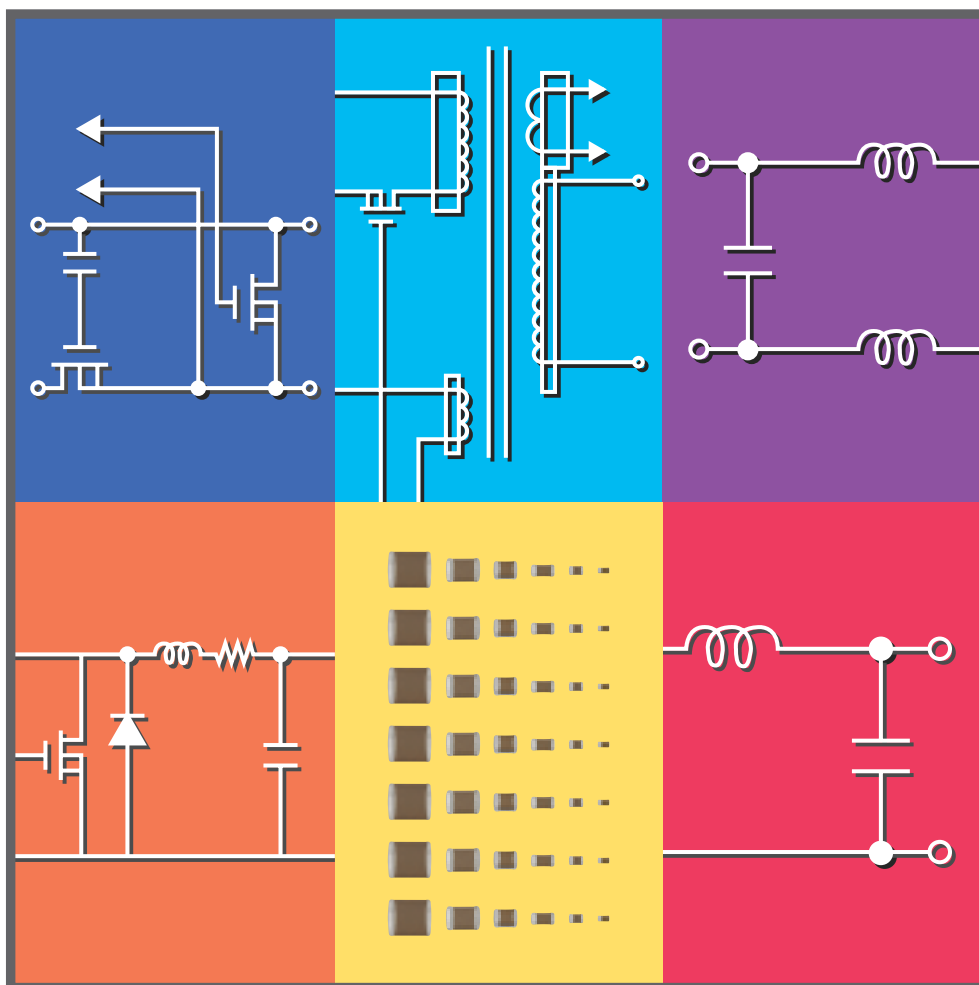


**Chip Monolithic
Ceramic Capacitors
for DC/DC Converters**



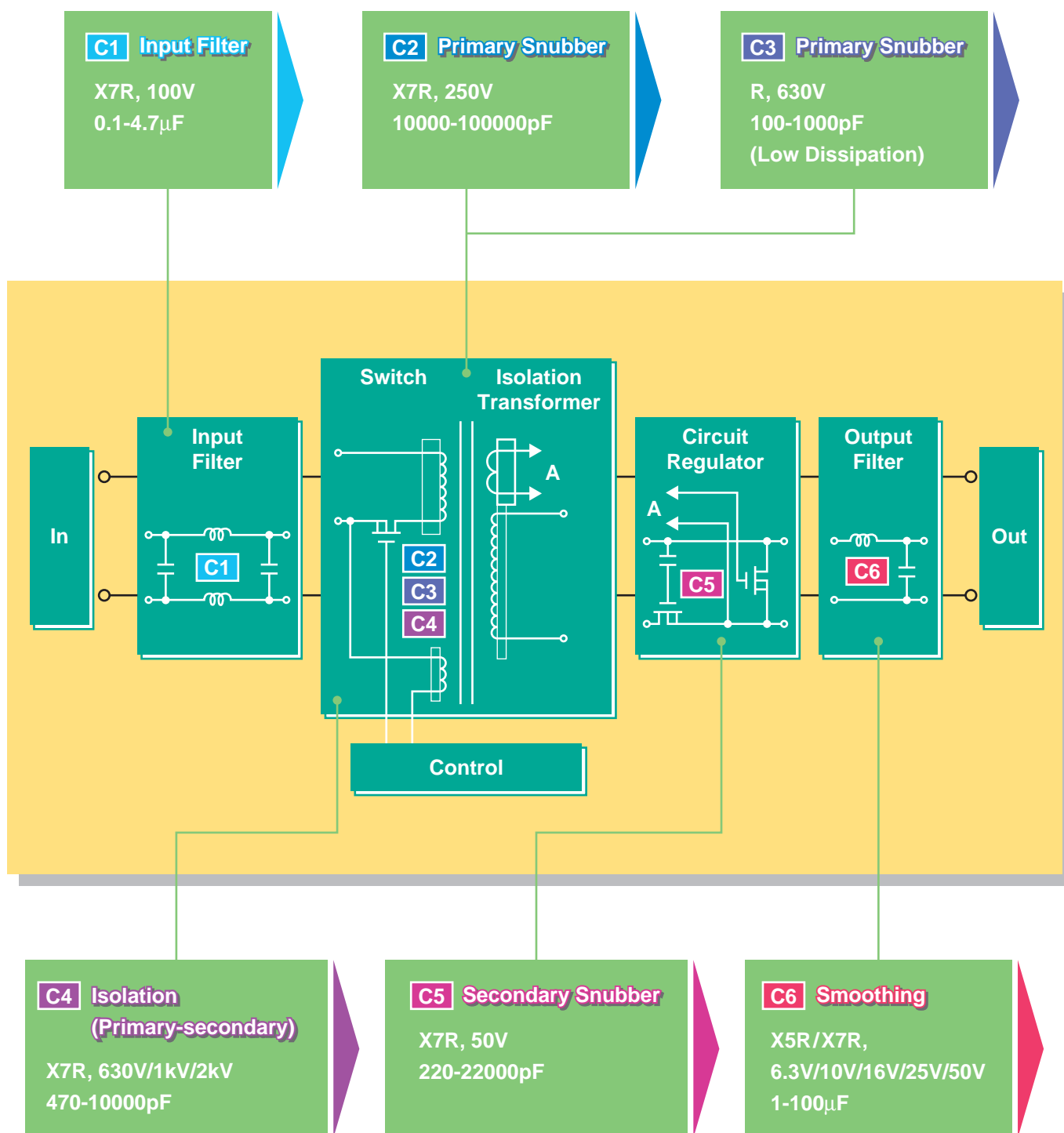
Innovator in Electronics



Murata's extensive and complete chip capacitor line up enables your DC/DC converters and voltage regulators to be compact and high performed.

As the industry leader, Murata offers this complete monolithic ceramic capacitor line up for all your DC/DC converter and voltage regulator needs. All the parts below incorporate our latest thin film and base metal technology, to provide high performance, reliable and cost competitive components. We are committed to providing the most optimal component solutions for all of our customers' needs.


