MLVA

Multilayer varistor ESD suppressor

HALOGEN HF FREE

RoHS

Surface Mount Device

Product features

- Zinc oxide based ceramic chip
- Provides ESD protection with fast response time (<1ns) allowing equipment to pass IEC 61000-4-2 Level 4 Test
- 0402 and 0603 meet IEC 61000-4-4 and 61000-4-5
- Low profile designs for board space savings
- Low and stable leakage current reduces power consumption
- Low clamping voltage
- Wide 5.5 to 26 Vdc operating voltage range
- Halogen free and RoHS compliant for global applications

Applications

- Computers and peripherals
- Digital still cameras
- Cell phones
- Medical equipment
- Printers/copiers/scanners
- DVD Players
- MP3/Multimedia players
- LCD TV / Monitor
- External storage
- Cable/DSL Modems
- Set top boxes

Part Numbering System:

MLVA 04 V05 C270

- MLVA — Product Family
- 04 — Size
- V05 — Working DC Voltage
- C270 — Capacitance in pF

Packaging

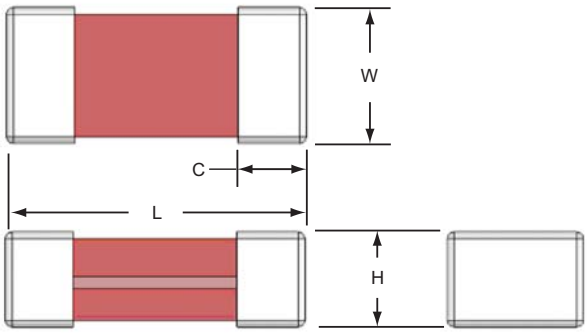
- Size 0201: 15,000 pieces per reel - EIA (EIAJ)
- Size 0402: 10,000 pieces per reel - EIA (EIAJ)
- Size 0603: 4000 pieces per reel - EIA (EIAJ)

Specifications

Part Number	Size	Working Voltage V_{rms}	Working Voltage Vdc	Varistor Voltage @ 1 mAdc	Clamping Voltage	Capacitance pF	Peak Current (amps)	Transient Energy (Joules)
MLVA02V05C053	0201	4	5.5	6-17	30	33	-	-
MLVA02V05C047	0201	4	5.5	8-14	26	47	-	-
MLVA02V05C064	0201	4	5.5	8-14	26	64	-	-
MLVA04V05C270	0402	4	5	6.4-9.6	20	270	20	0.05
MLVA04V09C130	0402	7	9	10-15	32	130	20	0.05
MLVA04V14C090	0402	11	14	14.4-21.6	38	90	20	0.05
MLVA04V18C085	0402	14	18	17.6-26.4	45	85	20	0.05
MLVA06V05C270	0603	4	5.5	6.4-9.6	22	270	30	0.1
MLVA06V09C210	0603	7	9	10-15	27	210	30	0.1
MLVA06V14C150	0603	11	14	14.4-21.6	35	150	30	0.1
MLVA06V18C130	0603	14	18	17.6-26.4	40	130	30	0.1
MLVA06V26C100	0603	20	26	24.8-37.2	58	100	30	0.1

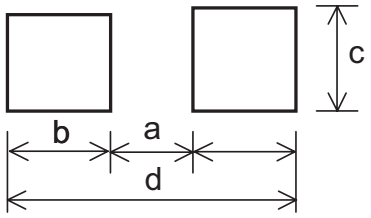
Working Voltage V_{rms} - Maximum AC operating voltage the varistor can maintain and not exceed 10 µA leakage current for 0402, 0603. Working Voltage Vdc - Maximum DC operating voltage the varistor can maintain and not exceed 10 µA leakage current for 0402, 0603.
Varistor Voltage - Voltage across the device measured at 1 mA DC current. Equivalent to V_B, "breakdown voltage."
Clamping Voltage - Maximum peak voltage across the varistor with 8/20 µs waveform and 1 A pulse current.
Capacitance - Device capacitance measured with zero volt bias 1 V_{rms} at 1 MHz.
Peak Current - Maximum peak current which may be applied with 8/20 µs waveform without device failure.
Transient Energy - Maximum energy which may be dissipated with the 10/1000 µs waveform without device failure.

