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)**
- **An automotive-compliant part is available under a separate datasheet (T3V3S5AQ–T12S5AQ).**

Mechanical Data

- Package: SOD523
- Package 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 e3
- Weight: 0.001 grams (Approximate)

SOD523



Top View



Device Schematic

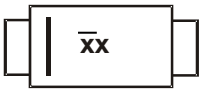
Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
(Type Number)-7* (Note 5)	SOD523	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 = T5V0S5A-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 https://www.diodes.com/design/support/packaging/diodes-packaging/.
5. Dispensed in every other cavity of the tape.
6. See *Electrical Characteristics* table for marking code by part number.

Marking Information



xx or $\bar{x}x$ = Product Type Marking Code
(See *Electrical Characteristics* Table)
"-" = Made in ChengDu

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Forward Voltage @ I_F = 10mA		V_F	0.9	V
ESD Rating	Human Body Model	ESD	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_D	300	mW
Thermal Resistance, Junction to Ambient Air (Note 7)	$R_{\theta JA}$	417	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to 150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Type Number	Reverse Standoff Voltage	Min Breakdown Voltage V_{BR} @ I_T	Test Current	Max Reverse Leakage @ V_{RWM} (Note 8)	Typ Clamping Voltage @ I_{PP} = 5A (t_P = 8 × 20μs) (See Figure 1)	Max Clamping Voltage V_{C1} @ I_{PP1} (t_P = 8 × 20μs) (See Figure 1)		Max Clamping Voltage V_{C2} @ I_{PP2} (t_P = 8 × 20μs) (See Figure 1)		Typical Power Dissipation (See Figure 1)	Typical Total Capacitance V_R = 0V f = 1MHz	Marking Code
	V_{RWM} (V)	Min (V)	I_T (mA)	I_R (μA)	V_C (V)	V_C (V)	I_{PP} (A)	V_C (V)	I_{PP} (A)	P_{PK} (W)	C_T (pF)	
T3V3S5A	3.3	5.0	1.0	1	6.6	12.7	11.2	13.7	16	220	125	EE
T5V0S5A	5.0	6.2	1.0	0.05	7.6	16.1	9.4	17.3	15	260	130	EK
T6V0S5A	6.0	6.8	1.0	0.05	8.5	17	8.8	20	13	260	110	EM
T12S5A	12	14.1	1.0	0.01	17.2	24	9.6	25	12	300	85	ET

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

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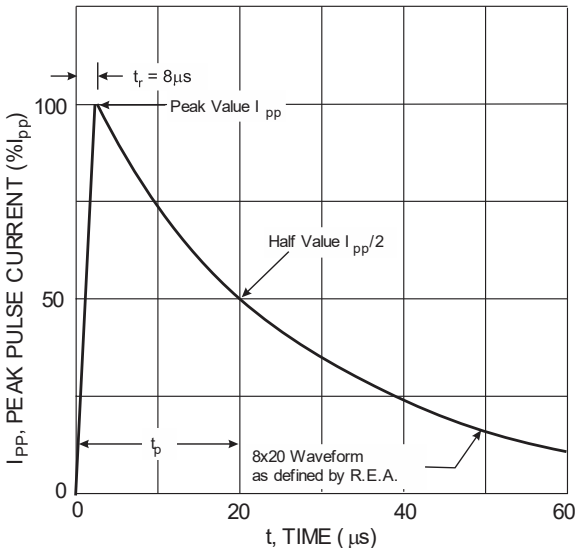


