Variable Analogue Phase Shifter
25.5-32.5 GHz

Arralis

Product Datasheet

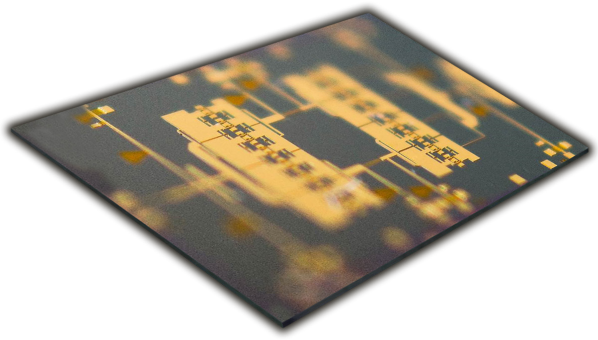
Ka-PS-2533

A MMIC analogue phase-shifter enabling 360° phase variation in the 25.5–32.5 GHz frequency band.

Overview

This phase shifter provides very low insertion loss variation over all phases and frequencies (±2 dB) as well as excellent phase tracking over all frequencies (less than ±25°). It also offers an alternative to digital phase-shifters where any required phase delay is achievable with the phase set by varying the control voltage (VD) in the range of -0.5 to 0.7 V.

As the underside of the die is gold plated, this MMIC is compatible with precision die attach methods, as well as thermo-compression and thermosonic wire bonding, making it ideal for MCM and hybrid microcircuit applications.



Features

- 25.5-32.5 GHz
- 7 dB insertion loss
- 5 dB return loss
- >360° phase variation
- Evaluation board available

Applications

- Frequency translation
- Beam Steering Antenna
- Phased arrays
- IOT
- Security
- 5G

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Specification Overview

Parameter	Min	Typ	Max	Unit
Frequency	25.5		32.5	(GHz)
Phase Variation	0		360	Degrees
Insertion Loss	5	7	10	(dB)
Insertion Loss Variation (over frequency, all voltages)			±2	(dB)
Phase Variation (over frequency, all voltages)			±25	Degrees
Control Voltage (VD)	-0.5		0.7	(V)

Notes
All tests carried out at 25°C

Absolute Maximum Ratings

Parameter	Rating
RF Power	20 dBm
VD	2 V
ID	20 mA
Storage Temperature	-65°C to +175°C
Channel Temperature	+175°C
Operating Temperature	-40°C to +85°C

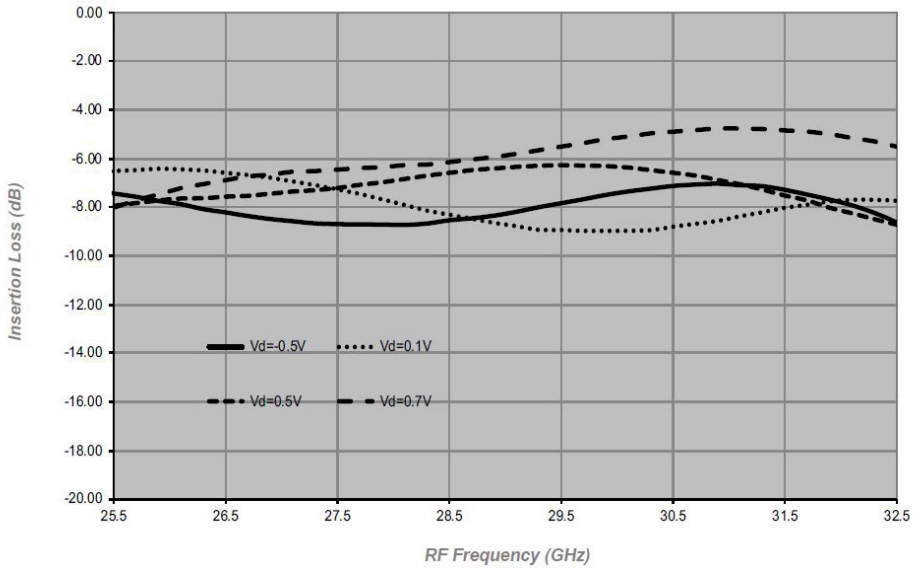
CAUTION!
ESD – Sensitive Device

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features proprietary protection circuitry, damage may occur on devices subjected to ESD. Proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

