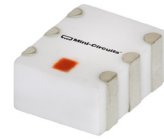


# 2 Way-90° Power Splitter

QCV-271+

50Ω 150 to 265 MHz



CASE STYLE: JV1210C-1

## The Big Deal

- High Power handling (10W)
- Low Unbalance, 0.5 dB & 4 deg. typ.
- Industry leading combination of size/bandwidth

## Product Overview

Mini-Circuits new 90° Power Splitter, model QCV-271+, offers an industry leading combination of operating bandwidth and size; supporting nearly an octave band in a miniature EIA-1210 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-1210 package size, the QCV-271+ offers an industry leading combination of size, bandwidth and frequency. The small footprint (3.2mm x 2.0mm) 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 10W, the LTCC construction of the QCV-271+ makes this 90° hybrid a robust, rugged product that can be used effectively in either the transmit or receive paths.  |

### Notes

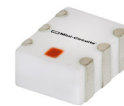
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
C. The parts covered by this specification document are subject to Mini-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)



# Power Splitter/Combiner

2 Way-90° 50Ω 150 to 265 MHz

## QCV-271+



Generic photo used for illustration purposes only  
CASE STYLE: JV1210C-1

### Maximum Ratings

|                             |                |
|-----------------------------|----------------|
| Operating Temperature       | -55°C to 100°C |
| Storage Temperature         | -55°C to 100°C |
| Power Input (as a splitter) | 10W* max.      |

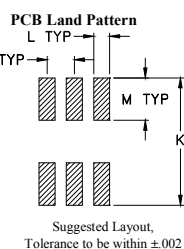
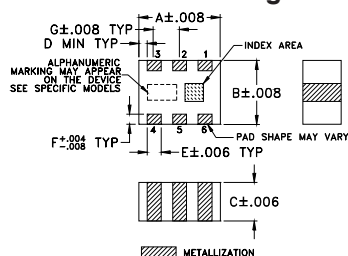
\* Derate linearly to 3W at 100°C ambient.  
Permanent damage may occur if any of these limits are exceeded.

### Pin Connections

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

Product Marking: CE

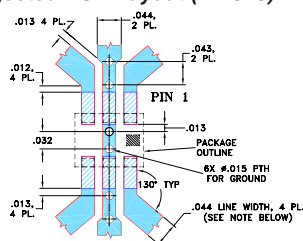
### Outline Drawing



### Outline Dimensions (inch mm)

| A    | B    | C    | D    | E    | F     | G    |
|------|------|------|------|------|-------|------|
| .126 | .098 | .059 | .004 | .022 | .016  | .039 |
| 3.2  | 2.5  | 1.50 | 0.1  | 0.56 | 0.4   | 1.0  |
| H    | J    | K    | L    | M    | wt    |      |
| -    | -    | .177 | .024 | .059 | grams |      |
| -    | -    | 4.5  | 0.6  | 1.5  | 0.03  |      |

Demo Board MCL P/N: TB-610+  
Suggested PCB Layout (PL-340)



- 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.  
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-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)

### Features

- low insertion loss, 0.5 dB typ.
- high isolation, 20 dB typ.
- ultra small size, 0.12x0.10x0.059"
- wrap-around terminal for excellent solderability

### Applications

- I&Q modulators
- image reject mixers
- balanced amplifiers
- marine radio

### +RoHS Compliant

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



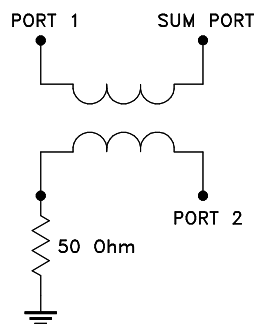
Available Tape and Reel  
at no extra cost

| Reel Size | Devices/Reel                      |
|-----------|-----------------------------------|
| 7"        | 20, 50, 100, 200, 500, 1000, 2000 |

### Electrical Specifications at 25°C

| Parameter   | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|---|-----------------|------|------|------|--------|
| Frequency Range                                       |                 | 150  |      | 265  | MHz    |
| Insertion Loss<br>(avg of coupled outputs above 3 dB) | 150-185         | —    | 0.4  | 0.7  | dB     |
|   | 185-230         | —    | 0.5  | 0.8  |        |
|   | 230-265         | —    | 0.9  | 1.0  |        |
| Isolation   | 150-185         | 16   | 18   | —    | dB     |
|   | 185-230         | 16   | 17   | —    |        |
|   | 230-265         | 14   | 16   | —    |        |
| Phase Unbalance                                       | 150-185         | —    | 3.5  | 8    | Degree |
|   | 185-230         | —    | 3.2  | 8    |        |
|   | 230-265         | —    | 2.0  | 8    |        |
| Amplitude Unbalance                                   | 150-185         | —    | 1.0  | 1.4  | dB     |
|   | 185-230         | —    | 0.4  | 0.6  |        |
|   | 230-265         | —    | 0.7  | 1.4  |        |
| VSWR (Port S)   | 150-185         | —    | 1.2  | 1.4  | :1     |
|   | 185-230         | —    | 1.2  | 1.4  |        |
|   | 230-265         | —    | 1.3  | 1.5  |        |
| VSWR (Port 1-2)                                       | 150-185         | —    | 1.18 | 1.3  | :1     |
|   | 185-230         | —    | 1.21 | 1.4  |        |
|   | 230-265         | —    | 1.34 | 1.5  |        |

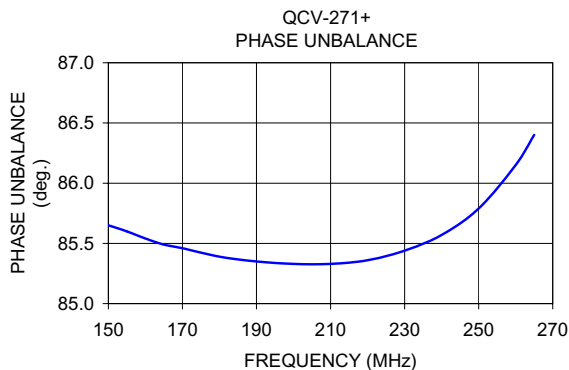
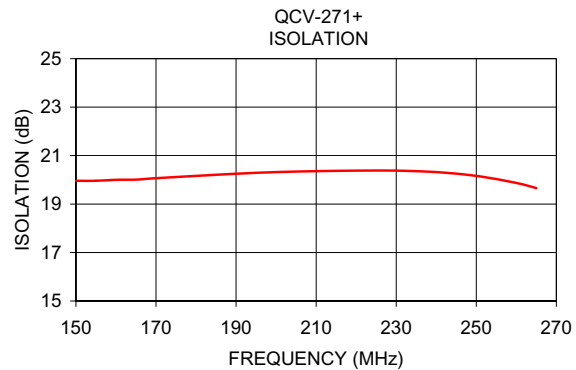
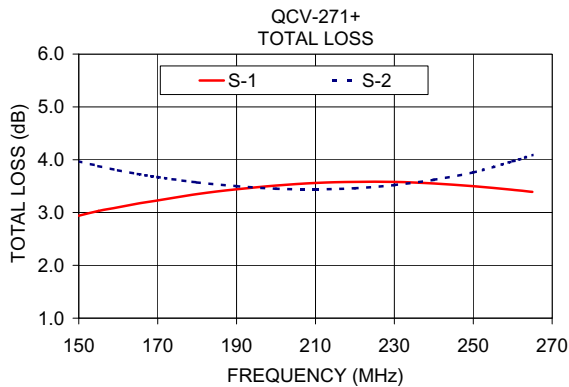
### Electrical Schematic



## Typical Performance Data

| Frequency<br>(MHz) | Total Loss <sup>1</sup><br>(dB) |      | Amplitude<br>Unbalance<br>(dB) | Isolation<br>(dB) | Phase<br>Unbalance<br>(deg.) | VSWR<br>S | VSWR<br>1 | VSWR<br>2 |
|--------------------|---------------------------------|------|--------------------------------|-------------------|------------------------------|-----------|-----------|-----------|
|                    | S-1                             | S-2  |                                |                   |                              |           |           |           |
| 150.00             | 2.94                            | 3.97 | 1.02                           | 19.96             | 85.65                        | 1.17      | 1.21      | 1.18      |
| 155.00             | 3.03                            | 3.88 | 0.85                           | 19.96             | 85.60                        | 1.17      | 1.21      | 1.18      |
| 160.00             | 3.10                            | 3.80 | 0.70                           | 20.00             | 85.54                        | 1.17      | 1.21      | 1.18      |
| 165.00             | 3.17                            | 3.73 | 0.56                           | 20.01             | 85.49                        | 1.17      | 1.21      | 1.18      |
| 170.00             | 3.23                            | 3.67 | 0.43                           | 20.07             | 85.46                        | 1.16      | 1.21      | 1.18      |
| 180.00             | 3.35                            | 3.57 | 0.22                           | 20.16             | 85.39                        | 1.16      | 1.22      | 1.19      |
| 190.00             | 3.44                            | 3.50 | 0.06                           | 20.25             | 85.35                        | 1.16      | 1.22      | 1.19      |
| 200.00             | 3.51                            | 3.45 | 0.05                           | 20.32             | 85.33                        | 1.16      | 1.22      | 1.20      |
| 210.00             | 3.56                            | 3.44 | 0.11                           | 20.36             | 85.33                        | 1.17      | 1.23      | 1.21      |
| 220.00             | 3.58                            | 3.46 | 0.12                           | 20.38             | 85.36                        | 1.18      | 1.24      | 1.23      |
| 230.00             | 3.58                            | 3.52 | 0.06                           | 20.38             | 85.44                        | 1.20      | 1.25      | 1.25      |
| 240.00             | 3.55                            | 3.62 | 0.06                           | 20.32             | 85.57                        | 1.22      | 1.26      | 1.28      |
| 250.00             | 3.50                            | 3.76 | 0.26                           | 20.16             | 85.79                        | 1.26      | 1.28      | 1.31      |
| 260.00             | 3.43                            | 3.97 | 0.53                           | 19.87             | 86.15                        | 1.30      | 1.31      | 1.35      |
| 265.00             | 3.39                            | 4.09 | 0.70                           | 19.66             | 86.40                        | 1.33      | 1.32      | 1.38      |

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



### Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Mini-Circuits:](#)

[QCV-271+](#)