SKYWORKS®

DATA SHEET

Surface Mount General-Purpose Schottky Diodes

Features

- Tight parameter distribution
- Available as singles, pairs and dual series pairs
- 100% DC tested
- Designed for high-volume commercial applications
- Available in tape and reel packaging
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

Description

This series of 8, 20 and 70 V rated low-cost plastic packaged Schottky diodes are designed for general-purpose use in RF applications as detectors, mixers and switches and in digital pulse forming applications. All diodes are fully characterized including SPICE model parameters and deliver tight parameter distribution, minimizing performance variability. They are available in SC-70, SC-79, SC-88, SOD-323, SOT-23, SOT-143 and LGA packages. Wiring configurations include singles, common cathode, series pairs, unconnected pairs and dual series pairs. Available in tape and reel for pick and place manufacturing.

NEW Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.

Absolute Maximum Ratings

Characteristic	Value
Reverse voltage (V_R)	Rated V_B
Forward current - steady state (I_F)	50 mA
Forward current - 1 ms pulse (I_F)	1A
Power dissipation (P_D)	75 mW
Storage temperature (T_{ST})	-65 °C to +150 °C
Operating temperature (T_{OP})	-65 °C to +150 °C
Junction temperature (T_J)	150 °C
Soldering temperature	260 °C for 5 seconds
Electrostatic Discharge (ESD) Human Body Mode (HBM)	Class 0
Electrostatic Discharge (ESD) Charged Device Model (CDM)	Class C4

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

CAUTION: *Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.*

							
Single	Single	Single	Common Cathode	Series Pair	Unconnected Pair	Unconnected Pair	Dual Series Pair
SC-79	SOD-323	SOT-23	SOT-23	SOT-23	SOT-143	LGA	SC-88
SMS3922-079 Marking: Cathode	**SMS3922-011** Marking: SA	**SMS3922-001** Marking: SA1	**SMS3922-004** Marking: SA3	**SMS3922-005** Marking: SA2	**SMS3922-015** Marking: SA7		
SMS3922-079LF Marking: Cathode	**SMS3922-011LF** Marking: XA	**SMS3922-001LF** Marking: XA1	**SMS3922-004LF** Marking: XA3	**SMS3922-005LF** Marking: XA2	**SMS3922-015LF** Marking: XA7		
SMS3923-079 Marking: Cathode	♦**SMS3923-011** Marking: SB	**SMS3923-001** Marking: SB1		**SMS3923-005** Marking: SB2	**SMS3923-015** Marking: SB7	**SMS3923-517** **Lead (Pb)-Free** Marking: B	
SMS3923-079LF Marking: Cathode	♦**SMS3923-011LF** Marking: XB	**SMS3923-001LF** Marking: XB1		**SMS3923-005LF** Marking: XB2	**SMS3923-015LF** Marking: XB7		**SMS3923-081LF** Marking: XBQ
♦**SMS3924-079** Marking: Cathode				**SMS3924-005** Marking: SC2	**SMS3924-015** Marking: SC7		
♦**SMS3924-079LF** Marking: Cathode				**SMS3924-005LF** Marking: XC2	**SMS3924-015LF** Marking: XC7		
L_S = 0.7 nH	L_S = 1.5 nH	L_S = 1.5 nH	L_S = 1.5 nH	L_S = 1.5 nH	L_S = 1.5 nH	L_S = 0.6 nH	L_S = 1.8 nH
				SC-70			
				SMS3924-075 Marking: SC2			
				SMS3924-075LF Marking: XC2			
				L_S = 1.4 nH			

LF denotes lead (Pb)-free, RoHS-compliant packaging option as an alternative to our standard tin/lead (Sn/Pb) packaging.

