

DATA SHEET

SMSA3923-011LF: Surface-Mount Mixer/Detector Schottky Diode

Automotive Applications

- Infotainment
- Navigation
- Telematics
- Garage door openers
- Wireless control systems

Features

- AEC-Q101 qualified
- Package rated MSL1, 260 °C per JEDEC J-STD-020



Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.



Description

The SMSA3923-011LF plastic-packaged Schottky diode is designed for several automotive in-vehicle applications.

Table 1 describes the SMSA3923-011LF package and marking.

Table 1. Packaging and Marking


Single
SOD-323 Green™
SMSA3923-011LF Marking: XB
$L_s = 1.5 \text{ nH}$



The Pb-free symbol or "LF" in the part number denotes a lead-free, RoHS-compliant package unless otherwise noted as Green™. Tin/lead (Sn/Pb) packaging is not recommended for new designs.

Electrical and Mechanical Specifications

The absolute maximum ratings of the SMSA3923-011LF are provided in Table 2. Electrical specifications are provided in Table 3. The associated SPICE model parameters are provided in Table 4.

Typical performance characteristics of the SMSA3923-011LF series are illustrated in Figure 1. Package dimensions are shown in Figure 2, and tape and reel dimensions are provided in Figure 3.

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 SMSA3923-011LF is rated to Moisture Sensitivity Level 1 (MSL1) at 260 °C for 5 seconds. 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.

Table 2. SMSA3923-011LF Absolute Maximum Ratings¹

Parameter	Symbol	Minimum	Maximum	Units
Reverse voltage	c		Rated V_B	V
Forward current	I_F		50	mA
Power dissipation @ 25 °C lead temperature	P_D		75	mW
Storage temperature	T_{STG}	-65	+150	°C
Operating temperature	T_A	-65	+150	°C
Junction temperature	T_J		+150	°C
Electrostatic discharge:	ESD			
Charged Device Model (CDM), Class 4			>1100	V
Human Body Model (HBM), Class 0			<250	V
Machine Model (MM), Class A			<50	V

¹ 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.

ESD HANDLING: *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 when handling or transporting. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD handling precautions should be used at all times.*

Table 3. SMSA3923-011LF Electrical Specifications¹
($T_A = +25$ °C, Per Junction Unless Otherwise Noted)

Part Number	$V_B @ 10 \mu A$ (V, Minimum)	I_R	$C_T @ 0 V$ (pF)	$V_F @ 1 mA$ (mV)	Pair Configuration $\Delta V_F @ 1 mA$ (mV, Maximum)	V_F , Maximum
SMSA3923-011LF	20	<500 nA @ 15 V	0.83 to 1.30	310 to 370	10	<1000 mV @ 35 mA

¹ Performance is guaranteed only under the conditions listed in this table.

Table 4. SPICE Model Parameters

Parameter	Units	SMSA3923-011LF
Is	A	5E-9
Rs	Ω	10
N	-	1.05
TT	sec	8E-11
CJO	pF	0.9
M	-	0.24
Eg	eV	0.69
XTI	-	2
Fc	-	0.5
Bv	V	46
Ibv	A	1E-5
VJ	V	0.640

Typical Performance Characteristics
 (TA = +25 °C, Per Junction Unless Otherwise Noted)

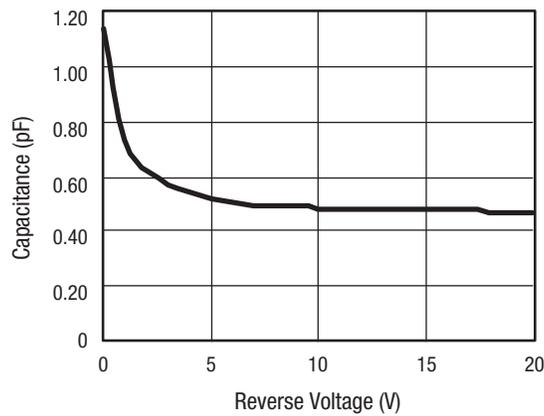


Figure 1. SMSA3923-011LF Total Capacitance vs Reverse Voltage

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