



HYLINK Technology CO.,LTD

SMD Transient Voltage Suppressors

APPROVAL SHEET

Customer Information

Customer :			
Part Name :			
Part No. :			
Model No. :			
	COMPANY	PURCHASE	R&D

Vendor Information

Name:	HYLINK Technology CO.,LTD
Part Name	Chip TVS
Part No.	HL0603-060E0R20P-LF
Lot No.	

<h2>HYLINK Technology CO.,LTD</h2>			
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PART NO. HLO603-060E0R20P-LF

1.1 Technical Data

	Symbol	Value	Unit
Maximum allowable continuous AC voltage ₁	V_{RMS}	-----	V
Maximum allowable continuous DC voltage	V_{DC}	6	V
Typical capacitance value measured at 1MHZ	C	0.20-0.10 0.20+0.05	pF
Typical ESD trigger Voltage ₂	V_T	150	V
Typical ESD clamping Voltage at 30ns	V_{CLAMP}	30	V
Leakage current at V_{DC} ₃ (AT initial state)	I_{LDC}	< 0.05	uA
Minimum ESD pulse withstand		> 2000	Time

1.2 Reference Data

Response time	T_{rise}	< 1	ns
Operation ambient temperature		-55~+85	
Storage temperature		-55~+125	

1.3 Other Data

Body	Ceramic
End termination	Ag/Ni/Sn
Packaging	Reel
Complies with ESD Standard	IEC61000-4-2
Complies with ROHS Standard	Yes
Marking	None
Lead content	< 100 ppm

Notes:

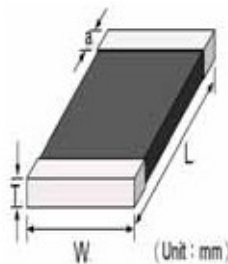
1 AC voltage at 50~60 Hz

2 The Clamping voltage was measured by IEC61000-4-2,level4 pulse,8KV contact testing method.

3 The Leakage current was measured at 6Vdc.

2 .Size

Model	0603(1608)
Length(L)	1.60±0.15
Width(W)	0.80±0.10
Thickness(T)	0.90 max

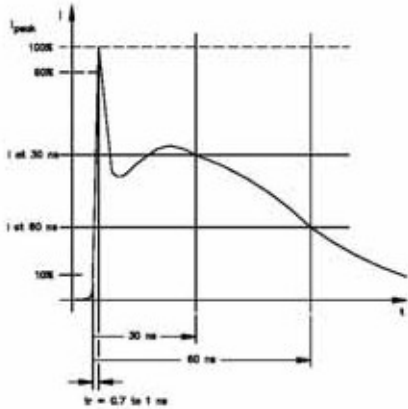




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3.ESD Wave Form



IEC61000-4-2 Standards

SEVERITY LEVEL	AIRDIRCHARGE	DIRECT DISCHARGE
1	2 KV	2 KV
2	4 KV	4 KV
3	8 KV	6 KV
4	15 KV	8 KV

IEC 61000-4-2 Compliant ESD Current Pulse Waveform

4. Enviromental Reliability Test

Characteristic	Test method and description		
High Temperature Storage	The specimen shall be subjected to 125 ± 2 for 1000 ± 12 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 or two hours. The change	Step	Temperature
		Period	
		130Min	$\pm 3-55 \pm 3$
		2Room	Temperature 1~2 hours
High Temperature Load	of varistor voltage shall be within 10 % and mechanical damage shall be examined. After being continuously applied the maximum allowable voltage at 85 ± 2 for 1000 ± 2 hours, the specimen shall be stored at room temperature and humidity for one or two hours, the change of varistor voltage shall be within 10%.	330Min	$\pm 3125 \pm 2$
Damp Heat Load/ Humidity Load	The specimen should be subjected to 40 ± 2 , 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 -55 ± 2 , without load for 500 hours and then stored at room temperature for one or two hours. the change of varistor voltage shall be within 10%.		

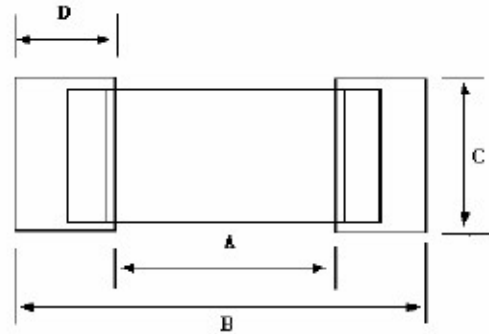


5. Soldering Recommendations

5.1 Recommended solder pad layout

(Unit:mm)

	A	B	C	D
0402	0.4~0.6	1.4~1.8	0.5~0.6	0.6~1.2
0603	0.8~1.2	2.2~2.8	0.6~1.0	0.9~1.5
0805	1.0~1.5	2.6~3.2	1.2~1.5	1.1~1.8
1206	1.8~2.5	4.2~5.2	1.2~1.8	1.2~1.8
1210	1.8~2.5	4.2~5.2	2.2~3.0	1.3~2.0
1812	2.5~3.3	5.5~6.7	2.8~3.6	1.3~2.2
2220	3.8~4.6	6.6~7.8	4.8~5.5	1.3~2.2

