

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.

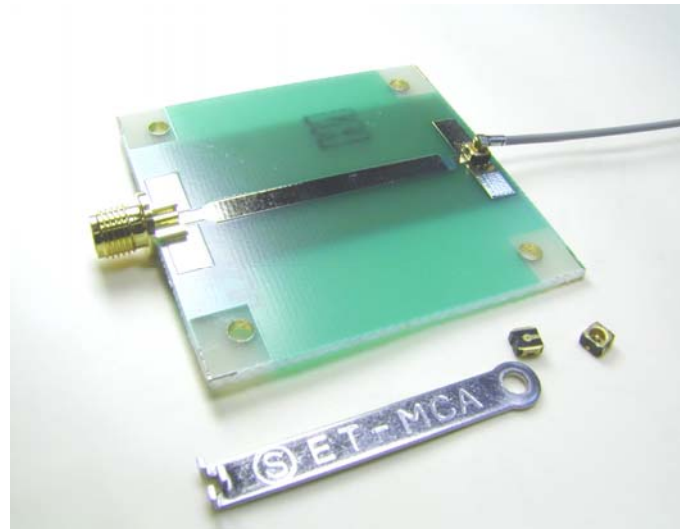


Applications

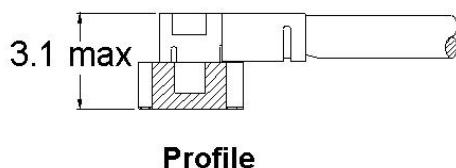
- Application: - RF-single interconnection line for a variety of products, such as cellular phone, telecommunication equipment, measurement instrument, GPS telemetric, microwave wireless devices.
- Cost-effective and reliable design solution for interface between two modules, form module to host board,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

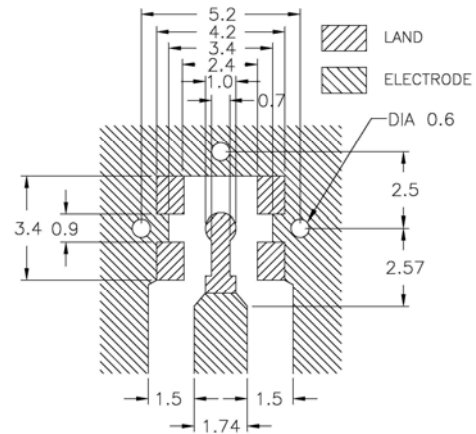
PCB Component: 3.4mm square X 1.5mm form factor

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.

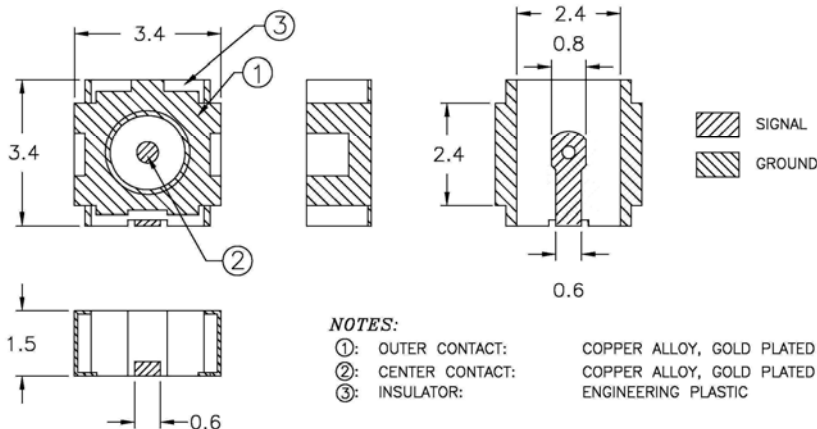


PATTERN DIMENSION

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.

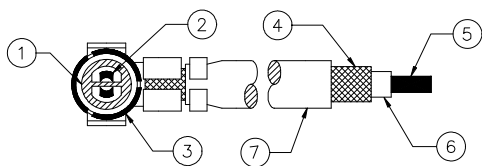
PCB socket: P/N MCA-ST-00T



Standard Packaging:

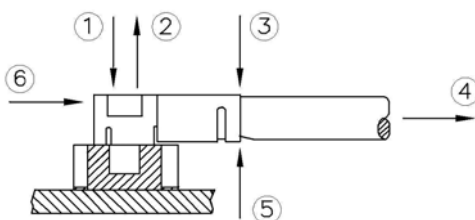
Bulk: 500pcs/bag.
Tape & Reel: 4000pcs/reel.

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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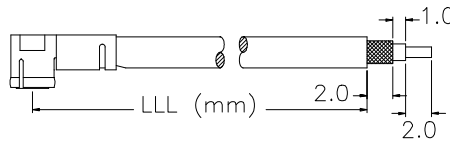
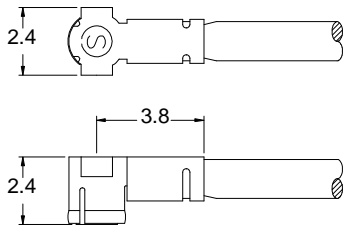
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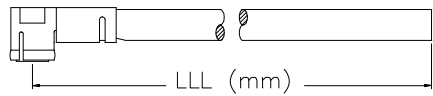


■ Cable Assembly P/N Designation



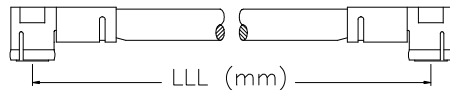
**SINGLE-HEADED CABLE HARNESS ASSY,
STRIPPED & TINNED**

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

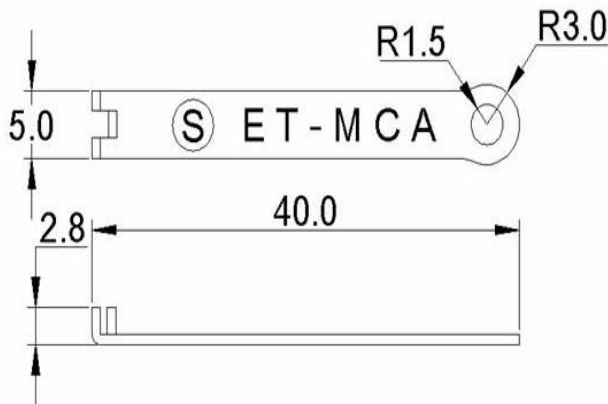
MCA – XX – XX – XXX – X
A B C D

- 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.