DC/DC Converters



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● Line Up

Applications		Part Number	TC Code	Rated Voltage (Vdc)	Capacitance	Length (mm)	Width (mm)	Thickness (mm)	Case Size (JIS/EIA)
C1	Input Filter	GRM31CR72A104KW03L	X7R	100	0.1μF	3.2	1.6	1.6	3216/1206
		GRM32DR72A224KW01L	X7R	100	0.22μF	3.2	2.5	2.0	3225/1210
		GRM32ER72A105KA01L	X7R	100	1μF	3.2	2.5	2.5	3225/1210
		GRM43ER72A225KA01L	X7R	100	2.2μF	4.5	3.2	2.5	4532/1812
		GRM55ER72A475KA01L	X7R	100	4.7μF	5.7	5.0	2.5	5750/2220
C2	Primary Snubber	GRM21BR72E103KW03L	X7R	250	10000pF	2.0	1.25	1.25	2012/0805
		GRM31BR72E153KW01L	X7R	250	15000pF	3.2	1.6	1.25	3216/1206
		GRM31BR72E223KW01L	X7R	250	22000pF	3.2	1.6	1.25	3216/1206
		GRM31CR72E333KW03L	X7R	250	33000pF	3.2	1.6	1.6	3216/1206
		GRM31CR72E473KW03L	X7R	250	47000pF	3.2	1.6	1.6	3216/1206
		GRM31CR72E104KW03L	X7R	250	0.1μF	3.2	1.6	1.6	3216/1206
C3	Primary Snubber (Low Dissipation)	GRM31AR32J101KY01D	R	630	100pF	3.2	1.6	1.0	3216/1206
		GRM31AR32J151KY01D	R	630	150pF	3.2	1.6	1.0	3216/1206
		GRM31AR32J221KY01D	R	630	220pF	3.2	1.6	1.0	3216/1206
		GRM31AR32J331KY01D	R	630	330pF	3.2	1.6	1.0	3216/1206
		GRM31BR32J471KY01L	R	630	470pF	3.2	1.6	1.25	3216/1206
		GRM31BR32J681KY01L	R	630	680pF	3.2	1.6	1.25	3216/1206
C4	Isolation	GRM31BR72J102KW01L	X7R	630	1000pF	3.2	1.6	1.25	3216/1206
		GRM31BR72J152KW01L	X7R	630	1500pF	3.2	1.6	1.25	3216/1206
		GRM31BR72J182KW01L	X7R	630	1800pF	3.2	1.6	1.25	3216/1206
		GRM31BR72J222KW01L	X7R	630	2200pF	3.2	1.6	1.25	3216/1206
		GRM31BR72J332KW01L	X7R	630	3300pF	3.2	1.6	1.25	3216/1206
		GRM31BR72J472KW01L	X7R	630	4700pF	3.2	1.6	1.25	3216/1206
		GRM31BR72J682KW01L	X7R	630	6800pF	3.2	1.6	1.25	3216/1206
		GRM31BR72J103KW01L	X7R	630	10000pF	3.2	1.6	1.25	3216/1206
		GRM31BR73A471KW01L	X7R	1k	470pF	3.2	1.6	1.25	3216/1206
		GRM31BR73A511KW01L	X7R	1k	510pF	3.2	1.6	1.25	3216/1206
		GRM31BR73A102KW01L	X7R	1k	1000pF	3.2	1.6	1.25	3216/1206
		GRM31BR73A152KW01L	X7R	1k	1500pF	3.2	1.6	1.25	3216/1206
		GRM31BR73A222KW01L	X7R	1k	2200pF	3.2	1.6	1.25	3216/1206
		GRM31BR73A332KW01L	X7R	1k	3300pF	3.2	1.6	1.25	3216/1206
		GRM31BR73A472KW01L	X7R	1k	4700pF	3.2	1.6	1.25	3216/1206
		GRM32QR73A682KW01L	X7R	1k	6800pF	3.2	2.5	1.5	3225/1210
		GRM32QR73A103KW01L	X7R	1k	10000pF	3.2	2.5	1.5	3225/1210
		GR442DR73D102KW02L	X7R	2k	1000pF	4.5	2.0	2.0	4520/1808
		GR443DR73D222KW01L	X7R	2k	2200pF	4.5	3.2	2.0	4532/1812
		C5	Secondary Snubber	GRM188R71H221KA01D	X7R	50	220pF	1.6	0.8
GRM188R71H331KA01D	X7R			50	330pF	1.6	0.8	0.8	1608/0603
GRM188R71H471KA01D	X7R			50	470pF	1.6	0.8	0.8	1608/0603
GRM188R71H681KA01D	X7R			50	680pF	1.6	0.8	0.8	1608/0603
GRM188R71H102KA01D	X7R			50	1000pF	1.6	0.8	0.8	1608/0603
GRM188R71H152KA01D	X7R			50	1500pF	1.6	0.8	0.8	1608/0603
GRM188R71H222KA01D	X7R			50	2200pF	1.6	0.8	0.8	1608/0603
GRM188R71H332KA01D	X7R			50	3300pF	1.6	0.8	0.8	1608/0603
GRM188R71H472KA01D	X7R			50	4700pF	1.6	0.8	0.8	1608/0603
GRM188R71H682KA01D	X7R			50	6800pF	1.6	0.8	0.8	1608/0603
GRM188R71H103KA01D	X7R			50	10000pF	1.6	0.8	0.8	1608/0603
GRM188R71H153KA01D	X7R			50	15000pF	1.6	0.8	0.8	1608/0603
GRM188R71H223KA01D	X7R	50	22000pF	1.6	0.8	0.8	1608/0603		

Continued on the following page. 

