

ESD3Z3.3A-H

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210W Normal Capacitance Uni-Directional TVS For ESD Protection 3.3V

Features

- Low leakage current.
- Low reverse clamping voltage.
- Fast response time.
- Complies with following standards:
IEC 61000-4-2 $\pm 25\text{kV}$ (Contact), $\pm 25\text{kV}$ (Air).
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

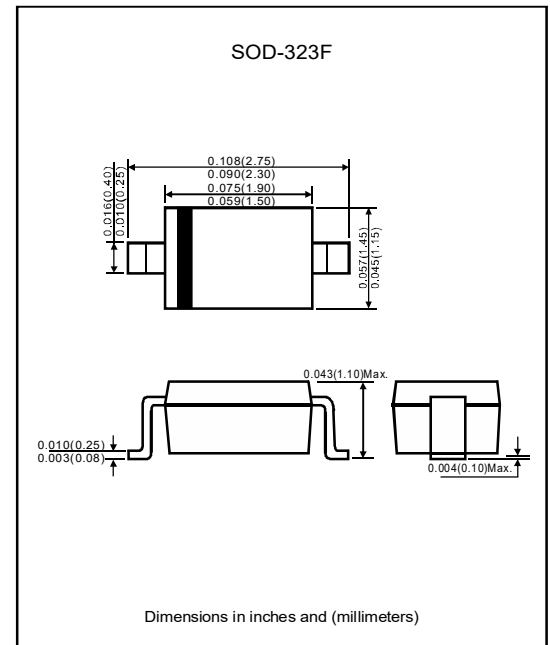
Applications

- Computers, peripherals, portable electronics, audio and video equipment .
- Cellular handsets and accessories.
- Other electronics equipment communication systems.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant.
- Case : Molded plastic, SOD-323F.
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Weight : Approximated 10mg.

Package outline



Maximum ratings (At $T_A=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbols	Ratings	Unit
Peak pulse power (Note2)	P_{PK}	210	W
Peak pulse current (Note2)	I_{PP}	16	A
ESD per IEC 61000-4-2 (Note1) (Air)	V_{ESD}	± 25	kV
(Contact)		± 25	
JESD22-A114-B ESD voltage per human body model (Note1)		± 16	
ESD voltage per machine model (Note1)		± 0.4	
Lead solder temperature (10 second duration)	T_L	260	$^\circ\text{C}$
Operating temperature	T_J	+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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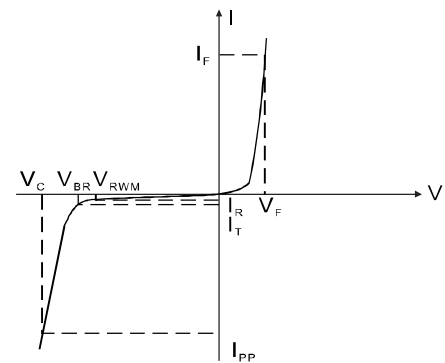
Electrical characteristics (At $T_A=25^\circ\text{C}$, unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Reverse working voltage (Note1)		V_{RWM}			3.3	V
Reverse breakdown voltage	$I_T=1\text{mA}$	V_{BR}	5.0		5.9	V
Reverse leakage current	$V_{RWM}=3.3\text{V}$	I_R			10	μA
Clamping voltage (Note2)	$I_{PP}=16\text{A}$	V_C			13	V
Forward voltage	$I_F=10\text{mA}$	V_F			0.9	V
Junction capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$	C_J		120		pF

