

# Power Splitter/Combiner

QCN-5A+



2 Way-90° 50Ω 330 to 540 MHz

### Maximum Ratings

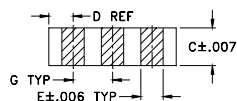
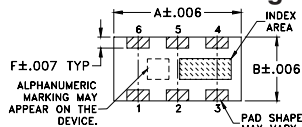
|                             |                |
|-----------------------------|----------------|
| Operating Temperature       | -55°C to 100°C |
| Storage Temperature         | -55°C to 100°C |
| Power Input (as a splitter) | 15W* max.      |

\* Derate linearly to 7W at 100°C ambient.

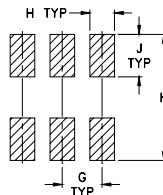
### Pin Connections

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

### Outline Drawing



### PCB Land Pattern



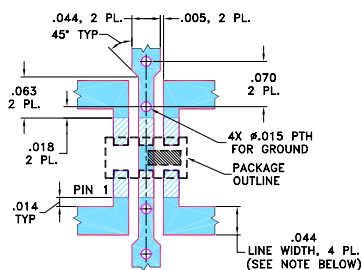
Suggested Layout, Tolerance to be within ±.002

### Outline Dimensions (inch/mm)

| A    | B    | C    | D    | E     | F    |
|------|------|------|------|-------|------|
| .126 | .063 | .035 | .024 | .022  | .011 |
| 3.20 | 1.60 | 0.89 | 0.61 | 0.56  | 0.28 |
| G    | H    | J    | K    | wt    |      |
| .039 | .024 | .042 | .123 | grams |      |
| 0.99 | 0.61 | 1.07 | 3.12 | .020  |      |

### Demo Board MCL P/N: TB-255

### Suggested PCB Layout (PL-131)



- 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

### Features

- low insertion loss, 0.4 dB typ.
- high isolation, 20 dB typ.
- wrap-around terminal for excellent solderability
- ultra small, 0.12"X0.6"X0.35"
- patent pending

### Applications

- balanced amplifiers
- modulators
- VHF
- defense communication

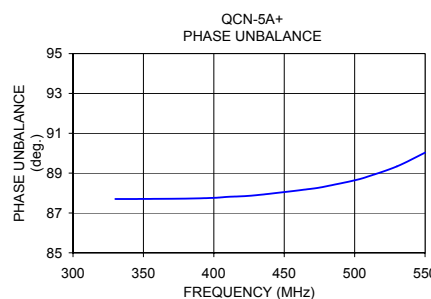
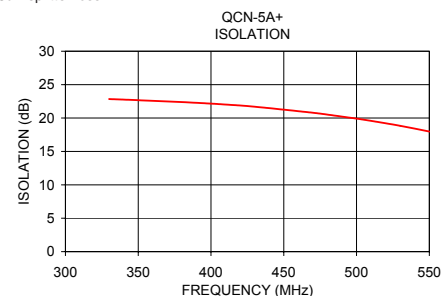
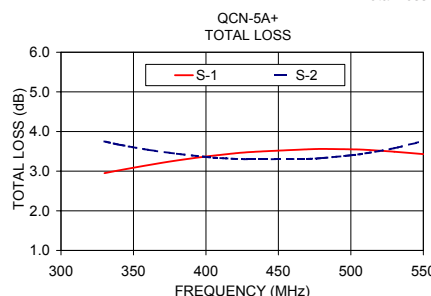
### Splitter Electrical Specifications

| FREQ. RANGE (MHz) | ISOLATION (dB) |      | INSERTION LOSS (dB) Avg. of Coupled Outputs less 3 dB |      | PHASE UNBALANCE (Degrees) |      | AMPLITUDE UNBALANCE (dB) |      | VSWR (:1) |
|-------------------|----------------|------|---|------|---------------------------|------|--------------------------|------|-----------|
|                   | Typ.           | Min. | Typ.  | Max. | Typ.                      | Max. | Typ.                     | Max. | Typ.      |
| 330-400           | 20             | 18   | 0.3   | 0.6  | 2.5                       | 5    | 0.6                      | 1.1  | 1.2       |
| 480-540           | 18             | 14   | 0.6   | 0.9  | 1                         | 4    | 0.6                      | 1.1  | 1.2       |

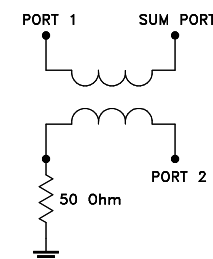
### Typical Performance Data

| 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  |                          |                |                        |        |        |        |
| 330.00          | 2.95                         | 3.75 | 0.81                     | 22.84          | 87.70                  | 1.15   | 1.20   | 1.13   |
| 340.00          | 3.02                         | 3.67 | 0.66                     | 22.76          | 87.70                  | 1.15   | 1.20   | 1.14   |
| 360.00          | 3.15                         | 3.54 | 0.39                     | 22.58          | 87.71                  | 1.15   | 1.20   | 1.14   |
| 380.00          | 3.27                         | 3.44 | 0.17                     | 22.39          | 87.72                  | 1.15   | 1.21   | 1.15   |
| 400.00          | 3.37                         | 3.36 | 0.01                     | 22.16          | 87.76                  | 1.15   | 1.22   | 1.16   |
| 410.00          | 3.41                         | 3.33 | 0.08                     | 22.02          | 87.81                  | 1.15   | 1.22   | 1.17   |
| 430.00          | 3.48                         | 3.30 | 0.18                     | 21.70          | 87.89                  | 1.16   | 1.23   | 1.19   |
| 470.00          | 3.55                         | 3.31 | 0.24                     | 20.79          | 88.22                  | 1.17   | 1.26   | 1.23   |
| 480.00          | 3.56                         | 3.33 | 0.22                     | 20.51          | 88.34                  | 1.18   | 1.27   | 1.24   |
| 500.00          | 3.55                         | 3.40 | 0.15                     | 19.91          | 88.64                  | 1.20   | 1.30   | 1.28   |
| 510.00          | 3.54                         | 3.45 | 0.08                     | 19.57          | 88.84                  | 1.21   | 1.31   | 1.30   |
| 530.00          | 3.49                         | 3.58 | 0.09                     | 18.83          | 89.34                  | 1.23   | 1.34   | 1.34   |
| 550.00          | 3.43                         | 3.76 | 0.33                     | 17.98          | 90.03                  | 1.26   | 1.39   | 1.39   |

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



### electrical schematic



For detailed performance specs & shipping online see web site



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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).

REV. A  
M127604  
QCN-5A+  
AD/QL/AM  
100816