



Mini-Circuits



# Test Cable

## T50-3FT-VFVM+

50Ω 3FT DC to 50 GHz Low Loss 2.4mm-Female to 2.4mm-Male

### THE BIG DEAL

- Low insertion loss
- Stainless steel 50 GHz connector for long mating-cycle life
- Triple shield cable for excellent shielding effectiveness
- Good amplitude and phase stability vs flexing over frequency
- 50 GHz connector mates with 2.4 mm



Generic photo used for illustration purposes only

|            |                            |
|------------|----------------------------|
| Model No.  | T50-3FT-VFVM+              |
| Case Style | RL2527-3                   |
| Connectors | 2.4mm Female to 2.4mm Male |

### +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.

### APPLICATIONS

- Military and Defense Applications
- Research & development labs

### PRODUCT OVERVIEW

Mini-Circuits' T50-series test cables provide wideband performance for test applications from DC to 50 GHz with low insertion loss and excellent return loss. These cables are specially designed for stability of phase and amplitude versus flexure while offering outstanding durability and reliability. Featuring triple-shielded cable construction with a unique molded boot, the cables are suitable for demanding lab environments where constant bending is required. T50-series cables feature 2.4mm-male to 2.4mm-male connectors and come in a variety of lengths to meet your needs.

### KEY FEATURES

| Feature                                     | Advantages                                                                                                                                                                        |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wideband, DC to 50 GHz                      | Supports a wide range of test applications including R&D, military and defense, production test and more.                                                                         |
| Excellent stability of phase versus flexure | T50-series test cables have been tested in bend radii as tight as 2.0 inches to ensure minimal change in phase, 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.                                                                                    |
| 2.4mm-Female to 2.4mm-Male connectors       | Mates with common connector types for 40 and 50 GHz test applications.                                                                                                            |





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**ELECTRICAL SPECIFICATIONS AT +25°C**

| Parameter       | Frequency (GHz) | Min. | Typ. | Max. | Units |
|-----------------|-----------------|------|------|------|-------|
| Frequency Range |                 | DC   |      | 50   | GHz   |
| Length          |                 | 3    |      |      | FT    |
| Insertion Loss  | DC - 18         | —    | 2.0  | 2.3  | dB    |
|                 | 18 - 26.5       | —    | 2.4  | 2.8  |       |
|                 | 26.5 - 40       | —    | 3.3  | 3.6  |       |
|                 | 40 - 50         | —    | 3.7  | 4.1  |       |
| Return Loss     | DC - 18         | 20   | 25   | —    | dB    |
|                 | 18 - 26.5       | 17   | 20   | —    |       |
|                 | 26.5 - 40       | 16   | 20   | —    |       |
|                 | 40 - 50         | 15   | 19   | —    |       |

**ABSOLUTE MAXIMUM RATINGS**

| Parameter                         | Ratings          |
|-----------------------------------|------------------|
| Operating Temperature             | -18°C to +28°C   |
| Storage Temperature               | -40°C to +50°C   |
| Power Handling at 25°C, Sea Level | 144 W at 2 GHz   |
|                                   | 46 W at 18 GHz   |
|                                   | 38 W at 26.5 GHz |
|                                   | 30 W at 40 GHz   |
|                                   | 25W at 50 GHz    |

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





# Test Cable

## T50-3FT-VFVM+

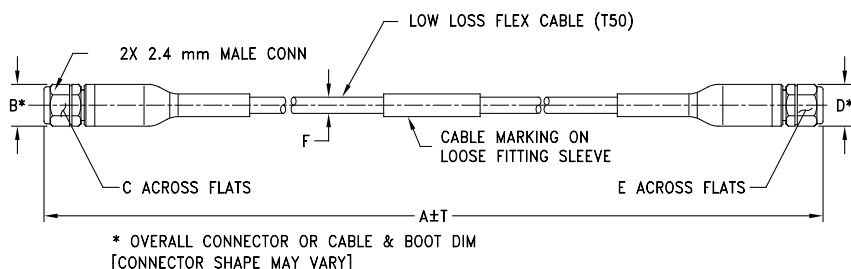
50Ω 3FT DC to 50 GHz Low Loss 2.4mm-Female to 2.4mm-Male

### CABLE CONSTRUCTION



- Center Conductor: Solid SPC
- Dielectric: ND-PTFE
- Outer Conductor: SPC Strip
- Interlayer: LD-PTFE
- Outer shield: SPC Braid
- FEP (Blue)

