



FLEXIBLE

Test Cable

FLC-1.5FT-SMSM+

Mini-Circuits

50Ω 1.5 FT DC to 26 GHz SMA-Male



Generic photo used for illustration purposes only

THE BIG DEAL

- Low Insertion Loss, 1.2 dB at 26 GHz
- Rugged construction includes protective shield and strain relief for longer life
- Stainless steel connectors for long mating-cycle life
- Extra Flexible

| | |
|-------------------|-----------------|
| Model No. | FLC-1.5FT-SMSM+ |
| Case Style | MU1838-1.5 |
| Connectors | SMA-Male |

APPLICATIONS

- Military and Defense Systems
- Research & Development labs

+RoHS Compliant
 The +Suffix identifies RoHS Compliance.
 See our website for methodologies and qualifications

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.

PRODUCT OVERVIEW

Mini-Circuits FLC-SMSM+ series flexible test cables provide ultra-wideband performance from DC to 26 GHz with low insertion loss and excellent VSWR. Specially designed for outstanding stability of phase and insertion loss versus flexure, these cables are ideal for demanding lab environments where crowded layouts and frequent bending are common. They feature SMA-M to SMA-M stainless steel connectors and rugged cable construction with protective shield and strain relief for excellent durability. Available from stock in a variety of lengths to support a range of requirements.

KEY FEATURES

| Feature | Advantages |
|--|--|
| Ultra-wideband, DC to 26 GHz | Supports a wide range of test applications including R&D, military and defense, production test and more. |
| Excellent stability of phase and insertion loss versus flexure | FLC-series test cables have been tested in bend radii as tight as 2.4 inches to qualify minimal change in insertion loss, insertion phase, and VSWR, providing reliable performance in a wide range of configurations. |
| Low insertion loss | Allows accurate measurement with minimal compensation for the effects of the cable connection. |
| Performance qualified to 20,000 flexures | Like all Mini-Circuits test cables, FLC-series models have been performance qualified up to 20,000 bend cycles, ensuring outstanding durability and extra long life. |

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 ECO-019810
 FLC-1.5FT-SMSM+
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ELECTRICAL SPECIFICATIONS AT +25°C

| Parameter | Frequency (GHz) | Min. | Typ. | Max. | Units |
|---------------------|-----------------|------|------|------|-------|
| Frequency Range | | DC | — | 26 | GHz |
| Length ¹ | | 1.5 | | | FT |
| Insertion Loss | DC - 6 | — | 0.68 | 1.8 | dB |
| | 6 - 18 | — | 1.03 | 1.8 | |
| | 18 - 26 | — | 1.26 | 1.8 | |
| VSWR | DC - 6 | — | 1.20 | 1.35 | :1 |
| | 6 - 18 | — | 1.25 | 1.35 | |
| | 18 - 26 | — | 1.33 | 1.38 | |

1. Custom sizes available, consult factory.

PERFORMANCE CHANGE VS. FLEXURE (TYPICAL)²

| Parameter | Frequency (GHz) | Bend Radius (inches) | | | Units |
|------------------------------|-----------------|----------------------|------|------|-------|
| | | 10.0 | 3.25 | 2.40 | |
| Insertion Loss ³ | DC - 6 | 0.00 | 0.01 | 0.01 | dB |
| | 6 - 18 | 0.01 | 0.02 | 0.03 | |
| | 18 - 26 | 0.01 | 0.04 | 0.05 | |
| Insertion Phase ³ | DC - 6 | 0.03 | 0.09 | 0.49 | Deg |
| | 6 - 18 | 0.03 | 0.31 | 1.7 | |
| | 18 - 26 | 0.07 | 1.6 | 2.9 | |
| VSWR ³ | DC - 6 | 0.00 | 0.01 | 0.01 | :1 |
| | 6 - 18 | 0.01 | 0.02 | 0.02 | |
| | 18 - 26 | 0.01 | 0.08 | 0.11 | |

