

Features

- AEC-Q200 compliant
- Meets IEC 61000-4-2 standard
- Multilayered varistor technology
- Proprietary insulating overcoat provides low and stable leakage current
- Quick response time (<0.5 ns)
- High transient current capability
- High reliability
- RoHS compliant*

Applications

- HDMI
- CANbus
- Ethernet
- GPS
- Camera links
- Sensors
- Touchscreen interfaces
- Circuits sensitive to ESD

ChipGuard® Automotive MLA Series Varistor ESD Clamp Protectors

Description

Bourns® ChipGuard® Automotive MLA Series is a multilayered varistor designed specifically for use in automotive circuits requiring ESD protection. The CGA-MLA series is available in industry standard 0603, 0805 and 1206 packages. These robust protectors exhibit extremely fast response times to ESD events making them ideal for protecting a wide array automotive electronics.

ChipGuard® Automotive MLA Series products are fully AEC-Q200 qualified and supported.

Device Symbol



Electrical Characteristics @ 25 °C (unless otherwise noted)

Model	Package	Vrms	VDC	VN Min.	VN Max.	VC	ITM (Max.)	WTM (Max.)	CP	
		(V)	(V)	(V)	(V)	(V)	(A)	(J)	(pF) Typ.	
		<10 μA	1 mA DC		1 A @ 8/20 μs	@ 8/20 μs	10/1000 μs	@ 1 KHz		
CGA0603MLA-16150E	0603	14	16	23.0	34.2	70	5	0.030	15	
CGA0603MLA-16121E		14	16	22.0	28.0	46	30	0.200	120	
CGA0603MLA-17300E		14	17	21.6	34.4	70	2	0.050	30	
CGA0603MLA-18101E		14	18	19.8	25.2	44	30	0.200	100	
CGA0603MLA-19161E		14	19	24.0	32.0	64	20	0.100	160	
CGA0603MLA-22750E		17	22	25.0	41.0	54	30	0.075	75	
CGA0603MLA-22500E		17	22	24.3	30.7	54	10	0.100	50	
CGA0603MLA-22101E		17	22	24.3	30.7	50	30	0.200	100	
CGA0603MLA-22161E		17	22	24.3	30.7	50	30	0.200	160	
CGA0603MLA-26800E		20	26	30.0	43.0	67	30	0.100	80	
CGA0603MLA-31900E		25	31	35.0	43.9	71	30	0.200	90	
CGA0603MLA-32120E		25	32	51.9	71.0	124	5	0.250	12	
CGA0805MLA-16401E	0805	14	16	22.0	28.0	46	120	0.3	400	
CGA0805MLA-18351E		14	18	19.8	25.2	44	120	0.3	350	
CGA0805MLA-22101E		17	22	25.0	34.0	54	30	0.1	100	
CGA0805MLA-22401E		17	22	24.3	30.7	50	120	0.3	400	
CGA0805MLA-26221E		20	26	29.7	37.3	56	80	0.4	220	
CGA0805MLA-31251E		25	31	35.1	43.9	71	80	0.3	250	
CGA0805MLA-38201E	30	38	42.3	52.7	81	80	0.3	200		
CGA1206MLA-16801E	1206	14	16	22.0	28.0	44	200	0.60	800	
CGA1206MLA-16701E		14	16	19.8	25.2	42	200	0.50	700	
CGA1206MLA-22651E		17	22	24.3	30.7	48	200	0.30	650	
CGA1206MLA-22841E		17	22	24.3	29.7	50	100	0.40	840	
CGA1206MLA-26601E		20	26	29.7	37.3	58	200	0.70	600	
CGA1206MLA-31551E		25	31	35.1	43.9	69	200	1.00	550	
CGA1206MLA-38501E		30	38	42.3	52.7	81	200	1.10	500	
CGA1206MLA-40181E		40	56	63.0	77.0	110	200	1.00	180	

General Characteristics

Operating Temperature.....	-40 °C to +125 °C
Storage Temperature.....	-40 °C to +125 °C
Response Time.....	<1 ns
Performance Standard	IEC 61000-4-2



