

# Interconnect Cable

## QBL Series

50Ω DC to 18 GHz



CASE STYLE: GM1530-XX

XX= cable length in feet

## The Big Deal

- Ideal for dense interconnect applications
- E-Z Lock mates with standard SMA connector
- Excellent electrical performance: 20 dB return loss to 18 GHz
- Ultra Rugged: Withstands 20K flex cycles and 20K insertions

## Product Overview

The QBL Series Coaxial Cables include a E-Z Lock connector that mates securely with a standard female SMA connector with a simple sliding lock feature. These cables are ideal for use in dense interconnect applications where there are many SMA connectors in a small area such as an RF distribution panel. The QBL Series offers superior strain relief for lasting durability and flexibility for tight access locations. The FEP jacket supports operation to 105°C and protects a double shielded cable construction for minimum signal leakage.

## Key Features

| Feature                           | Advantages                                                                                                                                                                                                                                                                 |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E-Z Lock Feature                  | The E-Z Lock system is simple as Push, Slide and Click to make a repeatable RF connection.                                                                                                                                                                                 |
| Mate with Standard SMA Connectors | The unique design of the QBL E-Z Lock connector mates directly with a standard female SMA connector. The white bronze plated brass fingers are designed to tightly grip the SMA threads while the center conductor and guide structure make a secure connection to 18 GHz. |
| Excellent Return loss             | Supporting 25 dB return loss at 6 GHz and 19 dB up to 18 GHz, the QBL-N Series are ideally suited for testing a wide range of RF equipment while minimizing measurement degradation due to affects of VSWR interactions.                                                   |
| Good Power Handling Capability    | Capable of withstanding RF power of 270 Watts at 1 GHz and 47 Watts at 18 GHz (at sea level), the QBL-N Series are a great fit for a wide variety of test and installation applications.                                                                                   |
| Super Rugged                      | Tested without performance degradation to over 20,000 flex cycles (flexed to stress both the cable and strain relief) the QBL-N Series cables are ideal for a wide variety of test applications.                                                                           |

### 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.  
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# Interconnect Cable

50Ω 4FT DC to 18 GHz

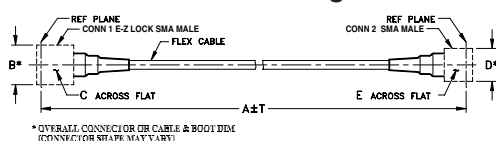
**QBL4SMQ-SM+**

## Maximum Ratings

|                         |                |        |  |
|-------------------------|----------------|--------|--|
| Operating Temperature   | -55°C to 105°C |        |  |
| Storage Temperature     | -55°C to 105°C |        |  |
| Power Handling at 25°C, | 270W at        | 1 GHz  |  |
| Sea Level               | 180W at        | 2 GHz  |  |
|                         | 120W at        | 4 GHz  |  |
|                         | 62W at         | 12 GHz |  |
|                         | 47W at         | 18 GHz |  |

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

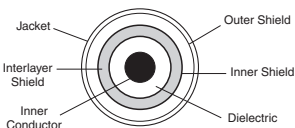
## Outline Drawing



## Outline Dimensions (inch/mm)

| A    |        | B     | C  | D    | E    | T        |          | wt    |
|------|--------|-------|----|------|------|----------|----------|-------|
| Feet | Meters | .43   | -- | .36  | .312 | Inches   | mm       | grams |
| 4.00 | 1.22   | 10.92 | -- | 9.14 | 7.92 | + .96/-0 | +24.4/-0 | 67    |

## Cable Cross Section



### Cable Construction

|                 |                                                            |
|-----------------|------------------------------------------------------------|
| Inner Conductor | Solid Silver Plated Copper                                 |
| Dielectric      | Solid PTFE                                                 |
| Shield          | Silver-Plated Copper tape under Silver-Plated Copper Braid |
| Jacket          | Blue FEP                                                   |

### Connectors (SMA)

- passivated stainless steel (coupling nut)
- captive contact
- gold plated brass center contacts
- PTFE dielectric

### E-Z Lock SMA

- body & outer contact: gold-plated brass
- center contact: gold-plated CuBe
- PTFE dielectric
- clamping piece: white bronze plated brass
- sleeve: POM

sliding locking sleeve, retracted to the open position



locking sleeve closed and in locked position, securing the SMA connection



## Product Guarantee\*

Mini-Circuits® will repair or replace your test cable at its option if the connector attachment fails within six months of shipment. This guarantee excludes cable or connector interface damage from misuse or abuse.

