

MLVHV

Multilayer varistor ESD suppressor



Product features

- MLVHV0604V175: 0604 (1610 metric) package
- MLVHV0806VXXX: 0806 (2217 metric) package
- Bi-directional
- Meet 61000-4-5 standard
- Quick response time (<1ns)
- Meets moisture sensitivity level (MSL): 1

Applications

- Smart meters
- Vac driven LEDs (Acrich, driverless LEDs)
- GFCI and AFCIs
- Vac line protection
- Power supplies and converters
- Industrial equipment
- Commercial and home appliances

Agency information

- cURus recognized:
File E340782, Guide VZCA2 and VZCA8

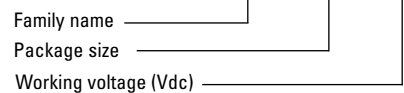


Environmental compliance



Ordering part number

MLVHV 0604 V175

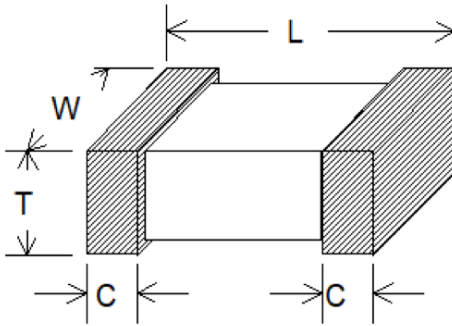


Product specifications

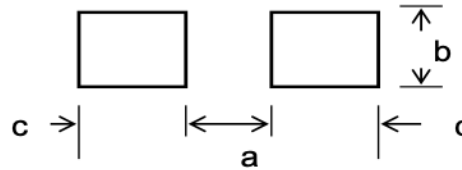
| Part number | Working voltage maximum | | Varistor voltage @ 1 mA _{dc} (V _v) | Leakage current V _v *80% (at initial state) (μA) maximum | Clamping voltage 1 A 8/20 μs (V) maximum | Typical capacitance @ 1 kHz (pF) maximum | Peak current 8/20 μs (1 time) (A) maximum | Peak current 8/20 μs (15 times) (A) maximum |
|------------------|-------------------------|-------|---|---|--|--|---|---|
| | (Vac) | (Vdc) | | | | | | |
| MLVHV0604 | | | | | | | | |
| MLVHV0604V175 | 180 | 225 | 270 ±10% | 50 | 450 | 20 | 20 | 10 |
| MLVHV0806 | | | | | | | | |
| MLVHV0806V150 | 150 | 200 | 240 ±10% | 80 | 340 | 140 | 160 | 100 |
| MLVHV0806V175 | 175 | 225 | 270 ±10% | 80 | 390 | 100 | 100 | 50 |
| MLVHV0806V250 | 250 | 320 | 390 ±10% | 50 | 570 | 50 | 50 | 30 |
| MLVHV0806V300 | 300 | 385 | 470 ±10% | 50 | 740 | 15 | 10 | 10 |

V_v – Voltage across the device measured at 1 mA DC current.
Equivalent to V_b, "Breakdown Voltage".
Operating temperature range: -40 °C to +125 °C.

Dimensions – mm



Pad layout



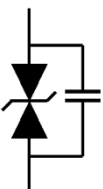
| Dimension | Value |
|------------------|--------------|
| MLVHV0604 | |
| L | 1.60 ±0.15 |
| W | 1.05 ±0.10 |
| T | 1.15 maximum |
| C | 0.25 ±0.10 |
| MLVHV0806 | |
| L | 2.2 ±0.20 |
| W | 1.7 ±0.20 |
| T | 1.8 maximum |
| C | 0.50 ±0.25 |

| Dimension | Value |
|------------------|-------|
| MLVHV0604 | |
| a | 0.7 |
| b | 1.07 |
| c | 0.92 |
| MLVHV0806 | |
| a | 1.1 |
| b | 1.75 |
| c | 1.2 |

Print solder in a thickness of 150 to 200 μm

Terminal plating: Ni>4um; Sn>4um;
Part marking: (No marking)

