COAXIAL

Phase-Stable Flex Cables CBN Series

50Ω DC to 26.5 GHz SMA-Male to SMA-Male

KEY FEATURES

- Broadband
- Low Loss Dielectric
- Exceptional Phase & Amplitude Stability
- Extremely Flexible

Generic photo used for illustration purposes only

APPLICATIONS

- Test & Measurement
- High-Speed Data Systems
- Instrumentation
- Precision Measurement
- High-Volume Production Test
- R&D Labs & Device Characterization
- Circuit Level Breadboarding
- Equipment Rack & Stack Interconnects
- Tight & Limited Spacing Applications

PRODUCT OVERVIEW

The CBN series carries on the Mini-Circuits commitment to quality, consistency, performance, and value. While achieving the design goal of extreme flexibility, the CBN design has largely eliminated flex resistance as well as spring-back. Difficult routing challenges have been greatly simplified while maintaining improved attenuation and unparalleled RF stability.

Whether your application is packaged device characterization on the bench, circuit-level breadboarding, the interconnection of RF equipment in a lab or production environment, or deliverable products where space limitations exist, CBN is the correct choice when extreme flexibility and RF stability is of primary concern.

The CBN-XX-SMSM+ SMA-Male to SMA-Male cable family is ideal for interconnecting coaxial components and subassemblies in a wide range of systems, including test and measurement, instrumentation, and more. This flexible cable provides excellent phase and amplitude stability as well as flexibility. These cables are presently available from 1 to 15 feet long; for custom lengths, please contact the Mini-Circuits Sales Department.

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ELECTRICAL SPECIFICATIONS[1]

Operation Frequency (GHz)	26.5
Impedance (Ω)	50
Velocity of Propagation (%)	74
Shielding Effectiveness (dB)	90
Voltage Withstand Min. (VDC)	2000
Bending Phase[2] Max. (deg.)	±6 @ 26.5 GHz
Return Loss Typ. [VSWR]	17.5 dB [1.30:1]
Return Loss Max. [VSWR]	35.0 dB [1.04:1]

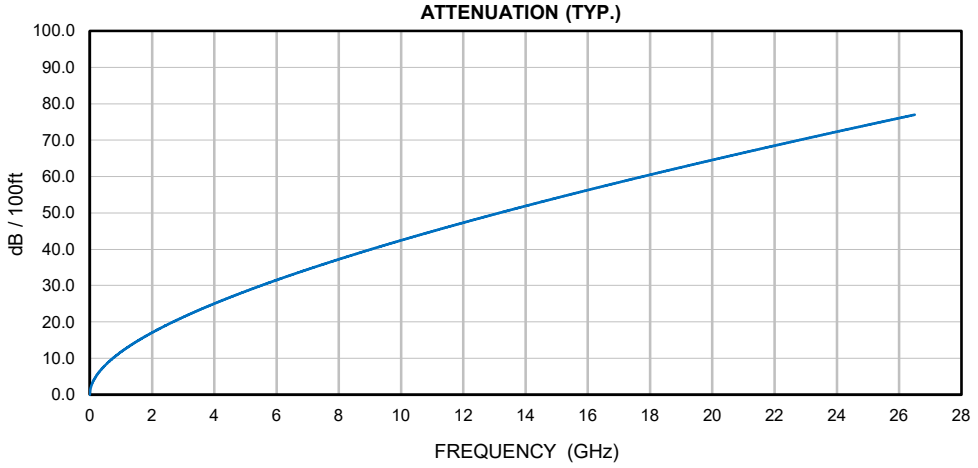
1. Permanent damage may occur if any of these limits are exceeded
2. Phase & Amplitude stability specs guaranteed from 18-inch cable lengths. For cables shorter than 18 inches, no degradation in performance is expected.

MECHANICAL & ENVIRONMENTAL SPECIFICATIONS[1]

Operating Case Temperature[3]	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Bend Radius: Installation (mm) [in]	16 [0.64]
Bend Radius: Repeated (mm) [in]	50 [1.97]
Weight (g/m) [lbs/1000ft] @ A < 2ft	(50 + 17)*A ± 15 [(33.57 + 11.4)*A ± 10.1]
Weight (g/m) [lbs/1000ft] @ A > 2ft	(50 + 18)*A ± 15 [(33.57 + 12.1)*A ± 10.1]

3. Temperature extremes are not intended for continuous normal operation.

ATTENUATION (TYP.)