## Features

- E-Z Lock connector on one end for easy mating & demating
- extra rugged construction with strain relief for longer life
- stainless steel SMA connector for long mating-cycle life
- useful over temperature range, -55°C to 105°C
- double shield cable for excellent shielding effectiveness
- flexible for easy connection & bend
- excellent stability of insertion loss, VSWR & phase after thousands of flex cycles
- 6 month guarantee\*

## Applications

- dense RF connect
- commercial and military systems to 18 GHz
- multi-port telecom systems



CASE STYLE: GM1526-4

| Connectors                 | Model                         |
|----------------------------|-------------------------------|
| Conn1<br>SMA-Male E-Z Lock | Conn2<br>SMA-Male QBL4SMQ-SM+ |

## +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

## Electrical Specifications at 25°C

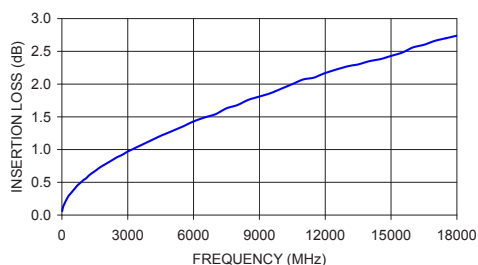
| Parameter       | Condition (GHz) | Min. | Typ. | Max. | Units |
|-----------------|-----------------|------|------|------|-------|
| Frequency Range |                 | DC   |      | 18   | GHz   |
| Length          |                 |      | 4    |      | Ft    |
| Insertion Loss  | DC - 2          | —    | 0.5  | 1.1  |       |
|                 | 2 - 6           | —    | 1.0  | 2.0  |       |
|                 | 6 - 12          | —    | 1.6  | 2.9  |       |
|                 | 12 - 18         | —    | 2.1  | 3.4  |       |
| Return Loss     | DC - 2          | 20   | 37   | —    |       |
|                 | 2 - 6           | 20   | 31   | —    |       |
|                 | 6 - 12          | 15   | 29   | —    |       |
|                 | 12 - 18         | 15   | 27   | —    |       |

Custom sizes available, consult factory.

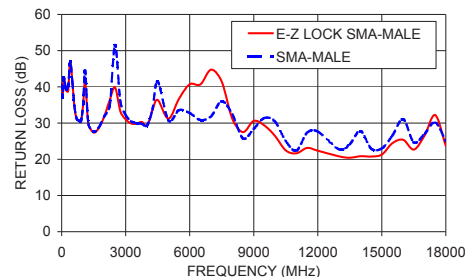
## Typical Performance Data

| Frequency (MHz) | Insertion Loss (dB) | Return Loss (dB) |          |
|-----------------|---------------------|------------------|----------|
|                 |                     | E-Z Lock SMA-M   | SMA-MALE |
| 10              | 0.06                | 40.6             | 40.7     |
| 1000            | 0.54                | 34.8             | 35.0     |
| 2000            | 0.78                | 31.9             | 31.9     |
| 4000            | 1.13                | 29.3             | 29.3     |
| 5000            | 1.28                | 31.2             | 30.8     |
| 6000            | 1.43                | 40.7             | 32.8     |
| 6500            | 1.49                | 40.7             | 30.9     |
| 7000            | 1.54                | 44.8             | 31.9     |
| 8000            | 1.68                | 31.1             | 32.4     |
| 9000            | 1.81                | 30.6             | 28.4     |
| 10000           | 1.93                | 26.4             | 30.4     |
| 12000           | 2.17                | 22.4             | 27.7     |
| 14000           | 2.35                | 20.9             | 27.8     |
| 15000           | 2.43                | 21.3             | 23.0     |
| 18000           | 2.74                | 23.7             | 25.0     |

