

top hat®

Surface Mount Power Splitter/Combiner

2 Way-0° 50Ω 50 to 3000 MHz

TCP-2-33W+

Features

- wide frequency band, 50 to 3000 MHz
- low insertion, 1.0 dB typ.
- external resistor required
- aqueous washable
- leads for excellent solderability
- low cost

Applications

- cellular
- PCN
- GPS



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		50		3000	MHz
Insertion Loss Above 3.0 dB	50-500	—	0.6	0.9	dB
	500-1500	—	0.9	1.3	
	1500-3000	—	1.3	2.1	
Isolation	50-500	20	30	—	dB
	500-1500	16	21	—	
	1500-3000	8	11	—	
Phase Unbalance	50-500	—	0.7	2	Degree
	500-1500	—	1.6	5	
	1500-3000	—	6.5	10	
Amplitude Unbalance	50-500	—	0.06	0.2	dB
	500-1500	—	0.4	0.6	
	1500-3000	—	0.8	1.3	
VSWR (Port-S)	50-500	—	1.9	2.2	:1
	500-1500	—	1.9	2.2	
	1500-3000	—	1.8	2.1	
VSWR (Port 1-2)	50-500	—	1.9	2.2	:1
	500-1500	—	2.2	2.5	
	1500-3000	—	2.6	2.9	

Maximum Ratings

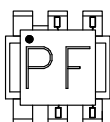
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.

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

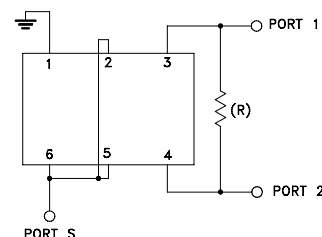
Pin Connections

Function	Pin Number
SUM PORT	2,5,6
PORT 1	3
PORT 2	4
GROUND	1
EXT. RESISTOR 475Ω	3,4

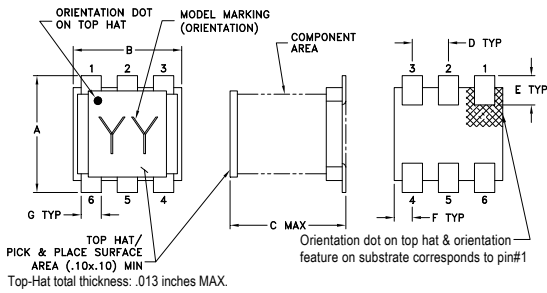
Product Marking



Electrical Schematic



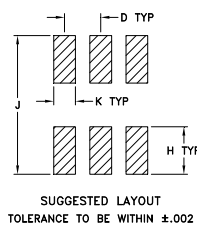
Outline Drawing



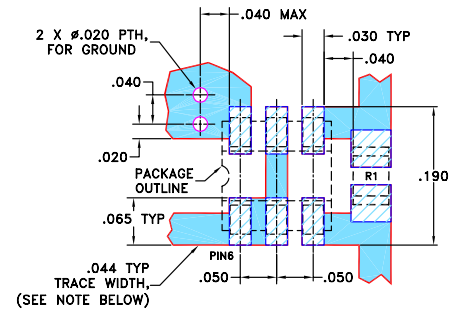
Outline Dimensions (inch/mm)

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-86+
Suggested PCB Layout (PL-008)



RESISTOR R1: 475 ± 1% 0hm, 0805 SIZE

NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

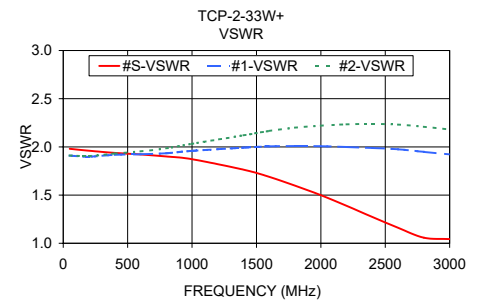
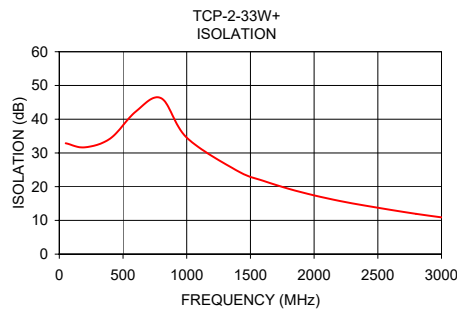
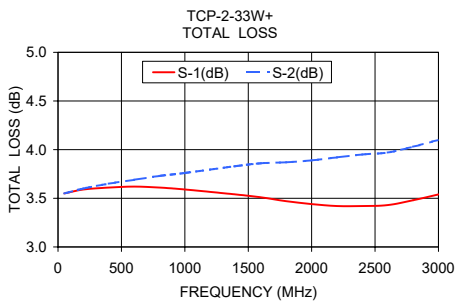
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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						
50.00	3.55	3.55	0.00	32.87	0.06	1.98	1.91	1.91
200.00	3.59	3.60	0.01	31.65	0.23	1.96	1.90	1.90
400.00	3.61	3.65	0.03	34.27	0.44	1.94	1.92	1.93
600.00	3.62	3.69	0.07	42.24	0.63	1.92	1.92	1.95
800.00	3.61	3.73	0.12	46.22	0.82	1.90	1.93	1.99
1000.00	3.59	3.76	0.17	34.55	0.96	1.87	1.96	2.03
1400.00	3.54	3.83	0.29	24.63	1.24	1.76	1.99	2.12
1600.00	3.51	3.86	0.35	21.75	1.38	1.69	2.01	2.17
1800.00	3.47	3.87	0.40	19.39	1.56	1.60	2.01	2.20
2000.00	3.44	3.89	0.45	17.42	1.84	1.50	2.01	2.22
2200.00	3.42	3.92	0.50	15.78	2.21	1.39	2.00	2.23
2400.00	3.42	3.95	0.53	14.40	2.62	1.27	1.99	2.24
2600.00	3.43	3.97	0.54	13.12	3.15	1.16	1.97	2.23
2800.00	3.48	4.03	0.55	11.95	3.88	1.06	1.95	2.21
3000.00	3.54	4.10	0.56	10.91	4.84	1.04	1.92	2.18

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.
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