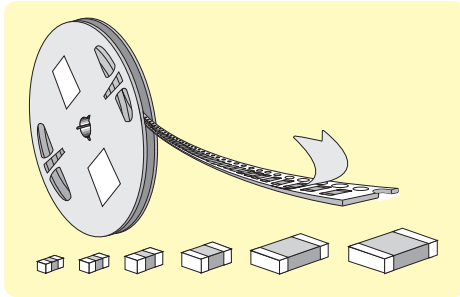


MURATA type GRM & GJ series



A range of surface mount, multilayer ceramic capacitors with increased levels of capacitance up to 100µF offering an effective alternative to tantalum devices. The components are available in a wide variety of industry standard chip sizes and manufactured with nickel barrier terminations for improved solderability. Supplied taped and reeled.



- ◆ **Effective alternative to tantalum**
- ◆ Values from **1µF to 100µF**
- ◆ Choice of dielectric **X5R, X6S, X7S, X7R** or **Y5V**
- ◆ Industry standard chip sizes : **0402, 0603, 0805, 1206, 1210, 1812 & 2220**
- ◆ Nickel barrier terminations
- ◆ Suitable for wave & reflow soldering
- ◆ Supplied taped & reeled



Specification

Working voltage	As listed
Capacitance tolerance	X5R ±10%
	X6S ±10%
	X7S ±10%
	X7R ±10%
	Y5V -20,+80%
Temperature coefficient	X5R ±15% over -55°C to +85°C
	X6S ±22% over -55°C to +105°C
	X7S ±22% over -55°C to +125°C
	X7R ±15% over -55°C to +125°C
	Y5V +22%, -82% over -30°C to +85°C
Operating temperature range	X5R -55°C to +85°C
	X6S -55°C to +105°C
	X7S -55°C to +125°C
	X7R -55°C to +125°C
	Y5V -30°C to +85°C
Insulation resistance	≥10,000MΩ or 500MΩ/µF whichever is less

Marking

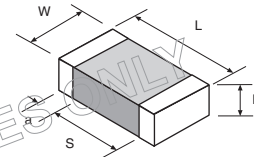
No marking appears on the product.

Packaging

TAPE : 8mm wide,
2mm pitch (0402)
4mm pitch (0603, 0805, 1206, 1210)
8mm pitch (1812, 2220)

REEL : 178mm dia.

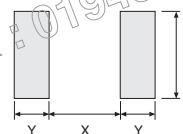
Dimensions (mm)



Chip Size	L	W	a	S
0402	1.0	0.5	0.15 min.	0.4 min.
0603	1.6	0.8	0.2 min.	0.5 min.
0805	2.0	1.25	0.2 min.	0.7 min.
1206	3.2	1.6	0.3 min.	1.5 min.
1210	3.2	2.5	0.3 min.	1.0 min.
1812	4.5	3.2	0.3 min.	2.0 min.
2220	5.7	5.0	0.3 min.	2.0 min.

Dimension H : see following page

Pad Pattern



Chip Size	X	Y	Z
0402	0.3 - 0.5	0.35 - 0.45	0.4 - 0.6
0603	0.6 - 0.8	0.6 - 0.7	0.6 - 0.8
0805	1.0 - 1.2	0.6 - 0.7	0.8 - 1.1
1206	2.2 - 2.4	0.8 - 0.9	1.0 - 1.4
1210	2.0 - 2.4	1.0 - 1.2	1.8 - 2.3
1812	3.0 - 3.5	1.2 - 1.4	2.3 - 3.0
2220	4.0 - 4.6	1.4 - 1.6	3.5 - 4.8

FOR TECHNICAL DATA REFERENCE PURPOSES ONLY

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Alternatively, contact our Sales Desk to discuss your specific requirements.

