

## Soft Termination Capacitor ~ GCJ series ~

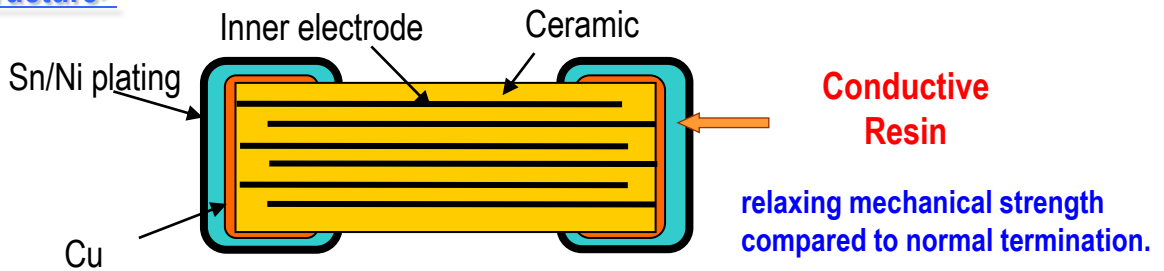
### GENERAL DESCRIPTION

Requirements especially enhanced mechanical strength from the automotive customers to us are increasing. It was noted that many components may be subject to severe flexing, vibration, and thermal condition when used in various under the bonnet automotive applications. MURATA designed GCJ series to enhance more mechanical flexure strength in comparison with standard ceramic capacitor.

### FEATURES

1. Bending performance is better than normal design.
2. Conductive resin between Cu electrode and Ni/Sn plating to enhance more mechanical flexure strength
3. GCJ series is RoHS compliant.

#### <Structure>



#### Global Part Numbering



#### -1-:Product ID

Code	Product
GC	MLCC for automotive

#### -2-:Series

Code	Product
J	Soft Termination

#### -3-:Dimension (LxW)

Code	Dimension (LxW)
18	1.6x0.8mm (EIA:0603)
21	2.0x1.25mm (EIA:0805)
31	3.2x1.6mm (EIA:1206)
32	3.2x2.5mm (EIA:1210)

#### -4-:Dimension (T)

Code	Dimension (T)
5	0.5mm
6	0.6mm
8	0.8mm
9	0.85mm
A	1.0mm
M	1.15mm
B	1.25mm
N	1.35mm
C	1.6mm
R	1.8mm
D	2.0mm
E	2.5mm

#### -5-:Temperature Characteristics

Code	TC	Temp. Range	Cap. Change	Operating Temp.
R7	X7R	-55 to 125C	+/-15%	-55 to 125C
C7	X7S		+/-22%	

#### -6-:Rated Voltage

Code	Rated Voltage
0G	DC 4V
0J	DC 6.3V
1A	DC 10V
1C	DC 16V
1E	DC 25V
1H	DC 50V

#### -8-:Capacitance Tolerance

Code	Cap. Tol.	TC
K	+/-10%	X7_, X6S, X5R
M	+/-20%	X7_, X6S, X5R

#### -9-:Individual Specification Code

#### -7-:Capacitance

Code	Capacitance
102	1,000pF
103	0.01uF
104	0.1uF
105	1uF
106	10uF

#### -10-:Packaging

Code	Packaging
D	φ 180mm Paper Taping
L	φ 180mm Embossed Taping
J	φ 330mm Paper Taping
K	φ 330mm Embossed Taping

# Soft Termination Capacitor ~ GCJ series ~

## <CHIP SIZE and CAPACITANCE RANGE>

■ M.P.    
 ■ Under development (~11Q1 Jan.~Mar.)    
 ■ Under development (~11Q4 Oct.~Dec.)

