

ESD5Z5.0B Thru ESD5Z24B

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ESD5Z5.0B Thru ESD5Z24B

Surface Mount Uni-Directional TVS
For ESD Protection Diode : 5V ~ 24V

Features

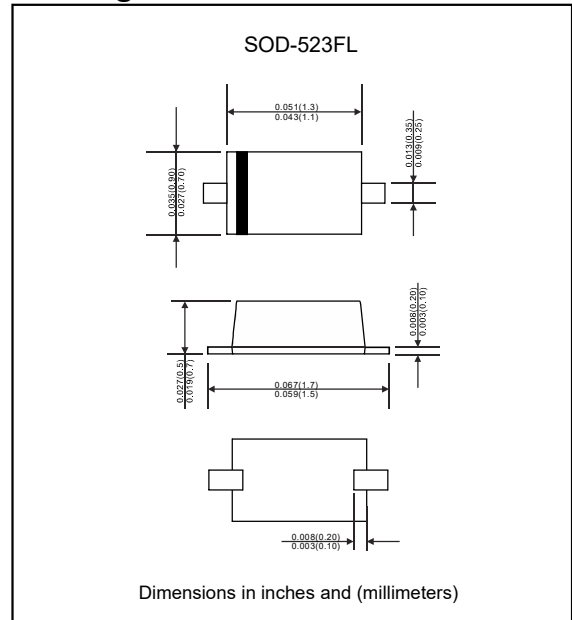
- 350Watts peak pulse power per (tp=8/20μs).
- Protects one I/O line (Uni-directional).
- Provide transient protection:
IEC 61000-4-2 (ESD) ± 30KV (Air).
± 30KV (Contact).
IEC 61000-4-4 (EFT) (5/50ns).
- High temperature soldering guaranteed 260°
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.ESD5Z5.0B-H

Applications

- Cell phone handsets and accessories.
- Microprocessor based equipment.
- Personal digital assistants (PDA's).
- Serial and parallel ports.
- Peripherals.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOD-523FL.
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Polarity : Indicated by cathode band.
- Mounting Position : Any.

Package outline**Maximum ratings** (at $T_A=25^\circ\text{C}$ unless otherwise noted)

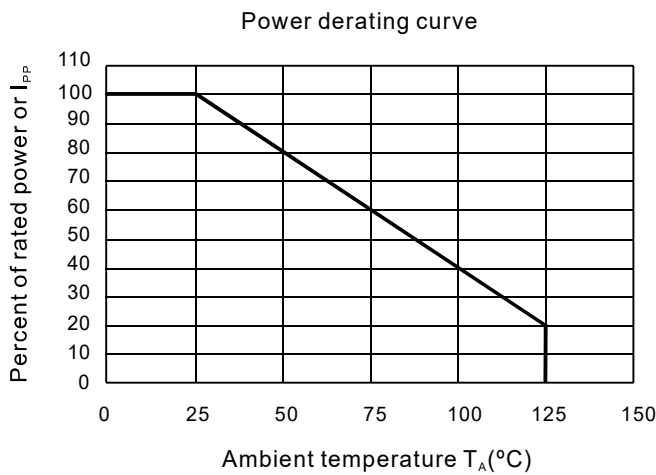
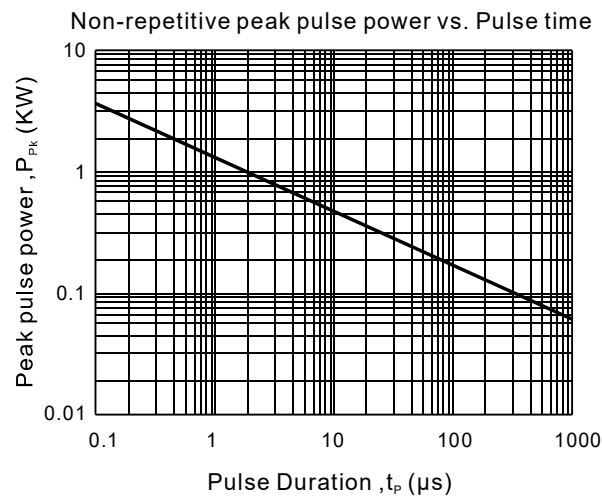
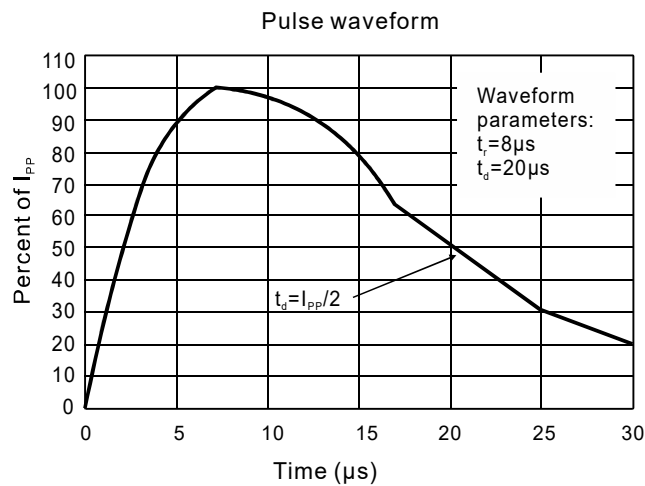
Parameter	Symbol	Ratings	Unit
Total power dissipation (8/20μs)	P_{PP}	350	W
Electrostatic discharge ESD per IEC 61000-4-2(Air) ESD per IEC 61000-4-2(Contact)	V_{ESD}	±30	KV
Operating temperature range	T_{OPT}	-55 to +150	°C
Storage temperature range	T_{STG}	-55 to +150	°C
Lead soldering temperature (10sec.)	T_L	260	°C

