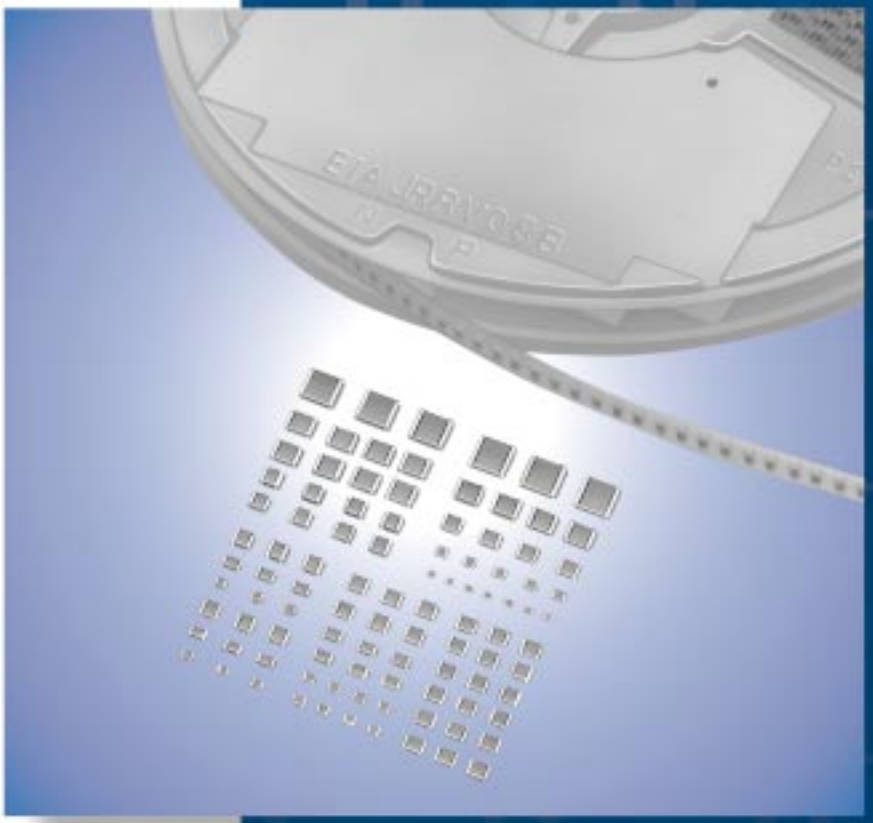
Chip Monolithic Ceramic Capacitors



Innovator in Electronics

Murata Manufacturing Co., Ltd.

Cat.No.C02E-16

Part Numbering

Chip Monolithic Ceramic Capacitors

(Part Number)

GR	M	18	8	B1	1H	102	K	A01	D
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿

❶Product ID

❷Series

Product ID	Code	Series
GR	J	Soft Termination Type
	M	Tin Plated Layer
	4	Only for Information Devices / Tip & Ring
	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
GA	2	For AC250V (r.m.s.)
	3	Safety Standard Certified Type

❸Dimensions (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

❹Dimension (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.

❹Elements (**GNM** Only)

Code	Elements
2	2-elements
4	4-elements

Continued on the following page.

Please check the MURATA home page (http://www.murata.com/) if you cannot find the part number in the catalog.

Continued from the preceding page.

❺Temperature 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
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

❻Rated 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
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)

❼Capacitance

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

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Please check the MURATA home page (http://www.murata.com/) if you cannot find the part number in the catalog.

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❽Capacitance 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
				1.1 to 9.9pF	1pF Step and E24 Series
C	±0.25pF	CΔ	**GRM/GJM**	≦9.9pF	0.1pF
		except CΔ	**GRM**	≦5pF	* 1pF
		CΔ	**GQM**	≦1pF	0.1pF
				1.1 to 9.9pF	1pF Step and E24 Series
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, X5R, ZLM	**GRJ/GRM/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.

❾Individual Specification Code (Except **LLR**)

Expressed by three figures.

❾ESR (**LLR** Only)

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

❿Packaging

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

Chip Monolithic Ceramic Capacitors

For General Purpose GRM Series

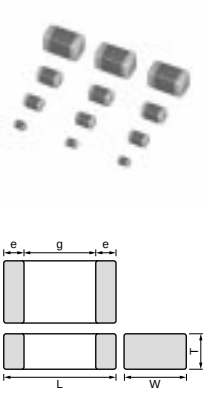
■ Features

1. Higher resistance of solder-leaching due to the Ni-barriered termination, applicable for reflow-soldering, and flow-soldering (GRM18/21/31 type only).
2. The GRM series is a lead free product.
3. Smaller size and higher capacitance value.
4. High reliability and no polarity.
5. Excellent pulse response and noise reduction due to the low impedance at high frequency.
6. The GRM series is available in paper or embossed tape and reel packaging for automatic placement. Bulk case packaging is also available for GRM15/18/21(T=0.6,1.25).
7. TA replacement.

■ Applications

General electronic equipment

Part Number	Dimensions (mm)				
	L	W	T	e	g min.
GRM022	0.4 ±0.02	0.2 ±0.02	0.2 ±0.02	0.07 to 0.14	0.13
GRM033	0.6 ±0.03	0.3 ±0.03	0.3 ±0.03	0.1 to 0.2	0.2
GRM15X	1.0 ±0.05	0.5 ±0.05	0.25 ±0.05	0.1 to 0.3	0.4
GRM153			0.3 ±0.03		
GRM155			0.5 ±0.05	0.15 to 0.35	0.3
GRM185	1.6 ±0.1	0.8 ±0.1	0.5 +0/-0.1	0.2 to 0.5	0.5
GRM188*			0.8 ±0.1		
GRM216	2.0 ±0.1	1.25 ±0.1	0.6 ±0.1	0.2 to 0.7	0.7
GRM219			0.85 ±0.1		
GRM21A			1.0 +0/-0.2		
GRM21B			1.25 ±0.1		
GRM316	3.2 ±0.15	1.6 ±0.15	0.6 ±0.1	0.3 to 0.8	1.5
GRM319			0.85 ±0.1		
GRM31M			1.15 ±0.1		
GRM31C	3.2 ±0.2	1.6 ±0.2	1.6 ±0.2		
GRM329	3.2 ±0.3	2.5 ±0.2	0.85 +0.15/-0.05	0.3 min.	1.0
GRM32A			1.0 +0/-0.2		
GRM32M			1.15 ±0.1		
GRM32N			1.35 ±0.15		
GRM32C			1.6 ±0.2		
GRM32R			1.8 ±0.2		
GRM32D			2.0 ±0.2		
GRM32E			2.5 ±0.2		



* Bulk Case: 1.6 ±0.07(L)×0.8 ±0.07(W)×0.8 ±0.07(T)
The figures indicate typical specification.

Capacitance Table

Temperature Compensating Type C0G(5C),U2J(7U) Characteristics

6 ex.6: T Dimension [mm]

TC	C0G(**5C**)												U2J(**7U**)								
LxW [mm]	0.4x0.2 (**02**) <01005>			0.6x0.3 (**03**) <0201>	1.0x0.5 (**15**) <0402>	1.6x0.8 (**18**) <0603>		2.0x1.25 (**21**) <0805>		3.2x1.6 (**31**) <1206>			0.6x0.3 (**03**) <0201>		1.0x0.5 (**15**) <0402>		1.6x0.8 (**18**) <0603>		2.0x1.25 (**21**) <0805>		3.2x1.6 (**31**) <1206>
Rated Voltage [Vdc] / Capacitance	16 (**1C**)	10 (**1A**)	6.3 (**0J**)	50 (**1H**)	50 (**1H**)	100 (**1E**)	50 (**1H**)	100 (**1E**)	50 (**1H**)	100 (**1E**)	50 (**1H**)	50 (**1H**)	25 (**1E**)	50 (**1H**)	10 (**1A**)	50 (**1H**)	10 (**1A**)	50 (**1H**)	10 (**1A**)	50 (**1H**)
0.1pF(**R10**)				3	3, 5															
0.2pF(**R20**)	2			3	3, 5															
0.3pF(**R30**)	2			3	3, 5															
0.4pF(**R40**)	2			3	3, 5															
0.5pF(**R50**)	2			3	3, 5															
0.6pF(**R60**)	2			3	3, 5															
0.7pF(**R70**)	2			3	3, 5															
0.8pF(**R80**)	2			3	3, 5															
0.9pF(**R90**)	2			3	3, 5															
1.0pF(**1R0**)	2			3	3, 5								3		5					
1.1pF(**1R1**)	2			3	3, 5															
1.2pF(**1R2**)	2			3	3, 5															
1.3pF(**1R3**)	2			3	3, 5															
1.4pF(**1R4**)	2			3	3, 5															
1.5pF(**1R5**)	2			3	3, 5															
1.6pF(**1R6**)	2			3	3, 5															
1.7pF(**1R7**)	2			3	3, 5															
1.8pF(**1R8**)	2			3	3, 5															
1.9pF(**1R9**)	2			3	3, 5															
2.0pF(**2R0**)	2			3	3, 5								3		5					
2.1pF(**2R1**)	2			3	3, 5															
2.2pF(**2R2**)	2			3	3, 5															
2.3pF(**2R3**)	2			3	3, 5															
2.4pF(**2R4**)	2			3	3, 5															
2.5pF(**2R5**)	2			3	3, 5															
2.6pF(**2R6**)	2			3	3, 5															
2.7pF(**2R7**)	2			3	3, 5															
2.8pF(**2R8**)	2			3	3, 5															
2.9pF(**2R9**)	2			3	3, 5															
3.0pF(**3R0**)	2			3	3, 5								3		5					
3.1pF(**3R1**)	2			3	3, 5															
3.2pF(**3R2**)	2			3	3, 5															
3.3pF(**3R3**)	2			3	3, 5															
3.4pF(**3R4**)	2			3	3, 5															
3.5pF(**3R5**)	2			3	3, 5															
3.6pF(**3R6**)	2			3	3, 5															
3.7pF(**3R7**)	2			3	3, 5															
3.8pF(**3R8**)	2			3	3, 5															
3.9pF(**3R9**)	2			3	3, 5															
4.0pF(**4R0**)	2			3	3, 5								3		5					
4.1pF(**4R1**)	2			3	3, 5															
4.2pF(**4R2**)	2			3	3, 5															
4.3pF(**4R3**)	2			3	3, 5															
4.4pF(**4R4**)	2			3	3, 5															
4.5pF(**4R5**)	2			3	3, 5															
4.6pF(**4R6**)	2			3	3, 5															
4.7pF(**4R7**)	2			3	3, 5															
4.8pF(**4R8**)	2			3	3, 5															
4.9pF(**4R9**)	2			3	3, 5															

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

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Capacitance Table

Continued from the preceding page.

6 ex.6: T Dimension [mm]

TC	C0G(**5C**)												U2J(**7U**)								
LxW [mm]	0.4x0.2 (**02**) <01005>			0.6x0.3 (**03**) <0201>	1.0x0.5 (**15**) <0402>	1.6x0.8 (**18**) <0603>		2.0x1.25 (**21**) <0805>		3.2x1.6 (**31**) <1206>			0.6x0.3 (**03**) <0201>		1.0x0.5 (**15**) <0402>		1.6x0.8 (**18**) <0603>		2.0x1.25 (**21**) <0805>		3.2x1.6 (**31**) <1206>
Rated Voltage [Vdc] / Capacitance	16 (**1C**)	10 (**1A**)	6.3 (**0J**)	50 (**1H**)	50 (**1H**)	100 (**1E**)	50 (**1H**)	100 (**1E**)	50 (**1H**)	100 (**1E**)	50 (**1H**)		50 (**1H**)	25 (**1E**)	50 (**1H**)	10 (**1A**)	50 (**1H**)	10 (**1A**)	50 (**1H**)	10 (**1A**)	50 (**1H**)
5.0pF(**5R0**)	2			3	3, 5								3		5						
5.1pF(**5R1**)	2			3	3, 5																
5.2pF(**5R2**)	2			3	3, 5																
5.3pF(**5R3**)	2			3	3, 5																
5.4pF(**5R4**)	2			3	3, 5																
5.5pF(**5R5**)	2			3	3, 5																
5.6pF(**5R6**)	2			3	3, 5																
5.7pF(**5R7**)	2			3	3, 5																
5.8pF(**5R8**)	2			3	3, 5																
5.9pF(**5R9**)	2			3	3, 5																
6.0pF(**6R0**)	2			3	3, 5								3		5						
6.1pF(**6R1**)	2			3	3, 5																
6.2pF(**6R2**)	2			3	3, 5																
6.3pF(**6R3**)	2			3	3, 5																
6.4pF(**6R4**)	2			3	3, 5																
6.5pF(**6R5**)	2			3	3, 5																
6.6pF(**6R6**)	2			3	3, 5																
6.7pF(**6R7**)	2			3	3, 5																
6.8pF(**6R8**)	2			3	3, 5																
6.9pF(**6R9**)	2			3	3, 5																
7.0pF(**7R0**)	2			3	3, 5								3		5						
7.1pF(**7R1**)	2			3	3, 5																
7.2pF(**7R2**)	2			3	3, 5																
7.3pF(**7R3**)	2			3	3, 5																
7.4pF(**7R4**)	2			3	3, 5																
7.5pF(**7R5**)	2			3	3, 5																
7.6pF(**7R6**)	2			3	3, 5																
7.7pF(**7R7**)	2			3	3, 5																
7.8pF(**7R8**)	2			3	3, 5																
7.9pF(**7R9**)	2			3	3, 5																
8.0pF(**8R0**)	2			3	3, 5								3		5						
8.1pF(**8R1**)	2			3	3, 5																
8.2pF(**8R2**)	2			3	3, 5																
8.3pF(**8R3**)	2			3	3, 5																
8.4pF(**8R4**)	2			3	3, 5																
8.5pF(**8R5**)	2			3	3, 5																
8.6pF(**8R6**)	2			3	3, 5																
8.7pF(**8R7**)	2			3	3, 5																
8.8pF(**8R8**)	2			3	3, 5																
8.9pF(**8R9**)	2			3	3, 5																
9.0pF(**9R0**)	2			3	3, 5								3		5						
9.1pF(**9R1**)	2			3	3, 5																
9.2pF(**9R2**)	2			3	3, 5																
9.3pF(**9R3**)	2			3	3, 5																
9.4pF(**9R4**)	2			3	3, 5																
9.5pF(**9R5**)	2			3	3, 5																
9.6pF(**9R6**)	2			3	3, 5																
9.7pF(**9R7**)	2			3	3, 5																
9.8pF(**9R8**)	2			3	3, 5																
9.9pF(**9R9**)	2			3	3, 5																

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Continued on the following page.

Capacitance Table

Continued from the preceding page.

6 ex.6: T Dimension [mm]

TC	C0G(**5C**)											U2J(**7U**)								
LxW [mm]	0.4x0.2 (**02**) <01005>			0.6x0.3 (**03**) <0201>	1.0x0.5 (**15**) <0402>	1.6x0.8 (**18**) <0603>		2.0x1.25 (**21**) <0805>		3.2x1.6 (**31**) <1206>		0.6x0.3 (**03**) <0201>		1.0x0.5 (**15**) <0402>		1.6x0.8 (**18**) <0603>		2.0x1.25 (**21**) <0805>		3.2x1.6 (**31**) <1206>
Rated Voltage [Vdc] / Capacitance	16 (**1C**)	10 (**1A**)	6.3 (**0J**)	50 (**1H**)	50 (**1H**)	100 (**1E**)	50 (**1H**)	100 (**1E**)	50 (**1H**)	100 (**1E**)	50 (**1H**)	50 (**1H**)	25 (**1E**)	50 (**1H**)	10 (**1A**)	50 (**1H**)	10 (**1A**)	50 (**1H**)	10 (**1A**)	50 (**1H**)
10pF(**100**)	**2**			**3**	**3, 5**	**8**	**8**					**3**		**5**						
12pF(**120**)	**2**			**3**	**3, 5**	**8**	**8**					**3**		**5**						
15pF(**150**)	**2**			**3**	**3, 5**	**8**	**8**					**3**		**5**						
18pF(**180**)	**2**			**3**	**3, 5**	**8**	**8**						**3**	**5**						
22pF(**220**)	**2**			**3**	**3, 5**	**8**	**8**						**3**	**5**						
27pF(**270**)	**2**			**3**	**3, 5**	**8**	**8**						**3**	**5**						
33pF(**330**)	**2**			**3**	**3, 5**	**8**	**8**						**3**	**5**						
39pF(**390**)	**2**			**3**	**3, 5**	**8**	**8**						**3**	**5**						
47pF(**470**)	**2**			**3**	**3, 5**	**8**	**8**						**3**	**5**						
56pF(**560**)		**2**	**2**	**3**	**3, 5**	**8**	**8**						**3**	**5**						
68pF(**680**)		**2**	**2**	**3**	**3, 5**	**8**	**8**						**3**	**5**						
82pF(**820**)		**2**	**2**	**3**	**3, 5**	**8**	**8**						**3**	**5**						
100pF(**101**)		**2**	**2**	**3**	**3, 5**	**8**	**8**	**6**					**3**	**5**						
120pF(**121**)					**3, 5**	**8**	**8**	**6**						**5**						
150pF(**151**)					**3, 5**	**8**	**8**	**6**						**5**						
180pF(**181**)					**3, 5**	**8**	**8**	**6**						**5**						
220pF(**221**)					**3, 5**	**8**	**8**	**6**												
270pF(**271**)					**3, 5**	**8**	**8**	**6**												
330pF(**331**)					**3, 5**	**8**	**8**	**6**												
390pF(**391**)					**3, 5**	**8**	**8**	**6**												
470pF(**471**)					**3, 5**	**8**	**8**	**6**												
560pF(**561**)					**3, 5**	**8**	**8**	**6**												
680pF(**681**)					**3, 5**	**8**	**8**	**6**												
820pF(**821**)					**5**	**8**	**8**	**6**												
1000pF(**102**)					**5**	**8**	**8**	**6**								**8**				
1200pF(**122**)						**8**	**8**	**6**	**6**						**5**	**8**				
1500pF(**152**)						**8**	**8**	**6**	**6**						**5**	**8**				
1800pF(**182**)							**8**	**6**	**6**	**9**					**5**	**8**				
2200pF(**222**)							**8**	**6**	**6**	**9**					**5**	**5, 8**				
2700pF(**272**)							**8**	**6**	**6**	**9**					**5**	**5, 8**				
3300pF(**332**)							**8**	**6**	**6**	**9**					**5**	**5, 8**				
3900pF(**392**)							**8**		**6**	**9**					**5**	**5, 8**				
4700pF(**472**)									**6**	**9**	**9**				**5**	**5, 8**				
5600pF(**562**)									**9**	**9**	**9**					**8**	**5**			
6800pF(**682**)									**9**	**9**	**9**					**8**	**5**			
8200pF(**822**)									**9**	**9**	**9**					**8**	**5**			
10000pF(**103**)									**9**	**9**	**9**					**8**	**5**	**6**		
12000pF(**123**)									**9**	**9**	**9**						**8**	**6**		
15000pF(**153**)									**9**	**9**	**9**						**8**	**6**		
18000pF(**183**)									**B**	**9**	**9**						**8**	**6**		
22000pF(**223**)									**B**	**9**	**9**						**8**	**9**		
27000pF(**273**)											**9**							**9**		
33000pF(**333**)											**9**							**A**		
39000pF(**393**)											**9**							**B**		
47000pF(**473**)											**M**							**B**		
56000pF(**563**)											**M**								**9**	**9**
68000pF(**683**)											**C**								**B**	**M**
82000pF(**823**)											**C**								**B**	**M**
0.1μF(**104**)											**C**								**B**	**M**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Capacitance Table

Temperature Compensating Type P2H(6P),R2H(6R),S2H(6S),T2H(6T) Characteristics

6 ex.6: T Dimension [mm]

TC	P2H (**6P**)	R2H (**6R**)		S2H (**6S**)		T2H (**6T**)	
LxW [mm]	1.0x0.5 (**15**) <0402>	0.6x0.3 (**03**) <0201>	1.0x0.5 (**15**) <0402>	0.6x0.3 (**03**) <0201>	1.0x0.5 (**15**) <0402>	0.6x0.3 (**03**) <0201>	1.0x0.5 (**15**) <0402>
Rated Voltage [Vdc] / Capacitance	50 (**1H**)	25 (**1E**)	50 (**1H**)	25 (**1E**)	50 (**1H**)	25 (**1E**)	50 (**1H**)
1.0pF(**1R0**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
2.0pF(**2R0**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
3.0pF(**3R0**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
4.0pF(**4R0**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
5.0pF(**5R0**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
6.0pF(**6R0**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
7.0pF(**7R0**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
8.0pF(**8R0**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
9.0pF(**9R0**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
10pF(**100**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
12pF(**120**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
15pF(**150**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
18pF(**180**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
22pF(**220**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
27pF(**270**)	**5**	**3**	**5**	**3**	**5**	**3**	**5**
33pF(**330**)		**3**	**5**	**3**	**5**	**3**	**5**
39pF(**390**)		**3**		**3**	**5**	**3**	**5**
47pF(**470**)		**3**		**3**		**3**	**5**
56pF(**560**)		**3**		**3**		**3**	**5**
68pF(**680**)		**3**		**3**		**3**	**5**
82pF(**820**)		**3**		**3**		**3**	**5**
100pF(**101**)		**3**		**3**		**3**	**5**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Capacitance Table

Continued from the preceding page.

High Dielectric Constant Type X7R(R7)/X7S(C7)/X7T(D7)/X7U(E7) Characteristics

5 ex.5: T Dimension [mm]

Capacitance \ LxW [mm]	0.4x0.2 (02) <01005>	0.6x0.3 (03) <0201>				1.0x0.5 (15) <0402>					1.6x0.8 (18) <0603>						
Rated Voltage [Vdc]	10 (1A)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	100 (2A)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	100 (2A)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)
68pF(**680**)	**2**																
100pF(**101**)	**2**	**3**	**3**														
150pF(**151**)	**2**	**3**	**3**														
220pF(**221**)	**2**	**3**	**3**			**5**	**X, 5**				**8**	**8**					
330pF(**331**)	**2**	**3**	**3**			**5**	**X, 5**				**8**	**8**					
470pF(**471**)	**2**	**3**	**3**			**5**	**X, 5**				**8**	**8**					
680pF(**681**)		**3**	**3**			**5**	**X, 5**				**8**	**8**					
1000pF(**102**)		**3**	**3**			**5**	**X, 5**				**8**	**8**					
1500pF(**152**)		**3**	**3**			**5**	**X, 5**				**8**	**8**					
2200pF(**222**)			**3**	**3**		**5**	**5**	**X**			**8**	**8**	**8**				
3300pF(**332**)			**3**	**3**		**5**	**5**		**X**		**8**	**8**	**8**				
4700pF(**472**)				**3**	**3**	**5**	**5**	**5**	**X**		**8**	**8**	**8**				
6800pF(**682**)				**3**	**3**		**5**	**5**	**X**		**8**	**8**	**8**				
10000pF(**103**)				**3**	**3**		**5**	**5**	**X**		**8**	**8**	**8**				
15000pF(**153**)							**5**	**5**	**5**			**8**	**8**				
22000pF(**223**)							**5**	**5**	**5**			**8**	**8**				
33000pF(**333**)								**5**	**5**			**8**	**8**				
47000pF(**473**)								**5**	**5**			**8**	**8**				
68000pF(**683**)									**5**	**5**		**8**	**8**				
0.10µF(**104**)									**5**	**5**	**8**	**8**	**8**				
0.15µF(**154**)									**5**				**8**	**8**			
0.22µF(**224**)									**5**				**8**	**8**			
0.33µF(**334**)														**8**	**8**		
0.47µF(**474**)													**8**	**8**	**8**		
0.68µF(**684**)														**8**	**8**		
1.0µF(**105**)													**8**	**8**	**5, 8**		
2.2µF(**225**)															**8**	**8**	**8**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Continued on the following page.

Capacitance Table

Continued from the preceding page.

Capacitance \ LxW [mm]	2.0x1.25 (21) <0805>							3.2x1.6 (31) <1206>							3.2x2.5 (32) <1210>							
Rated Voltage [Vdc]	100 (2A)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	100 (2A)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	100 (2A)	50 (1H)	35 (YA)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)
6800pF(**682**)	9																					
10000pF(**103**)	B																					
15000pF(**153**)	B							9														
22000pF(**223**)	B							M														
33000pF(**333**)	B	9						M														
47000pF(**473**)	B	B						M														
68000pF(**683**)		B	9					M														
0.10μF(**104**)		B	B					9														
0.15μF(**154**)		B	B					M	M													
0.22μF(**224**)	A	B	B					M	M													
0.33μF(**334**)	A	9	B						9	9												
0.47μF(**474**)	B	B	9					M	M	9												
0.68μF(**684**)			9	9				M	M	9					C							
1.0μF(**105**)		B	9, B	B				C	M						C							
2.2μF(**225**)			B	B	B				C	M	M				E							
4.7μF(**475**)				B	B				C	C	9#, C					E						
10μF(**106**)					B	B				C	C	C					E	D				
22μF(**226**)							B					C	C					E	E	E		
47μF(**476**)														C						E	E	
100μF(**107**)																						E

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

These Part Numbers have individual testing conditions on Durability of GRM Series Specifications and Test Methods (2). Please refer to P60.

High Dielectric Constant Type X6S(C8)/X6T(D8) Characteristics

5 ex.5: T Dimension [mm]

Capacitance \ LxW [mm]	0.6x0.3 (03) <0201>		1.0x0.5 (15) <0402>		
Rated Voltage [Vdc]	6.3 (0J)	4 (0G)	25 (1E)	6.3 (0J)	4 (0G)
15000pF(**153**)	3	3			
22000pF(**223**)	3	3			
33000pF(**333**)	3	3			
47000pF(**473**)	3	3			
68000pF(**683**)			5		
0.10μF(**104**)			5		
0.15μF(**154**)				5	5
0.22μF(**224**)				5	5
0.33μF(**334**)				5	5
0.47μF(**474**)				5	5
0.68μF(**684**)				5#	5

Capacitance \ LxW [mm]	1.6x0.8 (18) <0603>					2.0x1.25 (21) <0805>					3.2x1.6 (31) <1206>					3.2x2.5 (32) <1210>			
Rated Voltage [Vdc]	25 (1E)	10 (1A)	6.3 (0J)	4 (0G)	2.5 (0E)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	25 (1E)	10 (1A)	6.3 (0J)	4 (0G)
1.0μF(**105**)	8	5	5				6												
2.2μF(**225**)		8	8				9					6							
4.7μF(**475**)				8		B	B	9	9			9							
10μF(**106**)				8#	8			B	9, B		C	M	9	9		D			
22μF(**226**)									B#	B			C	C		E	N		
47μF(**476**)														C	C		E	E	
100μF(**107**)															C			E	E

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

These Part Numbers have individual testing conditions on Durability of GRM Series Specifications and Test Methods (2). Please refer to P60.

Capacitance Table

Continued from the preceding page.

High Dielectric Constant Type X5R(R6) Characteristics

5 ex.5: T Dimension [mm] : Please refer to X7R(R7) etc. Characteristics.

Capacitance \ LxW [mm]	0.4x0.2 (**02**) <01005>		0.6x0.3 (**03**) <0201>				1.0x0.5 (**15**) <0402>						1.6x0.8 (**18**) <0603>						
Rated Voltage [Vdc]	10 (**1A**)	6.3 (**0J**)	25 (**1E**)	16 (**1C**)	10 (**1A**)	6.3 (**0J**)	100 (**2A**)	50 (**1H**)	25 (**1E**)	16 (**1C**)	10 (**1A**)	6.3 (**0J**)	100 (**2A**)	50 (**1H**)	25 (**1E**)	16 (**1C**)	10 (**1A**)	6.3 (**0J**)	4 (**0G**)
68pF(**680**)	**2**																		
100pF(**101**)	**2**																		
150pF(**151**)	**2**																		
220pF(**221**)	**2**																		
330pF(**331**)	**2**																		
470pF(**471**)	**2**																		
680pF(**681**)	**2**	**2**																	
1000pF(**102**)	**2**	**2**						**5**						**8**					
1500pF(**152**)	**2**	**2**			**3**														
2200pF(**222**)	**2**	**2**			**3**			**5**						**8**					
3300pF(**332**)	**2**	**2**			**3**														
4700pF(**472**)	**2**	**2**			**3**			**5**						**8**					
6800pF(**682**)	**2**	**2**			**3**														
10000pF(**103**)	**2**	**2**			**3**	**3**								**8**					
15000pF(**153**)						**3**													
22000pF(**223**)						**3**				**5**				**8**					
33000pF(**333**)						**3**				**5**	**5**								
47000pF(**473**)						**3**				**5**	**5**								
68000pF(**683**)									**5**	**5**	**5**								
0.10µF(**104**)									**5**	**5**	**5**				**8**				
0.15µF(**154**)											**5**	**5**							
0.22µF(**224**)											**5**	**5**			**8**	**8**			
0.33µF(**334**)											**5**	**5**							
0.47µF(**474**)											**5**	**5**			**8**	**8**			
0.68µF(**684**)											**5**	**5**					**8**		
1.0µF(**105**)											**5**				**8**	**5, 8**	**5**		
2.2µF(**225**)																**8**	**8**		
4.7µF(**475**)																		**8**	
10µF(**106**)																		**8**	**8**
22µF(**226**)																			**8**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Continued on the following page.

Capacitance Table

Continued from the preceding page.

