



## MLVS 0805 AM Series

# Specification

<b>Product Name</b>	<b>Multilayer Varistor</b>
<b>Series</b>	<b>MLVS AM Series</b>
<b>Size</b>	<b>EIA 0805</b>



## MLVS0805AM Series Engineering Specification

### 1. Scope

- (1) SMD type zinc oxide based ceramic chip
- (2) RoHS compliant
- (3) Qualified based on AEC-Q200
- (4) Meet IEC 61000-4-2 standard
- (5) Insulator over coat keeps excellent low and stable leakage current
- (6) Quick response time (<1ns)
- (7) Low clamping voltage
- (8) High transient current capability
- (9) Compact size for ELA0805

### Applications

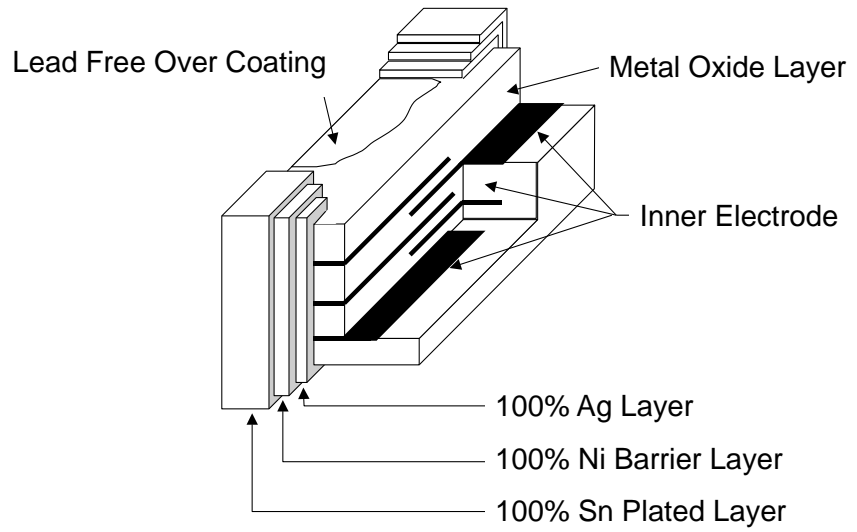
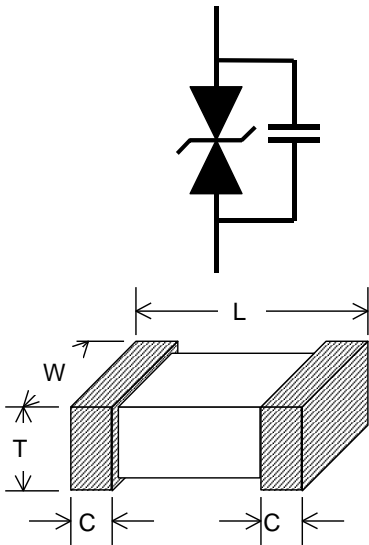
Protection against automotive related transient overvoltage

### 2. Explanation of Part Number

<u>MLV</u>	<u>S</u>	<u>0805</u>	<u>AM</u>	<u>14</u>	<u>401</u>
(1)	(2)	(3)	(4)	(5)	(6)

1. Multilayer varistor
2. Type: S=single; A=array
3. Size
4. Automotive series
5. Max. AC voltage
6. Typical Capacitance: "150" means  $15 \times 10^0 = 15$

