SKYWORKS®

DATA SHEET

Surface Mount Schottky Quad Mixer Diodes

Features

- Tight parameter distribution
- Available as ring quads, crossover quads, bridge quads and octoquads
- 100% DC tested
- Designed for high-volume commercial applications
- Available in tape and reel packaging
- Available lead (Pb)-free and RoHS-compliant

Description

Skyworks offers a series of low-cost devices in a SOT-143 package. This series includes low, medium and high barrier junctions as ring quads, crossover quads and bridge quads. Octoquad rings are also offered for high dynamic range applications. These devices are constructed utilizing Skyworks monolithic chip technology, assuring uniformity of electrical characteristics for each junction. The low capacitance of Skyworks ring and crossover quads is optimal for double balanced mixer applications covering wireless frequencies into C-band. The bridge quads are designated for modulators and frequency multiplier applications. These diodes are 100% DC tested and deliver tight parameter distribution, minimizing performance variability. They compliment Skyworks product line of Schottky singles and pairs available in SC-70, SC-79, SOD-323, SOT-23 and SOT-143 packages. 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
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
ESD human body model	Class 1B

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.*

Electrical Specifications at 25 °C (Per Junction)

Barrier	V_B @ 10 µA (V) Min.	C_J @ 0 V 1 MHz (pF)	V_F @ 1 mA (mV)	ΔV_F @ 1 mA (mV) Max.	R_T[1] @ 10 mA (Ω) Max.					
						SOT-143				
						Ring Quad	Crossover Quad	Bridge Quad	Octoquad	Crossover Octoquad
Low	2	0.3–0.5	200–270	10	8	**SMS3926-022** Marking: SE4	♦**SMS3926-023** Marking: SE5	**SMS3929-021** Marking: SQE		
						SMS3926-022LF Marking: XE4	♦**SMS3926-023LF** Marking: XE5	**SMS3929-021LF** Marking: XQE		
Medium	2	0.3–0.5	310–370	10	8		**SMS3927-023** Marking: SJ5	**SMS3930-021** Marking: SRE		
							SMS3927-023LF Marking: XJ5	**SMS3930-021LF** Marking: XRE		
High	4	0.3–0.5	520–580	10	8		♦**SMS3928-023** Marking: SK5	**SMS3931-021** Marking: SSE		
							♦**SMS3928-023LF** Marking: XK5	**SMS3931-021LF** Marking:XSE		
High Dual-Junction	8	0.3–0.5	1000–1200	20	16				**SMS3940-026** Marking: STG	
									SMS3940-026LF Marking: XTG	**SMS3940-029LF** Marking: XTN

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

1. R_T is the slope resistance.
All parameters are based upon a single leg.

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

SPICE Model Parameters (Per Junction)

Parameter	Unit	SMS3926 SMS3929	SMS3927 SMS3930	SMS3928 SMS3931 SMS3940
IS	A	2.5E-07	1.3E-09	9E-13
R_S	Ω	4	4	4
N		1.04	1.04	1.04
TT	s	1E–11	1E–11	1E–11
C_{J0}	pF	0.42	0.39	0.39
M		0.32	0.37	0.42
E_G	eV	0.69	0.69	0.69
XTI		2	2	2
F_C		0.5	0.5	0.5
B_V	V	2	3	4
I_{BV}	A	1E–05	1E–05	1E–05
V_J	V	0.495	0.595	0.8

All parameters are based upon a single junction.

Typical Forward Voltage Characteristics at 25 °C

Part Number	V_F @ 0.01 mA (mV)	V_F @ 0.1 mA (mV)	V_F @ 1 mA (mV)	V_F @ 10 mA (mV)
	Typ.	Typ.	Typ.	Typ.
SMS3926	100	165	232	324
SMS3927	206	271	338	428
SMS3928	423	488	555	641
SMS3940	862	989	1123	1304

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.

SOT-143