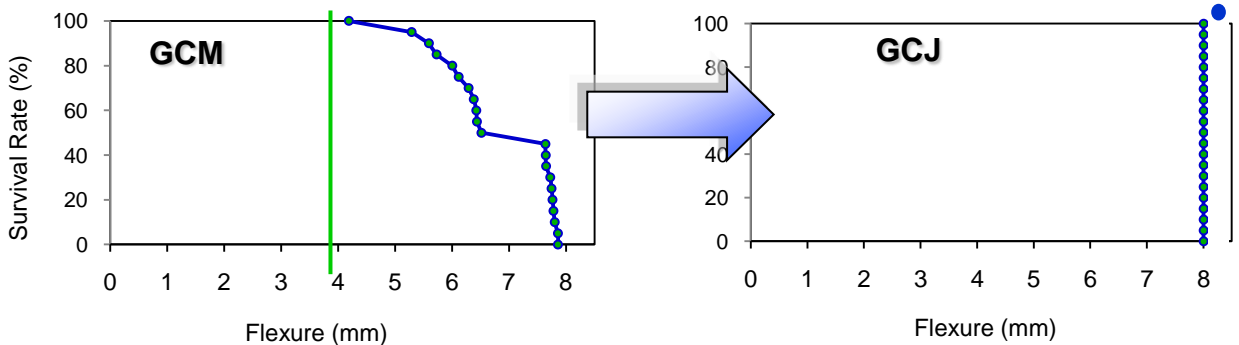
Type	Size	WV	Capacitance Range					
			1nF	10nF	100nF	1uF	10uF	
GCJ18	0603	100	[Blue blocks]					1nF-22nF
		50	[Blue blocks]					1nF-100nF(150nF-220nF)
		25	[Blue blocks]					33nF, 47nF, 220nF(470nF)
		16	[Blue blocks]					68nF, 100nF, 330nF-470nF
GCJ21	0805	100	[Blue blocks]					1nF-100nF
		50	[Blue blocks]					1nF-470nF
		25	[Blue blocks]					330nF-1uF(1.5uF- 2.2uF)
		16	[Blue blocks]					1uF(1.5uF-2.2uF)
		10	[Blue blocks]					3.3uF-4.7uF
GCJ31	1206	100	[Blue blocks]					100nF-220nF
		50	[Blue blocks]					100nF-2.2uF
		25	[Blue blocks]					1uF-4.7uF
		10	[Blue blocks]					4.7uF-10uF
GCJ32	1210	100	[Blue blocks]					(2.2uF)
		50	[Blue blocks]					(1uF)4.7uF
		25	[Blue blocks]					10uF
		16	[Blue blocks]					(22uF)

## Performance Comparison between Soft termination and Standard design

### <Bending Strength>

A capacitor is soldered to the printed circuit board and is bent up to 8 mm at 1mm per second. The judging method whether a capacitor is broken by bending strength is depending on capacitance change -10%. The below diagram is comparison of bending strength between Soft termination and Normal design. Soft termination has more bending strength than Normal design.

### 1206 size/2.2uF Comparison between GCM and GCJ



[ 8mm of board bending is limit of bending measurement machine.]

