

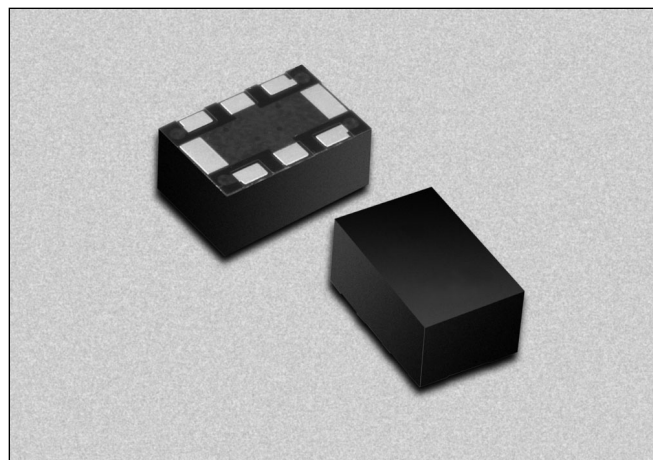
# LGA Packaged Phase Shifter for DCS Base Stations



PS184-315

## Features

- Designed for DCS 1837.5 ± 32.5 MHz Band
- 100 Degree Phase Shift Range
- 1.5 Degree Phase Deviation
- 0.3 dB Insertion Loss Deviation
- 0–12 V Control Voltage Range
- Specified 33 dBm IP3
- Small Footprint LGA Package



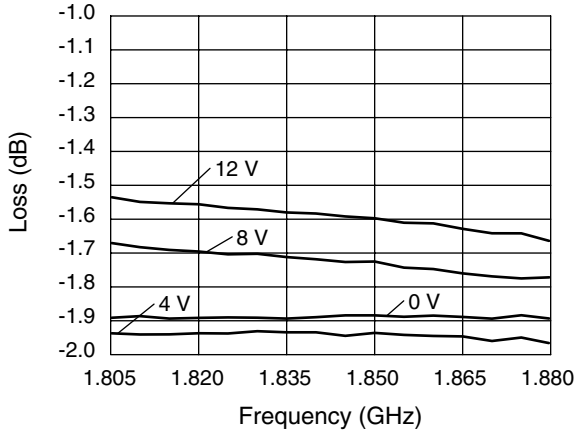
## Description

The PS184-315 is a voltage controlled phase shifter specifically designed for use in power amplifier distortion compensation circuits centered at 1837.5 MHz in DCS band base stations. Its characteristics are specified in a 70 MHz bandwidth. The PS184-315 employs a monolithic quadrature hybrid and a pair of selected silicon varactor diodes to achieve 100 degree phase shift and low insertion loss. The PS184-315 is packaged in the small outline LGA (Land Grid Array) surface mount package with the internal elements affixed to an organic BT substrate.

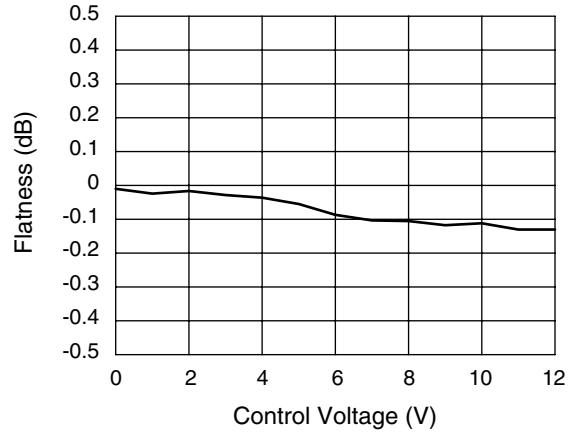
## Electrical Specifications at 25°C

| Parameter                       | Condition                                    | Min. | Typ. | Max. | Unit    |
|---------------------------------|--|------|------|------|---------|
| Frequency Range (BW)            | $F_O = 1837.5$                               | 1805 |      | 1870 | MHz     |
| Phase Shift                     | At $F_O$ , $C_V = 12$ V                      | 100  |      |      | Deg.    |
| Phase Deviation in BW           | $C_V = 0-12$ V                               |      | 1.5  | 2.0  | Deg.    |
| Control Voltage ( $C_V$ ) Range |  | 0    |      | 12   | V       |
| Control Current                 | $C_V = 12$ V                                 |      |      | 1    | $\mu$ A |
| Insertion Loss in BW            | $C_V = 0$ V                                  |      |      | 2.3  | dB      |
| I.L. Deviation in BW            | $C_V = 0-12$ V                               |      |      | 0.3  | dB      |
| I.L. Variation                  | At $F_O$ , $C_V = 0-12$ V                    |      |      | 0.75 | dB      |
| VSWR in BW                      |  |      |      | 1.8  |         |
| IM3                             | $P_{IN} = 8$ dBm, 1900/1905 MHz, $C_V = 0$ V |      |      | -50  | dBc     |
| IP3                             | Derived from IM3                             | 33   |      |      | dBm     |

