	<div></div>	4700pF						
DEHR3	7.0 to 19.0	3.15k				150pF	<div></div>	2700pF						
	7.0 to 21.0	2k				220pF	<div></div>	4700pF						
	7.0 to 17.0	1k				220pF	<div></div>	4700pF						

Medium Voltage (Low Heat Generation Type for Temperature Compensation)

Series	D (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DEA1X	5.0 to 16.0	3.15k			10pF	<div><div></div></div> 390pF								
	4.5 to 15.0	2k			10pF	<div><div></div></div> 560pF								
	4.5 to 12.0	1k			10pF	<div><div></div></div> 560pF								

Medium Voltage Type (High Dielectric Constant)

Series	D (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DEBB3	5.0 to 15.0	3.15k				100pF	<div><div></div></div> 3300pF							
	4.5 to 15.0	2k				100pF	<div><div></div></div> 4700pF							
	4.5 to 15.0	1k				100pF	<div><div></div></div> 6800pF							
DEBE3	7.0 to 13.0	3.15k					1000pF	<div><div></div></div> 4700pF						
	6.0 to 16.0	2k					1000pF	<div><div></div></div> 10000pF						
	5.0 to 13.0	1k					1000pF	<div><div></div></div> 10000pF						
DEBF3	5.0 to 12.0	2k					1000pF	<div><div></div></div> 10000pF						
	6.0 to 10.0	1k					2200pF	<div><div></div></div> 10000pF						

Medium Voltage Compatible Type

Series	D (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DEC1X	7.0 to 15.0	6.3k			10pF	150pF								
DECB3	9.0 to 13.0	6.3k				100pF	1000pF							
DECE3	11.0 to 15.0	6.3k					1000pF	2200pF						

Capacitors

Disc Type (High Voltage) for LCD Backlight Inverter Circuit Only



Series	D (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DEF1X	7.0 to 9.0	6.3k			10pF	47pF								
DEF2C	7.0 to 8.0	6.3k		2.0pF	10pF									

Disc Type (Safety Standard Certified Type)



Type KY (Basic Insulation Type) -IEC60384-14 X1/Y2 Class

Series	D (mm)	Rated Voltage (V)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE21X	8.0	AC250 (r.m.s.)			10pF	68pF								
DE2B3	7.0 to 8.0	AC300 (r.m.s.)				100pF	680pF							
	7.0 to 8.0	AC250 (r.m.s.)				100pF	680pF							
DE2E3	7.0 to 10.0	AC300 (r.m.s.)					1000pF	4700pF						
	7.0 to 10.0	AC250 (r.m.s.)					1000pF	4700pF						
DE2F3	14.0	AC300 (r.m.s.)						10000pF						
	14.0	AC250 (r.m.s.)						10000pF						

Type KX (Reinforced Insulation Type) -IEC60384-14 X1/Y1 Class







Series	D (mm)	Rated Voltage (V)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
DE11X	9.0	AC250 (r.m.s.)			10pF	<div><div></div></div> 68pF							
DE1B3	7.0 to 8.0	AC300 (r.m.s.)				100pF	<div><div></div></div> 680pF						
	7.0 to 8.0	AC250 (r.m.s.)				100pF	<div><div></div></div> 680pF						
DE1E3	7.0 to 12.0	AC300 (r.m.s.)					1000pF	<div><div></div></div> 4700pF					
	7.0 to 12.0	AC250 (r.m.s.)					1000pF	<div><div></div></div> 4700pF					

The Electrical Appliance and Material Safety Law of Japan

Series	D (mm)	Rated Voltage (V)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DEJE3	7.0 to 11.0	AC250 (r.m.s.)					1000pF	4700pF						
DEJF3	8.0 to 11.0	AC250 (r.m.s.)					4700pF	10000pF						

Disc Type (Ultra-high-voltage)



Series	D (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
DHR4E	8.0 to 18.0	15k				100pF		1000pF					
	8.0 to 16.0	12k				100pF		1000pF					
	8.0 to 15.0	10k				100pF		1000pF					
DHRB3	8.0 to 18.0	15k				100pF		1000pF					
	8.0 to 16.0	12k				100pF		1000pF					
	8.0 to 15.0	10k				100pF		1000pF					

Lead Type Ceramic Capacitors

For Automotive

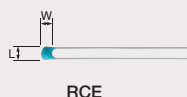
Powertrain/Safety (AEC-Q200)

Temperature Compensating Type



Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RCE5C	3.6X3.5	100		1.0pF			1500pF						
		50		1.0pF			3900pF						
	4.0X3.5	100					1800pF	3300pF					
		50					4700pF	22000pF					
RCE7U	4.0X3.5	250				100pF	4700pF						
	5.5X4.0	1k		10pF		1000pF							
		630		10pF		4700pF							
		250					6800pF	10000pF					
	5.5X5.0	1k				1500pF	2200pF						
		630					6800pF	10000pF					
	7.5X5.5	1k					3300pF	4700pF					
		630					15000pF	22000pF					
	7.5X8.0	1k					6800pF	10000pF					
		630					33000pF	47000pF					
	7.7X13.0	1k						20000pF					
		630						94000pF					

High Dielectric Constant Type



Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
RCEC7	5.5X5.0	100								1.5μF	2.2μF		
	5.5X7.5	100									4.7μF		
RCER7	3.6X3.5	100				220pF	22000pF						
		50				220pF	0.10μF						
	4.0X3.5	250				1000pF	22000pF						
		100					33000pF	0.33μF					
		50						0.15μF	0.47μF				
	5.5X4.0	1k				1000pF	10000pF						
		630				1000pF	22000pF						
		250					33000pF	0.10μF					
		100						0.15μF	1.0μF				
		50						0.68μF	2.2μF				
	5.5X5.0	25							3.3μF	4.7μF			
		1k					15000pF	22000pF					
		630					33000pF	47000pF					
		250						0.15μF	0.22μF				
		50							3.3μF	4.7μF			
	5.5X7.5	25								10μF			
		50								10μF			
		25								22μF			
	7.5X5.5	1k					33000pF	47000pF					

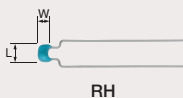
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Capacitors

Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
RCER7	7.5X5.5	630							68000pF	<div><div></div>0.10μF</div>				
		250								<div><div></div>0.33μF</div> <div><div></div>0.47μF</div>				
	7.5X7.5	250								<div><div></div>0.68μF</div> <div><div></div>1.0μF</div>				
	7.5X8.0	1k							68000pF	<div><div></div>0.10μF</div>				
		630								<div><div></div>0.15μF</div> <div><div></div>0.22μF</div>				
	7.5X12.5	250									<div><div></div>2.2μF</div>			
	7.7X13.0	1k								<div><div></div>0.22μF</div>				
		630									<div><div></div>0.47μF</div>			

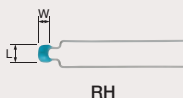
Powertrain/Safety (AEC-Q200) 150°C Max.

Temperature Compensating Type



Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
RHE5G	3.6X3.5	100				100pF	1500pF							
		50				100pF	3900pF							
	4.0X3.5	100					1800pF	3300pF						
		50						4700pF	10000pF					

High Dielectric Constant Type



Series	LxW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
RHEL8	3.6X3.5	100				220pF	<div><div></div></div> 22000pF							
		50				220pF	<div><div></div></div> 0.10μF							
	4.0X3.5	100					33000pF	<div><div></div></div> 0.10μF						
		50						0.15μF	<div><div></div></div> 0.33μF					
	5.5X4.0	100						0.15μF	<div><div></div></div> 0.22μF					
		50							0.47μF	<div><div></div></div> 2.2μF				
	5.5X5.0	50								3.3μF	<div><div></div></div> 4.7μF			
	5.5X7.5	50									<div><div></div></div> 10μF			

Safety Standard Certified for Automotive

Type KJ -IEC60384-14 X1/Y2 Class



Series	D (mm)	Rated Voltage (V)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DE6B3	8.0 to 9.0	AC300 (r.m.s.)				100pF	<div><div></div></div> 680pF							
DE6E3	7.0 to 12.0	AC300 (r.m.s.)					1000pF	<div><div></div></div> 4700pF						

High Voltage Ceramic Capacitors

Ultra-high-voltage



(in mm)

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)											
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ	
DHS4E	—	40k				140pF	<div><div></div></div> 2000pF							
		30k				190pF	<div><div></div></div> 2700pF							
		20k				280pF	<div><div></div></div> 4000pF							
		15k				370pF	<div><div></div></div> 5300pF							
		10k				560pF	<div><div></div></div> 8000pF							
DHSF4	—	40k				340pF	<div><div></div></div> 2700pF							
		30k				460pF	<div><div></div></div> 3600pF							
		20k				600pF	<div><div></div></div> 4800pF							

High Voltage AC Rated Type



(in mm)

Series	LXW (mm)	Rated Voltage (V)	Capacitance Range (F)										
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ
DHK3V	—	AC10k (r.m.s.)				100pF	1000pF						

Polymer Aluminum Electrolytic Capacitors











ECAS

Series	LXW (mm)	Rated Voltage (Vdc)	Capacitance Range (F)												
			0.1p	1p	10p	100p	1000p	10000p	0.1μ	1μ	10μ	100μ	1000μ		
ECAS	7.3X4.3	16									6.8μF	<div><div></div></div> 22μF			
		12.5									10μF	<div><div></div></div> 100μF			
		10									10μF	<div><div></div></div> 150μF			
		6.3									10μF	<div><div></div></div> 330μF			
		4										68μF	<div><div></div></div> 330μF		
		2										100μF	<div><div></div></div> 560μF		

Trimmer Capacitors

Trimmer Capacitors are variable capacitance capacitors, used for adjusting characteristics of electronic equipment.

Mounting Method	Soldering Method	Series	Max. Height	Size (WXL)	Rated Voltage	Operating Temperature Range	Remarks
Surface Mounting	Reflow Soldering Methods	 TZR1	0.9mm max.	1.5X1.7mm	25V	-25 to 85°C	
		 TZY2	1.25mm max.	2.5X3.2mm	25V	-25 to 85°C	
		 TZC3	1.7mm max.	3.2X4.5mm	100V	-25 to 85°C	
		 TZW4	2.6mm max.	4.2X5.2mm	250V	-55 to 125°C	for High Frequency Power
		 TZB4_A	3.2mm max.	4.0X4.5mm	100V/50V	-25 to 85°C	
		 TZB4_B	3.2mm max.	4.0X4.5mm	100V/50V	-25 to 85°C	
	Flow Soldering Methods	 TZB4_A	3.2mm max.	4.0X4.5mm	100V/50V	-25 to 85°C	with Cover Film
		 TZB4_B	3.2mm max.	4.0X4.5mm	100V/50V	-25 to 85°C	with Cover Film



Please refer to p. 69 for Electrical Double Layer Capacitors.

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- Chip Monolithic Ceramic Capacitors Cat. No. C02E
- Chip Monolithic Ceramic Capacitors for Automotive Cat. No. C03E
- Safety Standard Certified Ceramic Capacitors/ High Voltage Ceramic Capacitors Cat. No. C85E
- Ceramic Trimmer Capacitors Cat. No. T13E
- Polymer Aluminum Electrolytic Capacitors Cat. No. C90E
- Radial Lead Type Monolithic Ceramic Capacitors Cat. No. C49E
- High Performance Electrical Double Layer Capacitors DMF Series Cat. No. O83E
- High Performance Electrical Double Layer Capacitors DMT Series Cat. No. O84E

Noise Suppression Products/ EMI Suppression Filters

Broad lineup of Noise Suppression Products and EMI Suppression Filters






















Summary

Using Murata's ceramic processing technology and unique material, we offer a variety of Noise Suppression Products and EMI Suppression Filters.

Lineup

- EMI (chip and lead type) ●Noise Suppression Products for Automotive ●ESD Protection Devices
- AC Line Filters ●Ferrite Cores

Noise Suppression Filters (Chip Ferrite Bead)

			Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance (Ω) at 100MHz						Effective Frequency Range (Hz) (For Reference Only)																							
						10	100		1000		10k	100k	1M	10M	100M	1G	10G																		
For General Band Noise	Universal Type [Power Lines / Signal Lines]		 BLM02AX	01005 (0402)	750	10	70		120																										
			 BLM03AX	0201 (0603)	1000	10	80		120	240	600	1000																							
			 BLM15AX	0402 (1005)	1740	10	30	70	120	220	600	1000																							
	Signal Lines Type	For General Signal Lines	 BLM03AG	0201 (0603)	-	10	80		70	120	240	600	1000																						
			 BLM15AG	0402 (1005)	-	10	70		120	220	600	1000																							
			 BLM18AG	0603 (1608)	-	120		150	330	470	600	1000																							
			 BLM21AG	0805 (2012)	-	120		150	330	470	600	1000																							
			 BLM18TG	0603 (1608)	-	120		220	600	1000																									
			 BLA2AA (4 circuits array)	0804 (2010)	-	120		220	600	1000																									
			 BLA31AG (4 circuits array)	1206 (3216)	-	30	60	120	220	600	1000																								
			For High Speed Signal Lines	 BLM02BX	01005 (0402)	-	120				150																								
				 BLM03B	0201 (0603)	-	10	22	33	47	56	75	80															120	240	470	600				
				 BLM15B	0402 (1005)	-	5	10	22	33	47	75	120															220	470	600	1000	1800			
		 BLM18B		0603 (1608)	-	5	10	22	47	60	75	140	220	330	420	470	600	1500	2200																
		 BLM21B		0805 (2012)	-	5	75		60	120	150	220	330	470	750	1500	2200	2700																	
		 BLA2AB (4 circuits array)		0804 (2010)	-	10	22	47	75	120	220	470	600	1000																					
		 BLA31BD (4 circuits array)		1206 (3216)	-	120		220	470	600	1000																								
		For Digital Interface Lines		 BLM18RK	0603 (1608)	-	120		220	470	600	1000																							
			 BLM21RK	0805 (2012)	-	120		220	470	600	1000																								

For automotive grade products, please refer to catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

Continued on the following page.



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.










- SMD/BLOCK Type EMI Suppression Filters EMIFIL® Cat. No. C31E
- EMI Suppression Filters (for DC)/Chip Inductors for Automotive Cat. No. C51E
- EMI Suppression Filters (Lead Type EMIFIL®) Cat. No. C30E
- EMI Suppression Filters (EMIFIL®) for AC Power Lines Cat. No. C09E
- Noise Suppression by EMIFIL® Digital Equipment Application Manual Cat. No. C33E
- Noise Suppression by EMIFIL® Application Guide Application Manual Cat. No. C35E
- Application Manual for Power Supply Noise Suppression and Decoupling for Digital ICs Cat. No. C39E
- Ferrite Core for EMI Suppression Microwave Absorber Cat. No. O63E

Noise Suppression Products/EMI Suppression Filters

		Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance (Ω) at 100MHz			Effective Frequency Range (Hz) (For Reference Only)								
					10	100	1000	10k	100k	1M	10M	100M	1G	10G		
For General Band Noise	Power Lines Type	BLM03PX*	0201 (0603)	1800	33 (1.5A) 22 (1.8A) 80 (1A)											
		BLM03PG	0201 (0603)	900	33 (0.75A) 22 (0.9A)											
		BLM15P*	0402 (1005)	3000	10 (1A)	30 (2.2A)	60 (1.7A/2.5A)	120 (1.3A/2A)	330 (1.2A)	600 (0.9A)						
		BLM18PG*	0603 (1608)	3000	33 (3A) 120 (2A) 220 (1.4A) 470 (1A) 30 (1A) 60 (0.5A) 180 (1.5A) 330 (1.2A)											
		BLM21PG*	0805 (2012)	6000	30 (4A) 220 (2A) 22 (6A) 60 (3.5A) 120 (3A) 330 (1.5A)											
		BLM31PG*	1206 (3216)	6000	50 (3.5A) 390 (2A) 33 (6A) 120 (3.5A) 600 (1.5A)											
		BLM41PG*	1806 (4516)	6000	75 (3.5A) 470 (2A) 60 (6A) 180 (3.5A) 1000 (1.5A)											
		BLM18KG*	0603 (1608)	6000	30 (5A) 70 (3.5A) 220 (2.2A) 470 (1.5A) 26 (6A) 100 (3A) 120 (3A) 330 (1.7A) 600 (1.3A)											
		BLM18SG*	0603 (1608)	6000	70 (4A) 220 (2.5A) 26 (6A) 120 (3A) 330 (1.5A)											
		BLE32PN	1220 (3225)	10000	30											
For GHz Band Noise	Universal Type [Power Lines / Signal Lines]	BLM03EB*	0201 (0603)	600	25 (0.6A) 50 (0.4A)											
		BLM15EG*	0402 (1005)	1500	220 (0.7A) 120 (1.5A)											
		BLM18EG*	0603 (1608)	2000	120 (2A) 330 (0.5A) 470 (0.5A) 100 (2A) 220 (2A/1A) 390 (0.5A) 600 (0.5A)											
		BLM18HE*	0603 (1608)	800	1000 (0.6A) 600 (0.8A) 1500 (0.5A)											
	Signal Lines Type	BLM03HG	0201 (0603)	-	600 1200											
		BLM03HD	0201 (0603)	-	600 330 470 1000											
		BLM03HB	0201 (0603)	-	190											
		BLM15HG	0402 (1005)	-	600 1000											
		BLM15HD	0402 (1005)	-	600 1000 1800											
		BLM15HB	0402 (1005)	-	120 220											
		BLM18HG	0603 (1608)	-	600 470 1000											
		BLM18HD	0603 (1608)	-	600 470 1000											
		BLM18HB	0603 (1608)	-	120 220 330											
		BLM18HK	0603 (1608)	-	330 600 470 1000											
	For High-GHz Band Noise	Signal Lines Type	BLM15GG	0402 (1005)	-	220 470										
			BLM15GA	0402 (1005)	-	75										
			BLM18GG	0603 (1608)	-	470										

Noise Suppression Filters (Chip 3 Terminal Capacitor)

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Capacitance (F)							Effective Frequency Range (Hz) (For Reference Only)							
				10p	100p	1000p	10000p	0.1μ	1μ	10μ	10k	100k	1M	10M	100M	1G	10G	
Signal Lines Type	 NFM15CC	0402 (1005)	-	2200 22000														
	 NFM18CC	0603 (1608)	-	470 2200 22 47 100 220 1000 22000														
	 NFM21CC	0805 (2012)	-	470 2200 22 47 100 220 1000 22000														
	 NFM3DCC	1205 (3212)	-	470 2200 22 47 100 220 1000 22000														
	 NFM41CC	1806 (4516)	-	470 2200 22 47 100 220 1000 22000														
	 NFA31CC (4 circuits array)	1206 (3216)	-	470 2200 22 47 100 220 1000 22000														

* The derating of rated current is required for some items according to the operating temperature.

For automotive grade products, please refer to catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

Continued on the following page.














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Noise Suppression Products/EMI Suppression Filters

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Capacitance (F)							Effective Frequency Range (Hz) (For Reference Only)						
				10p	100p	1000p	10000p	0.1μ	1μ	10μ	10k	100k	1M	10M	100M	1G	10G
Power Lines Type	NFM15PC	0402 (1005)	2000					47000	0.22	1.0							
	NFM18PS	0603 (1608)	2000					0.1	0.47	4.3							
	NFM18PC	0603 (1608)	4000						0.47	1.0							
	NFM21PS	0805 (2012)	4000						0.22	1.0							
	NFM21PC	0805 (2012)	6000					0.1	0.47	2.2							
	NFM3DPC*	1205 (3212)	2000				22000										
	NFM31PC	1206 (3216)	6000														
	NFM31KC*	1206 (3216)	10000				10000 22000										
	NFM41PC	1806 (4516)	6000						0.1	0.1							
Universal Type [Power Lines / Signal Lines]	NFE31PT	1206 (3216)	6000				470 2200										
	NFE61PT	2706 (6816)	2000				22 47 100 220 1500										

Noise Suppression Filters (Chip LC/RC Filter)

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Cut-off Frequency (MHz)								Effective Frequency Range (Hz) (For Reference Only)							
				10				100			500	10k	100k	1M	10M	100M	1G	10G	
Signal Lines Type	 NFL15ST	0402 (1005)	-					150	200	300	500								
	 NFL18ST	0603 (1608)	-			50	70	100		200	300	500							
	 NFL18SP	0603 (1608)	-					150	200	300	500								
	 NFL21SP	0805 (2012)	-	10	20						500								
	 NFA18SL (4 circuits array)	0603 (1608)	-							200	400								
	 NFA18SD (4 circuits array)	0603 (1608)	-			50		130	180	220	300	350	480						
	 NFA21SL (4 circuits array)	0805 (2012)	-							200	180								
	 NFA21SL (4 circuits array)	0805 (2012)	-			50	80			280	310	300	330						
	 NFW31SP	1206 (3216)	-	10	20			50	100	150	200	300	500						
	 NFR21GD	0805 (2012)	-								400								
 NFA31GD (4 circuits array)	1206 (3216)	-																	

Noise Suppression Filters (Chip EMIFIL®)

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance (Ω) at 1MHz												Effective Frequency Range (Hz) (For Reference Only)						
				1	10	100	1000	10k	100k	1M	10M	100M	1G	10G								
Universal Type [Power Lines / Signal Lines]	 NFZ2HBM_10	1008 (2520)	1200	1.5	2.9	6.1	11	24	60													
	 NFZ32BW_10*	1210 (3225)	2550		3.6	7.4	15	32	70	150	290	620										
	 NFZ32BW_11*	1210 (3225)	2900		3.3	6.8	9.8	19	31	65	150											

* The derating of rated current is required for some items according to the operating temperature.

For automotive grade products, please refer to catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."








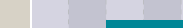

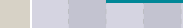



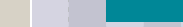







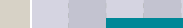

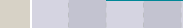







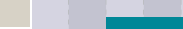

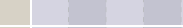









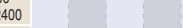



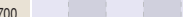
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Noise Suppression Products/EMI Suppression Filters

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Impedance (Ω) at 100MHz				Effective Frequency Range (Hz) (For Reference Only)						
				100			1000	10k	100k	1M	10M	100M	1G	10G
Signal Lines Type	 NFZ32SW_10	1210 (3225)	-		300		900							
Universal Type [Power Lines / Signal Lines]	 NFZ18SM_10	0603 (1608)	1250	120										
	 NFZ2MSM_10	0806 (2016)	4000	100	180	300	600							


Noise Suppression Filters (Chip Common Mode Choke Coil)


		Series	Size Code inch (mm)	Max. Rated Current (mA)	Common Mode Impedance (Ω) at 100MHz			Effective Frequency Range (Hz) (For Reference Only)						
					100	500	1000	100k	1M	10M	100M	1G	10G	
Signal Lines Type	For Audio Lines	 DLM11G	0504 (1210)	-	600									
	For Ultra-High-Speed Signal Lines	 DLM11S	0504 (1210)	-	45 90									
		 DLP0QSN	025020 (0605)	-	60									
		 DLP0QSA	025020 (0605)	-	15 7 35									
		 DLP0NSC	03025 (0806)	-	28 90									
		 DLP0NSN	03025 (0806)	-	35 90 67 120									
		 DLP0NSA	03025 (0806)	-	15 7									
		 DLP11SN	0504 (1210)	-	67 90 120 160 200 280 330									
		 DLP11SA	0504 (1210)	-	35 90 67									
		 DLP11RN	0504 (1210)	-	45									
		 DLP11RB	0504 (1210)	-	15 40									
		 DLP11TB	0504 (1210)	-	80									
		 DLP31S	1206 (3216)	-	120 220 550									
		 DLP1NDN (2 circuits array)	05025 (1506)	-	35 90 67									
		 DLP2ADA (2 circuits array)	0804 (2010)	-	35 90 67									
		 DLP2ADN (2 circuits array)	0804 (2010)	-	90 67 120 160 200 280									
		 DLP31DN (2 circuits array)	1206 (3216)	-	90 130 200 320 440									
		 DLW21S	0805 (2012)	-	90 67 120 180 260 370 500 920									
		 DLW21H	0805 (2012)	-	90 67 120 180									
		 DLW31SN	1206 (3216)	-	90 160 260 600 1000 2200									
		 DLW43SH	1812 (4532)	-										
Universal Type [Power Lines / Signal Lines]		 DLW44S*	1515 (4040)	2100	400 850 2200 1700 2400									
		 DLW5AH/DLW5BS*	2014 / 2020 (5036)/(5050)	5000	190 350 500 800 1500 4000									
		 DLW5AT*/DLW5BT*	2014 / 2020 (5036)/(5050)	6000	50 110 230 330 500 1000 1400 850 1100 2700									

	Series	Size Code inch (mm)	Max. Rated Current (mA)	Common Mode Impedance (Ω) at 10MHz			Effective Frequency Range (Hz) (For Reference Only)						
				100	500	1000	100k	1M	10M	100M	1G	10G	
Large Current Type for Automotive Available	 PLT10H*	-	-	45									
				100	400	900							
					500	1000							














* The derating of rated current is required for some items according to the operating temperature.

For automotive grade products, please refer to catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

Continued on the following page. 

 For more details on each series, please refer to our website.
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Noise Suppression Filters (Block Type)

		Series	Height (mm)	Rated Voltage (Vdc)	Rated Current (A)	Effective Frequency Range (Hz) (For Reference Only)						
						10k	100k	1M	10M	100M	1G	10G
Power Lines Type	SMD Type	 BNX022*	3.1	50	10							
		 BNX023*	3.1	100	15							
		 BNX024*	3.5	50	15							
		 BNX025*	3.5	25	15							
		 BNX026*	3.5	50	15							
		 BNX027*	3.5	16	15							
		 BNX028*	3.5	16	15							
		 BNX029*	3.5	6.3	15							
	Lead Type	 BNX002	13 max.	50	10							
		 BNX003	13 max.	150	10							
		 BNX005	13.5 max.	50	15							
		 BNX012*	8.5 max.	50	15							
		 BNX016*	8.5 max.	25	15							

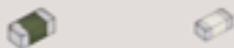
* The derating of rated current is required for some items according to the operating temperature.
For automotive grade products, please refer to catalog C51E, "EMI Suppression Filters (for DC)/Chip Inductors for Automotive."

ESD Protection Devices

Support ESD protection for various kinds of electronic devices.

Ceramic ESD Protection Devices LXES_A Series


Applying Murata's original ceramic technology for excellent ESD suppression performance and ultra-small capacitance value.



Silicon ESD Protection Devices LXES_B Series

Applying accumulated design technology for excellent ESD suppression performance.



Continued on the following page. 



For more details on each series, please refer to our website.
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Noise Suppression Products/EMI Suppression Filters

Silicon ESD Protection Devices LXES_T Series

Applying accumulated design technology for excellent ESD suppression performance.



Common Mode Filter with ESD Protection Devices LXES_D Series

Applying Murata's original ceramic technology for excellent ESD suppression performance with Common Mode Choke Coil and small capacitance value.



Noise Suppression Filters (Lead Type), Others

	Series									Effective Frequency Range (Hz) (For Reference Only) 10k 100k 1M 10M 100M 1G 10G
Lead Type EMIFIL®	 BL01	 BL02	 BL03	 DSS1	 DSN6	 DSN9(H)	 DSS6	 DST9(H)		
EMIGUARD®	 VFC2H	 VFR3V	 VFS6V	 VFS9V						
AC Line Filters	Common Mode Choke Coil	 PLA10AN	 PLA10AH	 PLH10AN						
	Hybrid Common Mode Choke Coil	 PLY10AN	 PLY10AH	 PLY17BN						
Common Mode Choke Coils	 PLT09H									
Microwave Absorbers	 EA10	 EA20/21/30								
Ferrite Core	 FSRH	 FSRB	 FSRC	 FSSA						



For more details on each series, please refer to our website.

Product Search ⇒ <http://search.murata.co.jp/>

Inductors (Coils)

Broad lineup of Chip Inductors and Power Inductors



Summary

Using Murata's ceramic processing technology and unique material, we offer a variety of inductor products that are suitable for the demands of many applications.

Lineup

- RF Inductors
- Inductors for Power Lines
- Inductors for General Circuits

WEB Product Search Engine



① Search by part number

The applicable inductors can be searched by alphanumeric characters.



② Search by specifications

Inductors can be searched by various specifications, such as the Inductance, DC Resistance, and Rated Current.



③ Search in the lineup

Inductors applicable to the conditions can be searched from the lineup of each series.

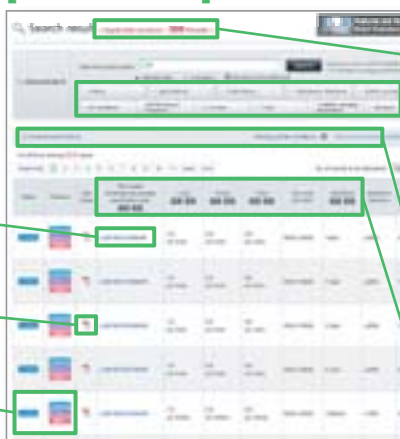


④ Search by competitor's part number (Cross reference)

The Murata part number applicable to the assumed specification can be searched by the competitor's part number of the Inductors.



[Search result]



The number of cases applicable to the current search conditions is always displayed in real time.

Click each search condition button to display the menu. The search results will change in real time with the selected conditions.

Clicking the "Current search conditions" opens a menu, and the filtered conditions can be checked.

The results can be sorted by clicking the ▲ button of the search results items.

Clicking the product name opens the details page, and more detailed information can be acquired.

A simple specification sheet can be downloaded without opening the details page.

The icons clearly indicate the status and the features of the product.

RF Inductors

Film Type -LQP Series-



The film inductors in the LQP series have a different set of features, since micromachining of the coil patterns is enabled by forming the electrodes using a photolithography technique. The inductors can have smaller sizes and high Q characteristics, while at the same time the series offers a lineup of inductors with inductance values that both deviate minimally and are finely graded. The lineup consists of a wide range of inductors in the 0201/0603 size, which is becoming the mainstream, and in the 01005/0402 size, which is the smallest in the industry; both sizes support the trend toward miniaturized sizes. These inductors are used in the matching and resonance circuits of RF units that require miniaturized sizes, minimal tolerance in inductance and finely graded inductance levels. They are also used in choke circuits that demand miniaturized sizes and low Rdc.

Features

- Ultra-miniature size
- High Q value and small size

The feature of the film type is also the Q factor that is higher than the monolithic method which is adopted by other companies in the same industry. Murata offers the film type in the small 0201/0603 size and the 01005/0402 size. (Figure 1) Lineup of Small products. (Figure 2)

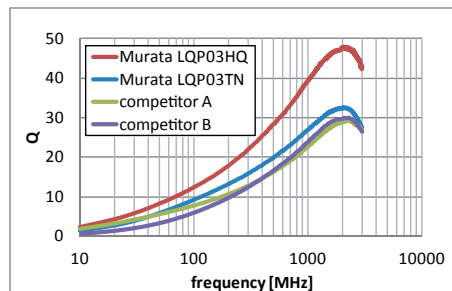


Figure 1: Comparison of Q Characteristics between 0603 Size, LQP03 Series and Monolithic Products of Other Companies (both 10 nH)

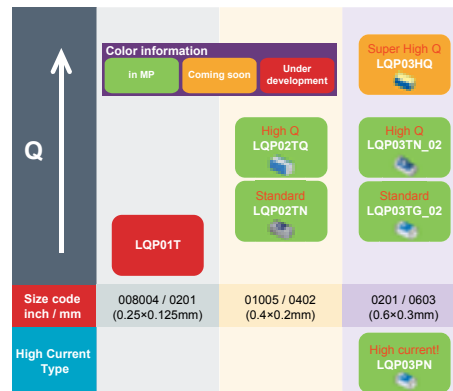


Figure 2: Lineup of Small Products

- Minimal tolerance in inductance, finely graded inductance levels

The tolerance between Murata's monolithic structure and film structure products of high frequency coils and L value lineup are shown in the following table. Compared with the monolithic type, the position accuracy of the film type is more accurate when forming the coil. Therefore, there is less variation in the L value, which allows for less tolerance and tighter steps.

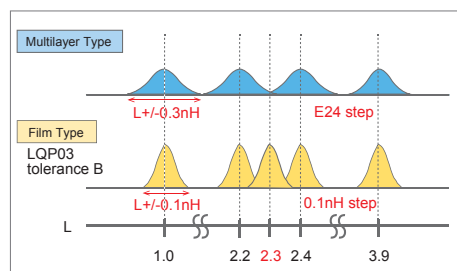


Figure 3: Step and Tolerance of Inductance

Uses and Applications

- Matching circuits of power amplifiers, RF matching circuits that require small sizes, minimal tolerance in inductance and high Q

Lineup

Series	Size Code inch (mm)	Applications	Inductance (H)										Rated Current Range
			0.1n	1n	10n	100n	1μ	10μ	100μ	1m	10m		
LQP	01005 (0402)	General	0.2nH			39nH							90mA to 990mA
	0201 (0603)	General	0.1nH			270nH						50mA to 1.4A	
		Infotainment		0.6nH			120nH					80mA to 850mA	
	0402 (1005)	General		1.0nH			33nH					60mA to 400mA	
	0603 (1608)	General		1.3nH			100nH					50mA to 300mA	

Inductors (Coils)

Multilayer Type -LQG Series-



The multilayer structure of LQG enable a smaller size and lower cost than wound structure. While the Q factor is lower than that of the wire wound structure, the multilayer structure provides good overall balance between the L value tolerance, rated current, size, price, and other characteristics, enabling use in a wide range of applications. The multilayer structure is suitable for various applications such as RF circuit matching, choke, and resonance for mobile communication equipment. Based on the long market results, this product realizes high reliability to meet automotive market demands.

