

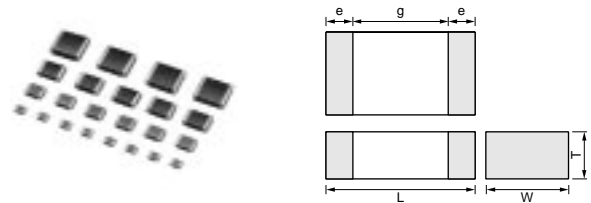
# Chip Monolithic Ceramic Capacitors



## for Flow/Reflow Soldering GRP15/GRM15/18/21/31 Series

### ■ Features

1. Terminations are made of metal highly resistant to migration.
2. The GRM series is a complete line of chip ceramic capacitors in 6.3V, 10V, 16V, 25V, 50V and 100V ratings. These capacitors have temperature characteristics ranging from C0G to Y5V.
3. A wide selection of sizes is available, from the miniature LxWxT: 1.0x0.5x0.5mm to LxWxT: 3.2x1.6x1.15 mm.  
GRM18, 21 and GRM31 types are suited to flow and reflow soldering.  
GRP15 types is applied to only reflow soldering.
4. Stringent dimensional tolerances allow highly reliable, high speed automatic chip placement on PCBs.
5. The GRP/GRM series is available in paper or plastic embossed tape and reel packaging for automatic placement. Bulk case packaging is also available for GRP15, GRM18, GRM21 electronic equipment.
6. Dielectric layer of GRP15 Y5V 0.22uF/0.47uF/1.0uF are relaxor



Part Number	Dimensions (mm)				
	L	W	T	e	g min.
<b>GRP155</b>	1.0 ±0.05	0.5 ±0.05	0.5 ±0.05	0.15 to 0.3	0.4
<b>GRM155</b>					
<b>GRM188*</b>	1.6 ±0.1	0.8 ±0.1	0.8 ±0.1	0.2 to 0.5	0.5
<b>GRM216</b>			0.6 ±0.1		
<b>GRM219</b>	2.0 ±0.1	1.25 ±0.1	0.85 ±0.1	0.2 to 0.7	0.7
<b>GRM21B</b>			1.25 ±0.1		
<b>GRM319</b>	3.2 ±0.15	1.6 ±0.15	0.85 ±0.1	0.3 to 0.8	1.5
<b>GRM31M</b>			1.15 ±0.1		
<b>GRM31C</b>	3.2 ±0.2	1.6 ±0.2	1.6 ±0.2		

\* Bulk Case : 1.6 ±0.07(L) × 0.8 ±0.07(W) × 0.8 ±0.07(T)

### ■ Applications

General electronic equipment.

### Temperature Compensating Type GRP15 Series (1.0x0.5mm)

Part Number	GRP15								
L x W [EIA]	1.00x0.50 [0402]								
TC	C0G (5C)	C0H (6C)	P2H (6P)	R2H (6R)	S2H (6S)	SL (1X)		T2H (6T)	U2J (7U)
Rated Volt.	50 (1H)	25 (1E)	50 (1H)	50 (1H)	50 (1H)	25 (1E)	50 (1H)	50 (1H)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)									
0.5pF( <b>R50</b> )	0.50(5)								
0.75pF( <b>R75</b> )	0.50(5)								
1.0pF( <b>1R0</b> )	0.50(5)								
2.0pF( <b>2R0</b> )	0.50(5)								
3.0pF( <b>3R0</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
4.0pF( <b>4R0</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
5.0pF( <b>5R0</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
6.0pF( <b>6R0</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
7.0pF( <b>7R0</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
8.0pF( <b>8R0</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
9.0pF( <b>9R0</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
10.0pF( <b>100</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
12.0pF( <b>120</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
15.0pF( <b>150</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
18.0pF( <b>180</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
22.0pF( <b>220</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)
27.0pF( <b>270</b> )	0.50(5)		0.50(5)	0.50(5)	0.50(5)			0.50(5)	0.50(5)

