Sunridge MCF Series – 2.0mm Mated Height Miniature Coaxial Interconnect

Sunridge MCF series coaxial product fulfills the rigorous requirements of high frequency RF signal transmission in digital world. In a miniature form factor of 3.0mm x 3.0mm PCB footprint by 2.0mm mated height, MCF features an advanced design that makes for optimal mechanical application, i.e., easy insertion and sturdy engagement among mating pair, and delivers a supreme performance of low insertion loss and low VSWR at 50 OHM impedance over a working frequency range from DC to 6.0 GHz. MCF offers a practical and reliable solution for interconnection from board to board or from board to panel.

**Features**
- Space Economy: 3.0mm x 3.0mm footprint, mated height 2.0 mm
- Cable Conn: durable cable crimp and sturdy mating with PCB socket
- Teflon Cable: three options offered --
  - #68 cable of 0.81mm OD - for flexibility;
  - #62 of 0.91mm OD for low insertion-loss and flexibility;
  - #59 of 1.13mm OD. - for low insertion-loss and robust structure.
- Versatility: Custom design for virtually any MCF-to-RF cable assembly
- PCB socket: Molded-in construction. High temp plastic for IR reflow.
- Strength: Lead-in and interlock features make for easy insertion and sturdy mating.
- Accessory: Assembly tool to guide insertion and extraction. MCF-SMA adapter for connection to network analyzer.

**Typical Application:**
Smart cell phone, portable info or tracking device, monitoring base station. Particularly, widely used in Telecommunication modules.

**PCB Connector**  Pn: MCF-ST-00T

**Material Spec**
- **Outer Contact:** Copper Alloy, Gold Plated.
- **Center Contact:** Copper Alloy, Gold Plated.
- **Insulator:** Engineering Plastic.
- **Cable:** Silver plated center conductor with Teflon dielectric and jacket.

**Form Factor**

**Recommended PCB Layout**

**Material Spec**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>DC to 6GHz</td>
</tr>
<tr>
<td>Nominal Impedance</td>
<td>50 ohm</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-40°C to +90°C</td>
</tr>
<tr>
<td>Contact Resistance</td>
<td>25m ohm max</td>
</tr>
<tr>
<td>Withstanding Voltage</td>
<td>AC 200Vrms</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>500M ohm min</td>
</tr>
<tr>
<td>Durability</td>
<td>20 Cycles</td>
</tr>
</tbody>
</table>

* (dimension: mm)
**Sunridge MCF Series – 2.0mm Mated Height Miniature Coaxial Interconnect**

### MCF Cable Assembly

- **Insertion force (with tool):** 800gf.
- **Extraction force (with tool):** 600gf.
- **Retention, downward force:** 200gf Max.
- **Retention, upward force:** 200gf Max.
- **Retention, pull back:** 400gf Max.
- **Durability:** 20 cycles

### P/N Designation

<table>
<thead>
<tr>
<th>MCF – XX - XX - XXX - X</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Head Configuration:</td>
<td>SH: Single-Headed Cable construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH: Double-Headed Cable construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Coaxial Cable Code:</td>
<td>see cable selection guide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Length (in mm): Ex: LLL = 200: 200mm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. End Cut (SH only):</td>
<td>T : open end stripped &amp; tinned.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F : open end flat cut</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Insertion/Extraction Tool

- **Pn:** ET-MCF

### Mechanical Application

1. Insertion force (with tool): 800gf.
2. Extraction force (with tool): 600gf.
4. Retention, upward force: 200gf Max.
5. Retention, pull back: 400gf Max.
   - Durability: 20 cycles

### Integrated Solution

MCF- single headed cable is typically integrated with another R/F connector for interconnection, say, from module board to panel or to antenna fitting. Sunridge is equally committed to both R/F cable assembly customers and OEM’s. Send your application requirement to engineering@sunridgecorp.com for a project evaluation.

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<table>
<thead>
<tr>
<th>P/N Designation</th>
<th>( \text{Pn: MCF-SH-XX-LLL-T} )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \text{Pn: MCF-SH-XX-LLL-F} )</td>
</tr>
<tr>
<td></td>
<td>( \text{Pn: MCF-DH-XX-LLL} )</td>
</tr>
</tbody>
</table>

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**www.sunridgecorp.com**

**Sunridge Corporation**

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Taiwan Operations: 886-2-2906-2119
E-mail: sales@sunridgecorp.com

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Catalog No: MCF050614
MCF- Derivative Cable Assembly P/N Selector:
(Illustration of the most commonly used MCF-RF cable assy. A variety of other RF configurations is readily available at Sunridge Corp. Contact engineering@sunridgecorp.com for project inquiry.)

