

MSEMFxxxLC SERIES
Low Capacitance Quad Array for ESD Protection

Revision:B

General Description

This integrated transient voltage suppressor device (TVS) is designed for applications requiring transient overvoltage protection, printers, business machines, communication systems, medical equipment, and other applications. Its integrated design provides very effective and reliable protection for separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Applications

- Serial and Parallel Ports
- Microprocessor Based Equipment
- Notebooks, Desktops, Servers
- Cellular and Portable Equipment

Features

- Four Separate Unidirectional Configurations for Protection
- Low Leakage Current < 1 μ A @ 3Volts
- Power Dissipation: 380mW
- Small SOT-553 SMT Package
- Low Capacitance
- Complies to USB 1.1 Low Speed & Speed Specifications
- These are Pb-Free Devices

Complies with the following standards

IEC61000-4-2

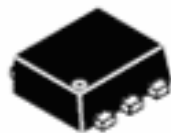
Level 4 15 kV (air discharge)

8 kV(contact discharge)

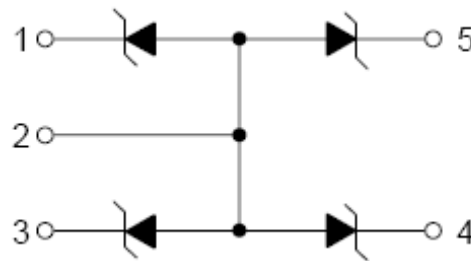
MIL STD 883E - Method 3015-7 Class 3

25 kV HBM (Human Body Model)

Functional diagram



SOT-553

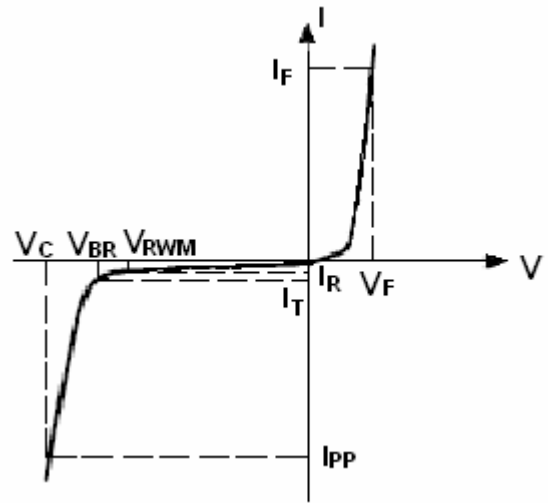


Maximum Ratings (T_A=25°C)

Symbol	Parameter	Value	Units
P _{PK}	Peak Power Dissipation(8×20 μ s@T _A =25°C)	25	W
P _D	Steady State Power-1 Diode	380	mW
R ^θ _{JA}	Thermal Resistance, Junction-to-Ambient	327	°C/W
	Above 25°C, Derate	3.05	Mw/°C
T _{Jmax}	Maximum Junction Temperature	150	°C
T _J T _{stg}	Operation Junction and Storage Temperature Range	-55 to +150	°C
T _L	Lead Solder Temperature(10 seconds duration)	260	°C

Electrical Parameter

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
I_T	Test Current
V_{BR}	Breakdown Voltage @ I_T
I_F	Forward Current
V_F	Forward Voltage @ I_F



Electrical Characteristics

Part Numbers	V_{BR}			I_T	V_{RWM}	I_R	C
	Min.	Typ.	Max.				Typ. 0v bias
	V	V	V				pF
MSEMF3V3LC	5.3	5.6	5.9	1	3.0	1.0	12
MSEMF05LC	6.1	6.8	7.2	1	5.0	1.0	8
MSEMF12LC	11.4	12	12.7	5	9.0	1.0	7

1. Non-repetitive current per Figure 1.
2. Only 1 diode under power. For 4 diodes under power
3. Capacitance of one diode at $f=1\text{MHz}, T_A=25^\circ\text{C}$

