



Mob: +91 7217885948

www.rfconnector.in

pradeep@rfconnector.in



www.rfconnector.in



MCX/MMCX/MMS/MMT/MML

R113/R110/R209/R210/R302



*Section 1 Table of Contents***MML**

| | |
|-----------------------|------------|
| Introduction..... | 1-4 |
| Characteristics..... | 1-4 |
| Pigtails..... | 1-5 |
| Cable Assemblies..... | 1-5 to 1-6 |
| Receptacles..... | 1-6 |
| Adapters..... | 1-7 |

MMS/MMT

| | |
|-----------------------------------|--------------|
| Introduction..... | 1-8 |
| Characteristics..... | 1-9 to 1-10 |
| Plugs..... | 1-11 |
| Pigtails..... | 1-11 |
| Cable Assemblies..... | 1-11 to 1-12 |
| Receptacles..... | 1-12 |
| Adapters..... | 1-12 |
| Extraction Tool..... | 1-13 |
| Measurement Cable Assemblies..... | 1-13 |
| Assembly Instructions..... | 1-13 |

MMCX

| | |
|-------------------------------|--------------|
| Introduction..... | 1-14 |
| Interface..... | 1-14 |
| Characteristics MMCX..... | 1-15 |
| Characteristics Eco MMCX..... | 1-15 |
| Plugs..... | 1-16 |
| Receptacles..... | 1-16 to 1-17 |
| Panel Drilling..... | 1-17 |
| Assembly Instructions..... | 1-18 |

MCX

| | |
|----------------------------|--------------|
| Introduction..... | 1-19 |
| Interface..... | 1-19 |
| Characteristics..... | 1-20 |
| Plugs..... | 1-21 to 1-22 |
| Jacks..... | 1-22 |
| Receptacles..... | 1-23 to 1-24 |
| In Series Adapters..... | 1-24 |
| Panel Drilling..... | 1-25 |
| Packaging..... | 1-25 |
| Assembly Instructions..... | 1-26 |



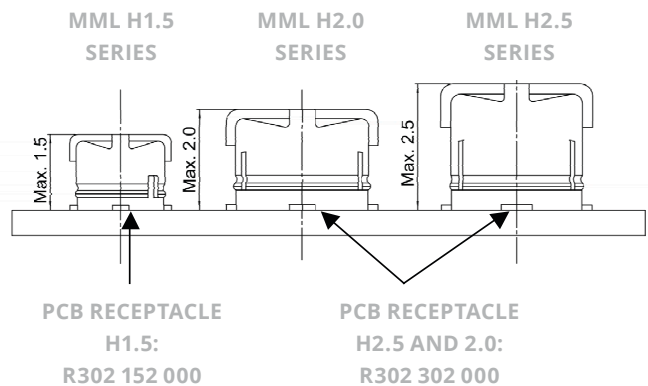
MML

INTRODUCTION

Radiall has developed a new MML series to address the market demand for smaller microminiature coaxial connectors for applications such as cell relay, WiFi access points, GPS and other mobile terminals. There are three types of plugs with mated heights of H2.5, H2.0 and H1.5, as well as two types of vertical PCB receptacles with electrical performance up to 6 GHz.

FEATURES

- Two vertical PCB receptacles
 - MML H2.5 and MML H2.0
 - MML H1.5
- Space saving
 - Three mated heights 2.5 mm, 2.0 mm, 1.5 mm
 - PCB patterns 3.08 mm x 3 mm for H2.5 and H2.0, 2 mm x 2 mm for H1.5
- DC - 6GHz, typical VSWR 1.35 max
- Cable assemblies are offered with three high performance cables: 1.33 mm for MML H2.5, 1.13 mm for MML H2.0, 0.81 mm for MML H1.5



APPLICATIONS

- Handhelds/GPS/WLAN
- GSM/CDMA/WCDMA/TD-SCDMA cards

CHARACTERISTICS

| TEST / CHARACTERISTICS | VALUES / REMARKS |
|------------------------|------------------|
|------------------------|------------------|

ELECTRICAL CHARACTERISTICS

| | |
|--|--|
| Nominal Impedance | 50Ω |
| Frequency Range | DC - 6 GHz |
| Typical VSWR | 1.35 max |
| Contact Resistance <ul style="list-style-type: none"> • Center Contact • Outer Contact | 25 mΩ 15 mΩ |
| Insulation Resistance | 500 MΩ min |
| Voltage Rating <ul style="list-style-type: none"> • H2.5 and H2 • H1.5 | 200 Vrms 150 Vrms |
| Withstanding Voltage <ul style="list-style-type: none"> • H2.5 and H2 • H1.5 | 300 Vrms 200 Vrms |
| Mechanical Durability | 30 cycles |
| Center Contact Axial Force | 0.15 N |
| RoHS | Compliant |
| Temperature Range | -40 °C / +90 °C |
| Humidity | 96 hours at Temperature of 40 °C and Humidity of 95% |
| Corrosion (Salt Spray) | 5% Salt Water Solution, 48 hours |

MATERIALS AND PLATING

| | Materials | Platings |
|-----------------------|-----------------|----------|
| Connector Bodies | Phosphor Bronze | Gold |
| Female Center Contact | | |
| Male Center Contact | Brass | |



MML

PIGTAILS AND CABLE ASSEMBLIES

MML PIGTAILS

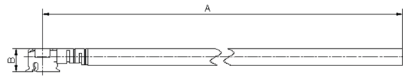


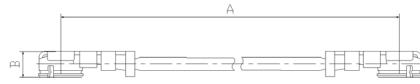
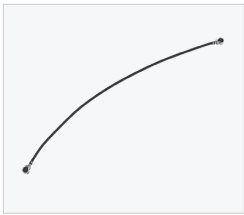
FIG. 1



FIG. 1

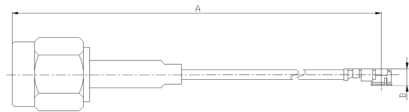
| CABLE GROUP DIA. | MML TYPE | PART NUMBER | FIG. | DIMENSIONS (MM) | PACKAGING |
|------------------|----------|------------------|------|------------------|-----------|
| | | | | A | |
| 1.33/50/S | H2.5 | R302 255 003 xxx | 1 | xxx (500 mm max) | 100 |
| 1.13/50/S | H2.0 | R302 205 001 xxx | 2 | xxx (400 mm max) | |
| 0.81/50/S | H1.5 | R302 155 000 xxx | | | |

MML TO MML CABLE ASSEMBLIES



| CABLE GROUP DIA. | MML TYPE | PART NUMBER | DIMENSIONS (MM) | PACKAGING |
|------------------|----------|------------------|------------------|-----------|
| | | | A | |
| 1.33/50/S | H2.5 | R302 000 000 xxx | xxx (500 mm max) | 100 |
| 1.13/50/S | H2.0 | R302 205 000 | 100 | |
| 0.81/50/S | H1.5 | R302 155 001 | | |

MML TO MML CABLE ASSEMBLIES



| CABLE GROUP DIA. | MML TYPE | PART NUMBER | DIMENSIONS (MM) | PACKAGING |
|------------------|----------|------------------|------------------|-----------|
| | | | A | |
| 1.33/50/S | H2.5 | R302 255 002 xxx | xxx (400 mm max) | 100 |
| 1.13/50/S | H2.0 | R302 205 002 | 100 | |

| LENGTH | STEP | TOLERANCE |
|---------------|-------|-----------|
| 30 to 100 mm | 10 mm | ±2 mm |
| 110 to 200 mm | | ±3 mm |
| 225 to 300 mm | 25 mm | ±5 mm |
| 325 to 500 mm | | ±10 mm |

Notes

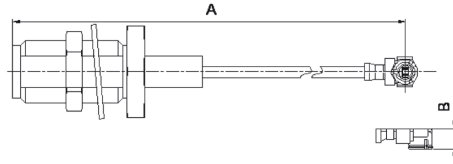
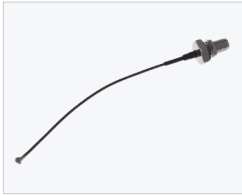
xxx = Length in mm



MML

CABLE ASSEMBLIES AND RECEPTACLES

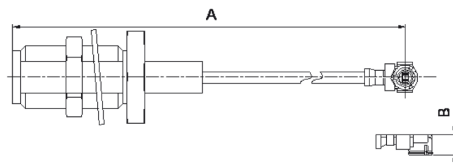
MML TO SMA BULKHEAD JACK CABLE ASSEMBLIES



| CABLE GROUP DIA. | MML TYPE | PART NUMBER | DIMENSIONS | PACKAGING | NOTE |
|------------------|----------|------------------|------------------|-----------|----------------|
| 1.37/50/S | H2.5 | R302 255 000 xxx | xxx (400 mm max) | 100 | - |
| | | R302 255 001 xxx | | | SMA Panel Seal |
| 1.13/50S | H2.0 | R302 255 003 xxx | | | - |
| | | R302 255 014 xxx | | | SMA Panel Seal |

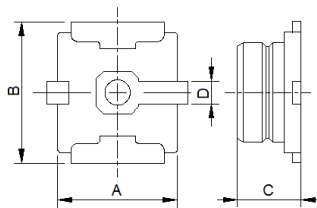
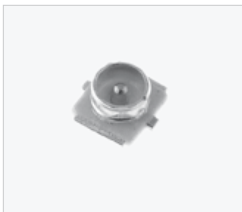
| LENGTH | STEP | TOLERANCE |
|---------------|-------|-----------|
| 30 to 100 mm | 10 mm | ±2 mm |
| 110 to 200 mm | | ±3 mm |
| 225 to 300 mm | 25 mm | ±5 mm |
| 325 to 500 mm | | ±10 mm |

MML TO RP SMA BULKHEAD REVERSE POLARITY CABLE ASSEMBLIES



| CABLE GROUP DIA. | MML TYPE | PART NUMBER | DIMENSIONS | PACKAGING | NOTE |
|------------------|----------|------------------|------------------|-----------|-------------------|
| 1.37/50/S | H2.5 | R302 255 015 xxx | xxx (400 mm max) | 100 | - |
| | | R302 255 006 xxx | | | RP SMA Panel Seal |

