

Chip Monolithic Ceramic Capacitors



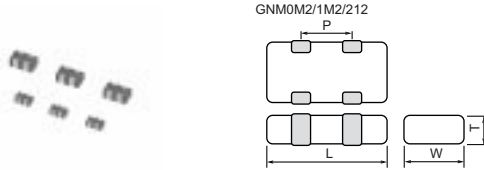
Capacitor Array GNM Series

■ Features

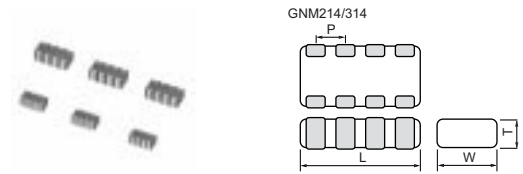
1. High density mounting due to mounting space saving
2. Mounting cost saving

■ Applications

General electronic equipment



Part Number	Dimensions (mm)			
	L	W	T	P
GNM0M2	0.9 ±0.05	0.6 ±0.05	0.45 ±0.05	0.45 ±0.05
GNM1M2	1.37 ±0.15	1.0 ±0.15	0.5 +0.05/-0.10	0.64 ±0.05
			0.6 ±0.1	
			0.8 +0/-0.15	
GNM212	2.0 ±0.15	1.25 ±0.15	0.6 ±0.1	1.0 ±0.1
			0.85 ±0.1	
			0.85 ±0.1	



Part Number	Dimensions (mm)			
	L	W	T	P
GNM214	2.0 ±0.15	1.25 ±0.15	0.5 +0.05/-0.1	0.5 ±0.05
			0.6 ±0.1	
			0.85 ±0.1	
GNM314	3.2 ±0.15	1.6 ±0.15	0.8 ±0.1	0.8 ±0.1
			0.85 ±0.1	
			1.0 ±0.1	
			1.15 ±0.1	

For General GRM Series

Array GNM Series

Low ESL LL Series

High-Q GJM Series

High Frequency GQM Series

Monolithic Microchip GMA Series

For Bonding GMD Series

Product Information

Capacitance Table

Temperature Compensating Type COG (5C) Characteristics

0.6		ex.0.6: T Dimension [mm]			
Capacitance	LxW [mm]	1.37x1.0 (1M) <0504>	2.0x1.25 (21) <0805>	3.2x1.6 (31) <1206>	
	Number of Elements	2(2)		4(4)	
	Rated Voltage [Vdc]	50 (1H)	50 (1H)	100 (2A)	50 (1H)
10pF(100)		0.6	0.6	0.8	0.8
15pF(150)		0.6	0.6	0.8	0.8
22pF(220)		0.6	0.6	0.8	0.8
33pF(330)		0.6	0.6	0.8	0.8
47pF(470)		0.6	0.6	0.8	0.8
68pF(680)		0.6	0.6	0.8	0.8
100pF(101)		0.6	0.6	0.8	0.8
150pF(151)		0.6	0.6	0.8	0.8
220pF(221)		0.6	0.6		0.8
330pF(331)					0.8

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

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

0.6		ex.0.6: T Dimension [mm]											
Capacitance	LxW [mm]	1.37x1.0 (1M) <0504>				2.0x1.25 (21) <0805>				3.2x1.6 (31) <1206>			
	Number of Elements	2(2)				4(4)				4(4)			
	Rated Voltage [Vdc]	50 (1H)	25 (1E)	16 (1C)	10 (1A)	50 (1H)	25 (1E)	16 (1C)	50 (1H)	25 (1E)	16 (1C)	6.3 (0J)	
470pF(471)						0.6							
1000pF(102)		0.6				0.6							
2200pF(222)			0.6				0.6						
4700pF(472)			0.6				0.6						
10000pF(103)			0.6				0.6						
22000pF(223)				0.6	0.6			0.85					
47000pF(473)				0.6	0.6			0.85	0.85		1.0		
0.10μF(104)				0.6	0.6			0.85	0.85	0.85	1.0		
1.0μF(105)												1.15	

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

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

0.5		ex.0.5: T Dimension [mm]	
Capacitance	LxW [mm]	1.37x1.0 (1M) <0504>	2.0x1.25 (21) <0805>
	Number of Elements	2(2)	4(4)
	Rated Voltage [Vdc]	16 (1C)	16 (1C)
0.10μF(104)		0.5	0.5

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

For General GRM Series

Array GNM Series

Low ESL LL□ Series

High-Q GJM Series

High Frequency GQM Series

Monolithic Microchip GMA Series

For Bonding GMD Series

Product Information

Capacitance Table

High Dielectric Constant Type X5R (R6) Characteristics

0.6		ex.0.6: T Dimension [mm]																	
LxW [mm]	Number of Elements	0.9x0.6 (0M) <0302>				1.37x1.0 (1M) <0504>				2.0x1.25 (21) <0805>			2.0x1.25 (21) <0805>		3.2x1.6 (31) <1206>				
		16 (1C)	10 (1A)	6.3 (0J)	4 (0G)	50 (1H)	25 (1E)	16 (1C)	10 (1A)	6.3 (0J)	16 (1C)	10 (1A)	6.3 (0J)	10 (1A)	6.3 (0J)	16 (1C)	10 (1A)		
Capacitance [Vdc]																			
1000pF(102)						0.6													
2200pF(222)							0.6												
4700pF(472)								0.6											
10000pF(103)		0.45	0.45	0.45				0.6											
22000pF(223)		0.45	0.45	0.45					0.6	0.6									
47000pF(473)		0.45	0.45	0.45						0.6	0.6								
0.10μF(104)		0.45	0.45	0.45							0.6								
0.22μF(224)									0.8										
0.47μF(474)												0.85							
1.0μF(105)					0.45					0.8	0.8	0.8	0.85	0.85		0.85	0.85	0.85	0.85
2.2μF(225)											0.8	0.8		0.85	0.85		0.85		

