

Features

- AEC-Q200 qualified
- ESD protection to IEC 61000-4-2 Level 4
- <1 ns response time to ESD strike</p>
- Low leakage current
- Extremely low capacitance (0.05 pF typ.)
- Bidirectional device
- Multi-strike capability

Applications

- Camera links
- Sensors
- Touchscreen interfaces
- GPS
- Antennas
- USB 3.0

ChipGuard[®] Automotive MLC Series - ESD Protectors

High-speed communications buses

General Information

Bourns® ChipGuard® Automotive MLC Series is a sub-1 pF protector designed specifically for use in automotive circuits requiring ESD protection. The CGA-MLC series is available in industry standard 0402 and 0603 packages. In addition to its very low capacitance, these protectors exhibit extremely fast response times to ESD events making them ideal for protecting a wide array of high speed digitial electronic applications.

The ChipGuard® Automotive MLC Series is fully AEC-Q200 qualified and supported.

Electrical Characteristics @ 25 °C (unless otherwise noted)

| Provension and the second seco | Symbol - | CGA0402MLC- | | | CGA0603MLC- | | | |
|--|---------------------|----------------------------|-----|-----|-------------|-----|--------------------|------|
| Parameter | | 05E | 12E | 24E | 05E | 12E | 24E | Unit |
| DC Working Voltage | V _W (DC) | ≤5 | ≤12 | ≤24 | ≤5 | ≤12 | ≤24 | V |
| Maximum Leakage Current @ Max. V _W (DC) | ١L | <0.01 | | | | | | μA |
| Typical Clamping Voltage (Note 1) | VC | 30 | | | | V | | |
| Typical Trigger Voltage (Note 1) | VT | 300 | | | | | V | |
| Typical Peak Voltage (Note 2) | VP | 300 | | | | V | | |
| Typical Capacitance @ 1 MHz, 1 Vrms | CO | | 0.2 | | 0.2 | 0.2 | 0.05 | pF |
| Response Time | RT | <1 | | | | | ns | |
| ESD Protection: Per IEC 61000-4-2 Level 4 Min. Contact Discharge Min. Air Discharge Typical ESD Withstand | | ±8 ±15 (Note 3) 1000 | | | | | kV kV Pulses | |
| Operating Temperature | TOPR | -55 to +125 | | | | | °C | |
| Storage Temperature | TSTG | -55 to +125 | | | | °C | | |

Notes: 1. V_T and V_C measured using TLP (Transmission Line Pulse) method.

2. Peak voltage measured under ESD Test Conditions: IEC61000-4-2, 8 kV contact discharge.

3. IEC 61000-4-2 ESD Performance for CGA0603MLC-05E and CGA0603MLC-12E devices will meet minimum 100 reps. Some shifting in characteristics may occur when tested over several hundred ESD pulses. All other part numbers listed will meet IEC 61000-4-2 ESD Performance with minimum 1000 reps without degradation in performance.



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

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

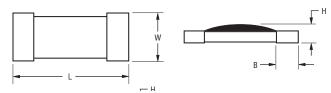


ChipGuard® Automotive MLC Series - ESD Protectors

Bourns

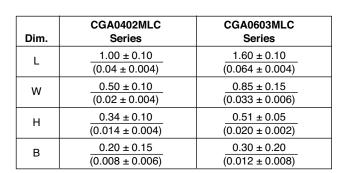
А

Product Dimensions

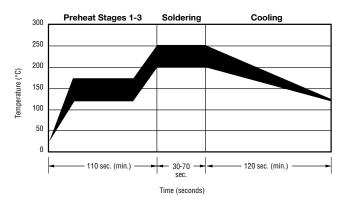


| C | | | | | | |
|---|---|---|--|--|--|--|
| Dim. | CGA0402MLC Series | CGA0603MLC Series | | | | |
| A | $\frac{0.50 \pm 0.1}{(0.02 \pm 0.004)}$ | $\frac{0.75 \pm 0.1}{(0.03 \pm 0.004)}$ | | | | |
| в | $\frac{0.50 \pm 0.1}{(0.02 \pm 0.004)}$ | $\frac{0.75 \pm 0.1}{(0.03 \pm 0.004)}$ | | | | |
| с | $\frac{0.50 \pm 0.1}{(0.02 \pm 0.004)}$ | $\frac{0.75 \pm 0.1}{(0.03 \pm 0.004)}$ | | | | |

Recommended Pad Layout



Solder Reflow Recommendations



| A | Stage 1 Preheat | Ambient to Preheating Temperature | 30 s to 60 s |
|---|-----------------|--|---|
| В | Stage 2 Preheat | 140 °C to 160 °C | 60 s to 120 s |
| С | 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 250 °C to 255 °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 5 s |
| Е | 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.

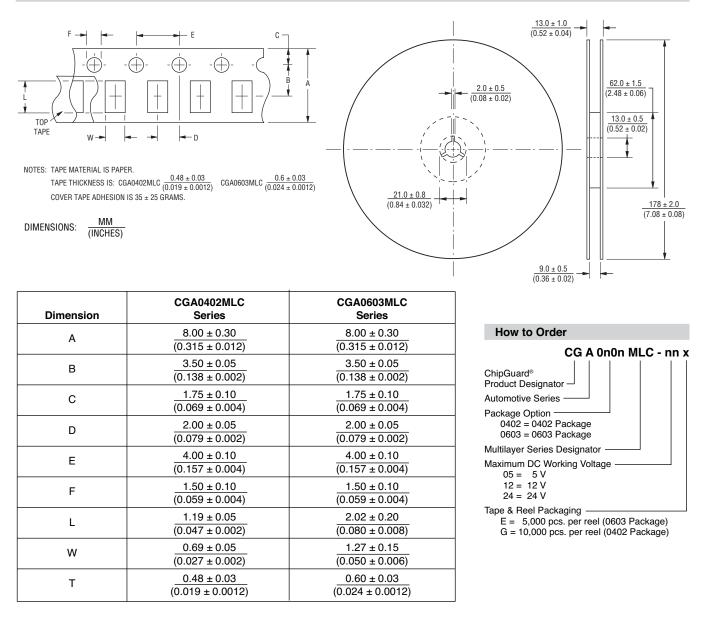
• Solder gun tip temperature should be kept below 280 °C and should not touch the device directly. Contact should be less than 3 seconds. A solder gun under 30 watts is recommended.

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

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Packaging Dimensions



REV. A 12/13

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