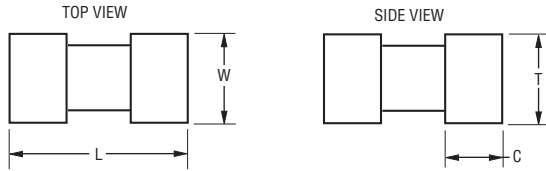
WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.
 Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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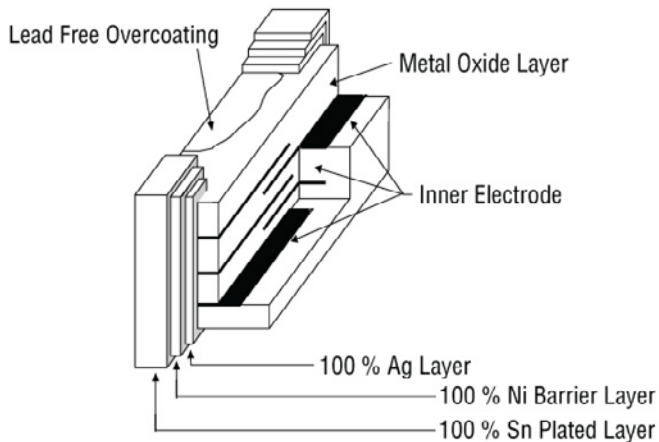
Product Dimensions



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

Dim.	CGA0603MLA Series	CGA0805MLA Series	CGA1206MLA Series
L	$\frac{1.60 \pm 0.15}{(0.063 \pm 0.006)}$	$\frac{2.00 \pm 0.20}{(0.079 \pm 0.008)}$	$\frac{3.20 \pm 0.30}{(0.126 \pm 0.012)}$
W	$\frac{0.80 \pm 0.10}{(0.031 \pm 0.004)}$	$\frac{1.25 \pm 0.20}{(0.049 \pm 0.008)}$	$\frac{1.60 \pm 0.20}{(0.063 \pm 0.008)}$
T	$\frac{0.80 \pm 0.10}{(0.031 \pm 0.004)}$	$\frac{0.90 \pm 0.10}{(0.035 \pm 0.004)}$	$\frac{1.70}{(0.067)}$ MAX.
C	$\frac{0.30 \pm 0.15}{(0.012 \pm 0.006)}$	$\frac{0.50 \pm 0.25}{(0.020 \pm 0.010)}$	$\frac{0.50 \pm 0.25}{(0.020 \pm 0.010)}$

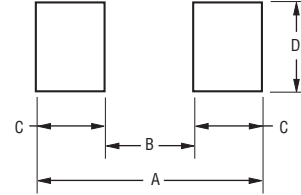
Construction



Environmental Characteristics

Moisture Sensitivity Level..... 1
 ESD Classification (HBM).....3B

Recommended Pad Layout



Note: Print solder to a recommended thickness of 150 to 200 μm.

Dim.	CGA0603MLA Series	CGA0805MLA Series	CGA1206MLA Series
A	$\frac{2.54}{(0.100)}$	$\frac{3.50}{(0.137)}$	$\frac{4.06}{(0.160)}$
B	$\frac{0.50}{(0.020)}$	$\frac{1.10}{(0.043)}$	$\frac{2.02}{(0.080)}$
C	$\frac{1.02}{(0.040)}$	$\frac{1.20}{(0.047)}$	$\frac{1.02}{(0.040)}$
D	$\frac{0.76}{(0.030)}$	$\frac{1.20}{(0.047)}$	$\frac{1.65}{(0.065)}$

How to Order

CG A xx0x MLA - xx yyy E

ChipGuard® Product Designator _____

Automotive Series _____

Package Option _____
 0603 = 1608 Package
 0805 = 2012 Package
 1206 = 3216 Package

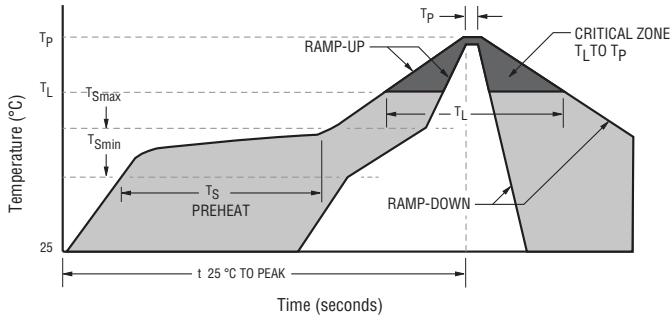
Multilayer Series Designator _____

Maximum DC Working Voltage, V _____
 (Current <10 μA)

