SURFACE MOUNT

Bi-Directional Coupler SYDC-20-31HP+

50Ω 20 dB Coupling 1 to 30 MHz 50 Watt

FEATURES

- High power, 50W max. with output load VSWR 2.0 max
- High power, 20W max. with output open or short
- Low mainline loss, 0.1 dB typ.
- High directivity, 33 dB typ.
- Excellent flatness, 0.1 dB typ.

Generic photo used for illustration purposes only

CASE STYLE: AH1596

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

APPLICATIONS

- Military mobile
- Signal monitoring

ELECTRICAL SPECIFICATIONS AT 25°C[1]

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		1.5	—	30	MHz
Mainline Loss (above theoretical 0.044 dB)	1.5-30	—	0.06	0.25	dB
Coupling	1.5-30	19.5	20.5	21.5	dB
Coupling Flatness(±)	1.5-30	—	0.05	0.2	dB
Directivity	1.5-30	22	33	—	dB
Return Loss (Input)	1.5-30	20	25	—	dB
Return Loss (Output)	1.5-30	20	25	—	dB
Return Loss (Coupling)	1.5-30	18	24	—	dB
Input Power[2]	1.5-30	—	—	50	W

1. Tested on Evaluation Board TB-SYDC20-31HP+
2. The user must provide adequate means of heat removal to limit the temperature of ground connections 2,3,6,7, 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 10°C/W or lesswhen the unit is driven at maximum specified RF input power, 50 watt. At higher ambient temperature, with the same heat sink. Input power in watts must not exceed 50W (65°C-Tambient) /40°C

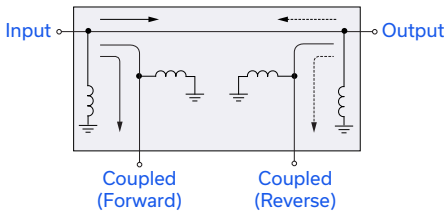
MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to 65°C
Storage Temperature	-55°C to 100°C

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. C
ECO-015468
ED-14256
SYDC-20-31HP+
YQ/CP/AM
221026

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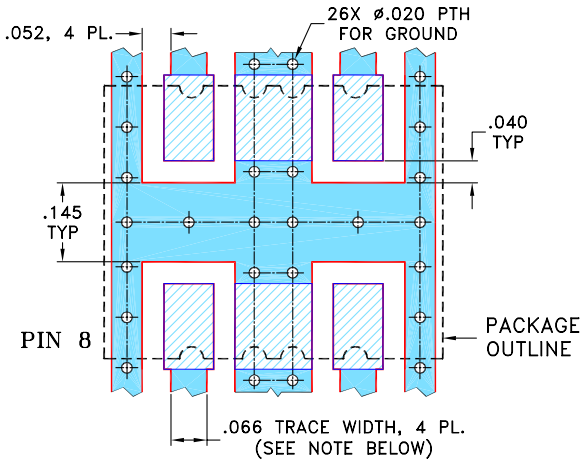
PAD CONNECTIONS

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

PRODUCT MARKING: N/A

SUGGESTED PCB LAYOUT (PL-339)



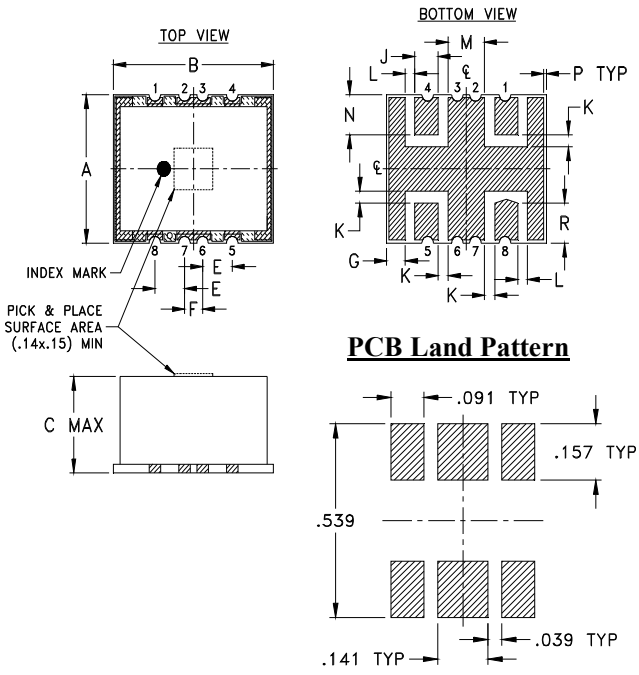
NOTES:

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

OUTLINE DRAWING



Suggested Layout,
Tolerance to be within ±.002

OUTLINE DIMENSIONS (Inches / mm)

A	B	C	E	F	G	H	J
.50	.62	.36	.115	.070	.073	--	.090
12.70	15.75	9.14	2.92	1.78	1.85	--	2.29

K	L	M	N	P	Q	R	wt
.040	.037	.140	.135	.010	--	.135	grams
1.02	0.94	3.56	3.43	0.25	--	3.43	3.00

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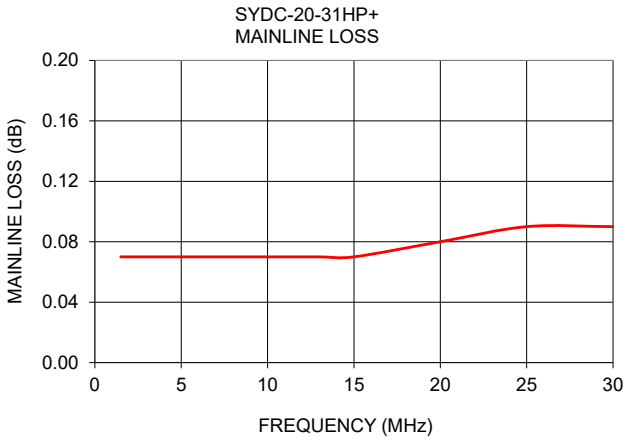
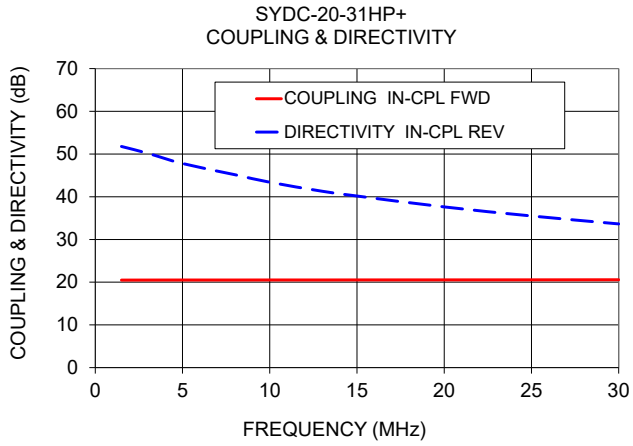
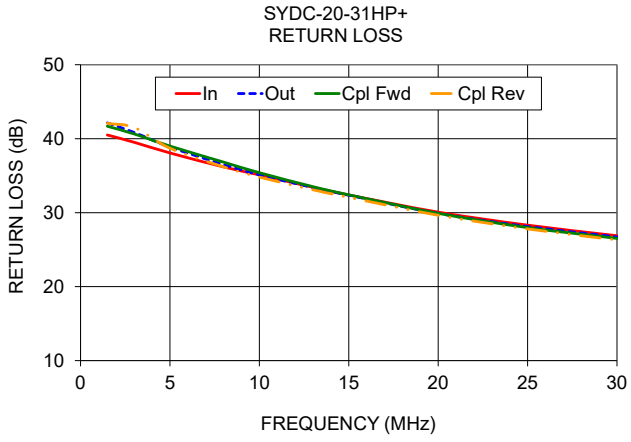
TYPICAL PERFORMANCE DATA

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
1.50	0.07	20.49	20.45	51.77	45.19	40.50	42.13	41.68	42.07
3.00	0.07	20.50	20.46	50.18	45.85	39.51	40.84	40.64	41.51
5.00	0.07	20.51	20.47	47.78	44.28	38.07	38.87	39.00	38.71
8.00	0.07	20.51	20.47	45.16	42.62	36.18	36.50	36.83	36.19
10.00	0.07	20.52	20.48	43.40	41.50	35.11	35.11	35.40	34.81
13.00	0.07	20.52	20.48	41.29	39.87	33.42	33.40	33.51	33.09
15.00	0.07	20.53	20.49	40.17	39.01	32.39	32.36	32.41	32.07
20.00	0.08	20.54	20.50	37.62	36.63	30.07	29.90	29.91	29.65
25.00	0.09	20.55	20.52	35.50	34.74	28.31	28.12	27.98	27.80
30.00	0.09	20.57	20.54	33.64	33.09	26.88	26.72	26.52	26.31







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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