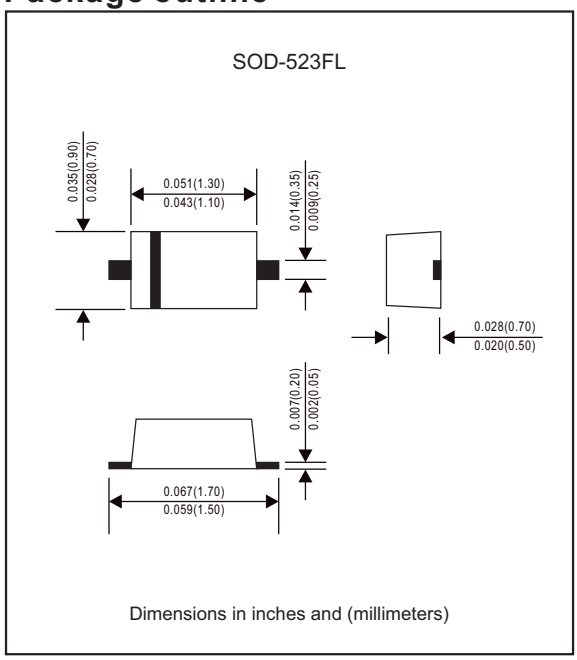
ESD5Z3.3C

Surface Mount Bi-Directional TVS For ESD Protection Diode 3.3V

Features

- Working voltages : 3.3V
- 96 Watts peak pulse power per line (tp=8/20μs)
- Protects one I/O line
- Low clamping voltage
- Low leakage current
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex.ESD5Z3.3C-H

Package outline



Applications

- Cell phone handsets and accessories
- Microprocessor based equipment
- Personal digital assistants (PDA's)
- Notebooks, desktops, and servers
- Portable instrumentation
- Peripherals
- Pagers

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-523FL
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.002 gram

Maximum ratings (at T_A=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Value	Unit
Total power dissipation	on FR−5 Board, @ T_A=25°C	P_{PP}	96	W
Lead solder temperature -maximum		T_L	260(10s)	°C
Operating junction temperature range		T_J	-55 to +150	°C
Storage temperature range		T_{STG}	-55 to +150	°C

Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No.	V_{RWM} (V) Max	I_R(μA) @V_{RWM} Max	V_{BR}(V)@I_T (Note 2) Min.	V_{BR}(V)@I_T (Note 2) Max.	I_T (mA)	V_C(V) @ I_{PP}=1.0A (Note 1) Max	I_{PP}(A) (Note 1) Max	V_C(V) @Max I_{PP} (Note 1) Max	P_{PK} (W) (Note 1) Max	C_T(pF) V_R=0V and f=1MHz Typ.
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Note 1: Surge current waveform per Fig.1
2:V_{BR} is measured with a pulse test current I_T at an ambient temperature of 25°C

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Rating and characteristic curves

