



GRM series / X7R or X5R Temp Chara.

Features

1. Terminations are made of metal highly resistant to migration.
2. Temperature characteristic : X7R (-55 - 125C, +/-15%) or X5R (-55 - 85C, +/-15%) with 50V or 25V, 16V, 10V, 6.3V.
3. No Polarity
4. Stringent dimensional tolerances allow highly reliable, high speed automatic chip placement on PCBs.
5. Replace the Tantalum chip capacitor with smaller case size.

Chip size and Capacitance range

Mass Production
 Under Development

Type	GRM18					GRM21					GRM31				
	0603					0805					1206				
WV	50	25	16	10	6.3	50	25	16	10	6.3	50	25	16	10	6.3
1000pF	X7R														
1500pF	X7R														
2200pF	X7R														
3300pF	X7R														
4700pF	X7R														
6800pF	X7R														
0.01uF	X7R														
0.015uF	X7R														
0.022uF	X7R														
0.033uF	X7R	X7R				X7R									
0.047uF	X7R	X7R				X7R									
0.068uF	X7R	X7R				X7R									
0.1uF	X7R	X7R				X7R									
0.15uF		X7R	X7R	X7R		X7R									
0.22uF	X7R	X7R	X7R	X7R		X7R									
0.33uF			X7R			X7R	X7R				X7R				
0.47uF			X7R	X5R		X7R	X7R				X7R				
0.68uF							X7R	X7R				X7R			
1uF		X5R	X5R	X5R			X7R	X7R			X7R	X7R/X5R	X7R		
2.2uF			X5R	X5R	X5R		X5R	X5R	X7R		X7R	X7R	X7R		
4.7uF					X5R		X5R	X5R	X5R			X7R	X7R/X5R	X7R/X5R	
10uF									X5R	X5R		X5R	X5R	X7R/X5R	X7R/X5R
22uF										X5R					X5R
47uF															X5R

Type	GRM32					GRM43					GRM55				
	1210					1812					2220				
WV	50	25	16	10	6.3	50	25	16	10	6.3	50	25	16	10	6.3
0.47uF															
0.68uF	X7R														
1uF	X7R														
2.2uF		X7R				X7R									
4.7uF	X7R	X5R	X7R				X7R				X7R				
10uF		X7R/X5R	X5R				X5R				X5R	X7R			
22uF		X5R	X5R	X5R	X5R			X5R	X7R						
47uF					X5R				X5R						
100uF					X5R										

CHIP MONOLITHIC CERAMIC CAPACITOR



GRM series / X7R or X5R Temp Chara.

Global Part Numbering

GR M 18 8 R7 1H 102 J A01 D
 -1- -2- -3- -4- -5- -6- -7- -8- -9- -10-

-1:-Product ID

Code	Product
GR	MLCC cap for Commercial grade

-5:-Temperature Characteristics

Code	TC	Temp. Range	Cap. Change
R7	X7R	-55 to 125C	+/-15%
R6	X5R	-55 to 85C	+/-15%

-7:-Capacitance

Code	Capacitance
103	0.01uF
105	1uF

-2:-Series

Code	Series
M	Tin Plated Termination
P	Solder Plated Termination

-8:-Capacitance Tolerance

Code	Cap. Tol.	TC
K	+/-10%	X7R/X5R
M	+/-20%	X7R/X5R

-3:-Dimension (LxW)

Code	Dimension (LxW)
15	1.0X0.5mm
18	1.6x0.8mm
21	2.0x1.25mm
31	3.2x1.6mm
32	3.2x2.5mm
43	4.5x3.2mm

-4:-Dimension (T)

Code	Dimension (T)
8	0.8mm
9	0.85mm
B	1.25mm
C	1.6mm
D	2.0mm
E	2.5mm
F	3.2mm
M	1.15mm
R	1.8mm

-6:-Rated Voltage

Code	Rated Voltage
0J	DC 6.3V
1A	DC 10V
1C	DC 16V
1E	DC 25V
1H	DC 50V

-9:-Individual Specification Code

Code	Packaging
D	φ178mm Paper Taping
L	φ178mm Plastic Taping
J	φ330mm Paper Taping
K	φ330mm Plastic Taping

-10:-Packaging

Code	Packaging
D	φ178mm Paper Taping
L	φ178mm Plastic Taping
J	φ330mm Paper Taping
K	φ330mm Plastic Taping

