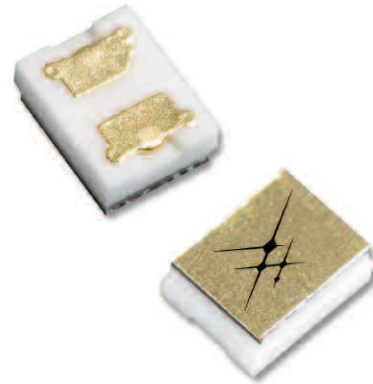


DATA SHEET

Silicon Schottky Diodes in Hermetic Surface Mount Package

Features

- Medium, low and ZBD barrier heights available
- Hermetic ceramic package, 1.83 x 1.43 x 1.0 mm
- Very low parasitic impedance
- Low thermal impedance
- Usable as high as 10 GHz
- Operating temperature range -55 °C to 150 °C
- ESD Class 0, human body model
- Available lead (Pb)-free, RoHS-compliant, and Green MSL-1 @ 260 °C per JEDEC J-STD-020



Description

The family of proven silicon Schottky diodes is packaged in a hermetic, ceramic package. This package offers excellent, very low parasitic inductance and capacitance for wide bandwidth, high frequency operation. It has low thermal impedance and meets fine and gross leak requirements for excellent reliability. Its small form factor, 1.83 x 1.43 x 1.0 mm, compares favorably to that of the smallest plastic packages.

This package meets Skyworks definition of Green: it is lead (Pb)-free, fully complies with current RoHS requirements and contains no halogens and no antimony (Sb).

The SMS3922-107 and SMS3923-107 are silicon medium barrier Schottky diodes suitable for use in mixers and high level detector circuits.

The SMS7621-107 is a silicon low barrier Schottky diode, suitable for use in small signal, sensitive detector circuits.

The SMS7630-107 is a silicon Schottky zero bias detector diode (ZBD) diode, suitable for use in the most sensitive detector circuits.

The diodes available in this package can operate over the temperature range of -55 °C to 150 °C.



Skyworks Green products are lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide and brominated flame retardants.

Electrical Specifications

T = 25 ° C, unless otherwise noted

Part Number	Barrier Height	Minimum Reverse Breakdown Voltage $I_R = 10 \mu A$ (V)	Maximum Reverse Leakage Current $V_R = 15 V$ (nA)	Total Capacitance $V_R = 0 V$ & $f = 1 MHz$ (pF)		Forward Voltage $I_F = 1 mA$ (mV)		Maximum Forward Voltage, $I_F = 35 mA$ (mV)	ESD Rating, Human Body Model
				Min.	Max.	Min.	Max.		
SMS3922-107	Med./Low	8	100 @ 1.0 V		1.5	280	340	450 @ 10 mA	Class 0
SMS3923-107	Medium	20	500	0.83	1.23	310	370	1000	Class 0

Part Number	Barrier Height	Minimum Reverse Breakdown Voltage $I_R = 10 \mu A$ (V)	Maximum Total Capacitance $V_R = 0 V$ & $f = 1 MHz$ (pF)	Forward Voltage $I_F = 1 mA$ (mV)		Maximum Slope Resistance $I_F = 5 mA$ (Ω)	ESD Rating, Human Body Model
				Min.	Max.		
SMS7621-107	Low	2	0.26	260	320	18	Class 0

Part Number	Barrier Height	Minimum Reverse Breakdown Voltage $I_R = 100 \mu A$ (V)	Typical Total Capacitance $V_R = 0.15 V$ & $f = 1 MHz$ (pF)	Forward Voltage $I_F = 100 \mu A$ (mV)		Forward Voltage $I_F = 1 mA$ (mV)		Typical Video Resistance (Ω)	ESD Rating, Human Body Model
				Min.	Max.	Min.	Max.		
SMS7630-107	ZBD	1	0.50	60	120	135	240	5000	Class 0

Absolute Maximum Ratings

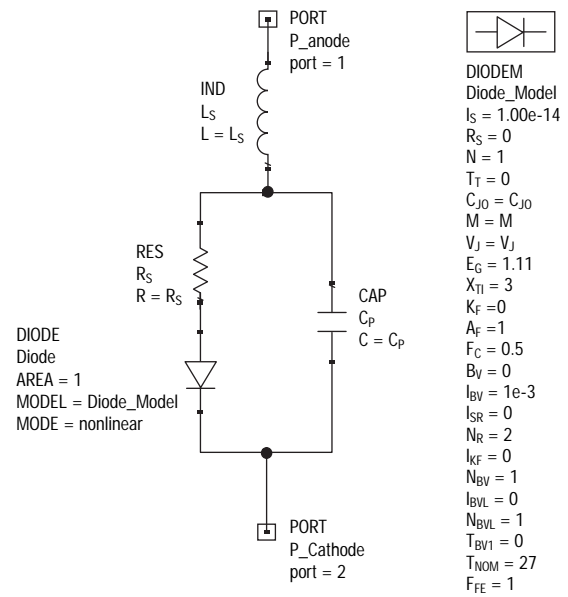
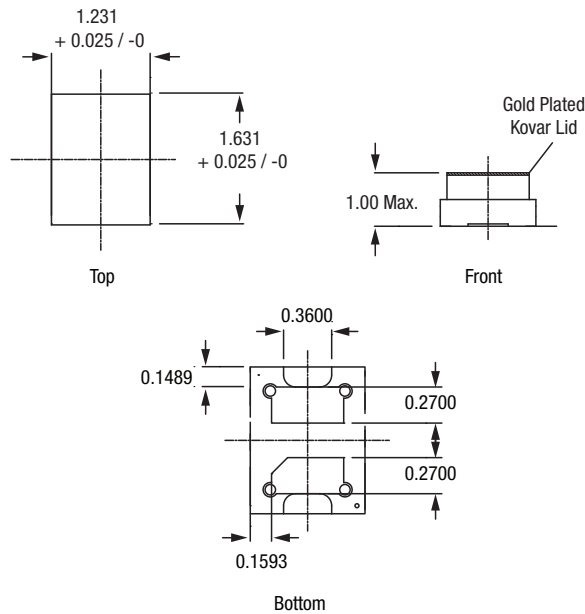
Characteristic	Value
Reverse voltage	Minimum Reverse Breakdown Voltage
Forward current	100 mA
Dissipated power at 25 °C	250 mW
Operating temperature	-55 °C to +150 °C
Storage temperature	-65 °C to +200 °C
Electrostatic Discharge (ESD) Human Body Mode (HBM)	Class 0
Electrostatic Discharge (ESD) Charged 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.

SPICE Model Parameters

Parameter	Unit	SMS3923	SMS7621	SMS7630	SMS3922
IS	A	5e-9	4e-8	5e-6	3e-8
RS	Ω	11	12	20	9
N		1.05	1.05	1.05	1.08
TT	s	8e-11	1e-11	1e-11	8e-11
CJO	pF	0.9	0.10	0.14	0.9
M		0.24	0.35	0.40	0.26
EG	eV	0.69	0.69	0.69	0.69
XTI		2	2	2	2
FC		0.5	0.5	0.5	0.5
BV	V	46	3	2	20
IBV	A	1e-5	1e-5	1e-4	1e-5
VJ	V	0.64	0.51	0.34	0.595
LS	nH	0.7			
CP	pF	0.07			

SPICE Model**-107 Package Outline**

All Dimensions in Millimeters

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