

Surface Mount

# Bi-Directional Coupler

50Ω 30 dB Coupling 20 to 100 MHz 55 Watt

SYDC-30-12HP+



Generic photo used for illustration purposes only

CASE STYLE: AH202-1

+RoHS Compliant

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

## Maximum Ratings

\*Operating Temperature, Case -40°C to 85°C

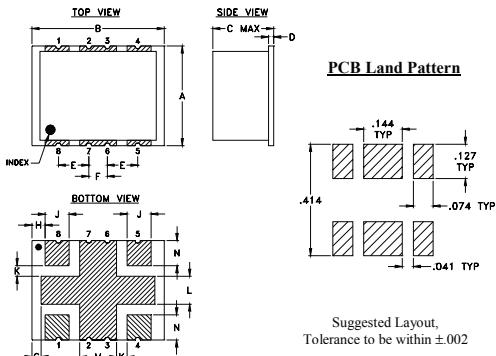
Storage Temperature -55°C to 100°C

\* Case temperature is defined as temperature on ground leads. Permanent damage may occur if any of these limits are exceeded.

## Pad Connections

INPUT	8
OUTPUT	1
COUPLED (forward)	5
COUPLED (reverse)	4
GROUND	2,3,6,7

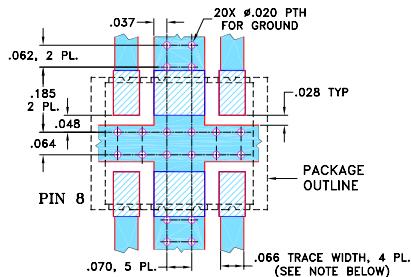
## Outline Drawing



## Outline Dimensions (inch mm)

A	B	C	D	E	F	G
.38	.50	.25	.020	.115	.070	.035
9.65	12.70	6.35	0.51	2.92	1.78	0.89
H	J	K	L	M	N	wt
.050	.090	.040	.105	.140	.095	grams
1.27	2.29	1.02	2.67	3.56	2.41	0.80

## Demo Board MCL P/N: TB-349 Suggested PCB Layout (PL-246)



### NOTES:

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. 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

## Features

- high power handling, 55 Watt max.
- low mainline loss, 0.06 dB typ.
- good return loss, 36 dB typ.

## Applications

- military mobile
- ISM



Reel Size 13" Devices/Reel 200

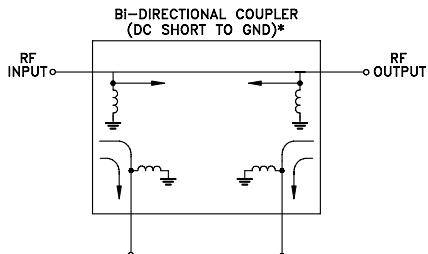
## Electrical Specifications

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		20		100	MHz
Mainline Loss <sup>1</sup>	20 - 100	—	0.06	0.15	dB
Nominal Coupling	20 - 100	—	29±1.0	—	dB
Coupling Flatness (±)	20 - 100	—	±0.6	—	dB
Directivity	20 - 100	20	30	—	dB
Return Loss	20 - 100	—	36	—	dB
Input Power <sup>2</sup>	20 - 100	—	—	55	W

1. Mainline loss includes theoretical power loss at coupled port.

2. The user must provide adequate means of heat removal to limit the temperature of ground connections 2,3,6,7 to 85°C, in order to ensure proper performance. At 25°C ambient temperature this requires thermal resistance of the user's PC board heat sink to be 35°C/W or less when the unit is driven at maximum specified RF input power, 55W. At higher ambient temperature, with the same heat sink. Input power in watts must not exceed 55W x (85°C - T<sub>AMBIENT</sub>)÷60°C.

## Electrical Schematic



\* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) THAT ROUTES DC FROM RF PORTS TO GROUND.

### Notes

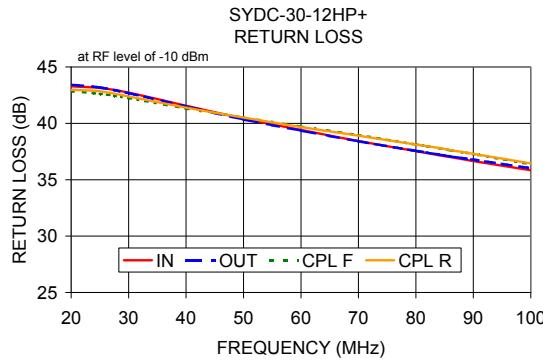
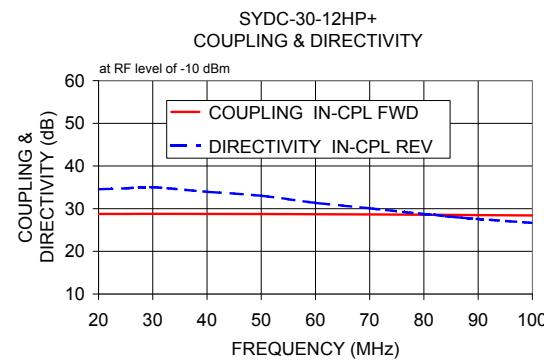
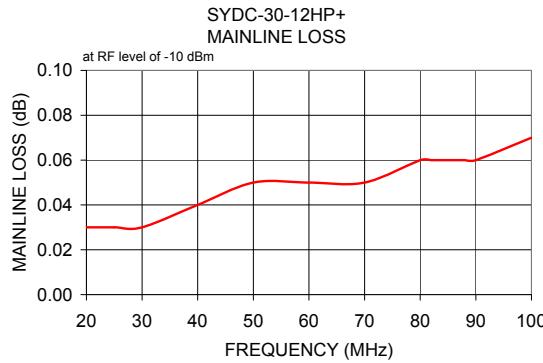
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## Typical Performance Data

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)		Directivity (dB)		Return Loss (dB)			
		In-Out	In-Cpl Fwd	Out-Cpl Rev	Out-Cpl Fwd	In-Cpl Rev	In	Out	Cpl Fwd
20.00	0.03	28.77	28.68	34.36	34.57	43.29	43.43	42.84	42.98
30.00	0.03	28.78	28.63	34.45	35.02	42.72	42.67	42.24	42.38
40.00	0.04	28.77	28.59	33.21	33.96	41.56	41.51	41.32	41.40
50.00	0.05	28.74	28.54	31.95	33.03	40.43	40.34	40.52	40.52
60.00	0.05	28.70	28.50	30.23	31.37	39.42	39.36	39.72	39.67
70.00	0.05	28.64	28.43	29.23	30.09	38.43	38.41	38.95	38.91
80.00	0.06	28.58	28.33	28.40	28.71	37.54	37.56	38.12	38.12
84.00	0.06	28.55	28.29	27.70	28.22	37.17	37.24	37.80	37.82
86.00	0.06	28.54	28.27	27.56	28.01	37.01	37.07	37.61	37.62
88.00	0.06	28.52	28.26	27.50	27.77	36.83	36.92	37.45	37.47
90.00	0.06	28.50	28.23	27.11	27.58	36.66	36.78	37.28	37.30
100.00	0.07	28.42	28.11	26.17	26.65	35.84	36.02	36.37	36.45



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