

# Sunridge MCA Series –Miniature Coaxial Interconnect System



Sunridge MCA series coaxial product fulfills the critical requirements of high frequency data transmission commonplace in digital world. Constructed with ultra-thin Teflon wire of supreme grade and interconnect mechanism of rigid structure, MCA series meets high performance benchmark: VSWR response of 1.2 Max from DC to 2GHz, or 1.3 Max from 2GHz to 3GHz. Slim form factor - a PCB footprint of 3.5 mm square and a mated profile of 3.1mm - enables design compactness demanded by today's feature rich hand held devices.

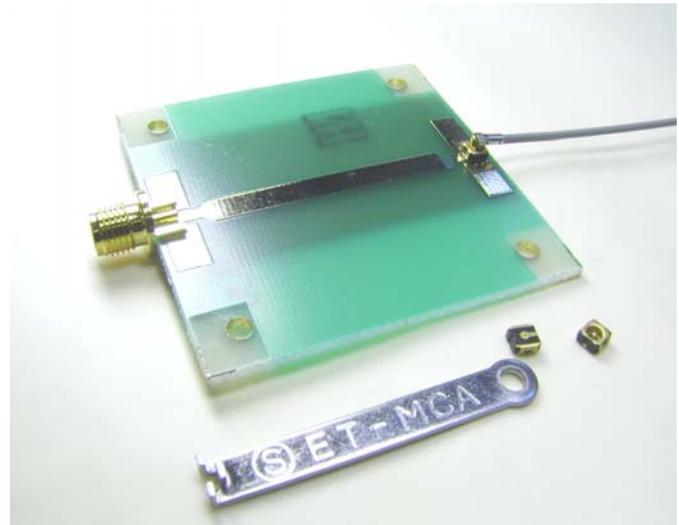


## Applications

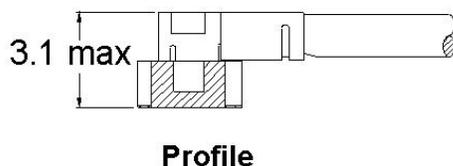
- Application: - RF-single interconnection line for a variety of products, such as cellular phone, telecommunication equipment, measurement instrument, GPS telemetric, microwave wireless devices.
- Cost-effective and reliable design solution for interface between two modules, form module to host board, or from module to enclosure panel.

## Features

- Space Economy: condense PCB footprint of 3.5mm x 3.5mm. Low profile of 1.5mm as component height, and of 3.1mm as mated height.
- Wide selection of steel-wire/Teflon-insulator based cable, with OD size ranging from 0.75mm to 2.00mm.
- Robust connection with coaxial conductors ensures solid electrical continuity.
- Cable- and PCB - connector set is designed with alignment and locking features, to facilitate easy insertion and to guarantee reliable and sturdy engagement.
- Integral molded-in construction enhances product reliability.
- High temperature plastic housing of PCBA connector for IR reflow process.
- Extraction tool available to make easy field replacement.



## Form Factor



Characteristics	
Frequency Range	DC to 3GHz
VSWR	1.2 Max, from DC to 2GHz
	1.3 Max, from 2GHz to 3GHz
Nominal Impedance	50 ohm
Temperature Range	-40°C to +90°C
Contact Resistance	15m ohm max
Withstanding Voltage	AC 300Vrms
Insulation Resistance	500M ohm min
Durability	50 Cycles



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(dimension: mm)

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## Product Application

A MCA interconnection system consists of a mating pair: a PCB component , and a MCA- cable assembly.

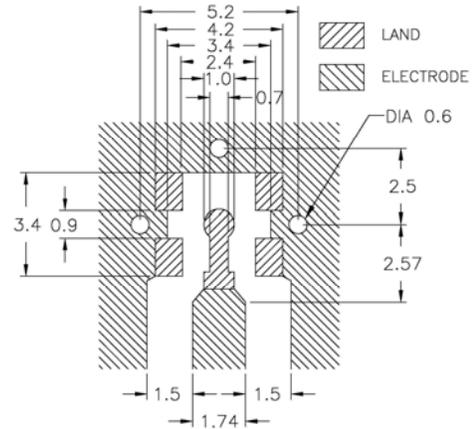
**PCB Component:** 3.4mm square X 1.5mm form factor

