SD05C Series 450W Discrete Bidirectional TVS Diode

RoHS Pb GREEN

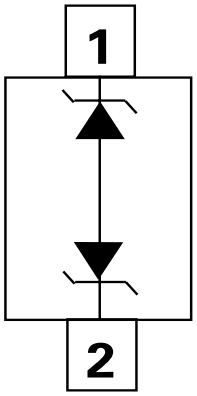


Description

The bidirectional SD05C TVS diode is designed to replace multilayer varistors (MLVs) in electronic equipment for low speed and DC applications. It will protect any sensitive equipment from damage due to electrostatic discharge (ESD) and other transient events.

The SD05C can safely absorb repetitive ESD strikes at ±30kV (contact discharge, IEC 61000-4-2) without performance degradation and safely dissipate 30A of 8/20µs induced surge current (IEC61000-4-5) with very low clamping voltages.

Pinout and Functional Block Diagram



Features

- ESD, IEC61000-4-2, ±30kV contact, ±30kV air
- EFT, IEC61000-4-4, 50A (5/50ns)
- Lightning, IEC61000-4-5, 30A (t_P=8/20µs)
- Low clamping voltage
- Low leakage current
- Small SOD323 package fits 0805 footprints

Applications

- Switches / Buttons
- Test Equipment / Instrumentation
- Point-of-Sale Terminals
- Medical Equipment
- Notebooks / Desktops / Servers
- Computer Peripherals

Additional Information

Datasheet | **Resources** | **Samples**

Life Support Note:
Not Intended for Use in Life Support or Life Saving Applications
The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.

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Revised: 04/24/13

TVS Diode Arrays (SPA® Diodes)

General Purpose ESD Protection - SD05C Series

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I_{PP}	Peak Current (t_p=8/20µs)	30	A
P_{pk}	Peak Pulse Power (t_p=8/20µs)	450	W
T_{OP}	Operating Temperature	–40 to 125	°C
T_{STOR}	Storage Temperature	–55 to 150	°C

Notes:

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Thermal Information

Parameter	Rating	Units
Storage Temperature Range	–55 to 150	°C
Maximum Junction Temperature	150	°C
Maximum Lead Temperature (Soldering 20-40s)	260	°C

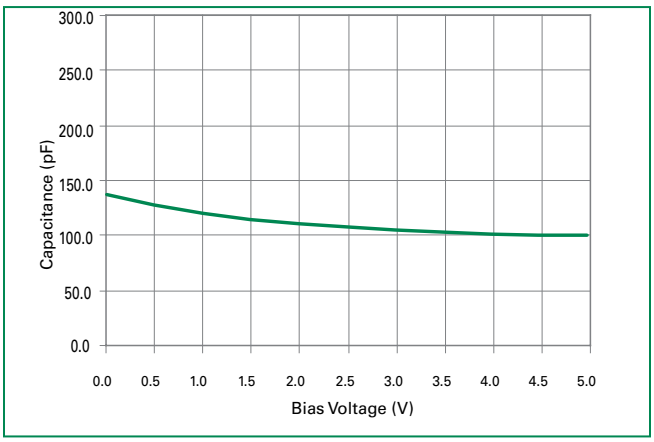
Electrical Characteristics (T_{OP}=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Voltage Drop	V_R	I_R=1mA	6			V
Reverse Standoff Voltage	V_{RWM}	I_R≤1µA			5.0	V
Leakage Current	I_{LEAK}	V_R=5V			1.0	µA
Clamp Voltage[1]	V_C	I_{PP}=1A, t_p=8/20µs, Fwd		9.7		V
		I_{PP}=2A, t_p=8/20µs, Fwd		10.3		V
		I_{PP}=10A, t_p=8/20µs, Fwd		13.5		V
		I_{PP}=24A, t_p=8/20µs, Fwd		18.0		V
Dynamic Resistance	R_{DYN}	$(V_{C2} - V_{C1}) / (I_{PP2} - I_{PP1})$		0.6		Ω
ESD Withstand Voltage[1]	V_{ESD}	IEC61000-4-2 (Contact Discharge)	±30			kV
		IEC61000-4-2 (Air Discharge)	±30			kV
Diode Capacitance[1]	C_D	Reverse Bias=0V, f=1MHz			200	pF