Capacitance \ LxW [mm]	2.0x1.25 (21) <0805>							3.2x1.6 (31) <1206>							3.2x2.5 (32) <1210>							
Rated Voltage [Vdc]	100 (2A)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	100 (2A)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	100 (2A)	50 (1H)	35 (YA)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	4 (0G)
6800pF(**682**)																						
10000pF(**103**)																						
15000pF(**153**)																						
22000pF(**223**)																						
33000pF(**333**)																						
47000pF(**473**)																						
68000pF(**683**)																						
0.10μF(**104**)																						
0.15μF(**154**)																						
0.22μF(**224**)																						
0.33μF(**334**)																						
0.47μF(**474**)																						
0.68μF(**684**)																						
1.0μF(**105**)			6	6, B																		
2.2μF(**225**)			9, B	9, B	B				C	6												
4.7μF(**475**)			B	9, B	9, B	B				9,C	9,C											
10μF(**106**)				B	9, B	9, B				C	9, C	9						E	D			
22μF(**226**)						B	9				C	C	C						E			
47μF(**476**)												C	C							E	E	
100μF(**107**)													C	C								E

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>	0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		16(**1C**)	50(**1H**)	50(**1H**)
Capacitance	Tolerance	Part Number		
0.1pF(**R10**)	±0.05pF(**W**)		**GRM0335C1HR10WD01D**	**GRM1555C1HR10WA01D**
	±0.1pF(**B**)		**GRM0335C1HR10BD01D**	**GRM1555C1HR10BA01D**
0.2pF(**R20**)	±0.05pF(**W**)	**GRM0225C1CR20WD05L**	**GRM0335C1HR20WD01D**	**GRM1555C1HR20WA01D**
	±0.1pF(**B**)	**GRM0225C1CR20BD05L**	**GRM0335C1HR20BD01D**	**GRM1555C1HR20BA01D**
0.3pF(**R30**)	±0.05pF(**W**)	**GRM0225C1CR30WD05L**	**GRM0335C1HR30WD01D**	**GRM1555C1HR30WA01D**
	±0.1pF(**B**)	**GRM0225C1CR30BD05L**	**GRM0335C1HR30BD01D**	**GRM1555C1HR30BA01D**
0.4pF(**R40**)	±0.05pF(**W**)	**GRM0225C1CR40WD05L**	**GRM0335C1HR40WD01D**	**GRM1555C1HR40WA01D**
	±0.1pF(**B**)	**GRM0225C1CR40BD05L**	**GRM0335C1HR40BD01D**	**GRM1555C1HR40BA01D**
0.5pF(**R50**)	±0.05pF(**W**)	**GRM0225C1CR50WD05L**	**GRM0335C1HR50WD01D**	**GRM1555C1HR50WA01D**
	±0.1pF(**B**)	**GRM0225C1CR50BD05L**	**GRM0335C1HR50BD01D**	**GRM1555C1HR50BA01D**
0.6pF(**R60**)	±0.05pF(**W**)	**GRM0225C1CR60WD05L**	**GRM0335C1HR60WD01D**	**GRM1555C1HR60WA01D**
	±0.1pF(**B**)	**GRM0225C1CR60BD05L**	**GRM0335C1HR60BD01D**	**GRM1555C1HR60BA01D**
0.7pF(**R70**)	±0.05pF(**W**)	**GRM0225C1CR70WD05L**	**GRM0335C1HR70WD01D**	**GRM1555C1HR70WA01D**
	±0.1pF(**B**)	**GRM0225C1CR70BD05L**	**GRM0335C1HR70BD01D**	**GRM1555C1HR70BA01D**
0.8pF(**R80**)	±0.05pF(**W**)	**GRM0225C1CR80WD05L**	**GRM0335C1HR80WD01D**	**GRM1555C1HR80WA01D**
	±0.1pF(**B**)	**GRM0225C1CR80BD05L**	**GRM0335C1HR80BD01D**	**GRM1555C1HR80BA01D**
0.9pF(**R90**)	±0.05pF(**W**)	**GRM0225C1CR90WD05L**	**GRM0335C1HR90WD01D**	**GRM1555C1HR90WA01D**
	±0.1pF(**B**)	**GRM0225C1CR90BD05L**	**GRM0335C1HR90BD01D**	**GRM1555C1HR90BA01D**
1.0pF(**1R0**)	±0.05pF(**W**)	**GRM0225C1C1R0WD05L**	**GRM0335C1H1R0WD01D**	**GRM1555C1H1R0WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R0BD05L**	**GRM0335C1H1R0BD01D**	**GRM1555C1H1R0BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R0CD05L**	**GRM0335C1H1R0CD01D**	**GRM1555C1H1R0CA01D**
1.1pF(**1R1**)	±0.05pF(**W**)	**GRM0225C1C1R1WD05L**	**GRM0335C1H1R1WD01D**	**GRM1555C1H1R1WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R1BD05L**	**GRM0335C1H1R1BD01D**	**GRM1555C1H1R1BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R1CD05L**	**GRM0335C1H1R1CD01D**	**GRM1555C1H1R1CA01D**
1.2pF(**1R2**)	±0.05pF(**W**)	**GRM0225C1C1R2WD05L**	**GRM0335C1H1R2WD01D**	**GRM1555C1H1R2WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R2BD05L**	**GRM0335C1H1R2BD01D**	**GRM1555C1H1R2BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R2CD05L**	**GRM0335C1H1R2CD01D**	**GRM1555C1H1R2CA01D**
1.3pF(**1R3**)	±0.05pF(**W**)	**GRM0225C1C1R3WD05L**	**GRM0335C1H1R3WD01D**	**GRM1555C1H1R3WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R3BD05L**	**GRM0335C1H1R3BD01D**	**GRM1555C1H1R3BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R3CD05L**	**GRM0335C1H1R3CD01D**	**GRM1555C1H1R3CA01D**
1.4pF(**1R4**)	±0.05pF(**W**)	**GRM0225C1C1R4WD05L**	**GRM0335C1H1R4WD01D**	**GRM1555C1H1R4WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R4BD05L**	**GRM0335C1H1R4BD01D**	**GRM1555C1H1R4BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R4CD05L**	**GRM0335C1H1R4CD01D**	**GRM1555C1H1R4CA01D**
1.5pF(**1R5**)	±0.05pF(**W**)	**GRM0225C1C1R5WD05L**	**GRM0335C1H1R5WD01D**	**GRM1555C1H1R5WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R5BD05L**	**GRM0335C1H1R5BD01D**	**GRM1555C1H1R5BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R5CD05L**	**GRM0335C1H1R5CD01D**	**GRM1555C1H1R5CA01D**
1.6pF(**1R6**)	±0.05pF(**W**)	**GRM0225C1C1R6WD05L**	**GRM0335C1H1R6WD01D**	**GRM1555C1H1R6WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R6BD05L**	**GRM0335C1H1R6BD01D**	**GRM1555C1H1R6BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R6CD05L**	**GRM0335C1H1R6CD01D**	**GRM1555C1H1R6CA01D**
1.7pF(**1R7**)	±0.05pF(**W**)	**GRM0225C1C1R7WD05L**	**GRM0335C1H1R7WD01D**	**GRM1555C1H1R7WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R7BD05L**	**GRM0335C1H1R7BD01D**	**GRM1555C1H1R7BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R7CD05L**	**GRM0335C1H1R7CD01D**	**GRM1555C1H1R7CA01D**
1.8pF(**1R8**)	±0.05pF(**W**)	**GRM0225C1C1R8WD05L**	**GRM0335C1H1R8WD01D**	**GRM1555C1H1R8WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R8BD05L**	**GRM0335C1H1R8BD01D**	**GRM1555C1H1R8BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R8CD05L**	**GRM0335C1H1R8CD01D**	**GRM1555C1H1R8CA01D**
1.9pF(**1R9**)	±0.05pF(**W**)	**GRM0225C1C1R9WD05L**	**GRM0335C1H1R9WD01D**	**GRM1555C1H1R9WA01D**
	±0.1pF(**B**)	**GRM0225C1C1R9BD05L**	**GRM0335C1H1R9BD01D**	**GRM1555C1H1R9BA01D**
	±0.25pF(**C**)	**GRM0225C1C1R9CD05L**	**GRM0335C1H1R9CD01D**	**GRM1555C1H1R9CA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) **GR** ❶ | **M** ❷ | **02** ❸ | **2** ❹ | **5C** ❺ | **1C** ❻ | **R20** ❼ | **W** ❽ | **D05** ❾ | **L** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging*

Packaging Code in Part Number shows STD 180mm Reel Taping.

*__GRM022__: **D** is applicable.

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>	0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		16(**1C**)	50(**1H**)	50(**1H**)
Capacitance	Tolerance	Part Number		
2.0pF(**2R0**)	±0.05pF(**W**)	**GRM0225C1C2R0WD05L**	**GRM0335C1H2R0WD01D**	**GRM1555C1H2R0WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R0BD05L**	**GRM0335C1H2R0BD01D**	**GRM1555C1H2R0BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R0CD05L**	**GRM0335C1H2R0CD01D**	**GRM1555C1H2R0CA01D**
2.1pF(**2R1**)	±0.05pF(**W**)	**GRM0225C1C2R1WD05L**	**GRM0335C1H2R1WD01D**	**GRM1555C1H2R1WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R1BD05L**	**GRM0335C1H2R1BD01D**	**GRM1555C1H2R1BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R1CD05L**	**GRM0335C1H2R1CD01D**	**GRM1555C1H2R1CA01D**
2.2pF(**2R2**)	±0.05pF(**W**)	**GRM0225C1C2R2WD05L**	**GRM0335C1H2R2WD01D**	**GRM1555C1H2R2WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R2BD05L**	**GRM0335C1H2R2BD01D**	**GRM1555C1H2R2BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R2CD05L**	**GRM0335C1H2R2CD01D**	**GRM1555C1H2R2CA01D**
2.3pF(**2R3**)	±0.05pF(**W**)	**GRM0225C1C2R3WD05L**	**GRM0335C1H2R3WD01D**	**GRM1555C1H2R3WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R3BD05L**	**GRM0335C1H2R3BD01D**	**GRM1555C1H2R3BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R3CD05L**	**GRM0335C1H2R3CD01D**	**GRM1555C1H2R3CA01D**
2.4pF(**2R4**)	±0.05pF(**W**)	**GRM0225C1C2R4WD05L**	**GRM0335C1H2R4WD01D**	**GRM1555C1H2R4WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R4BD05L**	**GRM0335C1H2R4BD01D**	**GRM1555C1H2R4BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R4CD05L**	**GRM0335C1H2R4CD01D**	**GRM1555C1H2R4CA01D**
2.5pF(**2R5**)	±0.05pF(**W**)	**GRM0225C1C2R5WD05L**	**GRM0335C1H2R5WD01D**	**GRM1555C1H2R5WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R5BD05L**	**GRM0335C1H2R5BD01D**	**GRM1555C1H2R5BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R5CD05L**	**GRM0335C1H2R5CD01D**	**GRM1555C1H2R5CA01D**
2.6pF(**2R6**)	±0.05pF(**W**)	**GRM0225C1C2R6WD05L**	**GRM0335C1H2R6WD01D**	**GRM1555C1H2R6WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R6BD05L**	**GRM0335C1H2R6BD01D**	**GRM1555C1H2R6BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R6CD05L**	**GRM0335C1H2R6CD01D**	**GRM1555C1H2R6CA01D**
2.7pF(**2R7**)	±0.05pF(**W**)	**GRM0225C1C2R7WD05L**	**GRM0335C1H2R7WD01D**	**GRM1555C1H2R7WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R7BD05L**	**GRM0335C1H2R7BD01D**	**GRM1555C1H2R7BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R7CD05L**	**GRM0335C1H2R7CD01D**	**GRM1555C1H2R7CA01D**
2.8pF(**2R8**)	±0.05pF(**W**)	**GRM0225C1C2R8WD05L**	**GRM0335C1H2R8WD01D**	**GRM1555C1H2R8WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R8BD05L**	**GRM0335C1H2R8BD01D**	**GRM1555C1H2R8BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R8CD05L**	**GRM0335C1H2R8CD01D**	**GRM1555C1H2R8CA01D**
2.9pF(**2R9**)	±0.05pF(**W**)	**GRM0225C1C2R9WD05L**	**GRM0335C1H2R9WD01D**	**GRM1555C1H2R9WA01D**
	±0.1pF(**B**)	**GRM0225C1C2R9BD05L**	**GRM0335C1H2R9BD01D**	**GRM1555C1H2R9BA01D**
	±0.25pF(**C**)	**GRM0225C1C2R9CD05L**	**GRM0335C1H2R9CD01D**	**GRM1555C1H2R9CA01D**
3.0pF(**3R0**)	±0.05pF(**W**)	**GRM0225C1C3R0WD05L**	**GRM0335C1H3R0WD01D**	**GRM1555C1H3R0WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R0BD05L**	**GRM0335C1H3R0BD01D**	**GRM1555C1H3R0BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R0CD05L**	**GRM0335C1H3R0CD01D**	**GRM1555C1H3R0CA01D**
3.1pF(**3R1**)	±0.05pF(**W**)	**GRM0225C1C3R1WD05L**	**GRM0335C1H3R1WD01D**	**GRM1555C1H3R1WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R1BD05L**	**GRM0335C1H3R1BD01D**	**GRM1555C1H3R1BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R1CD05L**	**GRM0335C1H3R1CD01D**	**GRM1555C1H3R1CA01D**
3.2pF(**3R2**)	±0.05pF(**W**)	**GRM0225C1C3R2WD05L**	**GRM0335C1H3R2WD01D**	**GRM1555C1H3R2WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R2BD05L**	**GRM0335C1H3R2BD01D**	**GRM1555C1H3R2BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R2CD05L**	**GRM0335C1H3R2CD01D**	**GRM1555C1H3R2CA01D**
3.3pF(**3R3**)	±0.05pF(**W**)	**GRM0225C1C3R3WD05L**	**GRM0335C1H3R3WD01D**	**GRM1555C1H3R3WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R3BD05L**	**GRM0335C1H3R3BD01D**	**GRM1555C1H3R3BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R3CD05L**	**GRM0335C1H3R3CD01D**	**GRM1555C1H3R3CA01D**
3.4pF(**3R4**)	±0.05pF(**W**)	**GRM0225C1C3R4WD05L**	**GRM0335C1H3R4WD01D**	**GRM1555C1H3R4WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R4BD05L**	**GRM0335C1H3R4BD01D**	**GRM1555C1H3R4BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R4CD05L**	**GRM0335C1H3R4CD01D**	**GRM1555C1H3R4CA01D**
3.5pF(**3R5**)	±0.05pF(**W**)	**GRM0225C1C3R5WD05L**	**GRM0335C1H3R5WD01D**	**GRM1555C1H3R5WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R5BD05L**	**GRM0335C1H3R5BD01D**	**GRM1555C1H3R5BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R5CD05L**	**GRM0335C1H3R5CD01D**	**GRM1555C1H3R5CA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) GR ❶ | M ❷ | 02 ❸ | 2 ❹ | 5C ❺ | 1C ❻ | 2R0 ❼ | W ❽ | D05 ❾ | L ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging*

Packaging Code in Part Number shows STD 180mm Reel Taping.

*GRM022: **D** is applicable.

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>	0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		16(**1C**)	50(**1H**)	50(**1H**)
Capacitance	Tolerance	Part Number		
3.6pF(**3R6**)	±0.05pF(**W**)	**GRM0225C1C3R6WD05L**	**GRM0335C1H3R6WD01D**	**GRM1555C1H3R6WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R6BD05L**	**GRM0335C1H3R6BD01D**	**GRM1555C1H3R6BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R6CD05L**	**GRM0335C1H3R6CD01D**	**GRM1555C1H3R6CA01D**
3.7pF(**3R7**)	±0.05pF(**W**)	**GRM0225C1C3R7WD05L**	**GRM0335C1H3R7WD01D**	**GRM1555C1H3R7WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R7BD05L**	**GRM0335C1H3R7BD01D**	**GRM1555C1H3R7BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R7CD05L**	**GRM0335C1H3R7CD01D**	**GRM1555C1H3R7CA01D**
3.8pF(**3R8**)	±0.05pF(**W**)	**GRM0225C1C3R8WD05L**	**GRM0335C1H3R8WD01D**	**GRM1555C1H3R8WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R8BD05L**	**GRM0335C1H3R8BD01D**	**GRM1555C1H3R8BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R8CD05L**	**GRM0335C1H3R8CD01D**	**GRM1555C1H3R8CA01D**
3.9pF(**3R9**)	±0.05pF(**W**)	**GRM0225C1C3R9WD05L**	**GRM0335C1H3R9WD01D**	**GRM1555C1H3R9WA01D**
	±0.1pF(**B**)	**GRM0225C1C3R9BD05L**	**GRM0335C1H3R9BD01D**	**GRM1555C1H3R9BA01D**
	±0.25pF(**C**)	**GRM0225C1C3R9CD05L**	**GRM0335C1H3R9CD01D**	**GRM1555C1H3R9CA01D**
4.0pF(**4R0**)	±0.05pF(**W**)	**GRM0225C1C4R0WD05L**	**GRM0335C1H4R0WD01D**	**GRM1555C1H4R0WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R0BD05L**	**GRM0335C1H4R0BD01D**	**GRM1555C1H4R0BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R0CD05L**	**GRM0335C1H4R0CD01D**	**GRM1555C1H4R0CA01D**
4.1pF(**4R1**)	±0.05pF(**W**)	**GRM0225C1C4R1WD05L**	**GRM0335C1H4R1WD01D**	**GRM1555C1H4R1WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R1BD05L**	**GRM0335C1H4R1BD01D**	**GRM1555C1H4R1BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R1CD05L**	**GRM0335C1H4R1CD01D**	**GRM1555C1H4R1CA01D**
4.2pF(**4R2**)	±0.05pF(**W**)	**GRM0225C1C4R2WD05L**	**GRM0335C1H4R2WD01D**	**GRM1555C1H4R2WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R2BD05L**	**GRM0335C1H4R2BD01D**	**GRM1555C1H4R2BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R2CD05L**	**GRM0335C1H4R2CD01D**	**GRM1555C1H4R2CA01D**
4.3pF(**4R3**)	±0.05pF(**W**)	**GRM0225C1C4R3WD05L**	**GRM0335C1H4R3WD01D**	**GRM1555C1H4R3WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R3BD05L**	**GRM0335C1H4R3BD01D**	**GRM1555C1H4R3BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R3CD05L**	**GRM0335C1H4R3CD01D**	**GRM1555C1H4R3CA01D**
4.4pF(**4R4**)	±0.05pF(**W**)	**GRM0225C1C4R4WD05L**	**GRM0335C1H4R4WD01D**	**GRM1555C1H4R4WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R4BD05L**	**GRM0335C1H4R4BD01D**	**GRM1555C1H4R4BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R4CD05L**	**GRM0335C1H4R4CD01D**	**GRM1555C1H4R4CA01D**
4.5pF(**4R5**)	±0.05pF(**W**)	**GRM0225C1C4R5WD05L**	**GRM0335C1H4R5WD01D**	**GRM1555C1H4R5WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R5BD05L**	**GRM0335C1H4R5BD01D**	**GRM1555C1H4R5BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R5CD05L**	**GRM0335C1H4R5CD01D**	**GRM1555C1H4R5CA01D**
4.6pF(**4R6**)	±0.05pF(**W**)	**GRM0225C1C4R6WD05L**	**GRM0335C1H4R6WD01D**	**GRM1555C1H4R6WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R6BD05L**	**GRM0335C1H4R6BD01D**	**GRM1555C1H4R6BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R6CD05L**	**GRM0335C1H4R6CD01D**	**GRM1555C1H4R6CA01D**
4.7pF(**4R7**)	±0.05pF(**W**)	**GRM0225C1C4R7WD05L**	**GRM0335C1H4R7WD01D**	**GRM1555C1H4R7WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R7BD05L**	**GRM0335C1H4R7BD01D**	**GRM1555C1H4R7BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R7CD05L**	**GRM0335C1H4R7CD01D**	**GRM1555C1H4R7CA01D**
4.8pF(**4R8**)	±0.05pF(**W**)	**GRM0225C1C4R8WD05L**	**GRM0335C1H4R8WD01D**	**GRM1555C1H4R8WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R8BD05L**	**GRM0335C1H4R8BD01D**	**GRM1555C1H4R8BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R8CD05L**	**GRM0335C1H4R8CD01D**	**GRM1555C1H4R8CA01D**
4.9pF(**4R9**)	±0.05pF(**W**)	**GRM0225C1C4R9WD05L**	**GRM0335C1H4R9WD01D**	**GRM1555C1H4R9WA01D**
	±0.1pF(**B**)	**GRM0225C1C4R9BD05L**	**GRM0335C1H4R9BD01D**	**GRM1555C1H4R9BA01D**
	±0.25pF(**C**)	**GRM0225C1C4R9CD05L**	**GRM0335C1H4R9CD01D**	**GRM1555C1H4R9CA01D**
5.0pF(**5R0**)	±0.05pF(**W**)	**GRM0225C1C5R0WD05L**	**GRM0335C1H5R0WD01D**	**GRM1555C1H5R0WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R0BD05L**	**GRM0335C1H5R0BD01D**	**GRM1555C1H5R0BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R0CD05L**	**GRM0335C1H5R0CD01D**	**GRM1555C1H5R0CA01D**
5.1pF(**5R1**)	±0.05pF(**W**)	**GRM0225C1C5R1WD05L**	**GRM0335C1H5R1WD01D**	**GRM1555C1H5R1WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R1BD05L**	**GRM0335C1H5R1BD01D**	**GRM1555C1H5R1BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R1CD05L**	**GRM0335C1H5R1CD01D**	**GRM1555C1H5R1CA01D**
	±0.5pF(**D**)	**GRM0225C1C5R1DD05L**	**GRM0335C1H5R1DD01D**	**GRM1555C1H5R1DA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>	0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		16(**1C**)	50(**1H**)	50(**1H**)
Capacitance	Tolerance	Part Number		
5.2pF(**5R2**)	±0.05pF(**W**)	**GRM0225C1C5R2WD05L**	**GRM0335C1H5R2WD01D**	**GRM1555C1H5R2WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R2BD05L**	**GRM0335C1H5R2BD01D**	**GRM1555C1H5R2BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R2CD05L**	**GRM0335C1H5R2CD01D**	**GRM1555C1H5R2CA01D**
	±0.5pF(**D**)	**GRM0225C1C5R2DD05L**	**GRM0335C1H5R2DD01D**	**GRM1555C1H5R2DA01D**
5.3pF(**5R3**)	±0.05pF(**W**)	**GRM0225C1C5R3WD05L**	**GRM0335C1H5R3WD01D**	**GRM1555C1H5R3WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R3BD05L**	**GRM0335C1H5R3BD01D**	**GRM1555C1H5R3BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R3CD05L**	**GRM0335C1H5R3CD01D**	**GRM1555C1H5R3CA01D**
	±0.5pF(**D**)	**GRM0225C1C5R3DD05L**	**GRM0335C1H5R3DD01D**	**GRM1555C1H5R3DA01D**
5.4pF(**5R4**)	±0.05pF(**W**)	**GRM0225C1C5R4WD05L**	**GRM0335C1H5R4WD01D**	**GRM1555C1H5R4WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R4BD05L**	**GRM0335C1H5R4BD01D**	**GRM1555C1H5R4BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R4CD05L**	**GRM0335C1H5R4CD01D**	**GRM1555C1H5R4CA01D**
	±0.5pF(**D**)	**GRM0225C1C5R4DD05L**	**GRM0335C1H5R4DD01D**	**GRM1555C1H5R4DA01D**
5.5pF(**5R5**)	±0.05pF(**W**)	**GRM0225C1C5R5WD05L**	**GRM0335C1H5R5WD01D**	**GRM1555C1H5R5WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R5BD05L**	**GRM0335C1H5R5BD01D**	**GRM1555C1H5R5BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R5CD05L**	**GRM0335C1H5R5CD01D**	**GRM1555C1H5R5CA01D**
	±0.5pF(**D**)	**GRM0225C1C5R5DD05L**	**GRM0335C1H5R5DD01D**	**GRM1555C1H5R5DA01D**
5.6pF(**5R6**)	±0.05pF(**W**)	**GRM0225C1C5R6WD05L**	**GRM0335C1H5R6WD01D**	**GRM1555C1H5R6WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R6BD05L**	**GRM0335C1H5R6BD01D**	**GRM1555C1H5R6BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R6CD05L**	**GRM0335C1H5R6CD01D**	**GRM1555C1H5R6CA01D**
	±0.5pF(**D**)	**GRM0225C1C5R6DD05L**	**GRM0335C1H5R6DD01D**	**GRM1555C1H5R6DA01D**
5.7pF(**5R7**)	±0.05pF(**W**)	**GRM0225C1C5R7WD05L**	**GRM0335C1H5R7WD01D**	**GRM1555C1H5R7WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R7BD05L**	**GRM0335C1H5R7BD01D**	**GRM1555C1H5R7BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R7CD05L**	**GRM0335C1H5R7CD01D**	**GRM1555C1H5R7CA01D**
	±0.5pF(**D**)	**GRM0225C1C5R7DD05L**	**GRM0335C1H5R7DD01D**	**GRM1555C1H5R7DA01D**
5.8pF(**5R8**)	±0.05pF(**W**)	**GRM0225C1C5R8WD05L**	**GRM0335C1H5R8WD01D**	**GRM1555C1H5R8WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R8BD05L**	**GRM0335C1H5R8BD01D**	**GRM1555C1H5R8BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R8CD05L**	**GRM0335C1H5R8CD01D**	**GRM1555C1H5R8CA01D**
	±0.5pF(**D**)	**GRM0225C1C5R8DD05L**	**GRM0335C1H5R8DD01D**	**GRM1555C1H5R8DA01D**
5.9pF(**5R9**)	±0.05pF(**W**)	**GRM0225C1C5R9WD05L**	**GRM0335C1H5R9WD01D**	**GRM1555C1H5R9WA01D**
	±0.1pF(**B**)	**GRM0225C1C5R9BD05L**	**GRM0335C1H5R9BD01D**	**GRM1555C1H5R9BA01D**
	±0.25pF(**C**)	**GRM0225C1C5R9CD05L**	**GRM0335C1H5R9CD01D**	**GRM1555C1H5R9CA01D**
	±0.5pF(**D**)	**GRM0225C1C5R9DD05L**	**GRM0335C1H5R9DD01D**	**GRM1555C1H5R9DA01D**
6.0pF(**6R0**)	±0.05pF(**W**)	**GRM0225C1C6R0WD05L**	**GRM0335C1H6R0WD01D**	**GRM1555C1H6R0WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R0BD05L**	**GRM0335C1H6R0BD01D**	**GRM1555C1H6R0BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R0CD05L**	**GRM0335C1H6R0CD01D**	**GRM1555C1H6R0CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R0DD05L**	**GRM0335C1H6R0DD01D**	**GRM1555C1H6R0DA01D**
6.1pF(**6R1**)	±0.05pF(**W**)	**GRM0225C1C6R1WD05L**	**GRM0335C1H6R1WD01D**	**GRM1555C1H6R1WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R1BD05L**	**GRM0335C1H6R1BD01D**	**GRM1555C1H6R1BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R1CD05L**	**GRM0335C1H6R1CD01D**	**GRM1555C1H6R1CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R1DD05L**	**GRM0335C1H6R1DD01D**	**GRM1555C1H6R1DA01D**
6.2pF(**6R2**)	±0.05pF(**W**)	**GRM0225C1C6R2WD05L**	**GRM0335C1H6R2WD01D**	**GRM1555C1H6R2WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R2BD05L**	**GRM0335C1H6R2BD01D**	**GRM1555C1H6R2BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R2CD05L**	**GRM0335C1H6R2CD01D**	**GRM1555C1H6R2CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R2DD05L**	**GRM0335C1H6R2DD01D**	**GRM1555C1H6R2DA01D**
6.3pF(**6R3**)	±0.05pF(**W**)	**GRM0225C1C6R3WD05L**	**GRM0335C1H6R3WD01D**	**GRM1555C1H6R3WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R3BD05L**	**GRM0335C1H6R3BD01D**	**GRM1555C1H6R3BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R3CD05L**	**GRM0335C1H6R3CD01D**	**GRM1555C1H6R3CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R3DD05L**	**GRM0335C1H6R3DD01D**	**GRM1555C1H6R3DA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) | **GR** ❶ | **M** ❷ | **02** ❸ | **2** ❹ | **5C** ❺ | **1C** ❻ | **5R2** ❼ | **W** ❽ | **D05** ❾ | **L** ❿ |

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging*

Packaging Code in Part Number shows STD 180mm Reel Taping.

*__GRM022__: **D** is applicable.

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>	0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		16(**1C**)	50(**1H**)	50(**1H**)
Capacitance	Tolerance	Part Number		
6.4pF(**6R4**)	±0.05pF(**W**)	**GRM0225C1C6R4WD05L**	**GRM0335C1H6R4WD01D**	**GRM1555C1H6R4WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R4BD05L**	**GRM0335C1H6R4BD01D**	**GRM1555C1H6R4BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R4CD05L**	**GRM0335C1H6R4CD01D**	**GRM1555C1H6R4CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R4DD05L**	**GRM0335C1H6R4DD01D**	**GRM1555C1H6R4DA01D**
6.5pF(**6R5**)	±0.05pF(**W**)	**GRM0225C1C6R5WD05L**	**GRM0335C1H6R5WD01D**	**GRM1555C1H6R5WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R5BD05L**	**GRM0335C1H6R5BD01D**	**GRM1555C1H6R5BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R5CD05L**	**GRM0335C1H6R5CD01D**	**GRM1555C1H6R5CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R5DD05L**	**GRM0335C1H6R5DD01D**	**GRM1555C1H6R5DA01D**
6.6pF(**6R6**)	±0.05pF(**W**)	**GRM0225C1C6R6WD05L**	**GRM0335C1H6R6WD01D**	**GRM1555C1H6R6WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R6BD05L**	**GRM0335C1H6R6BD01D**	**GRM1555C1H6R6BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R6CD05L**	**GRM0335C1H6R6CD01D**	**GRM1555C1H6R6CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R6DD05L**	**GRM0335C1H6R6DD01D**	**GRM1555C1H6R6DA01D**
6.7pF(**6R7**)	±0.05pF(**W**)	**GRM0225C1C6R7WD05L**	**GRM0335C1H6R7WD01D**	**GRM1555C1H6R7WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R7BD05L**	**GRM0335C1H6R7BD01D**	**GRM1555C1H6R7BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R7CD05L**	**GRM0335C1H6R7CD01D**	**GRM1555C1H6R7CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R7DD05L**	**GRM0335C1H6R7DD01D**	**GRM1555C1H6R7DA01D**
6.8pF(**6R8**)	±0.05pF(**W**)	**GRM0225C1C6R8WD05L**	**GRM0335C1H6R8WD01D**	**GRM1555C1H6R8WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R8BD05L**	**GRM0335C1H6R8BD01D**	**GRM1555C1H6R8BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R8CD05L**	**GRM0335C1H6R8CD01D**	**GRM1555C1H6R8CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R8DD05L**	**GRM0335C1H6R8DD01D**	**GRM1555C1H6R8DA01D**
6.9pF(**6R9**)	±0.05pF(**W**)	**GRM0225C1C6R9WD05L**	**GRM0335C1H6R9WD01D**	**GRM1555C1H6R9WA01D**
	±0.1pF(**B**)	**GRM0225C1C6R9BD05L**	**GRM0335C1H6R9BD01D**	**GRM1555C1H6R9BA01D**
	±0.25pF(**C**)	**GRM0225C1C6R9CD05L**	**GRM0335C1H6R9CD01D**	**GRM1555C1H6R9CA01D**
	±0.5pF(**D**)	**GRM0225C1C6R9DD05L**	**GRM0335C1H6R9DD01D**	**GRM1555C1H6R9DA01D**
7.0pF(**7R0**)	±0.05pF(**W**)	**GRM0225C1C7R0WD05L**	**GRM0335C1H7R0WD01D**	**GRM1555C1H7R0WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R0BD05L**	**GRM0335C1H7R0BD01D**	**GRM1555C1H7R0BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R0CD05L**	**GRM0335C1H7R0CD01D**	**GRM1555C1H7R0CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R0DD05L**	**GRM0335C1H7R0DD01D**	**GRM1555C1H7R0DA01D**
7.1pF(**7R1**)	±0.05pF(**W**)	**GRM0225C1C7R1WD05L**	**GRM0335C1H7R1WD01D**	**GRM1555C1H7R1WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R1BD05L**	**GRM0335C1H7R1BD01D**	**GRM1555C1H7R1BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R1CD05L**	**GRM0335C1H7R1CD01D**	**GRM1555C1H7R1CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R1DD05L**	**GRM0335C1H7R1DD01D**	**GRM1555C1H7R1DA01D**
7.2pF(**7R2**)	±0.05pF(**W**)	**GRM0225C1C7R2WD05L**	**GRM0335C1H7R2WD01D**	**GRM1555C1H7R2WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R2BD05L**	**GRM0335C1H7R2BD01D**	**GRM1555C1H7R2BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R2CD05L**	**GRM0335C1H7R2CD01D**	**GRM1555C1H7R2CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R2DD05L**	**GRM0335C1H7R2DD01D**	**GRM1555C1H7R2DA01D**
7.3pF(**7R3**)	±0.05pF(**W**)	**GRM0225C1C7R3WD05L**	**GRM0335C1H7R3WD01D**	**GRM1555C1H7R3WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R3BD05L**	**GRM0335C1H7R3BD01D**	**GRM1555C1H7R3BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R3CD05L**	**GRM0335C1H7R3CD01D**	**GRM1555C1H7R3CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R3DD05L**	**GRM0335C1H7R3DD01D**	**GRM1555C1H7R3DA01D**
7.4pF(**7R4**)	±0.05pF(**W**)	**GRM0225C1C7R4WD05L**	**GRM0335C1H7R4WD01D**	**GRM1555C1H7R4WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R4BD05L**	**GRM0335C1H7R4BD01D**	**GRM1555C1H7R4BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R4CD05L**	**GRM0335C1H7R4CD01D**	**GRM1555C1H7R4CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R4DD05L**	**GRM0335C1H7R4DD01D**	**GRM1555C1H7R4DA01D**
7.5pF(**7R5**)	±0.05pF(**W**)	**GRM0225C1C7R5WD05L**	**GRM0335C1H7R5WD01D**	**GRM1555C1H7R5WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R5BD05L**	**GRM0335C1H7R5BD01D**	**GRM1555C1H7R5BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R5CD05L**	**GRM0335C1H7R5CD01D**	**GRM1555C1H7R5CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R5DD05L**	**GRM0335C1H7R5DD01D**	**GRM1555C1H7R5DA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>	0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		16(**1C**)	50(**1H**)	50(**1H**)
Capacitance	Tolerance	Part Number		
7.6pF(**7R6**)	±0.05pF(**W**)	**GRM0225C1C7R6WD05L**	**GRM0335C1H7R6WD01D**	**GRM1555C1H7R6WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R6BD05L**	**GRM0335C1H7R6BD01D**	**GRM1555C1H7R6BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R6CD05L**	**GRM0335C1H7R6CD01D**	**GRM1555C1H7R6CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R6DD05L**	**GRM0335C1H7R6DD01D**	**GRM1555C1H7R6DA01D**
7.7pF(**7R7**)	±0.05pF(**W**)	**GRM0225C1C7R7WD05L**	**GRM0335C1H7R7WD01D**	**GRM1555C1H7R7WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R7BD05L**	**GRM0335C1H7R7BD01D**	**GRM1555C1H7R7BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R7CD05L**	**GRM0335C1H7R7CD01D**	**GRM1555C1H7R7CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R7DD05L**	**GRM0335C1H7R7DD01D**	**GRM1555C1H7R7DA01D**
7.8pF(**7R8**)	±0.05pF(**W**)	**GRM0225C1C7R8WD05L**	**GRM0335C1H7R8WD01D**	**GRM1555C1H7R8WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R8BD05L**	**GRM0335C1H7R8BD01D**	**GRM1555C1H7R8BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R8CD05L**	**GRM0335C1H7R8CD01D**	**GRM1555C1H7R8CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R8DD05L**	**GRM0335C1H7R8DD01D**	**GRM1555C1H7R8DA01D**
7.9pF(**7R9**)	±0.05pF(**W**)	**GRM0225C1C7R9WD05L**	**GRM0335C1H7R9WD01D**	**GRM1555C1H7R9WA01D**
	±0.1pF(**B**)	**GRM0225C1C7R9BD05L**	**GRM0335C1H7R9BD01D**	**GRM1555C1H7R9BA01D**
	±0.25pF(**C**)	**GRM0225C1C7R9CD05L**	**GRM0335C1H7R9CD01D**	**GRM1555C1H7R9CA01D**
	±0.5pF(**D**)	**GRM0225C1C7R9DD05L**	**GRM0335C1H7R9DD01D**	**GRM1555C1H7R9DA01D**
8.0pF(**8R0**)	±0.05pF(**W**)	**GRM0225C1C8R0WD05L**	**GRM0335C1H8R0WD01D**	**GRM1555C1H8R0WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R0BD05L**	**GRM0335C1H8R0BD01D**	**GRM1555C1H8R0BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R0CD05L**	**GRM0335C1H8R0CD01D**	**GRM1555C1H8R0CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R0DD05L**	**GRM0335C1H8R0DD01D**	**GRM1555C1H8R0DA01D**
8.1pF(**8R1**)	±0.05pF(**W**)	**GRM0225C1C8R1WD05L**	**GRM0335C1H8R1WD01D**	**GRM1555C1H8R1WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R1BD05L**	**GRM0335C1H8R1BD01D**	**GRM1555C1H8R1BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R1CD05L**	**GRM0335C1H8R1CD01D**	**GRM1555C1H8R1CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R1DD05L**	**GRM0335C1H8R1DD01D**	**GRM1555C1H8R1DA01D**
8.2pF(**8R2**)	±0.05pF(**W**)	**GRM0225C1C8R2WD05L**	**GRM0335C1H8R2WD01D**	**GRM1555C1H8R2WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R2BD05L**	**GRM0335C1H8R2BD01D**	**GRM1555C1H8R2BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R2CD05L**	**GRM0335C1H8R2CD01D**	**GRM1555C1H8R2CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R2DD05L**	**GRM0335C1H8R2DD01D**	**GRM1555C1H8R2DA01D**
8.3pF(**8R3**)	±0.05pF(**W**)	**GRM0225C1C8R3WD05L**	**GRM0335C1H8R3WD01D**	**GRM1555C1H8R3WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R3BD05L**	**GRM0335C1H8R3BD01D**	**GRM1555C1H8R3BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R3CD05L**	**GRM0335C1H8R3CD01D**	**GRM1555C1H8R3CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R3DD05L**	**GRM0335C1H8R3DD01D**	**GRM1555C1H8R3DA01D**
8.4pF(**8R4**)	±0.05pF(**W**)	**GRM0225C1C8R4WD05L**	**GRM0335C1H8R4WD01D**	**GRM1555C1H8R4WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R4BD05L**	**GRM0335C1H8R4BD01D**	**GRM1555C1H8R4BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R4CD05L**	**GRM0335C1H8R4CD01D**	**GRM1555C1H8R4CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R4DD05L**	**GRM0335C1H8R4DD01D**	**GRM1555C1H8R4DA01D**
8.5pF(**8R5**)	±0.05pF(**W**)	**GRM0225C1C8R5WD05L**	**GRM0335C1H8R5WD01D**	**GRM1555C1H8R5WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R5BD05L**	**GRM0335C1H8R5BD01D**	**GRM1555C1H8R5BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R5CD05L**	**GRM0335C1H8R5CD01D**	**GRM1555C1H8R5CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R5DD05L**	**GRM0335C1H8R5DD01D**	**GRM1555C1H8R5DA01D**
8.6pF(**8R6**)	±0.05pF(**W**)	**GRM0225C1C8R6WD05L**	**GRM0335C1H8R6WD01D**	**GRM1555C1H8R6WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R6BD05L**	**GRM0335C1H8R6BD01D**	**GRM1555C1H8R6BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R6CD05L**	**GRM0335C1H8R6CD01D**	**GRM1555C1H8R6CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R6DD05L**	**GRM0335C1H8R6DD01D**	**GRM1555C1H8R6DA01D**
8.7pF(**8R7**)	±0.05pF(**W**)	**GRM0225C1C8R7WD05L**	**GRM0335C1H8R7WD01D**	**GRM1555C1H8R7WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R7BD05L**	**GRM0335C1H8R7BD01D**	**GRM1555C1H8R7BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R7CD05L**	**GRM0335C1H8R7CD01D**	**GRM1555C1H8R7CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R7DD05L**	**GRM0335C1H8R7DD01D**	**GRM1555C1H8R7DA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) **GR** ❶ | **M** ❷ | **02** ❸ | **2** ❹ | **5C** ❺ | **1C** ❻ | **7R6** ❼ | **W** ❽ | **D05** ❾ | **L** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging*

Packaging Code in Part Number shows STD 180mm Reel Taping.

