

Coaxial

SMA Fixed Attenuator

VAT-20+

50Ω 0.5W 20dB DC to 6000 MHz



Maximum Ratings

Operating Temperature	-45°C to 100°C
Storage Temperature	-55°C to 100°C

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

Features

- wideband coverage, DC to 6000 MHz
- rugged unibody construction
- off-the-shelf availability
- very low cost

Applications

- impedance matching
- signal level adjustment

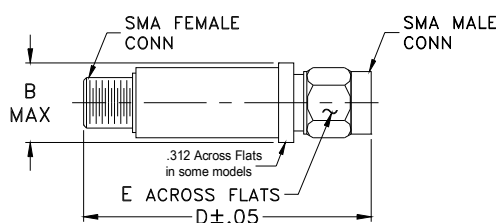
CASE STYLE: FF704

Connectors	Model	Price	Qty.
SMA	VAT-20+	\$11.95 ea.	(1-9)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Outline Drawing



Outline Dimensions (inch/mm)

B	D	E	wt
.410	1.43	.312	grams
10.41	36.32	7.92	10.0

Electrical Specifications

FREQ. RANGE (MHz)	ATTENUATION * (dB)					VSWR (:1)					MAX. INPUT POWER (W)
	Flatness **										
	DC-3 GHz	3-5 GHz	5-6 GHz	DC-6 GHz		DC-3 GHz	3-5 GHz	5-6 GHz			
$f_c - f_u$	Nom.	Typ.	Typ.	Typ.	Typ.	Typ.	Max.	Typ.	Max.	Typ.	
DC-6000	20±0.3	0.45	0.55	0.35	0.85	1.05	1.20	1.20	1.50	1.30	0.5

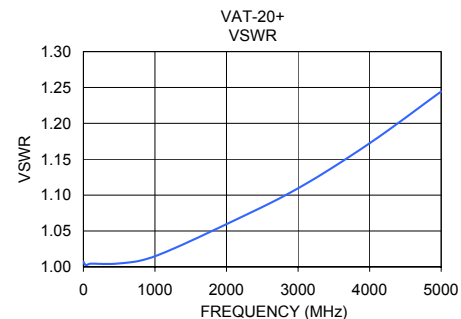
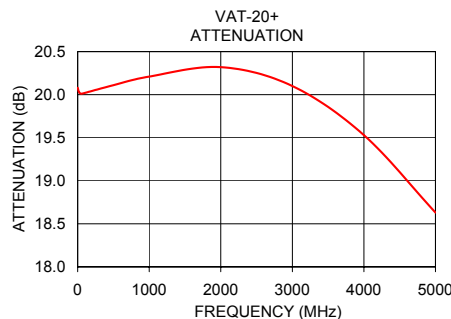
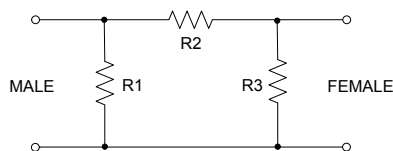
* Attenuation varies by 0.3 dB max. over temperature.

** Flatness= variation over band divided by 2.

Typical Performance Data

Frequency (MHz)	Attenuation (dB)	VSWR (:1)
0.03	20.08	1.01
20.00	20.03	1.00
50.00	20.01	1.00
100.00	20.02	1.00
500.00	20.11	1.00
1000.00	20.21	1.01
2000.00	20.32	1.06
3000.00	20.10	1.11
4000.00	19.53	1.17
5000.00	18.63	1.24

Electrical Schematic



Mini-Circuits®
ISO 9001 ISO 14001 AS 9100 CERTIFIED

For detailed performance specs & shopping online see web site

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at minicircuits.com

IF/RF MICROWAVE COMPONENTS

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.

REV. G
M129173
VAT-20+
LC/TD/CP/AM
101007

DC Block SMA

50Ω 0.1 MHz to 8 GHz

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
DC Input Voltage	50V Max.

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

Features

- broadband performance
- low insertion loss
- rugged unibody construction
- off-the-shelf availability

Applications

- test and measurement instrumentation
- communication systems
- defense systems

BLK-89+



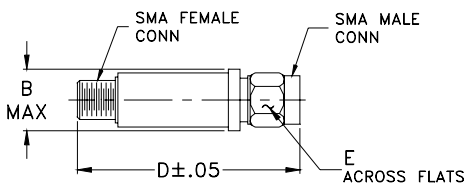
CASE STYLE: FF888

SMA Connectors	Model	Price	Qty.
Female-Male	BLK-89-S+	\$14.95 ea.	(1-9)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

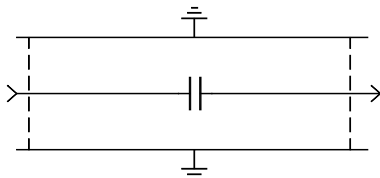
Outline Drawing



Outline Dimensions (inch/mm)

