PRODUCT SPECIFICATION

DOCUMENT NO.ENS000134900				
DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
MLVS1210 HDG Series	Sandy	Hungtsai	Shawn Yeh	Shawn Yeh

MLVS1210 HDG Series Engineering Specification

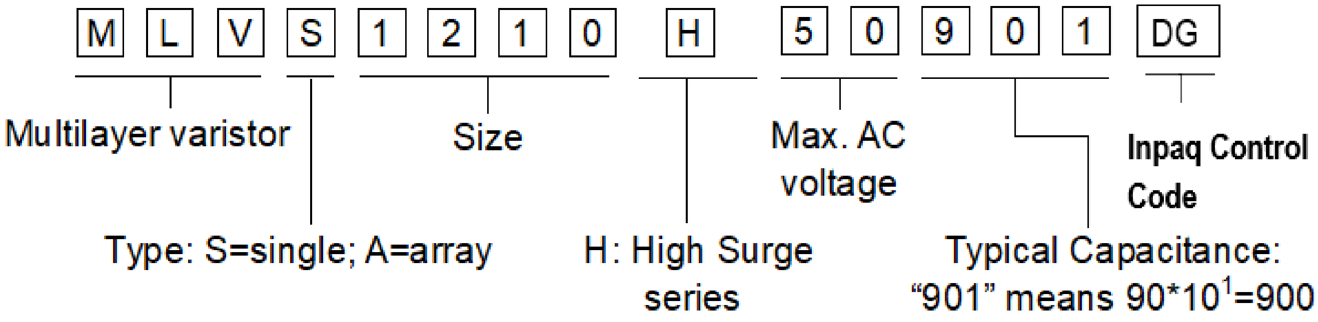
1. Scope

(1) RoHS compliant
(2) Meet IEC61000-4-5 standard
(3) SMD type zinc oxide based ceramic chip
(4) Insulator over coat keeps excellent low and stable leakage current
(5) Quick response time (<0.5ns)
(6) High transient current capability
(7) High reliability
(8) Compact size for EIA1210

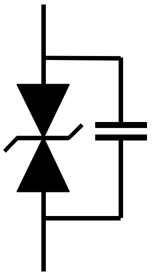
Applications

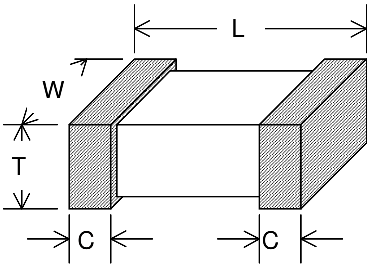
Protection against high working voltage applications related transient overvoltage

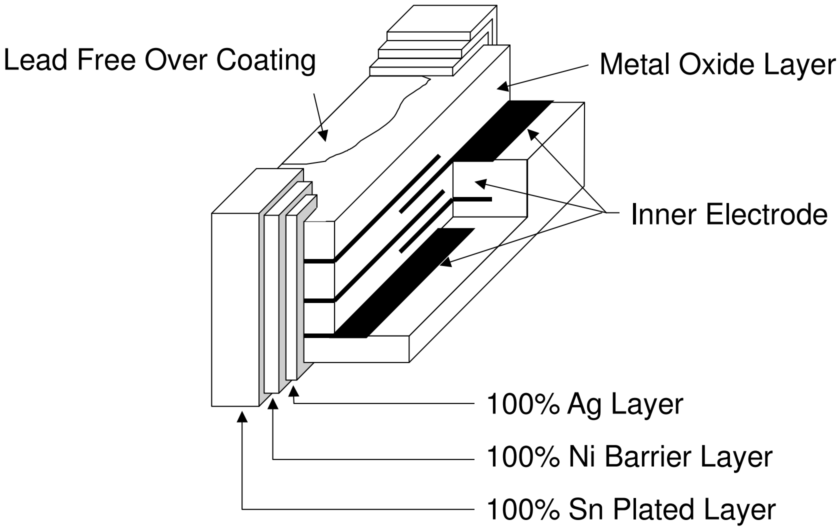
2. Explanation of Part Number



3. Construction & Dimension







Unit : mm	1210
L	3.20±0.25
W	2.50±0.25
T	2.75 max.
C	0.50±0.25

4. Part ratings and characteristics

4.1. Ratings (25°C for characteristics)

	Working voltage		Varistor voltage	Clamping Voltage	Capacitance	Peak current
Symbol	V_{RMS}	V_{DC}	V_V	Vc	Cp	i_{max}
Units	Volts	Volts	Volts	Volts	pF	Amps
	(Max.)	(Max.)		(Max.)	(Typical)	(Max.)
Test Condition		< 15µA	1mA DC	2.5A 8/20µs	1KHz	8/20µs
MLVS1210H14352DG	14	18	22~28	45	3500	1000
MLVS1210H17502DG	17	24	27~34	50	5000	2000
MLVS1210H25252DG	25	38	41~51	70	2500	1500
MLVS1210H48132DG	48	60	69~83	115	1300	1200
MLVS1210H48142DG	48	60	69~83	115	1400	1200
MLVS1210H48901DG	48	60	69~83	108	900	800
MLVS1210H50901DG	50	65	73~91	120	900	900
MLVS1210H60801DG	60	85	90~110	140	800	1100

