SD03 THRU SD36

Unidirectional small Packaged TVS Diodes for ESD Protection

➢ General Description

The SDxx Series is designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. These devices are ideal for situations where board space is at a premium.

This series has been specifically designed to protect sensitive components which are connected to power、data and transmission lines from overvoltage caused by ESD(electrostatic discharge), CDE (Cable Discharge Events),and EFT (electrical fast transients).

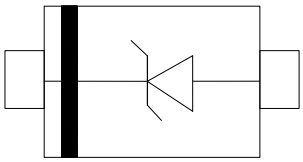
➢ Feature

- Peak Power Dissipation − 300 W (8 x 20 us Waveform)
- Replacement for MLV (0805)
- Low Clamping Voltage
- Low Leakage
- Stand-off Voltage: 3.3, 5.0,12,15,18,24,36V
- Response Time is < 1 ns
- Meets MSL 1 Requirements
- Solid-state silicon avalanche technology
- ROHS compliant

➢ SOD-323

➢ Application

- Cellular handsets AND accessories
- Portable instrumentation
- Peripherals
- Networking and Telecom
- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Projection TV



➢ Protection solution to meet

- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)

➢ Maximum Ratings (T_A=25°C Unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20μs waveform)	P_{PPP}	300	Watts
ESD Rating per IEC61000-4-2： Contact Air		±8 ±15	KV
Lead Soldering Temperature	T_L	260 (10 sec.)	℃
Operating Temperature Range	T_J	-55 ~ 150	℃
Storage Temperature Range	T_{STG}	-55 ~ 150	℃
Lead Solder Temperature − Maximum (10 Second Duration)	T_L	260	℃

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

*Other voltages may be available upon request.

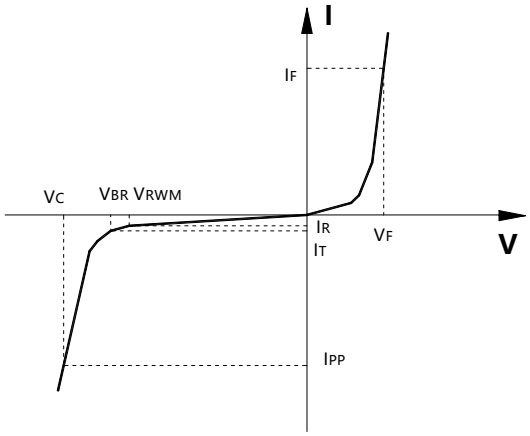
1. Non-repetitive current pulse, per Figure 1.

➢ Electrical Characteristics (T_A=25°C Unless otherwise specified)

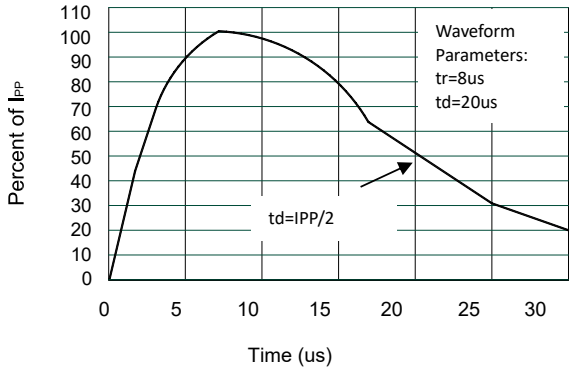
Device	Marking	V_{RWM}	I_R @ V_{RWM}	V_{BR} @ 1 mA	V_C		Capacitance	
				(Volts)	@ 1 A	@I_{PP}	@ V_R = 0 V, 1 MHz (pF)	
		(V)	(uA)	Min	(V)	(V)	Typ	Max
SD03	A	3.3	20	4.00	7.6	14V@17A	260	300
SD05	5U 或 05W	5.0	1	6.00	9.6	15V@17A	240	300
SD12	6U	12	1	13.6	19	30V@10A	55	100
SD15	7U	15	1	16.7	24	38V@8A	43	67
SD18	18U	18	1	18.5	22	29V@7A	58	87
SD24	F	24	1	26.7	43	60V@4A	27	41
SD36	R	36	1	40.0	60	90V@2A	27	35

Junction capacitance is measured in VR=0V,F=1MHz

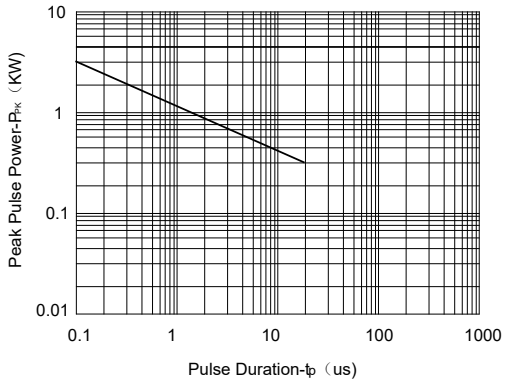
Symbol	Parameter
V_{RWM}	Working Peak Reverse Voltage
V_{BR}	Breakdown Voltage @ I_T
V_C	Clamping Voltage @ I_{PP}
I_T	Test Current
I_{RM}	Leakage current at V_{RWM}
I_{PP}	Peak pulse current
C_O	Off-state Capacitance
C_J	Junction Capacitance