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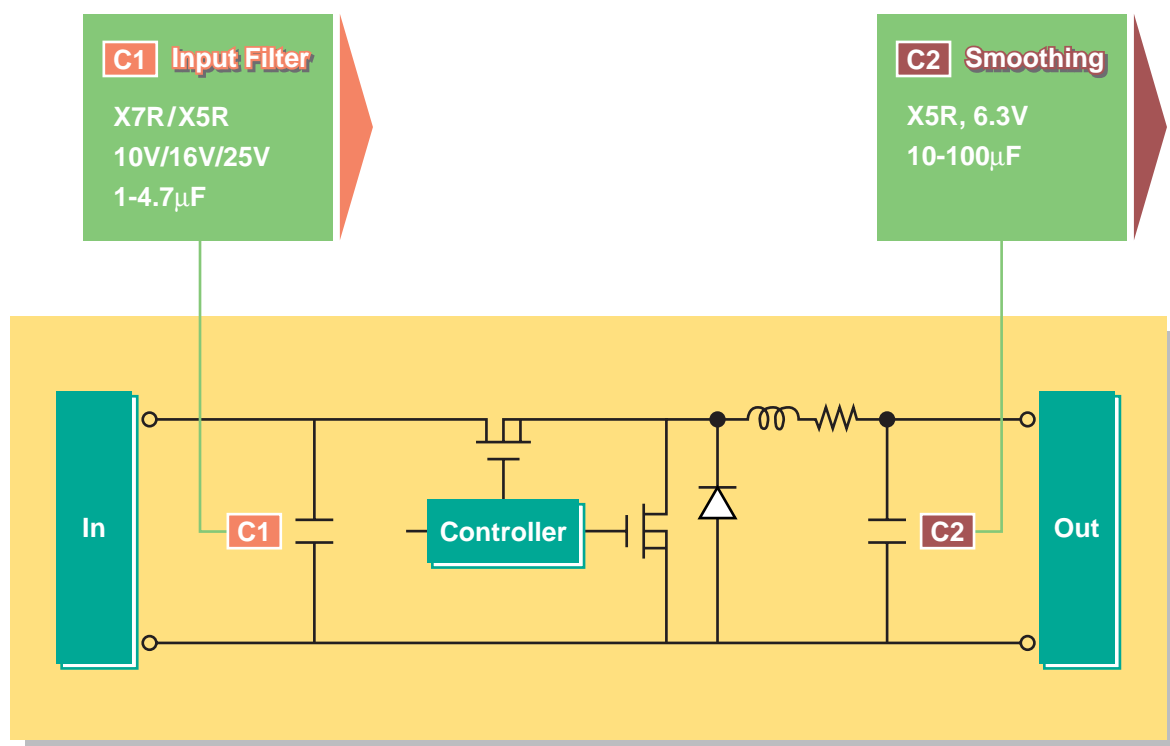
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Applications	Part Number	TC Code	Rated Voltage (Vdc)	Capacitance	Length (mm)	Width (mm)	Thickness (mm)	Case Size (JIS/EIA)	
C6	Smoothing	GRM32RR71H105KA01L	X7R	50	1 μ F	3.2	2.5	1.8	3225/1210
		GRM43ER71H225KA01L	X7R	50	2.2 μ F	4.5	3.2	2.5	4532/1812
		GRM55ER71H475KA01L	X7R	50	4.7 μ F	5.7	5.0	2.5	5750/2220
		GRM31MR71E105KC01L	X7R	25	1 μ F	3.2	1.6	1.15	3216/1206
		GRM32RR71E225KC01L	X7R	25	2.2 μ F	3.2	2.5	1.8	3225/1210
		GRM43ER71E475KA01L	X7R	25	4.7 μ F	4.5	3.2	2.5	4532/1812
		GRM55DR71E106KA01L	X7R	25	10 μ F	5.7	5.0	2.0	5750/2220
		GRM21BR71C105KA01L	X7R	16	1 μ F	2.0	1.25	1.25	2012/0805
		GRM31MR71C225KA35L	X7R	16	2.2 μ F	3.2	1.6	1.15	3216/1206
		GRM32RR71C475KC01L	X7R	16	4.7 μ F	3.2	2.5	1.8	3225/1210
		GRM32DR71C106KA01L	X7R	16	10 μ F	3.2	2.5	2.0	3225/1210
		GRM21BR71A225KA01L	X7R	10	2.2 μ F	2.0	1.25	1.25	2012/0805
		GRM31CR71A475KA01L	X7R	10	4.7 μ F	3.2	1.6	1.6	3216/1206
		GRM43ER71A226KE01L	X7R	10	22 μ F	4.5	3.2	2.5	4532/1812
		GRM31CR70J106KA01L	X7R	6.3	10 μ F	3.2	1.6	1.6	3216/1206
		GRM216R61E105KA12D	X5R	25	1 μ F	2.0	1.25	0.6	2012/0805
		GRM219R61E225KA12D	X5R	25	2.2 μ F	2.0	1.25	0.85	2012/0805
		GRM319R61E475KA12D	X5R	25	4.7 μ F	3.2	1.6	0.85	3216/1206
		GRM32DR61E106KA12L	X5R	25	10 μ F	3.2	2.5	2.0	3225/1210
		GRM31CR61C106KC31L	X5R	16	10 μ F	3.2	1.6	1.6	3216/1206
		GRM32ER61C226KE20L	X5R	16	22 μ F	3.2	2.5	2.5	3225/1210
		GRM31MR61A106KE19L	X5R	10	10 μ F	3.2	1.6	1.15	3216/1206
		GRM43ER61A476KE19L	X5R	10	47 μ F	4.5	3.2	2.5	4532/1812
		GRM21BR60J106ME01L	X5R	6.3	10 μ F	2.0	1.25	1.25	2012/0805
		GRM31CR60J226KE19L	X5R	6.3	22 μ F	3.2	1.6	1.6	3216/1206
		GRM32ER60J476ME20L	X5R	6.3	47 μ F	3.2	2.5	2.5	3225/1210
GRM43SR60J107ME20L	X5R	6.3	100 μ F	4.5	3.2	2.8	4532/1812		