Size	Chip T	TC	WV	Cap	Cap Tol	Murata Global P/N	Sample	Mass Production
0603	0.8+/-0.1	X7R	50	1000pF	+/-10%	GRM188R71H102KA01D	Available	M.P.
	0.8+/-0.1	X7R	50	1500pF	+/-10%	GRM188R71H152KA01D	Available	M.P.
	0.8+/-0.1	X7R	50	2200pF	+/-10%	GRM188R71H222KA01D	Available	M.P.
	0.8+/-0.1	X7R	50	3300pF	+/-10%	GRM188R71H332KA01D	Available	M.P.
	0.8+/-0.1	X7R	50	4700pF	+/-10%	GRM188R71H472KA01D	Available	M.P.
	0.8+/-0.1	X7R	50	6800pF	+/-10%	GRM188R71H682KA01D	Available	M.P.
	0.8+/-0.1	X7R	50	0.01uF	+/-10%	GRM188R71H103KA01D	Available	M.P.
	0.8+/-0.1	X7R	50	0.015uF	+/-10%	GRM188R71H153KA01D	Available	M.P.
	0.8+/-0.1	X7R	50	0.022uF	+/-10%	GRM188R71H223KA01D	Available	M.P.
	0.8+/-0.1	X7R	50	0.033uF	+/-10%	GRM188R71H333KA61D	Available	M.P.
	0.8+/-0.1	X7R	50	0.047uF	+/-10%	GRM188R71H473KA61D	Available	M.P.
	0.8+/-0.1	X7R	50	0.068uF	+/-10%	GRM188R71H683KA93D	Available	M.P.
	0.8+/-0.1	X7R	50	0.1uF	+/-10%	GRM188R71H104KA93D	Available	M.P.
	0.8+/-0.1	X7R	50	0.22uF	+/-10%	GRM188R71H224K***D	04Q1	04Q2
	0.8+/-0.1	X7R	25	0.033uF	+/-10%	GRM188R71E333KA01D	Available	M.P.
	0.8+/-0.1	X7R	25	0.047uF	+/-10%	GRM188R71E473KA01D	Available	M.P.
	0.8+/-0.1	X7R	25	0.068uF	+/-10%	GRM188R71E683KA01D	Available	M.P.
	0.8+/-0.1	X7R	25	0.1uF	+/-10%	GRM188R71E104KA01D	Available	M.P.
	0.8+/-0.1	X7R	25	0.15uF	+/-10%	GRM188R71E154KA01D	Available	M.P.
	0.8+/-0.1	X7R	25	0.22uF	+/-10%	GRM188R71E224KA88D	Available	M.P.
	0.8+/-0.1	X5R	25	1uF	+/-10%	GRM188R61E105KA12D	Available	M.P.
	0.8+/-0.1	X7R	16	0.15uF	+/-10%	GRM188R71C154KA01D	Available	M.P.
	0.8+/-0.1	X7R	16	0.22uF	+/-10%	GRM188R71C224KA01D	Available	M.P.
	0.8+/-0.1	X7R	16	0.33uF	+/-10%	GRM188R71C334KA01D	Available	M.P.
	0.8+/-0.1	X7R	16	0.47uF	+/-10%	GRM188R71C474KA01D	Available	M.P.
	0.8+/-0.1	X7R	16	1uF	+/-10%	GRM188R71C105K***D	04Q1	04Q2
	0.8+/-0.1	X5R	16	1uF	+/-10%	GRM188R61C105KA93D	Available	M.P.
	0.8+/-0.1	X5R	16	2.2uF	+/-10%	GRM188R61C225KE15D	Available	M.P.
	0.8+/-0.1	X7R	10	0.15uF	+/-10%	GRM188R71A154KA01D	Available	M.P.
	0.8+/-0.1	X7R	10	0.22uF	+/-10%	GRM188R71A224KA01D	Available	M.P.
	0.8+/-0.1	X5R	10	0.47uF	+/-10%	GRM188R61A474KA61D	Available	M.P.
	0.8+/-0.1	X5R	10	1uF	+/-10%	GRM188R61A105KA61D	Available	M.P.
	0.8+/-0.1	X5R	10	2.2uF	+/-10%	GRM188R61A225KE34D	Available	M.P.
	0.8+/-0.1	X7R	10	2.2uF	+/-10%	GRM188R71A225K***D	04Q1	04Q2
	0.8+/-0.1	X5R	6.3	2.2uF	+/-10%	GRM188R60J225KE19D	Available	M.P.
	0.8+/-0.1	X5R	6.3	4.7uF	+/-10%	GRM188R60J475KE19D	Available	M.P.

GRM series / X7R or X5R Temp Chara.