### 3. Construction & Dimension



Unit: mm	0805
L	2.0±0.20
W	1.25±0.2
t	0.9±0.10
c	0.5±0.25

## 4. Part ratings and characteristics

### 4.1. Ratings (25°C for characteristics, 125°C for maximum ratings)

	Working voltage		Varistor voltage	Clamping Voltage	Capacitance	Peak current	Transient energy
Symbol	$V_{RMS}$	$V_{DC}$	$V_V$	$V_c$	$C_p$	$i_{max}$	$W_{max}$
Units	Volts	Volts	Volts	Volts	pF	Amps	Joules
	(Max.)	(Max.)		(Max.)	(Typical)	(Max.)	(Max.)
Test Condition		< 10 $\mu$ A	1mA DC	1 A 8/20 $\mu$ s	1KHz	8/20 $\mu$ s	10/1000 $\mu$ s
MLVS0805AM04501	4	5.5	7.8~12	22	500	80	0.1
MLVS0805AM06421	6	9	10.8~18	30	420	80	0.2
MLVS0805AM08361	8	11	14~20	32	360	100	0.3
MLVS0805AM11401	11	14	17.2~21	38	400	100	0.1
MLVS0805AM14401	14	16	22~28	46	400	120	0.3
MLVS0805AM14351	14	18	19.8~25.2	44	350	120	0.3
MLVS0805AM17101	17	22	25~34	54	100	30	0.1
MLVS0805AM17401	17	22	24.3~30.7	50	400	120	0.3
MLVS0805AM20221	20	26	29.7~37.3	56	220	100	0.4
MLVS0805AM25251	25	31	35.1~43.9	71	250	100	0.3
MLVS0805AM30201	30	38	42.3~52.7	81	200	100	0.3
MLVS0805AM35171	35	45	55~61	93	170	80	0.1

$V_{RMS}$  – Maximum AC operating voltage the varistor can maintain and not exceed 10 $\mu$ A leakage current

$V_{DC}$  – Maximum DC operating voltage the varistor can maintain and not exceed 10 $\mu$ A leakage current

$V_V$  –Voltage across the device measured at 1mA DC current.  
Equivalent to  $V_b$ , “Breakdown Voltage”.

$V_c$  – Maximum peak voltage across the varistor measured at 8/20us waveform and 1A pulse current

$C_p$  – Device capacitance measured with zero volt bias 1Vrms.

$i_{max}$  – Maximum peak current which may be applied with 8/20us waveform without device failure

$W_{max}$  – Maximum energy that may be dissipated with the 10/1000us waveform without device failure

## 5. General electrical specifications

### 5.1. General technical data

Operating temperature	-40 ... +125°C
Storage temperature (on board)	-40... +125°C
Response time	<1 ns
Solderability	245±5°C, 3 ±1sec
Solder leach resistance	260±5°C, 10 ±1sec

