ULTRA-WIDEBAND, MILLIMETER WAVE

Precision Fixed Attenuator BW-E30-1W653+

50Ω 1 W 30 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-E30-1W653+
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 • 1.2 dB @ 26.5 GHz Typ. • 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-E30-1W653+
MCL NY
260811

Precision Fixed Attenuator BW-E30-1W653+

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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	28.75	30.4	31.25	dB
	26.5–40	28.5	30.0	31.5	
	40–60	27.7	29.2	32	
	60–65	25	28.2	35	
VSWR	DC–26.5	–	1.09	1.35	:1
	26.5–50	–	1.12	1.55	
	50–65	–	1.18	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

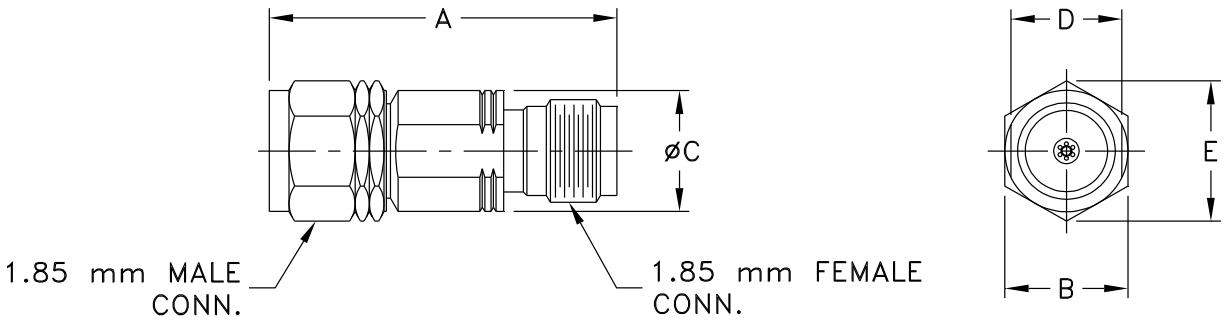
Parameter	Ratings
Operating Temperature	-55 °C to +100 °C
Storage Temperature	-55 °C to +100 °C

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

Precision Fixed Attenuator **BW-E30-1W653+**

50Ω 1 W 30 dB DC to 65 GHz 1.85 mm Female to 1.85 mm Male

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

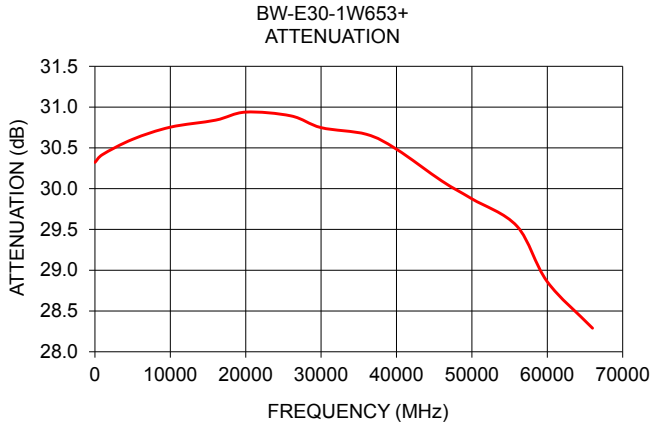
ULTRA-WIDEBAND, MILLIMETER WAVE

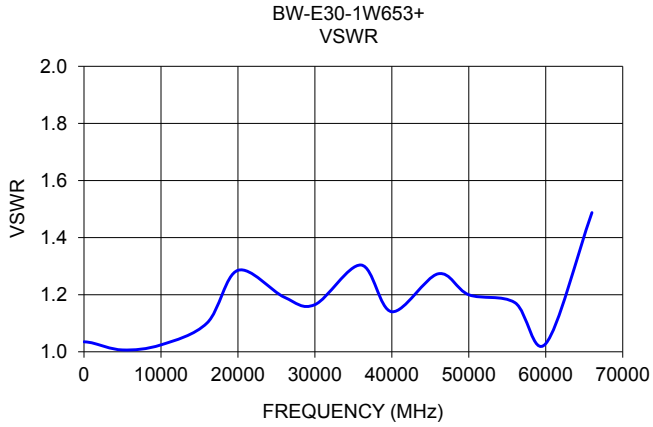
Precision Fixed Attenuator BW-E30-1W653+

50Ω 1 W 30 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	30.32	1.03
1000	30.42	1.03
5000	30.61	1.01
10000	30.75	1.02
16000	30.84	1.10
20000	30.94	1.29
26000	30.89	1.19
30000	30.75	1.17
36000	30.67	1.30
40000	30.48	1.14
46000	30.09	1.27
50000	29.88	1.20
56000	29.54	1.17
65000	28.29	1.49





