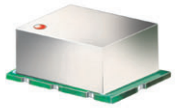
Surface Mount

Bi-Directional Coupler

SYDC-30-12HP+

50Ω 30 dB Coupling 20 to 100 MHz



CASE STYLE: AH202-1
PRICE: $39.95 ea. QTY (1-9)

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

The + suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Maximum Ratings

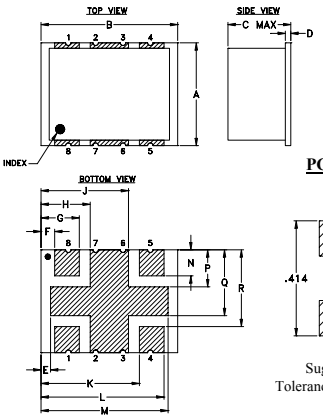
*Operating Temperature, Case	-40°C to 85°C
Storage Temperature	-55°C to 100°C

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

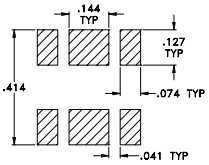
Pin Connections

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

Outline Drawing



PCB Land Pattern

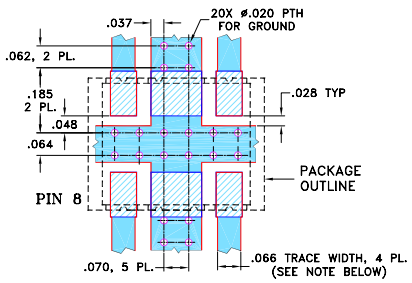


Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	
.38	.50	.25	.020	.035	.050	.140	.180	
9.65	12.70	6.35	0.51	0.89	1.27	3.56	4.57	
J	K	L	M	N	P	Q	R	wt
.320	.360	.450	.465	.095	.135	.240	.280	grams
8.13	9.14	11.43	11.81	2.41	3.43	6.10	7.11	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, 55W max.
- low mainline loss, 0.06 dB typ.
- good VSWR, 1.03 typ.

Applications

- military mobile
- ISM

Bi-Directional Coupler Electrical Specifications

FREQ. (MHz)	COUPLING (dB)		MAINLINE LOSS[1] (dB)		DIRECTIVITY (dB)		VSWR (:1)	POWER[2] INPUT (W)
f_L-f_U	Nom.	Flatness	Typ.	Max.	Typ.	Min.	Typ.	Max.
20-100	29±1.0	±0.6	0.06	0.15	30	20	1.03	55

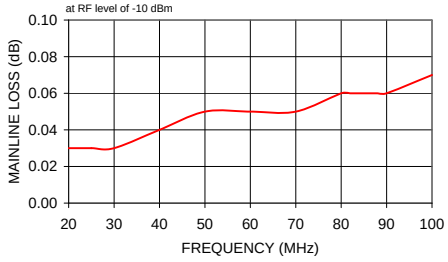
1. Mainline loss includes theoretical power loss at coupled port.

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 -TAMBIENT) ÷ 60°C.

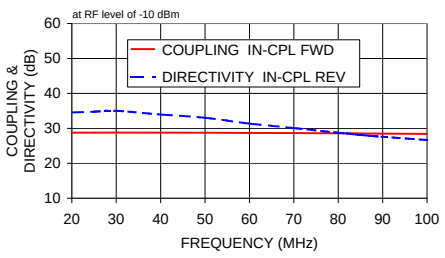
Typical Performance Data

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	Cpl Rev
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

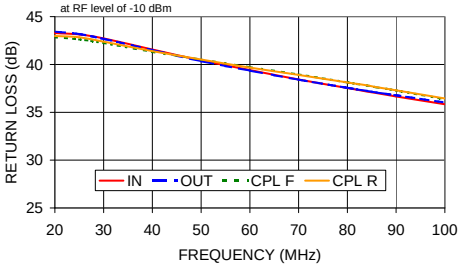
SYDC-30-12HP+
MAINLINE LOSS



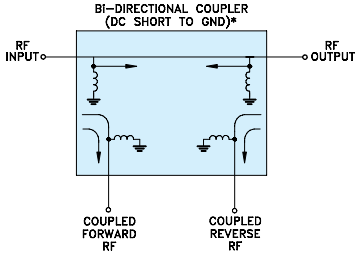
SYDC-30-12HP+
COUPLING & DIRECTIVITY



SYDC-30-12HP+
RETURN LOSS



Electrical Schematic



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

For detailed performance specs & shopping online see web site

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-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.

REV. A
M124579
ED-13563
SYDC-30-12HP+
WZ/CP/AM
091016