Figure 1. Pulse Waveform

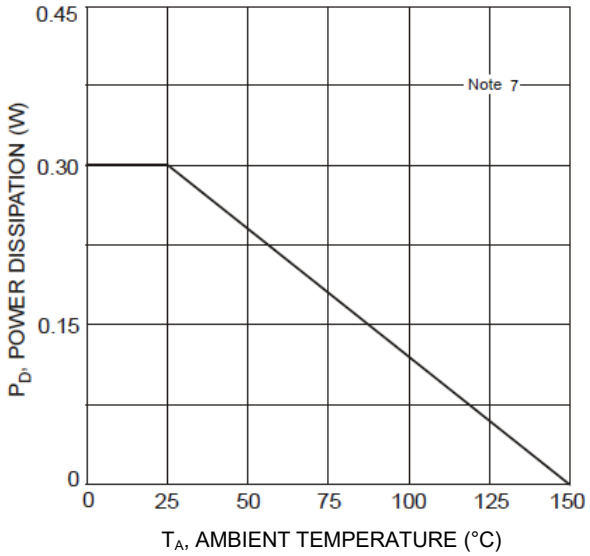


Figure 2. Power Derating Curve

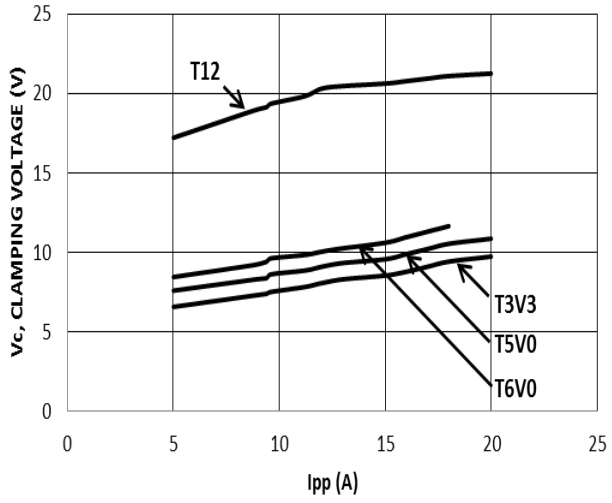


Figure 3. Clamping Voltage Characteristics (tp = 8/20µs)

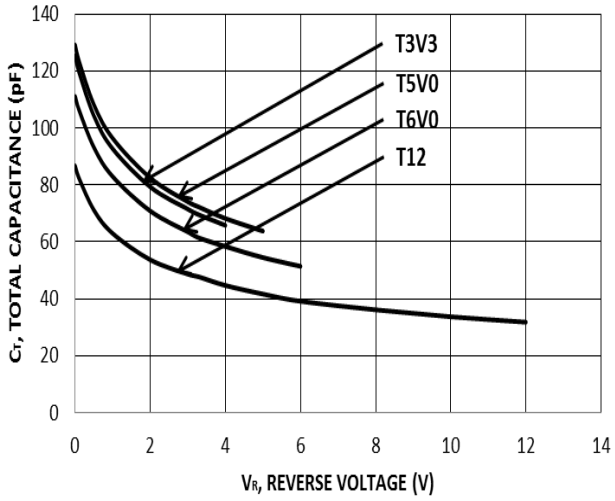


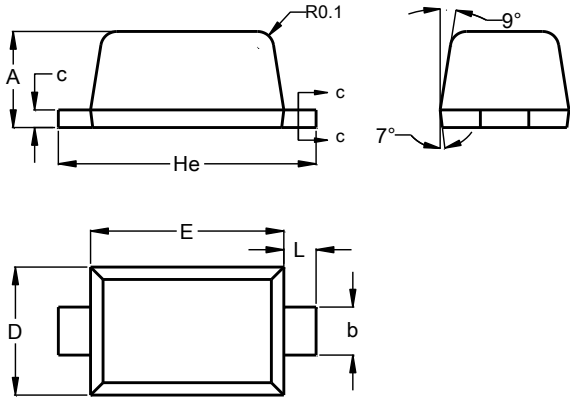
Figure 4. Typical Total Capacitance vs. Reverse Voltage

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Package Outline Dimensions

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

SOD523

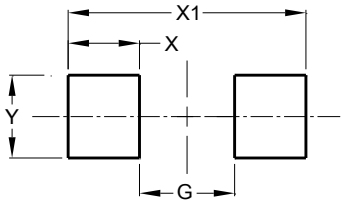


SOD523		
Dim	**Min**	**Max**
A	0.55	0.65
b	0.26	0.34
c	0.11	0.17
D	0.75	0.85
E	1.15	1.25
He	1.55	1.65
L	0.10	0.30
All Dimensions in mm		

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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