

# Narrow Band Phase Shifter

50Ω 180° Voltage Variable 1.8 to 2.5 MHz

## JCPHS-2.5+



CASE STYLE: BG419  
PRICE: \$32.95 ea. QTY (1-9)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Input Power	20 dBm max.
Control Voltage	20V

Permanent damage may occur if any of these limits are exceeded.

### Pin Connections

IN	1
OUT	7
BIAS	8
GROUND	2,3,4,5,6,9,10,11,12,13,14

### Features

- low insertion loss, 0.9 dB typ.
- good VSWR, 1.2:1 typ.
- solder-plated J-leads for excellent solderability and strain relief
- aqueous washable

### Applications

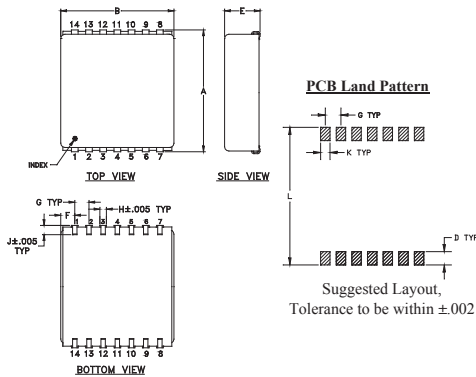
- radio location
- maritime mobile

### Phase Shifter Electrical Specifications

FREQUENCY (MHz)	PHASE RANGE (Degrees)	INSERTION LOSS (dB)		CONTROL VOLTAGE (V)	CONTROL BANDWIDTH (kHz)	VSWR (:1)	
		Typ.	Max.			Typ.	Max.
1.8-2.5	180	0.9	2.7	0-18	DC-50	1.2	1.8

Maximum operating power, 0 dBm

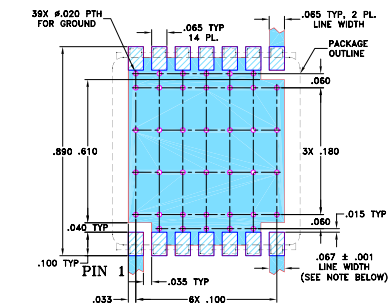
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F
.870	.800	--	.100	.400	.100
22.098	20.32	--	2.54	10.16	2.54
G	H	J	K	L	wt
.100	.047	.065	.065	.890	grams
2.54	1.1938	1.651	1.651	22.606	6.4

### Demo Board MCL P/N: TB-62 Suggested PCB Layout (PL-011)

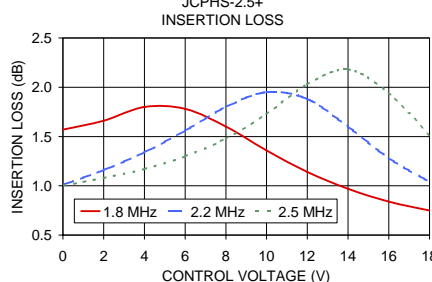
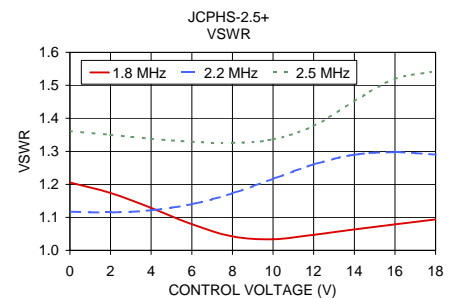
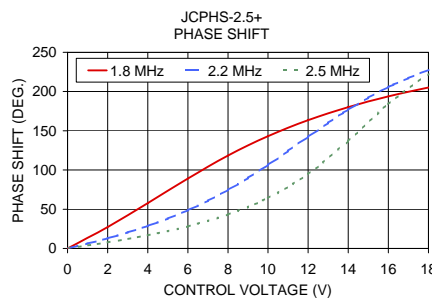


- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

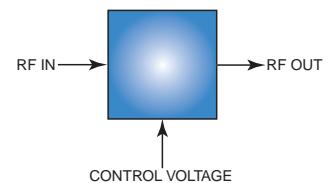
### Typical Performance Data

Control Voltage (V)	Phase Shift* (Degrees)			VSWR (:1)			Insertion Loss (dB)		
	1.8 MHz	2.2 MHz	2.5 MHz	1.8 MHz	2.2 MHz	2.5 MHz	1.8 MHz	2.2 MHz	2.5 MHz
0.0	0.00	0.00	0.00	1.21	1.12	1.36	1.57	1.01	1.00
2.0	27.36	12.96	7.66	1.17	1.12	1.35	1.66	1.16	1.08
4.0	57.85	28.73	16.68	1.13	1.12	1.34	1.80	1.34	1.17
6.0	89.17	48.73	28.00	1.08	1.14	1.33	1.78	1.56	1.30
8.0	118.37	74.58	43.16	1.04	1.17	1.33	1.60	1.80	1.48
10.0	143.18	106.54	64.34	1.03	1.22	1.34	1.36	1.95	1.73
12.0	163.56	142.37	95.00	1.05	1.26	1.38	1.14	1.88	2.03
14.0	180.16	176.76	137.06	1.06	1.29	1.45	0.97	1.60	2.18
16.0	193.88	205.68	184.07	1.08	1.30	1.52	0.84	1.28	1.94
18.0	205.05	227.58	222.53	1.09	1.29	1.54	0.75	1.04	1.51

\* Normalized at control voltage = 0V



### electrical schematic



**Mini-Circuits**  
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P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp).

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