ULTRA-WIDEBAND, MILLIMETER WAVE

# Precision Fixed Attenuator BW-E3-1W653+

50Ω 1 W 3 dB DC to 65 GHz 1.85 mm Female to 1.85 mm Male

## THE BIG DEAL

- Extremely Wideband, DC to 65 GHz
- 1.85 mm Female to 1.85 mm Male Connectors
- Good VSWR, 1.2 @ 26.5 GHz, 1.3 @ 65 GHz Typ.
- Outstanding Accuracy, ±1.5 dB Over Full Range



*Generic photo used for illustration purposes only*

| Model No. | BW-E3-1W653+ |
|---|---|
| Case Style | DJ2591 |
| Connectors | 1.85 mm Female to 1.85 mm Male |

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

## APPLICATIONS

- Impedance Matching
- Instrumentation
- Test Setups

## PRODUCT OVERVIEW

Mini-Circuits' BW-Ex-1W653+ series of precision fixed attenuators achieves extremely wide frequency range from DC up to 65 GHz. Available in a variety of attenuation values for different requirements, these units support a broad range of system and test applications. Excellent attenuation flatness, good VSWR (1.2:1 typ.) and rugged construction make these models ideal solutions for applications requiring precise attenuation across very wide frequency range.

## KEY FEATURES

| Feature | Advantages |
|---|---|
| Extremely Wideband, DC to 65 GHz | Ideal for an exceptionally wide variety of lab and system applications up to millimeter wave bands. |
| Excellent Attenuation Accuracy, ±1.5 dB or Better Across Full Range | Provides precise, consistent attenuation across the entire frequency band, ideal for broadband and multi-band usage. |
| Good VSWR<br>• 1.2 dB @ 26.5 GHz Typ.<br>• 1.3 dB @ 65 GHz Typ. | Efficient power utilization with minimal signal power reflected back to source. |
| 1 W Power Handling | Provides precise attenuation for a range of input power levels. |
| Passivated Stainless Steel Connectors | Rugged construction withstands harsh environmental conditions for high reliability and long life of use. |

REV. A
ECO-024509
BW-E3-1W653+
MCL NY
260811

# Precision Fixed Attenuator BW-E3-1W653+

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## ELECTRICAL SPECIFICATIONS AT +25 °C

| Parameter | Condition (GHz) | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Frequency Range | | DC | | 65 | GHz |
| Attenuation | DC–26.5 | 2.25 | 3.0 | 3.75 | dB |
| | 26.5–40 | – | 3.2 | 4.0 | |
| | 40–60 | – | 3.7 | 4.5 | |
| | 60–65 | – | 3.9 | 4.5 | |
| VSWR | DC–26.5 | – | 1.1 | 1.35 | :1 |
| | 26.5–50 | – | 1.2 | 1.55 | |
| | 50–65 | – | 1.3 | 1.65 | |
| Input Power[1] | DC–65 | – | – | 1 | W |

1. Max. Power at +25 °C ambient, derate linearly to 0.1 W +100 °C.

## ABSOLUTE MAXIMUM RATINGS

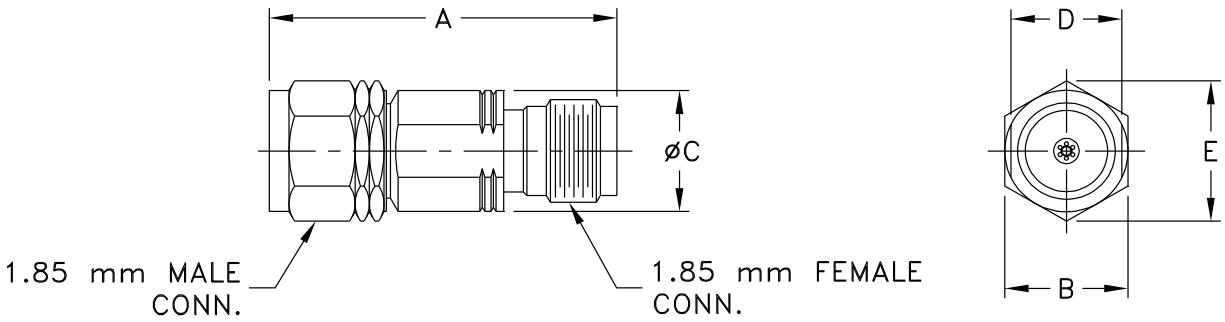
| Parameter | Ratings |
|---|---|
| Operating Temperature | -55 °C to +100 °C |
| Storage Temperature | -55 °C to +100 °C |

