2 Way-90° Power Splitter

QCS-312+

1700 to 3100 MHz

The Big Deal

- High Power handling (8W)
- Low Unbalance, 0.5 dB & 4 deg. typ.
- · Industry leading combination of size/bandwidth



CASE STYLE: GE0805C-1

Product Overview

Mini-Circuits new 90° Power Splitter, model: QCS-312+, offers an industry leading combination of operating bandwidth and size; supporting nearly an octave band in a miniature EIA-0805 form factor. The outstanding phase and amplitude unbalance make this component a versatile building block for use in a variety of systems and sub-system designs.

Key Features

| Feature | Advantages | | |
|-----------------------------------|--|--|--|
| Small Size | Offered in the EIA-0805 package size, the QCS-312+ offers an industry leading combination of size, bandwidth and frequency. The small footprint (2.0mm x 1.25mm) allows for reduced parasitics in systems with improved performance and simplified layout. | | |
| Low Phase and Amplitude Unbalance | Supporting 4 deg. and 0.5 dB unbalance make this 90° hybrid applicable for use in higher level integrated components such as image reject mixers, single sideband modulators, phase shifters, variable attenuators, and balance amplifiers. | | |
| High Power Handling | Capable of operating up to 8W, the LTCC construction of the QCS-312+ makes this 90° hybrid a robust, rugged product that can be used effectively in either the transmit or receive paths. | | |

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-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.ninicircuits.com/MCLStore/terms.jsp

Power Splitter/Combiner

QCS-312+

2 Way-90°

 50Ω

1700 to 3100 MHz

Maximum Ratings

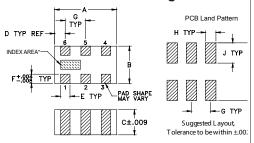
| Operating Temperature | -55°C to 100°C |
|-----------------------------|----------------|
| Storage Temperature | -55°C to 100°C |
| Power Input (as a splitter) | 15W* max. |
| | |

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

Pin Connections

| 4 |
|-----|
| 6 |
| 2,5 |
| 3 |
| |

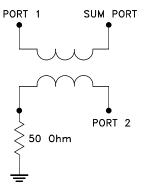
Outline Drawing



Outline Dimensions (inch)

| Α | В | С | D | E | F |
|-----------|-----------|-----------|-----------|------|-------------|
| .079 | .049 | .033 | .014 | .012 | .012 |
| 2.01 | 1.24 | 0.84 | 0.36 | 0.30 | 0.30 |
| | | | | | |
| G | Н | J | K | | wt |
| G .026 | H .014 | J .039 | K .110 | | wt grams |

Electrical Schematic



Features

- Low insertion loss, 0.5 dB typ.
- Miniature size, 0.079"x0.049"x0.033"
- LTCC construction
- High power

Applications

- Balanced amplifiers
- Modulators
- DCS, PCS, UMTS
- ISM
- WiMAX

- High isolation, 25 dB typ.
- - Phase Shifter
 - Attenuator

Electrical Specifications at 25°C

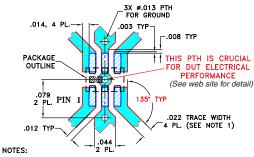
| Generic photo used for illustration purposes only CASE STYLE: GE0805C-1 |
|---|

+RoHS Compliant The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



| Parameter | Frequency (MHz) | Min. | Тур. | Max. | Unit | |
|--------------------------------------|-----------------|------|------|------|--------|--|
| Frequency | | 1700 | | 3100 | MHz | |
| | 1700-1850 | | 0.4 | 0.6 | dB | |
| | 1850-1990 | | 0.4 | 0.6 | | |
| Insertion Loss | 1990-2170 | | 0.5 | 0.7 | | |
| (Avg. Of Coupled Outputs) above 3 dB | 2170-2400 | | 0.5 | 0.7 | | |
| | 2400-2700 | | 0.5 | 0.7 | | |
| | 2700-3100 | | 0.6 | 0.8 | | |
| | 1700-1850 | 17 | 23 | | dB | |
| | 1850-1990 | 18 | 24 | | | |
| Isolation | 1990-2170 | 18 | 25 | | | |
| Isolation | 2170-2400 | 18 | 25 | | | |
| | 2400-2700 | 18 | 25 | | | |
| | 2700-3100 | 18 | 25 | | | |
| | 1700-1850 | | 2.0 | 7.0 | Degree | |
| | 1850-1990 | | 2.0 | 7.0 | | |
| Phase Unbalance | 1990-2170 | | 2.0 | 7.0 | | |
| r nase officialitie | 2170-2400 | | 2.0 | 7.0 | | |
| | 2400-2700 | | 2.0 | 7.0 | | |
| | 2700-3100 | | 2.0 | 7.0 | | |
| | 1700-1850 | | 0.6 | 1.2 | dB | |
| | 1850-1990 | | 0.2 | 0.7 | | |
| Amplitude Unbalance | 1990-2170 | | 0.5 | 1.0 | | |
| Ampiliade oribalarice | 2170-2400 | | 0.5 | 1.0 | | |
| | 2400-2700 | | 0.5 | 1.0 | | |
| | 2700-3100 | | 0.7 | 1.2 | | |
| VSWR | 1700-3100 | | 1.2 | | :1 | |

Demo Board MCL P/N: TB-489-312+ Suggested PCB Layout (PL-304)



1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001"; COPPER: 1/2 0Z. 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

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