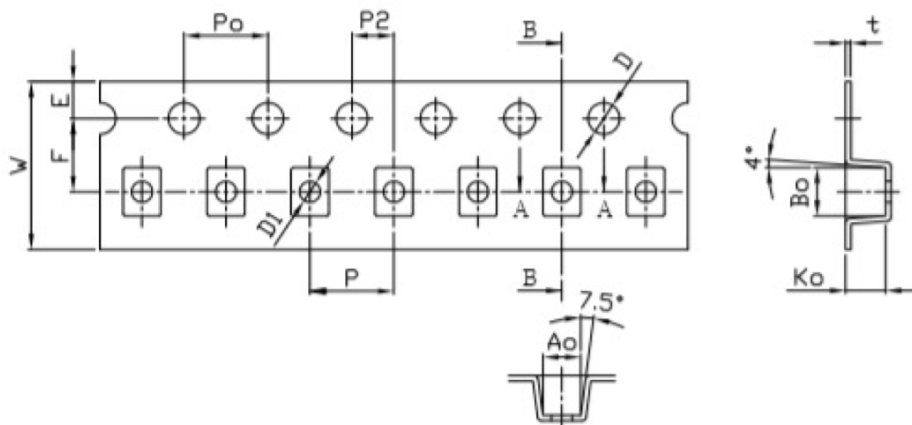
Circuit diagram



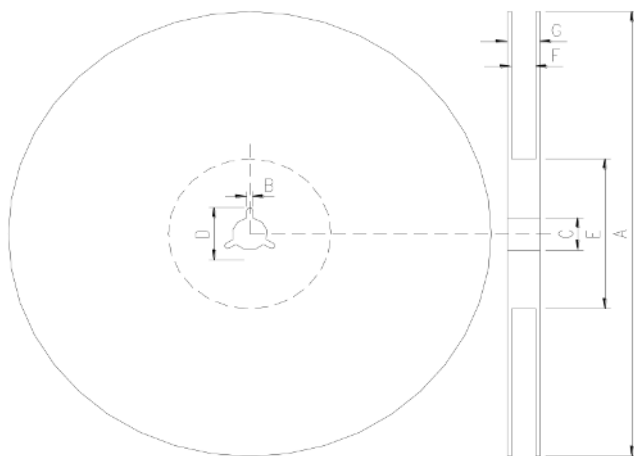
Packaging information - mm

MLVHV0604: 3,000 parts on a 7" diameter tape and reel (EIA-481 compliant)

MLVHV0806: 2,000 parts on a 7" diameter tape and reel (EIA-481 compliant)



| Dimension | Millimeter | Tolerance |
|------------------|------------|-----------|
| W | 8 | ±0.10 |
| P | 4 | ±0.10 |
| E | 1.75 | ±0.10 |
| F | 3.5 | ±0.05 |
| P ₂ | 2 | ±0.05 |
| D | 1.5 | +0.01/-0 |
| D ₁ | 1 | ±0.10 |
| P ₀ | 4 | ±0.10 |
| 10P ₀ | 40 | ±0.2 |
| A ₀ | 1.8 | ±0.10 |
| B ₀ | 2.3 | ±0.10 |
| K ₀ | 1.9 | ±0.10 |
| t | 0.26 | ±0.05 |



| Dimension | Millimeter | Tolerance |
|-----------|------------|-----------|
| A | 178 | ±2.0 |
| B | 2 | ±0.5 |
| C | 13 | ±0.5 |
| D | 21 | ±0.8 |
| E | 62 | ±1.5 |
| F | 9 | ±0.5 |
| G | 13 | ±1.0 |

Solder reflow profile

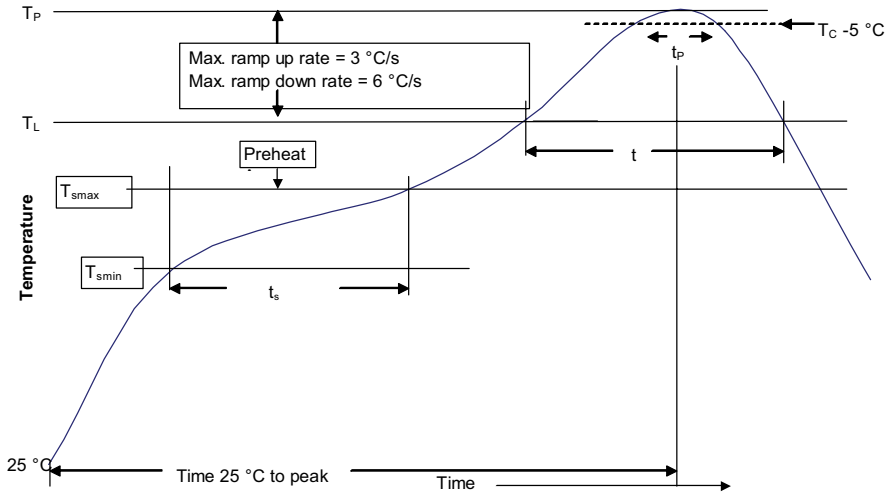


Table 1 - Standard SnPb solder (T_c)

| Package thickness | Volume mm ³ <350 | Volume mm ³ ≥350 |
|-------------------|-----------------------------|-----------------------------|
| <2.5 mm | 235 °C | 220 °C |
| ≥2.5 mm | 220 °C | 220 °C |

Table 2 - Lead (Pb) free solder (T_c)

| Package thickness | Volume mm ³ <350 | Volume mm ³ 350 - 2000 | Volume mm ³ >2000 |
|-------------------|-----------------------------|-----------------------------------|------------------------------|
| <1.6 mm | 260 °C | 260 °C | 260 °C |
| 1.6 – 2.5 mm | 260 °C | 250 °C | 245 °C |
| >2.5 mm | 250 °C | 245 °C | 245 °C |

Reference J-STD-020

| Profile feature | Standard SnPb solder | Lead (Pb) free solder |
|---|----------------------|-----------------------|
| Preheat and soak | | |
| • Temperature min. (T _{smmin}) | 100 °C | 150 °C |
| • Temperature max. (T _{smmax}) | 150 °C | 200 °C |
| • Time (T _{smmin} to T _{smmax}) (t _s) | 60-120 seconds | 60-120 seconds |
| Ramp up rate T _L to T _p | 3 °C/ second max. | 3 °C/ second max. |
| Liquidous temperature (T _L) | 183 °C | 217 °C |
| Time (t _L) maintained above T _L | 60-150 seconds | 60-150 seconds |
| Peak package body temperature (T _p)* | Table 1 | Table 2 |
| Time (t _p)* within 5 °C of the specified classification temperature (T _c) | 20 seconds* | 30 seconds* |
| Ramp-down rate (T _p to T _L) | 6 °C/ second max. | 6 °C/ second max. |
| Time 25 °C to peak temperature | 6 minutes max. | 8 minutes max. |

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

Manual solder

+330 °C, 6 seconds maximum, 30 W maximum soldering iron, generally manual/hand soldering is not recommended

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