

# Surface Mount Power Splitter/Combiner

## SBTCJ-122-75X+

2 Way-180° 75Ω 5 to 1250 MHz

### Maximum Ratings

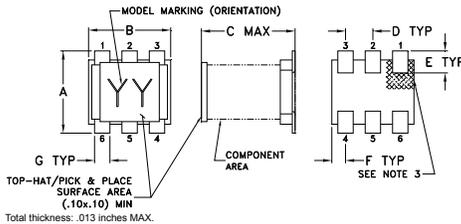
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	1.0W max.

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

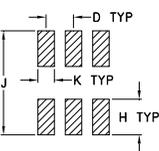
### Pin Connections

SUM PORT	6
PORT 1 (180°)	1
PORT 2 (0°)	3
GROUND	4
EXT. INDUCTOR SERIES 3.6nH	3
EXT. CAPACITOR 0.8pF	3 TO GND
EXT. CAPACITOR 3.6pF	5 TO GND
EXT. RESISTOR 30.1Ω	5 TO GND
EXT. RESISTOR SERIES 4.99Ω	1
GROUND OR NOT USE	2

### Outline Drawing



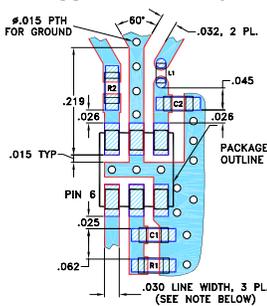
### PCB Land Pattern



### 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	

### Demo Board MCL P/N: TB-580+ Suggested PCB Layout (PL-342)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B 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

### 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-Circuits' 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)

### Features

- wide band frequency 5-1250 MHz.
- low insertion, 1.5 dB typ.
- excellent amplitude unbalance, 0.3 dB typ.
- very good phase unbalance, 2.7 deg. typ.
- external resistor inductor & capacitor required
- aqueous washable
- leads for excellent solderability
- low cost

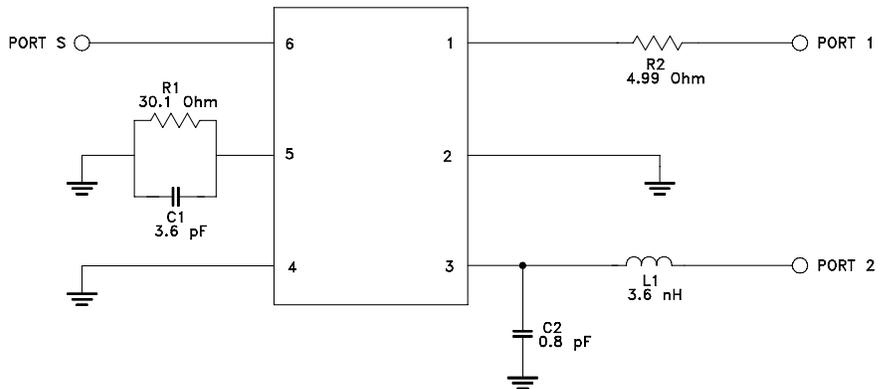
### Applications

- DOCSIS® 3.1 Systems
- CATV
- cellular
- UHV/VHV

### Electrical Specifications at 25°C

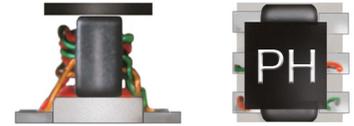
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1250	MHz
Insertion Loss Above 3.0 dB	5-50	—	1.1	1.7	
	50-1000	—	1.5	2.0	dB
	1000-1250	—	2.1	2.7	
Isolation	5-50	20	29	—	
	50-1000	20	28	—	dB
	1000-1250	17	20	—	
Phase Unbalance	5-50	—	0.6	3	
	50-1000	—	2.7	9	Degree
	1000-1250	—	5.0	12	
Amplitude Unbalance	5-50	—	0.4	0.6	
	50-1000	—	0.5	0.9	dB
	1000-1250	—	1.0	1.7	
VSWR (Port S)	5-50	—	1.27	1.5	
	50-1000	—	1.25	1.5	:1
	1000-1250	—	1.25	1.6	
VSWR (Port 1-2)	5-50	—	1.23	1.5	
	50-1000	—	1.28	1.8	:1
	1000-1250	—	1.68	2.1	

