SURFACE MOUNT

Bi-Directional Coupler

SYDC-30-12HP+

50Ω 30 dB Coupling 20 to 100 MHz 55 W

FEATURES

- High Power Handling, 55 W Max.
- Low Mainline Loss, 0.06 dB Typ.
- Good Return Loss, 36 dB Typ.

CASE STYLE: AH202-1

Generic photo used for illustration purposes only

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- Military Mobile
- ISM

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		20		100	MHz
Mainline Loss[1]	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[2]	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, 15 W.
At higher ambient temperature, with the same heat sink. Input power in watts must not exceed 55 W x (+85°C - Tambient) ÷ +60°C.

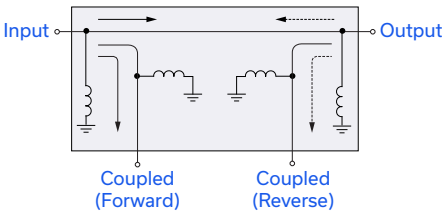
ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C Case[3]
Storage Temperature	-55°C to +100°C

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

ELECTRICAL SCHEMATIC

BI-DIRECTIONAL COUPLER*



*Electrical schematic is for Bi-Directional coupler with internal transformer(s) that routes DC from all ports to ground.

REV. D
ECO-015468
ED-12537/2
SYDC-30-12HP+
MCL NY
251107

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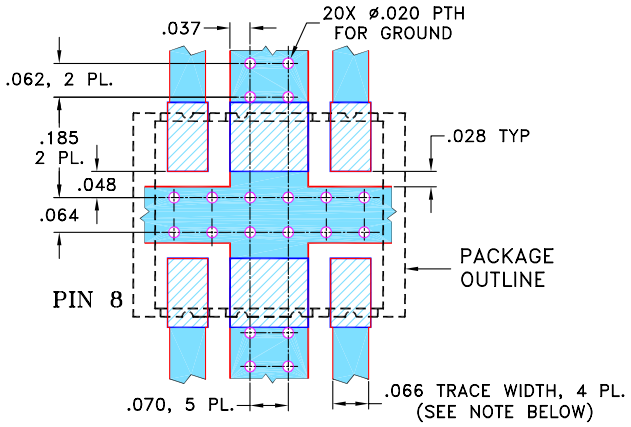
PAD CONNECTIONS

INPUT	8
OUTPUT	1
COUPLED (FORWARD)	5
COUPLED (REVERSE)	4
GROUND	2, 3, 6, 7

*PRODUCT MARKING: SYDC-30-12HP

*Marking may contain other features or characters for internal lot control.

EVAL BOARD MCL P/N: TB-SYDC30-12HP+
SUGGESTED PCB LAYOUT (PL-246)



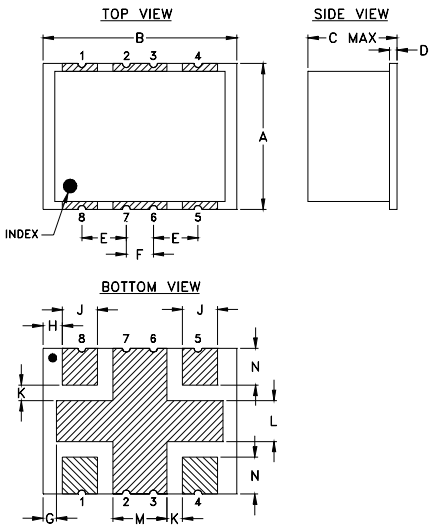
NOTES:

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.