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Part Number	GRP15								
L x W [EIA]	1.00x0.50 [0402]								
TC	C0G (5C)	C0H (6C)	P2H (6P)	R2H (6R)	S2H (6S)	SL (1X)		T2H (6T)	U2J (7U)
Rated Volt.	50 (1H)	25 (1E)	50 (1H)	50 (1H)	50 (1H)	25 (1E)	50 (1H)	50 (1H)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)									
33.0pF(330)	0.50(5)			0.50(5)	0.50(5)			0.50(5)	0.50(5)
39.0pF(390)	0.50(5)				0.50(5)			0.50(5)	0.50(5)
47pF(470)	0.50(5)						0.50(5)	0.50(5)	0.50(5)
56pF(560)	0.50(5)						0.50(5)	0.50(5)	0.50(5)
68pF(680)	0.50(5)						0.50(5)	0.50(5)	0.50(5)
82pF(820)	0.50(5)						0.50(5)	0.50(5)	0.50(5)
100pF(101)	0.50(5)						0.50(5)	0.50(5)	0.50(5)
120pF(121)	0.50(5)						0.50(5)		0.50(5)
150pF(151)	0.50(5)						0.50(5)		0.50(5)
180pF(181)		0.50(5)					0.50(5)		0.50(5)
220pF(221)		0.50(5)				0.50(5)			
270pF(271)		0.50(5)				0.50(5)			
330pF(331)						0.50(5)			
390pF(391)						0.50(5)			

The part numbering code is shown in ( ).  
Dimensions are shown in mm and Rated Voltage in Vdc.

### Temperature Compensating Type GRM18 Series (1.60x0.80mm)

Part Number	GRM18												
L x W [EIA]	1.60x0.80 [0603]												
TC	C0G (5C)		C0H (6C)	P2H (6P)	R2H (6R)	S2H (6S)	SL (1X)				T2H (6T)	U2J (7U)	
Rated Volt.	50 (1H)	100 (2A)	200 (2D)	25 (1E)	50 (1H)	50 (1H)	50 (1H)	25 (1E)	50 (1H)	100 (2A)	200 (2D)	50 (1H)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)													
0.5pF(R50)	0.80(8)		0.80(8)										
0.75pF(R75)	0.80(8)		0.80(8)										
1.0pF(1R0)	0.80(8)		0.80(8)										
2.0pF(2R0)	0.80(8)		0.80(8)										
3.0pF(3R0)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)					0.80(8)	0.80(8)
4.0pF(4R0)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)					0.80(8)	0.80(8)
5.0pF(5R0)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)					0.80(8)	0.80(8)
6.0pF(6R0)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)					0.80(8)	0.80(8)
7.0pF(7R0)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)					0.80(8)	0.80(8)
8.0pF(8R0)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)					0.80(8)	0.80(8)
9.0pF(9R0)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)					0.80(8)	0.80(8)
10.0pF(100)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)					0.80(8)	0.80(8)
12pF(120)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)				0.80(8)	0.80(8)	0.80(8)
15pF(150)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)				0.80(8)	0.80(8)	0.80(8)
18pF(180)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)				0.80(8)	0.80(8)	0.80(8)
22pF(220)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)				0.80(8)	0.80(8)	0.80(8)
27pF(270)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)				0.80(8)	0.80(8)	0.80(8)
33pF(330)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)				0.80(8)	0.80(8)	0.80(8)
39pF(390)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)				0.80(8)	0.80(8)	0.80(8)
47pF(470)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)				0.80(8)	0.80(8)	0.80(8)
56pF(560)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)				0.80(8)	0.80(8)	0.80(8)
68pF(680)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)
82pF(820)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)
100pF(101)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)		0.80(8)		0.80(8)	0.80(8)	0.80(8)
120pF(121)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)		0.80(8)	0.80(8)		0.80(8)	0.80(8)