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

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

0.5		ex.0.5: T Dimension [mm]					
LxW [mm]	Number of Elements	1.37x1.0 (1M) <0504>			2.0x1.25 (21) <0805>		
		16 (1C)	10 (1A)	10 (1A)			
Capacitance [Vdc]							
1.0μF(105)		0.5	0.5	0.5			

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

For General GRM Series

Array GNM Series

Low ESL LL Series

High-Q GJM Series

High Frequency GQM Series

Monolithic Microchip GMA Series

For Bonding GMD Series

Product Information

Temperature Compensating Type C0G(5C) Characteristics

LxW [mm]		1.37x1.0(1M)<0504>		2.0x1.25(21)<0805>		3.2x1.6(31)<1206>	
Number of Elements		2(2)		4(4)			
Rated Volt. [Vdc]		50(1H)		50(1H)		100(2A)	50(1H)
Capacitance	Tolerance	Part Number					
10pF (100)	±10% (K)	GNM1M25C1H100KD01D	GNM2145C1H100KD01D	GNM3145C2A100KD01D	GNM3145C1H100KD01D		
15pF (150)	±10% (K)	GNM1M25C1H150KD01D	GNM2145C1H150KD01D	GNM3145C2A150KD01D	GNM3145C1H150KD01D		
22pF (220)	±10% (K)	GNM1M25C1H220KD01D	GNM2145C1H220KD01D	GNM3145C2A220KD01D	GNM3145C1H220KD01D		
33pF (330)	±10% (K)	GNM1M25C1H330KD01D	GNM2145C1H330KD01D	GNM3145C2A330KD01D	GNM3145C1H330KD01D		
47pF (470)	±10% (K)	GNM1M25C1H470KD01D	GNM2145C1H470KD01D	GNM3145C2A470KD01D	GNM3145C1H470KD01D		
68pF (680)	±10% (K)	GNM1M25C1H680KD01D	GNM2145C1H680KD01D	GNM3145C2A680KD01D	GNM3145C1H680KD01D		
100pF (101)	±10% (K)	GNM1M25C1H101KD01D	GNM2145C1H101KD01D	GNM3145C2A101KD01D	GNM3145C1H101KD01D		
150pF (151)	±10% (K)	GNM1M25C1H151KD01D	GNM2145C1H151KD01D	GNM3145C2A151KD01D	GNM3145C1H151KD01D		
220pF (221)	±10% (K)	GNM1M25C1H221KD01D	GNM2145C1H221KD01D		GNM3145C1H221KD01D		
330pF (331)	±10% (K)				GNM3145C1H331KD01D		

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]		1.37x1.0(1M)<0504>			
Number of Elements		2(2)			
Rated Volt. [Vdc]		50(1H)	25(1E)	16(1C)	10(1A)
Capacitance	Tolerance	Part Number			
1000pF (102)	±20% (M)	GNM1M2R71H102MA01D			
2200pF (222)	±20% (M)		GNM1M2R71E222MA01D		
4700pF (472)	±20% (M)		GNM1M2R71E472MA01D		
10000pF (103)	±20% (M)		GNM1M2R71E103MA01D		
22000pF (223)	±20% (M)			GNM1M2R71C223MA01D	GNM1M2R71A223MA01D
47000pF (473)	±20% (M)			GNM1M2R71C473MA01D	GNM1M2R71A473MA01D
0.10µF (104)	±20% (M)			GNM1M2R71C104MA01D	GNM1M2C71A104MA01D

LxW [mm]		2.0x1.25(21)<0805>		
Number of Elements		4(4)		
Rated Volt. [Vdc]		50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	Part Number		
470pF (471)	±20% (M)	GNM214R71H471MA01D		
1000pF (102)	±20% (M)	GNM214R71H102MA01D		
2200pF (222)	±20% (M)		GNM214R71E222MA01D	
4700pF (472)	±20% (M)		GNM214R71E472MA01D	
10000pF (103)	±20% (M)		GNM214R71E103MA01D	
22000pF (223)	±20% (M)			GNM214R71C223MA01D
47000pF (473)	±20% (M)			GNM214R71C473MA01D
0.10µF (104)	±20% (M)			GNM214R71C104MA01D

LxW [mm]		3.2x1.6(31)<1206>			
Number of Elements		4(4)			
Rated Volt. [Vdc]		50(1H)	25(1E)	16(1C)	6.3(0J)
Capacitance	Tolerance	Part Number			
47000pF (473)	±20% (M)	GNM314R71H473MA11D		GNM314R71C473MA01L	
0.10µF (104)	±20% (M)	GNM314R71H104MA11D	GNM314R71E104MA11D	GNM314R71C104MA01L	
1.0µF (105)	±20% (M)				GNM314R70J105MA01L

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

* Please refer to GNM series Specifications and Test Method (2).

