

High Performance Schottky Diodes

Ultraminiature 0201 Surface Mount Technology Packaging

Skyworks Introduces High Performance Surface Mount 0201 Packaging

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 silicon radio frequency (RF) schottky diodes in a 0201 surface mount technology (SMT) footprint. This new family of ultraminiature 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, automotive radar, and Doppler radar sensors.

These devices are well suited for RF, microwave and millimeterwave signal detection applications up to 100 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 Ni/Sn (nickel/tin) 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/Ni/Sn 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

The SMS7621-060 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 SMS7630-061 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 100 GHz.

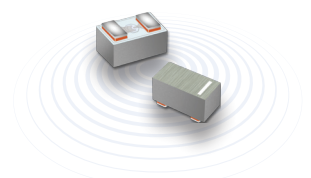
These devices can operate over the temperature range of -65° C to 150° C, and complement Skyworks' extensive line of plastic packaged diodes and diode chips. SPICE parameters are provided on the data sheets.



3X Smaller Than SC-79
Package Height is Half of SC-79
0.6 mm vs. 0.3 mm

0201
0.60 x 0.30 x 0.27 mm
<0.2 nH inductance

SC-79
1.6 x .80 x .60 mm
0.7 nH inductance



SMS7621-060, SMS7630-061

Key Specifications

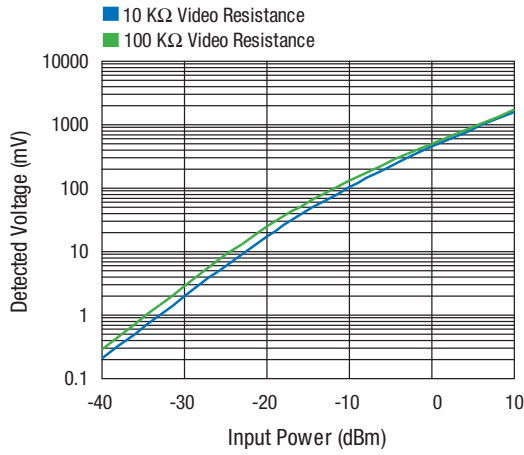
SMS7630-061 (P-Type)

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

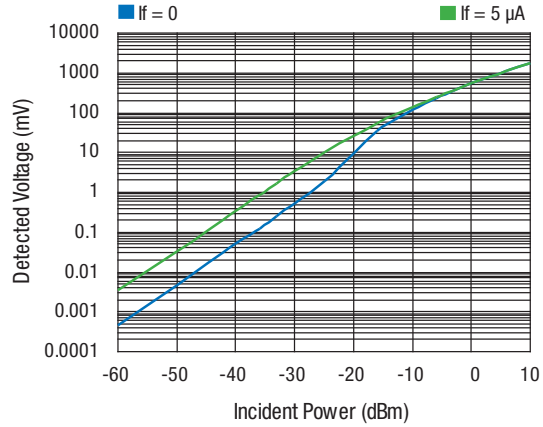
SMS7621-060 (N-Type)

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

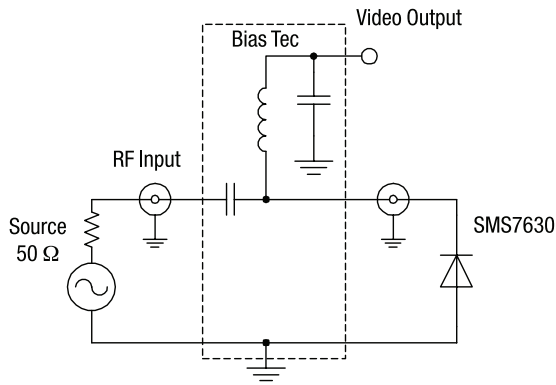
Typical Performance



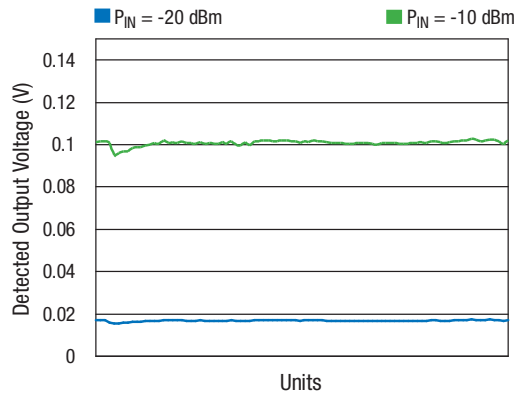
SMS7630-061 Detector Voltage vs. Input Power (25°C)