## Soft Termination Capacitor ~ GCJ series ~

### Murata P/N List < 0603 size / X7R >

Size	Chip T (mm)	TC	WV	Cap	Cap Tol	Murata Global P/N	Sample	M.P.
0603	0.8±0.1	X7R	100	1,000pF	+/-10%	GCJ188R72A102KA01D	Available	Mass Production
	0.8±0.1	X7R		1,500pF	+/-10%	GCJ188R72A152KA01D	Available	Mass Production
	0.8±0.1	X7R		2,200pF	+/-10%	GCJ188R72A222KA01D	Available	Mass Production
	0.8±0.1	X7R		3,300pF	+/-10%	GCJ188R72A332KA01D	Available	Mass Production
	0.8±0.1	X7R		4,700pF	+/-10%	GCJ188R72A472KA01D	Available	Mass Production
	0.8±0.1	X7R		6,800pF	+/-10%	GCJ188R72A682KA01D	Available	Mass Production
	0.8±0.1	X7R		0.01μF	+/-10%	GCJ188R72A103KA01D	Available	Mass Production
	0.8±0.1	X7R		0.015μF	+/-10%	GCJ188R72A153KA01D	Available	Mass Production
	0.8±0.1	X7R		0.022μF	+/-10%	GCJ188R72A223KA01D	Available	Mass Production
	0.8±0.1	X7R		1,000pF	+/-10%	GCJ188R71H102KA01D	Available	Mass Production
	0.8±0.1	X7R	1,500pF	+/-10%	GCJ188R71H152KA01D	Available	Mass Production	
	0.8±0.1	X7R	2,200pF	+/-10%	GCJ188R71H222KA01D	Available	Mass Production	
	0.8±0.1	X7R	3,300pF	+/-10%	GCJ188R71H332KA01D	Available	Mass Production	
	0.8±0.1	X7R	4,700pF	+/-10%	GCJ188R71H472KA01D	Available	Mass Production	
	0.8±0.1	X7R	6,800pF	+/-10%	GCJ188R71H682KA01D	Available	Mass Production	
	0.8±0.1	X7R	0.01μF	+/-10%	GCJ188R71H103KA01D	Available	Mass Production	
	0.8±0.1	X7R	0.015μF	+/-10%	GCJ188R71H153KA01D	Available	Mass Production	
	0.8±0.1	X7R	0.022μF	+/-10%	GCJ188R71H223KA01D	Available	Mass Production	
	0.8±0.1	X7R	0.033μF	+/-10%	GCJ188R71H333KA12D	Available	Mass Production	
	0.8±0.1	X7R	0.047μF	+/-10%	GCJ188R71H473KA12D	Available	Mass Production	
	0.8±0.1	X7R	0.068μF	+/-10%	GCJ188R71H683KA12D	Available	Mass Production	
	0.8±0.1	X7R	0.1μF	+/-10%	GCJ188R71H104KA12D	Available	Mass Production	
	0.8±0.1	X7R	0.15μF	+/-10%	GCJ188R71H154K****	11Q4	11Q4	
	0.8±0.1	X7R	0.22μF	+/-10%	GCJ188R71H224K****	11Q4	11Q4	
	0.8±0.1	X7R	0.033μF	+/-10%	GCJ188R71E333KA01D	Available	Mass Production	
	0.8±0.1	X7R	0.047μF	+/-10%	GCJ188R71E473KA01D	Available	Mass Production	
	0.8±0.1	X7R	0.22μF	+/-10%	GCJ188R71E224KA12D	Available	Mass Production	
	0.8±0.1	X7R	0.47μF	+/-10%	GCJ188R71E474K****	11Q4	11Q4	
	0.8±0.1	X7R	0.068μF	+/-10%	GCJ188R71C683KA01D	Available	Mass Production	
	0.8±0.1	X7R	0.1μF	+/-10%	GCJ188R71C104KA01D	Available	Mass Production	
	0.8±0.1	X7R	0.33μF	+/-10%	GCJ188R71C334KA01D	Available	Mass Production	
	0.8±0.1	X7R	0.47μF	+/-10%	GCJ188R71C474KA12D	Available	Mass Production	

1) “\*” of under development P/N have not fixed yet.

2) Q1 = January to March, Q2 = April to June, Q3 = July to September, Q4 = October to December

3) This is muRata’s development schedule, which may change due to progress of each development works.

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.

