

**DATA SHEET**

# PS214-315: Voltage Controlled Phase Shifter

## 1700–2800 MHz

### Features

- 1700–2800 MHz frequency band
- 70–100-degree phase shift range
- 1.1 dB insertion loss variation
- 0–12 V control voltage range
- Specified 33 dBm IP3
- Small footprint LGA package
- Lead (Pb)-free and RoHS-compliant

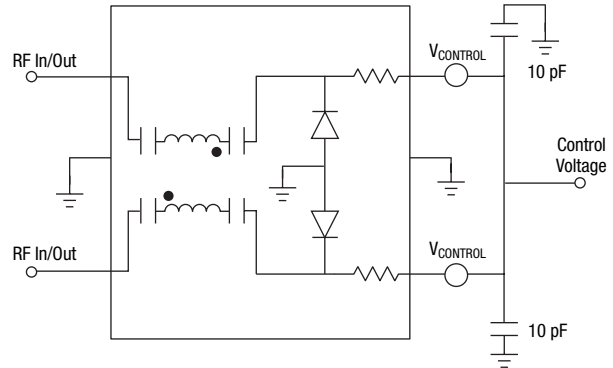
### Description

The PS214-315 is a voltage controlled phase shifter that employs a monolithic quadrature hybrid and a pair of selected silicon varactor diodes to achieve nominal 100-degree phase shift and low insertion loss. The PS214-315 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



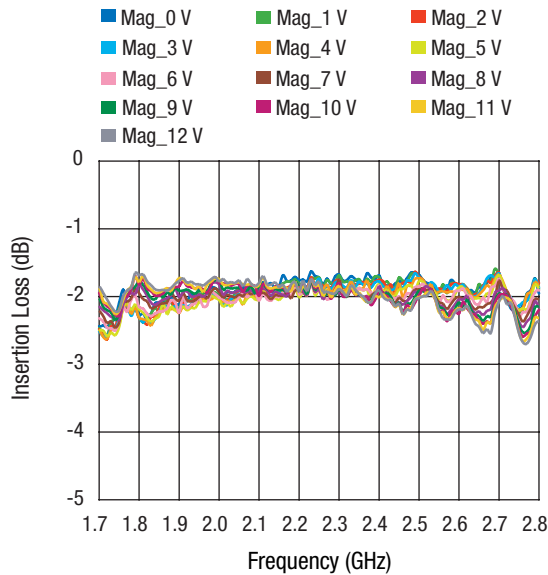
### Electrical Specifications at 25 °C

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

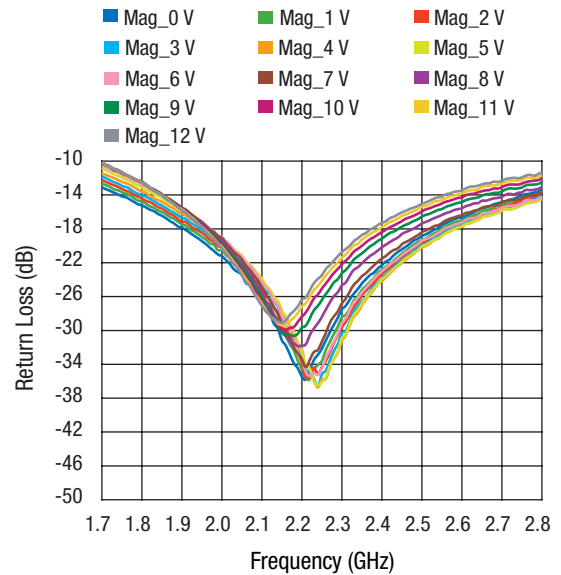
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Phase shift	At F <sub>0</sub> , V <sub>CONTROL</sub> = 12 V	2110–2170 MHz	75			Deg.
Control voltage (V <sub>CONTROL</sub> ) range			0		12	V
Control current	V <sub>CONTROL</sub> = 12 V				1	μA
Insertion loss in BW	V <sub>CONTROL</sub> = 0 V	2110–2170 MHz			2.5	dB
I.L. deviation in BW	V <sub>CONTROL</sub> = 0–12 V	2110–2170 MHz			1.2	dB
Return loss in BW		1700–2800 MHz			-10	dB
IM3	P <sub>IN</sub> = 8 dBm, 2140/2145 MHz, V <sub>CONTROL</sub> = 0 V				-50	dBc
IP3	Derived from IM3		33			dBm

### Typical Performance Data

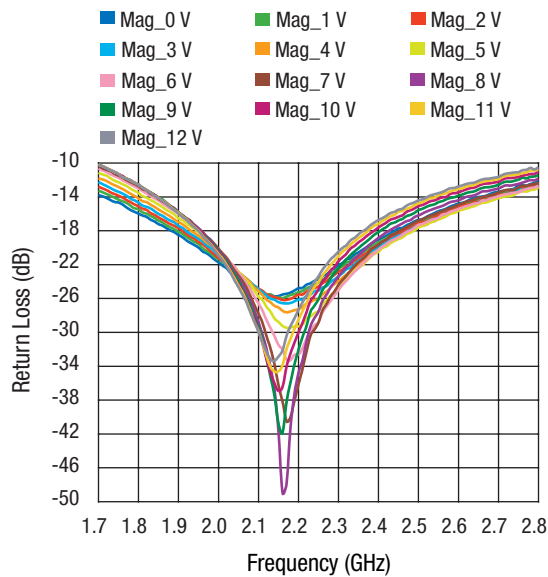
$Z_0 = 50 \Omega$ , unless otherwise noted



