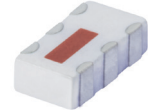


# Ultra-Small Ceramic Power Splitter/Combiner

2 Way-90° 50Ω 1100 to 1925 MHz

QCN-19D+



Generic photo used for illustration purposes only

CASE STYLE: FV1206-1

## Maximum Ratings

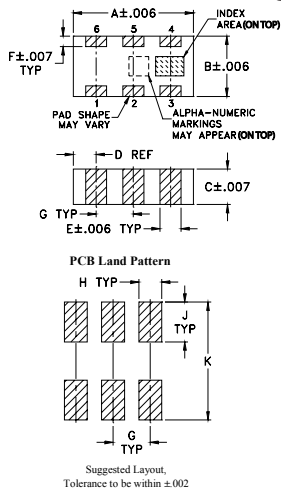
|                                                                                                              |                |
|--------------------------------------------------------------------------------------------------------------|----------------|
| Operating Temperature                                                                                        | -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.<br>Permanent damage may occur if any of these limits are exceeded. |                |

## Pin Connections

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

## Product Marking: SC

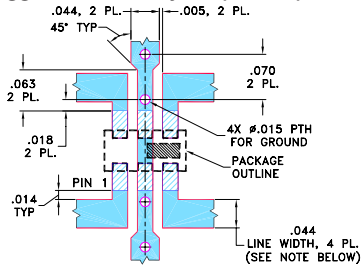
### Outline Drawing



### 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

#### 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, 26 dB typ.
- wrap-around terminal for excellent solderability
- ultra small, 0.12"X0.06"X0.035"
- patent pending

## Applications

- GPS
- PCS/DCS
- balanced amplifiers
- modulators

## Electrical Specifications

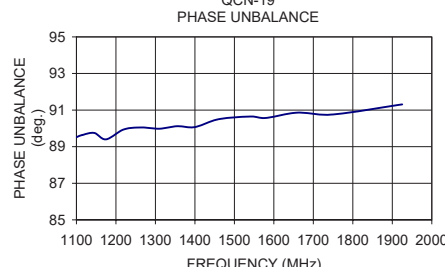
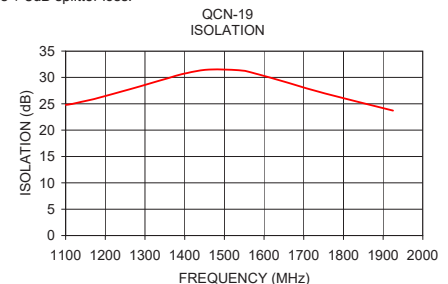
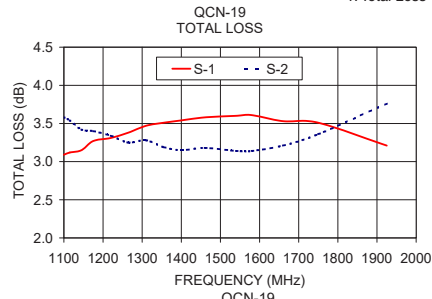
| FREQ. RANGE (MHz) | ISOLATION (dB) | INSERTION LOSS (dB)<br>Avg. of Coupled Outputs<br>ABOVE 3 dB | PHASE UNBALANCE (Degrees) | AMPLITUDE UNBALANCE (dB) | VSWR (:1) |
|-------------------|----------------|--------------------------------------------------------------|---------------------------|--------------------------|-----------|
| $f_L$ - $f_U$     | Typ. Min.      | Typ. Max.                                                    | Typ. Max.                 | Typ. Max.                | Typ.      |
| 1100-1925         |                |                                                              |                           |                          |           |
| 1100-1400         | 25 19          | 0.4 0.7                                                      | 1 3                       | 0.4 1.1                  | 1.15      |
| 1400-1600         | 26 20          | 0.4 0.8                                                      | 2 4                       | 0.5 1.0                  | 1.2       |
| 1600-1925         | 26 20          | 0.5 0.9                                                      | 2 4                       | 0.4 1.1                  | 1.2       |

1. For applications requiring DC voltage to be applied to the RF ports. DC resistance to ground is 100 Mohms min.

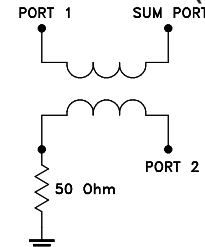
## Typical Performance Data

| 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                      |                          |                |                        |        |        |        |
| 1100.00         | 3.09 3.58                    | 0.49                     | 24.79          | 89.52                  | 1.10   | 1.11   | 1.15   |
| 1115.00         | 3.12 3.54                    | 0.42                     | 24.96          | 89.64                  | 1.09   | 1.10   | 1.14   |
| 1145.00         | 3.15 3.42                    | 0.27                     | 25.45          | 89.75                  | 1.08   | 1.10   | 1.14   |
| 1175.00         | 3.27 3.40                    | 0.13                     | 25.96          | 89.40                  | 1.07   | 1.09   | 1.13   |
| 1220.00         | 3.31 3.34                    | 0.03                     | 26.88          | 89.94                  | 1.06   | 1.08   | 1.12   |
| 1265.00         | 3.38 3.25                    | 0.13                     | 27.82          | 90.05                  | 1.05   | 1.07   | 1.11   |
| 1310.00         | 3.47 3.28                    | 0.19                     | 28.81          | 89.98                  | 1.04   | 1.06   | 1.10   |
| 1355.00         | 3.51 3.19                    | 0.31                     | 29.78          | 90.12                  | 1.04   | 1.05   | 1.09   |
| 1400.00         | 3.54 3.15                    | 0.39                     | 30.74          | 90.07                  | 1.04   | 1.04   | 1.07   |
| 1460.00         | 3.58 3.18                    | 0.39                     | 31.49          | 90.50                  | 1.04   | 1.03   | 1.06   |
| 1540.00         | 3.60 3.14                    | 0.45                     | 31.34          | 90.65                  | 1.06   | 1.02   | 1.04   |
| 1580.00         | 3.61 3.14                    | 0.46                     | 30.69          | 90.57                  | 1.07   | 1.02   | 1.04   |
| 1660.00         | 3.53 3.21                    | 0.32                     | 28.99          | 90.86                  | 1.10   | 1.02   | 1.02   |
| 1750.00         | 3.51 3.36                    | 0.16                     | 27.04          | 90.76                  | 1.14   | 1.03   | 1.01   |
| 1925.00         | 3.21 3.76                    | 0.55                     | 23.71          | 91.31                  | 1.21   | 1.06   | 1.05   |

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



### electrical schematic (Note 1)



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