

# SMA PC Mount Index

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# SMA Connectors

Specifications



INCHES (MILLIMETERS)  
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

## ELECTRICAL RATINGS

**Impedance:** 50 ohms

**Frequency Range:**

|   |            |
|---|------------|
| Flexible cable connectors .....   | 0-12.4 GHz |
| Uncabled receptacles, RA semi-rigid and adapters .....                      | 0-18.0 GHz |
| Straight semi-rigid cable connectors and field replaceable connectors ..... | 0-26.5 GHz |

**VSWR:** (f = GHz)

|  | Straight          |                               |
|--|-------------------|-------------------------------|
|  | Cabled Connectors | Right Angle Cabled Connectors |
| RG-178 cable .....                                     | 1.20 + .025f      | 1.20 + .03f                   |
| RG-316 cable .....                                     | 1.15 + .02f       | 1.15 + .03f                   |
| RG-58 cable .....                                      | 1.15 + .01f       | 1.15 + .02f                   |
| RG-142 cable .....                                     | 1.15 + .01f       | 1.15 + .02f                   |
| .086 semi-rigid .....                                  | 1.07 + .008f      | 1.18 + .015f                  |
| .141 semi-rigid (w/contact) .....                      | 1.05 + .008f      | 1.15 + .015f                  |
| .141 semi-rigid (w/o contact) ..                       | 1.035 + .005f     |                               |
| Jack-bulkhead jack adapter and plug-plug adapter ..... | 1.05 + .01f       |                               |
| Jack-jack adapter and plug-jack adapter .....          | 1.05 + .005f      |                               |
| Uncabled receptacles .....                             | N/A               |                               |
| Field replaceable (see page 54) .....                  | N/A               |                               |

**Working Voltage:** (Vrms maximum)<sup>†</sup>

| Connectors for Cable Type   | Sea Level | 70K Feet |
|---|-----------|----------|
| RG-178 .....  | 170       | 45       |
| RG-316 .....  | 250       | 65       |
| RG-58, RG-142, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o contact ..... | 335       | 85       |
| .141 semi-rigid with contact and adapters .....   | 500       | 125      |

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)<sup>†</sup>

|  |      |
|--|------|
| Connectors for RG-178 .....  | 500  |
| Connectors for RG-316 .....  | 750  |
| Connectors for RG-58, RG-142, .086 semi-rigid, field replaceable, uncabled receptacles ..... | 1000 |
| Connectors for .141 semi-rigid with contact and adapters .....                               | 1500 |
| Connectors for .141 semi-rigid w/o contact .....   | N/A  |

**Corona Level:** (Volts minimum at 70,000 feet)<sup>†</sup>

|  |     |
|--|-----|
| Connectors for RG-178 .....  | 125 |
| Connectors for RG-316 .....  | 190 |
| Connectors for RG-58, RG-142, .086 semi-rigid, uncabled receptacles, .141 semi-rigid w/o contact ..... | 250 |
| Connectors for .141 semi-rigid with contact and adapters .....   | 375 |

**Insertion Loss:** (dB maximum)

|   |       |                                    |
|---|-------|------------------------------------|
| Straight flexible cable connectors and adapters .....   | 0.06  | $\sqrt{f}$ (GHz), tested at 6 GHz  |
| Right angle flexible cable connectors .....             | 0.015 | $\sqrt{f}$ (GHz), tested at 6 GHz  |
| Straight semi-rigid cable connectors with contact ..... | 0.03  | $\sqrt{f}$ (GHz), tested at 10 GHz |
| Right angle semi-rigid cable connectors .....           | 0.05  | $\sqrt{f}$ (GHz), tested at 10 GHz |
| Straight semi-rigid cable connectors w/o contact .....  | 0.03  | $\sqrt{f}$ (GHz), tested at 16 GHz |
| Uncabled receptacles, field replaceable .....           |       | N/A                                |

**Insulation Resistance:** 5000 megohms minimum

**Contact Resistance:** (milliohms maximum)

|  | Initial | After Environmental |
|--|---------|---------------------|
| Center contact (straight cabled connectors and uncabled receptacles) ..... | 3.0*    | 4.0*                |
| Center contact (right angle cabled connectors and adapters) .....          | 4.0     | 6.0                 |
| Field replaceable connectors .....   | 6.0     | 8.0                 |
| Outer contact (all connectors) .....                                       | 2.0     | N/A                 |
| Braid to body (gold plated connectors) .....                               | 0.5     | N/A                 |
| Braid to body (nickel plated connectors) .....                             | 5.0     | N/A                 |

\*N/A where the cable center conductor is used as a contact

**RF Leakage:** (dB minimum, tested at 2.5 GHz)

|   |        |
|---|--------|
| Flexible cable connectors, adapters and .141 semi-rigid connectors w/o contact .....                                | -60 dB |
| Field replaceable w/o EMI gasket .....  | -70 dB |
| .086 semi-rigid connectors and .141 semi-rigid connectors with contact, and field replaceable with EMI Gasket ..... | -90 dB |
| Two-way adapters .....  | -90 dB |
| Uncabled receptacles .....  | N/A    |

