

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
- Lead free

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 μ A | | 1 mA DC | | 1 A @ 8/20 μ s | @ 8/20 μ s | 10/1000 μ s | @ 1 MHz |
| CG0402MLA-5.5MG | 4 | 5.5 | 8.0 | 18.0 | 24 | 20 | 0.05 | 270 |
| CG0402MLA-14LG | 11 | 14 | 15.3 | 20.7 | 30 | 20 | 0.05 | 100 |
| CG0402MLA-18KG | 14 | 18 | 23.0 | 33.0 | 45 | 20 | 0.05 | 85 |
| CG0603MLA-5.5ME | 4 | 5.5 | 8.0 | 18.0 | 24 | 30 | 0.1 | 270 |
| CG0603MLA-18KE | 14 | 18 | 23.0 | 33.0 | 54 | 30 | 0.1 | 130 |
| CG0603MLA-26KE | 20 | 26 | 32.0 | 42.0 | 70 | 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).

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Device Symbol



How to Order

CG 0n0n MLA - n.n x x

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.

** Only models lower than 10 volts require decimal point.



WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

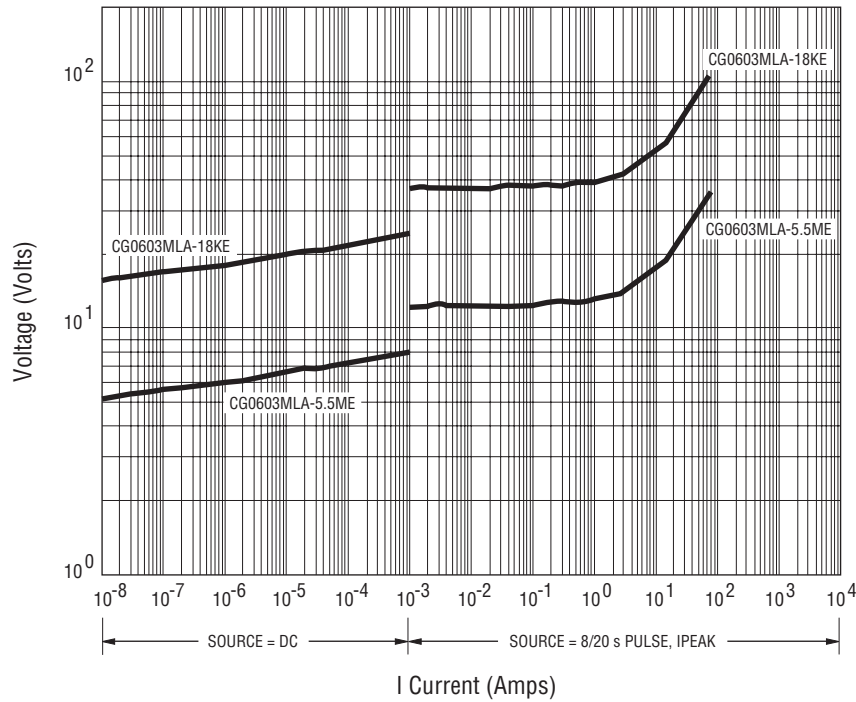
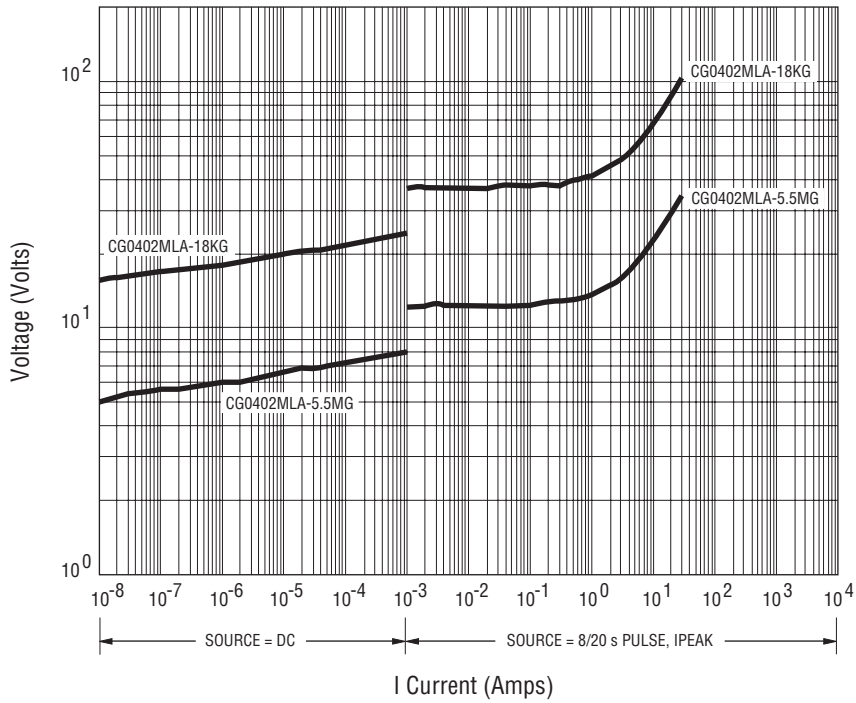
*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

