

## 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 capacitance 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 <sub>DC</sub> (V)	V <sub>B</sub> @ 1 mA (V)	V <sub>C</sub> @ 1 A 8/20 μs (V)	I <sub>L</sub> (μA)	C <sub>OFF</sub> (pF)
	Max.	Typ.	Max.	Max.	Max.
CG0402MLD-12G	12	50	140	1	5
CG0603MLD-12E	12	50	140	1	5

### Environmental Characteristics

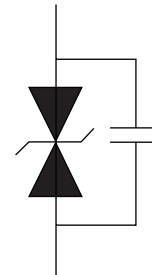
Operating Temperature ..... -30 °C to +85 °C  
 Storage Temperature..... -30 °C to +85 °C  
 Standard..... IEC 61000-4-2 Level 4

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.

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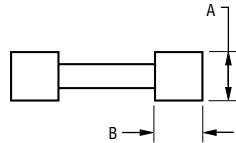
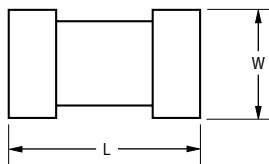
Asia-Pacific: Tel: +886-2 2562-4117 • Fax: +886-2 2562-4116

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

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

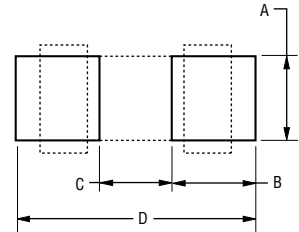
[www.bourns.com](http://www.bourns.com)

## Product Dimensions



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

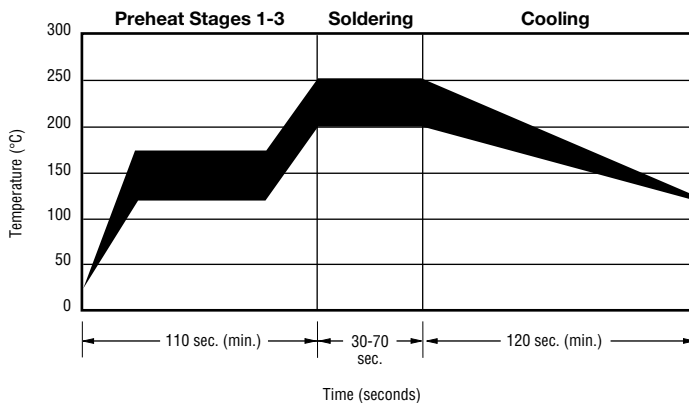
## Recommended Pad Layout



Dimension	CG0402MLD Series	CG0603MLD 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	$\frac{0.25 \pm 0.15}{(0.10 \pm 0.006)}$	$\frac{0.30 \pm 0.20}{(0.012 \pm 0.008)}$

Dim.	CG0402MLD Series	CG0603MLD 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



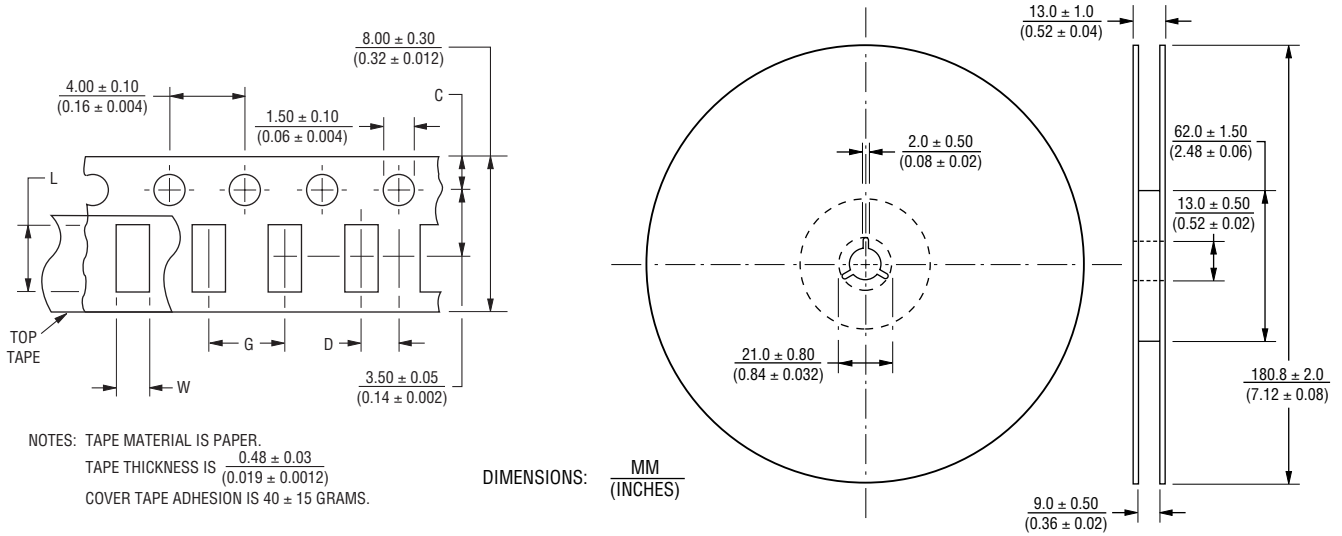
A	Stage 1 Preheat	Ambient to Preheating Temperature	30 s to 60 s
B	Stage 2 Preheat	140 °C to 160 °C	60 s to 120 s
C	Stage 3 Preheat	Preheat to 200 °C	20 s to 40 s
D	Main Heating	200 °C	60 s to 70 s
		210 °C	55 s to 65 s
		220 °C	50 s to 60 s
		230 °C	40 s to 50 s
E	Cooling	240 °C	30 s to 40 s
		200 °C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



Dimension	CG0402MLD Series	CG0603MLD 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. G 08/12

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

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

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