



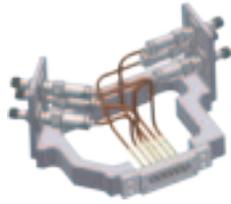
Microwave Products Catalog

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cristek.com



Cristek Interconnects, Inc.
—a genuine American
success story

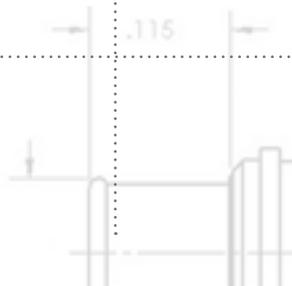
A heritage of accomplishment

Cristek Interconnects, Inc. is a genuine American success story...

Armed with little more than a fistful of credit cards, a \$25,000 contract from Litton and a small loan from her first boss, 23-year-old Cristi Cristich founded Cristek in 1985 to serve the military and aerospace industries and the Warfighter. Over 25 years later, Cristek boasts a diverse and experienced management team, over 100 employees and more than 56,000 square feet of manufacturing facilities in Southern California and New England.

From its inception, Cristek Interconnects has consistently earned the trust of its customers by combining solid interconnect design and manufacturing expertise with a “can-do” entrepreneurial spirit. As a result, they have been named Subcontractor of the Year for Region IX by the US Small Business Administration, are a HUB ZONE Certified small business and have earned numerous industry and customer awards.

Cristek’s consistent, near-perfect performance, has solidified its position as preferred supplier to many major military/aerospace prime contractors and is a testament to its ability to operate a process disciplined and metric-based business while maintaining its customer-focused, entrepreneurial roots.



Ensuring “best overall value” through experience and innovation.

Cristek Interconnects’ success would not be possible without the extraordinary creativity, quality and dedication of its people. Their contributions and effectiveness are maximized through the framework of Cristek’s proprietary “Mission RAD (Reliable, Aligned, Disciplined, Innovative)” business management systems. These systems combine a wide variety of best-in-class Lean, Six Sigma and general business tools into a fully integrated metrics-based system of operations for the company.

All product development is governed by Cristek’s JANUS 9-gate system. Once JANUS determines Cristek’s core competencies and corresponding resources are aligned with a given customer application, the system brings a high level of process maturity to even the most customized requirement. Each gate serves as a

check and balance to keep the project consistently with all customer expectations to the included on-time delivery of the product.

The speed and reliability of the JANUS system is the key enabler for Cristek’s LACOTT (“Lay-A-Cable-On-The-Table”) service. Through LACOTT, a customer can frequently receive a complete prototype from Cristek, with custom connectors and complex packaging, within the same timeframe it takes competitors to generate a formal proposal. Experience has proven that even with 3D modeling and other engineering technologies, nothing beats having a product in hand to engender confidence, ensure proof of design and demonstrate best overall value.



//
legacy of success and
breadth of high-density
packaging experience
//

Focused on delivering superior package design solutions.

In over two decades of experience, Cristek's focus has been on designing and producing ultra miniature, high precision connector and cable assemblies – making it the perfect partner to solve your most demanding microwave application. We specialize in high frequency, low loss applications where products need to survive in the most challenging environments within extremely confined packaging arrangements.

Cristek's standard offering of SMP and SMPM connectors includes the full range of launch options. Its rapidly expanding SMA product line was designed initially for difficult environments and with an eye to minimizing variability during assembly to precision cable. Specialty interfaces, packages and launch options are being developed every day to support an ever increasing range of customer needs, so if you don't see what you need in this catalog, please contact the factory. We may already have an off the shelf solution waiting that can fulfill your unique application.

Cristek Interconnects' unique ability to package high-frequency, low-loss contact systems into the same connector system as 24-30 AWG signal contacts sets them apart from the competition by optimizing package size and performance.



The Cristek Product Stable

Microwave Connectors

Flexible, Conformable & Semi Rigid Cabling

Complex Harnessing

Electro Mechanical Assembly

Micro Connectors per MIL-DTL-83513

Nano Connectors per MIL-DTL-32139

D Sub Connectors per MIL-DTL-24308

SMP Connectors per DESC 94007/94008

SMPM Connectors

Miniature Circular Connectors

EMI/EMP Connectors

Application Specific Connectors

Markets Served

Space & Satellite

Missile Defense

Precision Weapons

Avionics

Commercial Aerospace

Radar & Communications

Expeditionary Warfare

Medical Devices

Geophysical

The Cristek Pedigree

2009 SBA Subcontractor of the Year. Region IX

AS9100 & ISO 9001 Certified; Underwriters Laboratories Certificate A8992

Multiple Lean and Six Sigma Certification

Preferred Supplier to Multiple Prime and Subcontractors



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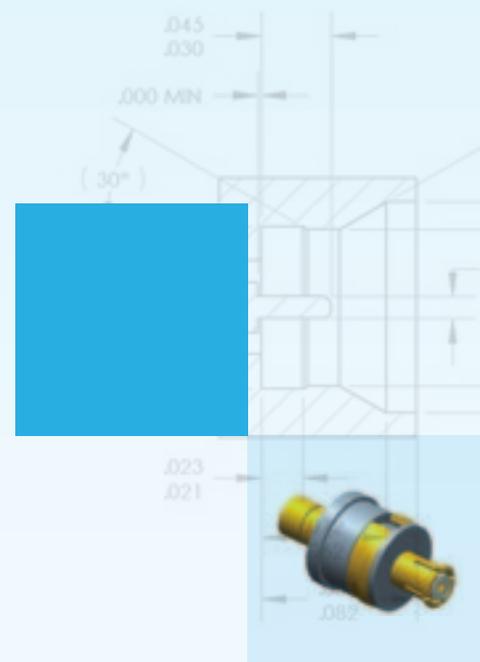
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SMP



SMP

CRISTEK
INTERCONNECTS, INC.

SMP High Frequency Push-on

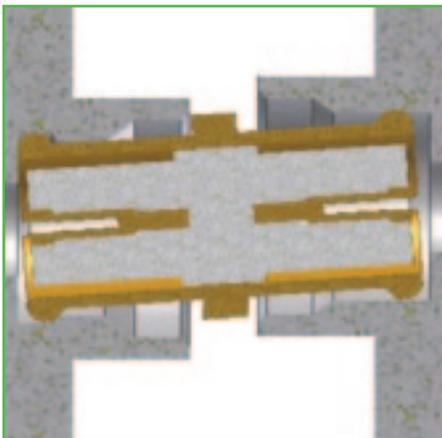
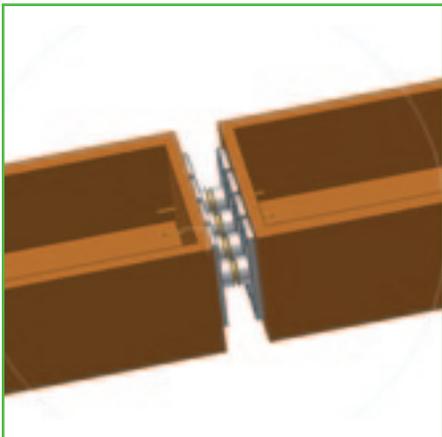
The SMP connector is a multi-functional, miniature, high frequency, push-on connector that can be adaptable for use in wide variety of high reliability applications. This connector is suitable for applications ranging from hermetic modules to backplanes. The multitude of configurations and styles provide specifically tailored solutions for a wide range of cabled and module to module assemblies. A unique feature of this connector is the ability to install cable assemblies with minimal movement. The floating connector feature provide a maximum allowance for misalignment. Unlike other push-on type connectors, the frequency range of the connector is not self limited by its push-on, blind mate features. These robust connectors are designed to mate tightly and maintain performance through 40 GHz.

Module to Module (board to board)

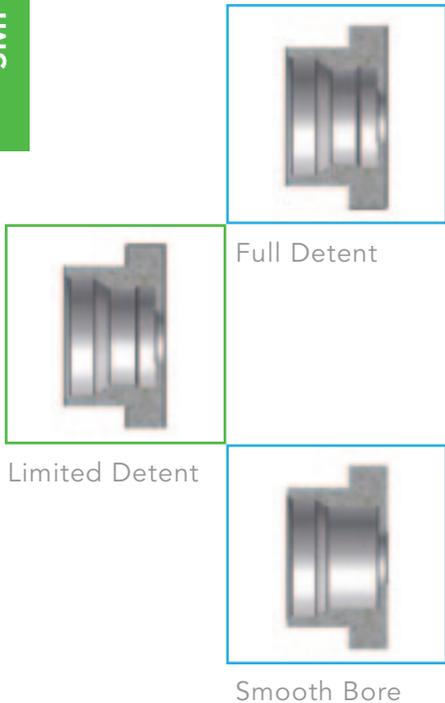
One of the benefits of the SMP connector is its ability to join two RF/ Microwave Modules or PC Boards to each other without the use of cables and the attendant insertion loss penalty. In the past, this was difficult and costly due to the necessary tolerances to ensure good alignment between modules or boards. The key component used in these applications is an inseries, female to female, SMP adapter called a "Bullet". The bullet is a unique connector, when placed between two SMP male connectors or shrouds, is used to join two microwave modules or boards. This method produces a tight compact arrangement with good performance characteristics from DC to 40 GHz.

Misalignment

The SMP's ability to tolerate axial and radial misalignment while maintaining microwave performance is one of the driving forces behind its widespread industry success. The SMP allows for axial and radial misalignment without the use of bulky springs or other alignment tools. This is why it is possible to use these connectors in module to module (board to board) applications. Although the bullet fits tightly into the shroud, by design it has the ability to move slightly while maintaining its performance. This slight radial and axial movement gives the SMP bullet its "Float". When installed properly, the SMP bullet/shroud combination can withstand .010"(.25mm) axial and \pm .010"(.25mm) radial float.

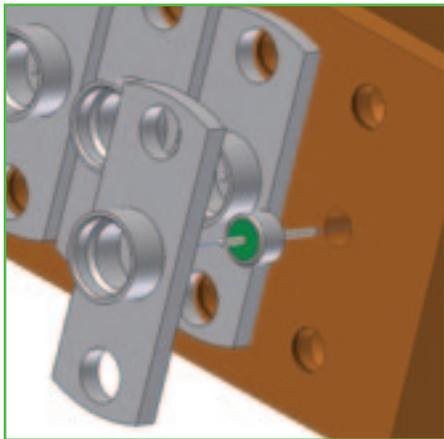


Detents



The SMP male connector is available in three standard detents specified in MIL-STD-348 to provide the proper amount of mating and retention force for its selected applications. These are defined as the “full”, “limited”, and “smooth bore”. The full detent provides the highest insertion and withdrawal forces and the smooth bore, the least. The user selects the detent most suitable for his or her application. The smooth bore is used on many blindmate applications where increased axial and radial float is needed. To ensure the bullet will stay on one of the modules, the limited or full detent SMP male shroud is used on one module and a smooth bore shroud is used on the other. When the modules are taken apart the bullet will then remain captivated within limited or full detent shroud. The limited detent shroud is often used when some captivation of the bullet is needed but there is risk that the higher forces may damaged the component. One example is the potential risk of cracking a printed circuit board and damaging the solder joints on the mating, PCB mounted connector. Full detents are used when retention forces need to be high, such as in a cable application

Hermetic Seals



In some case it is necessary to have a hermetic module, thus creating high expense and extreme difficulties for most connectors. In the case of the SMP, it is an easy process to create a hermetic module. All that is needed is an .015” glass feed through and shroud. The glass feed through is fired or soldered in the housing just as any other feed through, then the shroud is placed around the feed through, creating the SMP male connector. A wide variety of shrouds are available to suit many customer preferences. Performance is improved over other hermetic seals since the center pin of the feed through is the male contact and no additional contacts or insulators are needed.

Cable Connectors

The SMP also can be used for cable assemblies. These assemblies have the advantage of being quick disconnects while still maintaining performance at frequency ranges higher than other push on type connectors. The full detent is used when mating an SMP cable assembly so that it will maintain the maximum retention. Since a cable assembly does not need to have axial or radial float, several small changes are made to SMP female interface as defined by MIL-STD-348. This includes adding an anti-rock ring and EMI ring to improve performance of the connector and reduce RF leakage. The SMP connectors are available for use on both semi-rigid and flexible cable types.