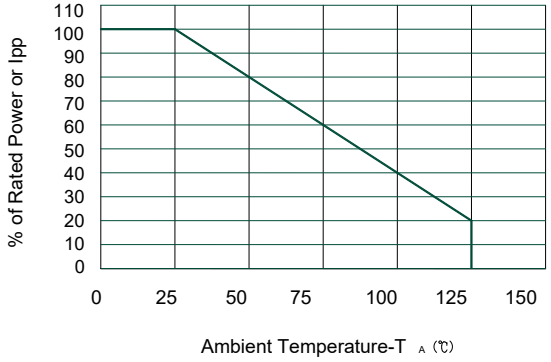
➢ Typical Characteristics



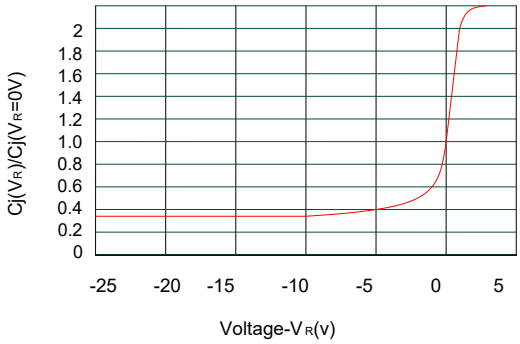
Pulse Waveform



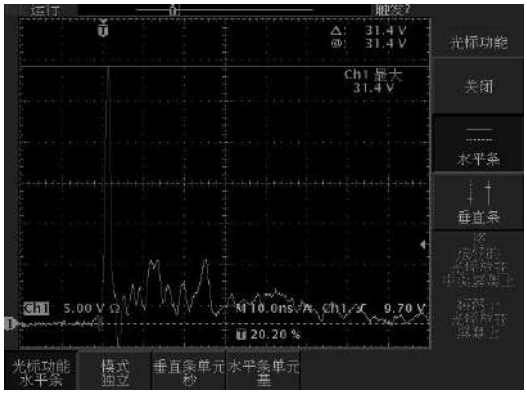
Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve



Junction Capacitance vs. Reverse Voltage



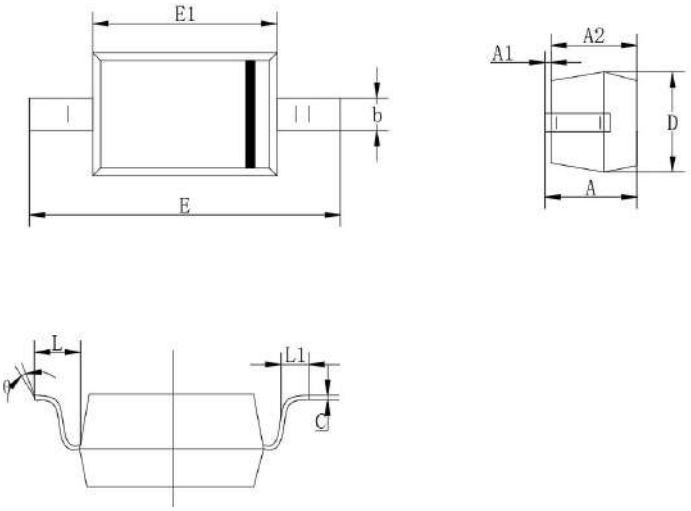
ESD Clamping Voltage Screenshot
Positive 8 kV Contact per IEC61000−4−2

➢ Ordering Information

Part Number	Description	Quantity
SD03~SD36	SOD-323 Reel	3000 pcs

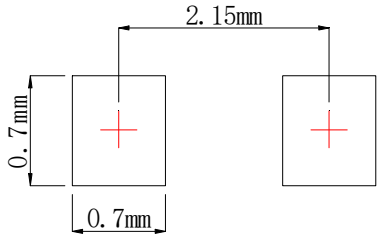
➢ Package Information (SOD-323)

Case Material: Molded Plastic. UL Flammability

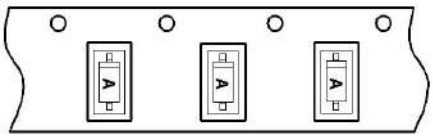


DIM	Millimeters	
	Min	Max
A	1.10Max	
A1	0.00	0.10
A2	0.80	0.90
b	0.25	0.35
c	0.08	0.15
D	1.20	1.40
E1	1.60	1.80
E	2.50	2.70
L	0.475REF	
L1	0.25	0.40