DIELECTRIC PERFORMANCE & APPLICATION

X5R/X6S/X7S/X7R: Medium K semi-stable types offering good volumetric efficiency. Used for by-pass, coupling and filtering in audio & video equipment, computers, telecommunications, etc, where moderate capacitance variations are permissible and dissipation factor is not critical.

Y5V: High K general purpose type for by-pass and decoupling applications where temperature stability is not of major importance. Offers highest volumetric efficiency.

MURATA type GRM & GJ series

Value (µF)	Dielectric	Chip Size	Chip Height H max. (mm)	Manf. Part No. & anglia Order Code	Value (µF)	Dielectric	Chip Size	Chip Height H max. (mm)	Manf. Part No. & anglia Order Code
4 Volt					16 Volt				
2.2	X7S	0603	0.9	GRM188C70G225KE20D	1.0	X5R	0603	0.5	GRM185R61C105KE43D
10	X7S	0805	1.35	GRM21BC70G106KE45L	1.0	X7R	0805	1.35	GRM21BR71C105KA01L
22	X6S	1206	1.8	GRM31CC80G226KE19L	1.0	Y5V	0805	1.35	GRM21BF51C105ZA01L
22	X7S	1206	1.8	GRM31CC70G226KE01L	1.0	X7R	1206	0.95	GRM319R71C105KC11D
6.3 Volt					2.2	X5R	0805	1.35	GRM21BR61C225KA88L
1.0	X5R	0402	0.55	GRM155R60J105KE19D	2.2	Y5V	0805	1.35	GRM21BF51C225ZA01L
1.0	X5R	0603	0.5	GRM185R60J105KE26D	2.2	X7R	1206	1.25	GRM31MR71C225KA35L
1.0	X5R	0603	0.9	GRM188R60J105KA01D	3.3	Y5V	1206	1.25	GRM31MF51C335ZA01L
1.0	X6S	0603	0.5	GRM185C80J105KE26D	4.7	X5R	1206	1.8	GRM31CR61C475KA01L
2.2	X5R	0603	0.5	GRM185R60J225KE26D	4.7	X7R	1206	1.8	GRM31CR71C475KA01L
2.2	X6S	0603	0.5	GRM185C80J225KE26D	4.7	Y5V	1206	1.25	GRM31MF51C475ZA01L
2.2	X5R	0805	1.35	GRM21BR60J225KC01L	4.7	X7R	1210	2.0	GRM32RR71C475KC01L
4.7	X5R	0603	0.9	GRM188R60J475KE19D	10	X5R	1206	1.8	GRM31CR31C106KC31L
4.7	X6S	0603	0.9	GRM188C80J475KE19D	10	Y5V	1210	1.35	GJ232NF51C106ZD01L
4.7	X5R	0805	1.35	GRM21BR60J475KA11L	10	Y5V	1210	1.35	GRM32NF51C106ZA01L
10	X5R	0805	0.95	GRM219R60J106KE19D	22	X5R	1210	2.7	GRM32ER61C226KE20L
10	X6S	0805	1.35	GRM21BC80J106KE19L	25 Volt				
10	Y5V	0805	1.35	GJ221BF50J106ZD01L	1.0	X5R	0603	0.9	GRM188R61E105KE12D
10	X5R	1206	0.95	GRM319R60J106KE19D	1.0	X5R	0805	0.7	GRM216R61E105KA12D
10	X5R	1206	1.8	GRM31CR60J106KA01L	1.0	X7R	0805	1.35	GRM21BR71E105KA99L
10	X6S	1206	0.95	GRM319C80J106KE19D	1.0	Y5V	0805	0.95	GRM219F51E105ZA01D