**RF High Potential Withstanding Voltage:** (Vrms minimum, tested at 4 and 7 MHz)<sup>†</sup>

|  |      |
|--|------|
| Connectors for RG-178 .....  | 335  |
| Connectors for RG-316 .....  | 500  |
| Connectors for RG-58, RG-142, .086 semi-rigid, .141 semi-rigid cable w/o contact, uncabled receptacles ..... | 670  |
| Connectors for .141 semi-rigid with contact and adapters .....   | 1000 |

## MECHANICAL RATINGS

**Engagement Design:** MIL-C-39012, Series SMA

**Engagement/Disengagement Force:** 2 inch-pounds maximum

**Mating Torque:** 7 to 10 inch-pounds

**Coupling Proof Torque:** 15 inch-pounds minimum

**Coupling Nut Retention:** 60 pounds minimum

**Contact Retention:**

- 6 lbs. minimum axial force (captivated contacts)
- 4 inch-ounce minimum torque (uncabled receptacles)

**Cable Retention:**

|                                      | Axial Force* (pounds) | Torque (in-oz) |
|--------------------------------------|-----------------------|----------------|
| Connectors for RG-178 .....          | 10                    | N/A            |
| Connectors for RG-316 .....          | 20                    | N/A            |
| Connectors for RG-58 .....           | 40                    | N/A            |
| Connectors for RG-142 .....          | 45                    | N/A            |
| Connectors for .086 semi-rigid ..... | 30                    | 16             |
| Connectors for .141 semi-rigid ..... | 60                    | 55             |

\*Or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

100 cycles minimum for .141 semi-rigid connectors w/o contact

## ENVIRONMENTAL RATINGS (Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** - 65°C to + 165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-202, Method 213, Condition I

**Vibration:** MIL-STD-202, Method 204, Condition D

**Moisture Resistance:** MIL-STD-202, Method 106

†Avoid user injury due to misapplication.

## MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626, gold plated\* per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Contacts:** Male - brass per QQ-B-626, gold plated per MIL-G-45204 .00003" min.

Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.

**Nut Retention Spring:** Beryllium copper per QQ-C-533. Unplated

**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 or Tefzel per ASTM D 3159

**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Crimp Sleeves:** Copper per WW-T-799 or brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

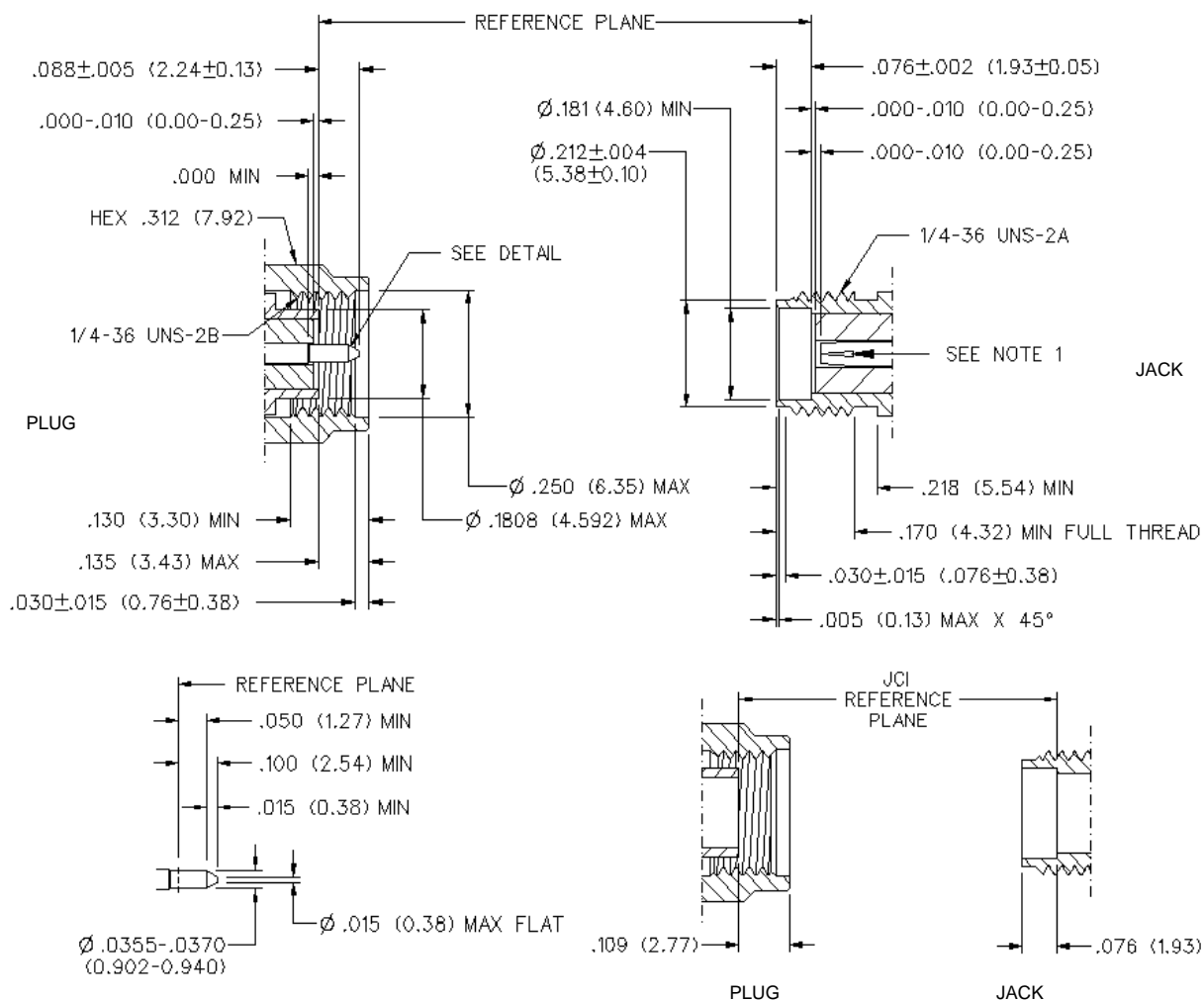
**Mounting Hardware:** Brass per QQ-B-626 or QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Seal Rings:** Silicone rubber per ZZ-R-765