Electrical

| | |
|--|--------------------|
| Impedance | 50 Ohms |
| Operating Frequency | DC to 40 GHz |
| Center Contact Resistance | 6.0 milliohms |
| Dielectric Withstanding Voltage (60 Hz) | |
| Sea level | 500 Volts RMS Min. |
| 70,000 ft | 125 Volts RMS Min. |
| Corona Extinction Voltage (70,000ft) | 190 Volts RMS Min. |
| RF High Potential Voltage (5MHz) | 325 Volts RMS Min. |
| Insulation Resistance | 5000 Megohms |
| Voltage Rating | |
| Sea level | 335 Volts RMS Max. |
| 70,000 ft | 65 Volts RMS Max. |
| RF leakage | -80 dB to 3 GHz |
| | -65 dB to 26.5 GHz |

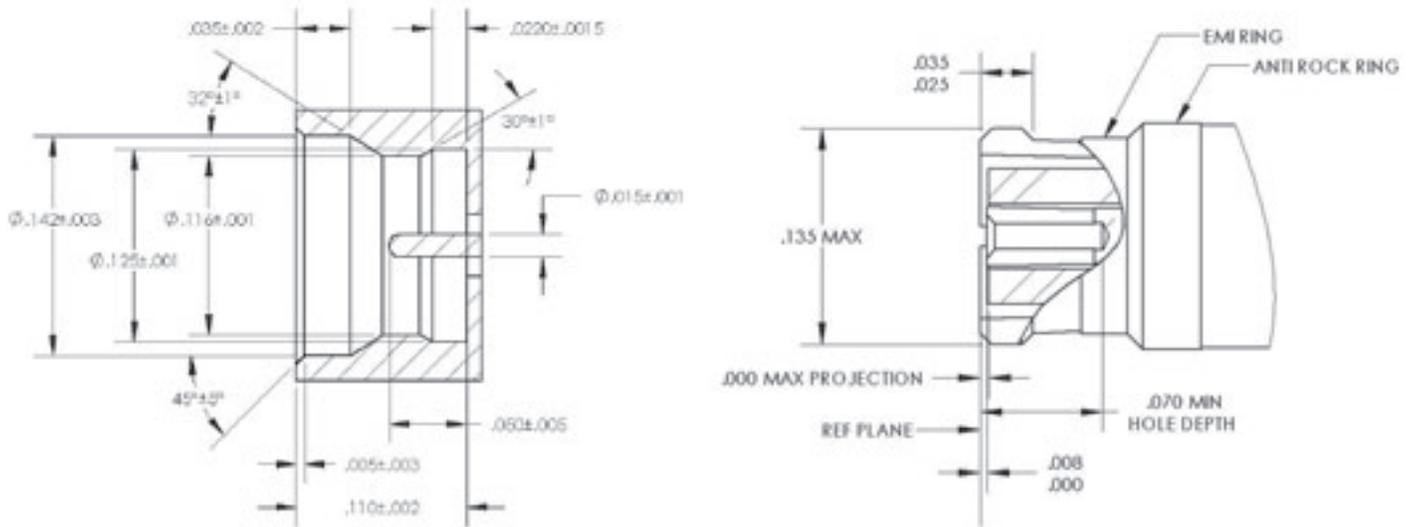
Mechanical

| | |
|----------------------------|----------------------|
| Axial Misalignment | .010" (.25mm) Max. |
| Radial Misalignment | ±.010" (.25mm) |
| Durability | |
| Full Detent | 100 Cycle |
| Limited Detent | 500 Cycles |
| Smooth Bore | 1000 Cycles |
| Force to Engage | |
| Full Detent | 15 lbs (66.7N) Max. |
| Limited Detent | 10 lbs (44.5 N) Max. |
| Smooth Bore | 2 lbs (8.9N) Max. |
| Force to Disengage | |
| Full Detent | 5 lbs (22.2N) Min. |
| Limited Detent | 2 lbs (8.9N) Min. |
| Smooth Bore | 0.5 (2.2N) Min. |
| Permeability | <2.0Mu |

Environmental

| | |
|------------------------------|--|
| Operating Temperature | -65°C to +165°C |
| Storage Temperature | -65°C to +200°C |
| Corrosion | MIL-STD-202, Method 101 Test Condition B, 5% Salt Solution |
| Vibration | MIL-STD-202, Method 204 Test Condition B, 15 min/axis |
| Random Vibration | MIL-STD-202, Method 214 Test Condition F, 15 min/axis |
| Mechanical Shock | MIL-STD-202, Method 213 Test Condition I, 100g's Sawtooth Axis |
| Thermal Shock | MIL-STD-202, Method 107 Test Condition B, +165°C High Temp. |

* Individual connector may vary consult factory for specific specification



Materials

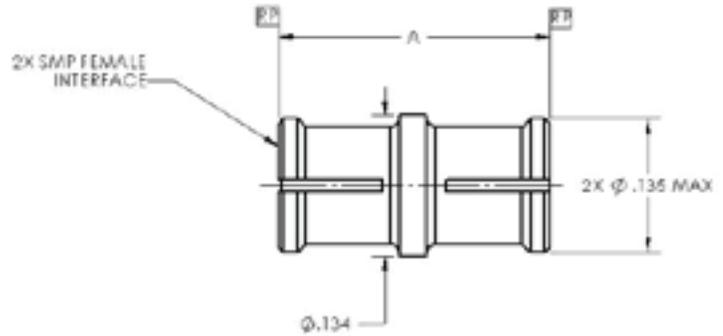
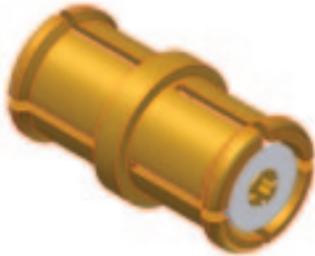
| | |
|-------------------------|--|
| Beryllium Copper (BeCu) | Per ASTM B 196 |
| Stainless Steel 303 | Per ASTM A 484, ASTM A 582, ASTM A 555 or ASTM A 581 |
| PTFE | Per ASTM D 1710 |
| Brass | Per ASTM B 36, ASTM B 121, ASTM B 16 or ASTM B 16M |
| Kovar | Per ASTM F 15 |
| Glass | Corning 7070 |

Standard Finish

| | |
|-----------|---|
| Gold | Per MIL-DTL-45204, Type III, Grade C, Class 1 |
| Nickel | Per SAE ASM 2404 or MIL-DLT-38999 Class 1 |
| Passivate | Per ASTM A967 or SAE AMS 2700 |

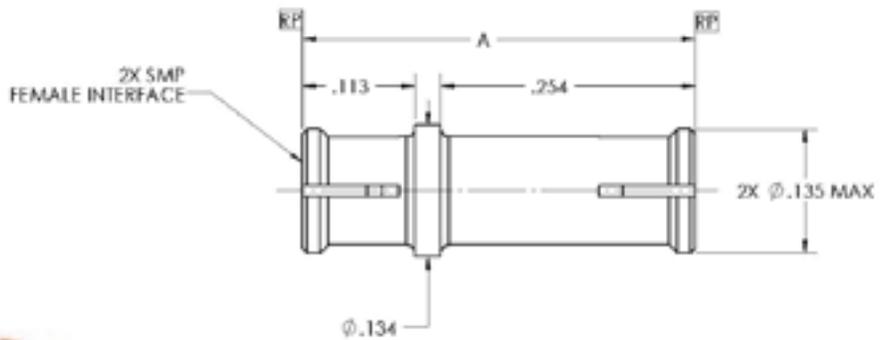
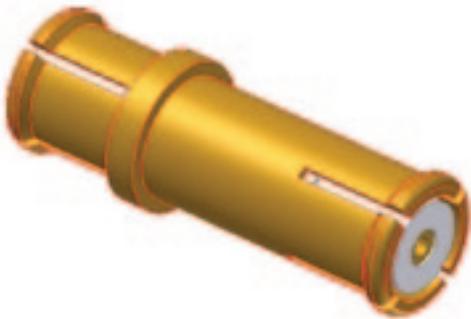
SMP INTERCONNECT (BULLET)

| Cristek Part Number | Dim A |
|---------------------|-------|
| MBI-S254-SI | .254 |



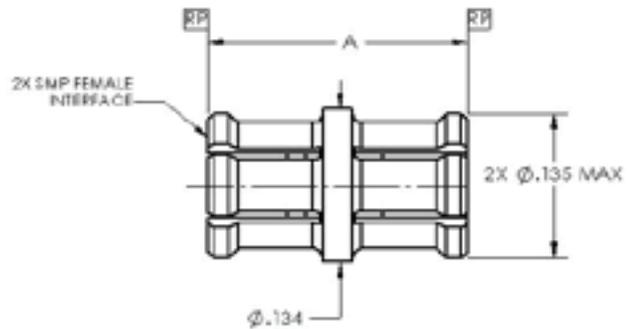
SMP INTERCONNECT (BULLET)

| Cristek Part Number | Dim A |
|---------------------|-------|
| MBI-S395-SI | .395 |



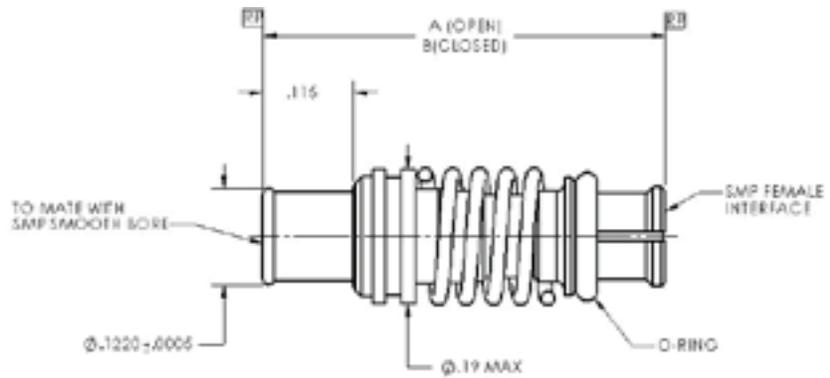
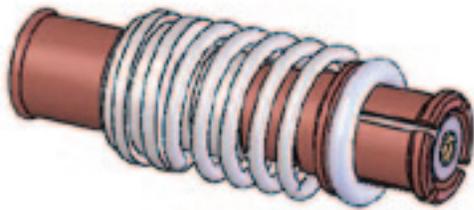
SMP INTERCONNECT (BULLET)

| Cristek Part Number | Dim A |
|---------------------|-------|
| MD-SFSF-S-001 | .224 |



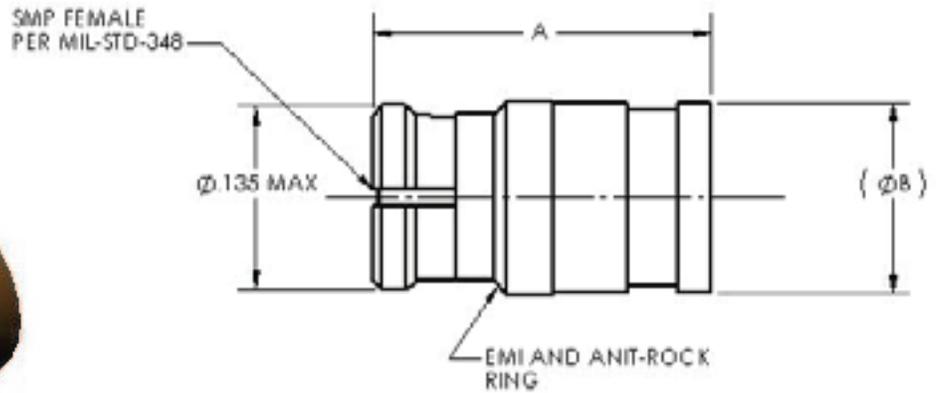
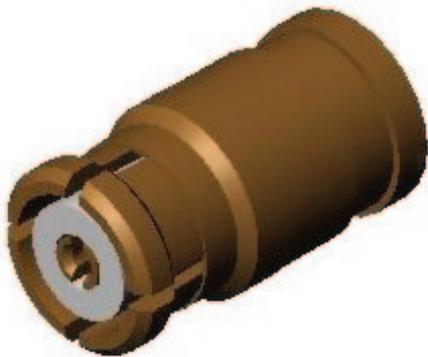
SMP INTERCONNECT (SPRING LOADED BULLET)

| Cristek Part Number | Dim A OPEN | Dim B CLOSED |
|---------------------|---------------|-----------------|
| MD-SFSF-L-001 | .500 | .450 |
| MD-SFSF-L-002 | .650 | .600 |
| MD-SFSF-L-003 | .750 | .700 |
| MD-SFSF-L-004 | 1.000 | .950 |
| MD-SFSF-L-005 | 1.250 | 1.200 |



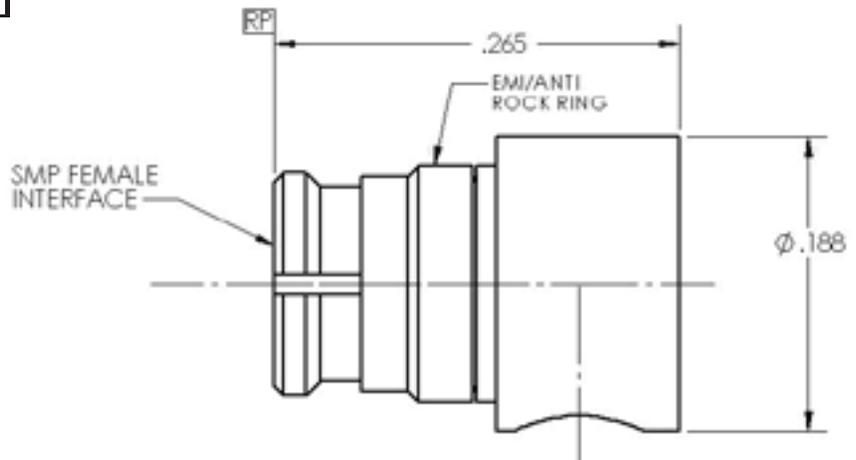
SMP FEMALE, STRAIGHT, SEMI-RIGID CABLE

| Cable Type | Cristek Part Number | Dim A | DIM B |
|------------|---------------------|-------|-------|
| SR .086 | MA1-SFCS-001 | .250 | .134 |
| SR .047 | MA1-SFCS-002 | .250 | .085 |



