WINSOURCE ELECTRONICS

THE DATASHEET OF

SYPD-2+

Surface Mount

Phase Detector

SYPD-2+

50Ω High Output 10 to 200 MHz



Generic photo used for illustration purposes only

CASE STYLE: TTT167

+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
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

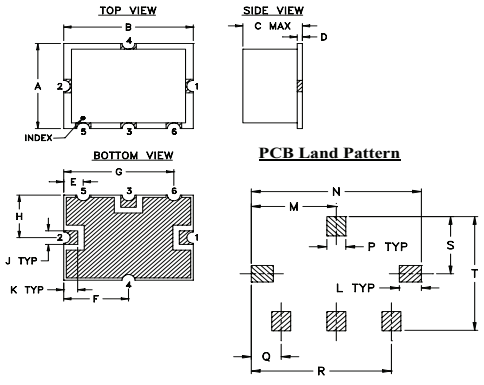
Features

- 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

Outline Drawing



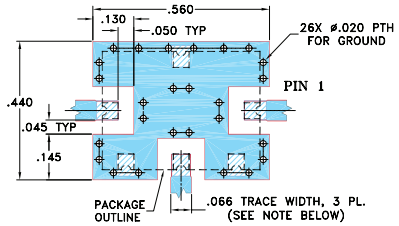
Suggested Layout,
Tolerance to be within ±.002

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-153
Suggested PCB Layout (PL-079)



NOTE:

1. 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.
2. 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.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER), SEE NOTE 2.

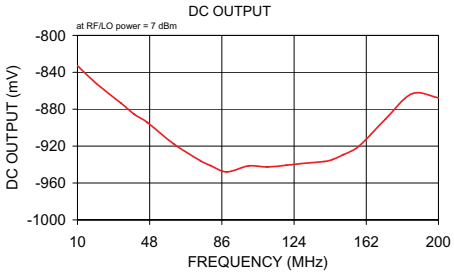
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

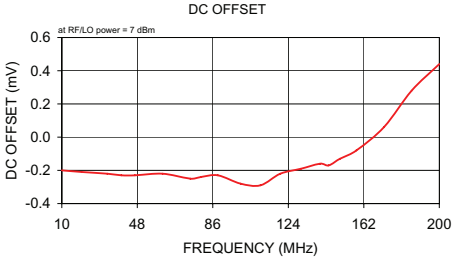
Phase Detector Electrical Specifications

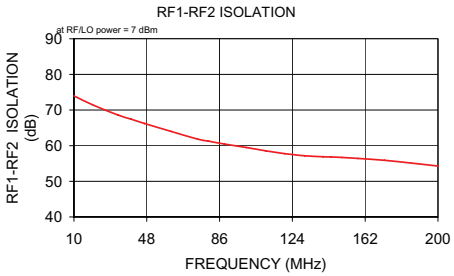
FREQUENCY (MHz)		POWER IN	SCALE FACTOR	IMPEDANCE (ohms) Output Load	ISOLATION (dB)	OUTPUT POLARITY	DC OUTPUT (mV)				FIGURE OF MERIT
		RF1		I							
RF1	I	RF2			RF1/RF2	RF1/RF2	Max.		Offset		
RF2		(dBm)	mV/deg.		Min.	In-Phase	Typ.	Min.	Typ.	Max.	Typ.
10-200	DC-50	7	8	500	40	neg.	1000	700	0.3	1	143

Typical Performance Data

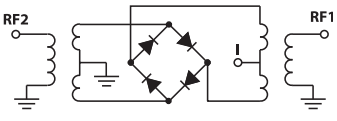
Frequency (MHz)	DC Output mV		DC Offset mV		RF1-RF2 Isolation (dB)
	$\overline{X}$	σ	$\overline{X}$	σ	$\overline{X}$
10.00	-832.85	8.84	-0.20	0.31	73.96
20.00	-852.33	8.56	-0.21	0.32	71.39
32.86	-873.37	8.31	-0.22	0.33	68.61
40.00	-885.64	8.09	-0.23	0.33	67.41
46.79	-894.39	7.95	-0.23	0.33	66.22
60.71	-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



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.
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