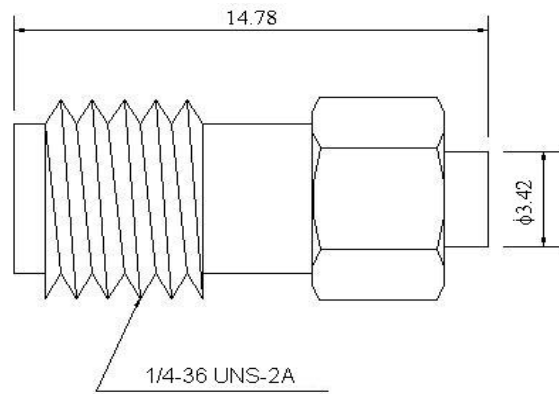
Application Notes:

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

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



■ Adapter: P/N MCAP-SMAJ



MCA cable head to SMA jack

(dimension: mm)

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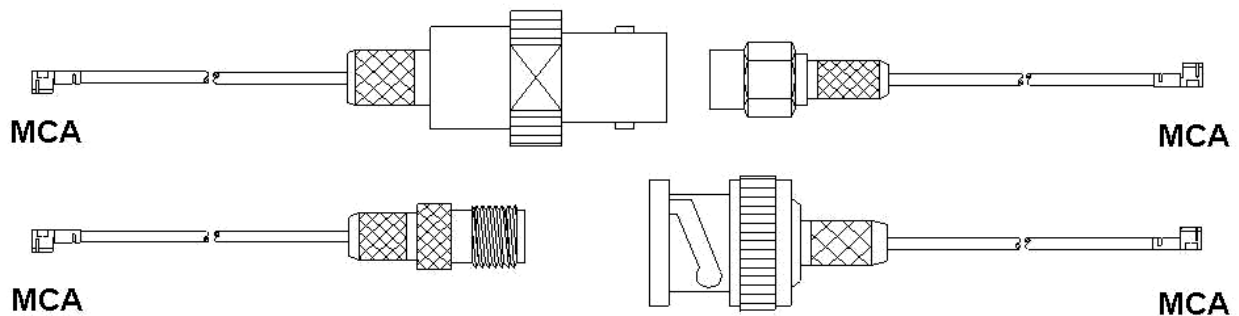
■ Cable Material Specification:

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 for a project evaluation.



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(dimension: mm)



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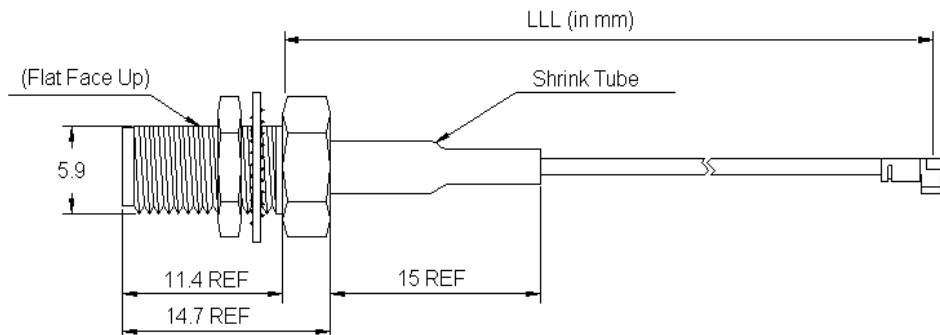
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MCA- Derivative Cable Assembly P/N Selector:

(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 for project inquiry.)

■ MCA to SMA Bulkhead Jack Cable Assembly:

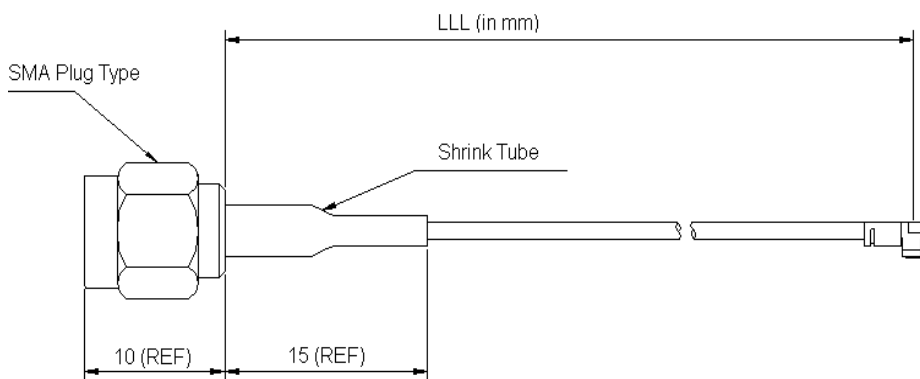


Range	Tolerance
50 < LLL < 100	± 2
100 < LLL < 200	± 3
300 < LLL < 300	± 5
300 < LLL < 500	± 10
500 < LLL < 1000	± 25
1000 < LLL	±60

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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