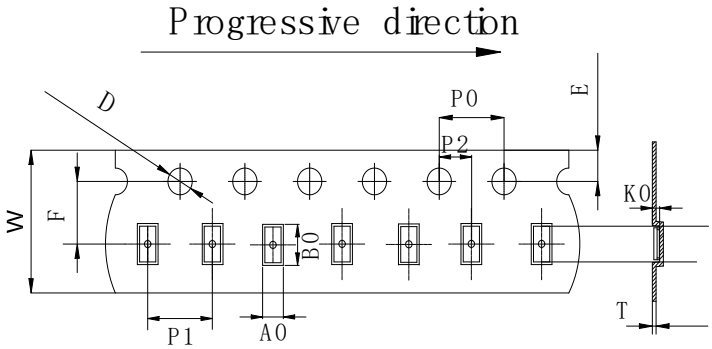
Recommended Pad outline



Device Orientation in Tape

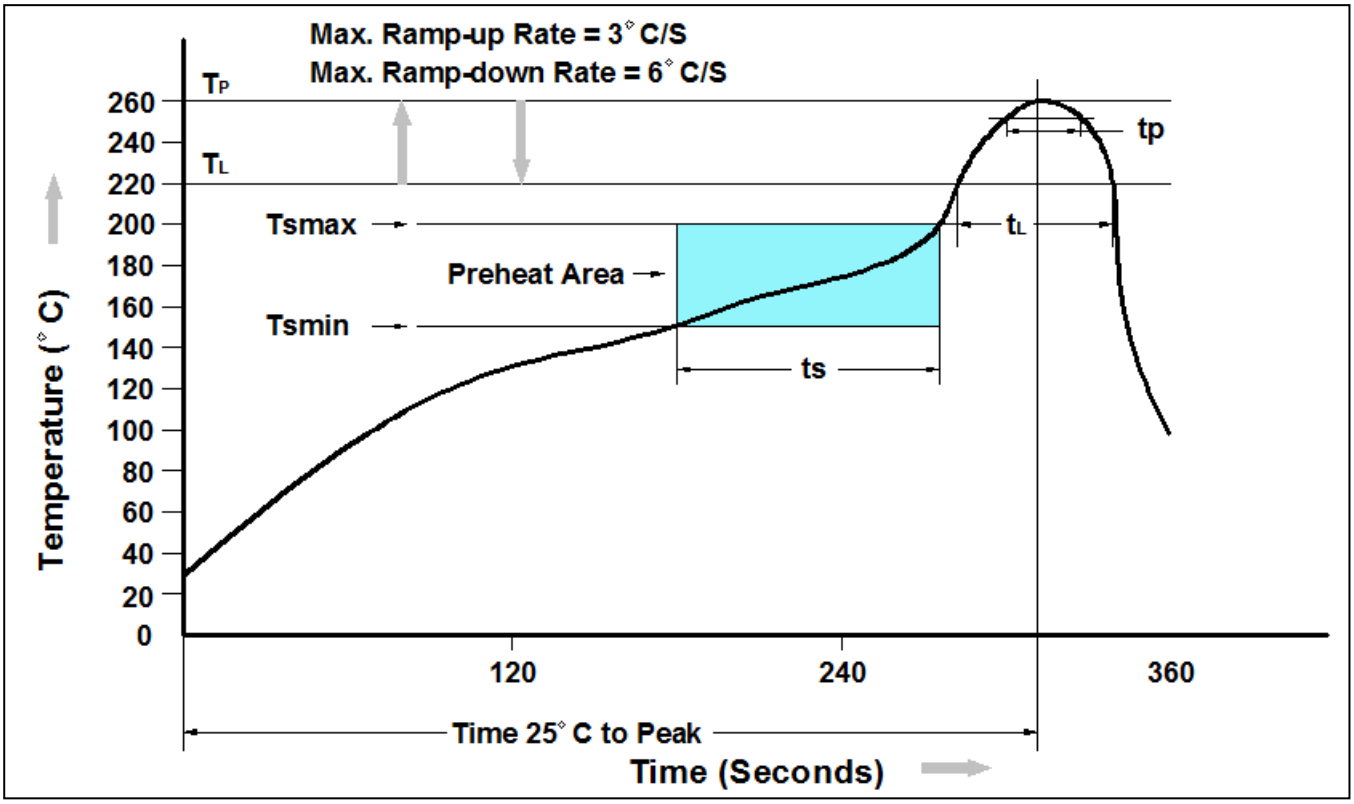


SOD-323 Reel Dim



PACKAGE	W	E	F	P0	D	P2	P1	T	A0	B0	K0
SOD-323	8mm ±0.1	1.75mm ±0.1	3.5mm ±0.1	4mm ±0.1	1.5mm ±0.1	2mm ±0.1	4mm ±0.1	0.23mm ±0.05	1.5mm ±0.1	3.0mm ±0.1	1.25mm ±0.1

Recommand IR Reflow Soldering Thermal Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Average Ramp-up Rate (tL to tP)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (tP) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

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