

## DATA SHEET

# Schottky Diode Quad Mixer Chips Supplied on Film Frame

### Features

- Designed for high-performance, double-balanced mixers
- Three barrier heights available
- Schottky diodes supplied 100% tested, sawn, mounted on film frame
- Low cost
- Available lead (Pb)-free, RoHS-compliant, and Green

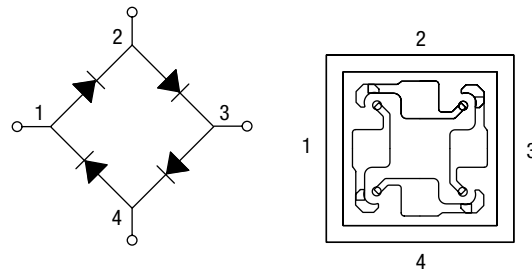
### Description

The Skyworks SMS392x-099 family of Si Schottky diodes are configured as ring quads intended for use in double-balanced mixers. Each ring quad die is comprised of four Schottky junctions, connected anode to cathode. There are three barrier heights available: SMS3926 is composed of low-barrier diodes, which can be driven with low-power local oscillator signals; SMS3927 is composed of medium-barrier diodes, for applications in which moderate-power local oscillator signals are available; and, SMS3928 is composed of high-barrier diodes for applications that require very low distortion performance and have higher local oscillator power available. These ring quads are 100% tested, sawn and supplied on film frame in wafer quantities.

**NEW**



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.



### Absolute Maximum Ratings

Characteristic	Value
Forward current ( $I_F$ )	75 mA
Power dissipation @ 25 °C at the base of the chip	75 mW per junction
Storage temperature	-65 °C to +200 °C
Operating temperature	-65 °C to +150 °C
ESD human body model	Class 0

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, 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 must be employed at all times.

**Electrical Specifications at 25 °C**

Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	$C_J V_R = 0 V$ $F = 1 MHz$ (pF)	$V_F @ I_F = 1 mA$ (mV)	Max. Delta $V_F @ 1 mA$ (mV)	Max. $R_T$ $I_F = 10 mA$ ( $\Omega$ )
SMS3926-099	2	0.3–0.5 pF	200–260	10	8
SMS3927-099	3	0.3–0.5 pF	300–400	10	8
SMS3928-099	4	0.3–0.5 pF	500–600	10	8

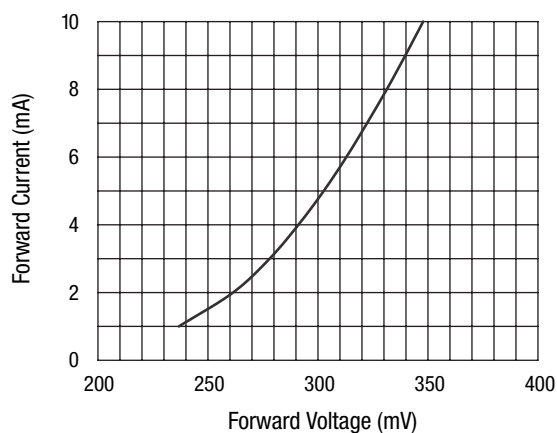
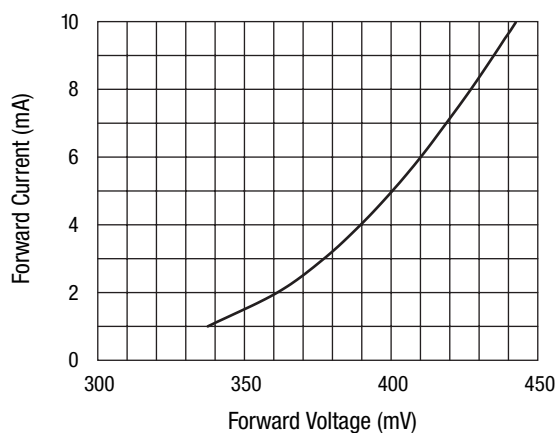
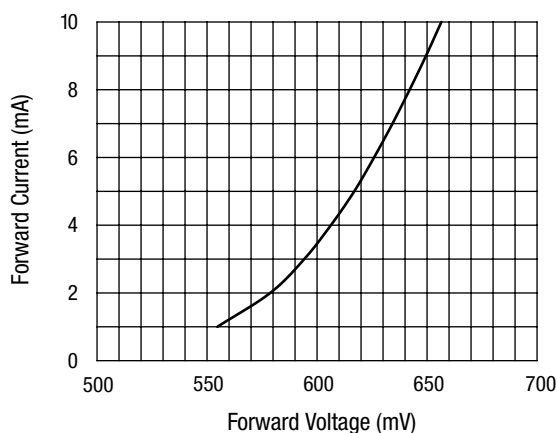
The above Schottky diode chips are processed on 100 mm silicon wafers, 100% DC tested, sawn and shipped on 6" film frame hoops. Electrical rejects are identified with black ink.