2. Performance change versus flexure with a 3 ft cable 360° around a 4" diameter mandrel.

3. Absolute values normalized to the reference position 0. See [AN-46-003](#) under Associated Application Notes

ABSOLUTE MAXIMUM RATINGS

| Parameter | Ratings |
|-----------------------------------|----------------|
| Operating Temperature | -55°C to +85°C |
| Storage Temperature | -55°C to +85°C |
| Power Handling at 25°C, Sea Level | 315 W at 2 GHz |
| | 94 W at 18 GHz |
| | 56 W at 26 GHz |

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





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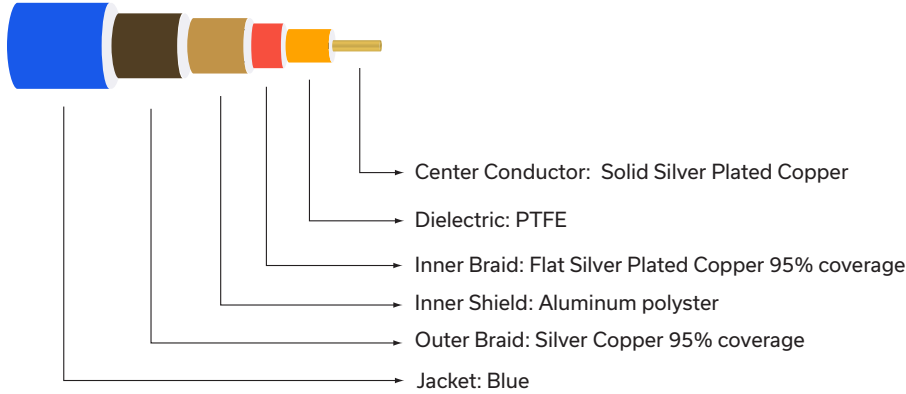
Test Cable

FLC-1.5FT-SMSM+

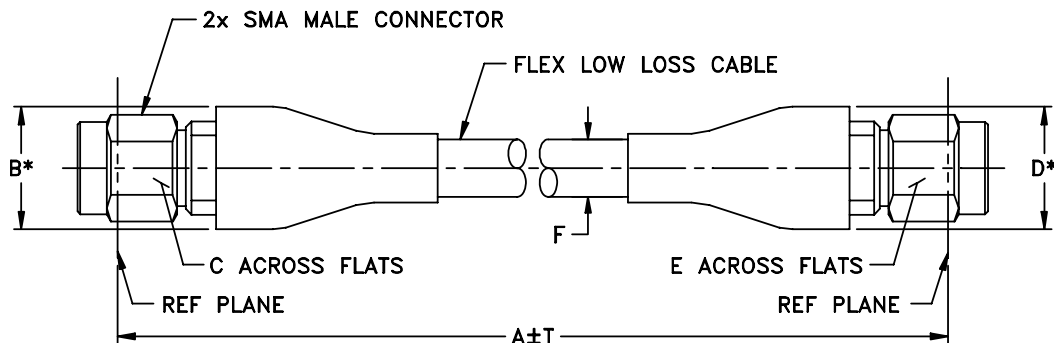
Mini-Circuits

50Ω 1.5 FT DC to 26 GHz SMA-Male

CABLE CONSTRUCTION



OUTLINE DRAWING



* OVERALL CONNECTOR DIMENSION

OUTLINE DIMENSIONS (Inch/mm)

| A | | B | C | D | E | F | T | | wt |
|------|--------|-------|------|-------|------|------|----------|----------|-------|
| Feet | Meters | .42 | .312 | .42 | .312 | .194 | Inch | mm | grams |
| 1.50 | 0.46 | 10.70 | 7.93 | 10.70 | 7.93 | 4.95 | + .50/-0 | +12.7/-0 | 47 |





