Applications

- Designed for switching applications

Features

- Low capacitance
- Low resistance
- Fast switching
- Oxide-nitride passivated
- Durable construction
- High voltage

SKYWORKS®
BREAKTHROUGH SIMPLICITY

WEB PIN Beam-Lead Diodes

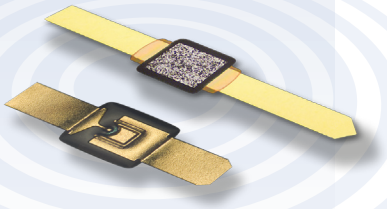
WEB Skyworks series of silicon PIN beam-lead diodes offer excellent performance in high frequency hybrid circuit switches. These devices are configured as mesa (DSM8100-000) or planar diodes (DSG9500-000), both of which have extremely low junction capacitance, 25 pF maximum, which enables these devices to be used has high-isolation series elements in high frequency switches. Both devices offer very fast switching time and low insertion loss.

Skyworks broad product portfolio includes PIN diodes as beam-leads, in addition to packaged and bondable silicon chips, and plastic packaged surface mount devices for switch and attenuator applications.

Applications

PIN diodes are three layer diodes, comprised of a heavily doped anode (the "P" layer) and a heavily doped cathode (the "N" layer) separated by a virtually undoped intrinsic layer (the "I" layer). Under forward bias, charge carriers from the P and the N layers are forced into the I layer, which reduces its RF impedance. When a reverse bias voltage is applied across the PIN diodes, all free charge carriers are removed from the I layer, thereby causing its RF impedance to increase. This variable RF impedance versus DC or low frequency bias signal allows the diode to be used in RF switching circuits in which the PIN diode is either forward biased or reverse biased.

Skyworks Green™ products are RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, are halogen free according to IEC-61249-2-21, and contain <1,000 ppm antimony trioxide in polymeric materials.



Electrical Specifications

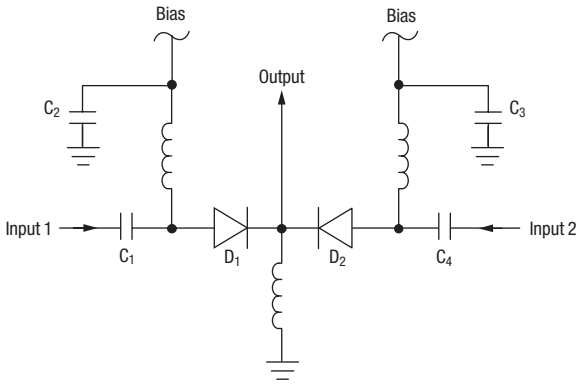
Part Number	Voltage Rating (V)[1]	Maximum Capacitance f = 1 MHz (pF)	Maximum Series Resistance, f = 100 MHz (Ω)	Typical Minority Carrier Lifetime I_F = 10 mA, I_R = 6 mA (ns)	Outline Drawing
DSG9500-000	100	0.025 @ 50 V	4 @ 50 mA	250	169-001
DSM8100-000	60	0.025 @ 10 V	3.5 @ 10 mA	25	389-003

1. Reverse current is specified at 10 µA maximum at the voltage rating. It is not recommended to drive a PIN diode into avalanche breakdown. Permanent damage to the diode is likely to occur.

Switching

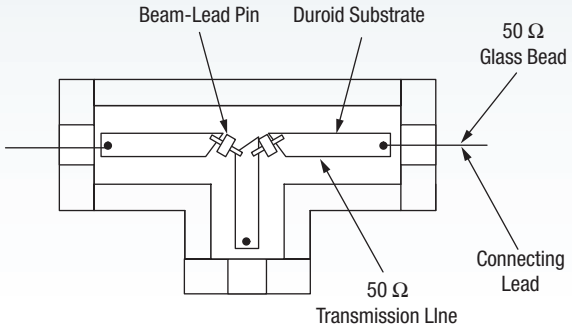
The circuit below shows a pair of PIN diodes used to form a single pole, double throw switch. In this switch, a positive control current typically of the order of 10 mA is applied to one of the bias inputs to place that side of the switch into its low insertion loss state, while a negative bias voltage is applied to the other bias input, forcing the diode on that side of the switch into its maximum RF impedance state to produce high isolation on that side of the switch.

