

## Features

- 0402 and 0603 package options
- Rated for IEC 61000-4-2, level 4
- Withstands multiple ESD strikes
- Low capacitance and leakage currents for invisible load protection
- Tape and reel packaging

## ChipGuard® MLA Series Varistor ESD Clamp Protectors

### Description

The ChipGuard® CG0402MLA and CG0603MLA Series are based on a multilayer metal oxide technology. The MLA family is designed to protect sensitive electronic circuits from the threat of electrostatic discharge ESD. The MLA series is available from 5.5 V to 26 V DC working voltages.

The wide operating voltage and temperature range makes this family ideally suited to IC power supplies, signal and control line protection.

### Electrical Characteristics @ 25 °C (unless otherwise noted)

Model	Vrms (V)	VDC (V)	VN Min. (V)	VN Max. (V)	VC (V)	ITM (Max.) (A)	WTM (Max.) (J)	CP (pF) Typ.
	<50 $\mu$ A		1 mA DC		1 A @ 8/20 $\mu$ s	@ 8/20 $\mu$ s	10/1000 $\mu$ s	@ 1 MHz
CG0402MLA-5.5MG	4	5.5	6.4	9.6	19	20	0.05	270
CG0402MLA-14KG	11	14	16.2	19.8	38	20	0.05	90
CG0402MLA-14LG	11	14	15.3	20.7	30	20	0.05	100
CG0402MLA-18KG	14	18	19.8	24.2	45	20	0.05	85
CG0603MLA-5.5ME	4	5.5	6.4	9.6	19	30	0.1	270
CG0603MLA-14KE	11	14	16.2	19.8	35	30	0.1	150
CG0603MLA-18KE	14	18	19.8	24.2	40	30	0.1	130
CG0603MLA-26KE	20	26	27.9	34.1	58	30	0.1	100

### Environmental Characteristics

Operating Temperature..... -55 °C to +125 °C  
 Storage Temperature..... -55 °C to +125 °C  
 Response Time..... <1 ns  
 Standard..... IEC 61000-4-2 Level 4

These products are RoHS compliant. There is some lead contained within the glass of the ceramic. This is acceptable under exemption no. 5 of the RoHS directive (DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment).

**BOURNS®**

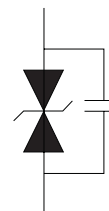
Asia-Pacific: Tel: +886-2 2562-4117 • Fax: +886-2 2562-4116

Europe: Tel: +41-41 768 5555 • Fax: +41-41 768 5510

The Americas: Tel: +1-951 781-5500 • Fax: +1-951 781-5700

[www.bourns.com](http://www.bourns.com)

### Device Symbol



### How to Order

#### CG 0402 MLA - 5.5 M G

ChipGuard®  
 Product Designator  
 Package Option  
 0402 = 0402 Package  
 0603 = 0603 Package  
 Multilayer Series Designator  
 Operating Voltage  
 5.5 = 5.5 V  
 14 = 14 V  
 18 = 18 V  
 26 = 26 V  
 Tolerance  
 K = 10 %  
 L = 15 %  
 M = 20 %  
 Tape & Reel Packaging  
 E = 4,000 pcs. per reel (CG0603MLA Series)  
 G = 10,000 pcs. per reel (CG0402MLA Series)