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Test Cable

FLC-1.5FT-SMSM+

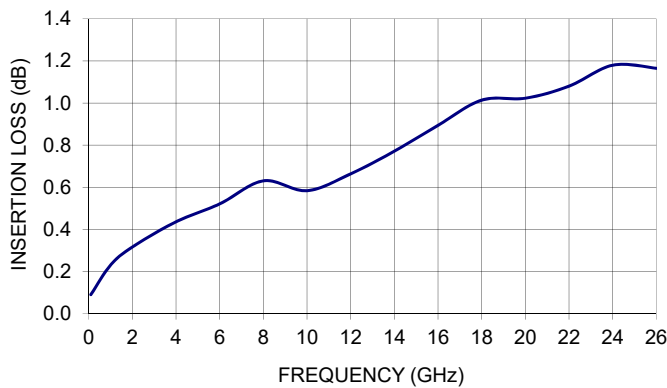
Mini-Circuits

50Ω 1.5 FT DC to 26 GHz SMA-Male

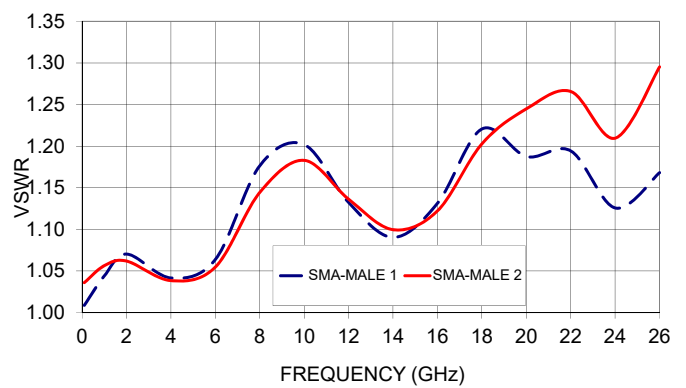
TYPICAL PERFORMANCE DATA AND CHARTS

| Frequency (GHz) | Insertion Loss (dB) | VSWR (:1) | |
|-----------------|---------------------|------------|------------|
| | | SMA-Male 1 | SMA-Male 2 |
| 0.1 | 0.09 | 1.01 | 1.04 |
| 1.0 | 0.23 | 1.04 | 1.06 |
| 2.0 | 0.32 | 1.07 | 1.06 |
| 4.0 | 0.44 | 1.04 | 1.04 |
| 6.0 | 0.52 | 1.06 | 1.05 |
| 8.0 | 0.63 | 1.18 | 1.14 |
| 10.0 | 0.58 | 1.20 | 1.18 |
| 12.0 | 0.66 | 1.13 | 1.14 |
| 14.0 | 0.77 | 1.09 | 1.10 |
| 16.0 | 0.89 | 1.13 | 1.12 |
| 18.0 | 1.01 | 1.22 | 1.20 |
| 20.0 | 1.02 | 1.19 | 1.24 |
| 22.0 | 1.08 | 1.19 | 1.27 |
| 24.0 | 1.18 | 1.13 | 1.21 |
| 26.0 | 1.17 | 1.17 | 1.30 |