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VRM (Voltage Regulator Module)



● Line Up

Applications	Part Number	TC Code	Rated Voltage (Vdc)	Capacitance (μ F)	Length (mm)	Width (mm)	Thickness (mm)	Case Size (JIS/EIA)
C1 Input Filter	GRM31MR71E105KC01L	X7R	25	1	3.2	1.6	1.15	3216/1206
	GRM32RR71E225KC01L	X7R	25	2.2	3.2	2.5	1.8	3225/1210
	GRM43ER71E475KA01L	X7R	25	4.7	4.5	3.2	2.5	4532/1812
	GRM21BR71C105KA01L	X7R	16	1	2.0	1.25	1.25	2012/0805
	GRM31MR71C225KA35L	X7R	16	2.2	3.2	1.6	1.15	3216/1206
	GRM32RR71C475KC01L	X7R	16	4.7	3.2	2.5	1.8	3225/1210
	GRM21BR71A225KA01L	X7R	10	2.2	2.0	1.25	1.25	2012/0805
	GRM31CR71A475KA01L	X7R	10	4.7	3.2	1.6	1.6	3216/1206
	GRM216R61E105KA12D	X5R	25	1	2.0	1.25	0.6	2012/0805
	GRM219R61E225KA12D	X5R	25	2.2	2.0	1.25	0.85	2012/0805
	GRM319R61E475KA12D	X5R	25	4.7	3.2	1.6	0.85	3216/1206
	GRM188R61C105KA12D	X5R	16	1	1.6	0.8	0.8	1608/0603
GRM188R61A225KE19D	X5R	10	2.2	1.6	0.8	0.8	1608/0603	
GRM219R61A475KE19D	X5R	10	4.7	2.0	1.25	0.85	2012/0805	
C2 Smoothing	GRM21BR60J106ME01L	X5R	6.3	10	2.0	1.25	1.25	2012/0805
	GRM31CR60J226ME19L	X5R	6.3	22	3.2	1.6	1.6	3216/1206
	GRM32ER60J476ME20L	X5R	6.3	47	3.2	2.5	2.5	3225/1210
	GRM43SR60J107ME20L	X5R	6.3	100	4.5	3.2	2.8	4532/1812

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△ Note:**1. Export Control**

〈For customers outside Japan〉

Murata products should not be used or sold for use in the development, production, stockpiling or utilization of any conventional weapons or mass-destructive weapons (nuclear weapons, chemical or biological weapons, or missiles), or any other weapons.

