

top hat®
Surface Mount
Power Splitter/Combiner
2 Way-180° 75Ω 5 to 1000 MHz

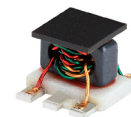
SBTCJ-13-75+

Features

- wide band frequency 5-1000 MHz
- low insertion, 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

Applications

- CATV
- cellular
- UHV/VHV



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

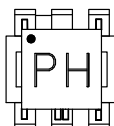
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		1000	MHz
Insertion Loss Above 3.0 dB	5 - 50	—	1.1	1.7	dB
	50 - 500	—	1.2	1.6	
	500 - 1000	—	1.5	2.1	
Isolation	5 - 50	20	29	—	dB
	50 - 500	20	28	—	
	500 - 1000	20	26	—	
Phase Unbalance	5 - 50	—	0.6	3	Degree
	50 - 500	—	2.7	7	
	500 - 1000	—	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	

Maximum Ratings

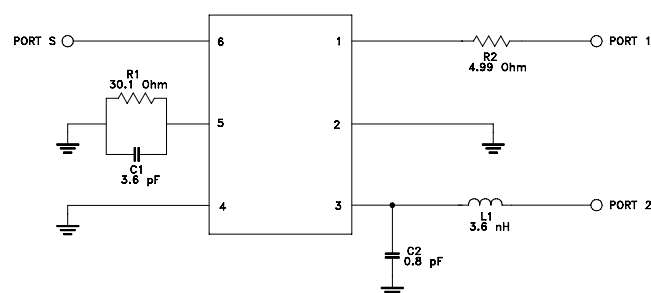
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	1.0W max.

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

Product Marking



Electrical Schematic

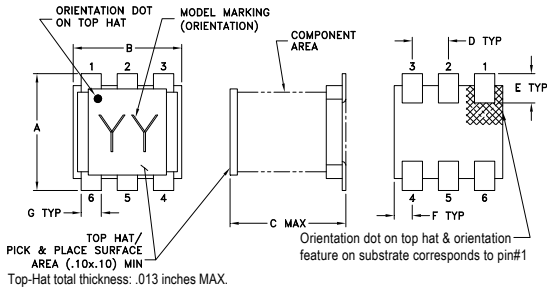


Pin Connections

Function	Pin Number
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 used	2

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	.1W 30.1Ω 1%; 0603 Size	KOA RK73HJTTD30R1F
RES R2	.1W 4.99 Ω 1%; 0603 Size	KOA RK73HJTTD4R99F

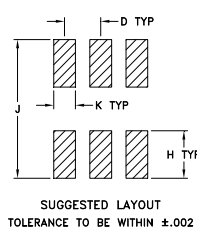
Outline Drawing



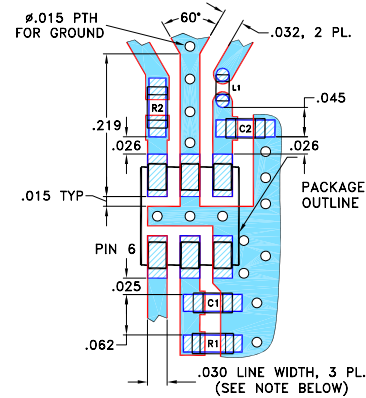
Outline Dimensions (inch/mm)

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	L	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-580+
Suggested PCB Layout (PL-342)

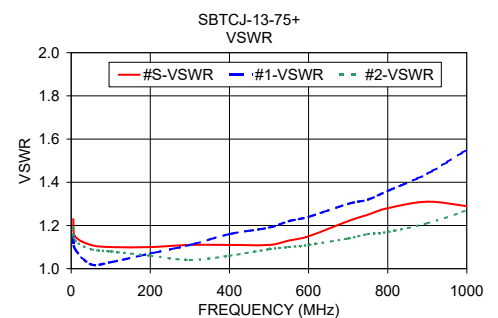
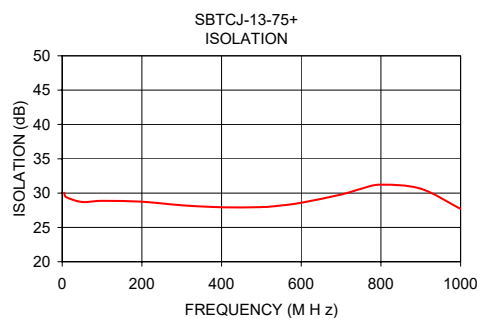
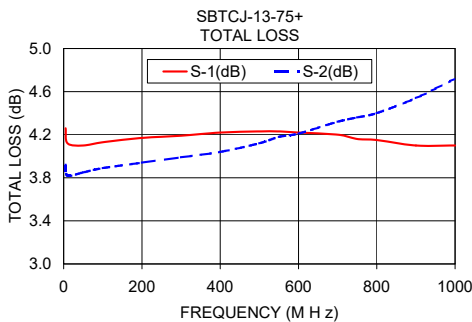


- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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						
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 + 3dB splitter loss.



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-Circuits' applicable established test performance criteria and measurement instructions.
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