



**SURFACE MOUNT** <sup>top hat</sup>  
**Power Splitter/Combiner**

**SBTCJ-13-75+**

Mini-Circuits

2 Way-180° 75Ω 5 to 1000 MHz

**FEATURES**

- Wide Band Frequency 5 to 1000 MHz
- Low Insertion Loss, 1.1 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



Generic photo used for illustration purposes only  
CASE STYLE: DB1627

**+RoHS Compliant**  
The +Suffix identifies RoHS Compliance.  
See our website for methodologies and qualifications

**APPLICATIONS**

- CATV
- Cellular
- UHV/VHV

**ELECTRICAL SPECIFICATIONS AT +25°C**

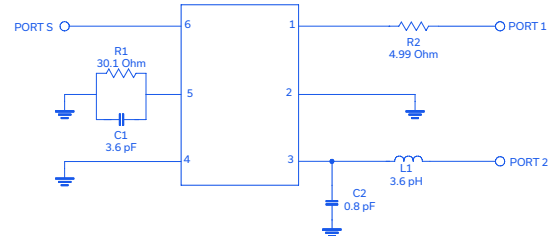
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1000	MHz
Insertion Loss Above 3.0 dB	5-50		1.1	1.7	dB
	50-500		1.2	1.6	
	500-1000		1.5	2.1	
Isolation	5-50	20	29		dB
	50-500	20	28		
	500-1000	20	26		
Phase Unbalance	5-50		0.6	3	Degree
	50-500		2.7	7	
	500-1000		2.8	9	
Amplitude Unbalance	5-50		0.4	0.6	dB
	50-500		0.3	0.5	
	500-1000		0.8	1.2	
VSWR (Port-S)	5-50		1.27	1.5	:1
	50-500		1.15	1.3	
	500-1000		1.38	1.6	
VSWR (Port 1-2)	5-50		1.23	1.5	:1
	50-500		1.24	1.4	
	500-1000		1.58	1.8	

**ABSOLUTE MAXIMUM RATINGS**

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

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

**ELECTRICAL SCHEMATIC**



SEQ.	Description	Suggested Supplier Part #
CAP C1	S-SER 3.6±.1 pF; 0603 Size	AVX. 0603 1U3R6 * AT2A
CAP C2	HIQ 0.8 ±.1 pF; 0603 Size	AVX. 0603 1U0R8 * AT2A
IND L1	3.6±.1 nH; 0402 Size	Murat LQP15MN3N6B00
RES R1	.1 W 30.1Ω 1%; 0603 Size	KOA RK73HJTDD30R1F
RES R2	.1 W 4.99 Ω 1%; 0603 Size	KOA RK73HJTDD4R99F





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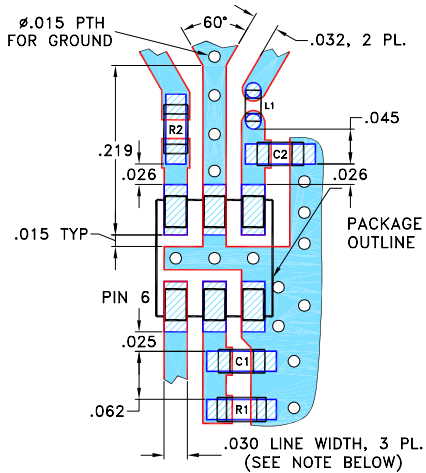
2 Way-180° 75Ω 5 to 1000 MHz

**PIN CONNECTIONS**

SUM PORT	6
PORT 1 (180°)	1
PORT 2 (0°)	3
GROUND	4
EXT. INDUCTOR SERIES 3.6 nh	3
EXT. CAPACITOR 0.8 pf	3 to GND
EXT. CAPACITOR 3.6 pf	5 to GND
EXT. RESISTOR 30.1Ω	5 to GND
EXT. RESISTOR SERIES 4.99Ω	1
NOT USED	2