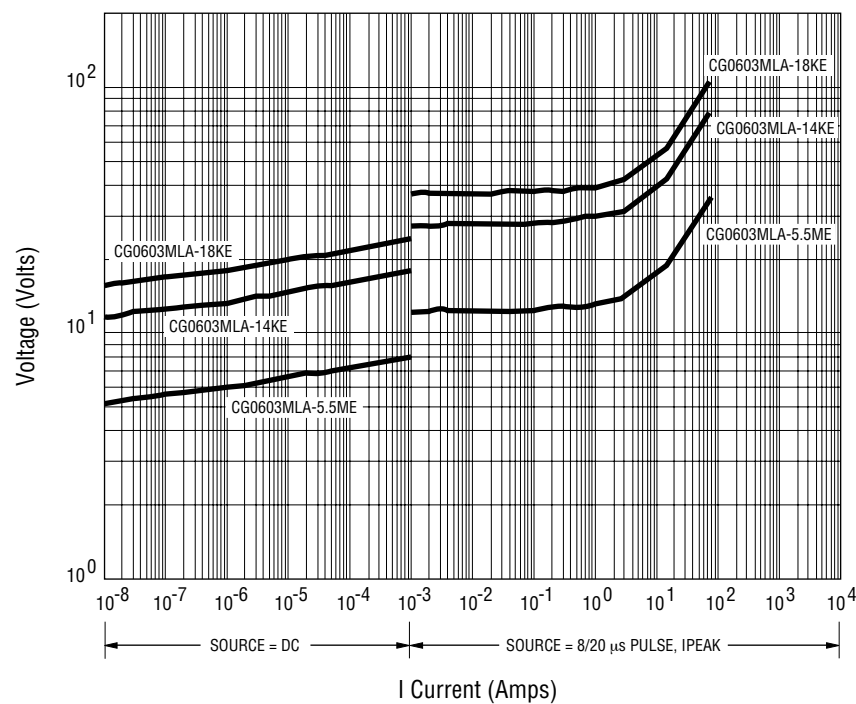
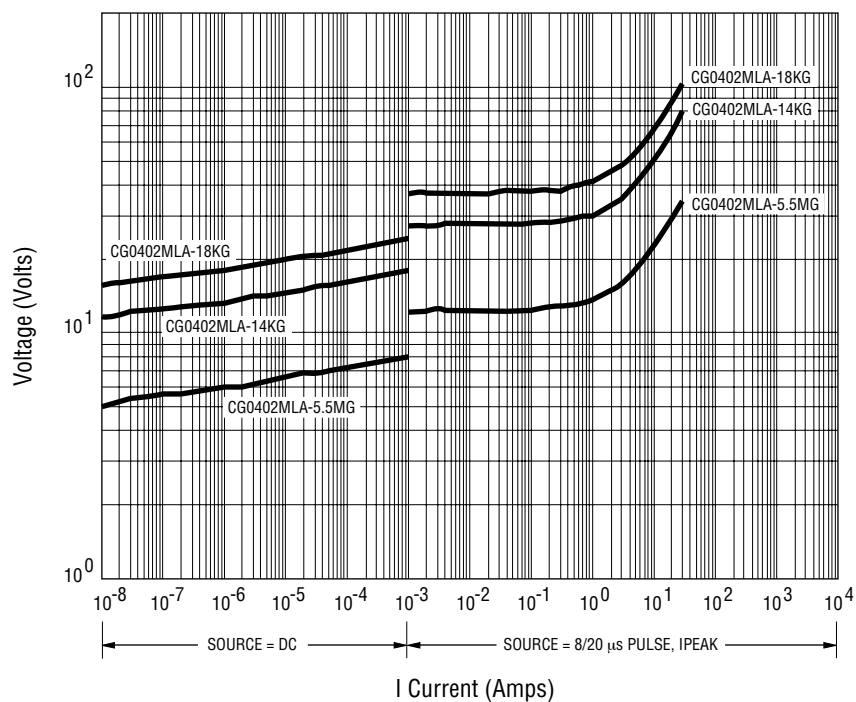
Ni barrier terminations are standard on all ChipGuard® part numbers.

\*RoHS Directive 2002/95/EC Jan 27, 2003 including Annex.

Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.

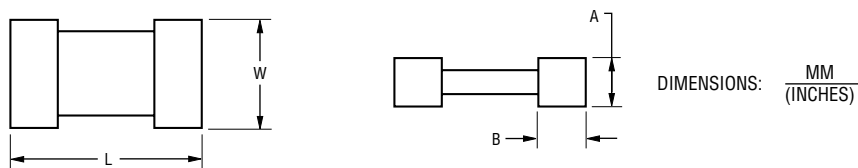
## Voltage-Current Characteristics



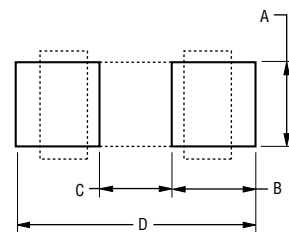
# ChipGuard® MLA Series Varistor ESD Clamp Protectors

**BOURNS®**

## Product Dimensions



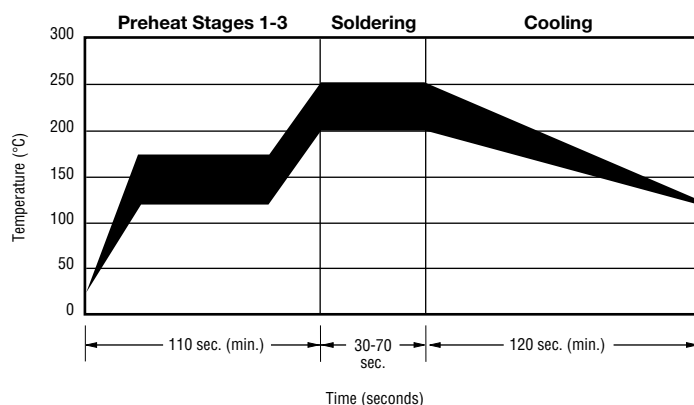
## Recommended Pad Layout



Dimension	CG0402MLA Series	CG0603MLA Series
L	$1.00 \pm 0.15$ (0.04 ± 0.006)	$1.60 \pm 0.20$ (0.064 ± 0.008)
W	$0.50 \pm 0.10$ (0.02 ± 0.004)	$0.80 \pm 0.20$ (0.032 ± 0.008)
A	$0.50 \pm 0.10$ (0.02 ± 0.004)	$0.80 \pm 0.20$ (0.032 ± 0.008)
B	$0.25 \pm 0.15$ (0.01 ± 0.006)	$0.30 \pm 0.20$ (0.012 ± 0.008)