FLC-1.5FT-SMSM+
INSERTION LOSS



FLC-1.5FT-SMSM+
VSWR



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



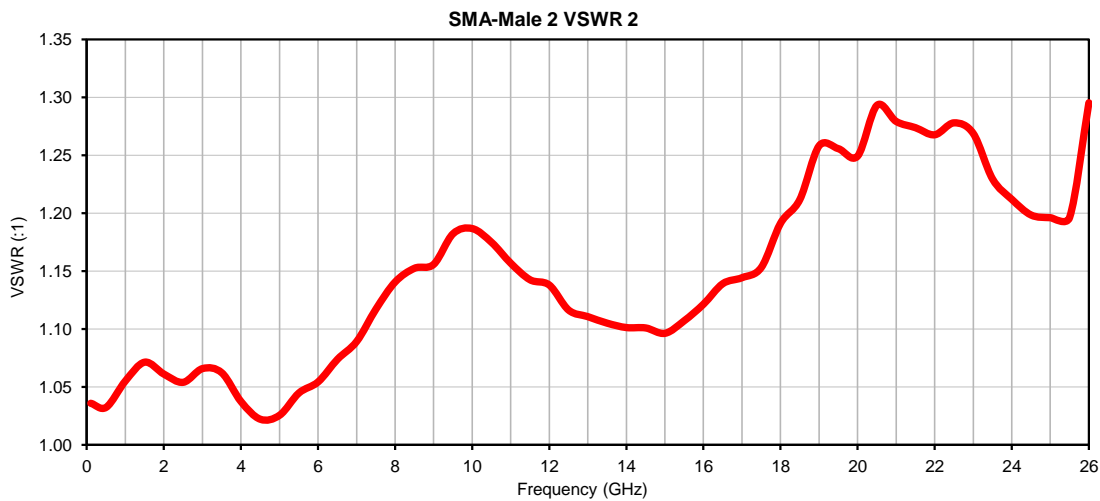
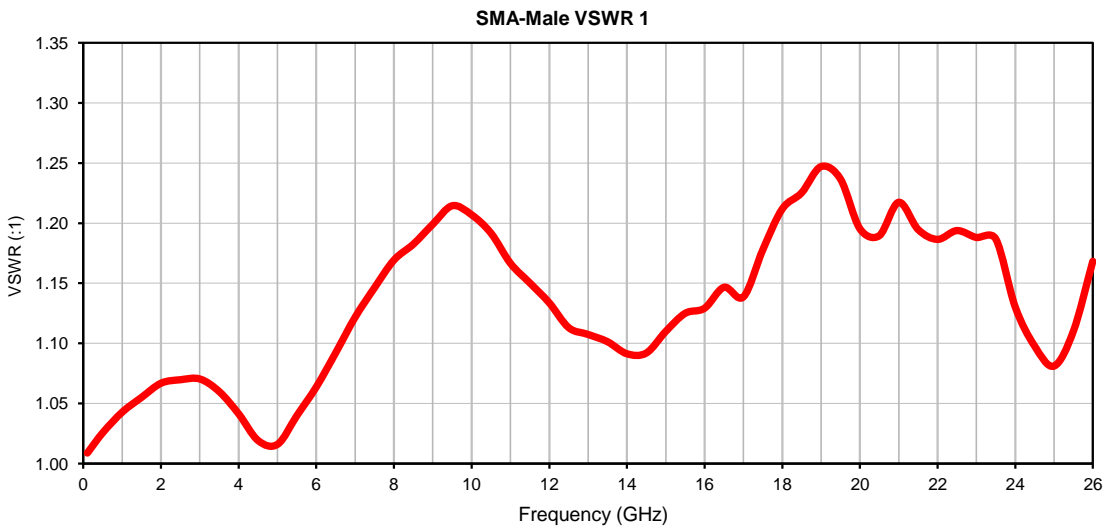
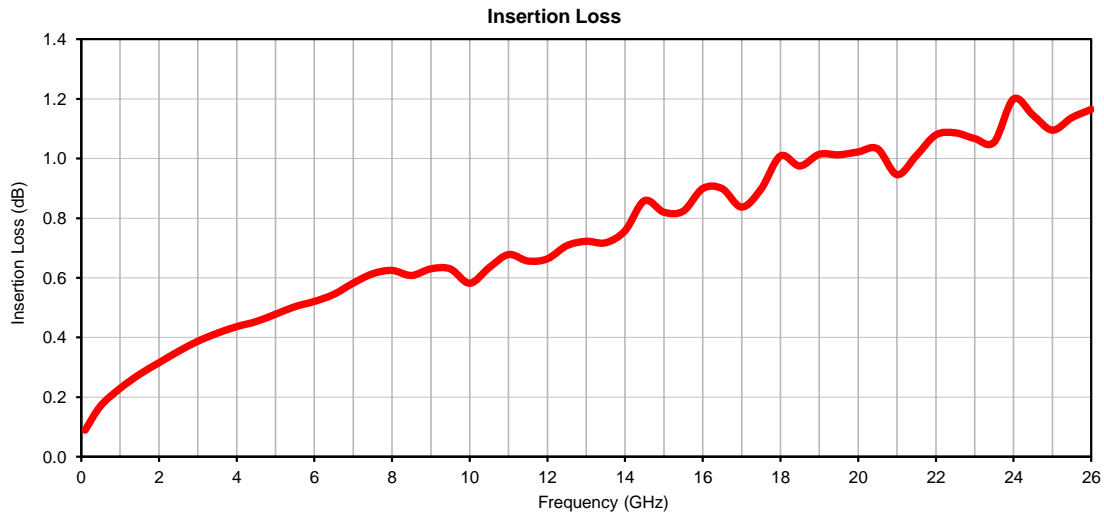
Test Cable, SMA-Male/SMA-Male

