

DATA SHEET

Silicon PIN Diodes in Hermetic Surface Mount Package

Applications

- Switches
- Attenuators
- Limiters

Features

- Hermetic ceramic package, 1.83 x 1.43 x 1.0 mm
- Very low parasitic impedance
- Low thermal impedance
- Usable to 10 GHz
- Operating temperature range -55 °C to 150 °C
- ESD Class 1B, human body model
- Low inductance 0.48 nH typ.
- Lead (Pb)-free, RoHS-compliant, and Green™, MSL-1 @ 260 °C per JEDEC J-STD-020

Description

The family of proven silicon PIN diodes is packaged in a hermetic, ceramic package. This package offers excellent, very low parasitic inductance and capacitance for wide bandwidth, high-frequency operation. It has low thermal impedance and meets fine and gross leak requirements for excellent reliability. Its small form factor, 1.83 x 1.43 x 1.0 mm, compares favorably to that of the smallest plastic packages.

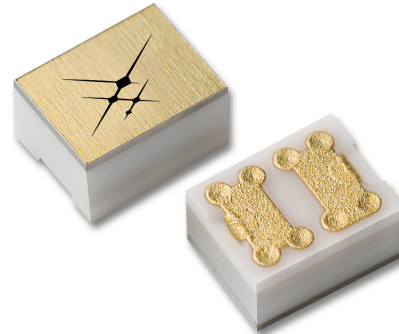
This package meets Skyworks definition of Green: it is lead (Pb)-free, fully complies with current RoHS requirements and contains no halogens and no antimony (Sb).

SMP1340-108, SMP1345-108 and SMP1352-108 are optimized for use in switching circuits. The SMP1352-108 can also be used in attenuator circuits.

SMP1302-108 and SMP1304-108 offer thicker I layers, making them ideal for low-distortion attenuator circuits.

The CLA4605-108 and CLA4607-108 are well suited for limiter applications.

The diodes available in this package can operate over the temperature range of -55 °C to 150 °C.



NEW 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

T = 25 °C, unless otherwise noted

Part Number	Voltage Rating ⁽¹⁾ (V)	Nom. I Region Thickness (μm)	Typ. Total Capacitance $V_R = 0\text{ V}$ & $f = 1\text{ MHz}$ (pF)	Max. Total Capacitance $V_R = 10\text{ V}$ 1 MHz (pF)	Typ. Forward Voltage $I_F = 10\text{ mA}$ (mV)	Max. Series Resistance $I_F = 1\text{ mA}$ & $f = 100\text{ MHz}$ (Ω)	Max. Series Resistance $I_F = 10\text{ mA}$ & $f = 100\text{ MHz}$ (Ω)	Typ. T_L $I_F = 10\text{ mA}$ (ns)
Switching Applications								
SMP1340-108	50	7	0.26	0.325	880	1.7 typ.	1.2	100
SMP1345-108	50	10	—	0.285	850	3.5 typ.	2	100
SMP1352-108	200	50	—	0.425 @ 20 V	825	8 typ.	2.8	1000
Attenuator Applications								
SMP1302-108	200	50	—	0.36 @ 30 V	800	20	3	700
SMP1304-108	200	100	—	0.36 @ 30 V	800	50	7	1000
Limiter Applications								
CLA4605-108	30	2	—	0.28	—	4 typ.	2.7	—
CLA4607-108	120	7	0.27	—	—	—	2.5	50
CLA4608-108	120	7	—	0.69 @ 38 V	—	—	1.2	100

1. Reverse current is specified at 10 μA maximum at the voltage rating. This voltage should not be exceeded.

Absolute Maximum Ratings

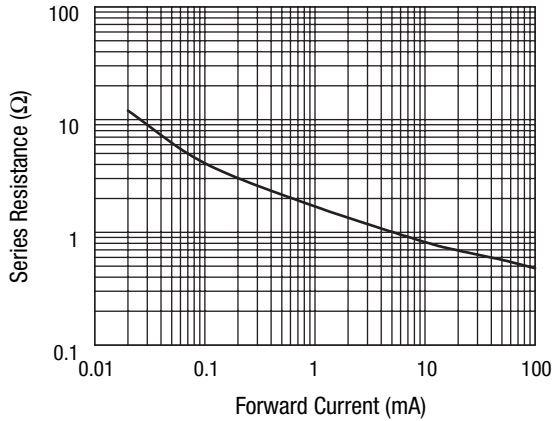
Characteristic	Value
Reverse voltage	Voltage rating
Forward current	150 mA
Dissipated power at 25 °C	250 mW
Operating temperature	-55 °C to +150 °C
Storage temperature	-65 °C to +200 °C

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 Ratings. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

CAUTION: Although these devices are designed to be robust, ESD (Electrostatic Discharge) can cause permanent damage. 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.