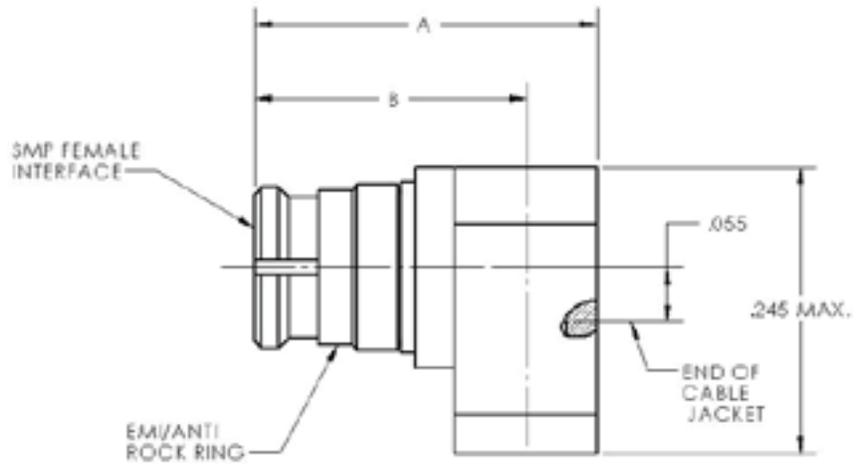
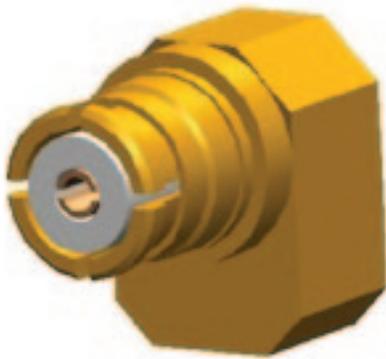
SMP FEMALE, RIGHT ANGLE, SEMI-RIGID CABLE

| Cable Type | Cristek Part Number |
|------------|---------------------|
| SR .086 | MA1-SFCR-01-001 |
| SR .047 | MA1-SFCR-02-001 |



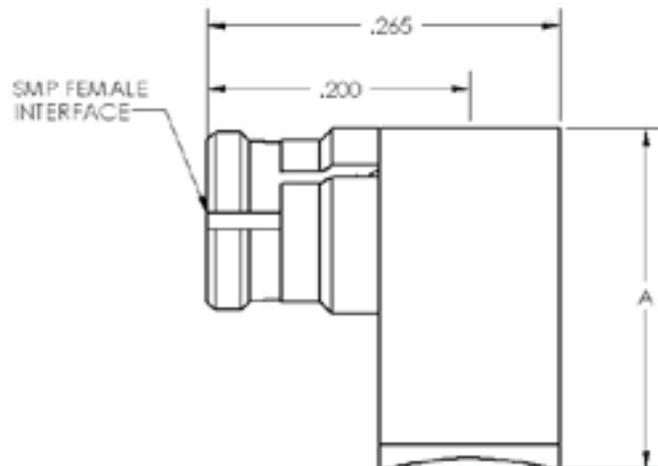
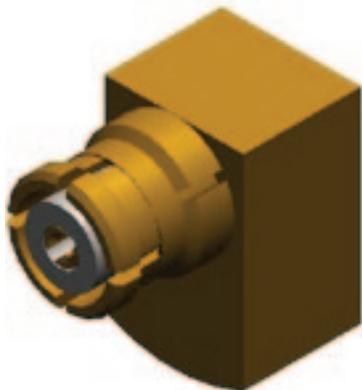
SMP FEMALE, RIGHT ANGLE, SEMI-RIGID CABLE

| Cable Type | Cristek Part Number | Dim A | Dim B |
|------------|---------------------|-------|-------|
| SR .086 | MA1-SFCR-003 | .265 | .210 |
| SR .047 | MA1-SFCR-004 | .230 | .192 |



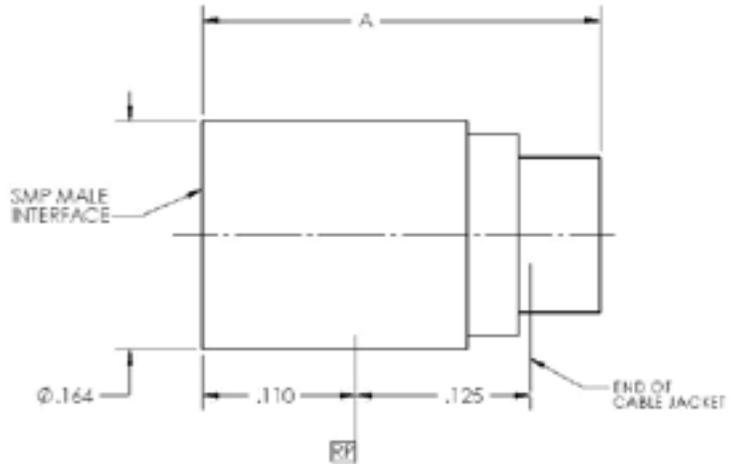
SMP FEMALE, RIGHT ANGLE, SEMI-RIGID CABLE, 26 GHz

| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR .086 | MA-SFCN-01-001 | .250 |
| SR .047 | MA-SFCN-02-001 | .285 |



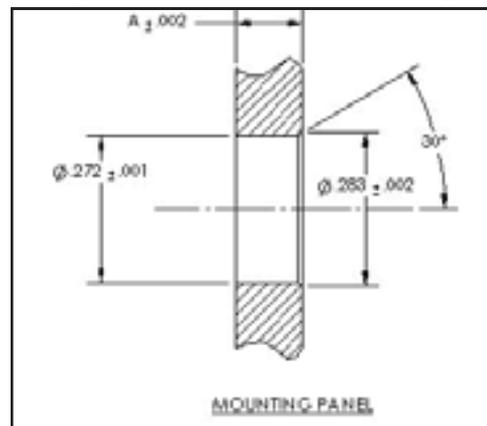
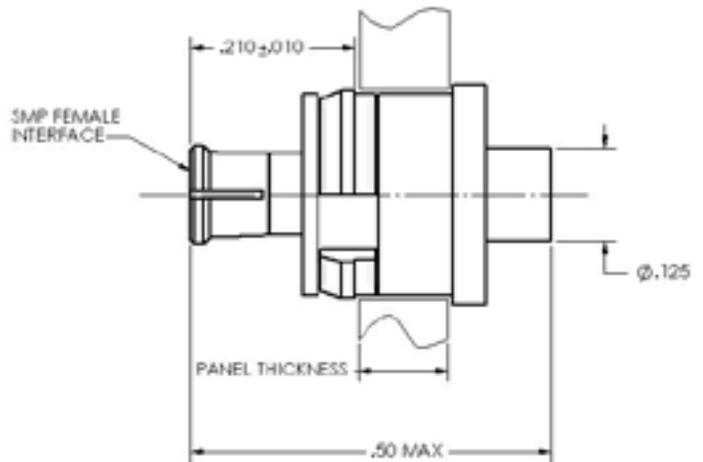
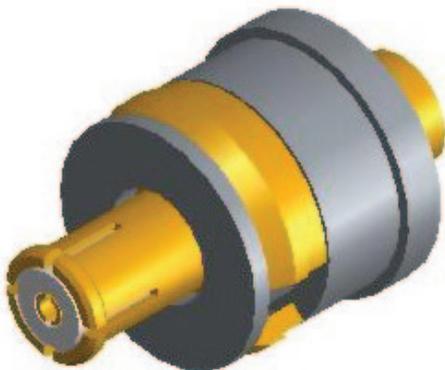
SMP STRAIGHT SHROUD, SEMI-RIGID CABLE

| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR .086 | MA1-SMCS-001 | .300 |
| SR .047 | MA1-SMCS-002 | .285 |



SMP FEMALE, SNAP IN FLOAT MOUNT, SEMI RIGID CABLE

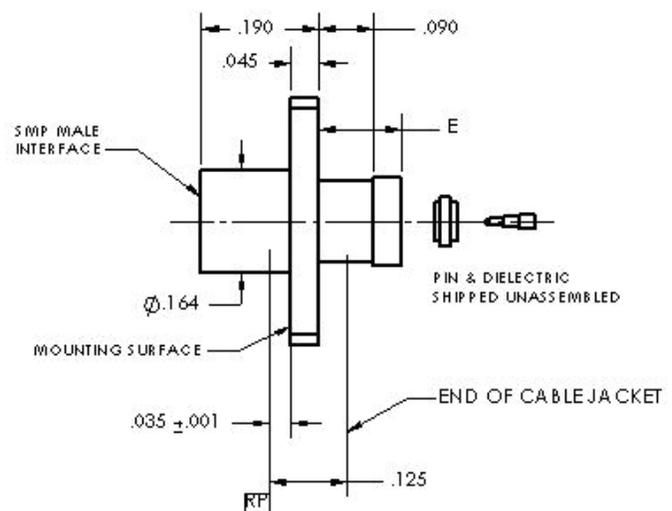
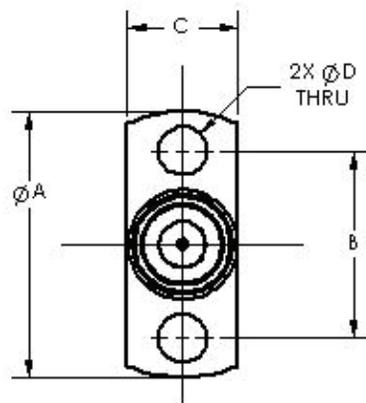
| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR .086 | MA-SFCM-01-001 | .093 |
| SR .047 | MA-SFCM-02-001 | .093 |
| SR .086 | MA-SFCM-01-002 | .125 |
| SR .047 | MA-SFCM-02-002 | .125 |



SMP FLANGE MOUNT SHROUDS, SEMI-RIGID CABLE, NON HERMETIC

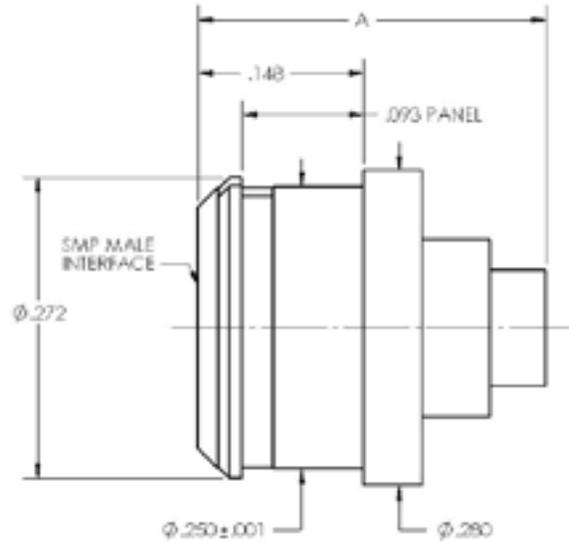
SMP

| Cable Type | Cristek Part Number | Detent | Dim A | Dim B | Dim C | Dim D | Dim E |
|------------|---------------------|--------|-------|-------|-------|-------|-------|
| SR .086 | MA-SMCF-01-001-FD | FD | Ø.400 | .282 | .165 | Ø.073 | .135 |
| SR .086 | MA-SMCF-01-001-LD | LD | Ø.400 | .282 | .165 | Ø.073 | .135 |
| SR .086 | MA-SMCF-01-001-SB | SB | Ø.400 | .282 | .165 | Ø.073 | .135 |
| SR .047 | MA-SMCF-02-001-FD | FD | Ø.400 | .282 | .165 | Ø.073 | .095 |
| SR .047 | MA-SMCF-02-001-LD | LD | Ø.400 | .282 | .165 | Ø.073 | .095 |
| SR .047 | MA-SMCF-02-001-SB | SB | Ø.400 | .282 | .165 | Ø.073 | .095 |
| SR .086 | MA-SMCF-01-002-FD | FD | Ø.480 | .328 | .186 | Ø.098 | .135 |
| SR .086 | MA-SMCF-01-002-LD | LD | Ø.480 | .328 | .186 | Ø.098 | .135 |
| SR .086 | MA-SMCF-01-002-SB | SB | Ø.480 | .328 | .186 | Ø.098 | .135 |
| SR .047 | MA-SMCF-02-002-FD | FD | Ø.480 | .328 | .186 | Ø.098 | .095 |
| SR .047 | MA-SMCF-02-002-LD | LD | Ø.480 | .328 | .186 | Ø.098 | .095 |
| SR .047 | MA-SMCF-02-002-SB | SB | Ø.480 | .328 | .186 | Ø.098 | .095 |
| SR .086 | MA-SMCF-01-003-FD | FD | Ø.625 | .481 | .223 | Ø.102 | .135 |
| SR .086 | MA-SMCF-01-003-LD | LD | Ø.625 | .481 | .223 | Ø.102 | .135 |
| SR .086 | MA-SMCF-01-003-SB | SB | Ø.625 | .481 | .223 | Ø.102 | .135 |
| SR .047 | MA-SMCF-02-003-FD | FD | Ø.625 | .481 | .223 | Ø.102 | .095 |
| SR .047 | MA-SMCF-02-003-LD | LD | Ø.625 | .481 | .223 | Ø.102 | .095 |
| SR .047 | MA-SMCF-02-003-SB | SB | Ø.625 | .481 | .223 | Ø.102 | .095 |



