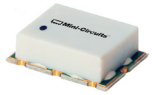
Surface Mount

Power Splitter/Combiner

SYPJ-2-13+

2 Way-180° 50Ω 10 to 1000 MHz



Generic photo used for illustration purposes only

CASE STYLE: TTT166

+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
7"	10, 20, 50, 100, 200
13"	500

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.
Internal Dissipation	0.125W max.

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

Pin Connections

SUM PORT	3
PORT 1 (0°)	1
PORT 2 (180°)	2
GROUND	4,5,6

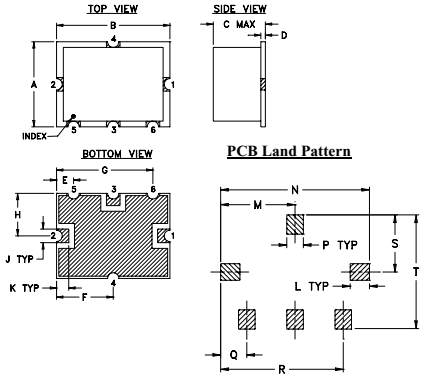
Features

- wideband, 10 to 1000 MHz
- good isolation, 22 dB typ.
- excellent amplitude unbalance, 0.3 dB typ.

Applications

- VHF/UHF
- cellular
- communication systems

Outline Drawing



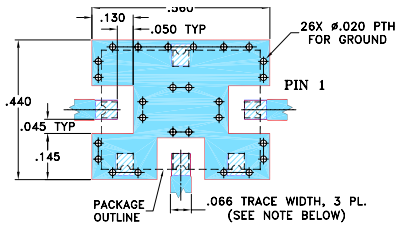
Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J
.38	.50	.15	.020	.075	.250	.425	.187	.050
9.65	12.70	3.81	0.51	1.91	6.35	10.80	4.75	1.27

K	L	M	N	P	Q	R	S	T	wt.
.050	.070	.270	.540	.060	.095	.445	.208	.415	grams
1.27	1.78	6.86	13.72	1.52	2.41	11.30	5.28	10.54	0.8

Demo Board MCL P/N: TB-12
Suggested PCB Layout (PL-079)



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. THE USE OF SOLDER MASK OVER THE GROUND AREA UNDER THE UNIT AS SHOWN IS RECOMMENDED TO PREVENT POTENTIAL SHORTING. IF USER CHOOSES TO EXPOSE METAL UNDER THE ENTIRE UNIT GROUND PAD FOR IMPROVED GROUNDING, IT IS RECOMMENDED A SOLDER MASK DAM BE APPLIED AROUND EACH GROUND PAD TO ENSURE FILLET AND CONNECTION AT GROUND PADS.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER), SEE NOTE 2.

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Electrical Specifications at 25°C

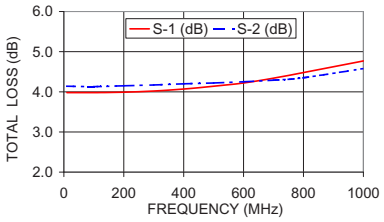
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency		10		1000	MHz
Insertion Loss (above theoretical 3.0 dB)	10-100	—	1.2	1.7	dB
	100-500	—	1.3	1.8	
	500-1000	—	1.7	2.3	
Isolation	10-100	20	24	—	dB
	100-500	18	22	—	
	500-1000	18	21	—	
Phase Unbalance	10-100	—	1.0	4.0	Degree
	100-500	—	4.0	8.0	
	500-1000	—	6.0	12.0	
Amplitude Unbalance	10-100	—	0.2	0.5	dB
	100-500	—	0.25	0.5	
	500-1000	—	0.3	0.7	
VSWR (Port S)	10-100	—	1.1	—	:1
	100-500	—	1.3	—	
	500-1000	—	1.6	—	
VSWR (Port 1-2)	10-100	—	1.4	—	:1
	100-500	—	1.5	—	
	500-1000	—	1.7	—	

Typical Performance Data

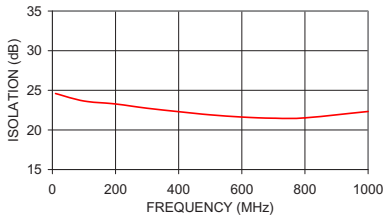
Frequency (MHz)	Total Loss[1] (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
10	3.98	4.14	0.15	24.59	180.00	1.08	1.34	1.37
100	3.98	4.13	0.15	23.65	179.19	1.09	1.29	1.33
200	3.99	4.15	0.16	23.27	178.46	1.15	1.27	1.36
300	4.02	4.17	0.15	22.74	177.82	1.21	1.26	1.41
400	4.07	4.20	0.13	22.30	177.27	1.26	1.25	1.47
500	4.14	4.22	0.09	21.90	176.79	1.32	1.25	1.52
600	4.22	4.25	0.03	21.63	176.33	1.37	1.26	1.58
700	4.34	4.29	0.05	21.48	175.82	1.43	1.30	1.63
800	4.48	4.35	0.13	21.52	175.23	1.48	1.36	1.68
1000	4.77	4.58	0.20	22.33	173.64	1.61	1.54	1.81

1. Total Loss = Insertion Loss + 3dB splitter theoretical loss.

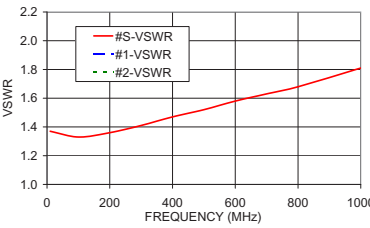
SYPJ-2-13+
TOTAL LOSS



SYPJ-2-13+
ISOLATION



SYPJ-2-13+
VSWR



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.
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