

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

**TCP-2-25X+**

2 Way-0° 50Ω 200 to 2500 MHz

**Features**

- low insertion, 0.8 dB typ.
- excellent amplitude unbalance, 0.2 dB typ.
- very good phase unbalance, 1.2 deg. 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		200		2500	MHz
Insertion Loss Above 3.0 dB	200 - 2500	—	0.8	1.3	dB
Isolation	200 - 2500	10	18	—	dB
Phase Unbalance	200 - 2500	—	—	6.0	Degree
Amplitude Unbalance	200 - 2500	—	—	0.8	dB

**Maximum Ratings**

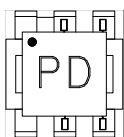
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	0.5W max.

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

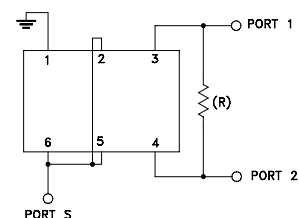
**Pin Connections**

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

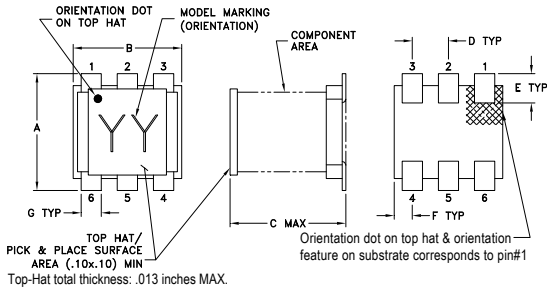
**Product Marking**



**Electrical Schematic**



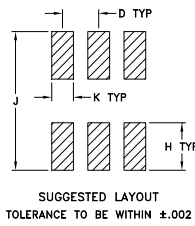
## Outline Drawing



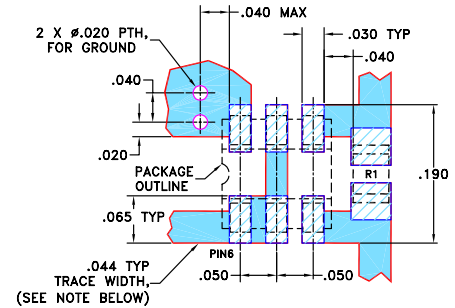
## Outline Dimensions (inch)

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  $\pm$  1% Ohm, 0805 SIZE

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

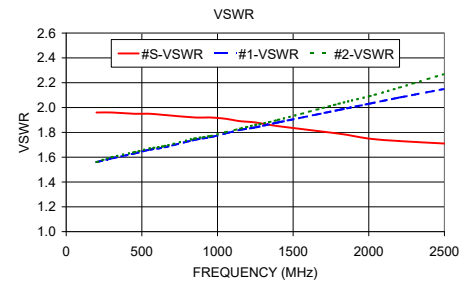
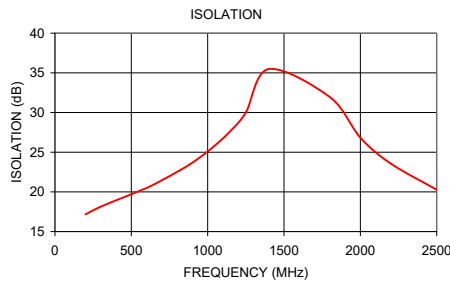
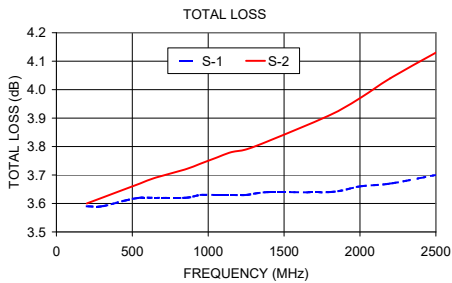
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- 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						
200.00	3.59	3.60	0.01	17.18	0.16	1.96	1.56	1.56
300.00	3.59	3.62	0.03	18.14	0.19	1.96	1.59	1.60
450.00	3.61	3.65	0.04	19.32	0.24	1.95	1.63	1.64
550.00	3.62	3.67	0.05	20.10	0.25	1.95	1.66	1.67
650.00	3.62	3.69	0.07	20.96	0.31	1.94	1.68	1.69
850.00	3.62	3.72	0.10	23.08	0.32	1.92	1.74	1.75
950.00	3.63	3.74	0.11	24.37	0.35	1.92	1.76	1.77
1050.00	3.63	3.76	0.13	25.89	0.38	1.91	1.79	1.80
1150.00	3.63	3.78	0.15	27.69	0.44	1.89	1.82	1.83
1250.00	3.63	3.79	0.16	30.01	0.48	1.88	1.84	1.86
1400.00	3.64	3.82	0.18	35.48	0.56	1.85	1.88	1.90
1800.00	3.64	3.91	0.27	31.95	0.78	1.79	1.98	2.03
2000.00	3.66	3.97	0.31	26.83	0.86	1.75	2.03	2.09
2200.00	3.67	4.04	0.37	23.56	1.14	1.73	2.08	2.16
2500.00	3.70	4.13	0.43	20.27	1.32	1.71	2.15	2.27

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.
- 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)