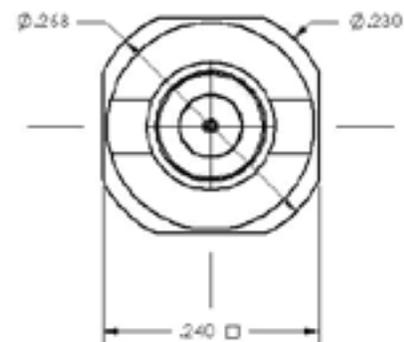
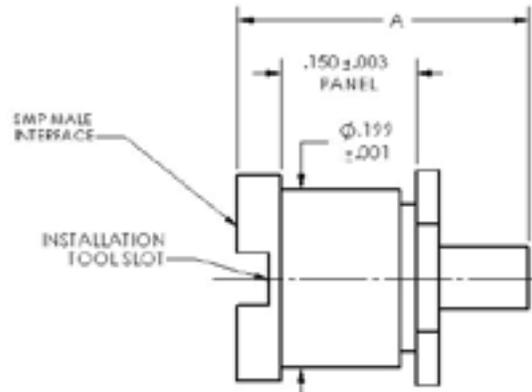
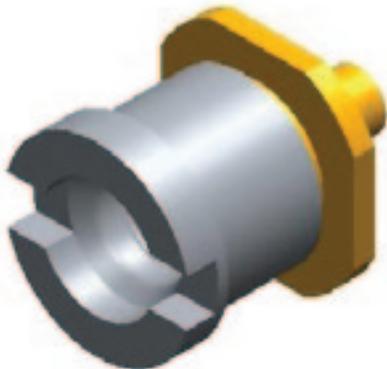
SMP SNAP IN SHROUD, PANEL MOUNT, SEMI-RIGID CABLE

| Cable Type | Cristek Part Number | Detent | Dim A |
|------------|---------------------|--------|-------|
| SR .086 | MA-SMCJ 01-001-FD | FD | .350 |
| SR .047 | MA-SMCJ-02-001-FD | FD | .310 |
| SR .086 | MA-SMCJ 01-001-LD | LD | .350 |
| SR .047 | MA-SMCJ-02-001-LD | LD | .310 |
| SR .086 | MA-SMCJ 01-001-SB | SB | .350 |
| SR .047 | MA-SMCJ-02-001-SB | SB | .310 |



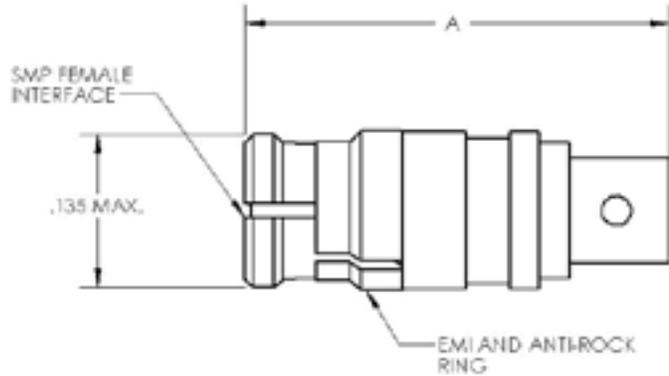
SMP THREADED SHROUD, BULKHEAD MOUNT, SEMI-RIGID CABLE

| Cable Type | Cristek Part Number | Detent | Dim A |
|------------|---------------------|--------|-------|
| SR .086 | MA-SMCK-01-001-FD | FD | .323 |
| SR .047 | MA-SMCK-02-001-FD | FD | .283 |
| SR .086 | MA-SMCK-01-001-LD | LD | .323 |
| SR .047 | MA-SMCK-02-001-LD | LD | .283 |
| SR .086 | MA-SMCK-01-001-SB | SB | .323 |
| SR .047 | MA-SMCK-02-001-SB | SB | .283 |
| SR .086 | MA-SMCK-01-001-CM | CM | .323 |
| SR .047 | MA-SMCK-02-001-CM | CM | .283 |



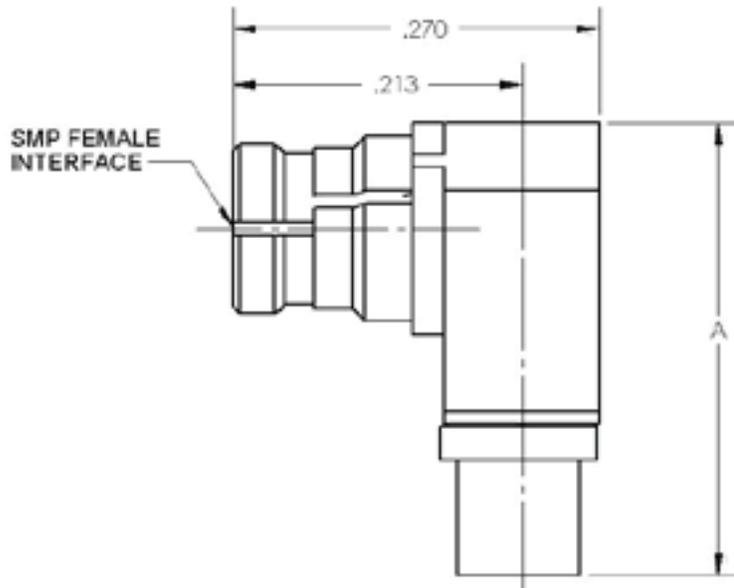
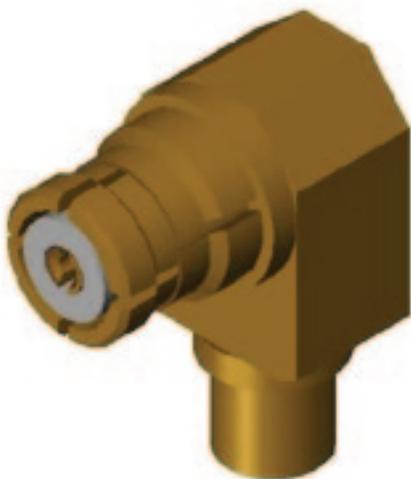
SMP FEMALE, STRAIGHT, FLEXIBLE CABLE

| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| RG178 | MA-SFCS-05-001 | .300 |
| RG316 | MA-SFCS-06-001 | .300 |



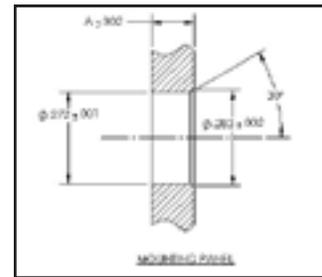
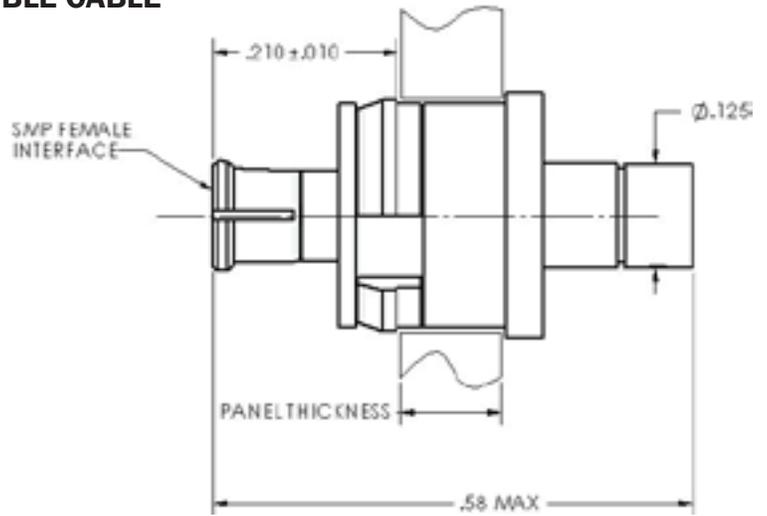
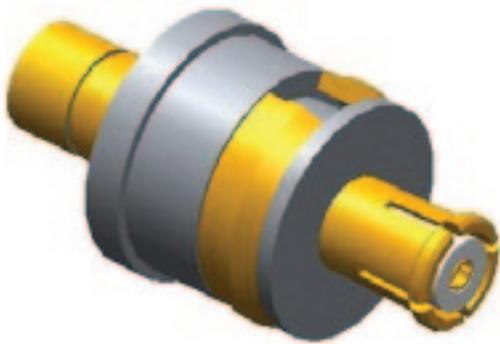
SMP FEMALE, RIGHT ANGLE, FLEXIBLE CABLE

| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| RG178 | MA-SFCR-05-001 | .265 |
| RG316 | MA-SFCR-06-001 | .230 |



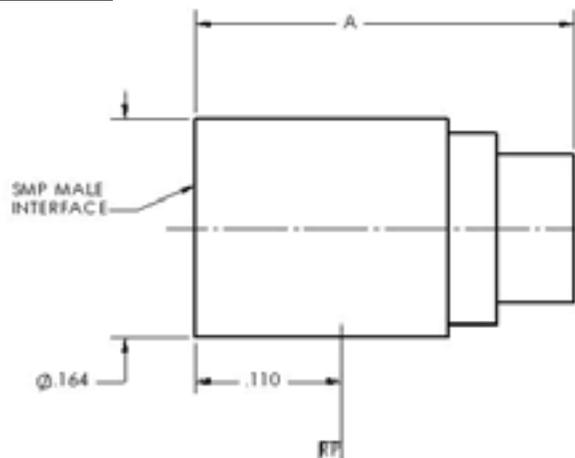
SMP FEMALE, SNAP IN FLOAT MOUNT, FLEXIBLE CABLE

| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| RG178 | MA-SFCM-05-001 | .093 |
| RG178 | MA-SFCM-05-002 | .125 |
| RG316 | MA-SFCM-06-001 | .093 |
| RG316 | MA-SFCM-06-002 | .125 |



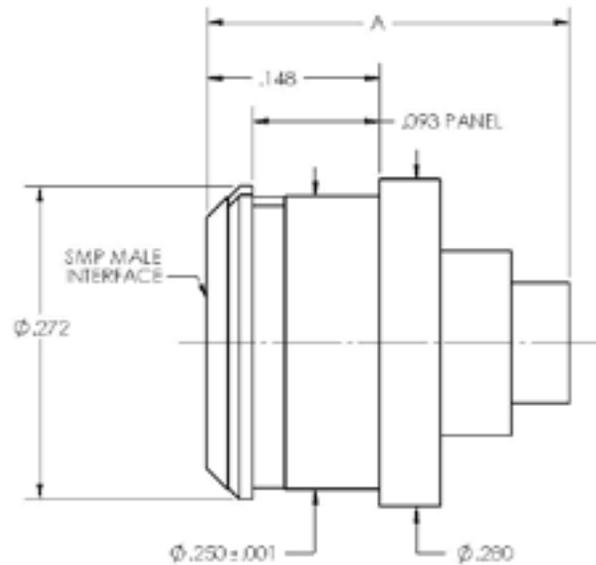
SMP STRAIGHT SHROUD, FLEXIBLE CABLE

| Cable Type | Cristek Part Number | Dim A | Detent |
|------------|---------------------|-------|--------|
| RG178 | MA-SMCS-05-001 | .285 | FD |
| RG316 | MA-SMCS-06-001 | .285 | FD |



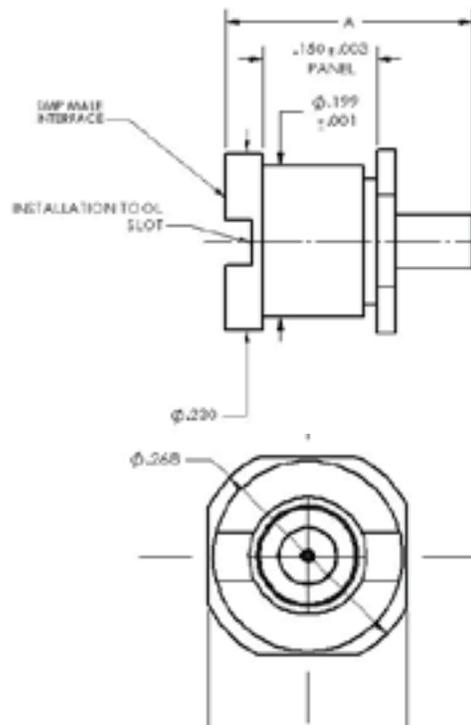
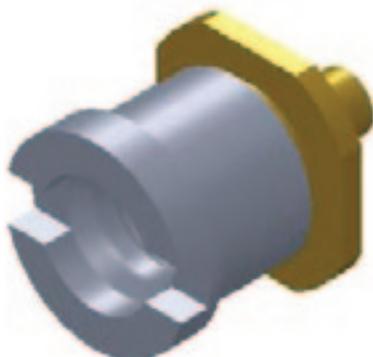
SMP SNAP IN SHROUD, PANEL MOUNT, FLEXIBLE CABLE

| Cable Type | Cristek Part Number | Dim A | Detent |
|------------|---------------------|-------|--------|
| RG178 | MA-SMCJ-05-001-FD | .380 | FD |
| RG178 | MA-SMCJ-05-001-LD | .380 | LD |
| RG178 | MA-SMCJ-05-001-CM | .380 | CM |
| RG316 | MA-SMCJ-06-002-FD | .400 | FD |
| RG316 | MA-SMCJ-06-002-LD | .400 | LD |
| RG316 | MA-SMCJ-06-002-CM | .400 | CM |



SMP THREADED SHROUD, BULKHEAD MOUNT, FLEXIBLE CABLE

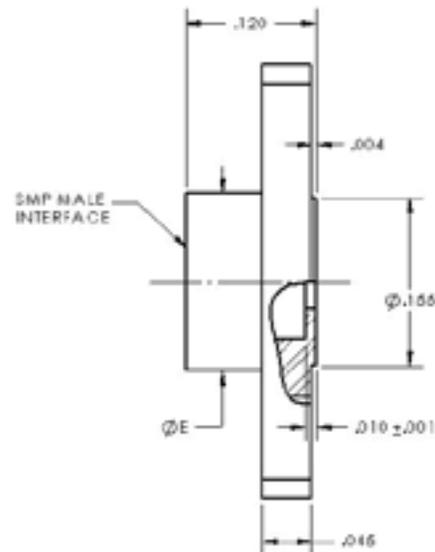
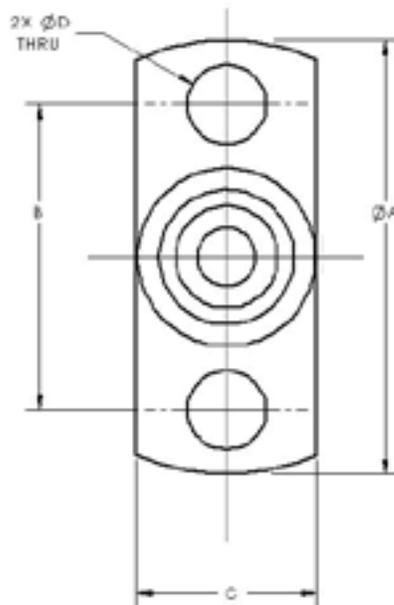
| Cable Type | Cristek Part Number | Dim A | Detent |
|------------|---------------------|-------|--------|
| RG178 | MA-SMCK-05-001-FD | .410 | FD |
| RG178 | MA-SMCK-05-001-LD | .410 | LD |
| RG178 | MA-SMCK-05-001-CM | .410 | CM |
| RG316 | MA-SMCK-06-002-FD | .450 | FD |
| RG316 | MA-SMCK-06-002-LD | .450 | LD |
| RG316 | MA-SMCK-06-002-CM | .450 | CM |