**EMI Gaskets:** Conductive silicone rubber per MIL-G-83528, Type M

\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

### Mating Engagement for SMA Series per MIL-C-39012



#### NOTES

1. ID OF CONTACT TO MEET VSWR, CONTACT RESISTANCE AND INSERTION WITHDRAWAL FORCES WHEN MATED WITH DIA. .0355-.0370 MALE PIN.

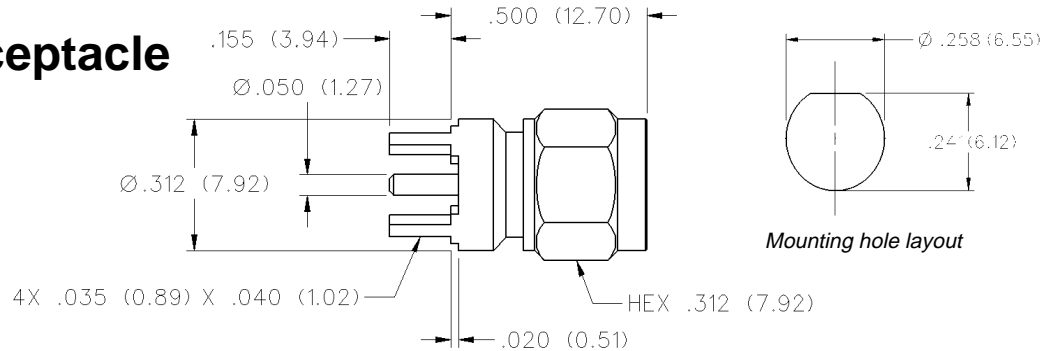
# SMA Connectors

PC Mount



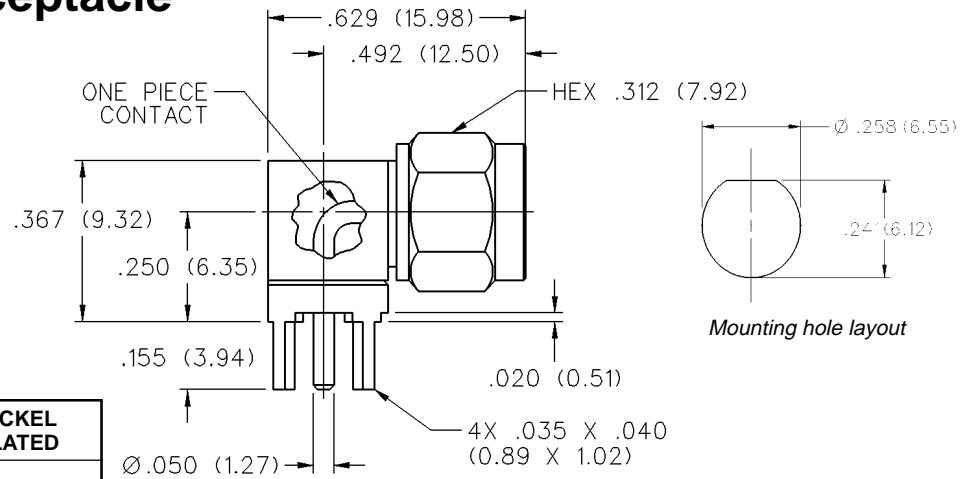
INCHES (MILLIMETERS)  
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

## Straight Plug Receptacle



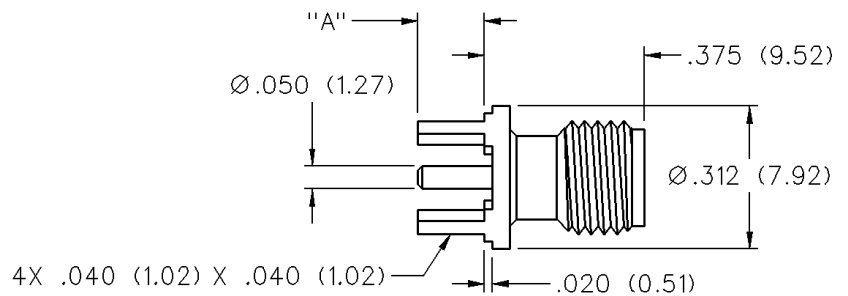
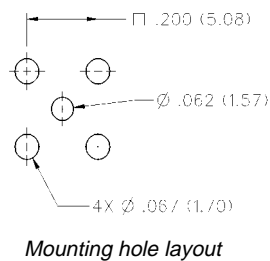
| VSWR & FREQ. RANGE    | GOLD PLATED  | NICKEL PLATED |
|-----------------------|--------------|---------------|
| VSWR: N/A<br>0-18 GHz | 142-0801-201 | 142-0801-206  |