(Part Number) **GN** **M** **1M** **2** **5C** **1H** **100** **K** **D01** **D** ①Product ID ②Series ③Dimensions (LxW) ④Number of Elements
 ⑤Temperature Characteristics ⑥Rated Voltage ⑦Capacitance
 ⑧Capacitance Tolerance ⑨Individual Specification Code ⑩Packaging

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

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

LxW [mm]	1.37x1.0(1M)<0504>	2.0x1.25(21)<0805>
Number of Elements	2(2)	4(4)
Rated Volt. [Vdc]	16(1C)	16(1C)
Capacitance	Tolerance	Part Number
0.10μF (104)	±20% (M)	GNM1M2R71C104MAA1D GNM214R71C104MAA1D

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

High Dielectric Constant Type X5R(R6) Characteristics

LxW [mm]	0.9x0.6(0M)<0302>		
Number of Elements	2(2)		
Rated Volt. [Vdc]	16(1C)	10(1A)	6.3(0J) 4(0G)
Capacitance	Tolerance	Part Number	
10000pF (103)	±20% (M)	GNM0M2R61C103ME18D*	GNM0M2R61A103ME17D* GNM0M2R60J103ME17D*
22000pF (223)	±20% (M)	GNM0M2R61C223ME18D*	GNM0M2R61A223ME17D* GNM0M2R60J223ME17D*
47000pF (473)	±20% (M)	GNM0M2R61C473ME18D*	GNM0M2R61A473ME17D* GNM0M2R60J473ME17D*
0.10μF (104)	±20% (M)	GNM0M2R61C104ME18D*	GNM0M2R61A104ME17D* GNM0M2R60J104ME17D*
1.0μF (105)	±20% (M)		GNM0M2R60G105ME17D*

LxW [mm]	1.37x1.0(1M)<0504>		
Number of Elements	2(2)		
Rated Volt. [Vdc]	50(1H)	25(1E)	16(1C)
Capacitance	Tolerance	Part Number	
1000pF (102)	±20% (M)	GNM1M2R61H102MA01D	
2200pF (222)	±20% (M)		GNM1M2R61E222MA01D
4700pF (472)	±20% (M)		GNM1M2R61E472MA01D
10000pF (103)	±20% (M)		GNM1M2R61E103MA01D
22000pF (223)	±20% (M)		GNM1M2R61C223MA01D
47000pF (473)	±20% (M)		GNM1M2R61C473MA01D
0.22μF (224)	±20% (M)		GNM1M2R61C224ME18D*
1.0μF (105)	±20% (M)		GNM1M2R61C105ME18D*

LxW [mm]	1.37x1.0(1M)<0504>	
Number of Elements	2(2)	
Rated Volt. [Vdc]	10(1A)	6.3(0J)
Capacitance	Tolerance	Part Number
22000pF (223)	±20% (M)	GNM1M2R61A223MA01D
47000pF (473)	±20% (M)	GNM1M2R61A473MA01D
0.10μF (104)	±20% (M)	GNM1M2R61A104MA01D
1.0μF (105)	±20% (M)	GNM1M2R61A105ME17D* GNM1M2R60J105ME12D*
2.2μF (225)	±20% (M)	GNM1M2R61A225ME18D* GNM1M2R60J225ME18D*

LxW [mm]	2.0x1.25(21)<0805>		
Number of Elements	2(2)		
Rated Volt. [Vdc]	16(1C)	10(1A)	6.3(0J)
Capacitance	Tolerance	Part Number	
0.47μF (474)	±20% (M)	GNM212R61C474MA16D	
1.0μF (105)	±20% (M)	GNM212R61C105MA16D	GNM212R61A105MA13D
2.2μF (225)	±20% (M)		GNM212R61A225ME16D* GNM212R60J225ME16D*

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

* Please refer to GNM series Specifications and Test Method (2).

(Part Number) **GN** **M** **1M** **2** **R7** **1C** **104** **M** **AA1** **D** ①Product ID ②Series ③Dimensions (LxW) ④Number of Elements
 ⑤Temperature Characteristics ⑥Rated Voltage ⑦Capacitance
 ⑧Capacitance Tolerance ⑨Individual Specification Code ⑩Packaging

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

For General GRM Series
Array GNM Series
Low ESL LL Series
High-Q GJM Series
High Frequency GQM Series
Monolithic Microchip GMA Series
For Bonding GMD Series
Product Information

High Dielectric Constant Type X5R(R6) Characteristics

LxW [mm]		2.0x1.25(21)<0805>	
Number of Elements		4(4)	
Rated Volt. [Vdc]		10(1A)	6.3(0J)
Capacitance	Tolerance	Part Number	
1.0μF (105)	±20% (M)	GNM214R61A105ME17D*	GNM214R60J105ME17D*
2.2μF (225)	±20% (M)		GNM214R60J225ME18D*

LxW [mm]		3.2x1.6(31)<1206>	
Number of Elements		4(4)	
Rated Volt. [Vdc]		16(1C)	10(1A)
Capacitance	Tolerance	Part Number	
1.0μF (105)	±20% (M)	GNM314R61C105MA15D	GNM314R61A105MA13D

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

* Please refer to GNM series Specifications and Test Method (2).

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

LxW [mm]		1.37x1.0(1M)<0504>	2.0x1.25(21)<0805>	
Number of Elements		2(2)	4(4)	
Rated Volt. [Vdc]		16(1C)	10(1A)	10(1A)
Capacitance	Tolerance	Part Number		
1.0μF (105)	±20% (M)	GNM1M2R61C105MEA2D*	GNM1M2R61A105MEA4D*	GNM214R61A105MEA2D*

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

* Please refer to GNM series Specifications and Test Method (2).

