

# Surface Mount Phase Detector

## SYPD-52W+

50Ω High Output 300 to 650 MHz



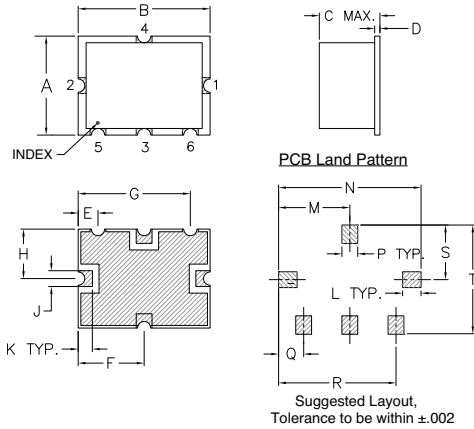
### Maximum Ratings

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

### Pin Connections

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

### Outline Drawing



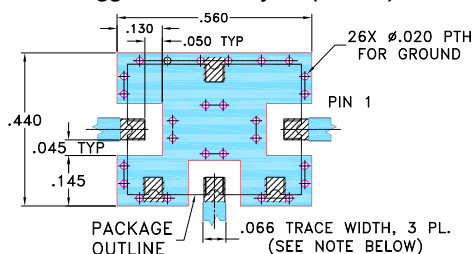
### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K
.38	.50	.23	.020	.075	.250	.425	.187	.050	.050
9.60	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.
  - GROUND PAD SHALL BE FREE OF SOLDER MASK IF REQUIRED FOR SOLDERING.
  - 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

### Features

- frequency range, 300 to 650 MHz
- high DC output, 900 mV typ.

### Applications

- monitoring circuits
- leveling circuits
- PLL

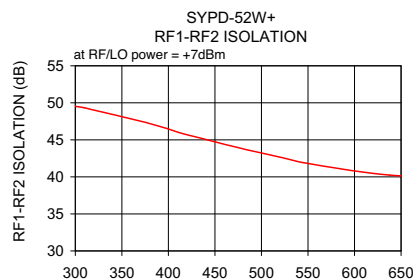
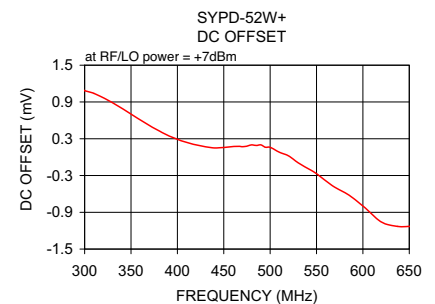
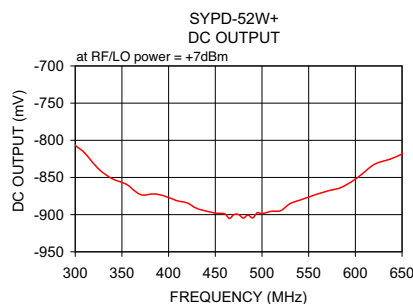
**+RoHS Compliant**  
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

### Phase Detector Electrical Specifications

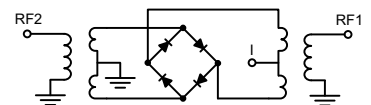
FREQUENCY (MHz)	POWER IN RF1 RF2 (dBm)	SCALE FACTOR mV/deg.	IMPEDANCE (ohms) Output Load I	ISOLATION (dB) RF1/RF2 Min.	OUTPUT POLARITY RF1/RF2 In - Phase	DC OUTPUT (mV)				FIGURE OF MERIT Typ.	
						Max. Typ.	Offset Typ.	Max. Typ.	Max. Typ.		
300-400	DC-50	+7	8	500	34	neg.	850	700	0.9	4.0	129
400-500	DC-50	+7	8	500	30	neg.	900	750	0.7	2.5	129
500-650	DC-50	+7	8	500	28	neg.	850	700	1.0	5.0	129

### Typical Performance Data

Frequency (MHz)	DC Output mV		DC Offset mV		RF1-RF2 Isolation (dB) X
	$\bar{X}$	$\sigma$	$\bar{X}$	$\sigma$	
300.0	-806.7	10.04	1.09	0.52	49.54
325.0	-838.5	9.84	0.93	0.46	48.86
340.0	-852.0	9.52	0.80	0.42	48.41
355.0	-859.3	9.22	0.65	0.37	47.98
385.0	-872.0	8.24	0.39	0.32	47.04
400.0	-877.0	7.60	0.29	0.35	46.44
430.0	-891.6	7.18	0.17	0.45	45.36
450.0	-897.9	6.93	0.16	0.54	44.73
485.0	-900.5	6.57	0.19	0.70	43.64
500.0	-898.7	6.49	0.16	0.77	43.23
550.0	-876.4	6.16	-0.27	1.04	41.80
585.0	-863.3	6.63	-0.62	1.20	41.11
602.5	-850.1	6.95	-0.83	1.26	40.74
620.0	-832.6	7.64	-1.06	1.37	40.47
650.0	-818.3	8.97	-1.13	1.60	40.13



### electrical schematic



### Notes

- 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.
- 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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