■ MCF to SMA Bulkhead Jack Cable Assembly:

![Diagram of MCF to SMA Bulkhead Jack Cable Assembly]

<table>
<thead>
<tr>
<th>Descriptions</th>
<th>Recommended Cable</th>
<th>Sunridge P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCF to SMAJB</td>
<td>#59, 1.13 mm OD</td>
<td>MCF-RH-59-LLL-SMAJB103</td>
</tr>
<tr>
<td>MCF to SMAJB Reverse Polarity (RP)</td>
<td>#59, 1.13 mm OD</td>
<td>MCF-RH-59-LLL-SMAJB181</td>
</tr>
<tr>
<td>MCF to SMAJB with O-Ring Seal</td>
<td>#59, 1.13 mm OD</td>
<td>MCF-RH-59-LLL-SMAJB105</td>
</tr>
<tr>
<td>MCF to SMAJB RP with O-ring Seal</td>
<td>#59, 1.13 mm OD</td>
<td>MCF-RH-59-LLL-SMAJB183</td>
</tr>
</tbody>
</table>

LLL: Length in mm. e.g., LLL = 200 means 200mm; LLL = 073 means 73mm

■ MCF to SMA Plug Cable Assembly:

![Diagram of MCF to SMA Plug Cable Assembly]

<table>
<thead>
<tr>
<th>Descriptions</th>
<th>Recommended Cable</th>
<th>Sunridge P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCF to SMAP</td>
<td>#59, 1.13 mm OD</td>
<td>MCF-RH-59-LLL-SMAP103</td>
</tr>
<tr>
<td>MCF to SMAP Reverse Polarity (RP)</td>
<td>#59, 1.13 mm OD</td>
<td>MCF-RH-59-LLL-SMAP181</td>
</tr>
</tbody>
</table>

LLL: Length in mm. e.g., LLL = 200 means 200mm; LLL = 073 means 73mm
### Cable Selection Guide

<table>
<thead>
<tr>
<th>Cable Designation Code</th>
<th>#62</th>
<th>#59</th>
<th>#68</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. and Dia. (No./mm)</td>
<td>7/0.07</td>
<td>7/0.08</td>
<td>7/0.05</td>
</tr>
<tr>
<td>Material</td>
<td>Silver plated copper wire</td>
<td>Silver plated copper wire</td>
<td>Silver plated copper wire</td>
</tr>
<tr>
<td>Total Dia. (mm)</td>
<td>0.21</td>
<td>0.24</td>
<td>0.15</td>
</tr>
<tr>
<td>Dielectric</td>
<td>FEP</td>
<td>FEP</td>
<td>PFA</td>
</tr>
<tr>
<td>No. and Dia. (mm)</td>
<td>0.63</td>
<td>0.68</td>
<td>0.4</td>
</tr>
<tr>
<td>Material</td>
<td>Tinned copper wire/ copper tape</td>
<td>Tinned copper wire</td>
<td>Tinned copper wire</td>
</tr>
<tr>
<td>Dia. of wire (mm)</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Total Dia. (mm)</td>
<td>0.80</td>
<td>0.93</td>
<td>0.65</td>
</tr>
<tr>
<td>Material</td>
<td>FEP</td>
<td>FEP</td>
<td>PFA</td>
</tr>
<tr>
<td>Nominal thickness (mm)</td>
<td>0.05</td>
<td>0.1</td>
<td>0.08</td>
</tr>
<tr>
<td>Overall Dia. (mm)</td>
<td>0.91</td>
<td>1.13</td>
<td>0.81</td>
</tr>
<tr>
<td>Nominal impedance (Ohm)</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Voltage rating (Vrms Max.)</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Nominal static capacitance (pF/m)</td>
<td>97</td>
<td>97</td>
<td>96</td>
</tr>
</tbody>
</table>

#### Insertion loss

- **dB/m at 1GHz**
  - #62: 2.00
  - #59: 2.06
  - #68: 3.53
- **dB/m at 2GHz**
  - #62: 2.60
  - #59: 2.97
  - #68: 5.17
- **dB/m at 2.4GHz**
  - #62: 3.10
  - #59: 3.27
  - #68: 5.71
- **dB/m at 3GHz**
  - #62: 3.50
  - #59: 3.69
  - #68: 6.45
- **dB/m at 5GHz**
  - #62: 4.00
  - #59: 4.87
  - #68: 8.53
- **dB/m at 6GHz**
  - #62: 4.40
  - #59: 5.38
  - #68: 9.42

#### Performance Measurement Reference:

*(Test sample: MCF dual head cable assy, 100mm; Test instrument: Agilent 8753ES network analyzer.)*

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**MCF-DH-62-100**
- **Length**: 100mm
- **Cable Code**: #62
- **Overall Diameter**: 0.91mm
- **Inner Conductor**: 0.21mm Dia.
- **Dielectric**: 0.63mm Dia.
- **Outer Conductor**: 0.80mm Dia.
- **Jacket**: 0.91mm Dia.
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Performance Measurement Reference:
(Test sample: MCF dual head cable assy, 100mm; Test instrument: Agilent 8753ES network analyzer.)

MCF-DH-59-100
Length: 100mm
Cable Code: #59
Overall Diameter: 1.13mm
Inner Conductor: 0.24mm Dia.
Dielectric: 0.68mm Dia.
Outer Conductor: 0.93mm Dia.
Jacket: 1.13mm Dia.

MCF-DH-68-100
Length: 100mm
Cable Code: #68
Overall Diameter: 0.81mm
Inner Conductor: 0.15mm Dia.
Dielectric: 0.40mm Dia.
Outer Conductor: 0.65mm Dia.
Jacket: 0.81mm Dia.