

## 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

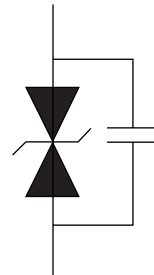
Operating Temperature ..... -30 °C to +85 °C  
 Storage Temperature..... -30 °C to +85 °C  
 Standard..... IEC 61000-4-2 Level 4

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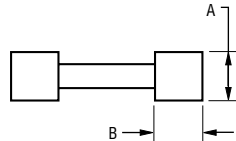
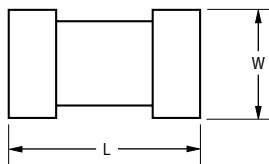
Asia-Pacific: Tel: +886-2 2562-4117 • Fax: +886-2 2562-4116

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

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

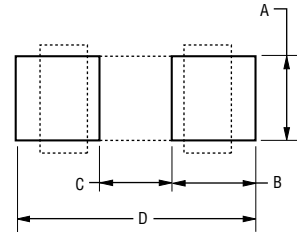
www.bourns.com

## Product Dimensions



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

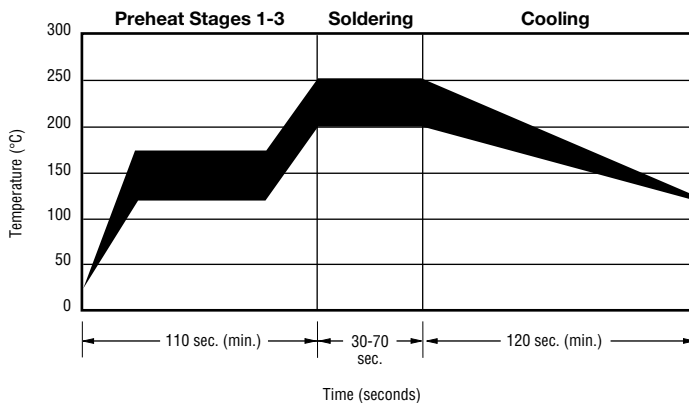
## Recommended Pad Layout



| 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



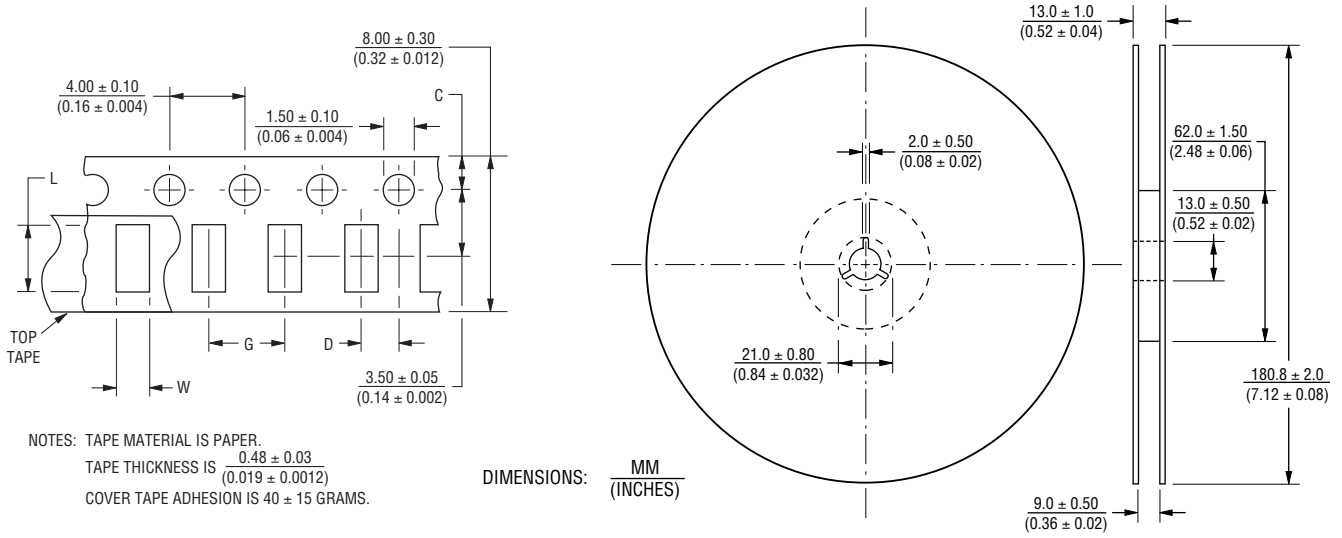
|   |                 |                                   |                  |
|---|-----------------|-----------------------------------|------------------|
| A | Stage 1 Preheat | Ambient to Preheating Temperature | 30 s to 60 s     |
| B | Stage 2 Preheat | 140 °C to 160 °C                  | 60 s 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.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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