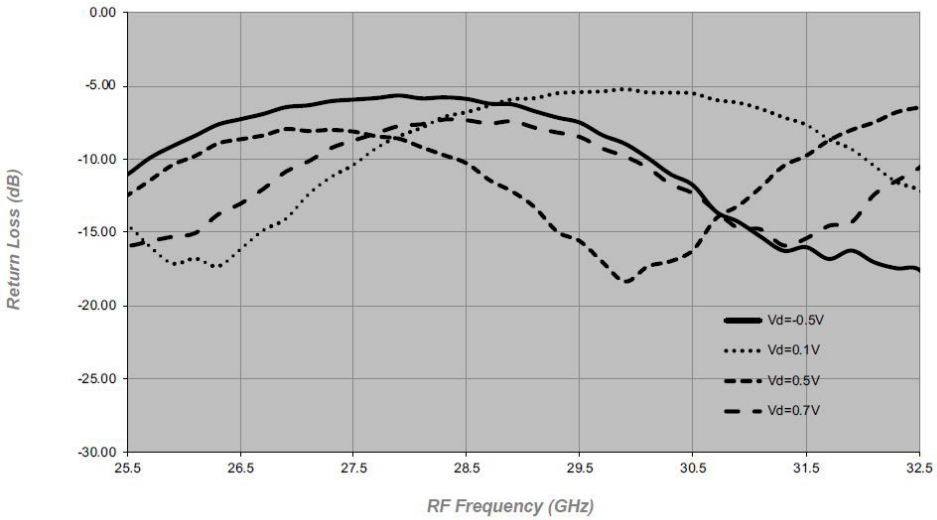
Measured Performance Data

Test conditions: 25.5-32.5 GHz frequency band; -0.5-0.7 V control voltage variation

Insertion Loss



Output Return Loss



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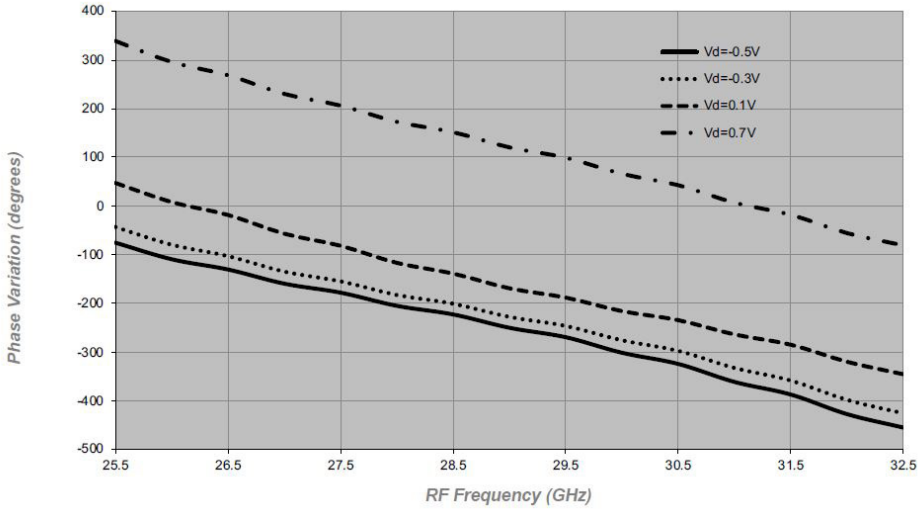
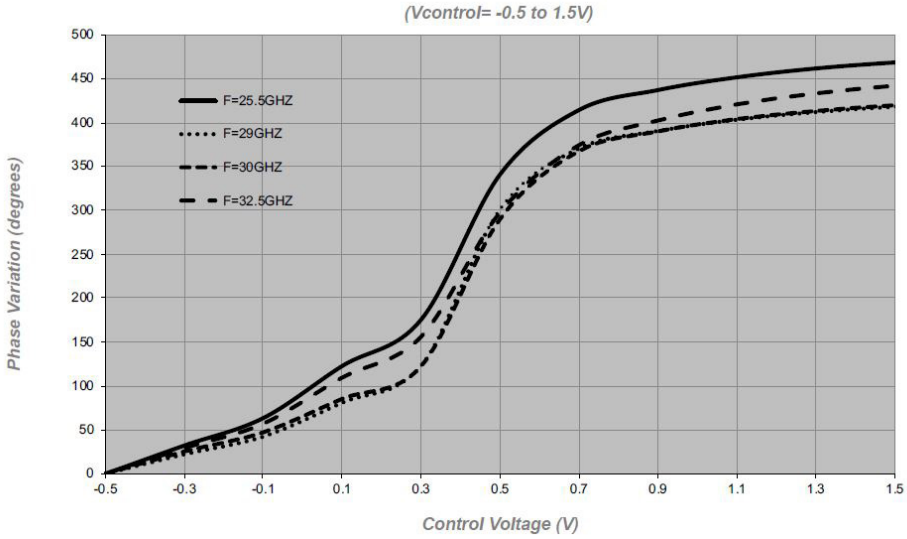
Absolute Phase Shift



