Surface Mount

Directional Coupler

SYDC-10-42HP+

50Ω 10 dB Coupling 10 to 400 MHz 16 Watt

Generic photo used for illustration purposes only

CASE STYLE: AH1596

Maximum Ratings

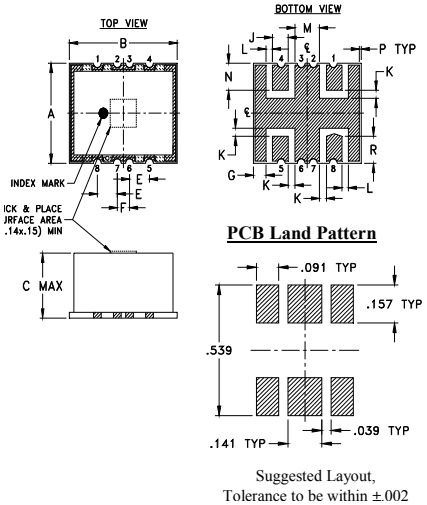
Operating Temperature	-40°C to 60°C Case*
Storage Temperature	-55°C to 100°C

*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
EXTERNAL 50Ω	4
GROUND	2,3,6,7

Outline Drawing

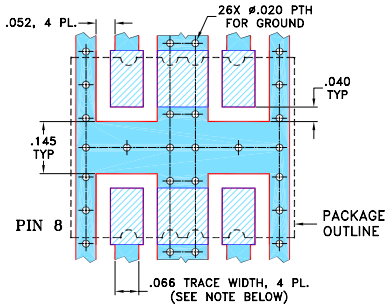


Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	E	F	G	H	
.50	.62	.36	.115	.070	.073	--	.09
12.70	15.75	9.14	2.92	1.78	1.85	--	2.2
K	**L**	**M**	**N**	**P**	**Q**	**R**	
.040	.037	.140	.135	.010	--	.135	gran
1.02	0.94	3.56	3.43	0.25	--	3.43	3.(

Demo Board MCL P/N: TB-608+
Suggested PCB Layout (PL-339)



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, 16W max.
- flat coupling, ±0.3 dB typ.
- low mainline loss, 0.3 dB typ.

Applications

- signal monitoring
- military mobile

+RoHS Compliant

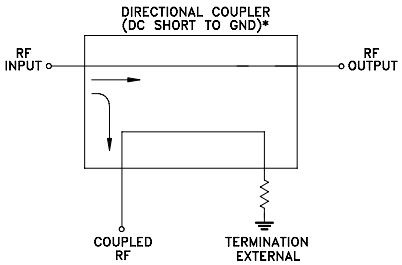
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		10	—	400	MHz
Mainline Loss (above theoretical 0.45 dB)	10-250 250-400	— —	0.3 0.6	0.7 1.3	dB
Coupling	10-400	9.0	10	10.8	dB
Coupling Flatness(±)	10-400	—	0.3	0.7	dB
Directivity	10 250 400	23 12 7	32 18 12	— — —	dB
Return Loss (Input)	10-400	—	22	—	dB
Return Loss (Output)	10-400	—	22	—	dB
Return Loss (Coupling)	10-400	—	18	—	dB
Input Power[1]	10-400	—	—	16	W

1. The user must provide adequate means of heat removal to limit the temperature of ground connections under the PCB to 65°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 3.5°C/W.

Electrical Schematic



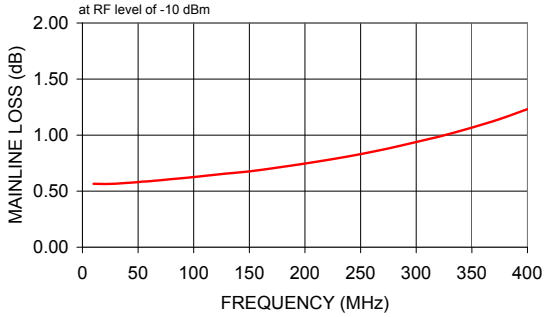
* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.

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.
C. The parts covered by this specification document 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

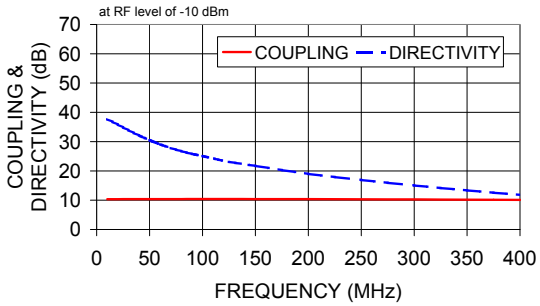
Typical Performance Data

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Return Loss (dB) Out	Return Loss (dB) Cpl
10.00	0.57	10.36	37.66	26.50	27.30	23.24
30.00	0.57	10.37	33.90	27.46	26.78	24.03
50.00	0.58	10.38	30.49	27.81	26.55	24.36
100.00	0.63	10.39	25.07	28.64	25.77	25.13
150.00	0.68	10.39	21.74	29.25	24.96	26.07
200.00	0.75	10.37	19.00	28.26	24.26	26.99
250.00	0.83	10.32	16.89	26.75	23.28	28.37
300.00	0.94	10.26	15.02	24.27	21.93	30.49
350.00	1.07	10.19	13.36	21.60	20.40	32.95
400.00	1.23	10.10	11.82	18.96	18.59	38.73

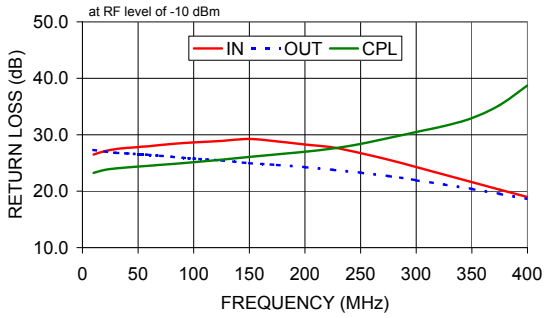
SYDC-10-42HP+
MAINLINE LOSS



SYDC-10-42HP+
COUPLING & DIRECTIVITY



SYDC-10-42HP+
RETURN LOSS



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