



SURFACE MOUNT

Directional Coupler

SYDC-10-42HP+

Mini-Circuits

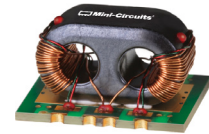
50Ω 10 dB Coupling 10 to 400 MHz 16 Watt

THE BIG DEAL

- High power, 16W max.
- Flat coupling, ±0.3 dB typ.
- Low mainline loss, 0.3 dB typ.

APPLICATIONS

- Signal monitoring
- Military mobile



Generic photo used for illustration purposes only

CASE STYLE: AH1596

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our website for 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	—	0.3	0.7	dB
	250-400	—	0.6	1.3	
Coupling	10 - 400	9.0	10	10.8	dB
Coupling Flatness (±)	10 - 400	—	0.3	0.7	dB
Directivity	10	23	32	—	dB
	250	12	18	—	
	400	7	12	—	
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

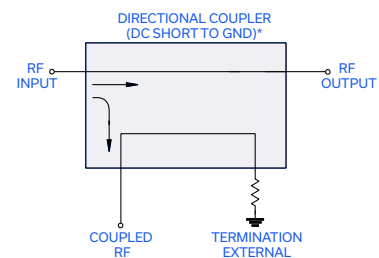
1. The user must provide adequate means of heat removal to limit the temperature of ground connections under the PCB to 65°C, in order to ensure proper performance. At 25°C ambient temperature this requires thermal resistance of the user's PC board heat sink to be 3.5°C/W.

MAXIMUM RATINGS

Parameter	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.

ELECTRICAL SCHEMATIC



*Electrical schematic is for Directional coupler with internal transformer(s) and external termination





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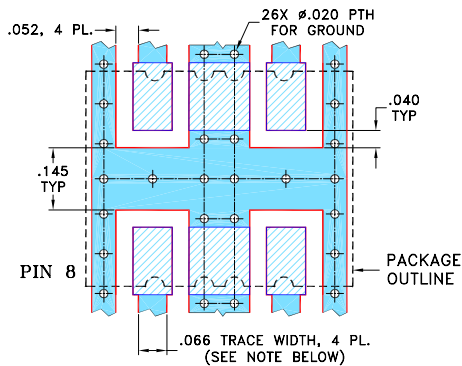
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PAD CONNECTIONS

INPUT	8
OUTPUT	1
COUPLED (FORWARD)	5
50Ω TERM EXTERNAL	4
GROUND	2, 3, 6, 7

PRODUCT MARKING: N/A

SUGGESTED PCB LAYOUT (PL-339)

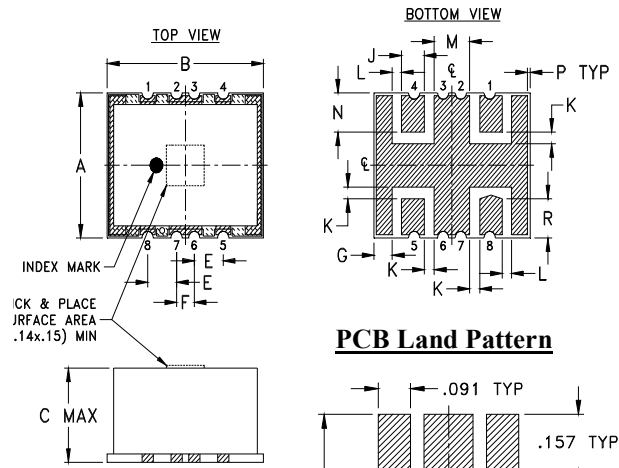


NOTES:

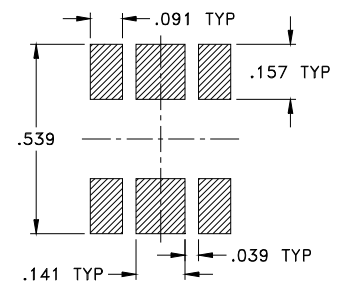
- TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.030 \pm .002$; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- 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 $\pm .002$

OUTLINE DIMENSIONS (Inches/mm)

A	B	C	E	F	G	H	I
.50	.62	.36	.115	.070	.073	--	.06
12.70	15.75	9.14	2.92	1.78	1.85	--	2.2
K	L	M	N	P	Q	R	S
.040	.037	.140	.135	.010	--	.135	gran
1.02	0.94	3.56	3.43	0.25	--	3.43	3.0



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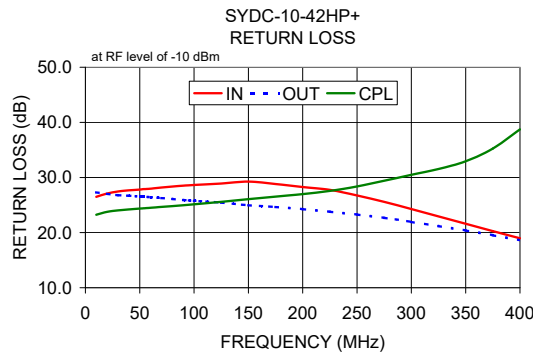
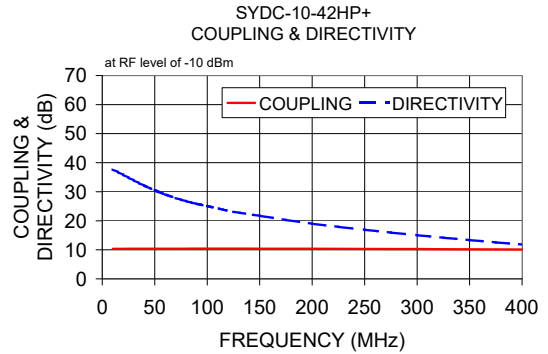
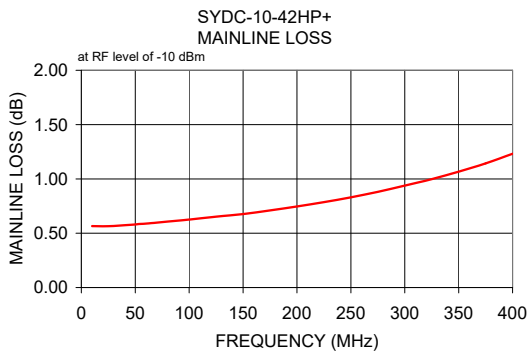
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TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB)	Coupling (dB)	Directivity (dB)	Return Loss (dB)		
	In-Out			In	Out	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



- 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/terms/viewterm.html

