SURFACE MOUNT

Bi-Directional Coupler

SYDC-18-23+

50Ω 18 dB Coupling 10 to 2000 MHz

FEATURES

- High directivity, 20 dB typ.
- Wideband frequency, 10-2000 MHz
- Excellent VSWR, 1.25:1 typ.

APPLICATIONS

- Cellular
- Instrumentation
- Communications
- GPS



Generic photo used for illustration purposes only

CASE STYLE: AH202-1

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

ELECTRICAL SPECIFICATIONS AT 25°C[1]

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		10		2000	MHz
Mainline Loss	10	—	0.8	1.2	dB
	30	—	0.7	1.0	
	1000	—	0.6	0.9	
	2000	—	1.0	1.5	
Coupling	10-2000	—	17.8±0.8		dB
Coupling Flatness(±)	10-300	—	0.2	0.4	dB
	300-1000	—	0.3	0.5	
	1000-2000	—	0.4	0.9	
Directivity	10	14	17	—	dB
	30	18	21	—	
	1000	15	20	—	
	2000	14	20	—	
Return Loss (Input)	10	—	18	—	dB
	30	—	21	—	
	1000	—	20	—	
	2000	—	14	—	
Return Loss (Output)	10	—	18	—	dB
	30	—	22	—	
	1000	—	20	—	
	2000	—	16	—	
Return Loss (Coupling)	10	—	18	—	dB
	30	—	21	—	
	1000	—	20	—	
	2000	—	16	—	
Input Power[2]	10	—	—	1	W
	30-1000	—	—	2	
	1000-2000	—	—	2	

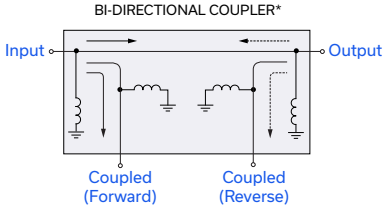
1. Tested on Evaluation Board TB-SYDC-18-23+
2. The user must provide adequate means of heat removal to limit the temperature of ground connections 2,3,6,7 to 85°C, in order to ensure proper performance. At 25°C ambient tempera ture this requires thermal resistance of the user's PC board heat sink to be 27°C/W or less when the unit is driven at maximum specified RF input power, xW. At higher ambient temperature, with the same heat sink. Input power in watts must not exceed xW x (85°C -Tambient)÷60°C. 'Where x=1 at 10 MHz and 2 over 30 to 2000 MHz.

MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C

Permanent damage may occur if any of these limits are exceeded.

ELECTRICAL SCHEMATIC



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

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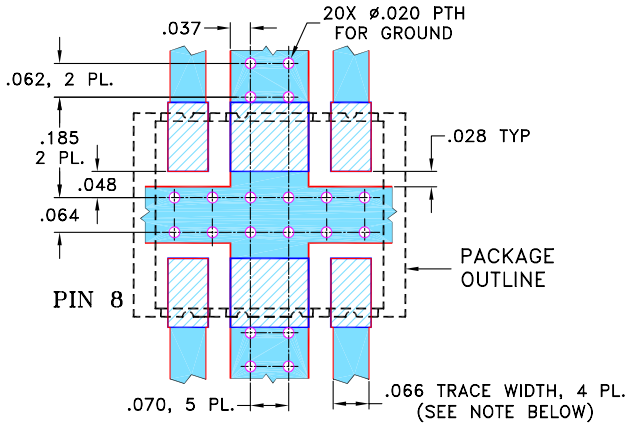
PAD CONNECTIONS

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

*PRODUCT MARKING: SYDC-18-23

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

SUGGESTED PCB LAYOUT (PL-246)



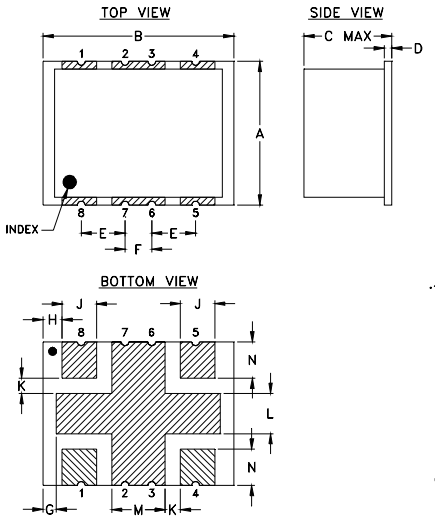
NOTES:

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.