For General
GRM Series

Array
GNM Series

Low ESL
LL□ Series

High-Q
GJM Series

High Frequency
GQM Series

Monolithic Microchip
GMA Series

For Bonding
GMD Series

Product Information

GNM Series Specifications and Test Methods (1)

When no **** is added in PNs table, please refer to GNM Series Specifications and Test Methods (1).
 When **** is added in PNs table, please refer to GNM Series Specifications and Test Methods (2).

No.	Item	Specifications		Test Method																									
		Temperature Compensating Type	High Dielectric Type																										
1	Operating Temperature Range	5C: -55 to +125°C	R7, C7: -55 to +125°C R6: -55 to +85°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																									
5	Dielectric Strength	No defects or abnormalities		No failure should be observed when 300% of the rated voltage (5C) or 250% of the rated voltage (R7) is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA.																									
6	Insulation Resistance	More than 10,000MΩ or 500Ω · F (whichever is smaller)		The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at 25°C and 75%RH max. and within 2 minutes of charging.																									
7	Capacitance	Within the specified tolerance		The capacitance/Q/D.F. should be measured at 25°C at the frequency and voltage shown in the table.																									
8	Q/ Dissipation Factor (D.F.)	30pF min.: $Q \geq 1000$ 30pF max.: $Q \geq 400+20C$ C: Nominal Capacitance (pF)	<table border="1"> <thead> <tr> <th>Char.</th> <th>25V min.</th> <th>16V</th> <th>10V</th> <th>6.3V</th> </tr> </thead> <tbody> <tr> <td>R7, R6, C7</td> <td>0.025 max.</td> <td>0.035 max.</td> <td>0.035 max.</td> <td>0.05 max.</td> </tr> </tbody> </table>	Char.	25V min.	16V	10V	6.3V	R7, R6, C7	0.025 max.	0.035 max.	0.035 max.	0.05 max.	<table border="1"> <thead> <tr> <th>Char.</th> <th>5C</th> <th>R7</th> </tr> </thead> <tbody> <tr> <td>Item</td> <td></td> <td></td> </tr> <tr> <td>Frequency</td> <td>1±0.1MHz</td> <td>1±0.1kHz</td> </tr> <tr> <td>Voltage</td> <td>0.5 to 5Vrms</td> <td>1.0±0.2Vrms</td> </tr> </tbody> </table>	Char.	5C	R7	Item			Frequency	1±0.1MHz	1±0.1kHz	Voltage	0.5 to 5Vrms	1.0±0.2Vrms			
			Char.	25V min.	16V	10V	6.3V																						
R7, R6, C7	0.025 max.	0.035 max.	0.035 max.	0.05 max.																									
Char.	5C	R7																											
Item																													
Frequency	1±0.1MHz	1±0.1kHz																											
Voltage	0.5 to 5Vrms	1.0±0.2Vrms																											
9	Capacitance Change	Within the specified tolerance (Table A)	<table border="1"> <thead> <tr> <th>Char.</th> <th>Temp. Range</th> <th>Reference Temp.</th> <th>Cap. Change</th> </tr> </thead> <tbody> <tr> <td>R7</td> <td>-55°C to +125°C</td> <td rowspan="3">25°C</td> <td rowspan="2">Within ±15%</td> </tr> <tr> <td>R6</td> <td>-55°C to +85°C</td> </tr> <tr> <td>C7</td> <td>-55°C to +125°C</td> <td>Within ±22%</td> </tr> </tbody> </table>	Char.	Temp. Range	Reference Temp.	Cap. Change	R7	-55°C to +125°C	25°C	Within ±15%	R6	-55°C to +85°C	C7	-55°C to +125°C	Within ±22%	The capacitance change should be measured after 5 min. at each specified temperature 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, the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as in Table A. 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. <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25±2</td> </tr> <tr> <td>2</td> <td>-55±3 (for 5C/R7/C7), -30±3 (for F5)</td> </tr> <tr> <td>3</td> <td>25±2</td> </tr> <tr> <td>4</td> <td>125±3 (for 5C/R7/C7), 85±3 (for F5)</td> </tr> <tr> <td>5</td> <td>25±2</td> </tr> </tbody> </table> (2) High Dielectric Constant Type The ranges of capacitance change compared with the above 25°C value over the temperature ranges shown in the table should be within the specified ranges. <ul style="list-style-type: none"> 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. 	Step	Temperature (°C)	1	25±2	2	-55±3 (for 5C/R7/C7), -30±3 (for F5)	3	25±2	4	125±3 (for 5C/R7/C7), 85±3 (for F5)	5	25±2
	Char.	Temp. Range	Reference Temp.	Cap. Change																									
	R7	-55°C to +125°C	25°C	Within ±15%																									
R6	-55°C to +85°C																												
C7	-55°C to +125°C	Within ±22%																											
Step	Temperature (°C)																												
1	25±2																												
2	-55±3 (for 5C/R7/C7), -30±3 (for F5)																												
3	25±2																												
4	125±3 (for 5C/R7/C7), 85±3 (for F5)																												
5	25±2																												
Capacitance Temperature Coefficient	Within the specified tolerance (Table A)																												
Capacitance Drift	Within ±0.2% or ±0.05pF (whichever is larger.)																												
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.1 using a eutectic solder. Then apply 5N 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. <table border="1"> <thead> <tr> <th>Type</th> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>GNM1M2</td> <td>0.5</td> <td>1.6</td> <td>0.32</td> <td>0.32</td> </tr> <tr> <td>GNM212</td> <td>0.6</td> <td>1.8</td> <td>0.5</td> <td>0.5</td> </tr> <tr> <td>GNM214</td> <td>0.6</td> <td>2.0</td> <td>0.25</td> <td>0.25</td> </tr> <tr> <td>GNM314</td> <td>0.8</td> <td>2.5</td> <td>0.4</td> <td>0.4</td> </tr> </tbody> </table>	Type	a	b	c	d	GNM1M2	0.5	1.6	0.32	0.32	GNM212	0.6	1.8	0.5	0.5	GNM214	0.6	2.0	0.25	0.25	GNM314	0.8	2.5	0.4	0.4
		Type	a		b	c	d																						
GNM1M2	0.5	1.6	0.32	0.32																									
GNM212	0.6	1.8	0.5	0.5																									
GNM214	0.6	2.0	0.25	0.25																									
GNM314	0.8	2.5	0.4	0.4																									

Fig. 1

(in mm)

C continued on the following page.