### OUTLINE DRAWING



### OUTLINE DIMENSIONS (Inch mm)

| A    |        | B    | C  | D    | E    | F    | T        |         | wt    |
|------|--------|------|----|------|------|------|----------|---------|-------|
| Feet | Meters | 0.36 | -- | 0.36 | .315 | .142 | Inch     | MM      | grams |
| 3.00 | 0.91   | 9.25 | -- | 9.25 | 8.00 | 3.61 | +0.08/-0 | +2.0/-0 | 58    |





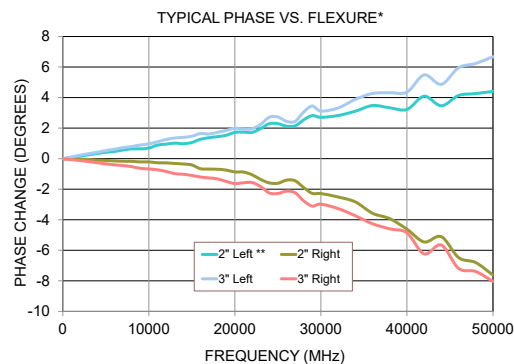
# Test Cable

## T50-3FT-VFVM+

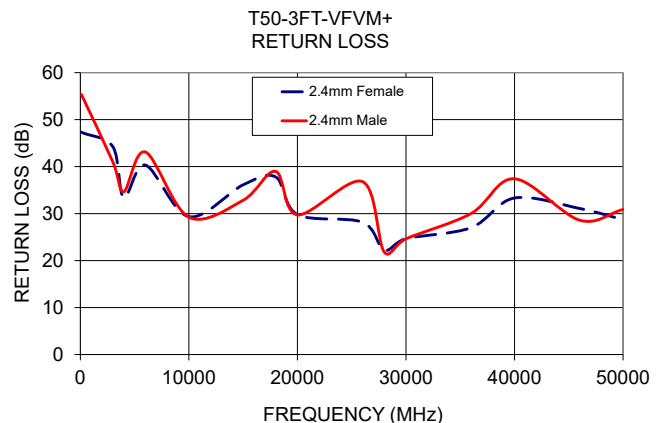
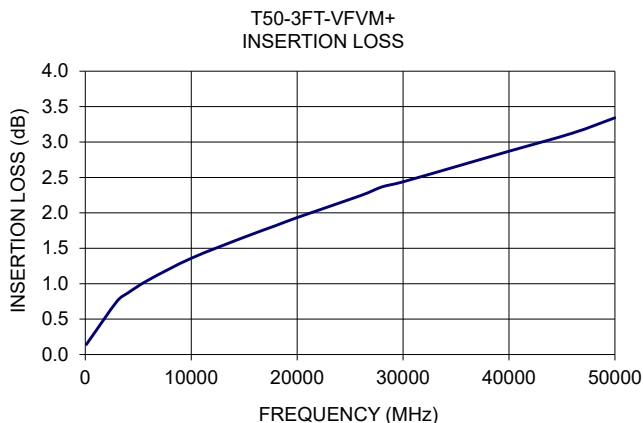
50Ω 3FT DC to 50 GHz Low Loss 2.4mm-Female to 2.4mm-Male

### TYPICAL PERFORMANCE DATA

| Frequency (MHz) | Insertion Loss (dB) | Return Loss (dB) |           |
|-----------------|---------------------|------------------|-----------|
|                 |                     | 2.4mm Female     | 24mm Male |
| 100             | 0.14                | 47.3             | 55.3      |
| 3000            | 0.75                | 44.2             | 41.0      |
| 4000            | 0.87                | 33.4             | 34.6      |
| 6000            | 1.06                | 40.3             | 43.1      |
| 10000           | 1.36                | 29.3             | 29.2      |
| 15000           | 1.66                | 36.1             | 32.8      |
| 18000           | 1.82                | 37.8             | 39.0      |
| 20000           | 1.93                | 29.8             | 29.7      |
| 26000           | 2.24                | 28.2             | 36.8      |
| 28000           | 2.37                | 22.2             | 21.8      |
| 30000           | 2.44                | 24.7             | 24.6      |
| 36000           | 2.70                | 27.0             | 30.0      |
| 40000           | 2.87                | 33.3             | 37.4      |
| 46000           | 3.13                | 31.1             | 28.6      |
| 50000           | 3.34                | 28.7             | 30.9      |



\* Typical phase change over flexure performed on T50-3FT-VFVM+ by wrapping cable 360° around 2" and 3" radii mandrels referenced to normalized straight position.  
 \*\* Setup is flipped and measurement is repeated.