SMP FLANGE MOUNT SHROUD

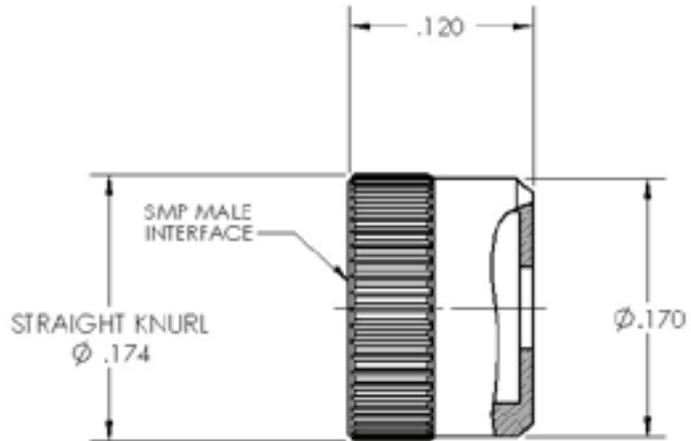
SMP

| Cristek Part Number | Detent | Dim A | Dim B | Dim C | Dim D | DIM E |
|---------------------|--------|-------|-------|-------|-------|----------|
| MA1-SMMF-001-FD | FD | Ø.400 | .282 | .165 | Ø.073 | .170 MAX |
| MA1-SMMF-001-LD | LD | Ø.400 | .282 | .165 | Ø.073 | .170 MAX |
| MA1-SMMF-001-SB | SB | Ø.400 | .282 | .165 | Ø.073 | .170 MAX |
| MA1-SMMF-002-FD | FD | Ø.480 | .328 | .186 | Ø.098 | .170 MAX |
| MA1-SMMF-002-LD | LD | Ø.480 | .328 | .186 | Ø.098 | .170 MAX |
| MA1-SMMF-002-SB | SB | Ø.480 | .328 | .186 | Ø.098 | .170 MAX |
| MA1-SMMF-003-FD | FD | Ø.625 | .481 | .223 | Ø.102 | .170 MAX |
| MA1-SMMF-003-LD | LD | Ø.625 | .481 | .223 | Ø.102 | .170 MAX |
| MA1-SMMF-003-SB | SB | Ø.625 | .481 | .223 | Ø.102 | .170 MAX |
| MA1-SMMF-007-CM | CM | Ø.470 | .352 | .235 | Ø.073 | .240 MAX |



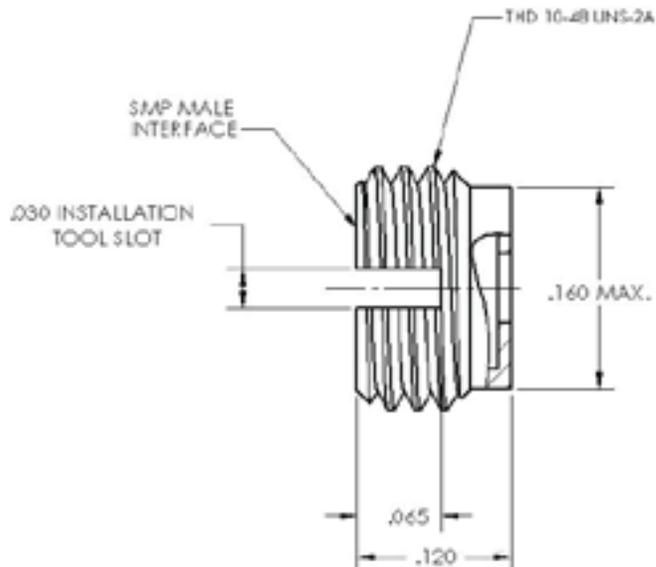
SMP PRESS IN SHROUD

| Cristek Part Number | Detent |
|---------------------|--------|
| MA1-SMMP-001-FD | FD |
| MA1-SMMP-001-LD | LD |
| MA1-SMMP-001-SB | SB |



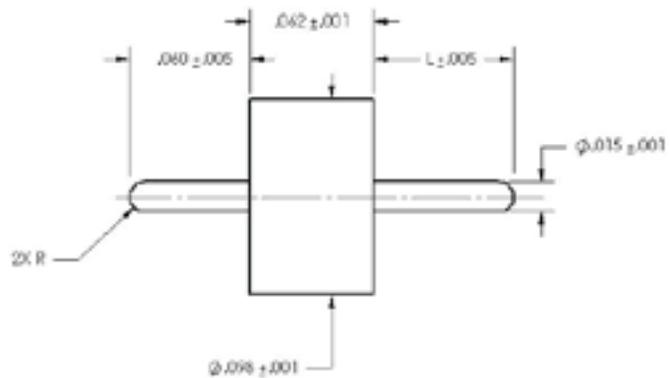
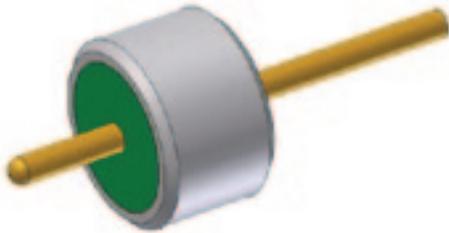
SMP THREAD IN SHROUD

| Cristek Part Number | Detent |
|---------------------|--------|
| MA1-SMMT-001-FD | FD |
| MA1-SMMT-001-LD | LD |
| MA1-SMMT-001-SB | SB |



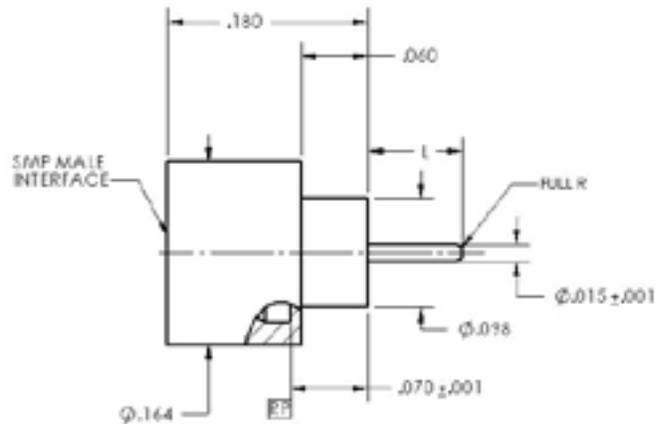
SMP HERMETIC FEED THRU, .015 DIAMETER PIN

| Cristek Part Number | "L" |
|---------------------|------|
| MA-MH-001-070 | .070 |
| MA-MH-001-090 | .090 |
| MA-MH-001-120 | .120 |
| MA-MH-001-150 | .150 |



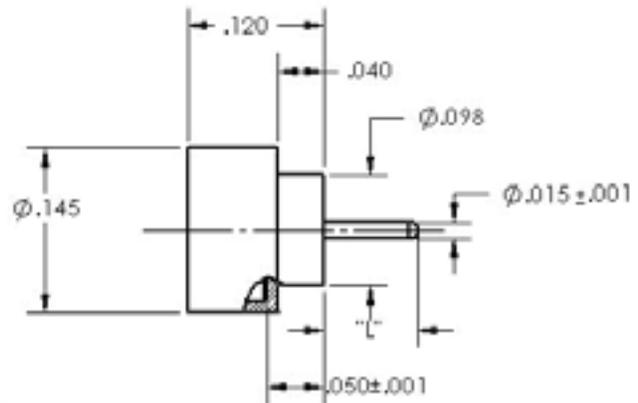
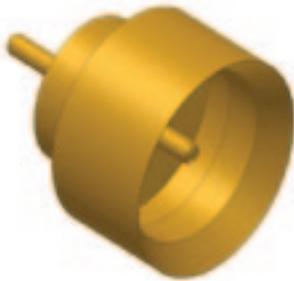
SMP HERMETIC FEED THRU SHROUDED, STANDARD PROFILE

| Cristek Part Number | Detent | "L" |
|---------------------|--------|------|
| MA1-SMZH-001-FD-050 | FD | .050 |
| MA1-SMZH-001-LD-050 | LD | .050 |
| MA1-SMZH-001-SB-050 | SB | .050 |
| MA1-SMZH-001-FD-070 | FD | .070 |
| MA1-SMZH-001-LD-070 | LD | .070 |
| MA1-SMZH-001-SB-070 | SB | .070 |
| MA1-SMZH-001-FD-090 | FD | .090 |
| MA1-SMZH-001-LD-090 | LD | .090 |
| MA1-SMZH-001-SB-090 | SB | .090 |



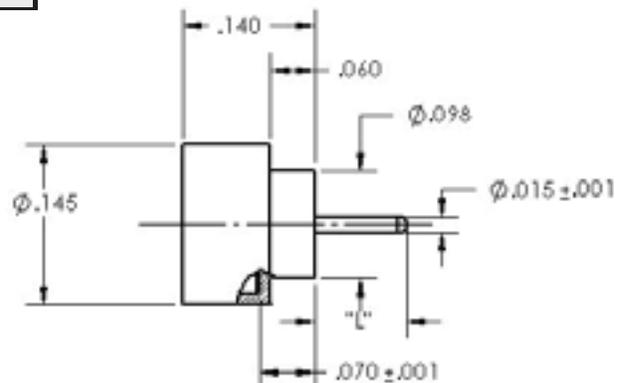
SMP HERMETIC FEED THRU, SHROUDED, LOW PROFILE .120

| Cristek Part Number | Detent | "L" |
|---------------------|--------|------|
| MA1-SMZH-002-FD-050 | FD | .050 |
| MA1-SMZH-002-LD-050 | LD | .050 |
| MA1-SMZH-002-SB-050 | SB | .050 |
| MA1-SMZH-002-FD-070 | FD | .070 |
| MA1-SMZH-002-LD-070 | LD | .070 |
| MA1-SMZH-002-SB-070 | SB | .070 |
| MA1-SMZH-002-FD-090 | FD | .090 |
| MA1-SMZH-002-LD-090 | LD | .090 |
| MA1-SMZH-002-SB-090 | SB | .090 |



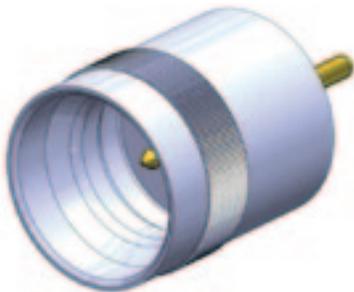
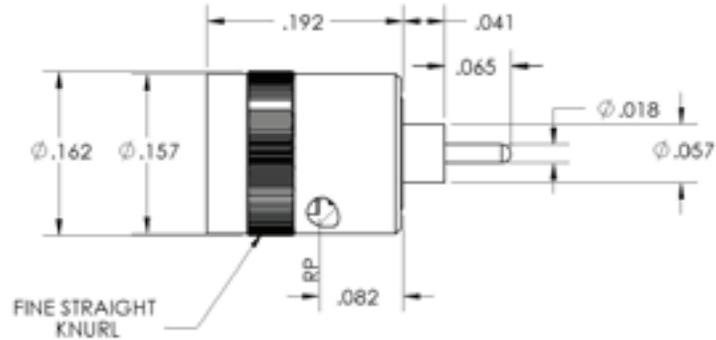
SMP HERMETIC FEEDTHRU, SHROUDED LOW PROFILE .140

| Cristek Part Number | Detent | "L" |
|---------------------|--------|------|
| MA1-SMZH-003-FD-050 | FD | .050 |
| MA1-SMZH-003-LD-050 | LD | .050 |
| MA1-SMZH-003-SB-050 | SB | .050 |
| MA1-SMZH-003-FD-070 | FD | .070 |
| MA1-SMZH-003-LD-070 | LD | .070 |
| MA1-SMZH-003-SB-070 | SB | .070 |
| MA1-SMZH-003-FD-090 | FD | .090 |
| MA1-SMZH-003-LD-090 | LD | .090 |
| MA1-SMZH-003-SB-090 | SB | .090 |



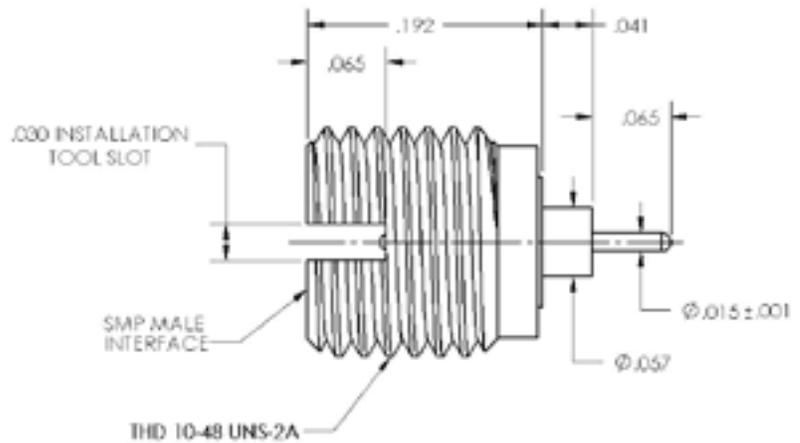
SMP PRESS IN “SPARK PLUG”, NON HERMETIC

| Cristek Part Number | Detent |
|---------------------|--------|
| MA1-SMZP-001-FD | FD |
| MA1-SMZP-001-LD | LD |
| MA1-SMZP-001-SB | SB |