Capacitance, pF _____
 (Example: 151 = 15x10¹ (150 pF))

Tape & Reel Packaging _____
 E = 4,000 pcs. per reel

Solder Reflow Recommendations

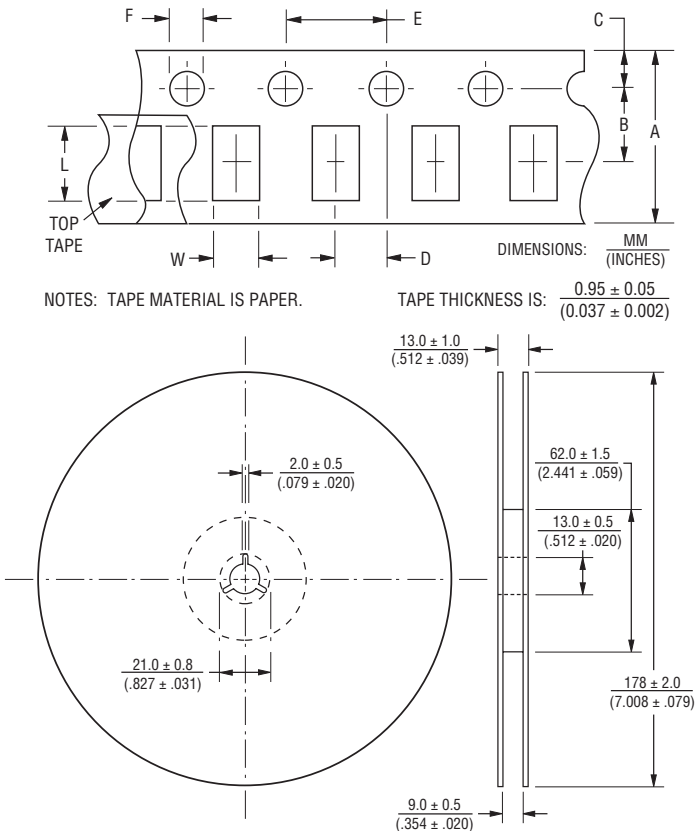


A	Stage 1 Preheat Ramp	Ambient to Preheating Temperature	3 °C / s max.
B	Stage 2 Preheat	Preheat min./max. Temperature Range	150 °C to 200 °C 60 s to 180 s
C	Stage 3 Preheat to Main Heating	Max. Time Above Stated Temperature	217 °C 60 s to 150 s
D	Main Heating	Max. Time Within 5 °C of Peak Temperature (260 °C)	255 °C 20 s to 40 s
E	Cool Down	Rate from Peak Temperature	6 °C / s max.

CAUTION:

- Rapid heating and cooling in excess of stated maximum rates will easily damage this product.
- Localized heating can also damage product.
- Do not thermally shock product in excess of 100 °C.
- Use a 30 W or less solder gun/iron for product repairs. Tip temperature maximum is 280 °C for less than 3 seconds.
- Do not touch the component directly with the soldering gun/iron.
- Excess solder volumes can damage the body of the product.

Packaging Dimensions



Dim.	CGA0603MLA Series	CGA0805MLA Series	CGA1206MLA Series
A	$\frac{8.00 \pm 0.30}{(0.315 \pm 0.012)}$		
B	$\frac{3.50 \pm 0.05}{(0.138 \pm 0.002)}$		
C	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$		
D	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$		
E	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$		
F	$\frac{1.50 \pm 0.10}{(0.059 \pm 0.004)}$		
L	$\frac{1.90 \pm 0.15}{(0.075 \pm 0.006)}$	$\frac{2.30 \pm 0.15}{(0.091 \pm 0.006)}$	$\frac{3.50 \pm 0.15}{(0.138 \pm 0.006)}$
W	$\frac{1.05 \pm 0.15}{(0.041 \pm 0.006)}$	$\frac{1.55 \pm 0.15}{(0.061 \pm 0.006)}$	$\frac{1.90 \pm 0.15}{(0.075 \pm 0.006)}$

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