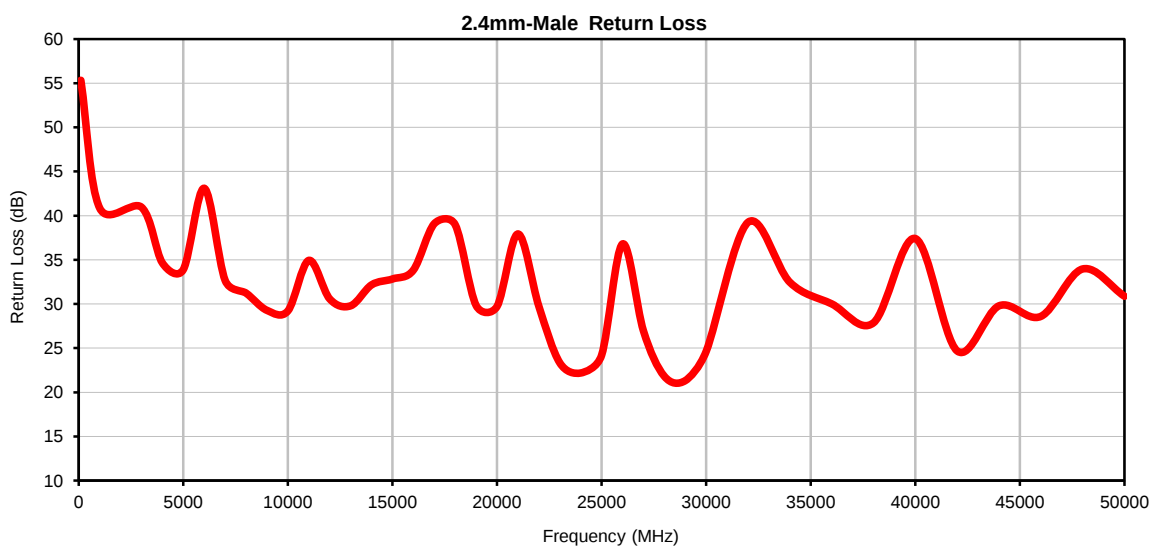
- NOTES**
- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
  - Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
  - 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/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