**Cable Connector:** 2.4mm square x 2.4mm form factor

### Cable Assembly Pn:

**MCA-SH-XX-LLL-Y**, assembled with cable connector head at one end, open at the other.

**MCA-DH-XX-LLL**, assembled with cable connector head at both ends.

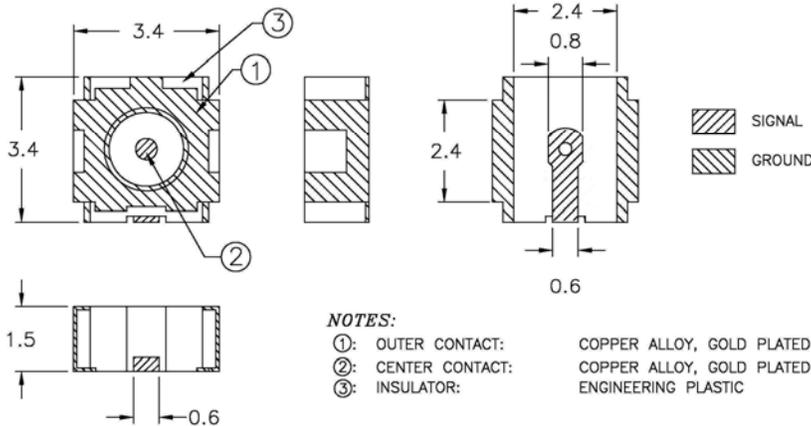


### PATTERN DIMENSION

#### Application Note:

1. Designed to mate with:  
MCA-SH-XX or MCA-DH-XX series cable harness assy.
2. Recommended IR temperature:  
250°C for less than 20 sec.  
20 sec extra for every 10°C temp.

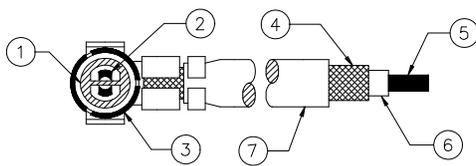
### PCB socket: P/N MCA-ST-00T



#### Standard Packaging:

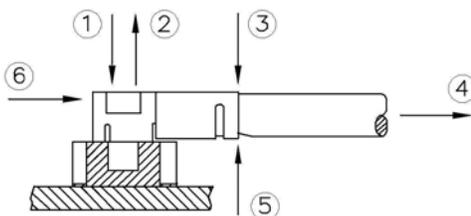
Bulk: 500pcs/bag.  
Tape & Reel: 4000pcs/reel.

### Cable Assembly Structure



- ① Insulator Core: High Temp Engineering Plastic.
- ② Inner Socket: Copper Alloy, Gold Plated.
- ③ Capsule Shell: Copper Alloy, Gold Plated.
- ④ Outer Conductor: Copper Braid, Tin Plated.
- ⑤ Inner Conductor: Steel Wire, Copper Covered, Silver-Plated.
- ⑥ Insulator: FEP.
- ⑦ Jacket: FEP

### Stress Load



- ① Insertion Force (with tool): 2.3kgf.
  - ② Withdrawal Force (with tool): 1.2kgf.
  - ③ Force Applied to Jacket (from top): 0.3kgf Max.
  - ④ Cable Pull Strength: 0.5kgf Max.
  - ⑤ Force Applied to Jacket (from bottom): 0.2kgf Max.
  - ⑥ Force Applied to the Shell: 0.5kgf Max.
- Durability: 15 cycles

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(dimension: mm)



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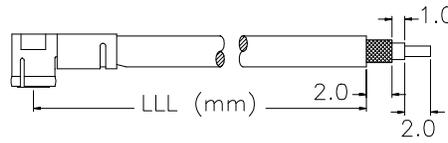
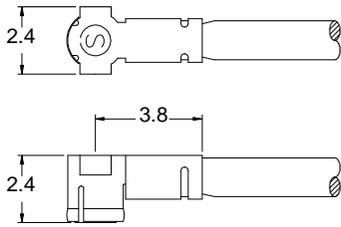
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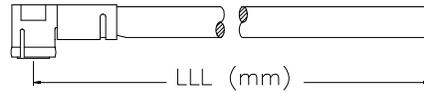


## ■ Cable Assembly P/N Designation



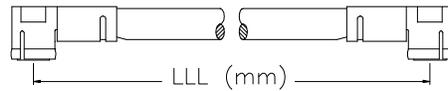
**SINGLE-HEADED CABLE HARNESS ASSY,  
STRIPPED & TINNED**