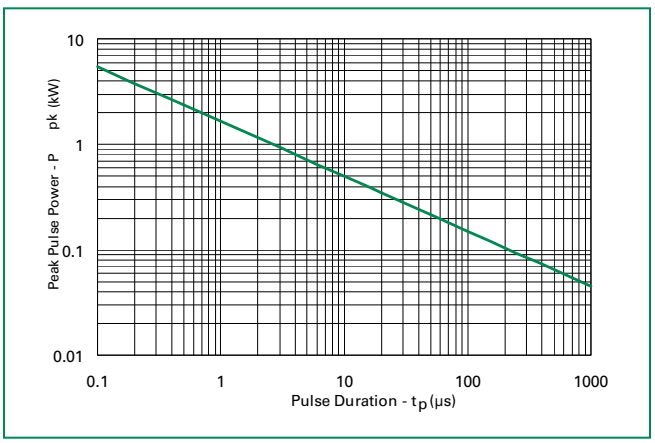
Note:

[1]Parameter is guaranteed by design and/or device characterization.

Capacitance vs. Reverse Bias

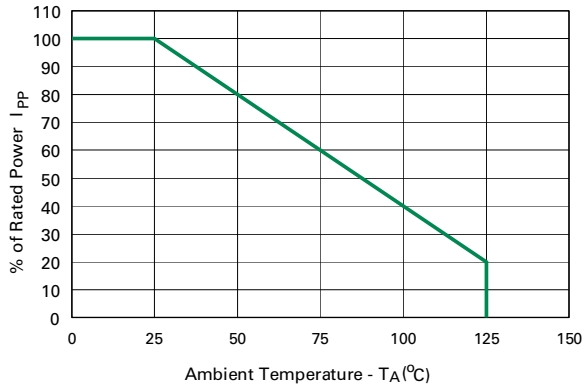


Non-Repetitive Peak Pulse Power vs. Pulse Time

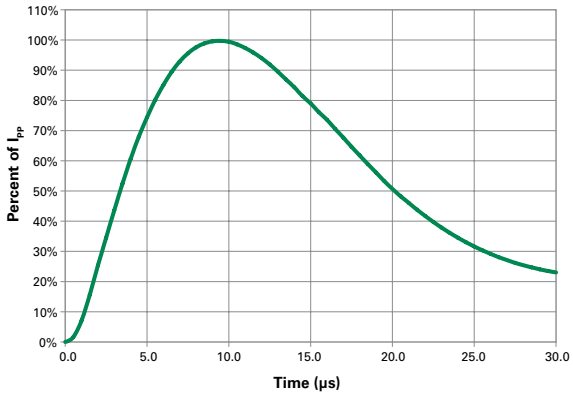


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Power Derating Curve

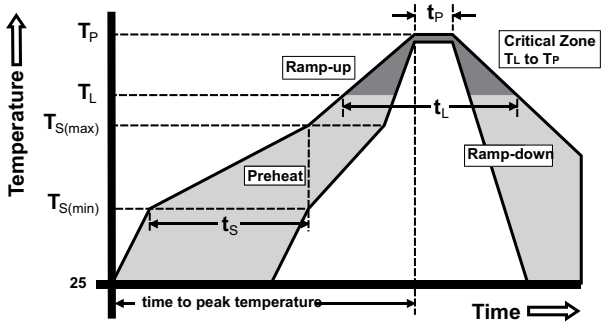


Pulse Waveform



Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus) Temp (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		260°C



Product Characteristics

Lead Plating	Matte Tin
Lead Material	Copper Alloy
Lead Coplanarity	0.0004 inches (0.102mm)
Substitute Material	Silicon
Body Material	Molded Epoxy
Flammability	UL 94 V-0

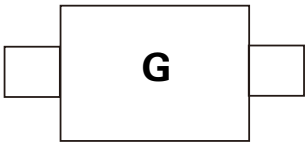
Notes :
1. All dimensions are in millimeters
2. Dimensions include solder plating.
3. Dimensions are exclusive of mold flash & metal burr.
4. Blo is facing up for mold and facing down for trim/form, i.e. reverse trim/form.
5. Package surface matte finish VDI 11-13.