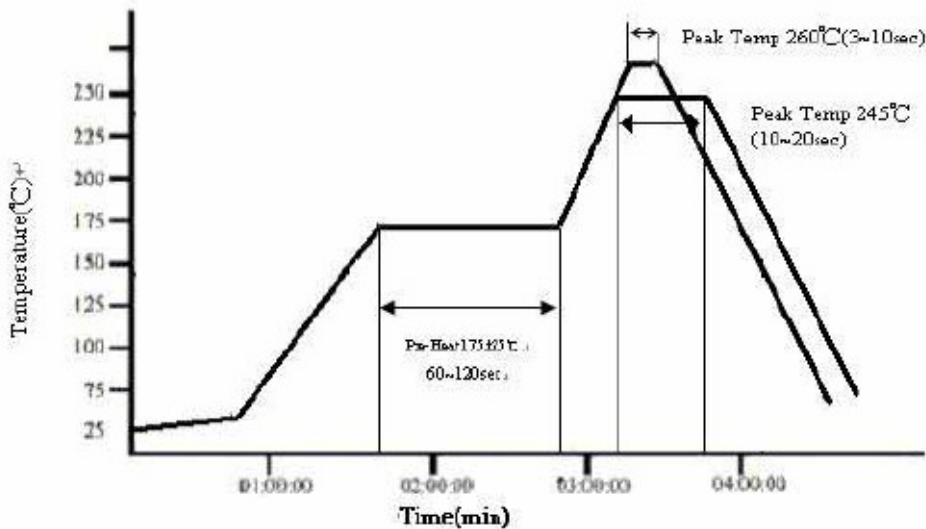


5.2 The SIR test of the solder paste shall be done(Based on JIS-Z-3284)

5.3 Steel plate and foot distance printing

Foot distance printing (mm)	Steel Plate thickness (mm)
> 0.65mm	0.18mm
0.65mm~0.5mm	0.15mm
0.50mm~0.40mm	0.12mm
<=0.40 mm	0.10mm

5.4 The IR reflow and temperature of Soldering for Pb Free



IR reflow Pb Free Process suggestion profile

- (1) The solder recommend is Sn96.5/Ag 3.5 of 120 to 150µm
- (2) Ramp-up rate (217to Peak) + 3 /second max
- (3) Temp. maintain at 175 +/-25180 seconds max
- (4) Temp. maintain above 21760-150 seconds



- (5) Peak temperature range 245 +20 / -10 _____ time within 5 _____ of actually peak temperature (tp)
10~20 seconds
- (6) Ramp down rate +6 /second max.

Perform adequate test in advance as the reflow temperature profile will vary according to the conditions of the manufacturing process, and the specification of the reflow furnace.

5.5 Resistance to soldering heat-High Temperature Resistance:260 ,10sec-3times.

5.6 Hand Soldering

In hand soldering of the Varistors. Large temperature gradient between preheated the Varistors and the tip of soldering iron may cause electrical failures and mechanical damages such as crackings or breakings of the devices. The soldering shall be carefully controlled and carried out so that the temperature gradient is kept minimum with following recommended conditions for hand soldering.

5.6.1 Recommended Soldering Condition 1

- (1) Solder:
0.12~0.18mm Thread solder (Sn96.5:Ag3.5) with soldering flux in the core.
Rosin-based and non-activated flux is recommended.
- (2) Preheating
The Varistors shall be preheated so that Temperature Gradient between the devices and the tip of soldering iron is 150or below.
- (3) Soldering Iron
Rated Power of 20w max with 3mm soldering tip in diameter.
Temperature of soldering iron tip 380 max,3-5sec (The required amount of solder shall be melted in advance on the soldering tip.)
- (4) Cooling
After soldering. The Varistors shall be cooled gradually at room ambient temperature.

5.6.2 Recommended Soldering Condition 2(Without preheating)

- (1) Solder iron tip shall not directly touch to ceramic dielectrics.
- (2) Solder iron tip shall be fully preheated before soldering while soldering iron tip to the external electrode of Varistors.

5.7 Post Soldering Cleaning

5.7.1 Residues of corrosive soldering fluxes on the PC board after cleaning may greatly have influences on the electrical characteristic and the reliability (such as humidity resistance)of the Varistors which have been mounted on the board. It shall be confirmed that the characteristic and the reliability of the devices are not affected by the applied cleaning conditions.

5.7.2. When an ultrasonic cleaning is applied to the mounted Varistors on PC Boards. Following conditions are recommended for preventing failures or damages of the devices due to the large vibration energy and the resonance caused by the ultrasonic waves.

- (1) Frequency 29MHz max
(2) Radiated Power 20w/lithr max
(3) Period 5minuets max