SMT RECEPTACLES



| MML TYPE | PART NUMBER | DIMENSIONS | | | | PACKAGING |
|-------------|--------------|------------|-----|------|-----|-------------|
| | | A | B | C | D | |
| H2.5 & H2.0 | R302 302 000 | 2.6 | 2.6 | 1.3 | 0.6 | 5000 Pieces |
| H1.5 | R302 152 000 | 1.7 | 1.7 | 0.85 | 0.3 | 5000 Pieces |

Notes

xxx = Length in mm

MML

ADAPTERS AND TEST PROBE

ADAPTERS

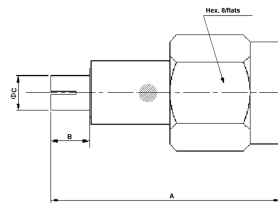


FIG. 1

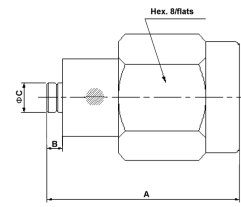
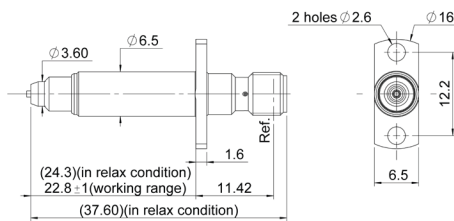


FIG. 2

| MML TYPE | PART NUMBER | FIG. | DIMENSIONS | | | NOTE |
|-------------|--------------|------|------------|------|------|---------------------|
| | | | A | B | C | |
| H2.5 & H2.0 | R302 303 000 | 2 | 13.2 | 1.05 | 1.98 | MML Plug - SMA Plug |
| | R302 303 001 | 1 | 17.2 | 2.9 | 2.6 | |
| H1.5 | R302 153 000 | 1 | 17.2 | 2.9 | 2.1 | MML Jack - SMA Plug |
| | R302 153 001 | 2 | 12.9 | 0.78 | 1.4 | |

MML TEST PROBE

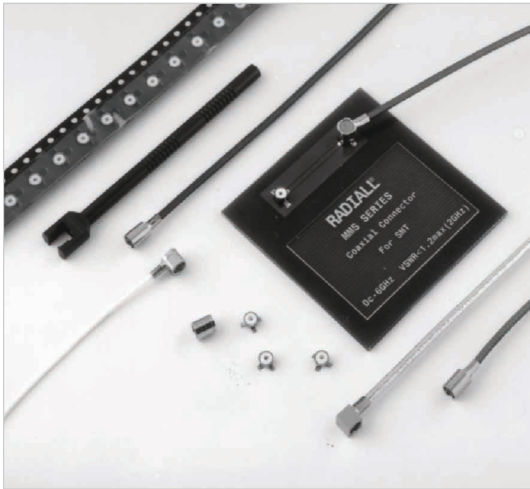


| PART NUMBER | INTERFACE 1 | INTERFACE 2 |
|--------------|-----------------|-------------|
| R191 597 800 | MML H2.0 / H2.5 | SMA Female |



MMS/MMT

INTRODUCTION



| | MMS | MMT |
|-----|------------|------------|
| 50Ω | DC - 6 GHz | DC - 8 GHz |
| 75Ω | DC - 1 GHz | |

GENERAL

- Low profile coaxial connectors
- Surface-mount receptacle (SMT)
- Snap-on mating
- High RF performance
- 360° cable rotation

APPLICATIONS

- Automotive
- Satellite reception terminals (GPS...)
- Instrumentation
- Wireless datacom networks
- Automated payment systems
- Video communications
- Other general electronics

Radiall introduced MMS and MMT connectors, dedicated to Surface Mount Technology (SMT), in the 1990s.

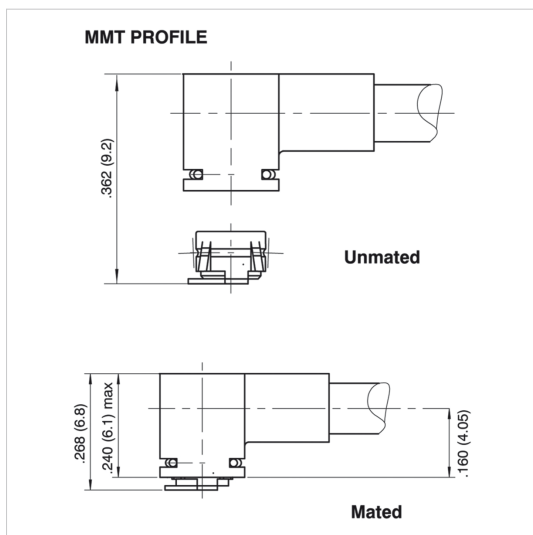
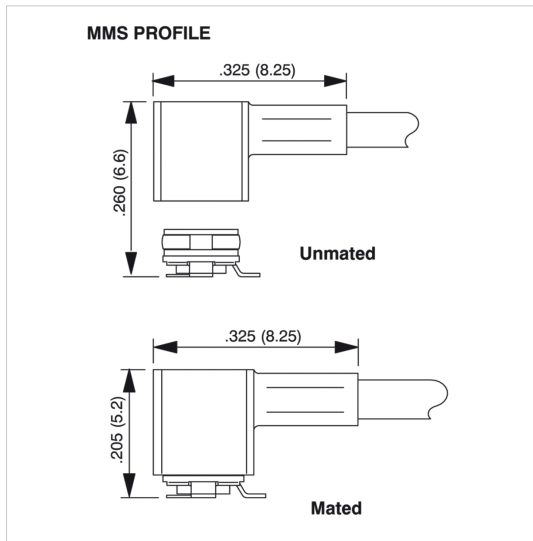
MMS and MMT series were the first coaxial connectors truly designed for SMT applications and adapted for automatic pick and place machines.

• 360° Cable Rotation

The MMS and MMT snap-on mating system ensures a correct positive connection each time and all connectors (plugs + receptacles) have a design which allows a 360° rotation of the pair when mated.

• MMS vs MMT

MMS and MMT connectors are dedicated to similar applications. The choice between these 2 series will be driven by mating life cycle required for the application. MMS is dedicated to applications which require only a few mating/unmating cycles. MMT provide stronger retention force while allowing more manipulation.



| | MMS | MMT |
|---------------------------|----------------------------------|----------------------------------|
| Durability (Mating Cycle) | 50 | 500 |
| Frequency Range | 50Ω DC - 6 GHz 75Ω DC - 1 GHz | 50Ω DC - 8 GHz 75Ω DC - 1 GHz |
| Mated Height | 5.2 mm | 6.8 mm |



MMS

CHARACTERISTICS

| TEST / CHARACTERISTICS | TEST STANDARD | VALUES / REMARKS |
|------------------------|---------------|------------------|
|------------------------|---------------|------------------|

ELECTRICAL CHARACTERISTICS

| | | | |
|-------------------------------|-----------------------------|---|------------|
| Impedance | - | 50Ω | 75Ω |
| Frequency Range | - | DC - 6 GHz | DC - 1 GHz |
| Typical V.S.W.R. (Mated Pair) | IEC 1169-1 | 1.05 at 1 GHz 1.15 at 2.5 GHz 1.35 at 6 GHz | |
| Insertion Loss | IEC 1169-1 | 0.2 dB at 2 GHz | |
| RF Leakage (Mated Pair) | MIL STD 1344 Method 3008 | -50 dB at 500 MHz -45 dB at 1 GHz -40 dB at 2 GHz | |
| Outer Contact Resistance | NF-C 93050 (I = 40 mA peak) | 5 mΩ max | |
| Center Contact Resistance | NF-C 93050 (I = 40 mA peak) | 15 mΩ max | |
| Insulation Resistance | IEC 1169-1 | 500 MΩ min (under 250 V RMS) | |
| Working Voltage | - | 50 V RMS | |
| Testing Voltage (V RMS) | IEC 1169-1 | Ø 1 mm: 250 ; Ø 2 mm: 500 | |
| Maximum Admissible Power | - | 40 W at 1 GHz / 20 °C / V.S.W.R. = 1 | |

MECHANICAL CHARACTERISTICS

| | | |
|---------------------------|----------------------|--|
| Durability | IEC 1169-1 | 50 matings |
| Force to Engage | IEC 1169-1 | 7 N avg |
| Force to Disengage | IEC 1169-1 | 5.5 N avg |
| Shocks (Drop Test) | IEC 68-2-27 | 50 g/11 ms ; 3 shocks / axis / way |
| Random Vibrations | General Motors spec. | Sine waves 5 to 1000 Hz 3 to 30g - 1 H/axis |
| Bumps (Mechanical Shocks) | IEC 68-2-29 | 25 g/6 ms 1000 bumps / axis / way |
| Cable Retention Force | IEC 1169-1 | Ø 1 mm: 20 N ; Ø 2 mm: 35 N |
| Solderability | IEC 68-2-54 | Passed |

ENVIRONMENTAL CHARACTERISTICS

| | | |
|-------------------|----------|---|
| Temperature Range | - | -40 °C / +90 °C |
| Climatic Cycles | GAM T 13 | 48 H at 70 °C - 24 H at 40 °C / 93% -36 H at -25 °C |

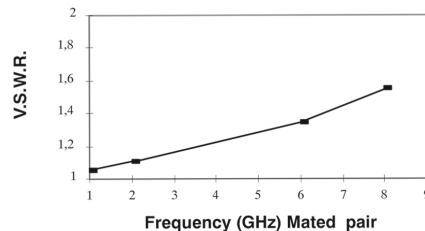
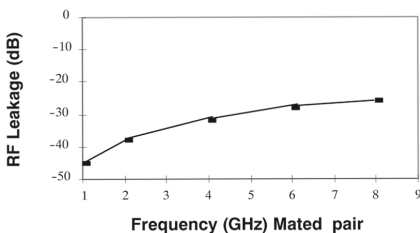
MATERIALS

| | |
|---------------------------------|-----------------------|
| Bodies Plugs/In-Series Adapters | Die Cast Zinc / Brass |
| Bodies Receptacles | Phosphor Bronze |
| Center Contact | Brass |
| • Male | Beryllium Copper |
| • Female | PTFE |
| Insulator | PTFE |