### Application Circuit



SEQ.	Description
CAP C1	S-SER 3.6±.1 pF; 0603 SIZE
CAP C2	HIQ 0.8 ±.1 pF; 0603 SIZE
IND L1	3.6±.1 nH; 0402 SIZE
RES R1	.1W 30.1 OHM 1%; 0603 SIZE
RES R2	.1W 4.99 OHM 1%; 0603 SIZE

SEQ.	Suggested Supplier Part #
C1	AVX. 0603 1U3R6 * AT2A
C2	AVX. 0603 1U0R8 * AT2A
L1	Murat LQP15MN3N6B00
R1	KOA RK73HIJTTD30R1F
R2	KOA RK73HIJTTD4R99F



CASE STYLE: DB1627

### +RoHS Compliant

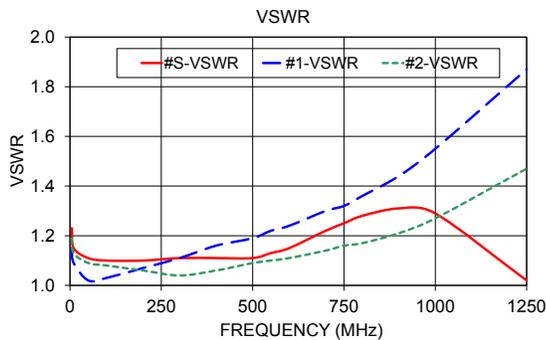
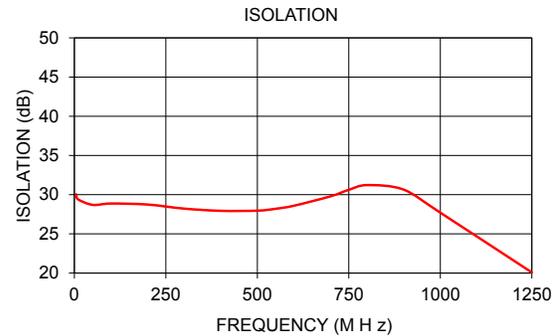
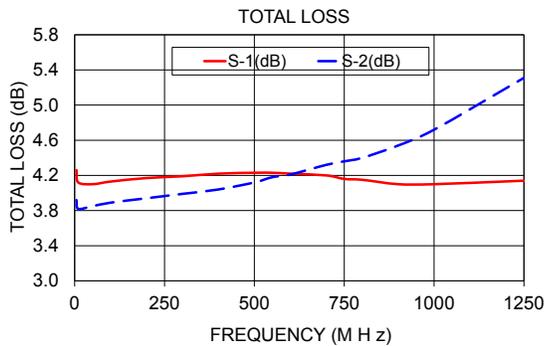
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Reel Size	Available Tape and Reel at no extra cost
7"	Devices/Reel 20, 50, 100, 200, 500
13"	1000, 2000

## 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						
5.00	4.26	3.92	0.34	30.05	179.61	1.23	1.15	1.19
10.00	4.12	3.82	0.30	29.41	179.60	1.15	1.09	1.13
50.00	4.10	3.85	0.25	28.70	179.99	1.11	1.02	1.09
100.00	4.13	3.89	0.24	28.87	179.77	1.10	1.03	1.08
200.00	4.17	3.94	0.23	28.74	179.39	1.10	1.07	1.06
300.00	4.19	3.99	0.21	28.22	179.06	1.11	1.11	1.04
400.00	4.22	4.04	0.17	27.94	178.93	1.11	1.16	1.06
500.00	4.23	4.12	0.10	27.96	178.85	1.11	1.19	1.09
550.00	4.23	4.18	0.05	28.20	178.94	1.13	1.22	1.10
600.00	4.22	4.21	0.01	28.59	179.11	1.15	1.24	1.11
700.00	4.20	4.32	0.12	29.79	179.42	1.22	1.30	1.14
750.00	4.16	4.36	0.20	30.62	179.59	1.25	1.32	1.16
800.00	4.15	4.40	0.26	31.22	179.85	1.28	1.36	1.17
900.00	4.10	4.54	0.44	30.64	179.53	1.31	1.44	1.21
1000.00	4.10	4.72	0.61	27.70	178.60	1.29	1.55	1.27
1250.00	4.14	5.31	1.17	20.08	174.23	1.02	1.87	1.47

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



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