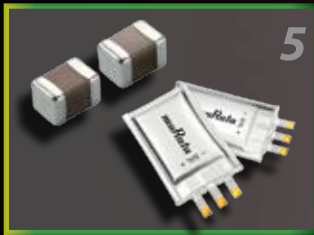


Target Products 2013

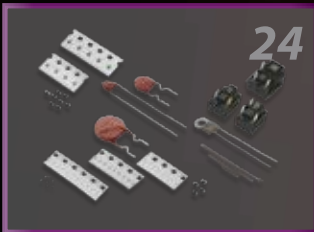
Capacitors



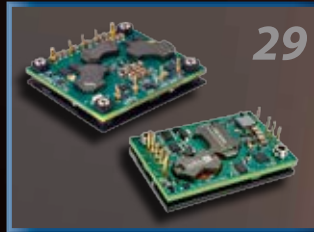
Inductors



Thermistors



Power Supplies



Sensors



MAGICSTRAP®



Sounders



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Contents

Capacitors

EDLC ● 5

Super Capacitors

Wide range, high reliability, energy storage device

5



KRM, KR3 ● 6-7

Metal Termination Caps

High reliability, immune to PCB flexure

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MKV ● 8-12

MKV Chip and Leaded Capacitors

Safety standard certificated / High voltage

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ECAS ● 13

Polymer Capacitors

High capacitance conductive polymer caps

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Hi-Capacitor Range Chart

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Chip Ferrite Beads

High current ferrite beads

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Wire wound inductors for power lines

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Thermistors

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MAGICSTRAP® to RFID

Creating & Protecting Value in Electronics

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µDC-DC Converter

EMI suppression & reduced harmonic noise

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DC-DC for Transportation

Developed for railway applications

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MEJ2 DC-DC Converter

Extends power rating of 5.2 kV isolation

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PAQ, PAH ● 38

DC-DC for Power Amplifiers

Developed for power amplifiers

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EMH ● 39

Power-over-ethernet

Efficient POE for 24/48/60V Battery Systems

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ULT ● 40-41

DC-DC Converter

High power density, 1/32 brick

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Contents

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DC-DC Converter
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Digital Accelerometers
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Piezo Sounders
For Beeper of mobile terminals

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Super capacitors EDLC

Wide range, high reliability, energy storage device

Part Number

- DMT series for tougher lifetime needs
- DMF series with low resistance, higher power density

Features

- **Small slim and robust package:**
DMF: 14mm x 21mm, DMT 14mm x 30mm, depending on cap value, height also depends on cap value
- **High power:** Very low ESR and high peak rated voltage
- **High energy:** High rated and large capacitance
- **Wide operation temperature range:**
DMF -30°C to 70°C
DMT -30°C to 85°C
- **Low ESR at low temperature**
- **Long cycle life up to 1000k cycles**
- **High peak pulse output**

Benefits

- **A Simple storage system without chemical reactions**
"Very High Cycle Life " because of no chemical reactions and potential for "High speed response" by proper design
"Smallest low ESR Capacitor product in the market"
- **Lowest cost per unit capacitance (about 100-500X cheaper than conventional capacitors)**
Almost always Activated Carbon is used as the electrode and because of its extremely high specific surface area and relatively cheap cost, ultra high capacitances are possible in a small package at affordable prices.

Applications

- **Various battery assist functions :**
LED Flash (Peak assist)
Smart Meters (Levelling assist)
Motor applications (Peak assist)
SSD (Back up)



Lead time

8-10 weeks with forecast information.
This will be improved when products run constantly.

Minimum order qty

3K or 5K pcs/order (3K or 5K pcs/reel)

Mass Production

DMF series: Started
DMT series: Starting July 13th 2013

Appearance

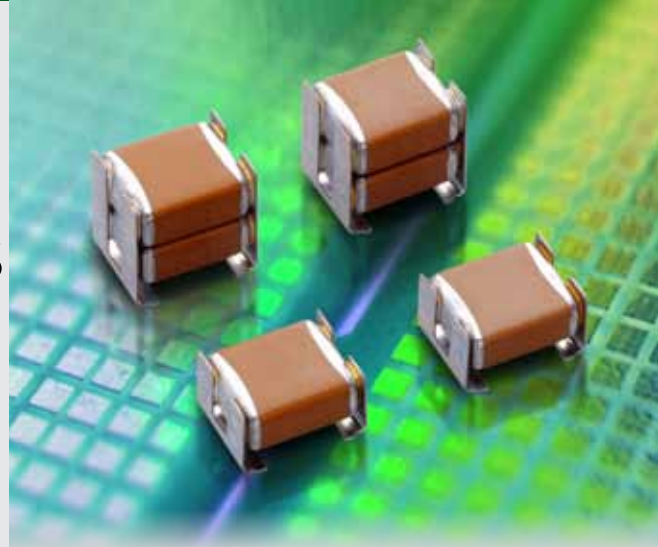


DMF series



Metal Termination Capacitors KRM, KR3 series

High reliability, achieve major acoustic noise reduction and are immune to PCB flexure



Background

Due to the high reliability requirements from the market, mounting issues are becoming more critical, especially for large case size MLCC. Why?

- Solder cracking after heat shock cycle
- Ceramic cracking because of board bending
- Acoustic noise.

Benefits

- High reliability for thermal & mechanical stress.
- Space saving & High capacitance value by stacking two MLCC.
- Reduce acoustic noise caused by ceramic vibration.

Unique Selling Points

- High reliability for thermal & mechanical stress
- High capacitance value by stacking two MLCC
- Unique Terminal design to reduce acoustic noise problem efficiently

Applications

- DC-DC converter, Noise suppression

Dimensions

Series	Appearance	Chip Size LxWxT (mm)	Dimensions (mm)		
			L	W	T
KRM55* KR355* (Single Chip)		5.7x5.0x2.0	6.1 ± 0.4	5.3 ± 0.2	2.8 ± 0.2
		5.7x5.0x2.7	6.1 ± 0.4	5.3 ± 0.2	3.7 ± 0.2
KRM55* KR355* (Double Chip)		5.7x5.0x2.0	6.1 ± 0.4	5.3 ± 0.2	4.8 ± 0.2
		5.7x5.0x2.7	6.1 ± 0.4	5.3 ± 0.2	6.4 ± 0.3

Series	LW size (mm)	Temp. Char.	Rated Voltage	Type	Capacitance Three digit												
					684	105	155	225	335	475	685	106	156	226	336	476	
KRM	6.1x5.3	X7R	DC25V	1													
				2													
			DC50V	1													
				2													
			DC63V	1													
				2													
			DC100V	1													
				2													
					683	104	154	224	334	474	684	105	155	225	335	475	
KRM	6.1x5.3	X7R	DC250V	1													
				2													
			DC630V	1													
				2													
			DC1KV	1													
				2													
			DC250V	1													
				2													
KR3	6.1x5.3	X7T	DC450V	1							564						
				2								125					
			DC630V	1					274								
				2								564					
KA2	6.1 x 5.3	X7R	AC250Vrms	1													
				2													

Samples Available
 Mass Production Started

Metal Termination Capacitors KRM, KR3 series

High reliability, achieve major acoustic noise reduction and are immune to PCB flexure



Rated Voltage	LW size (mm)	Height (mm)	Type	Temp. Char.	Cap.	Cap. Tol.	Murata P.N.
DC25V	6.1x5.3	2.8	1	X7R	15uF	±10%	KRM55LR71E156KH01K
		3.7	1	X7R	22uF	±10%	KRM55QR71E226KH01K
		4.8	2	X7R	33uF	±20%	KRM55TR71E336MH01K
		6.4	2	X7R	47uF	±20%	KRM55WR71E476MH01K
DC50V	6.1x5.3	2.8	1	X7R	4.7uF	±10%	KRM55LR71H475KH01K
		3.7	1	X7R	10uF	±10%	KRM55QR71H106KH01K
		6.4	2	X7R	22uF	±20%	KRM55WR71H226MH01K
DC63V	6.1x5.3	2.8	1	X7R	4.7uF	±10%	KRM55LR71J475KH01K
		3.7	1	X7R	10uF	±10%	KRM55QR71J106KH01K
		6.4	2	X7R	22uF	±20%	KRM55WR71J226MH01K
DC100V	6.1x5.3	2.8	1	X7R	4.7uF	±10%	KRM55LR72A475KH01K
		3.7	1	X7R	6.8uF	±10%	KRM55QR72A685KH01K
		4.8	2	X7R	10uF	±20%	KRM55TR72A106MH01K
		6.4	2	X7R	15uF	±20%	KRM55WR72A156MH01K
DC250V	6.1x5.3	2.8	1	X7R	0.33uF	±10%	KRM55LR72E334K****
		2.8	1	X7R	0.47uF	±10%	KRM55LR72E474K****
		2.8	1	X7R	1uF	±10%	KRM55LR72E105K****
		4.8	2	X7R	2.2uF	±20%	KRM55TR72E225K****
		2.8	1	X7T	0.47uF	±10%	KR355LD72E474K****
		3.7	1	X7T	1uF	±10%	KR355QD72E105K****
		6.4	2	X7T	2.2uF	±20%	KR355WD72E225M****
DC450V	6.1x5.3	2.8	1	X7T	0.22uF	±10%	KR355LD72W224K****
		2.8	1	X7T	0.47uF	±10%	KR355LD72W474K****
		3.7	1	X7T	0.56uF	±10%	KR355QD72W564K****
		4.8	2	X7T	1uF	±20%	KR355TD72W105M****
		6.4	2	X7T	1.2uF	±20%	KR355WD72W125M****
DC630V	6.1x5.3	2.8	1	X7R	0.15uF	±10%	KRM55LR72J154K****
		2.8	1	X7R	0.22uF	±10%	KRM55LR72J224K****
		4.8	2	X7R	0.33uF	±20%	KRM55TR72J334M****
		4.8	2	X7R	0.47uF	±20%	KRM55TR72J474M****
		2.8	1	X7T	0.1uF	±10%	KR355LD72J104K****
		2.8	1	X7T	0.15uF	±10%	KR355LD72J154K****
		3.7	1	X7T	0.22uF	±10%	KR355QD72J224K****
		3.7	1	X7T	0.27uF	±10%	KR355QD72J274K****
		6.4	2	X7T	0.47uF	±20%	KR355WD72J474M****
		6.4	2	X7T	0.56uF	±20%	KR355WD72J564M****
		DC1kV	6.1x5.3	2.8	1	X7R	0.1uF
4.8	2			X7R	0.22uF	±20%	KRM55TR73A224M****
AC250Vrms	6.1x5.3	2.8	1	X7R	0.1uF	±20%	KA255LR7E2104M****
		4.8	2	X7R	0.22uF	±20%	KA255TR7E224M****

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.

Minimum order qty

KRM55LR72A475KH01K – 2000pcs (330mm Embossed Tape)
 KRM55QR71E226KH01K – 1000pcs (330mm Embossed Tape)
 KRM55QR71H106KH01K – 1000pcs (330mm Embossed Tape)
 KRM55QR71J106KH01K – 1000pcs (330mm Embossed Tape)
 KRM55TR72A106MH01K – 1000pcs (330mm Embossed Tape)
 KRM55WR71E476MH01K – 500pcs (330mm Embossed Tape)
 KRM55WR71H226MH01K – 500pcs (330mm Embossed Tape)
 KRM55WR71J226MH01K – 500pcs (330mm Embossed Tape)

Samples

- Available

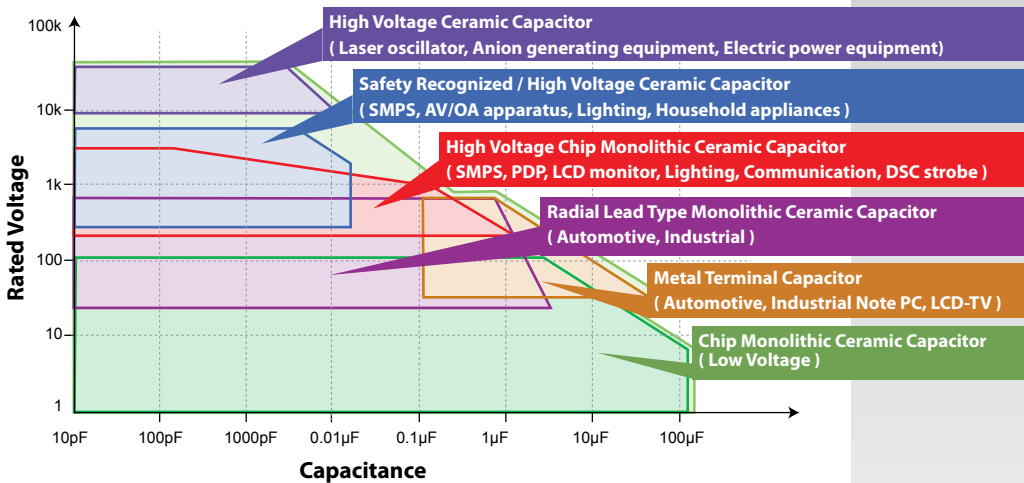
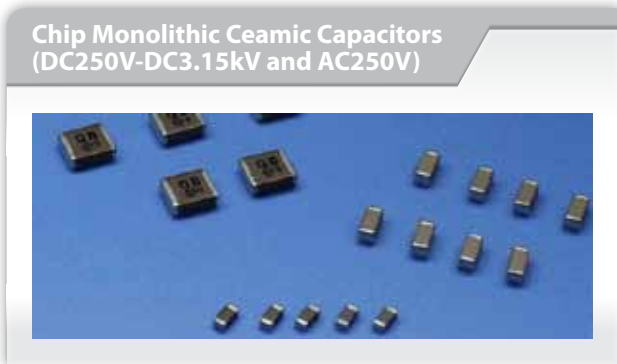
Mass Production

