

Product Summary

V_{BR} (Min)	I_{PP} (Max)	C_T (Typ)
6.2V	15A	130pF

Description

This new generation TVS is designed to protect sensitive electronics from the damage due to ESD. The combination of small size: SOD523 and high ESD surge capability makes it ideal for use in general applications in automotive market field as infotainment, ADAS.

Application

- Automotive electronics
- Telematics
- Automotive infotainment

Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air $\pm 30\text{kV}$, Contact $\pm 30\text{kV}$
- 1 Channel of ESD Protection
- Uni-Direction Protect
- Small Surface-Mount Package: SOD523
- Excellent Clamping Capability, Fast Response Time
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- The DIODES™ T5V0S5AQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
<https://www.diodes.com/quality/product-definitions/>

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
- Weight: 0.001 grams (Approximate)

SOD523



Top View



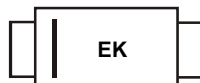
Device Schematic

Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
T5V0S5AQ-7* (Note 5)	SOD523	EK	7	8	3,000	Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 - 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.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
 - Dispensed in every other cavity of the tape.

Marking Information



EK = Product Type Marking Code

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
	IEC 61000-4-2 Air Discharge		±30	kV
	IEC 61000-4-2 Contact Discharge		±30	kV

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6) (See Figure 2)	P _D	300	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{θJA}	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.)

Part Number	Reverse Standoff Voltage	Min Breakdown Voltage V _{BR} @ I _T	Test Current	Max Reverse Leakage @ V _{RWM} (Note 7)	Typ Clamping Voltage @ I _{PP} = 5A (t _P = 8 × 20μs) (See Figure 1)	Max Clamping Voltage V _{C1} @ I _{PP1} (See Figure 1)		Max Clamping Voltage V _{C2} @ I _{PP2} (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)	
T5V0S5AQ	5.0	6.2	1.0	0.05	7.6	16.1	9.4	17.3	15	260	130	EK

Notes: 6. 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>.
7. Short duration pulse test used to minimize self-heating effect.

