

top hat<sup>®</sup>  
**Surface Mount**  
**Power Splitter/Combiner**

**TCP-2-272+**

2 Way-0° 50Ω 5 to 2700 MHz



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

**Features**

- wideband, 5 to 2700 MHz
- low insertion, 0.9 dB typ.
- excellent amplitude unbalance, 0.3 dB typ.
- very good phase unbalance, 1.5 deg. typ.
- external resistor required
- aqueous washable
- leads for excellent solderability
- low cost

**Applications**

- cellular
- PCN
- GPS
- CATV
- communication systems

**Electrical Specifications at 25°C**

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		5		2700	MHz
Insertion Loss Above 3.0 dB	5 - 50	—	0.6	0.8	dB
	50 - 1350	—	0.9	1.1	
	1350 - 2700	—	1.4	2.0	
Isolation	5 - 50	15	20	—	dB
	50 - 1350	20	24	—	
	1350 - 2700	10	12	—	
Phase Unbalance	5 - 50	—	0.5	2	Degree
	50 - 1350	—	2	4	
	1350 - 2700	—	6	10	
Amplitude Unbalance	5 - 50	—	0.1	0.4	dB
	50 - 1350	—	0.3	0.6	
	1350 - 2700	—	0.9	1.3	
VSWR (Port S)	5 - 50	—	2.0	2.2	:1
	50 - 1350	—	2.0	2.2	
	1350 - 2700	—	1.8	2.2	
VSWR (Port 1-2)	5 - 50	—	2.0	2.2	:1
	50 - 1350	—	2.0	2.2	
	1350 - 2700	—	2.3	2.5	

**Maximum Ratings**

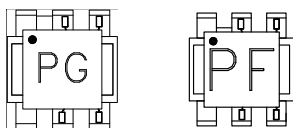
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.

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

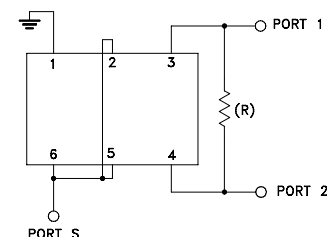
**Pin Connections**

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

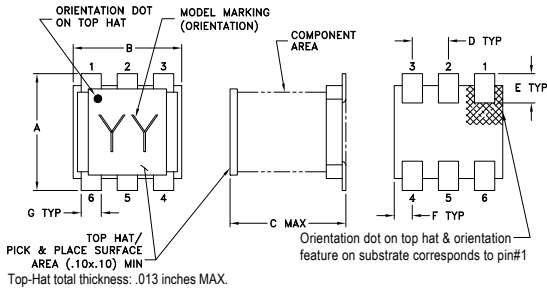
**Internal Optional Product Marking**



**Electrical Schematic**



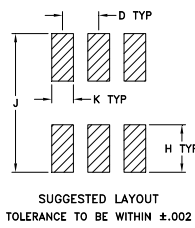
## Outline Drawing



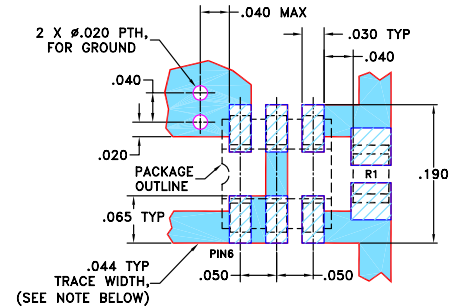
## Outline Dimensions (inch/mm)

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)



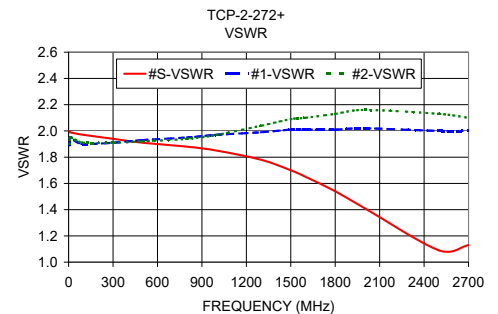
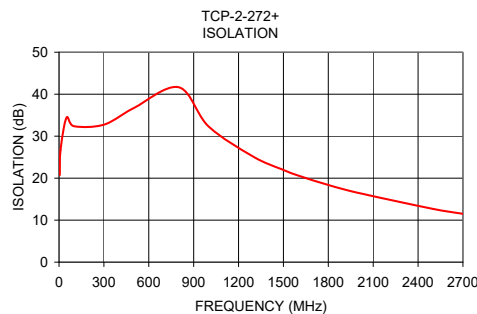
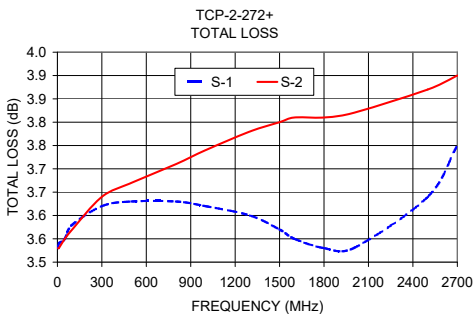
- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- 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 <sup>1</sup> (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
5.00	3.53	3.53	0.00	20.75	0.02	2.00	1.89	1.90
10.00	3.54	3.53	0.00	26.70	0.03	1.99	1.95	1.95
50.00	3.55	3.55	0.00	34.42	0.00	1.98	1.92	1.93
100.00	3.58	3.57	0.00	32.37	0.00	1.97	1.90	1.91
300.00	3.62	3.64	0.02	32.74	0.15	1.94	1.91	1.91
500.00	3.63	3.67	0.04	36.71	0.20	1.91	1.93	1.92
800.00	3.63	3.71	0.08	41.65	0.21	1.88	1.95	1.94
1000.00	3.62	3.74	0.12	32.30	0.22	1.85	1.97	1.97
1300.00	3.60	3.78	0.18	25.10	0.46	1.78	1.99	2.04
1500.00	3.57	3.80	0.23	21.96	0.45	1.70	2.01	2.09
1600.00	3.55	3.81	0.26	20.61	0.54	1.65	2.01	2.10
1800.00	3.53	3.81	0.28	18.38	0.52	1.54	2.01	2.13
2000.00	3.53	3.82	0.30	16.50	0.66	1.41	2.02	2.16
2500.00	3.64	3.87	0.23	12.68	1.47	1.09	2.00	2.13
2700.00	3.75	3.90	0.15	11.51	2.40	1.13	2.00	2.10

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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