## Soft Termination Capacitor ~ GCJ series ~

Murata P/N List < 0805 size / X7R >

Size	Chip T (mm)	TC	WV	Cap	Cap Tol	Murata Global P/N	Sample	M.P.	
0805	0.6+/-0.1	X7R	100	1,000pF	+/-10%	GCJ216R72A102KA01D	Available	Mass Production	
	0.6+/-0.1	X7R		1,500pF	+/-10%	GCJ216R72A152KA01D	Available	Mass Production	
	0.6+/-0.1	X7R		2,200pF	+/-10%	GCJ216R72A222KA01D	Available	Mass Production	
	0.6+/-0.1	X7R		3,300pF	+/-10%	GCJ216R72A332KA01D	Available	Mass Production	
	0.6+/-0.1	X7R		4,700pF	+/-10%	GCJ216R72A472KA01D	Available	Mass Production	
	0.6+/-0.1	X7R		6,800pF	+/-10%	GCJ216R72A682KA01D	Available	Mass Production	
	0.6+/-0.1	X7R		0.01μF	+/-10%	GCJ216R72A103KA01D	Available	Mass Production	
	0.6+/-0.1	X7R		0.015μF	+/-10%	GCJ216R72A153KA01D	Available	Mass Production	
	0.6+/-0.1	X7R		0.022μF	+/-10%	GCJ216R72A223KA01D	Available	Mass Production	
	0.85+/-0.1	X7R		0.033μF	+/-10%	GCJ219R72A333KA01D	Available	Mass Production	
	1.25+/-0.1	X7R		0.047μF	+/-10%	GCJ21BR72A473KA01L	Available	Mass Production	
	1.25+/-0.1	X7R		0.068μF	+/-10%	GCJ21BR72A683KA01L	Available	Mass Production	
	1.25+/-0.1	X7R		0.1μF	+/-10%	GCJ21BR72A104KA01L	Available	Mass Production	
	0.6+/-0.1	X7R		50	1,000pF	+/-10%	GCJ216R71H102KA01D	Available	Mass Production
	0.6+/-0.1	X7R			1,500pF	+/-10%	GCJ216R71H152KA01D	Available	Mass Production
	0.6+/-0.1	X7R	2,200pF		+/-10%	GCJ216R71H222KA01D	Available	Mass Production	
	0.6+/-0.1	X7R	3,300pF		+/-10%	GCJ216R71H332KA01D	Available	Mass Production	
	0.6+/-0.1	X7R	4,700pF		+/-10%	GCJ216R71H472KA01D	Available	Mass Production	
	0.6+/-0.1	X7R	6,800pF		+/-10%	GCJ216R71H682KA01D	Available	Mass Production	
	0.6+/-0.1	X7R	0.01μF		+/-10%	GCJ216R71H103KA01D	Available	Mass Production	
	0.6+/-0.1	X7R	0.015μF		+/-10%	GCJ216R71H153KA01D	Available	Mass Production	
	0.6+/-0.1	X7R	0.022μF		+/-10%	GCJ216R71H223KA01D	Available	Mass Production	
	0.85+/-0.1	X7R	0.033μF		+/-10%	GCJ219R71H333KA01D	Available	Mass Production	
	1.25+/-0.1	X7R	0.047μF		+/-10%	GCJ21BR71H473KA01L	Available	Mass Production	
	1.25+/-0.1	X7R	0.068μF		+/-10%	GCJ21BR71H683KA01L	Available	Mass Production	
	1.25+/-0.1	X7R	0.1μF		+/-10%	GCJ21BR71H104KA01L	Available	Mass Production	
	1.25+/-0.1	X7R	0.15μF		+/-10%	GCJ21BR71H154KA01L	Available	Mass Production	
	1.25+/-0.1	X7R	0.22μF		+/-10%	GCJ21BR71H224KA01L	Available	Mass Production	
	0.85+/-0.1	X7R	0.33μF	+/-10%	GCJ219R71H334KA12D	Available	Mass Production		
	1.25+/-0.1	X7R	0.47μF	+/-10%	GCJ21BR71H474KA12L	Available	Mass Production		
	0.85+/-0.1	X7R	25	0.33μF	+/-10%	GCJ219R71E334KA01D	Available	Mass Production	
	0.85+/-0.1	X7R		0.47μF	+/-10%	GCJ219R71E474KA12D	Available	Mass Production	
	1.25+/-0.1	X7R		0.68μF	+/-10%	GCJ21BR71E684KA12L	Available	Mass Production	
	1.25+/-0.1	X7R		1μF	+/-10%	GCJ21BR71E105KA12L	Available	Mass Production	
	1.25+/-0.1	X7R		1.5μF	+/-10%	GCJ21BR71E155K****	11Q4	11Q4	
	1.25+/-0.1	X7R		2.2μF	+/-10%	GCJ21BR71E225K****	11Q4	11Q4	
	0.85+/-0.1	X7R	16	1μF	+/-10%	GCJ219R71C105KA01D	Available	Mass Production	
	1.25+/-0.1	X7R		1.5μF	+/-10%	GCJ21BR71C155KA01L	Available	Mass Production	
	1.25+/-0.1	X7R		2.2μF	+/-10%	GCJ21BR71C225KA13L	Available	Mass Production	
	1.25+/-0.1	X7R		3.3μF	+/-10%	GCJ21BR71C335K****	11Q4	11Q4	
	1.25+/-0.1	X7R		4.7μF	+/-10%	GCJ21BR71C475K****	11Q4	11Q4	

1) “\*” of under development P/N have not fixed yet.