GNM Series Specifications and Test Methods (1)

Continued from the preceding page.

When no **** is added in PNs table, please refer to GNM Series Specifications and Test Methods (1).
 When **** is added in PNs table, please refer to GNM Series Specifications and Test Methods (2).

No.	Item	Specifications				Test Method																								
		Temperature Compensating Type	High Dielectric Type																											
11	Vibration Resistance	Appearance	No defects or abnormalities			Solder the capacitor to 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 min.: $Q \geq 1000$ 30pF max.: $Q \geq 400+20C$ C: Nominal Capacitance (pF)	<table border="1"> <thead> <tr> <th>Char.</th> <th>25V min.</th> <th>16V</th> <th>10V</th> <th>6.3V</th> </tr> </thead> <tbody> <tr> <td>R7, R6, C7</td> <td>0.025 max.</td> <td>0.035 max.</td> <td>0.035 max.</td> <td>0.05 max.</td> </tr> </tbody> </table>			Char.		25V min.	16V	10V	6.3V	R7, R6, C7	0.025 max.	0.035 max.	0.035 max.	0.05 max.															
		Char.	25V min.	16V	10V		6.3V																							
R7, R6, C7	0.025 max.	0.035 max.	0.035 max.	0.05 max.																										
12	Deflection	Appearance	No marking defects			Solder the capacitor on the test jig (glass epoxy board) shown in Fig. 2 using a eutectic solder. Then apply a force in the direction shown in Fig. 3 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 $\pm 5\%$ or $\pm 0.5\text{pF}$ (whichever is larger)	Within $\pm 10\%$																										
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Type	a	b	c	d																										
GNM1M2	2.0 ± 0.05	0.5 ± 0.05	0.32 ± 0.05	0.32 ± 0.05																										
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GNM314	2.5 ± 0.05	0.8 ± 0.05	0.4 ± 0.05	0.4 ± 0.05																										
<p>Fig. 2</p>					<p>Fig. 3</p>																									
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 eutectic solder solution for 2 ± 0.5 seconds at $230 \pm 5^\circ\text{C}$ or Sn-3.0Ag-0.5Cu solder solution for 2 ± 0.5 seconds at $245 \pm 5^\circ\text{C}$.																									
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 $270 \pm 5^\circ\text{C}$ for 10 ± 0.5 seconds. Let sit at room temperature for 24 ± 2 hours, then measure. • Initial measurement for high dielectric constant type Perform a heat treatment at $150+0/-10^\circ\text{C}$ for one hour and then let sit for 24 ± 2 hours at room temperature. Perform the initial measurement.																									
	Appearance	No marking defects																												
	Capacitance Change	Within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ (whichever is larger)	R7, R6, C7: Within $\pm 7.5\%$																											
	Q/D.F.	30pF min.: $Q \geq 1000$ 30pF max.: $Q \geq 400+20C$ C: Nominal Capacitance (pF)	<table border="1"> <thead> <tr> <th>Char.</th> <th>25V min.</th> <th>16V</th> <th>10V</th> <th>6.3V</th> </tr> </thead> <tbody> <tr> <td>R7, R6, C7</td> <td>0.025 max.</td> <td>0.035 max.</td> <td>0.035 max.</td> <td>0.05 max.</td> </tr> </tbody> </table>			Char.	25V min.	16V	10V	6.3V	R7, R6, C7	0.025 max.	0.035 max.	0.035 max.	0.05 max.															
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R7, R6, C7	0.025 max.	0.035 max.	0.035 max.	0.05 max.																										
I.R.	More than $10,000\text{M}\Omega$ or $500\Omega \cdot \text{F}$ (whichever is smaller)																													
Dielectric Strength	No failure																													

Continued on the following page.

For General GRM Series

Array GNM Series

Low ESL LL□ Series

High-Q GJM Series

High Frequency GQM Series

Monolithic Microchip GMA Series

For Bonding GMD Series

Product Information

GNM Series Specifications and Test Methods (1)

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When no "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (1).
 When "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (2).