PLATING

| | |
|---------------------------------|--------|
| Bodies Plugs/In-Series Adapters | Nickel |
| Bodies Receptacles | Gold |
| Center Contact | Nickel |
| • Male | Gold |
| • Female | |

RF LEAKAGE AND V.S.W.R





MMT

CHARACTERISTICS

| TEST / CHARACTERISTICS | TEST STANDARD | VALUES / REMARKS |
|------------------------|---------------|------------------|
|------------------------|---------------|------------------|

ELECTRICAL CHARACTERISTICS

| | | | |
|-------------------------------|---------------------------|---|--------------------|
| Impedance | - | 50Ω | 75Ω |
| Frequency Range | - | DC - 8 GHz | DC - 1 GHz |
| Typical V.S.W.R. (Mated Pair) | IEC 1169-1 | 1.05 at 1 GHz 1.10 at 2.5 GHz 1.15 at 6 GHz | |
| Insertion Loss | IEC 1169-1 | ≤ 0.2 √ F (GHz) | |
| RF Leakage (Mated Pair) | IEC 1726 | -42 dB at 500 MHz -38 dB at 1 GHz -30 dB at 3 GHz | |
| Outer Contact Resistance | IEC 1169-1 (I=40 mA eff.) | Initial: 2.5 mΩ max | Final: 12.5 mΩ max |
| Center Contact Resistance | IEC 1169-1 (I=40 mA eff.) | Initial: 5 mΩ max | Final: 15 mΩ max |
| Insulation Resistance | IEC 1169-1 | ≥ 5000 MΩ under 500 Vcc | |
| Working Voltage | - | 170 V eff. | |
| Testing Voltage | IEC 1169-1 | 500 V eff. | |
| Maximum Admissible Power | - | 23 W at 1.8 GHz / 40 °C / V.S.W.R. = 1.1 | |

MECHANICAL CHARACTERISTICS

| | | | |
|---------------------------|-------------|-------------------------------|-----------|
| Durability | IEC 1169-1 | 500 matings | |
| Force to Engage/Disengage | IEC 1169-1 | Ins ≤ 18 N | Ext > 7 N |
| Shocks | IEC 68-2-27 | Passed | |
| Vibrations | IEC 68-2-6 | Passed | |
| Bump | IEC 68-2-29 | Passed | |
| Cable Retention Force | IEC 1169-1 | Ø 2 mm: 20 N ; Ø 2.6 mm: 60 N | |
| Solderability | IEC 68-2-29 | Passed | |

ENVIRONMENTAL CHARACTERISTICS

| | | | |
|-------------------|-----------------------|----------------|--|
| Temperature Range | - | 55 °C / 100 °C | |
| Damp Heat | IEC 68-23 | Passed | |
| Thermal Shocks | IEC 68-2-14 / Test NA | Passed | |

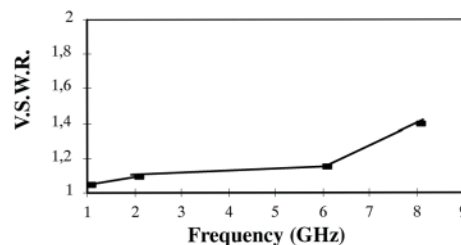
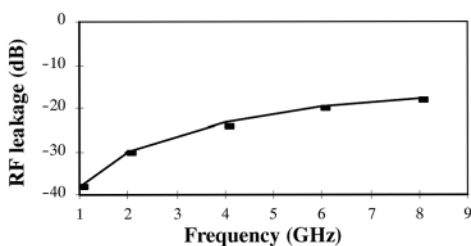
MATERIALS

| | | | |
|------------------------------|--------------|--|--|
| Plugs Body/In-Series Adaptor | Brass | | |
| Receptacles Body | CuSn9p | | |
| Plugs Center Contact | Cube2 | | |
| Receptacles Center Contact | Brass | | |
| Insulator | PTFE, Delrin | | |

PLATING

| | | | |
|---------------------------------|--------------|--|--|
| Bodies Plugs/In-Series Adapters | Nickel / BBR | | |
| Bodies Receptacles | Gold | | |
| Plugs Center Contact | Gold | | |
| Receptacles Center Contact | Gold | | |

RF LEAKAGE AND V.S.W.R





MMS/MMT

PLUGS, PIGTAILS AND CABLE ASSEMBLIES

RIGHT ANGLE PLUGS CRIMP TYPE FOR FLEXIBLE CABLES

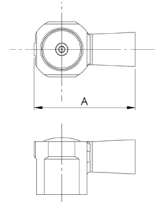
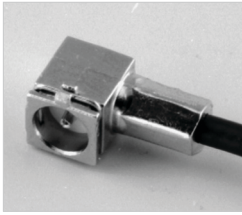


FIG. 1

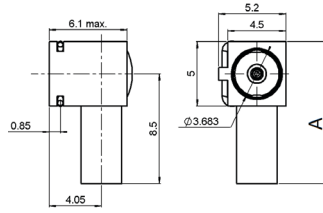


FIG. 2

| SERIES | CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | FIG. | IMP. (Ω) | DIMENSIONS A (MM) | CAPTIVE CENTER CONTACT | FINISH |
|--------|---------------|------------------|--------------|------|----------|-------------------|------------------------|--------|
| MMS | RG178 / RG196 | 2/50/S | R209 353 000 | 1 | 50 | 8.25 | Yes | Nickel |
| | | 1/50/S | R209 351 020 | | | 7.2 | | |
| MMT | RG178 / RG196 | 2/50/S | R210 160 020 | 2 | 50 | 11 | | |
| | | RG174 / RG316 | R210 157 010 | | | 10 | | |

PIGTAILS

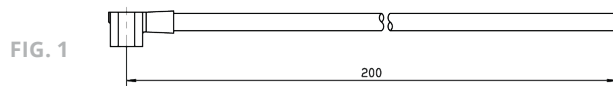
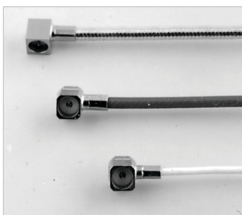


FIG. 1

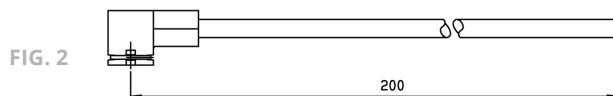


FIG. 2

| SERIES | CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | FIG. | COMPOSITION |
|--------|---------------|------------------|--------------|------|-----------------------------|
| MMS | RG178 / RG196 | 2/50/S | R285 001 021 | 1 | R209 353 000 + C291 145 007 |
| MMT | RG178 / RG196 | 2/50/S | R284 008 001 | 2 | R210 160 020 + C291 145 007 |
| | RG174 / RG316 | 2.6/50/S | R284 008 004 | | R210 157 010 + C291 150 000 |

CABLE ASSEMBLIES

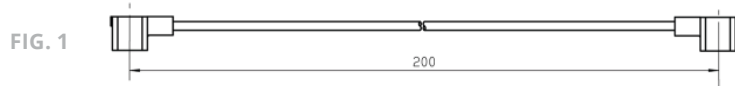
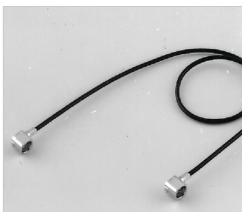


FIG. 1

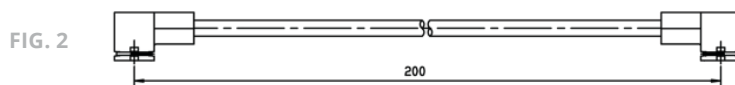


FIG. 2

| SERIES | CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | FIG. | COMPOSITION |
|--------|---------------|------------------|--------------|------|--|
| MMS | - | 1/50/S | R285 004 001 | 1 | R209 351 020 + R291 050 066 + R209 351 020 |
| | RG178 / RG196 | 2/50/S | R285 004 221 | | R209 353 000 + C291 145 007 + R209 353 000 |
| MMT | RG174 / RG316 | 2/50/S | R285 011 221 | 2 | R210 160 020 + C291 145 007 + R210 160 020 |

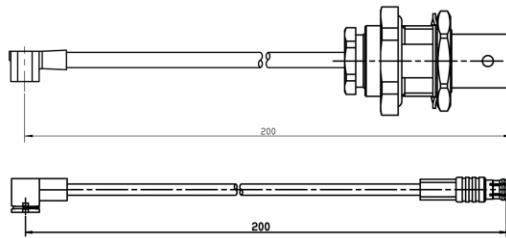
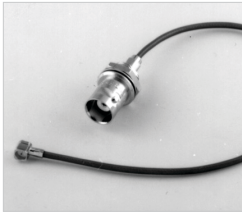
All dimensions are given in mm.



