



MMIC SURFACE MOUNT

# Power Splitter/Combiner

EP2RCW+

2 Way-0° 50Ω DC to 8 GHz

## THE BIG DEAL

- Ultra-Wide Bandwidth, DC to 8 GHz
- High Isolation, 23 dB Typ. at 0.7 to 7.5 GHz
- Excellent Amplitude Unbalance, 0.01 dB Typ. to 8 GHz
- Good Phase Unbalance, 0.9 Deg. Typ. at 0.7 to 7.5 GHz
- Small Size, 5x5 mm
- Aqueous Washable
- Protected by US Patent US11189902B1

*Generic photo used for illustration purposes only*

CASE STYLE: DG1677-2

**+RoHS Compliant**The +Suffix identifies RoHS Compliance. See our website for RoHS Compliance methodologies and qualifications

## APPLICATIONS

- WIMAX
- ISM
- Instrumentation
- Radar
- WLAN
- Satellite Communications
- LTE

## PRODUCT OVERVIEW

Mini-Circuits' EP2RCW+ is a MMIC 2-way 0° splitter/combiner designed for wideband operation from DC to 8.0 GHz supporting many applications requiring high performance across a wide frequency range including all the LTE bands through WiMax and WiFi, as well as instrumentation and more. This model provides excellent power handling up to 0.6 W (as a splitter/combiner) with low insertion loss, good isolation, and low phase and amplitude unbalance in a tiny 5x5 mm QFN package. Manufactured using GaAs IPD technology, the EP2RCW+ not only provides a repeatable performance, but also a high level of ESD protection.

## KEY FEATURES

| Feature   | Advantages  |
|---|---|
| Wideband, DC to 8.0 GHz   | One power splitter can be used in all the LTE bands through WiMax and WiFi, saving component count. Also ideal for wideband applications such as military and instrumentation.                                  |
| High Isolation, 23 dB Typ. at 0.7 to 7.5 GHz<br>Excellent Power Handling,<br>• 0.6 W as a Splitter/Combiner | In power combiner applications, half the power is dissipated internally. EP2RCW+ is designed to handle 0.6 W internal dissipation as a combiner allowing reliable operation without excessive temperature rise. |
| Excellent Amplitude Unbalance, 0.01 dB Typ.<br>Good Phase Unbalance, 0.9 Deg Typ. at 0.7 to 7.5 GHz         | Ideal for Applications such as MIMO & phased array radars.  |
| Tiny Size, 5x5 mm QFN Package   | Tiny footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB.   |

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ECO-012024  
EP2RCW+  
MCL NY  
250904

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ELECTRICAL SPECIFICATIONS<sup>1</sup> AT +25°C

| Parameter                                  | Frequency (GHz)                             | Min.                 | Typ.                         | Max.                     | Unit   |
|--|---|----------------------|------------------------------|--------------------------|--------|
| Frequency Range                            |   | DC                   |                              | 8.0                      | GHz    |
| Insertion Loss <sup>2</sup> , Above 3.0 dB | DC-0.4<br>0.4-0.7<br>0.7-7.5<br>7.5-8.0     |                      | 5.5<br>5.5<br>4.8<br>4.3     | 5.8<br>5.9<br>6.1<br>4.9 | dB     |
| Isolation                                  | DC-0.4<br>0.4-0.7<br>0.7-7.5<br>7.5-8.0     | 13<br>15<br>17<br>17 | 16.7<br>19.5<br>23.0<br>22.0 |                          | dB     |
| Phase Unbalance                            | DC-0.4<br>0.4-0.7<br>0.7-7.5<br>7.5-8.0     |                      | 0.04<br>0.2<br>0.9<br>1.7    | 2<br>2<br>9<br>9         | Degree |
| Amplitude Unbalance                        | DC-0.4<br>0.4-0.7<br>0.7-7.5<br>7.5-8.0     |                      | 0.01<br>0.01<br>0.02<br>0.01 | 0.3<br>0.3<br>0.4<br>0.3 | dB     |
| VSWR (Port S)                              | DC-0.4<br>0.4-0.7<br>0.7-7.5<br>7.5-8.0     |                      | 1.1<br>1.1<br>1.5<br>1.3     |                          | :1     |
| VSWR (Port 1-2)                            | DC-0.4<br>0.4-0.7<br>0.7-7.5<br>7.5-8.0     |                      | 1.6<br>1.8<br>1.7<br>1.1     |                          | :1     |
| Power Handling                             | As a Splitter<br>As a Combiner <sup>3</sup> | DC-8<br>DC-8         |                              | 0.6<br>0.6               | W      |