Relative Phase Shift



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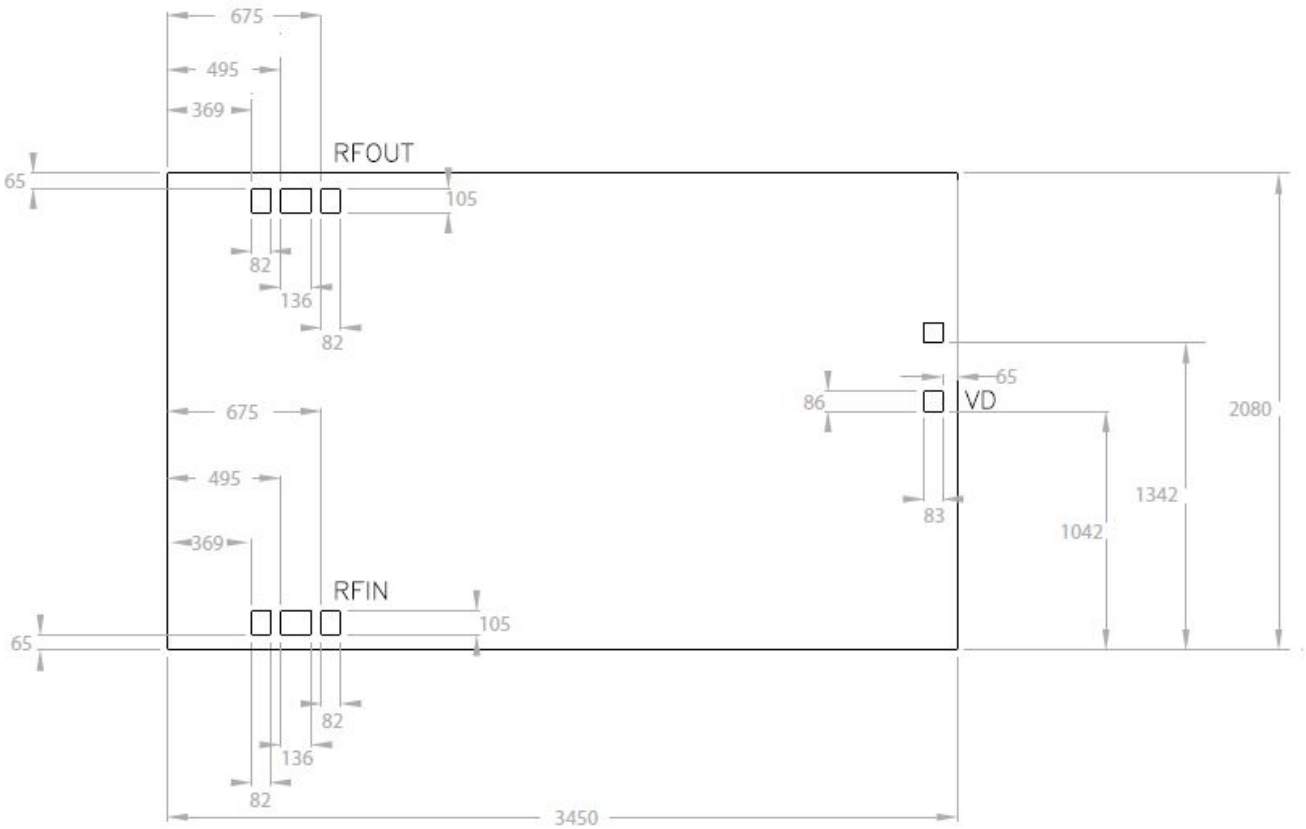
Outline Drawing



Notes

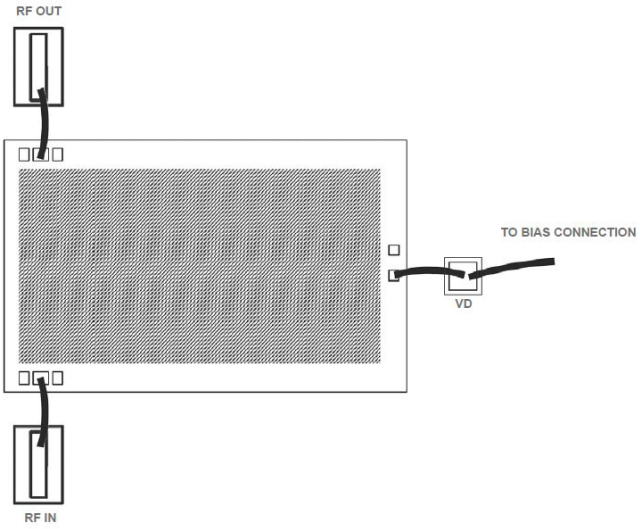
1. All dimensions are in um
2. Typical DC bond pads are 86 x 83 um square
3. RF bond pads are 105 x 136 um square
4. Gold backside metallisation
5. Backside metal is ground
6. Die thickness is 100 um

Die Packing Information
All dies are delivered using gel-paks unless otherwise requested

Pad Descriptions

Name	Description
RFIN	Input RF pad. This pad is AC coupled
RFOUT	Output RF pad. This pad is AC coupled
VD	Voltage phase control pad
BOTTOM	The die backside must be connected to RF/DC ground

Connection Configurations



General Notes On Assembly

Die should be mounted on conductive material such as gold-plated metal to provide a good ground and suitable heat sink, if necessary.

1. Attaching the die using Au/Sn preforms is preferable. The Eutectic melt for Au/Sn occurs at approximately 280 °C so the die (plus mount and preform) is initially heated up to 180 °C and then it is heated for approximately 10 seconds to 280 °C using a nitrogen heat gun. The device will survive 10 seconds at this temperature. The static breakdown for GaAs devices is approximately 330°C.
2. Pure, dry nitrogen should be used as the heat source.
3. If the device cannot be lifted/ placed by a vacuum device, then ESD die-lifting tweezers are preferable.
4. Aluminium wire must not be used.

Contact Information

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