Surface Mount

Phase Shifter

SPHSA-242+

50Ω 360° Voltage Variable 1650 to 2400 MHz

CASE STYLE: JW1441
PRICE: Contact Sales Dept.

+RoHS Compliant
The +Suffix identifies 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	12V

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

Pin Connections

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

^ proper operation is achieved with pins 8 or 12 or both connected to BIAS.

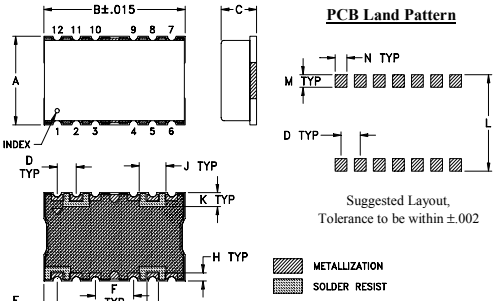
Features

- low insertion loss, 4.5 dB typ.
- low control voltage, 10V
- wide phase shift, 360°
- aqueous washable

Applications

- cellular
- communication

Outline Drawing

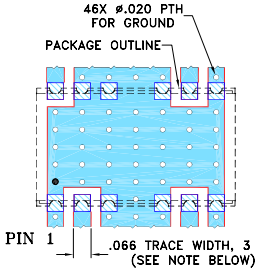


Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H
.440	.740	.19	.100	.070	.200	.060	.040
11.18	18.80	4.83	2.54	1.78	5.08	1.52	1.02

J	K	L	M	N	P	wt
.140	.070	.480	.063	.061	--	grams
3.56	1.78	12.19	1.60	1.55	--	2.5

Demo Board MCL P/N: TB-524+
Suggested PCB Layout (PL-408)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS .030" ± .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

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		1650		2400	MHz
Phase Range	1650 - 2400	360	—	—	Degrees
Insertion Loss	1650 - 2400	—	4.5	6.9	dB
Control Voltage	1650 - 2400	—	0-10	—	V
Control Bandwidth	1650 - 2400	—	DC-30	—	kHz
VSWR	1650 - 2400	—	1.6	2.9	:1

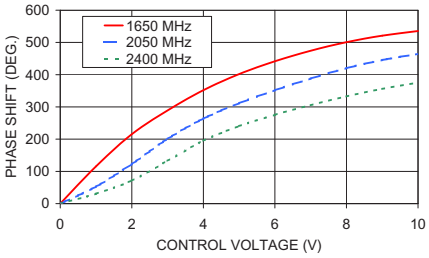
DC input resistance at Control port: 2000 ohms typ.

Typical Performance Data

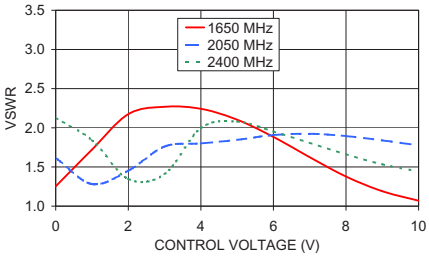
Control Voltage (V)	Phase Shift* (Degrees)			VSWR (:1)			Insertion Loss (dB)		
	1650 MHz	2025 MHz	2400 MHz	1650 MHz	2025 MHz	2400 MHz	1650 MHz	2025 MHz	2400 MHz
0.0	0.01	0.00	0.00	1.25	1.14	1.73	3.18	2.66	3.15
1.0	115.59	52.69	30.36	1.72	1.19	1.70	6.10	3.27	3.32
2.0	215.40	122.84	71.63	2.17	1.25	1.66	6.03	4.28	3.52
3.0	288.95	200.70	132.85	2.27	1.31	1.61	5.02	4.48	4.13
4.0	351.88	263.78	195.22	2.24	1.36	1.53	4.52	3.97	4.52
5.0	401.97	311.43	240.66	2.10	1.38	1.43	4.12	3.77	4.18
6.0	441.60	351.60	275.33	1.88	1.36	1.29	3.71	3.76	3.83
7.0	474.24	387.99	305.21	1.63	1.30	1.13	3.30	3.73	3.65
8.0	500.84	420.03	332.32	1.38	1.25	1.13	2.98	3.62	3.57
9.0	521.02	445.53	355.90	1.19	1.25	1.30	2.76	3.48	3.55
10.0	535.53	464.51	375.23	1.07	1.27	1.41	2.65	3.34	3.56

* Normalized at control voltage = 0V

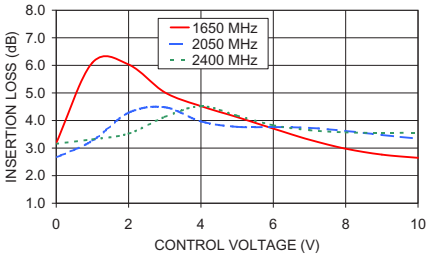
SPHSA-242+
PHASE SHIFT



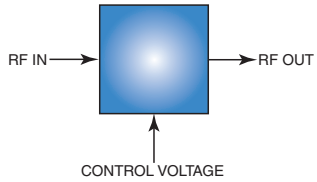
SPHSA-242+
VSWR



SPHSA-242+
INSERTION LOSS



electrical schematic



Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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