



**THE DATASHEET OF  
GRM31CR71C106KA12L**



## ● Part Numbering

### Chip Multilayer Ceramic Capacitors for General

(Part Number)

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

#### ① Series

Code	Series
<b>GA2</b>	Based on the Electrical Appliance and Material Safety Law of Japan Chip Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment
<b>GCH</b>	Chip Multilayer Ceramic Capacitors for Implanted Medical Equipment or Medical Equipment [GHTF D] (Non Life Support Circuit)
<b>GJ4</b>	Low Distortion Chip Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment
<b>GJM</b>	High Q Chip Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment (≤100Vdc)
<b>GMA</b>	Wire Bonding Mount Multilayer Microchip Capacitors for Consumer Electronics & Industrial Equipment
<b>GMD</b>	Wire Bonding/AuSn Soldering Mount Chip Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment
<b>GQM</b>	High Q and High Power Chip Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment (>100Vdc)
<b>GR3</b>	High Effective Capacitance & High Ripple Current Chip Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment
<b>GR4</b>	Chip Multilayer Ceramic Capacitors for Ethernet LAN and Primary-secondary Coupling of DC-DC Converters for Consumer Electronics & Industrial Equipment
	Chip Multilayer Ceramic Capacitors for Splitter Circuit of G-Fast, xDSL for Consumer Electronics & Industrial Equipment
<b>GRJ</b>	Chip Multilayer Ceramic Capacitors with Soft Termination for Consumer Electronics & Industrial Equipment
<b>GRM</b>	Chip Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment
	Chip Multilayer Ceramic Capacitors for LCD Backlight Inverter Circuit only
<b>KR3</b>	High Effective Capacitance & High Allowable Ripple Current Metal Terminal Type Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment
<b>KRM</b>	Metal Terminal Type Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment
<b>LLA</b>	8 Terminals Low ESL Chip Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment
<b>LLL</b>	LW Reversed Low ESL Chip Multilayer Ceramic Capacitors for Consumer Electronics & Industrial Equipment
<b>ZRA</b>	Low Acoustic Noise Chip Multilayer Ceramic Capacitors on Interposer Board for Consumer Electronics & Industrial Equipment
<b>ZRB</b>	Low Acoustic Noise Chip Multilayer Ceramic Capacitors on Interposer Board for Consumer Electronics & Industrial Equipment

#### ② Chip Dimensions (LxW)

Code	Dimensions (LxW)	EIA
<b>01</b>	0.25x0.125mm	008004
<b>02</b>	0.4x0.2mm	01005
<b>0D</b>	0.38x0.38mm	015015
<b>MD</b>	0.5x0.25mm	015008
<b>03</b>	0.6x0.3mm	0201
<b>05</b>	0.5x0.5mm	0202
<b>08</b>	0.8x0.8mm	0303
<b>1U</b>	0.6x1.0mm	02404
<b>15</b>	1.0x0.5mm	0402
<b>18</b>	1.6x0.8mm	0603
<b>JN</b>	1.8x1.0mm	0704
<b>21</b>	2.0x1.25mm	0805
	2.4x1.65mm (ZRA Only)	-
<b>22</b>	2.8x2.8mm	1111
<b>31</b>	3.2x1.6mm	1206
<b>32</b>	3.2x2.5mm	1210
<b>42</b>	4.5x2.0mm	1808
<b>43</b>	4.5x3.2mm	1812
<b>55</b>	5.7x5.0mm	2220

#### ③ Dimension (T)

Except KR□		KR□ Only	
Code	Dimension (T)	Code	Dimension (T)
<b>1</b>	0.125mm	<b>E</b>	1.8mm
<b>2</b>	0.2mm	<b>F</b>	1.9mm
<b>3</b>	0.3mm	<b>K</b>	2.7mm
<b>4</b>	0.4mm	<b>L</b>	2.8mm
<b>5</b>	0.5mm	<b>R</b>	3.6mm
<b>6</b>	0.6mm	<b>Q</b>	3.7mm
<b>7</b>	0.7mm	<b>T</b>	4.8mm
<b>8</b>	0.8mm	<b>V</b>	6.2mm
<b>9</b>	0.85mm	<b>W</b>	6.4mm
<b>A</b>	1.0mm		
<b>B</b>	1.25mm		
<b>C</b>	1.6mm		
<b>D</b>	2.0mm		
<b>E</b>	2.5mm		
<b>M</b>	1.15mm		
<b>Q</b>	1.5mm		
<b>S</b>	0.16mm		
<b>T</b>	0.18mm		
<b>X</b>	Depends on individual standards.		
<b>Y</b>	0.135mm		

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④ Temperature Characteristics