10	X7R	1206	1.8	GRM31CR70J106KA01L	1.0	X5R	1206	0.95	GRM319R61E105KC36D
10	Y5V	1206	1.25	GRM31MF50J106ZA01L	1.0	X7R	1206	1.25	GRM31MR71E105KC01L
22	X5R	0805	1.35	GRM21BR60J226ME39L	1.0	Y5V	1206	1.25	GRM31MF51E105ZA01L
22	X5R	1206	1.8	GRM31CR60J226KE19L	2.2	X5R	0805	0.95	GRM219R61E225KA12D
47	X5R	1206	1.8	GRM31CR60J476ME19L	2.2	X5R	1206	0.7	GRM316R61E225KA12D
100	X5R	1210	2.7	GRM32ER60J107ME20L	2.2	X7R	1206	1.25	GRM31MR71E225KA93L
100	X5R	2220	3.5	GRM55FR60J107KA01L	2.2	Y5V	1206	1.25	GRM31MF51E225ZA12L
10 Volt					4.7	X5R	0805	1.35	GRM21BR61E475KA12L
1.0	X5R	0603	0.5	GRM185R61A105KE36D	4.7	X5R	1206	0.95	GRM319R61E475KA12D
1.0	X7S	0603	0.9	GRM188C71A105KA12D	4.7	X7R	1206	1.8	GRM31CR71E475KA88L
1.0	Y5V	0603	0.9	GRM188F51A105ZC01D	4.7	X5R	1210	2.0	GRM31BR71E105KA99L
1.0	X7R	0805	1.35	GRM21BR71A105KA01L	4.7	X7R	1812	2.7	GRM43ER71E475KA01L
2.2	X5R	0603	0.9	GRM188R61A225KE34D	10	X5R	1206	1.8	GRM31CR61E106KA12L
2.2	X7R	0805	1.35	GRM21BR71A225KA01L	10	X5R	1210	2.2	GRM32DR61E106KA12L
2.2	X5R	1206	0.95	GRM319R61A225KA01D	10	X7R	1210	2.2	GRM32DR71E106KA12L
2.2	X7R	1206	1.25	GRM31MR71A225KA01L	10	Y5V	1210	2.0	GJ232RF51E106ZD01L
3.3	Y5V	1206	0.95	GRM319F51A335ZA01D	10	X5R	1812	2.2	GRM43DR61E106KA01L
4.7	X5R	0805	0.95	GRM219R61A475KE34D	50 Volt				
4.7	X7S	0805	1.35	GRM21BC71A475KA73L	1.0	X7R	1206	1.25	GRM31MR71H105KA88L
4.7	Y5V	0805	1.35	GRM21BF51A475ZA01L	1.0	X7R	1210	2.0	GRM32RR71H105KA01L
4.7	X5R	1206	0.7	GRM316R61A475KE19D	2.2	X7R	1206	1.8	GRM31CR71H225KA88L
4.7	X7R	1206	1.8	GRM31CR71A475KA01L	4.7	X7R	1210	2.7	GRM32ER71H475KA88L
10	X5R	0805	1.35	GRM21BR61A106KE19L	4.7	Y5V	1210	2.0	GJ232RF51H475ZD01L
10	X5R	1206	0.95	GRM319R61A106KE19D	4.7	X7R	2220	2.7	GRM55ER71H475KA01L
10	X5R	1206	1.25	GRM31MR61A106KE19L	10	X5R	2220	2.2	GRM55DR61H106KA88L
10	X6S	1206	1.25	GRM31MC81A106KE18L	100 Volt				
10	X7R	1206	1.8	GRM31CR71A106KA01L	1.0	X7R	1210	2.7	GRM32ER72A105KA01L
10	Y5V	1206	1.25	GRM31MF51A106ZA01L	1.0	Y5V	1210	2.0	GJ232RF52A105ZD01L
10	X5R	1210	2.7	GRM32ER61A106KC01L	2.2	X7R	1812	2.7	GRM43ER72A225KA01L
22	X7R	1210	2.7	GRM32ER71A226KE20L	4.7	X7R	2220	2.7	GRM55ER72A475KA01L
22	Y5V	1210	1.35	GJ232NF51A226ZD01L					
47	X5R	1812	2.7	GRM43ER61A476KE19L					