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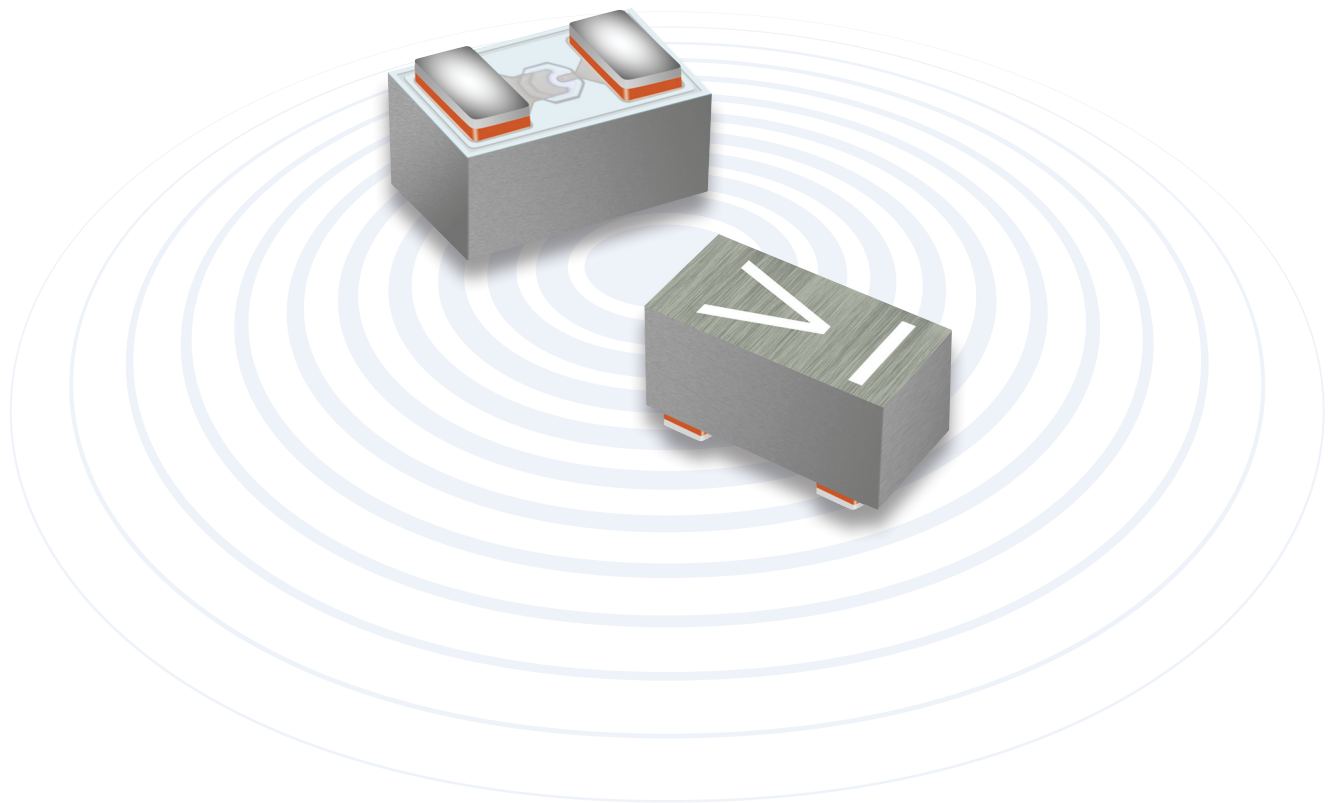
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New Packaging Technology Offering for Diode Applications
High Performance Micro Surface Mount 0201 Diodes

Skyworks Introduces High Performance Surface Mount 0201 Packaging

Micro Surface Mount Device (MSMD)

Silicon Schottky Diodes

Skyworks Solutions, Inc, an innovator of high performance analog and mixed signal semiconductors enabling mobile connectivity, has engineered the industry's smallest and lowest profile packaged silicon radio frequency (RF) schottky diodes in a 0201 surface mount technology (SMT) footprint. This new family of ultra-miniature and high-performance packaged diodes, which is priced comparably to traditional plastic packages, is ideal for a wide range of high-volume and cost-sensitive mixer and detector applications including CATV/DBS set-top boxes, mobile handsets, microwave radios, RFID tags, wireless infrastructure and embedded WLAN 802.11a/b/g/n modules.

These devices are well suited for RF and microwave signal detection applications up to 26 gigahertz (GHz) – traditional plastic packaging is typically only specified up to 10 GHz.

Key Benefits

Extension of current proven beamless technology:

- Significantly smaller, lighter and lower profile (0.3 mm or lower), when compared to plastic packaged alternative
- Less RF performance degradation when compared to leaded parts and/or wire bonded devices, resulting in better predictability of component characteristics
- High frequency performance, lower parasitic impedance, compared to alternative assembly
- Can easily transition to multi-device arrays, with smaller form factor and lower cost
- Replace traditional chip and wire approach, thereby reducing assembly cost while increasing overall assembly yield

Features

- Cu (copper) pillars with Sn/Ag (tin/silver) terminations provides an excellent packaging configuration for high performance and high reliability
- Device packaging format is compatible with existing high-speed 0201 surface mount assembly technology
- RoHS-compliant and Skyworks Green™ with Cu/Sn/Ag terminations
- Wafer level construction exhibits low parasitic inductance (<0.2 nH) and low parasitic capacitance <0.05 pF

Schottky Diodes for Mixer and Detector Applications

Description

The SMS7621-096 is a silicon low barrier N-type Schottky diode which can be used for very sensitive power detector circuits, in sampling circuits, or in mixer circuits

The SMS7630-093 is silicon zero bias detector diode with very low barrier height, which can be used for very sensitive power detector circuits or in sampling circuits.