**P/N: MCA-SH-XX-LLL-T**



**SINGLE-HEADED CABLE HARNESS ASSY,  
FLAT CUT**

**P/N: MCA-SH-XX-LLL-F**



**DOUBLE-HEADED CABLE HARNESS**

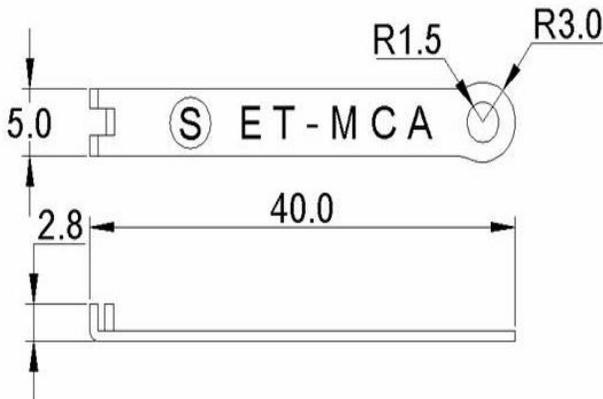
**P/N: MCA-DH-XX-LLL**

## ● P/N Designation

**MCA – XX – XX – XXX – X**  
A B C D

- A. Head Configuration: **SH**: Single-headed cable assy.  
**DH**: Double-headed cable assy.
- B. Coaxial Cable Selection: See cable selection guide (p.4)
- C. Length (in millimeter): **LLL** : As shown in figure.  
e.g.: **LLL** = 020: 20mm.  
**LLL** = 298: 298mm.
- D. End Cut (for SH): **T**: open end striped & tinned.  
**F**: open end cut flat.

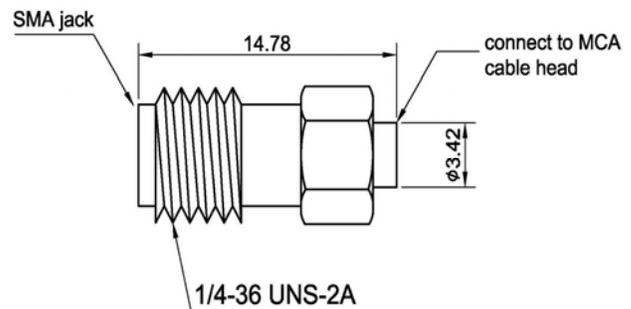
## ■ Insertion/Extraction Tool: P/N ET-MCA



## Application Notes:

1. Designed to mate with MCA-ST-00T.
2. For withdrawal from PAC-Connector, use insertion/extraction tool P/N ET-MCA

## ■ Adapter: P/N MCAP-SMAJ (Connection to Network Analyzer)



MCA cable head to SMA jack

(dimension: mm)

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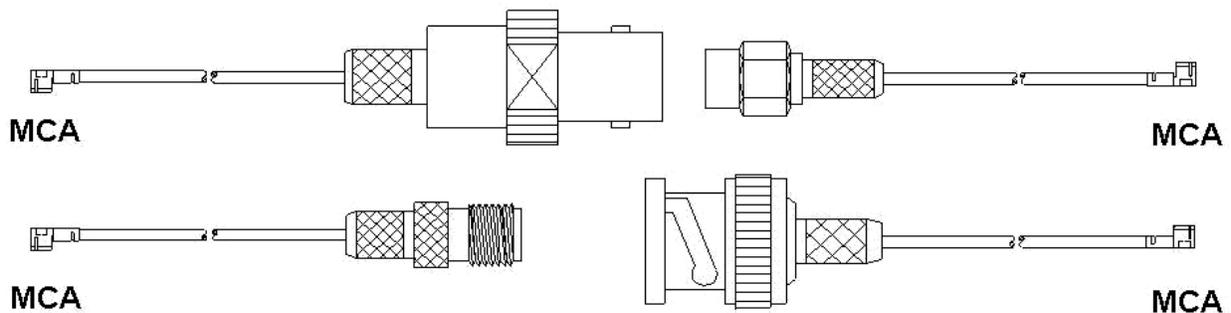
## ■ Cable Material Specification:

Cable Designation Code			#54 *	#56 *
Inner conductor	No. and Dia.	(No./mm)	7/0.102	1/0.26
	Material	—	Silver plated copper wire	Silver plated/ copper covered steel wire
	Total Dia.	(mm)	0.305	0.26
Dielectric	Material	—	FEP	FEP
	Total Dia .	(mm)	0.88	0.8
Outer conductor	Material	—	Tinned copper wire	Tinned copper wire
	Dia. of wire	(mm)	0.05	0.05
	Total Dia.	(mm)	1.13	1.05
Jacket	Material	—	FEP	FEP
	Nominal thickness	(mm)	0.1	0.1
Overall Dia.		(mm)	1.35	1.24
Nominal impedance		(Ohm)	50	50
Voltage rating		Vrms Max.	300	300
Nominal static capacitance		(pF/m)	96	100
Insertion loss	dB/m at 1GHz		1.61	1.62
	dB/m at 2GHz		2.33	2.35
	dB/m at 2.4GHz		2.58	2.59
	dB/m at 3GHz		2.92	2.98

\* #54 or #56 performs as well as RG178 (1.80mm OD) in a much smaller size, which works well for MCA's unique design; its RG178 alike structure, meanwhile, is process compatible for a wide variety of RF connector types.