B	D	E	wt
.410	1.18	.312	grams
10.41	29.97	7.92	7.0

Electrical Schematic

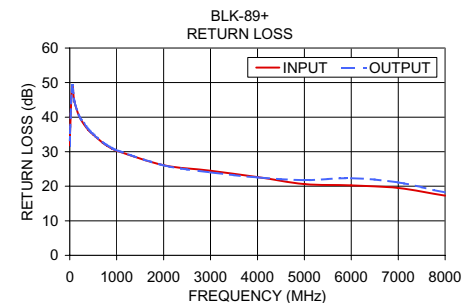
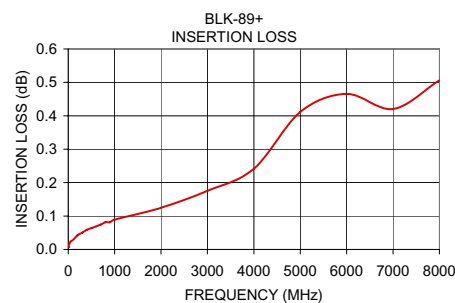


Electrical Specifications at 25°C

FREQUENCY (MHz)	INSERTION LOSS (dB)		RETURN LOSS (dB)	
	Typ.	Max.	Typ.	Min.
0.1 - 100	0.010	0.09	40	20
100 - 1000	0.10	0.3	36	25
1000 - 4000	0.15	0.8	24	18
4000 - 8000	0.5	0.9	20	13

Typical Performance Data

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	
		Male	Female
0.3	0.01	31.86	31.89
0.6	0.01	32.19	32.23
0.9	0.01	32.52	32.58
1.0	0.01	32.63	32.69
50.0	0.02	48.75	48.76
100.0	0.03	44.40	44.44
200.0	0.04	40.26	40.33
300.0	0.05	37.96	38.27
400.0	0.06	36.24	36.45
500.0	0.06	34.94	35.08
700.0	0.07	32.57	32.78
800.0	0.08	31.67	31.84
900.0	0.08	30.86	31.04
1000.0	0.09	30.27	30.41
2000.0	0.12	26.09	26.06
3000.0	0.18	24.48	24.04
4000.0	0.24	22.65	22.58
5000.0	0.41	20.64	21.77
6000.0	0.47	20.26	22.30
7000.0	0.42	19.52	21.11
8000.0	0.51	17.29	18.16



Mini-Circuits
ISO 9001 ISO 14001 AS 9100 CERTIFIED

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at minicircuits.com

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuit's 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-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp.

REV. C
M108294
BLK-89+
EDU-9517/2
UR/LC/CP
080218

Coaxial Adapter, SMA-M to BNC-F

SM-BF50+

50Ω

DC to 2 GHz



CASE STYLE: DJ1024

Maximum 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.	

Features

- flat response
- excellent VSWR
- low cost adapters, available from stock
- brass body, nickel plated

Connectors	Model	Price	Qty.
Conn1 SMA-M	Conn2 BNC-F	SM-BF50+	\$3.95 ea. (1-49)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

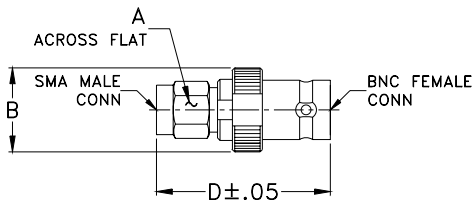
Applications

- interconnection of RF cables and equipment
- testing

Electrical Specifications T_{AMB}=25°C

FREQUENCY (GHz)	INSERTION LOSS (dB)	VSWR (:1) Max.
f _L -f _U	Typ.	DC-2 GHz
DC-2	0.05	1.20

Outline Drawing

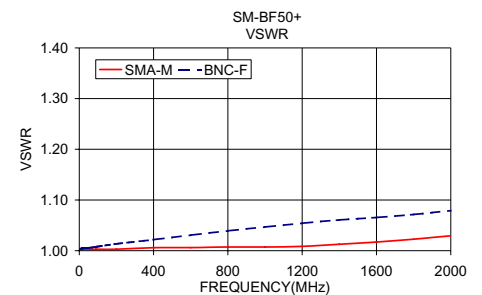
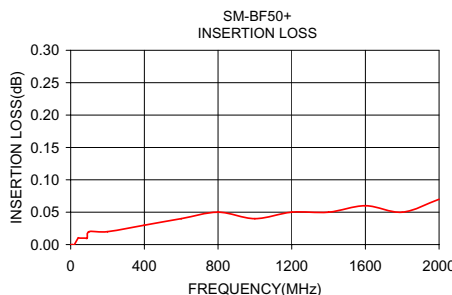


Outline Dimensions (inch/mm)

A	B	C	D	E	wt
.312	.53	--	1.10	--	grams
7.92	13.46	--	27.94	--	8.6

Typical Performance Data

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	
		SMA-M	BNC-F
1.00	0.00	1.00	1.00
10.00	0.00	1.00	1.00
20.00	0.00	1.00	1.00
40.00	0.01	1.00	1.01
50.00	0.01	1.00	1.01
60.00	0.01	1.00	1.01
70.00	0.01	1.00	1.01
80.00	0.01	1.00	1.01
90.00	0.01	1.00	1.01
100.00	0.02	1.00	1.01
200.00	0.02	1.00	1.01
400.00	0.03	1.01	1.02
600.00	0.04	1.01	1.03
800.00	0.05	1.01	1.04
1000.00	0.04	1.01	1.05
1200.00	0.05	1.01	1.05
1400.00	0.05	1.01	1.06
1600.00	0.06	1.02	1.07
1800.00	0.05	1.02	1.07
2000.00	0.07	1.03	1.08



Mini-Circuits®
 ISO 9001 ISO 14001 AS 9100 CERTIFIED
 IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at minicircuits.com

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.

REV. A
 M98898
 SM-BF50+
 RS/TD/CP
 090728