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Part Number	GRM18												
L x W [EIA]	1.60x0.80 [0603]												
TC	COG (5C)			COH (6C)	P2H (6P)	R2H (6R)	S2H (6S)	SL (1X)				T2H (6T)	U2J (7U)
Rated Volt.	50 (1H)	100 (2A)	200 (2D)	25 (1E)	50 (1H)	50 (1H)	50 (1H)	25 (1E)	50 (1H)	100 (2A)	200 (2D)	50 (1H)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)													
150pF(151)	0.80(8)	0.80(8)			0.80(8)	0.80(8)	0.80(8)		0.80(8)	0.80(8)		0.80(8)	0.80(8)
180pF(181)	0.80(8)					0.80(8)	0.80(8)		0.80(8)	0.80(8)		0.80(8)	0.80(8)
220pF(221)	0.80(8)						0.80(8)		0.80(8)	0.80(8)		0.80(8)	0.80(8)
270pF(271)	0.80(8)								0.80(8)	0.80(8)		0.80(8)	0.80(8)
330pF(331)	0.80(8)								0.80(8)	0.80(8)		0.80(8)	0.80(8)
390pF(391)	0.80(8)								0.80(8)	0.80(8)		0.80(8)	0.80(8)
470pF(471)	0.80(8)								0.80(8)				0.80(8)
560pF(561)	0.80(8)			0.80(8)					0.80(8)				0.80(8)
680pF(681)	0.80(8)								0.80(8)				0.80(8)
820pF(821)	0.80(8)							0.80(8)					
1000pF(102)	0.80(8)							0.80(8)					
1200pF(122)	0.80(8)							0.80(8)					
1500pF(152)	0.80(8)							0.80(8)					

The part numbering code is shown in ( ).  
Dimensions are shown in mm and Rated Voltage in Vdc.

### Temperature Compensating Type GRM21 Series (2.00x1.25mm)

Part Number	GRM21												
L x W [EIA]	2.00x1.25 [0805]												
TC	COG (5C)			COH (6C)	P2H (6P)	R2H (6R)	S2H (6S)	SL (1X)				T2H (6T)	U2J (7U)
Rated Volt.	50 (1H)	100 (2A)	200 (2D)	25 (1E)	50 (1H)	50 (1H)	50 (1H)	25 (1E)	50 (1H)	100 (2A)	200 (2D)	50 (1H)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)													
12pF(120)			0.85(9)										
15pF(150)			0.85(9)										
18pF(180)			0.85(9)										
22pF(220)			0.85(9)										
27pF(270)			0.85(9)										
33pF(330)			0.85(9)										
39pF(390)			0.85(9)										
47pF(470)			0.85(9)										
56pF(560)			0.85(9)										
68pF(680)		0.85(9)	1.25(B)										
82pF(820)		0.85(9)	1.25(B)										
100pF(101)		0.85(9)	1.25(B)										
120pF(121)		0.85(9)	1.25(B)								0.85(9)		
150pF(151)		0.85(9)	1.25(B)								1.25(B)		
180pF(181)		0.85(9)	1.25(B)		0.85(9)						1.25(B)		
220pF(221)		0.85(9)	1.25(B)		0.85(9)	0.85(9)					1.25(B)		
270pF(271)		0.85(9)			0.85(9)	0.85(9)	0.85(9)				1.25(B)		
330pF(331)		0.85(9)			0.85(9)	0.85(9)	0.85(9)				1.25(B)		
390pF(391)		1.25(B)			1.25(B)	0.85(9)	0.85(9)				1.25(B)		
470pF(471)		1.25(B)			1.25(B)	0.85(9)	0.85(9)			0.85(9)	1.25(B)		
560pF(561)	0.60(6)	1.25(B)			1.25(B)	1.25(B)	1.25(B)			0.85(9)		1.25(B)	
680pF(681)	0.60(6)	1.25(B)				1.25(B)	1.25(B)			0.85(9)		1.25(B)	
820pF(821)	0.60(6)	1.25(B)					1.25(B)		0.60(6)	1.25(B)		1.25(B)	0.60(6)
1000pF(102)	0.60(6)	1.25(B)							0.60(6)	1.25(B)		1.25(B)	0.60(6)
1200pF(122)	0.60(6)								0.60(6)	1.25(B)		1.25(B)	0.60(6)
1500pF(152)	0.60(6)								0.85(9)	1.25(B)		1.25(B)	0.85(9)