V_{RMS} – Maximum AC operating voltage the varistor can maintain and not exceed 15µA leakage current

V_{DC} – Maximum DC operating voltage the varistor can maintain and not exceed 15µA leakage current

V_V –Voltage across the device measured at 1mA DC current. Equivlent to Vb, “Breakdown Voltage”.

Vc – Maximum peak voltage across the varistor measured at 8/20us waveform and 2.5A pulse current

Cp – Device capacitance measured with zero volt bias 1Vrms.

i_{max} – Maximum peak current which may be applied with 8/20us 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, 5 +0/-0.5sec
Solder leach resistance	260±5°C,10 ±1sec

5.2. Taping Package Storage Condition

Storage Time: 12 months max.

Storage Temperature: 5 to 40°C

Relative Humidity: 65% max.

6. Precautions for Handling

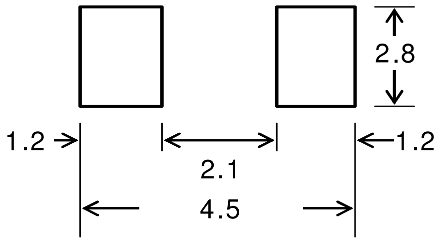
6.1. Solder cream in reflow soldering

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

(1) Print solder in a thickness of 150 to 200 μm

Dimensions: millimeters (inches)

1210



6.2. 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 component.
  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.

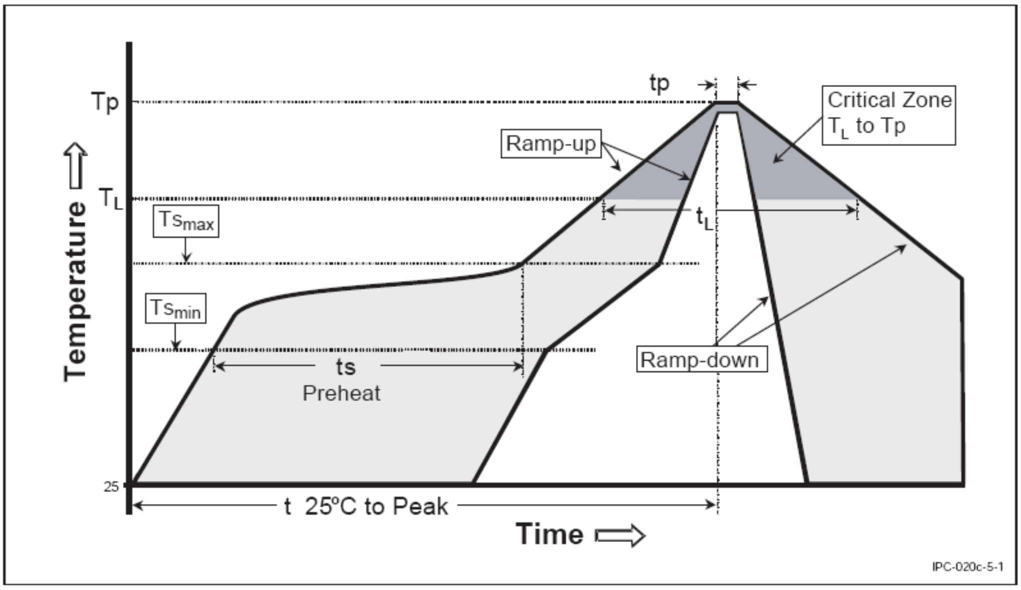
6.3. Precaution for soldering

Note that rapid heating, rapid cooling or local heating will easily damage the component.

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

6.4. Recommendable reflow soldering

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Tsmax to Tp)	3℃/second max.
Preheat – Temperature Min (Tsmin) – Temperature Max (Tsmax) – Time (tsmin to tsmax)	 150℃ 200℃ 60-180 seconds
Time maintained above: – Temperature (TL) – Time (tL)	 217℃ 60-150 seconds
Peak/Classification Temperature (Tp)	260℃
Time within 5 ℃ of actual Peak Temperature (tp)	20-40 seconds
Ramp-Down Rate	6℃/second max.
Time 25 ℃ to Peak Temperature	8 minutes max.



*According to J-STD-020C

6.5. Solder gun procedure

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

(1) Use solder tip temperature must be less than 350°C for the period within 3 seconds by using soldering gun under 30W.