MMS/MMT

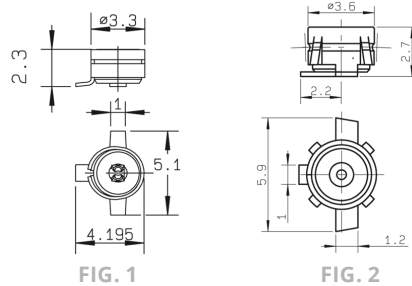
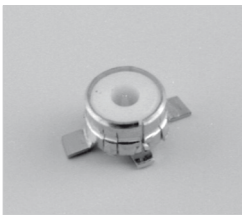
CABLE ASSEMBLIES, RECEPTACLES AND ADAPTERS

CUSTOM CABLE ASSEMBLIES



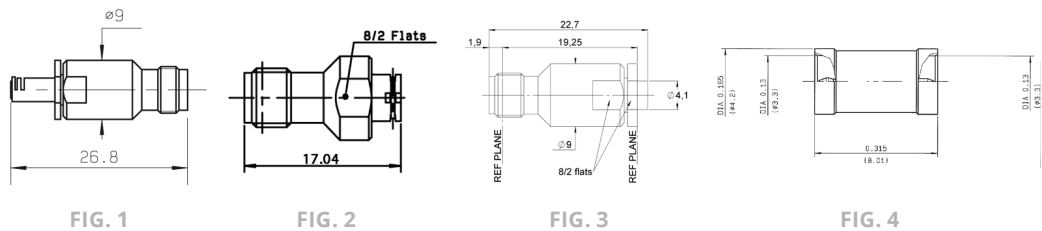
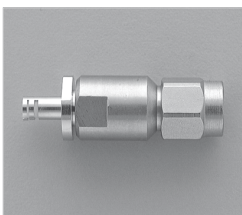
Contact us for all your cable assembly needs.

SMT RECEPTACLES



| SERIES | PART NUMBER | FIG. | IMP. (Ω) | CENTER CONTACT FINISH | FINISH | PACKAGING | REEL DIA. |
|--------|--------------|------|----------|-----------------------|--------|-------------------------|-----------|
| MMS | R209 408 012 | 1 | 50 | Gold | Gold | Tape & Reel 100 pieces | 180 |
| | R209 408 052 | | | | | Tape & Reel 500 pieces | 180 |
| | R209 408 302 | | | | | Tape & Reel 3000 pieces | 330 |
| MMT | R210 408 012 | 2 | | | | Tape & Reel 100 pieces | 180 |
| | R210 408 052 | | | | | Tape & Reel 500 pieces | 180 |
| | R210 408 302 | | | | | Tape & Reel 3000 pieces | 330 |

ADAPTERS



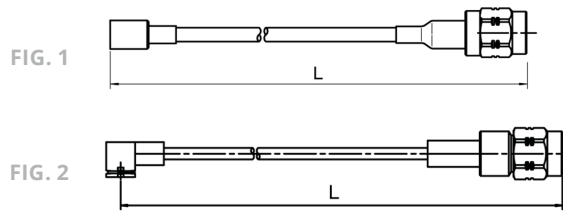
| SERIES | PART NUMBER | FIG. | TYPE | FINISH |
|--------|--------------|------|-------------------------|----------------------------|
| MMS | R191 975 791 | 1 | MMS Female / SMA Female | Passivated Stainless Steel |
| | R191 975 781 | - | MMS Male / SMA Female | |
| | R209 703 070 | 3 | MMS Male / MMS Male | Ni |
| MMT | R191 394 027 | 2 | MMT Female / SMA Female | BBR |



MMS/MMT

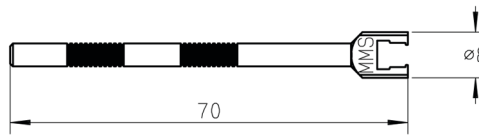
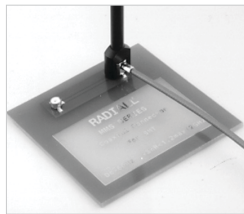
MEASUREMENT CABLE ASSEMBLIES AND TOOLING

MEASUREMENT CABLE ASSEMBLIES



| SERIES | CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | FIG. | COMPOSITION | LENGTH L (MM) |
|--------------------|---------------|------------------|--------------|------|--|---------------|
| MMS ^[1] | RG178 / RG196 | 2/50/S | R284 007 013 | 1 | R209 080 500 + C291 145 007 + R124 069 120 | 150 |
| MMT | RD316 | 2.6/50/D | R284 024 071 | 2 | R210 158 010 + C291 185 067 + R124 072 220 | 200 |

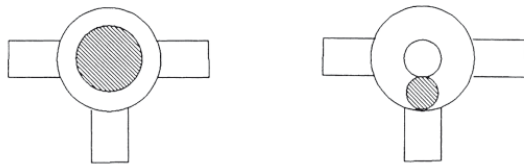
EXTRACTION TOOL ^[2]



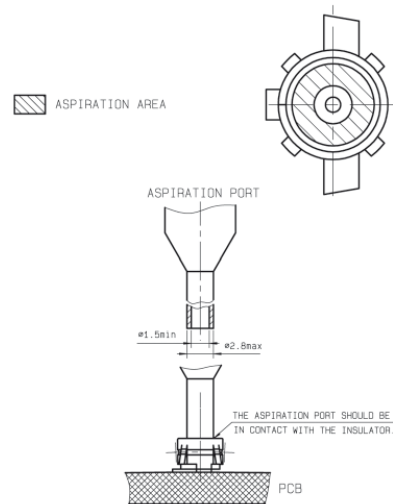
| SERIES | PART NUMBER |
|--------|--------------|
| MMS | R282 868 100 |
| MMT | R282 868 040 |

PROCEDURE FOR USE OF SMT NOZZLE FOR RECEPTACLE

Ø OF NOZZLE > 1.2 MM
SUCTION WITH THE CENTRAL CONTACT HOLE.



Ø OF NOZZLE < 1.2 MM
SUCTION WITH INSULATOR.



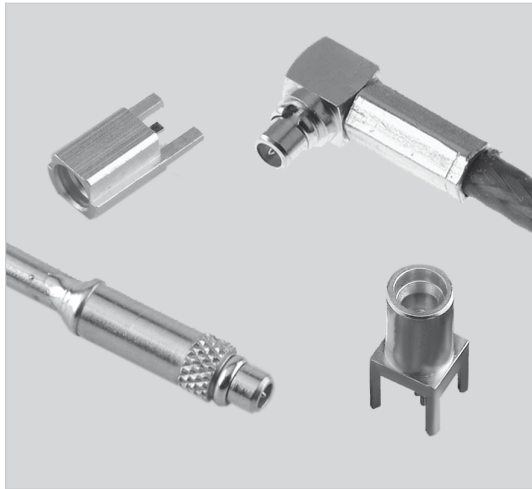
Notes

- Both cable assemblies are equipped with a straight MMS plug with a sliding interface to allow 500 matings and a SMA connector.
- Materials and finish; black anodized aluminium. The anodization allows the electric insulation and protects from the oxidization.



MMCX

INTRODUCTION



| | |
|-----|------------|
| 50Ω | DC - 6 GHz |
|-----|------------|

GENERAL

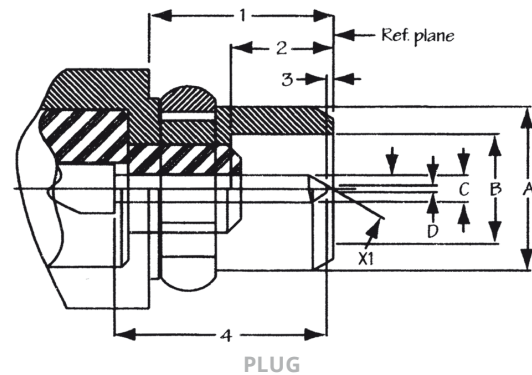
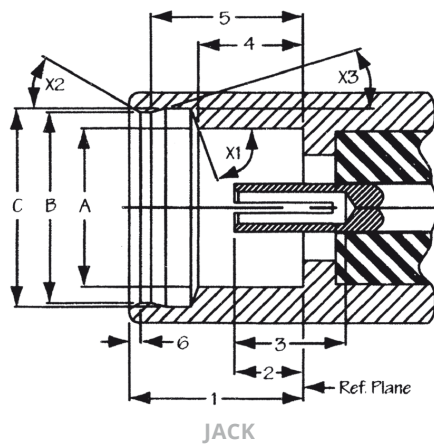
- Subminiature coaxial connectors
- Push-pull snap-on mating
- Complies with specification CECC 22000

APPLICATIONS

- Wireless telecom
- PCMCIA cards
- RF test ports
- Medical

MMCX series is dedicated for wire to PCB connection where low space above the PCB is available (less than 2.1 mm). MMCX is adapted to high volume applications and Pick & Place manufacturing processes.

INTERFACE



| LETTER | MM | | INCH | |
|--------|------|------|------|------|
| | MIN | MAX | MIN | MAX |
| 1 | 2.60 | - | .102 | - |
| 2 | 0.90 | 1.20 | .035 | .047 |
| 3 | 1.40 | - | .055 | - |
| 4 | 1.57 | 1.63 | .062 | .064 |
| 5 | 2.30 | 2.34 | .091 | .092 |
| 6 | - | 0.23 | - | .009 |
| A | 2.41 | - | .095 | - |
| B | 2.88 | 2.90 | .113 | .114 |
| C | 3.00 | 3.04 | .118 | .120 |
| X1 | 68° | 72° | - | - |
| X2 | 28° | 32° | - | - |
| X3 | 13° | 17° | - | - |

| LETTER | MM | | INCH | |
|--------|------|------|------|------|
| | MIN | MAX | MIN | MAX |
| 1 | 2.70 | - | .106 | - |
| 2 | 1.45 | - | .057 | - |
| 3 | 0 | 0.25 | - | .010 |
| A | 2.40 | - | .095 | - |
| B | 1.58 | 1.62 | .062 | .064 |
| C | 0.38 | 0.42 | .015 | .017 |
| D | - | 0.20 | - | .008 |
| X1 | 29° | 31° | - | - |



MMCX

CHARACTERISTICS

| TEST / CHARACTERISTICS | TEST STANDARD | VALUES / REMARKS |
|------------------------|---------------|------------------|
|------------------------|---------------|------------------|

ELECTRICAL CHARACTERISTICS

| | | |
|--|------------------|---|
| Impedance | - | 50Ω |
| Frequency Range | - | DC - 6 GHz |
| V.S.W.R. | CECC 22000 4.4.1 | Edge Card SMT: 1.40 max Cabled: 1.35 max |
| Dielectric Withstanding Voltage (At Sea Level) | CECC 22000 4.4.5 | 500 V RMS 50 Hz |
| Insulation Resistance | CECC 22000 4.4.4 | 1000 MΩ min |

MECHANICAL CHARACTERISTICS

| | | |
|---------------------|------------------|------------------------|
| Engagement Force | CECC 22000 4.5.4 | 3.5 lbs max |
| Disengagement Force | CECC 22000 4.5.4 | 1.4 lbs to 3.4 lbs max |
| Contact Captivation | CECC 22000 4.5.2 | 2.3 lbs min |
| Durability (Mating) | CECC 22000 4.7.1 | 500 cycles min |

ENVIRONMENTAL CHARACTERISTICS

| | | |
|-------------------|------------------|------------------|
| Temperature Range | - | -55 °C / +155 °C |
| Temperature Shock | CECC 22000 4.6.7 | Compliant |
| Vibration | CECC 22000 4.6.3 | Compliant |

MATERIALS AND PLATING

| | Material | Plating |
|--------------------------------------|---------------------------|---------|
| Bodies | Brass | Gold |
| Center Contact • Male • Female | Brass Beryllium Copper | Gold |
| Insulator | PTFE | - |

These characteristics are typical and may not apply to all connectors.