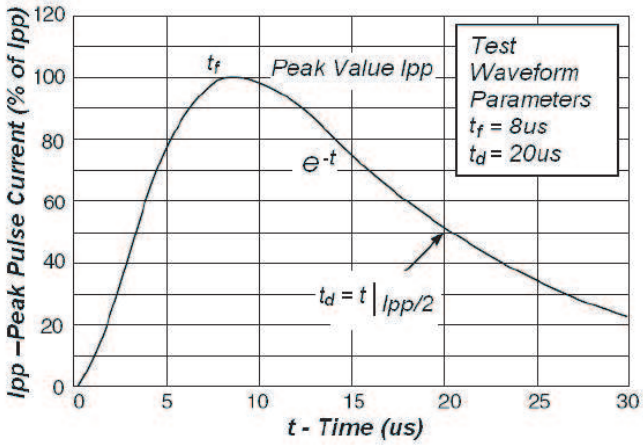

Fig1. Pulse Waveform

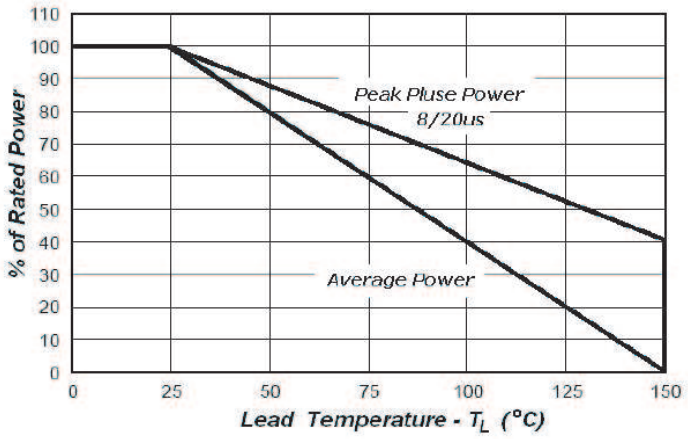

Fig2.Power Derating

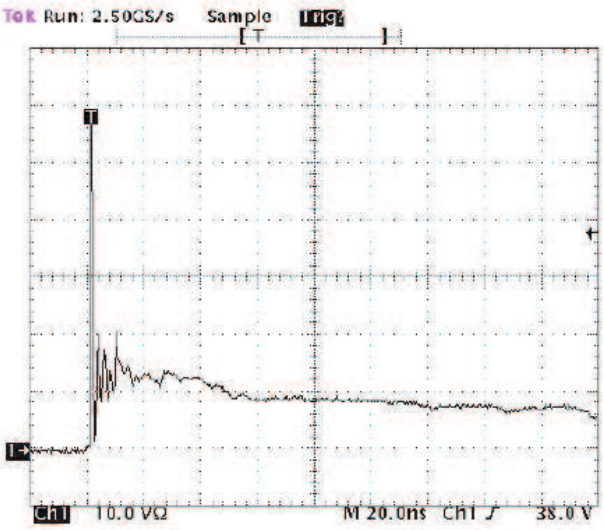

Figure . ESD Clamping Voltage Screenshot
Positive 8 kV contact per IEC 61000-4-2

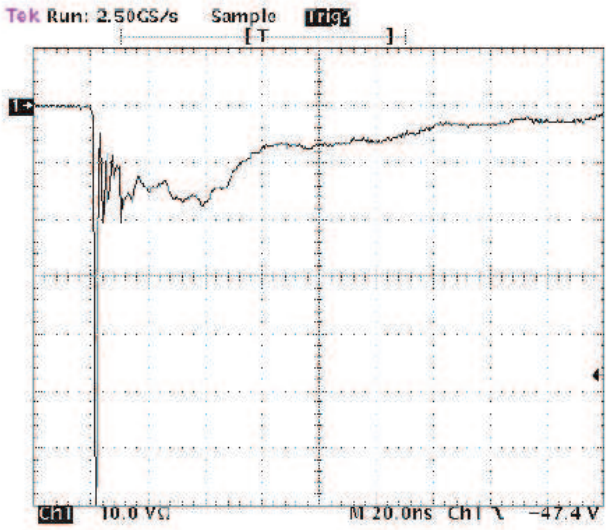

Figure . ESD Clamping Voltage Screenshot
Negative 8 kV contact per IEC 61000-4-2

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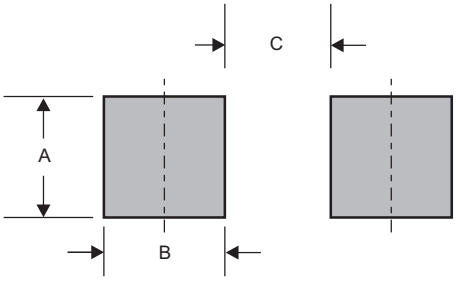
Pinning information

Pin	Simplified outline	Symbol
Bi-Directional		

Marking

Type number	Marking code
ESD5Z3.3C	CT,5B

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-523FL	0.032 (0.80)	0.024 (0.60)	0.044 (1.10)

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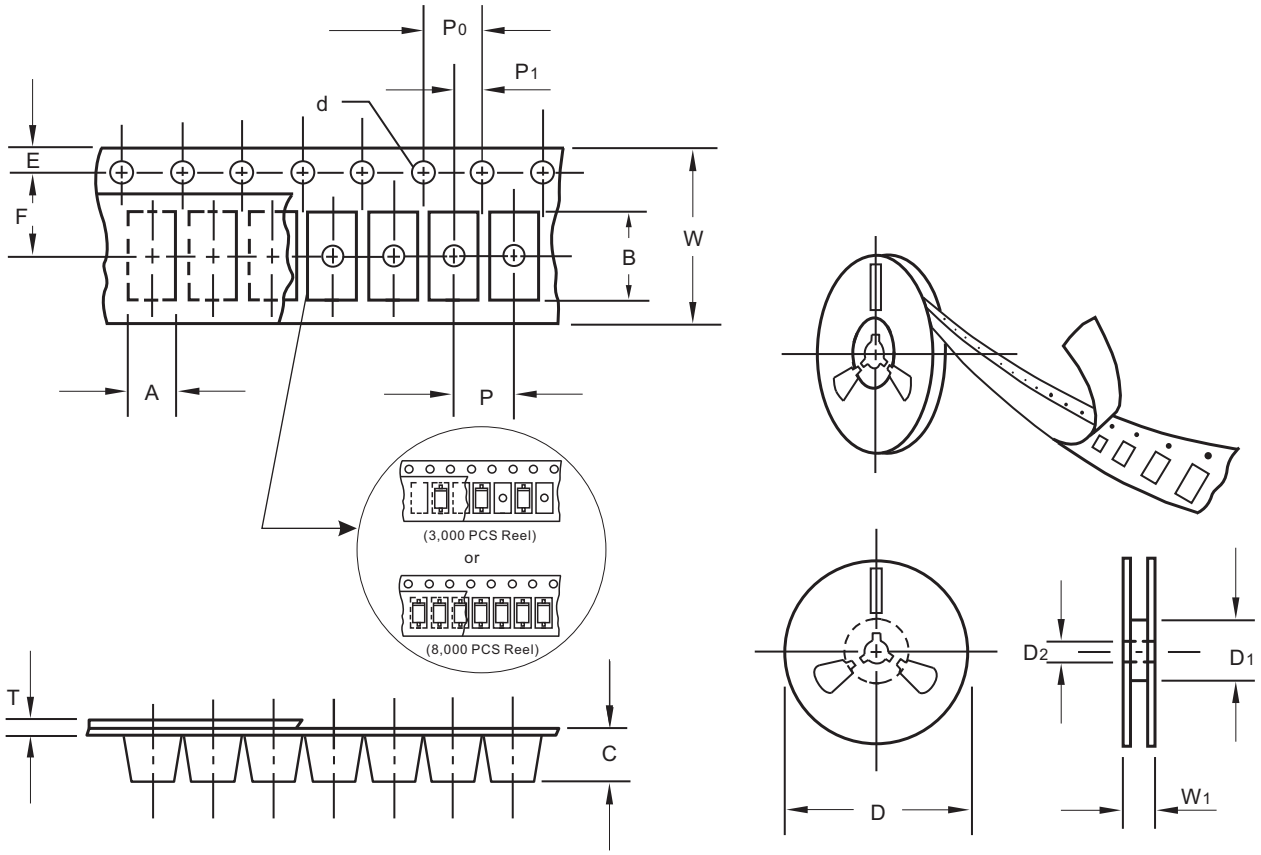
Packing information