FLC-1.5FT-SMSM+

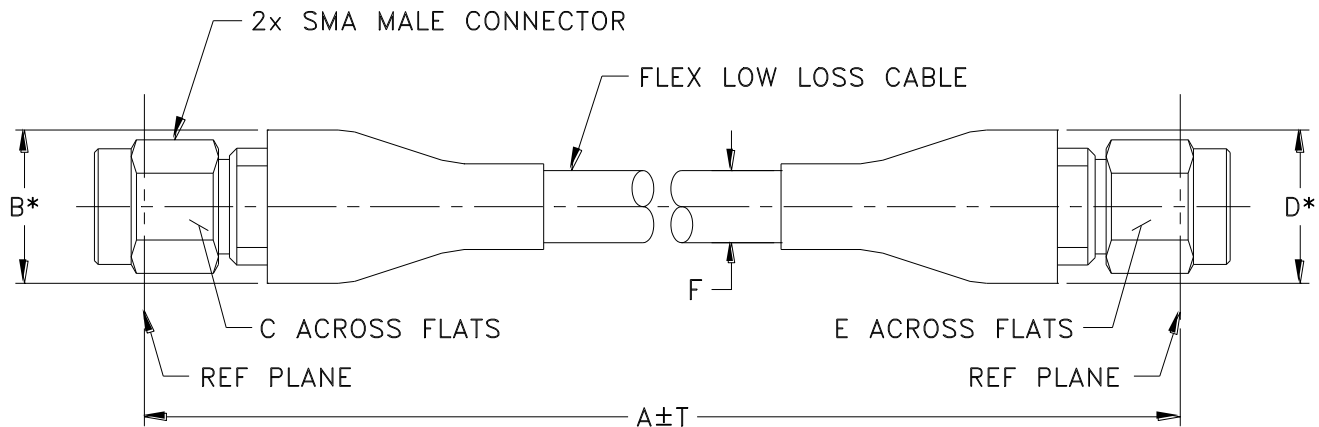
Typical Performance Data

| FREQUENCY (GHz) | INSERTION LOSS (dB) | SMA-MALE 1 VSWR (:1) | SMA-MALE 2 VSWR (:1) |
|--------------------|---------------------------|----------------------------|----------------------------|
| 0.1 | 0.09 | 1.01 | 1.04 |
| 0.5 | 0.17 | 1.03 | 1.03 |
| 1.0 | 0.23 | 1.04 | 1.06 |
| 1.5 | 0.28 | 1.06 | 1.07 |
| 2.0 | 0.32 | 1.07 | 1.06 |
| 2.5 | 0.35 | 1.07 | 1.05 |
| 3.0 | 0.39 | 1.07 | 1.07 |
| 3.5 | 0.41 | 1.06 | 1.06 |
| 4.0 | 0.44 | 1.04 | 1.04 |
| 4.5 | 0.45 | 1.02 | 1.02 |
| 5.0 | 0.48 | 1.02 | 1.03 |
| 5.5 | 0.50 | 1.04 | 1.04 |
| 6.0 | 0.52 | 1.06 | 1.05 |
| 6.5 | 0.54 | 1.09 | 1.07 |
| 7.0 | 0.58 | 1.12 | 1.09 |
| 7.5 | 0.61 | 1.15 | 1.12 |
| 8.0 | 0.63 | 1.17 | 1.14 |
| 8.5 | 0.61 | 1.18 | 1.15 |
| 9.0 | 0.63 | 1.20 | 1.16 |
| 9.5 | 0.63 | 1.21 | 1.18 |
| 10.0 | 0.58 | 1.21 | 1.19 |
| 10.5 | 0.63 | 1.19 | 1.17 |
| 11.0 | 0.68 | 1.17 | 1.16 |
| 11.5 | 0.66 | 1.15 | 1.14 |
| 12.0 | 0.66 | 1.13 | 1.14 |
| 12.5 | 0.71 | 1.11 | 1.12 |
| 13.0 | 0.72 | 1.11 | 1.11 |
| 13.5 | 0.72 | 1.10 | 1.11 |
| 14.0 | 0.76 | 1.09 | 1.10 |
| 14.5 | 0.86 | 1.09 | 1.10 |
| 15.0 | 0.82 | 1.11 | 1.10 |
| 15.5 | 0.82 | 1.12 | 1.11 |
| 16.0 | 0.90 | 1.13 | 1.12 |
| 16.5 | 0.90 | 1.15 | 1.14 |
| 17.0 | 0.84 | 1.14 | 1.14 |
| 17.5 | 0.90 | 1.18 | 1.15 |
| 18.0 | 1.01 | 1.21 | 1.19 |
| 18.5 | 0.98 | 1.23 | 1.21 |
| 19.0 | 1.01 | 1.25 | 1.26 |
| 19.5 | 1.01 | 1.24 | 1.26 |
| 20.0 | 1.02 | 1.20 | 1.25 |
| 20.5 | 1.03 | 1.19 | 1.29 |
| 21.0 | 0.95 | 1.22 | 1.28 |
| 21.5 | 1.01 | 1.19 | 1.27 |
| 22.0 | 1.08 | 1.19 | 1.27 |
| 22.5 | 1.09 | 1.19 | 1.28 |
| 23.0 | 1.07 | 1.19 | 1.27 |
| 23.5 | 1.05 | 1.19 | 1.23 |