**PRODUCT MARKING:** PH

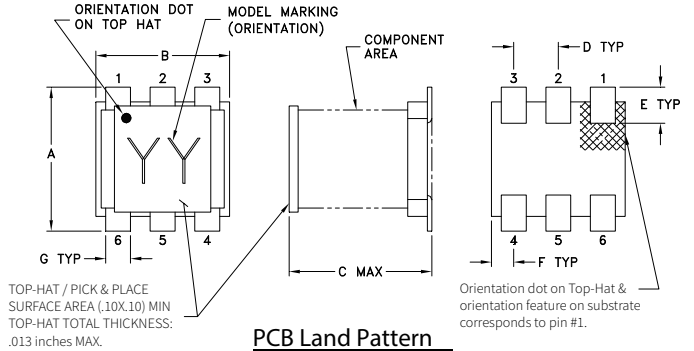
**DEMO BOARD MCL P/N: TB-580+**  
**SUGGESTED PCB LAYOUT (PL-342)**



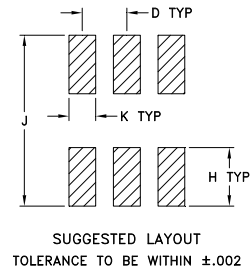
- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

**OUTLINE DRAWING**



**PCB Land Pattern**



**OUTLINE DIMENSIONS (Inches / 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

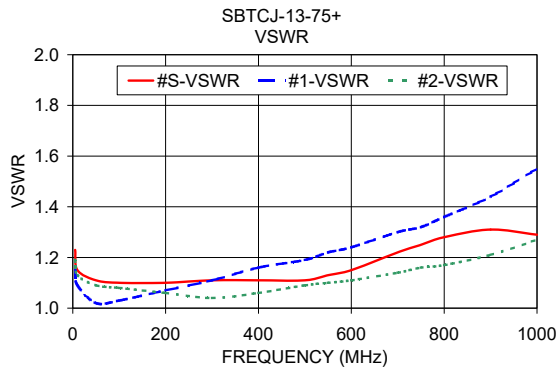
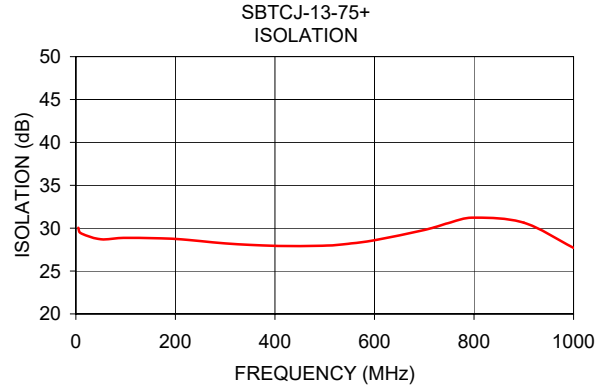
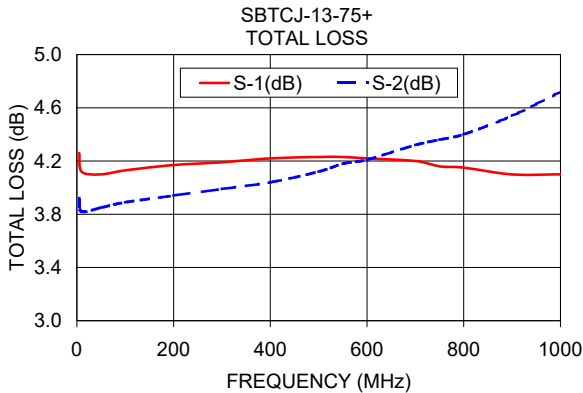
**TAPE & REEL INFORMATION: F47**



**TYPICAL PERFORMANCE DATA**

Frequency (MHz)	Total Loss <sup>1</sup> (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR (:1)		
	S-1	S-2				S	1	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

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



**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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)

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