No.	Item	Specifications				Test Method															
		Temperature Compensating Type	High Dielectric Type																		
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 listed in the following table. Let sit for 24±2 hours (temperature compensating type) or 48±4 hours (high dielectric constant type) at room temperature, then measure. <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Step</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Temp. (°C)</td> <td>Min. Operating Temp. +0/-3</td> <td>Room Temp.</td> <td>Max. Operating Temp. +3/-0</td> <td>Room Temp.</td> </tr> <tr> <td>Time (min.)</td> <td>30±3</td> <td>2 to 3</td> <td>30±3</td> <td>2 to 3</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Initial measurement for high dielectric constant type 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. 	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
	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																
	Appearance	No marking defects																			
	Capacitance Change	Within ±2.5% or ±0.25pF (whichever is larger)	R7, R6, C7: Within ±7.5%																		
Q/D.F.	30pF min.: Q≥1000 30pF max.: Q≥400+20C C: Nominal Capacitance (pF)	<table border="1" style="font-size: small;"> <thead> <tr> <th>Char.</th> <th>25V min.</th> <th>16V</th> <th>10V</th> <th>6.3V</th> </tr> </thead> <tbody> <tr> <td>R7, R6, C7</td> <td>0.025 max.</td> <td>0.035 max.</td> <td>0.035 max.</td> <td>0.05 max.</td> </tr> </tbody> </table>	Char.	25V min.	16V	10V	6.3V	R7, R6, C7	0.025 max.	0.035 max.	0.035 max.	0.05 max.									
Char.	25V min.	16V	10V	6.3V																	
R7, R6, C7	0.025 max.	0.035 max.	0.035 max.	0.05 max.																	
I.R.	More than 10,000MΩ or 500Ω · F (whichever is smaller)																				
Dielectric Strength	No failure																				
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 90 to 95% humidity for 500±12 hours. Remove and let sit for 24±2 hours at room temperature, then measure.															
	Appearance	No marking defects																			
	Capacitance Change	Within ±5% or ±0.5pF (whichever is larger)	R7, R6, C7: Within ±12.5%																		
	Q/D.F.	30pF and over: Q≥350 10pF and over, 30pF and below: Q≥275+5C/2 10pF and below: Q≥200+10C C: Nominal Capacitance (pF)	<table border="1" style="font-size: small;"> <thead> <tr> <th>Char.</th> <th>25V min.</th> <th>16V</th> <th>10V/6.3V</th> </tr> </thead> <tbody> <tr> <td>R7, R6, C7</td> <td>0.05 max.</td> <td>0.05 max.</td> <td>0.05 max.</td> </tr> </tbody> </table>	Char.	25V min.		16V	10V/6.3V	R7, R6, C7	0.05 max.	0.05 max.	0.05 max.									
	Char.	25V min.	16V	10V/6.3V																	
	R7, R6, C7	0.05 max.	0.05 max.	0.05 max.																	
I.R.	More than 1,000MΩ or 50Ω · F (whichever is smaller)																				
Humidity Load	The measured and observed characteristics should satisfy the specifications in the following table.																				
17	Appearance	No marking defects				Apply the rated voltage at 40±2°C and 90 to 95% humidity for 500±12 hours. Remove and let sit for 24±2 hours at room temperature, then measure. The charge/discharge current is less than 50mA.															
	Capacitance Change	Within ±7.5% or ±0.75pF (whichever is larger)	R7, R6, C7: Within ±12.5%																		
	Q/D.F.	30pF and over: Q≥200 30pF and below: Q≥100+10C/3 C: Nominal Capacitance (pF)	<table border="1" style="font-size: small;"> <thead> <tr> <th>Char.</th> <th>25V min.</th> <th>16V</th> <th>10V/6.3V</th> </tr> </thead> <tbody> <tr> <td>R7, R6, C7</td> <td>0.05 max.</td> <td>0.05 max.</td> <td>0.05 max.</td> </tr> </tbody> </table>	Char.	25V min.		16V	10V/6.3V	R7, R6, C7	0.05 max.	0.05 max.	0.05 max.									
	Char.	25V min.	16V	10V/6.3V																	
	R7, R6, C7	0.05 max.	0.05 max.	0.05 max.																	
	I.R.	More than 500MΩ or 25Ω · F (whichever is smaller)																			

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For General GRM Series

Array GNM Series

Low ESL LL□ Series

High-Q GJM Series

High Frequency GQM Series

Monolithic Microchip GMA Series

For Bonding GMD Series

Product Information

GNM Series Specifications and Test Methods (1)

Continued from the preceding page.

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No.	Item	Specifications				Test Method								
		Temperature Compensating Type	High Dielectric Type											
18	High Temperature Load	The measured and observed characteristics should satisfy the specifications in the following table.				Apply 200% 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. • Initial measurement for high dielectric constant type. Apply 200% of the rated DC voltage for one hour at the maximum operating temperature ±3°C. Remove and let sit for 24±2 hours at room temperature. Perform initial measurement.								
	Appearance	No marking defects												
	Capacitance Change	Within ±3% or ±0.3pF (whichever is larger)	R7, R6, C7: Within ±12.5%											
	Q/D.F.	30pF and over: $Q \geq 350$ 10pF and over, 30pF and below: $Q \geq 275 + 5C/2$ 10pF and below: $Q \geq 200 + 10C$ C: Nominal Capacitance (pF)	<table border="1" style="font-size: small;"> <thead> <tr> <th>Char.</th> <th>25V min.</th> <th>16V</th> <th>10V/6.3V</th> </tr> </thead> <tbody> <tr> <td>R7, R6, C7</td> <td>0.04 max.</td> <td>0.05 max.</td> <td>0.05 max.</td> </tr> </tbody> </table>	Char.	25V min.		16V	10V/6.3V	R7, R6, C7	0.04 max.	0.05 max.	0.05 max.		
	Char.	25V min.	16V	10V/6.3V										
R7, R6, C7	0.04 max.	0.05 max.	0.05 max.											
I.R.	More than 1,000MΩ or 50Ω · F (whichever is smaller)													

Table A

Char.	Nominal Values (ppm/°C) *1	Capacitance Change from 25°C (%)					
		-55°C		-30°C		-10°C	
		Max.	Min.	Max.	Min.	Max.	Min.
5C	0±30	0.58	-0.24	0.40	-0.17	0.25	-0.11

*1: Nominal values denote the temperature coefficient within a range of 25 to 125°C.