- Started



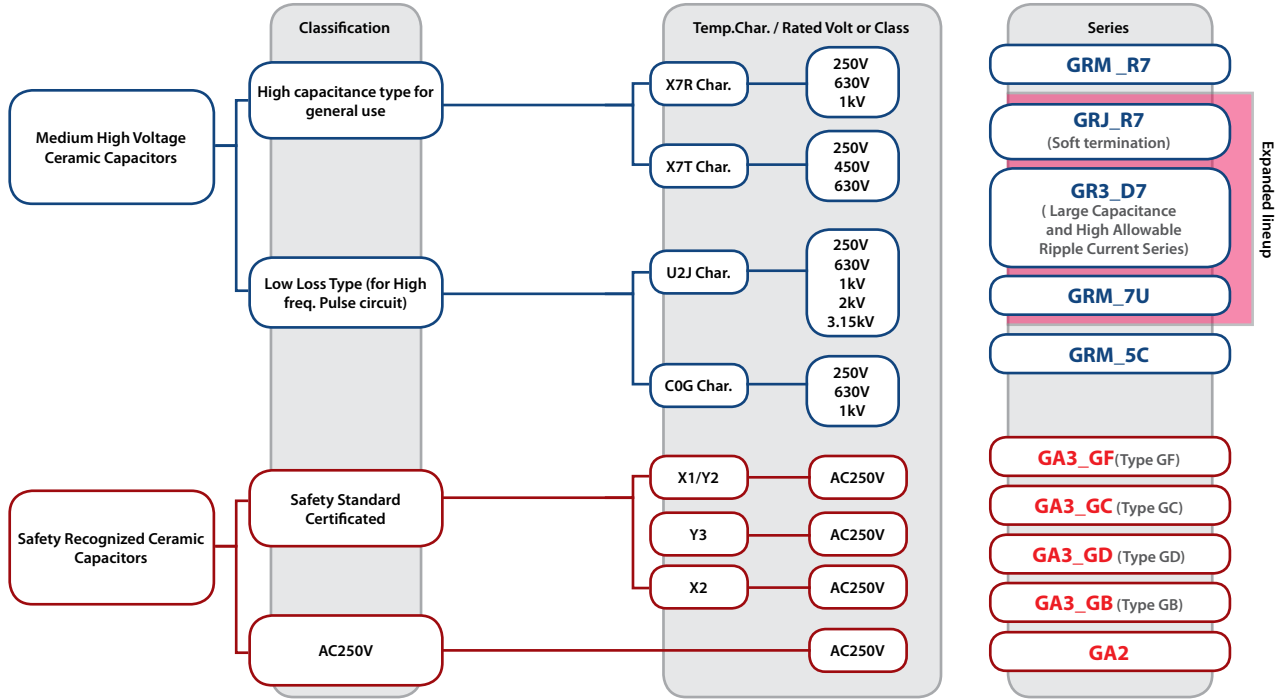
MKV chip and leaded Capacitors

Safety standard certificated / High voltage chip capacitors



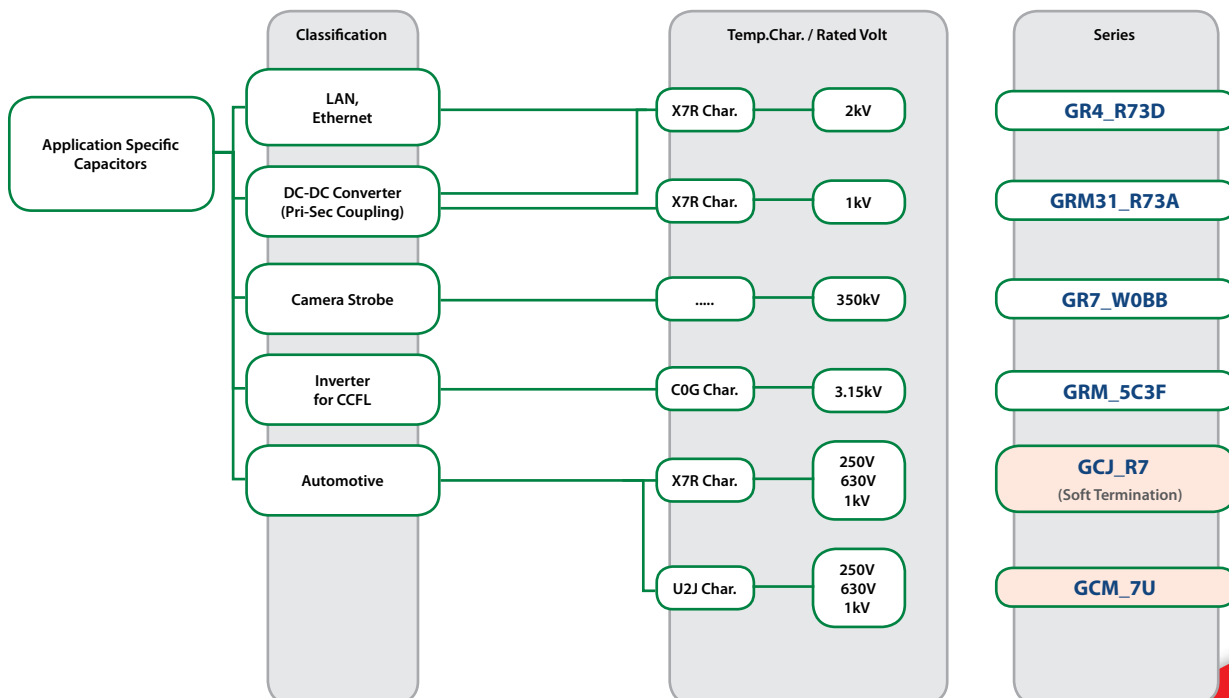
Safety Standard Certificated / High Voltage Chip Capacitors

Classification and Series (for General Use)



Safety Standard Certificated / High Voltage Chip Capacitors

Classification and Series (Application Specific)





Safety Standard Certificated / High Voltage Leaded Capacitors

Technology Trend - Safety Standard Certificated / High Voltage Ceramic Capacitors

Downsizing

1. Safety Recognized Capacitor

- Type KX: Downsizing
- Type KY: New line-up
(VA item for Type KH)

2. Small Type

- DEF series
(than DEC series)

3. High Allowable Power Capacity

- DES series



**Safety Recognized /
High Voltage Ceramic
Capacitors**

Technical Support

Development of "Capacitor selection Tool" for the high frequency pulse circuit

▶ Available at: http://www.murata.com/products/design_support/index.html

Green Products

1. RoHS Compliance

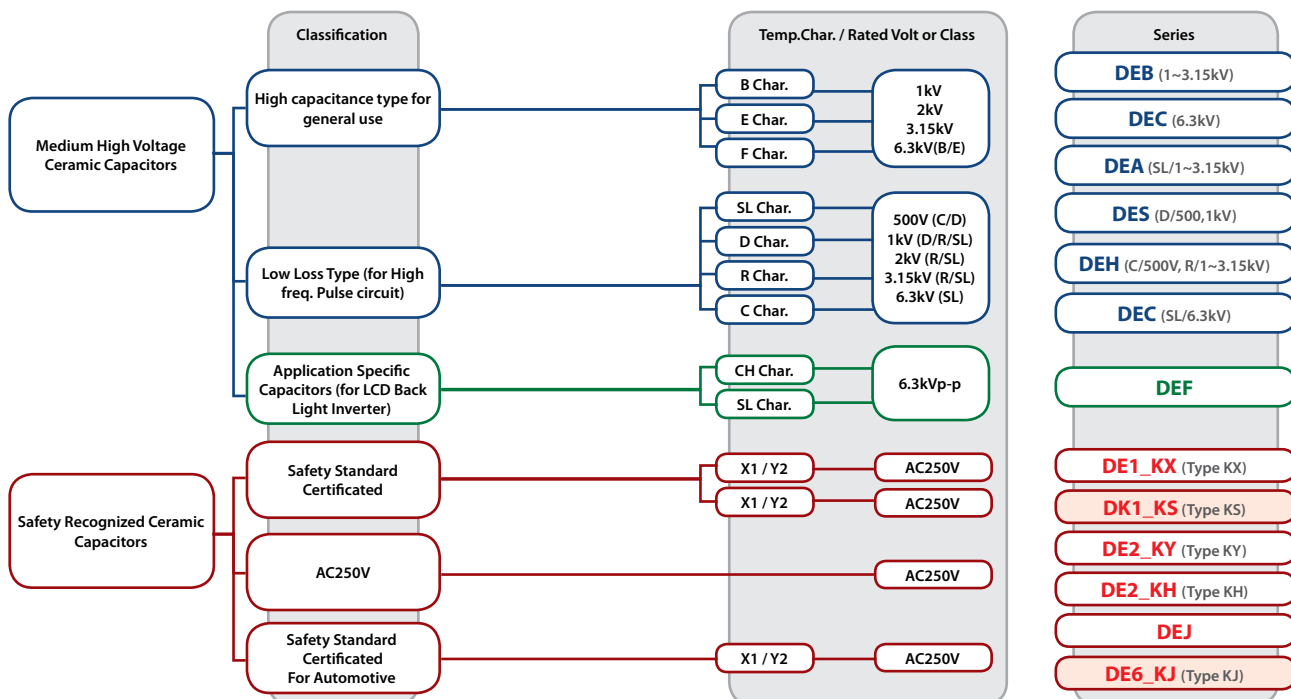
Lead wire : Cu wire plated with Sn-Cu solder

Inner Solder : Sn-Cu or Sn-Ag solder

2. Halogen free, outer epoxy resin : **NEW**

Safety Standard Certificated / High Voltage

Capacitors - Classification and Series



Software Selection Tools on Murata Web

MMCSV ▶ Murata Medium Voltage Capacitors Selection Tool by Voltage Waveform

This tool calculates a capacitor's power consumption to determine whether or not the capacitor can be used in a circuit in the design process for high frequency pulse circuit such as snubber circuit for switching power supplies.

The tool helps you select appropriate capacitors

Features

- This tool allows you to select appropriate capacitor by voltage waveform.
- By specifying a desired capacitance value and the shape of the capacitor, you can select the product most suitable for the actual conditions.
- All capacitor circuit adaptabilities and the reasons for judgements are displayed.
- Result can be saved in files, and printed out.

Object Item List (Mar/2011) Version 1.10.0

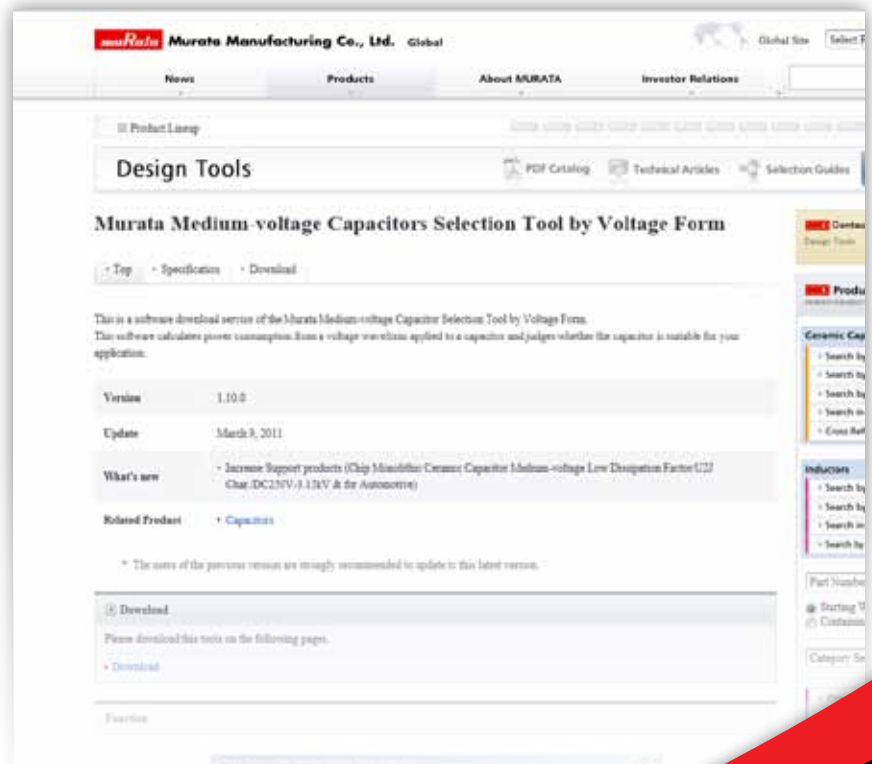
Type	Series	Temp. Char.	Rated Voltage[DC]	Cap.Range[pF]	
"High Voltage Ceramic Capacitors"	DEH	C	500V	330~4700	
			R	1kV	220~4700
				2kV	220~4700
	DEA	SL	3.15kV	150~2700	
			1kV	10~560	
			2kV	10~560	
	DES	D	3.15kV	10~390	
			500V	100~4700	
	DEC	SL	1kV	100~4700	
			6.3kV	5~150	
"Chip Monolithic Ceramic Capacitors"	GRM	U2J	250V	100~10000	
			630V	10~47000	
			1kV	10~10000	
			2kV	10~220	
			3.15kV	27~100	
"LCD Back Light Inverter only High Voltage Ceramic Capacitors"	DEF	CH	6.3kV p-p	2~10	
		SL	6.3kV p-p	10~47	
"LCD Back Light Inverter only Chip Monolithic Ceramic Capacitors"	GRM	COG	630V	100~1000	
			3.15kV	5~47	
"Automotive only Chip Monolithic Ceramic Capacitors"	GCM	U2J	250V	100~10000	
			630V	10~47000	
			1kV	560~10000	

Find our design tools on-line

This is a software download service of the Murata Medium-voltage Capacitor Selection Tool by Voltage Form.

This software calculates power consumption from a voltage waveform applied to a capacitor and judges whether the capacitor is suitable for your application.

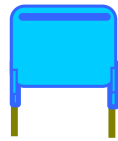
http://www.murata.com/products/design_support/mmcsv/index.html





Radial Lead Type Monolithic Ceramic Capacitors

Technology Trend



Radial Lead Type Monolithic Ceramic Capacitors

Green Products

- RoHS compliance LF leads wire

- LF Inner solder

Change Inner solder to LF solder from high-temperature melting solder (contain Pb)

Downsizing

- RDE series X7R-char small size

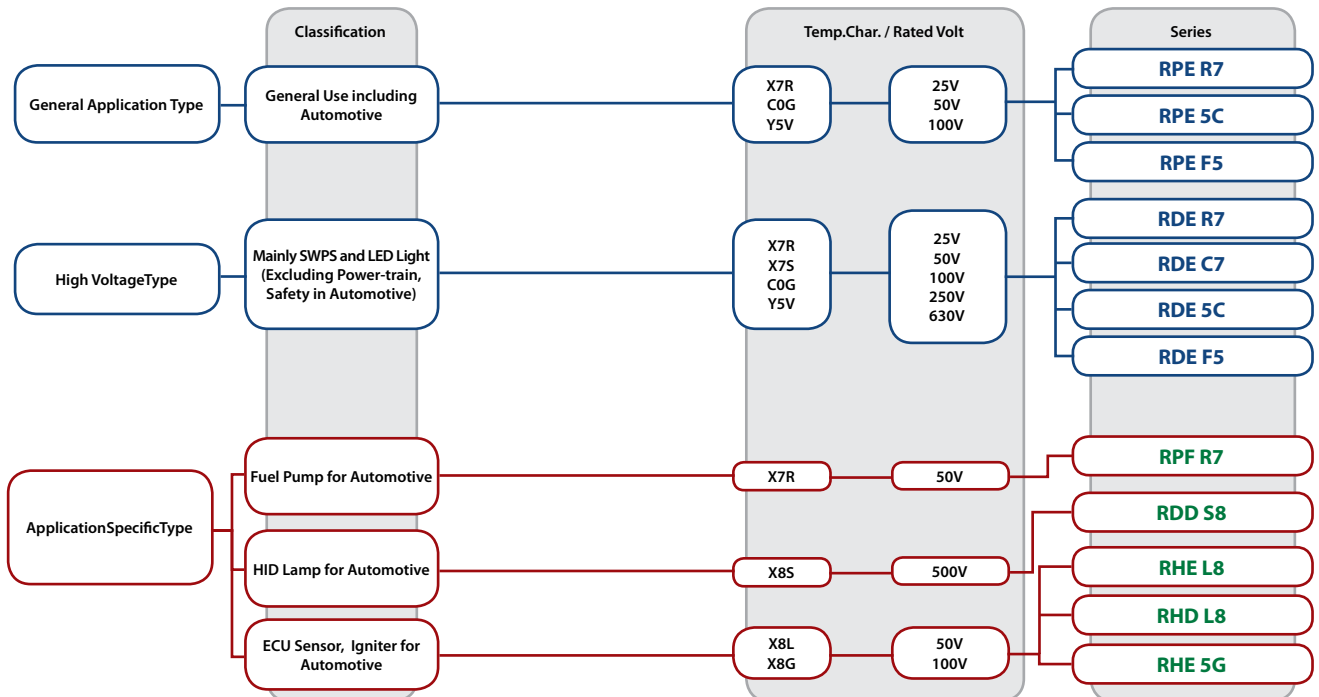
250V, 630VDC rating

25~100V DC rating

1kV DC rating

Radial Lead Type Monolithic Ceramic Capacitors

Classification and Series



Polymer Electrolytic Capacitors

Extensive product offering with high capacitance conductive polymer capacitors



Part Number ● ECAS D4 0D 107 M 016 K 0

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Features

- H-Chip type is designed with a resin-molded case structure, which utilizes multilayer aluminium foil for anode and solid conductive polymer for negative cathode.
- High performance for noise suppression, ripple absorption and decoupling.
- Low impedance (Much lower than conventional Electrolytic Capacitor)
- Capacitance range is 6.8μF to 470μF, rated voltage 2Vdc to 16Vdc.
- EIA standard case size: L 7.3mm * W 4.3mm, height profile of
- 1.9mm, 2.8mm & 4.2mm
- Operable at 105°C, can be reflow soldered.

Benefits

- Lower profile, small size and lower ESR than Aluminium Polymer Capacitor (can-type).
- Ultra low ESR at high frequency compared to solid tantalum and other SMT aluminium capacitors- accomplishes filtering in DC-DC converter with fewer capacitors.
- Display little capacitance change with bias and temperature, have high capacitance retention.
- No need for voltage derating with temperature.
- Does not exhibit "dc bias" characteristics shown by class 2 or 3 ceramic capacitors.