Features

- Line-up with wide range of inductance values
- Higher reliability

Uses and Applications

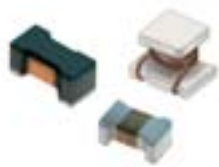
- Matching circuits of RF units, choke circuits

Lineup

Series	Size Code inch (mm)	Applications	Inductance (H)										Rated Current Range
			0.1n	1n	10n	100n	1μ	10μ	100μ	1m	10m		
LQG	0402 (1005)	General		1nH	<div></div>	270nH							110mA to 300mA
		Infotainment		1nH	<div></div>	270nH						110mA to 300mA	
		PowerTrain		1nH	<div></div>	270nH						110mA to 300mA	
	0603 (1608)	General		1.2nH	<div></div>	100nH						350mA to 1.1A	
		PowerTrain		1.2nH	<div></div>	270nH						200mA to 1.1A	

RF Inductor/For Power Lines

Wire Wound Type -LQW Series-



The wire wound inductors in the LQW series feature a high Q value. Inductors with high Q values are used in the matching circuits of RF units because their high Q values give them excellent attenuation characteristics inside the pass band of the filters. They are also frequently used in the matching applications of antennas for maintaining the transmission and reception sensitivity of the antennas. Furthermore, since they have low Rdc characteristics, they are also employed in choke circuits in which high current levels flow.

Features

- Low DC resistance is possible
- Extremely high Q (Quality factor) value
The frequency characteristics of the Q are shown in the graph by structure (wire wound, monolithic) of Murata's high frequency coil 1005 size. As shown in Figure 1, the feature of the wire wound type is the very high Q factor compared with the monolithic type.
- Large currents can be supported.

Uses and Applications

- RF matching circuits requiring Q value characteristics, Choke circuits that support Large currents levels, Antenna matching circuits

Lineup

Series	Size Code inch (mm)	Applications	Inductance (H)										Rated Current Range
			0.1n	1n	10n	100n	1μ	10μ	100μ	1m	10m		
LQW	0201 (0603)	General			5.4nH	<div><div></div></div> 13nH							280mA to 460mA
	03015 (0804)	General		1.1nH	<div><div></div></div> 33nH							140mA to 990mA	
	0402 (1005)	General		1.3nH	<div><div></div></div> 560nH							110mA to 3.15A	
		Infotainment		1.3nH	<div><div></div></div> 120nH							110mA to 1.2A	
	0603 (1608)	General		1.6nH	<div><div></div></div> 650nH							75mA to 3.2A	
		Infotainment		2.2nH	<div><div></div></div> 470nH							75mA to 1.4A	
	0805 (2012)	General				470nH	<div><div></div></div> 2200nH						75mA to 160mA
	0805 (2015)	General		2.7nH	<div><div></div></div> 820nH							160mA to 1.9A	
	1008 (2520)	General			12nH	<div><div></div></div> 4700nH							260mA to 1A
	1206 (3216)	General			8.8nH	<div><div></div></div> 100nH							230mA to 750mA

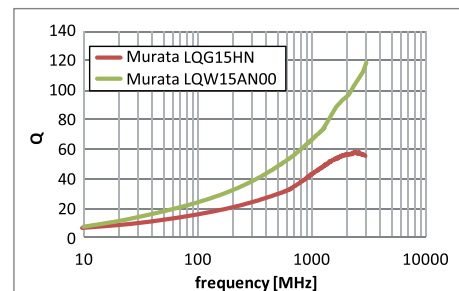


Figure 1: Comparison of Q Characteristics between Monolithic LQG15 Series and Wire Wound LQW15 Series (both 2.7 nH)

For Power Lines/General Circuits Inductor

Multilayer Type -LQM Series-



The monolithic inductor consists of a sintered alternately layered ceramic material and coil conductor. Compared with the wound structure, small sizes/low profiles are possible. Along with the progression of the high frequency of switching frequencies, the required inductance of the monolithic inductor for power inductors where mobile phones are the main market tends to be deteriorating, and cases where the monolithic inductor can be applied are expected to increase further.

■ Features

- Ideal for small size/low profile areas
- Magnetic shielded structure

■ Uses and Applications

- Mobile phones, digital cameras

■ Lineup

Series	Size Code inch (mm)	Thickness (mm/max.)	Applications	Inductance (H)										Rated Current Range
				0.1n	1n	10n	100n	1μ	10μ	100μ	1m	10m		
LQM	0603 (1608)	1.0 > Size T	General				0.047μH	<div><div></div></div>	10μH					15mA to 1.3A
		1.2 ≥ Size T ≥ 1.0	General					<div><div></div></div>	2.2μH					1.05A
	0805 (2012)	1.0 > Size T	General				0.47μH	<div><div></div></div>	2.2μH					600mA to 1.1A
			Infotainment				0.47μH	<div><div></div></div>	2.2μH					600mA to 1.1A
		1.2 ≥ Size T ≥ 1.0	General				0.1μH	<div><div></div></div>	10μH					15mA to 1.7A
			Infotainment				0.47μH	<div><div></div></div>	4.7μH					800mA to 1.3A
			PowerTrain						<div><div></div></div>	2.2μH				
		Size T > 1.2	General					2.7μH	<div><div></div></div>	47μH				7mA to 120mA
	0806 (2016)	1.0 > Size T	General				0.24μH	<div><div></div></div>	2.2μH					1.1A to 2.6A
		1.2 ≥ Size T ≥ 1.0	General				0.16μH	<div><div></div></div>	4.7μH					1A to 4A
			Infotainment				0.47μH	<div><div></div></div>	4.7μH					1.1A to 1.6A
	1008 (2520)	1.0 > Size T	General					<div><div></div></div>	0.56μH					1.5A
			Infotainment					<div><div></div></div>	0.56μH					1.5A
		1.2 ≥ Size T ≥ 1.0	General				0.24μH	<div><div></div></div>	4.7μH					800mA to 3.3A
			Infotainment				0.47μH	<div><div></div></div>	4.7μH					800mA to 1.8A
	1206 (3216)	1.0 > Size T	General				0.47μH	<div><div></div></div>	4.7μH					700mA to 1.4A
	1210 (3225)	1.2 ≥ Size T ≥ 1.0	General					<div><div></div></div>	1μH					1.8A

Inductors (Coils)

Wire Wound Type -LQH Series-



The wire wound inductor consists of a copper wire spirally wound around the ferrite core. Most of Murata's wire wound inductors for power circuits are coated with various resins over the copper wire wound around the ferrite core. The purpose of the coating resin is to improve the strength of the product.

The merits of using a wire wound product are demonstrated when used in large current areas and high inductance areas. The applicable markets vary from mobile phones to TVs and digital cameras.

Features

- Lineup of various sizes
- Can be used for high inductance values, and is ideal for power supply booster circuits.

Uses and Applications

- Mobile phones, digital cameras, TV, HDD, game machines

Lineup

Series	Size Code inch (mm)	Thickness (mm/max.)	Applications	Inductance (H)										Rated Current Range
				0.1n	1n	10n	100n	1μ	10μ	100μ	1m	10m		
LQH	0806 (2016)	1.0 > Size T	General					1μH		82μH				90mA to 595mA
	1008 (2520)	1.2 ≥ Size T ≥ 1.0	General					0.47μH		100μH				130mA to 2.75A
			Infotainment					0.47μH		22μH				430mA to 2.75A
		Size T > 1.2	General					2.2μH	4.7μH					800mA to 1.25A
	1212 (3030)	1.2 ≥ Size T ≥ 1.0	General					0.47μH		250μH				130mA to 2.86A
			Infotainment					0.47μH		47μH				460mA to 2.86A
		Size T > 1.2	General					1μH		100μH				240mA to 2.15A
	1206 (3216)	Size T > 1.2	General				0.054μH		100μH					45mA to 970mA
			Infotainment				0.054μH		0.88μH					180mA to 920mA
	1210 (3225)	Size T > 1.2	General				0.15μH		560μH					40mA to 2.9A
			Infotainment					0.47μH		330μH				60mA to 2.9A
			PowerTrain				0.15μH		22μH					250mA to 1.45A
	1515 (4040)	1.2 ≥ Size T ≥ 1.0	General					0.68μH		47μH				380mA to 2.5A
			Infotainment					0.68μH		47μH				410mA to 2.5A
		Size T > 1.2	General					0.51μH		470μH				145mA to 4.5A
	1812 (4532)	Size T > 1.2	General					0.56μH		2400μH				25mA to 3.3A
			Infotainment					1μH		2200μH				30mA to 3.3A
	2020 (5050)	Size T > 1.2	General					0.47μH		150μH				630mA to 4.6A
			Infotainment					0.47μH		22μH				1.05A to 4A
	2220 (5750)	Size T > 1.2	General					0.12μH		10000μH				50mA to 6A
2525 (6363)	Size T > 1.2	General					0.27μH		10000μH				50mA to 6A	

Effective Use of Power Inductors

The product group of Murata's inductors for power circuits consists of the wire wound type and the monolithic type. For the applications of power inductors, Murata has prepared the "[Murata Power Inductor Selection Tool](#)," which can calculate and display the performance of inductors based on actual use conditions.

The application of power inductors greatly contributes to the loss of inductors in the conversion efficiency of a set.

The loss of inductors can also be estimated in the frequency and current values actually used, by using the "[Murata Power Inductor Selection Tool](#)." The inductors mounted in sets that increase the conversion efficiency of a power supply to the maximum can easily be selected.

URL: <http://www.murata.com/products/inductor/chip/learn/apply/power>

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- Chip Inductors (Chip Coils) Cat. No. O05E
- EMI Suppression Filters (for DC)/
Chip Inductors for Automotive Cat. No. C51E

Resistors

Full lineup for various applications



Summary

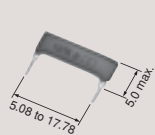
Using Murata's ceramic processing technology and unique material, we offer a variety of resistor products.

Lineup

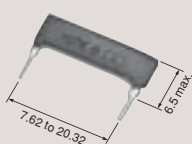
- High Voltage Resistors
- Trimmer Potentiometers

High Voltage Resistors

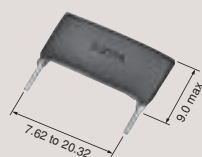
High Voltage Resistors are used for home and office equipment such as printers, copiers and air-conditioners. Murata offers the High Voltage Resistors "MHR Series."



MHR03 Series



MHR04 Series



MHR06 Series

(in mm)

Series	Resistance (min.) (MΩ)	Resistance (max.) (MΩ)	Maximum Operating Voltage (Single Use) (kV)	Maximum Operating Voltage (Molded Use) (kV)	Rated Power (W)
MHR03	1	500 to 1000	2 to 8	3 to 14	0.3 to 1.0
MHR04	1 to 10	1000	3.5 to 12	10 to 22	0.6 to 1.7
MHR06	1	1000	3.5 to 10	10 to 20	0.8 to 1.6

We have many products with various specifications.
For resistance value and ratio of B circuit, please contact us.



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Detailed Catalogs





















For more details, please refer to our printed catalogs and the PDF catalogs on our website.



• Trimmer Potentiometers Cat. No. R50E

Trimmer Potentiometers

Trimmer Potentiometers are used for trimming the resistance value of electronic equipment. Murata offers a broad range of Trimmer Potentiometers using both carbon and cermet materials.

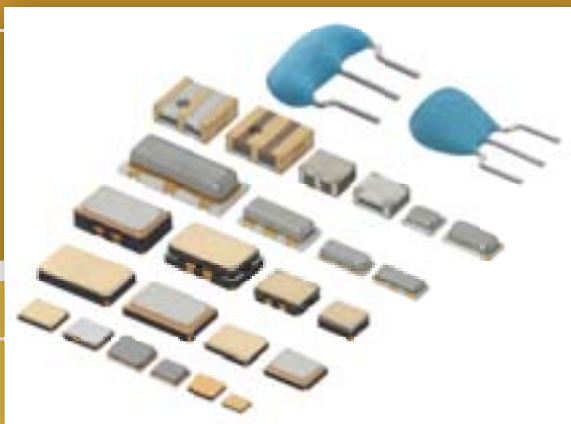
Mounting	Structure	Resistive Element Type	Adjustment Angle	Adjustment Turns	Size	Series		Remarks
Surface Mounting	Open Type	Carbon	Top Adjustment	1	2mm		PVZ2A	Low Profile (0.85mm max.)
					3mm		PVZ3A	Automatic Adjustment
				PVZ3G		Low Profile (1.25mm max.)		
				PVZ3H				
		Rear Adjustment	1	2mm		PVZ2R	Low Profile with Smaller Footprint (0.9mm max.)	
				3mm		PVZ3K		
	Cermet	Top Adjustment	1	2mm		PVA2A	Automatic Adjustment	
	Sealed Type	Cermet	Top Adjustment	1	3mm		PVG3A	Automatic Adjustment with Rotational Stop
						PVG3G	with Rotational Stop	
					4mm		PVM4	
11			5mm		PVG5A			
Side Adjustment			11	5mm		PVG5H		
PCB Insertion	Sealed Type	Cermet	Top Adjustment	1	6mm		PV32H	with Rotational Stop
				4	7mm		PV12P	
				12	6mm		PV37W	
				25	10mm		PV36W	
			Side Adjustment	1	6mm		PV32N	with Rotational Stop
				4	7mm		PV12T	
				12	6mm		PV37X	
				25	10mm		PV36X	



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Timing Devices

A stable timing source for microprocessors in various electronic devices



Summary

Murata's ceramic processing technology and unique piezoelectric material has led to the development of a range of small and thin ceramic timing devices that offer high oscillation frequency and remarkable oscillation tolerance.

Lineup

- Crystal Units ● Crystal Oscillators
- Ceramic Resonators CERALOCK®

IC Part Number - Timing Devices Search

Search for Timing Devices by IC part number or search for IC part number by Timing Devices on our website. It is possible to search by either oscillating frequency or frequency range, too.



<http://www.murata.com/simsurf/ic-td/>

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.




- Ceramic Resonators (CERALOCK®)
- Ceramic Resonator (CERALOCK®) Application Manual
- Crystal Unit

Cat. No. P16E
Cat. No. P17E
Cat. No. P79E

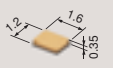
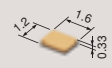

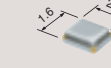



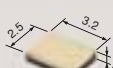
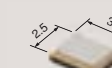


Crystal Units

The Crystal Unit realizes highly accurate frequency-based high-grade quartz crystal elements. We offer a wide lineup including Crystal Units using Murata's proven package technology for small digital devices, automotive, etc.

For Automotive

 XRCHA		(in mm)																	
Series	Seal	Frequency (MHz)																Frequency Shift by Temperature (ppm max.)	Operating Temperature Range (°C)
XRCHA	Resin	1	2	3	4	5	6	7	8	9	10	20	30	40	50	70	100	±100	-40 to 125

For Consumer/Industrial

 XRCFD																			
 XRCMD																			
 XRCGD																			
 XRCGB																			
 XRCHH																			
 XRCHJ																			
 XRCHA																			
 XRCJH																			
 XRCJK																			
 XRCLH																			
 XRCLK																			
Series	Seal	Frequency (MHz)																Frequency Shift by Temperature (ppm max.)	Operating Temperature Range (°C)
XRCFD	Metal											24.0000±10ppm	31.9999±10ppm					±10	-20 to 70
XRCMD	Metal											32.0000±10ppm	48.0000±10ppm					±10	-20 to 70
XRCGD	Metal											24.0000±10ppm	48.0000±10ppm					±10	-20 to 70
XRCGB	Resin											24.0000±100ppm	48.0000±100ppm					±50	-30 to 85
XRCHH	Metal											16.0000±10ppm	52.0000±10ppm					±15	-30 to 85
XRCHJ	Seam											16.0000±10ppm	52.0000±10ppm					±15	-30 to 85
XRCHA	Resin											16.0000±100ppm	23.9999±100ppm					±100	-30 to 85
XRCJH	Metal											13.0000±10ppm	52.0000±10ppm					±15	-30 to 85
XRCJK	Seam											12.0000±10ppm	52.0000±10ppm					±15	-30 to 85
XRCLH	Metal											10.0000±10ppm	52.0000±10ppm					±15	-30 to 85
XRCLK	Seam											10.0000±10ppm	52.0000±10ppm					±15	-30 to 85

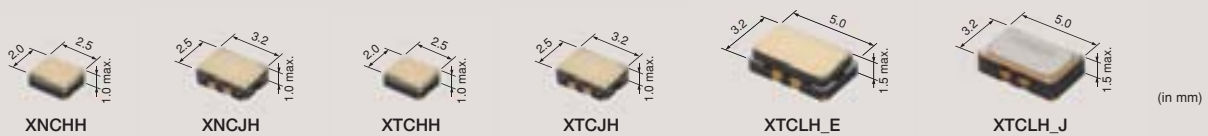


For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Crystal Oscillators

We offer a varied lineup of Crystal Oscillators using highly reliable crystal units, circuit engineering, superior temperature compensation method and measuring method fostered by our long experience and activity.

For Consumer/Industrial



Series	VC Function	Frequency (MHz)														Frequency Shift by Temperature (ppm max.)	Frequency Aging (ppm max./year)	Operating Temperature Range (°C)	
		1	2	3	4	5	6	7	8	9	10	20	30	40	50				70
XNCHH	—					10.0000±1ppm									52.0000±1ppm		±0.5	±1.0	-30 to 85
XNCJH	—					10.0000±1ppm									52.0000±1ppm		±0.5	±1.0	-30 to 85
XTCHH	●					10.0000±1ppm									52.0000±1ppm		±0.5	±1.0	-30 to 85
XTCJH	●					10.0000±1ppm									52.0000±1ppm		±0.5	±1.0	-30 to 85
XTCLH_E	●					10.0000±1ppm									40.0000±1ppm		±0.5	±1.0	-30 to 85
XTCLH_J	●					10.0000±0.5ppm									52.0000±0.5ppm		±0.2	±0.5	-30 to 85

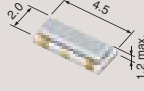


For more details on each series, please refer to our website.
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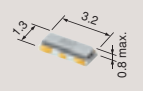
Ceramic Resonators CERALOCK®

Wide product lineup for automotive and consumer use with SMD and lead package.


MHz Chip Type for Automotive (Tight Frequency Tolerance)



CSTCR_G15C



CSTCE_G15C




CSTCE_V13C

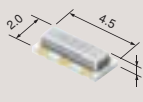
(in mm)

Series	Frequency (MHz)																Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)	
	1	2	3	4	5	6	7	8	9	10	20	30	40	50	70	100			
CSTCR_G15C				4.00±0.1%							7.99±0.1%							±0.13	-40 to 125
CSTCE_G15C								8.00±0.1%										±0.13	-40 to 125
CSTCE_V13C											14.00±0.1%							±0.13	-40 to 125


MHz Chip Type for Automotive (Standard Frequency Tolerance)




CSTCC_G_A



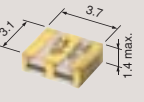
CSTCR_G_B



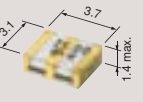
CSTCE_G_A



CSTCE_V_C



CSTCV_X_Q



CSACV_X_Q


(in mm)

Series	Frequency (MHz)																Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)	
	1	2	3	4	5	6	7	8	9	10	20	30	40	50	70	100			
CSTCC_G_A	2.00±0.5%										3.99±0.5%							±0.4 (15pF) -0.6/+0.3 (47pF)	-40 to 125
CSTCR_G_B				4.00±0.5%														±0.15	-40 to 125
CSTCE_G_A											8.00±0.5%							±0.2	-40 to 125
CSTCE_V_C																		±0.15	-40 to 125
CSTCV_X_Q																		±0.3	-40 to 125
CSACV_X_Q (No built-in load capacitance)																		±0.3	-40 to 125



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

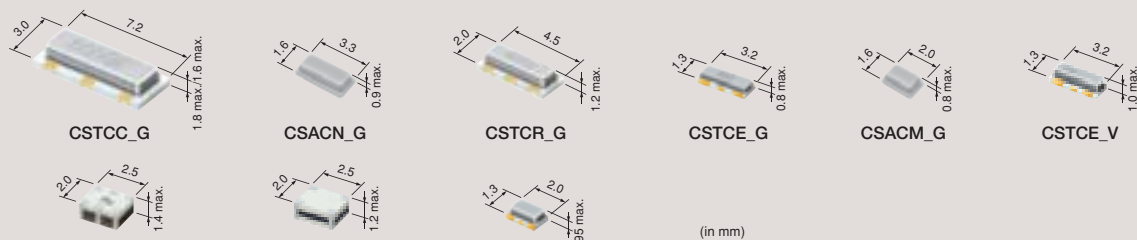
MHz Chip Type for Consumer Electronics (Tight Frequency Tolerance)



(in mm)

Series	1	2	3	4	5	6	7	8	9	10	20	30	40	50	70	100	Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)
CSTCR_G15L				4.00±0.1%							7.99±0.1%						±0.08	0 to 70
CSTCE_G15L					8.00±0.1%						13.99±0.1%						±0.08	0 to 70
CSTCE_V13L									14.00±0.1%				20.00±0.1%				±0.08	0 to 70
CSTCW_X11										20.01±0.1%				48.00±0.1%			±0.1	0 to 70

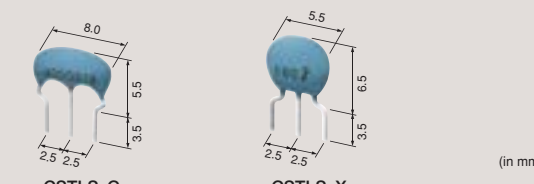
MHz Chip Type for Consumer Electronics (Standard Frequency Tolerance)



(in mm)

Series	1	2	3	4	5	6	7	8	9	10	20	30	40	50	70	100	Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)
CSTCC_G		2.00±0.5%									3.99±0.5%						±0.3 (15pF) ±0.4 (47pF)	-20 to 80
CSACN_G (No built-in load capacitance)			4.00±0.5%								6.00±0.5%						-0.25/+0.2	-20 to 85
CSTCR_G			4.00±0.5%								7.99±0.5%						±0.2	-20 to 80
CSTCE_G					8.00±0.5%						13.99±0.5%						±0.2	-20 to 80
CSACM_G (No built-in load capacitance)					8.00±0.5%						10.00±0.5%			12.00±0.5%			-0.25/+0.2	-20 to 85
CSTCE_V									14.00±0.5%				20.00±0.5%				±0.3	-20 to 80
CSTCW_X											20.01±0.5%				70.00±0.5%		±0.2	-20 to 80
CSACW_X (No built-in load capacitance)											20.01±0.5%				70.00±0.5%		±0.2	-20 to 80
CSTCG_V											20.00±0.5%			33.86±0.5%			±0.3	-20 to 80

MHz Lead Type for Consumer Electronics (Standard Frequency Tolerance)



(in mm)

Series	1	2	3	4	5	6	7	8	9	10	20	30	40	50	70	100	Frequency Shift by Temperature (% max.)	Operating Temperature Range (°C)
CSTLS_G				3.40±0.5%							10.00±0.5%						±0.2 (15pF) -0.4/+0.2 (47pF)	-20 to 80
CSTLS_X										16.00±0.5%					70.00±0.5%		±0.2	-20 to 80



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Filters for Audio Visual Equipment

Signal extraction for video and audio in electronic devices



Summary

Using Murata's ceramic processing technology and unique material, we offer components such as Ceramic Filters CERAFIL® and SAW Filters to enable the development of high-performance digital audio/visual systems and home PCs.

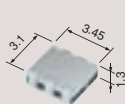
Lineup

● Ceramic Filters CERAFIL® (Filters, Traps and Discriminators) ● SAW Traps

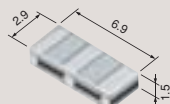
Ceramic Filters CERAFIL®

CERAFIL® 10.7MHz Chip Type

This series is suitable for FM radio and VICS/RKE/TPMS receiver use.
This series enables customers to design thinner and smaller circuits.



SFECF Series



SFECK / SFECV Series

(in mm)

Type	Series	3dB Bandwidth (kHz)						
		D	E	F	G	H	J	K
		350	330	280	230	180	150	110
Standard Type	SFECF10M7□	●	●	●	●	●	—	—
High-reliability Type	SFECK10M7□	—	—	—	—	—	●	●
Standard Type	SFECV10M7□	—	—	—	—	—	●	●
Standard Type	SFECV15M0□	—	●	—	—	—	—	—

□ is filled in with a letter denoting 3dB bandwidth.



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



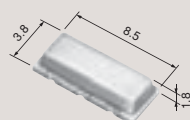
- CERAFIL® (Filters/Traps/Discriminators) for Audio/Visual Equipment
Cat. No. P50E
- CERAMIC FILTER (CERAFIL®) Application Manual
Cat. No. P11E

Filters for Audio Visual Equipment

CERAFIL® 2.3 to 6.5MHz Chip Type

SFSKA Series has distinctive features such as wide bandwidth and stable filter performance, enabling customers to design smaller products.

SFSKB Series is suitable for low frequency range.



SFSKA Series



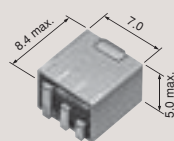
SFSKB Series

(in mm)

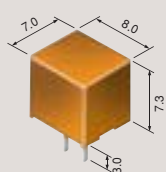
Series	Center Frequency (MHz)												3dB Bandwidth (kHz)
	2.3	2.8	3.2	3.8	4.3	4.5	4.8	5.2	5.5	5.7	6.0	6.5	
SFSKA	—	—	—	—	—	●	—	—	●	—	●	●	±60 min.
SFSKB	●	●	●	●	●	—	●	●	—	●	—	—	±75 min.

CERAFIL® 450kHz

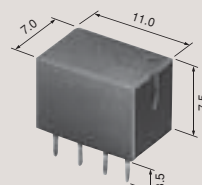
This series features high selectivity, high stability and adjustment-free operation, suitable for intermediate filters for AM radios.



SFPKA Series



SFPLA / CFULA Series



CFWLA Series

(in mm)

Type	Series	6dB Bandwidth (kHz) min.					
		D ±10	E ±7.5	F ±6	G ±4.5	H ±3	J ±2
Chip Standard Type	SFPKA450K□	—	—	—	●	●	—
Lead Standard Type	SFPLA450K□ / CFULA450K□	●	●	●	●	●	●
Lead High-selectivity Type	CFWLA450K□	●	●	●	●	●	●

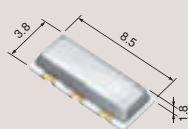
□ is filled in with a letter denoting 6dB bandwidth.



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Ceramic Traps

TPSKA Series has distinctive features such as high attenuation and high performance group delay time, enabling customers to design smaller products.



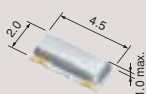
TPSKA Series

(in mm)

Series	Center Frequency (MHz)	Attenuation (dB)
TPSKA	4.500/5.500/6.000/6.500	35 min.

Ceramic Discriminators

In combination with ICs, this type obtains stable demodulation characteristics in a wide bandwidth.



CDSCB Series

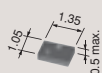
(in mm)

Series	Center Frequency
CDSCB	10.700MHz±30kHz

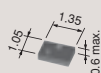
Recommended part number depends on IC specifications. Please contact us with the IC part number to be applied.

SAW Traps

Features: Wide pass band width, Highly selective attenuation band, High performance, Small size, Chip Size Package



SAEEA / SAEEL Series



SAEEB Series

(in mm)

SAW Filters and SAW Duplexers must be used only in the following equipment:

Mobile phones, cordless telephones (except automobile telephone), smartphones, tablet PC, PC (including laptop/netPC), game machines, cameras (except for business use and for security), STB, electronic dictionaries, and digital audio instruments. Please contact us for other usages.



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Filters for Communication Equipment

Broad lineup of Filters for RF/Local, Duplexers and Filters for IF



Summary

Using Murata's ceramic processing technology and unique material, we offer miniaturized filters with excellent properties for advanced communication equipment.

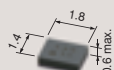
Lineup

- SAW Filters for Mobile Communications
- Dielectric Filters GIGAFIL®
- Chip Multilayer LC Filters
- Ceramic Filters CERAFIL®
- Ceramic Discriminators
- Crystal Filters

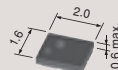
SAW Filters for Mobile Communications

SAW Duplexers

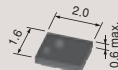
Features: Low Loss, High attenuation performance, Small size, Highly selective pass band, Chip Size Package



SAYEY Series



SAYFH Series



SAYRF Series

(in mm)

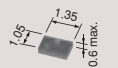
RF Filters

Features: Low Loss, High attenuation performance, Small size, Highly selective pass band, Chip Size Package

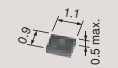
Single Filter



SAFEA Series



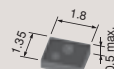
SAFEB Series



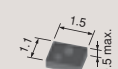
SAFFB Series

(in mm)

Dual Filter



SAWEN Series



SAWFD Series

(in mm)



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Filters for Communication Equipment

SAW Bank

This module, which has matching components, can simplify the connection to RFIC.



Filter Bank

Please contact us if you have any questions regarding our SAW Bank products.

DPX Bank

Please contact us if you have any questions regarding our DPX Bank products.

SAW Filters and SAW Duplexers must be used only in the following equipment:

Mobile phones, cordless telephones (except automobile telephone), smartphones, tablet PC, PC (including laptop/netPC), game machines, cameras (except for business use and for security), STB, electronic dictionaries, and digital audio instruments. Please contact us for other usages.

Dielectric Filters GIGAFIL®

Suitable for the cellular base stations and other telecom infrastructure systems.

Customized proposal responded to the request characteristics is also available in our applicable range mentioned below.



DFYH Series



DFCH Series

	Series	Frequency Range (MHz)						Number of Resonators	Input Power Range
		100	1000	2000	3000	4000	5000		
Duplexers	DFYH		700		2600			5 to 10	1 to 10W*
RF/IF/Local Filter	DFCH	600				3800		2 to 6	1 to 10W*

*Power depends upon specifications.

Characteristic customization is available. You can contact us also from our website.



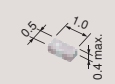
For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Filters for Communication Equipment

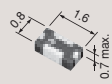
Chip Multilayer LC Filters

Ultra-small and low-profile filters based on ceramic multilayer technology.

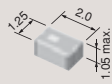
Band Pass Filters



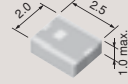
LFB15 Series



LFB18 Series



LFB21 Series



LFB2H Series



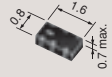
LFB31 Series

(in mm)

Low Pass Filters



LFL15 Series



LFL18 Series



LFL21 Series

(in mm)

Ceramic Filters CERAFIL®

Small and light Filters for IF in communications equipment using unique piezo-electric material.

CERAFIL® 10.7MHz Chip Type

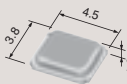


(in mm)

SFECF Series

Type	Series	3dB Bandwidth (kHz)				
		D	E	F	G	H
Standard Type	SFECF10M7□	●	●	●	●	●

□ is filled in with a letter denoting 3dB bandwidth.



(in mm)

SFSCE Series

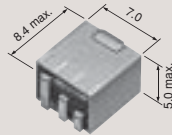
Type	Series	3dB Bandwidth (kHz) min.		
		03	04	05
Wide Bandwidth	SFSCE10M7WF□□	●	●	●

□ is filled in with a number denoting 3dB bandwidth.

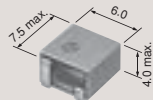


For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

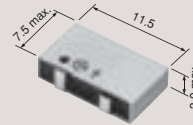
CERAFIL® 450/455kHz Chip Type



SFPKA Series



CFUKG / CFUKF Series



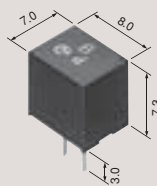
CFWKA Series

(in mm)

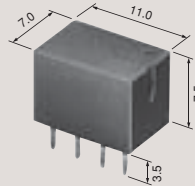
Type	Series	6dB Bandwidth (kHz) min.							
		A	B	C	D	E	F	G	H
		±17.5	±15	±12.5	±10	±7.5	±6	±4.5	±3
High-selectivity	SFPKA455K□ (4 Elements)	—	—	—	●	●	●	●	●
High-selectivity Miniature	CFUKG455K□ (4 Elements)	—	—	—	●	●	●	●	—
GDT Flat Type Miniature	CFUKF455K□ (4 Elements)	●	●	●	●	●	—	—	—
High-selectivity	CFWKA450K□ (6 Elements)	—	—	—	●	●	●	●	—

□ is filled in with a letter denoting 6dB bandwidth.

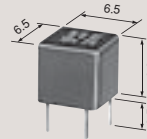
CERAFIL® 450/455kHz Lead Type



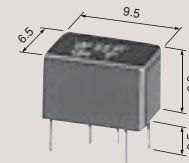
CFULA Series



CFWLA Series



CFULB Series



CFWLB Series

(in mm)

Type	Series	6dB Bandwidth (kHz) min.							
		B	C	D	E	F	G	H	J
		±15	±12.5	±10	±7.5	±6	±4.5	±3	±2
High-selectivity Low-profile	CFULA455K□ (4 Elements)	●	●	●	●	●	●	●	—
High-selectivity Low-profile	CFWLA455K□ (6 Elements)	●	●	●	●	●	●	●	●
High-selectivity Miniature	CFULB455K□ (4 Elements)	●	●	●	●	●	●	●	●
High-selectivity Miniature	CFWLB455K□ (6 Elements)	●	●	●	●	●	●	●	●

□ is filled in with a letter denoting 6dB bandwidth.

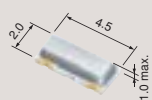


For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Ceramic Discriminators

In combination with ICs, Ceramic Discriminators obtain stable demodulation characteristics.

Ceramic Discriminators 10.7MHz Type



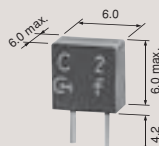
CDSCB Series

(in mm)

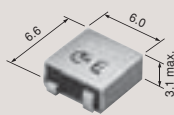
Series	Center Frequency
CDSCB	10.700MHz±30kHz

Recommended part number depends on IC specifications.
Please contact us with the IC part number to be applied.