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

# Precision Fixed Attenuator BW-E3-1W653+

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## OUTLINE DRAWING




## OUTLINE DIMENSIONS (Inch / mm)

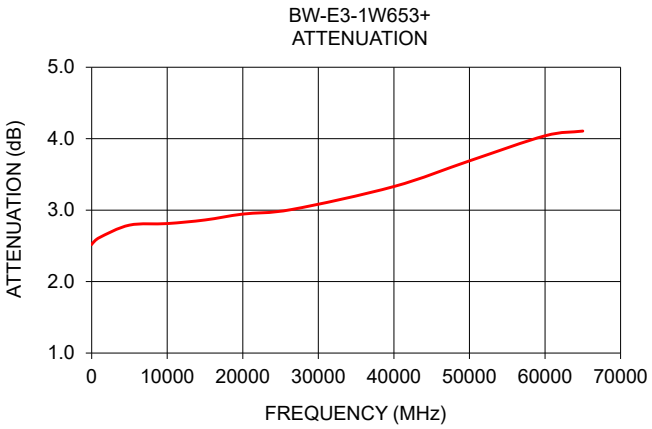
| A | B | C | D | E | wt |
|---|---|---|---|---|---|
| 0.88 | 0.31 | 0.310 | 0.284 | .36 | grams |
| 22.2 | 8.0 | 7.90 | 7.21 | 9.14 | 5.6 |

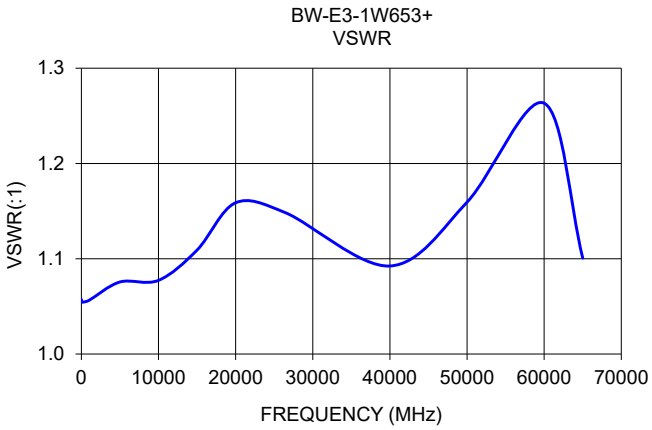
# Precision Fixed Attenuator BW-E3-1W653+

50Ω 1 W 3 dB DC to 65 GHz 1.85 mm Female to 1.85 mm Male

## TYPICAL PERFORMANCE DATA AND CHARTS

| Frequency (MHz) | Attenuation (dB) | VSWR (:1) |
|---|---|---|
| 10 | 2.52 | 1.06 |
| 100 | 2.53 | 1.05 |
| 1000 | 2.61 | 1.06 |
| 5000 | 2.79 | 1.08 |
| 10000 | 2.81 | 1.08 |
| 15000 | 2.86 | 1.11 |
| 20000 | 2.95 | 1.16 |
| 26500 | 3.01 | 1.15 |
| 40000 | 3.33 | 1.09 |
| 50000 | 3.69 | 1.16 |
| 60000 | 4.04 | 1.26 |
| 65000 | 4.11 | 1.10 |




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-Circuits' 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/terms/viewterm.html