Dim.	CG0402MLA Series	CG0603MLA Series
A	$0.51$ (0.020)	$0.76$ (0.030)
B	$0.61$ (0.024)	$1.02$ (0.040)
C	$0.51$ (0.020)	$0.50$ (0.020)
D	$1.70$ (0.067)	$2.54$ (0.100)

## Solder Reflow Recommendations



A	Stage 1 Preheat	Ambient to Preheating Temperature	30 s to 60 s
B	Stage 2 Preheat	140 °C to 160 °C	60 s to 120 s
C	Stage 3 Preheat	Preheat to 200 °C	20 s to 40 s
D	Main Heating	200 °C 210 °C 220 °C 230 °C 240 °C	60 s to 70 s 55 s to 65 s 50 s to 60 s 40 s to 50 s 30 s to 40 s
E	Cooling	200 °C to 100 °C	1 °C/s to 4 °C/s

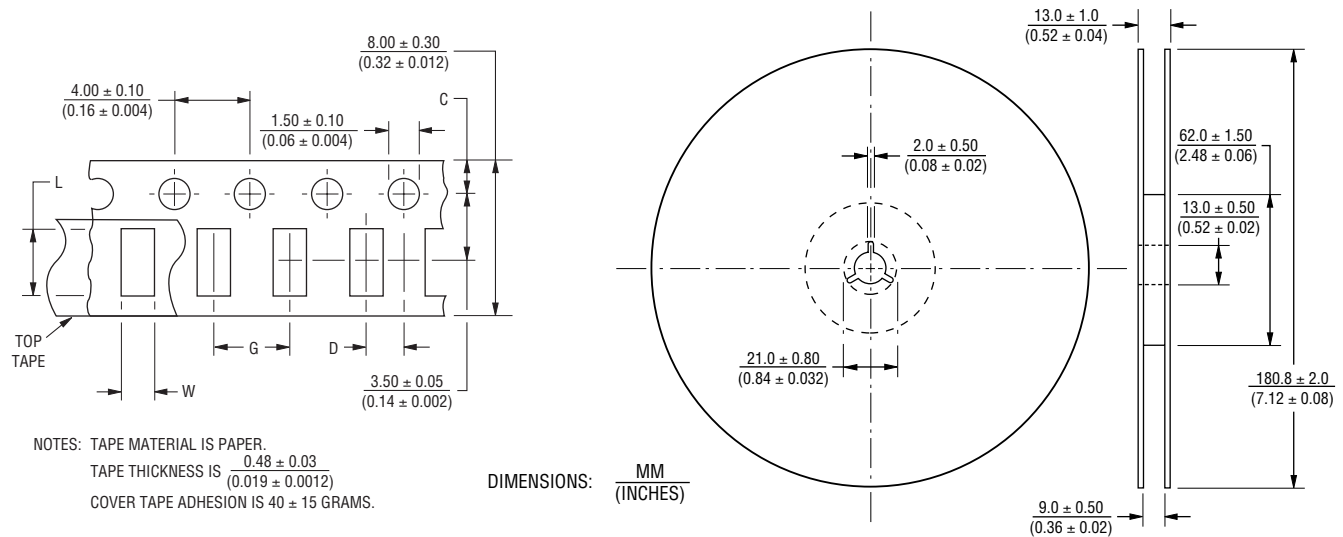
- This product can be damaged by rapid heating, cooling or localized heating.
- Heat shocks should be avoided. Preheating and gradual cooling recommended.
- Excessive solder can damage the device. Print solder thickness of 150 to 200 um recommended.
- Solder gun tip temperature should be kept below 280 °C and should not touch the device directly. Contact should be less than 3 seconds. A solder gun under 30 watts is recommended.

Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

# ChipGuard® MLA Series Varistor ESD Clamp Protectors

**BOURNS®**

## Packaging Dimensions



Dimension	CG0402MLA Series	CG0603MLA Series
C	$\frac{1.75 \pm 0.05}{(0.04 \pm 0.002)}$	$\frac{1.75 \pm 0.10}{(0.04 \pm 0.004)}$
D	$\frac{2.00 \pm 0.02}{(0.08 \pm 0.0008)}$	$\frac{2.00 \pm 0.05}{(0.08 \pm 0.002)}$
L	$\frac{1.19 \pm 0.05}{(0.047 \pm 0.002)}$	$\frac{1.80 \pm 0.20}{(0.072 \pm 0.008)}$
W	$\frac{0.69 \pm 0.05}{(0.027 \pm 0.002)}$	$\frac{0.90 \pm 0.20}{(0.036 \pm 0.008)}$
G	$\frac{2.0 \pm 0.05}{(0.08 \pm 0.002)}$	$\frac{4.0 \pm 0.05}{(0.16 \pm 0.002)}$

REV. K 11/10

Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.