1. Tested on Mini-Circuits Test Board TB-EP2RCW+.

2. De-embedded from Test Board Loss.

3. As a combiner of non-coherent signals, max. power per port is 0.3 Watts.

## ABSOLUTE MAXIMUM RATINGS

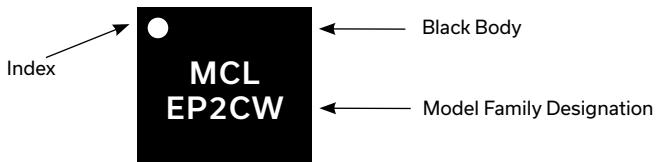
| Parameter             | Ratings         |
|-----------------------|-----------------|
| Operating Temperature | -55°C to +105°C |
| Storage Temperature   | -65°C to +150°C |

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

## PAD CONNECTIONS

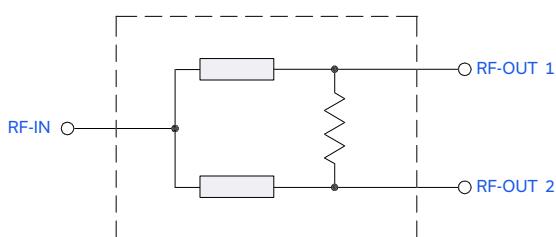
| Function                      | Pad Number                |
|-------------------------------|---------------------------|
| RF IN                         | 21                        |
| RF OUT 1                      | 10                        |
| RF OUT 2                      | 31                        |
| GROUND                        | 9,11,20,22,30,32 & Paddle |
| NOT USED<br>GROUND EXTERNALLY | 1-8, 12-19, 23-29         |

## PRODUCT MARKING



Marking may contain other features or characters for internal lot control.

## SIMPLIFIED ELECTRICAL SCHEMATIC



Mini-Circuits®



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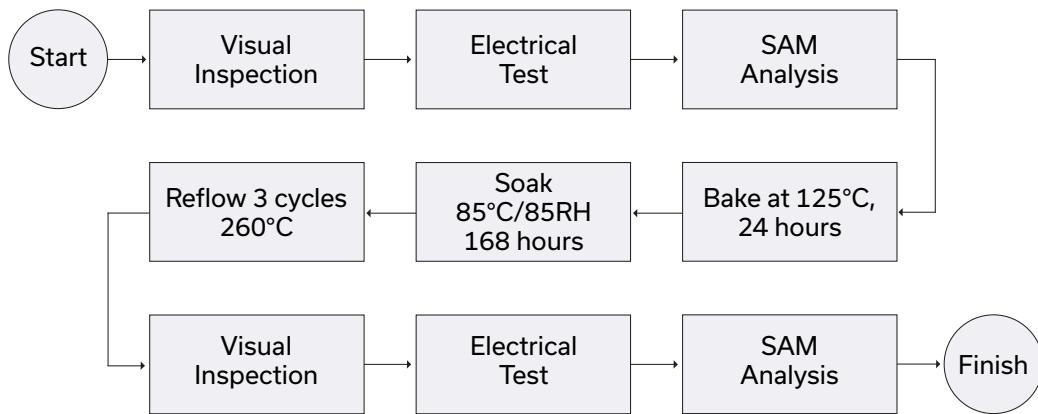
ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASHBOARD. TO ACCESS

[CLICK HERE](#)

|  |  |
|--|--|
| Performance Data                                     | <a href="#">Data Table</a><br><a href="#">Swept Graphs</a><br><a href="#">S-Parameter (S3P Files) Data Set (.zip file)</a> |
| Case Style   | DG1677-2 Plastic package, exposed paddle; Lead Finish: Matte Tin   |
| Tape & Reel<br>Standard Quantities Available on Reel | F68<br>7" Reels with 20, 50, 100, 200, 500 & 1000 devices<br>13" Reels with 2000, 3000 & 4000 devices                      |
| Suggested Layout for PCB Design                      | PL-647   |
| Evaluation Board                                     | TB-EP2RCW  |
| Environmental Ratings                                | ENV08T1  |

**ESD RATING**

Human Body Model (HBM): Class 2 (Pass 2000 V) in accordance with ANSI/ESD STM 5.1 - 2001

**MSL TEST FLOW CHART****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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)