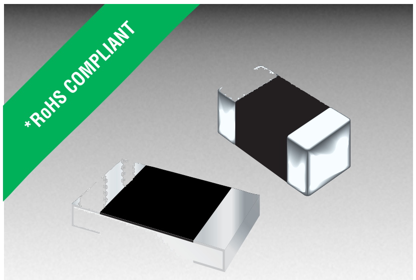


BOURNS®

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® MLD Series Varistor ESD Clamp Protectors

Description

The Chip Guard® CG0402MLD and CG0603MLD Series have been specifically designed to protect sensitive electronic components from electrostatic discharge damage. The MLD family has been designed to protect equipment to IEC61000-4-2, level 4 ESD specifications targeted for high speed data applications. The Chip Guard® MLD Series has been manufactured to provide very low cpacitance with excellent clamp qualities, making the family almost transparent under normal working conditions.

Electrical Characteristics @ 25 °C (unless otherwise noted)

Model	Continuous Operating Voltage	Breakdown Voltage	Clamping Voltage	Off-state Current	Capacitance
	V_{DC} (V)	V_B @ 1 mA (V)	V_C @ 1 A 8/20 μs (V)	I_L (μA)	C_{OFF} (pF)
	Max.	Typ.	Max.	Max.	Max.
CG0402MLD-12G	12	50	140	1	5
CG0603MLD-12E	12	50	140	1	5

Environmental Characteristics

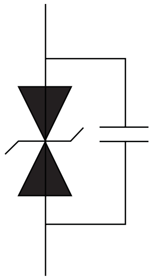
Operating Temperature .... -30 °C to +85 °C
Storage Temperature .... -30 °C to +85 °C
Standard .... IEC 61000-4-2 Level 4

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).

ESD Withstand Ratings

Parameter	Peak Voltage	Repetitions (Min.)
ESD Voltage Capability, Contact Discharge	8 kV	100 at 8 kV
ESD Voltage Capability, Air Discharge	15 kV	100 at 15 kV
Standard	IEC61000-4-2 Level 4	

Schematic



How to Order

CG 0n0n MLD - 12 x

ChipGuard® Product Designator
Package Option
0402 = 0402 Package
0603 = 0603 Package
Multilayer Series Designator
Operating Voltage
12 = 12 V
Tape & Reel Packaging
E = 4,000 pcs. per reel (CG0603MLD Series)
G = 10,000 pcs. per reel (CG0402MLD Series)

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

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

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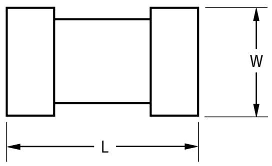
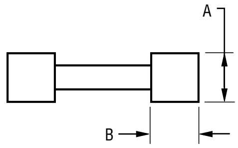
*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