QBL4SMQ-SM+  
INSERTION LOSS



QBL4SMQ-SM+  
RETURN LOSS



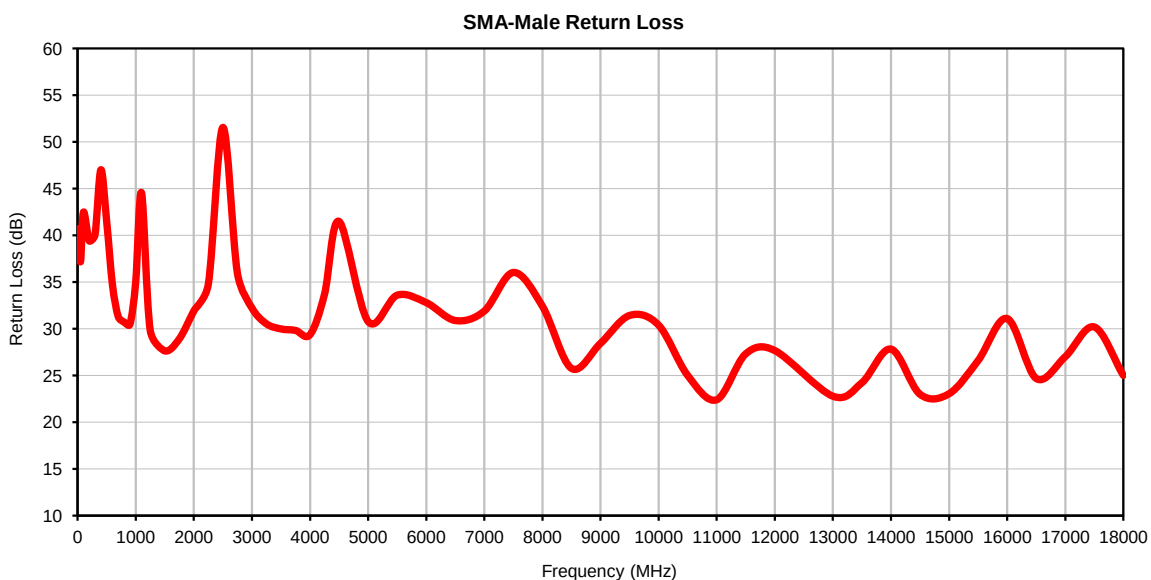
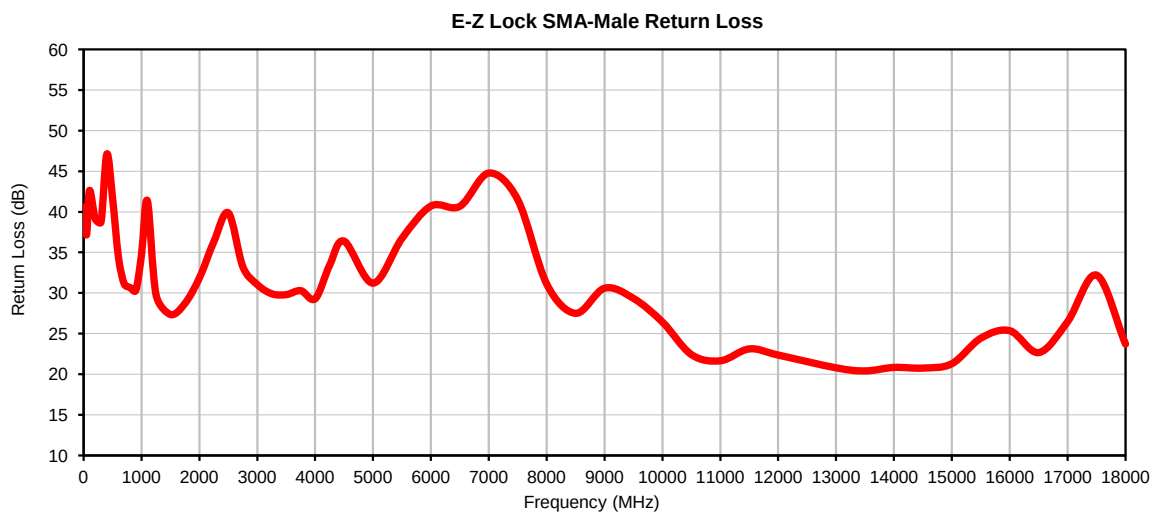
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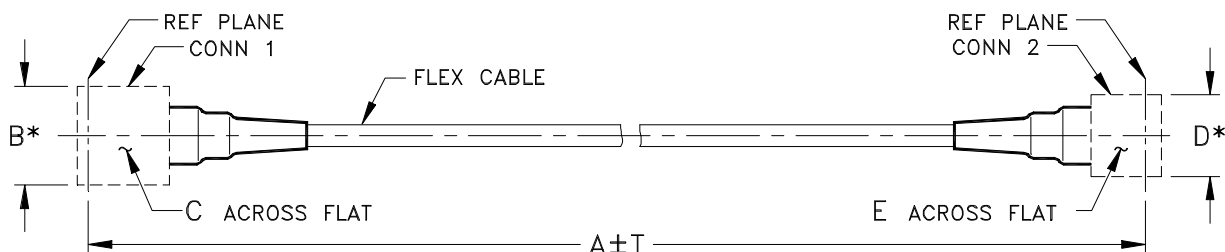