Ceramic Discriminators 450/455kHz Type



CDBLB Series



CDBKB Series

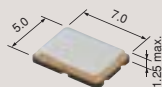
(in mm)

Series	Center Frequency (kHz)
CDBLB	450/455
CDBKB	450/455

Recommended part number depends on IC specifications.
Please contact us with the IC part number to be applied.

Crystal Filters

Our original wafer-thin technology has made it possible to make highly reliable filters in various applications such as radio communication worldwide.



XDCAF / XDCAG / XDCAH Series

(in mm)

Series	Center Frequency (MHz)	Number of Pole
XDCAF	21.4/21.7	2
XDCAG	38.85/58.05	4
XDCAH	50.85/73.35	



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- Ceramic Filters (CERAFIL®)/Ceramic Discriminators for Communications Equipment Cat. No. P05E
- CERAMIC FILTER (CERAFIL®) Application Manual Cat. No. P11E

RF Components

Broad lineup of RF Components for RF/Local circuits in communications equipment



Summary

To enhance the technical advantages of communication equipment, Murata offers miniaturized, sophisticated components to meet the demands of many applications.

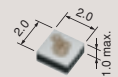
Lineup

- Isolators
- GaAs Switch ICs
- RF Diode Switches
- Baluns (Chip Multilayer and Wire Wound/Film type)
- Couplers (Chip Multilayer and Film type)
- Chip Multilayer Components (Hybrid Dividers and Diplexers)
- High Frequency Coaxial Connectors
- Single Layer Microchip Capacitors
- Thin Film Circuit Substrate RUSUB®

Isolators

Passing signals in the forward direction and blocking signals in the reverse direction

For Mobile Phones



CEG23 Series

(in mm)

Series	Adaptive Frequency Range (MHz)				Size (mm)	Rating Power (W)
	100	1000	2000	3000		
CEG23		700	2600		2.0×2.0×1.0 max.	1.2 max.

For Base Stations



CES20 Series



CES30 Series



CES40 Series

(in mm)

Series	Adaptive Frequency Range (MHz)				Size (mm)	Rating Power (W)
	100	1000	2000	3000		
CES20			1900	2600	3.2×2.5×1.2 max.	5 max.
CES30			1700	2200	3.2×3.2×1.6 max.	5 max.
CES40		800	950		4.0×4.0×1.7 max.	5 max.

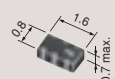


For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

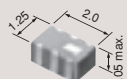
Baluns

SMD baluns constructed with a copper conductor and ceramic material. Ideal for high-frequency applications. Small-size and low-loss baluns can be customized for balance impedance of 50Ω to 200Ω.

Chip Multilayer Type



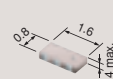
LDB18 Series



LDB21 Series



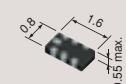
LDM15 Series



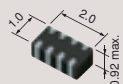
LDM18 Series

(in mm)

Film Type



DXP18B Series



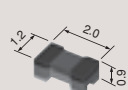
DXP2AB Series

(in mm)

Wire Wound Type



DXW21B Series



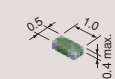
DXW21H Series

(in mm)

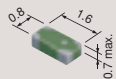
Couplers

An ultra-small, low-profile directional coupler based on ceramic multilayer technology. This coupler achieves ultra-small size, low insertion loss and high isolation.

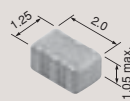
Chip Multilayer Type



LDC15 Series

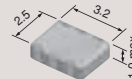


LDC18 Series



LDC21 Series

*It is available with Integrated LPF for LDC21 Series.



LDC32 Series
(3dB Hybrid)

(in mm)



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Film Type



(in mm)

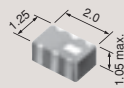
DXP18C Series

Chip Multilayer Hybrid Dividers

Power divider with a multilayer low pass filter in an ultra-compact package.



LDD18 Series

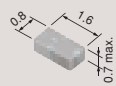


LDD21 Series

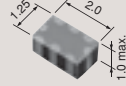
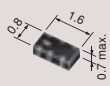
(in mm)

Chip Multilayer Diplexers

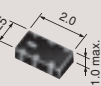
A diplexer branching low and high band.
Suitable for band-switching for dual-band system.



LFD18 Series



LFD21 Series



(in mm)



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

High Frequency Coaxial Connectors

High Frequency Coaxial Connectors

The mating height is only 1.0mm maximum by new mechanical design. Suitable for low profile design.



Type	Receptacle Part Number	Rated Voltage (Vrms)	Frequency Rating (GHz)	Temperature Range	VSWR	Cable Number	Mating Height (mm)
JSC	MM5829-2700	30	to 12	-40 to 85°C	1.3 max. (DC to 3GHz)	MXJA01	1.0 max.
HSC	MM4829-2702	30	to 6	-40 to 85°C	1.3 max. (DC to 3GHz)	MXHP32	1.2 max.

Nominal Impedance: 50Ω

High Frequency Coaxial Connectors with Switch

The coaxial connector with switch is very useful for characteristic measurement in cellular phones and microwave circuits.



Type	Receptacle Part Number	Rated Voltage (Vrms)	Frequency Rating (GHz)	Temperature Range	VSWR	Standard Measurement Probe Part Number
SWH	MM8930-2600	30	to 6	-40 to 85°C	1.2 max. (DC to 3GHz)	MM126515 MXHQ87PA3000
SWG	MM8030-2610	30	to 11	-40 to 85°C	1.2 max. (DC to 3GHz)	MM126320 MXHQ87WJ3000
SWF	MM8130-2600	30	to 6	-40 to 85°C	1.2 max. (DC to 3GHz)	MM126320 MXHS83QE3000
SWD	MM8430-2610	30	to 6	-40 to 85°C	1.2 max. (DC to 3GHz)	MM126320 MXHS83QE3000

Nominal Impedance: 50Ω



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Single Layer Microchip Capacitors

Very reliable performance and excellent frequency characteristics



Temperature Compensation Type

Capacitance Change (Temperature Range)	Series	Size (mm)	Rated Voltage (Vdc)	Capacitance Range at 25°C (pF)					Operating Temperature Range (°C)
				0.1	1	10	100	1000	
0±30ppm/°C (-25 to 85°C)	CLB0A	0.25×0.25	100	0.1					-55 to 125
	CLB0C	0.35×0.25	100	0.2					-55 to 125
	CLB0D	0.38×0.38	100	0.2	0.4				-55 to 125
	CLB05	0.5×0.5	100	0.3	0.6				-55 to 125
	CLB0E	0.55×0.38	100	0.5	0.6				-55 to 125
	CLB0F	0.64×0.64	100	0.3	1				-55 to 125
	CLB0G	0.7×0.5	100	0.7	1				-55 to 125
	CLB0H	0.71×0.38	100	0.7	0.8				-55 to 125
	CLB0J	0.76×0.76	100	0.4	1.3				-55 to 125
	CLB09	0.9×0.9	100	0.5	1.8				-55 to 125
	CLB1A	1.00×0.64	100	1.1	1.6				-55 to 125
	CLB1B	1.09×0.76	100	1.5	2				-55 to 125
	CLB1C	1.27×1.27	100	1	3.6				-55 to 125
	CLB1E	1.49×0.9	100	2	2.7				-55 to 125
	CLB1G	1.73×1.27	100	3.9	4.7				-55 to 125
	CLB1H	1.78×1.78	100	1.8	6.8				-55 to 125
	CLB2C	2.19×1.27	100	5.1					-55 to 125
	CLB2E	2.29×2.29	100	3	10				-55 to 125
	CLB2L	2.95×1.78	100	7.5	10				-55 to 125
	CLB3G	3.71×2.29	100	11	16				-55 to 125
-750±60ppm/°C (-25 to 85°C)	CLB0A	0.25×0.25	100	0.3	0.7				-55 to 125
	CLB0B	0.30×0.25	100	0.8					-55 to 125
	CLB0C	0.35×0.25	100	0.9					-55 to 125
	CLB0D	0.38×0.38	100	0.9	1.6				-55 to 125
	CLB05	0.5×0.5	100	1	2.4				-55 to 125
	CLB0E	0.55×0.38	100	1.8	2.4				-55 to 125
	CLB0F	0.64×0.64	100	2	4.3				-55 to 125
	CLB0G	0.7×0.5	100	2.7	3				-55 to 125
	CLB0H	0.71×0.38	100	2.7					-55 to 125
	CLB0J	0.76×0.76	100	3	6.2				-55 to 125
	CLB09	0.9×0.9	100	3.3	6.8				-55 to 125
	CLB1A	1.00×0.64	100	4.7	6.2				-55 to 125
	CLB1B	1.09×0.76	100	6.8	7.5				-55 to 125
	CLB1C	1.27×1.27	100	7.5	15				-55 to 125
	CLB1E	1.49×0.9	100	7.5	9.1				-55 to 125
	CLB1H	1.78×1.78	100	13	15				-55 to 125
	CLB2E	2.29×2.29	100	20					-55 to 125

Some capacitances are not available in the CLB05 Series.

All Single Layer Microchip Capacitors are produced after receiving an order.



For more details on each series, please refer to our website.

Product Search ⇒ <http://search.murata.co.jp/>

High Dielectric Constant Type

Capacitance Change (Temperature Range)	Series	Size (mm)	Rated Voltage (Vdc)	Capacitance Range at 25°C (pF)						Operating Temperature Range (°C)
				0.1	1	10	100	1000		
±10% (-25 to 85°C)	CLB0A	0.25×0.25	100			5.6	12			-55 to 125
	CLB0B	0.30×0.25	100			13	15			-55 to 125
	CLB0C	0.35×0.25	100			16	18			-55 to 125
	CLB0D	0.38×0.38	100			18	30			-55 to 125
	CLB05	0.5×0.5	100			22	43			-55 to 125
	CLB0E	0.55×0.38	100			33	43			-55 to 125
	CLB0F	0.64×0.64	100			43	75			-55 to 125
	CLB0G	0.7×0.5	100			47	68			-55 to 125
	CLB0H	0.71×0.38	100			47	56			-55 to 125
	CLB0J	0.76×0.76	100			68	110			-55 to 125
	CLB09	0.9×0.9	100			68	130			-55 to 125
	CLB1A	1.00×0.64	100			82	120			-55 to 125
	CLB1C	1.27×1.27	100				160	200		-55 to 125
	CLB1E	1.49×0.9	100				150	160		-55 to 125
	CLB1G	1.73×1.27	100					300		-55 to 125
	CLB1H	1.78×1.78	100					300	430	-55 to 125
	CLB2E	2.29×2.29	100					470	620	-55 to 125
+30, -80% (-25 to 85°C)	CLB0A	0.25×0.25	100			27	33			-55 to 125
	CLB0B	0.30×0.25	100			36	39			-55 to 125
	CLB0C	0.35×0.25	100			43	51			-55 to 125
	CLB0D	0.38×0.38	100			62	82			-55 to 125
	CLB05	0.5×0.5	100			75	130			-55 to 125
	CLB0E	0.55×0.38	100			91	120			-55 to 125
	CLB0F	0.64×0.64	100			130	220			-55 to 125
	CLB0G	0.7×0.5	100			150	200			-55 to 125
	CLB0H	0.71×0.38	100			130	150			-55 to 125
	CLB0J	0.76×0.76	100				200	300		-55 to 125
	CLB09	0.9×0.9	100				200	390		-55 to 125
	CLB1A	1.00×0.64	100				240	360		-55 to 125
+30, -90% (-25 to 85°C)	CLB0A	0.25×0.25	100			36	56			-55 to 125
	CLB0D	0.38×0.38	100			91	150			-55 to 125
	CLB05	0.5×0.5	100			130	220			-55 to 125
	CLB0F	0.64×0.64	100				220	390		-55 to 125
	CLB0J	0.76×0.76	100					330	560	-55 to 125
	CLB09	0.9×0.9	100					390	680	-55 to 125

Some capacitances are not available in the CLB0A/B/C/D/E, CLB1C Series.
All Single Layer Microchip Capacitors are produced after receiving an order.




Thin Film Circuit Substrate RUSUB®

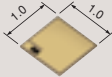
Suitable for Photo diode module.

Features

- RUSUB® technology provides a single-layer capacitor and thin film resistor formed in one chip. It reduces not only the number of parts to build a device, but also the assembly costs. It will also contribute to making a device smaller.
- The single-layer structure makes its self-resonant frequency higher. It allows stable operation even at a high frequency range.
- The short distance between the capacitor and thin film resistor makes the residue inductance smaller and contributes to attenuating unnecessary noise so the device can work at its best characteristics.
- Since it has a gold electrode, it is feasible to be installed inside a module, and it allows wire-bonding with gold wire.
- AuSn pre-coating finish is also available.
- It is very suitable for APD (Avalanche Photo Diode), because the capacitor has a withstanding voltage of 100V.



RUCYT101 Series



RUCYT201 Series

(in mm)

- Six types of standard samples of RUSUB® C+R (Capacitor + Resistor) are available.
- Custom substrate size, capacity, resistance value, and electrode pattern shape is available upon request.

Part Number	Size (mm) (L×W×T)	Capacitance (pF)	Resistance (Ω)	Temperature Characteristics of Capacitance at -25 to 85°C	Capacitor Rated Voltage (V)	Temperature Coefficient of Resistance (ppm/°C)	Resistor Rated Power (mW/mm²)
RUCYT101K00009GNTC	1.0×0.5×0.11	100±10%	50±20%	±10%	100	-70±50	100
RUCYT101K00011GNTC	1.0×0.5×0.11	100±10%	100±20%				
RUCYT101K00012GNTC	1.0×0.5×0.11	100±10%	200±20%				
RUCYT201K00010GNTC	1.0×1.0×0.12	200±10%	50±20%				
RUCYT201K00013GNTC	1.0×1.0×0.12	200±10%	100±20%				
RUCYT201K00014GNTC	1.0×1.0×0.12	200±10%	200±20%				



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



• High Frequency Single Layer Microchip Capacitors
Cat. No. C01E

Sensors

Offering sensing elements for various applications



Summary

Using our piezoelectric ceramics and magnetic resistive elements, Murata has developed a range of sensing technologies that can detect heat, infrared, ultrasonic waves, vibration, acceleration, angular velocity, angular rotation, rotation, magnetism and electrical fields. These products are used in a variety of applications such as white goods, audio/visual electronics and especially automotive, to name a few, improving the user's experience.

Lineup

- Infrared Sensors ● Ultrasonic Sensors ● Rotary Sensors ● Magnetic Pattern Recognition Sensors
- Magnetic Switches ● Shock Sensors ● Accelerometers ● Inclinometers ● Gyro Sensors
- Rotary Position Sensors ● Temperature Sensors (Thermistors)

Product Pickup

Magnetic Pattern Recognition Sensors

Magnetic pattern recognition sensors are suitable for differentiation of bank note types and patterns printed with magnetic ink. Murata's magnetic pattern recognition sensors combine InSb (indium antimonide) magnetoresistive elements with a permanent magnet, enabling weak magnetic information to be easily detected. The features of these sensors are wide dynamic range, wide gap characteristic, and high output, enabling detection of either ferromagnetic or magnetic patterns.



BS05 Series



BS05 Series

Temperature Sensors NTC/PTC Thermistors

NTC/PTC Thermistors are used to detect overheating. Murata offers a variety of thermistor products to meet the demands of various temperatures.



NCP Series



NX Series



PRF Series



PTF Series

For more details on Thermistors, please refer to p. 60.

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- MEMS Sensors & Sensing Elements
- Rotary Position Sensors
- Pyroelectric Infrared Sensors
- NTC Thermistors
- POSISTOR® for Circuit Protection

- Cat. No. S47E
- Cat. No. R51E
- Cat. No. S21E
- Cat. No. R44E
- Cat. No. R90E

Rotary Position Sensors

The output voltage of contact type rotary position sensors are proportional to the rotational angle of a rotor in potentiometer fashion.



SV Series

Magnetic Switches (AMR Sensors)

Magnetic switches are used for opening and shutting detection in products such as cellular phones, notebook PCs, and digital cameras.

You can choose the best product from our wide range of features such as the direction of the magnetic field detection, the package, the sampling period, and the sensitivity standard.



MR Series

Accelerometers

Accelerometers are based on the company's proprietary 3-D MEMS technology.

Accelerometers have excellent performance and reliability in a humid environment and at temperature cycling, making high accuracy acceleration detection possible.



SCA Series

Gyro Sensors

Gyroscope components and combined sensors (including gyroscopes and accelerometers) based on the company's proven 3-D MEMS technology and highly integrated electronics. High accuracy and high performance sensors are optimum for navigation systems and motion analysis.





















SCC Series

Lineup

Applications

AV Equipment

Communications Devices

Detection	Murata's Sensors													
	Products	Series or Main Part Number	Dimensions (mm)	TV	Audio	DVD, CD	Digital Video Camera	Digital Camera	PC	Scanner	Multifunction Machine	Printer	FAX	Electronic Bulletin Board
Infrared	Pyroelectric Infrared Sensors	IRS Series	 4.9×4.7×2.4	●										●
		IRA Series	 ø9.2 H4.7	●	●	●		●	●	●	●	●	●	●
Ultrasonic	Open Structure Type Ultrasonic Sensors	MA40S4R (for Receiver) MA40S4S (for Transmitter)	 ø9.9 H7.1											●
		MA40H1S	 5.2×5.2×1.15	●	●	●	●	●	●	●	●	●	●	●
	Dripproof Type Ultrasonic Sensors	MA58AF14-0N (for Dual Use)	 ø14.0 H9.0											
	High Frequency Type Ultrasonic Sensors	MA300D1-1 (for Dual Use)	 ø9.9 H7.3							●	●	●		
Magnetic	Rotary Sensors	FR05CM21AR	 ø12.7 H20											
	Magnetic Pattern Recognition Sensors	BS05 Series	 11.15×8.8×12.5 193.0×16.0×7.5											
	Magnetic Switches (AMR Sensors)	MR Series	 MRMS201A: 2.8×2.9×1.1 MRMS501A: 1.45×1.45×0.55				●	●	●					
Acceleration	Shock Sensors	PKGS Series	 3.2×2.0×1.05						●					
	Accelerometers	SCA Series	 10.48×11.31×5.08											
	Inclinometers	SCA Series	 15.58×11.31×5.08								●			
Angle Velocity	Gyro Sensors	SCC Series SCR Series	 8.5×18.7×4.5											
Angle	Rotary Position Sensors	SV Series	 11×12×2.1	●				●			●	●		
Temperature	NTC Thermistors	Chip Type NCP Series	 NCP03: 0.6×0.3×0.3 NCP15: 1.0×0.5×0.5 NCP18: 1.6×0.8×0.8 NCP21: 2.0×1.25×0.85	●	●	●	●	●	●	●	●	●	●	●
		Lead Type NX Series	 NXF: ø1.2 L25 to 150 NXR: ø4.0 L10 to 40	●	●				●	●	●	●	●	●
	PTC Thermistors POSISTOR®	Chip Type PRF Series	 PRF15: 1.0×0.5×0.5 PRF18: 1.6×0.8×0.8 PRF21: 2.0×1.25×0.9	●	●	●	●	●	●	●	●	●	●	●
		Lead Type PTF Series	 ø5.0 max. T4.0 max. ø7.5 T3.0	●	●				●	●	●	●	●	●



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

muRata

Thermistors

Facilitate your designs and products utilizing our thermal design and thermistor products.



Summary

Using Murata's semi-conductive ceramics and electrode printing technologies, such as PTC and NTC Thermistors, provides vital protection and sensing within electronic equipment. Simulation software tools are also available for your convenience.

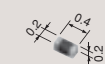
Lineup

- NTC Thermistors for temperature sensor/compensation, inrush current suppression, and automotive
- PTC Thermistors POSISTOR® for overheat sensing, overcurrent protection, inrush current suppression, and automotive

NTC Thermistors (for Temperature Sensor/Temperature Compensation)

Chip Type

Chip NTC Thermistors have Ni barrier terminations, provide excellent solderability, and offer high stability in harsh environments due to their unique inner construction.



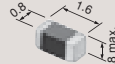
NCP02 Series



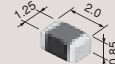
NCP03 Series



NCP15 Series



NCP18 Series



NCP21 Series

(in mm)

Series	Size Code inch (mm)	Resistance (25°C) (Ω)	B-Constant (25-50°C) (K)	Permissible Operating Current (25°C) (mA)	Rated Electric Power (25°C) (mW)	Typical Dissipation Constant (25°C) (mW/°C)	Operating Temperature Range (°C)
NCP02	01005 (0402)	10k/100k	3380/4250	0.31/0.01	100	1	-40 to 125
NCP03	0201 (0603)	1.0k to 220k	3500 to 4485	0.06 to 9.5	100	1	-40 to 125
NCP15	0402 (1005)	22 to 470k	3100 to 4500	0.04 to 6.7	100	1	-40 to 125
NCP18	0603 (1608)	100 to 470k	3250 to 4500	0.04 to 3.1	100	1	-40 to 125
NCP21	0805 (2012)	220 to 100k	3500 to 4250	0.14 to 3.0	200	2	-40 to 125

Rated Electric Power shows the required electric power that causes the Thermistor's temperature to rise to 125°C by self heating, at ambient temperature of 25°C.



For more details on each series, please refer to our website.

Product Search ⇒ <http://search.murata.co.jp/>

Detailed Catalogs

For more details, please refer to our printed catalogs and the PDF catalogs on our website.

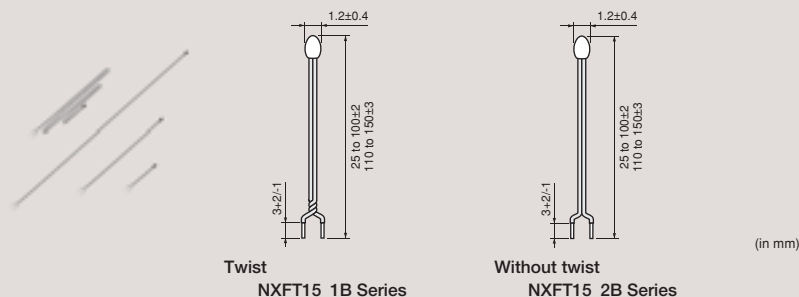


- NTC Thermistors
- POSISTOR® for Circuit Protection
- PTC Thermistor (POSISTOR®) Application Manual
- PTC - NTC for Surface Mounting Application

Cat. No. R44E
Cat. No. R90E
Cat. No. R16E
Cat. No. R01E

Thermo String Type

Small flexible lead type NTC Thermistors with a small head and a thin lead wire.

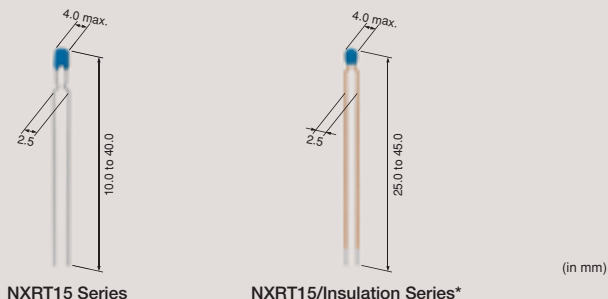


Series	Resistance (25°C) (Ω)	B-Constant (25-50°C) (K)	Operating Current for Sensor (25°C) (mA)	Thermal Time Constant (25°C) (s)	Full Length (mm)	Operating Temperature Range (°C)
NXFT15	10k to 100k	3380 to 4250	0.04 to 0.12	4	25 to 150	-40 to 125

Operating Current for Sensor raises the Thermistor's temperature by 0.1°C.
There are also items for automotive applications in the NXF Series.

Lead Type

This product is a thermistor for normal temperature level sensors having self-subsistence due to strong lead strength based on chip NTC.



Series	Resistance (25°C) (Ω)	B-Constant (25-50°C) (K)	Operating Current for Sensor (25°C) (mA)	Thermal Time Constant (25°C) (s)	Full Length (mm)	Operating Temperature Range (°C)
NXRT15	2k to 100k	3380 to 4250	0.04 to 0.27	4	10 to 40	-40 to 125
NXRT15 (Insulation*)	2k to 100k	3380 to 4250	0.05 to 0.36	4	25 to 45	-40 to 125

Operating Current for Sensor raises the Thermistor's temperature by 0.1°C.
There are also items for automotive applications in the NXR Series.

*Insulation: Lead wire insulation type.



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

NTC Thermistors (for Inrush Current Suppression)

Effectively suppresses surge currents that are generated when switching power regulators are turned on.

<p>(in mm)</p>						
Series	Resistance (25°C) (Ω)	Permissible Max. Current (25°C) (A)	Permissible Max. Current (55°C) (A)	Thermal Time Constant (25°C) (s)	Permissible Electrolytic Capacitor (100V) (μF)	Operating Temperature Range (°C)
NTPAN / J	3 to 10	2.6 to 5.4	2.2 to 4.7	125 to 135	5000 to 8600	-20 to 160
NTPAD / A	2.2 to 16.0	1.7 to 3.7	1.5 to 3.2	65 to 70	1400 to 2700	-20 to 160
NTPA5 / 6 / 7 / 9	4.0 to 22.0	1.0 to 2.5	0.9 to 2.2	20 to 65	346 to 800	-20 to 160

PTC Thermistors POSISTOR® (for Overheat Sensing)

Chip Type

For overheat sensing for power transistors, power diodes, and power ICs in hybrid circuits.



PRF15 Series

PRF18 Series

PRF21 Series

Series	Sensing Temperature Range (°C)										Sensing Temperature Tolerance (°C)	Maximum Voltage (V)	Size Code inch (mm)
	60	70	80	90	100	110	120	130	140	150			
PRF15			●	●	●	●	●	●	●	●	±3/±5	32	0402 (1005)
PRF18		●	●	●	●	●	●	●	●	●	±3/±5	32	0603 (1608)
PRF21			●	●	●	●	●	●	●	●	±5	32	0805 (2012)

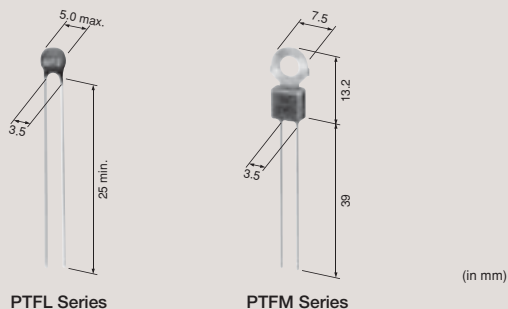
There are also items for automotive applications in the PRF Series.



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Lead Type

For protecting power transistors, stereo main amplifiers, etc., from overheating, and also for sensing the temperature of other components that may be overheated.



PTFL Series

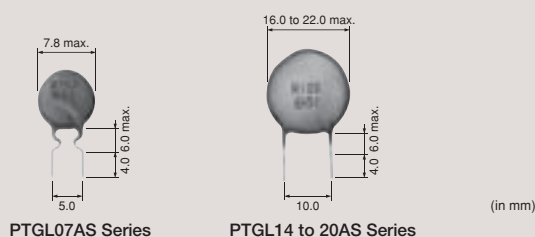
PTFM Series

Series	Sensing Temperature Range (TS) (°C)										Maximum Voltage (V)	Resistance (25°C) (max.) (Ω)	Resistance (TS-10°C) (max.) (Ω)	Resistance (TS°C) (min.) (Ω)
	60	70	80	90	100	110	120	130	140	150				
PTF□_471Q	●	●	●	●	●	●	●				16	100	330	470
PTF□_222Q	●	●	●	●	●	●	●				16	330	1.5k	2.2k

The blank is filled with type codes. (L: Lead type, M: with lug-terminal)
Operating Temperature Range is -10 to TS+10°C.

PTC Thermistors POSISTOR® (for Inrush Current Suppression)

This series is able to support overcurrent or inrush current issues on the power supply circuit.



PTGL07AS Series

PTGL14 to 20AS Series

Series	Resistance (25°C) (Ω)	Maximum Voltage (V)	Maximum Inrush Current (Ao-p)	Maximum Charge Energy (J)	Operating Temperature Range (°C)
PTGL07AS	120 to 200	280	5.66 to 8.46	7.8	-40 to 105
PTGL14 to 20AS	33 to 100	280	13 to 39	56.9 to 181.7	-20 to 85

Maximum Inrush Current shows the maximum inrush current value introduced into the Posistor at operating temperature range.

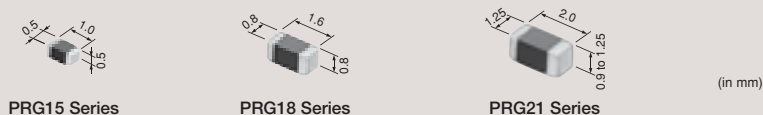


For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

PTC Thermistors POSISTOR® (for Overcurrent Protection)

Chip Type

Overcurrent Protection device with resettable function suitable for current limiting resistor.



Series	Maximum Voltage (V)	Hold Current (60°C) (mA)	Trip Current (-10°C) (mA)	Maximum Current (A)	Resistance (25°C) (Ω)	Size Code inch (mm)
PRG15	6 to 30	17 to 88	78 to 318	0.6 to 3.5	2.2 to 68	0402 (1005)
PRG18	6 to 30	7 to 220	25 to 850	0.06 to 7.5	2.2 to 470	0603 (1608)
PRG21	6 to 30	30 to 500	110 to 2000	1.1 to 10	0.2 to 22	0805 (2012)

Maximum Current shows typical transformer capacities that can be used. There are also items for automotive applications in the PRG Series.

Lead Type

Best suited to meet the requirements for power supplies and motor protection.

Error-free operation is ensured by rush current.



PTGL Series

*The Lead shape is an example.

Series	Maximum Voltage (V)	Hold Current (60°C) (mA)	Trip Current (-10°C) (mA)	Maximum Current (A)	Resistance (25°C) (Ω)
PTGL	16	370 to 1200	1040 to 3360	2.0 to 10.0	0.15 to 1.0
	24	80 to 180	320 to 710	2.0	2.2 to 10
	30	122 to 685	240 to 1900	0.7 to 7.0	0.8 to 13
	32	30 to 60	140 to 240	1.5	15 to 47
	51	213 to 749	332 to 1168	1.0 to 5.0	1.2 to 10
	56	90 to 380	240 to 980	1.0 to 2.5	3.3 to 22
	60	88 to 439	175 to 867	1.0 to 5.0	2.2 to 22
	80	50 to 310	135 to 860	0.7 to 5.5	3.7 to 55
	125	30 to 420	75 to 1050	0.3 to 2.0	3.3 to 180
	140	74 to 340	147 to 780	0.5 to 3.5	4.7 to 56
	250	90 to 100	280 to 300	0.5 to 0.6	12 to 39
	265	28 to 300	78 to 830	0.2 to 4.1	6.0 to 180

Maximum Current shows typical transformer capacities that can be used. There are also items for automotive applications in the PTGL Series.



For more details on each series, please refer to our website.

Product Search ⇒ <http://search.murata.co.jp/>

Power Supplies/Energy Devices

Eco-friendly and high quality power supplies



Summary

To meet consumer needs Murata offers power supply products and energy devices that can be used with a variety of equipment, such as video equipment, household information appliances, and communication/transfer equipment. Murata provides standard and customized products using highly reliable, Murata-made components utilizing advanced design and high-density packaging technology. The Electrical Double Layer Capacitor is an energy device that can provide various benefits such as downsizing, efficiency, and high functionality.

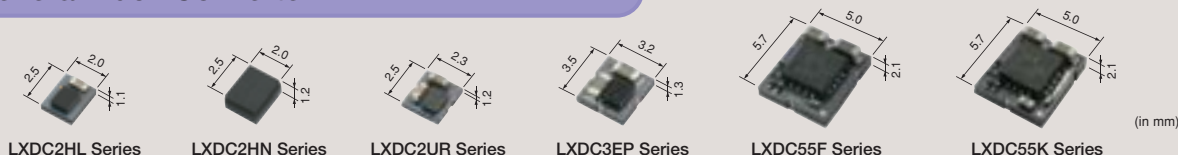
Lineup

- Micro DC-DC Converters
- DC-DC Converters
- High Voltage Transformers
- High Voltage Power Supplies
- Switching Power Supplies
- Electrical Double Layer Capacitors

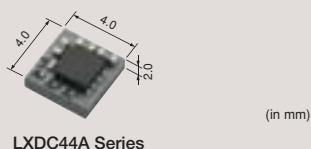
Micro DC-DC Converters

Murata's micro DC-DC converters are small power modules that utilize a unique ferrite substrate with an embedded power inductor, and incorporate the I/O capacitors onto the same package. Ultra-compact size and superior noise suppression make these devices ideal for cellular/smart phones, tablets, wearable devices, communication applications, and portable products.

General Buck Converter



Boost Converter



For more details on our product lineup, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Detailed Catalogs

For more details, please refer to the PDF catalogs on our website.



- High Performance Electrical Double Layer Capacitor DMF Series
Cat. No. O83E
- High Performance Electrical Double Layer Capacitor DMT Series
Cat. No. O84E


DC-DC Converters

DC-DC Converters are vital to the demands of electronic equipment.


Murata offers DC-DC Converters that set the standard for miniaturization, low profile, high efficiency, power-saving, low-noise power supplies. Murata provides standard products and customized products, ultra-low-profile products, and products for FPGA.