CHARACTERISTICS ECO MMCX

| TEST / CHARACTERISTICS | VALUES / REMARKS |
|------------------------|------------------|
|------------------------|------------------|

ELECTRICAL AND MECHANICAL CHARACTERISTICS

| | |
|-------------------|--------------------|
| Impedance | 50Ω |
| Frequency Range | DC - 3 GHz |
| Typical VSWR | 1.35 at 3 GHz |
| Temperature Range | -40 °C to + 100 °C |
| Mating Cycles | 100 Mating Cycles |

MATERIALS AND PLATING

| | Material | Plating |
|-----------------------|----------------------|---------|
| Connector Body | Brass | Gold |
| Insulator | PTFE / Polypropylene | - |
| Female Center Contact | Beryllium Copper | Gold |
| Outer Contact | Brass | - |

PACKAGING

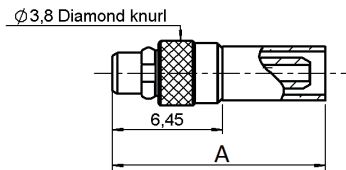
| | |
|-----------|--|
| Packaging | 100 Pieces Bulk 500 Pieces Reel 1500 Pieces Reel Unit Packaging |
|-----------|--|



MMCX

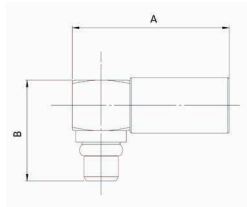
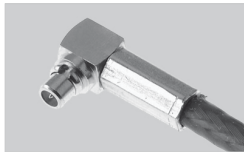
PLUGS AND RECEPTACLES

STRAIGHT PLUGS



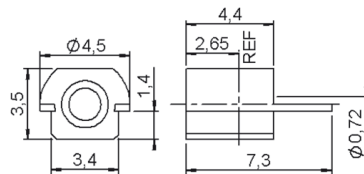
| CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | DIMENSIONS A (MM) | PACKAGING | NOTE |
|---------------|------------------|--------------|-------------------|-----------|-----------------|
| RG178 / RG196 | 2/50/S | R110 081 020 | 12.45 | 100 | Full Crimp Type |
| RG174 / RG176 | 2.6/50/S | R110 083 120 | 13.35 | | |

RIGHT ANGLE PLUGS



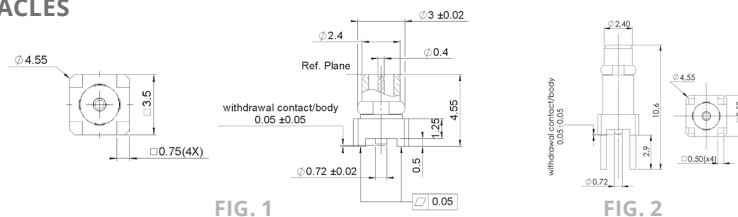
| CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | DIMENSIONS (MM) | | PACKAGING | NOTE |
|---------------|------------------|---------------|-----------------|-----|-----------|-------------|
| | | | A | B | | |
| RG178 / RG196 | 2/50/S | R110 170 100 | 10.9 | 7 | 100 | - |
| | | R110A 170 100 | 11 | 9.1 | 1000 | ECO Version |
| RG174 / RG316 | 2.6/50/S | R110 172 100 | 10.9 | 7 | 100 | - |
| | | R110A 172 100 | 12.5 | 8 | 1000 | ECO Version |
| RG405 | .085" | R110 153 000 | 7 | 7 | 100 | Solder Type |

PCB EDGE CARD RECEPTACLES



| PART NUMBER | GENDER | ASSEMBLY INSTRUCTIONS | PACKAGING | NOTE |
|---------------|--------|-----------------------|----------------------------|-------------|
| R110 422 100 | Jack | M03 | 100 | SMT |
| R110A 422 830 | | | Tape & Reel of 1500 Pieces | ECO Version |

STRAIGHT PLUG RECEPTACLES



| PART NUMBER | FIG. | ASSEMBLY INSTRUCTIONS | PANEL DRILLING | PACKAGING | NOTE |
|--------------|------|-----------------------|----------------|---------------------------|------|
| R110 434 100 | 2 | - | P01 | 100 | PCB |
| R110 434 860 | 1 | M04 | - | Tape & Reel of 500 Pieces | SMT |

MMCX

RECEPTACLES AND IN SERIES ADAPTERS

STRAIGHT JACK RECEPTACLES

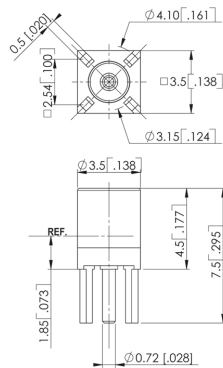
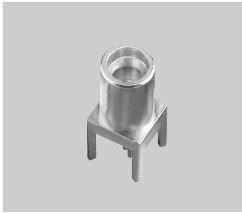


FIG. 1

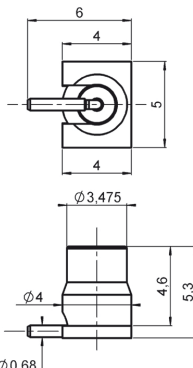


FIG. 2

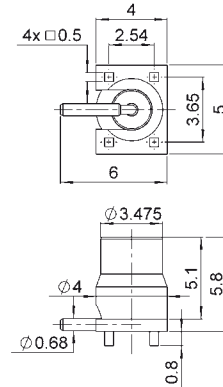


FIG. 3

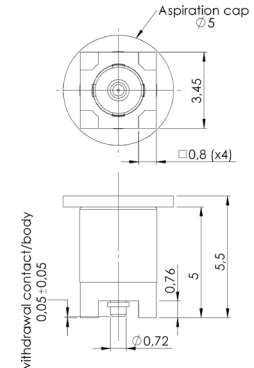
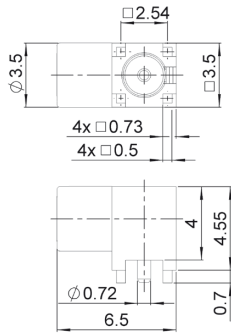


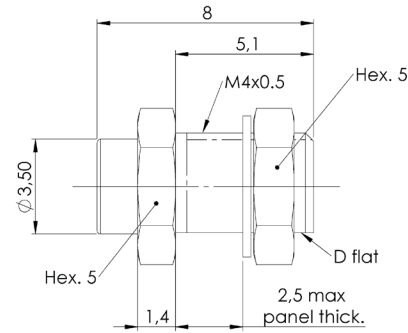
FIG. 4

| PART NUMBER | FIG. | PANEL DRILLING | ASSEMBLY INSTRUCTIONS | PACKAGING | FINISH |
|---------------|------|----------------|-----------------------|---------------------------|-------------|
| R110 426 000 | 1 | P01 | - | 100 | Solder Legs |
| R110A 426 000 | | | | | ECO Version |
| R110 427 810 | 4 | - | - | 500 | SMT |
| R110 427 820 | 2 | - | M01 | Tape & Reel of 500 Pieces | ECO Version |
| R110A 427 830 | 3 | - | M02 | | |

RIGHT ANGLE JACK RECEPTACLE



IN SERIES ADAPTER

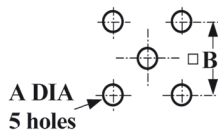


| PART NUMBER | PANEL DRILLING | PACKAGING |
|--------------|----------------|-----------|
| R110 665 860 | P02 | 500 |

| PART NUMBER | TYPE | FINISH |
|--------------|------------------|--------|
| R110 704 103 | Female to Female | Gold |

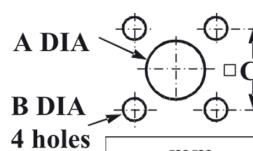
PANEL DRILLING

P01



| | mm | | inch | |
|---|------|------|------|------|
| | max. | min. | max. | min. |
| A | 0.85 | 0.75 | .033 | .030 |
| B | 2.56 | 2.52 | .101 | .099 |

P02



| | mm | |
|---|------|------|
| | Maxi | mini |
| A | 1.05 | 0.95 |
| B | 0.9 | 0.8 |
| C | 2.56 | 2.52 |

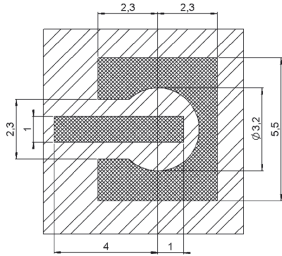


MMCX

ASSEMBLY INSTRUCTIONS

M01

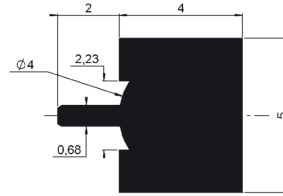
SOLDERING PATTERN



| |
|--------------------|
| PART NUMBER |
| R110 427 820 |

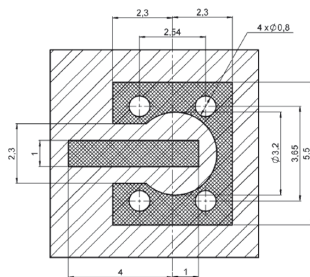
- Ground + varnish
- Lands for solder paste