Applications

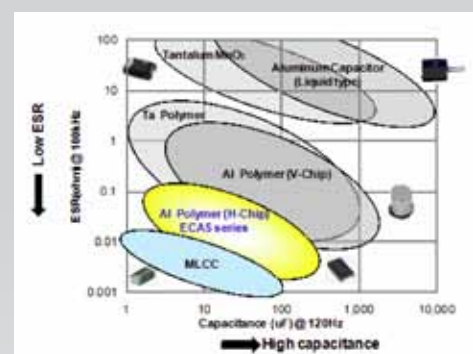
- Decoupling capacitors for ESR sensitive application.
- Filtering capacitor for video cards, CPU power supply circuitry.

Minimum Order Quantity

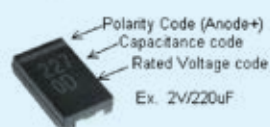
- ECASD4: 3000pcs
- ECASD6: 2500pcs
- ECASD9: 2000pcs

Part number breakdown

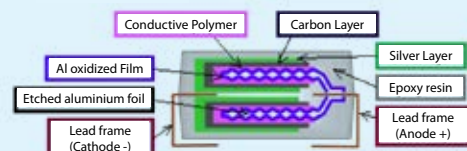
① Series	ECAS
② Dimensions	D4 7.3 x 4.3 x 1.9 mm
	D6 7.3 x 4.3 x 2.8 mm
	D9 7.3 x 4.3 x 4.2 mm
③ Rated Voltage	0D 2V
	0G 4V
	0J 6.3V
	0K 8V
	1A 10V
	1B 12.5V
	1C 16V
④ Capacitance	47μF = 476, 100μF = 107 etc.
⑤ Capacitance Tolerance	M 20%
⑥ ESR	016 16mΩ
⑦ Packing	K 330mm plastic tape
⑧ Individual Spec.	



Appearance

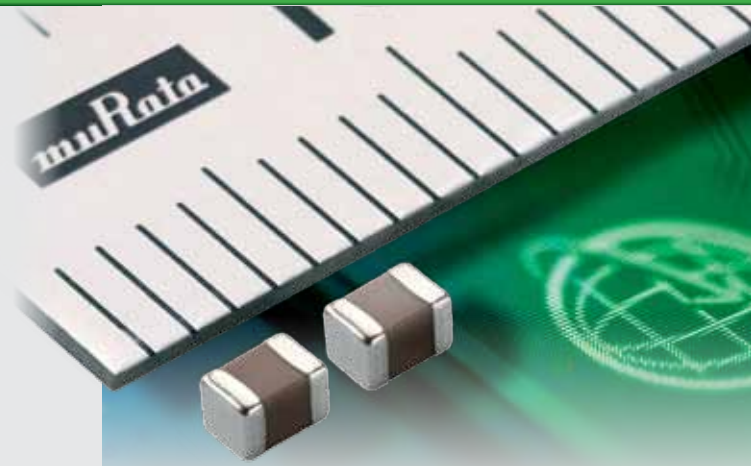


Cross-section





Hi Cap Range Chart



Features

- TA chip capacitor replacement product lineup is available in X7R (X7S, X7T, X7U), X6S(X6T) and X5R(X5S) temperature characteristics with a capacitance of 1µF and larger.
- The line of high volumetric capacitance ceramic chip capacitors is available in 2.5V,4V, 6.3V, 10V, 16V, 25V, 35V,50V and 100V.
- No polarity.
- GRM series is offered with a Ni barrier termination plated with Matte Tin, and is RoHS compliant.
- Stringent dimensional tolerances allow highly reliable, high-speed automatic chip placement on PCBs.

Global Part Numbering

• GR M 18 8 R6 0J 105 K A01 D
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Code	Product
① GR	MLCC
② M	Tin Plated Termination

Code	Dimensions (L x W)
③ 15	1.0x0.5mm (EIA:0402)
18	1.6x0.8mm (EIA:0603)
③ 21	2.0x1.25mm (EIA:0805)
31	3.2x1.6mm (EIA:1206)
32	3.2x2.5mm (EIA:1210)

Code	Dimension (T)
3	0.33mm
5	0.5mm
6	0.6mm
8	0.8mm
9	0.85mm
A	1.0mm
④ M	1.15mm
B	1.25mm
N	1.35mm
C	1.6mm
R	1.8mm
D	2.0mm
E	2.5mm

Code	TC	Temp. Range	Cap. Change	Operating Temp.
R7	X7R	-55 to 125°C	±15%	-55 to 125°C
C7	X7S		±22%	
D7	X7T		+22/-33%	
E7	X7U	-55 to 105°C	+22/-56%	-55 to 105°C
C8	X6S		±22%	
D8	X6T	-55 to 85°C	+22/-33%	-55 to 85°C
R6	X5R		±15%	
C6	X5S		±22%	

Code	Rated Voltage
⑤ 0E	DC 2.5V
0G	DC 4V
0J	DC 6.3V
1A	DC 10V
⑥ 1C	DC 16V
1E	DC 25V
YA	DC 35V
1H	DC 50V
2A	DC 100V

Code	Capacitance
105	1µF
⑦ 106	10µF
107	100µF

Code	Cap.Tol.	TC
⑧ K	±10%	X7_, X6_, X5_
M	±20%	X7_, X6_, X5_

⑨ Individual Specification Code

Code	Packaging
D	Ø180mm Paper Taping
L	Ø180mm Embossed Taping
⑩ J	Ø330mm Paper Taping
K	Ø330mm Embossed Taping

Regarding detailed specifications, please check catalog or product specification. Information in this PDF are as of Apr.2012.

They are subject to change or our products in it may be discontinued without advance notice. Please check the latest information before usage of the products.

Chip Size and Capacitance Range

X7R (X7S, X7T, X7U) Chip size and Capacitance range

Type	Size	WV	Capacitance μ F							
			1	2.2	4.7	10	22	47	100	
GRM15	0402	25	X7S							
		16	X7S							
		10	X7S							
		6.3	X7S	X7S						
		4	X7S	X7S						
GRM18	0603	35	X7S	X7S						
		25	X7S	X7S	X7S					
		16	X7S	X7S	X7S	X7T				
		10	X7S	X7S	X7S	X7T				
		6.3								
GRM21	0805	50			X7S					
		25	X7R		X7S	X7S				
		16	X7R	X7S	X7R	X7S				
		10	X7R	X7S	X7R	X7R				
		6.3	X7R	X7S	X7R	X7R				
GRM31	1206	4					X7U			
		100	X7R	X7S		X7S				
		50	X7R	X7S		X7S				
		35			X7R	X7S	X7S			
		25			X7R	X7S	X7S	X7S		
GRM32	1210	16			X7S					
		10			X7R					
		6.3				X7S	X7R			
		4					X7R	X7R		
		2.5							X7U	

X6S(X6T) Chip size and Capacitance range

Type	Size	WV	Capacitance μ F							
			1	2.2	4.7	10	22	47	100	
GRM15	0402	16		X6S						
		10	X6S	X6S						
GRM18	0603	35	X6S	X6S						
		25	X6S	X6S	X6S					
		16	X6S	X6S	X6S	X6S				
		10	X6S	X6S	X6S	X6S				
		6.3		X6S	X6S	X6S	X6S			
GRM21	0805	4					X6S			
		35	X6S	X6S	X6S	X6S	X6S			
		25	X6S	X6S	X6S	X6S	X6S			
		16	X6S	X6S	X6S	X6S	X6S			
		10	X6S	X6S	X6S	X6S	X6S			
GRM31	1206	6.3					X6S	X6S	X6T	
		4					X6S	X6S	X6T	
		25					X6S	X6S	X6T	
		16					X6S	X6S	X6T	
		10					X6S	X6S	X6T	
GRM32	1210	2.5								
		6.3					X6S	X6S	X6T	
		4					X6S	X6S	X6T	
		10					X6S	X6S	X6T	
		2.5							X6T	

X5R (X5S) Chip size and Capacitance range

Type	Size	WV	Capacitance μ F							
			1	2.2	4.7	10	22	47	100	
GRM15	0402	35	X5R							
		25	X5R	X5R						
		16	X5R	X5R						
		10	X5R	X5R	X5R					
		6.3	X5R	X5R	X5R	X5R				
GRM18	0603	4					X5R			
		2.5	X5R	X5R			X5R			
		35	X5R	X5R	X5R	X5R	X5R			
		25	X5R	X5R	X5R	X5R	X5R			
		16	X5R	X5R	X5R	X5R	X5R			
GRM21	0805	10		X5R	X5R	X5R	X5R			
		6.3		X5R	X5R	X5R	X5R	X5R		
		4					X5R	X5R		
		50		X5R	X5R	X5R	X5R	X5R		
		35		X5R	X5R	X5R	X5R	X5R		
GRM31	1206	25				X5R	X5R			
		16				X5R	X5R			
		10				X5R	X5R			
		6.3				X5R	X5R	X5R		
		50				X5R	X5R	X5R		
GRM32	1210	25					X5R			
		16					X5R	X5R		
		10					X5R	X5R		
		6.3						X5R	X5R	
		4							X5S	



	Type	Size	Chip T (mm Max.)	WV	Capacitance μF						
					1	2.2	4.7	10	22	47	100
Low Profile Series Chip size and Capacitance range	GRM15	0402	0.33	10	X5R						
				6.3							
				4							
	GRM18	0603	0.5	25	X5R						
				16	X5R						
				10	X6S	X7T					
				6.3	X6S						
				4							
	GRM21	0805	0.7	25	X5R						
				16	X7T	X6S					
				10	X5R						
				50	X5R						
				35	X6S						
			0.95	25	X7R	X5R	X6S	X5R	X7S	X5R	
				16	X6S						
				10	X6S						
				6.3	X6S						
				4							
			1.0	50	X5R						
				35	X6S						
				25	X7S						
				16	X7S						
				10							
	GRM31	1206	0.7	25	X5R						
				16	X5R						
				10	X5R						
			0.95	50	X5R						
				35	X6S						
				25	X5R						
				16	X6S	X7T	X6S	X5R	X5R		
	10										
	GRM32	1210	2.2	100	X7S						

■ Mass Production
■ Development
■ New Product

GRM15 series : 0.33mm Max
GRM18 series: 0.5mm Max
GRM21 series: 0.70mm Max, 0.95mm Max, 1.00mm Max
GRM31 series: 0.70mm Max, 0.95mm Max
GRM32 series: 2.2mm Max

X7R (X7S, X7T, X7U) Murata P/N List

Cap.	Size	WV	Chip T (mm)	TC	Cap. Tol.	Murata Global P/N	Durability (%Rated Volt)	Sample	M.P.	
1 μF	0402	25	0.5+/-0.2	X7R	+/-10%	GRM155C71E105K****	150%	Available	2013Q2	
		16	0.5+/-0.2	X7R	+/-10%	GRM155C71C105K****	150%	Available	2013Q2	
		10	0.5+/-0.2	X7R	+/-10%	GRM155C71A105K****	150%	Available	2013Q2	
		6.3	0.5+/-0.05	X7R	+/-10%	GRM155R70J105KA12D	100%	Available	Mass Production	
		4	0.5+/-0.05	X7R	+/-10%	GRM155R70G105KA12D	150%	Available	Mass Production	
	0603	35	0.8+/-0.1	X7R	+/-10%	GRM188R71A105KA12D	100%	Available	Mass Production	
		25	0.8+/-0.1	X7R	+/-10%	GRM188R71E105KA12D	150%	Available	Mass Production	
		16	0.8+/-0.1	X7R	+/-10%	GRM188R71C105KA12D	150%	Available	Mass Production	
		10	0.5+0/-0.1	X7T	+/-10%	GRM185D71A105KE36D	150%	Available	Mass Production	
		25	0.85+/-0.1	X7R	+/-10%	GRM219R71E105KA88D	200%	Available	Mass Production	
	0805	16	0.6+/-0.1	X7T	+/-10%	GRM216D71C105KA12D	100%	Available	Mass Production	
		50	1.15+/-0.1	X7R	+/-10%	GRM31MR71H105KA88L	200%	Available	Mass Production	
	2.2 μF	0402	6.3	0.5+/-0.2	X7S	+/-10%	GRM155C70J225ME11D	150%	Available	Mass Production
			25	0.8+/-0.2	X7S	+/-10%	GRM188C71E225KE11D	150%	Available	Mass Production
			16	0.8+/-0.2	X7S	+/-10%	GRM188C71C225KE11D	150%	Available	Mass Production
0603		10	0.8+/-0.1	X7R	+/-10%	GRM188R71A225KE15D	150%	Available	Mass Production	
		16	0.85+/-0.1	X7R	+/-10%	GRM219R71C225KE15D	150%	Available	Mass Production	
		16	1.25+/-0.1	X7R	+/-10%	GRM21BR71C225KA12L	150%	Available	Mass Production	
1206		50	1.6+/-0.2	X7R	+/-10%	GRM31CR71H225KA88L	200%	Available	Mass Production	
		16	0.8+/-0.2	X7S	+/-10%	GRM188C71C475K****	100%	Available	2013Q2	
		10	0.8+/-0.15	X7S	+/-10%	GRM188C71A475KE11D	150%	Available	Mass Production	
4.7 μF		0805	50	1.25+/-0.2	X7S	+/-10%	GRM21BC71H475K****	150%	Available	2013Q2
			25	0.85+0.15/-0.05	X7S	+/-10%	GRM219C71E475K****	150%	Available	2013Q3
			25	1.25+/-0.2	X7S	+/-10%	GRM21BC71E475K****	150%	Available	2013Q2
			16	0.85+0.15/-0.05	X7S	+/-10%	GRM219C71C475K****	150%	Available	2013Q3
			16	1.25+/-0.15	X7R	+/-10%	GRM21BR71C475KA73L	150%	Available	Mass Production
		1206	10	0.85+/-0.1	X7T	+/-10%	GRM219D71A475KE15D	100%	Available	Mass Production
	10		1.25+/-0.15	X7R	+/-10%	GRM21BR71A475KA73L	150%	Available	Mass Production	
	25		1.6+/-0.2	X7R	+/-10%	GRM31CR71E475KA88L	200%	Available	Mass Production	
	16		0.85+/-0.1	X7T	+/-10%	GRM319D71C475KA12D	100%	Available	Mass Production	
	100		2.0+/-0.2	X7S	+/-10%	GRM32DC72A475K****	150%	Available	2013Q3	
	1210	50	2.5+/-0.2	X7R	+/-10%	GRM32ER71H475KA88L	200%	Available	Mass Production	
	10 μF	0603	10	0.8+/-0.2	X7T	+/-20%	GRM188D71A106MA73D	150%	Available	Mass Production
			25	1.25+/-0.2	X7S	+/-10%	GRM21BC71E106K****	150%	Available	2013Q2
			16	1.25+/-0.2	X7S	+/-10%	GRM21BC71C106KE11L	150%	Available	Mass Production
		0805	10	1.25+/-0.15	X7R	+/-10%	GRM21BR71A106KE51L	150%	Available	Mass Production
6.3			1.25+/-0.15	X7R	+/-10%	GRM21BR70J106KE76L	150%	Available	Mass Production	
50			1.6+/-0.3	X7S	+/-10%	GRM31CC71H106K****	150%	Available	2013Q3	
1206		35	1.6+/-0.3	X7S	+/-10%	GRM31CC71A106K****	150%	Available	2013Q3	
		25	1.6+/-0.2	X7R	+/-10%	GRM31CR71E106KA12L	150%	Available	Mass Production	
		16	1.6+/-0.2	X7R	+/-10%	GRM31CR71C106KA12L	100%	Available	Mass Production	
1210		25	2.0+/-0.2	X7R	+/-10%	GRM32DR71E106KA12L	200%	Available	Mass Production	

X7R (X7S, X7T, X7U) Murata P/N List

Cap.	Size	WV	Chip T (mm)	TC	Cap. Tol.	Murata Global P/N	Durability (%Rated Volt)	Sample	M.P.
22μF	0805	4	1.25+/-0.15	X7U	+/-20%	GRM21BE70G226ME51L	150%	Available	Mass Production
		25	1.6+/-0.3	X7S	+/-10%	GRM31CC71E226M****	150%	Available	2013Q3
		16	1.6+/-0.3	X7S	+/-10%	GRM31CC71C226M****	150%	Available	2013Q2
	1206	10	1.6+/-0.2	X7R	+/-10%	GRM31CR71A226KE15L	150%	Available	Mass Production
		25	2.5+/-0.2	X7R	+/-10%	GRM32ER71E226KE15L	150%	Available	Mass Production
		16	2.5+/-0.2	X7R	+/-10%	GRM32ER71C226KEA8L	150%	Available	Mass Production
47μF	1206	4	1.6+/-0.2	X7U	+/-20%	GRM31CE70J476ME15L	150%	Available	Mass Production
	10	2.5+/-0.2	X7R	+/-10%	GRM32ER71A476KE15L	150%	Available	Mass Production	
100μF	1210	6.3	2.5+/-0.2	X7R	+/-10%	GRM32ER70J476KE20L	150%	Available	Mass Production
		4	2.5+/-0.2	X7U	+/-20%	GRM32EE70G107ME19L	150%	Available	Mass Production