Non-isolated Type


Non-isolated Type




MPDRX002S




MPDRX103S




MPDRX312S




MPDTY461S
MPDTY462S




MYGTM01210BZN




MYGTR01205BZN




MYSSM0123EBENL




MYUSP3R303FMP




OKL-T/3-W5N-C




OKL-T/6-W12P-C




OKL2-T/12-W5N-C



OKL2-T/12-W12N2-C



OKL2-T/20-W5



OKL2-T/20-W12

Part Number	Package	Input Voltage (V)	Nominal Output Power (W)	Output Voltage (V)	Current (A)	Efficiency (%)	Size (mm) L×W×H
MPDRX002S	SMD	3 to 5.5	28.8	0.8 to 1.8	16	90	33×13.5×8.5
MPDRX103S	SIL	10.8 to 13.2	28.8	0.8 to 1.8	16	86	50.8×5.8×14
MPDRX312S	SMD	3 to 5.5	28.8	0.8 to 1.8	16	86.5	27.8×15.4×4.2
MPDTY461S	SMD	4.5 to 14	94	1.6 to 3.63	26	90.5	33.02×13.46×4.2
MPDTY462S	SMD	4.5 to 14	43	0.75 to 1.65	26	85.5	33.02×13.46×4.2
MYGTM01210BZN	SIL	17 to 40	120	5 to 12	10	97.3	40×40.3×29.2
MYGTR01205BZN	SIL	17 to 40	36	5 to 12	3 to 5.2	93	25.1×12×27
MYSSM0123EBENL	SMD	14 to 40	42	5 to 12	3.5	96	30.2×20.9×12
MYUSP3R303FMP	SMD	3 to 5.5	9.9	0.7 to 3.3	3	94	11×8.5×5.6
OKL-T/3-W5N-C	SMD	2.7 to 5.5	10.9	0.6 to 3.63	3	95.3	12.2×12.2×6.2
OKL-T/6-W12P-C	SMD	4.5 to 14	33	0.591 to 5.5	6	93	12.2×12.2×7.2
OKL2-T/12-W5N-C	SMD	2.4 to 5.5	39.6	0.6 to 3.63	12	94	20.32×11.43×8.55
OKL2-T/12-W12N2-C	SMD	4.5 to 14	60	0.69 to 5.5	12	95	20.32×11.43×8.55
OKL2-T/20-W5N-C	SMD	2.4 to 5.5	66	0.6 to 3.63	20	93.1	33.02×13.46×8.75
OKL2-T/20-W5P-C	SMD	2.4 to 5.5	66	0.6 to 3.63	20	93.1	33.02×13.46×8.75
OKL2-T/20-W12N2-C	SMD	4.5 to 14	100	0.69 to 5.5	20	94	33.02×13.46×8.75
OKL2-T/20-W12P-C	SMD	4.5 to 14	110	0.69 to 5.5	20	94	33.02×13.46×8.75

These are just a few examples of our large assortment of power products.



For more details on our product lineup, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

Isolated Type



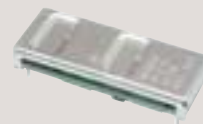
MYBQC01138AZTB



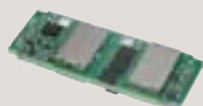
MYBQC01138AZTF



MYBEA01212AZT



MYBEA01212AZTB



MYBEA01210CZT



MYBEA01210CZTB



MYBEB00520AZT



MYBSC01208AZT
MYBSC00520AZT



MYBSC01208ABT
MYBSC00520ABT






Part Number	Package	Input Voltage (V)	Nominal Output Power (W)	Output Voltage (V)	Current (A)	Efficiency (%)	Isolation Voltage (VDC)	Footprint (Brick)	Size (mm) L×W×H
MYBQC01138AZTB	Insert	48V (36V to 75V)	400	10.6±6%	38	95	1500	1/4	58.4×36.8×14 max.
MYBQC01138AZTF	Insert	48V (36V to 75V)	400	10.6±6%	38	95	1500	1/4	58.4×36.8×17 max.
MYBEA01212AZT	Insert	48V (36V to 75V)	140	12±3%	12	92.5	1500	1/8	58.4×22.8×9 max.
MYBEA01212AZTB	Insert	48V (36V to 75V)	140	12±3%	12	92.5	1500	1/8	58.4×22.8×9 max.
MYBEA01210CZT	Insert	24V (18V to 36V)	120	12±3%	10	93	1500	1/8	58.4×22.8×9 max.
MYBEA01210CZTB	Insert	24V (18V to 36V)	120	12±3%	10	93	1500	1/8	58.4×22.8×9 max.
MYBEB00520AZT	Insert	48V (36V to 75V)	100	5±3%	20	93	1500	1/8	57×22.8×10 max.
MYBSC01208AZT	Insert	48V (36V to 75V)	100	12±3%	8	92.5	1500	1/16	33×23.2×10 max.
MYBSC01208ABT	SMD	48V (36V to 75V)	100	12±3%	8	92.5	1500	1/16	33×23.2×10 max.
MYBSC00520AZT	Insert	48V (36V to 75V)	100	5±3%	20	92	1500	1/16	33×22.8×10 max.
MYBSC00520ABT	SMD	48V (36V to 75V)	100	5±3%	20	92	1500	1/16	33×22.8×10 max.

These are just a few examples of our large assortment of power products.



For more details on our product lineup, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

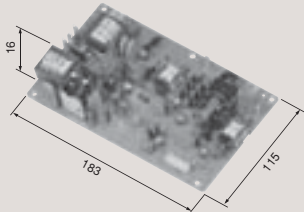
High Voltage Transformers

						
QF Type	QP Type	WP Type	NU Type	WR Type		
Series	Type	Features	Output Voltage Vout	Output Current Iout	Drive Frequency	Dimensions (mm) L×W×H
MSH	QF	Small Size	Max. 6kV	0.3mA	35 to 70kHz	39×24×13
	QP	Standard	Max. 8.5kV	0.4mA	35 to 70kHz	41×26×16
	WP	Low Profile	Max. 8.5kV	0.4mA	35 to 70kHz	44×27×11
	NU	High Power	Max. 8.5kV	1mA	30 to 70kHz	44×27×17
	WR	High Voltage	Max. 13kV	0.5mA	30 to 70kHz	49×25×27

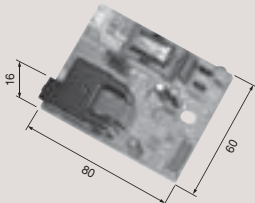


For more details on our product lineup, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>

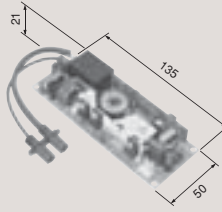
High Voltage Power Supplies



MPH7000 Series



MPH4000 Series
(for Air Purifier/Air Conditioner)



MPL3000 Series
(AC/DC Ballast)

(in mm)

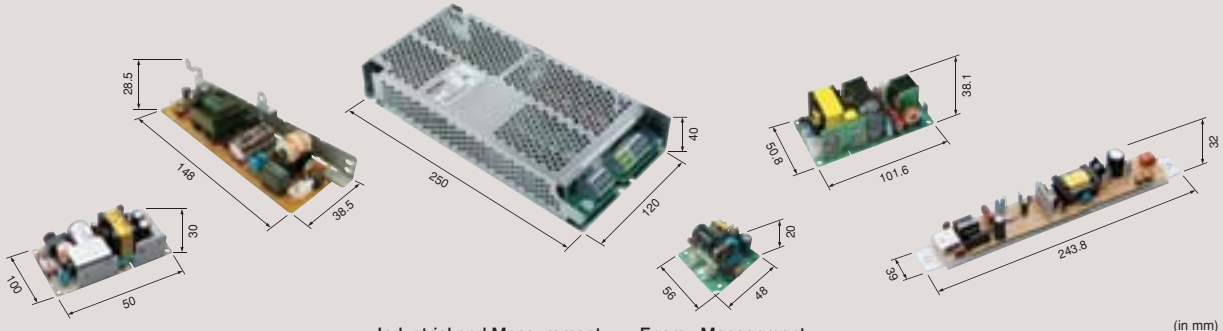
Series	Input Voltage Vin	Power Supply Type		Output Voltage Vout	Output Current Iout	Adjustable Range
MPH7000	24V DC	DC Constant Current		(6kV)	250μA	Iout: 200 to 300μA
		DC Constant Voltage		0.6kV	(1μA)	Vout: 550 to 650μV
		Switching	DC Constant Current	(-1.5kV)	-3μA	Iout: -2 to -4μA
			DC Constant Voltage	1.5kV	(0.5μA)	Vout: 1.4 to 1.6kV
		AC Constant Voltage		1.5kV rms	(250μA rms)	Vout: 1.3 to 1.7kV rms
MPH4000 (for Air Purifier/Air Conditioner)		DC Constant Voltage		±6kV	±400μA	—
		DC Constant Current		(±6kV)	±400μA	—

Series	Applications	Input Voltage Vin	Output Power	Other Specification
MPL3000 (AC/DC Ballast)	Projector	250 to 420V DC	to 350W	For extra-high pressure mercury lamp

For more details on our products, please contact us.

For more details on our products, please contact us.

Switching Power Supplies




Applications	Input Voltage	Output Voltage	Safety Standard	EMI Standard	Remarks
Medical Equipment	90 to 264V AC	5V 12V 24V 48V	UL, IEC	CISPR	
SOHO Equipment	90 to 264V AC	5V 12V 24V 48V	UL, IEC	CISPR	Models that provide a power-saving standby mode are also available.
Industrial and Measurement Equipment	90 to 264V AC	24V	UL, IEC	VCCI	150W/300W
Energy Management Equipment	60 to 225V AC	3.3V 24V	UL, IEC	VCCI, CISPR	
PBX	90 to 264V AC	12V 48V	UL, IEC	CISPR	Operating Ambient Temperature 80°C
LED Lighting	90 to 264V AC	24V	IEC, PSE	VCCI, CISPR	PWM Dimming, Accepted for DALI, UART

For more details on our products, please contact us.

Electrical Double Layer Capacitors

Electrical Double Layer Capacitors (EDLCs), often referred to as supercapacitors, are energy storage devices with high power density characteristics. Murata has focused its R&D efforts on electrical double layer energy devices, and also established collaboration with the component design and manufacturing firm CAP-XX Limited (CAP-XX). This has led to Murata's development of an EDLC technology resulting in low ESR and high capacitance in a very small package.



Series	Main Part Number	Thickness (mm)	Capacitance (mF)	Rated Voltage (V)	ESR (mΩ)	Operating Temperature (°C)
DMF (High Peak Power Type)	DMF3Z5R5H474M3DTA0	3.2	470	5.5 (Peak Voltage)	45	-30 to 70
	DMF4B5R5G105M3DTA0	3.7	1000	5.5 (Peak Voltage)	40	-30 to 70
DMT (Application Specific Type)	DMT334R2S474M3DTA0	3.5	470	4.2	130	-30 to 85



For more details on each series, please refer to our website.
Product Search ⇒ <http://search.murata.co.jp/>



For Ionizer Modules, please refer to p. 74.

Sound Components

Piezoelectric ceramic materials that expand and shrink by applying voltage are used in piezoelectric sound components.



Summary

Using Murata's unique ceramic material, we offer a variety of piezoelectric sound components.

Lineup

- Piezoelectric Sounders
- Piezoelectric Buzzers
- Piezoelectric Diaphragms

Piezoelectric Sounders

Low power consumption, lightweight

Suitable for office equipment/home appliances/audio equipment



Drive Type	Mounting Type	Main Part Number	Sound Pressure Level (dB)	Measurement Condition of Sound Pressure Level
External Drive	Surface Mounting Type	PKLCS1212E2400-R1	75 min.	3.0Vp-p ($\pm 1.5V_{o-p}$), 2.4kHz, square wave, 10cm
		PKLCS1212E4001-R1	75 min.	3.0Vp-p ($\pm 1.5V_{o-p}$), 4.0kHz, square wave, 10cm
		PKMCS0909E4000-R1	65 min.	3.0Vp-p ($\pm 1.5V_{o-p}$), 4.0kHz, square wave, 10cm
	Pin Type	PKM13EPYH4000-A0	70 min.	3.0Vp-p ($\pm 1.5V_{o-p}$), 4.0kHz, square wave, 10cm
		PKM17EPP-2002-B0	70 min.	3.0Vp-p ($\pm 1.5V_{o-p}$), 2.0kHz, square wave, 10cm
		PKM22EPH2001	75 min.	3.0Vp-p ($\pm 1.5V_{o-p}$), 2.0kHz, square wave, 10cm
		PKM22EPPH2001-B0	70 min.	3.0Vp-p ($\pm 1.5V_{o-p}$), 2.0kHz, square wave, 10cm



For more details on each series, please refer to our website.
Product Search \Rightarrow <http://search.murata.co.jp/>

Piezoelectric Buzzers

This is a unified piezoelectric sounder connected to a built-in self-drive circuit, and it easily generates sound with only a DC power supply.

Suitable for gas detector alarms/burglar alarms/home-electronic appliances



PKB24SPCH

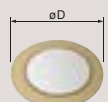
(in mm)

Drive Type	Mounting Type	Main Part Number	Sound Pressure Level (dB)	Measurement Condition of Sound Pressure Level
Self Drive	Pin Type	PKB24SPCH3601-B0	90 min.	12Vdc, 10cm

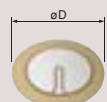
Piezoelectric Diaphragms

Low power consumption, lightweight

Suitable for Clocks/Calculators/Digital cameras/Burglar alarms and Various alarms.



7BB-□□-□



7BB-□□-□C

Drive Type	Main Part Number	Plate Size (φD)
External Drive	7BB-12-9	φ12.0mm
	7BB-15-6	φ15.0mm
	7BB-20-6	φ20.0mm
	7BB-27-4	φ27.0mm
Self Drive	7BB-20-6C	φ20.0mm
	7BB-27-4C	φ27.0mm

□: Indicates Metal Plate Diameter and Resonant Frequency Type.



For more details on each series, please refer to our website.

Product Search ⇒ <http://search.murata.co.jp/>

Detailed Catalogs

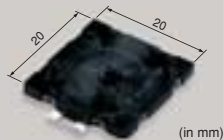
For more details, please refer to our printed catalogs and the PDF catalogs on our website.



- Piezoelectric Sound Components Cat. No. P37E
- Piezoelectric Sound Components Application Manual Cat. No. P15E

Microblowers

Tiny air pumps without a motor



(in mm)

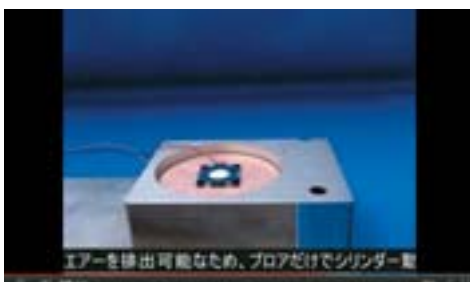
■ Features

Microblowers are designed to function as an air pump, using the ultrasonic vibrations of piezoelectric ceramics, which can generate high pressure air from a thin and extremely compact unit.

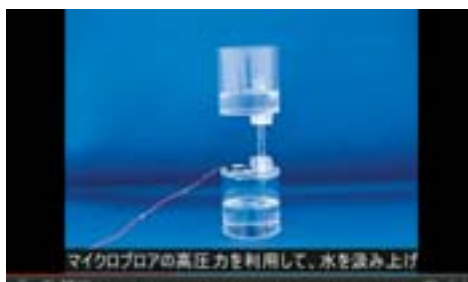
■ Applications

Aroma/diffuser, Gas & Alcohol Sensor, Air ionizer, Amusement, etc.

Part Number	Size	Air Flow	Static Pressure	Voltage of Operation
MZB1001T02	20(W)×20(L)×1.85(H)mm without the nozzle	≥0.7L/min@15Vp-p	≥1.42kPa@15Vp-p	10 to 20Vp-p



For more details on Microblowers, please refer to our website.



Piezoelectric Actuators

Quick response and high-accuracy position control.



■ Features

Piezoelectric actuators employ piezoelectric ceramics, which are widely used for positioning device.

*Please contact us for custom specifications.

Wireless Communication Modules

Available for a wide range of applications such as automotive, mobile computing devices, and household appliances.

Wi-Fi Modules / Bluetooth® · Wi-Fi Combo Modules



■ Features

Compact, highly efficient and flexible custom-made correspondence

■ Applications

Mobile phones, automotive, tablet PC, POS, HT, electric equipment, smart grid, etc.

Bluetooth® Modules / Bluetooth® Low Energy Modules



■ Features

Compact, highly efficient and flexible custom-made correspondence

■ Applications

Mobile phones, automotive, PMP, POS, HT, healthcare, wireless remote control, etc.



Please contact us about Wireless Communication Modules.

Ceramic Applied Products

Contribution to high integration and miniaturization requirements of the automotive industry and RF modules.

Low Temperature Co-fired Ceramics (LTCC) Multi-layer Module Boards



LTCC, Low Temperature Co-fired Ceramics, is a multi-layer, glass ceramic substrate that is co-fired with low resistance metal conductors. What makes Murata's LTCC special is our unique "Zero Shrinking Sintering Process," which restricts the ceramic shrinkage to only thickness.

Murata's LTCC multilayer substrates LFC® are useful in a wide range of electronic equipment such as substrates for highly-reliable electronic control units equipping vehicles and functional substrates for miniaturized high-frequency modules in cellular phones.

LFC® Series

Murata's LFC® Series LTCC substrate meets high integration and miniaturization requirements necessary for automotive applications.

AWG Series

Utilized in low-profile, small outline RF modules, the AWG Series features ultra-thin ceramic tapes, multiple material tape lamination, and enhanced board strength.



Cat.No. N20E

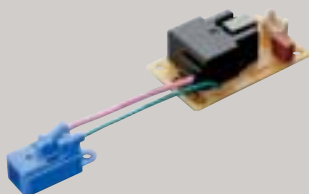
Others Ionizer Modules Ionissimo®

High-concentration ion, compact design, ozone control

Ionissimo® is an ionizer module with unprecedented compactness and high efficiency, capable of generating the largest number of ions in the industry* owing to Murata's own high-voltage technology and structural design. The ion generator is connected to the driving power supply for modularization and ease of incorporating into equipment.

*Surveyed by Murata (As of March 2011)

MHM Series



■ Features

- A large number of ions will be created by original structure.
- Compact equipment may be designed due to small ionizer element and driving power supply.
- Ozone amounts may be optimized for specific applications by controlling the generation of ozone without changing the number of ions.

■ Applications

Air Conditioner, Air Purifier, Static Eliminator, Vacuum Cleaner, etc.



View a demonstration video of Ionizer Modules Ionissimo® on our website

Others Variable Capacitor

Capacitance value can be adjusted by the tuning voltage

LXRW_V Series



LXRW0YV Series



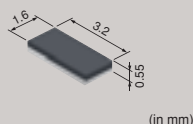
LXRW19V Series

(in mm)

Thin Film Variable Capacitors can carry out the variable of the capacitor by adjusting the tuning voltage. It is designed for use as Frequency Matching for HF band (13.56MHz).

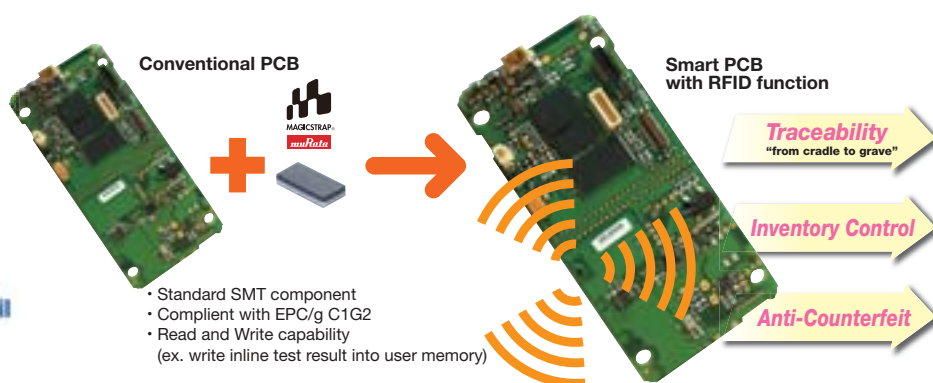
UHF-band MAGICSTRAP®

LXMS31 Series



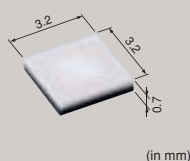
MAGICSTRAP® can be easily assembled by means of reflow soldering and adhesive (electrically conductive or non-conductive). Even if non-conductive adhesive is used, communication will take place when MAGICSTRAP® is bonded onto the antenna, and the RFID tag will function correctly.

MAGICSTRAP® complies with international standard EPC/gC1G2. It is an ultra-miniature (3.2x1.6x0.55mm) robust package with impedance transformation function. MAGICSTRAP® can be bonded onto the antenna over a wide range ($\pm 500\mu\text{m}$). In addition, MAGICSTRAP® supports wide UHF band (860-960MHz) for worldwide use in a single design.

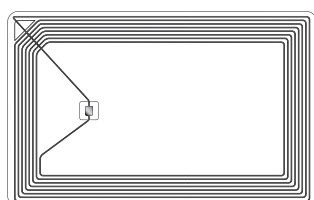


HF-band MAGICSTRAP®

LXMS33 Series



HF-band MAGICSTRAP® is one of the world's smallest HF-band RFID tags (3.2x3.2x0.7mm). Murata has applied its proprietary multi-layer circuit board technology, with which the successful miniaturization of an RFID tag to one-tenth the size of an RFID tag composed of plane surface, was achieved. Furthermore, the new RFID product uses a ceramic module structure that makes it highly resistant to the environment and enables it to achieve stable operation under various environmental conditions.



Miniaturization !



Applications

Small appliance/object tracking, management, certification, authentication, etc.

Electrical Characteristics

Read range: 15mm (reader/writer output: 200mW, antenna size: 35x54mm)



For more details on RFID Devices, please refer to our website.

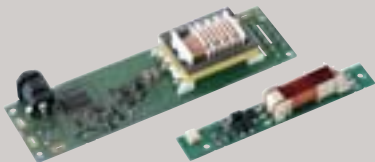
Murata has begun mass production of the capacitive coupling type* of wireless power transmission modules capable of charging at 10W.

This module makes wireless charging systems a reality (Wireless charging systems are capable of charging equipment placed on a charging pad without the need for cable connection).

*Capacitive coupling system

The capacitive coupling system is a method that involves transmitting energy using the electrical fields generated between these electrodes. Since the electric field is generated between the electrodes, it is also called an electric field coupling system.

LXWS Series



■ Features

- Wide charging area
- Ease of mounting
- No heat generation in the wireless power transmission area

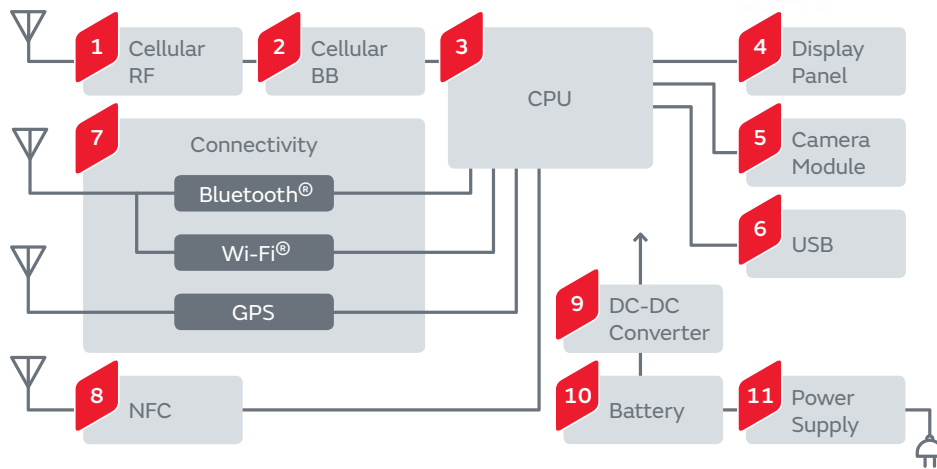


View demonstration videos of Wireless Power Transmission Modules on our website.



Application Guides

Smart Phones



1 Cellular RF

Chip Multilayer Duplexers
LFD Series



SAW Duplexers
SAY Series



SAW Filters
SAF Series



Chip Multilayer LC Filters



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Chip Multilayer Hybrid Dividers
LDD Series



RF Matching Transformer
SMST Series



High Frequency
Coaxial Connectors



Isolators
CEG23 Series



Micro DC-DC Converters
LXDC Series



Chip Inductors (Chip Coils)
LQW/LQP Series



Trimmer Capacitors
TZY2 Series



ESD Protection Devices
LXES Series



Thermistors
NCP/PRF Series



2 Cellular BB

Micro DC-DC Converters
LXDC Series



3 Terminal Capacitors
NFM Series



Chip Common Mode Choke Coils
DLW/DLP Series



Thermistors
NCP/PRF Series



3 CPU

Crystal Units
XRCGB Series



Chip Ferrite Beads
BLM Series



3 Terminal Capacitors
NFM Series



Thermistors
NCP/PRF Series



5 Camera Module

Micro DC-DC Converters
LXDC Series



Electrical Double Layer Capacitors
DMF Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR7 Series



Actuators



Chip Ferrite Beads
BLM Series



ESD Protection Devices
LXES Series



Thermistors
NCP/PRF Series



4 Display Panel

Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTCE Series



EMI Suppression Filters EMIFIL®
NFA Series



Chip Common Mode Choke Coils
DLW/DLP Series



ESD Protection Devices
LXES Series



Thermistors
NCP/PRF Series



6 USB

Micro DC-DC Converters
LXDC Series



Chip Common Mode Choke Coils
DLW/DLP Series



Chip Ferrite Beads
BLM Series



ESD Protection Devices
LXES Series



Thermistors
NCP/PRF Series



8 NFC

NFC Antennas
FLAN Series



Micro DC-DC Converters
LXDC Series



Crystal Units
XRCGB Series



Chip Ferrite Beads
BLM Series



Chip Inductors (Chip Coils)
LQM/LQH/LQB Series



Trimmer Capacitors
TZY2 Series



Variable Capacitors
LXRW Series



ESD Protection Devices
LXES Series



7 Connectivity

Bluetooth® Modules



Wi-Fi® Modules



Bluetooth® - Wi-Fi® Combo Modules



SAW Filters
SAF Series



Chip Multilayer LC Filters



Chip Multilayer Hybrid Baluns
LDB/LDM Series



High Frequency
Coaxial Connectors



Micro DC-DC Converters
LXDC Series



ESD Protection Devices
LXES Series



Thermistors
NCP/PRF Series



9 DC-DC Converter

Micro DC-DC Converters
LXDC Series



Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Thermistors
NCP/PRF Series



10 Battery

Thermistors
NCP/PRF/PRG Series



11 Power Supply

Wireless Power
Transmission Modules



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Chip Inductors (Chip Coils)
LQM/LQH Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



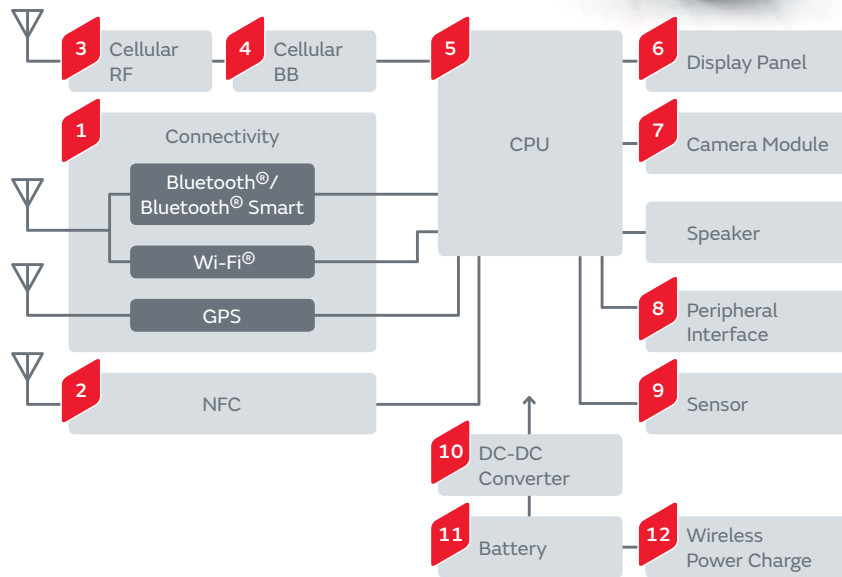
Safety Standard Certified
Ceramic Capacitors
Type KX/KY



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Wearable Devices



1 Connectivity

Bluetooth® Modules



SAW Filters
SAF Series



High Frequency
Coaxial Connectors
SWH Series



Crystal Units
XRCGB/XRCPB Series



ESD Protection Devices
LXES Series



Wi-Fi® Modules



Chip Multilayer LC Filters



High Frequency
Coaxial Connectors
JSC Series



Crystal Units
XRCGD Series



Bluetooth® - Wi-Fi® Combo Modules



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Micro DC-DC Converters
LXDC Series



Crystal Units
XRCMD/XRCFD Series



Thermistors
NCP/PRF Series



2 NFC

NFC Antennas
FLAN Series



Crystal Units
XRCGB/XRCPB Series



Crystal Units
XRCMD/XRCFD Series



Trimmer Capacitors
TZY2 Series



ESD Protection Devices
LXES Series



Micro DC-DC Converters
LXDC Series



Crystal Units
XRCGD Series



Chip Inductors (Chip Coils)
LQM/LQH/LQB Series



Variable Capacitors
LXRW Series



3 Cellular RF

Chip Multilayer Diplexers
LFD Series



SAW Duplexers
SAY Series



SAW Filters
SAF Series



Chip Multilayer LC Filters



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Chip Multilayer Hybrid Dividers
LDD Series



RF Matching Transformer
SMST Series



High Frequency
Coaxial Connectors



Isolators
CEG23 Series



Micro DC-DC Converters
LXDC Series



Trimmer Capacitors
TZY2 Series



ESD Protection Devices
LXES Series



Thermistors
NCP/PRF Series



4 Cellular BB

Micro DC-DC Converters
LXDC Series



Thermistors
NCP/PRF Series



5 CPU

Crystal Units
XRCGB/XRCPB Series



Crystal Units
XRCGD Series



Crystal Units
XRCMD/XRCFD Series



Thermistors
NCP/PRF Series



7 Camera Module

Micro DC-DC Converters
LXDC Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR7 Series



Electrical Double Layer Capacitors
DMF Series



Actuators



ESD Protection Devices
LXES Series



Thermistors
NCP/PRF Series



9 Sensor

Proximity and Illuminance Sensors
LT Series



Pressure Sensors
ZPA Series



Shock Sensors
PKGS Series



Thermistors
NCP/PRF Series



10 DC-DC Converter

Micro DC-DC Converters
LXDC Series



Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Thermistors
NCP Series



6 Display Panel

Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTCW Series



Ceramic Resonators CERALOCK®
CSACM Series



Crystal Units
XRCGB/XRCPB Series



Crystal Units
XRCGD Series



Crystal Units
XRCMD/XRCFD Series



ESD Protection Devices
LXES Series



Thermistors
NCP/PRF Series



8 Peripheral Interface

Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTCW Series



Crystal Units
XRCGB/XRCPB Series



Crystal Units
XRCGD Series



Crystal Units
XRCMD/XRCFD Series



Chip Common Mode Choke Coils
DLW/DLP Series



ESD Protection Devices
LXES Series



Thermistors
NCP/PRF Series



11 Battery

Thermistors
NCP/PRF/PRG Series



12 Wireless Power Charge

Low ESL Monolithic Ceramic Capacitors
LLL Series



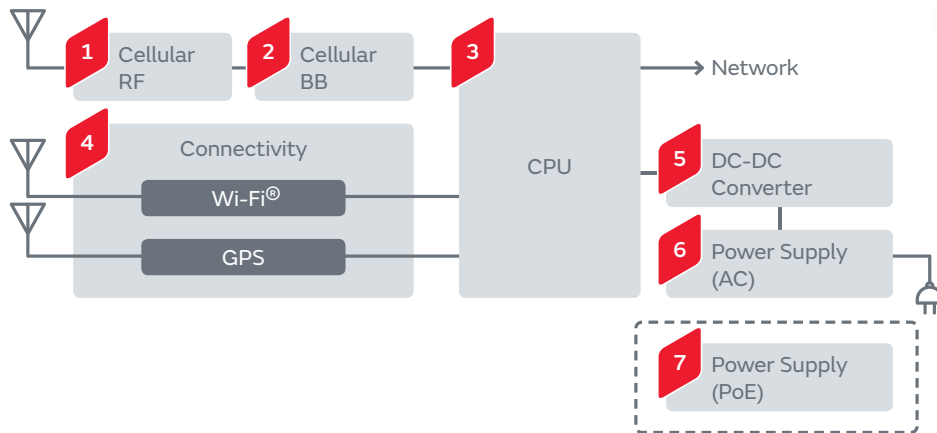
Thermistors
NCP/PRF Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Electrical Double Layer Capacitors	DMF Series	Power Line Battery Peak Assist	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip LC Fiter	NFA Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	
Piezoelectric Sounders	PKMCS Series	Sound component	
Piezoelectric Diaphragms	7BB Series	Sound component	

Base Stations



1 Cellular RF

Chip Multilayer Duplexers
LFD SeriesDuplexers
DFYH SeriesDielectric Filters GIGAFIL®
DFCH SeriesChip Multilayer Hybrid Baluns
LDB/LDM SeriesChip Multilayer Hybrid Couplers
LDC SeriesIsolators
CES SeriesChip Inductors (Chip Coils)
LQW/LQP SeriesTrimmer Capacitors
TZY2 SeriesESD Protection Devices
LXES SeriesThermistors
PRF Series

2 Cellular BB

3 Terminal Capacitors
NFM SeriesChip Common Mode Choke Coils
DLW/DLP SeriesThermistors
PRF Series

3 CPU

Crystal Units
XRCGB SeriesChip Ferrite Beads
BLM Series3 Terminal Capacitors
NFM SeriesThermistors
PRF Series