VIDEO SHADOWS



M02

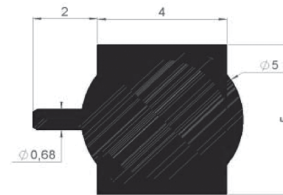
SOLDERING PATTERN



| |
|--------------------|
| PART NUMBER |
| R110A 427 830 |

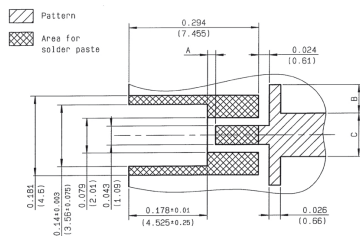
- Metal + varnish
- Ground + varnish
- Pads to solder
- Lands for solder paste

VIDEO SHADOWS



M03

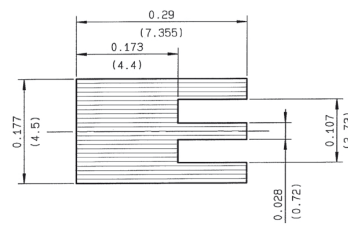
SOLDERING PATTERN



| |
|--------------------|
| PART NUMBER |
| R110 422 100 |
| R110A 422 830 |

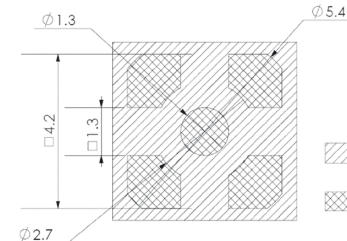
| PCB THICKNESS | A | B | C |
|---------------|--------------|-------------|-------------|
| 0.031 (0.79) | 0.039 (0.99) | - | 0.095 (1.4) |
| 0.039 (0.99) | 0.035 (0.89) | 0.012 (0.3) | 0.071 (1.8) |
| 0.063 (1.6) | 0.016 (0.41) | 0.063 (1.6) | 0.11 (2.79) |

VIDEO SHADOWS



M04

SOLDERING PATTERN



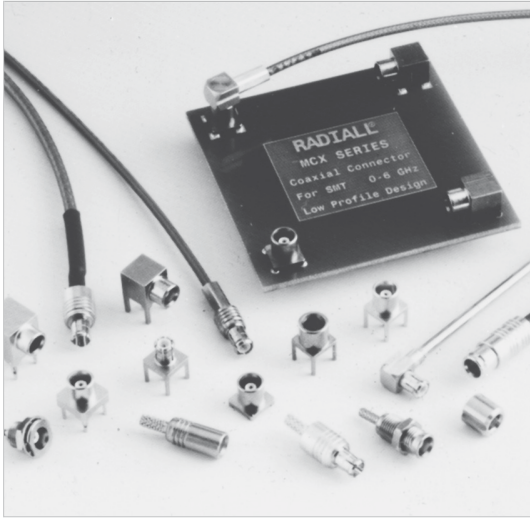
| |
|--------------------|
| PART NUMBER |
| R110 434 860 |

- Pattern
- Land for solder paste



MCX

INTRODUCTION



| | |
|-----------|------------|
| 50Ω - 75Ω | DC - 6 GHz |
|-----------|------------|

GENERAL

- Subminiature coaxial connectors
- Push-pull snap-on mating
- Complies with specification CECC 22220
- CEI standard 1169-36

APPLICATIONS

50Ω MODELS

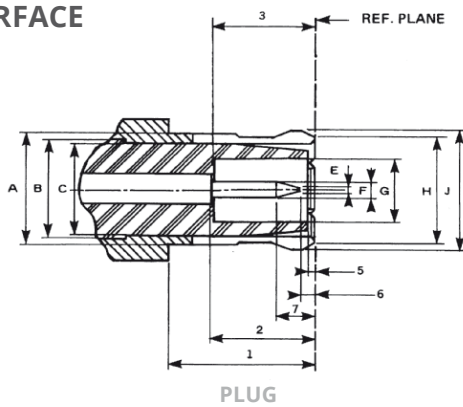
- Wireless communications
- Civil and military radio-telecommunication equipment

75Ω MODELS

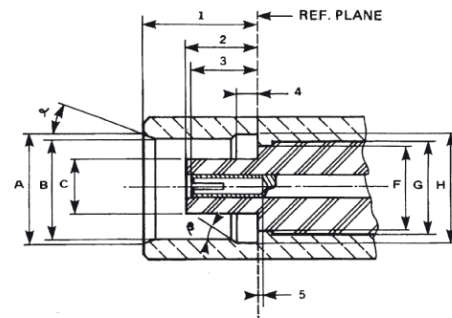
- Video communication
- Television broadcasting

The MCX series utilizes the SMB series electrical line and features a particularly simple, compact and robust interface. The MCX series is 30% smaller than the SMB. The MCX series helps to miniaturize equipment. It lowers wiring connection costs through its full crimp and solder crimp versions as the center contact of the straight models can be either crimped or soldered. It optimizes PCB layouts with its range of models for PCBs including surface mount and press-fit receptacles.

INTERFACE



PLUG



JACK

| LETTER | MM | | INCH | |
|--------|----------|------|----------|------|
| | MIN | MAX | MIN | MAX |
| 1 | 4.15 | - | .163 | - |
| 2 | 2.80 | 3.20 | .110 | .126 |
| 3 | 2.80 | - | .110 | - |
| 5 | 0 | 0.30 | 0 | .012 |
| 6 | 0.15 | - | .006 | - |
| 7 | - | 1.20 | - | .047 |
| A | - | 2.40 | - | .134 |
| B | 3.05 NOM | | .120 NOM | |
| C | - | 3.00 | - | .118 |
| E | - | 0.25 | - | .010 |
| F | 0.48 | 0.53 | .019 | .021 |
| G | 2.00 | - | .079 | - |
| H | - | 3.60 | - | .142 |
| J | - | 3.80 | - | .150 |

| LETTER | MM | | INCH | |
|--------|----------|------|----------|------|
| | MIN | MAX | MIN | MAX |
| 1 | 4.00 | 4.12 | .157 | .162 |
| 2 | 2.60 | 2.80 | .102 | .110 |
| 3 | 2.30 | 2.80 | .090 | .110 |
| 4 | 0.75 | 0.85 | .029 | .033 |
| 5 | 0 | - | 0 | - |
| a | 18° | 22° | 18° | 22° |
| β | 43° | 47° | 43° | 47° |
| A | 3.80 | - | .150 | - |
| B | 3.42 | 3.48 | .135 | .137 |
| C | - | 1.98 | - | .078 |
| F | - | 3.00 | - | .118 |
| G | 3.05 NOM | | 3.05 NOM | |
| H | 3.60 | 3.75 | .142 | .148 |



MCX

CHARACTERISTICS

| TEST / CHARACTERISTICS | VALUES / REMARKS | | |
|---|---|---|---------------------------------------|
| ELECTRICAL CHARACTERISTICS | | | |
| Impedance | 50Ω and 75Ω | | |
| Frequency Range | DC - 6 GHz | | |
| Typical V.S.W.R. • Straight styles: .085 2.6/50/S • Sight angle styles: .085 2.6/50/S | 1 GHz 1.04 1.06 1.03 1.04 | 2.5 GHz 1.08 1.09 1.06 1.07 | 6 GHz 1.13 1.12 1.10 1.10 |
| Insulation Resistance | 1,000 MΩ | | |
| Contact Resistance (mΩ) • Center Contact • Outer Contact | Initial ≤ 5 ≤ 2.5 | After Environment ≤ 15 ≤ 7.5 | |
| Voltage Rating (V.R.M.R.) • Cable RG 196/U - RG 188A/U - .047" • Ø 2.6 double screen • RG 405/U - .085 | At Sea Level 170 V rms max 335 V rms max 250 V rms max | At 70,000 Ft 45 V rms max 85 V rms max 65 V rms max | |
| Dielectric Withstanding Voltage • Cable RG 196/U - RG 188A/U - .047" • Ø 2.6 double screen • RG 405/U - .085 | At Sea Level 500 V rms max 750 V rms max 750 V rms max | At 70,000 Ft 100 V rms max 100 V rms max 100 V rms max | |
| Power | P = 120W at 1.8 GHz, T = 40°C at sea level, VSWR = 1.1 for a straight plug MCX for [2.6/50/D cable | | |

MECHANICAL CHARACTERISTICS

| | | | |
|---|---|--|--|
| Mechanical Endurance | 500 Matings | | |
| Engagement Separation Force | ≤ 14.2 lbs - 63 N max ≥ 1.8 Lbs - 8N ≤ 4.5 lbs 20 N | | |
| Cable Retention Force • RG 196A/U • RG 188A/U • Ø 2.6/50 Ω double screen .047" • RG 405/U-.085 | ≥ 7.2 lbs - 32 N ≥ 11.9 lbs - 53 N ≥ 24.1 lbs - 107 N ≥ 9.7 lbs - 43 N ≥ 34.9 lbs - 155 N | | |
| Contact Captivation | Axial Force 2.25 Lbs 10 N | | |

ENVIRONMENTAL CHARACTERISTICS

| | | | |
|------------------------|-----------------------------|--|--|
| Operating Temperature | -55 °C +155 °C | | |
| Temperature Cycling | CECC 22220 Paragraph 4-6-5 | | |
| Thermal Shocks | CECC 22220 Paragraph 4-6-7 | | |
| High Temperature Test | CECC 22220 Paragraph 4-7-2 | | |
| Corrosion (Salt Spray) | CECC 22220 Paragraph 4-6-10 | | |
| Vibration | CECC 22220 Paragraph 4-6-3 | | |

MATERIALS AND PLATING

| | Material | Plating |
|--------------------------|------------------|---------------------|
| Bodies and Male Contacts | Brass | Gold / BBR (bodies) |
| Female Center Contact | Beryllium Copper | Gold |
| Ferrules | Brass | - |
| Insulators | PTFE | - |