*__GRM022__: **D** is applicable.

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>	0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		16(**1C**)	50(**1H**)	50(**1H**)
Capacitance	Tolerance	Part Number		
8.8pF(**8R8**)	±0.05pF(**W**)	**GRM0225C1C8R8WD05L**	**GRM0335C1H8R8WD01D**	**GRM1555C1H8R8WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R8BD05L**	**GRM0335C1H8R8BD01D**	**GRM1555C1H8R8BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R8CD05L**	**GRM0335C1H8R8CD01D**	**GRM1555C1H8R8CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R8DD05L**	**GRM0335C1H8R8DD01D**	**GRM1555C1H8R8DA01D**
8.9pF(**8R9**)	±0.05pF(**W**)	**GRM0225C1C8R9WD05L**	**GRM0335C1H8R9WD01D**	**GRM1555C1H8R9WA01D**
	±0.1pF(**B**)	**GRM0225C1C8R9BD05L**	**GRM0335C1H8R9BD01D**	**GRM1555C1H8R9BA01D**
	±0.25pF(**C**)	**GRM0225C1C8R9CD05L**	**GRM0335C1H8R9CD01D**	**GRM1555C1H8R9CA01D**
	±0.5pF(**D**)	**GRM0225C1C8R9DD05L**	**GRM0335C1H8R9DD01D**	**GRM1555C1H8R9DA01D**
9.0pF(**9R0**)	±0.05pF(**W**)	**GRM0225C1C9R0WD05L**	**GRM0335C1H9R0WD01D**	**GRM1555C1H9R0WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R0BD05L**	**GRM0335C1H9R0BD01D**	**GRM1555C1H9R0BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R0CD05L**	**GRM0335C1H9R0CD01D**	**GRM1555C1H9R0CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R0DD05L**	**GRM0335C1H9R0DD01D**	**GRM1555C1H9R0DA01D**
9.1pF(**9R1**)	±0.05pF(**W**)	**GRM0225C1C9R1WD05L**	**GRM0335C1H9R1WD01D**	**GRM1555C1H9R1WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R1BD05L**	**GRM0335C1H9R1BD01D**	**GRM1555C1H9R1BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R1CD05L**	**GRM0335C1H9R1CD01D**	**GRM1555C1H9R1CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R1DD05L**	**GRM0335C1H9R1DD01D**	**GRM1555C1H9R1DA01D**
9.2pF(**9R2**)	±0.05pF(**W**)	**GRM0225C1C9R2WD05L**	**GRM0335C1H9R2WD01D**	**GRM1555C1H9R2WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R2BD05L**	**GRM0335C1H9R2BD01D**	**GRM1555C1H9R2BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R2CD05L**	**GRM0335C1H9R2CD01D**	**GRM1555C1H9R2CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R2DD05L**	**GRM0335C1H9R2DD01D**	**GRM1555C1H9R2DA01D**
9.3pF(**9R3**)	±0.05pF(**W**)	**GRM0225C1C9R3WD05L**	**GRM0335C1H9R3WD01D**	**GRM1555C1H9R3WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R3BD05L**	**GRM0335C1H9R3BD01D**	**GRM1555C1H9R3BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R3CD05L**	**GRM0335C1H9R3CD01D**	**GRM1555C1H9R3CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R3DD05L**	**GRM0335C1H9R3DD01D**	**GRM1555C1H9R3DA01D**
9.4pF(**9R4**)	±0.05pF(**W**)	**GRM0225C1C9R4WD05L**	**GRM0335C1H9R4WD01D**	**GRM1555C1H9R4WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R4BD05L**	**GRM0335C1H9R4BD01D**	**GRM1555C1H9R4BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R4CD05L**	**GRM0335C1H9R4CD01D**	**GRM1555C1H9R4CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R4DD05L**	**GRM0335C1H9R4DD01D**	**GRM1555C1H9R4DA01D**
9.5pF(**9R5**)	±0.05pF(**W**)	**GRM0225C1C9R5WD05L**	**GRM0335C1H9R5WD01D**	**GRM1555C1H9R5WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R5BD05L**	**GRM0335C1H9R5BD01D**	**GRM1555C1H9R5BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R5CD05L**	**GRM0335C1H9R5CD01D**	**GRM1555C1H9R5CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R5DD05L**	**GRM0335C1H9R5DD01D**	**GRM1555C1H9R5DA01D**
9.6pF(**9R6**)	±0.05pF(**W**)	**GRM0225C1C9R6WD05L**	**GRM0335C1H9R6WD01D**	**GRM1555C1H9R6WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R6BD05L**	**GRM0335C1H9R6BD01D**	**GRM1555C1H9R6BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R6CD05L**	**GRM0335C1H9R6CD01D**	**GRM1555C1H9R6CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R6DD05L**	**GRM0335C1H9R6DD01D**	**GRM1555C1H9R6DA01D**
9.7pF(**9R7**)	±0.05pF(**W**)	**GRM0225C1C9R7WD05L**	**GRM0335C1H9R7WD01D**	**GRM1555C1H9R7WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R7BD05L**	**GRM0335C1H9R7BD01D**	**GRM1555C1H9R7BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R7CD05L**	**GRM0335C1H9R7CD01D**	**GRM1555C1H9R7CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R7DD05L**	**GRM0335C1H9R7DD01D**	**GRM1555C1H9R7DA01D**
9.8pF(**9R8**)	±0.05pF(**W**)	**GRM0225C1C9R8WD05L**	**GRM0335C1H9R8WD01D**	**GRM1555C1H9R8WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R8BD05L**	**GRM0335C1H9R8BD01D**	**GRM1555C1H9R8BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R8CD05L**	**GRM0335C1H9R8CD01D**	**GRM1555C1H9R8CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R8DD05L**	**GRM0335C1H9R8DD01D**	**GRM1555C1H9R8DA01D**
9.9pF(**9R9**)	±0.05pF(**W**)	**GRM0225C1C9R9WD05L**	**GRM0335C1H9R9WD01D**	**GRM1555C1H9R9WA01D**
	±0.1pF(**B**)	**GRM0225C1C9R9BD05L**	**GRM0335C1H9R9BD01D**	**GRM1555C1H9R9BA01D**
	±0.25pF(**C**)	**GRM0225C1C9R9CD05L**	**GRM0335C1H9R9CD01D**	**GRM1555C1H9R9CA01D**
	±0.5pF(**D**)	**GRM0225C1C9R9DD05L**	**GRM0335C1H9R9DD01D**	**GRM1555C1H9R9DA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>			0.6x0.3(**03**)<0201>
Rated Volt. [Vdc]		16(**1C**)	10(**1A**)	6.3(**0J**)	50(**1H**)
Capacitance	Tolerance	Part Number			
10pF(**100**)	±2%(**G**)	**GRM0225C1C100GD05L**			**GRM0335C1H100GD01D**
	±5%(**J**)	**GRM0225C1C100JD05L**			**GRM0335C1H100JD01D**
12pF(**120**)	±2%(**G**)	**GRM0225C1C120GD05L**			**GRM0335C1H120GD01D**
	±5%(**J**)	**GRM0225C1C120JD05L**			**GRM0335C1H120JD01D**
15pF(**150**)	±2%(**G**)	**GRM0225C1C150GD05L**			**GRM0335C1H150GD01D**
	±5%(**J**)	**GRM0225C1C150JD05L**			**GRM0335C1H150JD01D**
18pF(**180**)	±2%(**G**)	**GRM0225C1C180GD05L**			**GRM0335C1H180GD01D**
	±5%(**J**)	**GRM0225C1C180JD05L**			**GRM0335C1H180JD01D**
22pF(**220**)	±2%(**G**)	**GRM0225C1C220GD05L**			**GRM0335C1H220GD01D**
	±5%(**J**)	**GRM0225C1C220JD05L**			**GRM0335C1H220JD01D**
27pF(**270**)	±2%(**G**)	**GRM0225C1C270GD05L**			**GRM0335C1H270GD01D**
	±5%(**J**)	**GRM0225C1C270JD05L**			**GRM0335C1H270JD01D**
33pF(**330**)	±2%(**G**)	**GRM0225C1C330GD05L**			**GRM0335C1H330GD01D**
	±5%(**J**)	**GRM0225C1C330JD05L**			**GRM0335C1H330JD01D**
39pF(**390**)	±2%(**G**)	**GRM0225C1C390GD05L**			**GRM0335C1H390GD01D**
	±5%(**J**)	**GRM0225C1C390JD05L**			**GRM0335C1H390JD01D**
47pF(**470**)	±2%(**G**)	**GRM0225C1C470GD05L**			**GRM0335C1H470GD01D**
	±5%(**J**)	**GRM0225C1C470JD05L**			**GRM0335C1H470JD01D**
56pF(**560**)	±2%(**G**)		**GRM0225C1A560GD05L**	**GRM0225C0J560GD05L**	**GRM0335C1H560GD01D**
	±5%(**J**)		**GRM0225C1A560JD05L**	**GRM0225C0J560JD05L**	**GRM0335C1H560JD01D**
68pF(**680**)	±2%(**G**)		**GRM0225C1A680GD05L**	**GRM0225C0J680GD05L**	**GRM0335C1H680GD01D**
	±5%(**J**)		**GRM0225C1A680JD05L**	**GRM0225C0J680JD05L**	**GRM0335C1H680JD01D**
82pF(**820**)	±2%(**G**)		**GRM0225C1A820GD05L**	**GRM0225C0J820GD05L**	**GRM0335C1H820GD01D**
	±5%(**J**)		**GRM0225C1A820JD05L**	**GRM0225C0J820JD05L**	**GRM0335C1H820JD01D**
100pF(**101**)	±2%(**G**)		**GRM0225C1A101GD05L**	**GRM0225C0J101GD05L**	**GRM0335C1H101GD01D**
	±5%(**J**)		**GRM0225C1A101JD05L**	**GRM0225C0J101JD05L**	**GRM0335C1H101JD01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) **GR** ❶ | **M** ❷ | **02** ❸ | **2** ❹ | **5C** ❺ | **1C** ❻ | **100** ❼ | **G** ❽ | **D05** ❾ | **L** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging*

Packaging Code in Part Number shows STD 180mm Reel Taping.

*__GRM022__: **D** is applicable.

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		50(**1H**)
TC		C0G(**5C**)
Capacitance	Tolerance	Part Number
10pF(**100**)	±2%(**G**)	**GRM1555C1H100GA01D**
	±5%(**J**)	**GRM1555C1H100JA01D**
12pF(**120**)	±2%(**G**)	**GRM1555C1H120GA01D**
	±5%(**J**)	**GRM1555C1H120JA01D**
15pF(**150**)	±2%(**G**)	**GRM1555C1H150GA01D**
	±5%(**J**)	**GRM1555C1H150JA01D**
18pF(**180**)	±2%(**G**)	**GRM1555C1H180GA01D**
	±5%(**J**)	**GRM1555C1H180JA01D**
22pF(**220**)	±2%(**G**)	**GRM1555C1H220GA01D**
	±5%(**J**)	**GRM1555C1H220JA01D**
27pF(**270**)	±2%(**G**)	**GRM1555C1H270GA01D**
	±5%(**J**)	**GRM1555C1H270JA01D**
33pF(**330**)	±2%(**G**)	**GRM1555C1H330GA01D**
	±5%(**J**)	**GRM1555C1H330JA01D**
39pF(**390**)	±2%(**G**)	**GRM1555C1H390GA01D**
	±5%(**J**)	**GRM1555C1H390JA01D**
47pF(**470**)	±2%(**G**)	**GRM1555C1H470GA01D**
	±5%(**J**)	**GRM1555C1H470JA01D**
56pF(**560**)	±2%(**G**)	**GRM1555C1H560GA01D**
	±5%(**J**)	**GRM1555C1H560JA01D**
68pF(**680**)	±2%(**G**)	**GRM1555C1H680GA01D**
	±5%(**J**)	**GRM1555C1H680JA01D**
82pF(**820**)	±2%(**G**)	**GRM1555C1H820GA01D**
	±5%(**J**)	**GRM1555C1H820JA01D**
100pF(**101**)	±2%(**G**)	**GRM1555C1H101GA01D**
	±5%(**J**)	**GRM1555C1H101JA01D**
120pF(**121**)	±2%(**G**)	**GRM1555C1H121GA01D**
	±5%(**J**)	**GRM1555C1H121JA01D**
150pF(**151**)	±2%(**G**)	**GRM1555C1H151GA01D**
	±5%(**J**)	**GRM1555C1H151JA01D**
180pF(**181**)	±2%(**G**)	**GRM1555C1H181GA01D**
	±5%(**J**)	**GRM1555C1H181JA01D**
220pF(**221**)	±2%(**G**)	**GRM1555C1H221GA01D**
	±5%(**J**)	**GRM1555C1H221JA01D**
270pF(**271**)	±2%(**G**)	**GRM1555C1H271GA01D**
	±5%(**J**)	**GRM1555C1H271JA01D**
330pF(**331**)	±2%(**G**)	**GRM1555C1H331GA01D**
	±5%(**J**)	**GRM1555C1H331JA01D**
390pF(**391**)	±2%(**G**)	**GRM1555C1H391GA01D**
	±5%(**J**)	**GRM1555C1H391JA01D**
470pF(**471**)	±2%(**G**)	**GRM1555C1H471GA01D**
	±5%(**J**)	**GRM1555C1H471JA01D**
560pF(**561**)	±2%(**G**)	**GRM1555C1H561GA01D**
	±5%(**J**)	**GRM1555C1H561JA01D**
680pF(**681**)	±2%(**G**)	**GRM1555C1H681GA01D**
	±5%(**J**)	**GRM1555C1H681JA01D**
820pF(**821**)	±2%(**G**)	**GRM1555C1H821GA01D**
	±5%(**J**)	**GRM1555C1H821JA01D**
1000pF(**102**)	±2%(**G**)	**GRM1555C1H102GA01D**
	±5%(**J**)	**GRM1555C1H102JA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		1.6x0.8(**18**)<0603>	
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)
Capacitance	Tolerance	Part Number	
10pF(**100**)	±5%(**J**)	**GRM1885C2A100JA01D**	**GRM1885C1H100JA01D**
12pF(**120**)	±5%(**J**)	**GRM1885C2A120JA01D**	**GRM1885C1H120JA01D**
15pF(**150**)	±5%(**J**)	**GRM1885C2A150JA01D**	**GRM1885C1H150JA01D**
18pF(**180**)	±5%(**J**)	**GRM1885C2A180JA01D**	**GRM1885C1H180JA01D**
22pF(**220**)	±5%(**J**)	**GRM1885C2A220JA01D**	**GRM1885C1H220JA01D**
27pF(**270**)	±5%(**J**)	**GRM1885C2A270JA01D**	**GRM1885C1H270JA01D**
33pF(**330**)	±5%(**J**)	**GRM1885C2A330JA01D**	**GRM1885C1H330JA01D**
39pF(**390**)	±5%(**J**)	**GRM1885C2A390JA01D**	**GRM1885C1H390JA01D**
47pF(**470**)	±5%(**J**)	**GRM1885C2A470JA01D**	**GRM1885C1H470JA01D**
56pF(**560**)	±5%(**J**)	**GRM1885C2A560JA01D**	**GRM1885C1H560JA01D**
68pF(**680**)	±5%(**J**)	**GRM1885C2A680JA01D**	**GRM1885C1H680JA01D**
82pF(**820**)	±5%(**J**)	**GRM1885C2A820JA01D**	**GRM1885C1H820JA01D**
100pF(**101**)	±5%(**J**)	**GRM1885C2A101JA01D**	**GRM1885C1H101JA01D**
120pF(**121**)	±5%(**J**)	**GRM1885C2A121JA01D**	**GRM1885C1H121JA01D**
150pF(**151**)	±5%(**J**)	**GRM1885C2A151JA01D**	**GRM1885C1H151JA01D**
180pF(**181**)	±5%(**J**)	**GRM1885C2A181JA01D**	**GRM1885C1H181JA01D**
220pF(**221**)	±5%(**J**)	**GRM1885C2A221JA01D**	**GRM1885C1H221JA01D**
270pF(**271**)	±5%(**J**)	**GRM1885C2A271JA01D**	**GRM1885C1H271JA01D**
330pF(**331**)	±5%(**J**)	**GRM1885C2A331JA01D**	**GRM1885C1H331JA01D**
390pF(**391**)	±5%(**J**)	**GRM1885C2A391JA01D**	**GRM1885C1H391JA01D**
470pF(**471**)	±5%(**J**)	**GRM1885C2A471JA01D**	**GRM1885C1H471JA01D**
560pF(**561**)	±5%(**J**)	**GRM1885C2A561JA01D**	**GRM1885C1H561JA01D**
680pF(**681**)	±5%(**J**)	**GRM1885C2A681JA01D**	**GRM1885C1H681JA01D**
820pF(**821**)	±5%(**J**)	**GRM1885C2A821JA01D**	**GRM1885C1H821JA01D**
1000pF(**102**)	±5%(**J**)	**GRM1885C2A102JA01D**	**GRM1885C1H102JA01D**
1200pF(**122**)	±5%(**J**)	**GRM1885C2A122JA01D**	**GRM1885C1H122JA01D**
1500pF(**152**)	±5%(**J**)	**GRM1885C2A152JA01D**	**GRM1885C1H152JA01D**
1800pF(**182**)	±5%(**J**)		**GRM1885C1H182JA01D**
2200pF(**222**)	±5%(**J**)		**GRM1885C1H222JA01D**
2700pF(**272**)	±5%(**J**)		**GRM1885C1H272JA01D**
3300pF(**332**)	±5%(**J**)		**GRM1885C1H332JA01D**
3900pF(**392**)	±5%(**J**)		**GRM1885C1H392JA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) **GR** ❶ **M** ❷ **18** ❸ **8** ❹ **5C** ❺ **2A** ❻ **100** ❼ **J** ❽ **A01** ❾ **D** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		2.0x1.25(**21**)<0805>		3.2x1.6(**31**)<1206>	
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	100(**2A**)	50(**1H**)
Capacitance	Tolerance	Part Number			
100pF(**101**)	±5%(**J**)	**GRM2165C2A101JA01D**			
120pF(**121**)	±5%(**J**)	**GRM2165C2A121JA01D**			
150pF(**151**)	±5%(**J**)	**GRM2165C2A151JA01D**			
180pF(**181**)	±5%(**J**)	**GRM2165C2A181JA01D**			
220pF(**221**)	±5%(**J**)	**GRM2165C2A221JA01D**			
270pF(**271**)	±5%(**J**)	**GRM2165C2A271JA01D**			
330pF(**331**)	±5%(**J**)	**GRM2165C2A331JA01D**			
390pF(**391**)	±5%(**J**)	**GRM2165C2A391JA01D**			
470pF(**471**)	±5%(**J**)	**GRM2165C2A471JA01D**			
560pF(**561**)	±5%(**J**)	**GRM2165C2A561JA01D**			
680pF(**681**)	±5%(**J**)	**GRM2165C2A681JA01D**			
820pF(**821**)	±5%(**J**)	**GRM2165C2A821JA01D**			
1000pF(**102**)	±5%(**J**)	**GRM2165C2A102JA01D**			
1200pF(**122**)	±5%(**J**)	**GRM2165C2A122JA01D**	**GRM2165C1H122JA01D**		
1500pF(**152**)	±5%(**J**)	**GRM2165C2A152JA01D**	**GRM2165C1H152JA01D**		
1800pF(**182**)	±5%(**J**)	**GRM2165C2A182JA01D**	**GRM2165C1H182JA01D**	**GRM3195C2A182JA01D**	
2200pF(**222**)	±5%(**J**)	**GRM2165C2A222JA01D**	**GRM2165C1H222JA01D**	**GRM3195C2A222JA01D**	
2700pF(**272**)	±5%(**J**)	**GRM2165C2A272JA01D**	**GRM2165C1H272JA01D**	**GRM3195C2A272JA01D**	
3300pF(**332**)	±5%(**J**)	**GRM2165C2A332JA01D**	**GRM2165C1H332JA01D**	**GRM3195C2A332JA01D**	
3900pF(**392**)	±5%(**J**)		**GRM2165C1H392JA01D**	**GRM3195C2A392JA01D**	
4700pF(**472**)	±5%(**J**)		**GRM2165C1H472JA01D**	**GRM3195C2A472JA01D**	**GRM3195C1H472JA01D**
5600pF(**562**)	±5%(**J**)		**GRM2195C1H562JA01D**	**GRM3195C2A562JA01D**	**GRM3195C1H562JA01D**
6800pF(**682**)	±5%(**J**)		**GRM2195C1H682JA01D**	**GRM3195C2A682JA01D**	**GRM3195C1H682JA01D**
8200pF(**822**)	±5%(**J**)		**GRM2195C1H822JA01D**	**GRM3195C2A822JA01D**	**GRM3195C1H822JA01D**
10000pF(**103**)	±5%(**J**)		**GRM2195C1H103JA01D**	**GRM3195C2A103JA01D**	**GRM3195C1H103JA01D**
12000pF(**123**)	±5%(**J**)		**GRM2195C1H123JA01D**	**GRM3195C2A123JA01D**	**GRM3195C1H123JA01D**
15000pF(**153**)	±5%(**J**)		**GRM2195C1H153JA01D**	**GRM3195C2A153JA01D**	**GRM3195C1H153JA01D**
18000pF(**183**)	±5%(**J**)		**GRM21B5C1H183JA01L**	**GRM3195C2A183JA01D**	**GRM3195C1H183JA01D**
22000pF(**223**)	±5%(**J**)		**GRM21B5C1H223JA01L**	**GRM3195C2A223JA01D**	**GRM3195C1H223JA01D**
27000pF(**273**)	±5%(**J**)				**GRM3195C1H273JA01D**
33000pF(**333**)	±5%(**J**)				**GRM3195C1H333JA01D**
39000pF(**393**)	±5%(**J**)				**GRM3195C1H393JA01D**
47000pF(**473**)	±5%(**J**)				**GRM31M5C1H473JA01L**
56000pF(**563**)	±5%(**J**)				**GRM31M5C1H563JA01L**
68000pF(**683**)	±5%(**J**)				**GRM31C5C1H683JA01L**
82000pF(**823**)	±5%(**J**)				**GRM31C5C1H823JA01L**
100000pF(**104**)	±5%(**J**)				**GRM31C5C1H104JA01L**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Temperature Compensating Type C0G(5C) Characteristics-Low Profile

LxW [mm]		1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		50(**1H**)
Capacitance	Tolerance	Part Number
0.1pF(**R10**)	±0.1pF(**B**)	**GRM1535C1HR10BDD5D**
0.2pF(**R20**)	±0.1pF(**B**)	**GRM1535C1HR20BDD5D**
0.3pF(**R30**)	±0.1pF(**B**)	**GRM1535C1HR30BDD5D**
0.4pF(**R40**)	±0.1pF(**B**)	**GRM1535C1HR40BDD5D**
0.5pF(**R50**)	±0.1pF(**B**)	**GRM1535C1HR50BDD5D**
0.6pF(**R60**)	±0.1pF(**B**)	**GRM1535C1HR60BDD5D**
0.7pF(**R70**)	±0.1pF(**B**)	**GRM1535C1HR70BDD5D**
0.8pF(**R80**)	±0.1pF(**B**)	**GRM1535C1HR80BDD5D**
0.9pF(**R90**)	±0.1pF(**B**)	**GRM1535C1HR90BDD5D**
1.0pF(**1R0**)	±0.25pF(**C**)	**GRM1535C1H1R0CDD5D**
1.1pF(**1R1**)	±0.25pF(**C**)	**GRM1535C1H1R1CDD5D**
1.2pF(**1R2**)	±0.25pF(**C**)	**GRM1535C1H1R2CDD5D**
1.3pF(**1R3**)	±0.25pF(**C**)	**GRM1535C1H1R3CDD5D**
1.4pF(**1R4**)	±0.25pF(**C**)	**GRM1535C1H1R4CDD5D**
1.5pF(**1R5**)	±0.25pF(**C**)	**GRM1535C1H1R5CDD5D**
1.6pF(**1R6**)	±0.25pF(**C**)	**GRM1535C1H1R6CDD5D**
1.7pF(**1R7**)	±0.25pF(**C**)	**GRM1535C1H1R7CDD5D**
1.8pF(**1R8**)	±0.25pF(**C**)	**GRM1535C1H1R8CDD5D**
1.9pF(**1R9**)	±0.25pF(**C**)	**GRM1535C1H1R9CDD5D**
2.0pF(**2R0**)	±0.25pF(**C**)	**GRM1535C1H2R0CDD5D**
2.1pF(**2R1**)	±0.25pF(**C**)	**GRM1535C1H2R1CDD5D**
2.2pF(**2R2**)	±0.25pF(**C**)	**GRM1535C1H2R2CDD5D**
2.3pF(**2R3**)	±0.25pF(**C**)	**GRM1535C1H2R3CDD5D**
2.4pF(**2R4**)	±0.25pF(**C**)	**GRM1535C1H2R4CDD5D**
2.5pF(**2R5**)	±0.25pF(**C**)	**GRM1535C1H2R5CDD5D**
2.6pF(**2R6**)	±0.25pF(**C**)	**GRM1535C1H2R6CDD5D**
2.7pF(**2R7**)	±0.25pF(**C**)	**GRM1535C1H2R7CDD5D**
2.8pF(**2R8**)	±0.25pF(**C**)	**GRM1535C1H2R8CDD5D**
2.9pF(**2R9**)	±0.25pF(**C**)	**GRM1535C1H2R9CDD5D**
3.0pF(**3R0**)	±0.25pF(**C**)	**GRM1535C1H3R0CDD5D**
3.1pF(**3R1**)	±0.25pF(**C**)	**GRM1535C1H3R1CDD5D**
3.2pF(**3R2**)	±0.25pF(**C**)	**GRM1535C1H3R2CDD5D**
3.3pF(**3R3**)	±0.25pF(**C**)	**GRM1535C1H3R3CDD5D**
3.4pF(**3R4**)	±0.25pF(**C**)	**GRM1535C1H3R4CDD5D**
3.5pF(**3R5**)	±0.25pF(**C**)	**GRM1535C1H3R5CDD5D**
3.6pF(**3R6**)	±0.25pF(**C**)	**GRM1535C1H3R6CDD5D**
3.7pF(**3R7**)	±0.25pF(**C**)	**GRM1535C1H3R7CDD5D**
3.8pF(**3R8**)	±0.25pF(**C**)	**GRM1535C1H3R8CDD5D**
3.9pF(**3R9**)	±0.25pF(**C**)	**GRM1535C1H3R9CDD5D**
4.0pF(**4R0**)	±0.25pF(**C**)	**GRM1535C1H4R0CDD5D**
4.1pF(**4R1**)	±0.25pF(**C**)	**GRM1535C1H4R1CDD5D**
4.2pF(**4R2**)	±0.25pF(**C**)	**GRM1535C1H4R2CDD5D**
4.3pF(**4R3**)	±0.25pF(**C**)	**GRM1535C1H4R3CDD5D**
4.4pF(**4R4**)	±0.25pF(**C**)	**GRM1535C1H4R4CDD5D**
4.5pF(**4R5**)	±0.25pF(**C**)	**GRM1535C1H4R5CDD5D**
4.6pF(**4R6**)	±0.25pF(**C**)	**GRM1535C1H4R6CDD5D**
4.7pF(**4R7**)	±0.25pF(**C**)	**GRM1535C1H4R7CDD5D**
4.8pF(**4R8**)	±0.25pF(**C**)	**GRM1535C1H4R8CDD5D**

