

top hat®

# Surface Mount Power Splitter/Combiner

## TCP-2-23-75+

2 Way-0° 75Ω 900 to 2300 MHz

### Features

- low insertion, 0.8 dB typ.
- excellent amplitude unbalance, 0.2 dB typ.
- very good phase unbalance, 1.2 deg. typ.
- external resistor required
- aqueous washable
- leads for excellent solderability
- low cost

### Applications

- cellular
- PCN
- GPS
- communications systems



Generic photo used for illustration purposes only

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
Frequency Range		900		2300	MHz
Insertion Loss Above 3.0 dB	900-1300	—	0.7	1.2	dB
	1300-2300	—	1.0	1.8	
Isolation	900-1300	13.0	16.0	—	dB
	1300-2300	14.0	18.0	—	
Phase Unbalance	900-1300	—	3.0	5.0	Degree
	1300-2300	—	—	8.0	
Amplitude Unbalance	900-1300	—	0.2	0.5	dB
	1300-2300	—	0.4	0.8	
VSWR (Port S)	900-2300	—	1.9	—	:1
VSWR (Port 1-2)	900-2300	—	1.6	—	:1

### Maximum Ratings

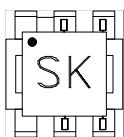
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.

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

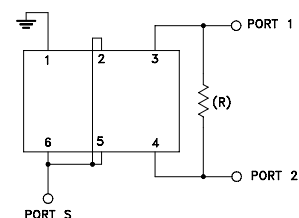
### Pin Connections

Function	Pin Number
SUM PORT	2,5,6
PORT 1	3
PORT 2	4
GROUND	1
EXT. RESISTOR 681Ω	3,4

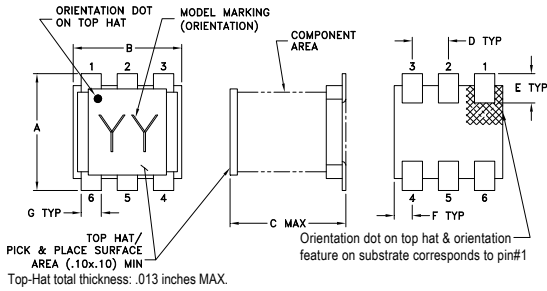
### Product Marking



### Electrical Schematic



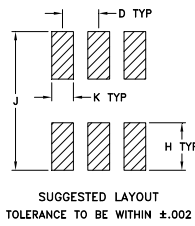
## Outline Drawing



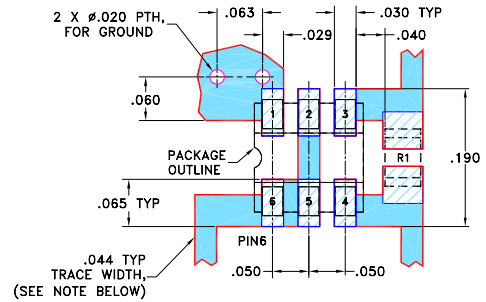
## Outline Dimensions (inch/mm)

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	

## PCB Land Pattern



## Demo Board MCL P/N: TB-315 Suggested PCB Layout (PL-396)



RESISTOR R1: 681 ± 1% Ohm, 0805 SIZE

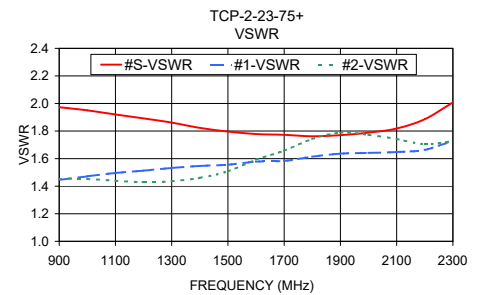
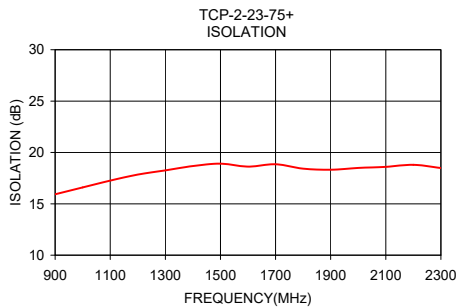
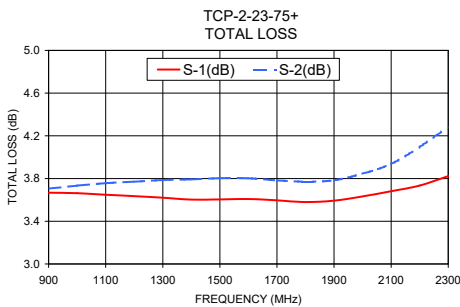
- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## 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						
900.00	3.67	3.71	0.04	15.93	0.39	1.97	1.45	1.46
1000.00	3.66	3.73	0.07	16.59	0.58	1.95	1.47	1.45
1100.00	3.65	3.76	0.11	17.26	0.77	1.92	1.50	1.44
1200.00	3.64	3.77	0.13	17.85	1.05	1.89	1.51	1.43
1300.00	3.62	3.79	0.17	18.26	1.35	1.86	1.53	1.44
1400.00	3.60	3.79	0.19	18.68	1.78	1.82	1.55	1.46
1500.00	3.60	3.80	0.20	18.91	2.16	1.80	1.56	1.51
1600.00	3.61	3.80	0.19	18.62	2.57	1.78	1.58	1.59
1700.00	3.60	3.78	0.19	18.85	2.90	1.77	1.58	1.66
1800.00	3.58	3.77	0.19	18.42	3.25	1.76	1.61	1.74
1900.00	3.59	3.78	0.19	18.32	3.36	1.77	1.64	1.79
2000.00	3.63	3.85	0.21	18.49	3.33	1.79	1.64	1.77
2100.00	3.68	3.94	0.26	18.60	3.67	1.82	1.65	1.74
2200.00	3.73	4.10	0.36	18.79	3.70	1.89	1.66	1.71
2300.00	3.82	4.29	0.46	18.48	4.27	2.01	1.73	1.73

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



## Additional Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- 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)