

# Power Splitter/Combiner

**EP2KA+**

2 Way-0°    50Ω    10 to 43.5 GHz



CASE STYLE: JV2579-1

## The Big Deal

- Ultra-Wide Bandwidth, 10-43.5 GHz
- Tiny Size, 3.5 mm x 2.5 mm
- Excellent Amplitude Unbalance, 0.18 dB typ.

## Product Overview

Mini-Circuits EP2KA+ is a MMIC splitter/combiner designed for wide band operation from 10 to 43.5 GHz. This model provides excellent amplitude unbalance in a tiny device package (3.5mm x 2.5mm). Manufactured using GaAs IPD technology, it provides a high level of ESD protection and excellent reliability.

## Key Features

Feature	Advantages
Wideband, 10 to 43.5 GHz	One power splitter can be used in many applications, saving component count. Also ideal for wideband applications such as military and instrumentation.
Excellent Amplitude Unbalance (0.18 dB) and Good Phase Unbalance (3-6 deg.)	Excellent Amplitude and phase unbalance helps to accurately divide the input signals which is essential in test and measurement circuits.
Small size 3.5mm x 2.5mm QFN package	Tiny footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB.

**2 Way-0° 50Ω 10 to 43.5 GHz****Features**

- Super wide bandwidth, 10 to 43.5 GHz
- Excellent amplitude unbalance, 0.18 dB typ.
- Small size, 3.5mm x 2.5 mm
- DC passing

**Applications**

- Military
- 5G
- Instrumentation



CASE STYLE: JV2579-1

**+RoHS Compliant**

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

**Electrical Specifications<sup>1</sup> at 25°C**

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Unit
Frequency Range		10		43.5	GHz
Insertion Loss above 3.0 dB	10 - 20	—	0.8	1.7	dB
	20 - 25	—	0.5	1.0	
	25 - 30	—	0.9	2.1	
	30 - 40	—	1.5	2.8	
	40 - 43.5	—	2.2	—	
Isolation	10 - 20	—	17	—	dB
	20 - 25	19	26	—	
	25 - 30	17	22	—	
	30 - 40	17	26	—	
	40 - 43.5	—	29	—	
Phase Unbalance	10 - 20	—	3.7	7.0	Degree
	20 - 25	—	4.7	8.0	
	25 - 30	—	6.1	9.0	
	30 - 40	—	9.3	—	
	40 - 43.5	—	9.6	—	
Amplitude Unbalance	10 - 20	—	0.13	0.3	dB
	20 - 25	—	0.18	0.4	
	25 - 30	—	0.22	0.5	
	30 - 40	—	0.36	0.7	
	40 - 43.5	—	0.57	—	
VSWR (Port S)	10 - 20		1.6		:1
	20 - 25		1.1		
	25 - 30		1.4		
	30 - 40		1.4		
	40 - 43.5		1.5		
VSWR (Port 1-2)	10 - 20		1.3		:1
	20 - 25		1.2		
	25 - 30		1.3		
	30 - 40		1.4		
	40 - 43.5		1.4		

1. Tested on Mini-Circuits Test Board MB-029

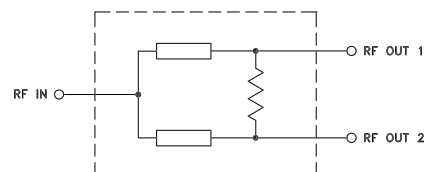
**Maximum Ratings**

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-65°C to 150°C
Power Input (as a splitter)	1.25W
Internal Dissipation (as a combiner)	0.63W
DC Current	300 mA