## Right Angle Plug Receptacle



| VSWR & FREQ. RANGE    | GOLD PLATED  | NICKEL PLATED |
|-----------------------|--------------|---------------|
| VSWR: N/A<br>0-18 GHz | 142-0801-301 | 142-0801-306  |

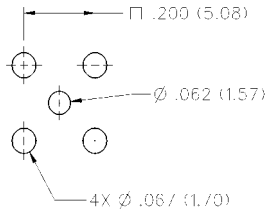
## Straight Jack Receptacle



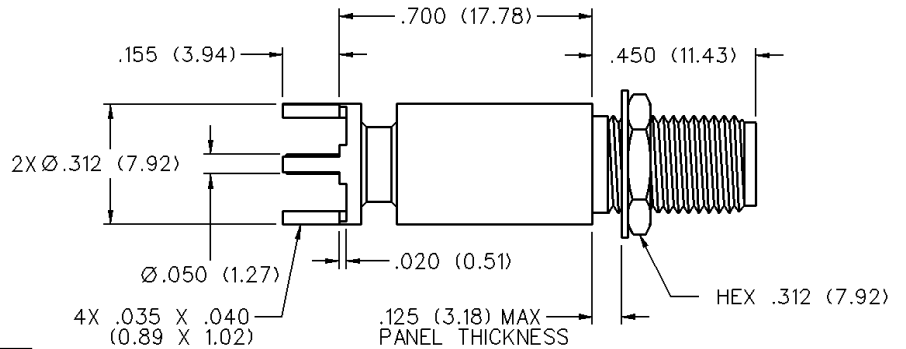
| VSWR & FREQ. RANGE    | GOLD PLATED  | NICKEL PLATED | IR COMPATIBLE | DIMENSION "A" |
|-----------------------|--------------|---------------|---------------|---------------|
| VSWR: N/A<br>0-18 GHz | 142-0701-201 | 142-0701-206  |               | .155 (3.94)   |
|                       | 142-0701-231 | 142-0701-236  | 142-0701-235* | .110 (2.79)   |

\* Tin/Lead solder dipped legs for IR Reflow Compatibility.

## Straight Bulkhead Jack Receptacle

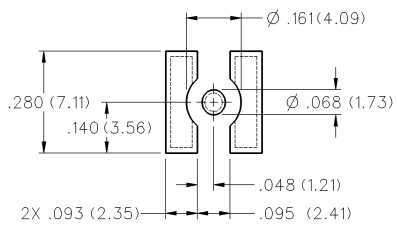


Mounting hole layout

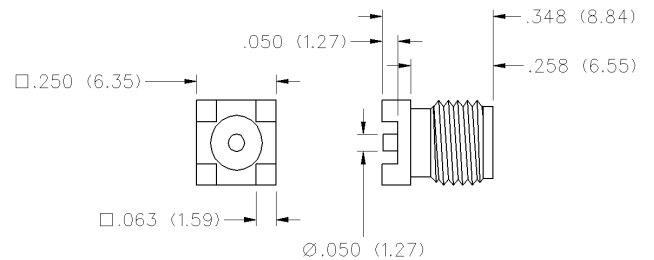


| VSWR & FREQ. RANGE    | GOLD PLATED  | NICKEL PLATED |
|-----------------------|--------------|---------------|
| VSWR: N/A<br>0-18 GHz | 142-0701-421 | 142-0701-426  |

## Straight Jack Receptacle - Surface Mount



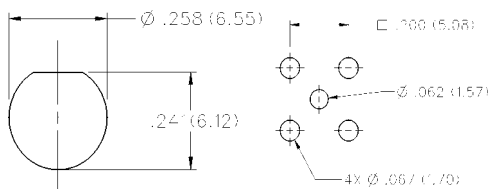
Recommended Land Pattern



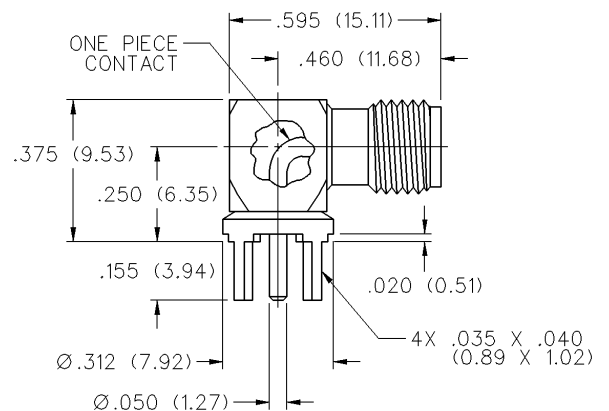
| VSWR & FREQ. RANGE    | GOLD PLATED  | NICKEL PLATED  |
|-----------------------|--------------|----------------|
| VSWR: N/A<br>0-18 GHz | 142-0711-201 | 142-0711-205 Δ |

