

**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.

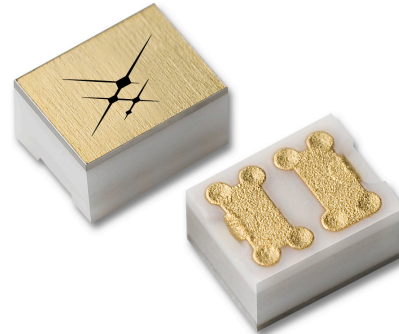
This package meets Skyworks definition of Green: it is lead (Pb)-free, fully complies with current RoHS requirements and contains no halogens and no antimony (Sb).

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 <sup>(1)</sup> (V)	Nom. I Region Thickness (µm)	Typ. Total Capacitance V <sub>R</sub> = 0 V & f = 1 MHz (pF)	Max. Total Capacitance V <sub>R</sub> = 10 V 1 MHz (pF)	Typ. Forward Voltage I <sub>F</sub> = 10 mA (mV)	Max. Series Resistance I <sub>F</sub> = 1 mA & f = 100 MHz (Ω)	Max. Series Resistance I <sub>F</sub> = 10 mA & f = 100 MHz (Ω)	Typ. T <sub>L</sub> I <sub>F</sub> = 10 mA (ns)
<b>Switching Applications</b>								
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
<b>Attenuator Applications</b>								
SMP1302-108	200	50	–	0.36 @ 30 V	800	20	3	700
SMP1304-108	200	100	–	0.36 @ 30 V	800	50	7	1000
<b>Limiter Applications</b>								
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

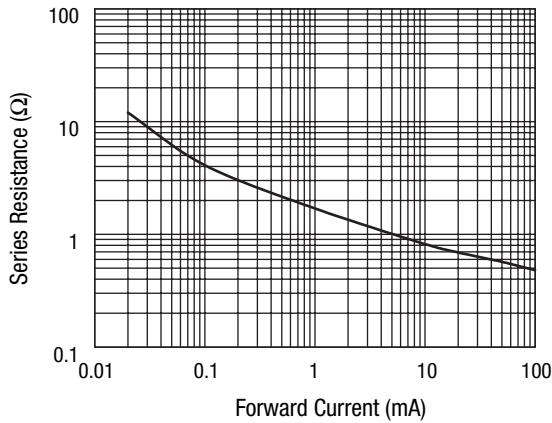
Characteristic	Value
Reverse voltage	Voltage rating
Forward current	150 mA
Dissipated power at 25 °C	250 mW
Operating temperature	-55 °C to +150 °C
Storage temperature	-65 °C to +200 °C

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.

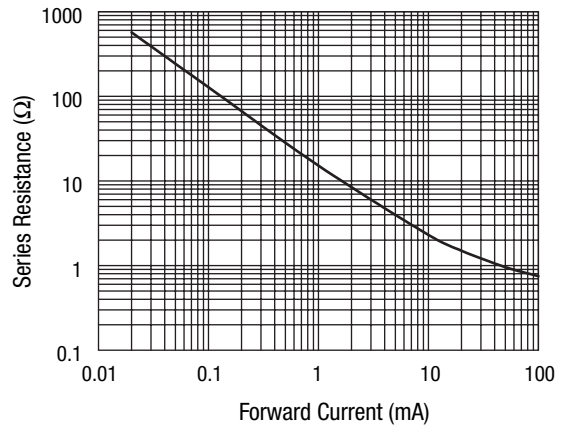
**Typical Performance Data (0, +3 V)**

**SMP1340**



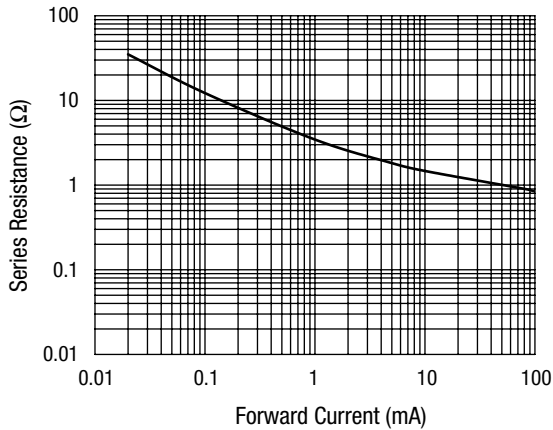
**Series Resistance vs. Current @ 100 MHz**

