

DIGITALLY CONTROLLED [PHASE SHIFTERS](#)

G.T. Microwave Features:

Frequency Ranges: From 500 MHz to 24 GHz up to 9:1 bandwidths are available.

TTL Compatible Logic: G.T.M.I.'s binary logic Digital to Analog Converter with 8 inputs; Logic '1' / BIT = 256 discrete phase shifts with a 1.4° Resolution (L.S.B) or all Logic '0' = 0° Reference State. Any resolution up to 12 BITS is available.

Optional Models: Analog Voltage controlled or Switched Line Digital phase shifters are available, please consult factory.

Operating Temperature Range: 500 nSec models have a temperature range from -10 to +65 Degrees C with a temperature coefficient of +/- 0.035 dB & +/- 0.17 Deg/Deg C. 1.0 uSec models have an improved temperature coefficient. For severe environments, consult factory.

High Speed Switching: [Phase Shifters](#) listed are measured from any set value to any value.

Low DC power Consumption: Phase Shifters require +/-12 to +/-15VDC@ +/-100mA.

Stable Phase Shifts: Variation vs. Temperature is typically +/- 0.17 degrees & +/- 0.035 dB/degrees C from -10 to +65 degrees C for 500 nSec models. Slower models have better temperature coefficients, please consult factory.

High RF Power Handling: For power levels greater than listed, please consult factory.

Standard Interfaces: RF Port connectors are 'SMA', female per MIL-C-39012.

Life Time Integrity: G.T.M.I.'s [Phase Shifters](#) can be designed to meet MIL-E-16400, Range 1 and MIL - E - 5400, Class 2 environments operating within the -55° to +85° C temperature range.

G.T.M.I Part Number	FREQUENCY RANGE GHz	Dynamic Range	Phase Error MAX	Amplitude MAX	INSERTION LOSS MAX	V.S.W.R. MAX	RF INPUT POWER CW	SWITCHING SPEED nSEC MAX	RF INPUT POWER dBm MAX	Outline Size
P*P-18A-5	0.2-0.4	360°	+/-10°	+/-1.0 dB	11.0 dB	1.6:1	0 dBm	500	+30	5
P*P-28A-5	0.3-0.6	360°	+/-10°	+/-1.0 dB	11.0 dB	1.6:1	0 dBm			1
P*P-39A-5	0.5-2.0	360°	+/-10°	+/-1.0 dB	13.0 dB	1.7:1	+5 dBm			1
P*P-38A-5	1.0-3.0	360°	+/-10°	+/-1.0 dB	13.0 dB	1.7:1	+5 dBm			1
P*P-49A-5	1.0-4.0	360°	+/-15°	+/-1.0 dB	13.0 dB	1.8:1	+5 dBm			6
P*P-48A-5	2.0-6.0	360°	+/-10°	+/-1.0 dB	11.0 dB	1.8:1	+10 dBm			2
P*P-58A-5	4.0-12.0	360°	+/-10°	+/-1.0 dB	12.0 dB	1.8:1	+10 dBm			2
P*P-68A-5	6.0-18.0	360°	+/-10°	+/-1.0 dB	12.0 dB	1.9:1	+15 dBm			3
P*P-84A-5	16.0-24.0	360°	+/-15°	+/-2.0 dB	16.0 dB	2.0:1	+15 dBm			3
P*P-69A-5	2.0-18.0	360°	+/-20°	+/-3.0 dB	16.0 dB	2.2:1	+10 dBm			4

POWER / LOGIC CONNECTIONS

No. of Bits	Login Pin Assignments	+15V Pin	-15v Pin	GND Pin
8	L.S.B. @ 1 TO M.S.B. @ 8	13	14	15
10	L.S.B. @ 1 TO M.S.B. @ 10	13	14	15
12	L.S.B. @ 1 TO M.S.B. @ 12	13	14	15

ALL UN-USED PINS HAVE NO INTERNAL CONNECTIONS.

SIZE	'A'DIM. IN/CM	'B' DIM. IN/CM	'C'DIM. IN/CM	'D' DIM. IN/CM
1	4.95/12.57	3.38/8.58	4.750/12.065	3.125/7.938
2	3.25/8.26	3.25/8.26	3.050/7.747	3.000/7.620
3	3.00/7.62	3.00/7.62	2.800/7.112	2.750/6.985
4	4.25/10.80	3.50/8.89	3.250/8.255	3.250/8.255
5	5.00/12.70	5.00/12.70	4.800/12.192	4.750/12.065
6	5.38/13.65	4.50/11.43	5.175/13.145	4.250/10.795