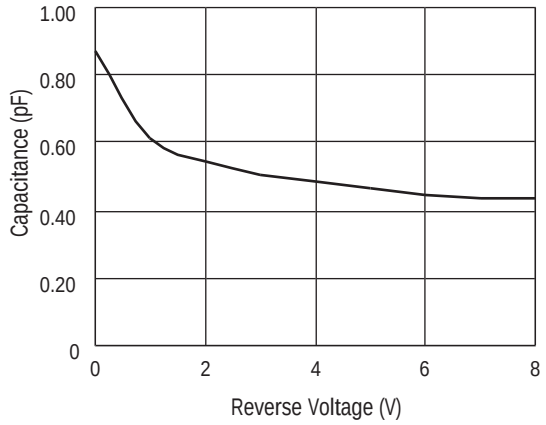
Innovation to Go™
Select Linear Products (indicated by ♦) now available for purchase online.

Electrical Specifications at 25 °C

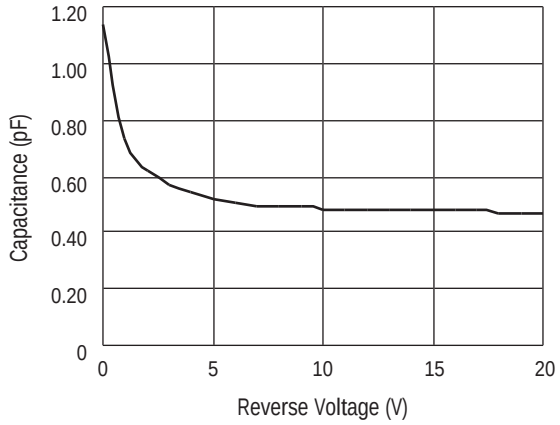
Per junction, unless otherwise noted

Part Number	V_B @ 10 µA (V)	I_R	C_T @ 0 V (pF)	V_F @ 1 mA (mV)	Pair Configuration ΔV_F @ 1 mA (mV)	V_F
	Min.				Max.	Max.
SMS3922 Series	8	@ 1 V < 100 nA	0.63–1.03	280–340	10	@ 10 mA < 450 mV
SMS3923 Series	20	@ 15 V < 500 nA	0.83–1.23	310–370	10	@ 35 mA < 1000 mV
SMS3924 Series	70	@ 50 V < 200 nA	1.43–1.83	490–550	10	@ 15 mA < 1000 mV

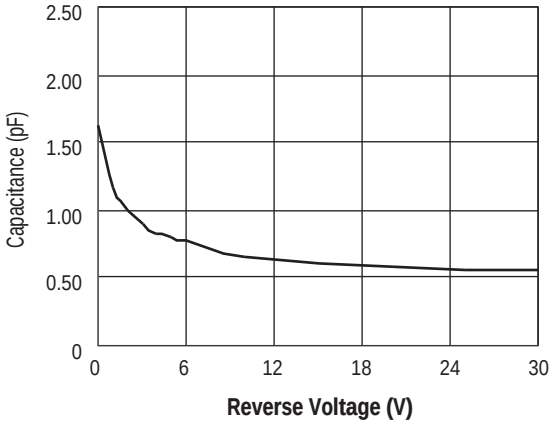
Typical Performance Data



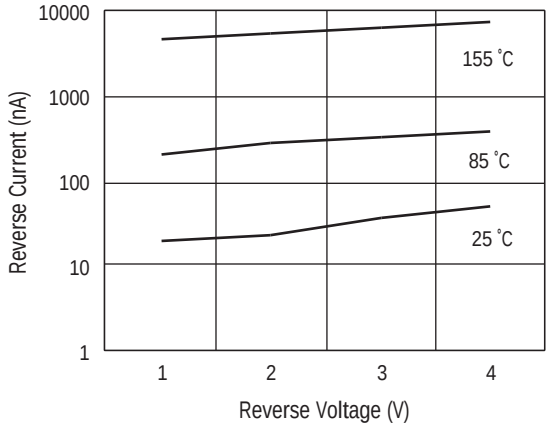
SMS3922 Total Capacitance vs. Reverse Voltage