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Part Number	GRM21												
L x W [EIA]	2.00x1.25 [0805]												
TC	COG (5C)			COH (6C)	P2H (6P)	R2H (6R)	S2H (6S)	SL (1X)				T2H (6T)	U2J (7U)
Rated Volt.	50 (1H)	100 (2A)	200 (2D)	25 (1E)	50 (1H)	50 (1H)	50 (1H)	25 (1E)	50 (1H)	100 (2A)	200 (2D)	50 (1H)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)													
1800pF(182)	0.60(6)								0.85(9)	1.25(B)		1.25(B)	0.85(9)
2200pF(222)	0.60(6)								0.85(9)				0.85(9)
2700pF(272)	0.60(6)			1.25(B)					1.25(B)				1.25(B)
3300pF(332)	0.60(6)			1.25(B)					1.25(B)				1.25(B)
3900pF(392)				1.25(B)				0.85(9)					
4700pF(472)								0.85(9)					
5600pF(562)								1.25(B)					
6800pF(682)								1.25(B)					

The part numbering code is shown in ( ).  
Dimensions are shown in mm and Rated Voltage in Vdc.

### Temperature Compensating Type GRM31 Series (3.20x1.60mm)

Part Number	GRM31														
L x W [EIA]	3.20x1.60 [1206]														
TC	COG (5C)				COH (6C)	P2H (6P)	R2H (6R)	S2H (6S)	SL (1X)					T2H (6T)	U2J (7U)
Rated Volt.	25 (1E)	50 (1H)	200 (2D)	500 (2H)	25 (1E)	50 (1H)	50 (1H)	50 (1H)	25 (1E)	50 (1H)	100 (2A)	200 (2D)	500 (2H)	50 (1H)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)															
1.0pF(1R0)				1.15(M)											
2.0pF(2R0)				1.15(M)											
3.0pF(3R0)				1.15(M)											
4.0pF(4R0)				1.15(M)											
5.0pF(5R0)				1.15(M)											
6.0pF(6R0)				1.15(M)											
7.0pF(7R0)				1.15(M)											
8.0pF(8R0)				1.15(M)											
9.0pF(9R0)				1.15(M)											
10.0pF(100)				1.15(M)											
12pF(120)				1.15(M)											
15pF(150)				1.15(M)											
18pF(180)				1.15(M)											
22pF(220)				1.15(M)											
27pF(270)				1.15(M)											
33pF(330)				1.15(M)											
39pF(390)				1.15(M)											
47pF(470)				1.15(M)											
56pF(560)				1.15(M)											
68pF(680)				1.15(M)											
82pF(820)				1.15(M)											
100pF(101)				1.15(M)											
120pF(121)				1.15(M)											
150pF(151)													1.15(M)		
180pF(181)													1.15(M)		
220pF(221)													1.15(M)		
270pF(271)			1.15(M)										1.15(M)		
330pF(331)			1.15(M)												
390pF(391)			1.15(M)												
470pF(471)			1.15(M)												
560pF(561)												1.15(M)			

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Part Number	GRM31														
L x W [EIA]	3.20x1.60 [1206]														
TC	C0G (5C)				COH (6C)	P2H (6P)	R2H (6R)	S2H (6S)	SL (1X)					T2H (6T)	U2J (7U)
Rated Volt.	25 (1E)	50 (1H)	200 (2D)	500 (2H)	25 (1E)	50 (1H)	50 (1H)	50 (1H)	25 (1E)	50 (1H)	100 (2A)	200 (2D)	500 (2H)	50 (1H)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)															
680pF(681)						0.85(9)							1.15(M)		
820pF(821)						0.85(9)	0.85(9)						1.15(M)		
1000pF(102)						1.15(M)	1.15(M)	0.85(9)					1.15(M)		
1200pF(122)						1.15(M)	1.15(M)	1.15(M)					1.15(M)		
1500pF(152)						1.15(M)	1.15(M)	1.15(M)							
1800pF(182)								1.15(M)							
2200pF(222)											1.15(M)			1.15(M)	
2700pF(272)		0.85(9)									1.15(M)			1.15(M)	
3300pF(332)		0.85(9)									1.15(M)			1.15(M)	
3900pF(392)		1.15(M)								0.85(9)	1.15(M)			1.15(M)	0.85(9)
4700pF(472)		0.85(9)								0.85(9)	1.15(M)				0.85(9)
5600pF(562)		1.15(M)								0.85(9)					0.85(9)
6800pF(682)					0.85(9)					1.15(M)					1.15(M)
8200pF(822)					1.15(M)					1.15(M)					1.15(M)
10000pF(103)	0.85(9)									1.15(M)					
12000pF(123)										1.15(M)					
15000pF(153)										1.15(M)					

The part numbering code is shown in ( ).  
Dimensions are shown in mm and Rated Voltage in Vdc.