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

Part No.	V_{RWM} (V)	$I_{R(Max)}$ (μA) @ V_{RWM}	$V_{BR(Min)}$ (V) @ I_T	I_T (mA)	$V_{C(Max)}$ (V) @ $I_{PP}=1A$	$V_{C(Max)}$ (V) @ I_{PPM}	I_{PPM} (A)	$C_{T(Max)}$ (pF)
ESD5Z5.0B	5	0.1	6	1	10	16	24	150
ESD5Z8.0B	8	0.1	9.2	1	13	20	15	100
ESD5Z12B	12	0.1	13.3	1	18	25	10	90
ESD5Z15B	15	0.1	16.7	1	24	30	7	50
ESD5Z18B	18	0.1	20.4	1	29	35	6	30
ESD5Z24B	24	0.1	26.7	1	35	48	5	30

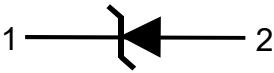
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Rating and characteristic curves (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)



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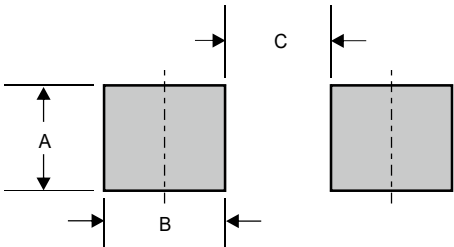
Pinning information

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Marking code
ESD5Z5.0B	5D
ESD5Z8.0B	AD
ESD5Z12B	BD
ESD5Z15B	CD
ESD5Z18B	DD
ESD5Z24B	ED

