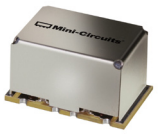
Surface Mount

Bi-Directional Coupler

SYDC-19-52HP+

50Ω 19 dB Coupling 30 to 512 MHz 50 Watt



CASE STYLE: AH1647
PRICE: $39.95 ea. QTY (1-9)

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

Maximum Ratings

Operating Temperature	-40°C to 65°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.

Pin Connections

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

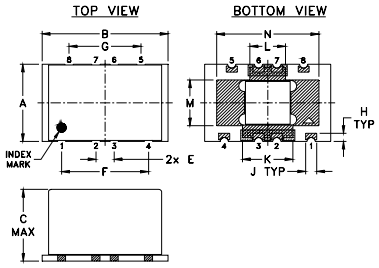
Features

- high power, 50W max. with output load VSWR 2.0 max
- high power, 20W max. with output open or short
- low mainline loss, 0.3 dB typ.
- good VSWR, 1.05 typ.

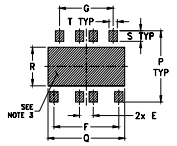
Applications

- military mobile

Outline Drawing



PCB Land Pattern



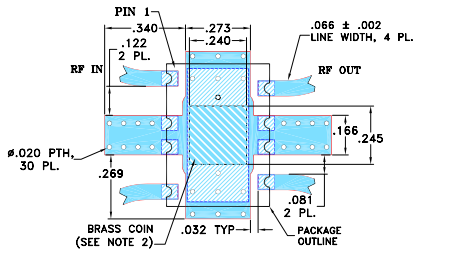
Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	E	F	G	H	J	K
.433	.690	.415	.100	.476	.394	.045	.060	.276
11.00	17.53	10.54	2.54	12.09	10.01	1.14	1.52	7.01

L	M	N	P	Q	R	S	T	wt
.194	.257	.560	.475	.561	.258	.069	.061	grams
4.93	6.53	14.22	12.07	14.25	6.55	1.75	1.55	2.80

Demo Board MCL P/N: TB-630+
Suggested PCB Layout (PL-351)



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. SUGGEST TO PROVIDE BRASS COIN FOR BETTER HEAT TRANSFER FROM THE UNIT. OTHERWISE PROVIDE ARRAY OF THERMAL VIAS ADEQUATE TO LIMIT TEMPERATURE OF GROUND CONNECTIONS UNDER THE UNIT TO 65°C.
3. 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
DENOTES BRASS COIN.

Electrical Specifications at 25°C

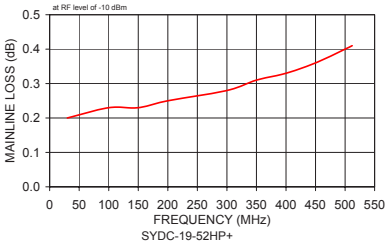
Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		30	—	512	MHz
Mainline Loss[1] (above theoretical 0.05 dB)	30 450 512		0.2 0.35 0.4	0.4 0.6 0.6	dB
Coupling	30-512 30 450 512	 19 19 19	19.5 19.5 19.9 20.0	 20 20.8 21	dB
Coupling Flatness(±)	30-512		0.4	0.6	dB
Directivity	30 450 512	22 18 16	35 25 22	— — —	dB
Return Loss (Input)	30 450 512	20 20 17	30 23 22	— — —	dB
Return Loss (Output)	30 450 512	26 23 18	31 26 24	— — —	dB
Return Loss (Coupling)	30 450 512	20 20 17	30 25 22	— — —	dB
Input Power[1]	30-100 100-450 450-512	— — —	— — —	30 50 40	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 10°C/W.

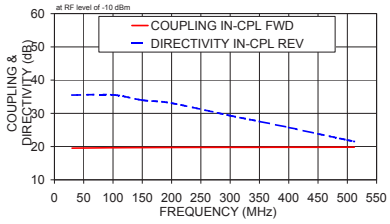
Typical Performance Data

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
30.00	0.20	19.53	19.39	35.44	35.50	30.87	32.42	31.49	32.72
100.00	0.23	19.66	19.57	35.65	35.56	34.30	36.09	34.74	36.52
150.00	0.23	19.70	19.66	34.87	33.97	36.74	37.48	35.35	38.24
200.00	0.25	19.73	19.73	33.09	33.07	35.32	36.68	34.82	37.69
300.00	0.28	19.77	19.86	29.46	29.31	31.78	34.90	31.48	36.27
350.00	0.31	19.79	19.91	27.51	27.57	29.37	33.28	29.43	35.15
400.00	0.33	19.80	19.93	25.71	25.76	27.22	31.60	27.29	33.32
450.00	0.36	19.81	19.94	23.69	23.83	25.29	29.58	25.50	31.16
500.00	0.40	19.82	19.91	21.89	21.95	23.53	27.79	23.80	29.02
512.00	0.41	19.82	19.90	21.51	21.52	23.16	27.41	23.40	28.52

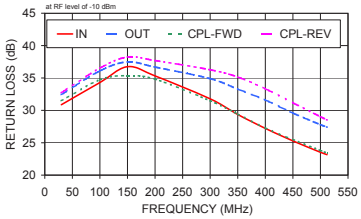
SYDC-19-52HP+
MAINLINE LOSS



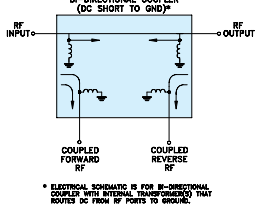
SYDC-19-52HP+
COUPLING & DIRECTIVITY



SYDC-19-52HP+
RETURN LOSS



Electrical Schematic



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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