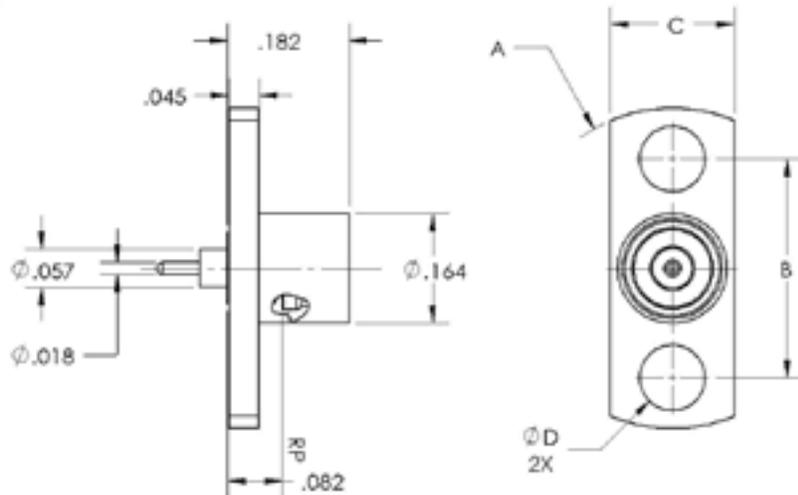
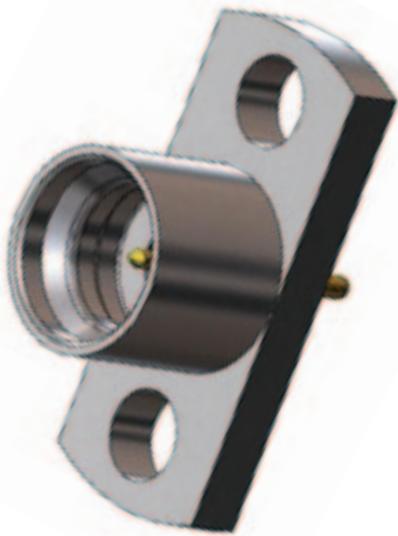
SMP THREAD IN, “SPARK PLUG”, NON HERMETIC

| Cristek Part Number | Detent |
|---------------------|--------|
| MA-SMZT-001-FD | FD |
| MA-SMZT-001-LD | LD |
| MA-SMZT-001-SB | SB |



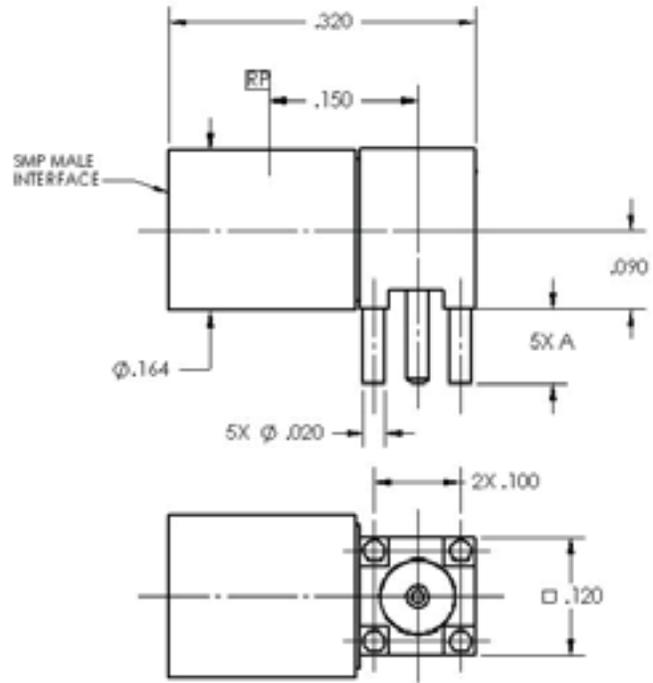
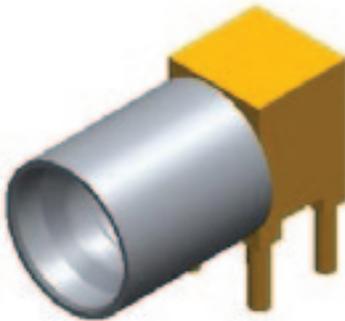
SMP FEED THRU, FLANGE MOUNT, SHROUDED LAUNCH

| Cristek Part Number | Detent | Dim A | Dim B | Dim C | Dim D |
|---------------------|--------|-------|-------|-------|-------|
| MA1-SMZ-001-FD | FD | Ø.400 | .282 | .165 | Ø.073 |
| MA1-SMZ-001-LD | LD | Ø.400 | .282 | .165 | Ø.073 |
| MA1-SMZ-001-SB | SB | Ø.400 | .282 | .165 | Ø.073 |
| MA1-SMZ-002-FD | FD | Ø.480 | .328 | .186 | Ø.098 |
| MA1-SMZ-002-LD | LD | Ø.480 | .328 | .186 | Ø.098 |
| MA1-SMZ-002-SB | SB | Ø.480 | .328 | .186 | Ø.098 |
| MA1-SMZ-003-FD | FD | Ø.625 | .481 | .223 | Ø.102 |
| MA1-SMZ-003-LD | LD | Ø.625 | .481 | .223 | Ø.102 |
| MA1-SMZ-003-SB | SB | Ø.625 | .481 | .223 | Ø.102 |



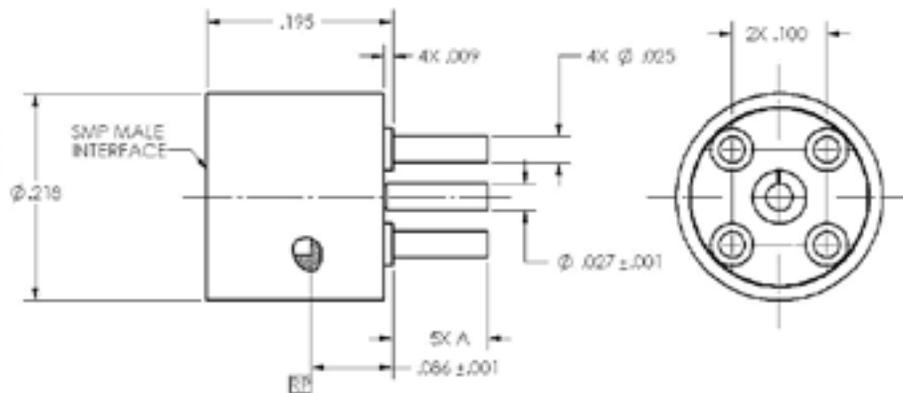
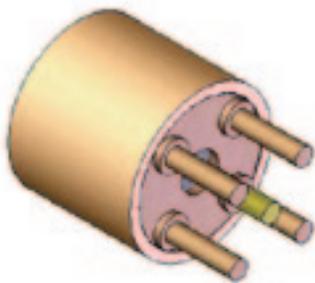
SMP MALE, RIGHT ANGLE, THRU HOLE, PCB

| Cristek Part Number | Dim A | Detent |
|---------------------|-------|--------|
| MA1-SMDR-001-FD | .096 | FD |
| MA1-SMDR-001-LD | .096 | LD |
| MA1-SMDR-001-SB | .096 | SB |
| MA1-SMDR-002-FD | .140 | FD |
| MA1-SMDR-002-LD | .140 | LD |
| MA1-SMDR-002-SB | .140 | SB |



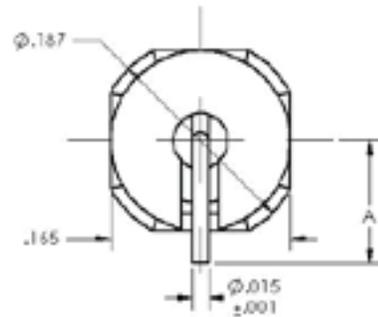
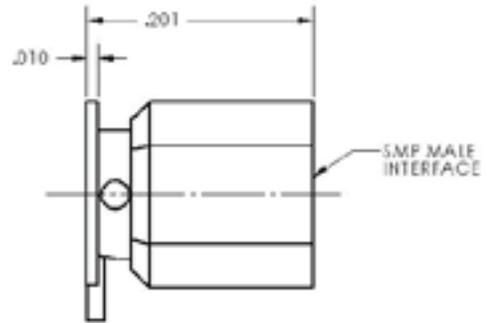
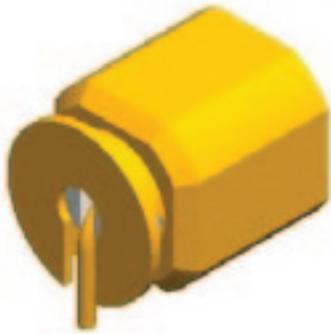
SMP MALE, VERTICAL, THRU HOLE, PCB

| Cristek Part Number | Dim A | Detent |
|---------------------|-------|--------|
| MA1-SMDS-001-FD | .100 | FD |
| MA1-SMDS-001-LD | .100 | LD |
| MA1-SMDS-001-SB | .100 | SB |
| MA1-SMDS-002-FD | .140 | FD |
| MA1-SMDS-002-LD | .140 | LD |
| MA1-SMDS-002-SB | .140 | SB |



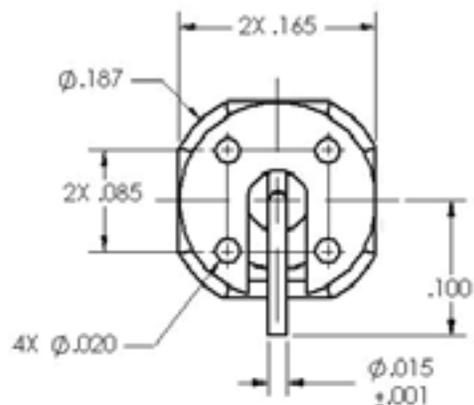
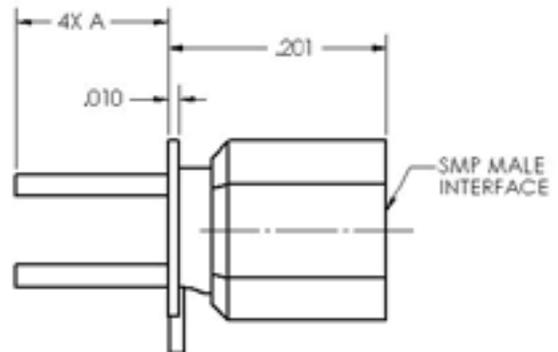
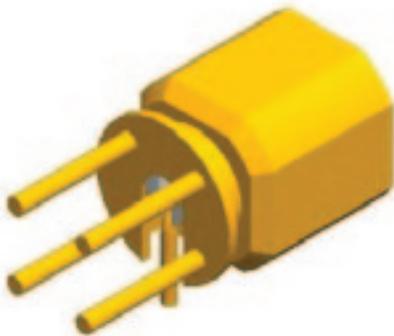
SMP MALE, VERTICAL, SURFACE MOUNT, PCB

| Cristek Part Number | Dim A | Detent |
|---------------------|-------|--------|
| MA-SMUN-001-FD | .100 | FD |
| MA-SMUN-001-LD | .100 | LD |
| MA-SMUN-001-SB | .100 | SB |



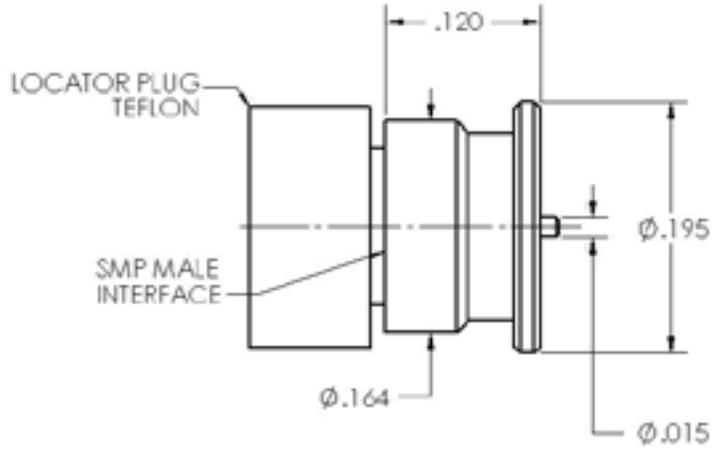
SMP MALE, VERTICAL, SURFACE MOUNT WITH THRU LEGS, PCB

| Cristek Part Number | Dim A | Detent |
|---------------------|-------|--------|
| MA-SMUN-004-FD | .140 | FD |
| MA-SMUN-004-LD | .140 | LD |
| MA-SMUN-004-SB | .140 | SB |



