Features

- AEC-Q200 compliant
- ESD protection to IEC 61000-4-2 Level 4
- <1 ns response time to ESD strike
- Low leakage current
- Extremely low capacitance (0.2 pF typ.)
- Bidirectional device
- Multi-strike capability

Model CG0603MLC-05E and CG0603MLC-12E are currently available, but not recommended for new designs. Substitute Model CGA0603MLC-05E and CGA0603MLC-12E.

CG0603MLC-05E & -12E - ChipGuard® ESD Protectors

General Information

The Bourns® ChipGuard® Automotive MLC Series is a sub-1 pF protector designed specifically for use in automotive circuits requiring ESD protection. In addition to its very low capacitance, this protector exhibits extremely fast response times to ESD events, making it ideal for protecting a wide array of high speed digitial electronic applications.

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

Electrical Characteristics @ 25 °C (unless otherwise noted)

Parameter	Symbol	CG0603MLC-05E	CG0603MLC-12E	Unit
DC Working Voltage	V_W(DC)	≤5	≤12	V
Maximum Leakage Current @ Max. V_W(DC)	I_L	<0.01		μA
Typical Clamping Voltage (Note 1)	V_C	30		V
Typical Trigger Voltage (Note 1)	V_T	300		V
Typical Peak Voltage (Note 2)	V_P	300		V
Typical Capacitance @ 1 MHz, 1 Vrms	C_O	0.2		pF
Response Time	R_T	<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	T_{OPR}	-55 to +125		˚C
Storage Temperature	T_{STG}	-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 will meet minimum 1000 reps without degradation in performance.

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WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

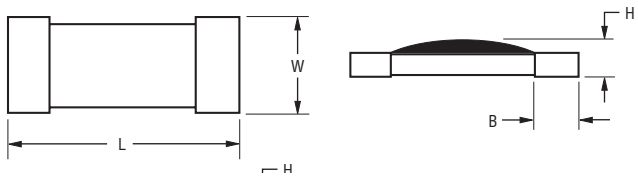
Applications

- Camera links
- Sensors
- Touchscreen interfaces
- GPS
- Antennas
- USB 3.0
- High-speed communications buses

CG0603MLC-05E & -12E - ChipGuard® ESD Protectors

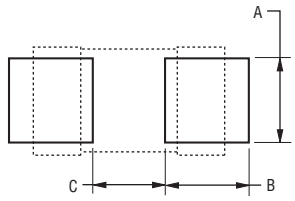
BOURNS®

Product Dimensions



Dim.	CG0603MLC Series
L	1.60 ± 0.10 (0.064 ± 0.004)
W	0.85 ± 0.15 (0.033 ± 0.006)
H	0.51 ± 0.05 (0.020 ± 0.002)
B	0.30 ± 0.20 (0.012 ± 0.008)

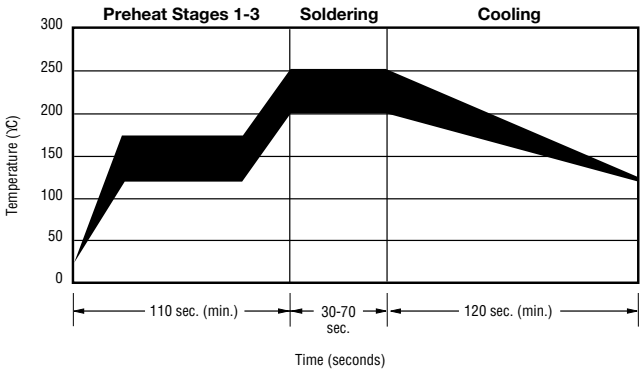
Recommended Pad Layout



Dim.	CG0603MLC Series
A	0.75 ± 0.1 (0.03 ± 0.004)
B	0.75 ± 0.1 (0.03 ± 0.004)
C	0.75 ± 0.1 (0.03 ± 0.004)

DIMENSIONS: MM (INCHES)

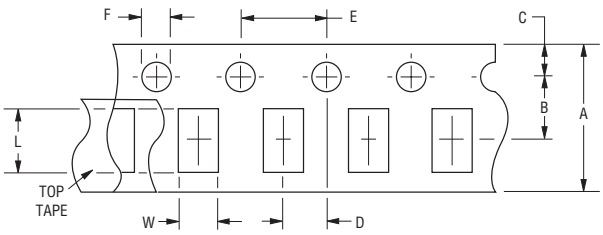
Solder Reflow Recommendations

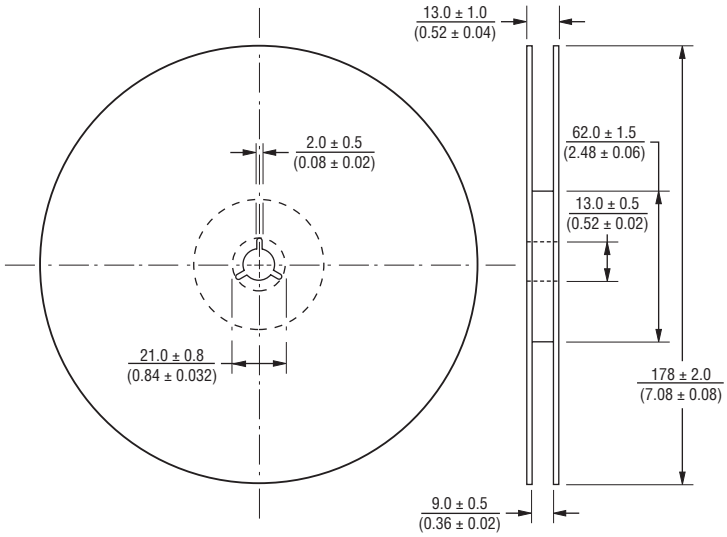


A	Stage 1 Preheat	Ambient to Preheating Temperature	30 s to 60 s
B	Stage 2 Preheat	140 °C to 160 °C	60 s to 120 s
C	Stage 3 Preheat	Preheat to 200 °C	20 s to 40 s
D	Main Heating	200 °C 210 °C 220 °C 230 °C 240 °C 250 °C to 255 °C	60 s to 70 s 55 s to 65 s 50 s to 60 s 40 s to 50 s 30 s to 40 s 5 s
E	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: 0.6 ± 0.03 (0.024 ± 0.0012)
COVER TAPE ADHESION IS 35 ± 25 GRAMS.

DIMENSIONS: MM (INCHES)

Dimension	CG0603MLC Series
A	8.00 ± 0.30 (0.315 ± 0.012)
B	3.50 ± 0.05 (0.138 ± 0.002)
C	1.75 ± 0.10 (0.069 ± 0.004)
D	2.00 ± 0.05 (0.079 ± 0.002)
E	4.00 ± 0.10 (0.157 ± 0.004)
F	1.50 ± 0.10 (0.059 ± 0.004)
L	2.02 ± 0.20 (0.080 ± 0.008)
W	1.27 ± 0.15 (0.050 ± 0.006)
T	0.60 ± 0.03 (0.024 ± 0.0012)

How to Order

CG 0603 MLC - nn E

ChipGuard® Product Designator
Package Option
0603 = 0603 Package
Multilayer Series Designator
Maximum DC Working Voltage
05 = 5 V
12 = 12 V
Tape & Reel Packaging
E = 5,000 pcs. per reel

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