### 5.2. Storage Condition with package

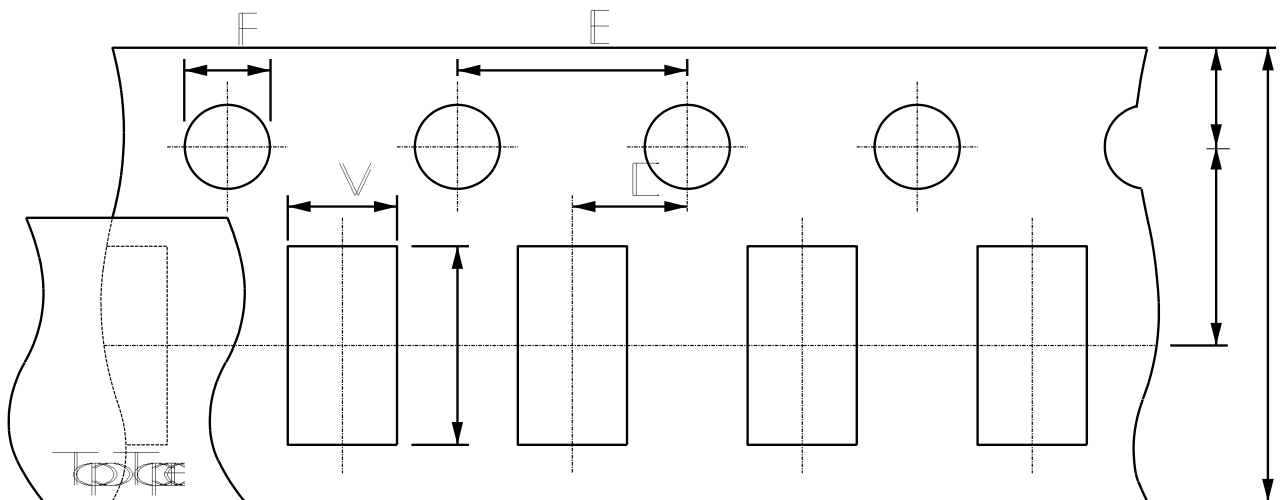
Storage Time: 12 months max

Storage Temperature: 5 to 40°C

Relative Humidity: to 65 %

## 6. Taping Package and Label Marking

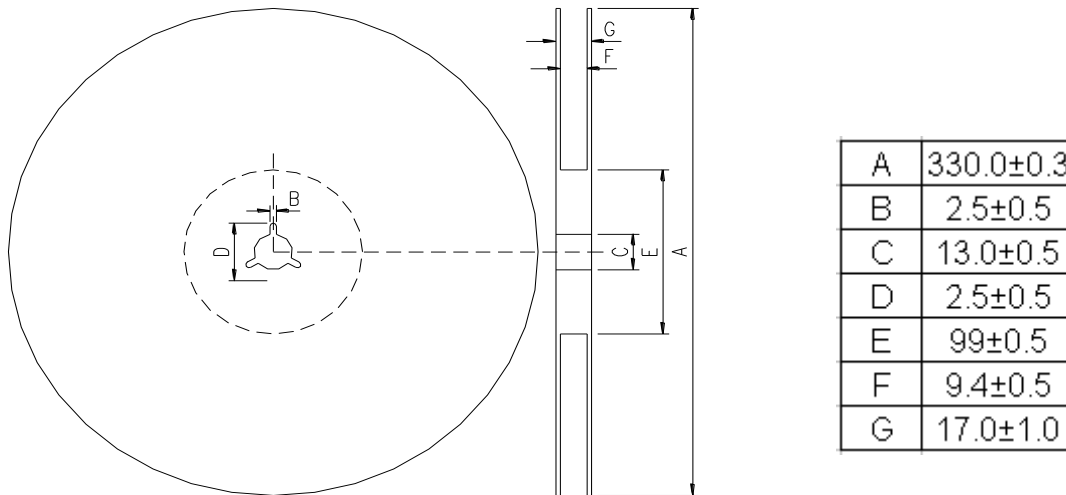
### 6.1. Carrier tape dimensions



UNIT: mm

A	B	C	D	E	F	L	W
8.00± 0.30	3.50± 0.05	1.75± 0.10	2.00± 0.05	4.00± 0.10	1.50± 0.10	2.30± 0.15	1.55± 0.15

## 6.2. Taping reel dimensions



## 6.3. Taping specifications

There shall be the portion having no product in both the head and the end of taping, and there shall be the cover tape in the head of taping.

## 6.4. Label Marking

The label specified as follows shall be put on the side of reel.

- (1) Part No.
- (2) Quantity
- (3) Lot No.

\* Part No. And Quantity shall be marked on outer packaging.

## 6.5. Quantity of products in the taping package

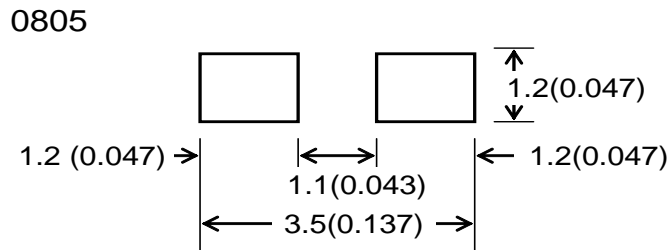
- (1) Standard quantity : 4000pcs/Reel for MLVS0805AM series
- (2) Shipping quantity is a multiple of standard quantity.

## 7. Precautions for Handling

### 7.1. Solder cream in reflow soldering

Refer to the recommendable land pattern as printing mask pattern for solder cream.

- (1) Print solder in a thickness of 150 to 200  $\mu\text{m}$ .
- (2) Dimensions: millimeters (inches)



### 7.2. Precaution for handling of substrate

Do not exceed to bend the board after soldering this product extremely.

(Reference examples)

- Mounting place must be as far as possible from the position, which is close to the break line of board, or on the line of large holes of board.
- Do not bend extremely the board, in mounting another components.  
If necessary, use back-up pin (support pin) to prevent from bending extremely.
- Do not break the board by hand. We recommend using the machine or the jig to break it.