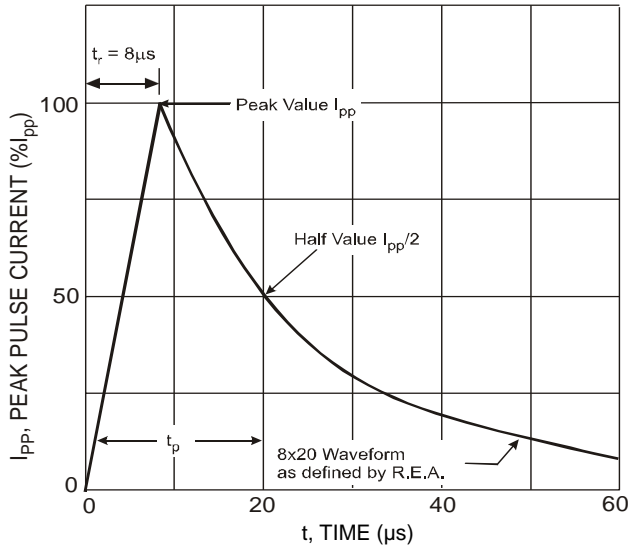


Figure 1. Typical 8 x 20µs Pulse Waveform

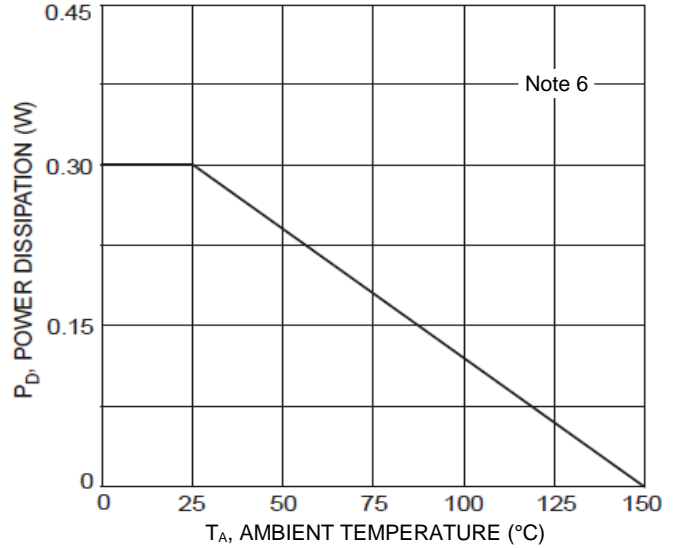


Figure 2. Power Derating Curve

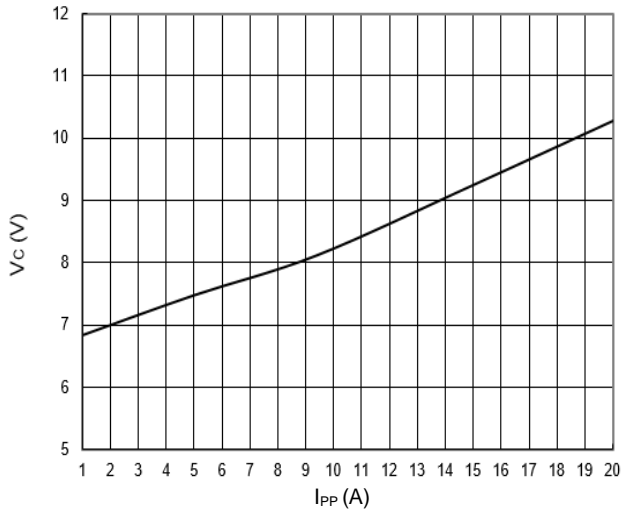


Figure 3. Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

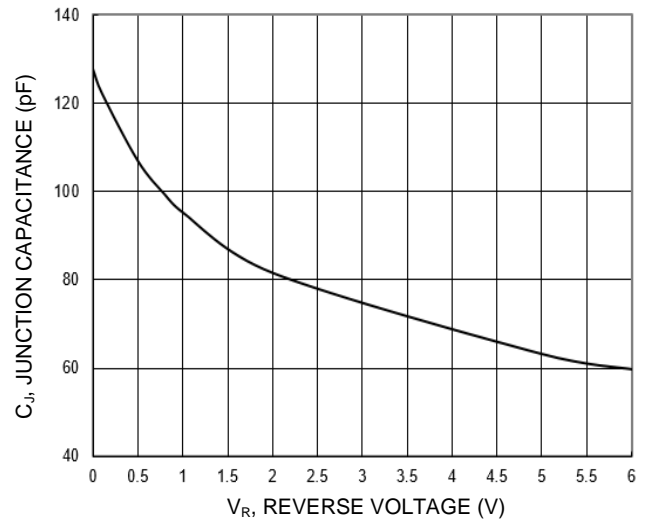


Figure 4. Typical Junction Capacitance

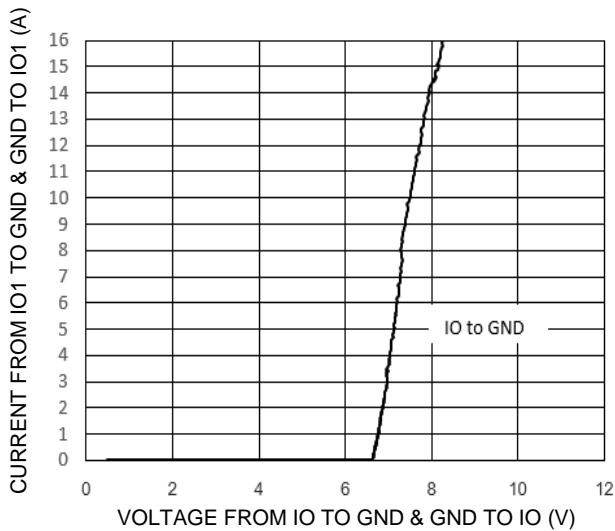


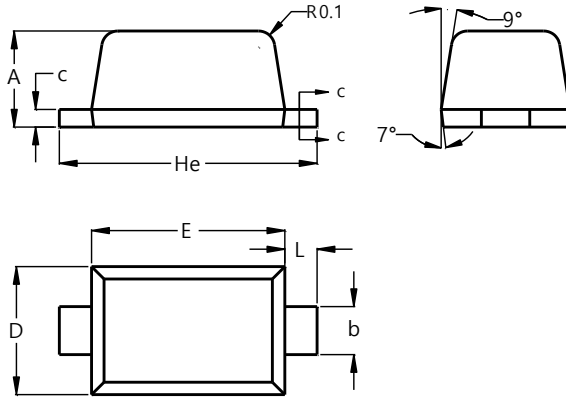
Figure 5. TLP Curve ($t_p = 100\text{ns}$)

Note: 6. 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>.

Package Outline Dimensions

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

SOD523

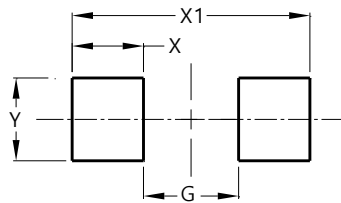


SOD523		
Dim	Min	Max
A	0.55	0.65
b	0.26	0.34
c	0.11	0.17
D	0.75	0.85
E	1.15	1.25
He	1.55	1.65
L	0.10	0.30
All Dimensions in mm		

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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