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-E30-1W653+

1.85mm-Female/1.85mm-Male

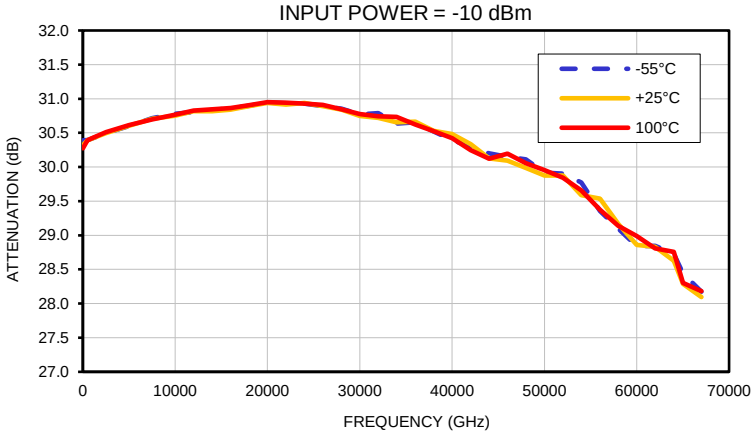
Typical Performance Curves

FREQ.	ATTENUATION			INPUT VSWR			OUTPUT VSWR		
(MHz)	(dB)			(:1)			(:1)		
	@-55˚C	@25°C	@+100°C	@-55°C	@+25˚C	@+100°C	@-55°C	@+25˚C	@+100°C
10	30.39	30.32	30.28	1.04	1.03	1.03	1.04	1.04	1.04
500	30.40	30.39	30.39	1.02	1.02	1.02	1.01	1.01	1.01
1000	30.42	30.42	30.42	1.03	1.03	1.03	1.01	1.01	1.01
2500	30.50	30.50	30.51	1.05	1.05	1.05	1.04	1.04	1.04
5000	30.60	30.61	30.61	1.01	1.01	1.00	1.05	1.05	1.05
7500	30.72	30.70	30.70	1.06	1.06	1.06	1.06	1.06	1.06
10000	30.78	30.75	30.76	1.02	1.02	1.02	1.06	1.06	1.06
12000	30.80	30.82	30.82	1.09	1.08	1.09	1.05	1.05	1.05
14000	30.84	30.82	30.84	1.14	1.13	1.14	1.05	1.05	1.05
16000	30.86	30.84	30.86	1.10	1.10	1.10	1.08	1.08	1.08
18000	30.90	30.89	30.91	1.20	1.20	1.20	1.14	1.13	1.13
20000	30.94	30.94	30.95	1.28	1.29	1.28	1.18	1.18	1.18
22000	30.93	30.91	30.94	1.24	1.24	1.24	1.22	1.22	1.22
24000	30.93	30.94	30.93	1.22	1.22	1.22	1.25	1.25	1.24
26000	30.89	30.89	30.91	1.19	1.19	1.20	1.24	1.23	1.24
28000	30.85	30.84	30.84	1.10	1.09	1.10	1.22	1.21	1.23
30000	30.77	30.75	30.78	1.17	1.17	1.18	1.16	1.14	1.17
32000	30.79	30.72	30.75	1.14	1.14	1.16	1.09	1.08	1.10
34000	30.64	30.66	30.74	1.20	1.20	1.20	1.06	1.08	1.06
36000	30.66	30.67	30.62	1.30	1.30	1.31	1.12	1.14	1.12
38000	30.52	30.53	30.52	1.15	1.15	1.16	1.17	1.18	1.16
40000	30.39	30.48	30.42	1.12	1.14	1.12	1.19	1.19	1.17
42000	30.30	30.34	30.24	1.20	1.21	1.18	1.17	1.18	1.15
44000	30.20	30.13	30.12	1.04	1.04	1.05	1.18	1.18	1.17
46000	30.15	30.09	30.20	1.30	1.27	1.30	1.19	1.18	1.18
48000	30.11	29.99	30.06	1.33	1.32	1.33	1.17	1.17	1.16
50000	29.92	29.88	29.96	1.21	1.20	1.22	1.15	1.14	1.14
52000	29.91	29.87	29.84	1.46	1.46	1.46	1.14	1.14	1.14
54000	29.77	29.59	29.66	1.47	1.47	1.48	1.15	1.15	1.16
56000	29.35	29.54	29.38	1.17	1.17	1.17	1.15	1.16	1.17
58000	29.10	29.17	29.14	1.08	1.08	1.09	1.14	1.14	1.15
60000	28.84	28.86	28.99	1.03	1.03	1.03	1.19	1.19	1.20
62000	28.85	28.83	28.81	1.34	1.34	1.35	1.31	1.30	1.30
64000	28.73	28.63	28.76	1.48	1.46	1.46	1.39	1.39	1.40
65000	28.44	28.29	28.30	1.50	1.49	1.51	1.46	1.45	1.46
67000	28.17	28.10	28.18	1.64	1.64	1.67	1.46	1.44	1.45

