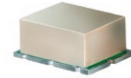


# Surface Mount Phase Detector

## SYPD-2+ SYPD-2

50Ω High Output 10 to 200 MHz



### Maximum Ratings

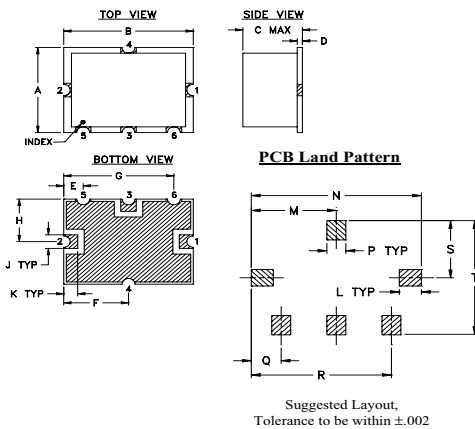
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Input Power	50mW
Peak IF current	20mA

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

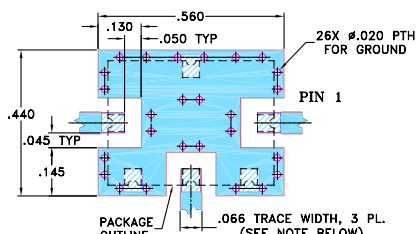
### Outline Drawing



### 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)



### 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 (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.		
10-200	DC-50	7	8	500	40	neg.	1000 700	0.3 1	143

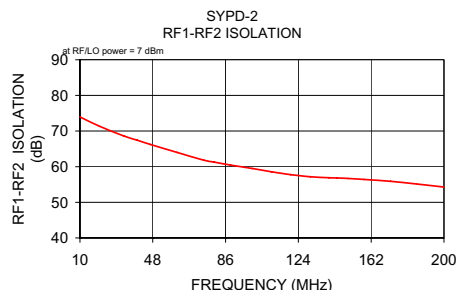
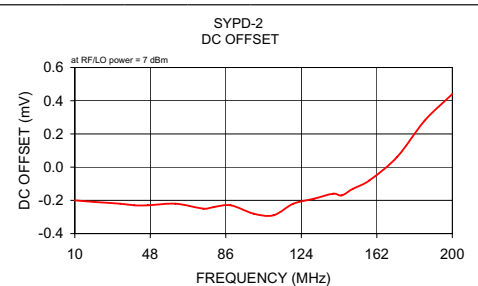
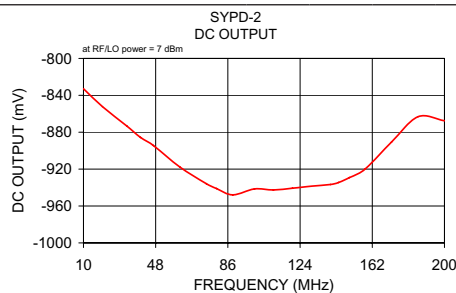
CASE STYLE: TTT167  
PRICE: \$18.95 ea. QTY (1-9)

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

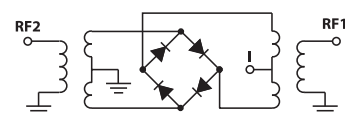
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

### Typical Performance Data

Frequency (MHz)	DC Output mV		DC Offset mV		RF1-RF2 Isolation (dB)
	$\bar{X}$	$\sigma$	$\bar{X}$	$\sigma$	
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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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-Circuit's 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-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp).

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