Attenuation (Typical @ 25°C & VSWR = 1.0) dB

Frequency (MHz)	1000	2000	3000	4000	6000	8000	10000	12000	14000	18000	20000	26500
dB / 100 m	38.49	55.91	69.87	82.03	103.25	121.94	139.00	154.91	169.65	198.08	211.40	252.14
dB / 100 ft	11.73	17.04	21.30	25.00	31.47	37.17	42.37	47.22	51.80	60.38	64.43	76.85

Calculate Attenuation = $K1 * \sqrt{FMHz} + K2 * FMHz + 0.02\sqrt{FGHz}$ dB

dB / 100 m	K1 =	1.1370000	K2 =	0.0025300
dB / 100 ft	K1 =	0.3465576	K2 =	0.0007711

Power (VSWR = 1.0; 25°C; Sea Level) W

Frequency (MHz)	1000	2000	3000	4000	6000	8000	10000	12000	14000	18000	20000	26500
Avg. Power (kW)	0.473	0.362	0.261	0.222	0.176	0.149	0.131	0.118	0.107	0.092	0.086	0.072

COAXIAL

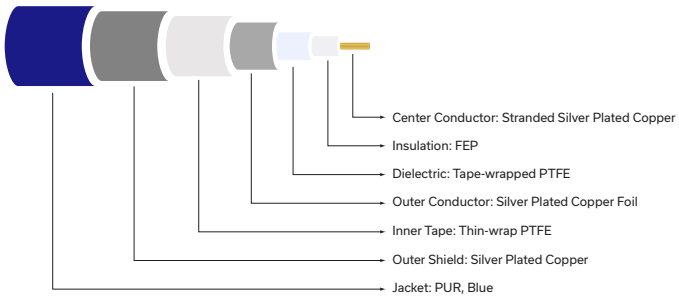
Phase-Stable Flex Cables CBN Series

50Ω DC to 26.5 GHz SMA-Male to SMA-Male

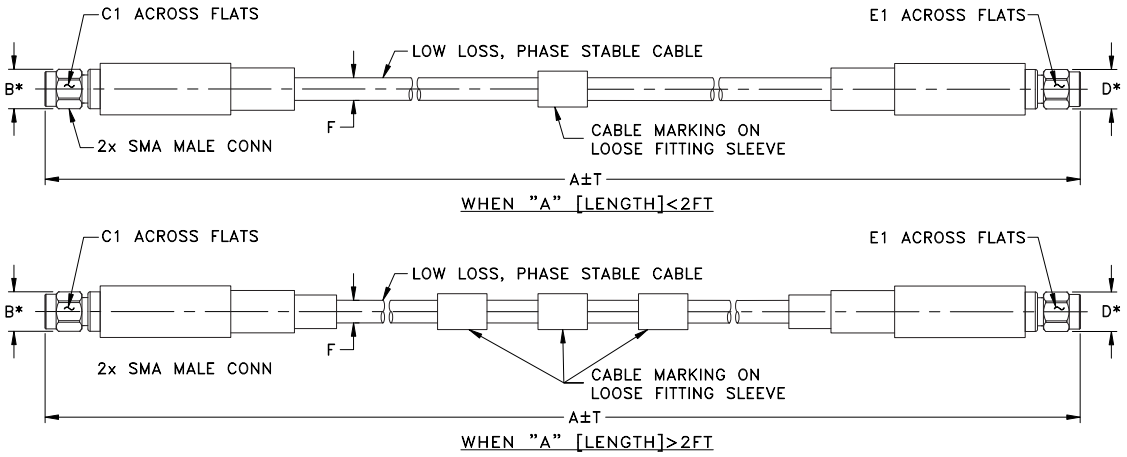
COAXIAL CONNECTIONS

Description	Connector 1	Connector 2
Connector Type	SMA-Male	SMA-Male
Orientation	Straight	Straight

CABLE CONSTRUCTION



CASE STYLE DRAWING



Unless Otherwise Specified dimensions are in inches [mm], Tolerances: 2 Pl.±0.03; 3 PL ±0.015 inches

A		B	C1	D	E1	F	T		Wt. grams
Feet	Meters						Feet	Meters	
1.00	0.30	.36 (9.14)	.315 (8.00)	.36 (9.14)	.315 (8.00)	.205 (5.20)	+.04/-0	+.01/-0	32.0
1.50	0.46						+.04/-0	+.01/-0	40.0
2.00	0.61						+.04/-0	+.01/-0	48.0
2.50	0.76						+.04/-0	+.01/-0	56.0
3.00	0.91						+.06/-0	+.02/-0	63.5
3.28	1.00						+.07/-0	+.02/-0	68.0
3.50	1.07						+.07/-0	+.02/-0	71.5
4.00	1.22						+.08/-0	+.02/-0	79.0
4.92	1.50						+.10/-0	+.03/-0	93.0
5.00	1.52						+.10/-0	+.03/-0	94.0
6.00	1.83						+.12/-0	+.04/-0	109.5
6.56	2.00						+.13/-0	+.04/-0	118.0
10.00	3.05						+.20/-0	+.06/-0	170.5
15.00	4.57						+.30/-0	+.09/-0	246.5

PRODUCT MARKING*: CBN-XX-SMSM+

*Marking may contain other features or characters for internal lot control.