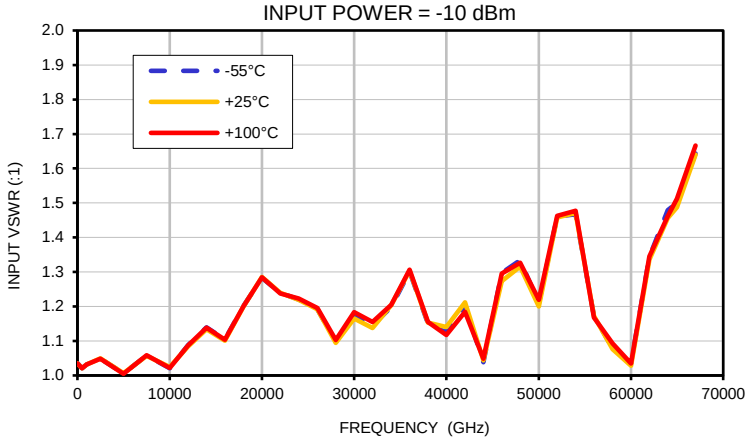
1.85mm-Female/1.85mm-Male

Typical Performance Curves

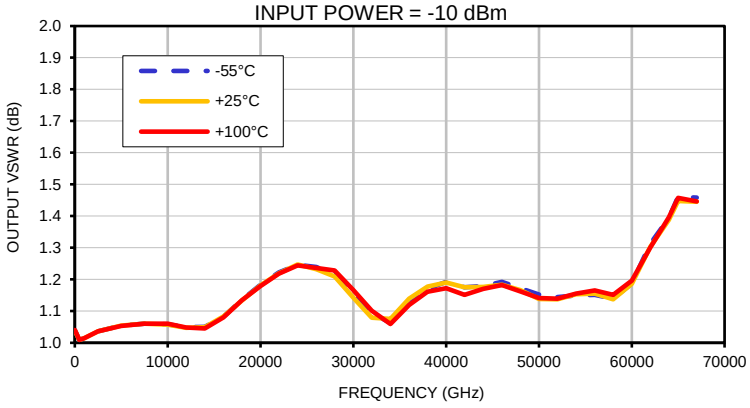
ATTENUATION vs. TEMPERATURE
INPUT POWER = -10 dBm



INPUT VSWR vs. TEMPERATURE
INPUT POWER = -10 dBm



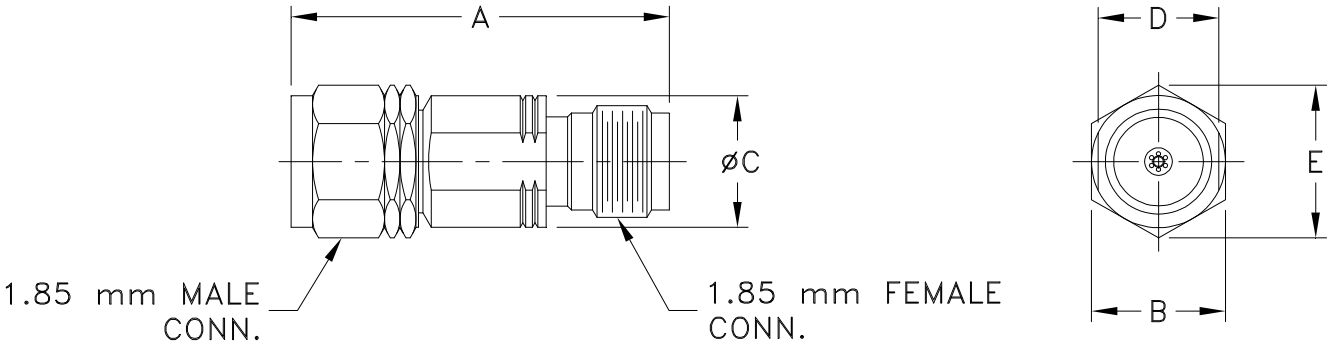
OUTPUT VSWR vs. TEMPERATURE
INPUT POWER = -10 dBm



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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Mini-Circuits

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 Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C 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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