

Product Description

ATEK366P5 is an analog phase shifter covering 2 to 18 GHz frequency range, providing continuously adjustable monotonic phase shift from 0 to 180 degrees via an analog control voltage.

Phase shifter is housed in compact 5x5 mm low cost SMD package, input and output matched to 50 ohms internally. Evaluation Board, bare die, custom package, and module options are available upon request.

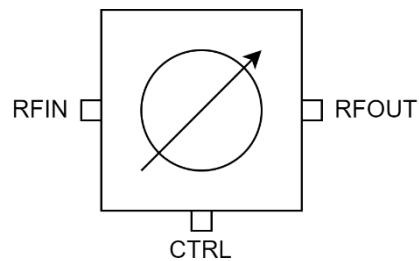
Product Features

- Frequency Range: 2 - 18 GHz
- Phase Shift: 180 degrees
- Insertion Loss: 5 dB
- Single Supply
- 5x5 mm compact size

Applications

- Wideband Receivers
- Telecommunication
- Test and Measurement
- SATCOM
- SDR

Functional Block Diagram



Electrical Specifications

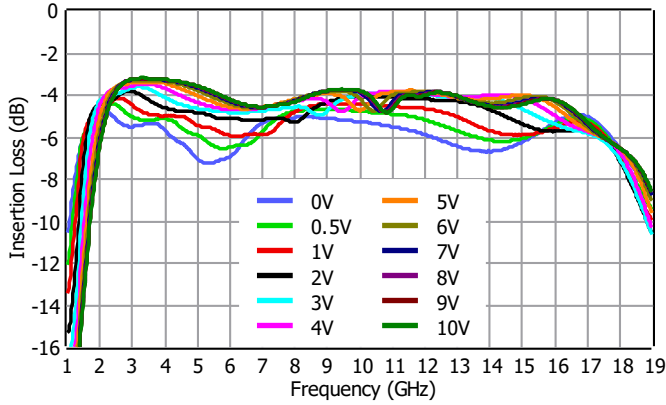
Conditions unless otherwise specified: Typical, T = 25 C, CW.

Parameter		Min	Typ	Max	Units
Operational Frequency Range		2		18	GHz
Insertion Loss at 12 GHz	0 V		5.9		dB
	2 V		4.3		
	4 V		3.9		
	6 V		3.8		
	8 V		4		
	10 V		4.1		
Normalized Phase Shift at 12 GHz	0 V		0		dB
	2 V		113		
	4 V		196		
	6 V		252		
	8 V		271		
	10 V		275		
Input Return Loss			-8		dB
Output Return Loss			-8		dB
Input IP3			TBD		dBm
Input P1dB			TBD		dBm
DC Supply Voltage (CTRL)		0		10	V
DC Supply Current (Ictrl)			0.3		mA
Operating Temperature		-40		85	°C

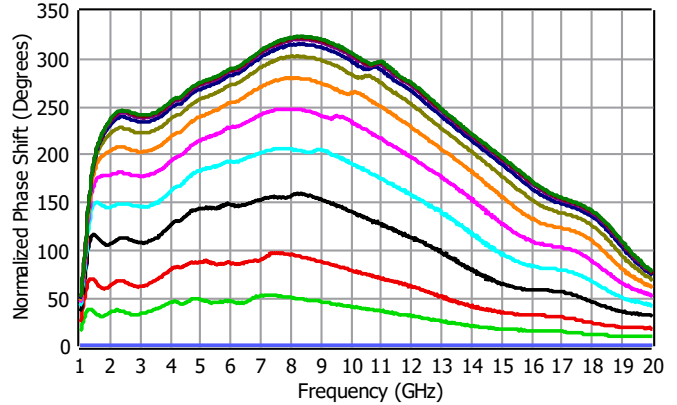
Typical Performance Plots

Conditions unless otherwise specified: Typical, T = 25 C, CW.