4 Connectivity

Wi-Fi® Modules



Chip Multilayer LC Filters

Chip Multilayer Hybrid Baluns
LDB/LDM SeriesMicro DC-DC Converters
LXDC SeriesESD Protection Devices
LXES SeriesThermistors
PRF Series

5 DC-DC Converter

DC-DC Converters
MYB SeriesDC-DC Converters
OKL SeriesMicro DC-DC Converters
LXDC SeriesMetal Terminal Type
Monolithic Ceramic Capacitors
KRM SeriesPolymer Aluminum
Electrolytic Capacitors
ECAS SeriesThermistors
PRF Series

6 Power Supply (AC)

Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA SeriesMedium High Voltage
Ceramic Capacitors
DEA/DES SeriesSafety Standard Certified
Ceramic Capacitors
Type KX/KYChip Inductors (Chip Coils)
LQM/LQH Series

7 Power Supply (PoE)

Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage Ceramic Capacitors
DEA/DES Series



Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Crystal Units
XRCGB Series



Chip Inductors (Chip Coils)
LQM/LQH Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

G-PON



1 Optical Transmitter Module/Optical Receiver Module

Monolithic Ceramic Capacitors
(Top & Bottom Electrode
Type for Bonding)
GMA Series



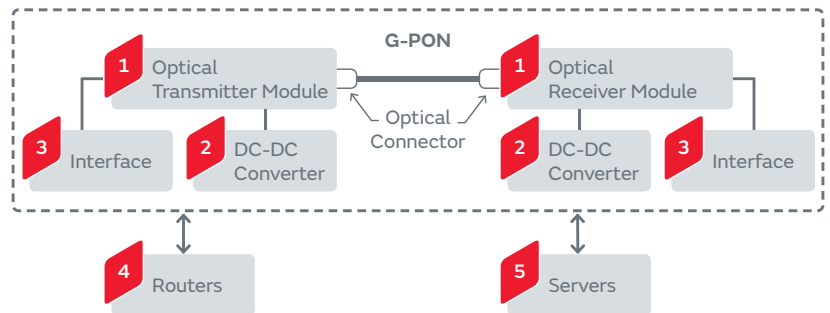
Single Layer
Microchip Capacitors
CLB Series



Monolithic Ceramic Capacitors
(Compatible to Bonding
/AuSn Soldering)
GMD Series



Thin Film Circuit Substrate
RUSUB®
RUCYT Series



2 DC-DC Converter

DC-DC Converters
MYB Series



DC-DC Converters
OKL Series



Micro DC-DC Converters
LXDC Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Thermistors
PRF Series



3 Interface

Low ESL Monolithic
Ceramic Capacitors
LLL/LLA/LLM Series



Crystal Units
XRCGB Series



Chip Common Mode
Choke Coils
DLW/DLP Series



ESD Protection Devices
LXES Series



4 Routers

Low ESL Monolithic
Ceramic Capacitors
LLL/LLA/LLM Series



Medium High Voltage Ceramic Capacitors
DEA/DES Series



Monolithic Ceramic Capacitors
(Compatible to Bonding
/AuSn Soldering)
GMD Series



Electrical Double Layer
Capacitors
DMT Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Monolithic Ceramic Capacitors
(Top & Bottom Electrode
Type for Bonding)
GMA Series



Crystal Units
XRCGB Series



Chip Common Mode Choke Coils
DLW/DLP Series



5 Servers

Shock Sensors
PKGS Series



Electrical Double Layer
Capacitors
DMT Series



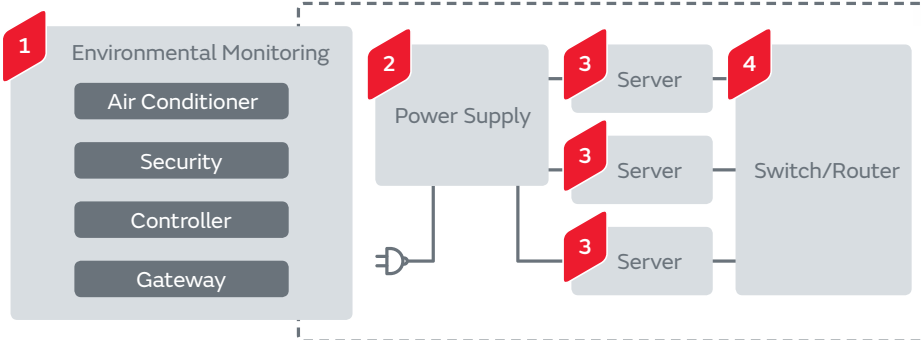
Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Crystal Units
XRCGB Series



Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	



1 Environmental Monitoring

Wi-Fi® Modules



Sub-GHz Modules

RFID Modules with I²C Interface MAGICSTRAP® LXMS Series

Magnetic Switches (AMR Sensors) MR Series



Pressure Sensors ZPA Series



Shock Sensors PKGS Series



Thermistors NCP Series



2 Power Supply

3-phase PFC Converters



DC-DC Converters for High Voltage Direct Current (HVDC)



3 Server

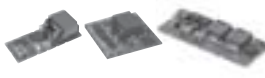
Shock Sensors PKGS Series



Isolated DC-DC Converters MYB Series



Non-isolated DC-DC Converters OKL/MPDR/MPDT Series



Electrical Double Layer Capacitors DMT Series



Polymer Aluminum Electrolytic Capacitors ECAS Series



Crystal Units XRCGB Series

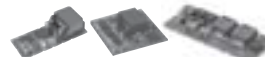


4 Switch/Router

Isolated DC-DC Converters MYB Series



Non-isolated DC-DC Converters OKL/MPDR/MPDT Series



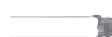
Low ESL Monolithic Ceramic Capacitors LLL/LLA/LLM Series



Monolithic Ceramic Capacitors for Medium Voltage GR/GA Series



Medium High Voltage Ceramic Capacitors DEA/DES Series



Monolithic Ceramic Capacitors (Top & Bottom Electrode Type for Bonding) GMA Series



Monolithic Ceramic Capacitors (Compatible to Bonding /AuSn Soldering) GMD Series



Crystal Units XRCGB Series



Electrical Double Layer Capacitors DMF Series



Chip Common Mode Choke Coils DLW/DLP Series



Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	



Powertrain/Safety

1

ECU

2

AT

3

Auxilliary
Motors

4

TPMS

5

ABS/ESC

6

Headlamp

7

EPS

8

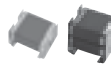
Fuel Injection
System

1 ECU

Low Temperature Co-fired
Ceramics (LTCC) Ceramic
Multilayer Substrates LFC®



Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series



Monolithic Ceramic
Capacitors
GCM/GCJ Series



Monolithic Ceramic Capacitors
for Conductive Glue Mounting
GCG Series



Radial Lead Type
Monolithic Ceramic Capacitors
RH Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Accelerometers
SCA Series



Gyro Sensors
SCC Series



Thermistors
PRF/PTG Series

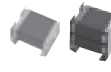


2 AT

Low Temperature Co-fired
Ceramics (LTCC) Ceramic
Multilayer Substrates LFC®



Metal Terminal Type Monolithic
Ceramic Capacitors
KCM Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Accelerometers
SCA Series



Thermistors
PRF/PTG Series

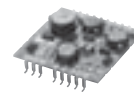


3 Auxiliary Motors

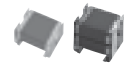
Low Temperature Co-fired
Ceramics (LTCC) Ceramic
Multilayer Substrates LFC®



DC-DC Converters



Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series



Radial Lead Type
Monolithic Ceramic Capacitors
RH Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Large Current Common Mode Choke Coils
PLT10HH Series



Thermistors
PRF/PTG Series



4 TPMS

Shock Sensors
PKGS Series



Ceramic Filters CERAFIL®
SFECF Series



Ceramic Discriminators
CDSCB Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Pressure Sensor Elements



Thermistors
PRF Series

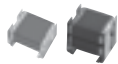


5 ABS/ESC

Low Temperature Co-fired
Ceramics (LTCC) Ceramic
Multilayer Substrates LFC®



Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series



Monolithic Ceramic
Capacitors
GCM/GCJ Series



Monolithic Ceramic Capacitors
for Conductive Glue Mounting
GCG Series



Ceramic Resonators
CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Accelerometers
SCA Series



Gyro Sensors
SCC Series



Thermistors
for Conductive Glue Mounting
NCG18 Series



6 Headlamp

Monolithic Ceramic Capacitors
GCM/GCJ Series



Monolithic Ceramic Capacitors
for Conductive Glue Mounting
GCG Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Thermistors
for Conductive Glue Mounting
NCG18 Series

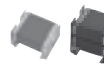


7 EPS

Low Temperature Co-fired
Ceramics (LTCC) Ceramic
Multilayer Substrates LFC®



Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series



Monolithic Ceramic Capacitors
GCM/GCJ Series



Monolithic Ceramic Capacitors
for Conductive Glue Mounting
GCG Series



Radial Lead Type
Monolithic Ceramic Capacitors
RCE Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Thermistors
for Conductive Glue Mounting
NCG18 Series



Accelerometers
SCA Series



Gyro Sensors
SCC Series



Thermistors
PRF/PTG Series



8 Fuel Injection System

Radial Lead Type
Monolithic Ceramic Capacitors
RPF Series



General Purpose (High Reliability)

Monolithic Ceramic Capacitors	GCM Series	Coupling/Decoupling		150°C
Radial Lead Type Monolithic Ceramic Capacitors	RCE Series	Noise Suppression/Decoupling		125°C
Radial Lead Type Monolithic Ceramic Capacitors	RH Series	Noise Suppression/Decoupling		150°C
Chip Inductors (Chip Coils)	LQH32CH Series	Voltage Conversion		105°C
Chip Inductors (Chip Coils)	LQG15HH Series	Impedance Matching/Choke		125°C
Chip Ferrite Beads	BLM_SH Series	Noise Suppression		125°C
3 Terminal Capacitors	NFM_H/NFE_H Series	Noise Suppression		125°C
Chip Common Mode Choke Coils	DLW31SH/DLW43SH Series	Common Mode Noise Suppression		125°C

105°C 105°C max. 125°C 125°C max. 150°C 150°C max.

HEV/PHEV/EV

1

Charger

2

BMS

3

Electrically-Driven
Compressor

4

Electric Pump

5

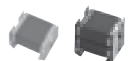
Inverter

6

DC-DC Converter



1 Charger

Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series

Monolithic Ceramic
Capacitors
GCM/GCJ Series

Safety Standard Certified
Ceramic Capacitors
Type KJ

Ceramic Resonators CERALOCK®
CSTCE Series

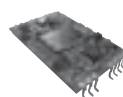
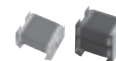
Crystal Units
XRCHA-F-A Series

Large Current Common Mode Choke Coils
PLT10HH Series

Thermistors
PRF/PTG Series


2 BMS

DC-DC Converters


Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series

Monolithic Ceramic
Capacitors
GCM/GCJ Series

Monolithic Ceramic Capacitors
for Conductive Glue Mounting
GCG Series

Ceramic Resonators CERALOCK®
CSTCE Series

Crystal Units
XRCHA-F-A Series

Thermistors
PRF/PTG Series


3 Electrically-driven Compressor

Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series

Monolithic Ceramic
Capacitors
GCM/GCJ Series

Monolithic Ceramic Capacitors
for Conductive Glue Mounting
GCG Series

Thermistors
PRF/PTG Series


4 Electric Pump

Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series

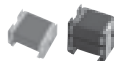
Monolithic Ceramic
Capacitors
GCM/GCJ Series

Monolithic Ceramic Capacitors
for Conductive Glue Mounting
GCG Series

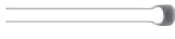
Large Current Common Mode Choke Coils
PLT10HH Series

Thermistors
PRF/PTG Series


5 Inverter

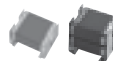
Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series

Monolithic Ceramic
Capacitors
GCM/GCJ Series

Monolithic Ceramic Capacitors
for Conductive Glue Mounting
GCG Series

Radial Lead Type
Monolithic Ceramic Capacitors
RH Series

Large Current
Common Mode Choke Coils
PLT10HH Series

Thermistors
PRF/PTG Series


6 DC-DC Converter

Metal Terminal Type
Monolithic Ceramic Capacitors
KCM Series

Monolithic Ceramic
Capacitors
GCM/GCJ Series

Monolithic Ceramic Capacitors
for Conductive Glue Mounting
GCG Series

Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series

Crystal Units
XRCHA-F-A Series

Large Current Common Mode Choke Coils
PLT10HH Series

Thermistors
PRF/PTG Series


General Purpose (High Reliability)

Monolithic Ceramic Capacitors	GCM Series	Coupling/Decoupling		150°C
Radial Lead Type Monolithic Ceramic Capacitors	RCE Series	Noise Suppression/Decoupling		125°C
Radial Lead Type Monolithic Ceramic Capacitors	RH Series	Noise Suppression/Decoupling		150°C
Chip Inductors (Chip Coils)	LQH32CH Series	Voltage Conversion		105°C
Chip Inductors (Chip Coils)	LQG15HH Series	Impedance Matching/Choke		125°C
Chip Ferrite Beads	BLM_SH Series	Noise Suppression		125°C
3 Terminal Capacitors	NFM_H/NFE_H Series	Noise Suppression		125°C
Chip Common Mode Choke Coils	DLW31SH/DLW43SH Series	Common Mode Noise Suppression		125°C

105°C 105°C max. 125°C 125°C max. 150°C 150°C max.

muRata

Information/Comfort/Accessory

1 Navigation/
Infotainment

2 RKE

3 Meter/HUD

4 Power Seat/
Power Mirror

5 Parking Assist



1 Navigation/Infotainment

Rotary Position Sensors
SV Series



Accelerometers
SCA Series



Electrical Double Layer Capacitors
DMF/DMT Series



Ceramic Filters CERAFIL®
SFECF Series



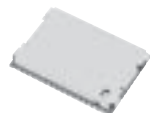
Ceramic Discriminators
CDSCB Series



Piezoelectric Sounders
PKLCS Series



Bluetooth® Modules



Wi-Fi® Modules



DC-DC Converters



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Thermistors
PRF/PRG/PTG Series



2 RKE

Electrical Double Layer Capacitors
DMT Series



Ceramic Filters CERAFIL®
SFECF Series



Ceramic Discriminators
CDSCB Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Piezoelectric Diaphragms
7BB Series

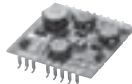


3 Meter/HUD

Rotary Position Sensors
SV Series



DC-DC Converters



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Piezoelectric Sounders
PKM/PKLCS Series



Thermistors
PRF/PTG Series



4 Power Seat/Power Mirror

Piezoelectric Sounders
PKLCS Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Thermistors
PRF/PTG Series



5 Parking Assist

Ultrasonic Sensors
MA Series



Accelerometers
SCA Series



Electrical Double Layer Capacitors
DMF/DMT Series



Piezoelectric Sounders
PKM/PKLCS Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series

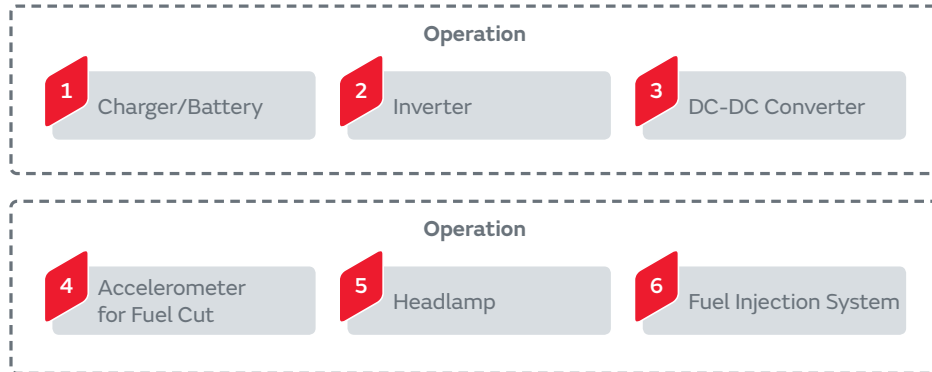


Thermistors
PRF/PTG Series

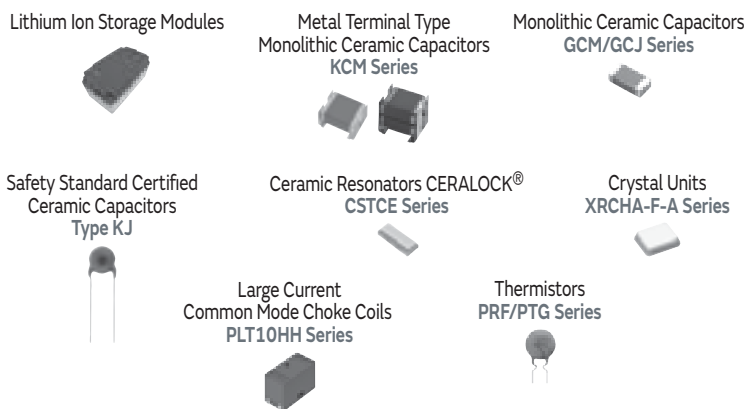


General Purpose

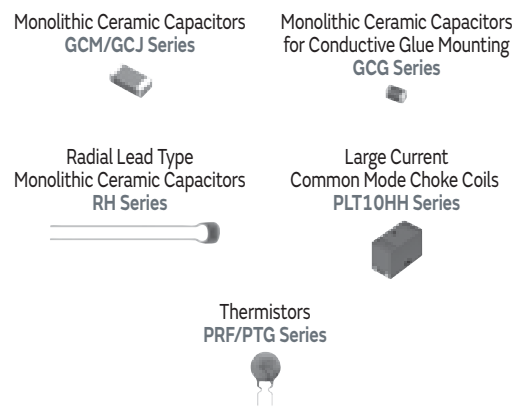
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling	
Monolithic Ceramic Capacitors for Medium Voltage	GRM Series	For Snubber	
Radial Lead Type Monolithic Ceramic Capacitors	RCE Series	Noise Suppression/Decoupling	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
EMI Suppression Filters EMIFIL®	NFM/NFA/NFL/NFE/NFW/NFR Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW Series	Common Mode Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	



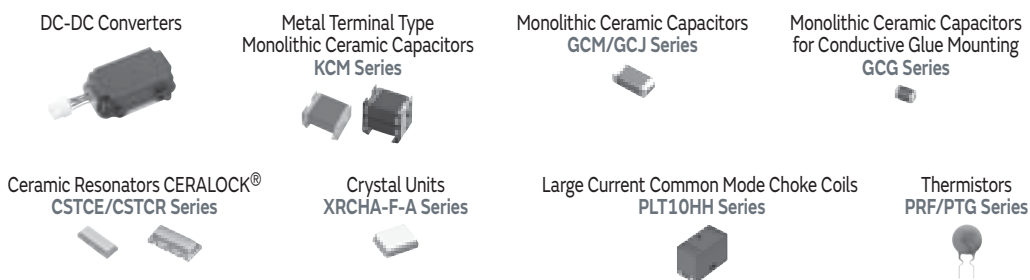
1 Charger/Battery



2 Inverter



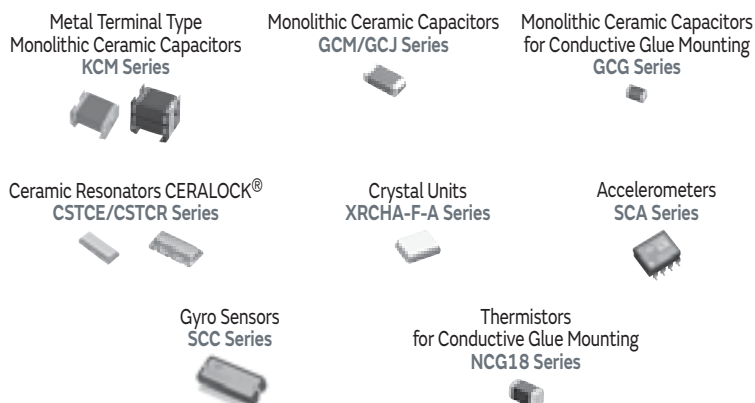
3 DC-DC Converter



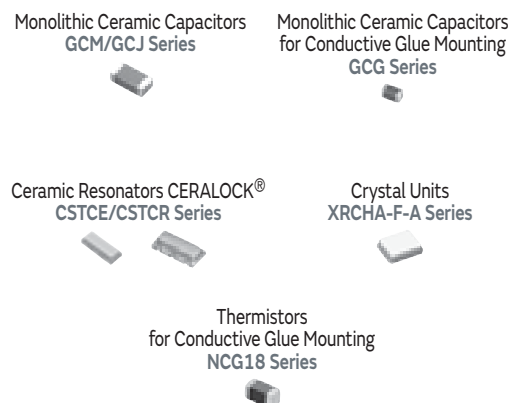
Monolithic Ceramic Capacitors	GCM Series	Coupling/Decoupling		150°C
Radial Lead Type Monolithic Ceramic Capacitors	RCE Series	Noise Suppression/Decoupling		125°C
Radial Lead Type Monolithic Ceramic Capacitors	RH Series	Noise Suppression/Decoupling		150°C
Chip Inductors (Chip Coils)	LQH32CH Series	Voltage Conversion		105°C
Chip Inductors (Chip Coils)	LQG15HH Series	Impedance Matching/Choke		125°C
Chip Ferrite Beads	BLM_SH Series	Noise Suppression		125°C
3 Terminal Capacitors	NFM_H/NFE_H Series	Noise Suppression		125°C
Chip Common Mode Choke Coils	DLW31SH/DLW43SH Series	Common Mode Noise Suppression		125°C

105°C 105°C max. 125°C 125°C max. 150°C 150°C max.

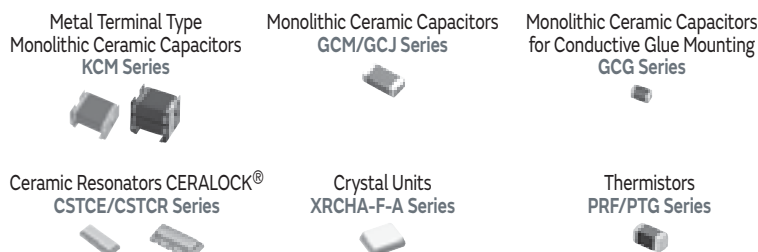
4 Accelerometer for Fuel Cut



5 Headlamp



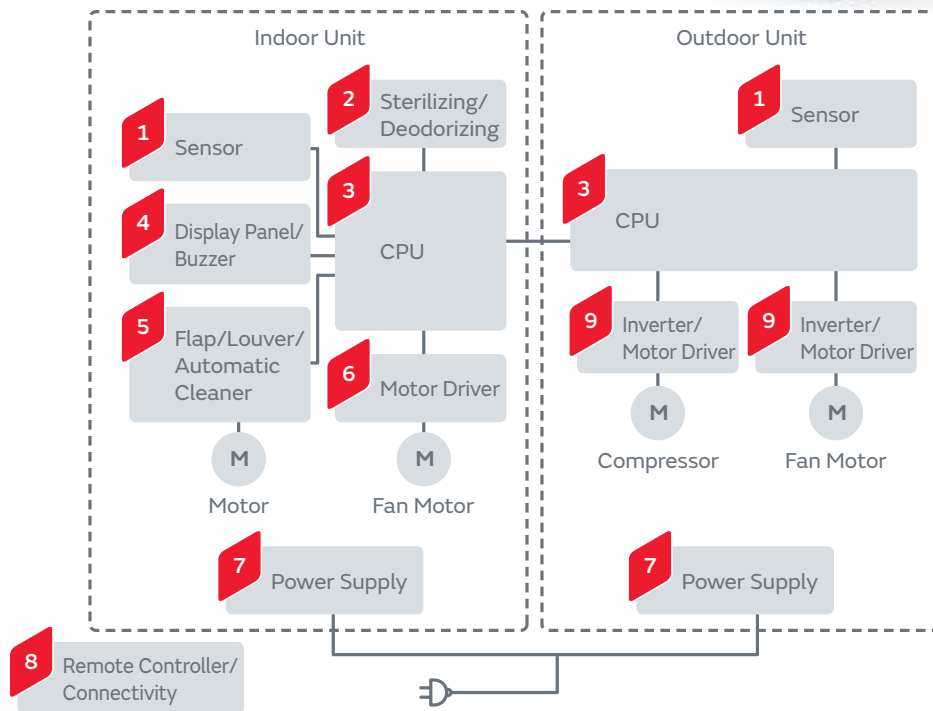
6 Fuel Injection System



General Purpose

Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling	
Monolithic Ceramic Capacitors for Medium Voltage	GRM Series	For Snubber	
Radial Lead Type Monolithic Ceramic Capacitors	RCE Series	Noise Suppression/Decoupling	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
EMI Suppression Filters EMIFIL®	NFM/NFA/NFL/NFE/NFW/NFR Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW Series	Common Mode Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	

Air Conditioner



1 Sensor

Pyroelectric Infrared Sensors
IRA Series



Ultrasonic Sensors
MA Series

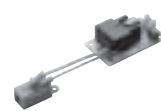


Thermistors
NCP/NXR/PRF Series



2 Sterilizing/Deodorizing

Ionizer Modules Ionissimo®
MHM300 Series



High Voltage Power
MPH4602 Series



3 CPU

Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



4 Display Panel/Buzzer

Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



Piezoelectric Sounders
PKM/PKLCS Series



Ozonizer Modules Ionissimo®
MHM500 Series



High Voltage Resistors
MHR Series



5 Flap/Louver/Automatic Cleaner

Rotary Position Sensors
SV Series



6 Motor Driver

Thermistors
NCP/NXR/PRF Series



7 Power Supply

Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage Ceramic Capacitors
DEA/DES Series



Safety Standard
Certified Ceramic Capacitors
Type KX/KY



Thermistors
NTP/PTG Series



8 Remote Controller/Connectivity

Bluetooth® Modules



Wi-Fi® Modules



Sub-GHz Modules



High Frequency
Coaxial Connectors



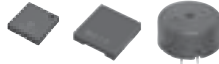
Micro
DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



Piezoelectric Sounders
PKMCS/PKLCs/PKM Series



Chip Inductors
(Chip Coils)
LQB Series



9 Inverter/Motor Driver

Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



Thermistors
NCP/NXR/PRF Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

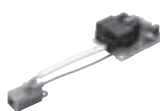
Refrigerator



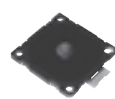
1 Sensor

Pyroelectric Infrared Sensors
IRA SeriesThermistors
NCP/NXR/PRF Series

2 Sterilizing/Deodorizing

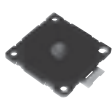
Ionizer Modules Ionissimo®
MHM300 SeriesOzonizer Modules Ionissimo®
MHM500 SeriesHigh Voltage Power
MPH4602 SeriesHigh Voltage Resistors
MHR Series

Microblowers



3 Automatic Icemaker

Microblowers



4 CPU

Ceramic Resonators CERALOCK®
CSTLS/CTCE/CSTCR Series

5 Display Panel/Buzzer

Ceramic Resonators CERALOCK®
CSTLS/CTCE/CSTCR SeriesPiezoelectric Sounders
PKM/PKLC Series

6 Connectivity

Bluetooth® Modules



Wi-Fi® Modules



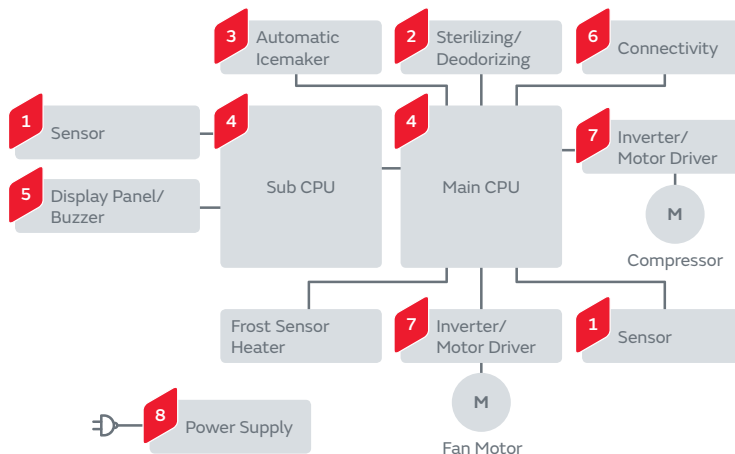
Sub-GHz Modules

High Frequency
Coaxial ConnectorsMicro DC-DC Converters
LXDC SeriesChip Inductors
(Chip Coils)
LQB Series

7 Inverter/Motor Driver

Thermistors
NCP/NXR/PRF Series

8 Power Supply

Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA SeriesMedium High Voltage
Ceramic Capacitors
DEA/DES SeriesSafety Standard Certified
Ceramic Capacitors
Type KX/KYThermistors
NTP/PTG Series

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Washing Machine



1 Sensor

Thermistors
NCP/NXR/PRF Series



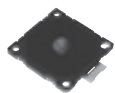
3 CPU

Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



2 Laundry Detergent/Rinse Pump

Microblowers



4 Display Panel/Buzzer

Rotary Position Sensors
SV Series



Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series

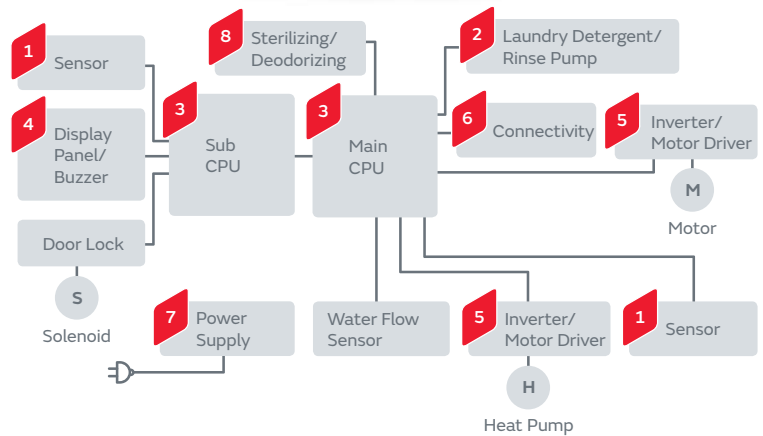


Piezoelectric Sounders
PKM Series



5 Inverter/Motor Driver

Thermistors
NCP/NXR/PRF Series



6 Connectivity

Bluetooth® Modules



Wi-Fi® Modules



Sub-GHz Modules



High Frequency
Coaxial Connectors



Micro DC-DCConverters
LXDC Series



Chip Inductors (Chip Coils)
LQB Series



7 Power Supply

Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



Thermistors
NTP/PTG Series



8 Sterilizing/Deodorizing

Ozonizer Modules Ionissimo®
MHM500 Series



High Voltage Power
MPH4602 Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Air Purifier



1 Sensor

Pyroelectric
Infrared Sensors
IRA Series



Ultrasonic Sensors
MA Series



Thermistors
NCP/NXR/PRF Series



2 Sterilizing/Deodorizing

Ionizer Modules Ionissimo®
MHM300 Series



High Voltage Power
MPH4602 Series



Ozonizer Modules Ionissimo®
MHM500 Series



High Voltage Resistors
MHR Series



3 CPU

Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



4 Display Panel/Buzzer

Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



Piezoelectric Sounders
PKM/PKLCs Series



8 Inverter/Motor Driver

Thermistors
NCP/NXR/PRF Series



9 Power Supply

Monolithic Ceramic
Capacitors for
Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



AC Line Filters
PLA/PLY Series



Thermistors
NTP/PTG Series



10 Remote Controller

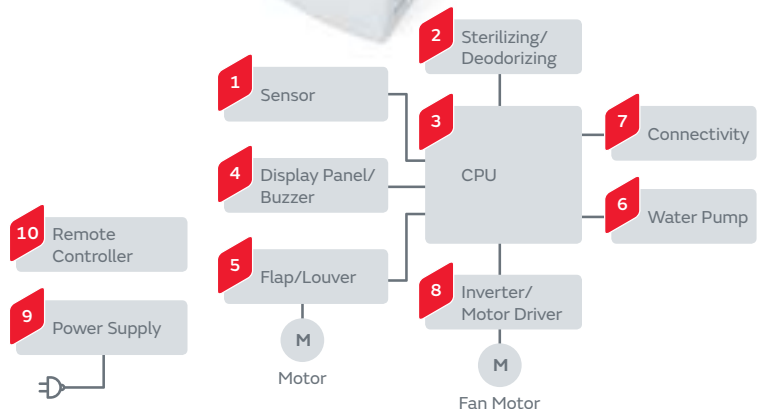
Micro
DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