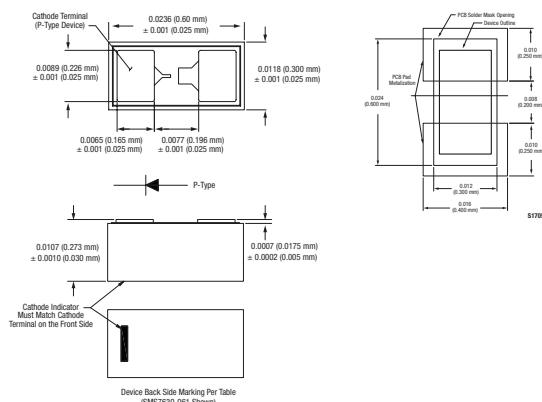
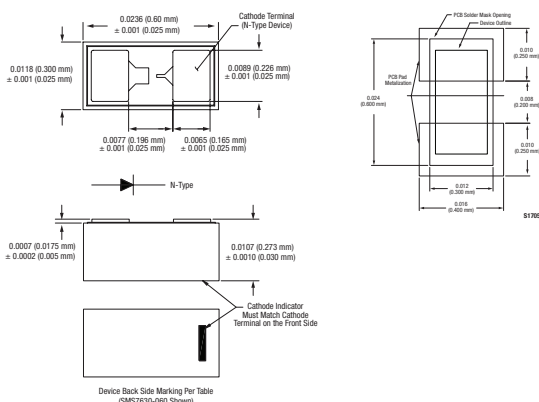
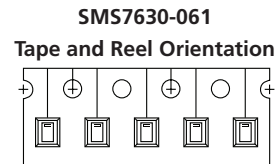
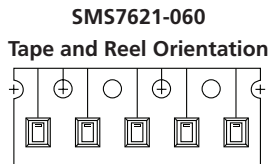
SMS7630-060 Detector Voltage at 2.45 GHz ($T_A = 25^\circ\text{C}$) 100 kΩ Video Resistance



Detector Circuit



SMS7630-061 Detected Output Voltage Consistency





www.skyworksinc.com

USA

Headquarters

Skyworks Solutions, Inc.
20 Sylvan Road
Woburn, MA 01801
Telephone: (781) 376 3000
Fax: (781) 376 3100
sales@skyworksinc.com

Skyworks Solutions, Inc.
5221 California Avenue
Irvine, CA 92617
Telephone: (949) 231 3000
Fax: (949) 231 3206
kirat.hatzfeld@skyworksinc.com

Skyworks Solutions, Inc.
5520 Adamstown Road
Adamstown, MD 21710
Telephone: (301) 695 9400
Fax: (301) 695 7065
transtech@skyworksinc.com

EUROPE

Skyworks Solutions, Inc.
Parallelvej 10
Lyngby 2800, Denmark
Telephone: +45 45267945
Fax: +45 45267710
jan.thoning@skyworksinc.com

Skyworks Solutions, Inc.
34 Avenue Franklin Roosevelt
Suresnes 92150, France
Telephone: +00 33 1 41443660
Fax: +00 33 1 41443661
irene.pfeiffer@skyworksinc.com

Skyworks Solutions, Ltd.
Abbey Manor Business Centre
The Abbey
Preston Road,
Yeovil, Somerset BA20 2EN
UK
Telephone: +44 1935 848546
Fax: +44 1935 431269
mike.carroll@skyworksinc.com

Skyworks Solutions, Inc.
Keilasatama 3
02150 Espoo
Finland
Telephone: +358 925107131
tommi.hiilos@skyworksinc.com

ASIA • PACIFIC

China

Skyworks Solutions Commercial
(Shenzhen) Co., Ltd. Shanghai Branch
Room 2901-02, Chong Hing
Finance Center,
No.288 Nanjing Road (W),
Shanghai, 200003 China
Telephone: +86 21 23066230
Fax: +86 21 33663398
elaine.zhao@skyworksinc.com

Skyworks Solutions, Inc.
Room 05, 11/F, Tower 2,
Kerry Plaza
No. 1 Zhongxinsi Road
Futian District
Shenzhen 518048 PRC
Telephone: +86 755 8291 3788
ext. 60017
Fax: +86 755 8293 1633
sabrina.chen@skyworksinc.com

Skyworks Solutions, Inc.
Suite 1212, COFCO, No. 8
Jianguomennei Avenue
Dongcheng District
Beijing, 100005 PRC
Telephone: +8610 652 60859
ext. 61608
Fax: +8610 852 98350
david.qi@skyworksinc.com

Japan

Skyworks Solutions, Inc.
3-20-2 Nishi-Shinjuku
Shinjuku-ku
Opera City Tower
Tokyo, 163-1436
Japan
Telephone: +81-3-5308-5180
Fax: +81-3-5308-5190
ahihiro.karikomi@skyworksinc.com

Korea

Skyworks Solutions, Inc.
Sam Hee Bldg.
559-10, 13F
Bumeo-1 Dong, Soosung-Gu
Daegu 706-011 Korea
Telephone: +825 3746 7141
Fax: +825 3745 1440
hannah.kim@skyworksinc.com

Skyworks Solutions, Inc.
648-19, Yeoksam-Dong
Seoul, Korea 135-911
Telephone: +822 3490 3816
christine.cho@skyworksinc.com

Singapore

Skyworks Solutions, Inc.
Centennial Tower
3 Temasek Avenue
Office #21-25
Singapore 039190
Telephone: +65 65497113
peter.gan@skyworksinc.com

Taiwan

Skyworks Solutions, Inc.
4 F, #198, Section 2
Tun Hwa. S. Road
Taipei 106, Taiwan ROC
Telephone: +8862 5559 8990
Fax: +8662 2735 6508
diana.wang@skyworksinc.com