| FREQUENCY<br>(MHz) | INSERTION LOSS<br>(dB) | E-Z Lock SMA-MALE<br>RETURN LOSS<br>(dB) | SMA-MALE<br>RETURN LOSS<br>(dB) |
|--------------------|------------------------|------------------------------------------|---------------------------------|
| 10.0               | 0.06                   | 40.6                                     | 40.7                            |
| 50.0               | 0.12                   | 37.2                                     | 37.2                            |
| 100.0              | 0.16                   | 42.6                                     | 42.5                            |
| 200.0              | 0.23                   | 39.1                                     | 39.4                            |
| 300.0              | 0.29                   | 38.8                                     | 40.1                            |
| 400.0              | 0.33                   | 47.1                                     | 47.0                            |
| 500.0              | 0.37                   | 41.6                                     | 41.5                            |
| 600.0              | 0.41                   | 34.4                                     | 34.7                            |
| 700.0              | 0.45                   | 31.1                                     | 31.3                            |
| 800.0              | 0.48                   | 30.7                                     | 30.7                            |
| 900.0              | 0.51                   | 30.3                                     | 30.4                            |
| 1000.0             | 0.54                   | 34.8                                     | 35.0                            |
| 1100.0             | 0.56                   | 41.4                                     | 44.5                            |
| 1250.0             | 0.61                   | 29.8                                     | 29.8                            |
| 1500.0             | 0.67                   | 27.4                                     | 27.6                            |
| 1750.0             | 0.73                   | 28.7                                     | 28.9                            |
| 2000.0             | 0.78                   | 31.9                                     | 31.9                            |
| 2250.0             | 0.83                   | 36.4                                     | 34.8                            |
| 2500.0             | 0.88                   | 39.9                                     | 51.5                            |
| 2750.0             | 0.92                   | 33.2                                     | 36.0                            |
| 3000.0             | 0.97                   | 31.0                                     | 32.2                            |
| 3250.0             | 1.01                   | 29.9                                     | 30.5                            |
| 3500.0             | 1.05                   | 29.8                                     | 30.0                            |
| 3750.0             | 1.09                   | 30.3                                     | 29.8                            |
| 4000.0             | 1.13                   | 29.3                                     | 29.3                            |
| 4250.0             | 1.17                   | 33.5                                     | 33.7                            |
| 4500.0             | 1.21                   | 36.4                                     | 41.5                            |
| 5000.0             | 1.28                   | 31.2                                     | 30.8                            |
| 5500.0             | 1.35                   | 36.7                                     | 33.6                            |
| 6000.0             | 1.43                   | 40.7                                     | 32.8                            |
| 6500.0             | 1.49                   | 40.7                                     | 30.9                            |
| 7000.0             | 1.54                   | 44.8                                     | 31.9                            |
| 7500.0             | 1.63                   | 41.5                                     | 36.0                            |
| 8000.0             | 1.68                   | 31.1                                     | 32.4                            |
| 8500.0             | 1.76                   | 27.5                                     | 25.7                            |
| 9000.0             | 1.81                   | 30.6                                     | 28.4                            |
| 9500.0             | 1.86                   | 29.3                                     | 31.4                            |
| 10000.0            | 1.93                   | 26.4                                     | 30.4                            |
| 10500.0            | 2.00                   | 22.4                                     | 25.0                            |
| 11000.0            | 2.07                   | 21.7                                     | 22.4                            |
| 11500.0            | 2.10                   | 23.1                                     | 27.3                            |
| 12000.0            | 2.17                   | 22.4                                     | 27.7                            |
| 13000.0            | 2.27                   | 20.8                                     | 22.8                            |
| 13500.0            | 2.30                   | 20.4                                     | 24.2                            |
| 14000.0            | 2.35                   | 20.9                                     | 27.8                            |
| 14500.0            | 2.38                   | 20.8                                     | 23.0                            |
| 15000.0            | 2.43                   | 21.3                                     | 23.0                            |
| 15500.0            | 2.48                   | 24.5                                     | 26.6                            |
| 16000.0            | 2.56                   | 25.4                                     | 31.1                            |
| 16500.0            | 2.60                   | 22.7                                     | 24.7                            |
| 17000.0            | 2.66                   | 26.5                                     | 27.0                            |
| 17500.0            | 2.70                   | 32.2                                     | 30.2                            |
| 18000.0            | 2.74                   | 23.7                                     | 25.0                            |