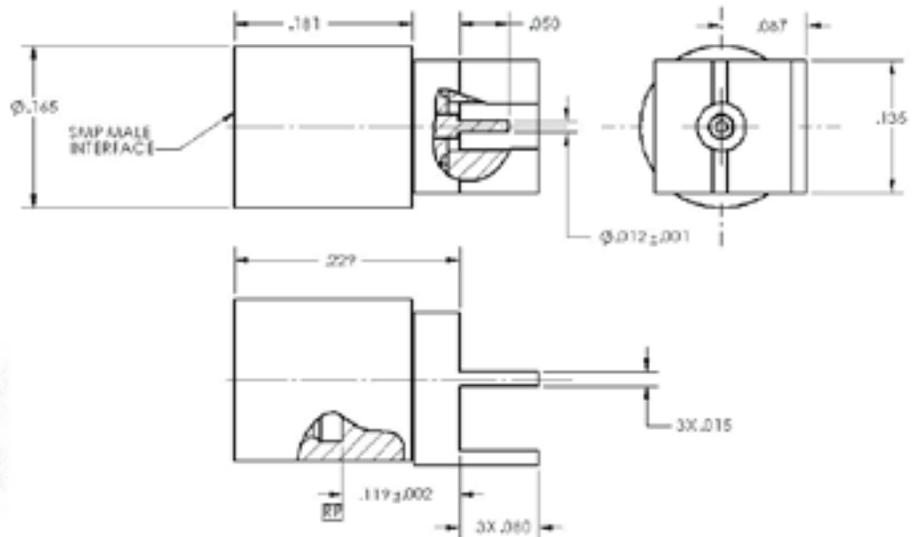
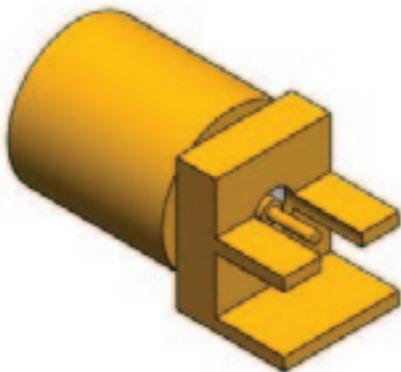
SMP MALE, VERTICAL, SURFACE MOUNT, PCB

| Cristek PN | Detent |
|----------------|--------|
| MA-SMUS-002-FD | FD |
| MA-SMUS-002-LD | LD |
| MA-SMUS-002-SB | SB |



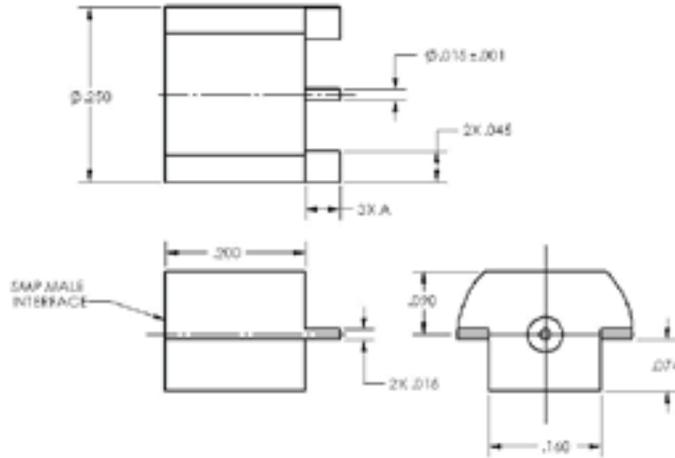
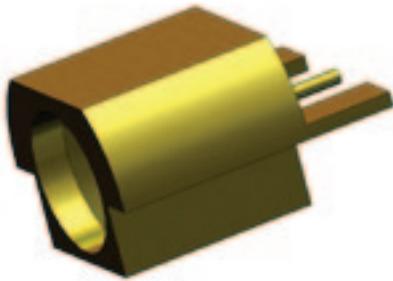
SMP MALE, EDGE LAUNCH, PCB

| Cristek PN | Detent |
|-----------------|--------|
| MA1-SMZE-001-FD | FD |
| MA1-SMZE-001-LD | LD |
| MA1-SMZE-001-SB | SB |



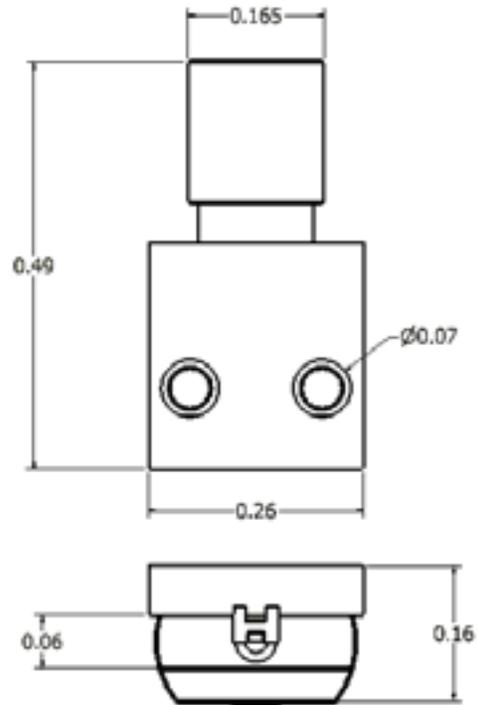
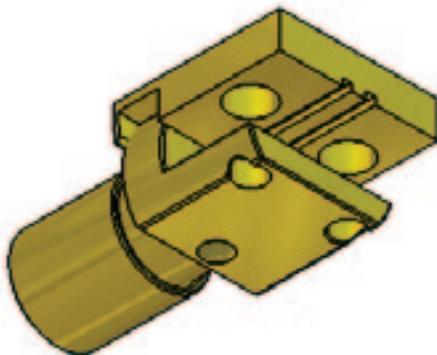
SMP MALE, NOTCH EDGE LAUNCH, PCB

| Cristek PN | Dim A | Detent |
|----------------|-------|--------|
| MA-SMZE-002-FD | .090 | FD |
| MA-SMZE-002-LD | .090 | LD |
| MA-SMZE-002-SB | .090 | SB |



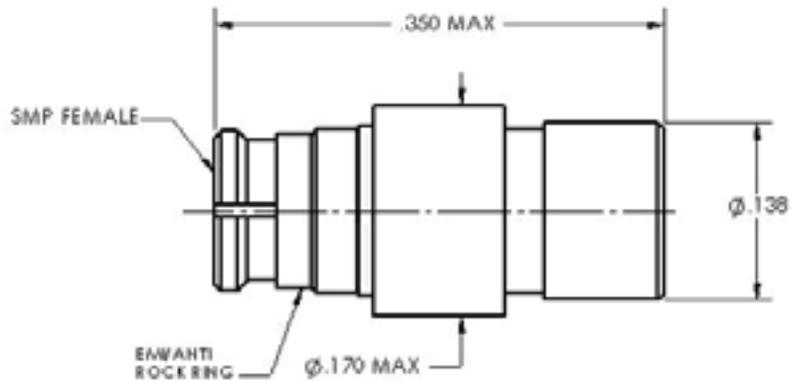
SMP MALE, SOLDERLESS EDGE LAUNCH, PCB

| Cristek PN | BOARD THICKNESS | Detent |
|----------------|-----------------|--------|
| MA-SMNJ-001-FD | .020 | FD |
| MA-SMNJ-001-LD | .020 | LD |
| MA-SMNJ-001-SB | .020 | SB |
| MA-SMNJ-002-FD | .030 | FD |
| MA-SMNJ-002-LD | .030 | LD |
| MA-SMNJ-002-SB | .030 | SB |



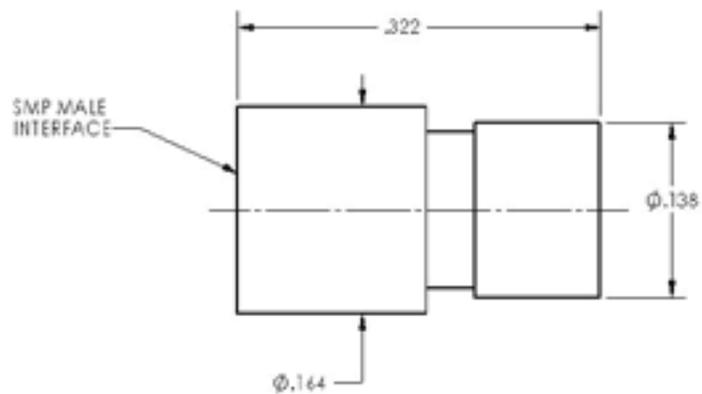
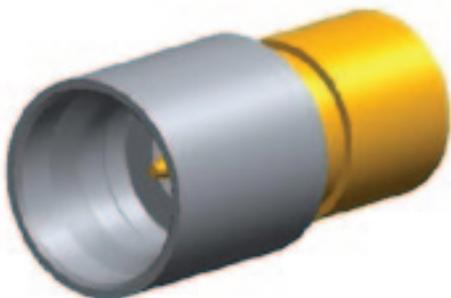
SMP FEMALE, 50 OHM, FIELD GRADE TERMINATION

| Cristek PN | VSWR MAX. | FREQUENCY RANGE | POWER MAX. |
|--------------|------------------|------------------------------|------------|
| MA1-SFTS-002 | 1.15:1 1.30:1 | DC to 18 GHz 18 to 40 GHz | .25 Watts |



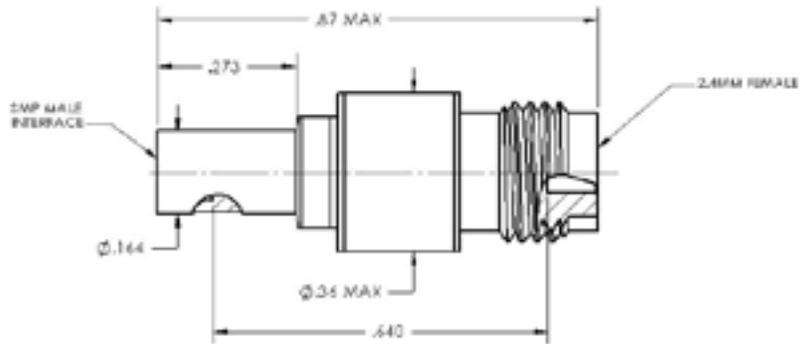
SMP MALE, 50 OHM, FIELD GRADE TERMINATION

| Cristek PN | Detent | VSWR MAX | FREQUENCY RANGE | POWER MAX. |
|-----------------|---------|------------------|------------------------------|------------|
| MA1-SMTS-002-FD | Full | 1.15:1 1.30:1 | DC TO 18 GHZ 18 TO 40 GHZ | .25 WATTS |
| MA1-SMTS-002-LD | Limited | | | |
| MA1-SMTS-002-SB | Smooth | | | |



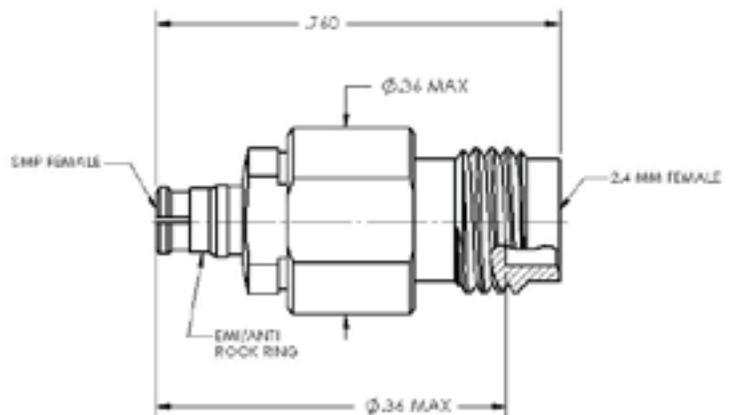
SMP MALE TO 2.4MM JACK ADAPTER

| Cristek Part Number | VSWR MAX | FREQUENCY RANGE | DETENT |
|---------------------|----------|-----------------|---------|
| MD1-FJSD-SS-001 | 1.2:1 | DC TO 40 GHZ | Full |
| MD1-FJSL-SS-001 | 1.2:1 | DC TO 40 GHZ | Limited |
| MD1-FJSS-SS-001 | 1.2:1 | DC TO 40 GHZ | Smooth |



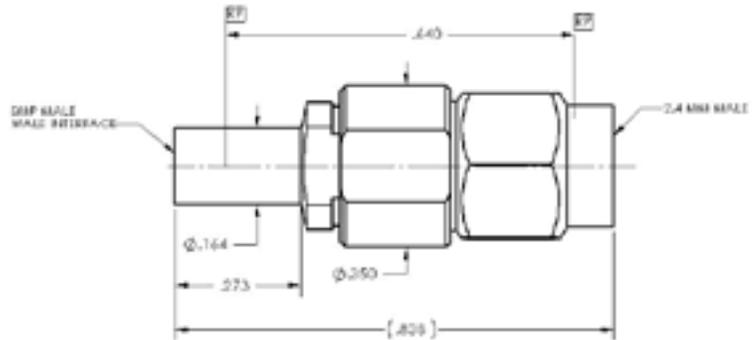
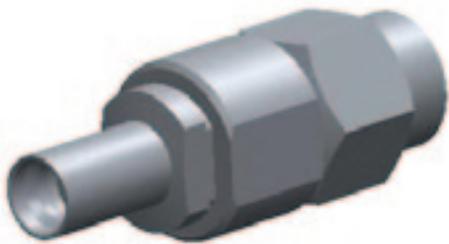
SMP FEMALE TO 2.4MM JACK ADAPTER

| Cristek Part Number | VSWR MAX | FREQUENCY RANGE |
|---------------------|----------|-----------------|
| MD1-FJSF-SS-001 | 1.2:1 | DC TO 40 GHZ |



