

## Features

- Ideally Suited for ESD Protection
- Small Surface Mount Package
- Excellent Clamping Capability, Fast Response Time
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

- Case: SOD523
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish—Matte Tin Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 (B3)
- Weight: 0.001 grams (Approximate)



Top View

## Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
(Type Number)-7* (Note 5)	Standard	XX (Note 6)	7	8	3000/Tape & Reel

\* Add "-7" to the appropriate type number in Electrical Characteristics Table on Page 2, Example: 5.0V TVS = T5V0S5-7

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.
  5. Dispensed in every other cavity of the tape.
  6. See *Electrical Characteristics* table for marking code by part number.

## Marking Information



xx = Product Type Marking Code  
(See Electrical Characteristics Table)

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Forward Voltage @ I <sub>F</sub> = 10mA	V <sub>F</sub>	0.9	V
ESD Rating	ESD	Human Body Model	8 kV
		Machine Model	400 V
		IEC61000-4-2 Air Discharge	±30 kV
		IEC61000-4-2 Contact Discharge	±30 kV

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 7) (See Figure 2)	P <sub>D</sub>	300	mW
Thermal Resistance, Junction to Ambient Air (Note 7)	R <sub>θJA</sub>	417	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Part Number	Reverse Standoff Voltage	Min. Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub>	Test Current	Max. Reverse Leakage @ V <sub>RWM</sub> (Note 8)	Typ. Clamping Voltage @ I <sub>PP</sub> = 5A (t <sub>p</sub> = 8 × 20μs) (See Figure 1)	Max. Clamping Voltage V <sub>C1</sub> @ I <sub>PP1</sub> (t <sub>p</sub> = 8 × 20μs) (See Figure 1)	Max. Clamping Voltage V <sub>C2</sub> @ I <sub>PP2</sub> (t <sub>p</sub> = 8 × 20μs) (See Figure 1)	Typical Power Dissipation (See Figure 1)		Typical Total Capacitance V <sub>R</sub> = 0V f = 1MHz	Marking Code
	V <sub>RWM</sub> (V)	Min (V)	I <sub>T</sub> (mA)	I <sub>R</sub> (μA)	V <sub>C</sub> (V)	V <sub>C</sub> (V) I <sub>PP</sub> (A)	V <sub>C</sub> (V) I <sub>PP</sub> (A)	P <sub>PK</sub> (W)	C <sub>T</sub> (pF)		
T3V3S5	3.3	5.0	1.0	1	8.4	14.1 11.2	16 16	220	140	ED	
T5V0S5	5.0	6.2	1.0	0.05	10	22 9.4	27 15	260	100	EJ	
T6V0S5	6.0	6.8	1.0	0.05	11.6	17 8.8	22.4 13	260	90	EL	
T12S5	12	14.1	1.0	0.01	20	25 9.6	28 12	300	60	ES	

Notes: 7. Part mounted on FR-4 board with recommended pad layout, which can be found at <http://www.diodes.com/package-outlines.html>.  
 8. Short duration pulse test used to minimize self-heating effect.

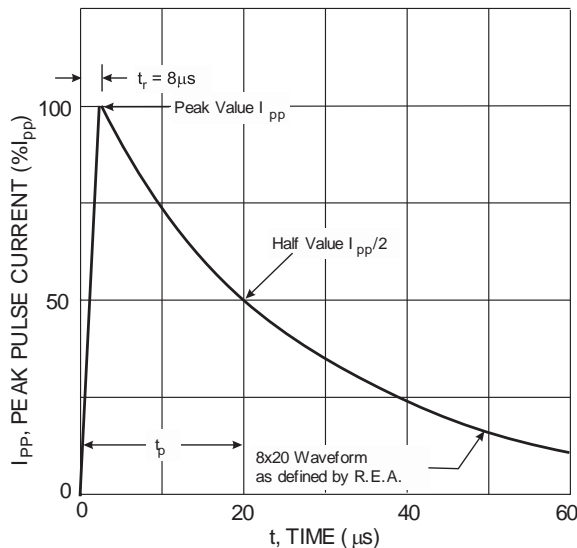


Fig. 1 Pulse Waveform

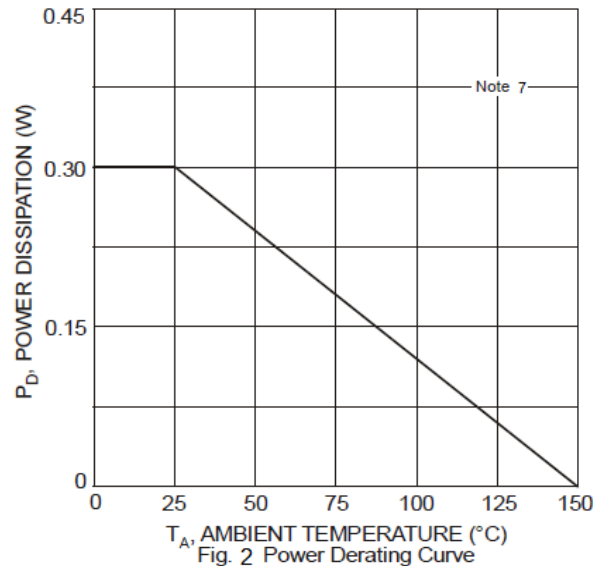
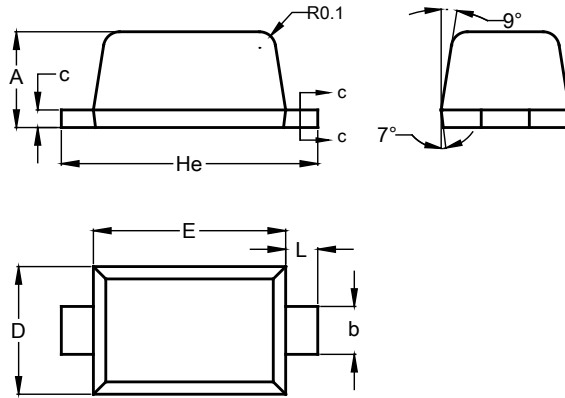


Fig. 2 Power Derating Curve

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD523

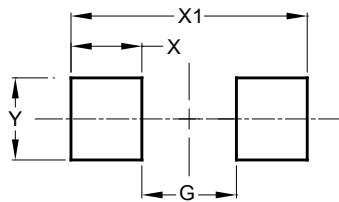


SOD523		
Dim	Min	Max
A	0.55	0.65
b	0.26	0.34
c	0.11	0.17
D	0.75	0.85
E	1.15	1.25
He	1.55	1.65
L	0.10	0.30
All Dimensions in mm		

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD523



Dimensions	Value (in mm)
G	0.80
X	0.60
X1	2.00
Y	0.70

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