## Typical Performance Curves



### Outline Dimensions



\* OVERALL CONNECTOR OR CABLE & BOOT DIM  
[CONNECTOR SHAPE MAY VARY]

GM1526 SERIES  
E-Z LOCK SMA MALE (CONN-1)  
SMA MALE (CONN-2)

| CASE STYLE # | A     |        | B              | C      | D             | E              | T        |           | WEIGHT<br>GRAMS |
|--------------|-------|--------|----------------|--------|---------------|----------------|----------|-----------|-----------------|
|              | FEET  | METERS |                |        |               |                | INCHES   | MM        |                 |
| GM1526-.33   | .33   | .10    | .43<br>(10.92) | -<br>- | .36<br>(9.14) | .312<br>(7.92) | +.50/-0  | +12.7/-0  | 17              |
| GM1526-.67   | .67   | .20    |                |        |               |                | +.50/-0  | +12.7/-0  | 22              |
| GM1526-1.0   | 1.00  | .30    |                |        |               |                | +.50/-0  | +12.7/-0  | 26              |
| GM1526-1.5   | 1.50  | .46    |                |        |               |                | +.50/-0  | +12.7/-0  | 33              |
| GM1526-1.64  | 1.64  | .50    |                |        |               |                | +.50/-0  | +12.7/-0  | 35              |
| GM1526-2     | 2.00  | .61    |                |        |               |                | +.50/-0  | +12.7/-0  | 40              |
| GM1526-3     | 3.00  | .91    |                |        |               |                | +.72/-0  | +18.3/-0  | 53              |
| GM1526-3.28  | 3.28  | 1.00   |                |        |               |                | +.79/-0  | +20.0/-0  | 57              |
| GM1526-4     | 4.00  | 1.22   |                |        |               |                | +.96/-0  | +24.4/-0  | 67              |
| GM1526-5     | 5.00  | 1.52   |                |        |               |                | +1.20/-0 | +30.5/-0  | 81              |
| GM1526-6     | 6.00  | 1.83   |                |        |               |                | +1.44/-0 | +36.6/-0  | 94              |
| GM1526-6.56  | 6.56  | 2.00   |                |        |               |                | +1.57/-0 | +40.0/-0  | 102             |
| GM1526-18    | 18.00 | 5.49   |                |        |               |                | +4.32/-0 | +109.7/-0 | 257             |

Unless otherwise specified dimensions are in inches (mm).

Tolerances: 2Pl. ± .03; 3Pl. ± .015

#### Note:

1. Flexible Coaxial Cable.



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Mini-Circuits ISO 9001 & ISO 14001 Certified



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 105°C<br>Ambient Environment                                                                           | Individual Model Data Sheet                           |
| Storage Temperature   | -55° to 105°C<br>Ambient Environment                                                                           | Individual Model Data Sheet                           |
| Thermal Shock         | -55° to 105°C, 100 cycles                                                                                      | MIL-STD-202, Method 107, Condition A-3, except -105°C |
| Mechanical Flexing    | 20,000 cycles<br>During each cycle, cable flexed from 90° through 0° to -90° and back with a Radii of 3 inches | - - -                                                 |