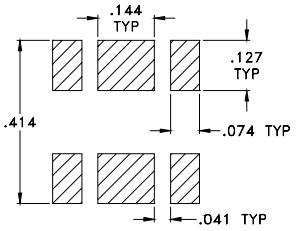
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

OUTLINE DRAWING



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

OUTLINE DIMENSIONS (Inches / 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

TAPE & REEL INFORMATION: F61

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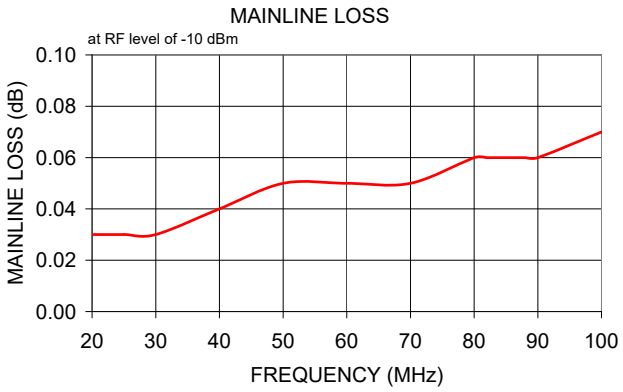
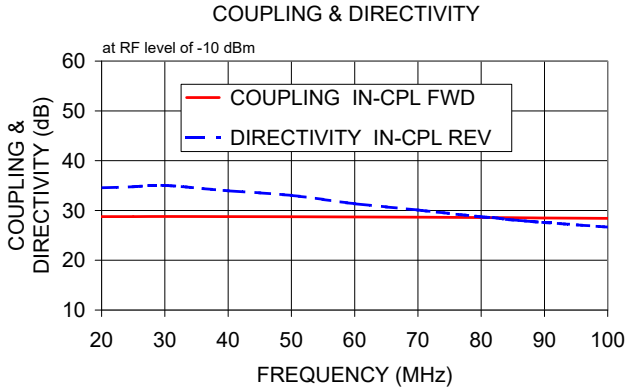
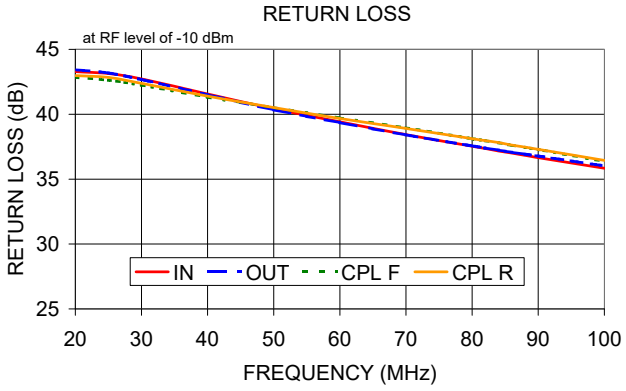
TYPICAL PERFORMANCE DATA

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	Cpl Rev
20	0.03	28.77	28.68	34.36	34.57	43.29	43.43	42.84	42.98
25	0.03	28.77	28.65	34.50	34.77	43.14	43.18	42.62	42.84
30	0.03	28.78	28.63	34.45	35.02	42.72	42.67	42.24	42.38
40	0.04	28.77	28.59	33.21	33.96	41.56	41.51	41.32	41.40
50	0.05	28.74	28.54	31.95	33.03	40.43	40.34	40.52	40.52
60	0.05	28.70	28.50	30.23	31.37	39.42	39.36	39.72	39.67
70	0.05	28.64	28.43	29.23	30.09	38.43	38.41	38.95	38.91
80	0.06	28.58	28.33	28.40	28.71	37.54	37.56	38.12	38.12
82	0.06	28.57	28.31	28.06	28.56	37.36	37.40	37.96	37.97
84	0.06	28.55	28.29	27.70	28.22	37.17	37.24	37.80	37.82
86	0.06	28.54	28.27	27.56	28.01	37.01	37.07	37.61	37.62
88	0.06	28.52	28.26	27.50	27.77	36.83	36.92	37.45	37.47
90	0.06	28.50	28.23	27.11	27.58	36.66	36.78	37.28	37.30
100	0.07	28.42	28.11	26.17	26.65	35.84	36.02	36.37	36.45







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.

B. 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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