Phase-Stable Flex Cables CBN Series

50Ω DC to 26.5 GHz SMA-Male to SMA-Male

ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
Case Style	GM3711
RoHS Status	Compliant
Environmental Ratings	ENV149

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/terms/viewterm.html

Phase-Stable Flexible Cable SMA Male to SMA Male

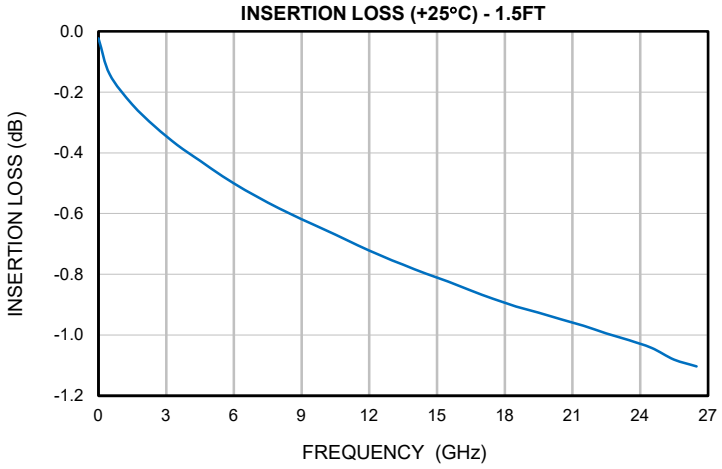
CBN-1.5FT-SMSM+

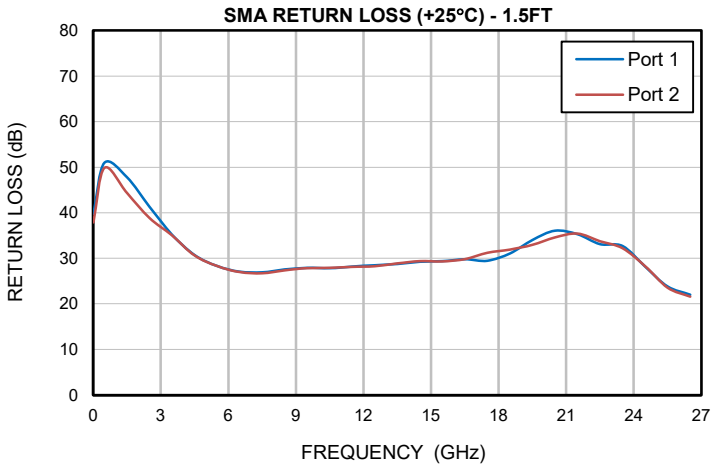
Typical Performance Data

FREQ.	INSERTION LOSS	SMA MALE RETURN LOSS IN	SMA MALE RETURN LOSS OUT
(GHz)	(dB)	(dB)	(dB)
0	0.02	39.81	37.87
1	0.14	50.96	49.84
2	0.24	47.78	44.30
3	0.31	41.34	38.88
4	0.37	35.24	35.06
5	0.43	30.75	30.62
6	0.48	28.31	28.32
7	0.52	27.06	26.97
8	0.56	26.93	26.72
9	0.60	27.53	27.36
10	0.64	27.92	27.83
11	0.67	27.81	27.92
12	0.71	28.19	28.14
13	0.74	28.50	28.27
14	0.77	28.75	28.89
15	0.80	29.24	29.37
16	0.82	29.39	29.30
17	0.85	29.78	29.83
18	0.88	29.49	31.21
19	0.91	31.06	31.94
20	0.93	34.01	32.95
21	0.95	36.05	34.57
22	0.97	35.29	35.42
23	0.99	33.11	33.76
24	1.02	32.70	32.18
25	1.04	28.16	28.28
26	1.08	23.84	23.55
27	1.10	22.05	21.62

