

## SEMFXXXLC

### Low Capacitance Quad Array for ESD Protection Description

Revision:A

#### 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  $\mu$  A
- Power Dissipation: 380mW
- Small SOT-353 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)

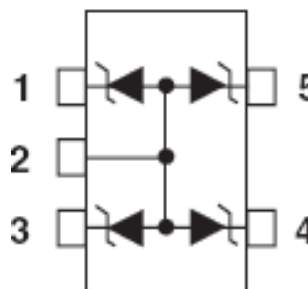
MIL STD 883E - Method 3015-7 Class 3

25 kV HBM (Human Body Model)

#### Functional diagram



SOT-353

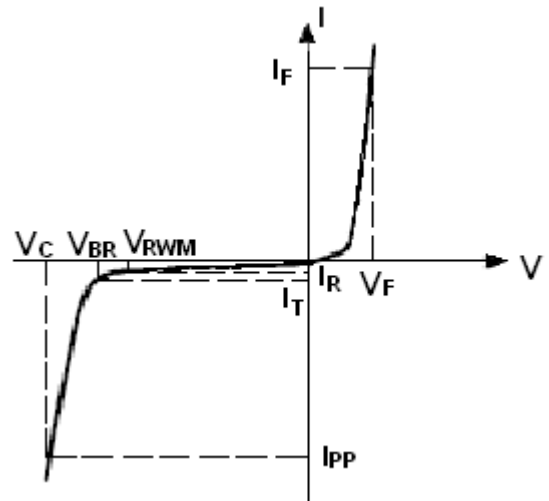


#### Maximum Ratings ( $T_A=25^\circ\text{C}$ )

Symbol	Parameter	Value	Units
$P_{PK}$	Peak Power Dissipation( $8 \times 20 \mu s @ T_A=25^\circ\text{C}$ )	30	W
$P_D$	Steady State Power-1 Diode	380	mW
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Above $25^\circ\text{C}$ , Derate	327 3.05	$^\circ\text{C}/\text{W}$ $\text{Mw}/^\circ\text{C}$
$T_{Jmax}$	Maximum Junction Temperature	150	$^\circ\text{C}$
$T_J T_{stg}$	Operation Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$T_L$	Lead Solder Temperature(10 seconds duration)	260	$^\circ\text{C}$

## 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 <sub>BR</sub>			I <sub>T</sub>	V <sub>RWM</sub>	I <sub>R</sub>	V <sub>F</sub>	I <sub>F</sub>	C
	Min.	Typ.	Max.				Max.		Typ. 0v bias
	V	V	V				mA		V
SEMF3V3LC	5.3	5.6	5.88	1	3.3	1.0	1.25	200	28
SEMF05LC	6.47	6.8	7.14	1	5.0	1.0	1.25	200	19