Piezoelectric Sounders
PKMCS/PKLCs Series



5 Flap/Louver

Rotary Position Sensors
SV Series



6 Water Pump

Microblowers



7 Connectivity

Bluetooth® Modules



Wi-Fi® Modules



Sub-GHz Modules



High Frequency
Coaxial Connectors



Micro DC-DC Converters
LXDC Series

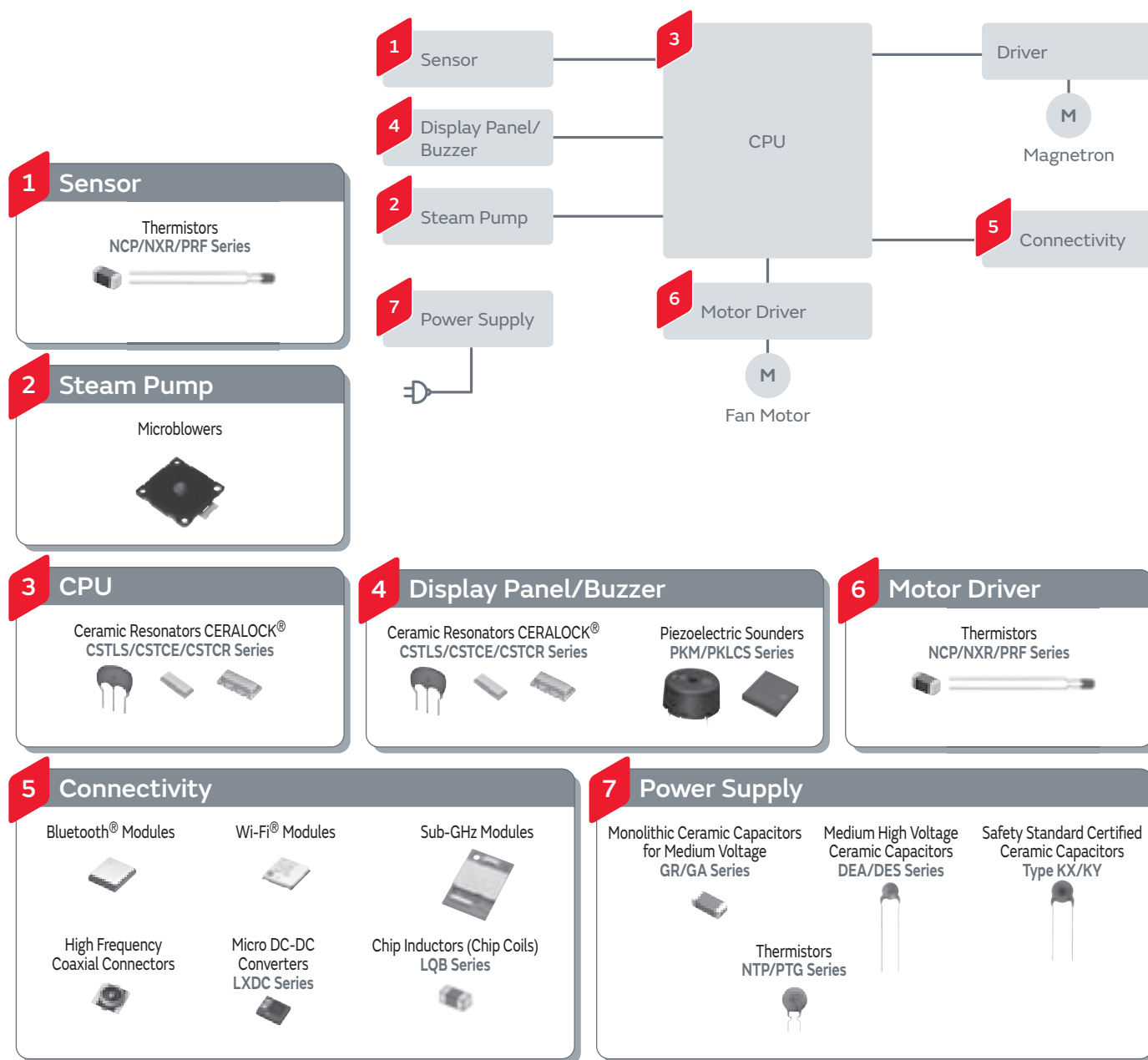


Chip Inductors (Chip Coils)
LQB Series



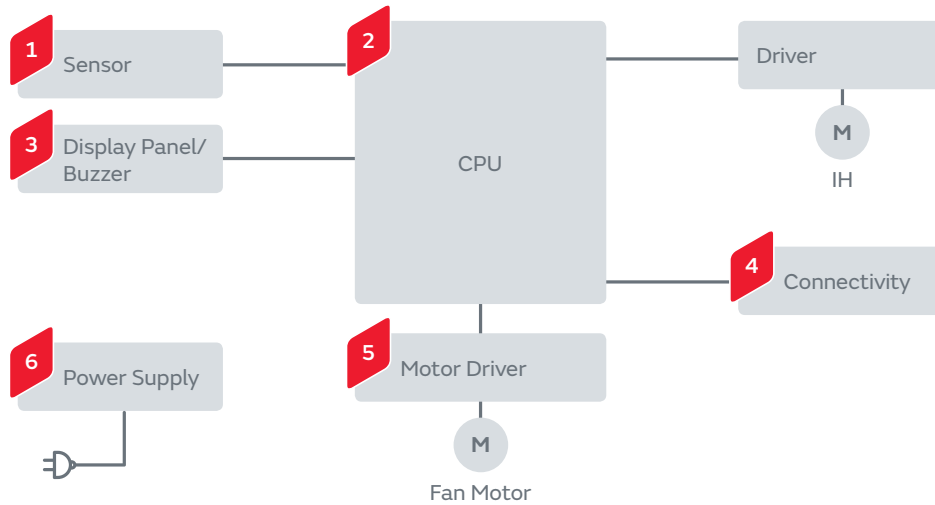
Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Microwave Oven



Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

IH Rice Cooker



1 Sensor

Thermistors
NCP/NXR/PRF Series



2 CPU

Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



3 Display Panel/Buzzer

Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



Piezoelectric Sounders
PKM/PKLC Series



4 Connectivity

Bluetooth® Modules



Wi-Fi® Modules



Sub-GHz Modules



High Frequency
Coaxial Connectors



Micro DC-DC Converters
LXDC Series



Chip Inductors (Chip Coils)
LQB Series



5 Motor Driver

Thermistors
NCP/NXR/PRF Series



6 Power Supply

Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



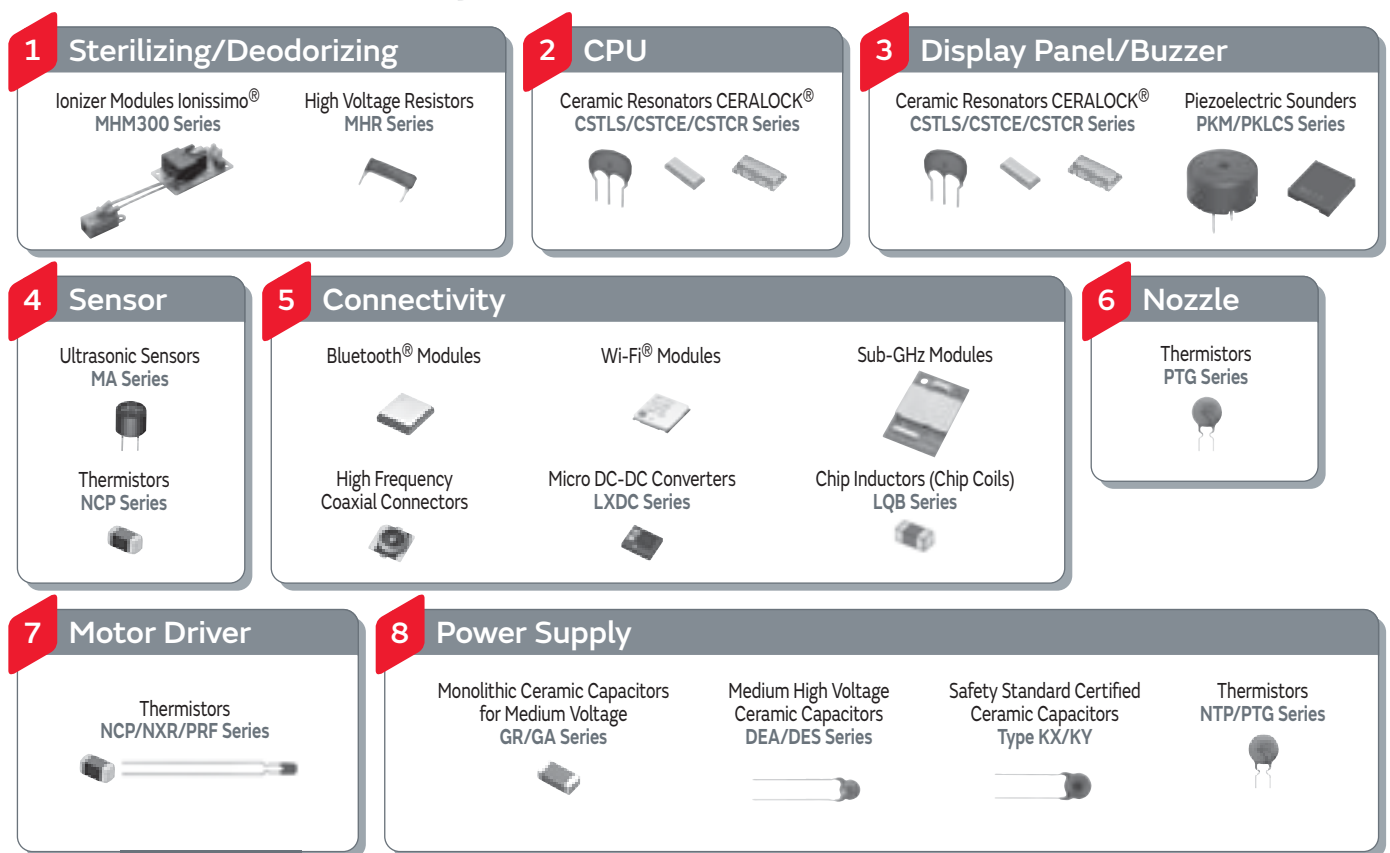
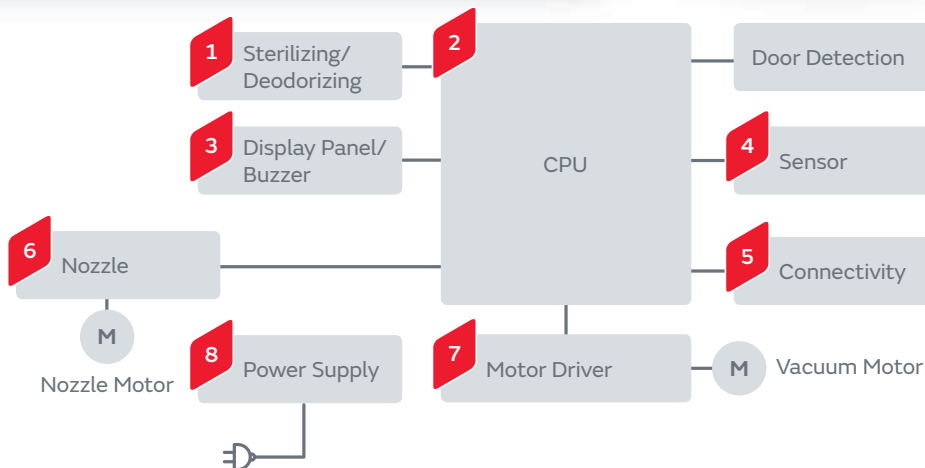
Thermistors
NTP/PTG Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Vacuum Cleaner

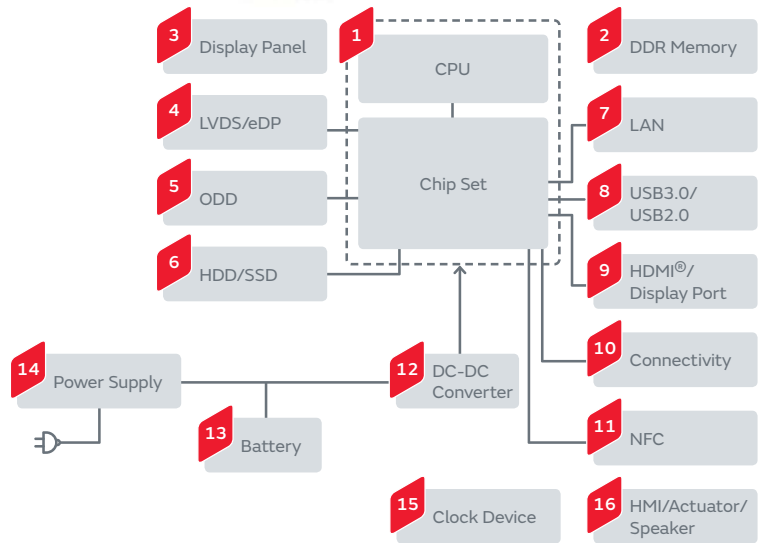
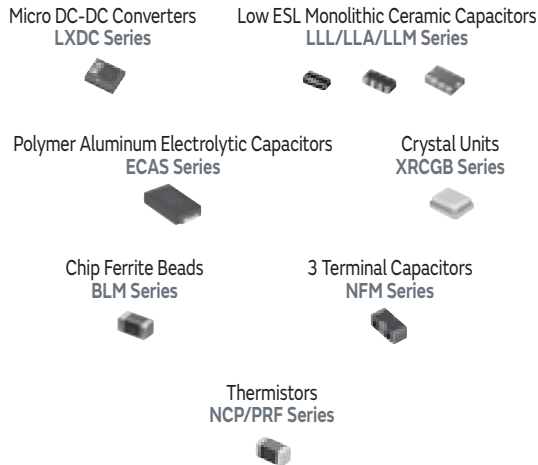


Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
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Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

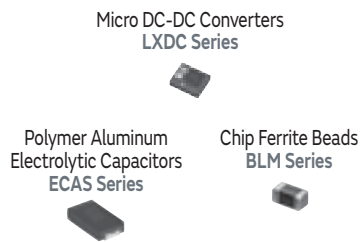
Tablet Terminators



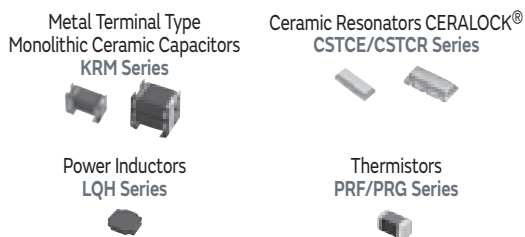
1 CPU/Chip Set



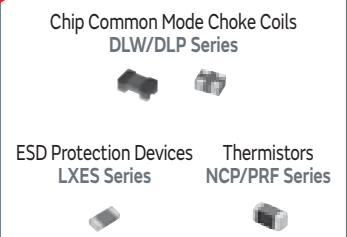
2 DDR Memory



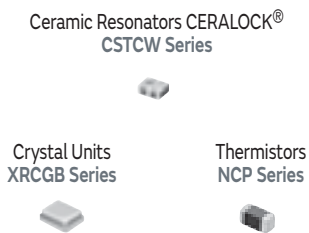
3 Display Panel



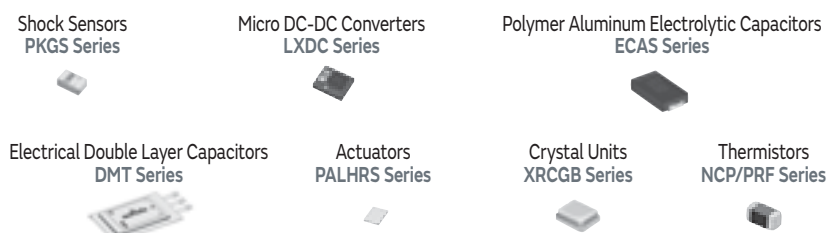
4 LVDS/eDP



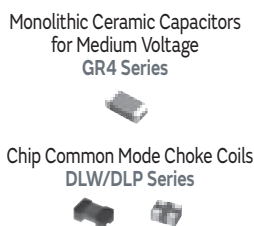
5 ODD



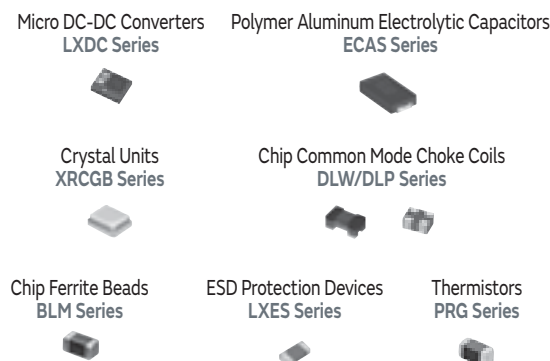
6 HDD/SSD



7 LAN



8 USB3.0/USB2.0



9 HDMI®/DisplayPort



10 Connectivity

Bluetooth® Modules



Wi-Fi® Modules



Bluetooth® - Wi-Fi® Combo Modules



SAW Filters
SAF Series



Chip Multilayer LC Filters



Chip Multilayer Hybrid Baluns
LDB/LDM Series



High Frequency
Coaxial Connectors



High Frequency Coaxial
Connectors with Switch



Micro DC-DC Converters
LXDC Series



ESD Protection Devices
LXES Series



11 NFC

NFC Antennas
FLAN Series



Micro DC-DC Converters
LXDC Series



Crystal Units
XRCGB Series



Chip Ferrite Beads
BLM Series



Chip Inductors (Chip Coils)
LQM/LQH/LQB Series



Trimmer Capacitors
TZY2 Series



Variable Capacitors
LXRW Series



ESD Protection Devices
LXES Series



12 DC-DC Converter

Micro DC-DC Converters
LXDC Series



Thermistors
NCP/PRF Series



Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



13 Battery

Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Thermistors
NXR/PRF/PRG Series



14 Power Supply

Micro DC-DC Converters
LXDC Series



Wireless Power
Transmission Modules



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Chip Common Mode Choke Coils
DLW/DLP Series



Thermistors
NCP/NTP/PRF Series



15 Clock Device

Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



16 HMI/Actuator/Speaker

Pyroelectric Infrared Sensors
IRS Series



Ultrasonic Sensors
MA Series



ESD Protection Devices
LXES Series



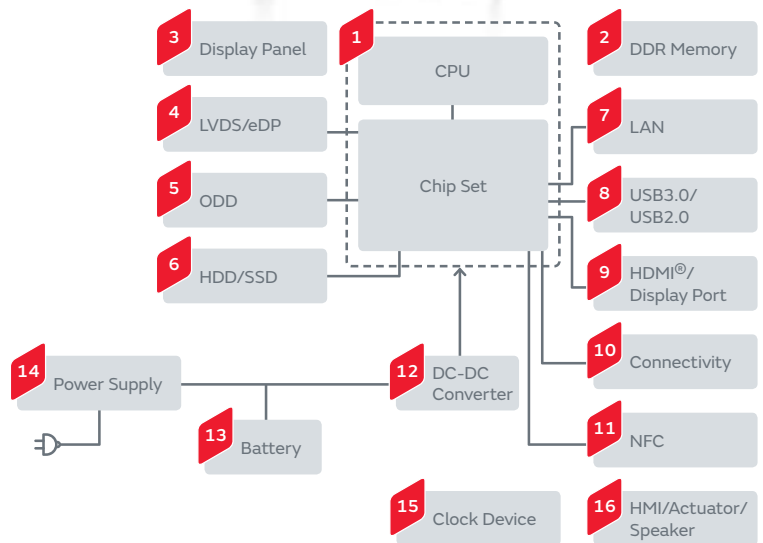
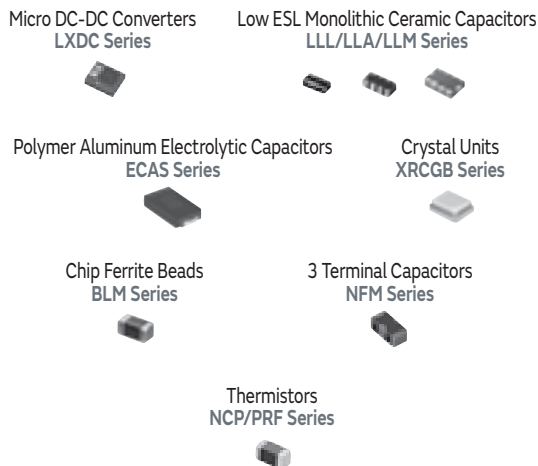
General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

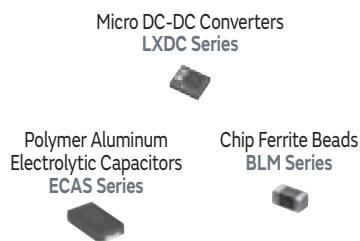
Notebook Computers



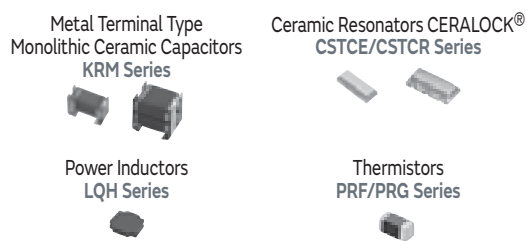
1 CPU/Chip Set



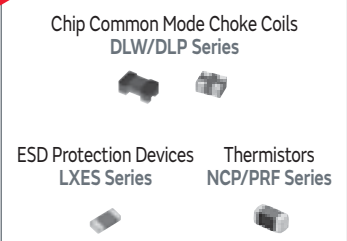
2 DDR Memory



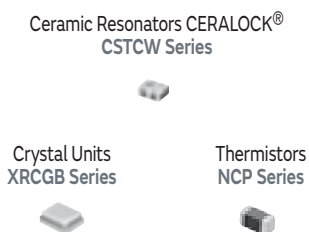
3 Display Panel



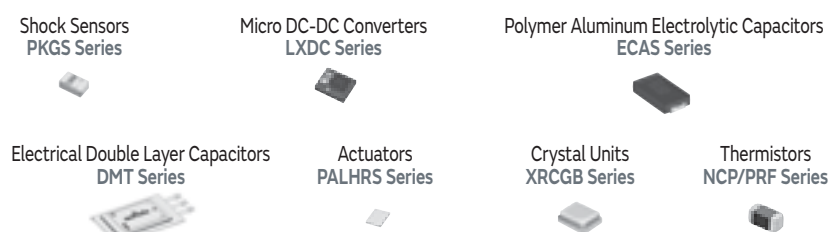
4 LVDS/eDP



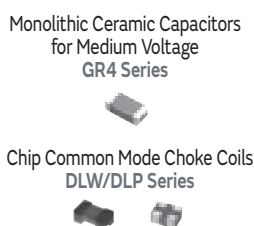
5 ODD



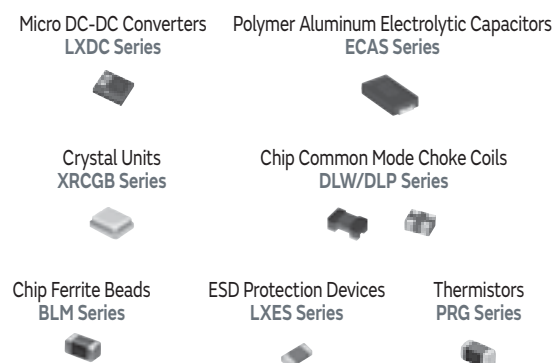
6 HDD/SSD



7 LAN



8 USB3.0/USB2.0



9 HDMI®/DisplayPort



10 Connectivity

Bluetooth® Modules



Wi-Fi® Modules



Bluetooth® - Wi-Fi® Combo Modules



SAW Filters
SAF Series



Chip Multilayer LC Filters



Chip Multilayer Hybrid Baluns
LDB/LDM Series



High Frequency
Coaxial Connectors



High Frequency Coaxial
Connectors with Switch



Micro DC-DC Converters
LXDC Series



ESD Protection Devices
LXES Series



11 NFC

NFC Antennas
FLAN Series



Micro DC-DC Converters
LXDC Series



Crystal Units
XRCGB Series



Chip Ferrite Beads
BLM Series



Chip Inductors (Chip Coils)
LQM/LQH/LQB Series



Trimmer Capacitors
TZY2 Series



Variable Capacitors
LXRW Series



ESD Protection Devices
LXES Series



12 DC-DC Converter

Micro DC-DC Converters
LXDC Series



Thermistors
NCP/PRF Series



Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



13 Battery

Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Thermistors
NXR/PRF/PRG Series



14 Power Supply

Micro DC-DC Converters
LXDC Series



Wireless Power
Transmission Modules



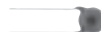
Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Chip Common Mode Choke Coils
DLW/DLP Series



Thermistors
NCP/NTP/PRF Series



15 Clock Device

Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



16 HMI/Actuator/Speaker

Pyroelectric Infrared Sensors
IRS Series



Ultrasonic Sensors
MA Series



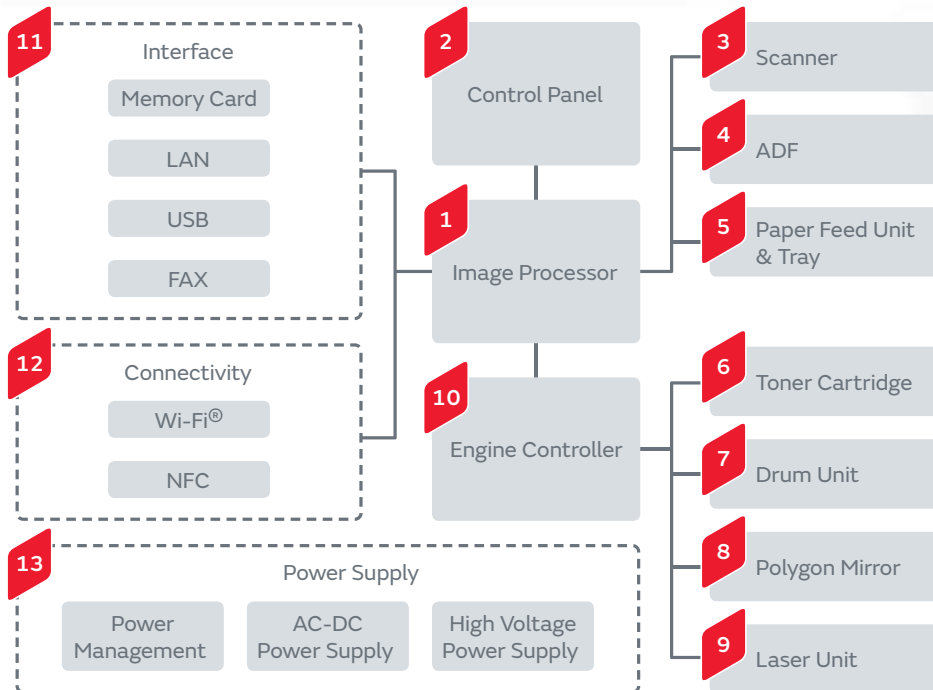
ESD Protection Devices
LXES Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

MFP (Multi Function Printer/Product/Peripheral)

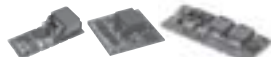


1 Image Processor

Isolated DC-DC Converters
MYB Series



Non-isolated DC-DC Converters
OKL/MPDR/MPDT Series



Micro DC-DC Converters
LXDC Series



Low ESL Monolithic
Ceramic Capacitors
LLL/LLA/LLM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Magnetic Switches (AMR Sensors)
MR Series



Crystal Units
XRCGB Series



Thermistors
NCP/PRF Series



2 Control Panel

Rotary Position Sensors
SV Series



Micro DC-DC Converters
LXDC Series



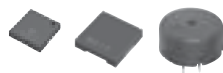
Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Piezoelectric Sounders
PKMCS/PKLCs/PKM Series



Chip Common Mode
Choke Coils
DLW/DLP Series



Thermistors
NCP/PRF Series



3 Scanner

Proximity and Illuminance Sensors
LT Series



Ultrasonic Sensors
MA Series



4 ADF

Ultrasonic Sensors
MA Series



Accelerometers
SCA Series



Rotary Position Sensors
SV Series



Proximity and Illuminance Sensors
LT Series



5 Paper Feed Unit & Tray

Magnetic Switches (AMR Sensors)
MR Series



Rotary Position Sensors
SV Series



Proximity and Illuminance Sensors
LT Series





6 Toner Cartridge

Proximity and Illuminance Sensors
LT Series




7
Drum Unit


Proximity and Illuminance Sensors
LT Series


Thermistors
NCP/PRF Series



8
Polygon Mirror


Accelerometers
SCA Series



9
Laser Unit



Thermistors
NCP/PRF Series



10
Engine Controller


Monolithic Ceramic Capacitors for Medium Voltage
GR/GA Series



Medium High Voltage Ceramic Capacitors
DEA/DES Series


Shock Sensors
PKGS Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series




Crystal Units
XRCGB Series




Large Current Common Mode Choke Coils
PLT10HH Series



Thermistors
PRF/ PTG Series



11
Interface

Polymer Aluminum Electrolytic Capacitors
ECAS Series



Crystal Units
XRCGB Series



Chip Common Mode Choke Coils
DLW/DLP Series




ESD Protection Devices
LXES Series




Thermistors
PRF Series



12
Connectivity


Wi-Fi® Modules



NFC Antennas
FLAN Series


Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series




Crystal Units
XRCGB Series



Chip Inductors (Chip Coils)
LQB Series



ESD Protection Devices
LXES Series




13
Power Supply


















Micro DC-DC Converters
LXDC Series


Monolithic Ceramic Capacitors for Medium Voltage
GR/GA Series


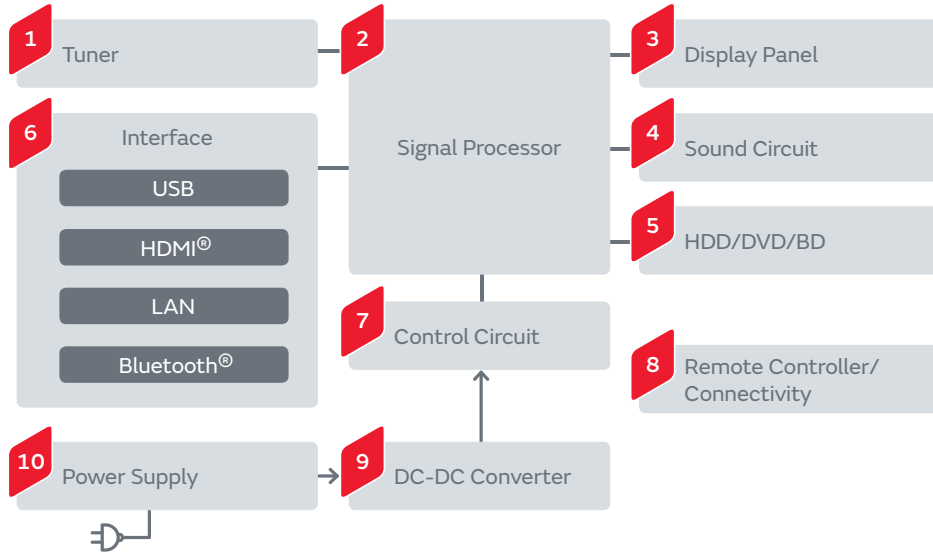
Medium High Voltage Ceramic Capacitors
DEA/DES Series


Safety Standard Certified Ceramic Capacitors
Type KX/KY


AC Line Filters
PLA/PLH/PLY Series



General Purpose	Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
	Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
	Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
	Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
	Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	  
	Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	 
	Chip Ferrite Beads	BLM Series	Noise Suppression	
	3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	 
	Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	 
	Microwave Absorbers	EA Series	Noise Suppression	
	Ferrite Cores	FS Series	Noise Suppression	
	Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Televisions



1 Tuner

Microchip Transformers (Baluns)
DXP18B Series



Chip Inductors (Chip Coils)
LQW Series



Crystal Units
XRCGB Series



ESD Protection Devices
LXES Series



2 Signal Processor

Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



3 Terminal Capacitors
NFM Series



Thermistors
NCP/PRF Series



3 Display Panel

DC-DC Converters
OKL Series



Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Chip Common Mode Choke Coils
DLW/DLP Series



Power Inductors
LQH Series



Rotary Position Sensors
SV Series



Thermistors
NCP/PRF Series



5 HDD/DVD/BD

Shock Sensors
PKGS Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Ceramic Resonators CERALOCK®
CSTCE Series



Crystal Units
XRCGB Series



Thermistors
NCP/PRF Series



4 Sound Circuit

Chip Common Mode Choke Coils
DLW/DLP Series



6 Interface

Bluetooth® Modules



Bluetooth® Smart Modules
LBCA/LBMA Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Chip Common Mode Choke Coils
DLW/DLP Series



ESD Protection Devices
LXES Series



Thermistors
PRG Series



7 Control Circuit

Bluetooth® Modules



Pyroelectric Infrared Sensors
IRS Series



Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



8 Remote Controller/Connectivity

Bluetooth® Modules



Wi-Fi® Modules



Bluetooth® Smart Modules



Shock Sensors
PKGS Series



Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Piezoelectric Sounders
PKMCS/PKLCs/PKM Series



Chip Inductors (Chip Coils)
LQB Series



ESD Protection Devices
LXES Series



9 DC-DC Converter

Micro DC-DC Converters
LXDC Series



Metal Terminal Type Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Power Inductors
LQH Series



