

Ultra-Small Ceramic Power Splitter/Combiner

QCN-3+

2 Way-90° 50Ω 220 to 470 MHz



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. |

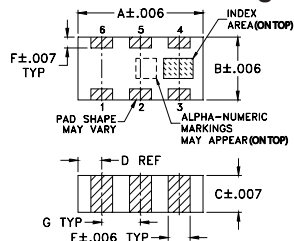
* Derate linearly to 7W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

Pin Connections

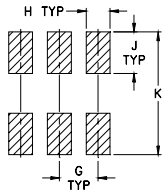
| | |
|----------------------|-----|
| SUM PORT | 1 |
| PORT 1 (0°) | 4 |
| PORT 2 (+90°) | 6 |
| GROUND | 2,5 |
| 50 OHM TERM EXTERNAL | 3 |

Product Marking: SB

Outline Drawing



PCB Land Pattern

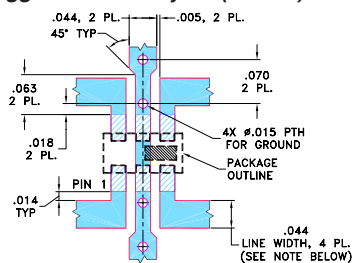


Suggested Layout,
Tolerance to be within ±.002

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

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

Features

- low insertion loss, 0.4 dB typ.
- high isolation, 25 dB typ.
- wrap-around terminal for excellent solderability
- ultra small, 0.12"X0.06"X0.035"

Applications

- balanced amplifiers
- modulators
- VHF
- defense communication

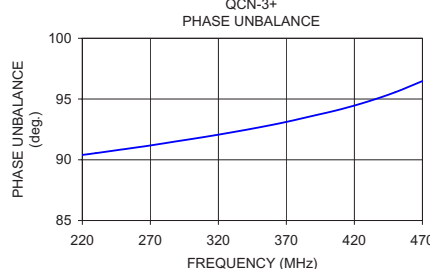
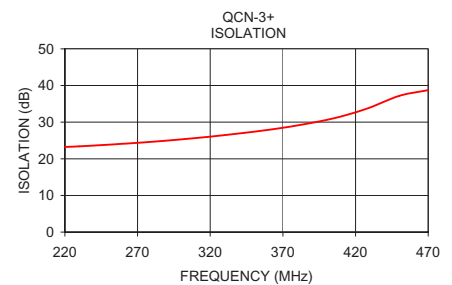
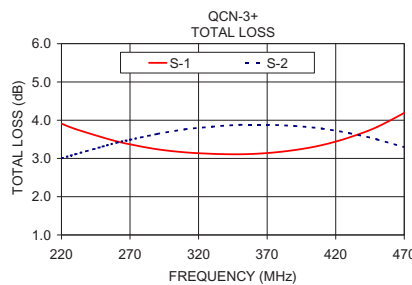
Electrical Specifications

| FREQ. RANGE (MHz) | ISOLATION (dB) | | INSERTION LOSS (dB) Avg. of Coupled Outputs ABOVE 3 dB | | PHASE UNBALANCE (Degrees) | | AMPLITUDE UNBALANCE (dB) | | VSWR (:1) |
|-------------------|----------------|------|--|------|---------------------------|------|--------------------------|------|-----------|
| | Typ. | Min. | Typ. | Max. | Typ. | Max. | Typ. | Max. | Typ. |
| 220-470 | 24 | 18 | 0.6 | 0.8 | 1 | 8 | 0.5 | 1.7 | 1.2 |
| 270-350 | 25 | 18 | 0.4 | 0.7 | 3 | 5 | 0.7 | 1.0 | 1.2 |
| 350-450 | 30 | 20 | 0.6 | 0.8 | 5 | 8 | 0.5 | 1.0 | 1.2 |

Typical Performance Data

| Frequency (MHz) | Total Loss ¹ (dB) | | Amplitude Unbalance (dB) | Isolation (dB) | Phase Unbalance (deg.) | VSWR S | VSWR 1 | VSWR 2 |
|-----------------|------------------------------|------|--------------------------|----------------|------------------------|--------|--------|--------|
| | S-1 | S-2 | | | | | | |
| 220.00 | 3.91 | 3.00 | 0.91 | 23.23 | 90.40 | 1.07 | 1.12 | 1.07 |
| 230.00 | 3.77 | 3.11 | 0.67 | 23.41 | 90.55 | 1.06 | 1.12 | 1.06 |
| 250.00 | 3.55 | 3.31 | 0.23 | 23.85 | 90.86 | 1.05 | 1.11 | 1.06 |
| 260.00 | 3.45 | 3.41 | 0.05 | 24.11 | 91.02 | 1.05 | 1.11 | 1.05 |
| 270.00 | 3.37 | 3.49 | 0.12 | 24.37 | 91.18 | 1.04 | 1.10 | 1.05 |
| 290.00 | 3.24 | 3.64 | 0.39 | 24.96 | 91.53 | 1.04 | 1.10 | 1.04 |
| 310.00 | 3.16 | 3.76 | 0.60 | 25.67 | 91.88 | 1.03 | 1.09 | 1.03 |
| 330.00 | 3.12 | 3.83 | 0.72 | 26.46 | 92.26 | 1.03 | 1.08 | 1.03 |
| 350.00 | 3.11 | 3.88 | 0.77 | 27.38 | 92.67 | 1.04 | 1.08 | 1.02 |
| 370.00 | 3.14 | 3.88 | 0.74 | 28.47 | 93.12 | 1.05 | 1.07 | 1.02 |
| 390.00 | 3.22 | 3.85 | 0.63 | 29.82 | 93.63 | 1.07 | 1.07 | 1.02 |
| 410.00 | 3.35 | 3.78 | 0.42 | 31.55 | 94.16 | 1.09 | 1.07 | 1.01 |
| 430.00 | 3.55 | 3.66 | 0.11 | 33.99 | 94.80 | 1.11 | 1.07 | 1.01 |
| 450.00 | 3.82 | 3.50 | 0.32 | 37.16 | 95.56 | 1.14 | 1.07 | 1.02 |
| 470.00 | 4.19 | 3.29 | 0.90 | 38.74 | 96.48 | 1.17 | 1.08 | 1.02 |

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



electrical schematic