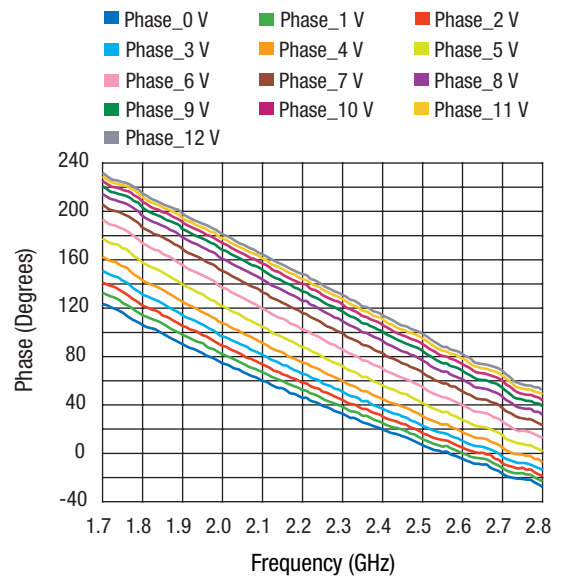
**Magnitude  $S_{21}$  vs. Frequency**



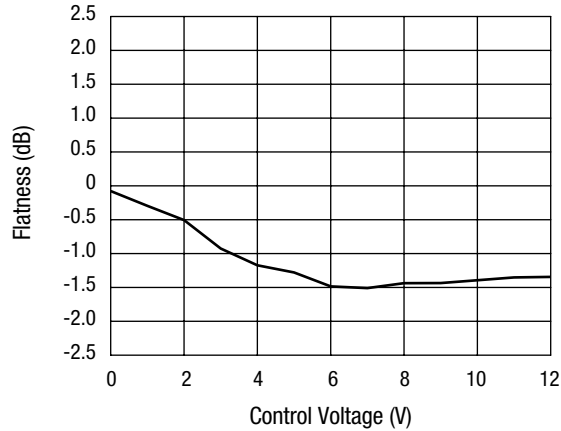
**Magnitude  $S_{22}$  vs. Frequency**



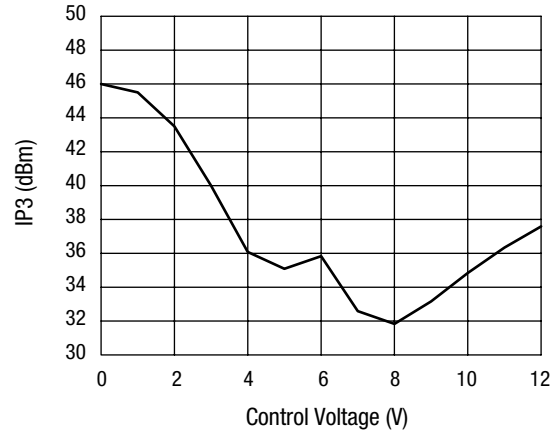
**Magnitude  $S_{11}$  vs. Frequency**



**Insertion Loss vs. Frequency and Control Voltage**

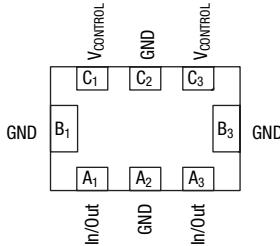


**Phase Flatness vs. Control Voltage**



**IP3 vs. Control Voltage**  
 $RF_1 = 2.140 \text{ GHz}$ ,  $RF_2 = 2.145 \text{ GHz}$  @ 8 dBm

**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>

**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.

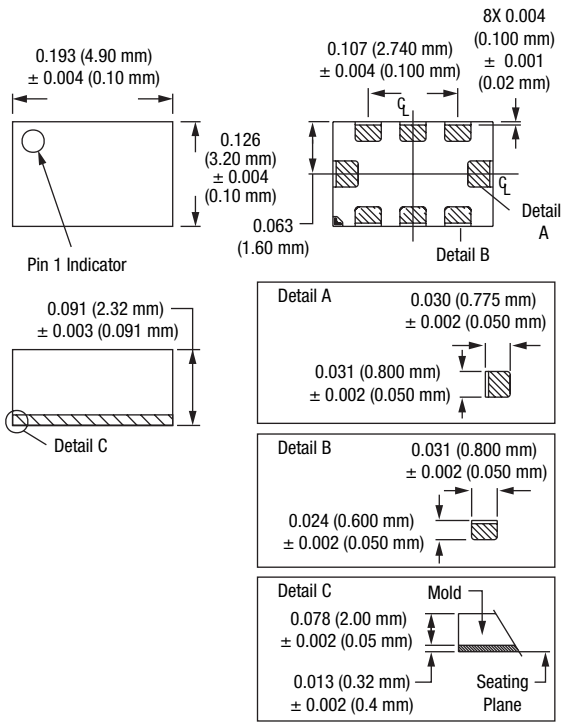
**Recommended Solder Reflow Profiles**

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.

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