LxW [mm]		1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		50(**1H**)
Capacitance	Tolerance	Part Number
4.9pF(**4R9**)	±0.25pF(**C**)	**GRM1535C1H4R9CDD5D**
5.0pF(**5R0**)	±0.25pF(**C**)	**GRM1535C1H5R0CDD5D**
5.1pF(**5R1**)	±0.5pF(**D**)	**GRM1535C1H5R1DDD5D**
5.2pF(**5R2**)	±0.5pF(**D**)	**GRM1535C1H5R2DDD5D**
5.3pF(**5R3**)	±0.5pF(**D**)	**GRM1535C1H5R3DDD5D**
5.4pF(**5R4**)	±0.5pF(**D**)	**GRM1535C1H5R4DDD5D**
5.5pF(**5R5**)	±0.5pF(**D**)	**GRM1535C1H5R5DDD5D**
5.6pF(**5R6**)	±0.5pF(**D**)	**GRM1535C1H5R6DDD5D**
5.7pF(**5R7**)	±0.5pF(**D**)	**GRM1535C1H5R7DDD5D**
5.8pF(**5R8**)	±0.5pF(**D**)	**GRM1535C1H5R8DDD5D**
5.9pF(**5R9**)	±0.5pF(**D**)	**GRM1535C1H5R9DDD5D**
6.0pF(**6R0**)	±0.5pF(**D**)	**GRM1535C1H6R0DDD5D**
6.1pF(**6R1**)	±0.5pF(**D**)	**GRM1535C1H6R1DDD5D**
6.2pF(**6R2**)	±0.5pF(**D**)	**GRM1535C1H6R2DDD5D**
6.3pF(**6R3**)	±0.5pF(**D**)	**GRM1535C1H6R3DDD5D**
6.4pF(**6R4**)	±0.5pF(**D**)	**GRM1535C1H6R4DDD5D**
6.5pF(**6R5**)	±0.5pF(**D**)	**GRM1535C1H6R5DDD5D**
6.6pF(**6R6**)	±0.5pF(**D**)	**GRM1535C1H6R6DDD5D**
6.7pF(**6R7**)	±0.5pF(**D**)	**GRM1535C1H6R7DDD5D**
6.8pF(**6R8**)	±0.5pF(**D**)	**GRM1535C1H6R8DDD5D**
6.9pF(**6R9**)	±0.5pF(**D**)	**GRM1535C1H6R9DDD5D**
7.0pF(**7R0**)	±0.5pF(**D**)	**GRM1535C1H7R0DDD5D**
7.1pF(**7R1**)	±0.5pF(**D**)	**GRM1535C1H7R1DDD5D**
7.2pF(**7R2**)	±0.5pF(**D**)	**GRM1535C1H7R2DDD5D**
7.3pF(**7R3**)	±0.5pF(**D**)	**GRM1535C1H7R3DDD5D**
7.4pF(**7R4**)	±0.5pF(**D**)	**GRM1535C1H7R4DDD5D**
7.5pF(**7R5**)	±0.5pF(**D**)	**GRM1535C1H7R5DDD5D**
7.6pF(**7R6**)	±0.5pF(**D**)	**GRM1535C1H7R6DDD5D**
7.7pF(**7R7**)	±0.5pF(**D**)	**GRM1535C1H7R7DDD5D**
7.8pF(**7R8**)	±0.5pF(**D**)	**GRM1535C1H7R8DDD5D**
7.9pF(**7R9**)	±0.5pF(**D**)	**GRM1535C1H7R9DDD5D**
8.0pF(**8R0**)	±0.5pF(**D**)	**GRM1535C1H8R0DDD5D**
8.1pF(**8R1**)	±0.5pF(**D**)	**GRM1535C1H8R1DDD5D**
8.2pF(**8R2**)	±0.5pF(**D**)	**GRM1535C1H8R2DDD5D**
8.3pF(**8R3**)	±0.5pF(**D**)	**GRM1535C1H8R3DDD5D**
8.4pF(**8R4**)	±0.5pF(**D**)	**GRM1535C1H8R4DDD5D**
8.5pF(**8R5**)	±0.5pF(**D**)	**GRM1535C1H8R5DDD5D**
8.6pF(**8R6**)	±0.5pF(**D**)	**GRM1535C1H8R6DDD5D**
8.7pF(**8R7**)	±0.5pF(**D**)	**GRM1535C1H8R7DDD5D**
8.8pF(**8R8**)	±0.5pF(**D**)	**GRM1535C1H8R8DDD5D**
8.9pF(**8R9**)	±0.5pF(**D**)	**GRM1535C1H8R9DDD5D**
9.0pF(**9R0**)	±0.5pF(**D**)	**GRM1535C1H9R0DDD5D**
9.1pF(**9R1**)	±0.5pF(**D**)	**GRM1535C1H9R1DDD5D**
9.2pF(**9R2**)	±0.5pF(**D**)	**GRM1535C1H9R2DDD5D**
9.3pF(**9R3**)	±0.5pF(**D**)	**GRM1535C1H9R3DDD5D**
9.4pF(**9R4**)	±0.5pF(**D**)	**GRM1535C1H9R4DDD5D**
9.5pF(**9R5**)	±0.5pF(**D**)	**GRM1535C1H9R5DDD5D**
9.6pF(**9R6**)	±0.5pF(**D**)	**GRM1535C1H9R6DDD5D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) **GR** | **M** | **15** | **3** | **5C** | **1H** | **R10** | **B** | **DD5** | **D**
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

Temperature Compensating Type C0G(5C) Characteristics-Low Profile

LxW [mm]		1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		50(**1H**)
Capacitance	Tolerance	Part Number
9.7pF(**9R7**)	±0.5pF(**D**)	**GRM1535C1H9R7DDD5D**
9.8pF(**9R8**)	±0.5pF(**D**)	**GRM1535C1H9R8DDD5D**
9.9pF(**9R9**)	±0.5pF(**D**)	**GRM1535C1H9R9DDD5D**
10pF(**100**)	±5%(**J**)	**GRM1535C1H100JDD5D**
12pF(**120**)	±5%(**J**)	**GRM1535C1H120JDD5D**
15pF(**150**)	±5%(**J**)	**GRM1535C1H150JDD5D**
18pF(**180**)	±5%(**J**)	**GRM1535C1H180JDD5D**
22pF(**220**)	±5%(**J**)	**GRM1535C1H220JDD5D**
27pF(**270**)	±5%(**J**)	**GRM1535C1H270JDD5D**
33pF(**330**)	±5%(**J**)	**GRM1535C1H330JDD5D**
39pF(**390**)	±5%(**J**)	**GRM1535C1H390JDD5D**
47pF(**470**)	±5%(**J**)	**GRM1535C1H470JDD5D**
56pF(**560**)	±5%(**J**)	**GRM1535C1H560JDD5D**
68pF(**680**)	±5%(**J**)	**GRM1535C1H680JDD5D**
82pF(**820**)	±5%(**J**)	**GRM1535C1H820JDD5D**
100pF(**101**)	±5%(**J**)	**GRM1535C1H101JDD5D**
120pF(**121**)	±5%(**J**)	**GRM1535C1H121JDD5D**
150pF(**151**)	±5%(**J**)	**GRM1535C1H151JDD5D**
180pF(**181**)	±5%(**J**)	**GRM1535C1H181JDD5D**
220pF(**221**)	±5%(**J**)	**GRM1535C1H221JDD5D**
270pF(**271**)	±5%(**J**)	**GRM1535C1H271JDD5D**
330pF(**331**)	±5%(**J**)	**GRM1535C1H331JDD5D**
390pF(**391**)	±5%(**J**)	**GRM1535C1H391JDD5D**
470pF(**471**)	±5%(**J**)	**GRM1535C1H471JDD5D**
560pF(**561**)	±5%(**J**)	**GRM1535C1H561JDD5D**
680pF(**681**)	±5%(**J**)	**GRM1535C1H681JDD5D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Temperature Compensating Type C0G(5C) Characteristics-Low Profile

LxW [mm]		2.0x1.25(**21**)<0805>		3.2x1.6(**31**)<1206>	
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	100(**2A**)	50(**1H**)
Capacitance	Tolerance	Part Number			
100pF(**101**)	±5%(**J**)	**GRM2165C2A101JA01D**			
120pF(**121**)	±5%(**J**)	**GRM2165C2A121JA01D**			
150pF(**151**)	±5%(**J**)	**GRM2165C2A151JA01D**			
180pF(**181**)	±5%(**J**)	**GRM2165C2A181JA01D**			
220pF(**221**)	±5%(**J**)	**GRM2165C2A221JA01D**			
270pF(**271**)	±5%(**J**)	**GRM2165C2A271JA01D**			
330pF(**331**)	±5%(**J**)	**GRM2165C2A331JA01D**			
390pF(**391**)	±5%(**J**)	**GRM2165C2A391JA01D**			
470pF(**471**)	±5%(**J**)	**GRM2165C2A471JA01D**			
560pF(**561**)	±5%(**J**)	**GRM2165C2A561JA01D**			
680pF(**681**)	±5%(**J**)	**GRM2165C2A681JA01D**			
820pF(**821**)	±5%(**J**)	**GRM2165C2A821JA01D**			
1000pF(**102**)	±5%(**J**)	**GRM2165C2A102JA01D**			
1200pF(**122**)	±5%(**J**)	**GRM2165C2A122JA01D**	**GRM2165C1H122JA01D**		
1500pF(**152**)	±5%(**J**)	**GRM2165C2A152JA01D**	**GRM2165C1H152JA01D**		
1800pF(**182**)	±5%(**J**)	**GRM2165C2A182JA01D**	**GRM2165C1H182JA01D**	**GRM3195C2A182JA01D**	
2200pF(**222**)	±5%(**J**)	**GRM2165C2A222JA01D**	**GRM2165C1H222JA01D**	**GRM3195C2A222JA01D**	
2700pF(**272**)	±5%(**J**)	**GRM2165C2A272JA01D**	**GRM2165C1H272JA01D**	**GRM3195C2A272JA01D**	
3300pF(**332**)	±5%(**J**)	**GRM2165C2A332JA01D**	**GRM2165C1H332JA01D**	**GRM3195C2A332JA01D**	
3900pF(**392**)	±5%(**J**)		**GRM2165C1H392JA01D**	**GRM3195C2A392JA01D**	
4700pF(**472**)	±5%(**J**)		**GRM2165C1H472JA01D**	**GRM3195C2A472JA01D**	**GRM3195C1H472JA01D**
5600pF(**562**)	±5%(**J**)		**GRM2195C1H562JA01D**	**GRM3195C2A562JA01D**	**GRM3195C1H562JA01D**
6800pF(**682**)	±5%(**J**)		**GRM2195C1H682JA01D**	**GRM3195C2A682JA01D**	**GRM3195C1H682JA01D**
8200pF(**822**)	±5%(**J**)		**GRM2195C1H822JA01D**	**GRM3195C2A822JA01D**	**GRM3195C1H822JA01D**
10000pF(**103**)	±5%(**J**)		**GRM2195C1H103JA01D**	**GRM3195C2A103JA01D**	**GRM3195C1H103JA01D**
12000pF(**123**)	±5%(**J**)		**GRM2195C1H123JA01D**		**GRM3195C1H123JA01D**
15000pF(**153**)	±5%(**J**)		**GRM2195C1H153JA01D**		**GRM3195C1H153JA01D**
18000pF(**183**)	±5%(**J**)				**GRM3195C1H183JA01D**
22000pF(**223**)	±5%(**J**)				**GRM3195C1H223JA01D**
27000pF(**273**)	±5%(**J**)				**GRM3195C1H273JA01D**
33000pF(**333**)	±5%(**J**)				**GRM3195C1H333JA01D**
39000pF(**393**)	±5%(**J**)				**GRM3195C1H393JA01D**
47000pF(**473**)	±5%(**J**)				**GRM31M5C1H473JA01L**
56000pF(**563**)	±5%(**J**)				**GRM31M5C1H563JA01L**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) **GR** ❶ | **M** ❷ | **21** ❸ | **6** ❹ | **5C** ❺ | **2A** ❻ | **101** ❼ | **J** ❽ | **A01** ❾ | **D** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

Temperature Compensating Type U2J(7U) Characteristics

LxW [mm]		0.6x0.3(**03**)<0201>		1.0x0.5(**15**)<0402>	
Rated Volt. [Vdc]		50(**1H**)	25(**1E**)	50(**1H**)	10(**1A**)
Capacitance	Tolerance	Part Number			
1.0pF(**1R0**)	±0.25pF(**C**)	**GRM0337U1H1R0CD01D**		**GRM1557U1H1R0CZ01D**	
2.0pF(**2R0**)	±0.25pF(**C**)	**GRM0337U1H2R0CD01D**		**GRM1557U1H2R0CZ01D**	
3.0pF(**3R0**)	±0.25pF(**C**)	**GRM0337U1H3R0CD01D**		**GRM1557U1H3R0CZ01D**	
4.0pF(**4R0**)	±0.25pF(**C**)	**GRM0337U1H4R0CD01D**		**GRM1557U1H4R0CZ01D**	
5.0pF(**5R0**)	±0.25pF(**C**)	**GRM0337U1H5R0CD01D**		**GRM1557U1H5R0CZ01D**	
6.0pF(**6R0**)	±0.5pF(**D**)	**GRM0337U1H6R0DD01D**		**GRM1557U1H6R0DZ01D**	
7.0pF(**7R0**)	±0.5pF(**D**)	**GRM0337U1H7R0DD01D**		**GRM1557U1H7R0DZ01D**	
8.0pF(**8R0**)	±0.5pF(**D**)	**GRM0337U1H8R0DD01D**		**GRM1557U1H8R0DZ01D**	
9.0pF(**9R0**)	±0.5pF(**D**)	**GRM0337U1H9R0DD01D**		**GRM1557U1H9R0DZ01D**	
10pF(**100**)	±5%(**J**)	**GRM0337U1H100JD01D**		**GRM1557U1H100JZ01D**	
12pF(**120**)	±5%(**J**)	**GRM0337U1H120JD01D**		**GRM1557U1H120JZ01D**	
15pF(**150**)	±5%(**J**)	**GRM0337U1H150JD01D**		**GRM1557U1H150JZ01D**	
18pF(**180**)	±5%(**J**)		**GRM0337U1E180JD01D**	**GRM1557U1H180JZ01D**	
22pF(**220**)	±5%(**J**)		**GRM0337U1E220JD01D**	**GRM1557U1H220JZ01D**	
27pF(**270**)	±5%(**J**)		**GRM0337U1E270JD01D**	**GRM1557U1H270JZ01D**	
33pF(**330**)	±5%(**J**)		**GRM0337U1E330JD01D**	**GRM1557U1H330JZ01D**	
39pF(**390**)	±5%(**J**)		**GRM0337U1E390JD01D**	**GRM1557U1H390JZ01D**	
47pF(**470**)	±5%(**J**)		**GRM0337U1E470JD01D**	**GRM1557U1H470JZ01D**	
56pF(**560**)	±5%(**J**)		**GRM0337U1E560JD01D**	**GRM1557U1H560JZ01D**	
68pF(**680**)	±5%(**J**)		**GRM0337U1E680JD01D**	**GRM1557U1H680JZ01D**	
82pF(**820**)	±5%(**J**)		**GRM0337U1E820JD01D**	**GRM1557U1H820JZ01D**	
100pF(**101**)	±5%(**J**)		**GRM0337U1E101JD01D**	**GRM1557U1H101JZ01D**	
120pF(**121**)	±5%(**J**)			**GRM1557U1H121JZ01D**	
150pF(**151**)	±5%(**J**)			**GRM1557U1H151JZ01D**	
180pF(**181**)	±5%(**J**)			**GRM1557U1H181JZ01D**	
1200pF(**122**)	±5%(**J**)				**GRM1557U1A122JA01D**
1500pF(**152**)	±5%(**J**)				**GRM1557U1A152JA01D**
1800pF(**182**)	±5%(**J**)				**GRM1557U1A182JA01D**
2200pF(**222**)	±5%(**J**)				**GRM1557U1A222JA01D**
2700pF(**272**)	±5%(**J**)				**GRM1557U1A272JA01D**
3300pF(**332**)	±5%(**J**)				**GRM1557U1A332JA01D**
3900pF(**392**)	±5%(**J**)				**GRM1557U1A392JA01D**
4700pF(**472**)	±5%(**J**)				**GRM1557U1A472JA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Temperature Compensating Type U2J(7U) Characteristics

LxW [mm]		1.6x0.8(**18**)<0603>	
Rated Volt. [Vdc]		50(**1H**)	10(**1A**)
Capacitance	Tolerance	Part Number	
1000pF(**102**)	±5%(**J**)	**GRM1887U1H102JA01D**	
1200pF(**122**)	±5%(**J**)	**GRM1887U1H122JA01D**	
1500pF(**152**)	±5%(**J**)	**GRM1887U1H152JA01D**	
1800pF(**182**)	±5%(**J**)	**GRM1887U1H182JA01D**	
2200pF(**222**)	±5%(**J**)	**GRM1887U1H222JA01D**	
2700pF(**272**)	±5%(**J**)	**GRM1887U1H272JA01D**	
3300pF(**332**)	±5%(**J**)	**GRM1887U1H332JA01D**	
3900pF(**392**)	±5%(**J**)	**GRM1887U1H392JA01D**	
4700pF(**472**)	±5%(**J**)	**GRM1887U1H472JA01D**	
5600pF(**562**)	±5%(**J**)	**GRM1887U1H562JA01D**	
6800pF(**682**)	±5%(**J**)	**GRM1887U1H682JA01D**	
8200pF(**822**)	±5%(**J**)	**GRM1887U1H822JA01D**	
10000pF(**103**)	±5%(**J**)	**GRM1887U1H103JA01D**	
12000pF(**123**)	±5%(**J**)		**GRM1887U1A123JA01D**
15000pF(**153**)	±5%(**J**)		**GRM1887U1A153JA01D**
18000pF(**183**)	±5%(**J**)		**GRM1887U1A183JA01D**
22000pF(**223**)	±5%(**J**)		**GRM1887U1A223JA01D**

LxW [mm]		2.0x1.25(**21**)<0805>		3.2x1.6(**31**)<1206>
Rated Volt. [Vdc]		50(**1H**)	10(**1A**)	50(**1H**)
Capacitance	Tolerance	Part Number		
10000pF(**103**)	±5%(**J**)	**GRM2167U1H103JA01D**		
12000pF(**123**)	±5%(**J**)	**GRM2167U1H123JA01D**		
15000pF(**153**)	±5%(**J**)	**GRM2167U1H153JA01D**		
18000pF(**183**)	±5%(**J**)	**GRM2167U1H183JA01D**		
22000pF(**223**)	±5%(**J**)	**GRM2197U1H223JA01D**		
27000pF(**273**)	±5%(**J**)	**GRM2197U1H273JA01D**		
33000pF(**333**)	±5%(**J**)	**GRM21A7U1H333JA39L**		
39000pF(**393**)	±5%(**J**)	**GRM21B7U1H393JA01L**		
47000pF(**473**)	±5%(**J**)	**GRM21B7U1H473JA01L**		
56000pF(**563**)	±5%(**J**)		**GRM2197U1A563JA01D**	**GRM3197U1H563JA01D**
68000pF(**683**)	±5%(**J**)		**GRM21B7U1A683JA01L**	**GRM31M7U1H683JA01L**
82000pF(**823**)	±5%(**J**)		**GRM21B7U1A823JA01L**	**GRM31M7U1H823JA01L**
100000pF(**104**)	±5%(**J**)		**GRM21B7U1A104JA01L**	**GRM31M7U1H104JA01L**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) **GR** ❶ **M** ❷ **18** ❸ **8** ❹ **7U** ❺ **1H** ❻ **102** ❼ **J** ❽ **A01** ❾ **D** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

Temperature Compensating Type U2J(7U) Characteristics-Low Profile

LxW [mm]		1.6x0.8(**18**)<0603>	
Rated Volt. [Vdc]		50(**1H**)	10(**1A**)
Capacitance	Tolerance	Part Number	
2200pF(**222**)	±5%(**J**)	**GRM1857U1H222JA44D**	
2700pF(**272**)	±5%(**J**)	**GRM1857U1H272JA44D**	
3300pF(**332**)	±5%(**J**)	**GRM1857U1H332JA44D**	
3900pF(**392**)	±5%(**J**)	**GRM1857U1H392JA44D**	
4700pF(**472**)	±5%(**J**)	**GRM1857U1H472JA44D**	
5600pF(**562**)	±5%(**J**)		**GRM1857U1A562JA44D**
6800pF(**682**)	±5%(**J**)		**GRM1857U1A682JA44D**
8200pF(**822**)	±5%(**J**)		**GRM1857U1A822JA44D**
10000pF(**103**)	±5%(**J**)		**GRM1857U1A103JA44D**

LxW [mm]		2.0x1.25(**21**)<0805>		3.2x1.6(**31**)<1206>
Rated Volt. [Vdc]		50(**1H**)	10(**1A**)	50(**1H**)
Capacitance	Tolerance	Part Number		
10000pF(**103**)	±5%(**J**)	**GRM2167U1H103JA01D**		
12000pF(**123**)	±5%(**J**)	**GRM2167U1H123JA01D**		
15000pF(**153**)	±5%(**J**)	**GRM2167U1H153JA01D**		
18000pF(**183**)	±5%(**J**)	**GRM2167U1H183JA01D**		
22000pF(**223**)	±5%(**J**)	**GRM2197U1H223JA01D**		
27000pF(**273**)	±5%(**J**)	**GRM2197U1H273JA01D**		
33000pF(**333**)	±5%(**J**)	**GRM21A7U1H333JA39L**		
56000pF(**563**)	±5%(**J**)		**GRM2197U1A563JA01D**	**GRM3197U1H563JA01D**
68000pF(**683**)	±5%(**J**)			**GRM31M7U1H683JA01L**
82000pF(**823**)	±5%(**J**)			**GRM31M7U1H823JA01L**
100000pF(**104**)	±5%(**J**)			**GRM31M7U1H104JA01L**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

Temperature Compensating Type P2H(6P), R2H(6R) Characteristics

TC		P2H	R2H	
LxW [mm]		1.0x0.5(**15**)<0402>	0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		50(**1H**)	25(**1E**)	50(**1H**)
Capacitance	Tolerance	Part Number		
1.0pF(**1R0**)	±0.25pF(**C**)	**GRM1556P1H1R0CZ01D**	**GRM0336R1E1R0CD01D**	**GRM1556R1H1R0CD01D**
2.0pF(**2R0**)	±0.25pF(**C**)	**GRM1556P1H2R0CZ01D**	**GRM0336R1E2R0CD01D**	**GRM1556R1H2R0CZ01D**
3.0pF(**3R0**)	±0.25pF(**C**)	**GRM1556P1H3R0CZ01D**	**GRM0336R1E3R0CD01D**	**GRM1556R1H3R0CZ01D**
4.0pF(**4R0**)	±0.25pF(**C**)	**GRM1556P1H4R0CZ01D**	**GRM0336R1E4R0CD01D**	**GRM1556R1H4R0CZ01D**
5.0pF(**5R0**)	±0.25pF(**C**)	**GRM1556P1H5R0CZ01D**	**GRM0336R1E5R0CD01D**	**GRM1556R1H5R0CZ01D**
6.0pF(**6R0**)	±0.5pF(**D**)	**GRM1556P1H6R0DZ01D**	**GRM0336R1E6R0DD01D**	**GRM1556R1H6R0DZ01D**
7.0pF(**7R0**)	±0.5pF(**D**)	**GRM1556P1H7R0DZ01D**	**GRM0336R1E7R0DD01D**	**GRM1556R1H7R0DZ01D**
8.0pF(**8R0**)	±0.5pF(**D**)	**GRM1556P1H8R0DZ01D**	**GRM0336R1E8R0DD01D**	**GRM1556R1H8R0DZ01D**
9.0pF(**9R0**)	±0.5pF(**D**)	**GRM1556P1H9R0DZ01D**	**GRM0336R1E9R0DD01D**	**GRM1556R1H9R0DZ01D**
10pF(**100**)	±5%(**J**)	**GRM1556P1H100JZ01D**	**GRM0336R1E100JD01D**	**GRM1556R1H100JZ01D**
12pF(**120**)	±5%(**J**)	**GRM1556P1H120JZ01D**	**GRM0336R1E120JD01D**	**GRM1556R1H120JZ01D**
15pF(**150**)	±5%(**J**)	**GRM1556P1H150JZ01D**	**GRM0336R1E150JD01D**	**GRM1556R1H150JZ01D**
18pF(**180**)	±5%(**J**)	**GRM1556P1H180JZ01D**	**GRM0336R1E180JD01D**	**GRM1556R1H180JZ01D**
22pF(**220**)	±5%(**J**)	**GRM1556P1H220JZ01D**	**GRM0336R1E220JD01D**	**GRM1556R1H220JZ01D**
27pF(**270**)	±5%(**J**)	**GRM1556P1H270JZ01D**	**GRM0336R1E270JD01D**	**GRM1556R1H270JZ01D**
33pF(**330**)	±5%(**J**)		**GRM0336R1E330JD01D**	**GRM1556R1H330JZ01D**
39pF(**390**)	±5%(**J**)		**GRM0336R1E390JD01D**	
47pF(**470**)	±5%(**J**)		**GRM0336R1E470JD01D**	
56pF(**560**)	±5%(**J**)		**GRM0336R1E560JD01D**	
68pF(**680**)	±5%(**J**)		**GRM0336R1E680JD01D**	
82pF(**820**)	±5%(**J**)		**GRM0336R1E820JD01D**	
100pF(**101**)	±5%(**J**)		**GRM0336R1E101JD01D**	

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) **GR** ❶ | **M** ❷ | **15** ❸ | **5** ❹ | **6P** ❺ | **1H** ❻ | **1R0** ❼ | **C** ❽ | **Z01** ❾ | **D** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

Temperature Compensating Type S2H(6S), T2H(6T) Characteristics

TC		S2H		T2H	
LxW [mm]		0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>	0.6x0.3(**03**)<0201>	1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		25(**1E**)	50(**1H**)	25(**1E**)	50(**1H**)
Capacitance	Tolerance	Part Number			
1.0pF(**1R0**)	±0.25pF(**C**)	**GRM0336S1E1R0CD01D**	**GRM1556S1H1R0CD01D**	**GRM0336T1E1R0CD01D**	**GRM1556T1H1R0CD01D**
2.0pF(**2R0**)	±0.25pF(**C**)	**GRM0336S1E2R0CD01D**	**GRM1556S1H2R0CZ01D**	**GRM0336T1E2R0CD01D**	**GRM1556T1H2R0CD01D**
3.0pF(**3R0**)	±0.25pF(**C**)	**GRM0336S1E3R0CD01D**	**GRM1556S1H3R0CZ01D**	**GRM0336T1E3R0CD01D**	**GRM1556T1H3R0CD01D**
4.0pF(**4R0**)	±0.25pF(**C**)	**GRM0336S1E4R0CD01D**	**GRM1556S1H4R0CZ01D**	**GRM0336T1E4R0CD01D**	**GRM1556T1H4R0CD01D**
5.0pF(**5R0**)	±0.25pF(**C**)	**GRM0336S1E5R0CD01D**	**GRM1556S1H5R0CZ01D**	**GRM0336T1E5R0CD01D**	**GRM1556T1H5R0CD01D**
6.0pF(**6R0**)	±0.5pF(**D**)	**GRM0336S1E6R0DD01D**	**GRM1556S1H6R0DZ01D**	**GRM0336T1E6R0DD01D**	**GRM1556T1H6R0DD01D**
7.0pF(**7R0**)	±0.5pF(**D**)	**GRM0336S1E7R0DD01D**	**GRM1556S1H7R0DZ01D**	**GRM0336T1E7R0DD01D**	**GRM1556T1H7R0DD01D**
8.0pF(**8R0**)	±0.5pF(**D**)	**GRM0336S1E8R0DD01D**	**GRM1556S1H8R0DZ01D**	**GRM0336T1E8R0DD01D**	**GRM1556T1H8R0DD01D**
9.0pF(**9R0**)	±0.5pF(**D**)	**GRM0336S1E9R0DD01D**	**GRM1556S1H9R0DZ01D**	**GRM0336T1E9R0DD01D**	**GRM1556T1H9R0DD01D**
10pF(**100**)	±5%(**J**)	**GRM0336S1E100JD01D**	**GRM1556S1H100JZ01D**	**GRM0336T1E100JD01D**	**GRM1556T1H100JD01D**
12pF(**120**)	±5%(**J**)	**GRM0336S1E120JD01D**	**GRM1556S1H120JZ01D**	**GRM0336T1E120JD01D**	**GRM1556T1H120JD01D**
15pF(**150**)	±5%(**J**)	**GRM0336S1E150JD01D**	**GRM1556S1H150JZ01D**	**GRM0336T1E150JD01D**	**GRM1556T1H150JD01D**
18pF(**180**)	±5%(**J**)	**GRM0336S1E180JD01D**	**GRM1556S1H180JZ01D**	**GRM0336T1E180JD01D**	**GRM1556T1H180JD01D**
22pF(**220**)	±5%(**J**)	**GRM0336S1E220JD01D**	**GRM1556S1H220JZ01D**	**GRM0336T1E220JD01D**	**GRM1556T1H220JD01D**
27pF(**270**)	±5%(**J**)	**GRM0336S1E270JD01D**	**GRM1556S1H270JZ01D**	**GRM0336T1E270JD01D**	**GRM1556T1H270JD01D**
33pF(**330**)	±5%(**J**)	**GRM0336S1E330JD01D**	**GRM1556S1H330JZ01D**	**GRM0336T1E330JD01D**	**GRM1556T1H330JD01D**
39pF(**390**)	±5%(**J**)	**GRM0336S1E390JD01D**	**GRM1556S1H390JZ01D**	**GRM0336T1E390JD01D**	**GRM1556T1H390JD01D**
47pF(**470**)	±5%(**J**)	**GRM0336S1E470JD01D**		**GRM0336T1E470JD01D**	**GRM1556T1H470JD01D**
56pF(**560**)	±5%(**J**)	**GRM0336S1E560JD01D**		**GRM0336T1E560JD01D**	**GRM1556T1H560JD01D**
68pF(**680**)	±5%(**J**)	**GRM0336S1E680JD01D**		**GRM0336T1E680JD01D**	**GRM1556T1H680JD01D**
82pF(**820**)	±5%(**J**)	**GRM0336S1E820JD01D**		**GRM0336T1E820JD01D**	**GRM1556T1H820JD01D**
100pF(**101**)	±5%(**J**)	**GRM0336S1E101JD01D**		**GRM0336T1E101JD01D**	**GRM1556T1H101JD01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

High Dielectric Constant Type X7R(R7) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>
Rated Volt. [Vdc]		10(**1A**)
Capacitance	Tolerance	Part Number
68pF(**680**)	±10%(**K**)	**GRM022R71A680KA01L**
100pF(**101**)	±10%(**K**)	**GRM022R71A101KA01L**
150pF(**151**)	±10%(**K**)	**GRM022R71A151KA01L**
220pF(**221**)	±10%(**K**)	**GRM022R71A221KA01L**
330pF(**331**)	±10%(**K**)	**GRM022R71A331KA01L**
470pF(**471**)	±10%(**K**)	**GRM022R71A471KA01L**

LxW [mm]		0.6x0.3(**03**)<0201>			
Rated Volt. [Vdc]		25(**1E**)	16(**1C**)	10(**1A**)	6.3(**0J**)
Capacitance	Tolerance	Part Number			
100pF(**101**)	±10%(**K**)	**GRM033R71E101KA01D**	**GRM033R71C101KA01D**		
150pF(**151**)	±10%(**K**)	**GRM033R71E151KA01D**	**GRM033R71C151KA01D**		
220pF(**221**)	±10%(**K**)	**GRM033R71E221KA01D**	**GRM033R71C221KA01D**		
330pF(**331**)	±10%(**K**)	**GRM033R71E331KA01D**	**GRM033R71C331KA01D**		
470pF(**471**)	±10%(**K**)	**GRM033R71E471KA01D**	**GRM033R71C471KA01D**		
680pF(**681**)	±10%(**K**)	**GRM033R71E681KA01D**	**GRM033R71C681KA01D**		
1000pF(**102**)	±10%(**K**)	**GRM033R71E102KA01D**	**GRM033R71C102KA01D**		
1500pF(**152**)	±10%(**K**)	**GRM033R71E152KA01D**	**GRM033R71C152KA01D**		
2200pF(**222**)	±10%(**K**)		**GRM033R71C222KA88D**	**GRM033R71A222KA01D**	
3300pF(**332**)	±10%(**K**)		**GRM033R71C332KA88D**	**GRM033R71A332KA01D**	
4700pF(**472**)	±10%(**K**)			**GRM033R71A472KA01D**	**GRM033R70J472KA01D**
6800pF(**682**)	±10%(**K**)			**GRM033R71A682KA01D**	**GRM033R70J682KA01D**
10000pF(**103**)	±10%(**K**)			**GRM033R71A103KA01D**	**GRM033R70J103KA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

(Part Number) **GR** ❶ **M** ❷ **02** ❸ **2** ❹ **R7** ❺ **1A** ❻ **680** ❼ **K** ❽ **A01** ❾ **L** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

High Dielectric Constant Type X7R(R7) Characteristics

LxW [mm]		1.0x0.5(**15**)<0402>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
220pF(**221**)	±10%(**K**)	**GRM155R72A221KA01D**	**GRM155R71H221KA01D**		
330pF(**331**)	±10%(**K**)	**GRM155R72A331KA01D**	**GRM155R71H331KA01D**		
470pF(**471**)	±10%(**K**)	**GRM155R72A471KA01D**	**GRM155R71H471KA01D**		
680pF(**681**)	±10%(**K**)	**GRM155R72A681KA01D**	**GRM155R71H681KA01D**		
1000pF(**102**)	±10%(**K**)	**GRM155R72A102KA01D**	**GRM155R71H102KA01D**		
1500pF(**152**)	±10%(**K**)	**GRM155R72A152KA01D**	**GRM155R71H152KA01D**		
2200pF(**222**)	±10%(**K**)	**GRM155R72A222KA01D**	**GRM155R71H222KA01D**		
3300pF(**332**)	±10%(**K**)	**GRM155R72A332KA01D**	**GRM155R71H332KA01D**		
4700pF(**472**)	±10%(**K**)	**GRM155R72A472KA01D**	**GRM155R71H472KA01D**	**GRM155R71E472KA01D**	
6800pF(**682**)	±10%(**K**)		**GRM155R71H682KA88D**	**GRM155R71E682KA01D**	
10000pF(**103**)	±10%(**K**)		**GRM155R71H103KA88D**	**GRM155R71E103KA01D**	
15000pF(**153**)	±10%(**K**)		**GRM155R71H153KA12D**	**GRM155R71E153KA61D**	**GRM155R71C153KA01D**
22000pF(**223**)	±10%(**K**)		**GRM155R71H223KA12D**	**GRM155R71E223KA61D**	**GRM155R71C223KA01D**
33000pF(**333**)	±10%(**K**)			**GRM155R71E333KA88D**	**GRM155R71C333KA01D**
47000pF(**473**)	±10%(**K**)			**GRM155R71E473KA88D**	**GRM155R71C473KA01D**
68000pF(**683**)	±10%(**K**)				**GRM155R71C683KA88D**
0.10μF(**104**)	±10%(**K**)				**GRM155R71C104KA88D**
0.15μF(**154**)	±10%(**K**)				**GRM155R71C154KA12D**
0.22μF(**224**)	±10%(**K**)				**GRM155R71C224KA12D**

LxW [mm]		1.0x0.5(**15**)<0402>
Rated Volt. [Vdc]		10(**1A**)
Capacitance	Tolerance	Part Number
68000pF(**683**)	±10%(**K**)	**GRM155R71A683KA01D**
0.10μF(**104**)	±10%(**K**)	**GRM155R71A104KA01D**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

High Dielectric Constant Type X7R(R7)/X7S(C7) Characteristics

LxW [mm]		1.6x0.8(**18**)<0603>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
220pF(**221**)	±10%(**K**)	**GRM188R72A221KA01D**	**GRM188R71H221KA01D**		
330pF(**331**)	±10%(**K**)	**GRM188R72A331KA01D**	**GRM188R71H331KA01D**		
470pF(**471**)	±10%(**K**)	**GRM188R72A471KA01D**	**GRM188R71H471KA01D**		
680pF(**681**)	±10%(**K**)	**GRM188R72A681KA01D**	**GRM188R71H681KA01D**		
1000pF(**102**)	±10%(**K**)	**GRM188R72A102KA01D**	**GRM188R71H102KA01D**		
1500pF(**152**)	±10%(**K**)	**GRM188R72A152KA01D**	**GRM188R71H152KA01D**		
2200pF(**222**)	±10%(**K**)	**GRM188R72A222KA01D**	**GRM188R71H222KA01D**	**GRM188R71E222KA01D**	
3300pF(**332**)	±10%(**K**)	**GRM188R72A332KA01D**	**GRM188R71H332KA01D**	**GRM188R71E332KA01D**	
4700pF(**472**)	±10%(**K**)	**GRM188R72A472KA01D**	**GRM188R71H472KA01D**	**GRM188R71E472KA01D**	
6800pF(**682**)	±10%(**K**)	**GRM188R72A682KA01D**	**GRM188R71H682KA01D**	**GRM188R71E682KA01D**	
10000pF(**103**)	±10%(**K**)	**GRM188R72A103KA01D**	**GRM188R71H103KA01D**	**GRM188R71E103KA01D**	
15000pF(**153**)	±10%(**K**)		**GRM188R71H153KA01D**	**GRM188R71E153KA01D**	
22000pF(**223**)	±10%(**K**)		**GRM188R71H223KA01D**	**GRM188R71E223KA01D**	
33000pF(**333**)	±10%(**K**)		**GRM188R71H333KA61D**	**GRM188R71E333KA01D**	
47000pF(**473**)	±10%(**K**)		**GRM188R71H473KA61D**	**GRM188R71E473KA01D**	
68000pF(**683**)	±10%(**K**)		**GRM188R71H683KA93D**	**GRM188R71E683KA01D**	
0.10μF(**104**)	±10%(**K**)	**GRM188R72A104KA35D**	**GRM188R71H104KA93D**	**GRM188R71E104KA01D**	
0.15μF(**154**)	±10%(**K**)			**GRM188R71E154KA01D**	**GRM188R71C154KA01D**
0.22μF(**224**)	±10%(**K**)			**GRM188R71E224KA88D**	**GRM188R71C224KA01D**
0.33μF(**334**)	±10%(**K**)				**GRM188R71C334KA01D**
0.47μF(**474**)	±10%(**K**)			**GRM188R71E474KA12D***	**GRM188R71C474KA88D**
0.68μF(**684**)	±10%(**K**)				**GRM188C71C684KA12D***
1.0μF(**105**)	±10%(**K**)			**GRM188R71E105KA12D***	**GRM188R71C105KA12D***

LxW [mm]		1.6x0.8(**18**)<0603>		
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number		
0.33μF(**334**)	±10%(**K**)	**GRM188R71A334KA61D**		
0.47μF(**474**)	±10%(**K**)	**GRM188R71A474KA61D**		
0.68μF(**684**)	±10%(**K**)	**GRM188R71A684KA61D**		
1.0μF(**105**)	±10%(**K**)	**GRM188R71A105KA61D***		
2.2μF(**225**)	±10%(**K**)	**GRM188R71A225KE15D***	**GRM188C70J225KE20D***	**GRM188C70G225KE20D***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

* Please refer to GRM Series Specifications and Test Method (2).