X6S (X6T) Murata P/N List

Cap.	Size	WV	Chip T (mm)	TC	Cap. Tol.	Murata Global P/N	Durability (%Rated Volt)	Sample	M.P.	
1μF	0402	35	0.5+/-0.2	X6S	+/-10%	GRM155C8YA105K****	150%	Available	2013Q2	
		25	0.5+/-0.2	X6S	+/-10%	GRM155C81E105K****	150%	Available	2013Q2	
		16	0.5+/-0.2	X6S	+/-10%	GRM155C81C105K****	150%	Available	2013Q2	
	0603	10	0.5+/-0.05	X6S	+/-10%	GRM155C81A105KA12D	150%	Available	Mass Production	
		35	0.8+/-0.1	X6S	+/-10%	GRM188C8YA105KAALD	150%	Available	Mass Production	
		25	0.8+/-0.1	X6S	+/-10%	GRM188C81E105KA12D	150%	Available	Mass Production	
	0805	10	0.5+/-0.1	X6S	+/-10%	GRM185C81A105KE36D	150%	Available	Mass Production	
		35	0.85+/-0.1	X6S	+/-10%	GRM219C8YA105KA73D	150%	Available	Mass Production	
		16	0.6+/-0.1	X6S	+/-10%	GRM216C81C105KA12D	150%	Available	Mass Production	
	2.2μF	0402	16	0.5+/-0.2	X6S	+/-10%	GRM155C81C225KE11D	150%	Available	Mass Production
			10	0.5+/-0.2	X6S	+/-10%	GRM155C81A225KE11D	150%	Available	Mass Production
			6.3	0.5+/-0.05	X6S	+/-10%	GRM155C80J225KE95D	100%	Available	Mass Production
0603		35	0.8+/-0.2	X6S	+/-10%	GRM188C8YA225KE11D	150%	Available	Mass Production	
		25	0.8+/-0.2	X6S	+/-10%	GRM188C81E225KE11D	150%	Available	Mass Production	
		16	0.8+/-0.1	X6S	+/-10%	GRM188C81C225KA12D	150%	Available	Mass Production	
0805		10	0.8+/-0.1	X6S	+/-10%	GRM188C81A225KE34D	150%	Available	Mass Production	
		6.3	0.8+/-0.1	X6S	+/-10%	GRM188C80J225KE19D	150%	Available	Mass Production	
		35	0.85+/-0.1	X6S	+/-10%	GRM219C8YA225KE15D	150%	Available	Mass Production	
1206		35	1.25+/-0.15	X6S	+/-10%	GRM21BC8YA225KA73L	150%	Available	Mass Production	
		25	0.85+/-0.1	X6S	+/-10%	GRM219C81E225KE15D	150%	Available	Mass Production	
		35	0.85+/-0.1	X6S	+/-10%	GRM319C8YA225KA12D	150%	Available	Mass Production	
4.7μF	0603	25	0.8+/-0.2	X6S	+/-10%	GRM188C81E475KE11D	100%	Available	Mass Production	
		16	0.8+/-0.15	X6S	+/-10%	GRM188C81C475KE11D	150%	Available	Mass Production	
		6.3	0.8+/-0.1	X6S	+/-10%	GRM188C80J475KE15D	100%	Available	Mass Production	
	0805	4	0.8+/-0.1	X6S	+/-10%	GRM188C80G475KE19D	150%	Available	Mass Production	
		35	0.85+0.15/-0.05	X6S	+/-10%	GRM219C8YA475K****	150%	Available	2013Q3	
		35	1.25+/-0.15	X6S	+/-10%	GRM21BC8YA475KE15D	150%	Available	Mass Production	
	1206	25	0.85+0.15/-0.05	X6S	+/-10%	GRM219C81E475K****	150%	Available	2013Q3	
		25	1.25+/-0.1	X6S	+/-10%	GRM21BC81E475KA12L	150%	Available	Mass Production	
		16	0.85+/-0.1	X6S	+/-10%	GRM219C81C475KA73D	150%	Available	Mass Production	
	10μF	0603	16	1.25+/-0.1	X6S	+/-10%	GRM21BC81C475KA88L	150%	Available	Mass Production
			16	0.8+/-0.2	X6S	+/-20%	GRM188C81C106KA73D	150%	Available	Mass Production
			10	0.8+/-0.2	X6S	+/-20%	GRM188C81A106KA73D	150%	Available	Mass Production
0805		4	0.8+/-0.1	X6S	+/-20%	GRM188C80G106KE47D	100%	Available	2013Q3	
		35	1.25+/-0.2	X6S	+/-10%	GRM21BC8YA106K****	150%	Available	Mass Production	
		25	1.25+/-0.2	X6S	+/-10%	GRM21BC81E106KE11L	100%	Available	Mass Production	
1206		16	1.25+/-0.15	X6S	+/-10%	GRMBC81C106KA73L	150%	Available	Mass Production	
		10	0.85+/-0.1	X6S	+/-10%	GRM21BC81A106KE18L	150%	Available	Mass Production	
		6.3	0.85+/-0.1	X6S	+/-10%	GRM219C80J106KE39D	150%	Available	Mass Production	
22μF		0805	4	0.85+/-0.1	X6S	+/-10%	GRM219C80G106KE19D	150%	Available	Mass Production
			35	1.6+/-0.2	X6S	+/-10%	GRM31CC8YA106KA12L	150%	Available	Mass Production
			25	1.6+/-0.2	X6S	+/-10%	GRM31CC81E106KE15L	150%	Available	Mass Production
47μF	1206	16	0.85+/-0.1	X6S	+/-10%	GRM319C81C106KA12D	150%	Available	Mass Production	
		4	0.8+/-0.2	X6S	+/-20%	GRM188C80G226MEA0D	100%	Available	Mass Production	
		16	1.25+/-0.2	X6S	+/-20%	GRM21BC81C226M****	100%	Available	2013Q2	
100μF	1210	10	1.25+/-0.2	X6S	+/-20%	GRM21BC81A226M****	150%	Available	2013Q2	
		6.3	1.25+/-0.15	X6S	+/-20%	GRM21BC80J226ME51L	100%	Available	Mass Production	
		4	1.25+/-0.15	X6S	+/-20%	GRM21BC80G226ME39L	150%	Available	Mass Production	
150μF	1210	35	1.6+/-0.3	X6S	+/-20%	GRM31CC8YA226M****	150%	Available	2013Q3	
		25	1.6+/-0.3	X6S	+/-20%	GRM31CC81E226M****	150%	Available	2013Q3	
		16	1.6+/-0.2	X6S	+/-10%	GRM31CC81C226KE15L	150%	Available	Mass Production	
1206	10	1.6+/-0.2	X6S	+/-10%	GRM31CC81A226KE19L	150%	Available	Mass Production		
	6.3	0.85+/-0.1	X6S	+/-20%	GRM319C80J226ME15D	150%	Available	Mass Production		
	25	2.5+/-0.2	X6S	+/-10%	GRM32EC81E226KE15L	150%	Available	Mass Production		
47μF	1206	6.3	1.6+/-0.2	X6S	+/-20%	GRM31CC80G476ME18L	150%	Available	Mass Production	
		4	1.6+/-0.2	X6S	+/-20%	GRM31CC80G476ME19L	150%	Available	Mass Production	
		16	2.5+/-0.2	X6S	+/-10%	GRM32EC81C476KE15L	150%	Available	Mass Production	
100μF	1210	10	2.5+/-0.2	X6S	+/-10%	GRM32EC81A476KE19L	150%	Available	Mass Production	
		6.3	2.5+/-0.2	X6S	+/-10%	GRM32EC80J476KE64L	150%	Available	Mass Production	
		6.3	1.6+/-0.3	X6T	+/-20%	GRM31CD80J107ME39L	100%	Available	Mass Production	
150μF	1210	4	1.6+/-0.3	X6T	+/-20%	GRM31CD80G107ME39L	150%	Available	Mass Production	
		6.3	2.5+/-0.2	X6S	+/-20%	GRM32EC80J107ME20L	150%	Available	Mass Production	
		4	2.5+/-0.2	X6S	+/-20%	GRM32EC80G107ME20L	150%	Available	Mass Production	
150μF	1210	4	1.8+0/0.2	X6T	+/-20%	GRM32RD80G157ME15L	100%	Available	Mass Production	
		2.5	1.8+0/0.2	X6T	+/-20%	GRM32RD80E157ME15L	150%	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.
 5) Sample marked "*" in Sample column are built upon your request. Lead time will be around 4wks (might be extended depending on production schedule). Please contact Murata Sales or Product Engineer directly



X5R (X5S) Murata P/N List

Cap.	Size	WV	Chip T (mm)	TC	Cap. Tol.	Murata Global P/N	Durability (%Rated Volt)	Sample	M.P.
1µF	0402	35	0.5+/-0.05	X5R	+/-10%	GRM155R6YA105KE11D	100%	Available	Mass Production
		25	0.5+/-0.05	X5R	+/-10%	GRM155R61E105KA12D	100%	Available	Mass Production
		16	0.5+/-0.05	X5R	+/-10%	GRM155R61C105KA12D	150%	Available	Mass Production
		10	0.5+/-0.05	X5R	+/-10%	GRM155R61A105KE15D	150%	Available	Mass Production
		50	0.8+/-0.1	X5R	+/-10%	GRM188R61H105KAALD	150%	Available	Mass Production
		25	0.5+/-0.1	X5R	+/-10%	GRM185R61E105KA12D	100%	Available	Mass Production
	0603	25	0.8+/-0.1	X5R	+/-10%	GRM188R61E105KA12D	150%	Available	Mass Production
		16	0.5+/-0.1	X5R	+/-10%	GRM185R61C105KE44D	150%	Available	Mass Production
		16	0.8+/-0.1	X5R	+/-10%	GRM188R61C105KA93D	150%	Available	Mass Production
		25	0.5+/-0.05	X5R	+/-20%	GRM155R61E225M****	100%	Available	2013Q2
		25	0.5+/-0.2	X5R	+/-10%	GRM155R61E225KE11D	150%	Available	Mass Production
		16	0.5+/-0.05	X5R	+/-20%	GRM155R61C225M****	150%	Available	2013Q2
2.2µF	0402	16	0.5+/-0.2	X5R	+/-10%	GRM155R61C225KE11D	150%	Available	Mass Production
		10	0.5+/-0.05	X5R	+/-10%	GRM155R61A225KE95D	100%	Available	Mass Production
		6.3	0.5+/-0.05	X5R	+/-10%	GRM155R60J225KE95D	150%	Available	Mass Production
		50	0.8+/-0.2	X5R	+/-10%	GRM188R61H225KE11D	150%	Available	Mass Production
		35	0.8+/-0.1	X5R	+/-10%	GRM188R6YA225KA12D	100%	Available	Mass Production
		25	0.8+/-0.1	X5R	+/-10%	GRM188R61E225KA12D	15 0%	Available	Mass Production
	0603	16	0.8+/-0.1	X5R	+/-10%	GRM188R61C225KE15D	150%	Available	Mass Production
		10	0.8+/-0.1	X5R	+/-10%	GRM188R61A225KE34D	150%	Available	Mass Production
		50	1.25+/-0.1	X5R	+/-10%	GRM21BR61H225KA73L	150%	Available	Mass Production
		50	0.85+/-0.1	X5R	+/-10%	GRM219R61H225KE15D	150%	Available	Mass Production
		25	0.85+/-0.1	X5R	+/-10%	GRM219R61E225KA12D	150%	Available	Mass Production
		16	0.6+/-0.1	X5R	+/-10%	GRM216R61C225KA12D	150%	Available	Mass Production
0805	16	0.85+/-0.1	X5R	+/-10%	GRM219R61C225KA88D	150%	Available	Mass Production	
	50	0.85+/-0.1	X5R	+/-10%	GRM319R61H225KA12D	150%	Available	Mass Production	
	50	1.6+/-0.2	X5R	+/-10%	GRM31CR61H225KA88L	150%	Available	Mass Production	
	25	0.6+/-0.1	X5R	+/-10%	GRM316R61E225KA12D	150%	Available	Mass Production	
	10	0.5+/-0.15	X5R	+/-20%	GRM155R61A475MEAD	100%	Available	Mass Production	
	6.3	0.5+/-0.15	X5R	+/-20%	GRM155R60J475MEAD	150%	Available	Mass Production	
4.7µF	0402	6.3	0.5+/-0.1	X5R	+/-20%	GRM155R60J475ME47D	100%	Available	Mass Production
		4	0.5+/-0.1	X5R	+/-20%	GRM155R60G475ME47D	150%	Available	Mass Production
		35	0.8+/-0.2	X5R	+/-10%	GRM188R6YA475KE15D	150%	Available	Mass Production
		25	0.8+/-0.15	X5R	+/-10%	GRM188R61E475KE11D	150%	Available	Mass Production
		16	0.5+/-0.05	X5R	+/-10%	GRM185R61C475K****	100%	Available	2013Q2
		16	0.8+/-0.15	X5R	+/-10%	GRM188R61C475KAADL	100%	Available	Mass Production
	0603	10	0.8+/-0.15	X5R	+/-10%	GRM188R61A475KE15D	100%	Available	Mass Production
		6.3	0.8+/-0.1	X5R	+/-10%	GRM188R60J475KE19D	150%	Available	Mass Production
		50	0.85+/-0.15/-0.05	X5R	+/-10%	GRM219R61H475K****	150%	Available	2013Q3
		50	1.25+/-0.15	X5R	+/-10%	GRM21BR61H475KE11L	150%	Available	Mass Production
		35	0.85+/-0.1	X5R	+/-10%	GRM219R6YA475KA73D	100%	Available	Mass Production
		25	0.85+/-0.1	X5R	+/-10%	GRM219R61E475KA73D	150%	Available	Mass Production
0805	25	1.25+/-0.1	X5R	+/-10%	GRM21BR61E475KA12L	150%	Available	Mass Production	
	16	0.85+/-0.1	X5R	+/-10%	GRM219R61C475KE15D	150%	Available	Mass Production	
	16	1.25+/-0.1	X5R	+/-10%	GRM21BR61A475KA88L	150%	Available	Mass Production	
	50	0.85+/-0.1	X5R	+/-10%	GRM319R61H475KA12D	150%	Available	Mass Production	
	25	1.6+/-0.2	X5R	+/-10%	GRM31CR61E475KA88L	200%	Available	Mass Production	
	10	0.6+/-0.1	X5R	+/-10%	GRM316R61A475KE19D	150%	Available	Mass Production	
10µF	0402	4	0.5+/-0.2	X5R	+/-20%	GRM155R60G106ME44D	150%	Available	Mass Production
		2.5	0.5+/-0.2	X5R	+/-20%	GRM155R60E106ME16D	150%	Available	Mass Production
		25	0.8+/-0.2	X5R	+/-20%	GRM188R61E106MA73D	150%	Available	Mass Production
		16	0.8+/-0.15	X5R	+/-10%	GRM188R61C106KAALD	150%	Available	Mass Production
		16	0.8+/-0.2	X5R	+/-20%	GRM188R61C106MA73D	150%	Available	Mass Production
		10	0.8+/-0.15	X5R	+/-10%	GRM188R61A106KE69D	100%	Available	Mass Production
	0603	6.3	0.8+/-0.1	X5R	+/-20%	GRM188R60J106ME47D	150%	Available	Mass Production
		50	1.25+/-0.2	X5R	+/-10%	GRM21BR61H106K****	150%	Available	2013Q3
		35	1.25+/-0.2	X5R	+/-10%	GRM21BR6YA106K****	150%	Available	2013Q3
		25	0.85+/-0.1	X5R	+/-10%	GRM219R61E106KA12D	100%	Available	Mass Production
		25	1.25+/-0.15	X5R	+/-10%	GRM21BR61E106KA73L	150%	Available	Mass Production
		16	0.85+/-0.1	X5R	+/-10%	GRM219R61C106KA73D	150%	Available	Mass Production
0805	16	1.25+/-0.1	X5R	+/-10%	GRM21BR61C106KE15L	150%	Available	Mass Production	
	10	0.85+/-0.1	X5R	+/-10%	GRM219R61A106KE44D	150%	Available	Mass Production	
	10	1.25+/-0.1	X5R	+/-10%	GRM21BR61A106KE19L	150%	Available	Mass Production	
	50	1.6+/-0.2	X5R	+/-10%	GRM31CR61H106KA12L	150%	Available	Mass Production	
	35	1.6+/-0.2	X5R	+/-10%	GRM31CR6YA106KA12L	150%	Available	Mass Production	
	25	0.85+/-0.1	X5R	+/-10%	GRM319R61E106KA12D	150%	Available	Mass Production	
22µF	0603	25	1.6+/-0.2	X5R	+/-10%	GRM31CR61E106KA12L	150%	Available	Mass Production
		16	1.6+/-0.2	X5R	+/-10%	GRM31CR61C106KA88L	200%	Available	Mass Production
		10	0.8+/-0.2	X5R	+/-20%	GRM188R61A226ME15D	100%	Available	Mass Production
		6.3	0.8+/-0.2	X5R	+/-20%	GRM188R60J226MEA0D	100%	Available	Mass Production
		4	0.8+/-0.2	X5R	+/-20%	GRM188R60G226MEA0D	150%	Available	Mass Production
		25	1.25+/-0.2	X5R	+20%	GRM21BR61E226ME44L	150%	Available	Mass Production
	0805	16	0.85+/-0.15/-0.05	X5R	+20%	GRM219R61C226ME15L	100%	Available	Mass Production
		16	1.25+/-0.2	X5R	+20%	GRM21BR61C226ME44L	150%	Available	Mass Production
		10	0.85+/-0.1	X5R	+/-20%	GRM219R61A226MEA0D	100%	Available	Mass Production
		10	1.25+/-0.15	X5R	+/-20%	GRM21BR61A226ME51L	100%	Available	Mass Production
		6.3	0.85+/-0.1	X5R	+/-20%	GRM219R60J226MEA0D	150%	Available	Mass Production
		6.3	1.25+/-0.15	X5R	+/-20%	GRM21BR60J226ME39L	150%	Available	Mass Production
1206	25	1.6+/-0.2	X5R	+/-10%	GRM31CR61E226KE15L	150%	Available	Mass Production	
	16	0.85+/-0.1	X5R	+/-20%	GRM319R61C226ME15D	100%	Available	Mass Production	
	16	1.6+/-0.2	X5R	+/-10%	GRM31CR61C226KE15L	150%	Available	Mass Production	
	1210	25	2.5+/-0.2	X5R	+/-10%	GRM32ER61E226KE15L	150%	Available	Mass Production