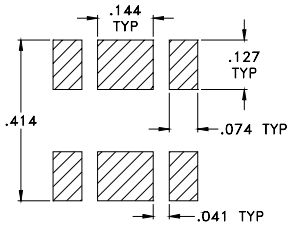
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

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

SURFACE MOUNT

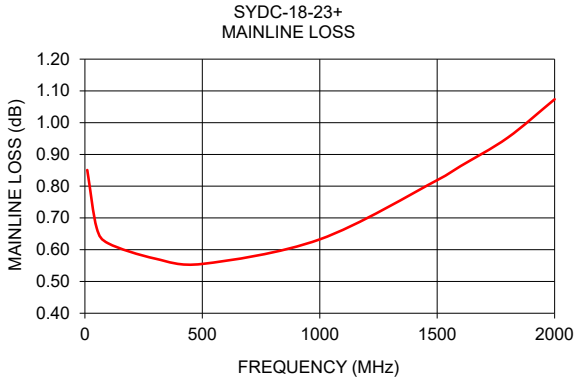
Bi-Directional Coupler

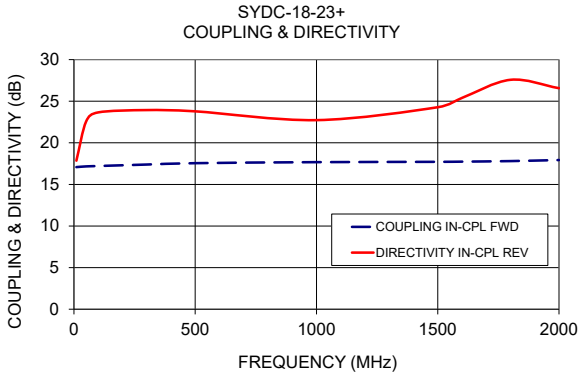
SYDC-18-23+

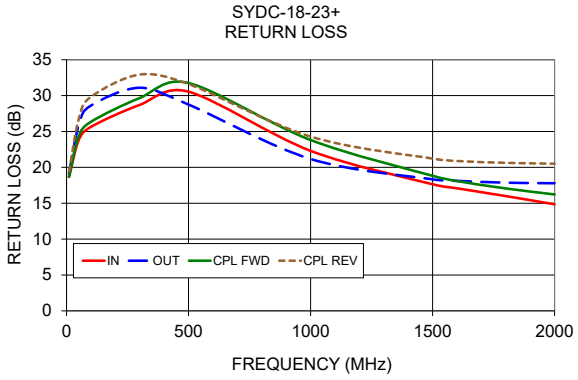
50Ω 18 dB Coupling 10 to 2000 MHz

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
10.0	0.85	17.08	18.41	19.19	17.85	18.66	19.15	18.68	19.40
50.0	0.67	17.17	18.09	23.85	22.55	23.83	25.90	24.36	26.73
100.0	0.62	17.21	18.02	24.93	23.66	25.64	28.61	26.35	29.82
300.0	0.57	17.39	18.04	25.38	23.94	28.71	31.10	29.67	32.94
500.0	0.56	17.55	18.17	24.50	23.78	30.54	28.75	31.76	31.61
1000.0	0.63	17.68	18.34	21.40	22.73	22.31	21.17	23.81	24.29
1500.0	0.82	17.71	18.25	23.73	24.28	17.65	18.33	18.83	21.22
1600.0	0.86	17.74	18.22	24.84	25.40	17.08	18.12	18.09	20.89
1800.0	0.95	17.80	18.19	28.37	27.57	16.00	17.86	17.06	20.63
2000.0	1.07	17.93	18.16	39.90	26.56	14.85	17.79	16.22	20.51







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