

BOURNS®

Features

- 0603 package
- Rated for IEC 61000-4-2, level 4 ESD requirements for high speed USB 2.0 or IEEE1394 applications
- Withstands multiple ESD strikes
- Low capacitance and leakage currents for invisible load protection
- Tape and reel packaging

ChipGuard® MLC Series Varistor ESD Clamp Protectors

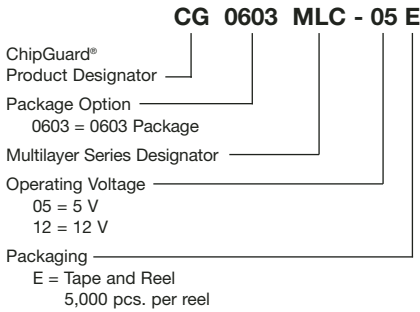
Description

The ChipGuard® CG0603MLC Series has been specifically designed to protect sensitive electronic components from electrostatic discharge damage. The MLC family has been designed to protect equipment to IEC61000-4-2, level 4 ESD specifications targeted for high speed USB 2.0 or IEEE1394 applications. The ChipGuard® MLC Series has been manufactured to provide very low capacitance and leakage currents with excellent clamp qualities, making the family almost transparent under normal working conditions.

Device Symbol



How to Order



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



Reliable Electronic Solutions

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Europe:

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FAX +41-41 7685510

The Americas:

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www.bourns.com

Electrical Characteristics @ 25 °C (unless otherwise noted)

Parameter	Device	Typ.	Max.	Unit
V_{DC} Continuous operating voltage	CG0603MLC-05 CG0603MLC-12	5 12	6	V
V_{CLAMP} Clamping voltage (see notes 1,2,3)	CG0603MLC-05 CG0603MLC-12	20 30	35 50	V
C_{off} Off-state capacitance, $f = 1 \text{ MHz}$, 1 V_{rms} bias			0.5	pF
I_L Off-state current, $V_{DC} = \text{max. rating}$			50	nA
V_T Trigger voltage (see notes 1,3,4)		150		V

- Notes: 1. Per IEC 61000-4-2, 30 A at 8 kV, level 4.
2. Measurement made 30 ns after initiation of pulse.
3. Test conducted in contact discharge mode.
4. Measurement made at maximum pulse voltage.

Environmental Characteristics

Response Time <1 ns
Operating Temperature -55 °C to +85 °C
Storage Temperature -55 °C to +85 °C

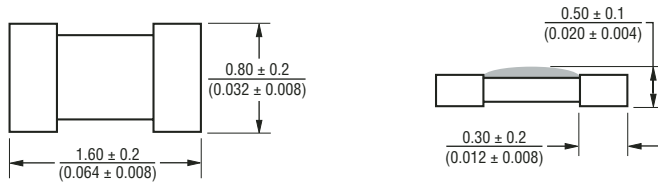
Surge Withstand Ratings

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	

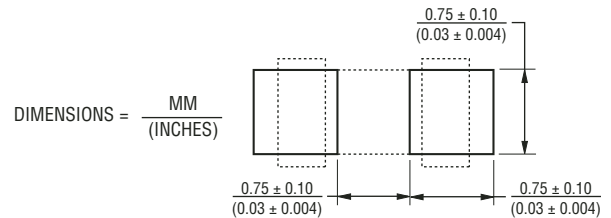
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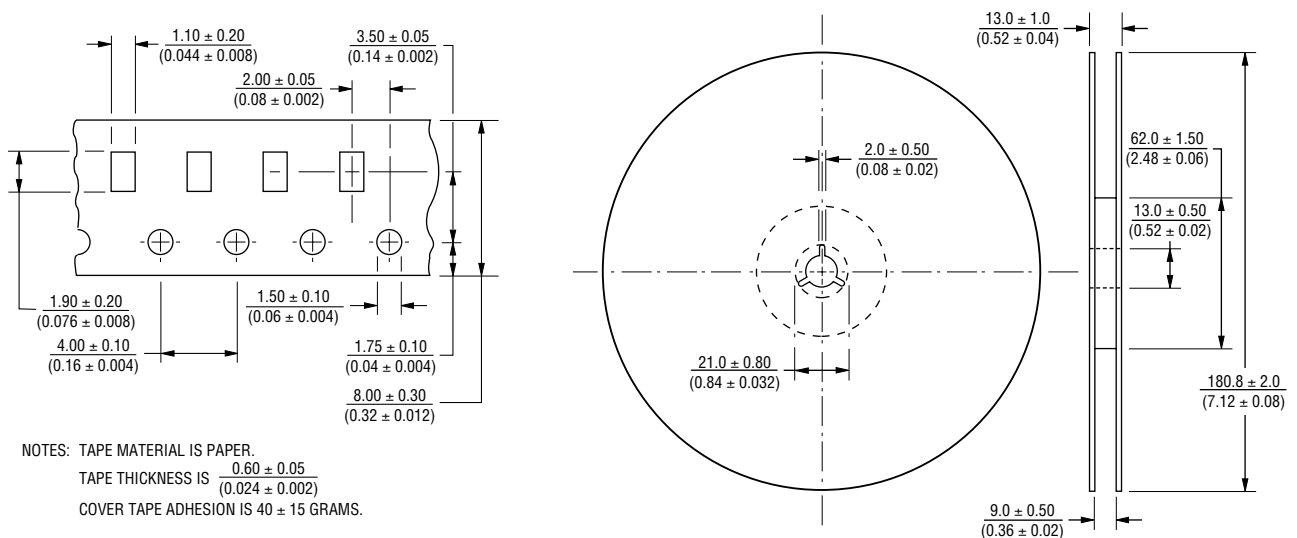
Product Dimensions



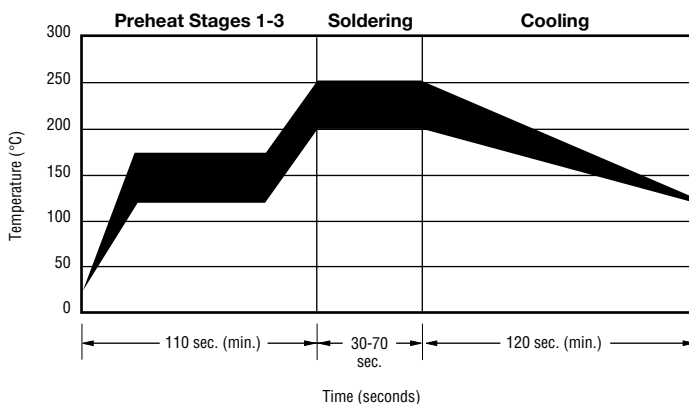
Recommended Pad Layout



Packaging Dimensions



Solder Reflow Recommendations



Stage	Description	Temperature	Time
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.

REV. D 01/05

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