Phase-Stable Flexible Cable SMA Male to SMA Male CBN-1.5FT-SMSM+

Typical Performance Curves

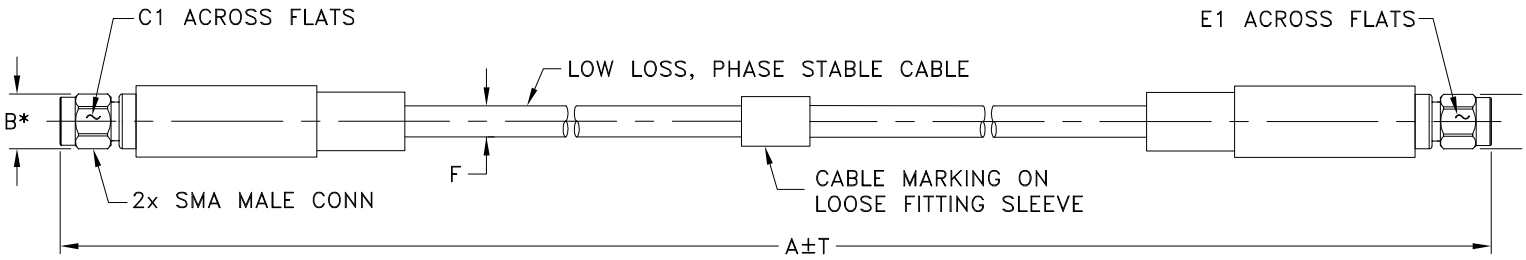




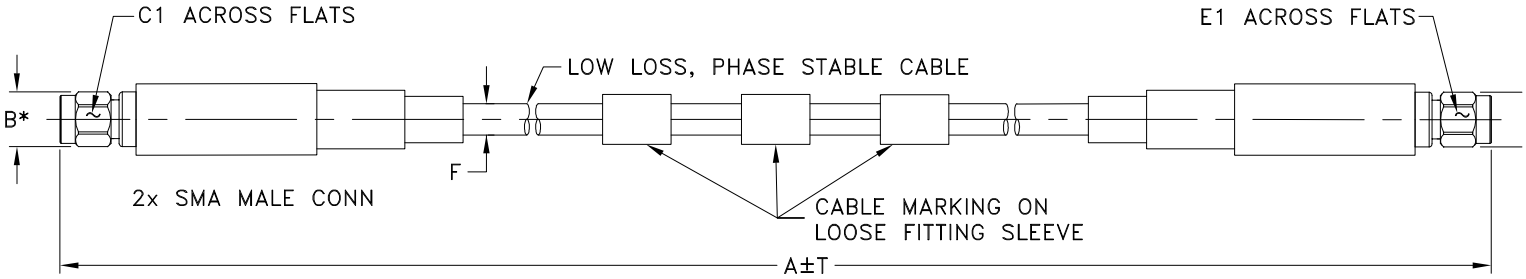
Case Style GM

Outline Dimensions

GM3711



WHEN "A" [LENGTH] < 2FT



WHEN "A" [LENGTH] > 2FT

CASE#	A		B	C1	C2	D	E1	E2	F	T		WEIGHT (GRAMS)
	FEET	METERS								FEET	METERS	
GM3711-1	1.00	0.30	.36 (9.14)	.315 (8.00)	– –	.36 (9.14)	.315 (8.00)	– –	.205 (5.20)	+.04/-0	+.01/-0	32.0
GM3711-1.5	1.50	0.46								+.04/-0	+.01/-0	40.0
GM3711-2	2.00	0.61								+.04/-0	+.01/-0	48.5
GM3711-2.5	2.50	0.76								+.04/-0	+.01/-0	56.0
GM3711-3	3.00	0.91								+.06/-0	+.02/-0	63.5
GM3711-3.28	3.28	1.00								+.07/-0	+.02/-0	68.0
GM3711-3.5	3.50	1.07								+.07/-0	+.02/-0	71.5
GM3711-4	4.00	1.22								+.08/-0	+.02/-0	79.0
GM3711-4.92	4.92	1.50								+.10/-0	+.03/-0	93.0
GM3711-5	5.00	1.52								+.10/-0	+.03/-0	94.0
GM3711-6	6.00	1.83								+.12/-0	+.04/-0	109.5
GM3711-6.56	6.56	2.00								+.13/-0	+.04/-0	118.0
GM3711-10	10.00	3.05								+.20/-0	+.06/-0	170.5
GM3711-15	15.00	4.57								+.30/-0	+.09/-0	246.5

Unless Otherwise Specified dimensions are in inches (mm),
Tolerances: 2 Pl.±0.03; 3 Pl. ±0.015 inches

Notes:
1. "A" Represents Length of Cable.
2. * OVERALL CONNECTOR DIMENSION
   [CONNECTOR SHAPE MAY VARY]

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RF/IF MICROWAVE COMPONENTS

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Mini-Circuits

Environmental Specifications ENV149

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	-45° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-45° to 85°C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-45° to 85°C, 100 cycles	MIL-STD-202; Method 107G
Mechanical Flexing	1000 cycles During each cycle, cable flexed in U-shape up to 90 degrees	----
Connector Durability	500 mating cycles	MIL-PRF-39012E, PARAGRAPH 4.6.12
Connector Retention	Force: 60 lb. Min.; Torque: Cable connector turned while held 6 inches from end; Stop at 9 in-lb. or 90-degree twist.	---
Heat-Aging Stability	There are no cracks, defects, or other damage to the surface material of the sample.	MIL-C-17G Para. 4.8.18
Cold Bend	There are no cracks, defects, or other damage to the surface material of the sample.	MIL-C-17G Para. 4.8.19

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