〈For customers in Japan〉

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage to a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.

- | | |
|-----------------------------|---|
| 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 in the above |

3. Product specifications in this catalog are as of April 2003. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

4. This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering. Especially, please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in them to prevent smoking and/or burning, etc.

5. You are able to read a detailed specification in the website of Search Engine (<http://search.murata.co.jp/>) or catalog library (<http://www.murata.com/catalog/>) before to require our product specification or to transact the approval sheet for product specification.

6. Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our catalogs. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.

7. No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.

● Part Numbering

Chip Monolithic Ceramic Capacitors

(Part Number)

GR	M	18	8	B1	1H	102	K	A01	D
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Product ID

② Series

Product ID	Code	Series
GR	J	Soft Termination Type
	M	Tin Plated Layer
	3	Large Capacitance and High Allowable Ripple Current
	4	Only for Information Devices
	7	Only for Camera Flash Circuit
GQ	M	High Frequency for Flow/Reflow Soldering
GM	A	Monolithic Microchip
	D	For Bonding
GN	M	Capacitor Array
LL	L	Low ESL Type
	R	Controlled ESR Low ESL Type
	A	8-termination Low ESL Type
	M	10-termination Low ESL Type
GJ	M	High Frequency Low Loss Type
	4	Low Distortion Type
	8	Low Acoustic Type
GA	2	For AC250V (r.m.s.)
	3	Safety Standard Certified Type
GW	M	For Decoupling

③ Dimensions (L×W)


Code	Dimensions (L×W)	EIA
02	0.4×0.2mm	01005
03	0.6×0.3mm	0201
05	0.5×0.5mm	0202
08	0.8×0.8mm	0303
0D	0.38×0.38mm	015015
0M	0.9×0.6mm	0302
15	1.0×0.5mm	0402
18	1.6×0.8mm	0603
1M	1.37×1.0mm	0504
21	2.0×1.25mm	0805
22	2.8×2.8mm	1111
31	3.2×1.6mm	1206
32	3.2×2.5mm	1210
42	4.5×2.0mm	1808
43	4.5×3.2mm	1812
52	5.7×2.8mm	2211
55	5.7×5.0mm	2220

④ Dimension (T) (Except **GNM**)

Code	Dimension (T)
2	0.2mm
3	0.3mm
5	0.5mm
6	0.6mm
7	0.7mm
8	0.8mm
9	0.85mm
A	1.0mm
B	1.25mm
C	1.6mm
D	2.0mm
E	2.5mm
F	3.2mm
M	1.15mm
N	1.35mm
Q	1.5mm
R	1.8mm
S	2.8mm
X	Depends on individual standards.

④ Elements (**GNM** Only)