(Part Number) GR ❶ | M ❷ | 18 ❸ | 8 ❹ | R7 ❺ | 2A ❻ | 221 ❼ | K ❽ | A01 ❾ | D ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

High Dielectric Constant Type X7R(R7)/X7U(E7) Characteristics

LxW [mm]		2.0x1.25(**21**)<0805>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
6800pF(**682**)	±10%(**K**)	**GRM219R72A682KA01D**			
10000pF(**103**)	±10%(**K**)	**GRM21BR72A103KA01L**			
15000pF(**153**)	±10%(**K**)	**GRM21BR72A153KA01L**			
22000pF(**223**)	±10%(**K**)	**GRM21BR72A223KA01L**			
33000pF(**333**)	±10%(**K**)	**GRM21BR72A333KA01L**	**GRM219R71H333KA01D**		
47000pF(**473**)	±10%(**K**)	**GRM21BR72A473KA01L**	**GRM21BR71H473KA01L**		
68000pF(**683**)	±10%(**K**)		**GRM21BR71H683KA01L**	**GRM219R71E683KA01D**	
0.10μF(**104**)	±10%(**K**)		**GRM21BR71H104KA01L**	**GRM21BR71E104KA01L**	
0.15μF(**154**)	±10%(**K**)		**GRM21BR71H154KA01L**	**GRM21BR71E154KA01L**	
0.22μF(**224**)	±10%(**K**)	**GRM21AR72A224KAC5L**	**GRM21BR71H224KA01L**	**GRM21BR71E224KA01L**	
0.33μF(**334**)	±10%(**K**)	**GRM21AR72A334KAC5L**	**GRM219R71H334KA88D**	**GRM21BR71E334KA01L**	
0.47μF(**474**)	±10%(**K**)	**GRM21BR72A474KA73L**	**GRM21BR71H474KA88L**	**GRM219R71E474KA88D**	
0.68μF(**684**)	±10%(**K**)			**GRM219R71E684KA88D**	**GRM219R71C684KA01D**
1.0μF(**105**)	±10%(**K**)		**GRM21BR71H105KA12L**	**GRM21BR71E105KA99L**	**GRM21BR71C105KA01L**
				GRM219R71E105KA88D	
2.2μF(**225**)	±10%(**K**)			**GRM21BR71E225KA73L***	**GRM21BR71C225KA12L**
4.7μF(**475**)	±10%(**K**)				**GRM21BR71C475KA73L***

LxW [mm]		2.0x1.25(**21**)<0805>		
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number		
2.2μF(**225**)	±10%(**K**)	**GRM21BR71A225KA01L**		
4.7μF(**475**)	±10%(**K**)	**GRM21BR71A475KA73L***		
10μF(**106**)	±10%(**K**)	**GRM21BR71A106KE51L***	**GRM21BR70J106KE76L***	
22μF(**226**)	±20%(**M**)			**GRM21BE70G226ME51L***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

* Please refer to GRM Series Specifications and Test Method (2).

High Dielectric Constant Type X7R(R7)/X7U(E7) Characteristics

LxW [mm]		3.2x1.6(**31**)<1206>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
15000pF(**153**)	±10%(**K**)	**GRM319R72A153KA01L**			
22000pF(**223**)	±10%(**K**)	**GRM31MR72A223KA01L**			
33000pF(**333**)	±10%(**K**)	**GRM31MR72A333KA01L**			
47000pF(**473**)	±10%(**K**)	**GRM31MR72A473KA01L**			
68000pF(**683**)	±10%(**K**)	**GRM31MR72A683KA01L**			
0.10μF(**104**)	±10%(**K**)	**GRM319R72A104KA01D**			
0.15μF(**154**)	±10%(**K**)	**GRM31MR72A154KA01L**	**GRM31MR71H154KA01L**		
0.22μF(**224**)	±10%(**K**)	**GRM31MR72A224KA01L**	**GRM31MR71H224KA01L**		
0.33μF(**334**)	±10%(**K**)		**GRM319R71H334KA01D**	**GRM319R71E334KA01D**	
0.47μF(**474**)	±10%(**K**)	**GRM31MR72A474KA35L**	**GRM31MR71H474KA01L**	**GRM319R71E474KA01D**	
0.68μF(**684**)	±10%(**K**)	**GRM31MR72A684KA35L**	**GRM31MR71H684KA88L**	**GRM319R71E684KA01D**	
1.0μF(**105**)	±10%(**K**)	**GRM31CR72A105KA01L**	**GRM31MR71H105KA88L**		
2.2μF(**225**)	±10%(**K**)		**GRM31CR71H225KA88L**	**GRM31MR71E225KA93L**	**GRM31MR71C225KA35L**
4.7μF(**475**)	±10%(**K**)		**GRM31CR71H475KA12L**	**GRM31CR71E475KA88L**	**GRM31CR71C475KA01L**
10μF(**106**)	±10%(**K**)			**GRM31CR71E106KA12L***	**GRM31CR71C106KAC7L***

LxW [mm]		3.2x1.6(**31**)<1206>		
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number		
10μF(**106**)	±10%(**K**)	**GRM31CR71A106KA01L**		
22μF(**226**)	±20%(**M**)	**GRM31CR71A226ME15L***	**GRM31CR70J226ME19L***	
47μF(**476**)	±20%(**M**)			**GRM31CE70G476ME15L***

LxW [mm]		3.2x2.5(**32**)<1210>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	35(**YA**)	25(**1E**)
Capacitance	Tolerance	Part Number			
0.68μF(**684**)	±10%(**K**)	**GRM32CR72A684KA01L**			
1.0μF(**105**)	±10%(**K**)	**GRM32CR72A105KA35L**			
2.2μF(**225**)	±10%(**K**)	**GRM32ER72A225KA35L**			
4.7μF(**475**)	±10%(**K**)		**GRM32ER71H475KA88L**		
10μF(**106**)	±10%(**K**)			**GRM32ER7YA106KA12L**	**GRM32DR71E106KA12L**
22μF(**226**)	±20%(**M**)				**GRM32ER71E226ME15L***

LxW [mm]		3.2x2.5(**32**)<1210>			
Rated Volt. [Vdc]		16(**1C**)	10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number			
22μF(**226**)	±20%(**M**)	**GRM32ER71C226MEA8L***	**GRM32ER71A226ME20L***		
47μF(**476**)	±20%(**M**)		**GRM32ER71A476ME15L***	**GRM32ER70J476ME20L***	
100μF(**107**)	±20%(**M**)				**GRM32EE70G107ME19L***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code
* Please refer to GRM Series Specifications and Test Method (2).

(Part Number) **GR** ❶ | **M** ❷ | **31** ❸ | **9** ❹ | **R7** ❺ | **2A** ❻ | **153** ❼ | **K** ❽ | **A01** ❾ | **L** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

High Dielectric Constant Type X7R(R7)/X7T(D7) Characteristics-Low Profile

LxW [mm]		1.0x0.5(**15**)<0402>			1.6x0.8(**18**)<0603>
Rated Volt. [Vdc]		50(**1H**)	25(**1E**)	16(**1C**)	10(**1A**)
Capacitance	Tolerance	Part Number			
220pF(**221**)	±10%(**K**)	**GRM15XR71H221KA86D**			
330pF(**331**)	±10%(**K**)	**GRM15XR71H331KA86D**			
470pF(**471**)	±10%(**K**)	**GRM15XR71H471KA86D**			
680pF(**681**)	±10%(**K**)	**GRM15XR71H681KA86D**			
1000pF(**102**)	±10%(**K**)	**GRM15XR71H102KA86D**			
1500pF(**152**)	±10%(**K**)	**GRM15XR71H152KA86D**			
2200pF(**222**)	±10%(**K**)		**GRM15XR71E222KA86D**		
3300pF(**332**)	±10%(**K**)			**GRM15XR71C332KA86D**	
4700pF(**472**)	±10%(**K**)			**GRM15XR71C472KA86D**	
6800pF(**682**)	±10%(**K**)			**GRM15XR71C682KA86D**	
10000pF(**103**)	±10%(**K**)			**GRM15XR71C103KA86D**	
1.0μF(**105**)	±10%(**K**)				**GRM185D71A105KE36D***

LxW [mm]		2.0x1.25(**21**)<0805>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
6800pF(**682**)	±10%(**K**)	**GRM219R72A682KA01D**			
33000pF(**333**)	±10%(**K**)		**GRM219R71H333KA01D**		
68000pF(**683**)	±10%(**K**)			**GRM219R71E683KA01D**	
0.22μF(**224**)	±10%(**K**)	**GRM21AR72A224KAC5L**			
0.33μF(**334**)	±10%(**K**)	**GRM21AR72A334KAC5L**	**GRM219R71H334KA88D**		
0.47μF(**474**)	±10%(**K**)			**GRM219R71E474KA88D**	
0.68μF(**684**)	±10%(**K**)			**GRM219R71E684KA88D**	**GRM219R71C684KA01D**
1.0μF(**105**)	±10%(**K**)			**GRM219R71E105KA88D**	

LxW [mm]		3.2x1.6(**31**)<1206>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
15000pF(**153**)	±10%(**K**)	**GRM319R72A153KA01L**			
22000pF(**223**)	±10%(**K**)	**GRM31MR72A223KA01L**			
33000pF(**333**)	±10%(**K**)	**GRM31MR72A333KA01L**			
47000pF(**473**)	±10%(**K**)	**GRM31MR72A473KA01L**			
68000pF(**683**)	±10%(**K**)	**GRM31MR72A683KA01L**			
0.10μF(**104**)	±10%(**K**)	**GRM319R72A104KA01D**			
0.15μF(**154**)	±10%(**K**)	**GRM31MR72A154KA01L**	**GRM31MR71H154KA01L**		
0.22μF(**224**)	±10%(**K**)	**GRM31MR72A224KA01L**	**GRM31MR71H224KA01L**		
0.33μF(**334**)	±10%(**K**)		**GRM319R71H334KA01D**		
0.47μF(**474**)	±10%(**K**)	**GRM31MR72A474KA35L**	**GRM31MR71H474KA01L**		
0.68μF(**684**)	±10%(**K**)	**GRM31MR72A684KA35L**	**GRM31MR71H684KA88L**		
1.0μF(**105**)	±10%(**K**)		**GRM31MR71H105KA88L**		
2.2μF(**225**)	±10%(**K**)			**GRM31MR71E225KA93L**	**GRM31MR71C225KA35L**
4.7μF(**475**)	±10%(**K**)				**GRM319D71C475KA12D*#**

LxW [mm]		3.2x2.5(**32**)<1210>	
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)
Capacitance	Tolerance	Part Number	
0.68μF(**684**)	±10%(**K**)	**GRM32CR72A684KA01L**	**GRM32NR71H684KA01L**
1.0μF(**105**)	±10%(**K**)	**GRM32CR72A105KA35L**	

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

* Please refer to GRM Series Specifications and Test Method (2).

These Part Numbers have individual testing conditions on Durability of GRM Series Specifications and Test Methods (2). Please refer to P60.

High Dielectric Constant Type X6S(C8) Characteristics

LxW [mm]		0.6x0.3(**03**)<0201>	
Rated Volt. [Vdc]		6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number	
15000pF(**153**)	±10%(**K**)	**GRM033C80J153KE01D***	**GRM033C80G153KE01D***
22000pF(**223**)	±10%(**K**)	**GRM033C80J223KE01D***	**GRM033C80G223KE01D***
33000pF(**333**)	±10%(**K**)	**GRM033C80J333KE01D***	**GRM033C80G333KE01D***
47000pF(**473**)	±10%(**K**)	**GRM033C80J473KE19D***	**GRM033C80G473KE01D***

LxW [mm]		1.0x0.5(**15**)<0402>		
Rated Volt. [Vdc]		25(**1E**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number		
68000pF(**683**)	±10%(**K**)	**GRM155C81E683KA12D**		
0.10μF(**104**)	±10%(**K**)	**GRM155C81E104KA12D**		
0.15μF(**154**)	±10%(**K**)		**GRM155C80J154KE01D***	**GRM155C80G154KE01D***
0.22μF(**224**)	±10%(**K**)		**GRM155C80J224KE01D***	**GRM155C80G224KE01D***
0.33μF(**334**)	±10%(**K**)		**GRM155C80J334KE01D***	**GRM155C80G334KE01D***
0.47μF(**474**)	±10%(**K**)		**GRM155C80J474KE19D***	**GRM155C80G474KE01D***
0.68μF(**684**)	±10%(**K**)		**GRM155C80J684KE15D*#**	**GRM155C80G684KE19D***

LxW [mm]		1.6x0.8(**18**)<0603>			
Rated Volt. [Vdc]		25(**1E**)	10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number			
1.0μF(**105**)	±10%(**K**)	**GRM188C81E105KAADD**			
2.2μF(**225**)	±10%(**K**)		**GRM188C81A225KE34D***	**GRM188C80J225KE19D***	
4.7μF(**475**)	±10%(**K**)				**GRM188C80G475KE19D***
10μF(**106**)	±20%(**M**)				**GRM188C80G106ME47D*#**

LxW [mm]		1.6x0.8(**18**)<0603>
Rated Volt. [Vdc]		2.5(**0E**)
Capacitance	Tolerance	Part Number
10μF(**106**)	±20%(**M**)	**GRM188C80E106ME47D***

LxW [mm]		2.0x1.25(**21**)<0805>			
Rated Volt. [Vdc]		25(**1E**)	16(**1C**)	10(**1A**)	6.3(**0J**)
Capacitance	Tolerance	Part Number			
1.0μF(**105**)	±10%(**K**)		**GRM216C81C105KA12D***		
2.2μF(**225**)	±10%(**K**)		**GRM219C81C225KA12D***		
4.7μF(**475**)	±10%(**K**)	**GRM21BC81E475KA12L***	**GRM21BC81C475KA88L***	**GRM219C81A475KE34D***	**GRM219C80J475KE19D***
10μF(**106**)	±10%(**K**)			**GRM21BC81A106KE18L***	**GRM21BC80J106KE19L***
					GRM219C80J106KE39D*
22μF(**226**)	±20%(**M**)				**GRM21BC80J226ME51L*#**

LxW [mm]		2.0x1.25(**21**)<0805>
Rated Volt. [Vdc]		4(**0G**)
Capacitance	Tolerance	Part Number
22μF(**226**)	±20%(**M**)	**GRM21BC80G226ME39L***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

* Please refer to GRM Series Specifications and Test Method (2).

These Part Numbers have individual testing conditions on Durability of GRM Series Specifications and Test Methods (2). Please refer to P60.

(Part Number) GR ❶ | M ❷ | 03 ❸ | 3 ❹ | C8 ❺ | 0J ❻ | 153 ❼ | K ❽ | E01 ❾ | D ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

High Dielectric Constant Type X6S(C8)/X6T(D8) Characteristics

LxW [mm]		3.2x1.6(**31**)<1206>			
Rated Volt. [Vdc]		25(**1E**)	16(**1C**)	10(**1A**)	6.3(**0J**)
Capacitance	Tolerance	Part Number			
2.2μF(**225**)	±10%(**K**)		**GRM316C81C225KA12D***		
4.7μF(**475**)	±10%(**K**)		**GRM319C81C475KA12D***		
10μF(**106**)	±10%(**K**)	**GRM31CC81E106KE15L***	**GRM31MC81C106KA12L**	**GRM319C81A106KA12D**	**GRM319C80J106KE19D***
22μF(**226**)	±20%(**M**)			**GRM31CC81A226ME19L***	**GRM31CC80J226ME19L***
47μF(**476**)	±20%(**M**)				**GRM31CC80J476ME18L***

LxW [mm]		3.2x1.6(**31**)<1206>
Rated Volt. [Vdc]		4(**0G**)
Capacitance	Tolerance	Part Number
47μF(**476**)	±20%(**M**)	**GRM31CC80G476ME19L***
100μF(**107**)	±20%(**M**)	**GRM31CD80G107ME39L***

LxW [mm]		3.2x2.5(**32**)<1210>			
Rated Volt. [Vdc]		25(**1E**)	10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number			
10μF(**106**)	±10%(**K**)	**GRM32DC81E106KA12L**			
22μF(**226**)	±20%(**M**)	**GRM32EC81E226ME15L***	**GRM32NC81A226ME19L***		
47μF(**476**)	±20%(**M**)		**GRM32EC81A476ME19L***	**GRM32EC80J476ME64L***	
100μF(**107**)	±20%(**M**)			**GRM32EC80J107ME20L***	**GRM32EC80G107ME20L***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code
*: Please refer to GRM Series Specifications and Test Method(2).

High Dielectric Constant Type X6S(C8) Characteristics-Low Profile

LxW [mm]		1.6x0.8(**18**)<0603>	
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)
Capacitance	Tolerance	Part Number	
1.0μF(**105**)	±10%(**K**)	**GRM185C81A105KE36D***	**GRM185C80J105KE26D***

LxW [mm]		2.0x1.25(**21**)<0805>		
Rated Volt. [Vdc]		16(**1C**)	10(**1A**)	6.3(**0J**)
Capacitance	Tolerance	Part Number		
1.0μF(**105**)	±10%(**K**)	**GRM216C81C105KA12D***		
2.2μF(**225**)	±10%(**K**)	**GRM219C81C225KA12D***		
4.7μF(**475**)	±10%(**K**)		**GRM219C81A475KE34D***	**GRM219C80J475KE19D***
10μF(**106**)	±10%(**K**)			**GRM219C80J106KE39D***

LxW [mm]		3.2x1.6(**31**)<1206>
Rated Volt. [Vdc]		16(**1C**)
Capacitance	Tolerance	Part Number
2.2μF(**225**)	±10%(**K**)	**GRM316C81C225KA12D***
4.7μF(**475**)	±10%(**K**)	**GRM319C81C475KA12D***

LxW [mm]		3.2x2.5(**32**)<1210>
Rated Volt. [Vdc]		25(**1E**)
Capacitance	Tolerance	Part Number
10μF(**106**)	±10%(**K**)	**GRM32DC81E106KA12L**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code
* Please refer to GRM Series Specifications and Test Method (2).

High Dielectric Constant Type X5R(R6) Characteristics

LxW [mm]		0.4x0.2(**02**)<01005>	
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)
Capacitance	Tolerance	Part Number	
68pF(**680**)	±10%(**K**)	**GRM022R61A680KA01L**	
100pF(**101**)	±10%(**K**)	**GRM022R61A101KA01L**	
150pF(**151**)	±10%(**K**)	**GRM022R61A151KA01L**	
220pF(**221**)	±10%(**K**)	**GRM022R61A221KA01L**	
330pF(**331**)	±10%(**K**)	**GRM022R61A331KA01L**	
470pF(**471**)	±10%(**K**)	**GRM022R61A471KA01L**	
680pF(**681**)	±10%(**K**)	**GRM022R61A681KE19L***	**GRM022R60J681KE19L***
1000pF(**102**)	±10%(**K**)	**GRM022R61A102KE19L***	**GRM022R60J102KE19L***
1500pF(**152**)	±10%(**K**)	**GRM022R61A152KE19L***	**GRM022R60J152KE19L***
2200pF(**222**)	±10%(**K**)	**GRM022R61A222KE19L***	**GRM022R60J222KE19L***
3300pF(**332**)	±10%(**K**)	**GRM022R61A332KE19L***	**GRM022R60J332KE19L***
4700pF(**472**)	±10%(**K**)	**GRM022R61A472KE19L***	**GRM022R60J472KE19L***
6800pF(**682**)	±10%(**K**)	**GRM022R61A682KE19L***	**GRM022R60J682KE19L***
10000pF(**103**)	±10%(**K**)	**GRM022R61A103KE19L***	**GRM022R60J103KE19L***

LxW [mm]		0.6x0.3(**03**)<0201>			
Rated Volt. [Vdc]		25(**1E**)	16(**1C**)	10(**1A**)	6.3(**0J**)
Capacitance	Tolerance	Part Number			
100pF(**101**)	±10%(**K**)				
150pF(**151**)	±10%(**K**)				
220pF(**221**)	±10%(**K**)				
330pF(**331**)	±10%(**K**)				
470pF(**471**)	±10%(**K**)				
680pF(**681**)	±10%(**K**)				
1000pF(**102**)	±10%(**K**)				
1500pF(**152**)	±10%(**K**)			**GRM033R61A152KA01D**	
2200pF(**222**)	±10%(**K**)			**GRM033R61A222KA01D**	
3300pF(**332**)	±10%(**K**)			**GRM033R61A332KA01D**	
4700pF(**472**)	±10%(**K**)			**GRM033R61A472KA01D**	
6800pF(**682**)	±10%(**K**)			**GRM033R61A682KA01D**	
10000pF(**103**)	±10%(**K**)			**GRM033R61A103KA01D**	**GRM033R60J103KA01D**
15000pF(**153**)	±10%(**K**)				**GRM033R60J153KE01D***
22000pF(**223**)	±10%(**K**)				**GRM033R60J223KE01D***
33000pF(**333**)	±10%(**K**)				**GRM033R60J333KE01D***
47000pF(**473**)	±10%(**K**)				**GRM033R60J473KE19D***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code
□ : Please refer to X7R(R7) etc. Characteristics.
* Please refer to GRM Series Specifications and Test Method (2).

(Part Number) GR ❶ | M ❷ | 02 ❸ | 2 ❹ | R6 ❺ | 1A ❻ | 680 ❼ | K ❽ | A01 ❾ | L ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging*

Packaging Code in Part Number shows STD 180mm Reel Taping.

*__GRM022__: **D** is applicable.

High Dielectric Constant Type X5R(R6) Characteristics

LxW [mm]		1.0x0.5(**15**)<0402>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
220pF(**221**)	±10%(**K**)				
330pF(**331**)	±10%(**K**)				
470pF(**471**)	±10%(**K**)				
680pF(**681**)	±10%(**K**)				
1000pF(**102**)	±10%(**K**)		**GRM155R61H102KA01D**		
1500pF(**152**)	±10%(**K**)				
2200pF(**222**)	±10%(**K**)		**GRM155R61H222KA01D**		
3300pF(**332**)	±10%(**K**)				
4700pF(**472**)	±10%(**K**)		**GRM155R61H472KA01D**		
6800pF(**682**)	±10%(**K**)				
10000pF(**103**)	±10%(**K**)				
15000pF(**153**)	±10%(**K**)				
22000pF(**223**)	±10%(**K**)				**GRM155R61C223KA01D**
33000pF(**333**)	±10%(**K**)				**GRM155R61C333KA01D**
47000pF(**473**)	±10%(**K**)				**GRM155R61C473KA01D**
68000pF(**683**)	±10%(**K**)			**GRM155R61E683KA87D**	**GRM155R61C683KA88D**
0.10μF(**104**)	±10%(**K**)			**GRM155R61E104KA87D**	**GRM155R61C104KA88D**

LxW [mm]		1.0x0.5(**15**)<0402>	
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)
Capacitance	Tolerance	Part Number	
33000pF(**333**)	±10%(**K**)	**GRM155R61A333KA01D**	
47000pF(**473**)	±10%(**K**)	**GRM155R61A473KA01D**	
68000pF(**683**)	±10%(**K**)	**GRM155R61A683KA01D**	
0.10μF(**104**)	±10%(**K**)	**GRM155R61A104KA01D**	
0.15μF(**154**)	±10%(**K**)	**GRM155R61A154KE19D***	**GRM155R60J154KE01D***
0.22μF(**224**)	±10%(**K**)	**GRM155R61A224KE19D***	**GRM155R60J224KE01D***
0.33μF(**334**)	±10%(**K**)	**GRM155R61A334KE15D***	**GRM155R60J334KE01D***
0.47μF(**474**)	±10%(**K**)	**GRM155R61A474KE15D***	**GRM155R60J474KE19D***
0.68μF(**684**)	±10%(**K**)	**GRM155R61A684KE15D***	**GRM155R60J684KE19D***
1.0μF(**105**)	±10%(**K**)	**GRM155R61A105KE15D***	

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code
: Please refer to X7R(R7) etc. Characteristics.
* Please refer to GRM Series Specifications and Test Method (2).

High Dielectric Constant Type X5R(R6) Characteristics

LxW [mm]		1.6x0.8(**18**)<0603>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
220pF(**221**)	±10%(**K**)				
330pF(**331**)	±10%(**K**)				
470pF(**471**)	±10%(**K**)				
680pF(**681**)	±10%(**K**)				
1000pF(**102**)	±10%(**K**)		**GRM188R61H102KA01D**		
1500pF(**152**)	±10%(**K**)				
2200pF(**222**)	±10%(**K**)		**GRM188R61H222KA01D**		
3300pF(**332**)	±10%(**K**)				
4700pF(**472**)	±10%(**K**)		**GRM188R61H472KA01D**		
6800pF(**682**)	±10%(**K**)				
10000pF(**103**)	±10%(**K**)		**GRM188R61H103KA01D**		
15000pF(**153**)	±10%(**K**)				
22000pF(**223**)	±10%(**K**)		**GRM188R61H223KA01D**		
33000pF(**333**)	±10%(**K**)				
47000pF(**473**)	±10%(**K**)				
68000pF(**683**)	±10%(**K**)				
0.10μF(**104**)	±10%(**K**)			**GRM188R61E104KA01D**	
0.15μF(**154**)	±10%(**K**)				
0.22μF(**224**)	±10%(**K**)			**GRM188R61E224KA88D**	**GRM188R61C224KA88D**
0.33μF(**334**)	±10%(**K**)				
0.47μF(**474**)	±10%(**K**)			**GRM188R61E474KA12D***	**GRM188R61C474KA93D***
1.0μF(**105**)	±10%(**K**)			**GRM188R61E105KA12D***	**GRM188R61C105KA93D***
2.2μF(**225**)	±10%(**K**)				**GRM188R61C225KE15D***

LxW [mm]		1.6x0.8(**18**)<0603>		
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number		
0.68μF(**684**)	±10%(**K**)	**GRM188R61A684KA61D**		
2.2μF(**225**)	±10%(**K**)	**GRM188R61A225KE34D***		
4.7μF(**475**)	±10%(**K**)		**GRM188R60J475KE19D***	
10μF(**106**)	±20%(**M**)		**GRM188R60J106ME47D***	**GRM188R60G106ME47D***
22μF(**226**)	±20%(**M**)			**GRM188R60G226MEA0L***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code
: Please refer to X7R(R7) etc. Characteristics.
* Please refer to GRM Series Specifications and Test Method (2).

(Part Number) **GR** ❶ | **M** ❷ | **18** ❸ | **8** ❹ | **R6** ❺ | **1H** ❻ | **102** ❼ | **K** ❽ | **A01** ❾ | **D** ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

High Dielectric Constant Type X5R(R6) Characteristics

LxW [mm]		2.0x1.25(**21**)<0805>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
6800pF(**682**)	±10%(**K**)				
10000pF(**103**)	±10%(**K**)				
15000pF(**153**)	±10%(**K**)				
22000pF(**223**)	±10%(**K**)				
33000pF(**333**)	±10%(**K**)				
47000pF(**473**)	±10%(**K**)				
68000pF(**683**)	±10%(**K**)				
0.10μF(**104**)	±10%(**K**)				
0.15μF(**154**)	±10%(**K**)				
0.22μF(**224**)	±10%(**K**)				
0.33μF(**334**)	±10%(**K**)				
0.47μF(**474**)	±10%(**K**)				
0.68μF(**684**)	±10%(**K**)				
1.0μF(**105**)	±10%(**K**)			**GRM216R61E105KA12D**	**GRM21BR61C105KA01L**
					GRM216R61C105KA88D*
2.2μF(**225**)	±10%(**K**)			**GRM21BR61E225KA12L**	**GRM21BR61C225KA88L***
				GRM219R61E225KA12D*	**GRM219R61C225KA88D***
4.7μF(**475**)	±10%(**K**)			**GRM21BR61E475KA12L***	**GRM21BR61C475KA88L***
					GRM219R61C475KE15D*
10μF(**106**)	±10%(**K**)				**GRM21BR61C106KE15L***

LxW [mm]		2.0x1.25(**21**)<0805>		
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number		
2.2μF(**225**)	±10%(**K**)	**GRM21BR61A225KA01L**		
4.7μF(**475**)	±10%(**K**)	**GRM21BR61A475KA73L***	**GRM21BR60J475KA11L***	
		GRM219R61A475KE34D*		
10μF(**106**)	±10%(**K**)	**GRM21BR61A106KE19L***	**GRM21BR60J106KE19L***	
		GRM219R61A106KE44D*	**GRM219R60J106KE19D***	
22μF(**226**)	±20%(**M**)		**GRM21BR60J226ME39L***	**GRM219R60G226ME66D***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code
: Please refer to X7R(R7) etc. Characteristics.
* Please refer to GRM Series Specifications and Test Method (2).