Temperature Characteristic Codes			Temperature Characteristics				Operating Temperature Range	Capacitance Change Each Temperature (%)					
Code	Public STD Code	Reference Temperature	Temperature Range	Capacitance Change or Temperature Coefficient	-55°C			*4		-10°C			
					Max.	Min.		Max.	Min.	Max.	Min.		
1X	SL	JIS	20°C	20 to 85°C	+350 to -1000ppm/°C	-55 to 125°C	-	-	-	-	-	-	
2C	CH	JIS	20°C	20 to 125°C	0±60ppm/°C	-55 to 125°C	0.82	-0.45	0.49	-0.27	0.33	-0.18	
3C	CJ	JIS	20°C	20 to 125°C	0±120ppm/°C	-55 to 125°C	1.37	-0.9	0.82	-0.54	0.55	-0.36	
3U	UJ	JIS	20°C	20 to 85°C	-750±120ppm/°C	-25 to 85°C	-	-	4.94	2.84	3.29	1.89	
4C	CK	JIS	20°C	20 to 125°C	0±250ppm/°C	-55 to 125°C	2.56	-1.88	1.54	-1.13	1.02	-0.75	
5C	C0G	EIA	25°C	25 to 125°C	0±30ppm/°C	-55 to 125°C	0.58	-0.24	0.4	-0.17	0.25	-0.11	
5G	X8G	*2	25°C	25 to 150°C	0±30ppm/°C	-55 to 150°C	0.58	-0.24	0.4	-0.17	0.25	-0.11	
7U	U2J	EIA	25°C	25 to 125°C *3	-750±120ppm/°C	-55 to 125°C	8.78	5.04	6.04	3.47	3.84	2.21	
B1	B *1	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	-	-	-	-	-	-	
C6	X5S	EIA	25°C	-55 to 85°C	±22%	-55 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	-	-	-	-	-	-	
L8	X8L	*2	25°C	-55 to 150°C	+15%, -40%	-55 to 150°C	-	-	-	-	-	-	
R1	R *1	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	-	-	-	-	-	-	
R8	R *1	*2	20°C	-25 to 85°C	±15%	-25 to 85°C	-	-	-	-	-	-	
Z7	X7R	*2	25°C	-55 to 125°C	±15% *5	-55 to 125°C	-	-	-	-	-	-	

\*1 Capacitance change is specified with 50% rated voltage applied.

\*2 Murata Temperature Characteristic Code.

\*3 Rated Voltage 100Vdc max: 25 to 85°C

\*4 -25°C (Reference Temperature 20°C) / -30°C (Reference Temperature 25°C)

\*5 Range of capacitance change rate with 50% rated voltage applied (See detailed specifications sheet).

⑤ Rated Voltage

Code		Rated Voltage
Standard Product	Voltage Derated Product	
0E	-	2.5Vdc
0G	-	4Vdc
0J	-	6.3Vdc
1A	-	10Vdc
1C	-	16Vdc
1E	-	25Vdc
1H	-	50Vdc
1J	-	63Vdc
2A	EL	100Vdc
2D	-	200Vdc

Code		Rated Voltage
Standard Product	Voltage Derated Product	
2E	-	250Vdc
2W	LP	450Vdc
2H	LU	500Vdc
2J	LQ/LV	630Vdc
3A	LF/LW	1kVdc
3B	LG/LX	1.25kVdc
3D	-	2kVdc
3F	-	3.15kVdc
E2	-	250Vac
YA	-	35Vdc

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(Part Number) 

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

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**6** 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. If any alphabet, other than "R", is included, this indicates the specific part number is a non-standard part.

Ex.)

Code	Capacitance
<b>R50</b>	0.50pF
<b>1R0</b>	1.0pF
<b>100</b>	10pF
<b>103</b>	10000pF

**7** Capacitance Tolerance

Code	Capacitance Tolerance
<b>B</b>	±0.1pF
<b>C</b>	±0.25pF
<b>D</b>	±0.5pF (Less than 10pF) ±0.5% (10pF and over)
<b>F</b>	±1%
<b>G</b>	±2%
<b>J</b>	±5%
<b>K</b>	±10%
<b>M</b>	±20%
<b>R</b>	Depends on individual standards.
<b>W</b>	±0.05pF

**8** Individual Specification Code

Expressed by three figures.

**9** Packaging

Code	Packaging
<b>L</b>	ø180mm Embossed Taping
<b>D/E/W</b>	ø180mm Paper Taping
<b>K</b>	ø330mm Embossed Taping
<b>J/F</b>	ø330mm Paper Taping
<b>T</b>	Bulk Tray

Please contact us if you find any part number not provided in this table.

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