

**DATA SHEET**

# PS094-315: Voltage Controlled Phase Shifter 700–1200 MHz

**Features**

- 700–1200 MHz frequency band
- 80–110-degree phase shift range
- 1.7 dB insertion loss variation
- 0–12 V control voltage range
- Specified 33 dBm IP3 @ 900 MHz
- Small footprint LGA package
- Lead (Pb)-free and RoHS-compliant

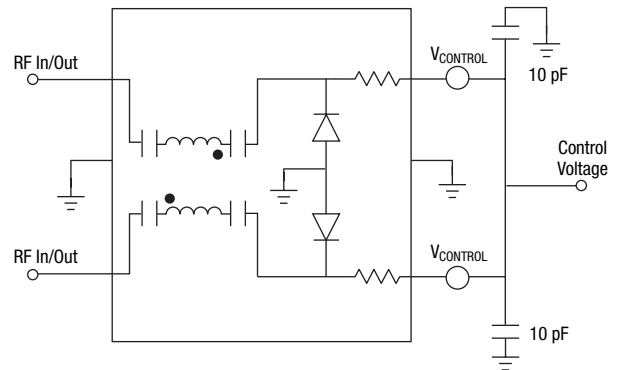
**Description**

The PS094-315 is a voltage controlled phase shifter that employs a monolithic quadrature hybrid and a pair of selected silicon varactor diodes to achieve 100-degree phase shift and low insertion loss. The PS094-315 is packaged in the small outline LGA (Land Grid Array) surface mount package with the internal elements affixed to an organic BT substrate.

**NEW** Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.



**Connection Diagram**



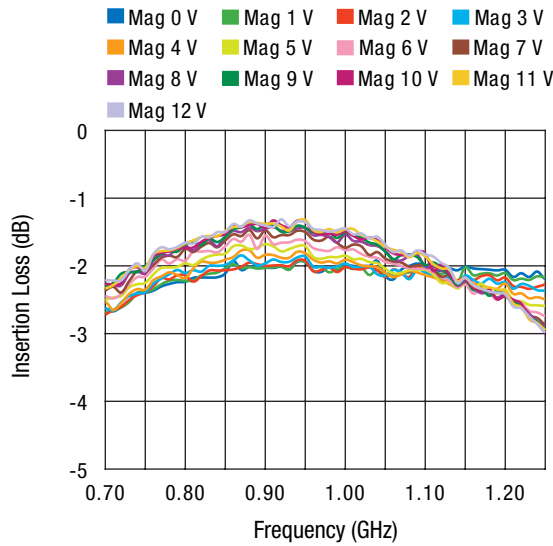
**Operating Characteristics at 25 °C**

**Z<sub>0</sub> = 50 Ω, unless otherwise noted**

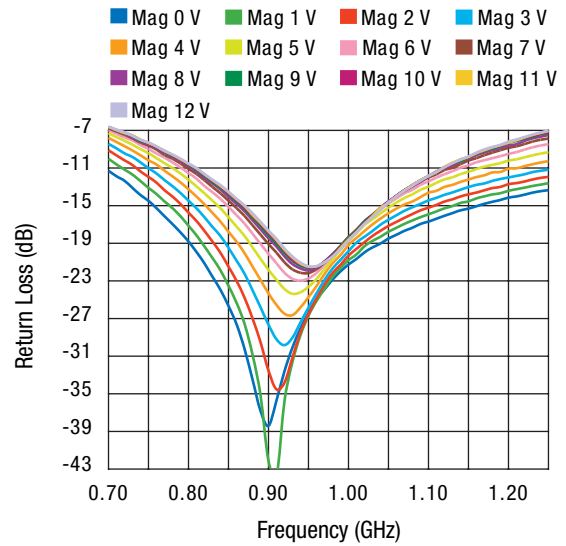
| Parameter                                     | Condition  | Frequency    | Min. | Typ. | Max. | Unit |
|---|--|--------------|------|------|------|------|
| Phase shift                                   | At F <sub>0</sub> , V <sub>CONTROL</sub> = 12 V                  | 925–960 MHz  | 80   | 100  |      | Deg. |
| Control voltage (V <sub>CONTROL</sub> ) range |  |              | 0    |      | 12   | V    |
| Control current                               | V <sub>CONTROL</sub> = 12 V                                      |              |      |      | 1    | μA   |
| Insertion loss in BW                          | V <sub>CONTROL</sub> = 12 V                                      | 925–960 MHz  |      |      | 3.2  | dB   |
| I.L. deviation in BW                          | V <sub>CONTROL</sub> = 0–12 V                                    | 925–960 MHz  |      |      | 2    | dB   |
| Return loss in BW                             |  | 700–1200 MHz |      |      | -7   | dB   |
| IM3   | P <sub>IN</sub> = 8 dBm, 900/905 MHz, V <sub>CONTROL</sub> = 0 V |              |      |      | -50  | dBc  |
| IP3   | Derived from IM3   |              | 33   |      |      | dBm  |

### Typical Performance Data

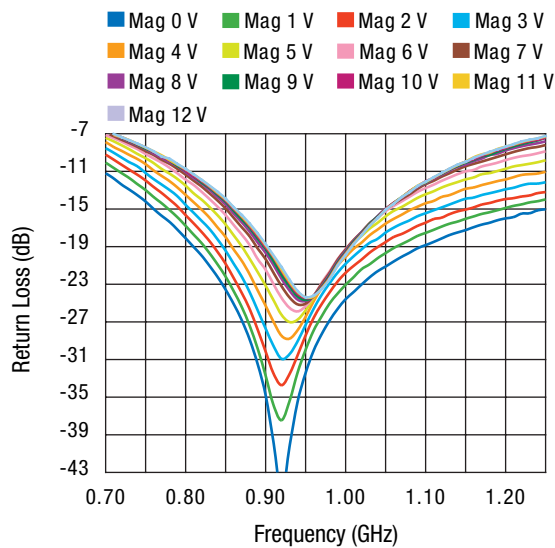
$Z_0 = 50 \Omega$ , unless otherwise noted