High Dielectric Constant Type X5R(R6) Characteristics

LxW [mm]		3.2x1.6(**31**)<1206>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
15000pF(**153**)	±10%(**K**)				
22000pF(**223**)	±10%(**K**)				
33000pF(**333**)	±10%(**K**)				
47000pF(**473**)	±10%(**K**)				
68000pF(**683**)	±10%(**K**)				
0.10µF(**104**)	±10%(**K**)				
0.15µF(**154**)	±10%(**K**)				
0.22µF(**224**)	±10%(**K**)				
0.33µF(**334**)	±10%(**K**)				
0.47µF(**474**)	±10%(**K**)				
0.68µF(**684**)	±10%(**K**)				
1.0µF(**105**)	±10%(**K**)				
2.2µF(**225**)	±10%(**K**)		**GRM31CR61H225KA88L**	**GRM316R61E225KA12D***	
4.7µF(**475**)	±10%(**K**)			**GRM31CR61E475KA88L**	**GRM31CR61C475KA01L**
				GRM319R61E475KA12D*	**GRM319R61C475KA88D***
10µF(**106**)	±10%(**K**)			**GRM31CR61E106KA12L***	**GRM31CR61C106KA88L**
					GRM319R61C106KE15D*
22µF(**226**)	±20%(**M**)				**GRM31CR61C226ME15L***

LxW [mm]		3.2x1.6(**31**)<1206>		
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number		
10µF(**106**)	±10%(**K**)	**GRM319R61A106KE19L***		
22µF(**226**)	±20%(**M**)	**GRM31CR61A226ME19L***	**GRM31CR60J226ME19L***	
47µF(**476**)	±20%(**M**)	**GRM31CR61A476ME15L***	**GRM31CR60J476ME19L***	
100µF(**107**)	±20%(**M**)		**GRM31CR60J107ME39L***	**GRM31CR60G107ME39L***

LxW [mm]		3.2x2.5(**32**)<1210>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	35(**YA**)	25(**1E**)
Capacitance	Tolerance	Part Number			
0.68µF(**684**)	±10%(**K**)				
1.0µF(**105**)	±10%(**K**)				
2.2µF(**225**)	±10%(**K**)				
4.7µF(**475**)	±10%(**K**)				
10µF(**106**)	±10%(**K**)			**GRM32ER6YA106KA12L**	**GRM32DR61E106KA12L**
22µF(**226**)	±20%(**M**)				**GRM32ER61E226ME15L***

LxW [mm]		3.2x2.5(**32**)<1210>		
Rated Volt. [Vdc]		16(**1C**)	10(**1A**)	6.3(**0J**)
Capacitance	Tolerance	Part Number		
22µF(**226**)	±20%(**M**)			
47µF(**476**)	±20%(**M**)	**GRM32ER61C476ME15L***	**GRM32ER61A476ME20L***	
100µF(**107**)	±20%(**M**)			**GRM32ER60J107ME20L***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code

: Please refer to X7R(R7) etc. Characteristics.

* Please refer to GRM Series Specifications and Test Method (2).

(Part Number) GR ❶ | M ❷ | 31 ❸ | C ❹ | R6 ❺ | 1H ❻ | 225 ❼ | K ❽ | A88 ❾ | L ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

High Dielectric Constant Type X5R(R6) Characteristics-Low Profile

LxW [mm]		1.0x0.5(**15**)<0402>		
Rated Volt. [Vdc]		16(**1C**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number		
220pF(**221**)	±10%(**K**)			
330pF(**331**)	±10%(**K**)			
470pF(**471**)	±10%(**K**)			
680pF(**681**)	±10%(**K**)			
1000pF(**102**)	±10%(**K**)			
1500pF(**152**)	±10%(**K**)			
2200pF(**222**)	±10%(**K**)			
3300pF(**332**)	±10%(**K**)			
4700pF(**472**)	±10%(**K**)			
6800pF(**682**)	±10%(**K**)			
10000pF(**103**)	±10%(**K**)			

LxW [mm]		1.6x0.8(**18**)<0603>	
Rated Volt. [Vdc]		16(**1C**)	10(**1A**)
Capacitance	Tolerance	Part Number	
1.0μF(**105**)	±10%(**K**)	**GRM185R61C105KE44D***	**GRM185R61A105KE36D***

LxW [mm]		2.0x1.25(**21**)<0805>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
6800pF(**682**)	±10%(**K**)				
33000pF(**333**)	±10%(**K**)				
68000pF(**683**)	±10%(**K**)				
0.22μF(**224**)	±10%(**K**)				
0.33μF(**334**)	±10%(**K**)				
0.47μF(**474**)	±10%(**K**)				
0.68μF(**684**)	±10%(**K**)				
1.0μF(**105**)	±10%(**K**)			**GRM216R61E105KA12D**	**GRM216R61C105KA88D**
2.2μF(**225**)	±10%(**K**)			**GRM219R61E225KA12D***	**GRM219R61C225KA88D***
4.7μF(**475**)	±10%(**K**)				**GRM219R61C475KE15D***

LxW [mm]		2.0x1.25(**21**)<0805>		
Rated Volt. [Vdc]		10(**1A**)	6.3(**0J**)	4(**0G**)
Capacitance	Tolerance	Part Number		
4.7μF(**475**)	±10%(**K**)	**GRM219R61A475KE34D***		
10μF(**106**)	±10%(**K**)	**GRM219R61A106KE44D***	**GRM219R60J106KE19D***	
22μF(**226**)	±20%(**M**)			**GRM219R60G226ME66D***

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code
: Please refer to X7R(R7) etc. Characteristics.
* Please refer to GRM Series Specifications and Test Method (2).

High Dielectric Constant Type X5R(R6) Characteristics-Low Profile

LxW [mm]		3.2x1.6(**31**)<1206>			
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)	16(**1C**)
Capacitance	Tolerance	Part Number			
15000pF(**153**)	±10%(**K**)				
22000pF(**223**)	±10%(**K**)				
33000pF(**333**)	±10%(**K**)				
47000pF(**473**)	±10%(**K**)				
68000pF(**683**)	±10%(**K**)				
0.10μF(**104**)	±10%(**K**)				
0.15μF(**154**)	±10%(**K**)				
0.22μF(**224**)	±10%(**K**)				
0.33μF(**334**)	±10%(**K**)				
0.47μF(**474**)	±10%(**K**)				
0.68μF(**684**)	±10%(**K**)				
1.0μF(**105**)	±10%(**K**)				
2.2μF(**225**)	±10%(**K**)			**GRM316R61E225KA12D***	
4.7μF(**475**)	±10%(**K**)			**GRM319R61E475KA12D***	**GRM319R61C475KA88D***
10μF(**106**)	±10%(**K**)				**GRM319R61C106KE15D***

LxW [mm]		3.2x1.6(**31**)<1206>
Rated Volt. [Vdc]		10(**1A**)
Capacitance	Tolerance	Part Number
10μF(**106**)	±10%(**K**)	**GRM319R61A106KE19D***

LxW [mm]		3.2x2.5(**32**)<1210>		
Rated Volt. [Vdc]		100(**2A**)	50(**1H**)	25(**1E**)
Capacitance	Tolerance	Part Number		
0.68μF(**684**)	±10%(**K**)			
1.0μF(**105**)	±10%(**K**)			
10μF(**106**)	±10%(**K**)			**GRM32DR61E106KA12L**

The part number code is shown in ( ) and Unit is shown in [ ]. < >: EIA [inch] Code
: Please refer to X7R(R7) etc. Characteristics.
* Please refer to GRM Series Specifications and Test Method (2).

(Part Number) GR ❶ | M ❷ | 31 ❸ | 6 ❹ | R6 ❺ | 1E ❻ | 225 ❼ | K ❽ | A12 ❾ | D ❿

❶Product ID ❷Series ❸Dimensions (LxW) ❹Dimension (T)
❺Temperature Characteristics ❻Rated Voltage ❼Capacitance
❽Capacitance Tolerance ❾Individual Specification Code ❿Packaging

Packaging Code in Part Number shows STD 180mm Reel Taping.

GRM Series Specifications and Test Methods (1) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
Please refer to individual specifications (our product specifications or the approval sheet).
When no "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).
When "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

No.	Item	Specifications		Test Method
		Temperature Compensating Type	High Dielectric Type	
1	Operating Temperature Range	–55 to +125°C (2P/R/S/T, 3P/R/S/T/U, 4P/R/S/T/U: –25 to +85°C)	B1, B3, F1: –25 to +85°C R1, R7: –55 to +125°C R6: –55 to +85°C C8: –55 to +105°C E4: +10 to +85°C F5: –30 to +85°C	Reference temperature: 25°C (2Δ, 3Δ, 4Δ, B1, B3, F1, R1: 20°C)
2	Rated Voltage	See the previous pages.		The rated voltage is defined as the maximum voltage that may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V^{P-P} or V^{O-P}, whichever is larger, should be maintained within the rated voltage range.
3	Appearance	No defects or abnormalities		Visual inspection
4	Dimensions	Within the specified dimensions		Using calipers (GRM02 size is based on Microscope)
5	Dielectric Strength	No defects or abnormalities		No failure should be observed when 300%* of the rated voltage (temperature compensating type) or 250% of the rated voltage (high dielectric constant type) is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA. *200% for 500V
6	Insulation Resistance	C≦0.047μF: More than 10,000MΩ C>0.047μF: More than 500Ω · F C: Nominal Capacitance		The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at 20/25°C and 75%RH max. and within 2 minutes of charging, provided the charge/discharge current is less than 50mA.
7	Capacitance	Within the specified tolerance		The capacitance/Q/D.F. should be measured at 20/25°C at the frequency and voltage shown in the table.
8	Q/ Dissipation Factor (D.F.)	30pF and over: Q≧1000 30pF and below: Q≧400+20C C: Nominal Capacitance (pF)	[R6, R7, C8] W.V.: 100V : 0.025 max. (C<0.068μF) : 0.05 max. (C≧0.068μF) W.V.: 50/35/25V: : 0.025 max.* *GRM32D R7/R6/C8 1E106: 0.035 max. W.V.: 16/10V: 0.035 max. W.V.: 6.3/4V : 0.05 max. (C<3.3μF) : 0.1 max. (C≧3.3μF) [E4] W.V.: 25Vmin: 0.025 max. [F1, F5] W.V.: 25V min. : 0.05 max. (C<0.1μF) : 0.09 max. (C≧0.1μF) W.V.: 16/10V: 0.125 max. W.V.: 6.3V: 0.15 max.	

Char. / Item	ΔC to 7U, 1X (1000pF and below)	ΔC to 7U, 1X (more than 1000pF) R6, R7, C8, F5, B1, B3, F1	R6, R7, F5 (C>10μF)	E4
Frequency	1±0.1MHz	1±0.1kHz	120±24kHz	1±0.1kHz
Voltage	0.5 to 5Vrms	1±0.2Vrms	0.5± 0.1Vrms	0.5± 0.05Vrms

Continued on the following page.

GRM Series Specifications and Test Methods (1) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
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Continued from the preceding page.

No.	Item		Specifications: Temperature Compensating Type	Specifications: High Dielectric Type	Test Method
9	Capacitance Temperature Characteristics	No bias	Within the specified tolerance (Table A-1)	B1, B3: Within ±10% (–25 to +85°C) R1, R7: Within ±15% (–55 to +125°C) R6: Within ±15% (–55 to +85°C) E4: Within +22/–56% (+10 to +85°C) F1: Within +30/–80% (–25 to +85°C) F5: Within +22/–82% (–30 to +85°C) C8: Within ±22% (–55 to +105°C)	The capacitance change should be measured after 5 min. at each specified temp. stage. (1)Temperature Compensating Type The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling the temperature sequentially from steps 1 through 5 (5C: +25 to +125°C/ΔC: +20 to +125°C: other temp. coeffs.: +25 to +85°C/+20 to +85°C) the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as in Table A-1. The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in the steps 1, 3 and 5 by the cap. value in step 3.
		50% of the Rated Voltage		B1: Within +10/–30% R1: Within +15/–40% F1: Within +30/–95%	
		Capacitance Drift	Within ±0.2% or ±0.05pF (whichever is larger.) *Do not apply to 1X/25V	*Initial measurement for high dielectric constant type Perform a heat treatment at 150+0/–10°C for one hour and then set for 24±2 hours at room temperature. Perform the initial measurement.	(2) High Dielectric Constant Type The ranges of capacitance change compared with the Reference Temperature value over the temperature ranges shown in the table should be within the specified ranges.* When applying voltage, the capacitance change should be measured after 1 more min. with applying voltage in equilibration of each temp. stage.
10	Adhesive Strength of Termination		No removal of the terminations or other defect should occur.		Solder the capacitor to the test jig (glass epoxy board) shown in Fig. 1a using a eutectic solder. Then apply 10N* force in parallel with the test jig for 10±1 sec. The soldering should be done either with an iron or using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock. *1N (GRM02), 2N (GRM03), 5N (GRM15, GRM18)

Step	Temperature (°C)
1	Reference Temperature ±2
2	–55±3 (for ΔC to 7U/R6/R7/C8) –30±3 (for F5), 10±3 (for E4) –25±3 (for other TC)
3	Reference Temperature ±2
4	125±3 (for ΔC/R7), 105±3 (for C8) 85±3 (for other TC)
5	Reference Temperature ±2

Step	Temperature (°C)	Applying Voltage (V)
1	Reference Temperature ±2	No bias
2	–55±3 (for C8, R1, R7, R6) –25±3 (for B1, B3, F1) –30±3 (for F5)/10±3 (for E4)	
3	Reference Temperature ±2	
4	125±3 (for R1, R7)/ 85±3 (for B1, B3, R6 F1, F5, E4)/105±3 (for C8)	
5	Reference Temperature ±2	50% of the rated voltage
6	–55±3 (for R1)/ –25±3 (for B1, F1)	
7	Reference Temperature ±2	
8	125±3 (for R1)/ 85±3 (for B1, F1)	

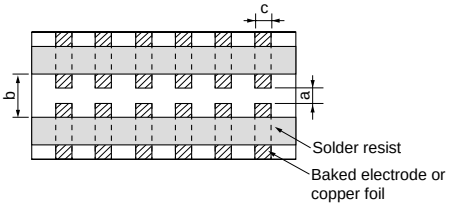

Fig. 1a

(in mm)

Type	a	b	c
GRM02	0.2	0.56	0.23
GRM03	0.3	0.9	0.3
GRM15	0.4	1.5	0.5
GRM18	1.0	3.0	1.2
GRM21	1.2	4.0	1.65
GRM31	2.2	5.0	2.0
GRM32	2.2	5.0	2.9
GRM43	3.5	7.0	3.7
GRM55	4.5	8.0	5.6

Continued on the following page.

GRM Series Specifications and Test Methods (1) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
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When no "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).
When "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

Continued from the preceding page.

No.	Item		Specifications: Temperature Compensating Type	Specifications: High Dielectric Type	Test Method
11	Vibration Resistance	Appearance	No defects or abnormalities		Solder the capacitor on the test jig (glass epoxy board) in the same manner and under the same conditions as (10). The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 minute. This motion should be applied for a period of 2 hours in each of 3 mutually perpendicular directions (total of 6 hours).
		Capacitance	Within the specified tolerance		
		Q/D.F.	30pF and over: Q≧1000 30pF and below: Q≧400+20C C: Nominal Capacitance (pF)	[B1, B3, R6, R7, C8] W.V.: 100V : 0.025 max. (C<0.068μF) : 0.05 max. (C≧0.068μF) W.V.: 50/35/25V: : 0.025 max.* *GRM32D R7/R6/C8 1E106: 0.035 max. W.V.: 16/10V: 0.035 max. W.V.: 6.3/4V : 0.05 max. (C<3.3μF) : 0.1 max. (C≧3.3μF) [E4] W.V.: 25Vmin: 0.025 max. [F1, F5] W.V.: 25V min. : 0.05 max. (C<0.1μF) : 0.09 max. (C≧0.1μF) W.V.: 16/10V: 0.125 max. W.V.: 6.3V: 0.15 max.	
12	Deflection	Appearance	No marking defects		Solder the capacitor on the test jig (glass epoxy board) shown in Fig. 2a using a eutectic solder. Then apply a force in the direction shown in Fig. 3a for 5±1 sec. The soldering should be done by the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.
		Capacitance Change	Within ±5% or ±0.5pF (whichever is larger)	Within ±10%	
13	Solderability of Termination		75% of the terminations are to be soldered evenly and continuously.		Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Preheat at 80 to 120°C for 10 to 30 seconds. After preheating, immerse in a eutectic solder solution for 2±0.5 seconds at 230±5°C or Sn-3.0Ag-0.5Cu solder solution for 2±0.5 seconds at 245±5°C.

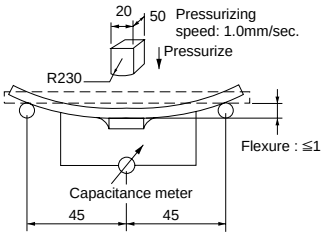

Fig. 3a

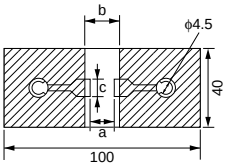

Fig. 2a

t: 1.6mm (GRM02/03/15: t: 0.8mm)

Type	a	b	c
GRM02	0.2	0.56	0.23
GRM03	0.3	0.9	0.3
GRM15	0.4	1.5	0.5
GRM18	1.0	3.0	1.2
GRM21	1.2	4.0	1.65
GRM31	2.2	5.0	2.0
GRM32	2.2	5.0	2.9
GRM43	3.5	7.0	3.7
GRM55	4.5	8.0	5.6

(in mm)

Continued on the following page.

GRM Series Specifications and Test Methods (1) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
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When "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

Continued from the preceding page.

No.	Item		Specifications: Temperature Compensating Type	Specifications: High Dielectric Type	Test Method
14	Resistance to Soldering Heat		The measured and observed characteristics should satisfy the specifications in the following table.		Preheat the capacitor at 120 to 150°C for 1 minute. Immerse the capacitor in a eutectic solder or Sn-3.0Ag-0.5Cu solder solution at 270±5°C for 10±0.5 seconds. Set at room temperature for 24±2 hours, then measure. •Initial measurement for high dielectric constant type Perform a heat treatment at 150+0/–10°C for one hour and then set at room temperature for 24±2 hours. Perform the initial measurement. •Preheating for GRM32/43/55
		Appearance	No defects or abnormalities		
		Capacitance Change	Within ±2.5% or ±0.25pF (whichever is larger)	B1, B3, R1, R6, R7, C8: Within ±7.5% F1, F5, E4: Within ±20%	
		Q/D.F.	30pF and over: Q≧1000 30pF and below: Q≧400+20C C: Nominal Capacitance (pF)	[B1, B3, R6, R7, C8] W.V.: 100V : 0.025 max. (C<0.068μF) : 0.05 max. (C≧0.068μF) W.V.: 50/35/25V: : 0.025 max.* *GRM32D R7/R6/C8 1E106: 0.035 max. W.V.: 16/10V: 0.035 max. W.V.: 6.3/4V : 0.05 max. (C<3.3μF) : 0.1 max. (C≧3.3μF) [E4] W.V.: 25Vmin: 0.025 max. [F1, F5] W.V.: 25V min. : 0.05 max. (C<0.1μF) : 0.09 max. (C≧0.1μF) W.V.: 16/10V: 0.125 max. W.V.: 6.3V: 0.15 max.	
		I.R.	More than 10,000MΩ or 500Ω · F (whichever is smaller)		
		Dielectric Strength	No defects		

Step	Temperature	Time
1	100 to 120°C	1 min.
2	170 to 200°C	1 min.

No.	Item		Specifications: Temperature Compensating Type	Specifications: High Dielectric Type	Test Method
15	Temperature Cycle		The measured and observed characteristics should satisfy the specifications in the following table.		Fix the capacitor to the supporting jig in the same manner and under the same conditions as (10). Perform the five cycles according to the four heat treatments shown in the following table. Set for 24±2 hours at room temperature, then measure.
		Appearance	No defects or abnormalities		
		Capacitance Change	Within ±2.5% or ±0.25pF (whichever is larger)	B1, B3, R1, R6, R7, C8: Within ±7.5% F1, F5, E4: Within ±20%	
		Q/D.F.	30pF and over: Q≧1000 30pF and below: Q≧400+20C C: Nominal Capacitance (pF)	[B1, B3, R6, R7, C8] W.V.: 100V : 0.025 max. (C<0.068μF) : 0.05 max. (C≧0.068μF) W.V.: 50/35/25V: : 0.025 max.* *GRM32D R7/R6/C8 1E106: 0.035 max. W.V.: 16/10V: 0.035 max. W.V.: 6.3/4V : 0.05 max. (C<3.3μF) : 0.1 max. (C≧3.3μF) [E4] W.V.: 25Vmin: 0.05 max. [F1, F5] W.V.: 25V min. : 0.05 max. (C<0.1μF) : 0.09 max. (C≧0.1μF) W.V.: 16/10V: 0.125 max. W.V.: 6.3V: 0.15 max.	
		I.R.	More than 10,000MΩ or 500Ω · F (whichever is smaller)		
		Dielectric Strength	No defects		

Step	1	2	3	4
Temp. (°C)	Min. Operating Temp. +0/–3	Room Temp.	Max. Operating Temp. +3/–0	Room Temp.
Time (min.)	30±3	2 to 3	30±3	2 to 3

•Initial measurement for high dielectric constant type
Perform a heat treatment at 150+0/–10°C for one hour and then set at room temperature for 24±2 hours.
Perform the initial measurement.

Continued on the following page.

GRM Series Specifications and Test Methods (1) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
Please refer to individual specifications (our product specifications or the approval sheet).
When no "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).
When "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

Continued from the preceding page.

No.	Item		Specifications: Temperature Compensating Type	Specifications: High Dielectric Type	Test Method
16	Humidity (Steady State)		The measured and observed characteristics should satisfy the specifications in the following table.		Set the capacitor at 40±2°C and in 90 to 95% humidity for 500±12 hours. Remove and set for 24±2 hours at room temperature, then measure.
		Appearance	No defects or abnormalities		
		Capacitance Change	Within ±5% or ±0.5pF (whichever is larger)	B1, B3, R1, R6, R7, C8: Within ±12.5% F1, F5, E4: Within ±30%	
		Q/D.F.	30pF and over: Q≧350 10pF and over 30pF and below: Q≧275+2.5C 10pF and below: Q≧200+10C C: Nominal Capacitance (pF)	[R6, R7, C8] W.V.: 100V : 0.05 max. (C<0.068μF) : 0.075 max. (C≧0.068μF) W.V.: 50/35/25/16/10V : 0.05 max. W.V.: 6.3/4V : 0.075 max. (C<3.3μF) : 0.125 max. (C≧3.3μF) [E4] W.V.: 25Vmin: 0.05 max. [F1, F5] W.V.: 25V min. : 0.075 max. (C<0.1μF) : 0.125 max. (C≧0.1μF) W.V.: 16/10V: 0.15 max. W.V.: 6.3V: 0.2 max.	
		I.R.	More than 1,000MΩ or 50Ω · F (whichever is smaller)		
17	Humidity Load		The measured and observed characteristics should satisfy the specifications in the following table.		Apply the rated voltage at 40±2°C and 90 to 95% humidity for 500±12 hours. Remove and set for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA. •Initial measurement for F1, F5/10V max. Apply the rated DC voltage for 1 hour at 40±2°C. Remove and set for 24±2 hours at room temperature. Perform initial measurement.
		Appearance	No defects or abnormalities		
		Capacitance Change	Within ±7.5% or ±0.75pF (whichever is larger)	B1, B3, R1, R6, R7, C8: Within ±12.5% F1, F5, E4: Within ±30% [W.V.: 10V max.] F1, F5: Within +30/–40%	
		Q/D.F.	30pF and over: Q≧200 30pF and below: Q≧100+10C/3 C: Nominal Capacitance (pF)	[B1, B3, R6, R7, C8] W.V.: 100V : 0.05 max. (C<0.068μF) : 0.075 max. (C≧0.068μF) W.V.: 50/35/25/16/10V : 0.05 max. W.V.: 6.3/4V : 0.075 max. (C<3.3μF) : 0.125 max. (C≧3.3μF) [E4] W.V.: 25Vmin: 0.05 max. [F1, F5] W.V.: 25V min. : 0.075 max. (C<0.1μF) : 0.125 max. (C≧0.1μF) W.V.: 16/10V: 0.15 max. W.V.: 6.3V: 0.2 max.	
		I.R.	More than 500MΩ or 25Ω · F (whichever is smaller)		

Continued on the following page.

GRM Series Specifications and Test Methods (1) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
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When "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

↘ Continued from the preceding page.

No.	Item		Specifications: Temperature Compensating Type	Specifications: High Dielectric Type	Test Method
18	High Temperature Load		The measured and observed characteristics should satisfy the specifications in the following table.		Apply 200%* of the rated voltage at the maximum operating temperature ±3°C for 1000±12 hours. Set for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA. •Initial measurement for high dielectric constant type. Apply 200% of the rated voltage* at the maximum operating temperature ±3°C for one hour. Remove and set for 24±2 hours at room temperature. Perform initial measurement. *GRM155C81E 683/104, GRM188C81E105, GRM188C81E105, GRM21BR71H105, GRM21BR72A474, GRM21BR71C225, GRM31CR71H475, GRM32E R6/R7 YA106, GRM32D R7/R6/C8 1E106 : 150% of the rated voltage.
		Appearance	No defects or abnormalities		
		Capacitance Change	Within ±3% or ±0.3pF (whichever is larger)	B1, B3, R1, R6, R7, C8: Within ±12.5% F1, F5, E4: Within ±30% [Except 10V max. and. C≧1.0μF] F1, F5: Within +30/–40% [10V max. and C≧1.0μF]	
		Q/D.F.	30pF and over: Q≧350 10pF and over 30pF and below: Q≧275+2.5C 10pF and below: Q≧200+10C C: Nominal Capacitance (pF)	[B1, B3, R6, R7, C8] W.V.: 100V : 0.05 max. (C<0.068μF) : 0.075 max. (C≧0.068μF) W.V.: 50/35/25/16/10V : 0.05 max. W.V.: 6.3/4V : 0.075 max. (C<3.3μF) : 0.125 max. (C≧3.3μF) [E4] W.V.: 25Vmin: 0.05 max. [F1, F5] W.V.: 25V min. : 0.075 max.(C<0.1μF) : 0.125 max.(C≧0.1μF) W.V.: 16/10V: 0.15 max. W.V.: 6.3V: 0.2 max.	
		I.R.	More than 1,000MΩ or 50Ω · F (whichever is smaller)		

Table A-1

(1)

Char.	Nominal Values (ppm/°C)*1	Capacitance Change from 25°C (%)					
		–55		–30		–10	
		Max.	Min.	Max.	Min.	Max.	Min.
5C	0±30	0.58	–0.24	0.40	–0.17	0.25	–0.11
6C	0±60	0.87	–0.48	0.59	–0.33	0.38	–0.21
6P	–150±60	2.33	0.72	1.61	0.50	1.02	0.32
6R	–220±60	3.02	1.28	2.08	0.88	1.32	0.56
6S	–330±60	4.09	2.16	2.81	1.49	1.79	0.95
6T	–470±60	5.46	3.28	3.75	2.26	2.39	1.44
7U	–750±120	8.78	5.04	6.04	3.47	3.84	2.21
1X	+350 to –1000	–	–	–	–	–	–

*1: Nominal values denote the temperature coefficient within a range of 25°C to 125°C (for ΔC)/85°C (for other TC).

(2)

Char.	Nominal Values (ppm/°C)*2	Capacitance Change from 20°C (%)					
		–55		–25		–10	
		Max.	Min.	Max.	Min.	Max.	Min.
2C	0±60	0.82	–0.45	0.49	–0.27	0.33	–0.18
3C	0±120	1.37	–0.90	0.82	–0.54	0.55	–0.36
4C	0±250	2.56	–1.88	1.54	–1.13	1.02	–0.75
2P	–150±60	–	–	1.32	0.41	0.88	0.27
3P	–150±120	–	–	1.65	0.14	1.10	0.09
4P	–150±250	–	–	2.36	–0.45	1.57	–0.30
2R	–220±60	–	–	1.70	0.72	1.13	0.48
3R	–220±120	–	–	2.03	0.45	1.35	0.30
4R	–220±250	–	–	2.74	–0.14	1.83	–0.09
2S	–330±60	–	–	2.30	1.22	1.54	0.81
3S	–330±120	–	–	2.63	0.95	1.76	0.63
4S	–330±250	–	–	3.35	0.36	2.23	0.24
2T	–470±60	–	–	3.07	1.85	2.05	1.23
3T	–470±120	–	–	3.40	1.58	2.27	1.05
4T	–470±250	–	–	4.12	0.99	2.74	0.66
3U	–750±120	–	–	4.94	2.84	3.29	1.89
4U	–750±250	–	–	5.65	2.25	3.77	1.50

*2: Nominal values denote the temperature coefficient within a range of 20°C to 125°C (for ΔC)/85°C (for other TC).

GRM Series Specifications and Test Methods (2) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
Please refer to individual specifications (our product specifications or the approval sheet).
When no "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).
When "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

No.	Item	Specifications	Test Method
1	Operating Temperature Range	B1, B3, F1: –25 to +85°C R1, R7, C7, D7, E7: –55 to +125°C C6, R6: –55 to +85°C F5: –30 to +85°C C8, D8: –55 to +105°C,	Reference temperature: 25°C (B1, B3, R1, F1: 20°C)
2	Rated Voltage	See the previous pages.	The rated voltage is defined as the maximum voltage that may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V^{P-P} or V^{O-P}, whichever is larger, should be maintained within the rated voltage range.
3	Appearance	No defects or abnormalities	Visual inspection
4	Dimensions	Within the specified dimensions	Using calipers (GRM02 size is based on Microscope)
5	Dielectric Strength	No defects or abnormalities	No failure should be observed when 250% of the rated voltage is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA.
6	Insulation Resistance	More than 50Ω · F	The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at reference temperature and 75%RH max. and within 1 minutes of charging, provided the charge/discharge current is less than 50mA.
7	Capacitance	Within the specified tolerance *Table 1	The capacitance/D.F. should be measured at reference temperature at the measuring frequency and voltage shown in the table.
8	Dissipation Factor (D.F.)	B1, B3, R1, *R6, *R7, C7, C8, E7, D7: 0.1 max. C6: 0.125 max. D8: 0.15 max. F1, F5: 0.2 max. *GRM31CR71E106: 0.125 max. GRM31CR6 0J/0G 107: 0.15 max.	GRM188C80E106: Perform a heat treatment at 150+0/-10°C for one hour and then set for 24±2 hours at room temperature.

Table 1

GRM022	**B3/R6**	**1A**	**681 to 103**
GRM155	**B3/R6**	**1A**	**124 to 105**
GRM185	**B3/R6**	**1C/1A**	**105**
GRM185	**C8/D7**	**1A**	**105**
GRM188	**B3/R6**	**1C/1A**	**225**
GRM188	**R7/C8**	**1A**	**225**
GRM188	**B3/R6**	**1A**	**335**
GRM219	**B3/R6**	**1C/1A**	**475**
GRM219	**C8**	**1A**	**475**
GRM219	**B3/R6**	**1A**	**106**
GRM21B	**B3/R6**	**1C/1A**	**106**
GRM21B	**R7/C8**	**1A**	**106**
GRM319	**B3/R6**	**1C/1A**	**106**

Nominal Capacitance	Measuring Frequency	Measuring Voltage
C≦10μF (10V min.)*	1±0.1kHz	1.0±0.2Vrms
C≦10μF (6.3V max.)	1±0.1kHz	0.5±0.1Vrms
C>10μF	120±24Hz	0.5±0.1Vrms
*For items in Table1	1±0.1kHz	0.5±0.1Vrms

Continued on the following page.

GRM Series Specifications and Test Methods (2) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
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When "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

Continued from the preceding page.

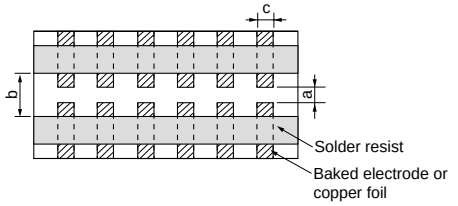
<table>
<tr><th>No.</th><th colspan="2">Item</th><th>Specifications</th><th>Test Method</th></tr>
<tr><td rowspan="2">9</td><td rowspan="2">Capacitance Temperature Characteristics</td><td>No bias</td><td>B1, B3 : Within ±10% (–25 to +85°C)
F1 : Within +30/–80% (–25 to +85°C)
R6 : Within ±15% (–55 to +85°C)
R1, R7 : Within ±15% (–55 to +125°C)
F5 : Within +22/–82% (–30 to +85°C)
C6 : Within ±22% (–55 to +85°C)
C7 : Within ±22% (–55 to +125°C)
C8 : Within ±22% (–55 to +105°C)
D7 : Within +22/–33% (–55 to +125°C)
E7 : Within +22/–56% (–55 to +125°C)
D8 : Within +22/–33% (–55 to +105°C)</td><td rowspan="2">The capacitance change should be measured after 5 min. at each specified temp. stage.
The ranges of capacitance change compared with the reference temperature value over the temperature ranges shown in the table should be within the specified ranges.*
In case of applying voltage, the capacitance change should be measured after 1 more min. with applying voltage in equilibration of each temp. stage.
*GRM32DR60J226, GRM43 B1/B3/R6 0J/1A 336/476: 1.0±0.2Vrms
GRM155B30G475, GRM155B30J 225, GRM21BB30J476,
GRM155R60E106, GRM188 B3/R6 0E/0G/0J 226: 0.2±0.05Vrms
<table>
<tr><th>Step</th><th>Temperature (°C)</th><th>Applying Voltage (V)</th></tr>
<tr><td>1</td><td>25±2 (for R6, R7, C6, C7, C8, D7, D8, E7, F5)
20±2 (for B1, B3, F1, R1)</td><td rowspan="4">No bias</td></tr>
<tr><td>2</td><td>–55±3 (for R1, R6, R7, C6, C7, C8, D7, D8, E7)
–30±3 (for F5)
–25±3 (for B1, B3, F1)</td></tr>
<tr><td>3</td><td>25±2 (for R6, R7, C6, C7, C8, D7, D8, E7, F5)
20±2 (for B1, B3, F1, R1)</td></tr>
<tr><td>4</td><td>125±3 (for R1, R7, C7, D7, E7)
105±3 (for C8, D8)
85±3 (for B1, B3, F1, F5, R6, C6)</td></tr>
<tr><td>5</td><td>20±2 (for B1, F1, R1)</td><td rowspan="4">50% of the rated voltage</td></tr>
<tr><td>6</td><td>–55±3 (for R1)
–25±3 (for B1, F1)</td></tr>
<tr><td>7</td><td>20±2 (for B1, F1, R1)</td></tr>
<tr><td>8</td><td>125±3 (for R1)
85±3 (for B1, F1)</td></tr>
</table>
•Initial measurement for high dielectric constant type
Perform a heat treatment at 150 +0/–10°C for one hour and then set for 24±2 hours at room temperature.
Perform the initial measurement.</td></tr>
<tr><td>50% of the Rated Voltage</td><td>B1: Within +10/–30%
R1: Within +15/–40%
F1: Within +30/–95%</td></tr>
<tr><td>10</td><td colspan="2">Adhesive Strength of Termination</td><td>No removal of the terminations or other defects should occur.
 

