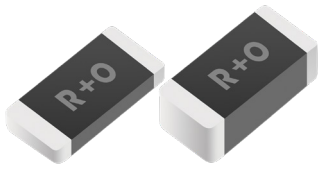
# Multilayer Chip Varistor (MLV) Datasheet

## Features

- Leadless , Size 1206
- Inherent Bi-directional Clamping
- High surge suppress capability, Low Leakage Current
- Low Inductance, Fast Response (Response time<0.5ns)
- Excellent Temperature Coefficient
- Operating temperature：-40℃ to +125℃
- RoHS compliant & Lead-Free & Halogen Free

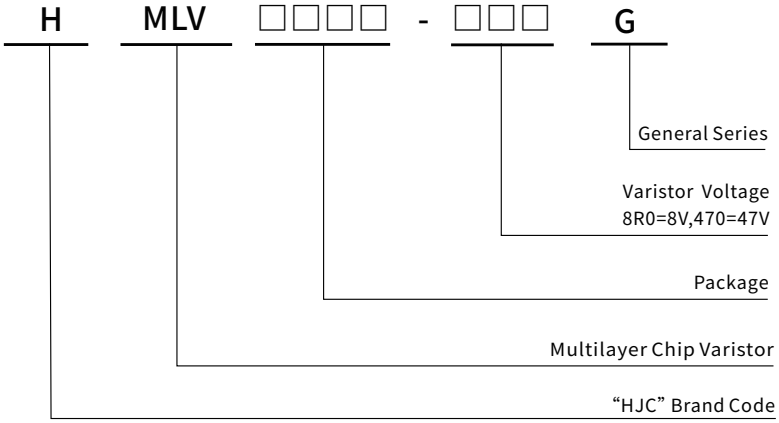
**HMLV1206 Series**

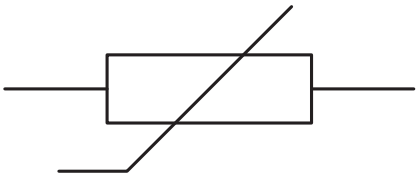



## Applications

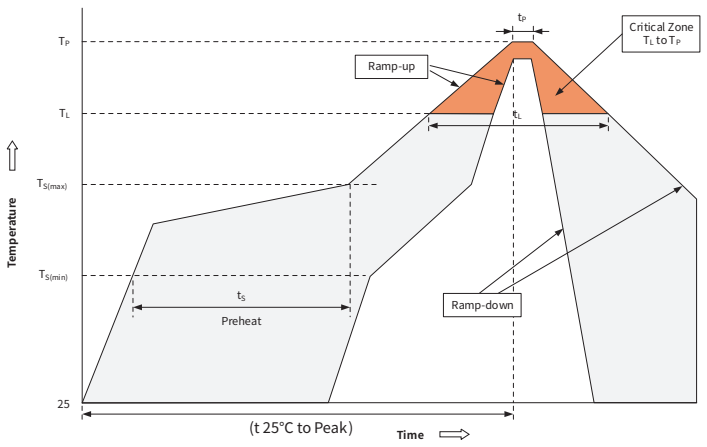
- Suppression of Inductive Switching or Other Transient Events
- Provides On-Board Transient Voltage Protection for ICs, CMOS and MOSFET
- Used to Help Achieve Electromagnetic Compliance of End Products
- Portable equipment protection, such as mobile phone, TV, etc.

## Part Number Code



## Recommended Soldering Conditions




| Profile Feature | | Pb-Free Assembly |
|---|---|---|
| Pre-heat | Temperature Min ($T_{S(min)}$) | +150°C |
| | Temperature Max($T_{S(max)}$) | +200°C |
| | Time (Min to Max) ($t_S$) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp ($T_L$) to peak) | | 3°C /sec. Max |
| $T_{S(max)}$ to $T_L$ - Ramp-up Rate | | 3°C /sec. Max |
| Reflow | Temperature($T_L$)(Liquid us) | +217°C |
| | Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_P$) | | +240°C to +260°C |
| Time within 5°C of actual Peak Temp ($t_P$) | | 15-30secs |
| Ramp-down Rate | | 6°C /sec. Max |
| Time 25°C to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260°C |

