

# Surface Mount Power Splitter/Combiner

2 Way-0°    75Ω    5 to 1250 MHz

TCP-2-122-75X+

## Features

- operates over both upstream and downstream bands
- low insertion, 0.8 dB typ.
- excellent amplitude unbalance, 0.3 dB typ.
- very good phase unbalance, 1.0 deg. typ.
- external resistor & capacitor required
- aqueous washable
- leads for excellent solderability
- low cost

## Applications

- DOCSIS® 3.1 Systems
- VHF/UHF
- CATV
- cellular



CASE STYLE: DB1627

### +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"	20, 50, 100, 200, 500
13"	1000, 2000

## Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
<b>Frequency Range</b>		5		1250	MHz
<b>Insertion Loss Above 3.0 dB</b>	5-50	—	0.5	0.7	dB
	50-1000	—	0.8	1.3	
	1000-1250	—	1.0	1.9	
<b>Isolation</b>	5-1000	19	25	—	dB
	1000-1250	17	23	—	
<b>Phase Unbalance</b>	5-1000	—	1.0	3	Degree
	1000-1250	—	2.0	5	
<b>Amplitude Unbalance</b>	5-1000	—	0.3	0.6	dB
	1000-1250	—	0.5	0.8	
<b>VSWR (Port S)</b>	5-1000	—	1.3	1.6	:1
	1000-1250	—	1.6	1.9	
<b>VSWR (Port 1-2)</b>	5-1000	—	1.3	1.8	:1
	1000-1250	—	1.6	1.9	

## Maximum Ratings

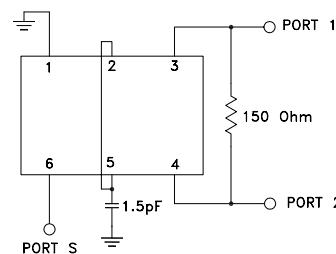
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.

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

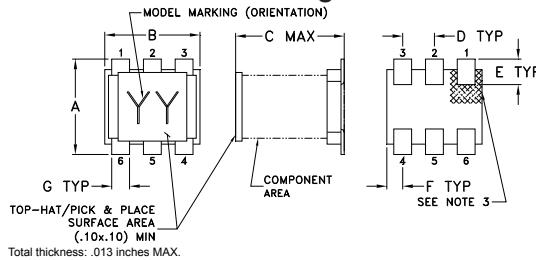
## Pin Connections

Function	Pin Number
SUM PORT	6
POR T1	3
POR T2	4
GROUND	1
CONNECT	2,5
EXT. RESISTOR 150Ω	3,4
EXT. CAPACITOR 1.5pF	2 OR 5 TO GND

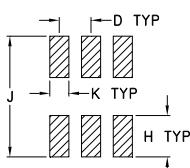
## Electrical Schematic



## Outline Drawing



## PCB Land Pattern

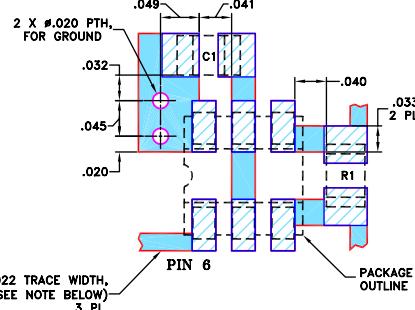


Suggested Layout,  
Tolerance to be within .002

## Outline Dimensions (inches)

A	B	C	D	E	F
.160	.150	.160	.050	.040	.025
4.06	3.81	4.06	1.27	1.02	0.64
G	H	J	K		wt
.028	.065	.190	.030		grams
0.71	1.65	4.83	0.76		0.15

## Demo Board MCL P/N: TB-124 Suggested PCB Layout (PL-002)



RESISTOR R1: 150 Ohm, 0805 SIZE  
CAPACITOR C1: 1.5 pF, 0805 SIZE

NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $0.030'' \pm 0.002''$ ; COPPER: 1 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

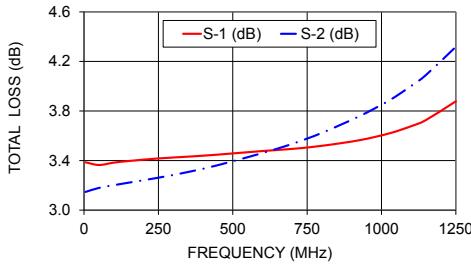
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Typical Performance Data

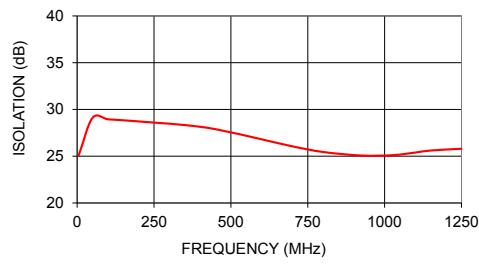
Frequency (MHz)	Total Loss <sup>1</sup> (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
5	3.39	3.15	0.24	25.09	1.29	1.04	1.27	1.19
50	3.36	3.18	0.19	29.10	0.06	1.01	1.19	1.14
100	3.38	3.20	0.18	28.95	0.10	1.04	1.18	1.14
150	3.40	3.22	0.17	28.84	0.21	1.06	1.18	1.15
250	3.42	3.26	0.16	28.59	0.39	1.10	1.18	1.17
350	3.43	3.31	0.12	28.33	0.53	1.14	1.18	1.21
450	3.45	3.36	0.09	27.89	0.64	1.17	1.19	1.24
600	3.48	3.46	0.02	26.81	0.72	1.20	1.21	1.29
700	3.49	3.53	0.04	26.06	0.67	1.21	1.24	1.33
800	3.52	3.62	0.10	25.45	0.51	1.21	1.27	1.36
925	3.56	3.76	0.19	25.07	0.09	1.23	1.32	1.41
1025	3.62	3.88	0.27	25.11	0.42	1.25	1.36	1.45
1100	3.68	4.00	0.32	25.39	0.90	1.28	1.39	1.49
1150	3.73	4.09	0.36	25.61	1.30	1.30	1.41	1.52
1250	3.88	4.32	0.44	25.80	1.99	1.35	1.45	1.59

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

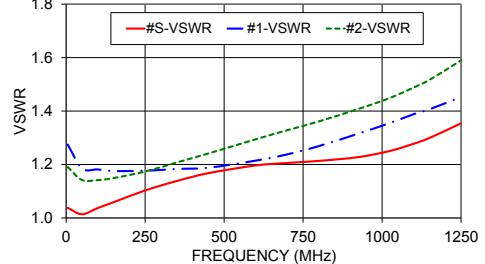
TCP-2-122-75X+  
TOTAL LOSS



TCP-2-122-75X+  
ISOLATION



TCP-2-122-75X+  
VSWR



## Additional 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](http://www.minicircuits.com/MCLStore/terms.jsp)