

DATA SHEET

# SMS7621-092: 0201 Surface-Mount Low-Barrier Silicon Schottky Diode Anti-Parallel Pair

## Applications

- Sub-harmonic mixer circuits
- Frequency multiplication

## Features

- Low barrier height
- Suitable for use to 26 GHz or higher
- Very low parasitic impedance:  $C_p < 0.05 \text{ pF}$ ,  $L_s < 0.2 \text{ nH}$
- Low profile, ultra-miniature 0201 surface-mount packages (MSL1, 260 °C per JEDEC J-STD-020)



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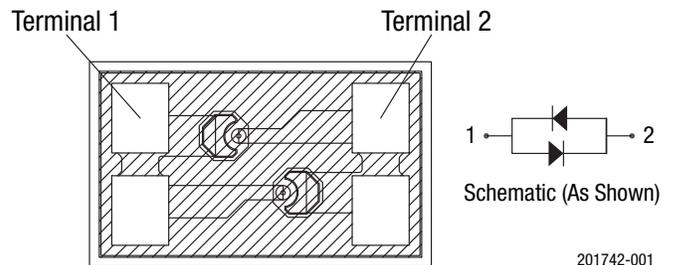


## Description

The SMS7621-092 is a silicon, low barrier n-type Schottky diode anti-parallel pair. This diode pair can be used for sub-harmonic mixer circuits and other applications such as frequency multiplication.

The low barrier height produces a very small forward voltage. Together with the very low junction capacitance, the small forward voltage provides this diode pair with very low local oscillator power requirements.

The package and pin configuration are shown in Figure 1.



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**Figure 1. SMS7621-092 Pinout (Bottom View)**

### Electrical and Mechanical Specifications

The absolute maximum ratings of the SMS7621-092 are provided in Table 1. Electrical specifications are provided in Table 2.

A graph of forward voltage versus forward bias current is shown in Figure 2.

**Table 1. SMS7621-092 Absolute Maximum Ratings (Per Junction)<sup>1</sup>**

Parameter	Symbol	Minimum	Maximum	Units
Forward current	I <sub>F</sub>		50	mA
Dissipated power @ 25 °C	P <sub>d</sub>		75	mW
Storage temperature	T <sub>STG</sub>	-65	+200	°C
Operating temperature	T <sub>A</sub>	-65	+150	°C
Electrostatic discharge: Human Body Model (HBM), Class 0	ESD		<250	V

<sup>1</sup> Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

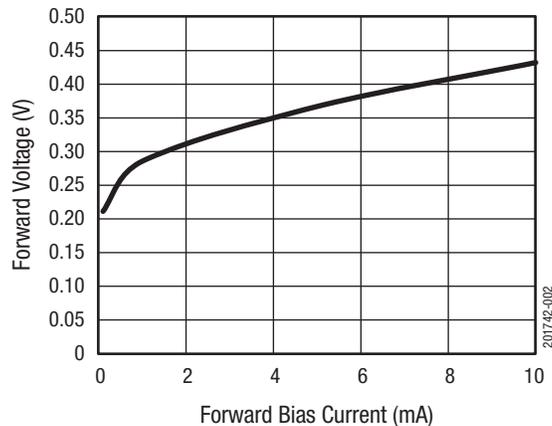
**ESD HANDLING:** Although this device is designed to be as robust as possible, electrostatic discharge (ESD) can damage this device. This device must be protected at all times from ESD when handling or transporting. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD handling precautions should be used at all times.

**Table 2. SMS7621-092 Electrical Specifications<sup>1</sup>**  
(T<sub>s</sub> = +25 °C Per Junction, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typical	Max	Units
Breakdown voltage <sup>2</sup>	V <sub>B</sub>	I <sub>R</sub> = 10 μA	2			V
Total capacitance	C <sub>T</sub>	V <sub>R</sub> = 0 V, f = 1 MHz		0.3		pF
Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 1 mA	260	290	320	mV
Total resistance	R <sub>T</sub>	I <sub>F</sub> = 5 mA		15	18	Ω

<sup>1</sup> Performance is guaranteed only under the conditions listed in this table.

<sup>2</sup> It is not possible to nondestructively measure the reverse breakdown voltage of a diode in an anti-parallel pair configuration. This parameter guaranteed by design only.



