

# ANALOG DIODE PHASE SHIFTERS CONTINUOUSLY VARIABLE

## PQ SERIES

### GENERAL INFORMATION

An analog Phase Shifter continuously changes the phase of a microwave signal by varying a DC voltage. Since the DC voltage applied to the diode is reverse bias, the current drain is negligible (typically less than 10 $\mu$ A). A balanced stripline configuration keeps the VSWR and amplitude ripple to a minimum for all values of phase.

### GENERAL SPECIFICATIONS

**RF Impedance:** 50 Ohms

**RF Power:** 7dBm peak or CW MAX

**DC Voltage:** 0 Volts to +28 Volts (standard)  
0 Volts to -28 Volts (optional)  
Will vary the phase of any Model over its minimum phase shift listed.

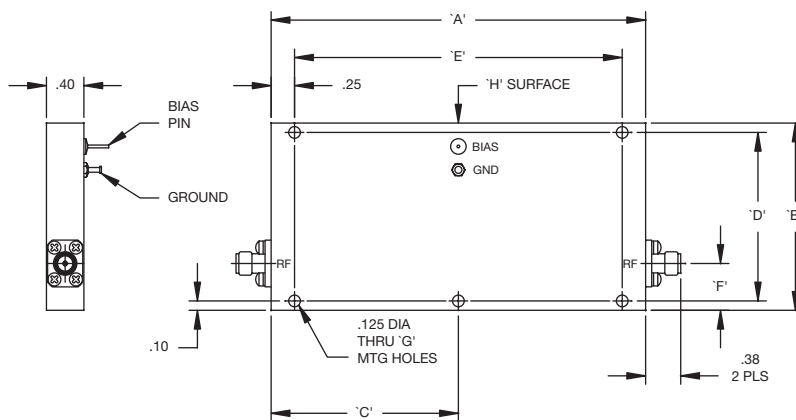
**Temperature:** The unit can be used over a -55 $^{\circ}$  C to + 85 $^{\circ}$  C range. The Phase will change either  $\pm 5^{\circ}$  or  $\pm 5\%$ , whichever is Greater.

**Speed:** Series PQ Phase shifters can be driven from any phase value to any other phase value in 10 nanoseconds.

**Connectors:** SMA.

### NOTES

- 1) Monotonicity is Guaranteed.
- 2) The Phase shift varies with frequency at any voltage setting. This variation, referenced to 0 $^{\circ}$  at 0 Volts for each frequency, is approximately  $\pm 15\%$  for octave models,  $\pm 10\%$  for models with 25% bandwidth, and  $\pm 7.5\%$  for models with 10% bandwidth. Phase flatness of the PQ-65 & PQ-74 is  $\pm 25\%$
- 3) A Connector, (SMA Female) is available in place of the bias pin at no extra charge. This will be placed at the center of the surface marked "H" on the drawing. This is the .38 x "A" surface. If an SMA Female is desired, add the suffix C to the model number (e.g., PQ-45C).
- 4) Linearization models available, call for outline and details.



Model No.	Frequency Range GHz	Phase Shift Degrees	Insertion loss Max dB	Amplitude Ripple Max $\pm$ dB	VSWR Max	Outline
PQ-17	.25-.5	360	4.5	1.25	2	10
PQ-27	.5-1.0	180	4	0.4	1.75	3
PQ-28	.5-1.0	360	5	1.25	2	4
PQ-34	1.0-2.0	360	5.5	1.5	2	8
PQ-44	2.0-4.0	180	4	0.5	1.75	3
PQ-45	2.0-4.0	360	6	1.5	2	5
PQ-59	4.0-8.0	40	1.25	0.3	1.75	2
PQ-60	4.0-8.0	360	8	1.5	2	9
PQ-65	8.0-18.0	180	14	2	2.6	7
PQ-66	7.0-12.0	360	14	2	2.5	9
PQ-72	8.0-12.0	60	2	0.5	2	2
PQ-73	8.0-10.0	180	6	1	2	7
PQ-74	9.0-17.0	360	17	4	2.6	9

### MECHANICAL OUTLINES

OUTLINE	A'	B'	C'	D'	E'	F'	G'
1	2.75	2.25	1.38	2.05	2.25	0.53	3 PLS
2	1.25	2.00	0.63	1.80	0.75	0.25	3 PLS
3	5.00	2.00	N/A	1.80	4.50	0.25	4 PLS
4	7.75	2.50	N/A	2.30	7.25	0.25	4 PLS
5	6.50	2.00	N/A	1.80	6.00	0.25	4 PLS
6	2.00	2.00	1.00	1.80	1.50	0.25	3 PLS
7	3.00	2.00	1.50	1.80	2.50	0.25	3 PLS
8	6.50	2.50	N/A	2.30	6.00	0.25	4 PLS
9	5.00	2.00	N/A	1.80	4.50	0.50	4 PLS
10	7.75	2.50	N/A	2.30	7.25	0.75	4 PLS