

ES45D3HP

Transient Voltage Suppressor

Features

- 1500 Watts Peak Pulse Power per Line ($t_p = 8/20\mu s$)
- Replacement for MLV (0805)
- Protects one I/O or power line
- Low Clamping Voltage
- Working Voltage: 4.5 V
- Low Leakage Current
- Response Time is Typically $< 1\text{ ns}$



IEC COMPATIBILITY (EN61000-4)

- IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 100A (8/20 μs)

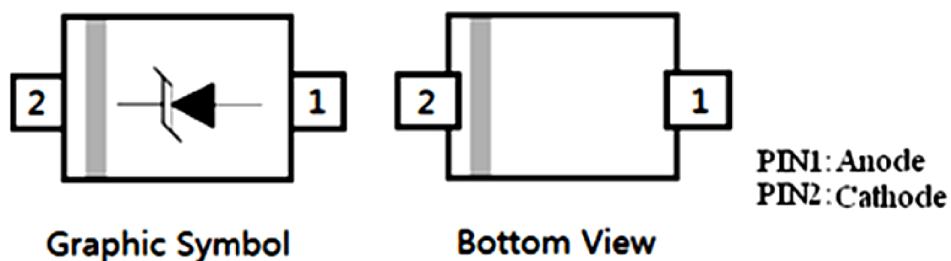
Mechanical Characteristics

- JEDEC SOD-323F package
- Molding compound flammability rating:
UL 94V-0
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant

Applications

- Laptop Computers
- Cellular Phones
- Digital Cameras
- Personal Digital Assistants (PDAs)

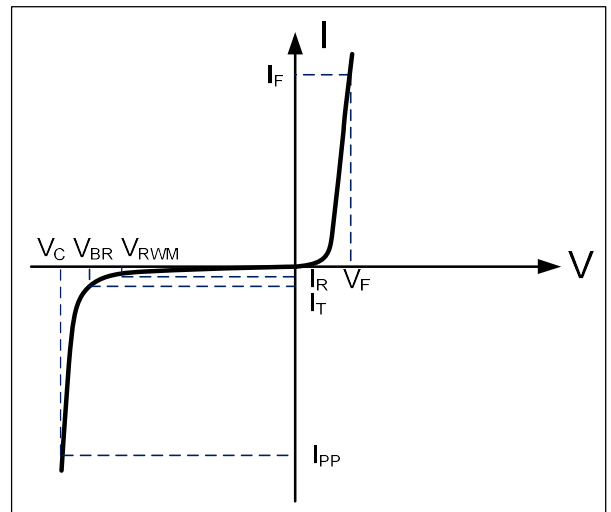
Schematic & PIN Configuration



Absolute Maximum Rating			
Rating	Symbol	Value	Units
DC Power Dissipation	P_{DC}	500	mWatts
Peak Pulse Power ($t_p=8/20\mu s$)	P_{PP}	1500	Watts
Maximum Peak Pulse Current ($t_p=8/20\mu s$)	I_{PP}	100	A
Operating Temperature	T_J	-55 to + 125	$^{\circ}C$
Storage Temperature	T_{STG}	-55 to +150	$^{\circ}C$

Electrical Parameters (T=25 $^{\circ}C$)

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}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F



Electrical Characteristics

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Forward Voltage	V_F	Pin 1 to Pin 2@ I_F		0.7		V
Reverse Stand-Off Voltage	V_{RWM}	Pin 2 to Pin 1@ I_R			4.5	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	5		7	V
Reverse Leakage Current	I_R	$V_{RWM}=4.5V, T=25^{\circ}C$			0.5	μA
Clamping Voltage	V_C	$I_{PP}=100A, t_p=8/20\mu s$			15	V
Junction Capacitance	C_j	Pin2 to Pin 1, $V_R=0V$, $f=1MHz$		700		pF

Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

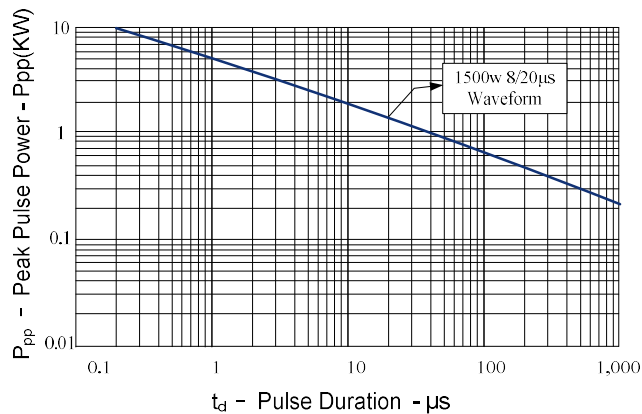


Figure 2: Power Derating Curve

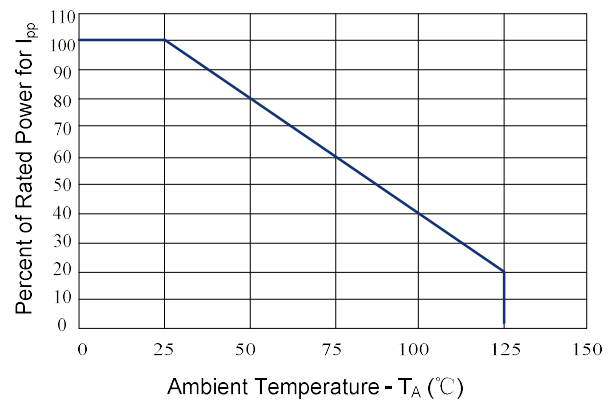


Figure 3: Clamping Voltage vs. Peak Pulse Current

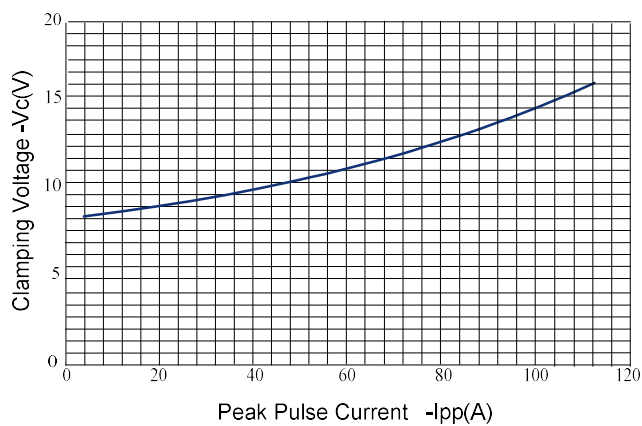


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

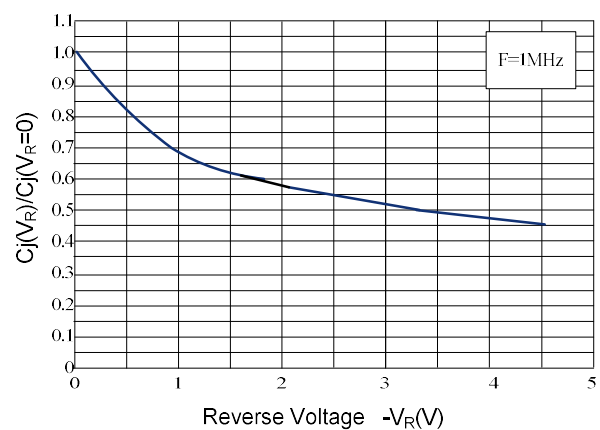