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TVS Diode Arrays (SPA® Diodes)

General Purpose ESD Protection - SD05C Series

Part Marking System



Part Numbering System

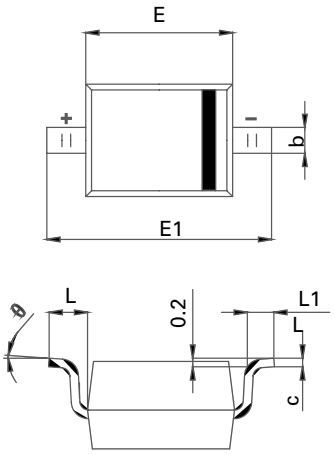
SD05C - 01 F T G

- SD05C: TVS Diode Arrays (SPA® Diodes) Series
- 01: Number of Channels
- F: Package F: SOD323
- T= Tape & Reel
- G= Green

Ordering Information

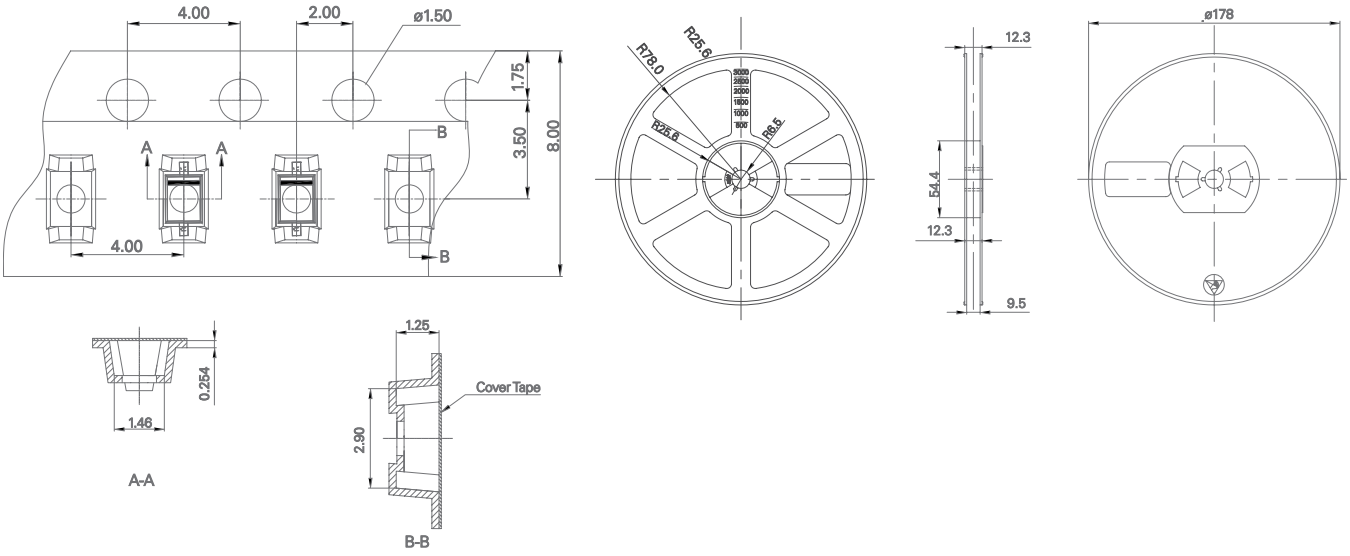
Part Number	Package	Marking	Min. Order Qty.
SD05C-01FTG	SOD323	G	3000

Package Dimensions -SOD323



Symbol	SOD323			
	Millimeters		Inches	
	Min	Max	Min	Max
A		1.00		0.039
A1	0.00	0.10	0.000	0.004
A2	0.80	0.90	0.031	0.035
b	0.25	0.35	0.010	0.014
c	0.08	0.15	0.003	0.006
D	1.20	1.40	0.047	0.055
E	1.60	1.80	0.063	0.071
E1	2.50	2.70	0.098	0.106
L	0.475 REF		0.019 REF	
L1	0.25	0.40	0.010	0.016
Ø	0°	8°	0°	8°

Embossed Carrier Tape & Reel Specification — SOD323



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