X5R (X5S) Murata P/N List

Cap.	Size	WV	Chip T (mm)	TC	Cap. Tol.	Murata Global P/N	Durability (%Rated Volt)	Sample	M.P.
47µF	0805	10	1.25+/-0.2	X5R	+/-20%	GRM21BR61A476ME15L	100%	Available	Mass Production
		6.3	0.85+/-0.1	X5R	+/-20%	GRM219R60J476M****	100%	Available	2013Q3
		6.3	1.25+/-0.2	X5R	+/-20%	GRM21BR60J476ME15L	100%	Available	Mass Production
	1206	4	0.85+/-0.1	X5R	+/-20%	GRM219R60G476ME44D	100%	Available	Mass Production
		10	1.6+/-0.2	X5R	+/-10%	GRM31CR61A476KE15L	150%	Available	Mass Production
		6.3	1.6+/-0.2	X5R	+/-10%	GRM31CR60J476KE19L	150%	Available	Mass Production
100µF	1210	16	2.5+/-0.2	X5R	+/-10%	GRM32ER61C476KE15L	150%	Available	Mass Production
	1206	6.3	1.6+/-0.3	X5R	+/-20%	GRM31CR60J107ME39L	150%	Available	Mass Production
	1210	10	2.5+/-0.2	X5R	+/-20%	GRM32ER61A107ME20L	100%	Available	Mass Production
150µF	1210	6.3	2.5+/-0.2	X5R	+/-20%	GRM32ER60J107ME20L	150%	Available	Mass Production
		4	1.8+0/-0.2	X5S	+/-20%	GRM32RC60G157ME15L	150%	Available	Mass Production

Low profile series Murata P/N List

Cap.	Size	WV	Chip T (mm)	TC	Cap. Tol.	Murata Global P/N	Durability (%Rated Volt)	Sample	M.P.	
1µF	0402	10	0.33mmMax	X5R	+/-20%	GRM153R61A105ME95D	100%	Available	Mass Production	
		25	0.5mmMax	X5R	+/-10%	GRM185R61E105KA12D	100%	Available	Mass Production	
		16	0.5mmMax	X5R	+/-10%	GRM185R61C105KE44D	150%	Available	Mass Production	
	0603	10	0.5mmMax	X7T	+/-10%	GRM185D71A105KE36D	150%	Available	Mass Production	
		10	0.5mmMax	X6S	+/-10%	GRM185C81A105KE36D	150%	Available	Mass Production	
		6.3	0.5mmMax	X6S	+/-10%	GRM185C80J105KE26D	150%	Available	Mass Production	
		25	0.7mmMax	X5R	+/-10%	GRM216R61E105KA12D	150%	Available	Mass Production	
		16	0.7mmMax	X7T	+/-10%	GRM216D71C105KA12D	100%	Available	Mass Production	
		16	0.7mmMax	X6S	+/-10%	GRM216C81C105KA12D	150%	Available	Mass Production	
	0805	16	0.7mmMax	X5R	+/-10%	GRM216R61C105KA88D	200%	Available	Mass Production	
		50	0.95mmMax	X5R	+/-10%	GRM219R61H105KA73D	150%	Available	Mass Production	
		35	0.95mmMax	X6S	+/-10%	GRM219C8YA105KA73D	150%	Available	Mass Production	
25		0.95mmMax	X7R	+/-10%	GRM219R71E105KA88D	150%	Available	Mass Production		
16		0.7mmMax	X5R	+/-10%	GRM216R61C225KA12D	150%	Available	Mass Production		
10		0.7mmMax	X5R	+/-10%	GRM216R61A225KE24D	150%	Available	Mass Production		
50		0.95mmMax	X5R	+/-10%	GRM219R61H225KE15D	150%	Available	Mass Production		
35		0.95mmMax	X6S	+/-10%	GRM219C8YA225KE15D	150%	Available	Mass Production		
25		0.95mmMax	X6S	+/-10%	GRM219C81E225KE15D	150%	Available	Mass Production		
25		0.95mmMax	X5R	+/-10%	GRM219R61E225KA12D	150%	Available	Mass Production		
16		0.95mmMax	X7R	+/-10%	GRM219R71C225KE15D	150%	Available	Mass Production		
2.2µF		16	0.95mmMax	X6S	+/-10%	GRM219C81C225KA12D	150%	Available	Mass Production	
	16	0.95mmMax	X5R	+/-10%	GRM219R61C225KA88D	150%	Available	Mass Production		
	35	0.95mmMax	X6S	+/-10%	GRM219C8YA225KA12D	150%	Available	Mass Production		
	25	0.7mmMax	X5R	+/-10%	GRM316R61E225KA12D	150%	Available	Mass Production		
	16	0.7mmMax	X6S	+/-10%	GRM316R61C225KA88D	150%	Available	Mass Production		
	50	0.95mmMax	X5R	+/-10%	GRM319R61H225KA12D	150%	Available	Mass Production		
	35	0.95mmMax	X6S	+/-10%	GRM319C8YA225KA12D	150%	Available	Mass Production		
	0603	16	0.55mmMax	X5R	+/-10%	GRM185R61C475K****	100%	Available	2013Q2	
	0805	35	0.95mmMax	X5R	+/-10%	GRM219R6YA475KA73D	100%	Available	Mass Production	
		25	0.95mmMax	X5R	+/-10%	GRM219R61E475KA73D	150%	Available	Mass Production	
		16	0.95mmMax	X6S	+/-10%	GRM219C81C475KA73D	150%	Available	Mass Production	
		16	0.95mmMax	X5R	+/-10%	GRM219R61C475KE15D	150%	Available	Mass Production	
10		0.95mmMax	X7T	+/-10%	GRM219D71A475KE15D	100%	Available	Mass Production		
10		0.95mmMax	X6S	+/-10%	GRM219C81A475KE34D	150%	Available	Mass Production		
6.3		0.95mmMax	X6S	+/-10%	GRM219C80J475KE19D	150%	Available	Mass Production		
50		1.00mmMax	X5R	+/-10%	GRM219R61H475K****	150%	Available	2013Q3		
35		1.00mmMax	X6S	+/-10%	GRM219C8YA475K****	150%	Available	2013Q3		
25		1.00mmMax	X7S	+/-10%	GRM219C71E475K****	150%	Available	2013Q3		
25		1.00mmMax	X6S	+/-10%	GRM219C81E475K****	150%	Available	2013Q3		
4.7µF		16	1.00mmMax	X7S	+/-10%	GRM219C71C475K****	150%	Available	2013Q3	
	10	0.7mmMax	X5R	+/-10%	GRM316R61A475KE19D	150%	Available	Mass Production		
	50	0.95mmMax	X5R	+/-10%	GRM319R61H475KA12D	150%	Available	Mass Production		
	25	0.95mmMax	X5R	+/-10%	GRM319R61C475KA12D	150%	Available	Mass Production		
	16	0.95mmMax	X7T	+/-10%	GRM319D71A475KA12D	100%	Available	Mass Production		
	16	0.95mmMax	X6S	+/-10%	GRM319C81C475KA12D	150%	Available	Mass Production		
	16	0.95mmMax	X5R	+/-10%	GRM319R61C475KA88D	150%	Available	Mass Production		
	1210	100	2.2mmMax	X7S	+/-10%	GRM32DC72A475K****	150%	Available	2013Q3	
	10µF	0805	25	0.95mm Max	X5R	+/-10%	GRM219R61E106KA12D	100%	Available	Mass Production
			16	0.95mm Max	X5R	+/-10%	GRM219R61C106KA73D	150%	Available	Mass Production
			10	0.95mm Max	X5R	+/-10%	GRM219R61A106KE44D	150%	Available	Mass Production
		1206	6.3	0.95mm Max	X5R	+/-10%	GRM219R60J106KE19D	150%	Available	Mass Production
25			0.95mm Max	X5R	+/-10%	GRM319R61E106KA12D	150%	Available	Mass Production	
16			0.95mm Max	X6S	+/-10%	GRM319C81C106KA12D	150%	Available	Mass Production	
0805	10	0.95mm Max	X5R	+/-20%	GRM219R61A226MEA0D	100%	Available	Mass Production		
	6.3	0.95mm Max	X5R	+/-20%	GRM219R60J226MEA0D	150%	Available	Mass Production		
	16	0.95mm Max	X5R	+/-20%	GRM219R61C226ME15L	100%	Available	Mass Production		
22µF	1206	16	0.95mm Max	X5R	+/-20%	GRM319R61C226ME15D	100%	Available	Mass Production	
		10	0.95mm Max	X5R	+/-20%	GRM319R61A226ME15D	150%	Available	Mass Production	
		6.3	0.95mm Max	X6S	+/-20%	GRM319C80J226ME15D	150%	Available	Mass Production	
47µF	0805	6.3	0.95mm Max	X5R	+/-20%	GRM219R60J476M****	100%	Available	2013Q3	
		4	0.95mm Max	X5R	+/-20%	GRM219R60G476ME44D	100%	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.

5) Sample marked "*" in Sample column are built upon your request. Lead time will be around 4wks (might be extended depending on production schedule). Please contact Murata Sales or Product Engineer directly



Chip Ferrite Beads BLM Series

High current ferrite beads



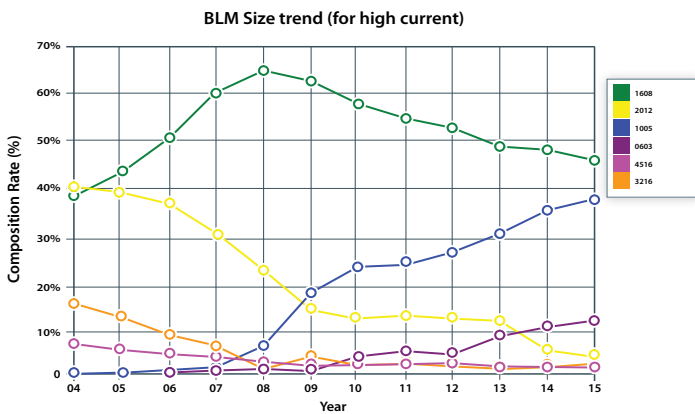
Features

- **High Current**
Up to 6Amps
- **High impedance**
up to 2700Ω
- **High Frequency**
100MHz, 500MHz, 1GHz
- **Miniaturization**
01005Ω, 0201Ω, 0402Ω, 0603Ω, 0804 array
- **Dimensions**
0.4 x 0.2 mm, 0.6 x 0.3 mm, 1.0 x 0.5 mm, 1.6 x 0.8 mm,

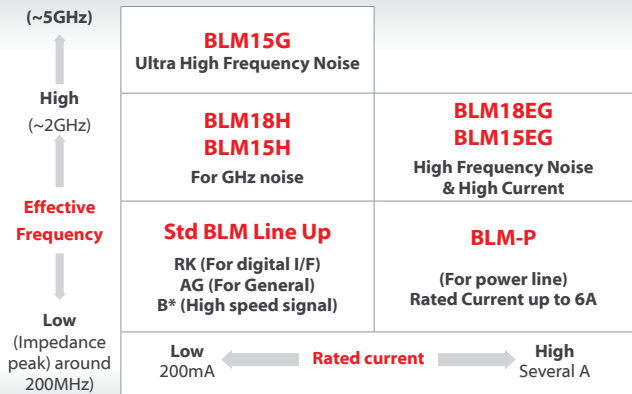
Applications

- Camera
- Mobile Phone
- Blu-ray/DVD

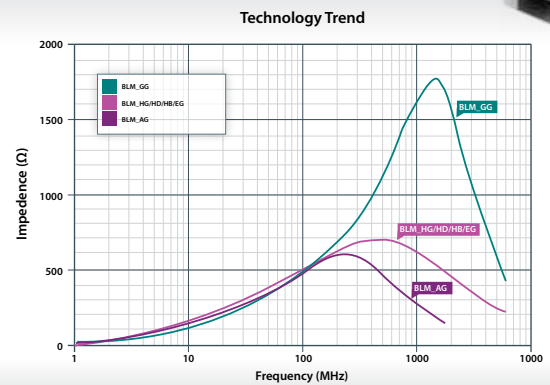
Case size trend



High Frequency Ferrite Beads



Chip ferrite Beads



Power Inductors

Wire wound inductors for power lines



Series	LW size Typ. (mm)	T size Max. (mm)	Shield	L Range (uH)	Rated current (A)		DCR typ. (ohms)	Engineering sample avail- ability	Mass production schedule
					Idc 1*	Idc 2*			
LQH5BP_T0	5.0x5.0	2.2	Yes	0.47-22	5.8 @1.0uH	3.1 @1.0uH	0.019 @1.0uH	Yes	Yes
LQH43P_26	4.5x3.2	2.8	Yes	1.0-220	3.4 @1.0uH	3.3 @1.0uH	0.026 @1.0uH	Yes	Yes
LQH44P_P0	4.0x4.0	1.8	Yes	1.0-22	2.95 @1.0uH	2.45 @1.0uH	0.03 @1.0uH	Yes	Yes
LQH44P_J0	4.0x4.0	1.2	Yes	1.0-47	2.0 @1.0uH	1.53 @1.0uH	0.048 @1.0uH	Yes	Yes
LQH32P_N0	3.2x2.5	1.7	Yes	0.47-120	2.3 @1.0uH	2.05 @1.0uH	0.045 @1.0uH	Yes	Yes
LQH32P_NC	3.2x2.5	1.7	Yes	0.47-22	3.0 @1.0uH	2.5 @1.0uH	0.036 @1.0uH	Yes	Yes
LQH3NP_M0	3.0x3.0	1.5	Yes	1.0 - 100	1.4 @1.0uH	2.05 @1.0uH	0.044 @ 1.0 uH	Yes	Yes
LQH3NP_MR	3.0x3.0	1.5	Yes	1.0-47	1.6 @1.0uH	2.15 @1.0uH	0.042 @1.0uH	Yes	Yes
LQH3NP_J0	3.0x3.0	1.2	Yes	1.0-47	1.65 @1.0uH	1.62 @1.0uH	0.040 @1.0uH	Yes	Yes
LQH3NP_G0	3.0x3.0	1.0	Yes	1.0-250	1.65 @1.0uH	1.525 @1.0uH	0.08 @ 1.0 uH	Yes	Yes
LQH2HP_G0	2.5X2.0	1.0	Yes	2.2-100	1.64 @2.2uH	1.0 @2.2uH	0.17@2.2uH	Yes	Yes
LQH2HP_J0	2.5X2.0	1.2	Yes	1.5-10	2.4 @1.5uH	1.5 @1.5uH	0.096 @1.5uH	Yes	Yes
LQH2HP_M0	2.5X2.0	1.5	Yes	2.2,4.7	1.7 @2.2uH	1.25 @2.2uH	0.146 @2.2uH	Yes	Yes
LQH2MC_02	2.0x1.6	0.95	No	1.0-82	-	0.485 @1.0uH	0.3 @1.0uH	Yes	Yes
LQH2MC_52	2.0x1.6	0.7	No	1.0 - 22	-	0.595 @1.0uH	0.25 @1.0uH	Yes	Yes

*1: When applied Rated current to the Products, Inductance will be more than the value which is 30% down from minimum rated Inductance value.