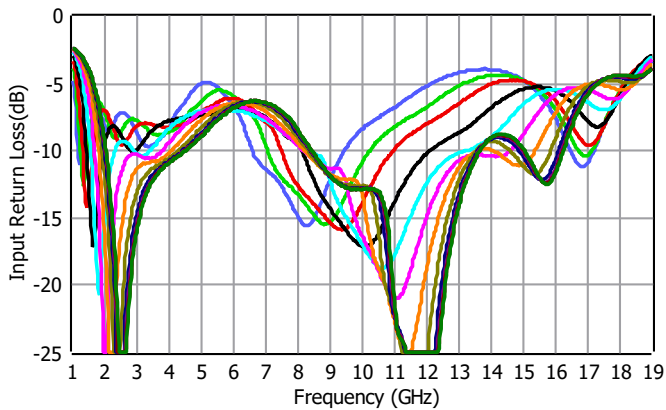
Insertion Loss



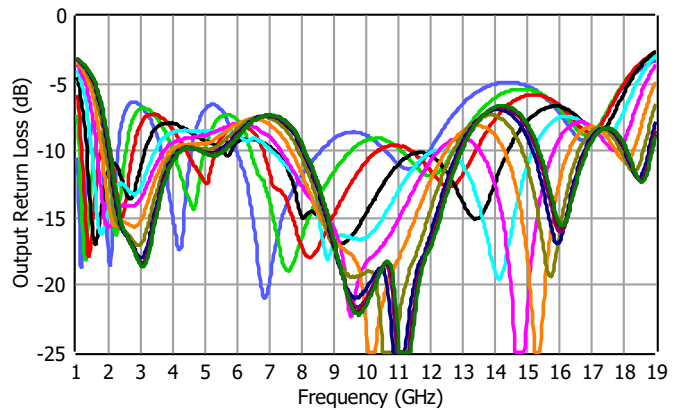
Normalized Phase Shift



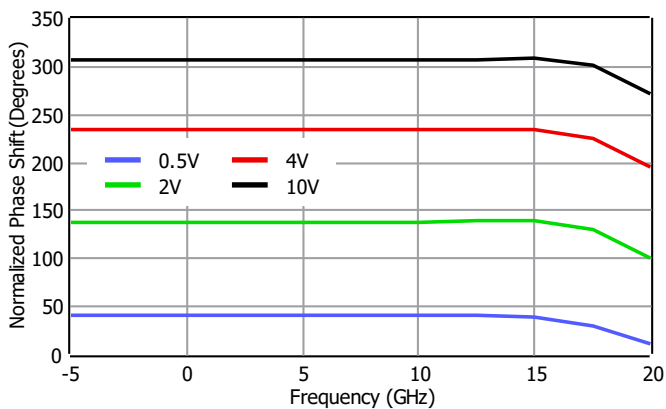
Input Return Loss



Output Return Loss



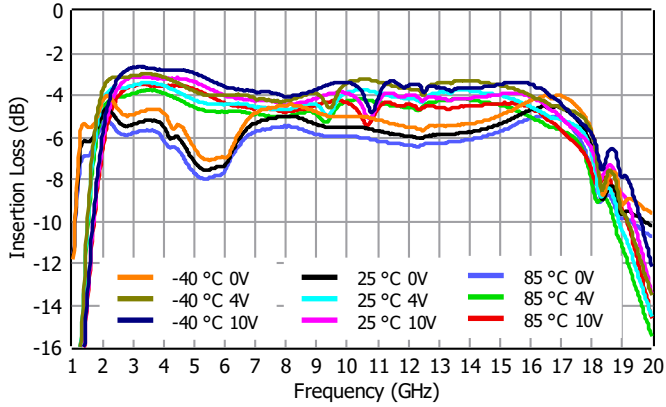
Phase Shift vs Pin at 10GHz



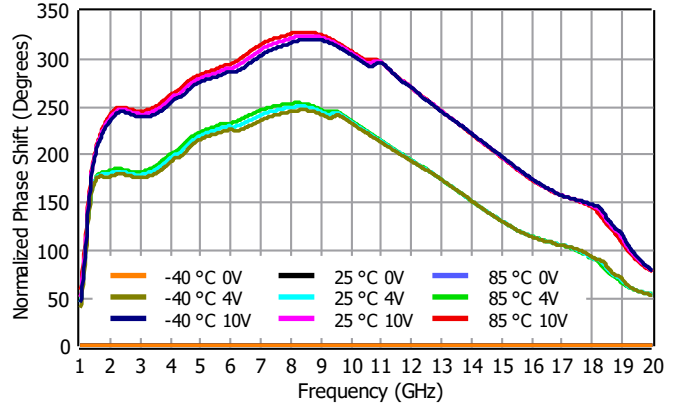
Typical Performance Plots

Conditions unless otherwise specified: Typical, T = 25 C, CW.

