

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. |

Power Splitter/Combiner

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



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

Electrical Specifications¹ 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

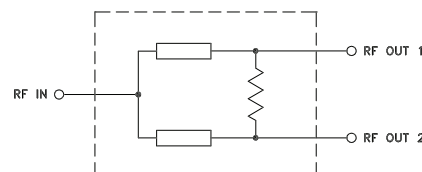
| Parameter | Ratings |
|--------------------------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -65°C to 150°C |
| Power Input (as a splitter) | 1.25W |
| Internal Dissipation (as a combiner) | 0.63W |
| DC Current | 300 mA |

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 |

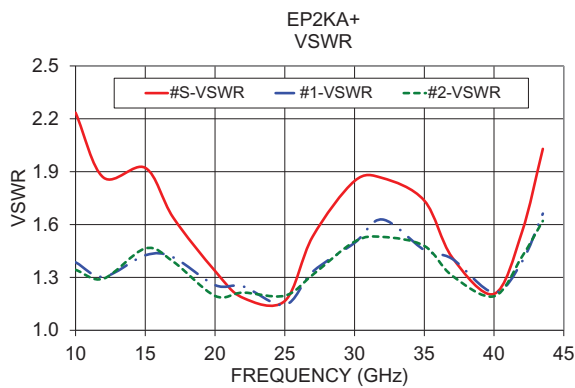
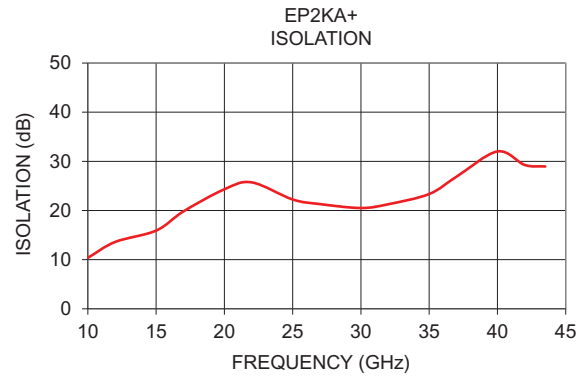
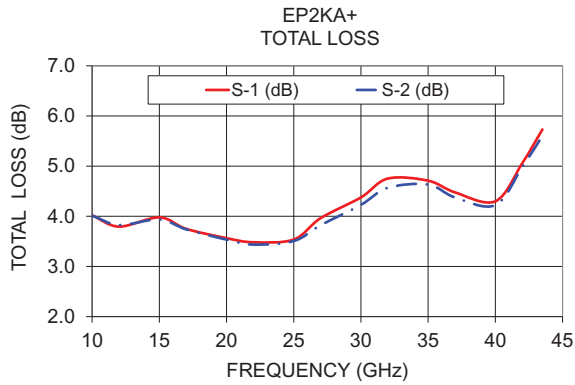
Simplified Electrical Schematic



Typical Performance Data

| Frequency (GHz) | Total Loss ¹ (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.

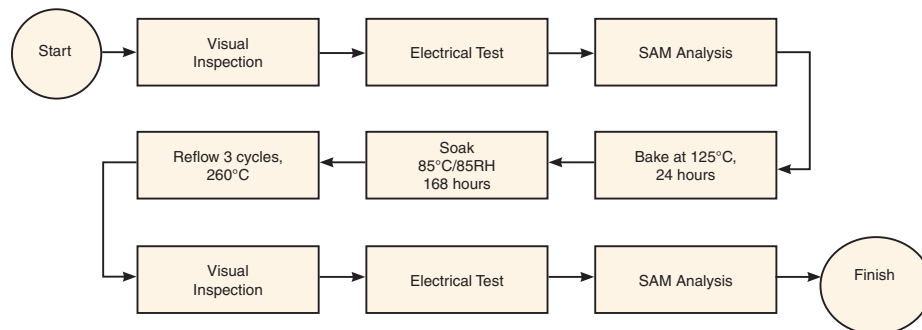


| Additional Detailed Technical Information | |
|---|--|
| <i>additional information is available on our dash board. To access this information click here</i> | |
| Performance Data | Data Table |
| | Swept Graphs |
| | S-Parameter (S3P Files) Data Set (.zip file) |
| Case Style | JV2579-1 <i>Plastic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