unit:mm

Item	Symbol	Tolerance	SOD-523FL
Carrier width	A	0.1	0.90
Carrier length	B	0.1	1.94
Carrier depth	C	0.1	0.76
Sprocket hole	d	0.1	1.50
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	50.00
Feed hole diameter	D_2	0.2	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	2.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	9.50

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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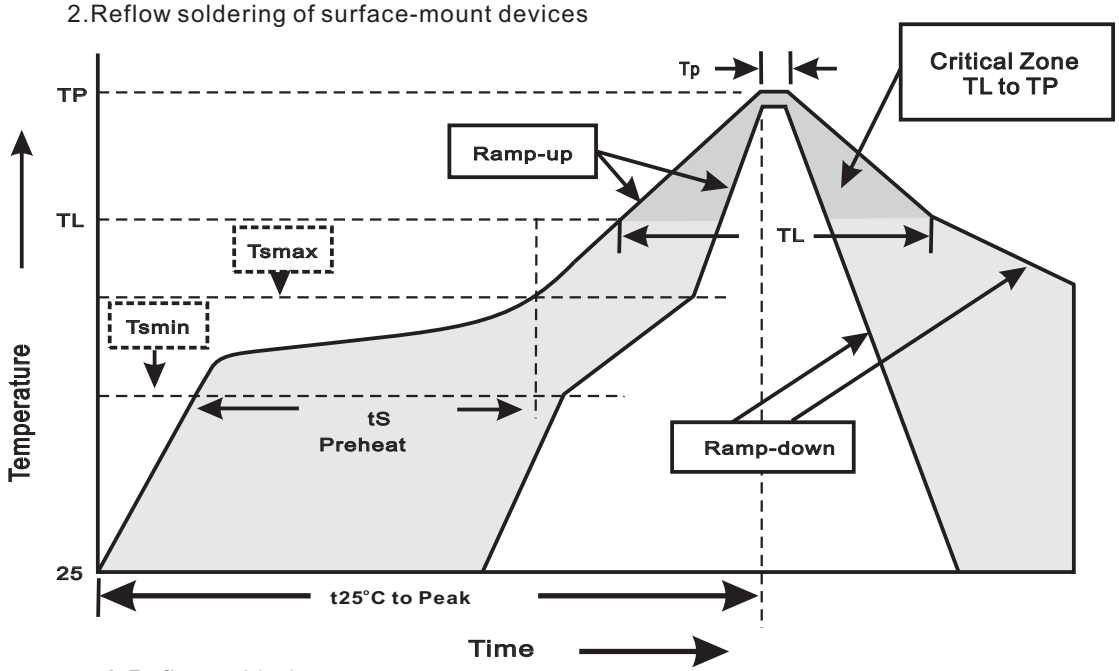
Reel packing

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)	APPROX. GROSS WEIGHT (kg)
SOD-523FL	7"	3,000	2.0	30,000	183*123*183	178	382*257*387	240,000	8
		8,000		80,000				640,000	10

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec.	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_{BR}=V_{BR} MIN*80% at T_J=150°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	15P_{SIG} at T_A=121°C for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
7. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031