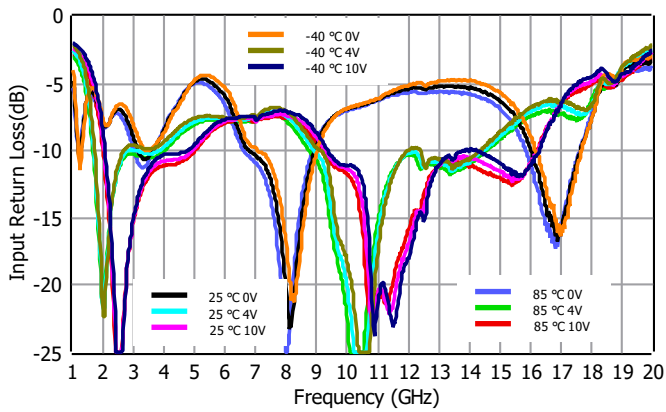
Insertion Loss vs Temperature



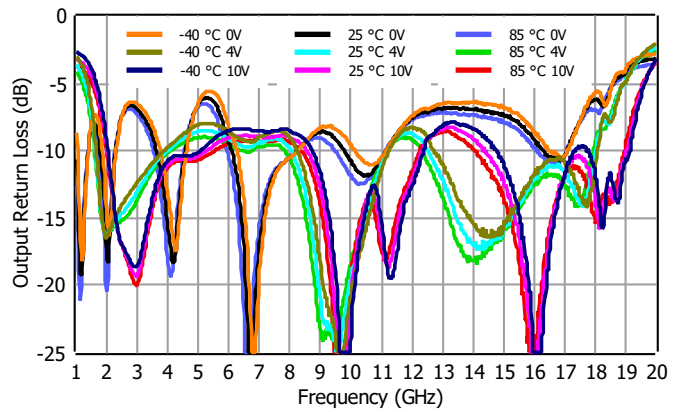
Normalized Phase Shift vs Temperature



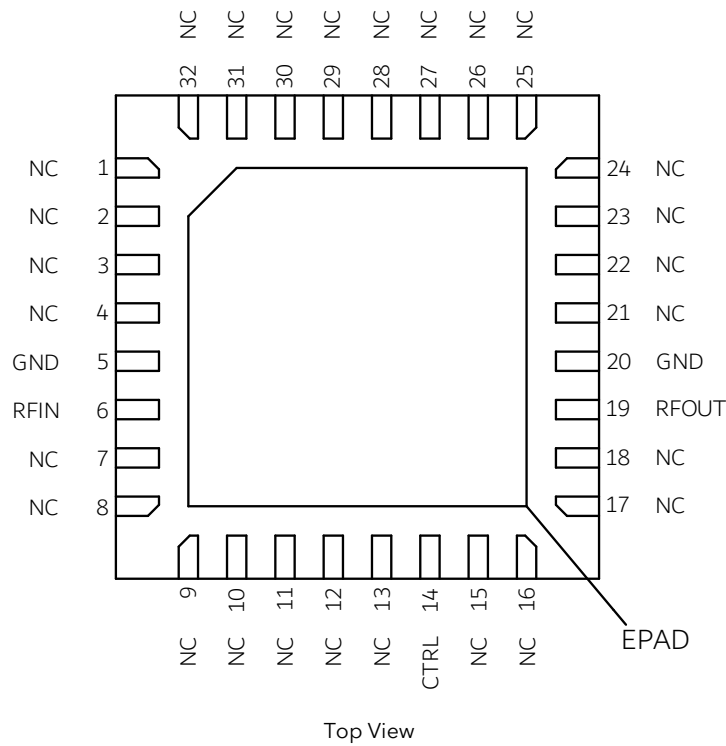
Input Return Loss vs Temperature



Output Return Loss vs Temperature



Pin Description

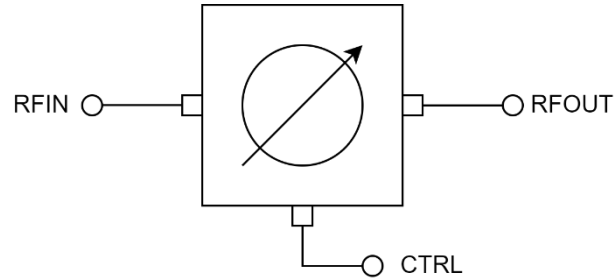


Pin Number	Pin Name	Description
6	RF IN	RF input pin. AC coupled.
19	RF OUT	RF output pin. AC coupled.
14	CTRL	Control voltage pin.
1-4, 7-13, 15-18, 21-32	NC	These pins are not internally connected. Can be grounded on the PCB.
5, 20	GND	Ground.
33	EPAD	Exposed Pad on the bottom of the package should be connected to ground with multiple number of vias to reduce the inductance to the GND.