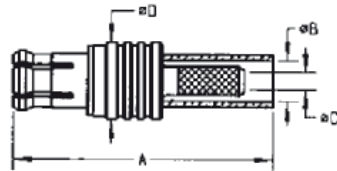
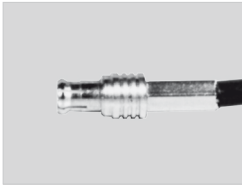
All dimensions are given in mm.
Standard packaging = 100 pieces



MCX

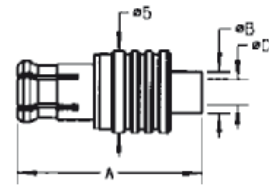
PLUGS

STRAIGHT PLUGS, FULL CRIMP TYPE, FOR FLEXIBLE CABLES



| CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | IMP. (Ω) | DIMENSIONS (MM) | | | | CAPTIVE CENTER CONTACT | FINISH |
|---------------|------------------|--------------|----------|-----------------|------|------|-----|------------------------|--------|
| | | | | A | B | C | D | | |
| RG178 / RG196 | 2/50/S | R113 081 000 | 50 | 16.1 | 2.55 | 1.1 | 5 | No | Gold |
| RG174 / RG316 | 2.6/50/S | R113 082 000 | | 16.1 | 2.95 | 1.65 | | | |
| RD316 | 2.6/50/D | R113 083 000 | | 16.2 | 3.25 | 1.65 | | | |
| RG179 | 2.6/75/S | R213 082 007 | 75 | 18.2 | 2.95 | 1.7 | 5.8 | Yes | BBR |
| RD179 | 2.6/75/D | R213 083 007 | | 18.3 | 3.25 | | | | |

STRAIGHT PLUGS, SOLDER TYPE, FOR SEMI-RIGID CABLES



| CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | IMP. (Ω) | DIMENSIONS (MM) | | | CAPTIVE CENTER CONTACT | FINISH |
|-------------|------------------|--------------|----------|-----------------|-----|------|------------------------|--------|
| | | | | A | B | C | | |
| RG405 | .085" | R113 053 000 | 50 | 11.3 | 3 | 2.25 | No | Gold |
| UT085-75 | .085"/75 | R213 053 037 | 75 | 14.1 | 3.1 | 2.3 | | BBR |

RIGHT ANGLE PLUGS, CRIMP TYPE, FOR FLEXIBLE CABLES (CAPTIVE CENTER CONTACT)

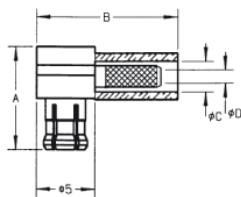
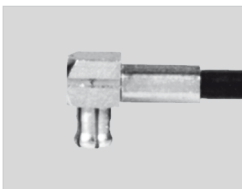


FIG. 1

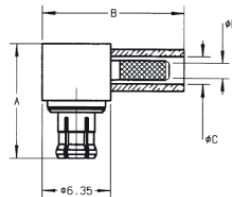


FIG. 2

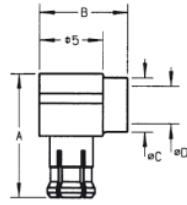
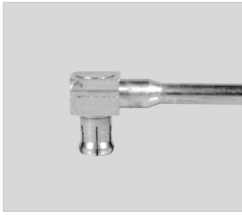
| CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | FIG. | IMP. (Ω) | DIMENSIONS (MM) | | | | FINISH |
|---------------|------------------|--------------|------|----------|-----------------|------|------|------|--------|
| | | | | | A | B | C | D | |
| RG178 / RG196 | 2/50/S | R113 181 000 | 1 | 50 | 8.6 | 11.9 | 2.55 | 1.1 | Gold |
| RG174 / RG316 | 2.6/50/S | R113 182 000 | | | | | 2.95 | 1.65 | |
| | | R113 182 020 | | | 8.2 | 11.1 | 3.1 | 1.7 | Gold |
| RD316 | 2.6/50/D | R113 183 000 | | | 8.6 | 11.9 | 3.25 | 1.65 | |
| RG179 | 2.6/75/S | R213 182 007 | 2 | 75 | 10.6 | 13.3 | 2.95 | 1.7 | BBR |
| RD179 | 2.6/75/D | R213 183 007 | | | | | 3.25 | | |



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PLUGS AND JACKS

RIGHT ANGLE PLUGS, SOLDER TYPE (CAPTIVE CENTER CONTACT)



| CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | IMP. (Ω) | DIMENSIONS (MM) | | | | FINISH |
|-----------------------|---------------------------|--------------|----------|-----------------|---|-----|------|--------|
| | | | | A | B | C | D | |
| .047" Semi-Rigid | .047" | R113 151 000 | 50 | 8.6 | 7 | 2.1 | 1.25 | Gold |
| RG405 | .085" | R113 153 000 | | | | 3.1 | 2.25 | |
| RG178 / RG174 / RG405 | 2/50/S - 2.6/50/S - .085" | R113 161 000 | | 8 | 8 | 3.0 | 2.35 | |

STRAIGHT JACKS, FOR FLEXIBLE AND SEMI-RIGID CABLES

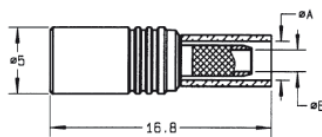


FIG. 1

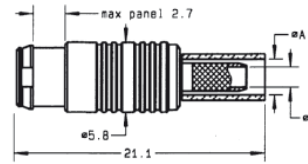


FIG. 2

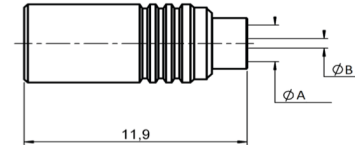


FIG. 3

| CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | FIG. | IMP. (Ω) | DIMENSIONS (MM) | | CAPTIVE CENTER CONTACT | PANEL DRILLING | FINISH |
|---------------|------------------|--------------|------|----------|-----------------|------|------------------------|----------------|---------------------|
| | | | | | A | B | | | |
| RG174 / RG316 | 2.6/50/S | R113 240 000 | 1 | 50 | 2.95 | 1.65 | Yes | - | Gold |
| RG179 | 2.6/75/S | R213 238 007 | 2 | 75 | 2.95 | 1.7 | | P01 | Clip-On Panel Mount |
| RG405 | .085" | R113 223 000 | 3 | 50 | 2.25 | 0.6 | No | - | Gold |

STRAIGHT BULKHEAD JACKS, FOR FLEXIBLE AND SEMI-RIGID CABLES

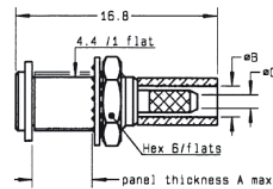


FIG. 1

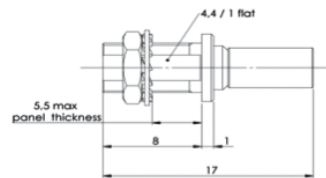


FIG. 2

| CABLE GROUP | CABLE GROUP DIA. | PART NUMBER | IMP. (Ω) | DIMENSIONS (MM) | | | CAPTIVE CENTER CONTACT | PANEL DRILLING | FINISH |
|---------------|------------------|--------------|----------|-----------------|------|------|------------------------|----------------|--------|
| | | | | A | B | C | | | |
| RG174 / RG316 | 2.6/50/S | R113 310 000 | 50 | 5 | 2.95 | 1.65 | Yes | P02 | Gold |
| RG178 / RG196 | 2/50/S | R113 306 000 | | | 2.55 | 1.1 | No | | |
| RG405 | .085" | R113 303 000 | | | 2.25 | 0.6 | | | |
| RG174 / RG196 | 2.6/50/S | R113 312 000 | | | 2.95 | 1.65 | Yes | | |



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RECEPTACLES

STRAIGHT FEMALE PANEL RECEPTACLES (CAPTIVE CENTER CONTACT)

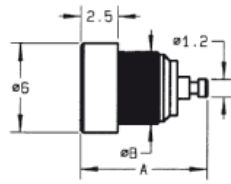


FIG. 1

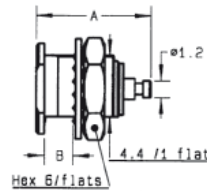
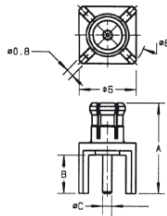


FIG. 2

| PART NUMBER | FIG. | IMP. (Ω) | DIMENSIONS (MM) | | PANEL DRILLING | FINISH | NOTE |
|--------------|------|----------|-----------------|-----|----------------|--------|----------------------|
| | | | A | B | | | |
| R113 402 220 | 1 | 50 | 8.7 | 4.8 | P03 | BBR | Press-In Mount |
| R113 553 000 | 2 | | 8.65 | 2.5 | P02 | Gold | Recessed Front Mount |

STRAIGHT MALE PCB RECEPTACLES (CAPTIVE CENTER CONTACT)



| PART NUMBER | IMP. (Ω) | DIMENSIONS (MM) | | | PANEL DRILLING | FINISH |
|--------------|----------|-----------------|-----|------|----------------|--------|
| | | A | B | C | | |
| R113 425 000 | 50 | 9.65 | 4.1 | 0.98 | P04 | Gold |

STRAIGHT FEMALE PCB RECEPTACLES (CAPTIVE CENTER CONTACT)

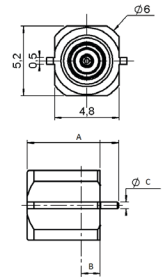
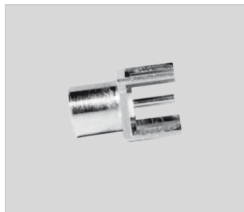