# Fixed Attenuator BW-E3-1W653+

*1.85mm-Female/1.85mm-Male*

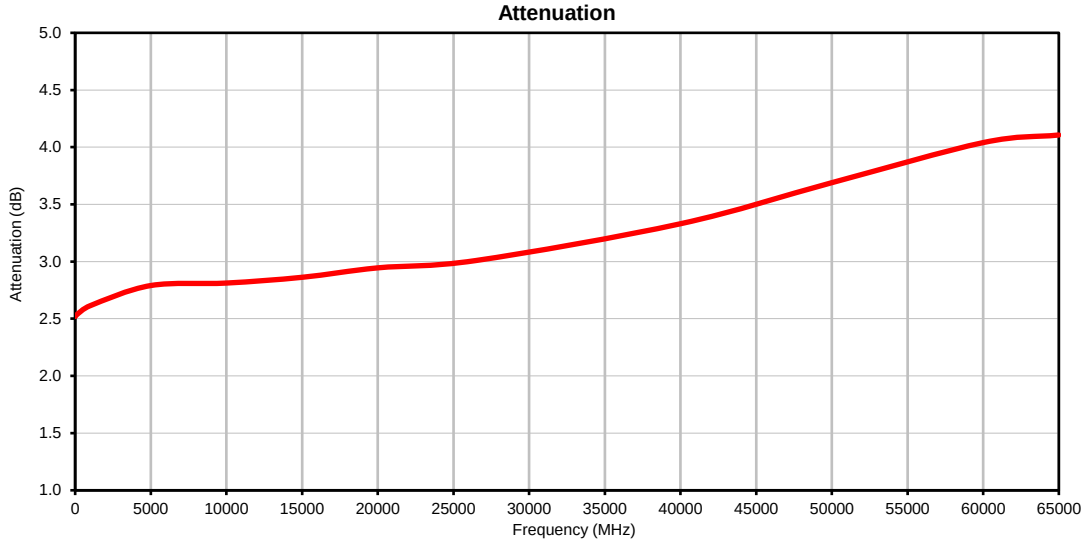
*Typical Performance Data*

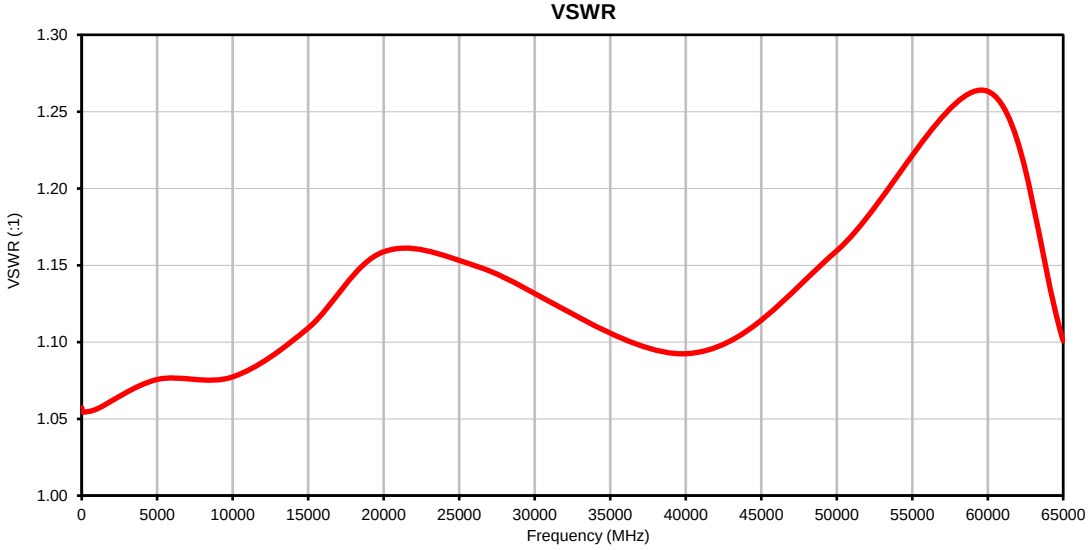
| FREQUENCY (MHz) | ATTENUATION (dB) | VSWR (:1) |
|---|---|---|
| 10 | 2.52 | 1.06 |
| 100 | 2.53 | 1.05 |
| 1000 | 2.61 | 1.06 |
| 5000 | 2.79 | 1.08 |
| 10000 | 2.81 | 1.08 |
| 15000 | 2.86 | 1.11 |
| 20000 | 2.95 | 1.16 |
| 26500 | 3.01 | 1.15 |
| 40000 | 3.33 | 1.09 |
| 50000 | 3.69 | 1.16 |
| 60000 | 4.04 | 1.26 |
| 65000 | 4.11 | 1.10 |

# Fixed Attenuator BW-E3-1W653+

*1.85mm-Female/1.85mm-Male*

*Typical Performance Curves*

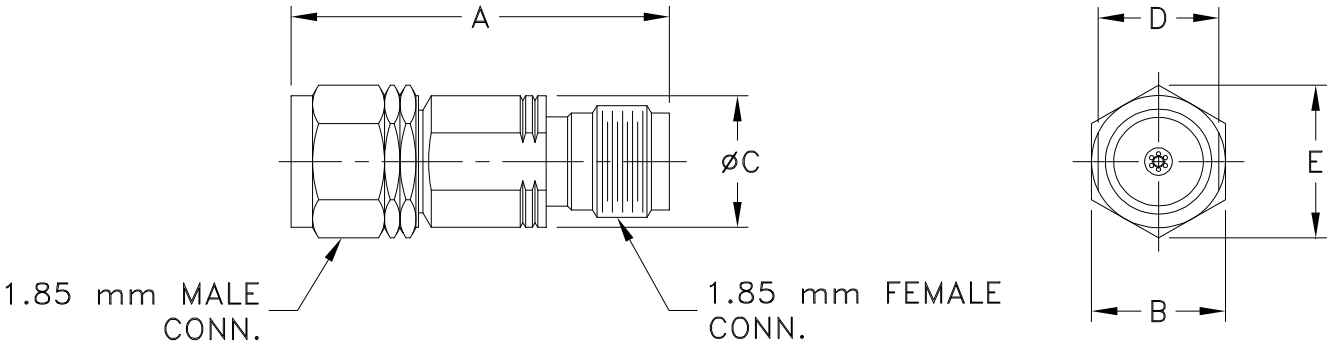


# Case Style DJ

**DJ2591**

## Outline Dimensions




| CASE# | A | B | C | D | E | WT. GRAM |
|---|---|---|---|---|---|---|
| DJ2591 | .88 (22.2) | .312 (8.00) | .31 (7.9) | .284 (7.21) | .36 (9.14) | 5.6 |

**Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015**

Notes:

1. Case material: Stainless steel.
2. Finish: Passivation.



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# Environmental Specifications ENV89

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 | -55° to 100° C or -55° to 85° C or -45° to 100° C<br>Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C<br>Ambient Environment | Individual Model Data Sheet |
| Thermal Shock | -55° to 100°C, 5 cycles | MIL-STD-202, Method 107, Condition B except over -55° to 100°C |
| Connector Durability | 500 mating/unmating cycles | MIL-PRF-39012E, PARAGRAPH 4.6.12 |
| Drop Test | 1 meter height, 5 times | |


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