*2: When applied rated current to the products, self generation of heat will rise to 40°C or less.



High current bead inductors 3000A/B

High current bead inductors suit high frequency switching applications



Features

- Low-profile, surface-mount design
- Low core loss material
- J-STD-020 D.1 reflow
- Materials meet UL94V-0

Applications

- Power supplies
- DC-DC converters
- DC-AC inverters
- Voltage Regulator Modules

Part Number	Inductance (nH)	DC Current (A)	Saturation Current (A)	DC Resistance (mΩ)
30800AC	80	37	57	0.19
30101AC	97	36	48	0.20
30151AC	145	29	33	0.19
30201AC	191	22	24	0.21
30850BC	85	37	78	0.29
30101BC	100	37	66	0.29
30121BC	114	37	59	0.29
30151BC	154	37	43	0.29
30221BC	200	29	32	0.29

Shielded Inductors 1200RS/1200LRS

Shielded inductors provide a power line filtering solution in applications with EMI susceptibility



Features

- Through-hole, radial leaded devices
- 1200LRS series is available with inductance values ranging from 6.8 μ H to 22mH and DC current ratings up to 4.7A IDC and compact dimensions of \varnothing 10.5x8.5mm
- 1200RS series offers higher current ratings for the same inductance values with the same footprint. Inductance values extend from 10 μ H to 1mH and maximum current ratings to 4.6A IDC. Dimensions are \varnothing 10.5x10.5mm
- All parts have a low DC resistance to help maximize efficiency

Order Code	Inductance (μ H)	DC Current (A)	DC Resistance (m Ω)
12LRS682C	6.8 \pm 20%	4.7	20
12LRS103C	10 \pm 20%	3.4	50
12LRS153C	15 \pm 20%	3.0	70
12LRS223C	22 \pm 20%	2.6	90
12LRS333C	33 \pm 20%	2.1	110
12LRS473C	47 \pm 20%	1.7	140
12LRS683C	68	1.6	160
12LRS104C	100	1.4	200
12LRS154C	150	1.0	350
12LRS224C	220	0.78	540
12LRS334C	330	0.63	860
12LRS474C	470	0.53	1230
12LRS684C	680	0.50	1650
12LRS105C	1000	0.40	2300
12LRS155C	1500	0.31	3400
12LRS225C	2200	0.28	4600
12LRS335C	3300	0.20	8700
12LRS475C	4700	0.18	10500
12LRS685C	6800	0.15	15000
12LRS106C	10000	0.12	24000
12LRS156C	15000	0.095	37000
12LRS226C	22000	0.073	70000

Order Code	Inductance (μ H)	DC Current (A)	DC Resistance (m Ω)
12RS103C	10 \pm 20%	4.6	23
12RS153C	15 \pm 20%	4.0	36
12RS223C	22 \pm 20%	3.3	42
12RS333C	33	2.7	57
12RS473C	47	2.2	100
12RS683C	68	1.8	150
12RS104C	100	1.4	190
12RS154C	150	1.25	230
12RS224C	220	1.10	290
12RS334C	330	0.85	510
12RS474C	470	0.72	980
12RS684C	680	0.55	1200
12RS105C	1000	0.44	1500



PTC & NTC Thermistor

For overcurrent protection & temperature sensor / temperature compensation



Applications

- Time Delay Relay ⇒ CFL
- Overcurrent protection ⇒ Vacuum Cleaner / Set Top Box
- Motor Starter ⇒ Compressor of refrigerator
- Temperature Sensor and Compensation
- ⇒ Digital still camera
- ⇒ Notebook PC
- ⇒ Cellular Phone
- ⇒ Hard disc drive
- ⇒ Car

UL/TUV Certification

Products	Certification	Size (inch)/Series	Certification No.
NCP	UL : UL1434	0201/0402/0603/0805	E137188
	TUV : IEC60539-2 / IEC60730-1	0201	-
		0402	-
		0603 NCP18XH103/10kohm) 0603 (Others)	R 50136236 -
	UL : UL1434	0402/0603/0805	E137188
PRF	TUV : IEC60738-1 / IEC60730-1	0603 (PRF18BA103/10kohm)	R 50131746
		0603 (Others)	-
PRG	UL : UL1434	0603/0805	E137188
	TUV : IEC60738-1 / IEC60730-1	0603	R 50169179
		0805	R 50169447
PTGL	UL : UL1434	P/N should be confirmed	E137188
	VDE : EN60738-1-3	P/N should be confirmed	40014981 40001695 40026566
PTFM*S	UL : UL1434	P/N should be confirmed	E137188
	VDE : EN60738-1-4	P/N should be confirmed	40028088

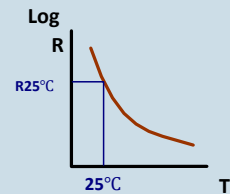
NTC Thermistor

Negative Temperature Coefficient (NTC Thermistor)

Resistance-Temperature Characteristics

NTC Thermistor

Mn-Ni, Mn-Co-Cu,
Mn-Ni + X
Ceramics



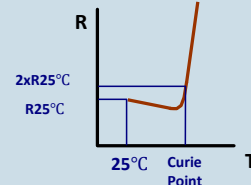
PTC Thermistor

Positive Temperature Coefficient (PTC Thermistor)

Resistance-Temperature Characteristics

**PTC Thermistor
(POSISTOR®)**

BaTiO₃ + X
Ceramics



Chip NTC Thermistor Line-up

For temperature sensor / temperature compensation



Resistance at 25 °C	0201 NCP03				0402 NCP15				0603 NCP18				0805 NCP21	
	B-Constant	Code	B-Constant	Code	B-Constant	Code	B-Constant	Code	B-Constant	Code	B-Constant	Code	B-Constant	Code
11 ohm	2750K	-	-	-	-	-	-	-	-	-	-	-	-	-
22 ohm	2750K	-	-	-	3100K	XC	-	-	-	-	-	-	-	-
33 ohm	2750K	-	-	-	3100K	XC	-	-	-	-	-	-	-	-
47 ohm	2750K	-	-	-	3100K	XC	-	-	-	-	-	-	-	-
68 ohm	2750K	-	-	-	3100K	XC	-	-	-	-	-	-	-	-
100 ohm	2750K	-	-	-	3250K	XF	-	-	3250K	XF	-	-	-	-
150 ohm	3100K	XC	-	-	3250K	XF	-	-	3250K	XF	-	-	-	-
220 ohm	3100K	XC	-	-	3500K	XM	-	-	3500K	XM	-	-	3500K	XM
330 ohm	3100K	XC	Under Development		3500K	XM	-	-	3500K	XM	-	-	-	-
470 ohm	3100K	XC	Under Development		3650K	XQ	-	-	3650K	XQ	-	-	3650K	XQ
680 ohm	3100K	XC	Under Development		3650K	XQ	-	-	3650K	XQ	-	-	-	-
1.0 kohm	3500K	XM	-	-	3950K	XW	-	-	3950K	XW	-	-	3650	-
1.5 kohm	3500K	XM	-	-	3950K	XW	-	-	3950K	XW	-	-	-	-
2.2 kohm	3500K	XM	-	-	3950K	XW	-	-	3950K	XW	-	-	-	-
3.3 kohm	3500K	XM	-	-	3950K	XW	-	-	3950K	XW	-	-	-	-
4.7 kohm	3500K	XM	-	-	3500K	XM	-	-	3500K	XM	-	-	-	-
6.8 kohm	3380K	XH	-	-	3950K	XW	-	-	3950K	XW	-	-	-	-
10 kohm	3380K	XH	3900K	XV	3380K	XH	3900K	XV	3380K	XH	3900K	XV	3900K	XV
15 kohm	3380K	XH	-	-	3950K	XW	-	-	3950K	XW	-	-	3950K	XW
22 kohm	3380K	XH	-	-	3950K	XW	4485K	WL	3950K	XW	-	-	3950K	XW
33 kohm	4250K	WF	-	-	4050K	WB	4485K	WL	4050K	WB	-	-	4050K	WB
47 kohm	4050K	WB	4485K	WL	4050K	WB	4485K	WL	4050K	WB	-	-	4050K	WB
68 kohm	4250K	WF	4485K	WL	1450K	WD	4485K	WL	1450K	WD	-	-	-	-
100 kohm	4250K	WF	4485K	WL	4250K	WF	4485K	WL	4250K	WF	-	-	4250K	WF
150 kohm	-	-	4485K	WL	4500K	WM	4485K	WL	4500K	WM	-	-	-	-
220 kohm	-	-	4485K	WL	4500K	WM	-	-	4500K	WM	-	-	-	-
330 kohm	-	-	-	-	-	-	-	-	-	-	-	-	-	-
470 kohm	-	-	-	-	4500K	WM	-	-	4500K	WM	-	-	-	-
680 kohm	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.0 Mohm	-	-	-	-	-	WM	-	-	-	-	-	-	-	-
Operating Temp.	-40 +125 °C				-40 +125 °C				-40 +125 °C				-40 +125 °C	
Dissipation Constant	Approx 1.0 mW/ °C				Approx 1.0 mW/ °C				Approx 1.0 mW/ °C				Approx 2.0 mW/ °C	
P/N in End	05RL				03RC				03RB				03RA	
Packaging	15kpcs/reel				10 kpcs/reel				4 kpcs/reel				4kpcs/reel	
Certified UL1434	-				-				Done				Done	



Chip PTC Thermistor Line-up

For overheat sensing / overcurrent protection



Line-up of PRF18 series (0603 size)

Various shut-down temperatures can be selected

Part Number	Charac.	Resistance (at +25°C)	Sensing Temp. (at 4.7 kohm)	Sensing Temp. (at 47 kohm)	Maximum Voltage	Operating Temp.
PRF18A5471QB5RB	AS	470 ohm +/-50%	145 +/- 5°C	-	32 VDC	-20 to +160°C
PRF18AR471QB5RB	AR		135 +/- 5°C	150 +/- 7°C		-20 to +150°C
PRF18BA471QB5RB	BA		125 +/- 5°C	140 +/- 7°C		-20 to +140°C
PRF18BB471QB5RB	BB		115 +/- 5°C	130 +/- 7°C		-20 to +130 °C
PRF18BC471QB5RB	BC		105 +/- 5°C	130 +/- 7°C		-20 to +120 °C
PRF18BD471QB5RB	BD		95 +/- 5°C	110 +/- 7°C		-20 to +110 °C
PRF18BE471QB5RB	BE		85 +/- 5°C	100 +/- 7°C		-20 to +100 °C
PRF18BF471QB5RB	BF		75 +/- 5°C	90 +/- 7°C		-20 to + 90 °C
PRF18BG471QB5RB	BG		65 +/- 5°C	80 +/- 7°C		-20 to + 80 °C
PRF18BB471RB5RB	BB		470 ohm +/-50%	115 +/- 3°C		-
PRF18BC471RB5RB	BC	105 +/- 3°C		-	-20 to +120 °C	
PRF18BD471RB5RB	BD	95 +/- 3°C		-	-20 to +110 °C	
PRF18BE471RB5RB	BE	85 +/- 3°C		-	-20 to +100 °C	

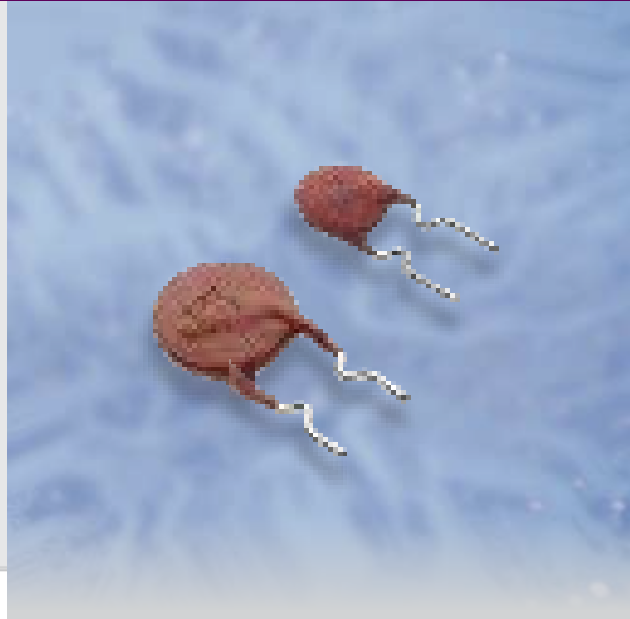
Line-up of PRG18 / PRG21 series (0603 / 0805 size) for over current protection

Various shut-down temperatures can be selected

Size	Part Number	Hold Current (mA)		Trip Current (mA)		V Max (VDC)	R25 (ohm)
		@60°C	@25°C	@25°C	@-10°C		
0805	PRG21BB220MB1RK	30	44	91	110	20	22
	PRG21BB150MB1RK	40	59	116	140	20	15
	PRG21BC6R8MM1RA	80	120	260	320	20	6.8
	PRG21BC4R7MM1RA	100	155	330	400	20	4.7
	PRG21BC3R3MM1RA	120	180	400	480	16	3.3
	PRG21BC2R2MM1RA	150	220	500	600	12	2.2
	PRG21BC1R0MM1RA	220	330	740	850	9	1.0
	PRG21BC0R6MM1RA	285	420	920	1100	6	0.6
	PRG21BC0R2MM1RA	500	750	1620	2000	6	0.2
0603	PRG18BB471MB1RB	7	10	21	25	24	470
	PRG18BB221MB1RB	10	14	29	35	24	220
	PRG18BB101MB1RB	15	21	45	55	24	100
	PRG18BB470MB1RB	20	29	61	75	24	47
	PRG18BB330MB1RB	25	36	71	85	24	33
	PRG18BC6R8MM1RB	80	120	260	320	20	6.8
	PRG18BC4R7MM1RB	100	155	330	400	20	4.7
	PRG18BC3R3MM1RB	120	180	400	480	12	3.3
	PRG18BC2R2MM1RB	150	220	500	600	9	2.2
	PRG18BC1R0MM1RB	220	330	740	850	6	1.0