FIG. 1

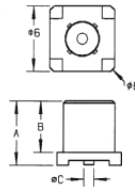


FIG. 2

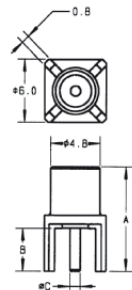


FIG. 3

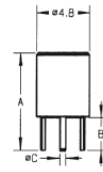


FIG. 4

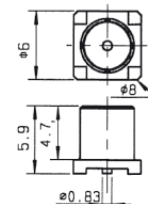


FIG. 5

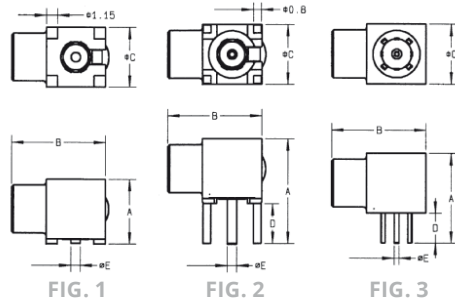
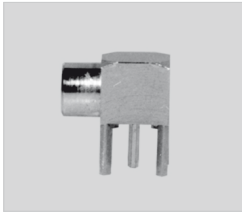
| PART NUMBER | FIG. | IMP. (Ω) | DIMENSIONS (MM) | | | ASSEMBLY INSTRUCTIONS | PANEL DRILLING | FINISH | NOTE | | | |
|--------------|------|----------|-----------------|-----|------|-----------------------|----------------|--------|------------------------------|------|------------------------------|---|
| | | | A | B | C | | | | | | | |
| R113 423 000 | 1 | 50 | 6.9 | 1.4 | 0.5 | M01 | - | Gold | SMT / Edge-Card | | | |
| R113 424 000 | 2 | | 5.9 | 4.7 | 0.96 | | | | - | - | SMT | |
| R113 424 010 | | | | | | | | | | | SMT / Tape & Reel 100 Pieces | |
| R113 424 020 | 3 | | 10 | 4.1 | 0.98 | - | P04 | - | - | | | |
| R113 426 000 | | | | | | | | | 8.44 | 2.54 | 0.98 | - |
| R113 426 130 | | | | | | | | | 9 | 3 | 0.5 | - |
| R113 427 000 | 4 | 75 | - | - | - | M01 | - | Gold | Space Saving on PCB | | | |
| R213 424 800 | 5 | | - | - | - | | | | SMT / Tape & Reel 100 Pieces | | | |
| R213 426 000 | 3 | | 10 | 4.1 | 0.71 | | | | - | - | | |



MCX

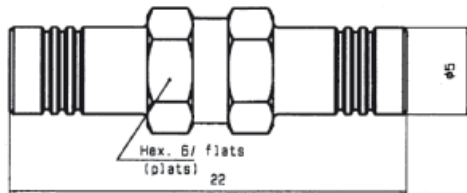
RECEPTACLES AND IN SERIES ADAPTERS

RIGHT ANGLE FEMALE PCB RECEPTACLES (CAPTIVE CENTER CONTACT)



| PART NUMBER | FIG. | IMP. (Ω) | DIMENSIONS (MM) | | | | | ASSEMBLY INSTRUCTIONS | PANEL DRILLING | FINISH | NOTE |
|--------------|------|-------------------|-----------------|-----|---|------|------|-----------------------|----------------------|--------|------------------------------|
| | | | A | B | C | D | E | | | | |
| R113 664 000 | 1 | 50 | 6.5 | 9.5 | 6 | - | 0.96 | M01 | - | Gold | SMT |
| R113 665 000 | 2 | | 10.5 | | | 4 | | - | BBR | - | |
| R113 665 020 | 2 | | 9 | 9.4 | | 3 | 0.5 | P05 | Space Saving Pattern | | |
| R113 666 000 | 3 | 75 | 6.5 | 9.5 | 6 | - | 0.83 | M01 | - | Gold | SMT / Tape & Reel 100 Pieces |
| R213 664 800 | 1 | | 10.5 | | | 4 | | 0.83 | - | P04 | - |
| R213 665 000 | 2 | | 10.5 | 4 | | 0.83 | - | P04 | - | | |

IN SERIES ADAPTER (FEMALE - FEMALE)



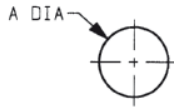
| PART NUMBER | IMP. (Ω) | FINISH |
|--------------|-------------------|--------|
| R113 704 000 | 50 | Gold |



MCX

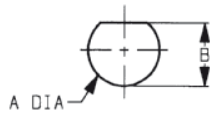
PANEL DRILLING

P01



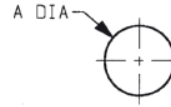
| A | MM | | INCH | |
|---|------|------|-------|-------|
| | maxi | mini | maxi | mini |
| A | 5 | 4.97 | 0.197 | 0.196 |

P02



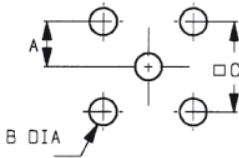
| | MM | | INCH | |
|---|------|------|-------|-------|
| | maxi | mini | maxi | mini |
| A | 5 | 4.9 | 0.197 | 0.19 |
| B | 4.58 | 4.46 | 0.18 | 0.176 |

P03



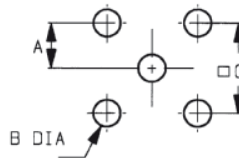
| A | MM | | INCH | |
|---|------|------|-------|-------|
| | maxi | mini | maxi | mini |
| A | 4.77 | 4.74 | 0.188 | 0.187 |

P04



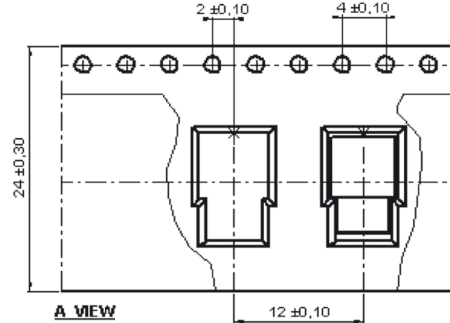
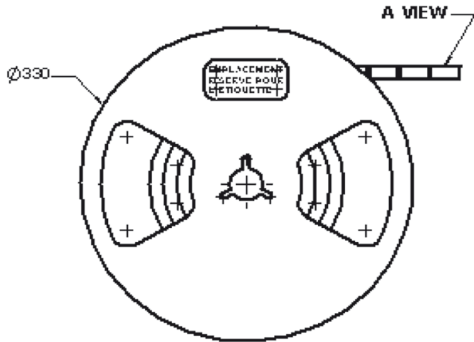
| | MM | | INCH | |
|---|------|------|-------|-------|
| | maxi | mini | maxi | mini |
| A | 2.56 | 2.52 | 0.101 | 0.099 |
| B | 1.4 | 1.3 | 0.055 | 0.051 |
| C | 5.13 | 5.03 | 0.202 | 0.198 |

P05



| | MM | | INCH | |
|---|------|------|------|------|
| | maxi | mini | maxi | mini |
| A | 1.30 | 1.24 | .051 | .049 |
| B | 0.89 | 0.79 | .035 | .031 |
| C | 2.59 | 2.49 | .102 | .098 |

PACKAGING



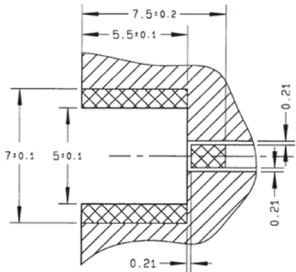


MCX

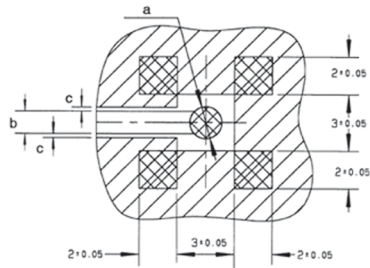
ASSEMBLY INSTRUCTIONS

M01

| PART NUMBER |
|--------------|
| R113 423 000 |



| PART NUMBER | a | b | c |
|--|-------------------------------------|-----|------|
| R113 424 000 R113 424 010 R113 424 020 | Ø 1.7 ^{+0.1} ₀ | 1.2 | 0.21 |
| R113A 424 020 R113 664 000 | | | |
| R113A 664 120 | | 1.2 | 0.21 |
| R213 424 800 | Ø 1.57 ^{+0.1} ₀ | 1 | 0.63 |



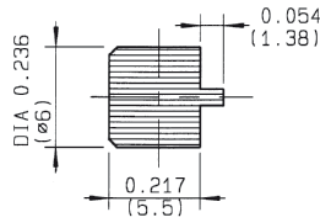
- Pattern
- Land for solder paste

COPLANAR LINE

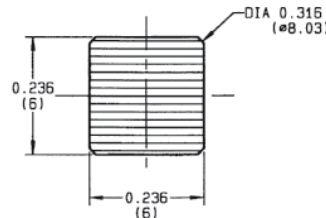
Pattern and signal are on the same side. Thickness of PCB: .063 (1.6 mm). The material of PCB is the epoxy resin of glass fabrics bacs (Er = 4.8). The solder resist should be printed.

VIDEO SHADOWS

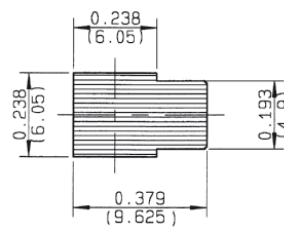
| PART NUMBER |
|--------------|
| R113 423 000 |



| PART NUMBER |
|---|
| R113 424 000 R113 424 020 R113 424 010 R113A 424 020 R213 424 800 |



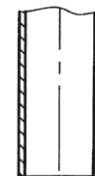
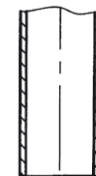
| PART NUMBER |
|--|
| R113 664 000 R213 644 800 R113A 664 120 |



Aspiration nozzle dimensions

MCX 50Ω

MCX 75Ω



DIA 0.112^{±0.002}
(ø2.85^{±0.05})
DIA 0.132^{±0.0012}
(ø3.35^{±0.03})

DIA 0.066
(ø1.675)
DIA 0.056
(ø1.425)