Size	Chip T	TC	WV	Cap	Cap Tol	Murata Global P/N	Sample	Mass Production
0805	0.85+/-0.1	X7R	50	0.033uF	+/-10%	GRM219R71H333KA01D	Available	M.P.
	1.25+/-0.1	X7R	50	0.047uF	+/-10%	GRM21BR71H473KA01L	Available	M.P.
	1.25+/-0.1	X7R	50	0.068uF	+/-10%	GRM21BR71H683KA01L	Available	M.P.
	1.25+/-0.1	X7R	50	0.1uF	+/-10%	GRM21BR71H104KA01L	Available	M.P.
	1.25+/-0.1	X7R	50	0.15uF	+/-10%	GRM21BR71H154KA01L	Available	M.P.
	1.25+/-0.1	X7R	50	0.22uF	+/-10%	GRM21BR71H224KA01L	Available	M.P.
	0.85+/-0.1	X7R	50	0.33uF	+/-10%	GRM21BR71H334KA88D	Available	M.P.
	1.25+/-0.1	X7R	50	0.47uF	+/-10%	GRM21BR71H474KA88L	Available	M.P.
	1.25+/-0.1	X7R	25	0.33uF	+/-10%	GRM21BR71E334KA01L	Available	M.P.
	1.25+/-0.1	X7R	25	0.47uF	+/-10%	GRM21BR71E474KA01L	Available	M.P.
	1.25+/-0.1	X7R	25	0.68uF	+/-10%	GRM21BR71E684KA88L	Available	M.P.
	1.25+/-0.15	X7R	25	1uF	+/-10%	GRM21BR71E105KA99L	Available	M.P.
	1.25+/-0.1	X5R	25	2.2uF	+/-10%	GRM21BR61E225KA12L	Available	M.P.
	1.25+/-0.1	X5R	25	4.7uF	+/-10%	GRM21BR61E475KA12L	Available	M.P.
	0.85+/-0.1	X7R	16	0.68uF	+/-10%	GRM219R71C684KA01D	Available	M.P.
	1.25+/-0.1	X7R	16	1uF	+/-10%	GRM21BR71C105KA01L	Available	M.P.
	1.25+/-0.1	X5R	16	2.2uF	+/-10%	GRM21BR61C225KA88L	Available	M.P.
	1.25+/-0.1	X7R	16	4.7uF	+/-10%	GRM21BR71C475K***L	04Q1	04Q2
	1.25+/-0.1	X5R	16	4.7uF	+/-10%	GRM21BR61C475KA88L	Available	M.P.
	1.25+/-0.1	X7R	10	2.2uF	+/-10%	GRM21BR71A225KA01L	Available	M.P.
0.85+/-0.1	X5R	10	4.7uF	+/-10%	GRM219R61A475KE34D	Available	M.P.	
1.25+/-0.1	X5R	10	10uF	+/-10%	GRM21BR61A106KE19L	Available	M.P.	
1.25+/-0.1	X5R	6.3	10uF	+/-10%	GRM21BR60J106KE19L	Available	M.P.	
1.25+/-0.15	X5R	6.3	22uF	+/-20%	GRM21BR60J226ME39L	Available	M.P.	
1206	0.85+/-0.1	X7R	50	0.33uF	+/-10%	GRM319R71H334KA01D	Available	M.P.
	1.15+/-0.1	X7R	50	0.47uF	+/-10%	GRM31MR71H474KA01L	Available	M.P.
	1.15+/-0.1	X7R	50	1uF	+/-10%	GRM31MR71H105KA88L	Available	M.P.
	1.6+/-0.2	X7R	50	2.2uF	+/-10%	GRM31CR71H225KA88L	Available	M.P.
	0.85+/-0.1	X7R	25	0.68uF	+/-10%	GRM319R71E684KA01D	Available	M.P.
	0.85+/-0.1	X5R	25	1uF	+/-10%	GRM319R61E105KC36D	Available	M.P.
	1.15+/-0.1	X7R	25	1uF	+/-10%	GRM31MR71E105KA88L	Available	M.P.
	1.15+/-0.15	X7R	25	2.2uF	+/-10%	GRM31MR71E225KA93L	Available	M.P.
	1.6+/-0.2	X7R	25	4.7uF	+/-10%	GRM31CR71E475KA88L	Available	M.P.
	1.6+/-0.2	X5R	25	10uF	+/-10%	GRM31CR61E106KA12L	Available	M.P.
	0.85+/-0.1	X7R	16	1uF	+/-10%	GRM319R71C105KC11D	Available	M.P.
	1.15+/-0.15	X7R	16	2.2uF	+/-10%	GRM31MR71C225KA35L	Available	M.P.
	1.6+/-0.2	X7R	16	4.7uF	+/-10%	GRM31CR71C475KA01L	Available	M.P.
	1.6+/-0.2	X5R	16	4.7uF	+/-10%	GRM31CR61C475KA01L	Available	M.P.
	1.6+/-0.2	X5R	16	10uF	+/-10%	GRM31CR61C106KC31L	Available	M.P.
	1.6+/-0.2	X7R	10	4.7uF	+/-10%	GRM31CR71A475KA01L	Available	M.P.
	0.85+/-0.1	X5R	10	4.7uF	+/-10%	GRM319R61A475KA01D	Available	M.P.
	1.15+/-0.1	X5R	10	10uF	+/-10%	GRM31MR61A106KE19L	Available	M.P.
	1.6+/-0.2	X7R	10	10uF	+/-10%	GRM31CR71A106KA01L	Available	M.P.
	1.6+/-0.2	X7R	6.3	10uF	+/-10%	GRM31CR70J106KA01L	Available	M.P.
1.15+/-0.1	X5R	6.3	10uF	+/-10%	GRM31MR60J106KE19L	Available	M.P.	
1.6+/-0.2	X5R	6.3	22uF	+/-10%	GRM31CR60J226KE19L	Available	M.P.	
1.6+/-0.2	X5R	6.3	47uF	+/-20%	GRM31CR60J476ME19L	Available	M.P.	