$R_T$  is the slope resistance.

All parameters are based upon a single junction.

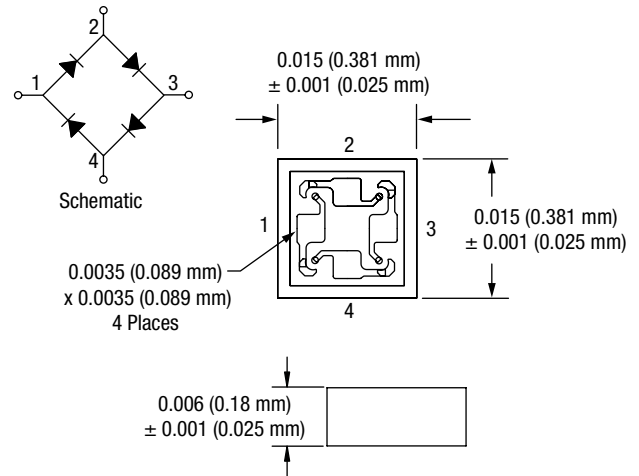
**Chip Dimensions**

Part Number	Quantity of Good Diodes Per Wafer		Bonding Pad Nominal (In.)	Chip Size Nominal (In.)	Chip Height Nominal (In.)
	Min.	Nom.			
SMS3926-099	27,000	30,000	0.0035 ± 0.0005	0.0150 ± 0.001	0.006 ± 0.001
SMS3927-099	25,000	28,000	0.0035 ± 0.0005	0.0150 ± 0.001	0.006 ± 0.001
SMS3928-099	27,000	30,000	0.0035 ± 0.0005	0.0150 ± 0.001	0.006 ± 0.001

