MMIC Surface Mount

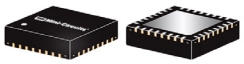
Power Splitter/Combiner

EP2RCW+

2 Way-0° 50Ω DC to 8.0 GHz

The Big Deal

- Ultra-wide bandwidth, DC to 8.0 GHz
- High Isolation, 21 dB typ at 4 GHz
- Small size, 5 x 5 x 1 mm



CASE STYLE: DG1677-2

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 alll the LTE bands through WiMax and WiFi, as well as instrumentation and more. This models provides excellent power handling up to 0.6W (as a splitter/combiner) with low insertion loss, good isolation, and low phase and amplitude unbalance in a tiny 5 x 5mm 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, 21 dB typ. at 4 GHz Excellent power handling, • 0.6W as a splitter / combiner	In power combiner applications, half the power is dissipated internally. EP2RCW+ is designed to handle 0.6W internal dissipation as a combiner allowing reliable operation without excessive temperature rise.
Excellent Amplitude unbalance, 0.1 dB typ. Good phase unbalance, 1.0° typ. at 4 GHz	Ideal for Applications such as WMO & phased array radars
Tiny size, 5 x 5mm 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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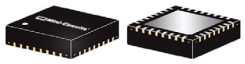
EP2RCW+

2 Way-0° 50Ω DC to 8.0 GHz

Features

- Wide bandwidth, DC to 8.0 GHz
- Excellent isolation, 21 dB typ. at 4 GHz
- Excellent amplitude unbalance, 0.1 dB typ. to 8 GHz
- Good phase unbalance, 1.0 deg. typ. at 4 GHz
- Small size, 5x5 mm
- Aqueous washable
- Patent pending



Generic photo used for illustration purposes only

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+RoHS Compliant

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

Applications

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

Electrical Specifications[1] at 25°C

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

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 watt

Maximum Ratings

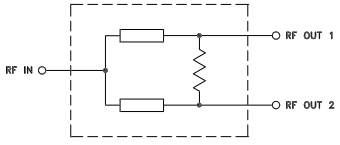
Parameter	Ratings
Operating Temperature	-55°C to 105°C
Storage Temperature	-65°C to 150°C

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

Pad Connections

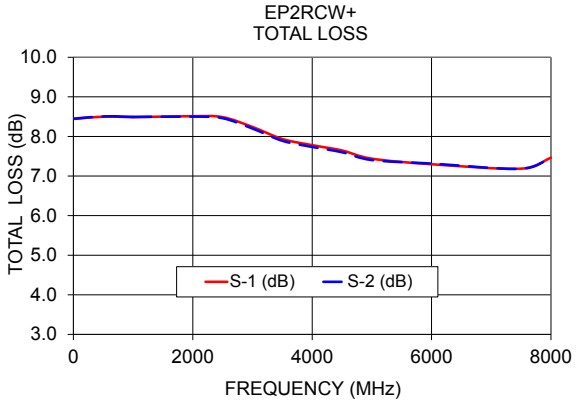
Function	Pad Number
RF IN	21
RF OUT 1	10
RF OUT 2	31
GROUND	9,11,20,22,30,32 & Paddle
NOT USED, GROUND EXTERNALLY	1-8, 12-19, 23-29

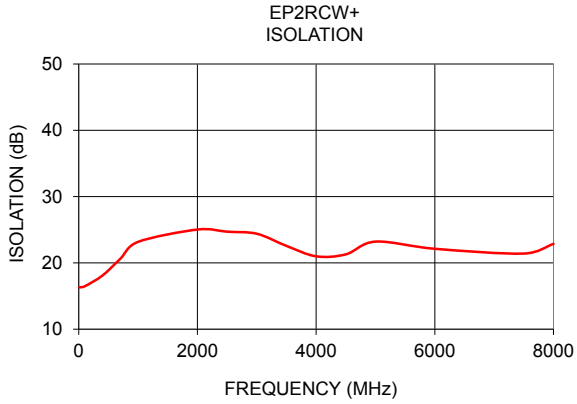
Simplified Electrical Schematic

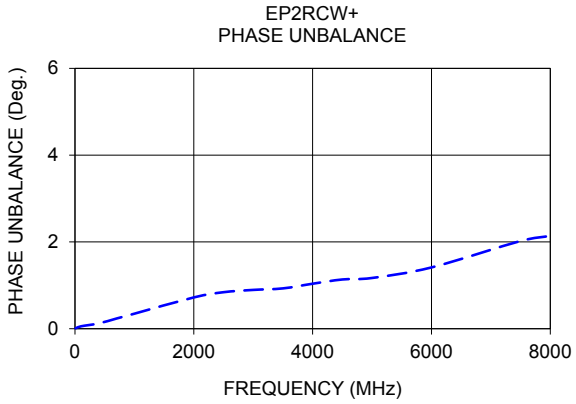


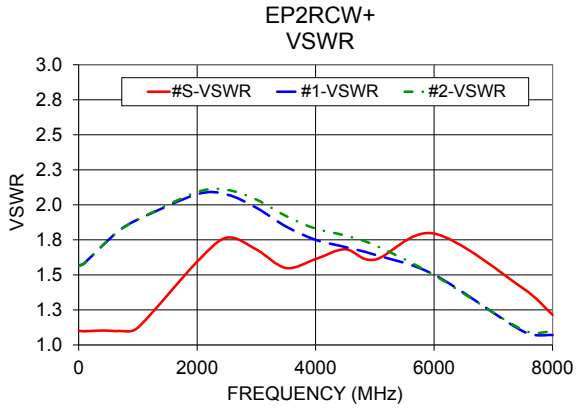
Typical Performance Data

Frequency (MHz)	Total Loss (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
10	8.44	8.45	0.00	16.3	0.0	1.1	1.6	1.6
100	8.45	8.46	0.01	16.5	0.1	1.1	1.6	1.6
400	8.49	8.50	0.01	18.1	0.1	1.1	1.7	1.7
700	8.50	8.51	0.00	20.6	0.2	1.1	1.8	1.8
1000	8.49	8.49	0.01	23.2	0.3	1.1	1.9	1.9
2000	8.51	8.50	0.01	25.0	0.7	1.6	2.1	2.1
2500	8.49	8.46	0.02	24.7	0.8	1.8	2.1	2.1
3000	8.24	8.20	0.03	24.4	0.9	1.7	2.0	2.0
3500	7.94	7.89	0.04	22.6	0.9	1.5	1.8	1.9
4000	7.78	7.73	0.03	21.0	1.0	1.6	1.8	1.8
4500	7.65	7.60	0.03	21.3	1.1	1.7	1.7	1.8
5000	7.44	7.40	0.03	23.2	1.2	1.6	1.6	1.7
6000	7.30	7.31	0.03	22.1	1.4	1.8	1.5	1.5
7500	7.19	7.18	0.01	21.4	2.0	1.4	1.1	1.1
8000	7.46	7.46	0.00	22.9	2.1	1.2	1.1	1.1









Additional Detailed Technical Information

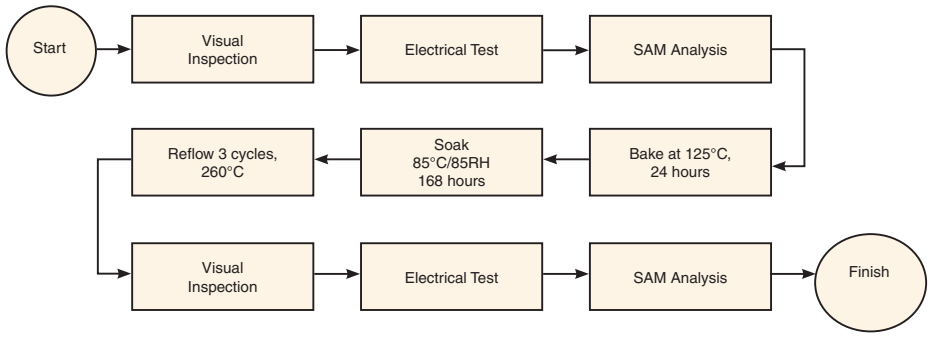
additional information is available on our dash board. To access this information click here

Performance Data	Data Table
	Swept Graphs
	S-Parameter (S3P Files) Data Set (.zip file)
Case Style	DG1677-2 *Plastic package, exposed paddle* *lead finish: Matte Tin*
Tape & Reel **Standard quantities available on reel**	F68 *7" reels with 20, 50, 100, 200, 500 and 1000 devices*
Suggested Layout for PCB Design	PL-647
Evaluation Board	TB-EP2RCW+
Environmental Ratings	ENV08T1

ESD Rating

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

MSL Test Flow Chart



Additional 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