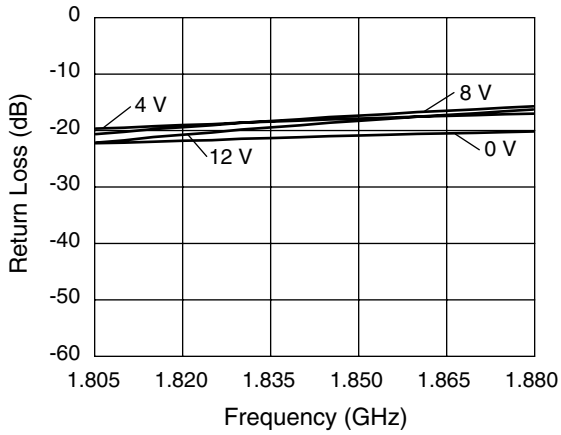
### Typical Performance Data



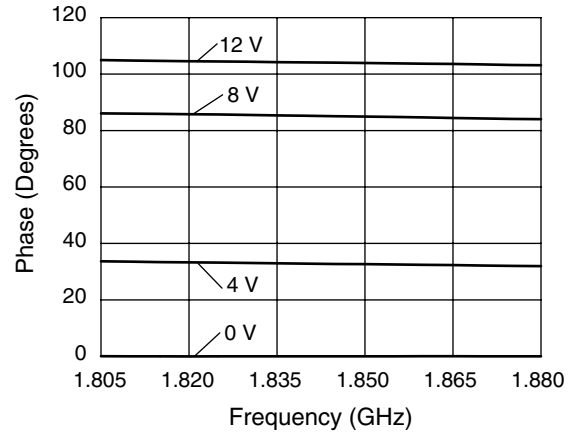
**Insertion Loss vs. Frequency and Control Voltage**



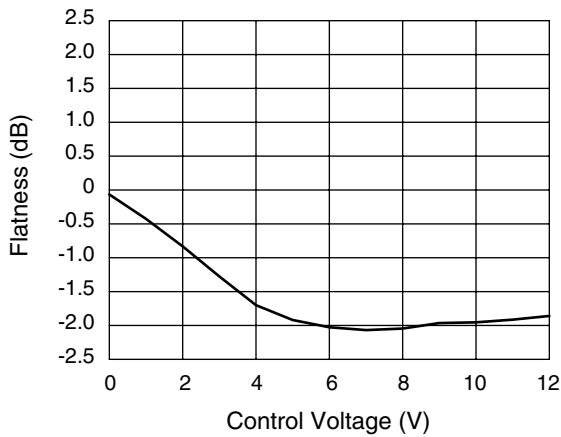
**Insertion Loss Flatness vs. Control Voltage**



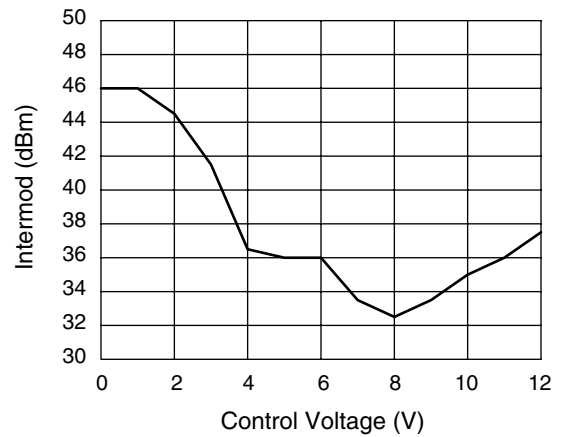
**Input/Output Return Loss vs. Frequency and Control Voltage**



**Phase vs. Frequency and Control Voltage**

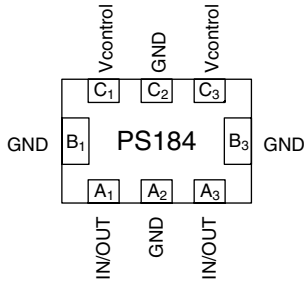


**Phase Flatness vs. Control Voltage**



**3rd Order Intermod vs. Control Voltage  
RF<sub>1</sub> = 1.900 GHz, RF<sub>2</sub> = 1.905 GHz @ 8 dBm**

**Pin Out (Bottom View)**

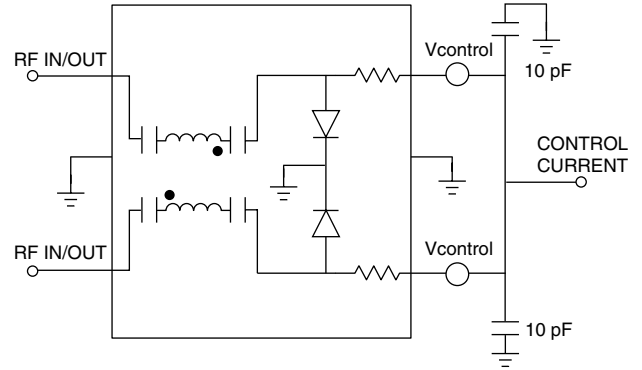


| Terminal No.   | Terminal Name |
|----------------|---------------|
| A <sub>1</sub> | IN/OUT        |
| A <sub>2</sub> | GND           |
| A <sub>3</sub> | IN/OUT        |
| B <sub>1</sub> | GND           |
| B <sub>3</sub> | GND           |
| C <sub>1</sub> | Vcontrol      |
| C <sub>2</sub> | GND           |
| C <sub>3</sub> | Vcontrol      |

**Absolute Maximum Ratings**

| Characteristic        | Value        |
|-----------------------|--------------|
| RF Input Power        | 20 dBm       |
| Control Voltage       | 15 V         |
| Operating Temperature | -40 to +85°C |
| Storage Temperature   | -40 to +85°C |

**Connection Diagram**



**-315**

