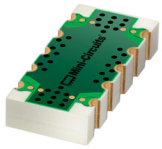
DC Pass, High Power

Bi-Directional Coupler

SCBD-16-63HP+

50Ω Up to 100W 50 to 6000 MHz



CASE STYLE: JB1233-1

The Big Deal

- Wideband, 50 to 6000 MHz
- High power handling, up to 100W
- Good directivity, 23 dB
- Low cost

Product Overview

Mini-Circuits SCBD-16-63HP+ high-power bi-directional coupler provides high power handling up to 100W and mainline loss as low as 0.2 dB. Covering frequencies from 50 to 6000 MHz, it supports a wide variety of applications from base station transmit paths to lab use and more. Good directivity of 23 dB provides accurate sampling from the coupled port, and 25 dB typical input/output return loss provides excellent matching over full frequency range. The coupler is designed into an open printed laminate (0.7 x 0.32 x 0.20") with wrap-around terminations for good solderability and easy visual inspection.

Feature	Advantages
Wideband, 50 to 6000 MHz	SCBD-16-63HP+ supports a wide range of system and lab applications.
Low mainline loss, 0.2 dB	Provides excellent through-path signal transmission.
High power handling, 100W	Usable in systems with a wide range of power requirements.
Excellent return loss, 25 dB typ. (input and output)	Provides excellent matching for 50Ω systems.
High directivity, 23 dB	High directivity allows accurate signal sampling through the coupled port with minimal measurement error.
DC current passing up to 2A	Suitable for use in systems requiring DC current at later stages.

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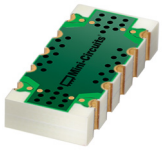


CASE STYLE: JB1233-1

+RoHS Compliant

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

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
13"	500

Maximum Ratings

Operating Temperature, case	-55°C to 85°C
Storage Temperature	-55°C to 100°C
DC Current	2A

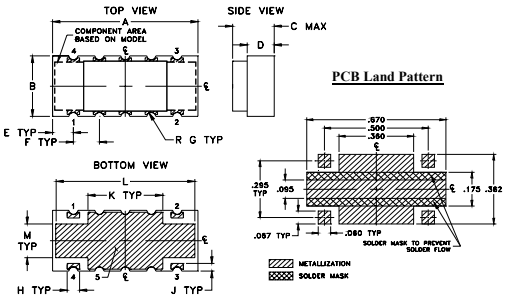
*Case temperature is defined as temperature on ground leads. Permanent damage may occur if any of these limits are exceeded.

Pad Connections

INPUT	1,2,3,4
OUTPUT	2,1,4,3
COUPLED IN	4,3,2,1
COUPLED OUT	3,4,1,2
GROUND	5

Product Marking: SCBD-01+

Outline Drawing



Suggested Layout,
Tolerance to be within ±.002

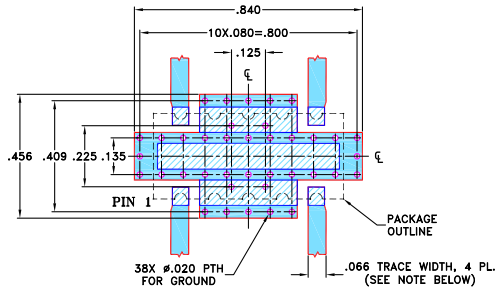
Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.70	.32	.20	.14	.100	.125	.022
17.78	8.13	5.08	3.56	2.54	3.18	0.56

H	J	K	L	M	wt
.060	.040	.360	.670	.175	grams
1.52	1.02	9.14	17.02	4.45	0.80

Demo Board MCL P/N: TB-774+
Suggested PCB Layout (PL-423)**

*** Wraparound solder on ground pins may not be shown*



NOTE: 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

- wide frequency range, 50 to 6000 MHz
- usable from 10-8000 MHz
- high directivity, 23 dB typ.
- good return loss
- high power, up to 100W
- DC current pass through input to output

Applications

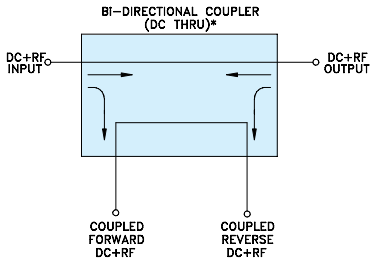
- cellular
- lab use
- WiMax
- PCN
- GSM
- ISM

Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		50		6000	MHz
Mainline Loss[1]	50 - 3500	—	0.2	0.4	dB
	3500 - 6000	—	0.45	0.7	
Coupling	50 - 400	—	41±12	—	dB
	400 - 800	—	29.5±4	—	
	800 - 1000	—	25.8±1.5	—	
	1000 - 1700	—	22.5±2.8	—	
	1700 - 2000	—	20.3±1.3	—	
	2000 - 2700	—	18.8±1.5	—	
	2700 - 3500	—	17.3±1.3	—	
	3500 - 6000	—	16.2±1	—	
Coupling Flatness (±)	1700 - 2000	—	0.5	1.0	dB
	2700 - 3500	—	0.6	1.0	
	3500 - 6000	—	0.5	1.0	
Directivity	50 - 2000	20	25	—	dB
	2000 - 3500	18	23	—	
	3500 - 4200	16	22	—	
	4200 - 6000	13	18	—	
Return Loss (Input)	50 - 3500	19	25	—	dB
	3500 - 6000	14	20	—	
Return Loss (Output)	50 - 3500	19	25	—	dB
	3500 - 6000	14	20	—	
Return Loss (Coupling)	50 - 3500	19	25	—	dB
	3500 - 6000	14	20	—	
Input Power[2] **(up to +65°C case temp.)**	50 - 2700	—	—	100	W
	2700 - 3500	—	—	75	
	3500 - 6000	—	—	50	
Input Power (up to +85°C case temp.)	50 - 2700	—	—	64	
	2700 - 3500	—	—	50	
	3500 - 6000	—	—	40	

1. Include coupling loss.
2. At 25°C with no DC. Derate linearly to 75W (50-2700 MHz), 50W (2700-3500 MHz) and 25W (3500-6000 MHz) at 65°C with 2A DC current.

Electrical Schematic



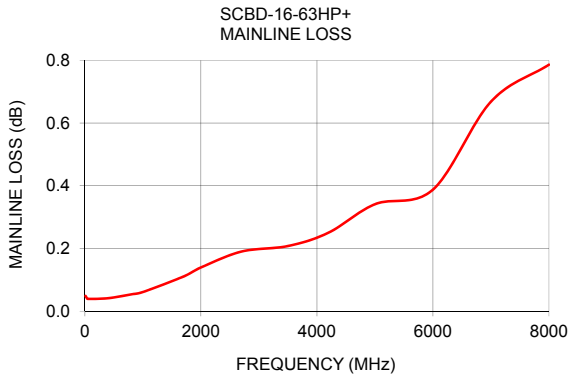
* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITHOUT INTERNAL TRANSFORMERS AND RESISTORS.

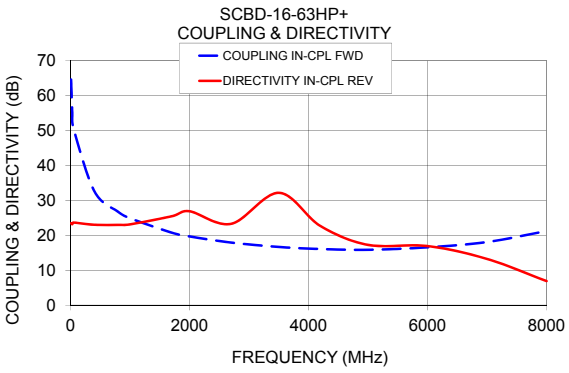
Notes

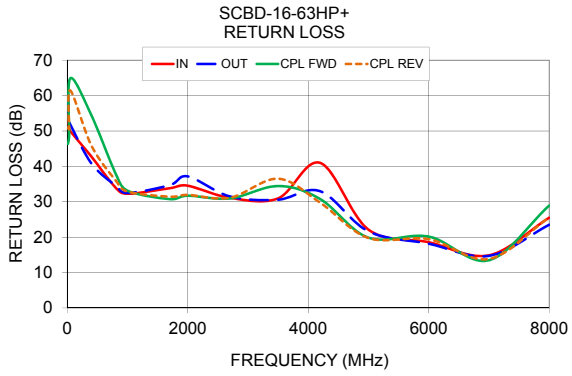
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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)	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	0.05	64.55	64.57	23.40	23.44	54.79	60.31	46.37	50.93
30.0	0.04	55.08	55.07	23.29	23.18	50.68	52.67	48.46	50.53
50.0	0.04	50.64	50.65	23.88	23.64	49.92	51.81	64.89	61.44
400.0	0.04	32.64	32.64	23.21	23.01	42.77	40.84	54.45	45.89
800.0	0.05	26.73	26.74	23.24	22.99	34.03	34.58	38.06	36.10
1000.0	0.06	24.88	24.88	23.32	23.12	32.26	32.48	33.13	32.88
1700.0	0.11	20.76	20.76	27.16	25.44	33.84	34.69	30.76	31.44
2000.0	0.14	19.68	19.69	28.73	26.88	34.54	37.18	31.71	31.94
2700.0	0.19	17.92	17.97	24.84	23.28	31.10	31.50	30.93	31.14
3500.0	0.21	16.67	16.69	30.41	32.16	30.97	30.60	34.45	36.52
4200.0	0.25	16.09	16.12	21.98	22.66	40.98	32.98	30.76	29.72
5000.0	0.34	15.86	15.89	17.78	17.26	22.13	21.64	19.85	19.77
6000.0	0.39	16.57	16.70	17.98	16.92	18.58	18.15	20.18	19.44
7000.0	0.67	18.08	17.71	11.77	13.24	14.87	14.71	13.47	13.84
8000.0	0.79	21.22	21.45	7.08	6.91	25.50	23.51	28.94	25.59







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