SMS3923 Total Capacitance vs. Reverse Voltage



SMS3924 Total Capacitance vs. Reverse Voltage



SMS3922 Reverse Current vs. Reverse Voltage

SPICE Model Parameters

Parameter	Unit	SMS3922	SMS3923	SMS3924
IS	A	3E-8	5E-9	2E-11
R_S	Ω	9	11	11
N		1.08	1.05	1.08
TT	s	8E-11	8E-11	8E-11
C_{J0}	pF	0.7	0.9	1.5
M		0.26	0.24	0.4
E_G	eV	0.69	0.69	0.69
XTI		2	2	2
F_C		0.5	0.5	0.5
B_V	V	20	46	100
I_{BV}	A	1E-5	1E-5	1E-5
V_J	V	0.595	0.64	0.84

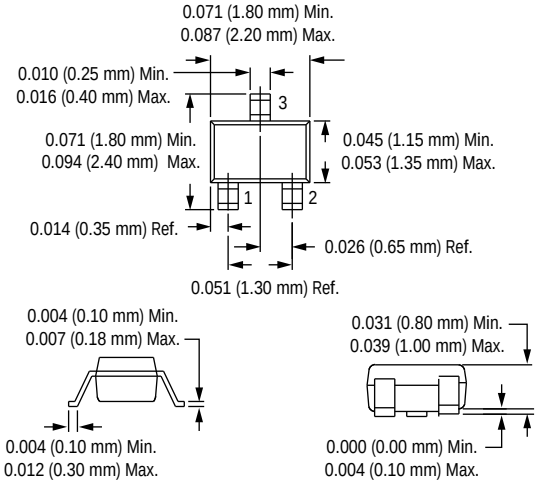
Recommended Solder Reflow Profiles

Refer to the *"Recommended Solder Reflow Profile"* Application Note.

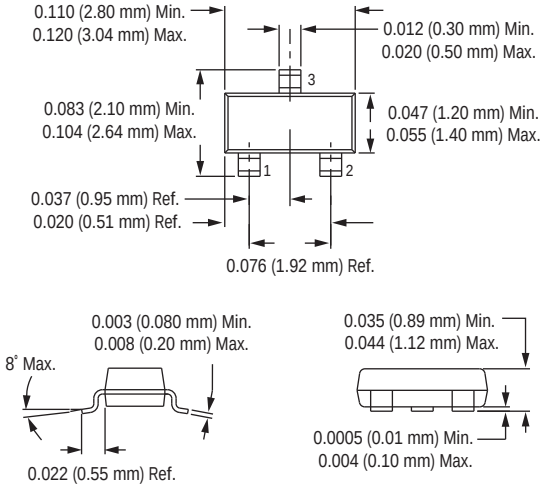
Tape and Reel Information

Refer to the *"Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation"* Application Note.

