High Power
Bi-Directional Coupler

SYBD-22-172HP+

50Ω 22dB Coupling DC Pass 1400 to 1750 MHz

CASE STYLE: JB1233
PRICE: $29.95 ea. QTY (1-9)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The + suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Maximum Ratings

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

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

Pin Connections

INPUT	1
OUTPUT	2
COUPLED (forward)	4
COUPLED (reverse)	3
GROUND	5

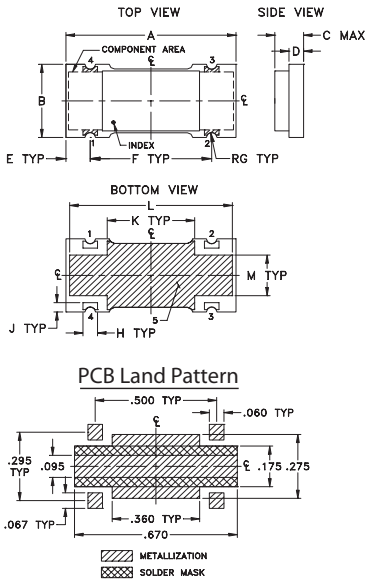
Features

- high power handling, 50 watts typ.
- low mainline loss, 0.09 dB typ.
- excellent VSWR, 1.15:1 typ.
- good directivity, 24 dB typ.
- wideband frequency, 1400 to 1750 MHz

Applications

- GPS
- instrumentation
- defense communications
- federal communications

Outline Drawing



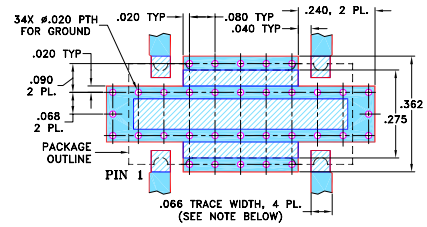
Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.70	.32	.13	.060	.100	.500	.022
17.78	8.13	3.30	1.52	2.54	12.70	0.56

H	J	K	L	M	wt
.060	.040	.360	.670	.175	grams
1.52	1.02	9.14	17.02	4.45	0.68

Demo Board MCL P/N: TB-398
Suggested PCB Layout (PL-260)



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

Bi-Directional Coupler Electrical Specifications

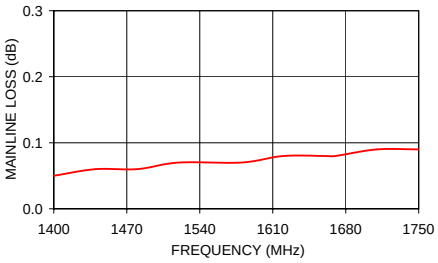
FREQ. (MHz)	COUPLING (dB)		MAINLINE LOSS[1] (dB)		DIRECTIVITY (dB)		VSWR (:1)	POWER INPUT (W)
f_L-f_U	Nom.	Flatness	Typ.	Max.	Typ.	Min.	Typ.	Max.
1400-1750			**0.09**	**0.30**	**20**	**16**	**1.15**	
1400-1580	22.3±0.7	±0.7	0.07	0.30	24	17	1.15	50
1580-1750	21.5±0.7	±0.6	0.09	0.30	23	16	1.15	25

1. Mainline loss includes theoretical power loss at coupled port.

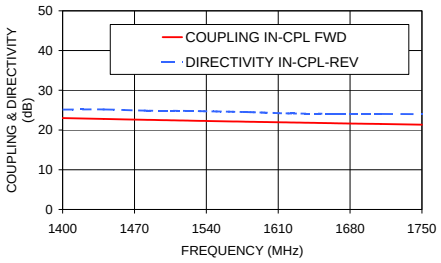
Typical Performance Data

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
1400.00	0.05	23.00	23.02	24.67	25.14	25.39	24.98	28.86	28.19
1440.00	0.06	22.79	22.81	24.57	25.18	25.07	24.66	28.59	27.83
1480.00	0.06	22.58	22.60	24.38	24.89	24.65	24.38	28.07	27.33
1520.00	0.07	22.38	22.40	24.30	24.81	24.35	24.10	27.87	27.35
1580.00	0.07	22.08	22.10	24.13	24.51	24.06	23.84	27.66	26.89
1620.00	0.08	21.90	21.92	23.75	24.17	23.84	23.64	27.26	26.71
1660.00	0.08	21.73	21.74	23.75	24.10	23.77	23.61	27.41	26.96
1670.00	0.08	21.68	21.70	23.84	24.08	23.76	23.64	27.49	26.93
1710.00	0.09	21.52	21.53	23.80	24.04	23.71	23.59	27.44	26.69
1750.00	0.09	21.35	21.36	23.73	24.00	23.64	23.52	27.29	26.85

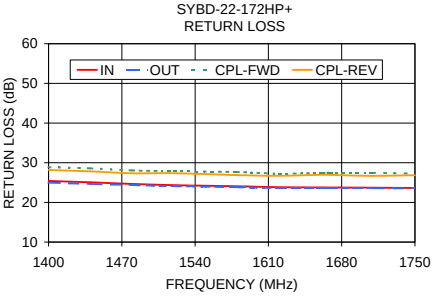
SYBD-22-172HP+
MAINLINE LOSS



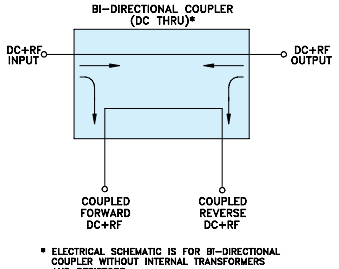
SYBD-22-172HP+
COUPLING & DIRECTIVITY



SYBD-22-172HP+
RETURN LOSS



Electrical Schematic



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

For detailed performance specs & shopping online see web site

REV. A
M119986
ED-12832/3
SYBD-22-172HP+
WZ/CP/AM
090911