

Surface Mount Phase Detector

50Ω High Output 10 to 200 MHz

**SYPD-2+
SYPD-2**



Maximum Ratings

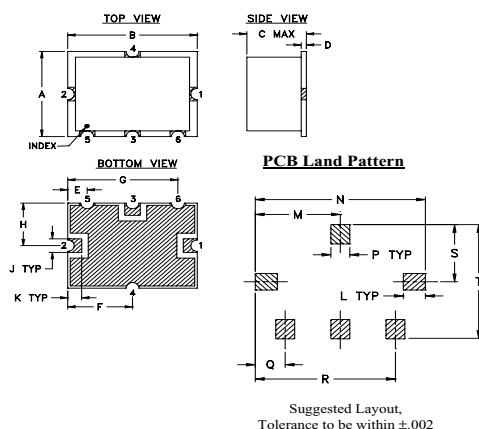
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Input Power	50mW
Peak IF current	20mA

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

Pin Connections

RF REF (RF2)	2
RF IN (RF1)	1
DC OUT (I)	3
GROUND	4,5,6

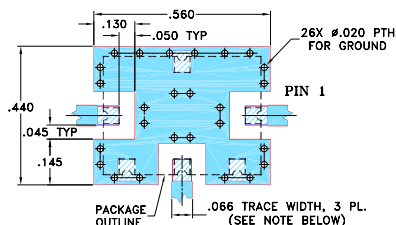
Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K
.38	.50	.23	.020	.075	.250	.425	.187	.050	.050
9.65	12.70	5.84	0.51	1.91	6.35	10.80	4.75	1.27	1.27
L	M	N	P	Q	R	S	T	wt.	
.070	.270	.540	.060	.095	.445	.208	.415	grams	
1.78	6.86	13.72	1.52	2.41	11.30	5.28	10.54	0.8	

Demo Board MCL P/N: TB-12 Suggested PCB Layout (PL-079)



NOTE:

- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 - THE USE OF SOLDER MASK OVER THE GROUND AREA UNDER THE UNIT AS SHOWN IS RECOMMENDED TO PREVENT POTENTIAL SHORTING. IF USER CHOOSES TO EXPOSE METAL UNDER THE ENTIRE UNIT GROUND PAD FOR IMPROVED GROUNDING, IT IS RECOMMENDED A SOLDER MASK DAM BE APPLIED AROUND EACH GROUND PAD TO ENSURE FILLET AND CONNECTION AT GROUND PADS.
 - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER), SEE NOTE 2.
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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-Circuits' applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document 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

Features

- wideband, 10 to 200 MHz
- low DC offset, 0.3 mV typ.
- high DC output, 1000 mV typ.
- high isolation, 40 dB min.

Applications

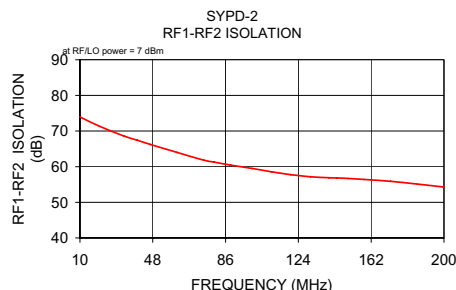
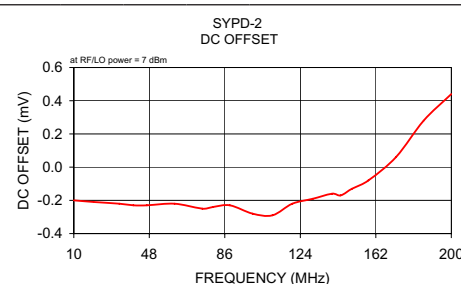
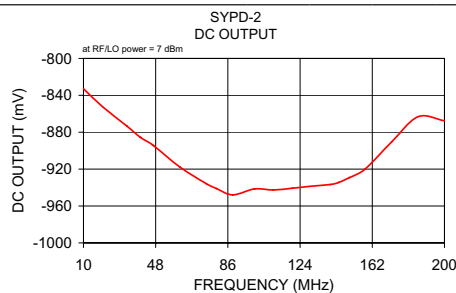
- monitoring circuits
- leveling circuits
- PLL

Phase Detector Electrical Specifications

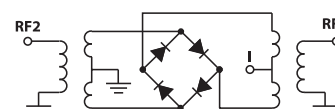
FREQUENCY (MHz)	POWER IN	SCALE FACTOR	IMPEDANCE (ohms) Output Load I	ISOLATION (dB)	OUTPUT POLARITY	DC OUTPUT (mV)	FIGURE OF MERIT
RF1 I RF2	RF1 RF2 (dBm)	mV/deg.		RF1/RF2 Min.	RF1/RF2 In-Phase	Max. Offset Typ. Min. Typ. Max.	Typ.
10-200	DC-50	7	8	500	40	neg.	1000 700 0.3 1 143

Typical Performance Data

Frequency (MHz)	DC Output mV	DC Offset mV	RF1-RF2 Isolation (dB)
	$\bar{X}$ σ	$\bar{X}$ σ	$\bar{X}$
10.00	-832.85 8.84	-0.20 0.31	73.96
20.00	-852.33 8.56	-0.21 0.32	71.39
32.86	-873.37 8.31	-0.22 0.33	68.61
40.00	-885.64 8.09	-0.23 0.33	67.41
46.79	-894.39 7.95	-0.23 0.33	66.22
60.71	-917.70 7.62	-0.22 0.35	64.00
74.64	-935.82 7.73	-0.25 0.37	61.81
80.00	-941.09 7.83	-0.24 0.37	61.28
88.57	-947.91 8.28	-0.23 0.38	60.45
100.00	-941.46 8.44	-0.28 0.40	59.49
110.00	-942.62 8.94	-0.29 0.41	58.55
120.00	-940.69 9.51	-0.22 0.40	57.75
130.36	-938.41 10.59	-0.19 0.39	57.17
140.00	-936.70 11.75	-0.16 0.37	56.90
144.29	-934.52 12.34	-0.17 0.36	56.82
150.00	-929.14 12.91	-0.13 0.38	56.68
158.21	-919.94 13.74	-0.08 0.40	56.42
172.14	-890.67 15.14	0.06 0.41	55.90
186.07	-863.24 17.28	0.28 0.31	55.11
200.00	-867.58 20.41	0.44 0.24	54.28



electrical schematic



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