Applications Information

Signal entering RF IN goes to RF OUT with a phase shift.

Typical application schematic to operate the phase shifter is given below.



Small signal data plots are gathered with probe PCB measurements to generate plots shown in this document.

Over temperature small signal data are generated with connectorized evaluation PCB measurements. Then the PCB trace and connector transition losses are de-embedded to generate the insertion loss data shown in this document.

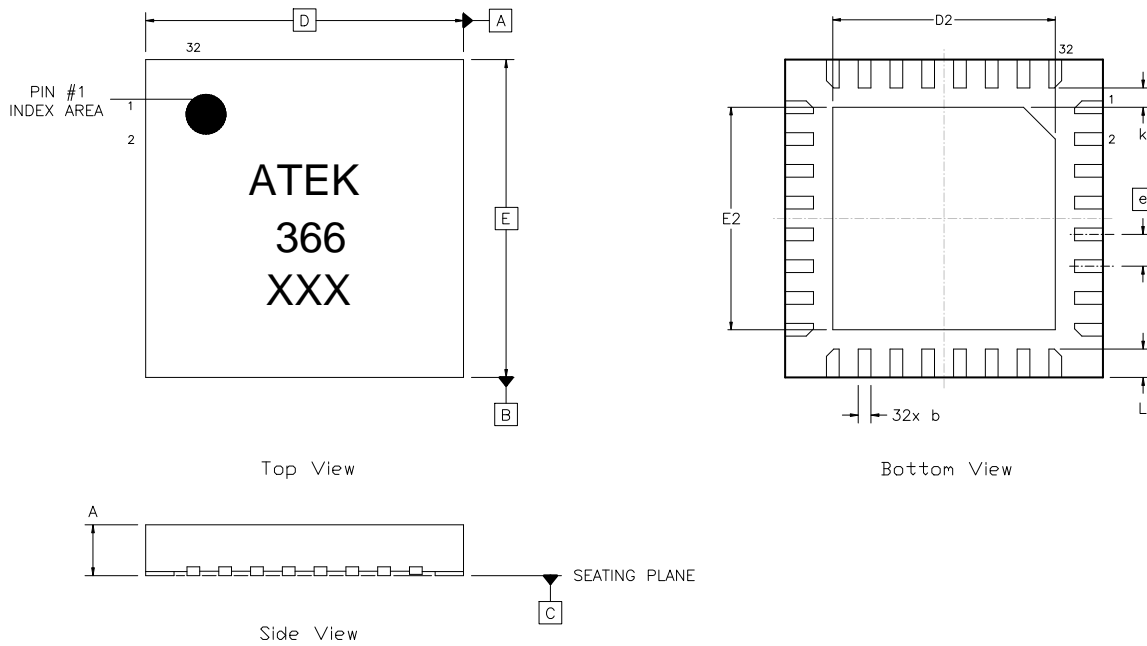
The NC pins of the phase shifter are connected to the GND on the PCBs used to generate the plots shown in this document.

Absolute Maximum Ratings

Parameter	Value/Range
Supply Voltage (Vdd)	TBD
RF Input Power	TBD
Storage Temperature	-55 to +125°C

Operation of this device outside the parameter ranges given above may cause damage. These conditions should not be applied simultaneously.

Mechanical and Marking Information



NOTES:
1) ALL DIMENSIONS IN MM

SYMBOL	MIN	MAX	SYMBOL	MIN	MAX
A, V	0.80	1.00	E2	3.40	3.60
b	0.18	0.30	e	0.50	BSC
D	5.00	BSC	k	0.20	-
D2	3.40	3.60	L	0.40	0.50
E	5.00	BSC			

Handling Precautions



Caution!
ESD-Sensitive Device
Handle Accordingly

Contact Information

For the latest specifications, additional product information, support, and sales.

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Revisions

Revision No	Revision Date	Revision Reason	Section / Page No
0.1	02.01.2025	Initial Release	
0.2	06.01.2025	Pin Description Table Revised	
1.0	24.03.2025	Product Description and Typical Performance Plots Updated	
1.1	08.04.2025	Temperature Measurement Data Added	