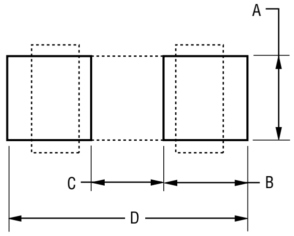
Product Dimensions





DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

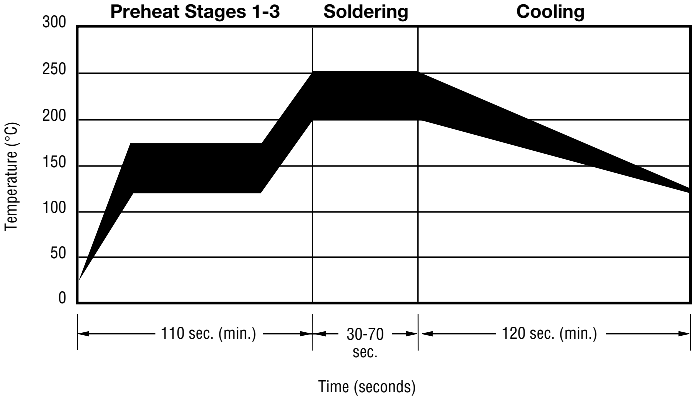
Recommended Pad Layout



Dimension	CG0402MLD Series	CG0603MLD Series
L	1.00 ± 0.15 (0.04 ± 0.006)	1.60 ± 0.20 (0.064 ± 0.008)
W	0.50 ± 0.10 (0.02 ± 0.004)	0.80 ± 0.20 (0.032 ± 0.008)
A	0.50 ± 0.10 (0.02 ± 0.004)	0.80 ± 0.20 (0.032 ± 0.008)
B	0.25 ± 0.15 (0.10 ± 0.006)	0.30 ± 0.20 (0.012 ± 0.008)

Dim.	CG0402MLD Series	CG0603MLD 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)

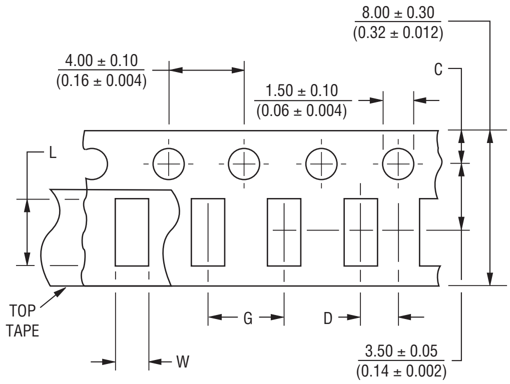
Solder Reflow Recommendations



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

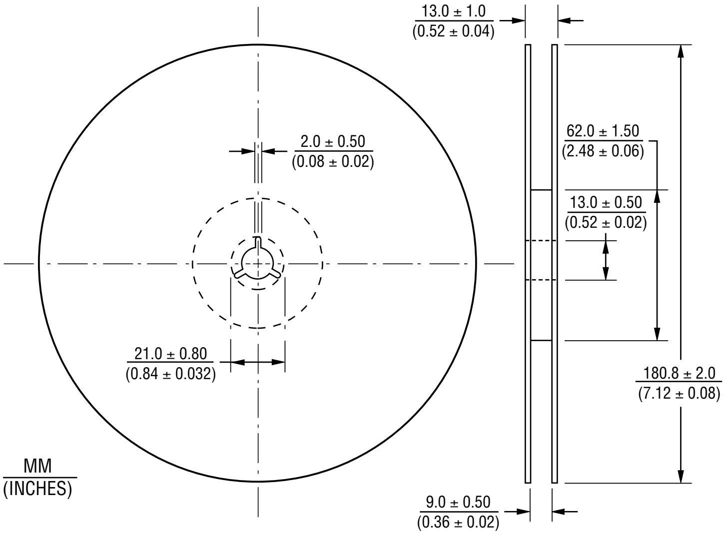
- This product can be damaged by rapid heating, cooling or localized heating.
- Heat shocks should be avoided. Preheating and gradual cooling recommended.
- Excessive solder can damage the device. Print solder thickness of 150 to 200 um recommended.
- Solder gun tip temperature should be kept below 280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

Packaging Dimensions



NOTES: TAPE MATERIAL IS PAPER.
TAPE THICKNESS IS $\frac{0.48 \pm 0.03}{(0.019 \pm 0.0012)}$
COVER TAPE ADHESION IS 40 ± 15 GRAMS.

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$



Dimension	CG0402MLD Series	CG0603MLD Series
C	1.75 ± 0.05 (0.04 ± 0.002)	1.75 ± 0.10 (0.04 ± 0.004)
D	2.00 ± 0.02 (0.08 ± 0.0008)	2.00 ± 0.05 (0.08 ± 0.002)
L	1.19 ± 0.05 (0.047 ± 0.002)	1.80 ± 0.20 (0.072 ± 0.008)
W	0.69 ± 0.05 (0.027 ± 0.002)	0.90 ± 0.20 (0.036 ± 0.008)
G	2.0 ± 0.05 (0.08 ± 0.002)	4.0 ± 0.05 (0.16 ± 0.002)