Typical Characteristics

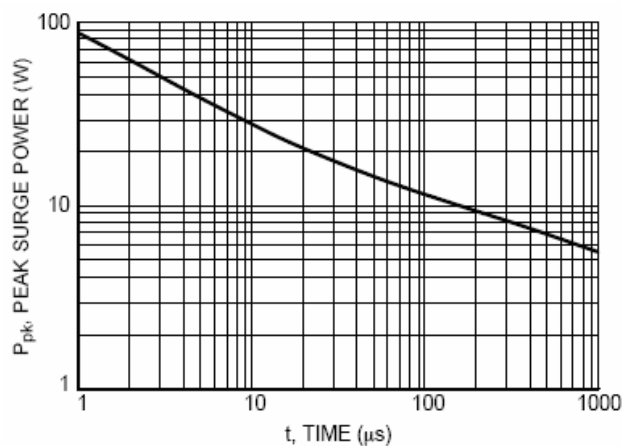


Figure 1 Pulse Width

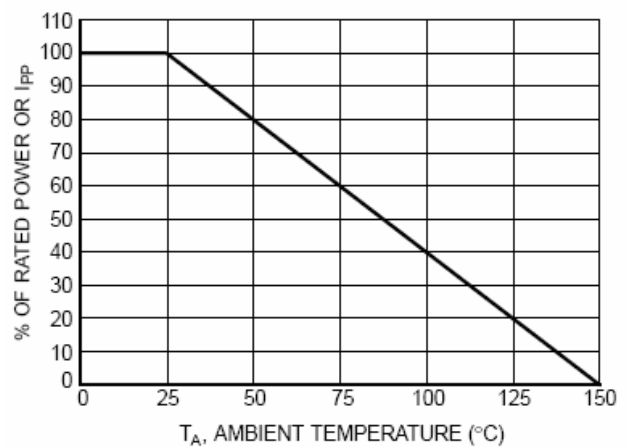


Figure 2 Power Derating Curve

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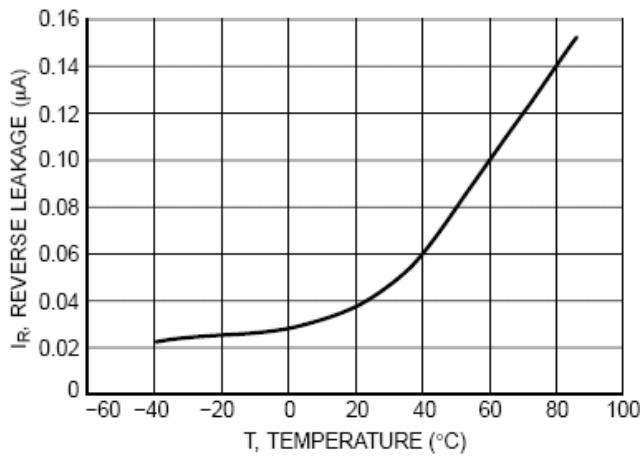