**Figure 2. Forward Voltage vs Forward Current**  
(T<sub>s</sub> = 25 °C)

### Package Dimensions

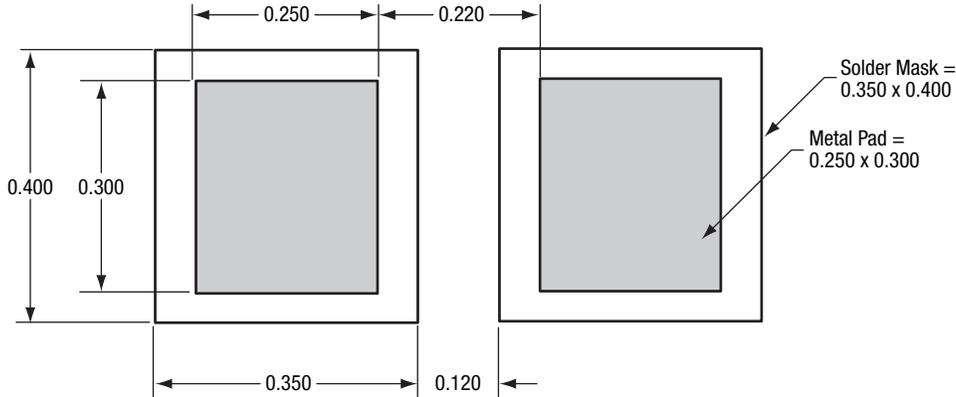
The PCB layout footprint for the SMS7621-092 is provided in Figure 3. A suggested stencil aperture drawing is shown in Figure 4. Package dimensions for the SMS7621-092 are shown in Figure 5. Tape and reel dimensions are provided in Figure 6.

### Package and Handling Information

Instructions on the shipping container label regarding exposure to moisture after the container seal is broken must be followed. Otherwise, problems related to moisture absorption may occur when the part is subjected to high temperature during solder assembly.

The SMS7621-092 is rated to Moisture Sensitivity Level 1 (MSL1) at 260 °C. It can be used for lead or lead-free soldering. For additional information, refer to the Skyworks Application Note, *Solder Reflow Information*, document number 200164.

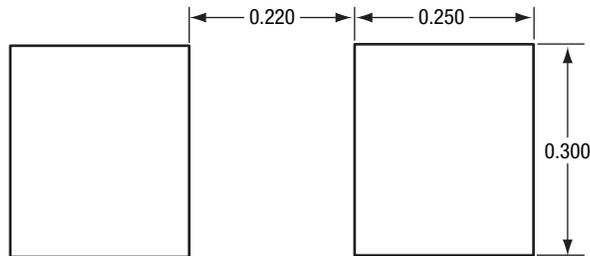
Care must be taken when attaching this product, whether it is done manually or in a production solder reflow environment. Production quantities of this product are shipped in a standard tape and reel format.



All measurements in millimeters

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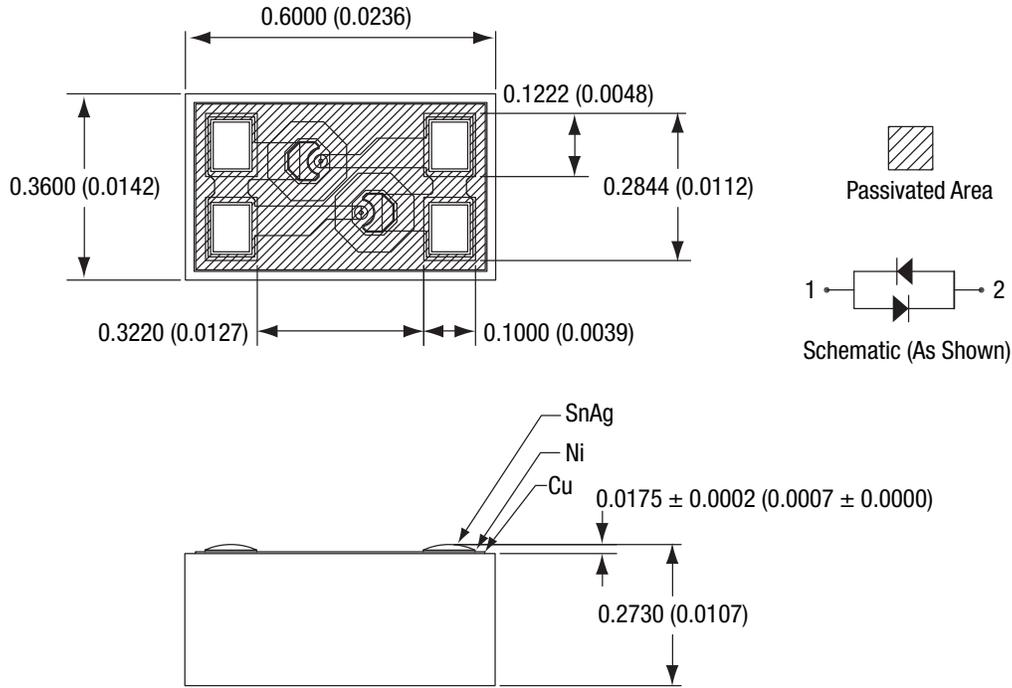
**Figure 3. SMS7621-092 PCB Layout Footprint**