**SMP1302**



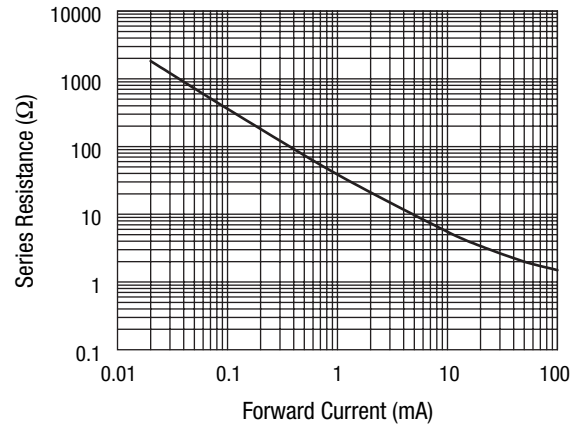
**Series Resistance vs. Current @ 100 MHz**

**SMP1345**



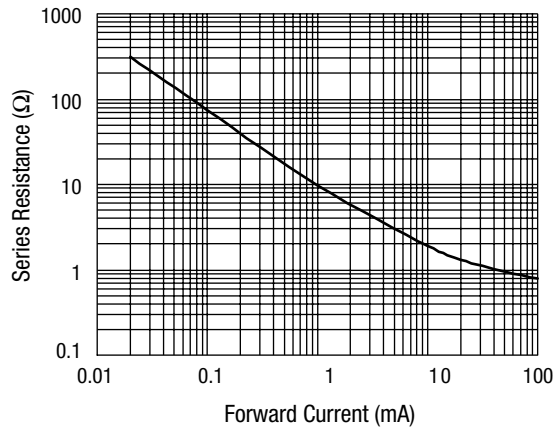
**Series Resistance vs. Current @ 100 MHz**

**SMP1304**



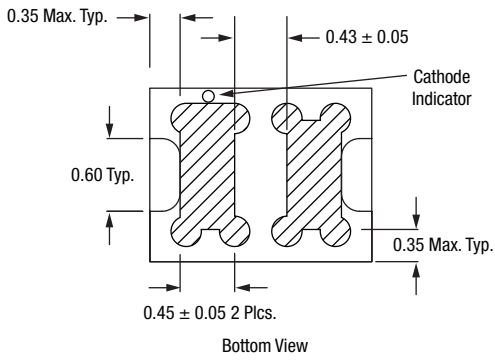
**Series Resistance vs. Current @ 100 MHz**

**SMP1352**

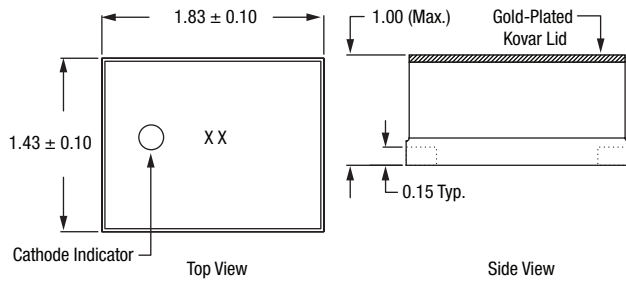
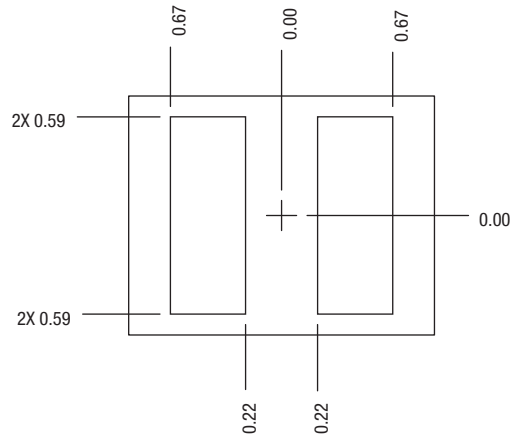


**Series Resistance vs. Current @ 100 MHz**

**-108 Package Outline**



**-108 Land Pattern**



All dimensions in mm

586-011

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