Suggested solder pad layout

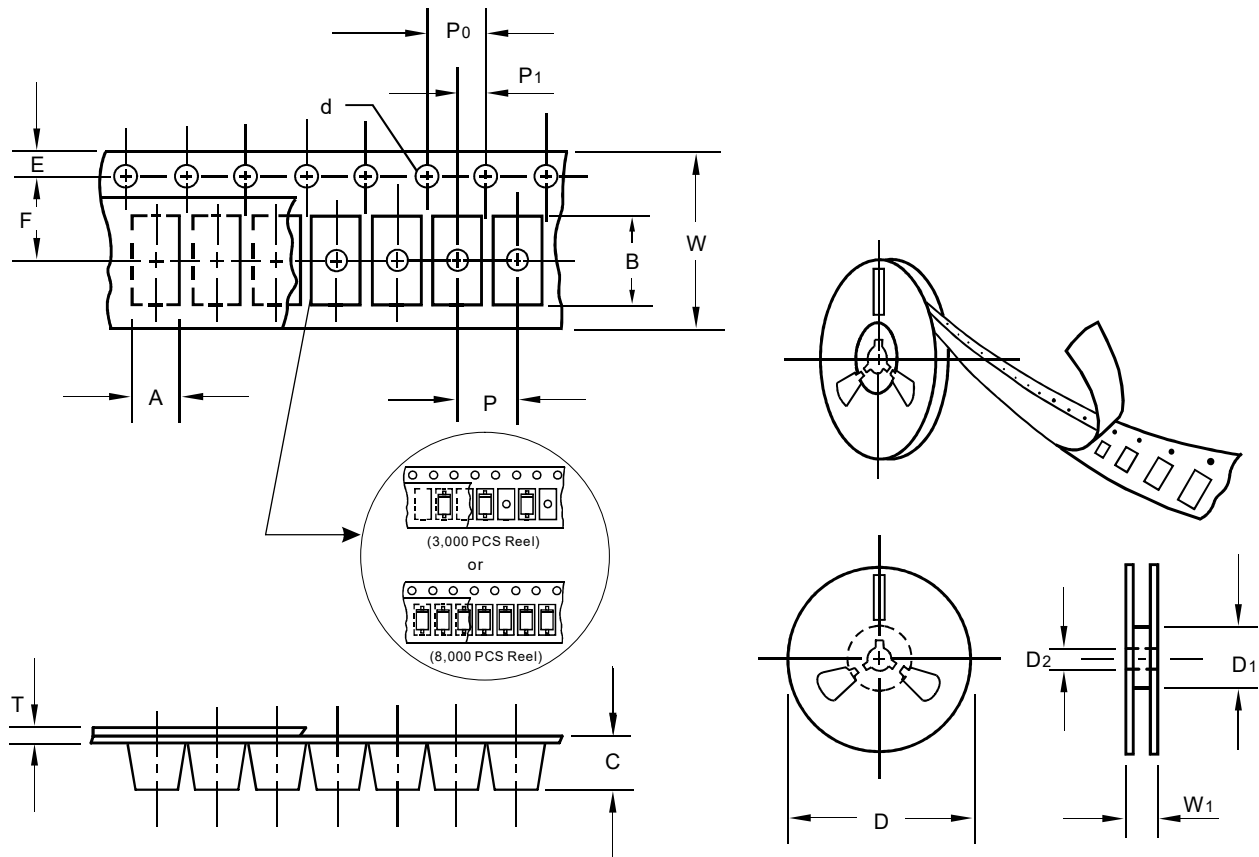


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-523FL	0.018 (0.45)	0.033 (0.85)	0.024 (0.60)

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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	D1	min	50.00
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	9.50

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

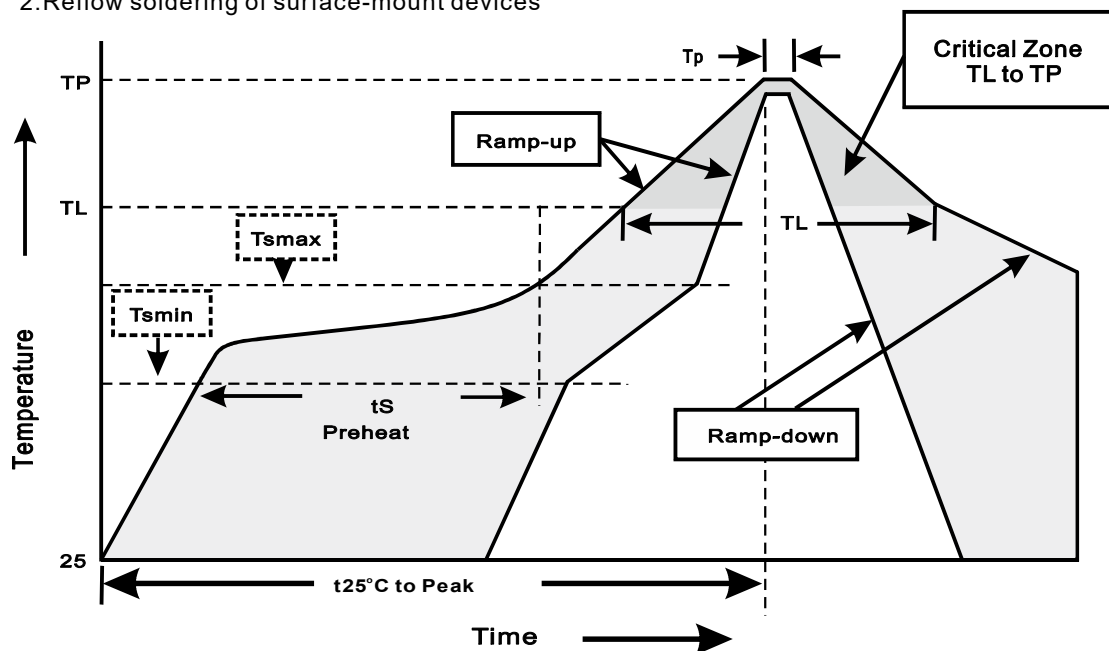
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Reel packing

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-523FL	7"	3,000	2.0	30,000	183*123*183	178	382*257*387	240,000
		8,000	2.0	80,000	183*123*183	178	382*257*387	640,000

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 60~120sec
T _{smax} 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(tp)	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 $260\pm 5^{\circ}\text{C}$ for $10\pm 2\text{sec.}$	MIL-STD-750D METHOD-2031
2. Solderability	at $245\pm 5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_{\text{BR}}=V_{\text{BR MIN}}*80\%$ at $T_{\text{J}}=150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	$15P_{\text{SIG}}$ at $T_{\text{A}}=121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Humidity	at $T_{\text{A}}=85^{\circ}\text{C}$, 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