

# Surface Mount Power Splitter/Combiner

## QCC-22+

2 Way-90° 50Ω 1500 to 2500 MHz



Generic photo used for illustration purposes only

CASE STYLE: GF981

### Maximum Ratings

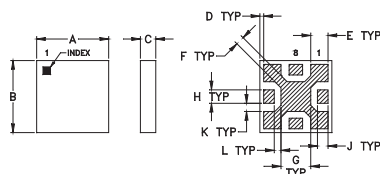
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	17.5W* max.

\* Derate linearly to 3.5W at 100°C ambient.  
Permanent damage may occur if any of these limits are exceeded.

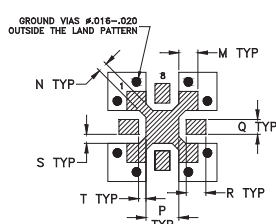
### Pin Connections

SUM PORT	2
PORT 1 (0°)	8
PORT 2 (+90°)	4
GROUND	1,3,5,7
50 OHM TERM EXTERNAL	6

### Outline Drawing



### PCB Land Pattern

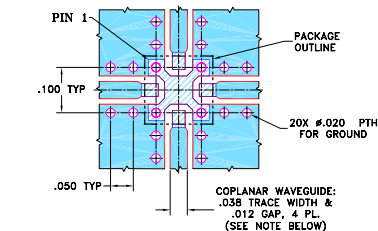


Suggested Layout,  
Tolerance to be within ±0.02

### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J		
.150	.150	.032	.008	.036	.018	.062	.028	.022		
3.81	3.81	0.81	0.20	0.91	0.46	1.57	0.71	0.56		
K	L	M	N	P	Q	R	S	T	wt	
.017	.014	.036	.018	.062	.028	.037	.017	.014	grams	
0.43	0.36	0.91	0.46	1.57	0.71	0.94	0.43	0.36	0.05	

### Demo Board MCL P/N: TB-302+ Suggested PCB Layout (PL-128)



NOTES: 1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### 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-Circuit's 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-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

### Features

- low insertion loss, 0.4 dB typ.
- high isolation, 28 dB typ.
- LTCC construction
- excellent temperature stability
- small size, 0.15" X 0.15"
- aqueous washable
- protected by U.S. Patent 7,030,713

### Applications

- PCS
- WLAN
- blue tooth
- space
- defense
- radar

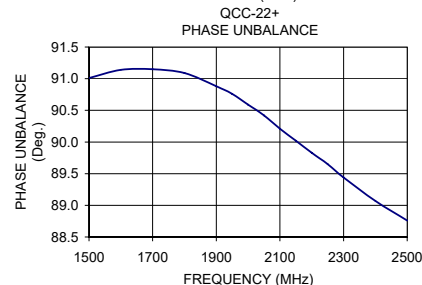
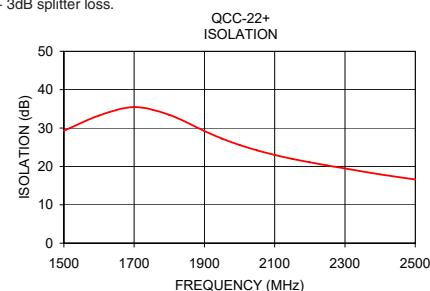
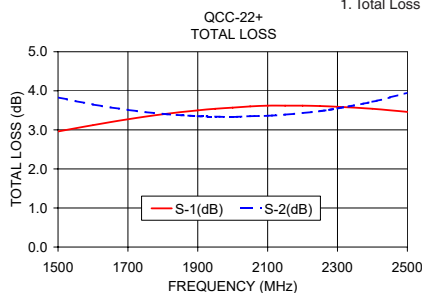
### Electrical Specifications

FREQ. RANGE (MHz)	ISOLATION (dB)		INSERTION LOSS (dB) Avg. of Coupled Outputs ABOVE 3 dB		PHASE UNBALANCE (Degrees)		AMPLITUDE UNBALANCE (dB)	
	Typ.	Min.	Typ.	Max.	Typ.	Max.	Typ.	Max.
1500-2500								
1500-1700	28	23	0.4	0.6	2	3	0.6	1.3
1700-2200	28	19	0.4	0.7	2	4	0.2	0.5
2200-2500	20	15	0.5	0.8	2	4	0.3	0.8

### 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						
1500.00	2.96	3.83	0.87	29.29	91.01	1.10	1.23	1.17
1600.00	3.12	3.65	0.53	33.27	91.14	1.07	1.23	1.16
1700.00	3.27	3.51	0.24	35.46	91.15	1.07	1.24	1.15
1800.00	3.40	3.41	0.01	33.44	91.09	1.08	1.26	1.15
1900.00	3.50	3.35	0.15	29.22	90.88	1.10	1.27	1.17
1950.00	3.54	3.34	0.20	27.24	90.76	1.12	1.28	1.18
2000.00	3.57	3.33	0.24	25.58	90.59	1.15	1.29	1.19
2050.00	3.60	3.35	0.25	24.18	90.42	1.17	1.31	1.20
2100.00	3.62	3.36	0.26	22.99	90.21	1.19	1.32	1.21
2150.00	3.62	3.39	0.23	21.96	90.02	1.21	1.33	1.22
2200.00	3.62	3.43	0.19	21.08	89.83	1.22	1.35	1.23
2250.00	3.61	3.48	0.13	20.24	89.65	1.24	1.36	1.25
2300.00	3.59	3.55	0.04	19.46	89.44	1.26	1.37	1.27
2400.00	3.54	3.72	0.18	17.93	89.07	1.33	1.39	1.31
2500.00	3.46	3.95	0.49	16.61	88.76	1.41	1.44	1.36

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



### electrical schematic