| 24.0 | 1.20 | 1.13 | 1.21 |
| 24.5 | 1.15 | 1.10 | 1.20 |
| 25.0 | 1.10 | 1.08 | 1.20 |
| 25.5 | 1.14 | 1.11 | 1.20 |
| 26.0 | 1.17 | 1.17 | 1.30 |

Typical Performance Curves



Outline Dimensions



* OVERALL CONNECTOR DIMENSION
(CONNECTOR SHAPE MAY VARY)

MU1838 SERIES
SMA MALE (CONN-1)
SMA MALE (CONN-2)

| CASE STYLE # | A | | B | C | D | E | F | T | | WEIGHT GRAMS |
|--------------|------|--------|----------------|----------------|----------------|----------------|----------------|----------|----------|--------------|
| | FEET | METERS | | | | | | INCH | MM | |
| MU1838-1 | 1.00 | 0.30 | .42 (10.70) | .312 (7.93) | .42 (10.70) | .312 (7.93) | .194 (4.95) | +.50/-0 | +12.7/-0 | 41 |
| MU1838-1.5 | 1.50 | 0.46 | | | | | | +.50/-0 | +12.7/-0 | 47 |
| MU1838-2 | 2.00 | 0.61 | | | | | | +.50/-0 | +12.7/-0 | 56 |
| MU1838-3 | 3.00 | 0.91 | | | | | | +.72/-0 | +18.3/-0 | 72 |
| MU1838-3.28 | 3.28 | 1.00 | | | | | | +.79/-0 | +20.0/-0 | 77 |
| MU1838-4 | 4.00 | 1.22 | | | | | | +.96/-0 | +24.4/-0 | 89 |
| MU1838-6 | 6.00 | 1.83 | | | | | | +1.44/-0 | +36.6/-0 | 123 |
| MU1838-6.56 | 6.56 | 2.00 | | | | | | +1.57/-0 | +40.0/-0 | 132 |

Unless otherwise specified dimensions are in inches (mm).

Tolerances: 2Pl. ± .03; 3Pl. ± .015

Note:

1. Flexible Low Loss Cable.



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 85°C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 85° C Ambient Environment | Individual Model Data Sheet |
| Thermal Shock | -55° to 100° C, 100 cycles | MIL-STD-202, Method 107, Condition A-3 |
| Mechanical Flexing | 20,000 cycles During each cycle, cable flexed from 90° through 0° to -90° and back with a Radii of 3 inches | - - - |