ULTRA-SMALL SURFACE-MOUNT SCHOTTKY DIODE

Product Summary (@T_A = +25°C)

V_{RRM} (V) @1mA	I_O (mA)	V_{FMAX} (mV) @10mA	I_{RMAX} (µA) @3V
3	50	410	20

Description

The RF Schottky diode SDR05F03T5 is with an integrated guard ring on-chip for overvoltage protection. The low barrier height, low-forward voltage and low junction capacitance make SDR05F03T5 a suitable choice for mixer and detector functions in applications. Packaged in the compact SOD523 package.

Applications

For mixers and detectors in:

- Low barrier diodes for detectors up to GHz
- Radar systems and modules
- For high-speed applications
- Almost zero bias detector diodes

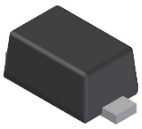
Features and Benefits

- Ultra-Small Leadless Surface-Mount Package (0.6mm x 0.3mm)
- Very Low Capacity
- Low-Forward Voltage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

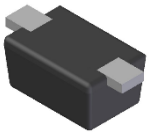
Mechanical Data

- 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 Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.001 grams (Approximate)

SOD523



Top View



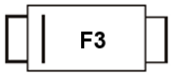
Bottom View

Ordering Information (Note 4)

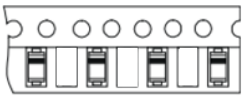
Part Number	Package	Packing	
		Qty.	Carrier
SDR05F03T5-7	SOD523	3,000	Tape & Reel

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/.

Marking Information



F3 = Product Type Marking Code
Bar Denotes Cathode Side



Note 5

Note: 5. Dispensed in every other cavity of the tape.

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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	3	V
Forward Current	I_O	50	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	100 ($T_C \leq$ +82°C)	mW
Thermal Resistance Junction to Case (Note 6)	$R_{\theta JC}$	680	°C/W
Operating and Storage Temperature Range (Note 7)	T_J, T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Breakdown Voltage	V_{BR}	3	—	—	V	I_R = 1mA
Forward Voltage	V_F	— —	195 330	300 410	mV	I_F = 1mA I_F = 10mA
Leakage Current (Note 8)	I_R	—	3.5	20	µA	V_R = 3V
Reverse Recovery Time	t_{RR}	—	1.10	—	ns	I_F = 10mA, I_R = 10mA, I_{RR} = 1mA
Total Capacitance	C_T	—	0.52	—	pF	V_R = 0.2V_{DC}, dv/dt = 20mV, f = 1MHz

Notes: 6. Part mounted on FR-4 PC board with recommended pad layout, which can be found on our website at http://www.diodes.com/package-outlines.html.
7. The heat generated must be less than the thermal conductivity from junction to case: $dP_D / dT_J < 1 / R_{\theta JC}$.
8. Short duration pulse test used to minimize self-heating effect.