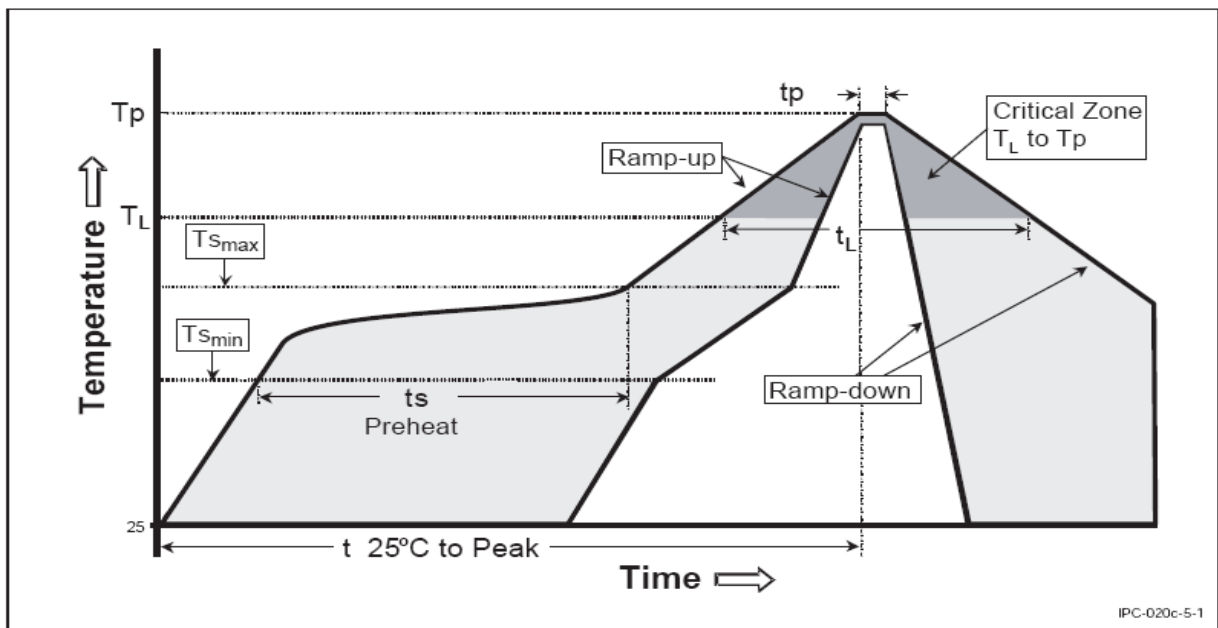
### 7.3. Precaution for soldering

Note that rapid heating, rapid cooling or local heating will easily damage this product.

Do not give heat shock over 100°C in the process of soldering. We recommend taking preheating and gradual cooling.

**7.4. Recommendable reflow soldering**

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T <sub>smax</sub> to T <sub>p</sub> )	3° C/second max.
<b>Preheat</b> – Temperature Min (T <sub>smin</sub> ) – Temperature Max (T <sub>smax</sub> ) – Time (t <sub>smin</sub> to t <sub>smax</sub> )	150 °C 200 °C 60-180 seconds
Time maintained above: – Temperature (T <sub>L</sub> ) – Time (t <sub>L</sub> )	217 °C 60-150 seconds
Peak/Classification Temperature (T <sub>p</sub> )	260 °C
Time within 5 °C of actual Peak Temperature (t <sub>p</sub> )	20-40 seconds
Ramp-Down Rate	6 °C/second max.
Time 25 °C to Peak Temperature	8 minutes max.



\*According to J-STD-020C



### **7.5. Soldering gun procedure**

Note the follows, in case of using solder gun for replacement.

- (1) The tip temperature must be less than 280°C for the period within 3 seconds by using soldering gun less than 30 W.
- (2) The soldering gun tip shall not touch this product directly.

### **7.6. Soldering volume**

Note that excess of soldering volume will easily get crack the body of this product.