PTC Thermistor lead type

For overcurrent protection

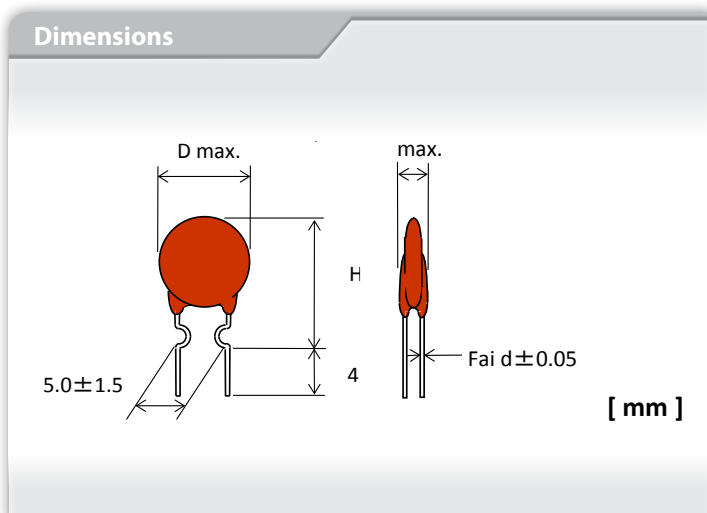


Part Number	Resistance (at 25°C)	Max Voltage	Max Current	Non-operating Current	Operating Current	Dimensions			
				at +60°C	at -10°C	D	T	H	Fai d
PTGL04AS100K2N51*0	10Ω +/-10%	30V rms	1.5A	122mA	240mA	4.5	3.5	9.5	0.5
PTGL04AS100K2B51*0	10Ω +/-10%		2.0A	167mA	330mA	4.5	3.5	9.5	0.6
PTGL05AS3R9K2B51*0	3.9Ω +/-10%		3.5A	269mA	530mA	5.5	3.5	10.5	0.6
PTGL07AS2R7K2B51*0	2.7Ω +/-10%		4.5A	336mA	663mA	7.3	3.5	12.3	0.6
PTGL07AS1R8K2B51*0	1.8Ω +/-10%		5.0A	420mA	829mA	7.3	3.5	12.3	0.6
PTGL09AS1R2K2B51*0	1.2Ω +/-10%		6.0A	556mA	1097mA	9.3	3.5	14.3	0.6
PTGL12AS0R8K2B51*0	0.8Ω +/-10%		7.0A	685mA	1352mA	11.5	3.5	16.5	0.6
PTGL04AS100K3B51*0	10Ω +/-10%	51V rms	1.0A	168mA	332mA	4.5	3.5	9.5	0.6
PTGL05AS6R8K3B51*0	6.8Ω +/-10%		1.5A	197mA	388mA	5.5	3.5	10.5	0.6
PTGL07AS3R3K3B51*0	3.3Ω +/-10%		3.0A	307mA	606mA	7.3	3.5	12.3	0.6
PTGL09AS2R2K3B51*0	2.2Ω +/-10%		4.0A	412mA	814mA	9.3	3.5	14.3	0.6
PTGL12AS1R2K3B51*0	1.2Ω +/-10%		5.0A	592mA	1168mA	11.5	3.5	16.5	0.6

* Bulk type = B

Ammo pack = A

UL Approved (File No. E137188)





MAGICSTRAP® to RFID

Creating & Protecting Value in Electronics

Features:

- I²C Serial Interface to Microcontroller or CPU
- User memory: up to 3.3kbit
- Fix unique ID (up to 96bit)
- Standards: EPC Global C1G2, ISO 18000-6
- RF-to-I2C bridge mode (handshake)

Applications:

- Product Configuration
- Device customization
- Firmware downloads
- Return management
- Counterfeit protection
- Production information
- Theft protection
- Sensor calibration

Benefits:

- Prototype management
- Traceability
- Process control
- Brand protection
- Maintenance / Repair management
- WEEE Recycling



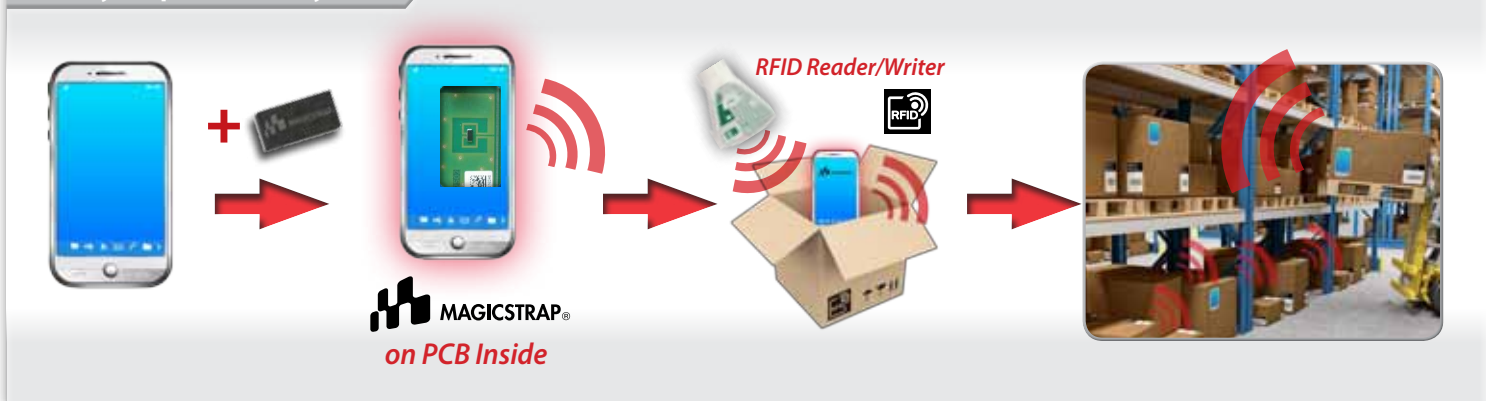
Dimensions



	L	W	T
LXMS31 Series	3.2mm	1.6mm	0.7mm
LXMS2H Series	2.5mm	2.0mm	0.9mm

Part Number	Type	Size (mm)	Feature	Description
LXMS31ACNA-009	1	3.2 x 1.6 x 0.7	SMD, user memory, UHF	NXP - G2XM - 512 bits
LXMS31ACNA-010	2	3.2 x 1.6 x 0.7	SMD, user memory, UHF	NXP - G2XM - 512 bits
LXMS31ACNA-011	3	3.2 x 1.6 x 0.7	SMD, user memory, UHF	NXP - G2XM - 512 bits
LXMS31ACNA-012	4	3.2 x 1.6 x 0.7	SMD, user memory, UHF	NXP - G2XM - 512 bits
LXMS2HACNF-138	2	2.5 x 2.0 x 0.9	I ² C-I/F, 3.3kbit memory, UHF	NXP - G2I2C - 3.3k bits

Trace your product everywhere



MAGICSTRAP® RFID Starterkit:
<http://www.beta-estore.com/rfid>

μDCDC Converter

LXDC Series



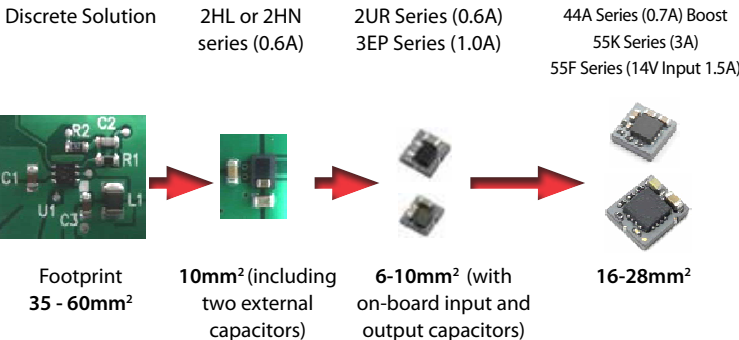
Features

- Low EMI noise and small footprint due to inductorembded ferrite substrate
- High efficiency using synchronous rectifier technology and PFM/PWM auto-select function (forced mode available on some models)
- Input voltage range: 2.3 ~ 5.5V & 14V(55Fseries)
- Load currents available are 600mA, 1A, 1.5A and 3A
- Fixed output voltage & Adjustable Voltage type (see product line-up table on back)
- Switching frequency: 3MHz to 6MHz
- Operating temperature range: -40 to +85°C

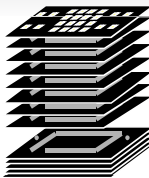
Applications

- Any device currently using discrete DC-DC circuits where downsizing and space-savings are required
- Cellular Phones, PDAs, Mobile Internet Devices
- Digital Cameras, eBooks, Tablets, W-LAN, BT
- Portable Game Consoles, Music Players, etc.
- Base station, 12V AC/DC adaptor input Devices

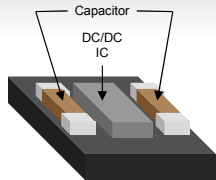
Downsizing advantage



Structure

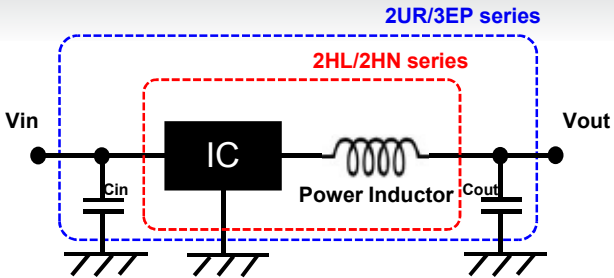


Multilayer process to create a ferrite substrate with 3-dimensional circuits and embedded power inductor



I/O via holes through the ferrite substrate act as ferrite beads and reduce conductive noise.

Application circuit



Note: See back page for circuits specific to each series.



DC-DC Converter for Transportation

RUW & UCR100 Developed for railway applications



Features

RUW

15W DC-DC converter with 10:1 input range

- Externally settable hold up time with additional capacitor
- DC OK/Power Fail signal
- Short circuit protection
- Over temperature protection
- Over voltage protection

UCR100

Ultra wide 8:1 input range DC-DC converter

- Eurocard 3U x 4TE format
- Input range of 16.8V - 137.5V
- Single outputs: 5V, 12V, or 24V
- High efficiency - up to 90%
- Remote On/Off control
- Adjustable output trim +/-10%
- Remote Sense compensation 10%

Applications

- Railway
- Transportation
- Telecommunication
- Industrial

Model Number	Input Voltage (Vout)	Output Voltage (Vin)	Power (W)
RUW15SL12C	16-160V	12V	15W
RUW15SL12HC	16-160V	12V	15W
RUW15SL24C	16-160V	24V	15W
RUW15SL24HC	16-160V	24V	15W

Root Model Number	Output Voltage (Vout)	Output Power (Pout)	Range Volts (V)	Efficiency Typical (%)
UCR100-050-T72-C	5.1V	100W	16.8-137.5V	87%
UCR100-120-T72-C	12V	120W	16.8-137.5V	86.5%
UCR100-240-T72-C	24V	105.6W	16.8-137.5V	90%



DC-DC Converter MEJ2 Series

Extends power rating of 5.2 kV isolation miniature DC-DC converters



Features

5.2kVDC Isolated 2W DC-DC Converters

- Class leading efficiency at low loads
- UL60950 basic/supplementary insulation
- UL60601 3rd ed. 1/2 MOOPs¹
- 5200VDC isolation test voltage
- Encapsulated for superior thermal performance

Applications

- Medical
- IGPT Drivers
- Industrial
- Instrumentation and Control

Model Number	Input Voltage (Vin)	Output Voltage (Vout)	Efficiency Typical (%)
MEJ2S0303SC	3.3V	3.3V	70%
MEJ2S0305SC	3.3V	5V	74%
MEJ2S0503SC	5V	3.3V	70%
MEJ2S0505SC	5V	5V	75%
MEJ2S0509SC	5V	9V	78%
MEJ2S0512SC	5V	12V	77%
MEJ2S0515SC	5V	15V	79%
MEJ2S1203SC	12V	3.3V	73%
MEJ2S1205SC	12V	5V	78%
MEJ2S1209SC	12V	9V	79%
MEJ2S1212SC	12V	12V	80%
MEJ2S1215SC	12V	15V	80%
MEJ2S1505SC	15V	5V	76%
MEJ2S1509SC	15V	9V	78%
MEJ2S1512SC	15V	12V	79%
MEJ2S1515SC	15V	15V	78%



DC-DC Converters for Power Amplifiers

PAH & PAQ series developed for power amplifiers



Features

PAH

Half-Brick Isolated, 350-Watt, DC-DC Converter

- Outstanding thermal performance
- Standard baseplate for conduction cooled applications
- No output reverse conduction
- Input to output isolation, 2250Vdc
- Input under-voltage lockout

PAQ

Quarter-Brick Isolated DC-DC Converter with 2:1 Wide Input Range

- Input voltage range of 36-75V (48V nominal)
- Output of 29.8V at 5A
- DOSA compatible 1/4 brick package (0.46" high)
- High efficiencies (92.5%, typical)
- Remote On/Off control

Applications

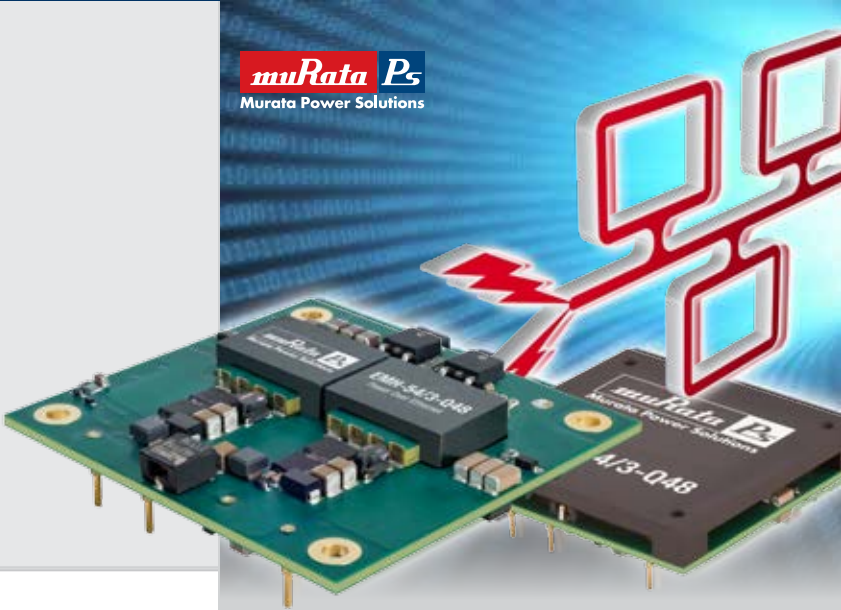
- Telecommunication
- Power Amplifiers

Root Model Number	Voltage Out (Vout)	Output Power (Pout)	Range Volts (V)	Efficiency Typical (%)
PAH-28/12.5-D48	28V	350W	36-75V	93%
PAH-28/16-D48	28V	450W	36-75V	93.5%
PAH-53/8.5-D48	53V	450.5W	36-75V	94%

Root Model Number	Input Voltage (Vin)	Output Voltage (Vout)	Output Power (Pout)
PAQ-29/5-D48 48V	36-75V	29.8V	150W

DC-DC Converter Power-over-ethernet

*Efficient Power-over-Ethernet for
24/48/60V Battery Systems*



Features

Isolated, 54Vout, 3A, Ethernet Power Half-Brick DC-DC Converters

- PoE compliant
- 18V - 72Vin Range
- 54Vout @ 3A (162W)
- 2250Vdc input to output isolation
- Optional baseplate
- 91% efficiency
- Industry-standard Half Brick footprint

Applications

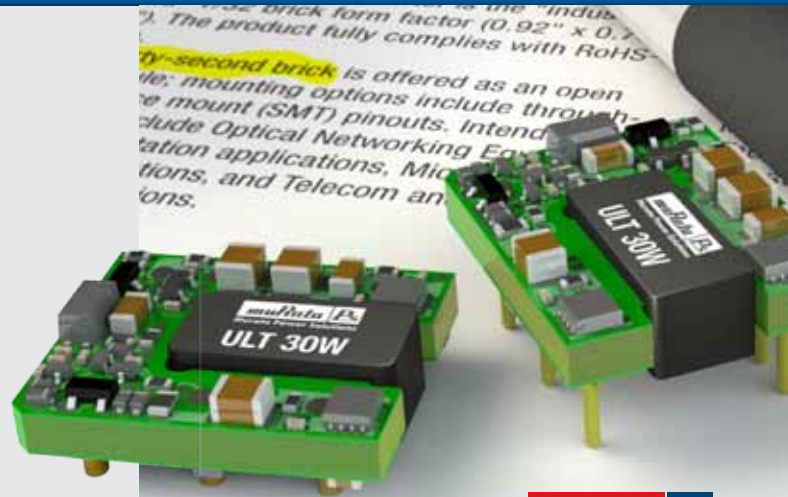
- Telecommunications
- Power-over-ethernet
- Datacom
- Networking applications

Root Model Number	Output Voltage (Vout)	Output Current (A)	Output Power (Pout)	Input Voltage (Vin)	Efficiency (%)
EMH-54/3-Q48 54V	54V	3A	162W	18-72V (48V Nom.)	91.5% Typ.