All measurements in millimeters

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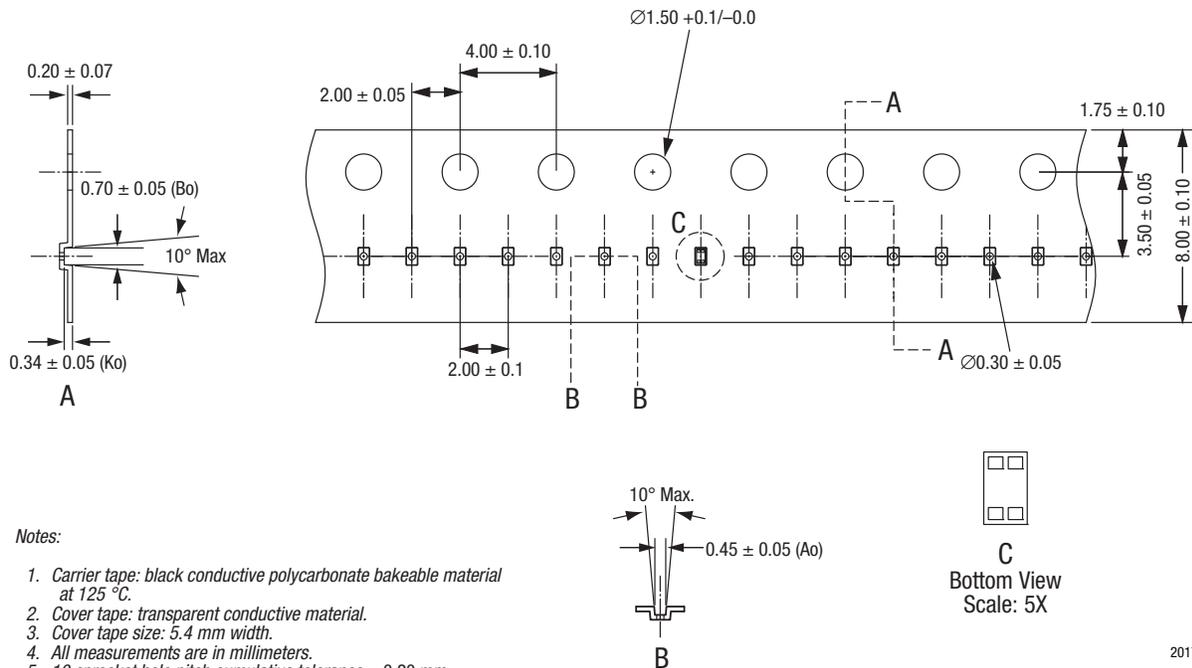
**Figure 4. SMS7621-092 Suggested Stencil Aperture**



All measurements in millimeters (inches shown in parentheses).  
Unless otherwise specified, all dimensions are  $\pm 0.025$  mm ( $\pm 0.001$  in.).

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Figure 5. SMS7621-092 Package Dimensions



Notes:

1. Carrier tape: black conductive polycarbonate bakeable material at 125 °C.
2. Cover tape: transparent conductive material.
3. Cover tape size: 5.4 mm width.
4. All measurements are in millimeters.
5. 10 sprocket hole pitch cumulative tolerance:  $\pm 0.20$  mm.

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Figure 6. SMS7621-092 Tape and Reel Dimensions

## Ordering Information

Model Name	Manufacturing Part Number
SMS7621-092: Surface-Mount Low-Barrier Schottky Diode Anti-Parallel Pair	SMS7621-092

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