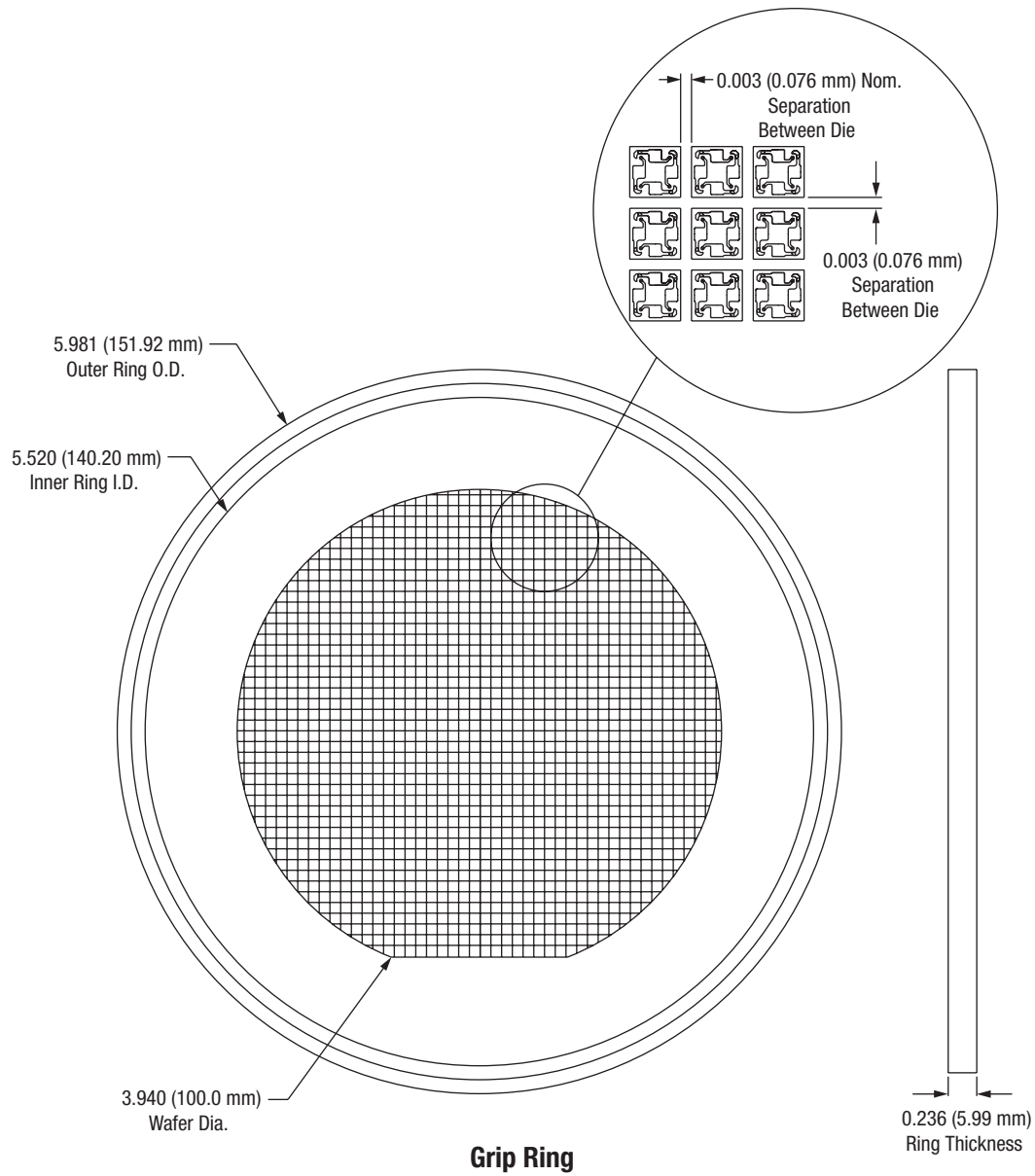
**Typical Performance Data at 25 °C****SMS3926 DC Characteristic****SMS3927 DC Characteristic****SMS3928 DC Characteristic**

**SPICE Model Parameters (Per Junction)**

Parameter	Units	SMS3926	SMS3927	SMS3928
IS	A	2.5E-07	1.3E-09	9.0E-13
RS	$\Omega$	4.00	4.00	4.00
N	-	1.04	1.04	1.04
TT	s	1E-11	1E-11	1E-11
CJO	pF	0.42	0.39	0.39
M	-	0.32	0.37	0.42
EG	eV	0.69	0.69	0.69
XTI	-	2.00	2.00	2.00
FC	-	0.50	0.50	0.50
BV	V	2.00	3.00	4.00
IBV	A	1.0E-05	1.0E-05	1.0E-05
VJ	V	0.495	0.595	0.800

**Outline Drawing**

## Wafer On Film



## Wafer Film Frame Description

- Wafer on nitto tape
- Color: light blue
- Thickness: 2.2–3.0 mils
- Tensile strength: 6.6 (lbs. in width)
- Ring material: plastic

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