Permanent damage may occur if any of these limits are exceeded

**Pad Connections**

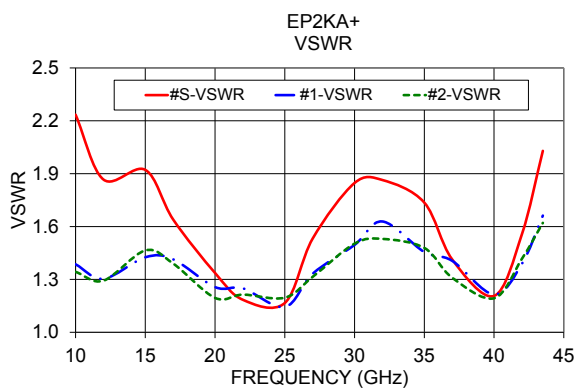
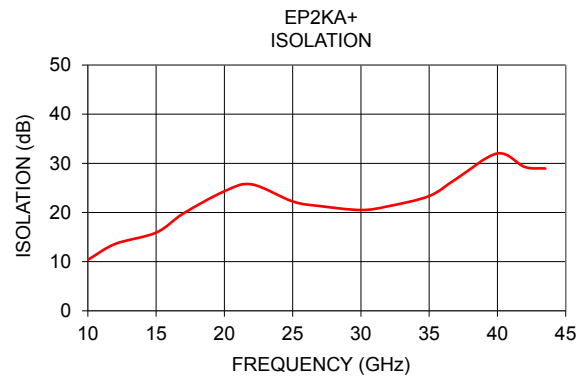
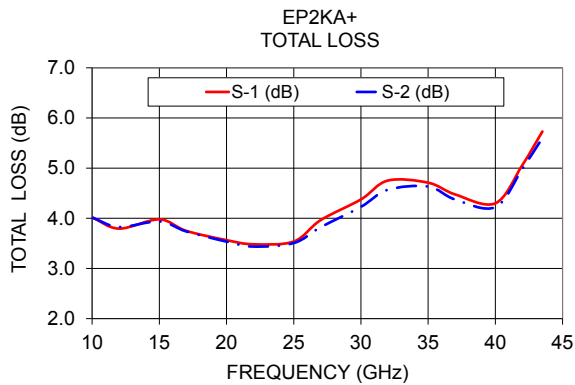
Function	Pad Number
SUM PORT	10
PORT 1	3
PORT 2	7
NC	2,5,8
GND	1,4,6,9 & Paddle

**Simplified Electrical Schematic**

Typical Performance Data

Frequency (GHz)	Total Loss <sup>1</sup> (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
10	4.02	4.01	0.01	10.37	2.07	2.23	1.39	1.34
12	3.79	3.83	0.03	13.60	2.10	1.87	1.30	1.29
15	3.98	3.94	0.04	15.91	2.83	1.92	1.43	1.46
17	3.75	3.74	0.01	19.81	3.28	1.64	1.41	1.39
20	3.56	3.54	0.03	24.32	3.73	1.34	1.26	1.20
22	3.48	3.44	0.05	25.72	4.34	1.18	1.25	1.21
25	3.54	3.51	0.03	22.24	4.63	1.17	1.14	1.20
27	3.96	3.82	0.14	21.31	5.34	1.53	1.33	1.31
30	4.38	4.23	0.15	20.51	6.07	1.85	1.50	1.50
32	4.75	4.57	0.18	21.28	7.47	1.86	1.63	1.53
35	4.71	4.63	0.08	23.36	8.10	1.74	1.46	1.48
37	4.48	4.38	0.10	26.88	8.50	1.41	1.41	1.31
40	4.30	4.22	0.08	32.02	9.29	1.21	1.21	1.19
42	5.06	4.98	0.07	29.26	9.33	1.56	1.39	1.42
43.5	5.73	5.60	0.13	28.96	9.60	2.03	1.66	1.62

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

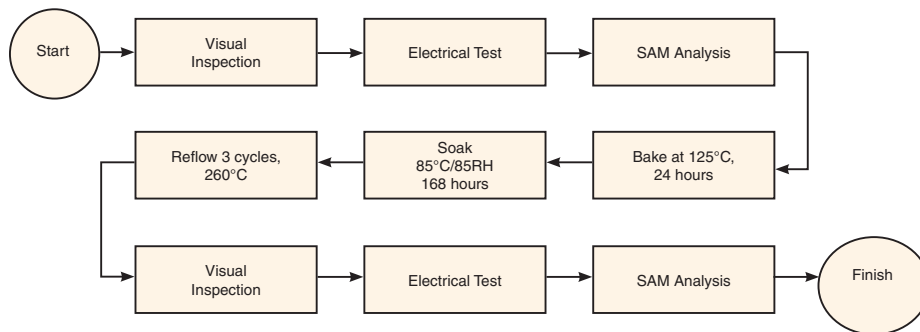


<b>Additional Detailed Technical Information</b>	
<i>additional information is available on our dash board. To access this information <a href="#">click here</a></i>	
<b>Performance Data</b>	Data Table
	Swept Graphs
	S-Parameter (S3P Files) Data Set (.zip file)
<b>Case Style</b>	JV2579-1 <i>Plastic package, exposed paddle lead finish: Matte Tin</i>
<b>Tape &amp; Reel</b> Standard quantities available on reel	F74 <i>7" reels with 20, 50, 100, 200, 500, 1000 and 2000 devices</i>
<b>Suggested Layout for PCB Design</b>	PL-598
<b>Evaluation Board</b>	MB-029
<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**



**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](http://www.minicircuits.com/MCLStore/terms.jsp)

