

DATA SHEET

SMS3925-079LF Low Capacitance, High Voltage Schottky Diode

Applications

- Wireless handsets and general purpose switching systems



Features

- Ultra-small SC-79 package
- SC-79 package rated MSL1, 260 °C per JEDEC J-STD-020

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




Description

The SMS3925-079LF is a 40 V, 0.6 pF RF Schottky diode designed for use as a level detector in wireless handsets and for general purpose low-cost, high volume switching applications.

Table 1 describes the package and marking of the SMS3925-079LF.

Table 1. SMS3925-079LF Packaging and Marking


Single
SC-79
SMS3925-079LF Marking: Cathode
$L_s = 0.7 \text{ nH}$



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

Table 2. SMS3925-079LF Series Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Reverse voltage	V_R		40	V
Forward current: steady state 1 ms pulse	I_F		50 1000	mA mA
Power dissipation	P_D		250	mW
Storage temperature	T_{STG}	-65	+150	°C
Operating temperature	T_A	-65	+150	°C
Junction temperature	T_J		+150	°C

Note: Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

CAUTION: Although this device is designed to be as robust as possible, Electrostatic Discharge (ESD) 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 should be used at all times. The SMS3925-079LF Schottky diode is rated Class 0 ESD, Human Body Model (HBM).

Table 3. SMS3925-079LF Series Electrical Specifications (Note 1)

($T_A = +25\text{ °C}$, Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typical	Max	Units
Reverse current	I_R	$V_R = 40\text{ V}$			10	μA
Capacitance (Note 2)	C_T	$F = 1\text{ MHz}, V_R = 0\text{ V}$		0.48	0.60	pF
Forward voltage	V_F	$I_F = 1\text{ mA}$	0.57	0.62	0.67	V

Note 1: Performance is guaranteed only under the conditions listed in this Table and is not guaranteed over the full operating or storage temperature ranges. Operation at elevated temperatures may reduce reliability of the device.

Note 2: Total capacitance, C_T , includes junction capacitance (C_J) and package capacitance (C_P).

Electrical and Mechanical Specifications

The absolute maximum ratings of the SMS3925-079 are provided in Table 2. Electrical specifications are provided in Table 3. The associated SPICE model parameters are provided in Table 4.

The total capacitance and reverse voltage are plotted in Figure 1. Package dimensions are shown in Figure 2.

Package and Handling Information

Instructions on the shipping container label regarding exposure to moisture after the container seal is broken must be followed. Otherwise, problems related to moisture absorption may occur

when the part is subjected to high temperature during solder assembly.

The SMS3925-079LF is rated to Moisture Sensitivity Level 1 (MSL1) at 260 °C. It can be used for lead or lead-free soldering. For additional information, refer to the Skyworks Application Note, *Solder Reflow Information*, document number 200164

Care must be taken when attaching this product, whether it is done manually or in a production solder reflow environment. Production quantities of this product are shipped in a standard tape and reel format. For packaging details, refer to the Skyworks Application Note *Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation*, document number 200083.

Table 4. SPICE Model Parameters

Parameter	Units	SMS3925-079LF
Is	A	1.8E-09
Rs	Ω	5.4
N	–	1.7
TT	sec	8E-11
CJo	pF	0.36
M	–	0.24
Eg	eV	0.69
XTI	–	2
Fc	–	0.5
Bv	V	58
Ibv	A	1E-05
Vj	V	0.8

Typical Performance Characteristics

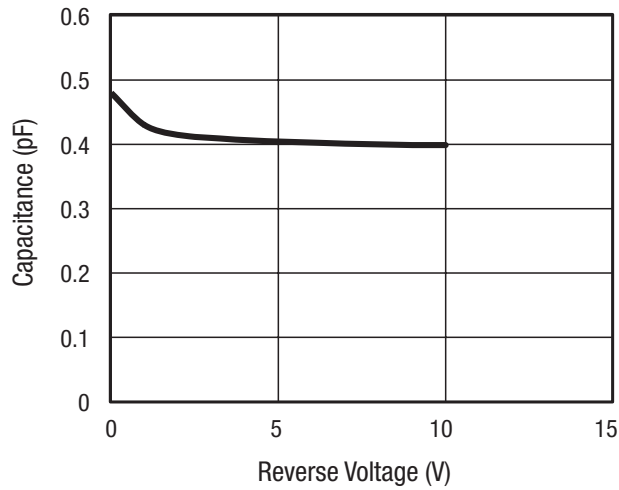


Figure 1. Total Capacitance vs Reverse Voltage

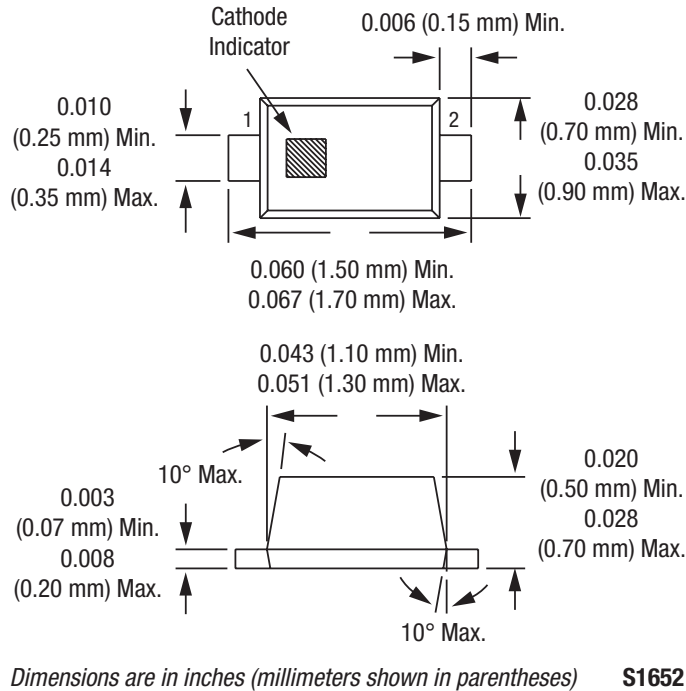


Figure 2. SC-79 Package Dimension Drawing

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