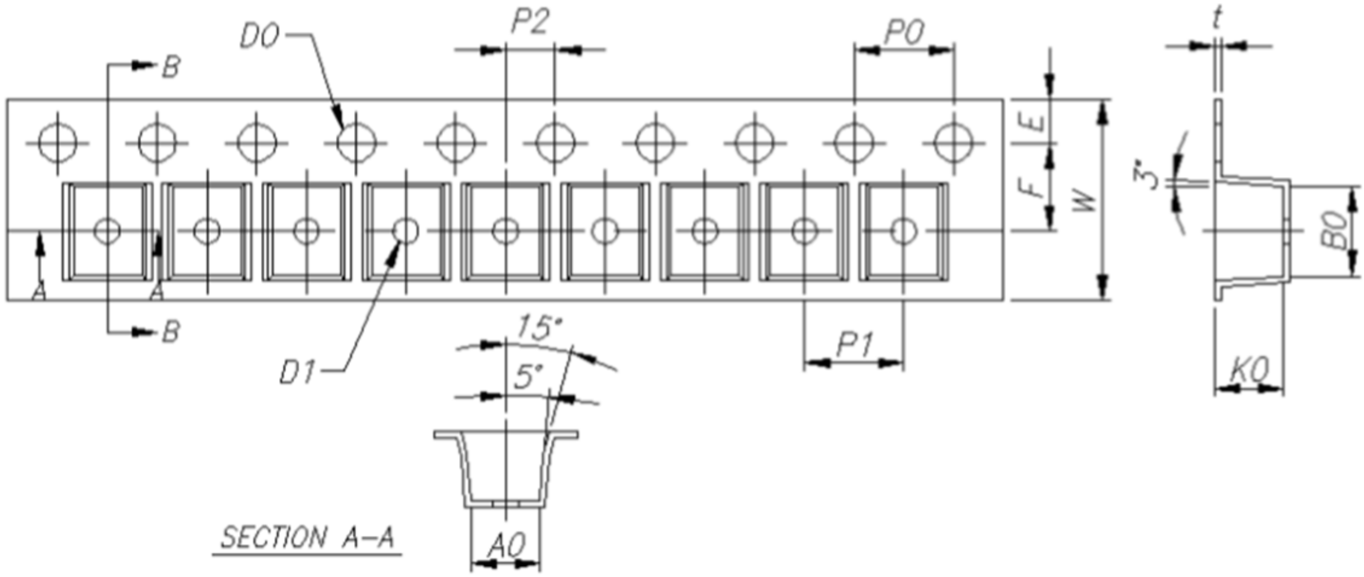
(2) Soldering gun tip shall not touch component directly.

6.6. Soldering volume

Apply proper volume of solder paste, too much may cause crack of component body.

7. Taping Package and Label Marking

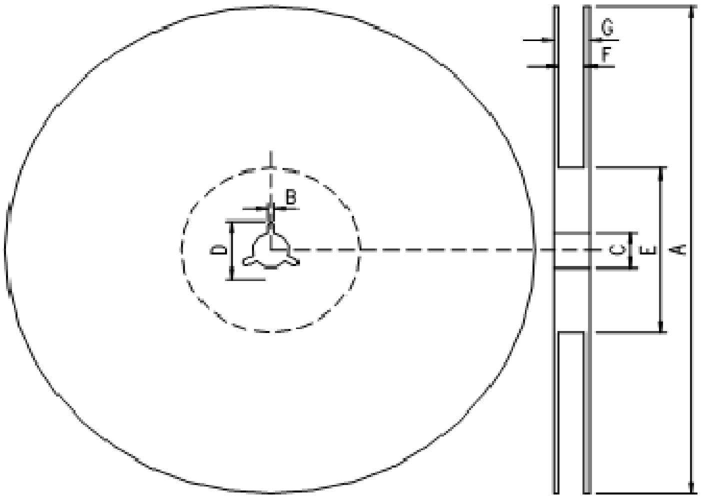
7.1. Carrier tape dimensions



Type	W	E	F	D0	D1	P0	P1	P2	10Po
1210	8.00 ±0.20	1.75 ±0.10	3.50 ±0.10	1.50 +0.10,-0	1.00 ±0.10	4.00 ±0.10	4.00 ±0.10	2.00 ±0.10	40.00 ±0.20
	Bo	Ao	Ko	t					
	3.55 ±0.10	2.75 ±0.10	2.75 ±0.10	0.27 ±0.03					

Unit : mm

7.2. Taping reel dimensions



UNIT: mm

A	178.0±2.0
B	2.0±0.5
C	13.0±0.5
D	21.0±0.8
E	62.0±1.5
F	9.0±0.5
G	13.0±1.0

7.3. 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.

7.4. 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.

7.5. Quantity of products in the taping package

(1) Standard quantity: 1,500pcs/Reel
(2) Shipping quantity is a multiple of standard quantity.