### High Dielectric Constant Type X5R (R6) Characteristics

TC	X5R (R6)							
Part Number	GRP15		GRM18		GRM21		GRM31	
L x W [EIA]	1.00x0.50 [0402]		1.60x0.80 [0603]		2.00x1.25 [0805]		3.20x1.60 [1206]	
Rated Volt.	10 (1A)	6.3 (0J)	10 (1A)	6.3 (0J)	10 (1A)	6.3 (0J)	10 (1A)	6.3 (0J)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)								
68000pF(683)	0.50(5)							
0.1μF(104)	0.50(5)							
0.33μF(334)			0.80(8)					
0.47μF(474)			0.80(8)					
0.68μF(684)			0.80(8)					
1.0μF(105)		0.80(8)	0.80(8)			0.85(9)		
1.5μF(155)					0.85(9)			
2.2μF(225)					1.25(B)			0.85(9)
3.3μF(335)					1.25(B)			1.30(X)
4.7μF(475)					1.25(B)		1.15(M)	1.60(C)
10μF(106)							1.60(C)	1.60(C)

The part numbering code is shown in each ( ).  
3.3μF and 4.7μF for 6.3V is replaced with GRM21B series of L: 2±0.15, W: 1.25±0.15, T: 1.25±0.15.  
T: 1.25±0.1mm is also available for GRM21 10V 1.0μF type.  
3.3μF for 10V rated is replaced with GRM31X series of L: 3.2±0.2, W: 1.6±0.2, T: 1.2±0.1mm.  
T: 1.15±0.1 is also available for GRM31, 16V, 1.0μF type.  
Dimensions are shown in mm and Rated Voltage in Vdc.

## High Dielectric Constant Type X7R (R7) Characteristics

TC	X7R (R7)																
Part Number	GRP15				GRM18					GRM21				GRM31			
L x W [EIA]	1.00x0.50 [0402]				1.60x0.80 [0603]					2.00x1.25 [0805]				3.20x1.60 [1206]			
Rated Volt.	10 (1A)	16 (1C)	25 (1E)	50 (1H)	10 (1A)	16 (1C)	25 (1E)	50 (1H)	100 (2A)	16 (1C)	25 (1E)	50 (1H)	100 (2A)	10 (1A)	16 (1C)	25 (1E)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)																	
220pF (221)				0.50 (5)				0.80 (8)									
330pF (331)				0.50 (5)				0.80 (8)									
470pF (471)				0.50 (5)				0.80 (8)									
680pF (681)				0.50 (5)				0.80 (8)									
1000pF (102)				0.50 (5)				0.80 (8)									
1500pF (152)				0.50 (5)				0.80 (8)									
2200pF (222)				0.50 (5)				0.80 (8)	0.80 (8)								
3300pF (332)				0.50 (5)				0.80 (8)	0.80 (8)								
4700pF (472)				0.50 (5)				0.80 (8)					0.85 (9)				
6800pF (682)			0.50 (5)					0.80 (8)					0.85 (9)				
10000pF (103)			0.50 (5)					0.80 (8)					1.25 (B)				
15000pF (153)		0.50 (5)						0.80 (8)									
22000pF (223)		0.50 (5)						0.80 (8)									
33000pF (333)	0.50 (5)							0.80 (8)					0.85 (9)				
47000pF (473)	0.50 (5)							0.80 (8)					1.25 (B)				
68000pF (683)								0.80 (8)					1.25 (B)				
0.10μF (104)						0.80 (8)	0.80 (8)					1.25 (B)	1.25 (B)				
0.15μF (154)					0.80 (8)							1.25 (B)	1.25 (B)				
0.22μF (224)					0.80 (8)							0.85 (9)	1.25 (B)				
0.33μF (334)												1.25 (B)					0.85 (9)
0.47μF (474)										0.85 (9)	1.25 (B)						1.15 (M)
0.68μF (684)										0.85 (9)							0.85 (9)
1.00μF (105)										1.25 (B)				0.85 (9)	0.85 (9)	1.15 (M)	
1.5μF (155)															1.15 (M)		