Δ Connector Mounting Pads 60%/40% Tin/Lead Coated (Solder Plated)

## Right Angle Jack Receptacle



Mounting hole layout



| VSWR & FREQ. RANGE    | GOLD PLATED  | NICKEL PLATED |
|-----------------------|--------------|---------------|
| VSWR: N/A<br>0-18 GHz | 142-0701-301 | 142-0701-306  |

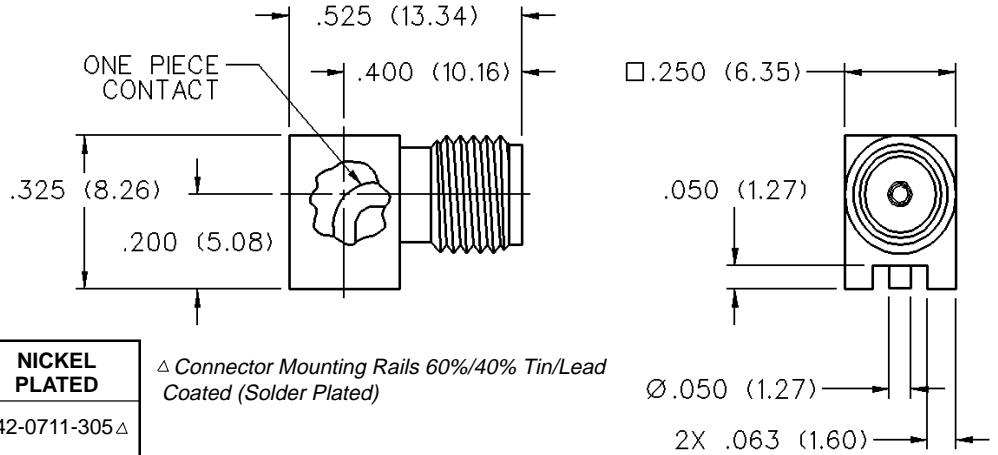
# SMA Connectors

PC Mount



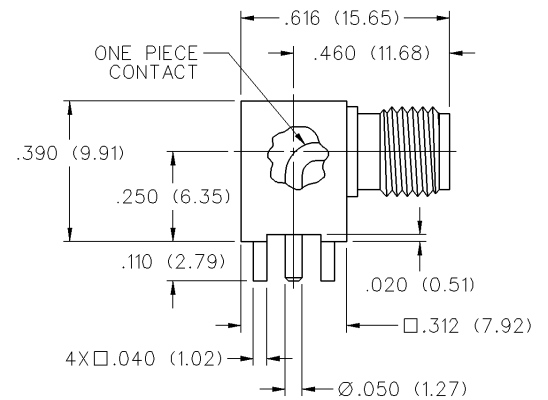
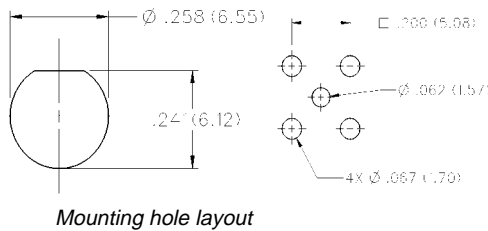
INCHES (MILLIMETERS)  
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

## Right Angle Jack Receptacle - Surface Mount



| VSWR & FREQ. RANGE    | GOLD PLATED  | NICKEL PLATED |
|-----------------------|--------------|---------------|
| VSWR: N/A<br>0-18 GHz | 142-0711-301 | 142-0711-305△ |

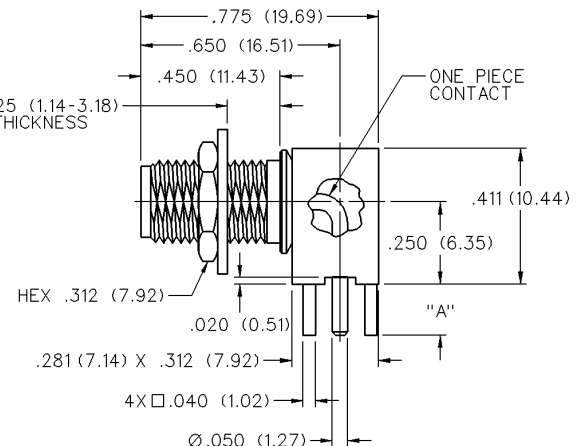
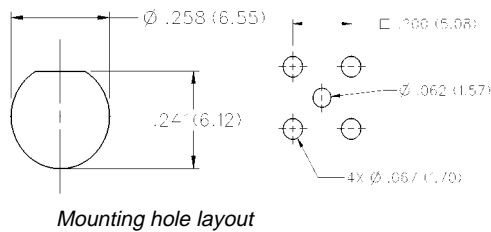
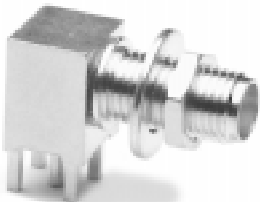
## Right Angle Jack Receptacle - Moisture Seal\*



| VSWR & FREQ. RANGE    | NICKEL BODY, GOLD INTERFACE<br>IR COMPATIBLE* |
|-----------------------|---|
| VSWR: N/A<br>0-18 GHz | 142-0701-335*                                 |

\* Tin/Lead solder dipped legs and Moisture Sealed for IR Reflow Compatibility.  
Mounting hole layout figure 2 page 163.