For General GRM Series

Array GNM Series

Low ESL LL Series

High-Q GJM Series

High Frequency GQM Series

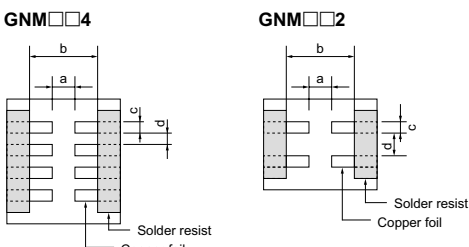
Monolithic Microchip GMA Series

For Bonding GMD Series

Product Information

GNM Series Specifications and Test Methods (2)

When no **** is added in PNs table, please refer to GNM Series Specifications and Test Methods (1).
 When **** is added in PNs table, please refer to GNM Series Specifications and Test Methods (2).

No.	Item	Specifications	Test Method																																										
1	Operating Temperature Range	R6: -55°C to +85°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 dimension	Using calipers																																										
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	50Ω · F min.	The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at 25°C and 75%RH max. and within 1 minute of charging.																																										
7	Capacitance	Within the specified tolerance	The capacitance/D.F. should be measured at 25°C at the frequency and voltage shown in the table. <table border="1"> <thead> <tr> <th>Nominal Capacitance</th> <th>Measuring Frequency</th> <th>Measuring Voltage</th> </tr> </thead> <tbody> <tr> <td>$C \leq 10\mu F$ *1 (10V min.)</td> <td>1±0.1kHz</td> <td>1.0±0.2Vrms</td> </tr> <tr> <td>$C \leq 10\mu F$ *2 (6.3V max.)</td> <td>1±0.1kHz</td> <td>0.5±0.1Vrms</td> </tr> <tr> <td>*1For items in Table1</td> <td>1±0.1kHz</td> <td>0.5±0.1Vrms</td> </tr> <tr> <td>*2For items in Table2</td> <td>1±0.1kHz</td> <td>1.0±0.1Vrms</td> </tr> </tbody> </table>	Nominal Capacitance	Measuring Frequency	Measuring Voltage	$C \leq 10\mu F$ *1 (10V min.)	1±0.1kHz	1.0±0.2Vrms	$C \leq 10\mu F$ *2 (6.3V max.)	1±0.1kHz	0.5±0.1Vrms	*1For items in Table1	1±0.1kHz	0.5±0.1Vrms	*2For items in Table2	1±0.1kHz	1.0±0.1Vrms																											
Nominal Capacitance	Measuring Frequency	Measuring Voltage																																											
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8	Dissipation Factor (D.F.)	0.1 max.*3 Table 3 <table border="1"> <thead> <tr> <th>GNM0M2 R6</th> <th>103/223/473/104</th> </tr> </thead> <tbody> <tr> <td>GNM1M2 R6</td> <td>0J 105/225</td> </tr> <tr> <td>GNM1M2 R6</td> <td>1A 105MEA4</td> </tr> <tr> <td>GNM1M2 R6</td> <td>1A 225</td> </tr> <tr> <td>GNM212 R6</td> <td>0J 225</td> </tr> <tr> <td>GNM212 R6</td> <td>1A 225</td> </tr> <tr> <td>GNM214 R6</td> <td>0J 225</td> </tr> </tbody> </table> *3 However 0.125 max. for Table 3 items.	GNM0M2 R6	103/223/473/104	GNM1M2 R6	0J 105/225	GNM1M2 R6	1A 105MEA4	GNM1M2 R6	1A 225	GNM212 R6	0J 225	GNM212 R6	1A 225	GNM214 R6	0J 225	<table border="1"> <thead> <tr> <th>Table 1</th> <th>GNM0M2 R6</th> <th>1A</th> <th>104</th> </tr> </thead> <tbody> <tr> <td>GNM0M2 R6</td> <td>1C</td> <td>104</td> <td></td> </tr> <tr> <td>GNM1M2 R6</td> <td>1A</td> <td>105/225</td> <td></td> </tr> <tr> <td>GNM1M2 R6</td> <td>1C</td> <td>224/105</td> <td></td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Table 2</th> <th>GNM0M2 R6</th> <th>0J</th> <th>103/223/473</th> </tr> </thead> <tbody> <tr> <td>GNM212 R6</td> <td>0J</td> <td>225</td> <td></td> </tr> <tr> <td>GNM214 R6</td> <td>0J</td> <td>105</td> <td></td> </tr> </tbody> </table>	Table 1	GNM0M2 R6	1A	104	GNM0M2 R6	1C	104		GNM1M2 R6	1A	105/225		GNM1M2 R6	1C	224/105		Table 2	GNM0M2 R6	0J	103/223/473	GNM212 R6	0J	225		GNM214 R6	0J	105	
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9	Capacitance Temperature Characteristics	<table border="1"> <thead> <tr> <th>Char.</th> <th>Temp. Range</th> <th>Reference Temp.</th> <th>Cap. Change</th> </tr> </thead> <tbody> <tr> <td>R6</td> <td>-55 to +85°C</td> <td>25°C</td> <td>Within ±15%</td> </tr> </tbody> </table>	Char.	Temp. Range	Reference Temp.	Cap. Change	R6	-55 to +85°C	25°C	Within ±15%	The capacitance change should be measured after 5 min. at each specified temperature stage. <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25±2</td> </tr> <tr> <td>2</td> <td>-55±3</td> </tr> <tr> <td>3</td> <td>25±2</td> </tr> <tr> <td>4</td> <td>85±3</td> </tr> <tr> <td>5</td> <td>25±2</td> </tr> </tbody> </table> The ranges of capacitance change compared with the 25°C value over the temperature ranges shown in the table should be within the specified ranges. • 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.	Step	Temperature (°C)	1	25±2	2	-55±3	3	25±2	4	85±3	5	25±2																						
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10	Adhesive Strength of Termination	No removal of the terminations or other defects should occur. 	Solder the capacitor to the test jig (glass epoxy board) shown in Fig. 1 using a eutectic solder. Then apply 5N (GNM0M2: 2N) 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. <table border="1"> <thead> <tr> <th>Type</th> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>GNM0M2</td> <td>0.2</td> <td>0.96</td> <td>0.25</td> <td>0.2</td> </tr> <tr> <td>GNM1M2</td> <td>0.5</td> <td>1.6</td> <td>0.32</td> <td>0.32</td> </tr> <tr> <td>GNM212</td> <td>0.6</td> <td>1.8</td> <td>0.5</td> <td>0.5</td> </tr> <tr> <td>GNM214</td> <td>0.6</td> <td>2.0</td> <td>0.25</td> <td>0.25</td> </tr> <tr> <td>GNM314</td> <td>0.8</td> <td>2.5</td> <td>0.4</td> <td>0.4</td> </tr> </tbody> </table> (in mm)	Type	a	b	c	d	GNM0M2	0.2	0.96	0.25	0.2	GNM1M2	0.5	1.6	0.32	0.32	GNM212	0.6	1.8	0.5	0.5	GNM214	0.6	2.0	0.25	0.25	GNM314	0.8	2.5	0.4	0.4												
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11	Vibration	Appearance: No defects or abnormalities Capacitance: Within the specified tolerance D.F.: 0.1 max.*3 *3 However 0.125 max. for Table 3 items.	Solder the capacitor to 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).																																										