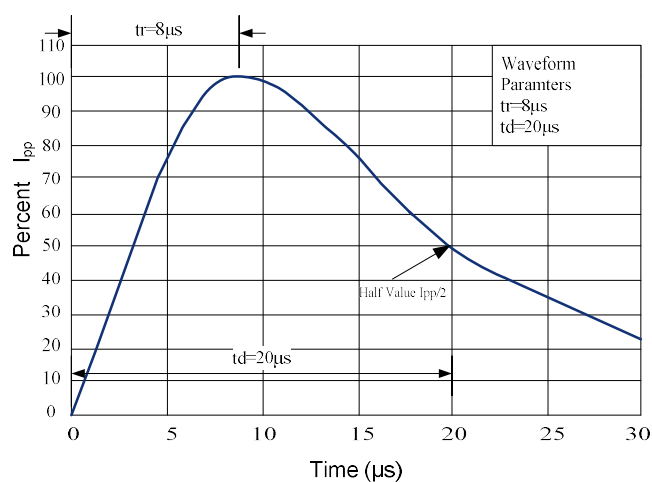
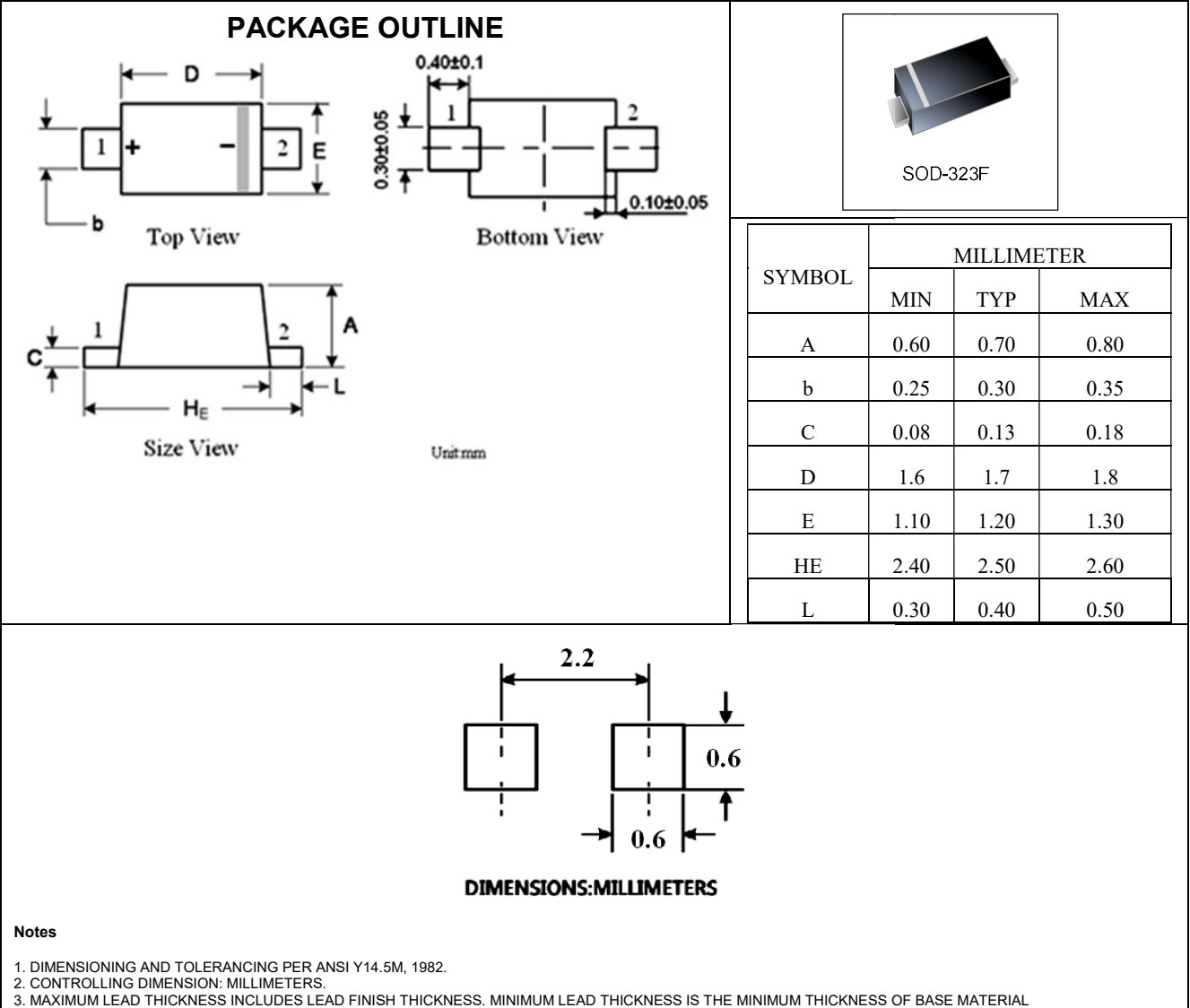


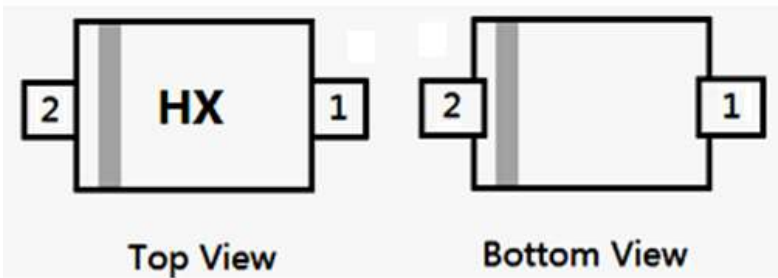
Figure 5: 8/20 μs Pulse Waveform



Outline Drawing – SOD-323F



Marking Codes



Revision History

NO.	Version	Date	Revision Item	Revision History	Confirm
1.	1.0	2015-10-08			
2.	1.1	2017-07-26	Update Anode for PIN1, Cathode for PIN2		