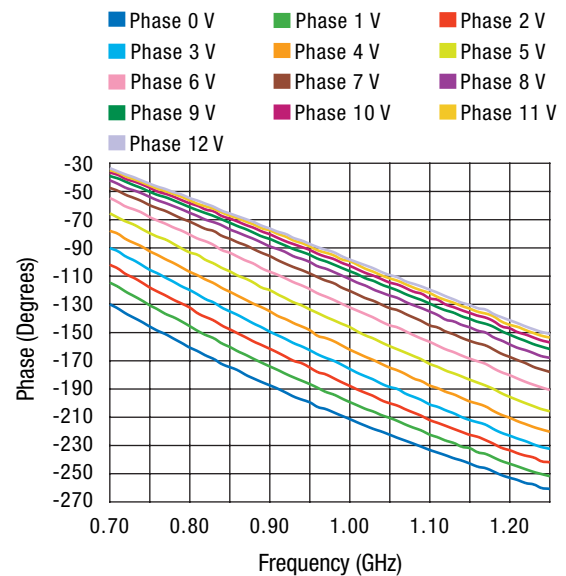
**Magnitude S<sub>21</sub> vs. Frequency and Control Voltage**



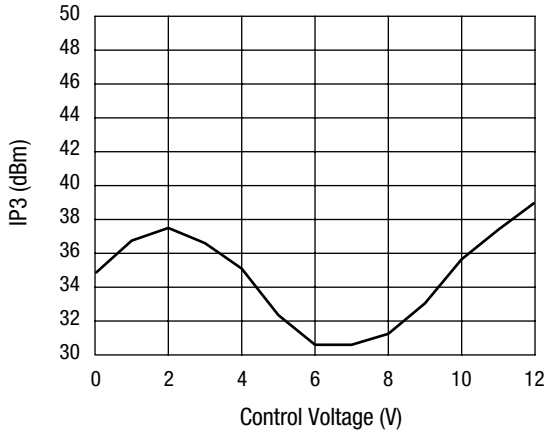
**Magnitude S<sub>22</sub> vs. Frequency and Control Voltage**



**Magnitude S<sub>11</sub> vs. Frequency and Control Voltage**



**Phase S<sub>21</sub> vs. Frequency and Control Voltage**



**IP3 vs. Control Voltage**  
**RF<sub>1</sub> = 0.900 GHz, RF<sub>2</sub> = 0.905 GHz @ 8 dBm**

**Absolute Maximum Ratings**

| Characteristic          | Value             |
|-------------------------|-------------------|
| RF input power          | 20 dBm            |
| Control voltage         | 15 V              |
| Operating temperature   | -40 °C to +85 °C  |
| Storage temperature     | -65 °C to +150 °C |
| Electrostatic discharge | HBM 1 B           |

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

**CAUTION:** Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. 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.

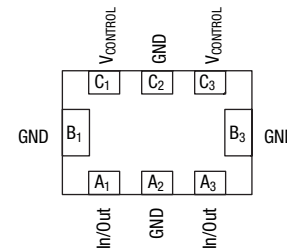
**Recommended Solder Reflow Profiles**

Refer to the [“Recommended Solder Reflow Profile”](#) Application Note.

**Tape and Reel Information**

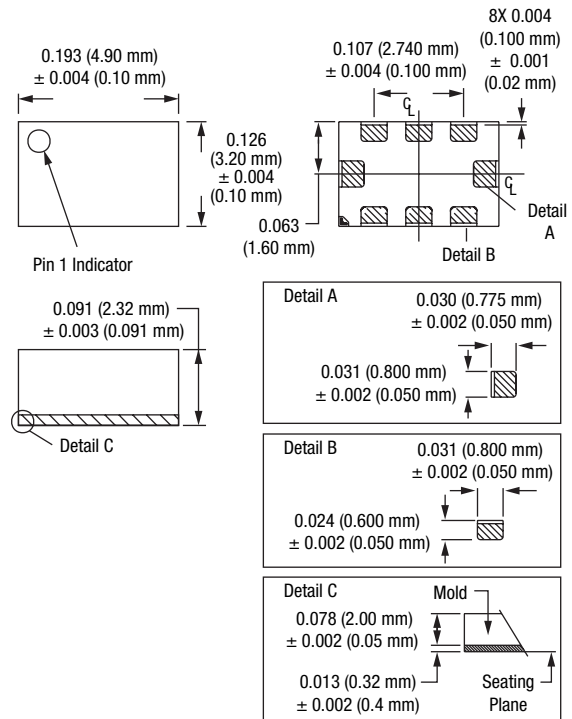
Refer to the [“Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation”](#) Application Note.

**Pin Out (Bottom View)**



| Terminal No.           | Terminal Name        |
|------------------------|----------------------|
| A <sub>1</sub> (Pin 1) | In/Out               |
| A <sub>2</sub>         | GND                  |
| A <sub>3</sub>         | In/Out               |
| B <sub>1</sub>         | GND                  |
| B <sub>3</sub>         | GND                  |
| C <sub>1</sub>         | V <sub>CONTROL</sub> |
| C <sub>2</sub>         | GND                  |
| C <sub>3</sub>         | V <sub>CONTROL</sub> |

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