C ontinued on the following page. 

GNM Series Specifications and Test Methods (2)

Continued from the preceding page.

When no "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (1).
 When "*" is added in PNs table, please refer to GNM Series Specifications and Test Methods (2).

No.	Item	Specifications	Test Method																														
12	Appearance	No marking defects	Solder the capacitor to the test jig (glass epoxy board) shown in Fig. 2 using a eutectic solder. Then apply a force in the direction shown in Fig. 3. 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 ±10%																															
	Deflection	<div style="text-align: center;"> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th>Type</th> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>GNM0M2</td> <td>2.0±0.05</td> <td>0.2±0.05</td> <td>0.2±0.05</td> <td>0.25±0.05</td> </tr> <tr> <td>GNM1M2</td> <td>2.0±0.05</td> <td>0.5±0.05</td> <td>0.32±0.05</td> <td>0.32±0.05</td> </tr> <tr> <td>GNM212</td> <td>2.0±0.05</td> <td>0.6±0.05</td> <td>0.5±0.05</td> <td>0.5±0.05</td> </tr> <tr> <td>GNM214</td> <td>2.0±0.05</td> <td>0.7±0.05</td> <td>0.3±0.05</td> <td>0.2±0.05</td> </tr> <tr> <td>GNM314</td> <td>2.5±0.05</td> <td>0.8±0.05</td> <td>0.4±0.05</td> <td>0.4±0.05</td> </tr> </tbody> </table> <p style="text-align: center;">Thickness: 0.8mm Fig. 2</p> </div>	Type	a	b	c	d	GNM0M2	2.0±0.05	0.2±0.05	0.2±0.05	0.25±0.05	GNM1M2	2.0±0.05	0.5±0.05	0.32±0.05	0.32±0.05	GNM212	2.0±0.05	0.6±0.05	0.5±0.05	0.5±0.05	GNM214	2.0±0.05	0.7±0.05	0.3±0.05	0.2±0.05	GNM314	2.5±0.05	0.8±0.05	0.4±0.05	0.4±0.05	<div style="text-align: center;"> <p style="text-align: center;">Fig. 3</p> </div>
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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 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 marking defects																														
		Capacitance Change	R6*: Within ±7.5% ** GNM0M2R60G105: Within +15/-7.5%																														
		D.F.	0.1 max. *3 *3 However 0.125 max. for Table 3 items.																														
		I.R.	50Ω · F min.																														
		Dielectric Strength	No failure																														
15	Temperature Cycle	Appearance	No marking defects																														
		Capacitance Change	R6*: Within ±12.5% *5 GNM0M2R60G105, GNM0M2R60J103/223/473/104, GNM0M2R61A103/223/473/104, GNM0M2R61C103/223/473/104, GNM1M2R61A105: Within ±15%																														
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		I.R.	50Ω · F min.																														
		Dielectric Strength	No failure																														
16	High Temperature High Humidity (Steady)	Appearance	No marking defects																														
		Capacitance Change	R6: Within ±12.5%																														
		D.F.	0.2 max.																														
		I.R.	12.5Ω · F min.																														
17	Durability	Appearance	No marking defects																														
		Capacitance Change	R6: Within ±12.5%																														
		D.F.	0.2 max.																														
		I.R.	25Ω · F min.																														

For General GRM Series

Array GNM Series

Low ESL LL□ Series

High-Q GJM Series

High Frequency GQM Series

Monolithic Microchip GMA Series

For Bonding GMD Series

Product Information