Note 1: All temperature refer to topside of the package, measured on the package body surface.
Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

## Electrical Characteristics (Ta=25°C Unless otherwise specified)

| Part Number | Varistor Voltage | Max. Allowable Voltage | | Leakage Current @ $V_{DC}$ | Max. Clamping Voltage @8/20μs | | Peak Single Pulse Transient Current @8/20μs | Max. Energy @10/1000μs | Typical Capacitance (Reference) @1KHZ | Response Time |
|---|---|---|---|---|---|---|---|---|---|---|
| | V1mA (V) | $V_{AC}$(V) | $V_{DC}$(V) | (μA) | IP(A) | $V_C$(V) | I(A) | (J) | (pF) | (ns) |
| HMLV1206-600G | 54~72 | 42 | 50 | 30 | 5 | 90 | 120 | 0.8 | 450 | 5 |

Note 1: Typical capacitance value tolerance 40%

## Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

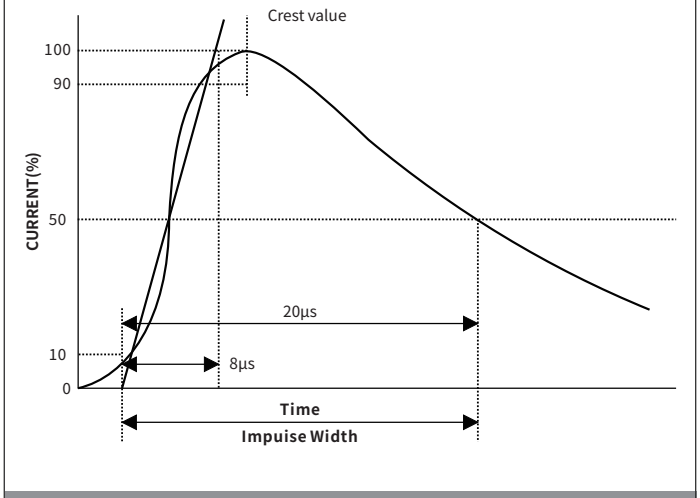



Fig.1 8/20μs Impluse Waveform

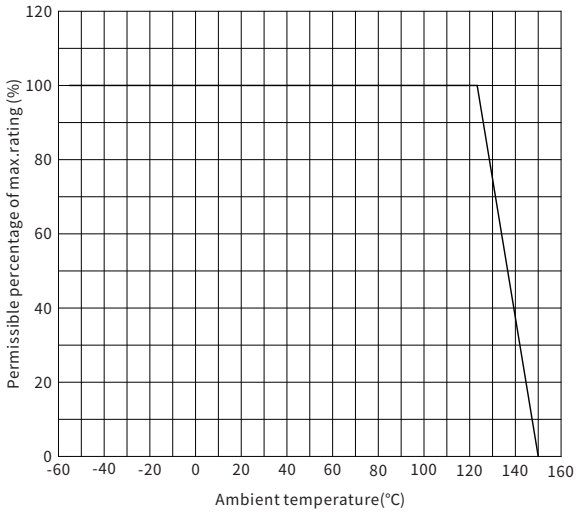



Fig.2 Temperature Derating Curve

## Reliability Test

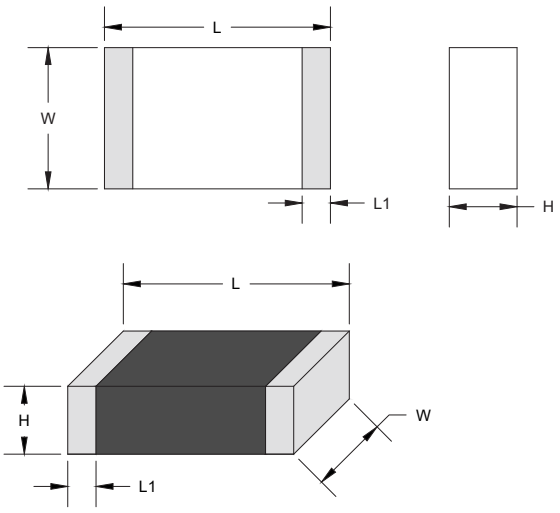
| Characteristic | Test method and description |
|---|---|
| High Temperature Storage | The specimen shall be subjected to 125 °C for 1000 hours in a thermostatic bath without load and then stored at room temperature and humidity for 1 to 2 hours. The change of varistor voltage shall be within 10%. |
| Temperature Cycle | The temperature cycle of specified temperature shall be repeated five times and then stored at room temperature and humidity for one two hours. The change of varistor voltage shall be within 10%and mechanical damage shall be examined. |
| High Temperature Load | After being continuously applied the maximum allowable voltage at 125 °C for 1000hours, the specimen shall be stored at room temperature and humidity for one or hours, the change of varistor voltage |