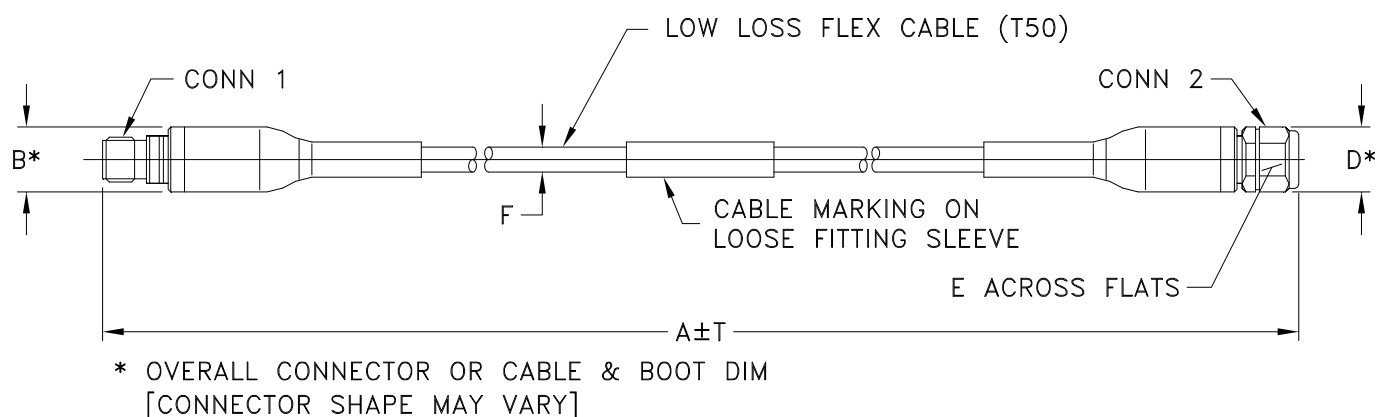
*Typical Performance Data*

| FREQUENCY<br>(MHz) | INSERTION LOSS<br>(dB) | 2.4mm-FEMALE<br>RETURN LOSS<br>(dB) | 2.4mm-MALE<br>RETURN LOSS<br>(dB) |
|--------------------|------------------------|-------------------------------------|-----------------------------------|
| 100                | 0.14                   | 47.3                                | 55.3                              |
| 1000               | 0.44                   | 37.5                                | 40.9                              |
| 3000               | 0.75                   | 44.2                                | 41.0                              |
| 4000               | 0.87                   | 33.4                                | 34.6                              |
| 5000               | 0.97                   | 33.8                                | 33.9                              |
| 6000               | 1.06                   | 40.3                                | 43.1                              |
| 7000               | 1.14                   | 33.1                                | 32.7                              |
| 8000               | 1.22                   | 32.4                                | 31.2                              |
| 9000               | 1.29                   | 29.4                                | 29.3                              |
| 10000              | 1.36                   | 29.3                                | 29.2                              |
| 11000              | 1.42                   | 41.6                                | 34.9                              |
| 12000              | 1.48                   | 31.3                                | 30.6                              |
| 13000              | 1.54                   | 30.7                                | 29.8                              |
| 14000              | 1.60                   | 36.4                                | 32.2                              |
| 15000              | 1.66                   | 36.1                                | 32.8                              |
| 16000              | 1.71                   | 36.2                                | 33.8                              |
| 17000              | 1.76                   | 40.9                                | 39.1                              |
| 18000              | 1.82                   | 37.8                                | 39.0                              |
| 19000              | 1.88                   | 30.1                                | 29.8                              |
| 20000              | 1.93                   | 29.8                                | 29.7                              |
| 21000              | 1.99                   | 34.7                                | 37.9                              |
| 22000              | 2.04                   | 27.8                                | 29.7                              |
| 23000              | 2.11                   | 22.6                                | 23.3                              |
| 24000              | 2.17                   | 22.0                                | 22.2                              |
| 25000              | 2.21                   | 23.5                                | 24.2                              |
| 26000              | 2.24                   | 28.2                                | 36.8                              |
| 27000              | 2.30                   | 25.4                                | 27.0                              |
| 28000              | 2.37                   | 22.2                                | 21.8                              |
| 29000              | 2.41                   | 22.9                                | 21.3                              |
| 30000              | 2.44                   | 24.7                                | 24.6                              |
| 32000              | 2.52                   | 28.3                                | 39.2                              |
| 34000              | 2.60                   | 27.3                                | 32.5                              |
| 36000              | 2.70                   | 27.0                                | 30.0                              |
| 38000              | 2.79                   | 27.6                                | 27.9                              |
| 40000              | 2.87                   | 33.3                                | 37.4                              |
| 42000              | 2.97                   | 24.7                                | 24.7                              |
| 44000              | 3.04                   | 27.9                                | 29.8                              |
| 46000              | 3.13                   | 31.1                                | 28.6                              |
| 48000              | 3.20                   | 37.9                                | 34.0                              |
| 50000              | 3.34                   | 28.7                                | 30.9                              |

## Typical Performance Curves



### Outline Dimensions



#### RL2527 SERIES

2.4mm FEMALE (CONN-1)

2.4mm MALE (CONN-2)

| CASE<br>STYLE # | A    |        | B             | C        | D             | E              | F              | T       |         | WEIGHT<br>GRAMS |
|-----------------|------|--------|---------------|----------|---------------|----------------|----------------|---------|---------|-----------------|
|                 | FEET | METERS |               |          |               |                |                | INCH    | MM      |                 |
| RL2527-2        | 2.00 | .61    | .36<br>(9.25) | --<br>-- | .36<br>(9.25) | .315<br>(8.00) | .142<br>(3.60) | +.08/-0 | +2.0/-0 | 47              |
| RL2527-3        | 3.00 | .91    |               |          |               |                |                | +.08/-0 | +2.0/-0 | 58              |
|                 |      |        |               |          |               |                |                |         |         |                 |
|                 |      |        |               |          |               |                |                |         |         |                 |
|                 |      |        |               |          |               |                |                |         |         |                 |
|                 |      |        |               |          |               |                |                |         |         |                 |
|                 |      |        |               |          |               |                |                |         |         |                 |

Unless otherwise specified dimensions are in inches (mm).

Tolerances: 2Pl. ± .03; 3Pl. ± .015

#### Note:

1. Low Loss Flexible (T50) 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 | +18°C to 28°C<br>Ambient Environment | Individual Model Data Sheet |
| Storage Temperature   | -40° to 50°C<br>Ambient Environment  | Individual Model Data Sheet |