Dimensions - mm



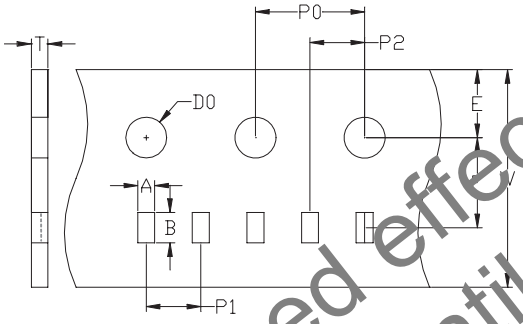
Size	L	W	H	C
0201	0.60±0.05	0.30±0.05	0.30±0.05	0.20±0.10
0402	1.00±0.15	0.50±0.10	0.50±0.10	0.25±0.15
0603	1.60±0.15	0.80±0.10	0.80±0.10	0.30±0.20

Recommended Pad Layout - mm (in)



Size	a	b	c	d
0201	0.23 (0.009)	0.30 (0.012)	0.45 (0.018)	0.83 (0.033)
0402	0.51 (0.020)	0.61 (0.024)	0.51 (0.020)	1.70 (0.067)
0603	0.50 (0.020)	1.02 (0.040)	0.76 (0.030)	2.54 (0.100)

Tape Packaging Specifications - mm



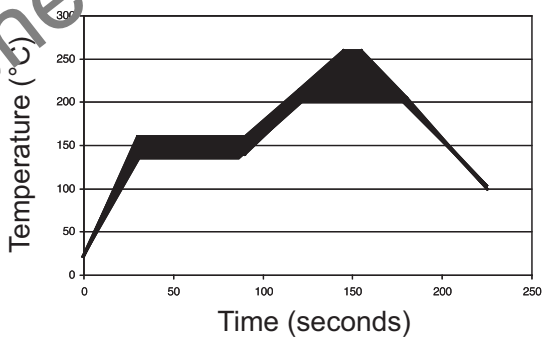
0201 Carrier Dimensions									
A	B	W	E	F	P0	P1	P2	D0	T
0.37 ±0.03	0.69 ±0.03	8.0 ±0.1	1.75 ±0.05	3.5 ±0.05	4.0 ±0.1	2.0 ±0.05	2.0 ±0.05	1.55 ±0.05	0.42 ±0.03
0402 Carrier Dimensions									
0.58 ±0.03	1.2 ±0.03	8.0 ±0.1	1.75 ±0.05	3.5 ±0.05	4.0 ±0.1	2.0 ±0.05	2.0 ±0.05	1.55 ±0.05	0.60 ±0.03
0603 Carrier Dimensions									
1.05 ±0.15	1.90 ±0.15	8.0 ±0.30	1.75 ±0.10	3.50 ±0.05	4.0 ±0.10	-	2.00 ±0.05	1.50 ±0.10	-

Environmental Specifications

Characteristic	Value
Bias Humidity	+40°C, 90% RH for 1000 hours
Thermal Shock	-40°C to +85°C, 30 minute cycle, 5 cycles
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-40°C to +85°C
Full Load Voltage	Working Voltage, 85°C, 1000 hours

Soldering Recommendations

- Compatible with lead and lead-free solder reflow processes
- Peak reflow temperatures and durations:
  - IR Reflow = 260°C max for 30 sec max.
  - Wave Solder = 260°C max. for 10 sec. max.
- Recommended IR Reflow Profile:



Eaton
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Cleveland, OH 44122
United States
www.eaton.com/electronics

Printed in USA
Publication No. 4070 BU-SB10346
August 2017

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