DC-DC Converter ULT Series

High power density 1/32 brick



Features

- Input voltage range of 36-75V (48V nominal)
- Outputs of 3.3V/7.5A, 5V/5A or 12V/2.5A
- DOSA approved 1/32 brick package (0.35" high)
- Tight line and load regulation
- On/Off control (Negative or Positive polarity)
- Trim adjustment range of +10% to -20%
- Operating temperature range of -40°C to 85°C
- Input-output isolation to 1500Vdc (basic)
- Certified to meet UL/EN 60950-1, CSA-C22.2 No. 60950-1, 2nd edition safety approvals

Options

- Surface-mount package
- 0.110" and 0.145" Pin lengths (L1 and L2 suffix)

Samples:

available from stock

Production quantities:

Production quantities: From stock to 12 weeks lead time

Applications:

- Telecom, wireless
- Distributed power architecture (DPA)
- Mobile and battery powered applications
- Robotics
- Test equipment
- Homeland Security
- Low-mid power broad market applications

DC-DC Converter ULT Series

High power density 1/32 brick



Self-Protection Features

The ULT Series has many self-protection features that prevent both converter and external circuit hazards.

- Input undervoltage lockout
- Overtemperature shutdown (+115°C, typ.)
- Output current limiting (using the "hiccup" autorestart technique)
- Output overvoltage protection
- Reverse conduction elimination

Markets

- Networking & Telecom Equipment
- Industrial & Instrumentation
- Transportation
- Medical Diagnostic Equipment
- Computers & Office Equipment

Part Number Structure & Features

Part Number	Output Voltage (Vout)	Output Current (Iout)	Input Voltage (Vin)	On/Off Polarity	Package	RoHS Compliant
ULT-3.3/7.5-D48N-C	3.3V	7.5A	48V	Negative	Thru-hole	RoHS 6
ULT-3.3/7.5-D48NM-C	3.3V	7.5A	48V	Negative	SMT	RoHS 6
ULT-3.3/7.5-D48P-C	3.3V	7.5A	48V	Positive	Thru-hole	RoHS 6
ULT-3.3/7.5-D48PM-C	3.3V	7.5A	48V	Positive	SMT	RoHS 6
ULT-5/5-D48N-C	5V	5A	48V	Negative	Thru-hole	RoHS 6
ULT-5/5-D48NM-C	5V	5A	48V	Negative	SMT	RoHS 6
ULT-5/5-D48P-C	5V	5A	48V	Positive	Thru-hole	RoHS 6
ULT-5/5-D48PM-C	5V	5A	48V	Positive	SMT	RoHS 6
ULT-12/2.5-D48N-C	12V	2.5A	48V	Negative	Thru-hole	RoHS 6
ULT-12/2.5-D48NM-C	12V	2.5A	48V	Negative	SMT	RoHS 6
ULT-12/2.5-D48P-C	12V	2.5A	48V	Positive	Thru-hole	RoHS 6
ULT-12/2.5-D48PM-C	12V	2.5A	48V	Positive	SMT	RoHS 6



DC-DC Converter UWQ Series

200W, quarter brick



muRata **PS**
Murata Power Solutions

Features

- Input voltage range of 18-75V (48V nominal)
- Output of 12V up to 17A
- Industry Standard DOSA 1/4 brick package (0.46" high)
- Tight line and load regulation
- On/Off control (Negative or Positive polarity)
- Operating temperature range of -40°C to 85°C
- Input-output isolation to 2250Vdc (basic)
- Certified to meet UL/EN 60950-1, CSA-C22.2 No. 60950-1, 2nd edition safety approvals

Self Protection Features

The UWQ Series has many self-protection features that prevent both converter and external circuit hazards.

- Input undervoltage lockout
- Overtemperature shutdown (+125°C, typ.)
- Output current limiting (using the "hiccup" autorestart technique)
- Output overvoltage protection
- Reverse conduction elimination

Options:

- Baseplate
- 0.110" and 0.145" Pin lengths (L1 and L2 suffix)

DC-DC Converter UWQ Series

200W, quarter brick



Applications:

- Telecom, wireless
- Regulated Intermediate Bus Architecture
- Mobile and battery powered applications
- Robotics
- Test equipment
- Homeland Security
- Low-mid power broad market applications

Markets

- Networking & Telecom Equipment
- Industrial & Instrumentation
- Transportation
- Medical Diagnostic Equipment
- Computers & Office Equipment

Part Number	Output Voltage (Vout)	Output Current (Iout)	Input Voltage (Vin)	On/Off Polarity	Package	RoHS Compliant
UWQ-12/17-Q48N-C	12V	17A	48V	Negative	Open-frame	RoHS 6



DC-DC Converter ULS Series

100W DC-DC Converters in 1/16 Brick Package



Features

Isolated, 54Vout, 3A, Ethernet Power Half-Brick DC-DC Converters

- Input voltage range of 36-75V (48V nominal)
- Outputs of 12V up to 8.3A, 5V up to 20A, & 3.3V up to 30A
- DOSA compatible 1/16 brick package (0.4" high)
- Tight line / load regulation (+/-)0.125% / 0.25% of Vout
- On/Off control (Negative or Positive logic)

Applications

- Telecom, wireless
- Distributed power architecture (DPA)
- Mobile and battery-powered applications
- Robotics
- Test equipment
- Homeland Security

Model Number	Input Voltage (Nom.) (Vin)	Output Voltage (Vout)	Output Current (Iout)	Output Power (Pout)	Efficiency Typical (%)
ULS-3.3/30-D48	48V	3.3V	30A	99W	91%
ULS-5/20-D48	48V	5V	20A	100W	91%
ULS-12/8.3-D48	48V	12V	8.3A	99.6W	92%

Combined Sensors

Gyro & Accelerometer



Fully integrated digital single axis gyro and 3-axis accelerometer in a single component

- Available also as a stand-alone gyro (SCR1100 series)
- Exceptionally insensitive to mechanical noise
- Superior bias stability over temperature and time (angular rate <math>< 1 \text{ }^\circ/\text{h}</math> bias instability)
- Low noise output (0.06 $^\circ/\text{s}$ rms)
- $\pm 100 \text{ }^\circ/\text{s}$ & $\pm 300 \text{ }^\circ/\text{s}$ angular rate measurement ranges
- Extensive self diagnostics features

For applications with tough requirements

- Inertial measurement units (IMUs)
- Platform stabilization and control
- Dynamic inclination measurement
- Motion analysis and control
- Roll-over detection
- Robotic control systems
- Navigation systems

Part Number	No. of axis	Range	Supply voltage (V)	Temperature range (°C)	Sensitivity	Signal bandwidth (Hz)	Output type
SCC1300-D02	1 (gyro), 3 (accel.)	$\pm 100^\circ/\text{s}$, $\pm 2\text{g}$	5 analog 3.3 digital	-40 to +125	50 LSB/($^\circ/\text{s}$), 1800 LSB/g	50, 45	Digital/SPI
SCC1300-D04	1 (gyro), 3 (accel.)	$\pm 300^\circ/\text{s}$, $\pm 6\text{g}$	5 analog 3.3 digital	-40 to +125	18 LSB/($^\circ/\text{s}$) 650 LSB/g	50, 45	Digital/SPI



Digital Accelerometers

Digital 1, 2 or 3 axis accelerometers



Features

- Excellent accuracy
- High stability
- Extremely stable output over wide range of temperature, humidity and vibrations
- Advanced self-diagnostic features
- Qualified according to AEC-Q100 standard
- Package, pin-out and SPI protocol compatible with Murata digital accelerometer product family
- RoHS compliant Dual Flat Lead (DFL) plastic package suitable for lead free soldering process and SMD mounting

Applications

Safety critical automotive applications

- Electronic Stability Control (ESC)
- Hill Start Assistance (HSA)
- Electronic Parking Brake (EPB)
- Roll Over
- Active Suspension
- Engine anti-vibration

Also various demanding industrial applications

- Platform stabilization and control
- Motion analysis and control
- Downhole surveying

Part Number	No. of axis	Measurement Direction	Range	Offset Temperature drift (mg)	Signal bandwidth (Hz)
SCA820-D04	1	Z	2	±30	50
SCA830-D06	1	Y	2	±30	50
SCA2100-D02	2	XY	2	±30	45
SCA2110-D04	2	XZ	2	±30	45
SCA2120-D06	2	YZ	2	±30	45
SCA3100-D04	3	XYZ	2	±30	45
SCA3100-D07	3	XYZ	6	±70	45

Temperature range: -40 to +125°C | Supply Voltage: 3.3 V | Output type: Digital/SPI

Digital Low Power Accelerometers

Digital Low Power 3-axis Accelerometers



Features

- Low current consumption
- High shock durability
- Robust packaging suitable for demanding environments
- Measurement mode 150 μ A
- Total offset error \pm 200 mg. Includes effects over supply voltage, temperature and life time
- RoHS compliant
- AEC Q-100 qualified
- Interrupt signal triggered by motion
- Selectable frequency response

Applications

Automotive security applications such as;

- Vehicle alarms
- Inclination sensing
- Motion activation
- Black box systems

Cost sensitive industrial applications where highly reliable sensor technology is required

Part Number	No. of axis	Range	Supply voltage (V)	Temperature range (°C)	Sensitivity	Signal bandwidth (Hz)	Output type
SCA3060-D01	3	\pm 2	3.0-3.6	-40 to +105	1000	9/35	Digital/SPI



Analog Inclinometers

Analog 1 and 2 axis inclinometers



Analog 1 and 2 axis inclinometers offering

- Robust design
- High performance

High calibration accuracy combines extremely low temperature dependency, high resolution and low noise together with a robust sensing element design, to make Murata inclinometers an ideal choice for high accuracy leveling instruments.

Analog 1 and 2 axis inclinometers offering

- Instruments, Heavy Duty Vehicles
- Platform leveling and stabilization
- 360° vertical orientation measurement (with SCA100T)
- Leveling instruments
- Construction levels
- Motion analysis and control
- Inclination compensation in weighting scales

Part Number	No. of axis	Range	Supply voltage (V)	Temperature range (°C)	Sensitivity (LSB/g)	Signal bandwidth (Hz)	Output type
SCA100T-D01	2	±30°, ±0.5g	5	-40 to +125	4	18	Analog/Digital
SCA100T-D02	2	±90°, ±1g	5	-40 to +125	2	18	Analog/Digital
SCA103T-D04	1	±15°, ±0.26g	5	-40 to +125	16	18	Analog/Digital
SCA103T-D05	1	±30°, ±0.5g	5	-40 to +125	8	18	Analog/Digital
SCA61T-FAHH1G	1	±30°, ±0.5g	5	-40 to +125	4	18	Analog/Digital
SCA61T-FA1H1G	1	±90°, ±1g	5	-40 to +125	2	18	Analog/Digital

Digital Inclinometers

Digital 1-axis inclinometers



Features

- Digital 16-bit SPI Interface
- Excellent accuracy
- High stability
- Extremely stable output over wide range of temperature, humidity and vibrations
- Advanced self-diagnostic features
- Qualified according to AEC-Q100 standard
- RoHS compliant Dual Flat Lead (DFL) plastic package suitable for lead free soldering process and SMD mounting

Applications

- Automotive / inclination measurement
- Instruments, Heavy Duty Vehicles
- Platform leveling and stabilization
- Motion analysis and control

Part Number	No. of axis	Range	Supply voltage (V)	Temperature range (°C)	Sensitivity (LSB/g)	Signal bandwidth (Hz)
SCA830-D07	1 (Y)	±1g	3.3	-40 to +125	32000	6.25



Analog Accelerometers

Analog 1- and 2-axis accelerometers



Features

- High performance and accuracy
- Excellent stability over temperature and time
- Outstanding overload and shock durability
- Extremely low noise outputs enabling high resolution
- Enhanced failure detection
- Digitally activated electrostatic self test
- Calibration memory parity check
- Continuous connection failure detection
- Bi-directional acceleration measurement
- RoHS compliant suitable for lead free soldering process and SMD mounting

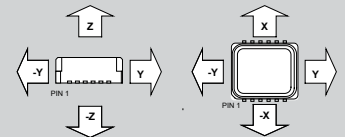
Applications

Safety critical automotive applications

- Electronic Stability Control (ESC)
- Hill Start Assistance (HSA)
- Electronic Parking Brake (EPB)
- Roll Over
- Active Suspension
- Engine anti-vibration

Various instrument applications

- Inertial measurement units (IMUs)
- Platform stabilization and control
- Motion analysis and control
- Robotic control systems
- Navigation systems



Part Number	No. of axis	Range (g)	Sensitivity (V/g)	Signal bandwidth (Hz)	Output type
SCA610-E28H1A	1 (x)	±1.7	1.2	50	Analog
SCA610-E23H1A	1 (x)	±1.5	1.333	50	Analog
SCA620-EF8H1A	1 (x)	±1.7	1.2	50	Analog
SCA620-EF1V1B	1 (z)	0 to +2.0	2	50	Analog
SCA630-EDCV1B	1(y)	-12.3 to 13.3	0.15	400	Analog
SCA720-D01	1(z)	±1 to ±3	0.94	115	Analog
SCA1000-D01	2 (x/y)	±1.7	1.2	50	Analog/Digital
SCA1020-D06	2 (y/z)	±1.7	1.2	50	Analog/Digital
SCA1000-N1000070	2 (x/y)	±4	0.55	115	Analog/Digital
SCA100T-D07	2 (x/y)	±12	0.17	400	Analog/Digital

Temperature range: -40 to +125°C | Supply Voltage: 5 V

Piezo Sounders

Suitable for Beeper of mobile terminals like PDAs, medical equipments



• Features

- Thin and Small package: L12.0 x W12.0 x T 3.0 mm
- Resistant to reflow soldering
- Tape & Reel supply available
- Utilize Au flash electrode for Pb free conductive glue mounting.
- Oper. temp. range -20 to 70 °C*
- Input voltage: 25 Vpp max.

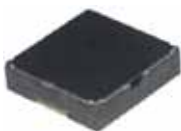
* Contact Murata if you require a wider operating temperature range

Suitable for Beeper of mobile terminals like PDAs, medical equipments

• Appearance



PKLCS1212E2400

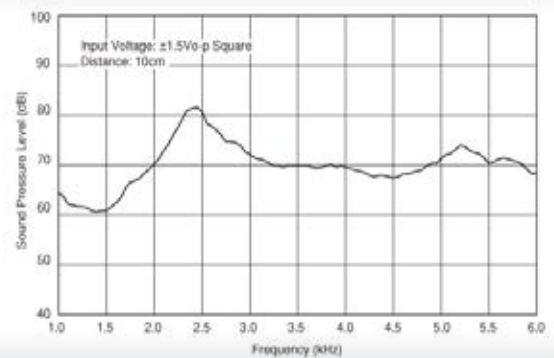


PKLCS1212E4001

2.4kHz

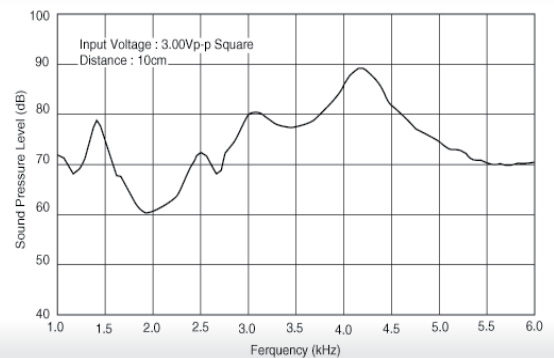
PKLCS1212E2400 (75 dB @ 3 Vpp / 10 cm)

NEW



4 kHz

PKLCS1212E4001 (75 dB @ 3 Vpp / 10 cm)



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