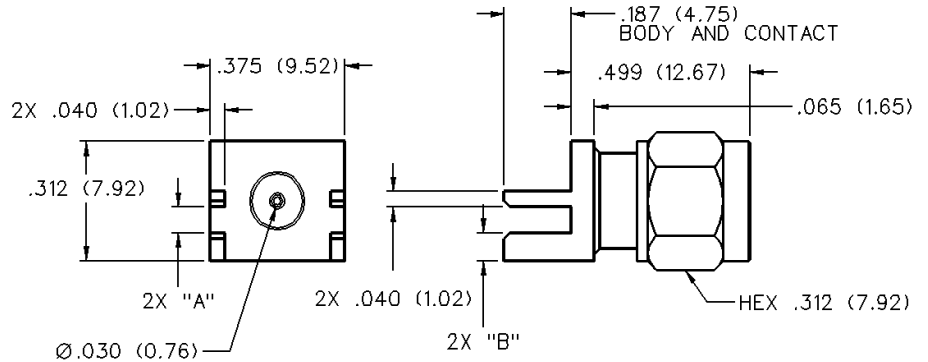
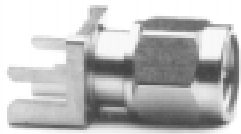
## Right Angle Bulkhead Jack Receptacle



| VSWR & FREQ. RANGE    | GOLD PLATED  | NICKEL PLATED | "A"         |
|-----------------------|--------------|---------------|-------------|
| VSWR: N/A<br>0-18 GHz | 142-0701-501 | 142-0701-506  | .155 (3.94) |
|                       | 142-0701-551 | 142-0701-556  | .110 (2.79) |

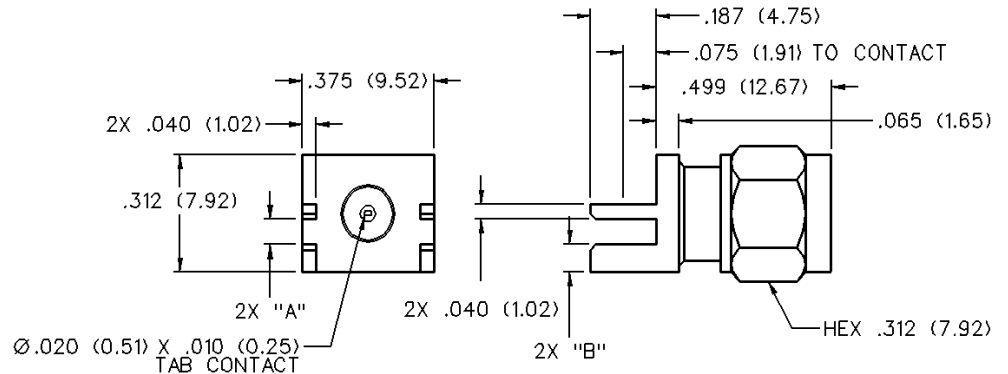
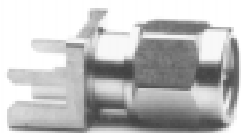
Mounting hole layout figure 1 and 2 page 163.

## End Launch Plug Receptacle - Round Contact



| VSWR & FREQ. RANGE    | BOARD THICKNESS | GOLD PLATED  | NICKEL PLATED | DIMENSION "A" | DIMENSION "B" |
|-----------------------|-----------------|--------------|---------------|---------------|---------------|
| VSWR: N/A<br>0-18 GHz | .062 (1.57)     | 142-0801-801 | 142-0801-806  | .068 (1.73)   | .073 (1.85)   |
|                       | .042 (1.07)     | 142-0801-821 | 142-0801-826  | .048 (1.22)   | .093 (2.36)   |

## End Launch Plug Receptacle - Tab Contact



| VSWR & FREQ. RANGE    | BOARD THICKNESS | GOLD PLATED  | NICKEL PLATED | DIMENSION "A" | DIMENSION "B" |
|-----------------------|-----------------|--------------|---------------|---------------|---------------|
| VSWR: N/A<br>0-18 GHz | .062 (1.57)     | 142-0801-811 | 142-0801-816  | .068 (1.73)   | .083 (2.11)   |
|                       | .042 (1.07)     | 142-0801-831 | 142-0801-836  | .048 (1.22)   | .103 (2.62)   |