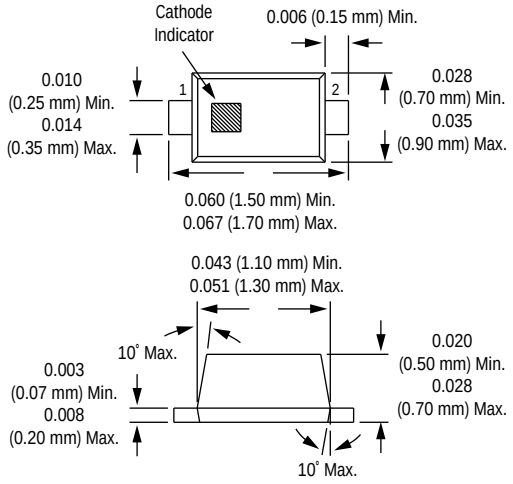
SC-70



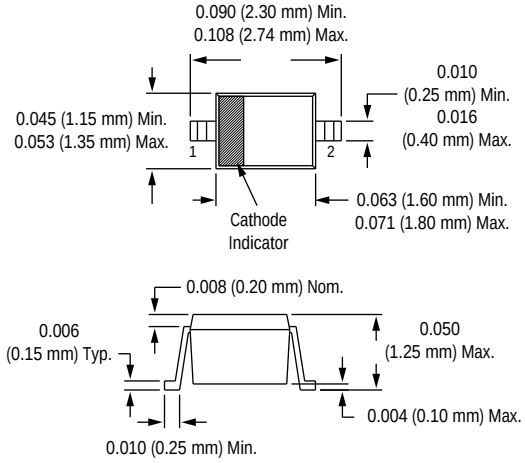
SOT-23



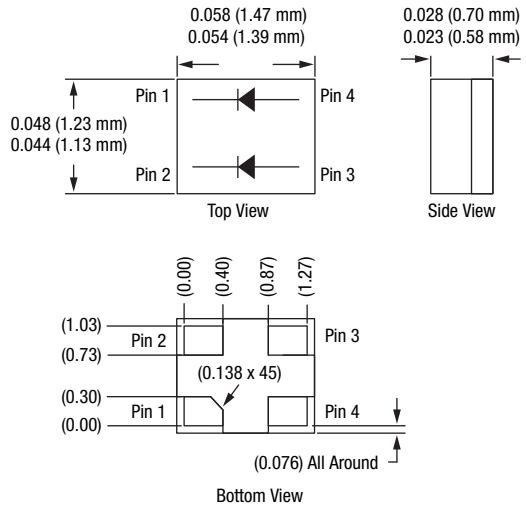
SC-79



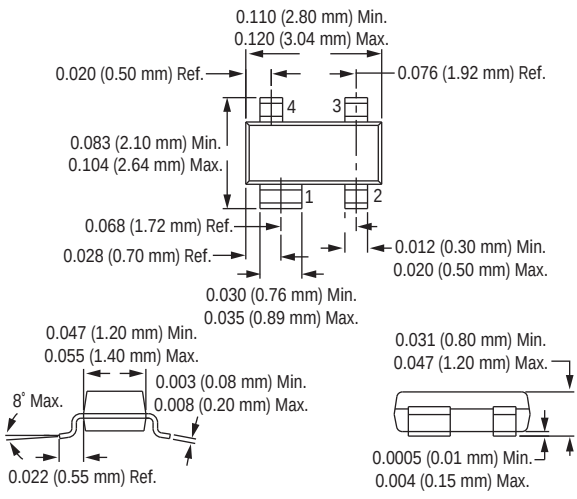
SOD-323



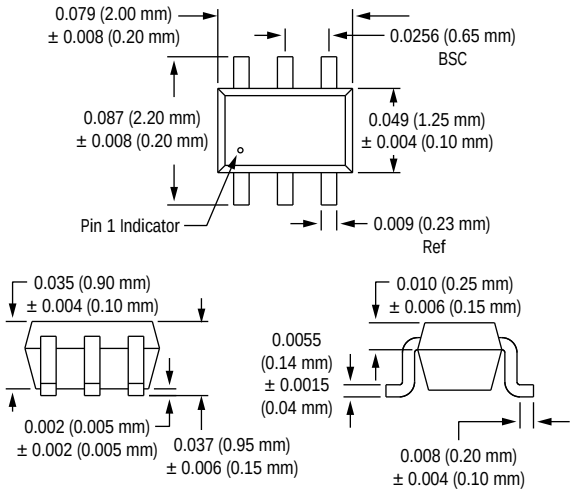
LGA (-517)



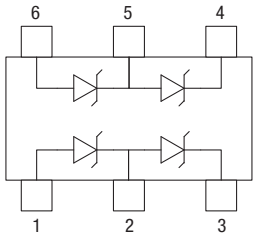
SOT-143



SC-88



SMS3923-081LF Pin Out (Top View)



SMS3923-081LF Equivalent Circuit