GRM series / X7R or X5R temp chara.

Size	Chip T	TC	WV	Cap	Cap Tol	Murata Global P/N	Sample	Mass Production
1210	1.35+/-0.15	X7R	50	0.68uF	+/-10%	GRM32NR71H684KA01L	Available	M.P.
	1.8+/-0.2	X7R	50	1uF	+/-10%	GRM32RR71H105KA01L	Available	M.P.
	2.5+/-0.2	X7R	50	4.7uF	+/-10%	GRM32ER71H475KA88L	Available	M.P.
	1.8+/-0.2	X7R	25	2.2uF	+/-10%	GRM32RR71E225KC01L	Available	M.P.
	1.8+/-0.2	X5R	25	4.7uF	+/-10%	GRM32RR61E475KC31L	Available	M.P.
	2.0+/-0.2	X5R	25	10uF	+/-10%	GRM32DR61E106KA12L	Available	M.P.
	2.0+/-0.2	X7R	25	10uF	+/-10%	GRM32DR71E106KA12L	Available	M.P.
	2.5+/-0.2	X5R	25	22uF	+/-10%	GRM32ER61E226K***L	Available	04Q2
	1.8+/-0.2	X7R	16	4.7uF	+/-10%	GRM32RR71C475KC01L	Available	M.P.
	2.0+/-0.2	X5R	16	10uF	+/-10%	GRM32DR61C106KA01L	Available	M.P.
	2.5+/-0.2	X5R	16	22uF	+/-10%	GRM32ER61C226KE20L	Available	M.P.
	2.5+/-0.2	X7R	10	22uF	+/-10%	GRM32ER71A226KE20L	Available	M.P.
	2.0+/-0.2	X5R	6.3	22uF	+/-10%	GRM32DR60J226KA01L	Available	M.P.
	2.5+/-0.2	X5R	6.3	47uF	+/-20%	GRM32ER60J476ME20L	Available	M.P.
2.5+/-0.2	X5R	6.3	100uF	+/-20%	GRM32ER60J107ME20L	Available	M.P.	
1812	2.5+/-0.2	X7R	50	2.2uF	+/-10%	GRM43ER71H225KA01L	Available	M.P.
	2.5+/-0.2	X7R	25	4.7uF	+/-10%	GRM43ER71E475KA01L	Available	M.P.
	2.0+/-0.2	X5R	25	10uF	+/-10%	GRM43DR61E106KA12L	Available	M.P.
	2.5+/-0.2	X5R	16	22uF	+/-10%	GRM43ER61C226KE01L	Available	M.P.
	2.5+/-0.2	X7R	10	22uF	+/-10%	GRM43ER71A226KE01L	Available	M.P.
	2.5+/-0.2	X5R	10	47uF	+/-10%	GRM43ER61A476KE19L	Available	M.P.
2220	2.5+/-0.2	X7R	50	4.7uF	+/-10%	GRM55ER71H475KA01L	Available	M.P.
	2.0+/-0.2	X5R	50	10uF	+/-10%	GRM55DR61H106KA88L	Available	M.P.
	2.0+/-0.2	X7R	25	10uF	+/-10%	GRM55DR71E106KA01L	Available	M.P.

- 1) Above table shows only commercial grade, and it include non automotive critical application.
- 2) This is muRata's development schedule, which may change due to progress of each development works.
- 3) 03Q4 = October 03 to December 03, 04Q1 = January 04 to March 04,,,,,
- 4) Above individual specification code and packaging code were decided with muRata standard specification, and it may change due to the special requirement by customer's drawing.
- 5) "****" (Individual specification code) of under development P/N have not fixed yet.