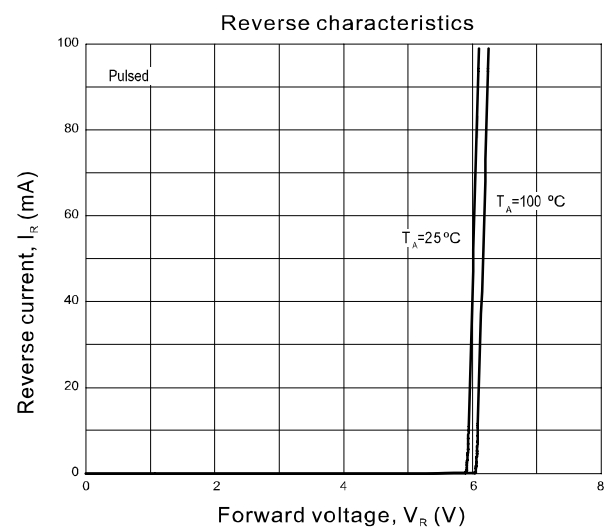
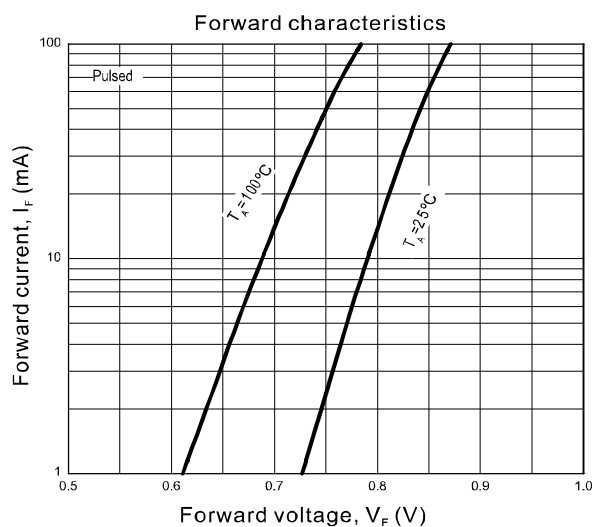
Note : 1. Device stressed with ten non-repetitive ESD pulses.
 2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.
 3. Other voltage available upon request.
 4. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

Rating and characteristic curves

Symbol	Parameter
I_{PP}	Peak pulse current
V_C	Clamping voltage @ I_{PP}
V_{RWM}	Reverse stand-off voltage
I_R	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

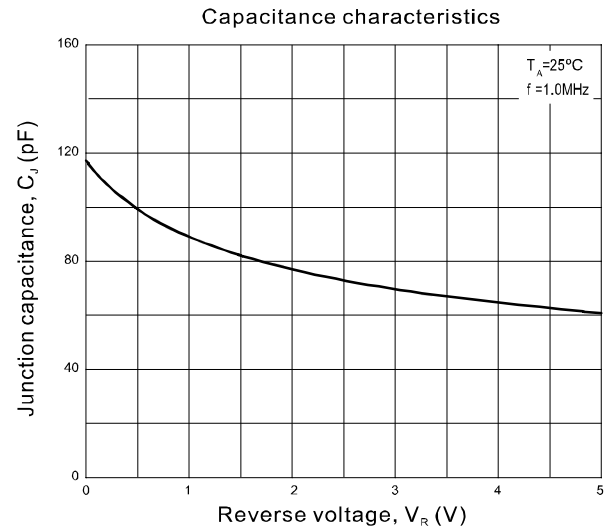
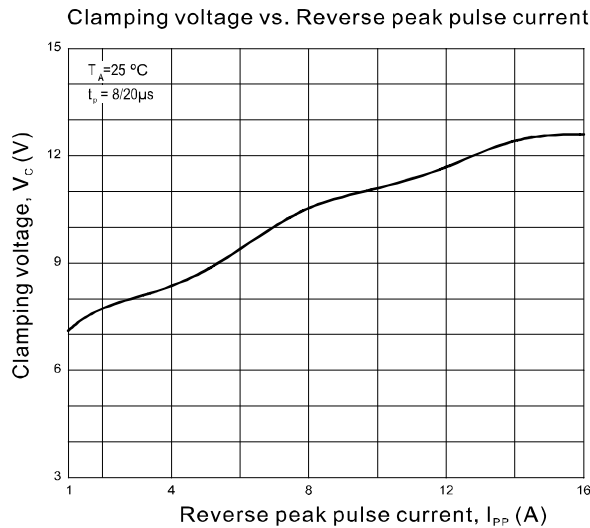


V-I characteristics for a Uni-directional TVS



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Rating and characteristic curves

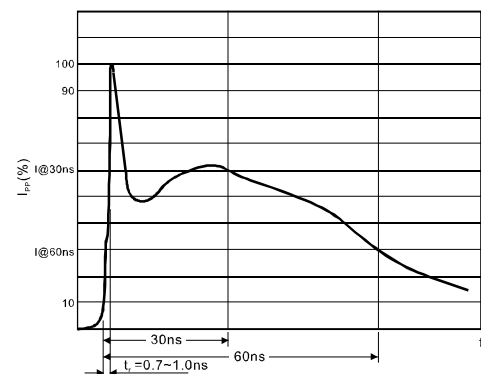


ESD standard compliance

IEC61000-4-2 Standard

Contact discharge		Air discharge	
Level	Test voltage (kV)	Level	Test voltage (kV)
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