The very low barrier height on both the devices produces a very small forward voltage. This low forward voltage, along with the diode's very low junction capacitance, make these diodes an excellent detector at frequencies as high as 26 GHz.

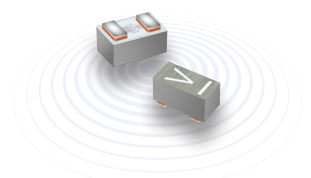
These devices can operate over the temperature range of -65° C to 150° C, and complement Skyworks' extensive line of plastic packaged diodes and diode chips. SPICE parameters are provided on the data sheets.



90% Smaller Than SC-79
MSMD Package Height is Half of SC-79
0.6 mm vs. 0.3 mm

MSMD
.50 x .25 x .30 mm
(.02" x .01" x .013")
<0.2 nH inductance

SC-79
1.6 x .80 x .60 mm
(.064" x .032" x .024")
0.7 nH inductance



SMS7621-096, SMS7630-093


Key Specifications

SMS7630-093 (P-Type)

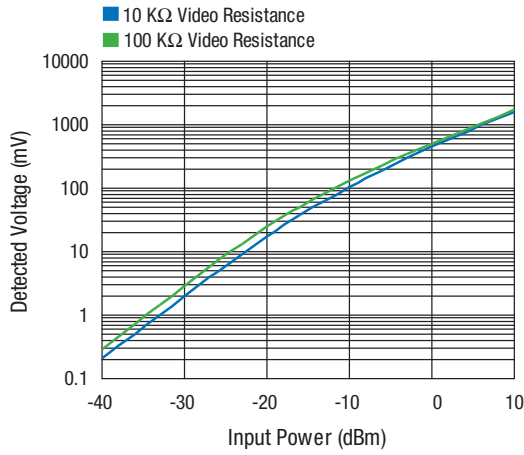
| Min. Breakdown Voltage @ $I_R = 10 \mu A$ (V) | Typical Total Capacitance @ $V_R = 0.15 V$ (pF) | Forward Voltage @ $I_F = 1 mA$ (mV) | Video Resistance @ $V_R = 0 V$ (Ω) |
|---|---|-------------------------------------|---|
| 1 | 0.3 | 135–240 | 3000–7000 |

SMS7621-096 (N-Type)

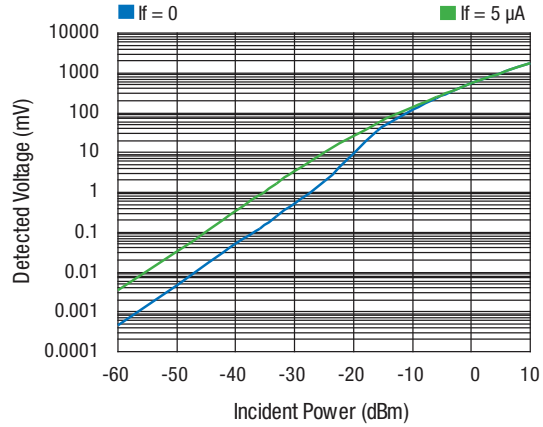
| Min. Breakdown Voltage @ $I_R = 10 \mu A$ (V) | Max. Total Capacitance @ $V_R = 0 V, F = 1 MHz$ (pF) | Forward Voltage @ $I_F = 1 mA$ (mV) | Max. Series Resistance @ $I_F = 5 mA$ (Ω) |
|---|--|-------------------------------------|--|
| 2 | 0.18 | 260–320 | 12 |

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

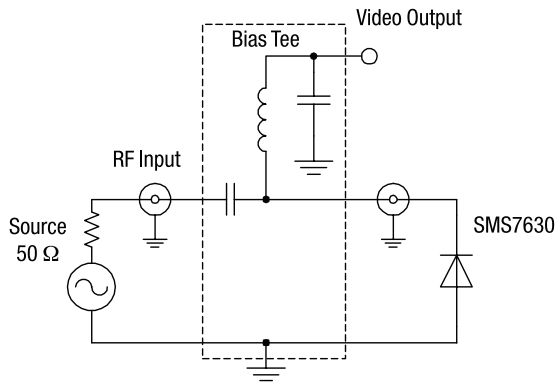
Typical Performance



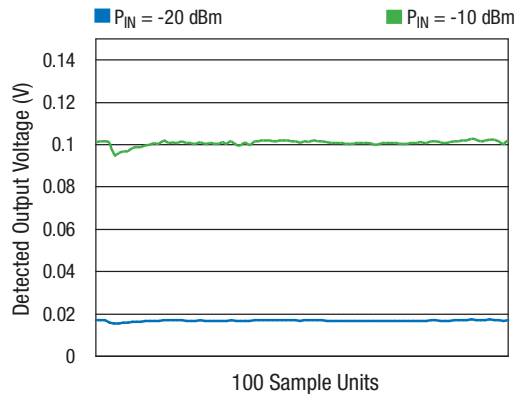
SMS7630-093 Detector Voltage vs. Input Power (25 °C)



SMS7621-096 Detector Voltage at 2.45 GHz ($T_A = 25 °C$)



Detector Circuit



SMS7630-093 Detected Output Voltage Consistency