| Damp Heat Load/Humidity Load | The specimen should be subjected to 40°C ,90 to 95%RH environment, and the maximum allowable voltage applied for 1000 hours, then stored at room temperature and humidity for one or two hours. The change of varistor voltage shall be within 10% |
| Low Temperature Storage | The specimen should be subjected to -40 °C , without load for 1000 hours and then stored at room temperature for one two hours. The change of varistor voltage shall be within 10%. |

| Step | Temperature | Period |
|---|---|---|
| 1 | -40±3°C | 30min±3 |
| 2 | Room Temperature | 1~2hours |
| 3 | 125±2°C | 30min±3 |
| 4 | Room Temperature | 1~2hours |

## Environmental Specification

| | |
|---|---|
| Storage temperature: | -25°C to +45°C |
| Storage Conditions: | Light-proof, Hermetically Sealed, Moisture-proof;<br>The components should be left in their original packing to avoid soldering problems due to oxidized contacts. |
| Relative humidity: | < 75 % annual average, < 95 % on max. 30 days in a year. |
| Storage period | The components should be employed within 24 months after delivery |

## Physical Dimensions

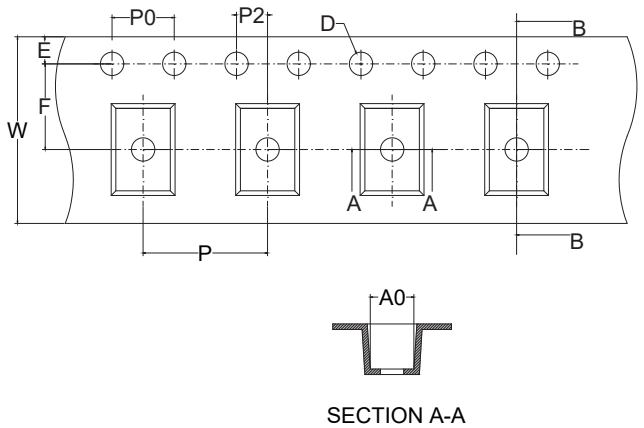



| Part Number | L | W | H | L1 |
|---|---|---|---|---|
| | (mm) | (mm) | (mm) | (mm) |
| HMLV1206-600G | 3.20±0.30 | 1.60±0.30 | 1.60(max) | 0.35±0.25 |

## Ordering Information

| PACKAGE | Part Number | DELIVERY MODE | MPQ(PCS) |
|---|---|---|---|
| 1206 | HMLV1206-600G | 7''REEL | 3,000 |

## Packaging Information




| Symbol | Dimensions |
|---|---|
| | (mm) |
| W | 8±0.1 |
| A0 | 1.88±0.1 |
| B0 | 3.5±0.1 |
| K0 | 1.27±0.1 |
| P | 4.0±0.1 |
| F | 3.5±0.1 |
| E | 1.75±0.1 |
| D | 1.5±0.1 |
| P0 | 4.0±0.1 |
| P2 | 2.0±0.1 |
| T | 0.2±0.05 |