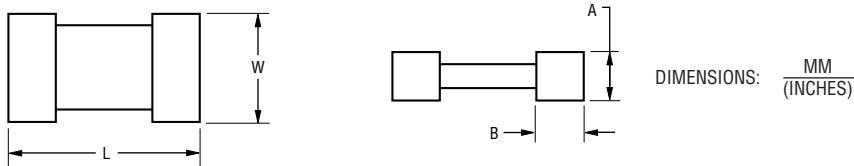
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Voltage-Current Characteristics



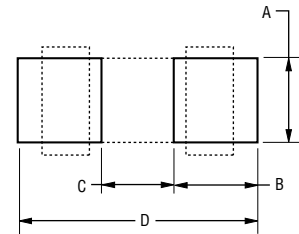
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Product Dimensions



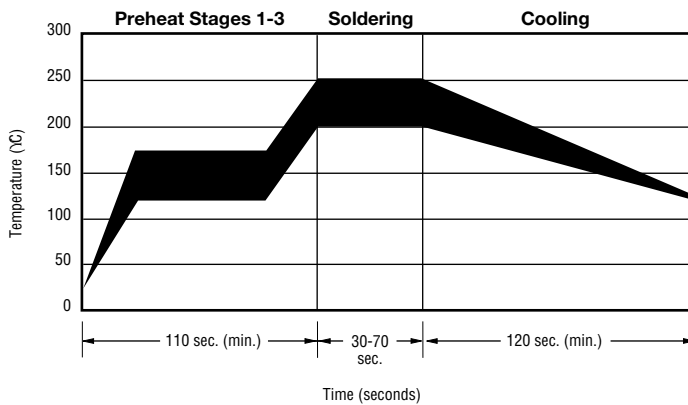
| Dimension | CG0402MLA Series | CG0603MLA Series |
|-----------|---|---|
| L | $\frac{1.00 \pm 0.15}{(0.04 \pm 0.006)}$ | $\frac{1.60 \pm 0.20}{(0.064 \pm 0.008)}$ |
| W | $\frac{0.50 \pm 0.10}{(0.02 \pm 0.004)}$ | $\frac{0.80 \pm 0.20}{(0.032 \pm 0.008)}$ |
| A | $\frac{0.50 \pm 0.10}{(0.02 \pm 0.004)}$ | $\frac{0.80 \pm 0.20}{(0.032 \pm 0.008)}$ |
| B | $\frac{0.25 \pm 0.15}{(0.010 \pm 0.006)}$ | $\frac{0.30 \pm 0.20}{(0.012 \pm 0.008)}$ |

Recommended Pad Layout



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

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.

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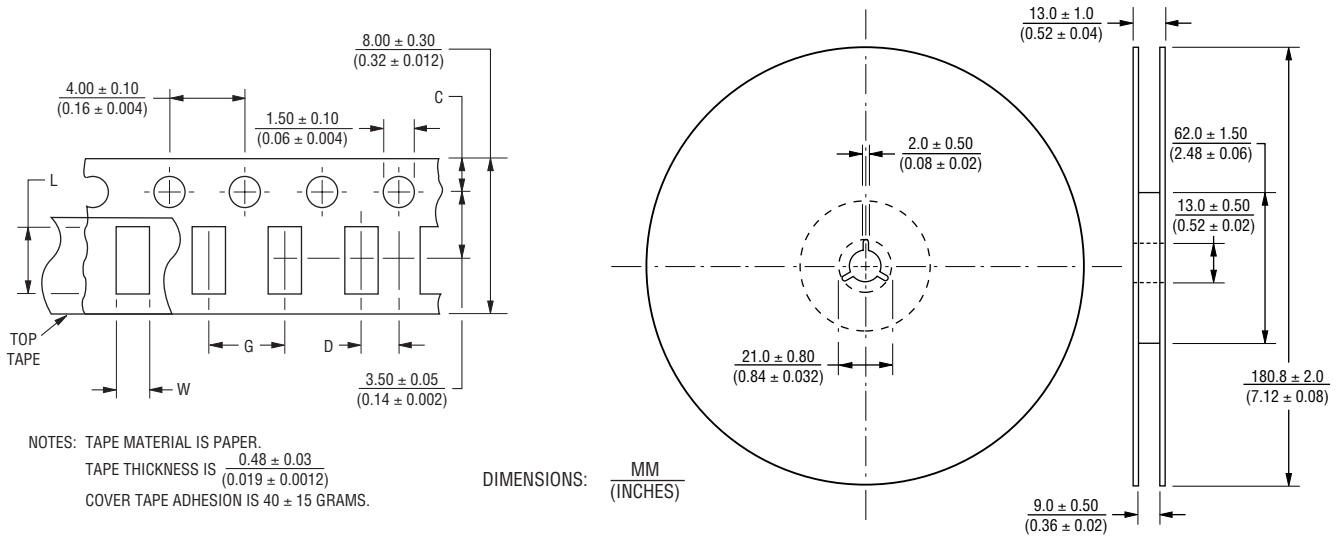
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Packaging Dimensions



| 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 | $\frac{2.0 \pm 0.05}{(0.08 \pm 0.002)}$ | $\frac{4.0 \pm 0.05}{(0.16 \pm 0.002)}$ |

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