Thermistors
NCP/PRF Series



10 Power Supply

Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



AC Line Filters
PLA/PLY Series



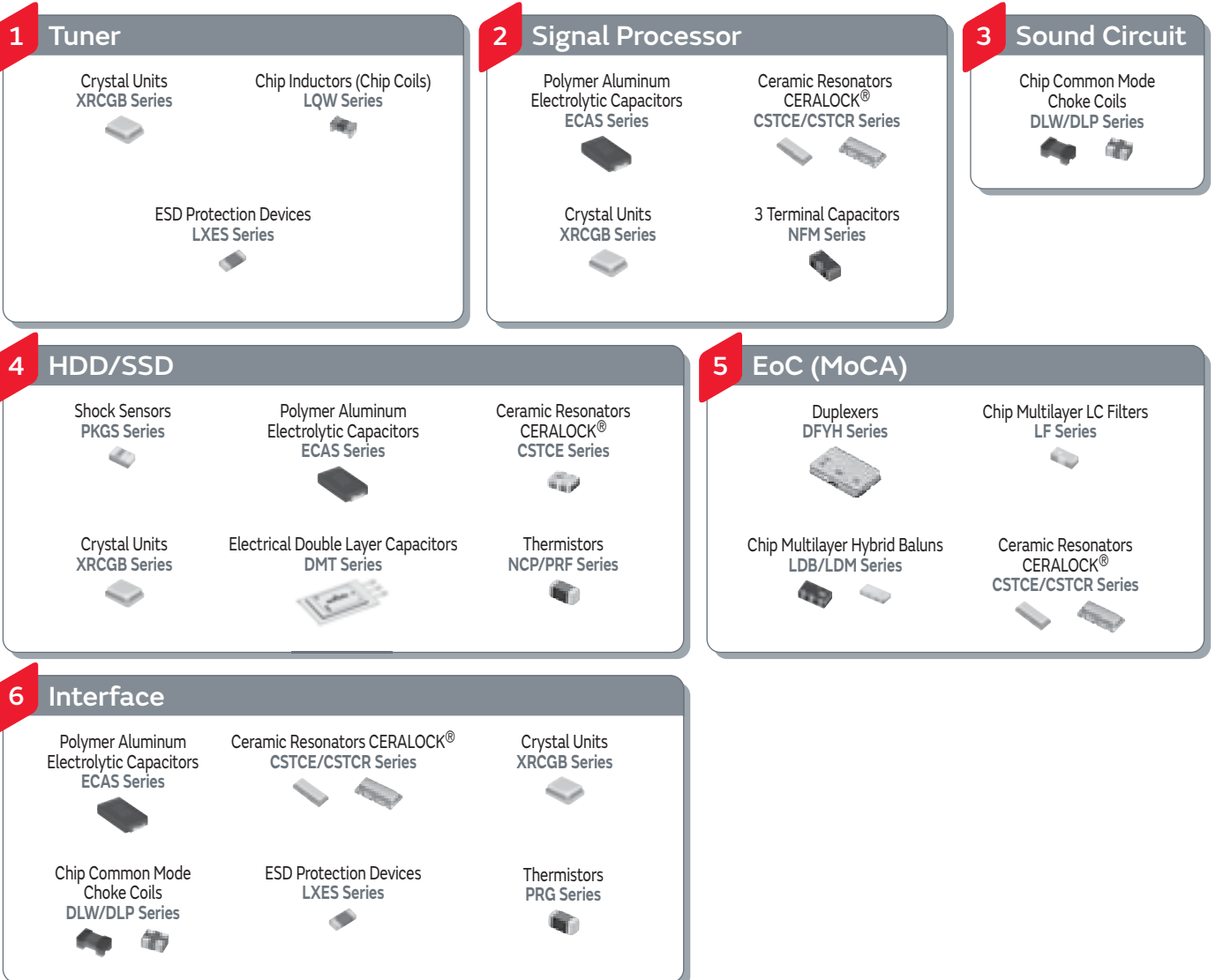
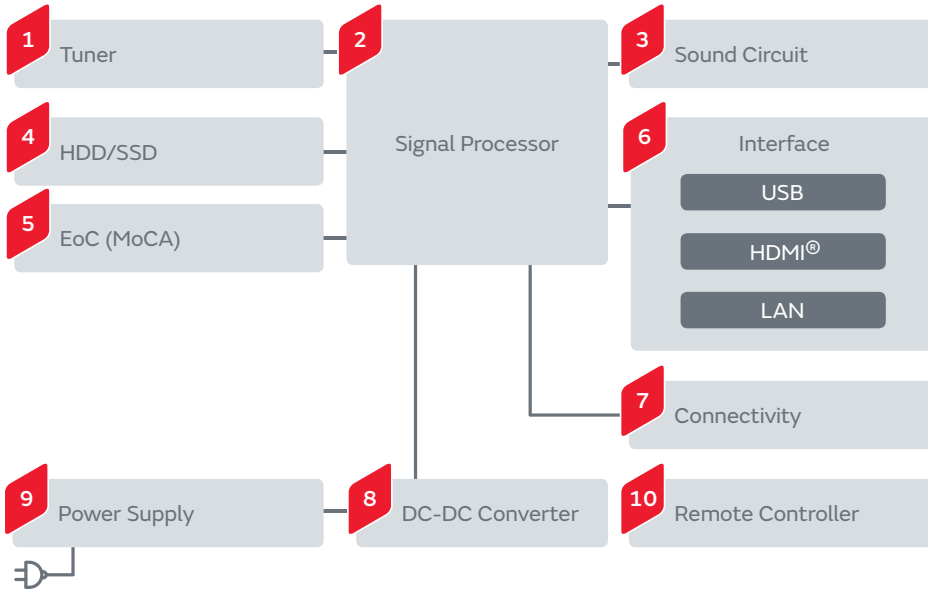
Thermistors
NCP/NTP/PRF/PTG Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
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Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Set-top Box



7 Connectivity

Wi-Fi® Modules



High Frequency Coaxial Connectors



High Frequency Coaxial Connectors with Switch



Micro DC-DC Converters LXDC Series



Ceramic Resonators CERALOCK® CSTCE/CSTCR Series



Chip Inductors (Chip Coils) LQB Series



ESD Protection Devices LXES Series



8 DC-DC Converter

DC-DC Converters OKL Series



Micro DC-DC Converters LXDC Series



Metal Terminal Type Monolithic Ceramic Capacitors KRM Series



Polymer Aluminum Electrolytic Capacitors ECAS Series



Power Inductors LQH Series



Thermistors NCP/PRF Series



9 Power Supply

Monolithic Ceramic Capacitors for Medium Voltage GR/GA Series



Medium High Voltage Ceramic Capacitors DEA/DES Series



Safety Standard Certified Ceramic Capacitors Type KX/KY



AC Line Filters PLA/PLY Series



Thermistors NCP/NTP/PRF/PTG Series



10 Remote Controller

Micro DC-DC Converters LXDC Series



Ceramic Resonators CERALOCK® CSTCE/CSTCR Series



Piezoelectric Sounders PKMCS/PKLCS/PKM Series

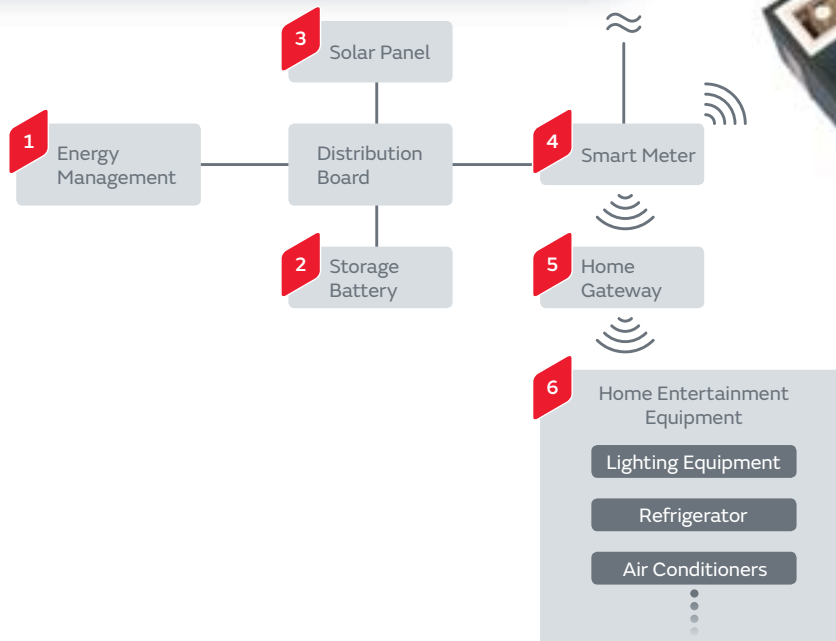


Trimmer Capacitors TZY2 Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	



1 Energy Management

Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Topics



Introduction of Examples as Energy System

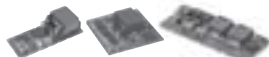
<http://www.murata.com/about/newsroom/news/product/power/2013/0426>

2 Storage Battery

Isolated DC-DC Converters
MYB Series



Non-isolated DC-DC Converters
OKL/MPDR/MPDT Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



Thermistors
NCP/NTP/PRF/PRG/PTG Series



Micro DC-DC Converters
LXDC Series



3 Solar Panel

Isolated DC-DC Converters
MYB Series



Non-isolated DC-DC Converters
OKL/MPD Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Micro DC-DC Converters
LXDC Series



Electrical Double Layer Capacitors
DMF/DMT Series



4 Smart Meter

Chip Multilayer LC Filters
LF Series



Chip Multilayer Hybrid Baluns
LDB/LDM Series



Wi-Fi® Modules



Sub-GHz Modules



Isolated DC-DC Converters
MYB Series



Non-isolated DC-DC Converters
OKL/MPD Series



Electrical Double
Layer Capacitors
DMF Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR4 Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



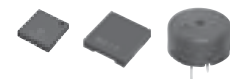
Safety Standard Certified
Ceramic Capacitors
Type KX/KY



Crystal Units
XRCGB Series



Piezoelectric Sounders
PKMCS/PKLCS/PKM Series



5 Home Gateway

Wi-Fi® Modules



Bluetooth® Modules



Sub-GHz Modules



6 Home Entertainment Equipment

Bluetooth® Modules



Wi-Fi® Modules



Sub-GHz Modules



Ultrasonic Sensors
MA Series



Shock Sensors
PKGS Series



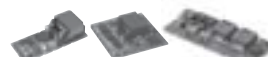
Magnetic Switches (AMR Sensors)
MR Series



Isolated DC-DC Converters
MYB Series



Non-isolated DC-DC Converters
OKL/MPDR/MPDT Series



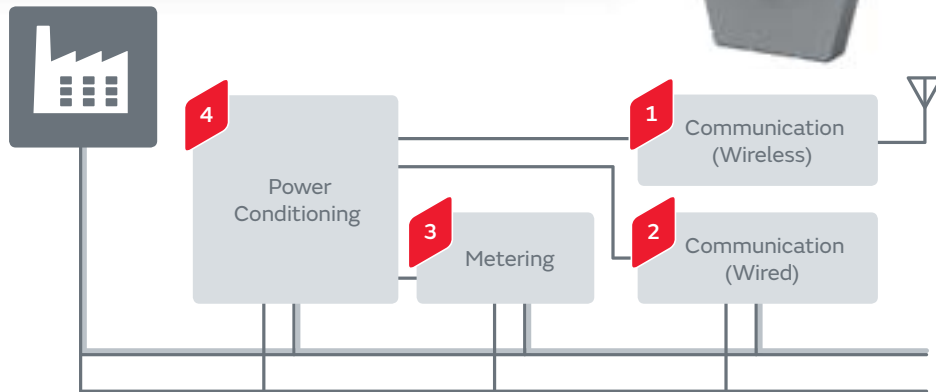
Crystal Units
XRCGB Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Smartmeter



1 Communication (Wireless)

Wi-Fi® Modules



Sub-GHz Modules


Chip Multilayer LC Filters
LF Series

Chip Multilayer Hybrid Baluns
LDB/LDM Series

High Frequency
Coaxial Connectors

High Frequency Coaxial
Connectors with Switch

RFID Modules with I²C
Interface MAGICSTRAP®
LXMS Series

ESD Protection Devices
LXES Series

Thermistors
NCP/PRF/PRG Series


3 Metering

Chip Common Mode
Choke Coils
DLW/DLP Series

Thermistors
NCP/PRF/PRG Series

Ceramic Resonators
CERALOCK®
CSTCE/CSTCR Series

Crystal Units
XRCGB Series


2 Communication (Wired)

Chip Inductors (Chip Coils)
LQW/LQP/LQG Series

Monolithic Ceramic Capacitors
for Medium Voltage
GR3/GR4 Series

Medium High Voltage
Ceramic Capacitors
DEA/DES Series

Safety Standard Certified
Ceramic Capacitors
Type KX/KY

Radial Lead Type
Monolithic Ceramic Capacitors
RDE Series

Thermistors
NCP/PRF/PRG Series

Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series

Crystal Units
XRCGB Series

ESD Protection Devices
LXES Series


4 Power Conditioning

Non-isolated
DC-DC Converters
OKL/MPD Series

Monolithic Ceramic Capacitors
for Medium Voltage
GR3/GR4 Series

Medium High Voltage
Ceramic Capacitors
DEA/DES Series

Safety Standard Certified
Ceramic Capacitors
Type KX/KY

Radial Lead Type
Monolithic Ceramic Capacitors
RDE Series

Chip Inductors (Chip Coils)
LQH Series


















AC Line Filters
PLA Series

Thermistors
NCP/PRF/PRG Series

Polymer Aluminum
Electrolytic Capacitors
ECAS Series

Electrical Double Layer
Capacitors
DMF Series

Micro DC-DC Converters
LXDC Series


Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	  
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	 
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	 
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	 
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Thermostat



1 CPU

Low ESL Monolithic Ceramic Capacitors
LLL/LLA/LLM Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Thermistors
NCP/PRF Series



2 Display Panel

Metal Terminal Type Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Thermistors
NCP/PRF Series



4 Temperature Sensor

Thermistors
NCP/NTP/PRF/PRG/PTG Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Chip Inductors (Chip Coils)
LQM/LQH/LQB Series



5 Humidity Sensor

Thermistors
NCP/NTP/PRF/PRG/PTG Series



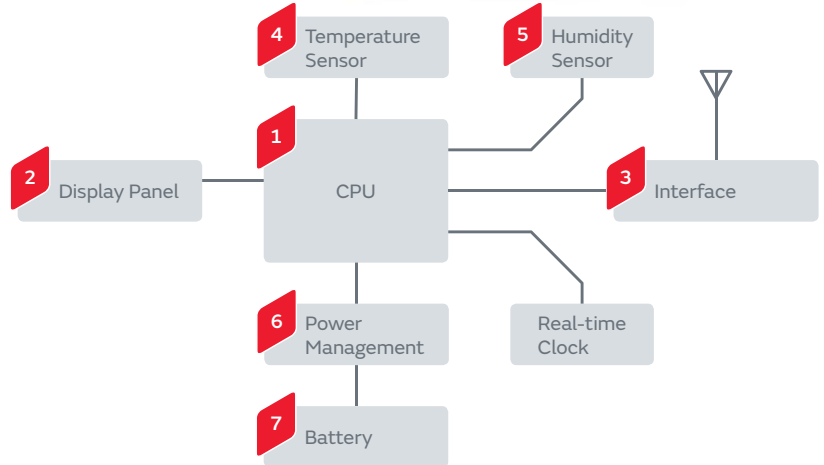
Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Chip Inductors (Chip Coils)
LQM/LQH/LQB Series



3 Interface

Wi-Fi® Modules



Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Chip Inductors (Chip Coils)
LQM/LQH/LQB Series



ESD Protection Devices
LXES Series



6 Power Management

Micro DC-DC Converters
LXDC Series



Monolithic Ceramic Capacitors for Medium Voltage
GR/GA Series



Medium High Voltage Ceramic Capacitors
DEA/DES Series



Safety Standard Certified Ceramic Capacitors
Type KX/KY



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Piezoelectric Sounders
PKMCS/PKLCS/PKM Series



Thermistors
NCP/NTP/PRF Series



7 Battery

Thermistors
NCP/PRF/PRG Series



Micro DC-DC Converters
LXDC Series



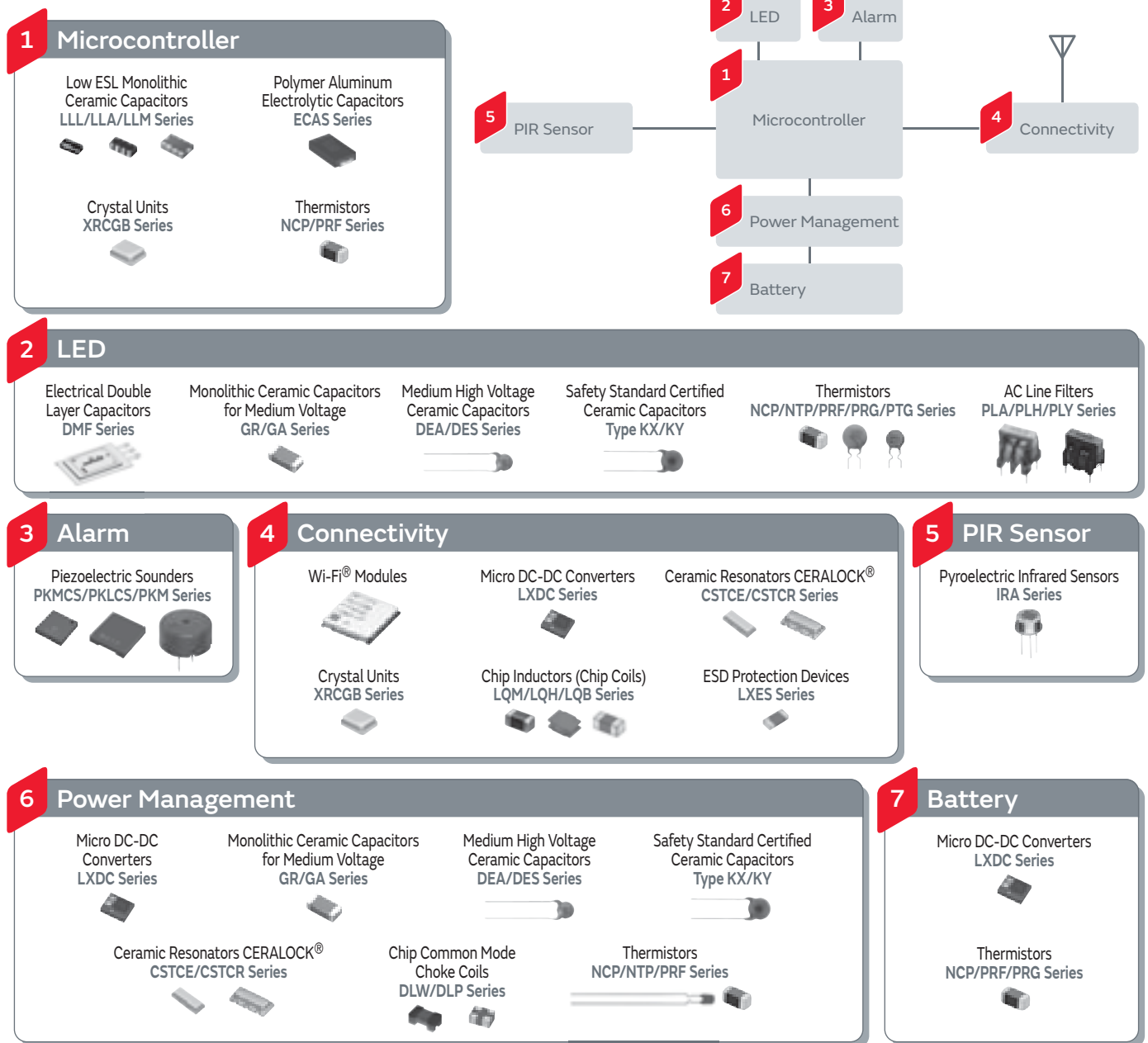
Electrical Double Layer Capacitors
DMF Series



General Purpose

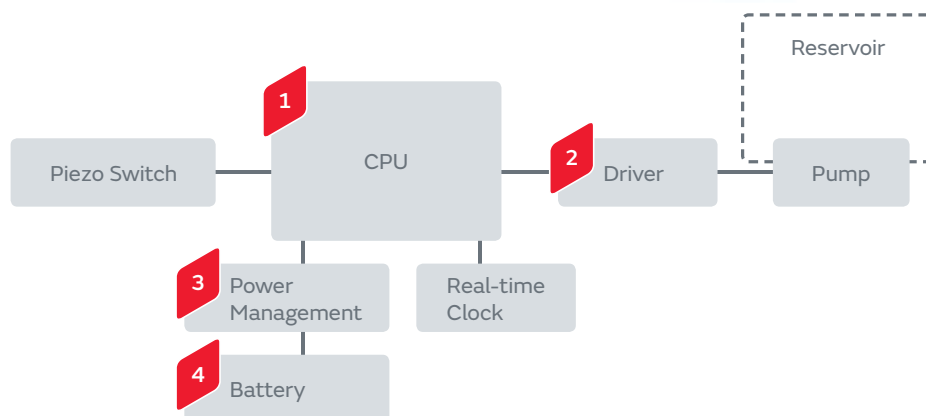
Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQM/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Human Detection



Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Air Dispenser



1 CPU

Low ESL Monolithic
Ceramic Capacitors
LLL/LLA/LLM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Thermistors
NCP/PRF Series



2 Driver

Thermistors
NCP/NXRT/PRF Series



3 Power Management

Micro
DC-DC Converters
LXDC Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



Ceramic Resonators
CERALOCK®
CSTCE/CSTCR Series



Thermistors
NCP/NTP/PRF Series



4 Battery

Electrical Double Layer Capacitors
DMF Series



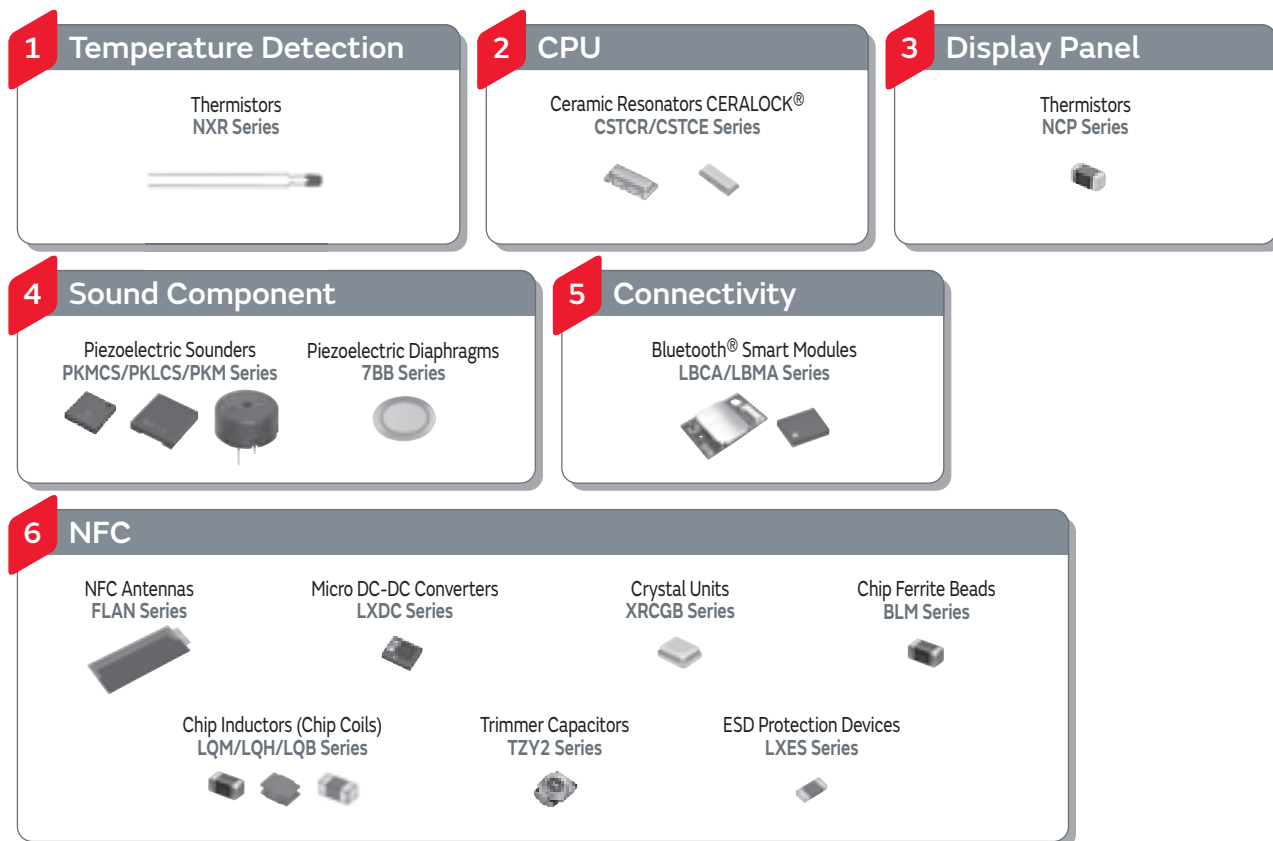
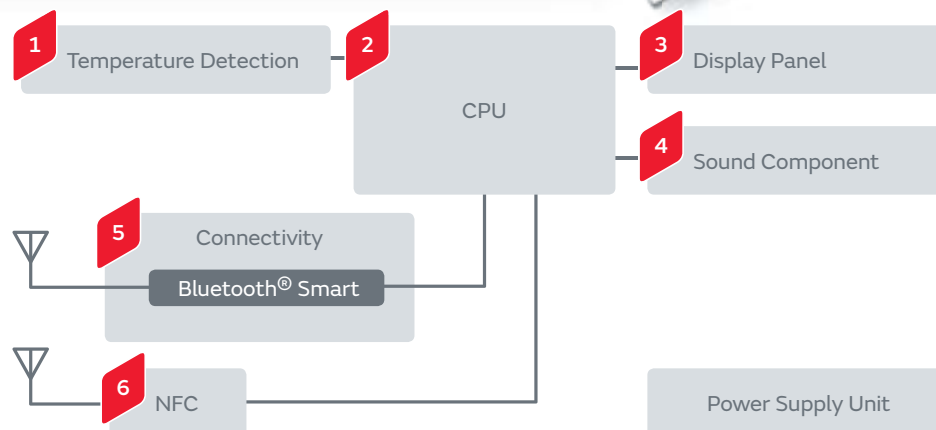
Thermistors
NXR/PRF/PRG Series



General Purpose

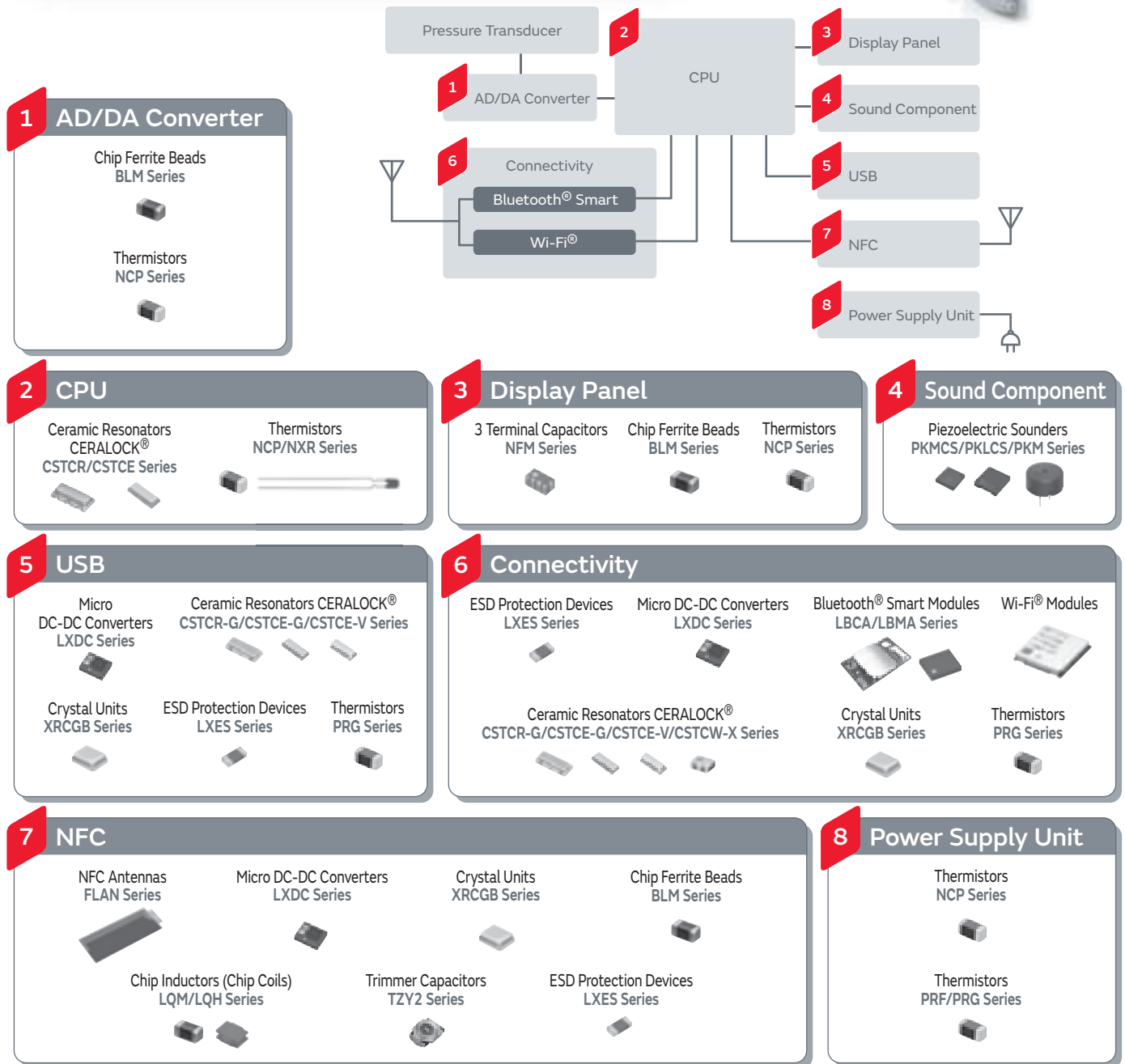
Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Thermometer



Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

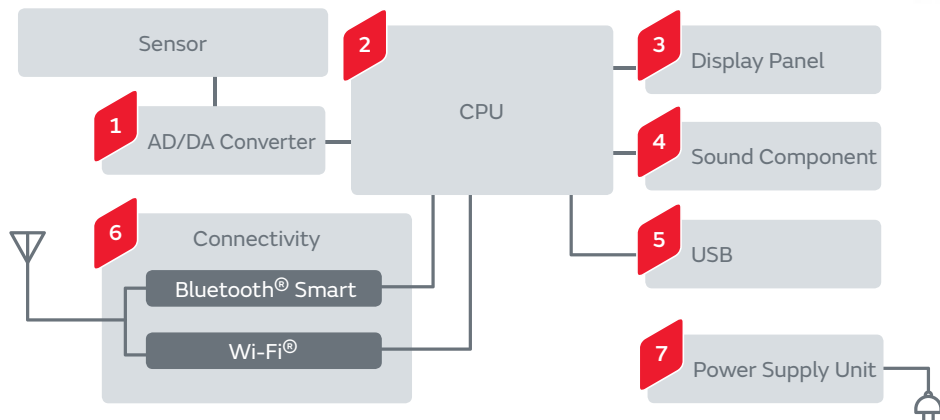
Blood Pressure Monitor



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Blood Glucose Meter



1 AD/DA Converter

Chip Ferrite Beads
BLM Series



Thermistors
NCP Series



2 CPU

Ceramic Resonators
CERALOCK®
CSTCR/CSTCE Series



Thermistors
NCP/NXR Series



3 Display Panel

3 Terminal Capacitors
NFM Series



Chip Ferrite Beads
BLM Series

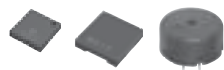


Thermistors
NCP Series



4 Sound Component

Piezoelectric Sounders
PKMCS/PKLCs/PKM Series



Piezoelectric Diaphragms
7BB Series



5 USB

Ceramic Resonators CERALOCK®
CSTCR-G/CSTCE-G/
CSTCE-V Series



Crystal Units
XRCGB Series

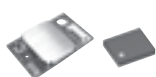


Thermistors
PRG Series



6 Connectivity

Bluetooth® Smart Modules
LBCA/LBMA Series



Wi-Fi® Modules



Crystal Units
XRCGB Series



Ceramic Resonators CERALOCK®
CSTCR-G/CSTCE-G/CSTCE-V/CSTCW-X Series



Thermistors
PRG Series



7 Power Supply Unit

Thermistors
NCP Series



Thermistors
PRF/PRG Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Diagnostic Imaging Apparatus



1 Light Source

High Voltage Ceramic Capacitors
DHS/DHK Series

2 Photo Detector

Thermistors
NCP/PRF Series

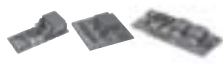
3 DSP

Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR SeriesCrystal Units
XRCGB Series

4 Memory

Isolated DC-DC Converters
MYB SeriesNon-isolated DC-DC Converters
OKL/MPDR/MPDT/MYS SeriesMicro DC-DC Converters
LXDC SeriesElectrical Double
Layer Capacitors
DMF Series

5 Control Circuit

Isolated DC-DC Converters
MYB SeriesNon-isolated DC-DC Converters
OKL/MPDR/MPDT SeriesMicro DC-DC Converters
LXDC SeriesCeramic Resonators
CERALOCK®
CSTCE/CSTCR Series

1 Light Source

2 Photo Detector

AFE

3 DSP

5 Control Circuit

6 Display Panel

4 Memory

8 DC-DC Converter

9 Power Supply

6 Display Panel

Metal Terminal Type
Monolithic Ceramic Capacitors
KRM SeriesCeramic Resonators
CERALOCK®
CSTCE/CSTCR SeriesThermistors
PRF/PRG Series

8 DC-DC Converter

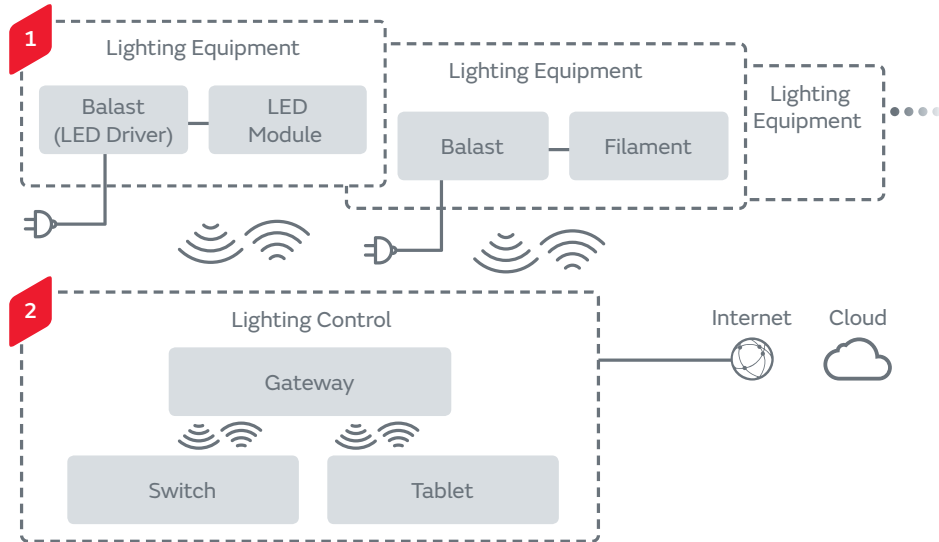
Micro DC-DC Converters
LXDC SeriesMetal Terminal Type
Monolithic Ceramic Capacitors
KRM SeriesPolymer Aluminum
Electrolytic Capacitors
ECAS SeriesThermistors
NCP/PRF Series