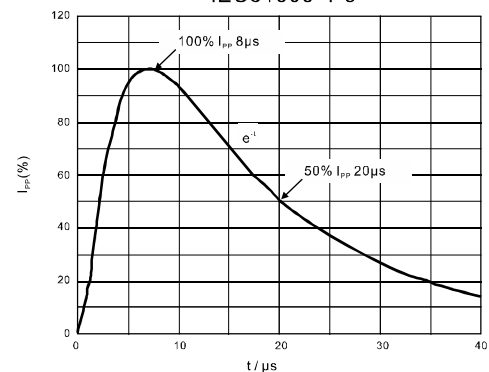
ESD pulse waveform according to IEC61000-4-2



JESD22-A114-B Standard

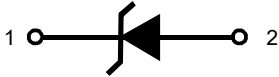
ESD class	Human body discharge (V)
0	0 ~ 249
1A	250 ~ 499
1B	500 ~ 999
1C	1000 ~ 1999
2	2000 ~ 3999
3A	4000 ~ 7999
3B	8000 ~ 15999

8/20μs pulse waveform according to IEC61000-4-5



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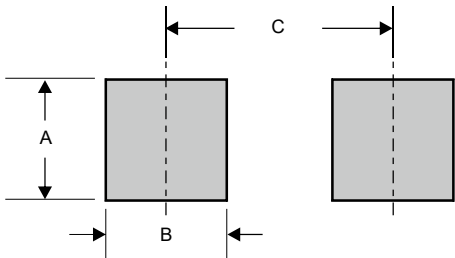
Pinning information

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Marking code
ESD3Z3.3A-H	YU

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.028 (0.70)	0.028 (0.70)	0.085 (2.15)

Packing information



Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

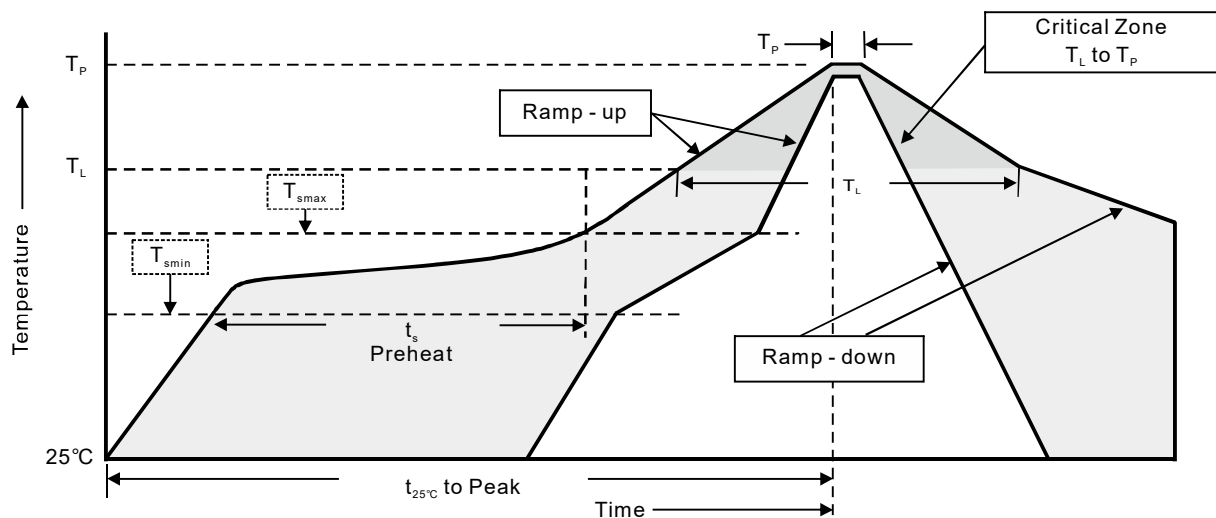
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
SOD-323F	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000

Suggested thermal profiles for soldering processes

1. Storage environment : Temperature = 5°C ~ 40°C, Humidity = 55%, ±25%.
2. Reflow soldering of surface - Mount devices.



3. Reflow soldering

Profile feature	Soldering condition
Average ramp-up rate (T_L to T_P)	< 3 °C/sec
Preheat - Temperature Min (T_{smin}) - Temperature Max (T_{smax}) - Time (Min to Max) (t_s)	150°C 200°C 60 ~ 120 sec
T_{smax} to T_L - Ramp-up rate	< 3 °C / sec
Time maintained above : - Temperature (T_L) - Time (T_L)	217°C 60 ~ 260 sec
Peak temperature (T_P)	255 °C -0 / +5°C
Time with 5°C of actual peak temperature (T_P)	10 ~ 30 sec
Ramp-down rate	< 6°C / sec
Time 25°C to peak temperature	< 6 minutes