Many other switching circuit variations exist. Please refer to "Design with PIN Diodes," available at www.skyworksinc.com for more information.

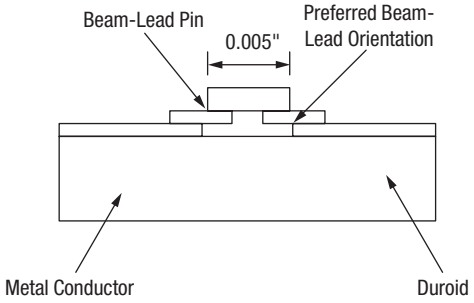


C2, C3 — Chip MIS capacitor
C1, C4 — Chip or beam-lead MIS capacitor
D1, D2 DSG9500 beam-lead PIN diode

Typical SPDT Switch



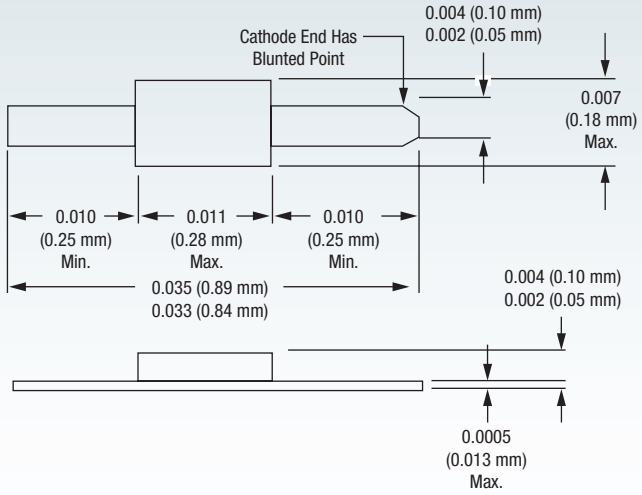
Typical SPDT Circuit Arrangement



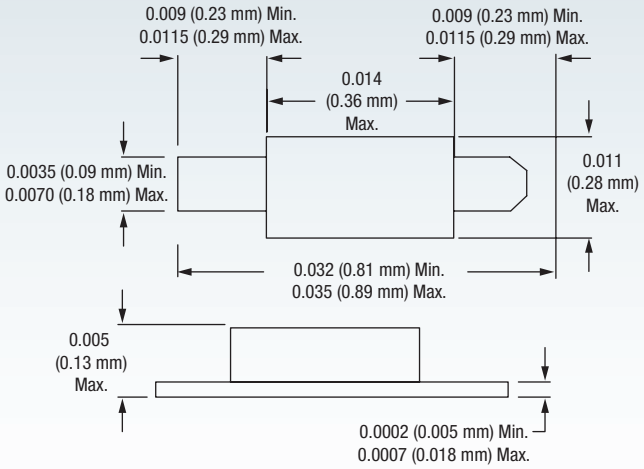
Typical Beam-Lead Mounting

Outline Drawings

DSG9500-000 (169-001)



DSG8100-000 (389-003)



Application Notes

For additional information, please refer to the following Application Notes.

Quality/Reliability

Design With PIN Diodes

Diode Chips, Beam-Lead Diodes, Capacitors: Bonding Methods and Packaging

ESD Compliance Testing and Recommended Protection Circuits for GaAs Devices

PIN Diode Basics

Through our Green Initiative,™ we are committed to manufacturing products that comply with global government directives and industry requirements.

Skyworks is continuously innovating RF, analog and mixed-signal ICs. For the latest product introductions and information about Skyworks, visit our Web site at **www.skyworksinc.com**

For additional information on our broad overall product portfolio, please contact your local sales office or email us at **sales@skyworksinc.com.**

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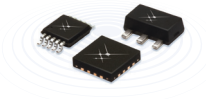

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