9 Power Supply

Medical Standards-Compliant
AC-DC Converters
MVAD/MVAB SeriesMicro DC-DC Converters
LXDC SeriesElectrical Double Layer Capacitors
DMF SeriesMonolithic
Ceramic Capacitors
for Medium Voltage
GR/GA SeriesMedium High Voltage
Ceramic Capacitors
DEA/DES SeriesSafety Standard Certified
Ceramic Capacitors
Type KX/KYCeramic Resonators CERALOCK®
CSTCE/CSTCR SeriesThermistors
NCP/NTP/PRF Series

General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	



1 Lighting Equipment

Ballast for LED Lighting



Monolithic Ceramic Capacitors for Medium Voltage GR/GA Series



Medium High Voltage Ceramic Capacitors DEA/DES Series



Safety Standard Certified Ceramic Capacitors Type KX/KY



Wi-Fi® Modules



Sub-GHz Modules



Thermistors NCP/NTP/PRF/PRG/PTG Series



AC Line Filters PLA/PLH/PLY Series



2 Lighting Control

Wi-Fi® Modules



Sub-GHz Modules

RFID Modules with I²C Interface MAGICSTRAP® LXMS Series

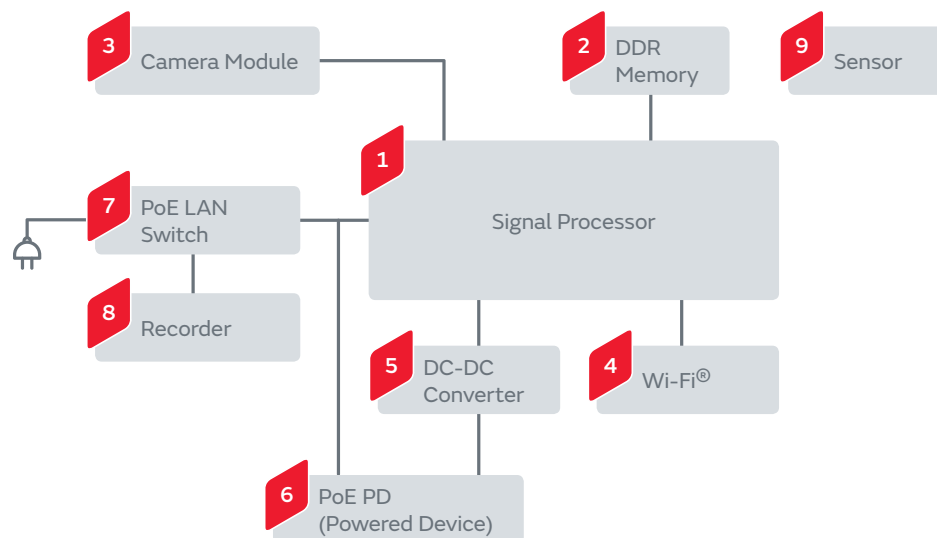
Pyroelectric Infrared Sensors IRA Series



Ceramic Resonators CERALOCK® CSTLS/CSTCE/CSTCR Series



Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	



1 Signal Processor



2 DDR Memory



3 Camera Module



4 Wi-Fi®

5 DC-DC Converter



6 PoE PD (Powered Device)



Ther

7 PoE LAN Switch

Micro DC-DC Converters
LXDC Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Thermistors
NCP/NXRT/NTP/PRF Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Crystal Units
XRCGB Series



8 Recorder

Shock Sensors
PKGS Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Ceramic Resonators CERALOCK®
CSTCE Series



Crystal Units
XRCGB Series



Thermistors
NCP/PRF Series



9 Sensor

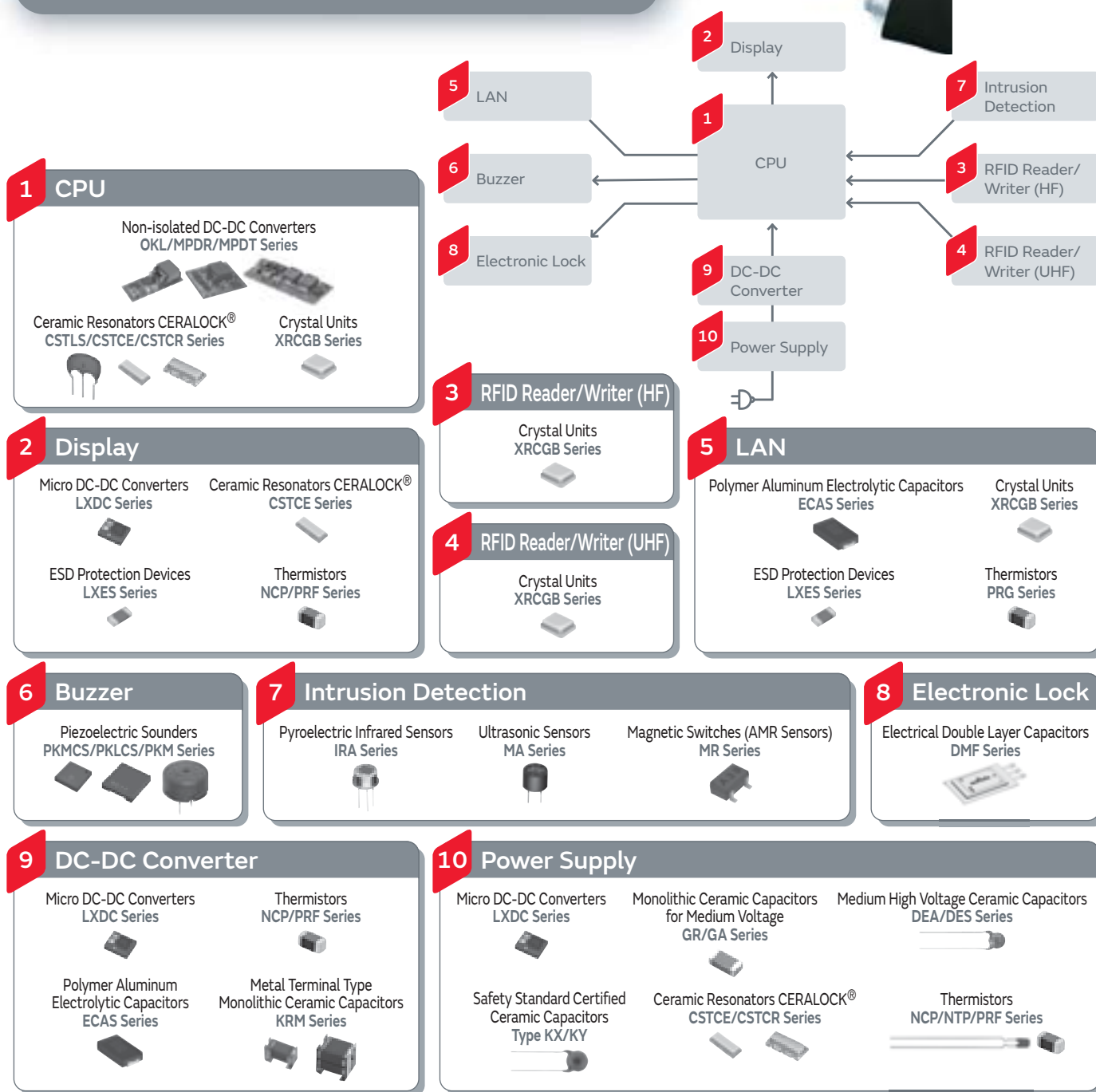
Pyroelectric Infrared Sensors
IRA Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Entrance and Exit Management System



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Electronic POS



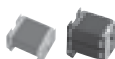
1 CPU

Electrical Double Layer Capacitors DMF/DMT Series
ESD Protection Devices LXES Series
Micro DC-DC Converters LXDC Series



2 Digital Panel/Buzzer

Metal Terminal Type Monolithic Ceramic Capacitors KCM Series
Ceramic Resonators CERALOCK® CSTCE/CSTCR Series



Power Inductors LQH Series



Thermistors PRF/PRG Series



Piezoelectric Sounders PKMCS/PKLCS/PKM Series



Piezoelectric Buzzers PKB Series



3 Interface

Polymer Aluminum Electrolytic Capacitors ECAS Series
Crystal Units XRCGB Series
Chip Common Mode Choke Coils DLW/DLP Series



ESD Protection Devices LXES Series



Thermistors PRG Series



6 Battery

Thermistors NCP/PRF/PRG Series



7 Power Supply

Monolithic Ceramic Capacitors for Medium Voltage GR/GA Series



Medium High Voltage Ceramic Capacitors DEA/DES Series



Safety Standard Certified Ceramic Capacitors Type KX/KY



AC Line Filters PLA/PLY Series



Thermistors NCP/NTP/PRF/PTG Series



2 Digital Panel/Buzzer

Digital Panel/Buzzer

3 Interface

LAN
USB
RS485/232

1 CPU

CPU

4 Connectivity

Wi-Fi®
Bluetooth®
NFC

5 DC-DC Converter

DC-DC Converter

6 Battery

Battery

7 Power Supply

Power Supply

4 Connectivity

Bluetooth® Modules



Bluetooth® - Wi-Fi® Combo Modules



Wi-Fi® Modules



NFC Antennas FLAN Series



Bluetooth® Smart Modules LBCA/LBMA Series



5 DC-DC Converter

Micro DC-DC Converters LXDC Series



Metal Terminal Type Monolithic Ceramic Capacitors KRM Series



Polymer Aluminum Electrolytic Capacitors ECAS Series



Power Inductors LQH Series



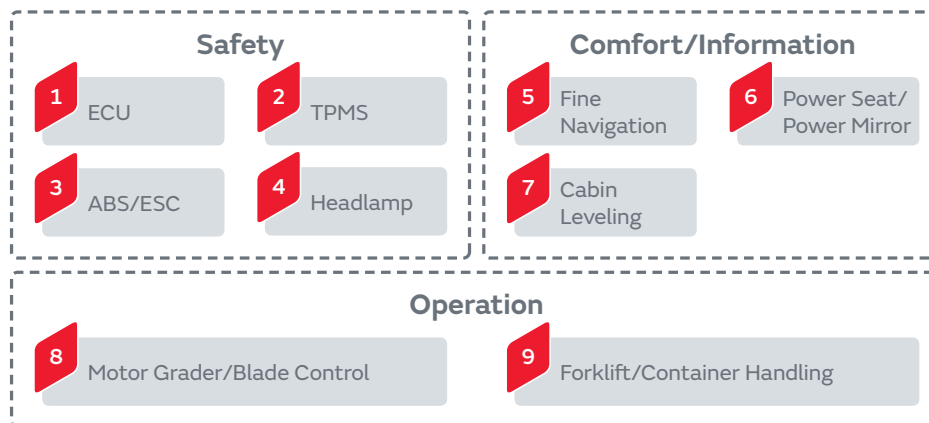
Thermistors NCP/PRF Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Heavy Duty Vehicles



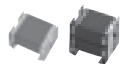
Safety

1 ECU

Low Temperature Co-fired Ceramics (LTCC) Ceramic Multilayer Substrates LFC®



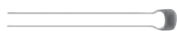
Metal Terminal Type Monolithic Ceramic Capacitors KCM Series



Monolithic Ceramic Capacitors for Conductive Glue Mounting GCG Series



Radial Lead Type Monolithic Ceramic Capacitors RH Series



Radial Lead Type Monolithic Ceramic Capacitors RCE Series



Ceramic Resonators CERALOCK® CSTCE/CSTCR Series



Accelerometers SCA Series



Gyro Sensors SCC Series



Thermistors PRF/PTG Series



2 TPMS

Shock Sensors PKGS Series



Ceramic Filters CERAFIL® SFECE Series



Ceramic Discriminators CDSCB Series



Ceramic Resonators CERALOCK® CSTCE/CSTCR Series



Crystal Units XRCHA-F-A Series



Pressure Sensor Elements ZPA Series



Thermistors PRF Series



4 Headlamp

Monolithic Ceramic Capacitors GCM/GCJ Series



Monolithic Ceramic Capacitors for Conductive Glue Mounting GCG Series



Ceramic Resonators CERALOCK® CSTCE/CSTCR Series



Crystal Units XRCHA-F-A Series



Thermistors for Conductive Glue Mounting NCG18 Series

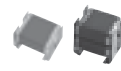


3 ABS/ESC

Low Temperature Co-fired Ceramics (LTCC) Ceramic Multilayer Substrates LFC®



Metal Terminal Type Monolithic Ceramic Capacitors KCM Series



Monolithic Ceramic Capacitors GCM/GCJ Series



Monolithic Ceramic Capacitors for Conductive Glue Mounting GCG Series



Ceramic Resonators CERALOCK® CSTCE/CSTCR Series



Crystal Units XRCHA-F-A Series



Accelerometers SCA Series



Gyro Sensors SCC Series



Thermistors for Conductive Glue Mounting NCG18 Series



Comfort/Information

5 Fine Navigation

Accelerometers
SCA Series



Gyro Sensors
SCC Series



MEMS Gyro Sensors
SCR Series



6 Power Seat/Power Mirror

Piezoelectric Sounders
PKLCS Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCHA-F-A Series



Thermistors
PRF/PTG Series



7 Cabin Leveling

Accelerometers
SCA Series



Gyro Sensors
SCC Series



Operation

8 Motor Grader/Blade Control

Accelerometers
SCA Series



Gyro Sensors
SCC Series



MEMS Gyro Sensors
SCR Series



9 Forklift/Container Handling

Accelerometers
SCA Series



General Purpose

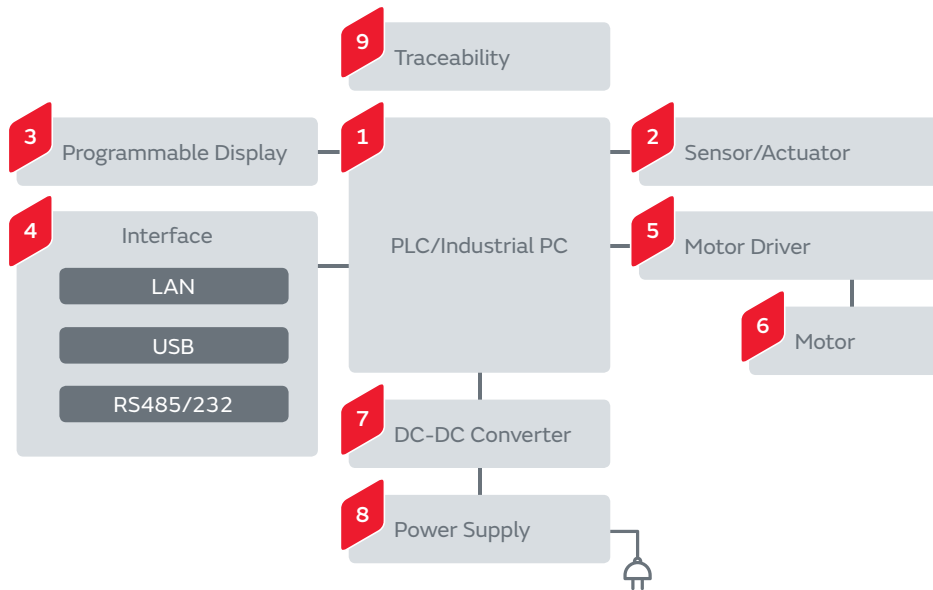
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling	
Monolithic Ceramic Capacitors for Medium Voltage	GRM Series	For Snubber	
Radial Lead Type Monolithic Ceramic Capacitors	RCE Series	Noise Suppression/Decoupling	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
EMI Suppression Filters EMIFIL®	NFM/NFA/NFL/NFE/NFW/NFR Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW Series	Common Mode Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	

General Purpose (High Reliability)

Monolithic Ceramic Capacitors	GCM Series	Coupling/Decoupling		150°C
Radial Lead Type Monolithic Ceramic Capacitors	RCE Series	Noise Suppression/Decoupling		125°C
Radial Lead Type Monolithic Ceramic Capacitors	RH Series	Noise Suppression/Decoupling		150°C
Chip Inductors (Chip Coils)	LQH32CH Series	Voltage Conversion		105°C
Chip Inductors (Chip Coils)	LQG15HH Series	Impedance Matching/Choke		125°C
Chip Ferrite Beads	BLM_SH Series	Noise Suppression		125°C
3 Terminal Capacitors	NFM_H/NFE_H Series	Noise Suppression		125°C
Chip Common Mode Choke Coils	DLW31SH/DLW43SH Series	Common Mode Noise Suppression		125°C

105°C 105°C max. 125°C 125°C max. 150°C 150°C max.

Industrial Automation



1 PLC/Industrial PC

Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Crystal Units
XRCGB Series



Chip Ferrite Beads
BLM Series



3 Terminal Capacitors
NFM Series



Electrical Double Layer Capacitors
DMT Series



Thermistors
NCP/PRF Series



2 Sensor/Actuator

Pyroelectric Infrared Sensors
IRA Series



Magnetic Switches (AMR Sensors)
MR Series



3 Programmable Display

Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Power Inductors
LQH Series



Electrical Double Layer Capacitors
DMT Series



Chip Common Mode Choke Coils
DLW/DLP Series



5 Motor Driver

Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Large Current
Common Mode Choke Coils
PLT10HH Series



Thermistors
PRF/PTG Series



4 Interface

Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Crystal Units
XRCGB Series



Chip Common Mode Choke Coils
DLW/DLP Series



ESD Protection Devices
LXES Series



Thermistors
PRG Series



6 Motor

Crystal Units
XRCGB Series



Rotary Sensors



7 DC-DC Converter

Isolated DC-DC Converters
MYB Series



Non-isolated DC-DC Converters
OKL/MPD/MYS Series



Micro DC-DC Converters
LXDC Series



Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Power Inductors
LQH Series



Thermistors
NCP/PRF Series



8 Power Supply

Micro DC-DC Converters
LXDC Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



Ceramic Resonators
CERALOCK®
CSTCE/CSTCR Series



Thermistors
NCP/NTP/PRF Series



9 Traceability

RFID Devices MAGICSTRAP®
LXMS Series



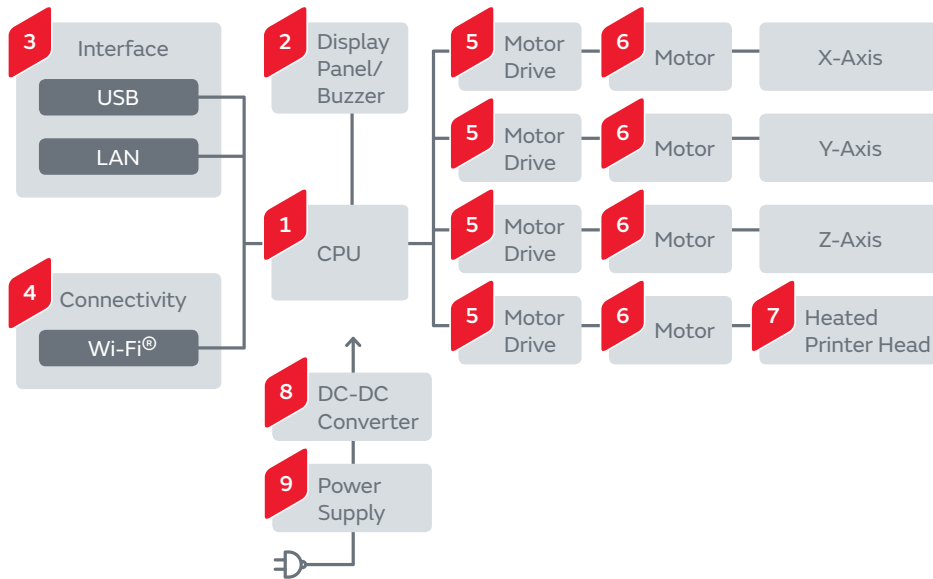
Electrical Double Layer
Capacitors
DMT Series



General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

3D Printer



1 CPU

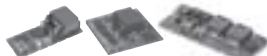
Isolated DC-DC Converters
MYB Series



Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Non-isolated DC-DC Converters
OKL/MPDR/MPDT Series



Crystal Units
XRCGB Series



Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



Thermistors
NCP/PRF Series

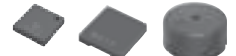


2 Display Panel/Buzzer

Ceramic Resonators CERALOCK®
CSTLS/CSTCE/CSTCR Series



Piezoelectric Sounders
PKMCS/PKLCS/PKM Series



3 Interface

Polymer Aluminum
Electrolytic Capacitors
ECAS Series



Crystal Units
XRCGB Series



Chip Common Mode Choke Coils
DLW/DLP Series



ESD Protection Devices
LXES Series



Thermistors
PRG Series



4 Connectivity

Wi-Fi® Modules



Micro DC-DC Converters
LXDC Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Chip Inductors (Chip Coils)
LQB Series



ESD Protection Devices
LXES Series



5 Motor Drive

Isolated DC-DC Converters
MYB Series



Non-isolated DC-DC Converters
OKL/MPDR/MPDT Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Ceramic Resonators CERALOCK®
CSTCE/CSTCR Series



Crystal Units
XRCGB Series



Large Current
Common Mode Choke Coils
PLT10HH Series



Thermistors
PRF/PTG Series



6 Motor

Crystal Units
XRCGB Series



7 Heated Printer Head

Thermistors
NCP/PRF Series



8 DC-DC Converter

Micro DC-DC Converters
LXDC Series



Metal Terminal Type
Monolithic Ceramic Capacitors
KRM Series



Polymer Aluminum Electrolytic Capacitors
ECAS Series



Thermistors
NCP/PRF Series



9 Power Supply

Micro DC-DC Converters
LXDC Series



Monolithic Ceramic Capacitors
for Medium Voltage
GR/GA Series



Medium High Voltage
Ceramic Capacitors
DEA/DES Series



Safety Standard Certified
Ceramic Capacitors
Type KX/KY



Thermistors
NCP/NTP/PRF Series



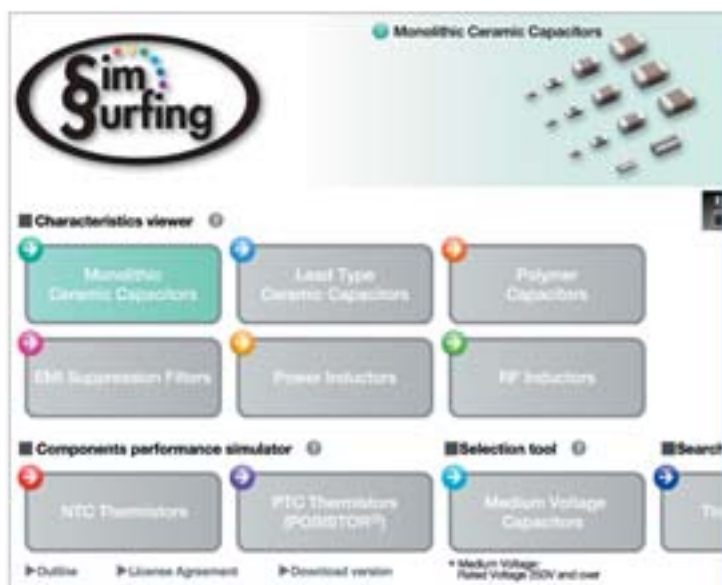
General Purpose

Monolithic Ceramic Capacitors	GRM/GJM Series	High Frequency Filter Circuit	
Monolithic Ceramic Capacitors	GRM Series	Coupling/Decoupling/For Step-up	
Resin External Electrode Monolithic Ceramic Capacitors	GRJ Series	Coupling/Decoupling/For Step-up	
Polymer Aluminum Electrolytic Capacitors	ECAS Series	Smoothing/Transient Backup	
Chip Inductors (Chip Coils)	LQW/LQP/LQG Series	High Frequency Circuit-Impedance Matching/Resonance	
Chip Inductors (Chip Coils)	LQM/LQH Series	Voltage Conversion	
Chip Ferrite Beads	BLM Series	Noise Suppression	
3 Terminal Capacitors	NFM/NFE Series	Noise Suppression	
Chip Common Mode Choke Coils	DLW/DLP Series	Noise Suppression	
Microwave Absorbers	EA Series	Noise Suppression	
Ferrite Cores	FS Series	Noise Suppression	
Thin Type Sandwich Cores	FSSA Series	Noise Suppression	

Design Support Software "SimSurfing"

<http://www.murata.com/simsurfing/>

This is the latest tool to get the electrical characteristics for Capacitors, Inductors, and EMI Suppression Filters, and to simulate Thermistors' behavior !



■ Characteristics viewer

You can easily search and download the following data for Monolithic Ceramic Capacitors, Polymer Capacitors, EMI Suppression Filters (Three-terminal Capacitors, Ferrite Beads) and Power/RF Inductors.

■ Components performance simulator

You can search by the simulation on simple circuits for Thermistors.

■ Selection tool

You can select Medium voltage Capacitors and Power Inductors according to conditions of use.

* Medium voltage: Rated Voltage 250V and over

■ Search tool

You can search the Murata timing device (CERALOCK® and crystal units) that is most suitable for your IC and access information about the recommended circuit constant setting.

If you register as a "my Murata" user

(<https://my.murata.com/en/web/mymurata/>), you can use Enhanced SimSurfing.

■ Usage example of "Chip Monolithic Ceramic Capacitors"

1 Select the products

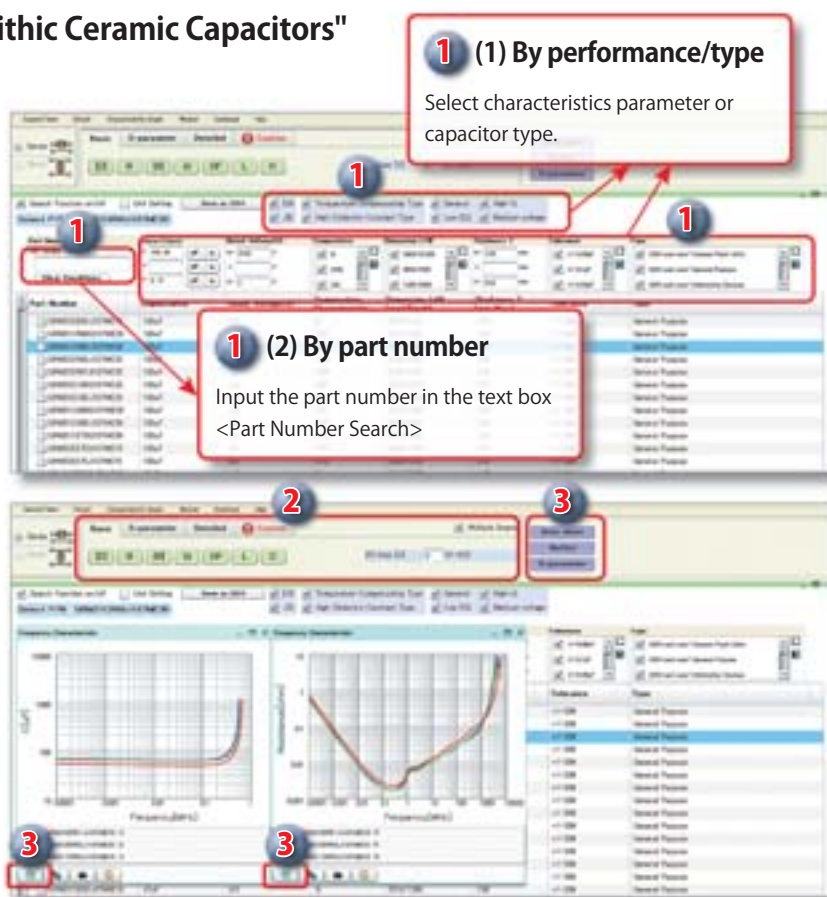
- (1) By performance/type
- (2) By part number

2 Show graph

Click each button on each tab of [Basic], [S-parameter] and [Detailed].

3 Data download

- Click each purple button in this area.
- Click "CSV output" button.



* Images are as of October 2014. Be assured that this software will be updated frequently.

<http://www.murata.com/simsurfing/>

A

AWG	Low Temperature Co-fired Ceramics (LTCC)	
	Multi-layer Module Boards	73

B

BLA	Noise Suppression Filters (Chip Ferrite Bead)	23
BLM	Noise Suppression Filters (Chip Ferrite Bead)	23
BLO	Noise Suppression Filters (Lead Type)	28
BN	Noise Suppression Filters (Block Type)	27
BS	Magnetic Pattern Recognition Sensors	56

C

CD	Ceramic Discriminators	43, 48
CE	Isolators	49
CF	Ceramic Filters CERAFIL®	42, 47
CL	Single Layer Microchip Capacitors	53
CS	Ceramic Resonators CERALOCK®	39

D

DE	Lead Type Ceramic Capacitors	17, 20
DF	Dielectric Filters GIGAFIL®	45
DHK	High Voltage Ceramic Capacitors	21
DHR	Lead Type Ceramic Capacitors	18
DHS	High Voltage Ceramic Capacitors	21
DL	Noise Suppression Filters (Chip Common Mode Choke Coil)	26
DM	Electrical Double Layer Capacitors	69
DS	Noise Suppression Filters (Lead Type)	28
DXP	Baluns	50
DXP	Couplers	51
DXW	Baluns	50

E

EA	Microwave Absorbers	28
ECAS	Polymer Aluminum Electrolytic Capacitors	21

F

FR	Rotary Sensors	58
FS	Ferrite Core	28

G

GA	Chip Monolithic Ceramic Capacitors	9
GC	Chip Monolithic Ceramic Capacitors	11
GJ	Chip Monolithic Ceramic Capacitors	6
GM	Chip Monolithic Ceramic Capacitors	7
GQ	Chip Monolithic Ceramic Capacitors	6
GR	Chip Monolithic Ceramic Capacitors	3, 7

I

IR	Pyroelectric Infrared Sensors	58
-----------	-------------------------------	----

K

KC	Chip Monolithic Ceramic Capacitors	14
KR	Chip Monolithic Ceramic Capacitors	10

L

LDB	Baluns	50
LDC	Couplers	50
LDD	Chip Multilayer Hybrid Dividers	51
LDM	Baluns	50
LFB	Chip Multilayer LC Filters	46
LFC	Low Temperature Co-fired Ceramics (LTCC)	
	Multi-layer Module Boards	73
LFD	Chip Multilayer Diplexers	51
LFL	Chip Multilayer LC Filters	46
LL	Chip Monolithic Ceramic Capacitors	5
LQ	Inductors (Coils)	30
LXDC	Micro DC-DC Converters	65
LXES	ESD Protection Devices	27
LXMS	MAGICSTRAP®	75
LXWS	Wireless Power Transmission Modules	76
LXRW	Variable Capacitor	74

M

MA	Ultrasonic Sensors	58
MHM	Ionizer Modules Ionissimo®	74
MHR	High Voltage Resistors	34
MM	High Frequency Coaxial Connectors (Receptacle)	52
MPD	DC-DC Converters	66
MPH	High Voltage Power Supplies	68
MPL	High Voltage Power Supplies	68
MR	Magnetic Switches (AMR Sensors)	57
MSH	High Voltage Transformers	68
MX	High Frequency Coaxial Connectors (Cable)	52
MY	DC-DC Converters	66
MZ	Microblowers	72

N

NC	NTC Thermistors	56, 60
NF	Noise Suppression Filters	
	(Chip 3 Terminal Capacitor), (Chip LC/RC Filter),	
	(Chip EMIFIL®)	24, 25
NT	NTC Thermistors	62
NX	NTC Thermistors	56, 61

O

OK	DC-DC Converters	66
-----------	------------------	----

P

PKG	Shock Sensors	58
PKB	Piezoelectric Buzzers	71
PKL	Piezoelectric Sounders	70
PKM	Piezoelectric Sounders	70
PLA	AC Line Filters	28
PLH	AC Line Filters	28
PLT	Noise Suppression Filters	
	(Chip Common Mode Choke Coil)	26, 28
PLY	AC Line Filters	28
PR	PTC Thermistors POSISTOR®	56, 62, 64
PT	PTC Thermistors POSISTOR®	56, 63, 64
PV	Trimmer Potentiometers	35

R

RC	Lead Type Ceramic Capacitors	19
RD	Lead Type Ceramic Capacitors	15
RH	Lead Type Ceramic Capacitors	20
RU	Thin Film Circuit Substrate RUSUB®	55

S

SAE	SAW Traps	43
SAF	SAW Filters for Mobile Communications	44
SAW	SAW Filters for Mobile Communications	44
SAY	SAW Filters for Mobile Communications	44
SCA	Accelerometers	57
SCA	Inclinometers	58
SCC	Gyro Sensors	57
SCR	Gyro Sensors	58
SF	Ceramic Filters CERAFIL®	41, 46
SV	Rotary Position Sensors	57

T

TP	Ceramic Traps	43
TZ	Trimmer Capacitors	22

V

VF	EMIGUARD®	28
-----------	-----------	----

X

XD	Crystal Filters	48
XN	Crystal Oscillators	38
XR	Crystal Units	37
XT	Crystal Oscillators	38
7B	Piezoelectric Diaphragms	71

Global Locations

For details please visit www.murata.com



⚠ Note

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- ① Aircraft equipment
- ② Aerospace equipment
- ③ Undersea equipment
- ④ Power plant equipment
- ⑤ Medical equipment
- ⑥ Transportation equipment (vehicles, trains, ships, etc.)
- ⑦ Traffic signal equipment
- ⑧ Disaster prevention / crime prevention equipment
- ⑨ Data-processing equipment
- ⑩ Application of similar complexity and/or reliability requirements to the applications listed above

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5 This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

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