Figure 3 Reverse Leakage versus temperature

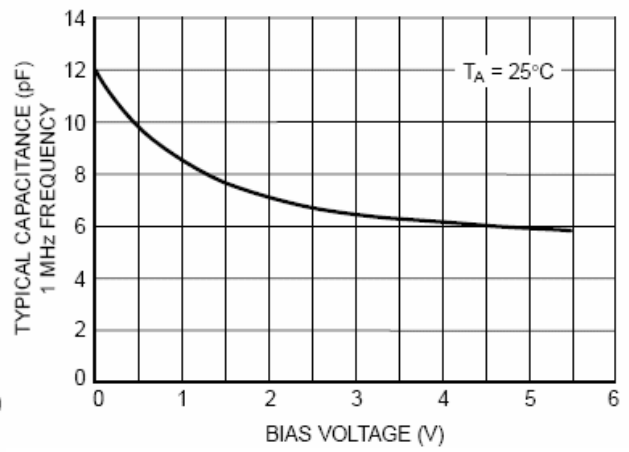


Figure 4 Capacitance

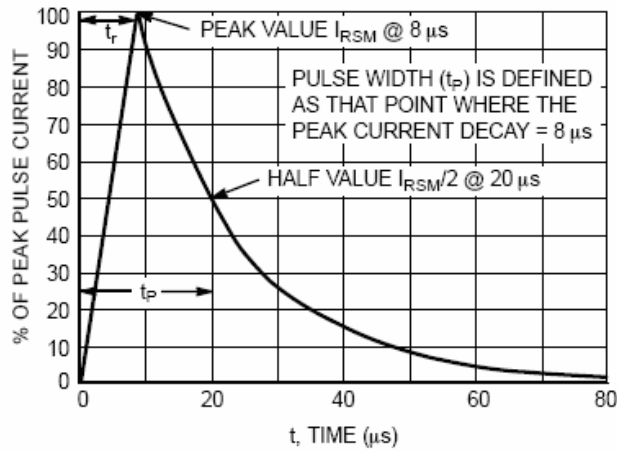


Figure 5 8*20 Pulse Waveform

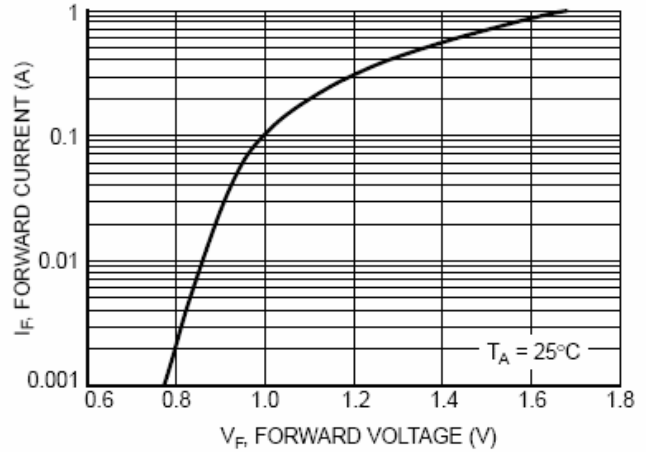
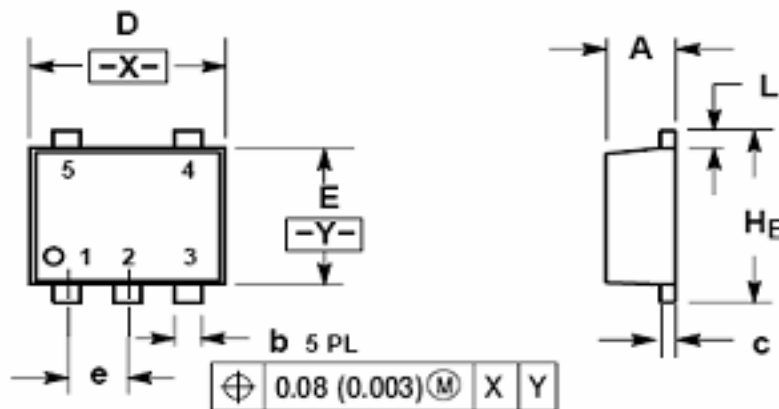


Figure 6 Forward Voltage

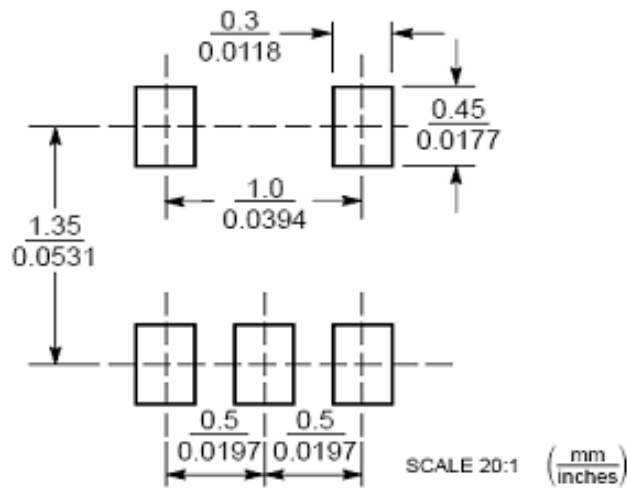
SOT-553 Mechanical Data



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DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.022	0.024
b	0.17	0.22	0.27	0.007	0.009	0.011
c	0.08	0.13	0.18	0.003	0.005	0.007
D	1.50	1.60	1.70	0.059	0.063	0.067
E	1.10	1.20	1.30	0.043	0.047	0.051
e	0.50BSC			0.020BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
H _E	1.50	1.60	1.70	0.059	0.063	0.067

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SHANGHAI SINO-IC MICROELECTRONICS CO., LTD

Add: Building 3, Room 3401-03, No.200 Zhangheng Road, ZhangJiang Hi-Tech Park, Pudong, Shanghai 201203, China

Phone: +86-21-33932402 33932403 33932405 33933508 33933608

Fax: +86-21-33932401

Email: webmaster@sino-ic.com

Website: <http://www.sino-ic.com>

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