2) Q1 = January to March, Q2 = April to June, Q3 = July to September, Q4 = October to December

3) This is muRata’s development schedule, which may change due to progress of each development works.

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.

## Soft Termination Capacitor ~ GCJ series ~

### Murata P/N List < 1206 size / X7R >

Size	Chip T (mm)	TC	WV	Cap	Cap Tol	Murata Global P/N	Sample	M.P.
1206	0.85+/-0.1	X7R	100	0.1μF	+/-10%	GCJ319R72A104KA01D	Available	Mass Production
	1.15+/-0.1	X7R		0.15μF	+/-10%	GCJ31MR72A154KA01L	Available	Mass Production
	1.15+/-0.1	X7R		0.22μF	+/-10%	GCJ31MR72A224KA01L	Available	Mass Production
	0.85+/-0.1	X7R	50	0.1μF	+/-10%	GCJ319R71H104KA01D	Available	Mass Production
	1.15+/-0.1	X7R		0.15μF	+/-10%	GCJ31MR71H154KA01L	Available	Mass Production
	1.15+/-0.1	X7R		0.22μF	+/-10%	GCJ31MR71H224KA01L	Available	Mass Production
	1.15+/-0.1	X7R		0.33μF	+/-10%	GCJ31MR71H334KA01L	Available	Mass Production
	1.15+/-0.1	X7R		0.47μF	+/-10%	GCJ31MR71H474KA01L	Available	Mass Production
	1.15+/-0.1	X7R		0.68μF	+/-10%	GCJ31MR71H684KA12L	Available	Mass Production
	1.15+/-0.1	X7R		1μF	+/-10%	GCJ31MR71H105KA12L	Available	Mass Production
	1.6+/-0.2	X7R		1.5μF	+/-10%	GCJ31CR71H155KA12L	Available	Mass Production
	1.6+/-0.2	X7R		2.2μF	+/-10%	GCJ31CR71H225KA12L	Available	Mass Production
	1.15+/-0.1	X7R		25	1μF	+/-10%	GCJ31MR71E105KA01L	Available
	1.15+/-0.1	X7R	1.5μF		+/-10%	GCJ31MR71E155KA12L	Available	Mass Production
	1.15+/-0.1	X7R	2.2μF		+/-10%	GCJ31MR71E225KA12L	Available	Mass Production
	1.15+/-0.1	X7R	3.3μF		+/-10%	GCJ31MR71E335KA12L	Available	Mass Production
	1.6+/-0.2	X7R	4.7μF		+/-10%	GCJ31CR71E475KA12L	Available	Mass Production
	1.6+/-0.2	X7R	10		6.8μF	+/-10%	GCJ31CR71A685KA13L	Available
	1.6+/-0.2	X7R		10μF	+/-10%	GCJ31CR71A106KA13L	Available	Mass Production

1) “\*” of under development P/N have not fixed yet.

2) Q1 = January to March, Q2 = April to June, Q3 = July to September, Q4 = October to December

3) This is muRata’s development schedule, which may change due to progress of each development works.

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.

## Soft Termination Capacitor ~ GCJ series ~

## Murata P/N List &lt; 1210 size / X7R &gt;

Size	Chip T (mm)	TC	WV	Cap	Cap Tol	Murata Global P/N	Sample	M.P.
1210	2.0+/-0.2	X7R	100	2.2 $\mu$ F	+/-10%	GCJ32DR72A225K****	11Q1	11Q1
	2.5+/-0.2	X7R	50	4.7 $\mu$ F	+/-10%	GCJ32ER71H475KA12L	Available	Mass Production
	2.5+/-0.2	X7R	25	10 $\mu$ F	+/-10%	GCJ32ER71E106KA12L	Available	Mass Production
	2.5+/-0.2	X7R	16	22 $\mu$ F	+/-10%	GCJ32ER71C226K****	11Q4	11Q4

1) "\*" of under development P/N have not fixed yet.

2) Q1 = January to March, Q2 = April to June, Q3 = July to September, Q4 = October to December

3) This is muRata's development schedule, which may change due to progress of each development works.

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.