## ■ Integrated Solution

MCA- 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](mailto:engineering@sunridgecorp.com) for a project evaluation.



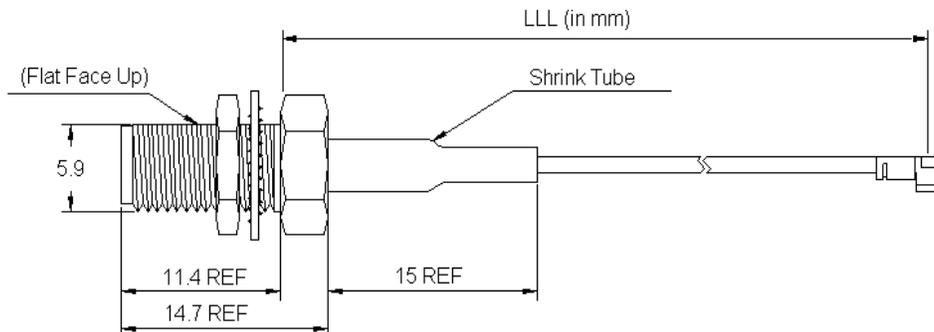
# Sunridge MCA Series –Miniature Coaxial Interconnect System



## MCA- Derivative Cable Assembly P/N Selector:

(Illustration of the most commonly used MCA-RF cable assy. A variety of other RF configurations is readily available at Sunridge Corp. Contact [engineering@sunridgecorp.com](mailto:engineering@sunridgecorp.com) for project inquiry.)

### ■ MCA to SMA Bulkhead Jack Cable Assembly:

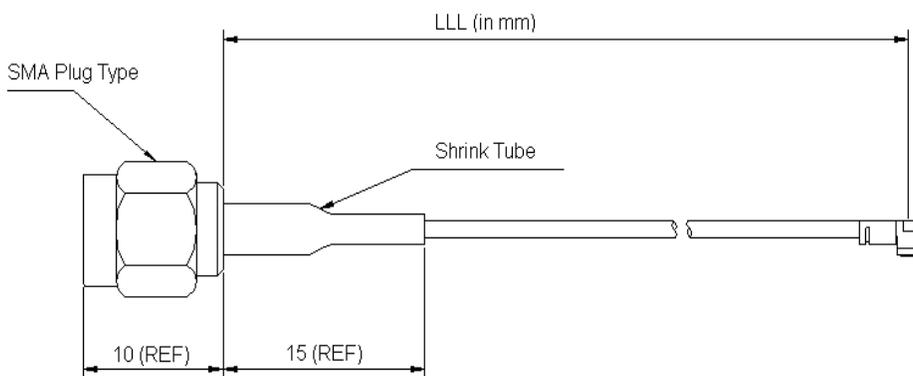


Range	Tolerance
50 < LLL < 100	± 2
100 < LLL < 200	± 3
300 < LLL < 300	± 5
300 < LLL < 500	± 10
500 < LLL < 1000	± 25
1000 < LLL	±60

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

Descriptions	Recommended Cable	Sunridge P/N
MCA to SMAJB	#54, 1.35 mm OD	MCA-RH-54-LLL-SMAJB207
MCA to SMAJB Reverse Polarity (RP)	#54, 1.35 mm OD	MCA-RH-54-LLL-SMAJB281
MCA to SMAJB with O-Ring Seal	#54, 1.35 mm OD	MCA-RH-54-LLL-SMAJB209
MCA to SMAJB RP with O-ring Seal	#54, 1.35 mm OD	MCA-RH-54-LLL-SMAJB283

### ■ MCA to SMA Plug Cable Assembly:



Range	Tolerance
50 < LLL < 100	± 2
100 < LLL < 200	± 3
300 < LLL < 300	± 5
300 < LLL < 500	± 10
500 < LLL < 1000	± 25
1000 < LLL	±60

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

Descriptions	Recommended Cable	Sunridge P/N
MCA to SMAP	#54, 1.35 mm OD	MCA-RH-54-LLL-SMAP205
MCA to SMAP Reverse Polarity (RP)	#54, 1.35 mm OD	MCA-RH-54-LLL-SMAP281

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(dimension: mm)



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