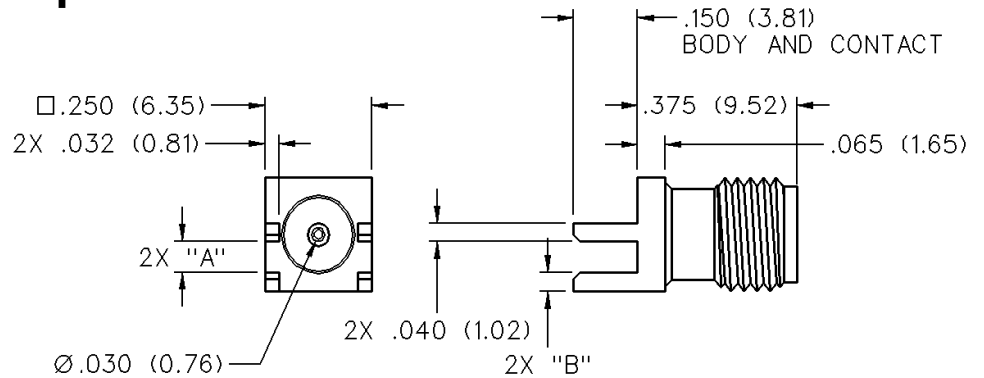
# SMA Connectors

PC Mount



INCHES (MILLIMETERS)  
CUSTOMER DRAWINGS AVAILABLE UPON REQUEST

## End Launch Jack Receptacle - Round Contact



| VSWR & FREQ. RANGE    | BOARD THICKNESS | GOLD PLATED  | NICKEL PLATED | DIMENSION "A" | DIMENSION "B" |
|-----------------------|-----------------|--------------|---------------|---------------|---------------|
| VSWR: N/A<br>0-18 GHz | .062 (1.57)     | 142-0711-821 | 142-0711-826  | .068 (1.73)   | .042 (1.07)   |
|                       | .042 (1.07)     | 142-0711-841 | 142-0711-846  | .048 (1.22)   | .062 (1.57)   |

*Coupling proof torque 8 inch-pounds maximum.*

## End Launch Jack Receptacle - Round Contact

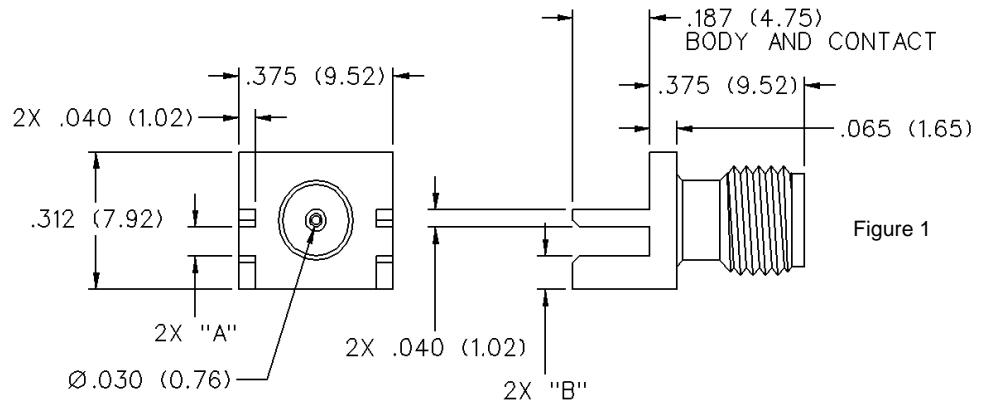


Figure 1

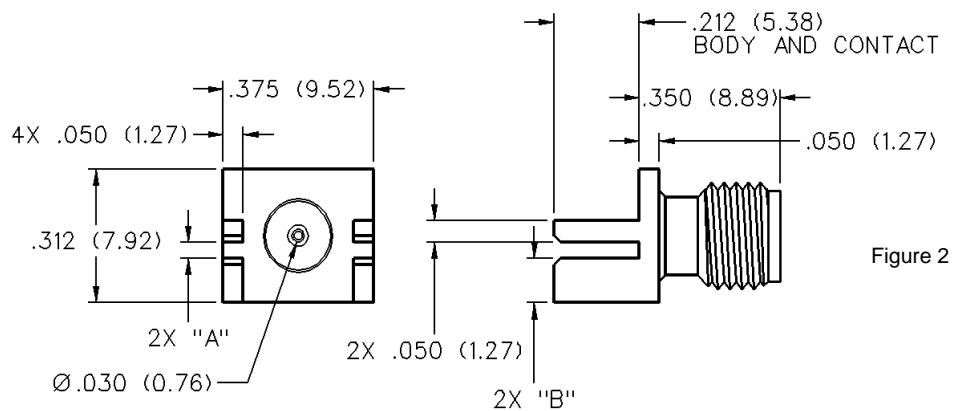
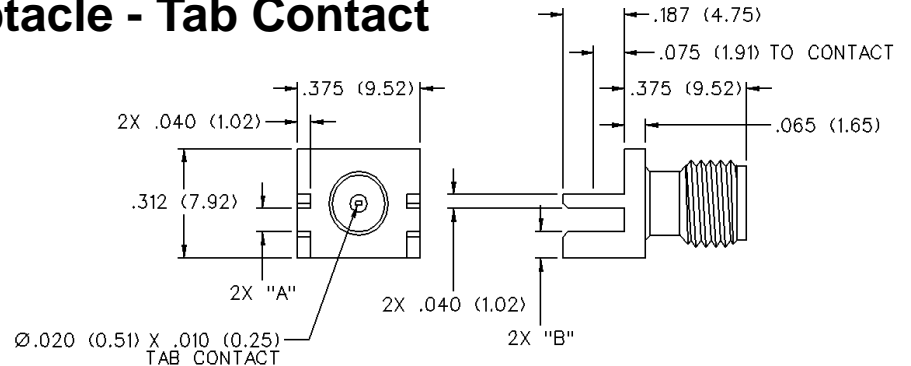