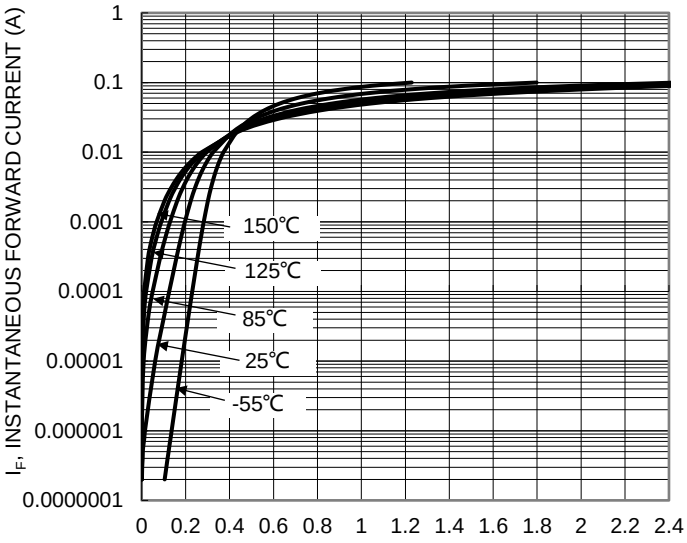


Figure 1. Typical Forward Characteristics

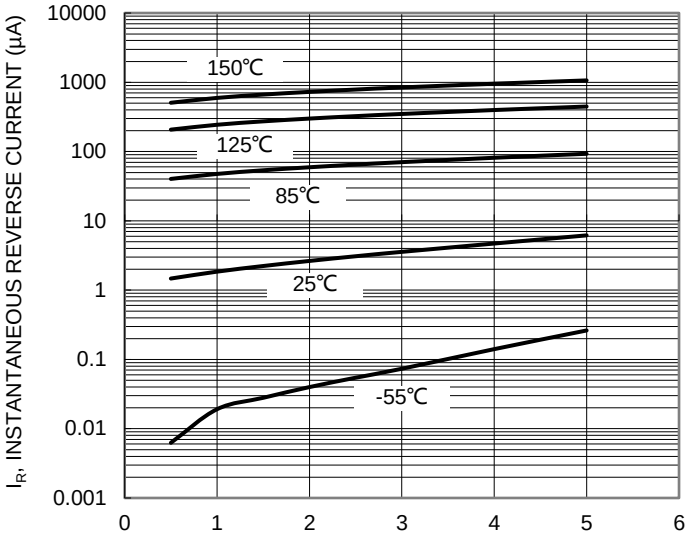


Figure 2. Typical Reverse Characteristics

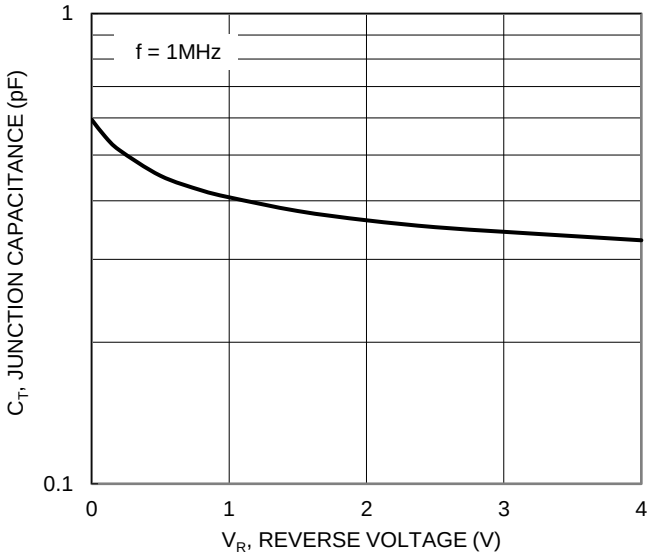


Figure 3. Typical Junction Capacitance

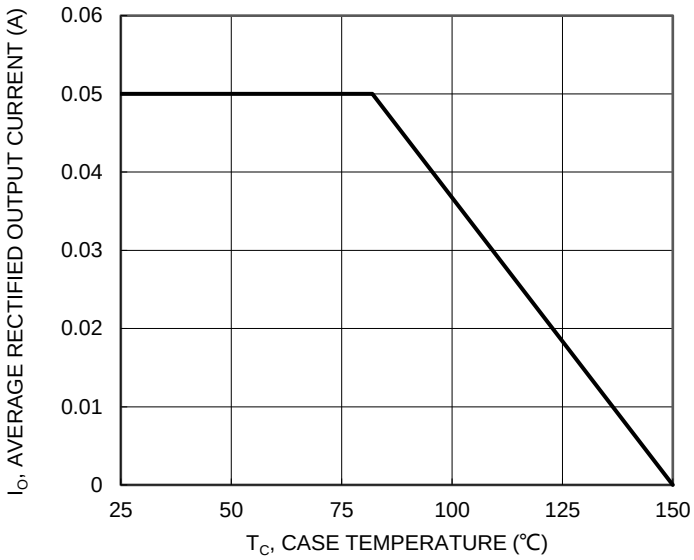
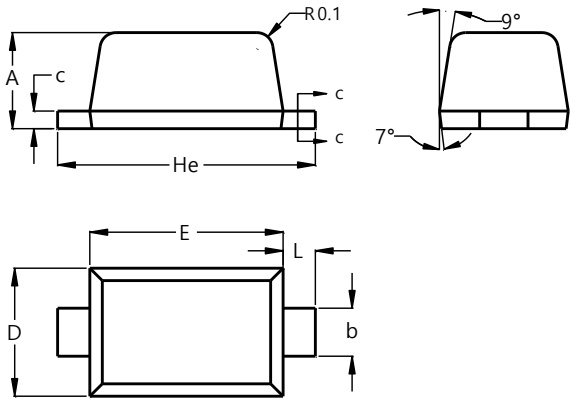


Figure 4. DC Forward Current Derating

Package Outline Dimensions

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

SOD523

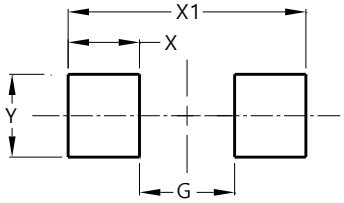


SOD523		
Dim	**Min**	**Max**
A	0.55	0.65
b	0.26	0.34
c	0.11	0.17
D	0.75	0.85
E	1.15	1.25
He	1.55	1.65
L	0.10	0.30
All Dimensions in mm		

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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