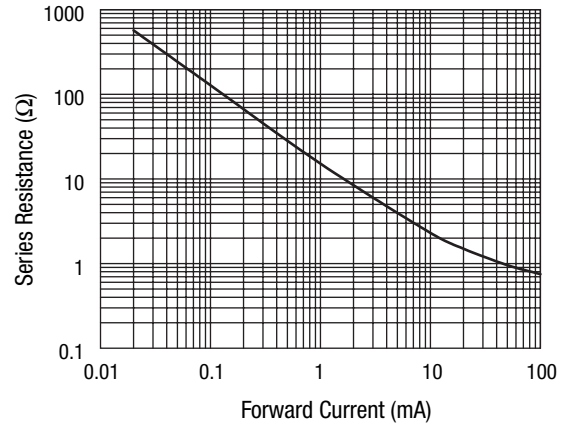
Typical Performance Data (0, +3 V)

SMP1340



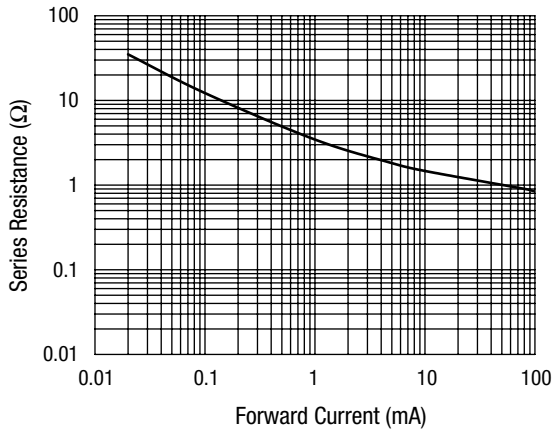
Series Resistance vs. Current @ 100 MHz

SMP1302



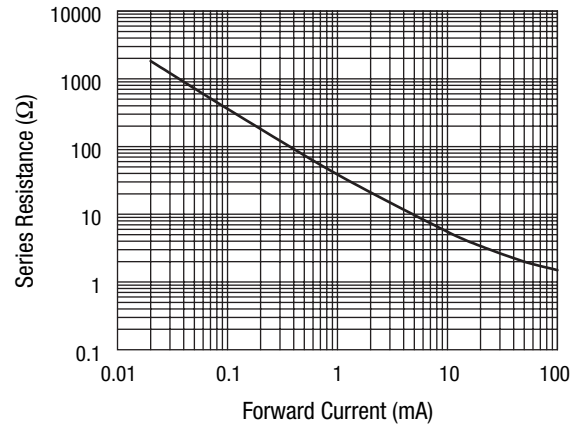
Series Resistance vs. Current @ 100 MHz

SMP1345



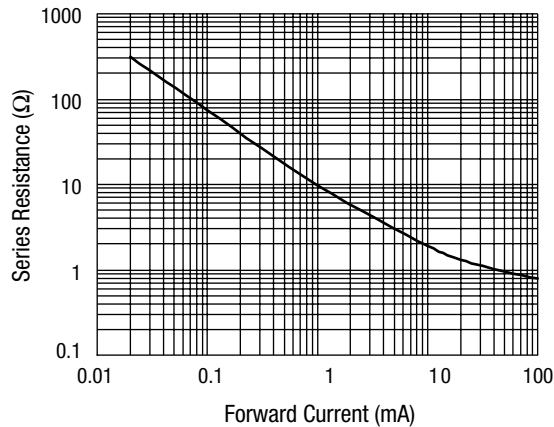
Series Resistance vs. Current @ 100 MHz

SMP1304



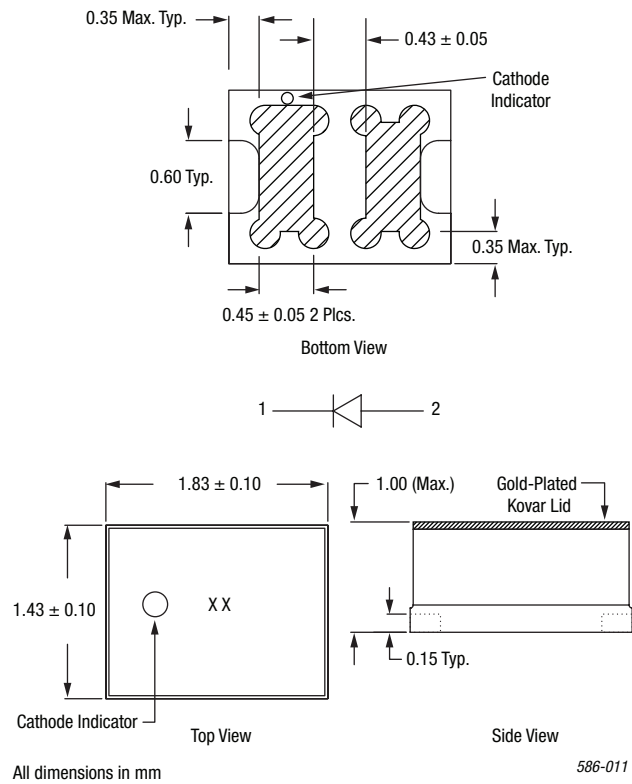
Series Resistance vs. Current @ 100 MHz

SMP1352

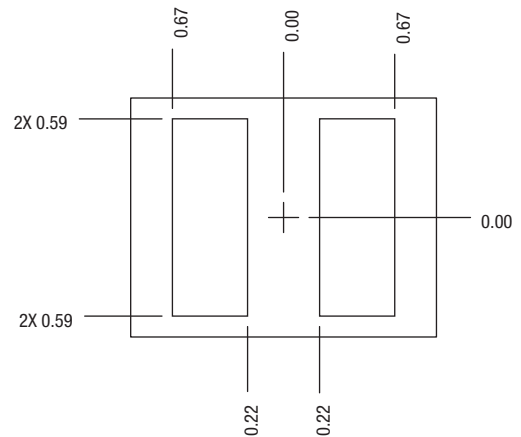


Series Resistance vs. Current @ 100 MHz

-108 Package Outline



-108 Land Pattern



Copyright © 2006, 2007, 2008, Skyworks Solutions, Inc. All Rights Reserved.

Information in this document is provided in connection with Skyworks Solutions, Inc. ("Skyworks") products or services. These materials, including the information contained herein, are provided by Skyworks as a service to its customers and may be used for informational purposes only by the customer. Skyworks assumes no responsibility for errors or omissions in these materials or the information contained herein. Skyworks may change its documentation, products, services, specifications or product descriptions at any time, without notice. Skyworks makes no commitment to update the materials or information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from any future changes.

No license, whether express, implied, by estoppel or otherwise, is granted to any intellectual property rights by this document. Skyworks assumes no liability for any materials, products or information provided hereunder, including the sale, distribution, reproduction or use of Skyworks products, information or materials, except as may be provided in Skyworks Terms and Conditions of Sale.