Code	Elements
2	2-elements
4	4-elements

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Temperature Characteristics

Temperature Characteristic Codes			Temperature Characteristics			Operating Temperature Range
Code	Public STD Code		Reference Temperature	Temperature Range	Capacitance Change or Temperature Coefficient	
1X	SL *1	JIS	20°C	20 to 85°C	+350 to -1000ppm/°C	-55 to 125°C
2C	CH *1	JIS	20°C	20 to 125°C	0±60ppm/°C	-55 to 125°C
2P	PH *1	JIS	20°C	20 to 85°C	-150±60ppm/°C	-25 to 85°C
2R	RH *1	JIS	20°C	20 to 85°C	-220±60ppm/°C	-25 to 85°C
2S	SH *1	JIS	20°C	20 to 85°C	-330±60ppm/°C	-25 to 85°C
2T	TH *1	JIS	20°C	20 to 85°C	-470±60ppm/°C	-25 to 85°C
3C	CJ *1	JIS	20°C	20 to 125°C	0±120ppm/°C	-55 to 125°C
3P	PJ *1	JIS	20°C	20 to 85°C	-150±120ppm/°C	-25 to 85°C
3R	RJ *1	JIS	20°C	20 to 85°C	-220±120ppm/°C	-25 to 85°C
3S	SJ *1	JIS	20°C	20 to 85°C	-330±120ppm/°C	-25 to 85°C
3T	TJ *1	JIS	20°C	20 to 85°C	-470±120ppm/°C	-25 to 85°C
3U	UJ *1	JIS	20°C	20 to 85°C	-750±120ppm/°C	-25 to 85°C
4C	CK *1	JIS	20°C	20 to 125°C	0±250ppm/°C	-55 to 125°C
5C	C0G *1	EIA	25°C	25 to 125°C	0±30ppm/°C	-55 to 125°C
5G	X8G *1	EIA	25°C	25 to 150°C	0±30ppm/°C	-55 to 150°C
6C	C0H *1	EIA	25°C	25 to 125°C	0±60ppm/°C	-55 to 125°C
6P	P2H *1	EIA	25°C	25 to 85°C	-150±60ppm/°C	-55 to 125°C
6R	R2H *1	EIA	25°C	25 to 85°C	-220±60ppm/°C	-55 to 125°C
6S	S2H *1	EIA	25°C	25 to 85°C	-330±60ppm/°C	-55 to 125°C
6T	T2H *1	EIA	25°C	25 to 85°C	-470±60ppm/°C	-55 to 125°C
7U	U2J *1	EIA	25°C	25 to 125°C *6	-750±120ppm/°C	-55 to 125°C
B1	B *2	JIS	20°C	-25 to 85°C	±10%	-25 to 85°C
B3	B	JIS	20°C	-25 to 85°C	±10%	-25 to 85°C
C7	X7S	EIA	25°C	-55 to 125°C	±22%	-55 to 125°C
C8	X6S	EIA	25°C	-55 to 105°C	±22%	-55 to 105°C
D7	X7T	EIA	25°C	-55 to 125°C	+22, -33%	-55 to 125°C
D8	X6T	EIA	25°C	-55 to 105°C	+22, -33%	-55 to 105°C
E7	X7U	EIA	25°C	-55 to 125°C	+22, -56%	-55 to 125°C
F1	F *2	JIS	20°C	-25 to 85°C	+30, -80%	-25 to 85°C
F5	Y5V	EIA	25°C	-30 to 85°C	+22, -82%	-30 to 85°C
J1	-	*3	20°C	-25 to 105°C	-20% min.	-25 to 105°C
L8	X8L	*3	25°C	-55 to 150°C	+15, -40%	-55 to 150°C
R1	R *2	JIS	20°C	-55 to 125°C	±15%	-55 to 125°C
R3	R	JIS	20°C	-55 to 125°C	±15%	-55 to 125°C
R6	X5R	EIA	25°C	-55 to 85°C	±15%	-55 to 85°C
R7	X7R	EIA	25°C	-55 to 125°C	±15%	-55 to 125°C
R9	X8R	EIA	25°C	-55 to 150°C	±15%	-55 to 150°C
W0	-	-	25°C	-55 to 125°C	±10% *4	-55 to 125°C
					+22, -33% *5	

*1 Please refer to table for Capacitance Change under reference temperature.


*2 Capacitance change is specified with 50% rated voltage applied.

*3 Murata Temperature Characteristic Code.

*4 Apply DC350V bias.

*5 No DC bias.

*6 Rated Voltage 100Vdc max: 25 to 85°C

Continued on the following page. 

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● Capacitance Change from each temperature

JIS Code

Murata Code	Capacitance Change from 20°C (%)					
	-55°C		-25°C		-10°C	
	Max.	Min.	Max.	Min.	Max.	Min.
1X	-	-	-	-	-	-
2C	0.82	-0.45	0.49	-0.27	0.33	-0.18
2P	-	-	1.32	0.41	0.88	0.27
2R	-	-	1.70	0.72	1.13	0.48
2S	-	-	2.30	1.22	1.54	0.81
2T	-	-	3.07	1.85	2.05	1.23
3C	1.37	-0.90	0.82	-0.54	0.55	-0.36
3P	-	-	1.65	0.14	1.10	0.09
3R	-	-	2.03	0.45	1.35	0.30
3S	-	-	2.63	0.95	1.76	0.63
3T	-	-	3.40	1.58	2.27	1.05
3U	-	-	4.94	2.84	3.29	1.89
4C	2.56	-1.88	1.54	-1.13	1.02	-0.75