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TC	X7R (R7)																	
Part Number	GRP15				GRM18					GRM21				GRM31				
L x W [EIA]	1.00x0.50 [0402]				1.60x0.80 [0603]					2.00x1.25 [0805]				3.20x1.60 [1206]				
Rated Volt.	10 (1A)	16 (1C)	25 (1E)	50 (1H)	10 (1A)	16 (1C)	25 (1E)	50 (1H)	100 (2A)	16 (1C)	25 (1E)	50 (1H)	100 (2A)	10 (1A)	16 (1C)	25 (1E)	50 (1H)	
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)																		
2.2μF (225)															1.15 (M)	1.15 (M)		

The part numbering code is shown in each ( ).

0.10μF, 50V rated are GRM21 series of L: 2±0.15, W: 1.25±0.15, T: 1.25±0.15.

T: 1.25±0.1mm is also available for GRM31 1.0μF for 16V.

The tolerance will be changed to L: 3.2±0.2, W: 1.6±0.2 for GRM31 16V 1.0μF type. Also L: 3.2±0.2, W: 1.6±0.2, T: 1.15±0.15 for GRM31 16V 1.5μF and 2.2μF type.

Dimensions are shown in mm and Rated Voltage in Vdc.

## High Dielectric Constant Type Y5V(F5) Characteristics

TC	Y5V (F5)																		
Part Number	GRP15					GRM18					GRM21				GRM31				
L x W [EIA]	1.00x0.50 [0402]					1.60x0.80 [0603]					2.00x1.25 [0805]				3.20x1.60 [1206]				
Rated Volt.	6.3 (0J)	10 (1A)	16 (1C)	25 (1E)	50 (1H)	10 (1A)	16 (1C)	25 (1E)	50 (1H)	100 (2A)	10 (1A)	16 (1C)	25 (1E)	50 (1H)	6.3 (0J)	10 (1A)	16 (1C)	25 (1E)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)																			
2200pF (222)					0.50 (5)														
4700pF (472)					0.50 (5)					0.80 (8)									
10000pF (103)					0.50 (5)				0.80 (8)										
22000pF (223)				0.50 (5)					0.80 (8)										
47000pF (473)			0.50 (5)						0.80 (8)										
0.10μF (104)			0.50 (5)					0.80 (8)						0.85 (9)					
0.22μF (224)		0.50 (5)					0.80 (8)						0.85 (9)	1.25 (B)					
0.47μF (474)		0.50 (5)				0.80 (8)	0.80 (8)						1.25 (B)						1.15 (M)
1.0μF (105)	0.50 (5)					0.80 (8)					0.85 (9)	0.85 (9)	0.85 (9)				0.85 (9)	1.15 (M)	
2.2μF (225)											1.25 (B)	1.25 (B)	1.25 (B)			0.85 (9)	1.15 (M)		
4.7μF (475)											1.25 (B)					1.15 (M)	1.15 (M)		
10.0μF (106)															1.15 (M)	1.15 (M)			

The part numbering code is shown in each ( ).

T: 1.25±0.1mm is also available for GRM21 25V or 16V 1.0μF type.

Dimensions are shown in mm and Rated Voltage in Vdc.

## High Dielectric Constant Type Z5U(E4) Characteristics

TC	Z5U (E4)		
Part Number	GRM18	GRM21	GRM31
L x W [EIA]	1.60x0.80 [0603]	2.00x1.25 [0805]	3.20x1.60 [1206]
Rated Volt.	50 (1H)	50 (1H)	50 (1H)
Capacitance (Capacitance part numbering code) and T(mm) Dimension (T Dimension part numbering code)			
10000pF(103)	0.80(8)		
22000pF(223)	0.80(8)		
47000pF(473)		0.60(6)	
0.10μF(104)		0.85(9)	
0.22μF(224)			0.85(9)

The part numbering code is shown in ( ).  
 Dimensions are shown in mm and Rated Voltage in Vdc.