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

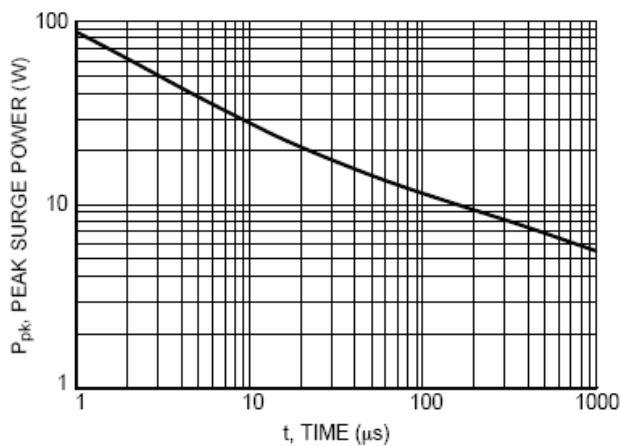


Figure 1 Pulse Width

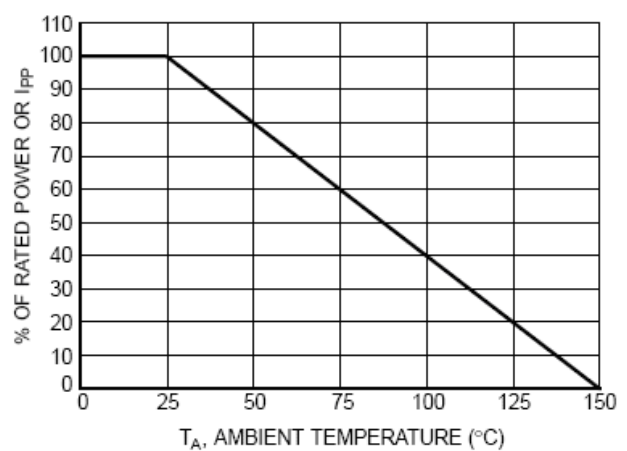


Figure 2 Power Derating Curve

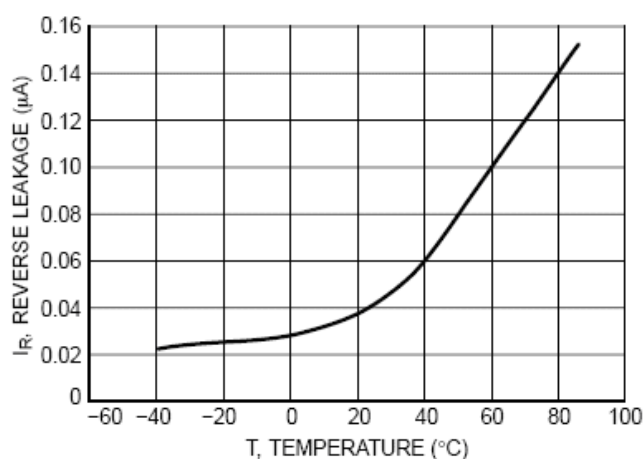


Figure 3 Reverse Leakage versus temperature

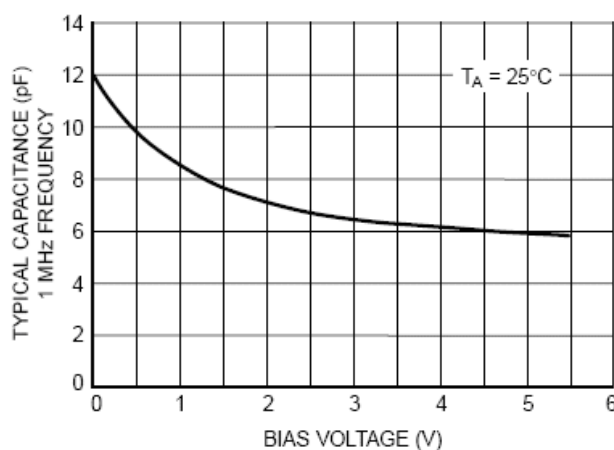


Figure 4 Capacitance

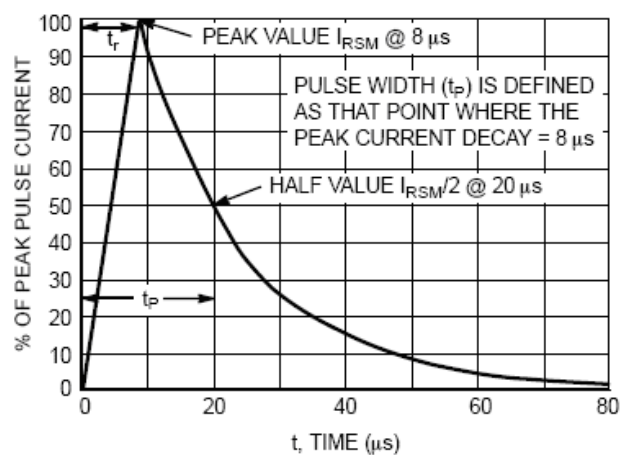


Figure 5 8\*20 Pulse Waveform

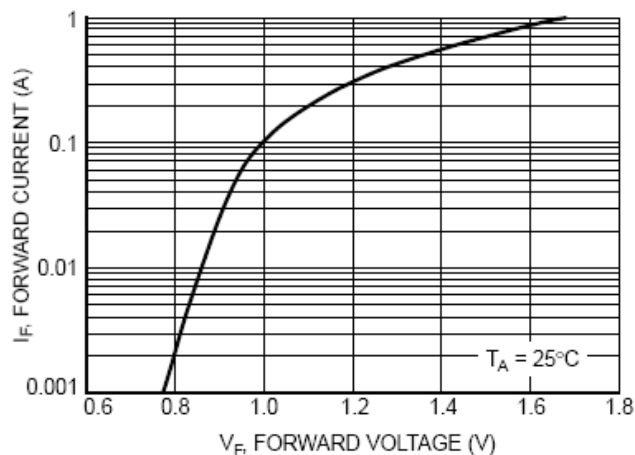
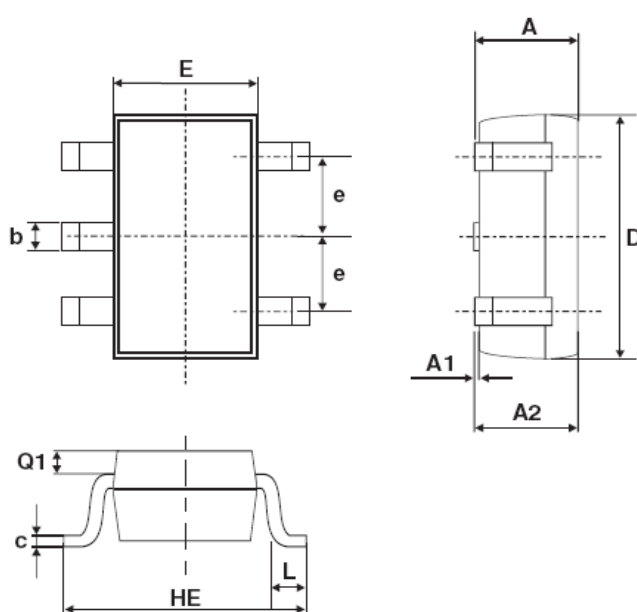


Figure 6 Forward Voltage

## SOT-353 Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.8	1.1	0.031	0.043
A1	0	0.1	0	0.004
A2	0.8	1	0.031	0.039
b	0.15	0.3	0.006	0.012
c	0.1	0.18	0.004	0.007
D	1.8	2.2	0.071	0.086
E	1.15	1.35	0.045	0.053
e	0.65 Typ.		0.025 Typ.	
H	1.8	2.4	0.071	0.094
Q1	0.1	0.4	0.004	0.016

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