Fig. 1a</td><td>Solder the capacitor on the test jig (glass epoxy board) shown in Fig. 1a using a eutectic solder. Then apply 10N* force in parallel with the test jig for 10±1sec.
The soldering should be done either with an iron or using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.
*1N: GRM02, 2N: GRM03, 5N: GRM15/GRM18
<table>
<tr><th>Type</th><th>a</th><th>b</th><th>c</th></tr>
<tr><td>GRM02</td><td>0.2</td><td>0.56</td><td>0.23</td></tr>
<tr><td>GRM03</td><td>0.3</td><td>0.9</td><td>0.3</td></tr>
<tr><td>GRM15</td><td>0.4</td><td>1.5</td><td>0.5</td></tr>
<tr><td>GRM18</td><td>1.0</td><td>3.0</td><td>1.2</td></tr>
<tr><td>GRM21</td><td>1.2</td><td>4.0</td><td>1.65</td></tr>
<tr><td>GRM31</td><td>2.2</td><td>5.0</td><td>2.0</td></tr>
<tr><td>GRM32</td><td>2.2</td><td>5.0</td><td>2.9</td></tr>
<tr><td>GRM43</td><td>3.5</td><td>7.0</td><td>3.7</td></tr>
<tr><td>GRM55</td><td>4.5</td><td>8.0</td><td>5.6</td></tr>
</table></td></tr>
<tr><td rowspan="3">11</td><td rowspan="3">Vibration</td><td>Appearance</td><td>No defects or abnormalities</td><td rowspan="3">Solder the capacitor on the test jig (glass epoxy board) in the same manner and under the same conditions as (10).
The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 minute. This motion should be applied for a period of 2 hours in each of 3 mutually perpendicular directions (total of 6 hours).</td></tr>
<tr><td>Capacitance</td><td>Within the specified tolerance</td></tr>
<tr><td>D.F.</td><td>B1, B3, R1, *R6, *R7, C7, C8, E7, D7: 0.1 max.
C6: 0.125 max.
D8: 0.15 max.
F1, F5: 0.2 max.
*GRM31CR71E106: 0.125 max.
GRM31CR6 0J/0G 107: 0.15 max.</td></tr>
</table>

Continued on the following page.

GRM Series Specifications and Test Methods (2) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
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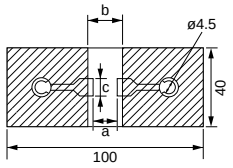
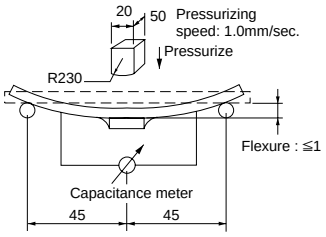
When "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

Continued from the preceding page.

No.	Item		Specifications	Test Method
12	Deflection	Appearance	No marking defects	Solder the capacitor on the test jig (glass epoxy board) shown in Fig. 2a using a eutectic solder. Then apply a force in the direction shown in Fig. 3a for 5±1 sec. The soldering should be done by the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.  t: 1.6mm Fig. 2a (GRM02/03/15: t: 0.8mm) (in mm)
		Capacitance Change	Within ±10%	
			 Fig.3a	
13	Solderability of Termination		75% of the terminations is to be soldered evenly and continuously.	Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Preheat at 80 to 120°C for 10 to 30 seconds. After preheating, immerse in a eutectic solder solution for 2±0.5 seconds at 230±5°C or Sn-3.0Ag-0.5Cu solder solution for 2±0.5 seconds at 245±5°C.
14	Resistance to Soldering Heat	Appearance	No defects or abnormalities	Preheat the capacitor at 120 to 150°C for 1 minute. Immerse the capacitor in a eutectic solder* or Sn-3.0Ag-0.5Cu solder solution at 270±5°C for 10±0.5 seconds. Set at room temperature for 24±2 hours, then measure. *Do not apply to GRM02. •Initial measurement for high dielectric constant type Perform a heat treatment at 150+0/–10°C for one hour and then set at room temperature for 24±2 hours. Perform the initial measurement. *Preheating for GRM32/43/55
		Capacitance Change	B1, B3, R1, *R6, R7, C6, C7, *C8, E7, D7, D8: Within ±7.5% F1, F5: Within ±20% *GRM188R6 0J/0G 106, GRM188C8 0E/0G 106, GRM219R60G226: Within ±12.5% GRM155R60G475, GRM155R60E106, GRM188R60G226: Within ±15%	
		D.F.	B1, B3, R1, *R6, *R7, C7, C8, E7, D7: 0.1 max. C6: 0.125 max. D8: 0.15 max. F1, F5: 0.2 max. *GRM31CR71E106: 0.125 max. GRM31CR6 0J/0G 107: 0.15 max.	
		I.R.	More than 50Ω · F	
		Dielectric Strength	No defects	
15	Temperature Sudden Change	Appearance	No defects or abnormalities	Fix the capacitor to the supporting jig in the same manner and under the same conditions as (10). Perform the five cycles according to the four heat treatments shown in the following table. Set for 24±2 hours at room temperature, then measure.
		Capacitance Change	B1, B3, R1, R6, R7, C6, C7, C8, D7, D8: Within ±7.5% E7: Within ±30% F1, F5: Within ±20%	
		D.F.	B1, B3, R1, *R6, *R7, C7, C8, E7, D7: 0.1 max. C6: 0.125 max. D8: 0.15 max. F1, F5: 0.2 max. *GRM31CR71E106: 0.125 max. GRM31CR6 0J/0G 107: 0.15 max.	
		I.R.	More than 50Ω · F	
		Dielectric Strength	No defects	

Type	a	b	c
GRM02	0.2	0.56	0.23
GRM03	0.3	0.9	0.3
GRM15	0.4	1.5	0.5
GRM18	1.0	3.0	1.2
GRM21	1.2	4.0	1.65
GRM31	2.2	5.0	2.0
GRM32	2.2	5.0	2.9
GRM43	3.5	7.0	3.7
GRM55	4.5	8.0	5.6

Step	Temperature	Time
1	100 to 120°C	1 min.
2	170 to 200°C	1 min.

Step	1	2	3	4
Temp. (°C)	Min. Operating Temp. +0/–3	Room Temp.	Max. Operating Temp. +3/–0	Room Temp.
Time (min.)	30±3	2 to 3	30±3	2 to 3

•Initial measurement for high dielectric constant type
Perform a heat treatment at 150+0/–10°C for one hour and then set at room temperature for 24±2 hours.
Perform the initial measurement.
GRM188R60J106 only Measurement after test Perform a heat treatment and then let sit for 24±2 hours at room temperature, then measure.

Continued on the following page.

GRM Series Specifications and Test Methods (2) (Note 1)-Typical Inspection

(Note 1) These Specifications and Test Methods indicate typical inspection.
Please refer to individual specifications (our product specifications or the approval sheet).
When no "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (1).
When "*" is added in PNs table, please refer to GRM Series Specifications and Test Methods (2).

Continued from the preceding page.

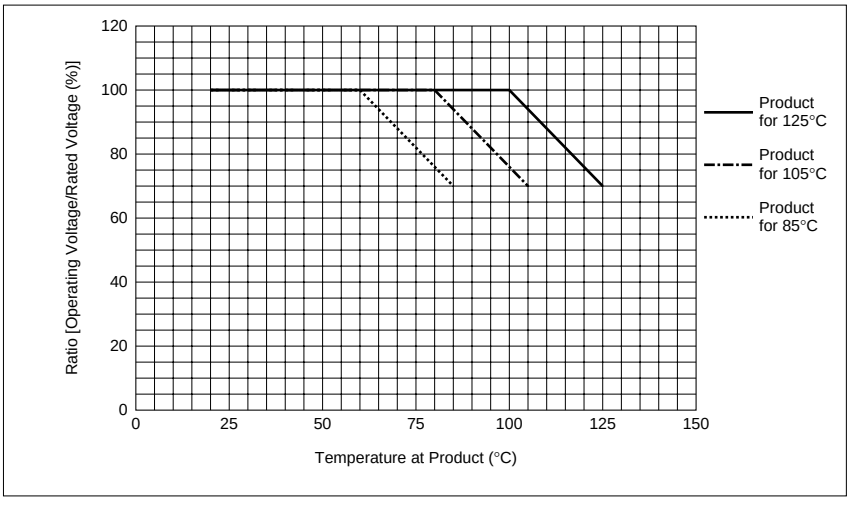
No.	Item		Specifications	Test Method
16	High Temperature High Humidity (Steady)	Appearance	No defects or abnormalities	Apply the rated voltage at 40±2°C and 90 to 95% humidity for 500±12 hours. The charge/discharge current is less than 50mA. •Initial measurement Perform a heat treatment at 150+0/–10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement. •Measurement after test Perform a heat treatment at 150+0/–10°C for one hour and then let sit for 24±2 hours at room temperature, then measure.
		Capacitance Change	B1, B3, R1, R6, R7, C6, C7, C8, E7, D7, D8: Within ±12.5% F1, F5: Within ±30%	
		D.F.	B1, B3, R1, R6, R7, C6, C7, *C8, E7, D7, D8: 0.2 max. F1, F5: 0.4 max. *GRM319C81A106, GRM31MC81A106: 0.125 max.	
		I.R.	More than 12.5Ω · F	
17	Durability	Appearance	No defects or abnormalities	Apply 150%* of the rated voltage for 1000±12 hours at the maximum operating temperature ±3°C. Let sit for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA. * Part Numbers with # have individual specification. As for these Part Numbers, please refer to table A. •Initial measurement Perform a heat treatment at 150+0/–10°C for one hour and then let sit for 24±2 hours at room temperature. Perform the initial measurement. •Measurement after test Perform a heat treatment at 150+0/–10°C for one hour and then let sit for 24±2 hours at room temperature, then measure.
		Capacitance Change	B1, B3, R1, *R6, R7, C6, C7, *C8, E7, D7, D8: Within ±12.5% F1, F5: Within ±30% *GRM188C8 0E/0G 106, GRM219R60G226: within ±15%	
		D.F.	B1, B3, R1, R6, R7, C6, C7, *C8, E7, D7, D8: 0.2 max. F1, F5: 0.4 max. *GRM319C81A106, GRM31MC81A106: 0.125 max.	
		I.R.	More than 25Ω · F	

Table A

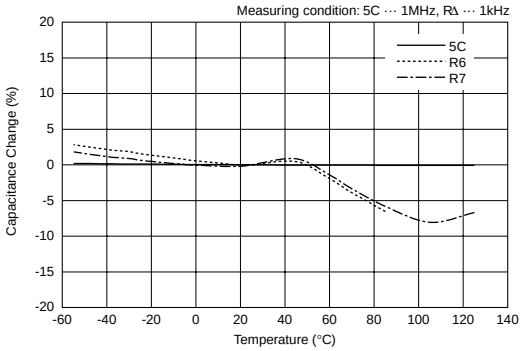
Part Number	Dimension L×W (mm)	Temp. Char.	Rated Volt. (Vdc)	Capacitance (F)	Cap. Tol (%)	Spec. Test Methods	Applied Testing Voltage at Durability
GRM155C80J684KE15D	1.0×0.5	X6S	6.3	0.68μ	±10%	(2)	Rated Volt. ×100%
GRM155C80J684ME15D	1.0×0.5	X6S	6.3	0.68μ	±20%	(2)	Rated Volt. ×100%
GRM188C80G106ME47D	1.6×0.8	X6S	4	10μ	±20%	(2)	Rated Volt. ×100%
GRM21BC80J226ME51L	2.0×1.25	X6S	6.3	22μ	±20%	(2)	Rated Volt. ×100%
GRM319D71C475KA12D	3.2×1.6	X7T	16	4.7μ	±10%	(2)	Rated Volt. ×100%
GRM319D71C475MA12D	3.2×1.6	X7T	16	4.7μ	±20%	(2)	Rated Volt. ×100%

Part Numbers of table A are designed for use in the circuits where continuous applied voltage to the capacitor is derated than rated voltage.
These Part Numbers guarantee Durability Test with 100% x rated voltage as testing voltage at the maximum operating temperature.
The following voltage and temperature derating conditions are recommended for use to ensure the same reliability level as normal specification.

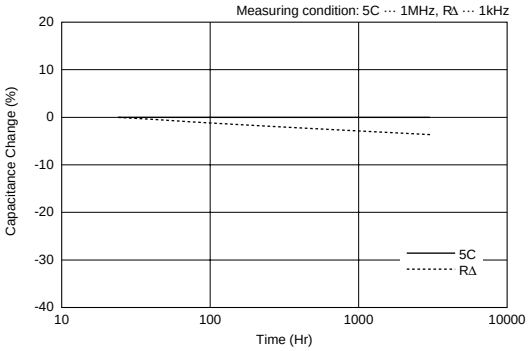
• Recommended Derating Conditions on Voltage and Temperature



■ Capacitance - Temperature Characteristics

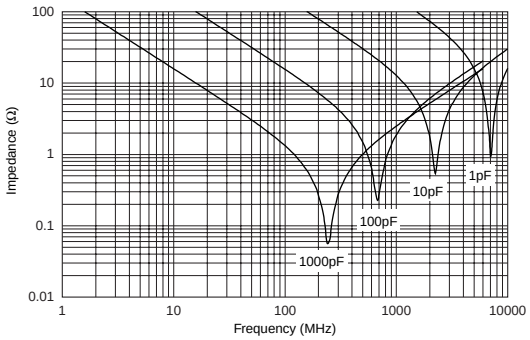


■ Capacitance Change - Aging

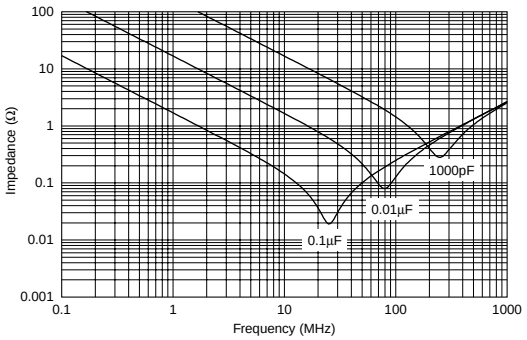


■ Impedance - Frequency Characteristics

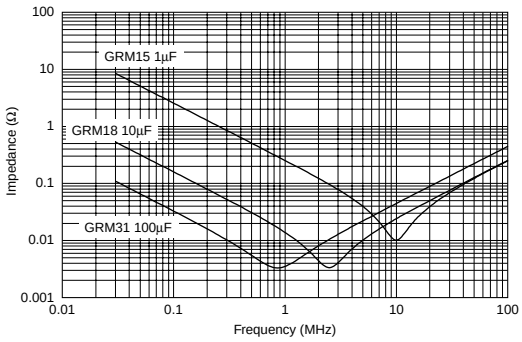
5C: GRM15



RΔ: GRM15



RΔ



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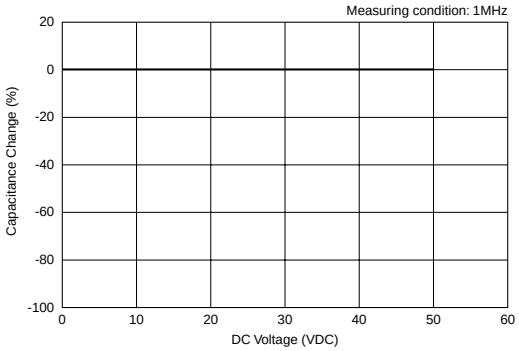
Continued on the following page.

GRM Series Data

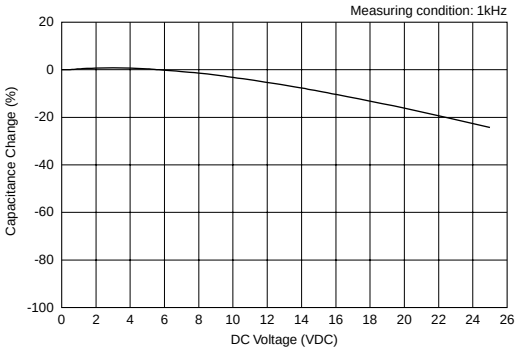
Continued from the preceding page.

■ Capacitance - DC Voltage Characteristics

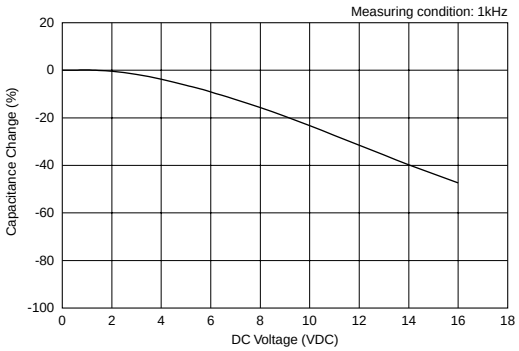
Temperature Compensating Type: GRM1555C1H102JA01



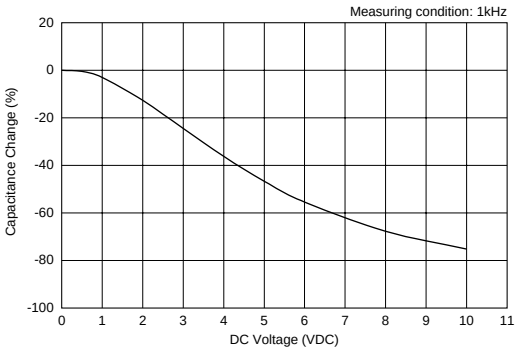
High Dielectric Constant Type: GRM155R71E103KA01



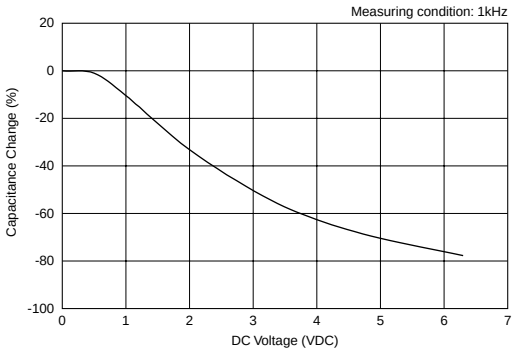
High Dielectric Constant Type: GRM155R71C104KA88



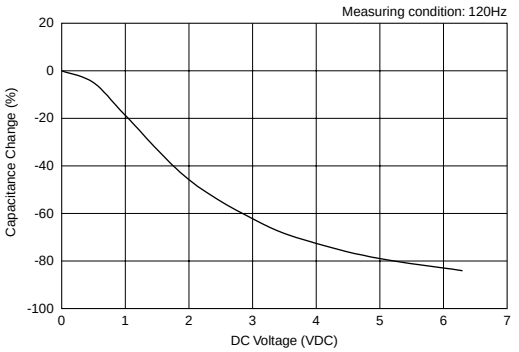
High Dielectric Constant Type: GRM155R61A105KE15



High Dielectric Constant Type: GRM188R60J106ME47



High Dielectric Constant Type: GRM31CR60J107ME39



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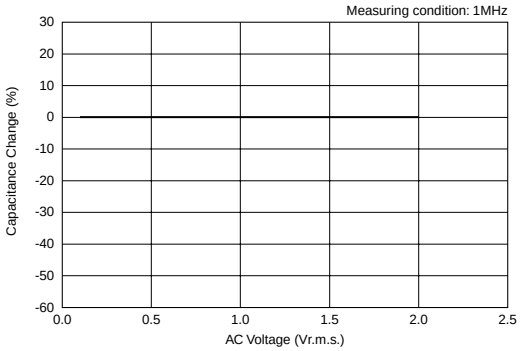
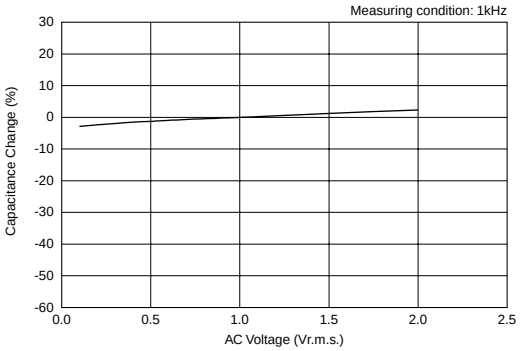
■ Capacitance - AC Voltage Characteristics

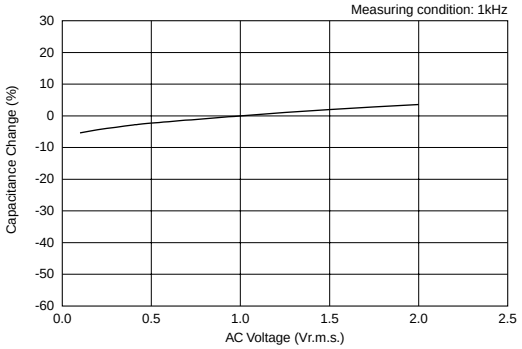
Temperature Compensating Type: GRM1555C1H102JA01



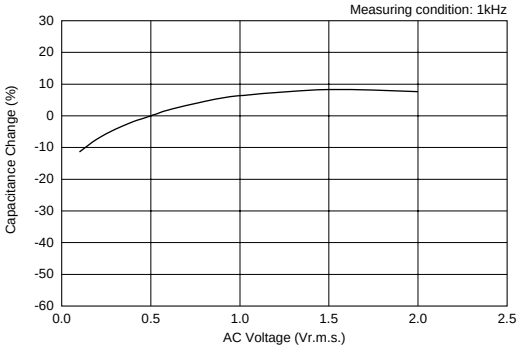
High Dielectric Constant Type: GRM155R71E103KA01



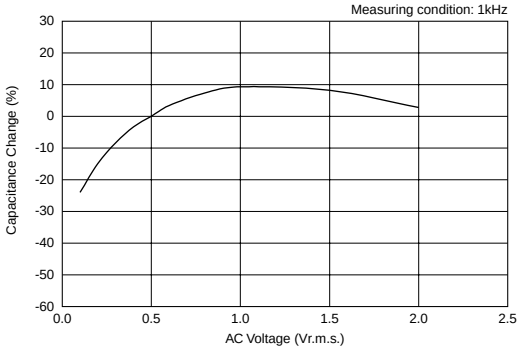
High Dielectric Constant Type: GRM155R71C104KA88



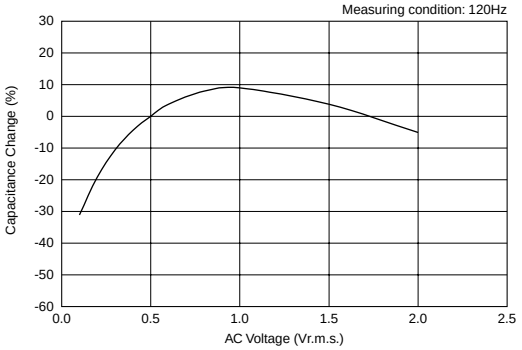
High Dielectric Constant Type: GRM155R61A105KE15



High Dielectric Constant Type: GRM188R60J106ME47



High Dielectric Constant Type: GRM31CR60J107ME39



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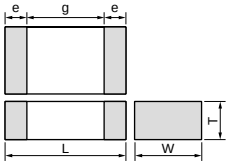
Chip Monolithic Ceramic Capacitors (Medium Voltage)

Low Dissipation Factor GRM Series



Part Number	Dimensions (mm)				
	L	W	T	e min.	g min.
GRM21A	2.0 ±0.2	1.25 ±0.2	1.0 +0,- 0.3	0.3	0.7
GRM21B			1.25 ±0.2		
GRM31A	3.2 ±0.2	1.6 ±0.2	1.0 +0,- 0.3		1.5*
GRM31B			1.25 +0,- 0.3		
GRM32A	3.2 ±0.2	2.5 ±0.2	1.0 +0,- 0.3		
GRM32B			1.25 +0,- 0.3		
GRM42A	4.5 ±0.3	2.0 ±0.2	1.0 +0,- 0.3		2.9

* GRM31A7U3D, GRM32A7U3D, GRM32B7U3D: 1.8mm min.

■ Features

1. Low-loss and suitable for high frequency circuits
2. Murata's original internal electrode structure provides high flash-over voltage.
3. A new monolithic structure for small, surface-mountable devices capable of operating at high voltage levels
4. Sn-plated external electrodes provides good solderability.
5. Use the GRM21/31 type with flow or reflow soldering, and other types with reflow soldering only.

■ Applications

Ideal for use on high frequency pulse circuits such as snubber circuits for switching power supplies, DC-DC converters, ballasts (inverter fluorescent lamps), etc.

Do not use these products in any Automotive Power train or Safety equipment including Battery chargers for Electric Vehicles and Plug-in Hybrids. Only Murata products clearly stipulated as "for Automotive use" can be used for automobile applications such as Power train and Safety equipment.

C0G Characteristics

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM21A5C2E100JW01D	DC250	C0G (EIA)	10 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E120JW01D	DC250	C0G (EIA)	12 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E150JW01D	DC250	C0G (EIA)	15 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E180JW01D	DC250	C0G (EIA)	18 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E220JW01D	DC250	C0G (EIA)	22 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E270JW01D	DC250	C0G (EIA)	27 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E330JW01D	DC250	C0G (EIA)	33 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E390JW01D	DC250	C0G (EIA)	39 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E470JW01D	DC250	C0G (EIA)	47 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E560JW01D	DC250	C0G (EIA)	56 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E680JW01D	DC250	C0G (EIA)	68 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E820JW01D	DC250	C0G (EIA)	82 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A5C2E101JW01D	DC250	C0G (EIA)	100 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM31A5C2J100JW01D	DC630	C0G (EIA)	10 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J120JW01D	DC630	C0G (EIA)	12 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J150JW01D	DC630	C0G (EIA)	15 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J180JW01D	DC630	C0G (EIA)	18 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J220JW01D	DC630	C0G (EIA)	22 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J270JW01D	DC630	C0G (EIA)	27 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J330JW01D	DC630	C0G (EIA)	33 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J390JW01D	DC630	C0G (EIA)	39 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J470JW01D	DC630	C0G (EIA)	47 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J560JW01D	DC630	C0G (EIA)	56 ±5%	3.2	1.6	1.0	1.5	0.3 min.

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Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM31A5C2J680JW01D	DC630	C0G (EIA)	68 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J820JW01D	DC630	C0G (EIA)	82 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J101JW01D	DC630	C0G (EIA)	100 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J121JW01D	DC630	C0G (EIA)	120 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J151JW01D	DC630	C0G (EIA)	150 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J181JW01D	DC630	C0G (EIA)	180 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J221JW01D	DC630	C0G (EIA)	220 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J271JW01D	DC630	C0G (EIA)	270 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J331JW01D	DC630	C0G (EIA)	330 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J391JW01D	DC630	C0G (EIA)	390 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J471JW01D	DC630	C0G (EIA)	470 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C2J561JW01D	DC630	C0G (EIA)	560 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31B5C2J681JW01L	DC630	C0G (EIA)	680 ±5%	3.2	1.6	1.25	1.5	0.3 min.
GRM31B5C2J821JW01L	DC630	C0G (EIA)	820 ±5%	3.2	1.6	1.25	1.5	0.3 min.
GRM31B5C2J102JW01L	DC630	C0G (EIA)	1000 ±5%	3.2	1.6	1.25	1.5	0.3 min.
GRM31A5C3A100JW01D	DC1000	C0G (EIA)	10 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A120JW01D	DC1000	C0G (EIA)	12 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A150JW01D	DC1000	C0G (EIA)	15 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A180JW01D	DC1000	C0G (EIA)	18 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A220JW01D	DC1000	C0G (EIA)	22 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A270JW01D	DC1000	C0G (EIA)	27 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A330JW01D	DC1000	C0G (EIA)	33 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A390JW01D	DC1000	C0G (EIA)	39 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A470JW01D	DC1000	C0G (EIA)	47 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A560JW01D	DC1000	C0G (EIA)	56 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A680JW01D	DC1000	C0G (EIA)	68 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A820JW01D	DC1000	C0G (EIA)	82 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A5C3A101JW01D	DC1000	C0G (EIA)	100 ±5%	3.2	1.6	1.0	1.5	0.3 min.

U2J Characteristics

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM21A7U2E101JW31D	DC250	U2J (EIA)	100 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E121JW31D	DC250	U2J (EIA)	120 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E151JW31D	DC250	U2J (EIA)	150 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E181JW31D	DC250	U2J (EIA)	180 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E221JW31D	DC250	U2J (EIA)	220 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E271JW31D	DC250	U2J (EIA)	270 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E331JW31D	DC250	U2J (EIA)	330 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E391JW31D	DC250	U2J (EIA)	390 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E471JW31D	DC250	U2J (EIA)	470 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E561JW31D	DC250	U2J (EIA)	560 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E681JW31D	DC250	U2J (EIA)	680 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E821JW31D	DC250	U2J (EIA)	820 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E102JW31D	DC250	U2J (EIA)	1000 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E122JW31D	DC250	U2J (EIA)	1200 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E152JW31D	DC250	U2J (EIA)	1500 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E182JW31D	DC250	U2J (EIA)	1800 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21A7U2E222JW31D	DC250	U2J (EIA)	2200 ±5%	2.0	1.25	1.0	0.7	0.3 min.
GRM21B7U2E272JW32L	DC250	U2J (EIA)	2700 ±5%	2.0	1.25	1.25	0.7	0.3 min.
GRM31A7U2E272JW31D	DC250	U2J (EIA)	2700 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM21B7U2E332JW32L	DC250	U2J (EIA)	3300 ±5%	2.0	1.25	1.25	0.7	0.3 min.
GRM31A7U2E332JW31D	DC250	U2J (EIA)	3300 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM21B7U2E392JW32L	DC250	U2J (EIA)	3900 ±5%	2.0	1.25	1.25	0.7	0.3 min.
GRM31A7U2E392JW31D	DC250	U2J (EIA)	3900 ±5%	3.2	1.6	1.0	1.5	0.3 min.