THE MATERIALS, PRODUCTS AND INFORMATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE, INCLUDING FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT; ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. SKYWORKS DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. SKYWORKS SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY SPECIAL, INDIRECT, INCIDENTAL, STATUTORY, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THE MATERIALS OR INFORMATION, WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Skyworks products are not intended for use in medical, lifesaving or life-sustaining applications, or other equipment in which the failure of the Skyworks products could lead to personal injury, death, physical or environmental damage. Skyworks customers using or selling Skyworks products for use in such applications do so at their own risk and agree to fully indemnify Skyworks for any damages resulting from such improper use or sale.

Customers are responsible for their products and applications using Skyworks products, which may deviate from published specifications as a result of design defects, errors, or operation of products outside of published parameters or design specifications. Customers should include design and operating safeguards to minimize these and other risks. Skyworks assumes no liability for applications assistance, customer product design, or damage to any equipment resulting from the use of Skyworks products outside of stated published specifications or parameters.

Skyworks, the Skyworks symbol, and "Breakthrough Simplicity" are trademarks or registered trademarks of Skyworks Solutions, Inc., in the United States and other countries. Third-party brands and names are for identification purposes only, and are the property of their respective owners. Additional information, including relevant terms and conditions, posted at www.skyworksinc.com, are incorporated by reference.