EIA Code

Murata Code	Capacitance Change from 25°C (%)					
	-55°C		-30°C		-10°C	
	Max.	Min.	Max.	Min.	Max.	Min.
5C/5G	0.58	-0.24	0.40	-0.17	0.25	-0.11
6C	0.87	-0.48	0.59	-0.33	0.38	-0.21
6P	2.33	0.72	1.61	0.50	1.02	0.32
6R	3.02	1.28	2.08	0.88	1.32	0.56
6S	4.09	2.16	2.81	1.49	1.79	0.95
6T	5.46	3.28	3.75	2.26	2.39	1.44
7U	8.78	5.04	6.04	3.47	3.84	2.21

⑥ Rated Voltage

Code	Rated Voltage
0E	DC2.5V
0G	DC4V
0J	DC6.3V
1A	DC10V
1C	DC16V
1E	DC25V
YA	DC35V
1H	DC50V
2A	DC100V
2D	DC200V
2E	DC250V
YD	DC300V


Code	Rated Voltage
2W	DC450V
2H	DC500V
2J	DC630V
3A	DC1kV
3D	DC2kV
3F	DC3.15kV
BB	DC350V (for Camera Flash Circuit)
E2	AC250V
GC	X1/Y2; AC250V (Safety Standard Certified Type GC)
GF	Y2, X1/Y2; AC250V (Safety Standard Certified Type GF)
GD	Y3; AC250V (Safety Standard Certified Type GD)
GB	X2; AC250V (Safety Standard Certified Type GB)

⑦ Capacitance

Expressed by three-digit alphanumerics. The unit is picofarad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two numbers. If there is a decimal point, it is expressed by the capital letter "R." In this case, all figures are significant digits.

Ex.)

Code	Capacitance
R50	0.5pF
1R0	1.0pF
100	10pF
103	10000pF

Continued on the following page. 

Continued from the preceding page.

⑨ Capacitance Tolerance

Code	Capacitance Tolerance	TC	Series	Capacitance Step	
W	±0.05pF	CΔ	GRM/GJM	≤9.9pF	0.1pF
B	±0.1pF	CΔ	GRM/GJM	≤9.9pF	0.1pF
			GQM	≤1pF	0.1pF
C	±0.25pF	CΔ	GRM/GJM	≤9.9pF	0.1pF
		except CΔ	GRM	≤5pF	1pF *
		CΔ	GQM	≤1pF	0.1pF
D	±0.5pF	CΔ	GRM/GJM	5.1 to 9.9pF	0.1pF
		except CΔ	GRM	5.1 to 9.9pF	1pF *
		CΔ	GQM	5.1 to 9.9pF	1pF Step and E24 Series
G	±2%	CΔ	GJM	≥10pF	E12 Series
		CΔ	GQM	≥10pF	E24 Series
J	±5%	CΔ, SL, U2J	GRM/GA3	≥10pF	E12 Series
		CΔ	GQM/GJM	≥10pF	E24 Series
K	±10%	B, R, X7R, X7T, X5R, ZLM	GRJ/GRM/GR3/GR7/GA3	E6 Series	
		C0G	GNM	E6 Series	
		B, R, X7R, X5R, ZLM	GR4, GMD	E12 Series	
M	±20%	B, R, X7R, X7S	GRM/GMA	E6 Series	
		X5R, X7R, X7S	GNM	E3 Series	
		X7R	GA2	E3 Series	
		X5R, X7R, X7S, X6S	LLL/LLR/LLA/LLM	E3 Series	
Z	+80%, -20%	F, Y5V	GRM	E3 Series	
R	Depends on individual standards.				

* E24 series is also available.

⑩ Individual Specification Code (Except LLR)

Expressed by three figures.

⑪ ESR (LLR Only)

Code	ESR
E01	100mΩ
E03	220mΩ
E05	470mΩ
E07	1000mΩ

⑫ Packaging

Code	Packaging
L	ø180mm Embossed Taping
D	ø180mm Paper Taping
E	ø180mm Paper Taping (LLL15)
K	ø330mm Embossed Taping
J	ø330mm Paper Taping
F	ø330mm Paper Taping (LLL15)
B	Bulk
C	Bulk Case
T	Bulk Tray