



Mini-Circuits

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

## 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



*Generic photo used for illustration purposes only*

## 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.

ELECTRICAL SPECIFICATIONS<sup>1</sup>

|                                        |                  |
|----------------------------------------|------------------|
| Operation Frequency (GHz)              | 26.5             |
| Impedance (Ω)                          | 50               |
| Velocity of Propagation (%)            | 74               |
| Shielding Effectiveness (dB)           | 90               |
| Voltage Withstand Min. (VDC)           | 2000             |
| Bending Phase <sup>2</sup> 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] |

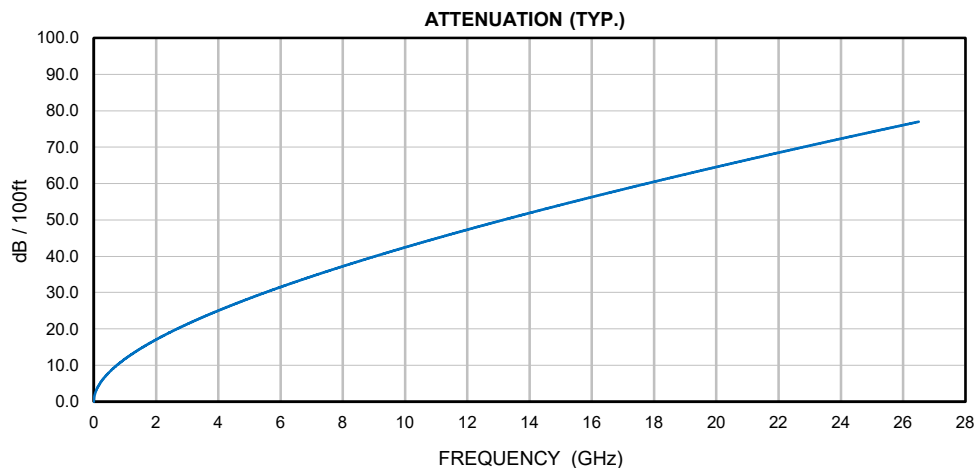
1. Permanent damage may occur if any of these limits are exceeded

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<sup>1</sup>

|                                         |                                            |
|-----------------------------------------|--------------------------------------------|
| Operating Case Temperature <sup>3</sup> | -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 (Typical @ 25°C &amp; VSWR = 1.0) dB

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

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

|                    |      |           |      |           |
|--------------------|------|-----------|------|-----------|
| <b>dB / 100 m</b>  | K1 = | 1.1370000 | K2 = | 0.0025300 |
| <b>dB / 100 ft</b> | K1 = | 0.3465576 | K2 = | 0.0007711 |

Power (VSWR = 1.0; 25°C; Sea Level) W

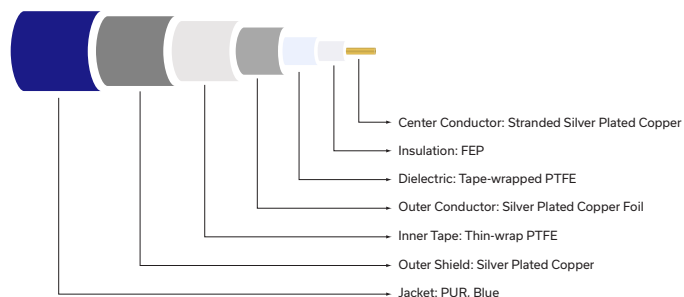
| Frequency (MHz)        | 1000  | 2000  | 3000  | 4000  | 6000  | 8000  | 10000 | 12000 | 14000 | 18000 | 20000 | 26500 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Avg. Power (kW)</b> | 0.473 | 0.362 | 0.261 | 0.222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



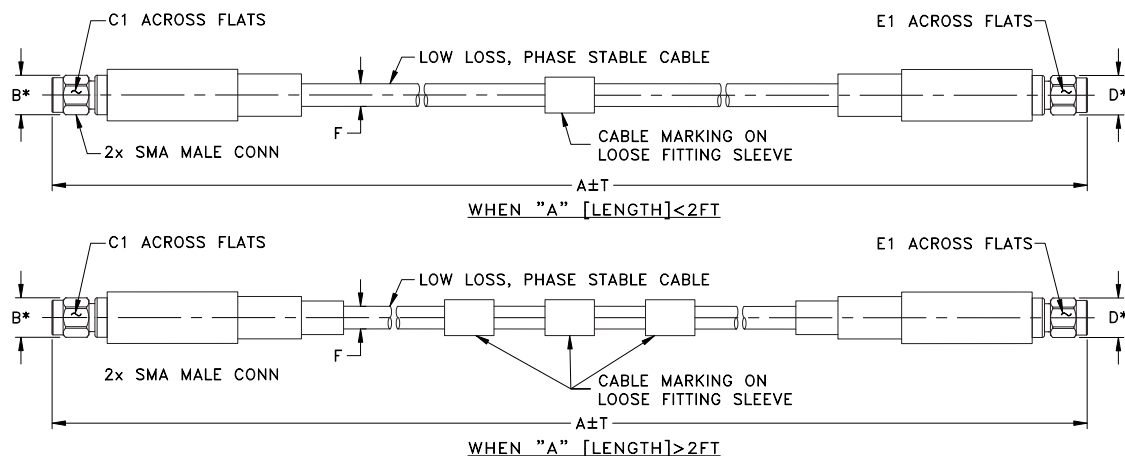
## COAXIAL CONNECTIONS

| 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<br>(9.14) | .315<br>(8.00) | .36<br>(9.14) | .315<br>(8.00) | .205<br>(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.



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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](http://www.minicircuits.com/terms/viewterm.html)