Figure 2

| VSWR & FREQ. RANGE    | BOARD THICKNESS | GOLD PLATED  | NICKEL PLATED | DIMENSION "A" | DIMENSION "B" | FIGURE |
|-----------------------|-----------------|--------------|---------------|---------------|---------------|--------|
| VSWR: N/A<br>0-18 GHz | .062 (1.57)     | 142-0701-801 | 142-0701-806  | .068 (1.73)   | .073 (1.85)   | 1      |
|                       | .042 (1.07)     | 142-0701-831 | 142-0701-836  | .048 (1.22)   | .093 (2.36)   | 1      |
|                       | .031 (.079)     | 142-0701-881 | 142-0701-886  | .037 (0.94)   | .104 (2.64)   | 2      |
|                       | .047 (1.19)     | 142-0711-871 | 142-0711-876  | .053 (1.35)   | .088 (2.24)   | 1      |

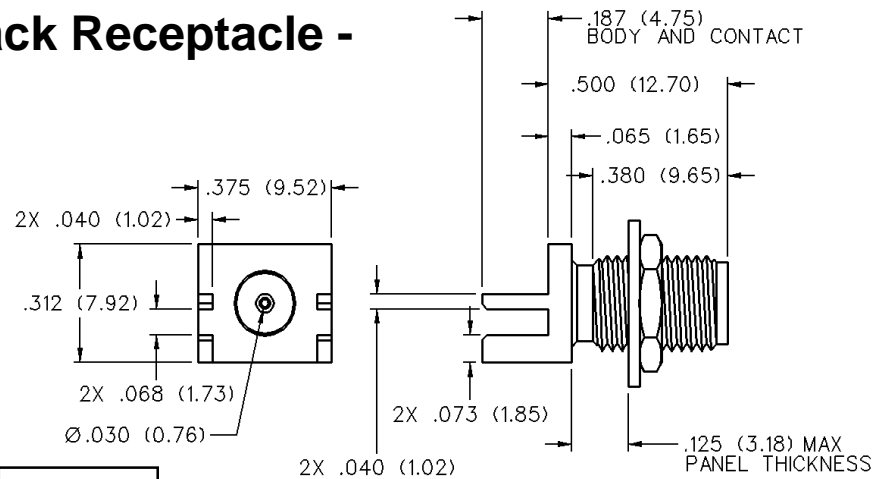
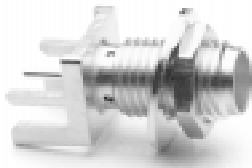


## End Launch Jack Receptacle - Tab Contact



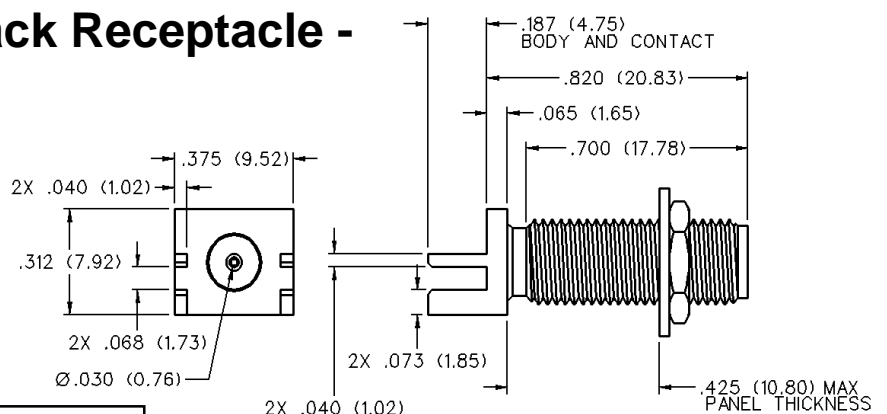
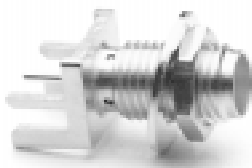
| VSWR & FREQ. RANGE    | BOARD THICKNESS | GOLD PLATED  | NICKEL PLATED | DIMENSION "A" | DIMENSION "B" |
|-----------------------|-----------------|--------------|---------------|---------------|---------------|
| VSWR: N/A<br>0-18 GHz | .062 (1.57)     | 142-0701-851 | 142-0701-856  | .068 (1.73)   | .083 (2.11)   |
|                       | .042 (1.07)     | 142-0701-841 | 142-0701-846  | .048 (1.22)   | .103 (2.62)   |
|                       | .047 (1.19)     | 142-0711-881 | 142-0711-886  | .053 (1.35)   | .098 (2.24)   |

## End Launch Bulkhead Jack Receptacle - Round Contact



| VSWR & FREQ. RANGE    | BOARD THICKNESS | GOLD PLATED  | NICKEL PLATED |
|-----------------------|-----------------|--------------|---------------|
| VSWR: N/A<br>0-18 GHz | .062 (1.57)     | 142-0701-871 | 142-0701-876  |

## End Launch Bulkhead Jack Receptacle - Round Contact



| VSWR & FREQ. RANGE    | BOARD THICKNESS | GOLD PLATED  | NICKEL PLATED |
|-----------------------|-----------------|--------------|---------------|
| VSWR: N/A<br>0-18 GHz | .062 (1.57)     | 142-0711-811 | 142-0711-816  |