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Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM21B7U2E472JW32L	DC250	U2J (EIA)	4700 ±5%	2.0	1.25	1.25	0.7	0.3 min.
GRM31A7U2E472JW31D	DC250	U2J (EIA)	4700 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM21B7U2E562JW32L	DC250	U2J (EIA)	5600 ±5%	2.0	1.25	1.25	0.7	0.3 min.
GRM31A7U2E562JW31D	DC250	U2J (EIA)	5600 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31B7U2E682JW31L	DC250	U2J (EIA)	6800 ±5%	3.2	1.6	1.25	1.5	0.3 min.
GRM31B7U2E822JW31L	DC250	U2J (EIA)	8200 ±5%	3.2	1.6	1.25	1.5	0.3 min.
GRM31B7U2E103JW31L	DC250	U2J (EIA)	10000 ±5%	3.2	1.6	1.25	1.5	0.3 min.
GRM31A7U2J100JW31D	DC630	U2J (EIA)	10 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J120JW31D	DC630	U2J (EIA)	12 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J150JW31D	DC630	U2J (EIA)	15 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J180JW31D	DC630	U2J (EIA)	18 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J220JW31D	DC630	U2J (EIA)	22 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J270JW31D	DC630	U2J (EIA)	27 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J330JW31D	DC630	U2J (EIA)	33 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J390JW31D	DC630	U2J (EIA)	39 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J470JW31D	DC630	U2J (EIA)	47 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J560JW31D	DC630	U2J (EIA)	56 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J680JW31D	DC630	U2J (EIA)	68 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J820JW31D	DC630	U2J (EIA)	82 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J101JW31D	DC630	U2J (EIA)	100 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J121JW31D	DC630	U2J (EIA)	120 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J151JW31D	DC630	U2J (EIA)	150 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J181JW31D	DC630	U2J (EIA)	180 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J221JW31D	DC630	U2J (EIA)	220 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J271JW31D	DC630	U2J (EIA)	270 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J331JW31D	DC630	U2J (EIA)	330 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J391JW31D	DC630	U2J (EIA)	390 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J471JW31D	DC630	U2J (EIA)	470 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J561JW31D	DC630	U2J (EIA)	560 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J681JW31D	DC630	U2J (EIA)	680 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J821JW31D	DC630	U2J (EIA)	820 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U2J102JW31D	DC630	U2J (EIA)	1000 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM32A7U2J122JW31D	DC630	U2J (EIA)	1200 ±5%	3.2	2.5	1.0	1.5	0.3 min.
GRM32A7U2J152JW31D	DC630	U2J (EIA)	1500 ±5%	3.2	2.5	1.0	1.5	0.3 min.
GRM32A7U2J182JW31D	DC630	U2J (EIA)	1800 ±5%	3.2	2.5	1.0	1.5	0.3 min.
GRM32A7U2J222JW31D	DC630	U2J (EIA)	2200 ±5%	3.2	2.5	1.0	1.5	0.3 min.
GRM31A7U3A100JW31D	DC1000	U2J (EIA)	10 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A120JW31D	DC1000	U2J (EIA)	12 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A150JW31D	DC1000	U2J (EIA)	15 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A180JW31D	DC1000	U2J (EIA)	18 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A220JW31D	DC1000	U2J (EIA)	22 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A270JW31D	DC1000	U2J (EIA)	27 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A330JW31D	DC1000	U2J (EIA)	33 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A390JW31D	DC1000	U2J (EIA)	39 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A470JW31D	DC1000	U2J (EIA)	47 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A560JW31D	DC1000	U2J (EIA)	56 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A680JW31D	DC1000	U2J (EIA)	68 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A820JW31D	DC1000	U2J (EIA)	82 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A101JW31D	DC1000	U2J (EIA)	100 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A121JW31D	DC1000	U2J (EIA)	120 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A151JW31D	DC1000	U2J (EIA)	150 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A181JW31D	DC1000	U2J (EIA)	180 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A221JW31D	DC1000	U2J (EIA)	220 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A271JW31D	DC1000	U2J (EIA)	270 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31A7U3A331JW31D	DC1000	U2J (EIA)	330 ±5%	3.2	1.6	1.0	1.5	0.3 min.
GRM31B7U3A391JW31L	DC1000	U2J (EIA)	390 ±5%	3.2	1.6	1.25	1.5	0.3 min.
GRM31B7U3A471JW31L	DC1000	U2J (EIA)	470 ±5%	3.2	1.6	1.25	1.5	0.3 min.

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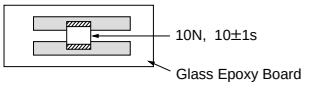
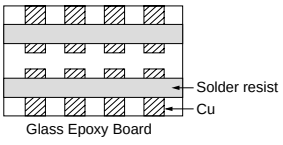
Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM31A7U3D100JW31D	DC2000	U2J (EIA)	10 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D120JW31D	DC2000	U2J (EIA)	12 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D150JW31D	DC2000	U2J (EIA)	15 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D180JW31D	DC2000	U2J (EIA)	18 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D220JW31D	DC2000	U2J (EIA)	22 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D270JW31D	DC2000	U2J (EIA)	27 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D330JW31D	DC2000	U2J (EIA)	33 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D390JW31D	DC2000	U2J (EIA)	39 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D470JW31D	DC2000	U2J (EIA)	47 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D560JW31D	DC2000	U2J (EIA)	56 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM31A7U3D680JW31D	DC2000	U2J (EIA)	68 ±5%	3.2	1.6	1.0	1.8	0.3 min.
GRM32A7U3D820JW31D	DC2000	U2J (EIA)	82 ±5%	3.2	2.5	1.0	1.8	0.3 min.
GRM32A7U3D101JW31D	DC2000	U2J (EIA)	100 ±5%	3.2	2.5	1.0	1.8	0.3 min.
GRM32A7U3D121JW31D	DC2000	U2J (EIA)	120 ±5%	3.2	2.5	1.0	1.8	0.3 min.
GRM32A7U3D151JW31D	DC2000	U2J (EIA)	150 ±5%	3.2	2.5	1.0	1.8	0.3 min.
GRM32B7U3D181JW31L	DC2000	U2J (EIA)	180 ±5%	3.2	2.5	1.25	1.8	0.3 min.
GRM32B7U3D221JW31L	DC2000	U2J (EIA)	220 ±5%	3.2	2.5	1.25	1.8	0.3 min.
GRM42A7U3F270JW31L	DC3150	U2J (EIA)	27 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A7U3F330JW31L	DC3150	U2J (EIA)	33 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A7U3F390JW31L	DC3150	U2J (EIA)	39 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A7U3F470JW31L	DC3150	U2J (EIA)	47 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A7U3F560JW31L	DC3150	U2J (EIA)	56 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A7U3F680JW31L	DC3150	U2J (EIA)	68 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A7U3F820JW31L	DC3150	U2J (EIA)	82 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A7U3F101JW31L	DC3150	U2J (EIA)	100 ±5%	4.5	2.0	1.0	2.9	0.3 min.

GRM Series Specifications and Test Methods

No.	Item		Specifications	Test Method
1	Operating Temperature Range		−55 to +125℃	−
2	Appearance		No defects or abnormalities	Visual inspection
3	Dimensions		Within the specified dimension	Using calipers and micrometers
4	Dielectric Strength		No defects or abnormalities	No failure should be observed when voltage in the Table is applied between the terminations for 1 to 5 sec., provided the charge/discharge current is less than 50mA. Rated Voltage / Test Voltage DC250V: 200% of the rated voltage DC630V: 150% of the rated voltage DC1kV, DC2kV, DC3.15kV: 130% of the rated voltage
5	Insulation Resistance (I.R.)		More than 10,000MΩ	The insulation resistance should be measured with DC500±50V (DC250±25V in case of rated voltage: DC250V) and within 60±5 sec. of charging.
6	Capacitance		Within the specified tolerance	The capacitance/Q should be measured at the frequency and voltage shown as follows. Capacitance / Frequency / Voltage C<1,000pF: 1±0.2MHz: AC0.5 to 5V(r.m.s.) C≧1,000pF: 1±0.2kHz: AC1±0.2V(r.m.s.)
7	Q		1,000 min.	
8	Capacitance Temperature Characteristics		Temp. Coefficient C0G char. : 0±30ppm/℃ (Temp. Range : +25 to +125℃) 0+30, −72ppm/℃ (Temp. Range : −55 to +25℃) U2J char. : −750±120ppm/℃ (Temp. Range : +25 to +125℃) −750+120, −347ppm/℃ (Temp. Range : −55 to +25℃)	The capacitance measurement should be made at each step specified in the Table. Step / Temperature (℃) 1: 25±2 2: Min. Operating Temp.±3 3: 25±2 4: Max. Operating Temp.±2 5: 25±2
9	Adhesive Strength of Termination		No removal of the terminations or other defect should occur.	Solder the capacitor to the testing jig (glass epoxy board) shown in Fig. 1. Then apply 10N force in the direction of the arrow. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.  Fig. 1
10	Vibration Resistance	Appearance	No defects or abnormalities	Solder the capacitor to the test jig (glass epoxy board). The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 min. This motion should be applied for a period of 2 hrs. in each of 3 mutually perpendicular directions (total of 6 hrs.). 
		Capacitance	Within the specified tolerance	
		Q	1,000 min.	

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GRM Series Specifications and Test Methods

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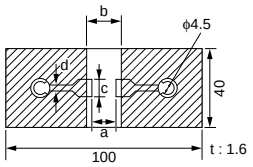
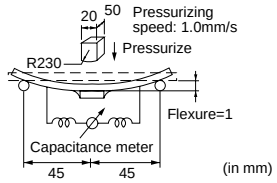
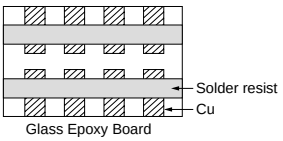
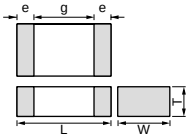
No.	Item		Specifications	Test Method
11	Deflection		No marking defects  Fig. 2 L×W (mm) / Dimension (mm): a / b / c / d 2.0×1.25: 1.2 / 4.0 / 1.65 / 1.0 3.2×1.6: 2.2 / 5.0 / 2.0 3.2×2.5: 2.2 / 5.0 / 2.9 4.5×2.0: 3.5 / 7.0 / 2.4	Solder the capacitor to the testing jig (glass epoxy board) shown in Fig. 2. Then apply a force in the direction shown in Fig. 3. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.  Fig. 3
12	Solderability of Termination		75% of the terminations are to be soldered evenly and continuously.	Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Immerse in solder solution for 2±0.5 sec. Immersing speed: 25±2.5mm/s Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder
13	Resistance to Soldering Heat	Appearance	No marking defects	Preheat the capacitor at 120 to 150℃✻ for 1 min. Immerse the capacitor in solder solution at 260±5℃ for 10±1 sec. Let sit at room condition* for 24±2 hrs., then measure. •Immersing speed: 25±2.5mm/s ✻Preheating for more than 3.2×2.5mm Step / Temperature / Time 1 / 100 to 120℃ / 1 min. 2 / 170 to 200℃ / 1 min.
		Capacitance Change	Within ±2.5%	
		Q	1,000 min.	
		I.R.	More than 10,000MΩ	
		Dielectric Strength	In accordance with item No.4	
14	Temperature Cycle	Appearance	No marking defects	Fix the capacitor to the supporting jig (glass epoxy board) shown in Fig. 4. Perform the 5 cycles according to the 4 heat treatments listed in the following table. Let sit for 24±2 hrs. at room condition,* then measure. Step / Temperature (℃) / Time (min.) 1 / Min. Operating Temp.±3 / 30±3 2 / Room Temp. / 2 to 3 3 / Max. Operating Temp.±2 / 30±3 4 / Room Temp. / 2 to 3  Fig. 4
		Capacitance Change	Within ±2.5%	
		Q	500 min.	
		I.R.	More than 10,000MΩ	
		Dielectric Strength	In accordance with item No.4	
15	Humidity (Steady State)	Appearance	No marking defects	Let the capacitor sit at 40±2℃ and relative humidity of 90 to 95% for 500^{+24}_{0}hrs. Remove and let sit for 24±2 hrs. at room condition,* then measure.
		Capacitance Change	Within ±5.0%	
		Q	350 min.	
		I.R.	More than 1,000MΩ	
		Dielectric Strength	In accordance with item No.4	
16	Life	Appearance	No marking defects	Apply voltage as in Table for $1{,}000^{+48}_{0}$hrs. at maximum operating temperature ±3℃. Remove and let sit for 24±2 hrs. at room condition,* then measure. Rated Voltage / Applied Voltage DC250V / 150% of the rated voltage DC630V, DC1kV, DC2kV, DC3.15kV / 120% of the rated voltage The charge/discharge current is less than 50mA.
		Capacitance Change	Within ±3.0%	
		Q	350 min.	
		I.R.	More than 1,000MΩ	
		Dielectric Strength	In accordance with item No.4	

* "Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa

Chip Monolithic Ceramic Capacitors (Medium Voltage)

High Capacitance for General Use GRM Series



Part Number	Dimensions (mm)				
	L	W	T	e	g min.
GRM188	1.6 ±0.1	0.8 ±0.1	0.8 ±0.1	0.2 to 0.5	0.4
GRM21A	2.0 ±0.2	1.25 ±0.2	1.0 +0,-0.3	0.3 min.	0.7
GRM21B			1.25 ±0.2		
GRM31B	3.2 ±0.2	1.6 ±0.2	1.25 +0,-0.3		1.2
GRM31C			1.6 ±0.2		
GRM32Q	3.2 ±0.3	2.5 ±0.2	1.5 +0,-0.3		
GRM32D			2.0 +0,-0.3		
GRM43Q	4.5 ±0.4	3.2 ±0.3	1.5 +0,-0.3		2.2
GRM43D			2.0 +0,-0.3		
GRM55D	5.7 ±0.4	5.0 ±0.4	2.0 +0,-0.3		3.2

■ Features

1. A new monolithic structure for small, high capacitance capable of operating at high voltage levels.
2. Sn-plated external electrodes provide good solderability.
3. Use the GRM18/21/31 types with flow or reflow soldering, and other types with reflow soldering only.

■ Applications

1. Ideal for use on diode-snubber circuits for switching power supplies.
2. Ideal for use as primary-secondary coupling for DC-DC converters.
3. Ideal for use on line filters and ringer detectors for telephones, facsimiles and modems.

Do not use these products in any Automotive Power train or Safety equipment including Battery chargers for Electric Vehicles and Plug-in Hybrids. Only Murata products clearly stipulated as "for Automotive use" can be used for automobile applications such as Power train and Safety equipment.

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM188R72E221KW07D	DC250	X7R (EIA)	220pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM188R72E331KW07D	DC250	X7R (EIA)	330pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM188R72E471KW07D	DC250	X7R (EIA)	470pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM188R72E681KW07D	DC250	X7R (EIA)	680pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM188R72E102KW07D	DC250	X7R (EIA)	1000pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM21AR72E102KW01D	DC250	X7R (EIA)	1000pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM188R72E152KW07D	DC250	X7R (EIA)	1500pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM21AR72E152KW01D	DC250	X7R (EIA)	1500pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM188R72E222KW07D	DC250	X7R (EIA)	2200pF ±10%	1.6	0.8	0.8	0.4	0.2 to 0.5
GRM21AR72E222KW01D	DC250	X7R (EIA)	2200pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM21AR72E332KW01D	DC250	X7R (EIA)	3300pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM21AR72E472KW01D	DC250	X7R (EIA)	4700pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM21AR72E682KW01D	DC250	X7R (EIA)	6800pF ±10%	2.0	1.25	1.0	0.7	0.3 min.
GRM21BR72E103KW03L	DC250	X7R (EIA)	10000pF ±10%	2.0	1.25	1.25	0.7	0.3 min.
GRM31BR72E153KW01L	DC250	X7R (EIA)	15000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72E223KW01L	DC250	X7R (EIA)	22000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31CR72E333KW03L	DC250	X7R (EIA)	33000pF ±10%	3.2	1.6	1.6	1.2	0.3 min.
GRM31CR72E473KW03L	DC250	X7R (EIA)	47000pF ±10%	3.2	1.6	1.6	1.2	0.3 min.
GRM31BR72E683KW01L	DC250	X7R (EIA)	68000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM32QR72E683KW01L	DC250	X7R (EIA)	68000pF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM31CR72E104KW03L	DC250	X7R (EIA)	0.10µF ±10%	3.2	1.6	1.6	1.2	0.3 min.
GRM32DR72E104KW01L	DC250	X7R (EIA)	0.10µF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM32QR72E154KW01L	DC250	X7R (EIA)	0.15µF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM43QR72E154KW01L	DC250	X7R (EIA)	0.15µF ±10%	4.5	3.2	1.5	2.2	0.3 min.
GRM32DR72E224KW01L	DC250	X7R (EIA)	0.22µF ±10%	3.2	2.5	2.0	1.2	0.3 min.

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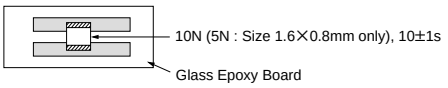
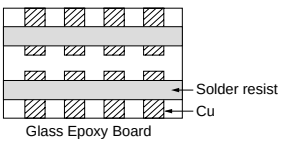
Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM43DR72E224KW01L	DC250	X7R (EIA)	0.22µF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM43DR72E334KW01L	DC250	X7R (EIA)	0.33µF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM55DR72E334KW01L	DC250	X7R (EIA)	0.33µF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM43DR72E474KW01L	DC250	X7R (EIA)	0.47µF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM55DR72E474KW01L	DC250	X7R (EIA)	0.47µF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM55DR72E105KW01L	DC250	X7R (EIA)	1.0µF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM31BR72J102KW01L	DC630	X7R (EIA)	1000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J152KW01L	DC630	X7R (EIA)	1500pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J222KW01L	DC630	X7R (EIA)	2200pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J332KW01L	DC630	X7R (EIA)	3300pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J472KW01L	DC630	X7R (EIA)	4700pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J682KW01L	DC630	X7R (EIA)	6800pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR72J103KW01L	DC630	X7R (EIA)	10000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31CR72J153KW03L	DC630	X7R (EIA)	15000pF ±10%	3.2	1.6	1.6	1.2	0.3 min.
GRM32QR72J223KW01L	DC630	X7R (EIA)	22000pF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM32DR72J333KW01L	DC630	X7R (EIA)	33000pF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM32DR72J473KW01L	DC630	X7R (EIA)	47000pF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM43QR72J683KW01L	DC630	X7R (EIA)	68000pF ±10%	4.5	3.2	1.5	2.2	0.3 min.
GRM43DR72J104KW01L	DC630	X7R (EIA)	0.10µF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM55DR72J154KW01L	DC630	X7R (EIA)	0.15µF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM55DR72J224KW01L	DC630	X7R (EIA)	0.22µF ±10%	5.7	5.0	2.0	3.2	0.3 min.
GRM31BR73A471KW01L	DC1000	X7R (EIA)	470pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A102KW01L	DC1000	X7R (EIA)	1000pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A152KW01L	DC1000	X7R (EIA)	1500pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A222KW01L	DC1000	X7R (EIA)	2200pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A332KW01L	DC1000	X7R (EIA)	3300pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM31BR73A472KW01L	DC1000	X7R (EIA)	4700pF ±10%	3.2	1.6	1.25	1.2	0.3 min.
GRM32QR73A682KW01L	DC1000	X7R (EIA)	6800pF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM32QR73A103KW01L	DC1000	X7R (EIA)	10000pF ±10%	3.2	2.5	1.5	1.2	0.3 min.
GRM32DR73A153KW01L	DC1000	X7R (EIA)	15000pF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM32DR73A223KW01L	DC1000	X7R (EIA)	22000pF ±10%	3.2	2.5	2.0	1.2	0.3 min.
GRM43DR73A333KW01L	DC1000	X7R (EIA)	33000pF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM43DR73A473KW01L	DC1000	X7R (EIA)	47000pF ±10%	4.5	3.2	2.0	2.2	0.3 min.
GRM55DR73A104KW01L	DC1000	X7R (EIA)	0.10µF ±10%	5.7	5.0	2.0	3.2	0.3 min.

GRM Series Specifications and Test Methods

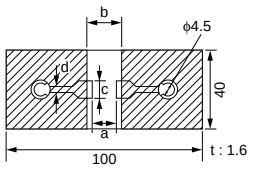
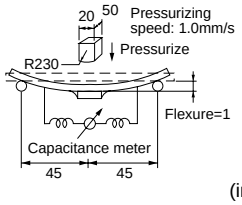
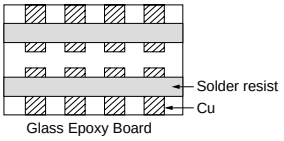
No.	Item		Specifications	Test Method
1	Operating Temperature Range		–55 to +125°C	–
2	Appearance		No defects or abnormalities	Visual inspection
3	Dimensions		Within the specified dimensions	Using calipers and micrometers
4	Dielectric Strength		No defects or abnormalities	No failure should be observed when 150% of the rated voltage (200% of the rated voltage in case of rated voltage: DC250V, 120% of the rated voltage in case of rated voltage: DC1kV) is applied between the terminations for 1 to 5 sec., provided the charge/discharge current is less than 50mA.
5	Insulation Resistance (I.R.)		C≧0.01μF: More than 100MΩ • μF C<0.01μF: More than 10,000MΩ	The insulation resistance should be measured with DC500±50V (DC250±25V in case of rated voltage: DC250V) and within 60±5 sec. of charging.
6	Capacitance		Within the specified tolerance	The capacitance/D.F. should be measured at a frequency of 1±0.2kHz and a voltage of AC1±0.2V(r.m.s.)
7	Dissipation Factor (D.F.)		0.025 max.	
8	Capacitance Temperature Characteristics		Cap. Change Within ±15% (Temp. Range: –55 to +125°C)	The capacitance measurement should be made at each step specified in the Table. Step / Temperature (°C) 1 / 25±2 2 / Min. Operating Temp.±3 3 / 25±2 4 / Max. Operating Temp.±2 5 / 25±2 •Pretreatment Perform a heat treatment at 150 $^{+0}_{-10}$°C for 60±5 min. and then let sit for 24±2 hrs. at room condition.*
9	Adhesive Strength of Termination		No removal of the terminations or other defect should occur.	Solder the capacitor to the testing jig (glass epoxy board) shown in Fig. 1. Then apply 10N force in the direction of the arrow. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.  Fig. 1
10	Vibration Resistance	Appearance	No defects or abnormalities	Solder the capacitor to the test jig (glass epoxy board). The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 min. This motion should be applied for a period of 2 hrs. in each of 3 mutually perpendicular directions (total of 6 hrs.). 
		Capacitance	Within the specified tolerance	
		D.F.	0.025 max.	

* "Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa

Continued on the following page.

GRM Series Specifications and Test Methods

Continued from the preceding page.

No.	Item		Specifications	Test Method
11	Deflection		No marking defects  Fig. 2 L×W (mm): a 1.0, b 3.0, c 1.2, d 1.0 1.6×0.8 2.0×1.25: a 1.2, b 4.0, c 1.65 3.2×1.6: a 2.2, b 5.0, c 2.0 3.2×2.5: a 2.2, b 5.0, c 2.9 4.5×3.2: a 3.5, b 7.0, c 3.7 5.7×5.0: a 4.5, b 8.0, c 5.6	Solder the capacitor to the testing jig (glass epoxy board) shown in Fig. 2. Then apply a force in the direction shown in Fig. 3. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.  (in mm) Fig. 3
12	Solderability of Termination		75% of the terminations are to be soldered evenly and continuously.	Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Immerse in solder solution for 2±0.5 sec. Immersing speed: 25±2.5mm/s Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder
13	Resistance to Soldering Heat	Appearance	No marking defects	Preheat the capacitor at 120 to 150°C✻ for 1 min. Immerse the capacitor in solder solution at 260±5°C for 10±1 sec. Let sit at room condition* for 24±2 hrs., then measure. •Immersing speed: 25±2.5mm/s •Pretreatment Perform a heat treatment at 150^{+}_{-10}°C for 60±5 min. and then let sit for 24±2 hrs. at room condition.* ✻Preheating for more than 3.2×2.5mm Step: 1 — Temperature: 100 to 120°C — Time: 1 min. 2 — 170 to 200°C — 1 min.
		Capacitance Change	Within ±10%	
		D.F.	0.025 max.	
		I.R.	C≧0.01μF: More than 100MΩ • μF C<0.01μF: More than 10,000MΩ	
		Dielectric Strength	In accordance with item No.4	
14	Temperature Cycle	Appearance	No marking defects	Fix the capacitor to the supporting jig (glass epoxy board) shown in Fig. 4. Perform the 5 cycles according to the 4 heat treatments listed in the following table. Let sit for 24±2 hrs. at room condition,* then measure. Step: 1 — Temperature (°C): Min. Operating Temp.±3 — Time (min.): 30±3 2 — Room Temp. — 2 to 3 3 — Max. Operating Temp.±2 — 30±3 4 — Room Temp. — 2 to 3 •Pretreatment Perform a heat treatment at 150^{+}_{-10}°C for 60±5 min. and then let sit for 24±2 hrs. at room condition.*  Fig. 4
		Capacitance Change	Within ±7.5%	
		D.F.	0.025 max.	
		I.R.	C≧0.01μF: More than 100MΩ • μF C<0.01μF: More than 10,000MΩ	
		Dielectric Strength	In accordance with item No.4	
15	Humidity (Steady State)	Appearance	No marking defects	Let the capacitor sit at 40±2°C and relative humidity of 90 to 95% for 500^{+24}_{0}hrs. Remove and let sit for 24±2 hrs. at room condition,* then measure. •Pretreatment Perform a heat treatment at 150^{+}_{-10}°C for 60±5 min. and then let sit for 24±2 hrs. at room condition.*
		Capacitance Change	Within ±15%	
		D.F.	0.05 max.	
		I.R.	C≧0.01μF: More than 10MΩ • μF C<0.01μF: More than 1,000MΩ	
		Dielectric Strength	In accordance with item No.4	

* "Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa

Continued on the following page.

GRM Series Specifications and Test Methods

Continued from the preceding page.

No.	Item		Specifications	Test Method
16	Life	Appearance	No marking defects	Apply 120% of the rated voltage (150% of the rated voltage in case of rated voltage: DC250V, 110% of the rated voltage in case of rated voltage: DC1kV) for 1,000$^{+48}_{0}$hrs. at maximum operating temperature ±3°C. Remove and let sit for 24±2hrs. at room condition,* then measure. The charge/discharge current is less than 50mA. •Pretreatment Apply test voltage for 60±5 min. at test temperature. Remove and let sit for 24±2 hrs. at room condition.*
		Capacitance Change	Within ±15% (rated voltage: DC250V, DC630V) Within ±20% (rated voltage: DC1kV)	
		D.F.	0.05 max.	
		I.R.	C≧0.01μF: More than 10MΩ • μF C<0.01μF: More than 1,000MΩ	
		Dielectric Strength	In accordance with item No.4	
17	Humidity Loading (Application: DC250V, DC630V item)	Appearance	No marking defects	Apply the rated voltage at 40±2°C and relative humidity of 90 to 95% for 500$^{+24}_{0}$hrs. Remove and let sit for 24±2 hrs. at room condition,* then measure. •Pretreatment Apply test voltage for 60±5 min. at test temperature. Remove and let sit for 24±2 hrs. at room condition.*
		Capacitance Change	Within ±15%	
		D.F.	0.05 max.	
		I.R.	C≧0.01μF: More than 10MΩ • μF C<0.01μF: More than 1,000MΩ	
		Dielectric Strength	In accordance with item No.4	

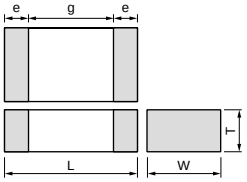
* "Room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa

Chip Monolithic Ceramic Capacitors (Medium Voltage)

For LCD Backlight Inverter Circuit GRM/DC3.15kV Series

■ Features

1. Low-loss and suitable for high frequency circuits
2. Murata's original internal electrode structure realizes high flash-over voltage.
3. A new monolithic structure for small, surface-mountable devices capable of operating at high voltage levels.
4. Sn-plated external electrodes realize good solderability.
5. Only for reflow soldering
6. Capacitance values less than 22pF can be used in LCD backlight inverter circuits as long as the applied voltage, peak to peak, is less than 4.0kV at 100kHz or less.



Part Number	Dimensions (mm)				
	L	W	T	e min.	g min.
GRM42A	4.5 ±0.3	2.0 ±0.2	1.0 +0, - 0.3	0.3	2.9

■ Applications

Ideal for use as the ballast in LCD backlight inverter.

Do not use these products in any Automotive Power train or Safety equipment including Battery chargers for Electric Vehicles and Plug-in Hybrids. Only Murata products clearly stipulated as "for Automotive use" can be used for automobile applications such as Power train and Safety equipment.

Part Number	Rated Voltage (V)	TC Code (Standard)	Capacitance (pF)	Length L (mm)	Width W (mm)	Thickness T (mm)	Electrode g min. (mm)	Electrode e (mm)
GRM42A5C3F050DW01L	DC3150	C0G (EIA)	5.0 ±0.5pF	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F100JW01L	DC3150	C0G (EIA)	10 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F120JW01L	DC3150	C0G (EIA)	12 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F150JW01L	DC3150	C0G (EIA)	15 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F180JW01L	DC3150	C0G (EIA)	18 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F220JW01L	DC3150	C0G (EIA)	22 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F270JW01L	DC3150	C0G (EIA)	27 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F330JW01L	DC3150	C0G (EIA)	33 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F390JW01L	DC3150	C0G (EIA)	39 ±5%	4.5	2.0	1.0	2.9	0.3 min.
GRM42A5C3F470JW01L	DC3150	C0G (EIA)	47 ±5%	4.5	2.0	1.0	2.9	0.3 min.

GRM/DC3.15kV Series Specifications and Test Methods

No.	Item	Specifications	Test Method
1	Operating Temperature Range	−55 to +125℃	−
2	Appearance	No defects or abnormalities	Visual inspection
3	Dimensions	Within the specified dimension	Using calipers and micrometers
4	Dielectric Strength	No defects or abnormalities	No failure should be observed when DC4095V is applied between the terminations for 1 to 5 sec., provided the charge/discharge current is less than 50mA.
5	Insulation Resistance (I.R.)	More than 10,000MΩ	The insulation resistance should be measured with DC500±50V and within 60±5 sec. of charging.
6	Capacitance	Within the specified tolerance	The capacitance/Q should be measured at a frequency of 1±0.2MHz and a voltage of AC0.5 to 5V(r.m.s.)
7	Q	1,000 min.	
8	Capacitance Temperature Characteristics	Temp. Coefficient 0±30ppm/℃ (Temp. Range: +25 to +125℃) 0+30, −72ppm/℃ (Temp. Range: −55 to +25℃)	The capacitance measurement should be made at each step specified in the Table.

Step	Temperature (℃)
1	25±2
2	Min. Operating Temp.±3
3	25±2
4	Max. Operating Temp.±2
5	25±2

No.	Item		Specifications	Test Method
9	Adhesive Strength of Termination		No removal of the terminations or other defect should occur.	Solder the capacitor to the testing jig (glass epoxy board) shown in Fig. 1. Then apply 10N force in the direction of the arrow. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.
10	Vibration Resistance	Appearance	No defects or abnormalities	Solder the capacitor to the test jig (glass epoxy board). The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, should be traversed in approximately 1 min. This motion should be applied for a period of 2 hrs. in each of 3 mutually perpendicular directions (total of 6 hrs.).
		Capacitance	Within the specified tolerance	
		Q	1,000 min.	
11	Deflection		No marking defects	Solder the capacitor to the testing jig (glass epoxy board) shown in Fig. 2. Then apply a force in the direction shown in Fig. 3. The soldering should be done using the reflow method and should be conducted with care so that the soldering is uniform and free of defects such as heat shock.

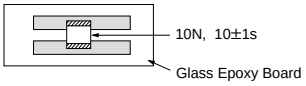
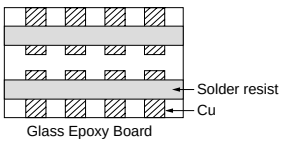


Fig. 1



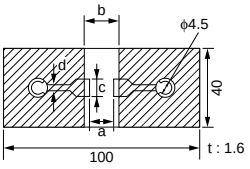


Fig. 2

L×W (mm)	Dimension (mm)			
	a	b	c	d
4.5×2.0	3.5	7.0	2.4	1.0

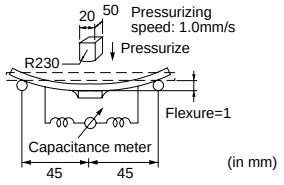
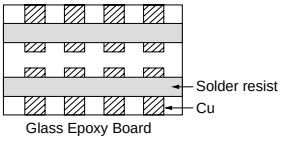


Fig. 3

Continued on the following page.

GRM/DC3.15kV Series Specifications and Test Methods

Continued from the preceding page.

No.	Item		Specifications	Test Method
12	Solderability of Termination		75% of the terminations are to be soldered evenly and continuously.	Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion). Immerse in solder solution for 2±0.5 sec. Immersing speed: 25±2.5mm/s Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder
13	Resistance to Soldering Heat	Appearance	No marking defects	Preheat the capacitor as in table. Immerse the capacitor in solder solution at 260±5℃ for 10±1 sec. Let sit at room condition* for 24±2 hrs., then measure. •Immersing speed: 25±2.5mm/s ∗Preheating Step / Temperature / Time 1 / 100 to 120℃ / 1 min. 2 / 170 to 200℃ / 1 min.
		Capacitance Change	Within ±2.5%	
		Q	1,000 min.	
		I.R.	More than 10,000MΩ	
		Dielectric Strength	In accordance with item No.4	
14	Temperature Cycle	Appearance	No marking defects	Fix the capacitor to the supporting jig (glass epoxy board) shown in Fig. 4. Perform the 5 cycles according to the 4 heat treatments listed in the following table. Let sit for 24±2 hrs. at room condition,* then measure. Step / Temperature (℃) / Time (min.) 1 / Min. Operating Temp.±3 / 30±3 2 / Room Temp. / 2 to 3 3 / Max. Operating Temp.±2 / 30±3 4 / Room Temp. / 2 to 3  Fig. 4
		Capacitance Change	Within ±2.5%	
		Q	1,000 min.	
		I.R.	More than 10,000MΩ	
		Dielectric Strength	In accordance with item No.4	
15	Humidity (Steady State)	Appearance	No marking defects	Let the capacitor sit at 40±2℃ and relative humidity of 90 to 95% for 500^{+24}_{-0}hrs. Remove and let sit for 24±2 hrs. at room condition,* then measure.
		Capacitance Change	Within ±5.0%	
		Q	350 min.	
		I.R.	More than 1,000MΩ	
		Dielectric Strength	In accordance with item No.4	
16	Life	Appearance	No marking defects	Apply 120% of the rated voltage for $1{,}000^{+48}_{-0}$hrs. at maximum operating temperature ±3℃. Remove and let sit for 24±2 hrs. at room condition,* then measure. The charge/discharge current is less than 50mA.
		Capacitance Change	Within ±3.0%	
		Q	350 min.	
		I.R.	More than 1,000MΩ	
		Dielectric Strength	In accordance with item No.4	

* "Room condition" Temperature: 15 to 35℃, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa