



MMIC SURFACE MOUNT

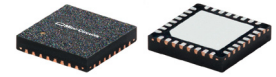
# Power Splitter/Combiner

## EP2RCW+

2 Way-0° 50Ω DC to 8 GHz

### THE BIG DEAL

- Ultra-Wide bandwidth, DC to 8 GHz
- High Isolation, 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  
CASE STYLE: DG1677-2

**+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

### 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 0.6W (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.





### 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	—	5.5	5.8	dB
	0.4 - 0.7	—	5.5	5.9	
	0.7 - 7.5	—	4.8	6.1	
	7.5 - 8.0	—	4.3	4.9	
Isolation	DC - 0.4	13	16.7	—	dB
	0.4 - 0.7	15	19.5	—	
	0.7 - 7.5	17	23.0	—	
	7.5 - 8.0	17	22.0	—	
Phase Unbalance	DC - 0.4	—	0.04	2	Degree
	0.4 - 0.7	—	0.2	2	
	0.7 - 7.5	—	0.9	9	
	7.5 - 8.0	—	1.7	9	
Amplitude Unbalance	DC - 0.4	—	0.01	0.3	dB
	0.4 - 0.7	—	0.01	0.3	
	0.7 - 7.5	—	0.02	0.4	
	7.5 - 8.0	—	0.01	0.3	
VSWR (Port S)	DC - 0.4	—	1.1	—	:1
	0.4 - 0.7	—	1.1	—	
	0.7 - 7.5	—	1.5	—	
	7.5 - 8.0	—	1.3	—	
VSWR (Port 1-2)	DC - 0.4	—	1.6	—	:1
	0.4 - 0.7	—	1.8	—	
	0.7 - 7.5	—	1.7	—	
	7.5 - 8.0	—	1.1	—	
Power Handling	As a splitter	DC - 8	—	0.6	W
	As a combiner <sup>3</sup>	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

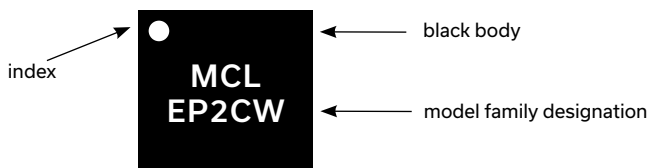
Parameter	Ratings
Operating temperature	-55°C to 105°C
Storage temperature	-65°C to 150°C

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

### PAD CONNECTIONS

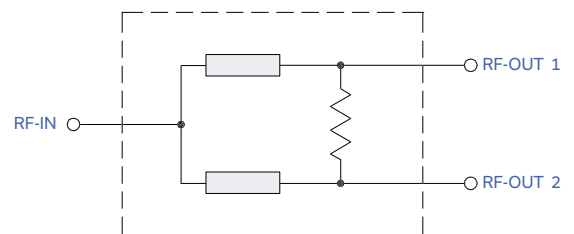
Function	Pad Number
RF IN	21
RF OUT 1	10
RF OUT 2	31
GROUND	9,11,20,22,30,32 & Paddle
NOT USED GROUND EXTERNALLY	1-8, 12-19, 23-29

### PRODUCT MARKING



Marking may contain other features or characters for internal lot control

### SIMPLIFIED ELECTRICAL SCHEMATIC





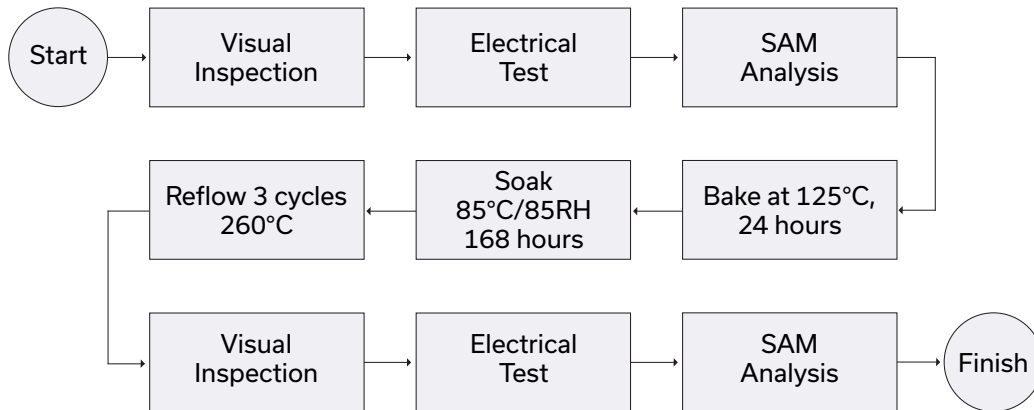
ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD. TO ACCESS [CLICK HERE](#)

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

### ESD RATING

Human Body Model (HBM): Class 2 (Pass 2000V) 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-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)

# 2 Way-0° Power Splitter/Combiner

# EP2RCW+

## Typical Performance Data

TEST CONDITIONS: Input Power = -10dBm @Temperature = +25°C

FREQ. (MHz)	TOTAL LOSS <sup>(1)</sup>		AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)	VSWR (:1)		
	S-1	S-2				S	1	2
100	8.44	8.45	0.00	0.01	16.41	1.11	1.57	1.57
200	8.46	8.46	0.00	0.04	16.85	1.10	1.61	1.61
300	8.47	8.47	0.00	0.06	17.49	1.10	1.66	1.66
400	8.48	8.48	0.00	0.11	18.23	1.10	1.71	1.71
500	8.49	8.49	0.00	0.13	19.05	1.10	1.76	1.75
600	8.49	8.50	0.00	0.16	19.90	1.09	1.79	1.79
700	8.49	8.50	0.00	0.20	20.77	1.10	1.83	1.83
800	8.49	8.50	0.00	0.24	21.63	1.10	1.86	1.86
900	8.49	8.50	0.00	0.26	22.48	1.11	1.88	1.89
1000	8.49	8.49	0.01	0.30	23.27	1.13	1.91	1.92
1200	8.48	8.49	0.01	0.36	24.56	1.20	1.95	1.97
1400	8.47	8.49	0.02	0.40	25.27	1.29	1.99	2.02
1600	8.47	8.50	0.02	0.44	25.40	1.40	2.03	2.06
1800	8.48	8.51	0.03	0.48	25.22	1.52	2.06	2.10
2000	8.49	8.52	0.03	0.52	25.02	1.62	2.08	2.12
2200	8.48	8.51	0.03	0.55	24.93	1.70	2.08	2.13
2400	8.43	8.47	0.03	0.58	24.94	1.73	2.07	2.12
2600	8.36	8.39	0.03	0.59	24.91	1.72	2.04	2.09
2800	8.26	8.29	0.03	0.62	24.66	1.69	1.99	2.04
3000	8.15	8.17	0.03	0.65	24.05	1.65	1.95	1.99
3200	8.05	8.07	0.02	0.68	23.16	1.63	1.89	1.93
3400	7.98	7.99	0.01	0.70	22.22	1.65	1.84	1.87
3600	7.92	7.93	0.00	0.75	21.40	1.69	1.80	1.82
3800	7.87	7.87	0.00	0.80	20.87	1.73	1.75	1.76
4000	7.81	7.80	0.01	0.86	20.67	1.74	1.71	1.71
4200	7.72	7.71	0.01	0.91	20.84	1.70	1.67	1.66
4400	7.61	7.60	0.01	0.96	21.34	1.62	1.63	1.61
4600	7.50	7.48	0.02	1.00	22.07	1.53	1.60	1.57
4800	7.40	7.38	0.02	1.05	22.80	1.46	1.58	1.54
5000	7.34	7.32	0.03	1.12	23.16	1.46	1.57	1.51
5200	7.33	7.30	0.03	1.19	22.96	1.56	1.56	1.49
5400	7.35	7.32	0.03	1.30	22.40	1.69	1.56	1.47
5600	7.37	7.34	0.03	1.42	21.83	1.82	1.54	1.45
5800	7.37	7.35	0.03	1.55	21.48	1.88	1.52	1.42
6000	7.32	7.30	0.02	1.68	21.45	1.86	1.48	1.38
6200	7.23	7.22	0.01	1.79	21.72	1.75	1.42	1.33
6400	7.11	7.11	0.00	1.88	22.19	1.57	1.35	1.28
6600	7.00	7.01	0.01	1.92	22.66	1.37	1.27	1.23
6800	6.95	6.97	0.02	1.93	22.73	1.22	1.20	1.19
7000	6.96	6.98	0.02	1.94	22.31	1.20	1.15	1.15
7200	7.03	7.05	0.02	1.93	21.81	1.28	1.11	1.14
7400	7.12	7.13	0.01	1.93	21.62	1.33	1.10	1.13
7600	7.21	7.22	0.01	1.95	21.93	1.30	1.09	1.14
7800	7.32	7.32	0.01	1.98	22.48	1.22	1.07	1.14
8000	7.48	7.48	0.00	2.00	22.43	1.22	1.05	1.13
8200	7.75	7.75	0.00	2.02	21.20	1.40	1.05	1.11
8400	8.13	8.12	0.00	2.06	19.74	1.63	1.07	1.13
8600	8.52	8.51	0.01	2.11	18.98	1.76	1.10	1.17
8800	8.87	8.85	0.02	2.19	19.46	1.66	1.11	1.20
9000	9.32	9.29	0.03	2.30	21.36	1.32	1.07	1.17
9200	10.55	10.51	0.04	2.41	20.35	1.24	1.12	1.15
9400	13.42	13.37	0.04	2.54	16.06	1.92	1.31	1.35
9600	17.68	17.64	0.04	2.65	13.92	2.79	1.50	1.62
9800	22.46	22.43	0.03	2.72	13.17	3.77	1.65	1.84
10000	27.27	27.24	0.03	2.74	12.95	5.03	1.77	2.02

<sup>(1)</sup> Total Loss = Insertion Loss + 3dB Splitter Loss



# 2 Way-0° Power Splitter/Combiner

# EP2RCW+

## Typical Performance Data

TEST CONDITIONS: Input Power = -10dBm @Temperature = -55°C

FREQ. (MHz)	TOTAL LOSS <sup>(1)</sup>		AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)	VSWR		
	(dB) S-1	(dB) S-2				(:1) S	(:1) 1	(:1) 2
100	8.39	8.39	0.00	0.02	16.31	1.12	1.57	1.56
200	8.40	8.40	0.00	0.05	16.78	1.11	1.62	1.61
300	8.41	8.41	0.00	0.07	17.42	1.10	1.67	1.67
400	8.41	8.41	0.00	0.11	18.17	1.11	1.72	1.72
500	8.41	8.41	0.00	0.14	18.99	1.11	1.77	1.76
600	8.41	8.41	0.00	0.17	19.85	1.11	1.80	1.80
700	8.40	8.40	0.00	0.21	20.73	1.11	1.84	1.84
800	8.39	8.39	0.00	0.25	21.59	1.12	1.87	1.88
900	8.38	8.39	0.00	0.28	22.45	1.13	1.90	1.90
1000	8.37	8.38	0.01	0.32	23.25	1.15	1.92	1.93
1200	8.35	8.36	0.01	0.40	24.57	1.21	1.96	1.98
1400	8.33	8.35	0.02	0.45	25.33	1.30	2.00	2.03
1600	8.32	8.35	0.03	0.48	25.45	1.42	2.04	2.08
1800	8.32	8.36	0.03	0.49	25.24	1.54	2.07	2.11
2000	8.33	8.36	0.03	0.53	25.01	1.64	2.09	2.14
2200	8.31	8.35	0.04	0.54	24.85	1.73	2.10	2.15
2400	8.27	8.31	0.03	0.57	24.84	1.77	2.09	2.14
2600	8.20	8.23	0.03	0.60	24.84	1.76	2.06	2.11
2800	8.09	8.12	0.03	0.62	24.60	1.73	2.02	2.07
3000	7.98	8.00	0.02	0.64	24.07	1.69	1.97	2.01
3200	7.87	7.88	0.02	0.69	23.19	1.67	1.92	1.96
3400	7.78	7.79	0.01	0.72	22.22	1.68	1.87	1.90
3600	7.71	7.71	0.00	0.78	21.35	1.72	1.82	1.84
3800	7.65	7.65	0.00	0.83	20.76	1.77	1.77	1.78
4000	7.58	7.57	0.01	0.89	20.51	1.78	1.72	1.72
4200	7.49	7.47	0.02	0.94	20.61	1.75	1.68	1.67
4400	7.37	7.35	0.02	1.00	21.06	1.68	1.64	1.62
4600	7.24	7.22	0.02	1.04	21.77	1.58	1.61	1.57
4800	7.13	7.11	0.03	1.09	22.53	1.51	1.59	1.54
5000	7.06	7.03	0.03	1.17	22.96	1.51	1.58	1.52
5200	7.04	7.00	0.03	1.25	22.85	1.59	1.57	1.50
5400	7.04	7.01	0.03	1.35	22.37	1.72	1.57	1.49
5600	7.06	7.03	0.03	1.47	21.78	1.85	1.56	1.47
5800	7.06	7.03	0.03	1.60	21.39	1.92	1.55	1.45
6000	7.01	6.98	0.02	1.75	21.28	1.92	1.52	1.41
6200	6.91	6.90	0.01	1.87	21.45	1.83	1.46	1.37
6400	6.78	6.78	0.00	1.97	21.86	1.66	1.39	1.31
6600	6.65	6.66	0.01	2.02	22.36	1.46	1.31	1.26
6800	6.56	6.58	0.02	2.04	22.61	1.29	1.23	1.20
7000	6.54	6.55	0.02	2.05	22.35	1.23	1.16	1.16
7200	6.58	6.59	0.02	2.03	21.84	1.28	1.11	1.13
7400	6.65	6.66	0.01	2.02	21.51	1.35	1.09	1.12
7600	6.72	6.73	0.01	2.04	21.63	1.36	1.08	1.12
7800	6.80	6.81	0.01	2.07	22.18	1.29	1.06	1.12
8000	6.91	6.91	0.00	2.09	22.49	1.24	1.04	1.11
8200	7.11	7.11	0.00	2.12	21.61	1.35	1.03	1.09
8400	7.43	7.43	0.00	2.17	19.97	1.60	1.05	1.09
8600	7.80	7.80	0.01	2.22	18.80	1.82	1.08	1.13
8800	8.12	8.10	0.02	2.30	18.78	1.83	1.08	1.17
9000	8.39	8.36	0.03	2.41	20.53	1.52	1.05	1.17
9200	9.12	9.09	0.04	2.54	21.94	1.12	1.07	1.10
9400	11.36	11.32	0.04	2.68	16.98	1.80	1.24	1.25
9600	15.32	15.29	0.04	2.80	13.93	2.85	1.43	1.53
9800	20.07	20.05	0.02	2.85	12.86	3.98	1.60	1.78
10000	24.95	24.93	0.01	2.83	12.56	5.38	1.73	1.99

<sup>(1)</sup>Total Loss = Insertion Loss + 3dB Splitter Loss



# 2 Way-0° Power Splitter/Combiner

# EP2RCW+

## Typical Performance Data

TEST CONDITIONS: Input Power = -10dBm @Temperature = +105°C

FREQ. (MHz)	TOTAL LOSS <sup>(1)</sup>		AMP. UNBAL. (dB)	PHASE UNBAL. (deg.)	ISOLATION (dB)	VSWR		
	(dB) S-1	(dB) S-2				(:1) S	1	2
100	8.50	8.50	0.00	0.00	16.51	1.10	1.58	1.57
200	8.52	8.52	0.00	0.01	16.93	1.09	1.61	1.61
300	8.54	8.54	0.00	0.03	17.56	1.09	1.66	1.65
400	8.55	8.55	0.00	0.05	18.30	1.09	1.70	1.70
500	8.57	8.57	0.00	0.07	19.11	1.09	1.75	1.74
600	8.58	8.58	0.00	0.09	19.96	1.08	1.79	1.78
700	8.59	8.59	0.00	0.12	20.83	1.08	1.82	1.82
800	8.59	8.59	0.00	0.14	21.68	1.09	1.85	1.85
900	8.60	8.60	0.00	0.15	22.51	1.10	1.88	1.88
1000	8.60	8.60	0.00	0.18	23.29	1.12	1.90	1.91
1200	8.60	8.60	0.00	0.23	24.52	1.19	1.95	1.96
1400	8.61	8.62	0.01	0.27	25.18	1.29	2.00	2.01
1600	8.62	8.63	0.01	0.30	25.33	1.40	2.04	2.05
1800	8.64	8.65	0.01	0.35	25.24	1.52	2.07	2.09
2000	8.64	8.65	0.01	0.39	25.15	1.61	2.08	2.11
2200	8.62	8.64	0.02	0.43	25.15	1.67	2.08	2.11
2400	8.57	8.59	0.02	0.46	25.17	1.69	2.06	2.09
2600	8.50	8.51	0.02	0.48	25.05	1.67	2.03	2.06
2800	8.40	8.42	0.02	0.51	24.65	1.63	1.98	2.02
3000	8.31	8.32	0.01	0.54	23.90	1.60	1.93	1.96
3200	8.23	8.24	0.01	0.55	22.98	1.60	1.88	1.91
3400	8.17	8.17	0.01	0.56	22.09	1.64	1.82	1.85
3600	8.12	8.12	0.00	0.59	21.39	1.69	1.77	1.80
3800	8.07	8.06	0.00	0.61	20.98	1.72	1.72	1.74
4000	8.00	7.99	0.01	0.65	20.89	1.71	1.67	1.68
4200	7.91	7.90	0.01	0.68	21.14	1.65	1.62	1.63
4400	7.81	7.80	0.01	0.71	21.68	1.55	1.58	1.59
4600	7.71	7.69	0.01	0.74	22.37	1.45	1.55	1.55
4800	7.63	7.62	0.02	0.78	22.98	1.40	1.53	1.52
5000	7.59	7.58	0.02	0.82	23.19	1.43	1.51	1.49
5200	7.60	7.58	0.02	0.87	22.93	1.55	1.50	1.48
5400	7.63	7.60	0.03	0.94	22.44	1.69	1.49	1.45
5600	7.65	7.62	0.03	1.02	21.99	1.80	1.47	1.43
5800	7.64	7.62	0.03	1.11	21.75	1.84	1.45	1.39
6000	7.60	7.58	0.02	1.22	21.79	1.78	1.41	1.35
6200	7.52	7.50	0.02	1.30	22.07	1.65	1.37	1.31
6400	7.43	7.42	0.01	1.38	22.43	1.47	1.31	1.27
6600	7.35	7.35	0.00	1.43	22.71	1.30	1.26	1.23
6800	7.33	7.34	0.00	1.46	22.66	1.19	1.21	1.20
7000	7.37	7.38	0.01	1.49	22.33	1.20	1.17	1.17
7200	7.46	7.46	0.00	1.51	22.02	1.26	1.15	1.16
7400	7.56	7.57	0.00	1.53	21.99	1.27	1.14	1.16
7600	7.68	7.68	0.00	1.56	22.29	1.22	1.14	1.16
7800	7.83	7.83	0.00	1.60	22.53	1.18	1.13	1.16
8000	8.05	8.05	0.00	1.62	22.06	1.27	1.12	1.15
8200	8.38	8.38	0.00	1.64	20.84	1.46	1.12	1.15
8400	8.78	8.78	0.00	1.68	19.73	1.62	1.15	1.17
8600	9.20	9.20	0.01	1.72	19.37	1.65	1.17	1.21
8800	9.63	9.62	0.01	1.76	20.18	1.47	1.18	1.22
9000	10.35	10.34	0.02	1.84	21.46	1.17	1.15	1.18
9200	12.15	12.14	0.02	1.91	18.82	1.36	1.22	1.24
9400	15.60	15.58	0.01	1.99	15.47	2.01	1.43	1.46
9600	20.08	20.08	0.01	2.05	13.96	2.83	1.63	1.70
9800	24.84	24.84	0.01	2.11	13.42	3.79	1.78	1.88
10000	29.51	29.53	0.02	2.11	13.26	4.96	1.90	2.03

<sup>(1)</sup> Total Loss = Insertion Loss + 3dB Splitter Loss

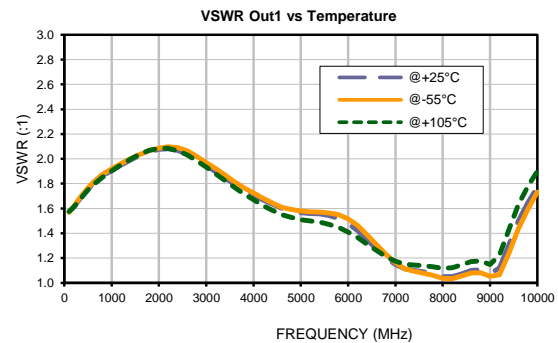
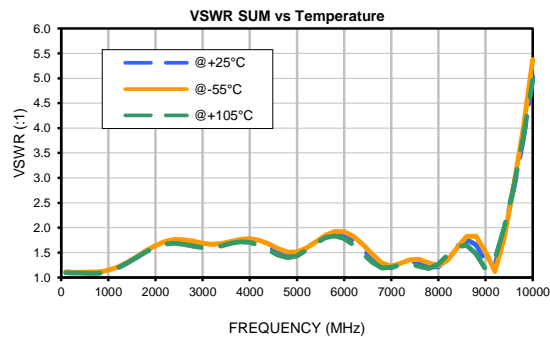
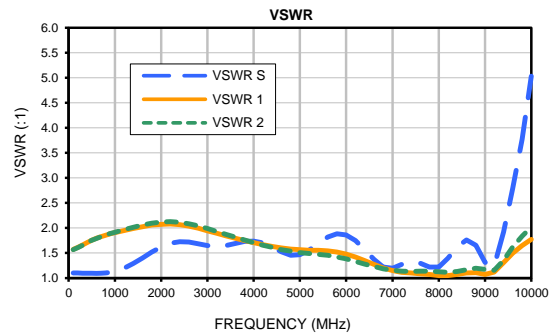
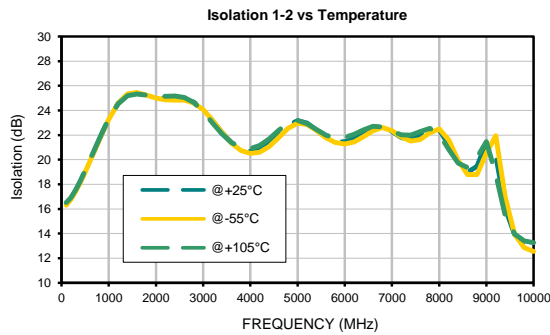
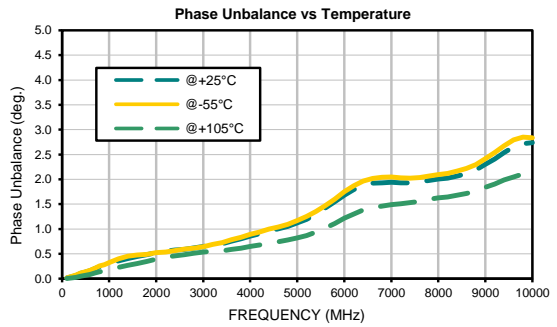
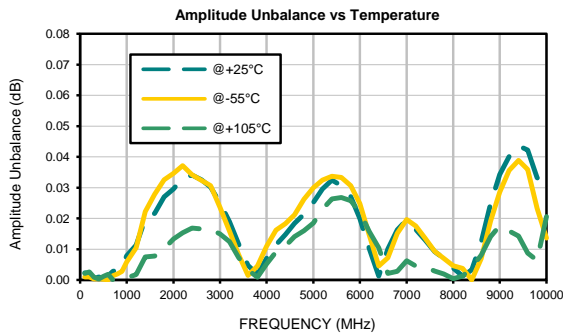
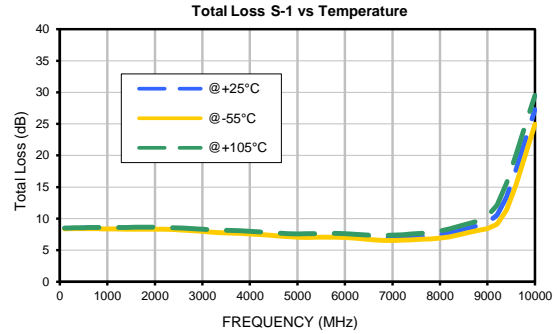
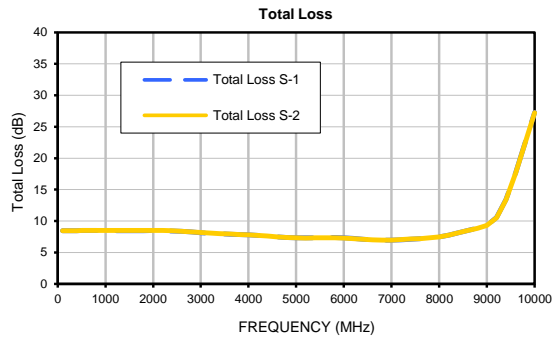


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 The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

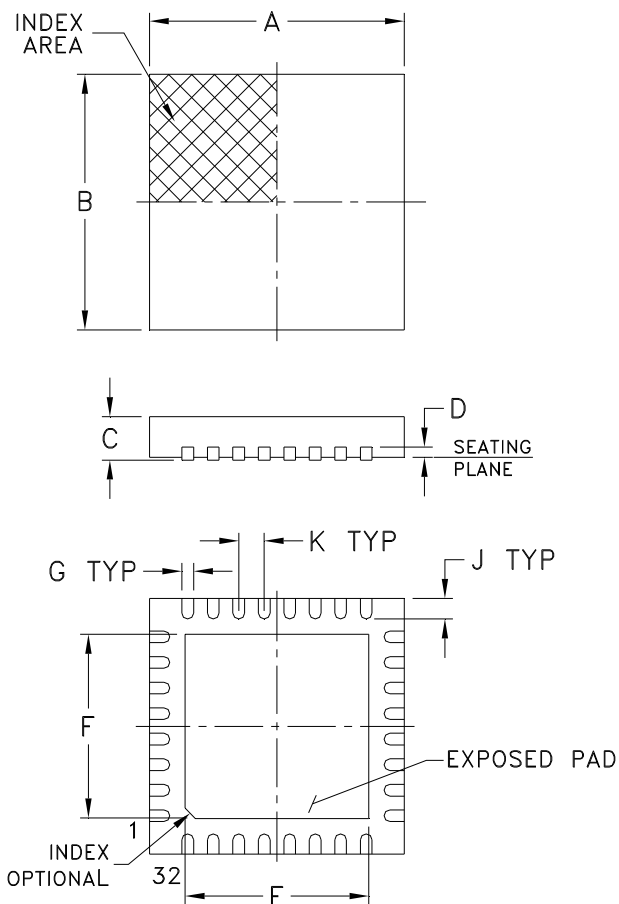
IF/RF MICROWAVE COMPONENTS

REV. OR  
 EP2RCW+  
 10/28/2019  
 Page 3 of 3

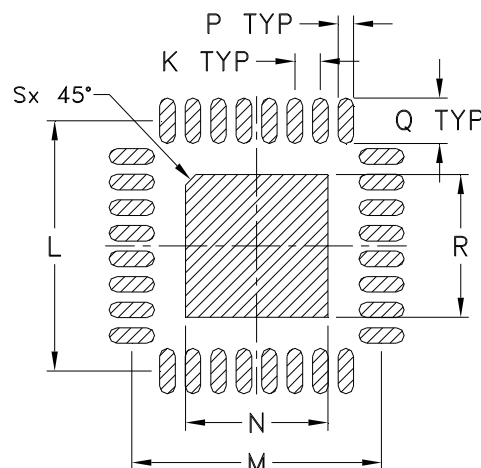
## Typical Performance Curves



### Outline Dimensions



### PCB Land Pattern



Suggested Layout,  
Tolerance to be within  $\pm .002$

CASE #	A	B	C MAX	C MIN	D	E	F	G	H	J
DG1677-2	.197 (5.00)	.197 (5.00)	.039 (1.00)	.031 (0.80)	.008 (0.20)	.142 (3.60)	.142 (3.60)	.009 (0.23)	- -	.016 (0.40)
CASE #	K	L	M	N	P	Q	R	S	WT. GRAM	
DG1677-2	.020 (0.50)	.193 (4.90)	.193 (4.90)	.110 (2.79)	.012 (0.30)	.035 (0.89)	.110 (2.79)	.008 (0.20)	.05	

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .01$ ; 3 Pl.  $\pm .005$

#### Notes:

- Case material: Plastic.
- Termination finish:

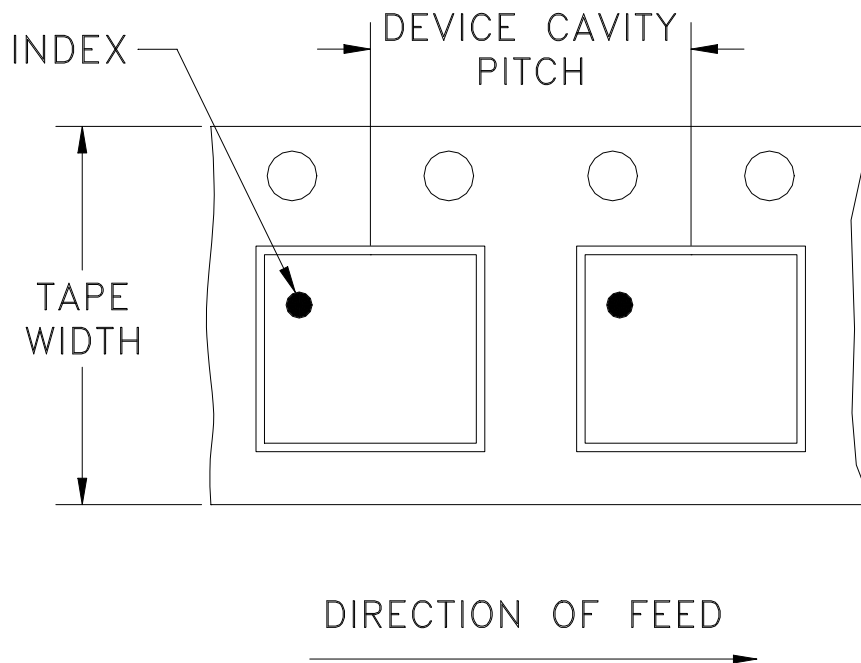
For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier transitioning to Matte-Tin.  
All models, (+) suffix. See Data sheet.

For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.



# Tape & Reel Packaging TR-F68

## DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
12	8	7	Small quantity standard	20
				50
				100
				200
				500
		7	Standard	1000
		13	Standard	2000
				3000
4000				

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: [www.minicircuits.com/pages/pdfs/tape.pdf](http://www.minicircuits.com/pages/pdfs/tape.pdf)



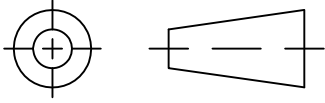
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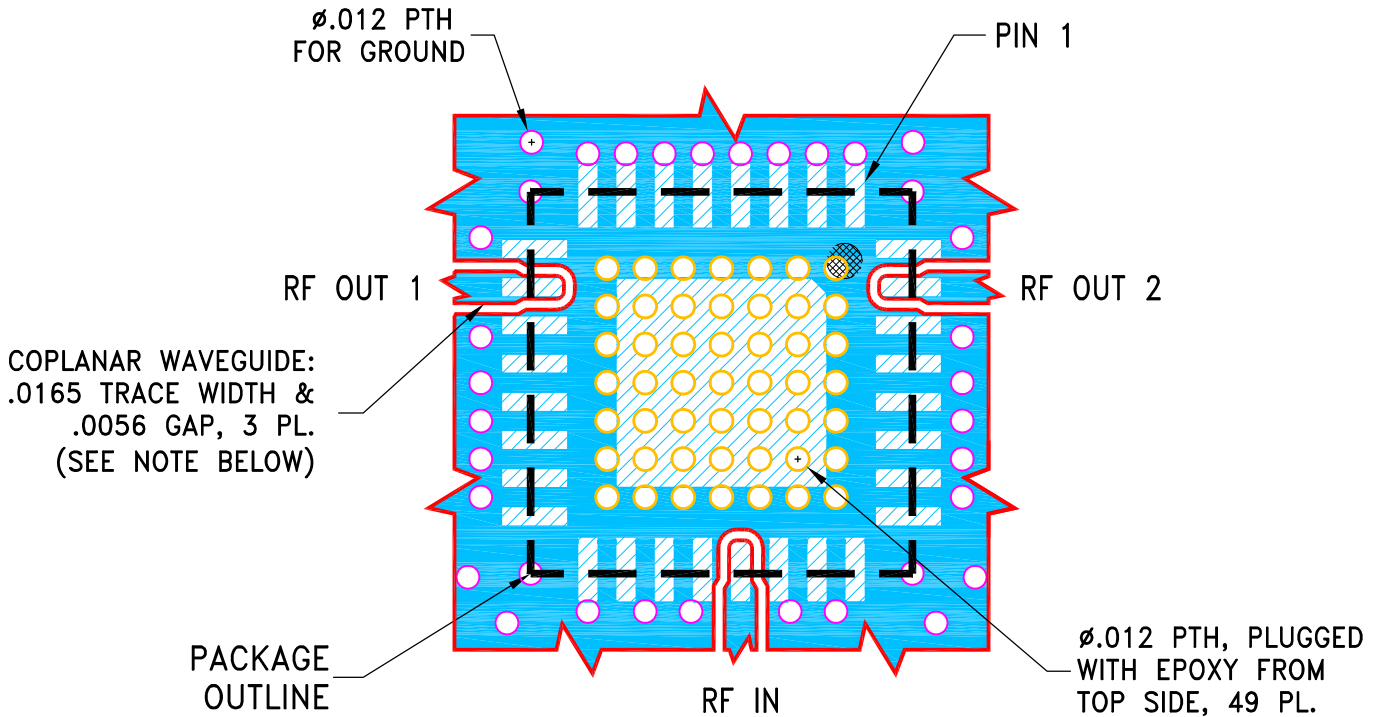
THIRD ANGLE PROJECTION



REVISIONS

REV OR	ECN No.	DESCRIPTION	DATE	DR	AUTH
	M175739	NEW RELEASE	09/10/19	ITG	CM

SUGGESTED MOUNTING CONFIGURATION  
FOR DG1677-2 CASE STYLE

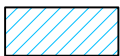


**NOTES:**

1. TRACE WIDTH & GAP ARE SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .010"±.001"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP 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.

UNLESS OTHERWISE SPECIFIED	INITIALS		DATE
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS ± 3 PL DECIMALS ± .005 ANGLES ± FRACTIONS ±	DRAWN	ITG	08/28/19
	CHECKED	GF	09/03/19
	APPROVED	CM	09/10/19



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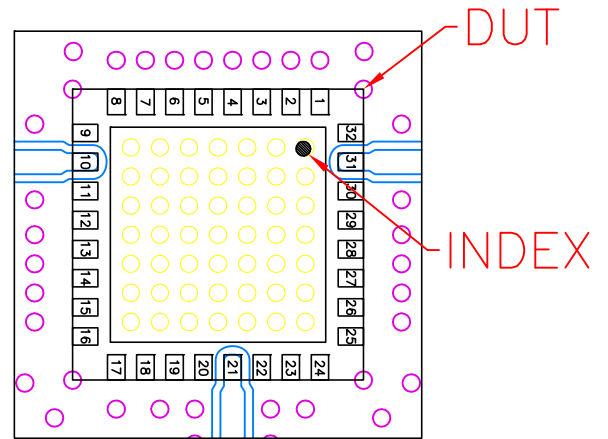
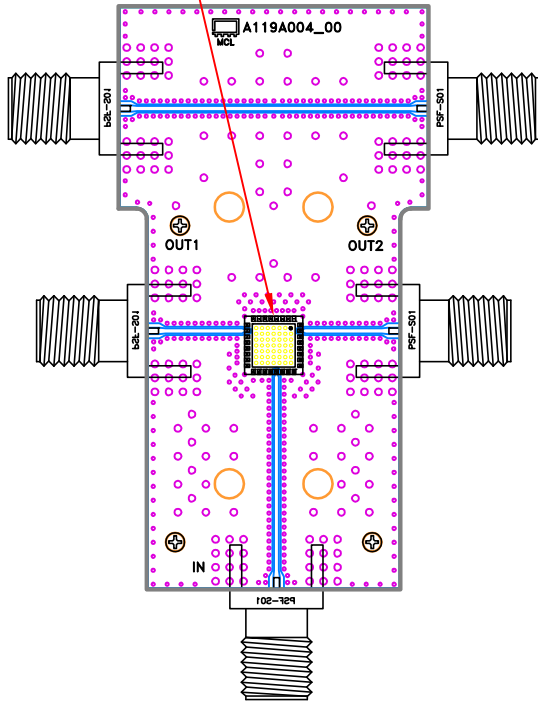
PL, DG1677-2, TB-EP2RCW+

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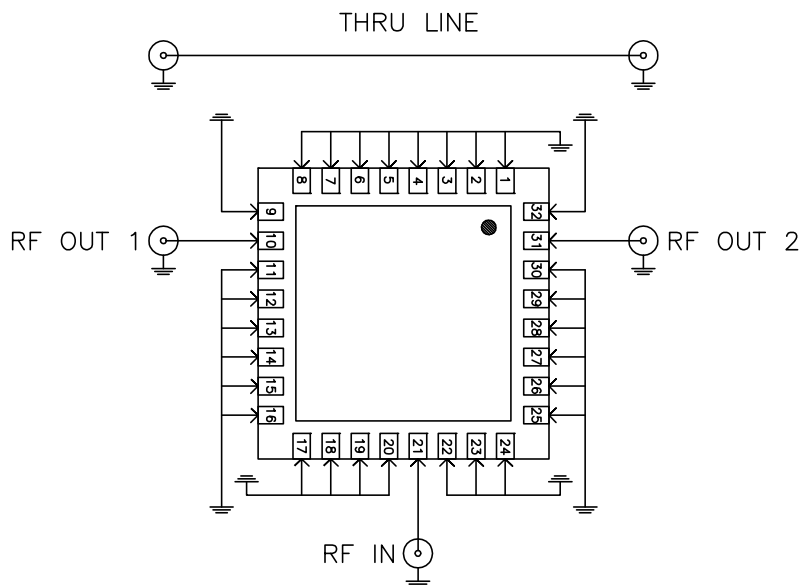
SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-647	REV: OR
FILE: 98PL647	SCALE: 10:1	SHEET: 1 OF 1	

# Evaluation Board and Circuit

SEE DETAIL "A"



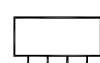
DETAIL "A"  
LOCATION OF INTERCONNECTOR  
AND UNITS COMPONENTS  
(SCALE 5:1)



SCHEMATIC DIAGRAM  
(SCALE 5:1)

## Notes:

1. 50 Ohm SMA Female Connectors.
2. PCB Material: Roger RO4350B or equivalent,  
Dielectric constant=3.5, Thickness=0.010 inch

 **Mini-Circuits®**

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 85°C or -45° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C or -65° to 150° Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Mechanical Shock	1.5Kg, 0.5 ms, 5 shock pulses, Y1 direction only	MIL-STD-883, Method 2002, Condition B, except Y1 direction only
Vibration (Variable Frequency)	50g peak	MIL-STD-883, Method 2007, Condition B
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102, Condition C
HAST	130°C, 85% RH, 96 hours	JESD22-A110
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Solder Reflow Heat	Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
Moisture Sensitivity: Level 1	Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 260°C peak	J-STD-020
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether +	MIL-STD-202, Method 215



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<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
	monoethanolamine at 63°C to 70°C	