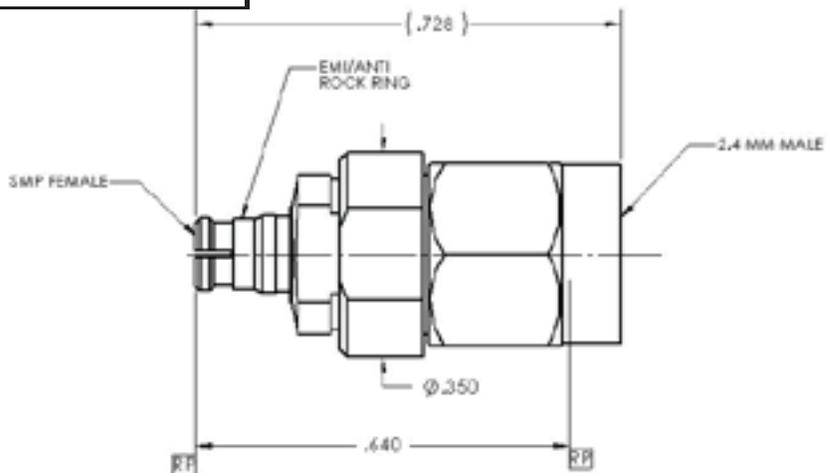
SMP MALE TO 2.4MM PLUG ADAPTER

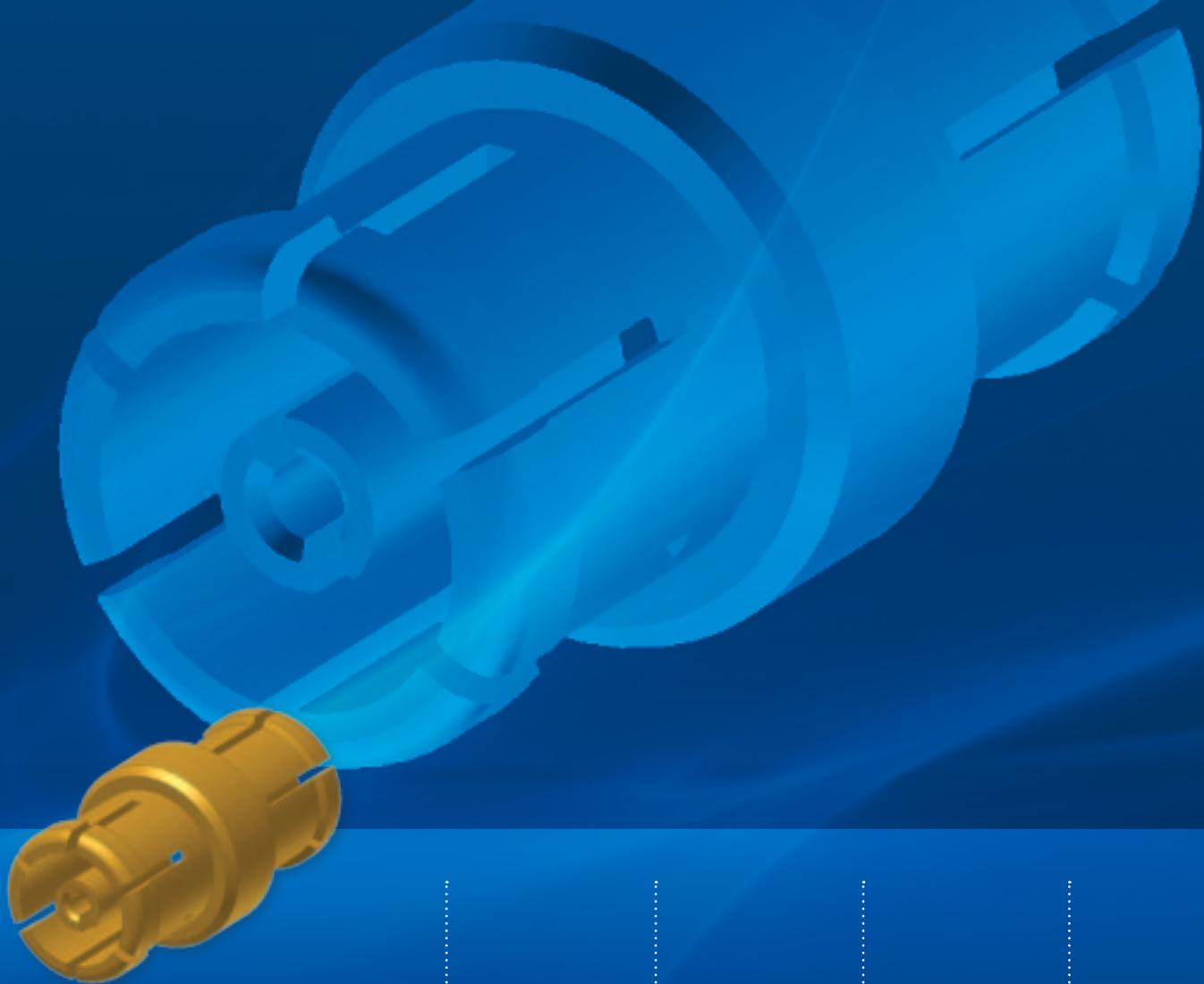
| Cristek Part Number | VSWR MAX | FREQUENCY RANGE | DETENT |
|---------------------|----------|-----------------|---------|
| MD1-FPSD-SS-001 | 1.2:1 | DC TO 40 GHZ | Full |
| MD1-FPSL-SS-001 | 1.2:1 | DC TO 40 GHZ | Limited |
| MD1-FPSS-SS-001 | 1.2:1 | DC TO 40 GHZ | Smooth |



SMP FEMALE TO 2.4MM PLUG ADAPTER

| Cristek Part Number | VSWR MAX | FREQUENCY RANGE |
|---------------------|----------|-----------------|
| MD1-FPSF-SS-001 | 1.2:1 | DC TO 40 GHZ |



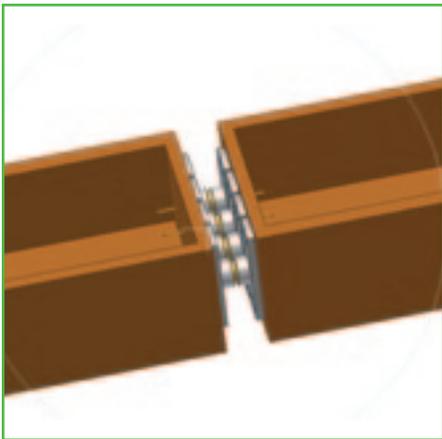


SMPM



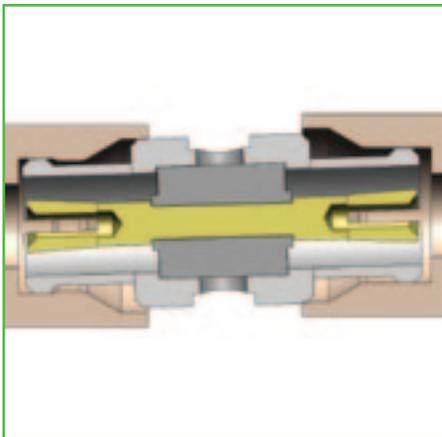
SMPM High Frequency Push-on

The SMPM connector, which is 30% smaller than its cousin, the SMPM, has similar features and applications. This is a multi-functional high frequency push-on connector suitable for use in a variety of applications. This ultra miniature connector can be used for applications ranging from hermetic modules to backplanes, and because of its diminutive size, it is ideal for “gang” or multi-connector configurations. Unlike other push-on type connectors, the frequency range of the connector is not limited by the push on, blind mate construction. These deceptively robust connectors are designed to mate tightly and maintain performance through 65 GHz



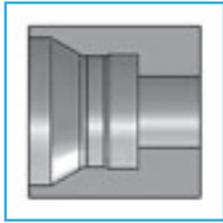
Module to Module (board to board)

One of the benefits of the SMPM connector is its ability to join two RF/ Microwave Modules or PC Boards to one another without the use of cables. In the past this was difficult and/or costly because of the tolerances necessary to ensure good alignment between modules or boards. The key component used in this application is an inseries female to female SMPM adapter called a “Bullet”. The bullet is a unique connector that can be used to join two micro-wave modules or boards together by placing the bullet between two SMPM Male connectors or shrouds. This method produces a tight, compact arrangement.

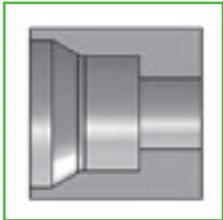


Misalignment

The SMPM’s ability to tolerate axial and radial misalignment while maintaining microwave performance is one of the key’s to it industry popularity. The SMPM accommodates axial and radial misalignment without the use of bulky springs or other alignment tools. This is why it is possible to use these connectors in module to module (board to board) applications. Although the bullet fits tightly into the mating shroud, by design, it has the ability to move slightly while maintaining its performance. This slight radial and axial movement gives the SMPM bullet its “Float”. When installed properly, the standard SMPM bullet/shroud combination can withstand $\pm .010$ ” (.25mm) Axial and $\pm .010$ ” (.25mm) Radial float.



Full Detent



Smooth Bore

Detents

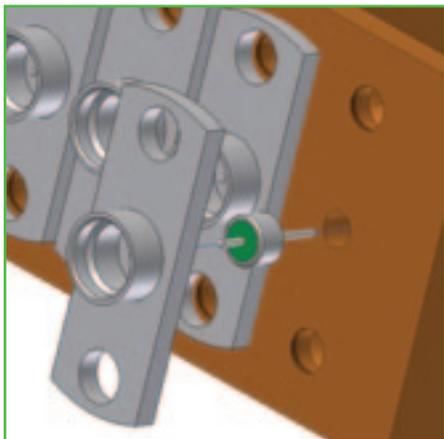
The SMPM has two types of detent as specified in MIL-STD-348. The detents are the Full and Smooth Bore. The full detent gives the largest insertion and withdrawal forces while the smooth bore gives the least. Each detent is developed for specific purposes depending on the application. The smooth bore is used on many blindmate applications where increased axial and radial float is needed. To provide assurance that the bullet will stay on one of the modules, the full detent SMPM male shroud is used on one module and a smooth bore shroud is used on the other. This will ensure when modules are taken apart that the bullet will stay with the full detent shroud. Full detents are used when withdrawal forces need to be high such as when a SMPM female cabled connector is used.

Hermetic Seals

In some cases it is important to have a hermetic module which creates high expense and extreme difficulty for most connectors. In the case of the SMPM, it is an easy process to create an hermetic module. All that is necessary is a .012" glass feed through and shroud. The glass feed through is fired or soldered in the housing just as any other feed through. The shroud is then placed around the feed through, creating the SMPM male connector. Performance is improved over other hermetic seals since the center pin of the feed through is the male contact and no additional contacts or insulators are needed.

Cable Connectors

The SMPM may also be used for cable assemblies. These assemblies have the advantage of being quick disconnects while still maintaining performance at frequency ranges higher than other push on type connectors. The full detent is used when mating an SMPM cable assembly so that it will maintain the maximum retention.



Electrical

| | |
|--|--------------------|
| Impedance | 50 Ohms |
| Operating Frequency | DC to 65 GHz |
| Center Contact Resistance | 6.0 milliohms |
| Dielectric Withstanding Voltage (60 Hz) | |
| Sea level | 325 Volts RMS Min. |
| 70,000 ft | 125 Volts RMS Min. |
| Corona Extinction Voltage (70,000ft) | 125 Volts RMS Min. |
| RF High Potential Voltage (5MHz) | 200 Volts RMS Min. |
| Insulation Resistance | 5000 Megohms |
| Voltage Rating | |
| Sea level | 335 Volts RMS Max. |
| 70,000 ft | 65 Volts RMS Max. |
| RF leakage | -80 dB to 3 GHz |
| | -65 dB to 26.5 GHz |

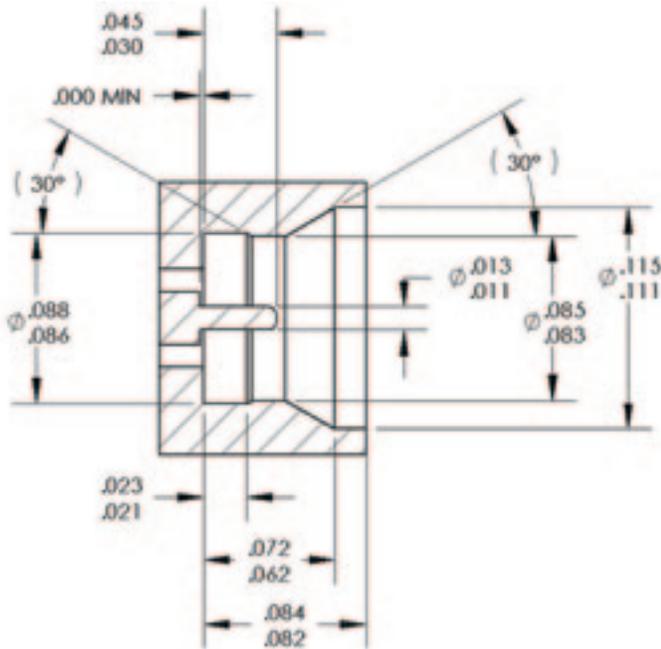
Mechanical

| | |
|----------------------------|--------------------|
| Axial Misalignment | .010" (.25mm) Max. |
| Radial Misalignment | ±.010" (.25mm) |
| Durability | |
| Full Detent | 100 Cycle |
| Smooth Bore | 1000 Cycles |
| Force to Engage | |
| Full Detent | 6 lbs (26.6N) Max. |
| Smooth Bore | 3 lbs (13.3N) Max. |
| Force to Disengage | |
| Full Detent | 7 lbs (31.1N) Min. |
| Smooth Bore | 0.5 (2.2N) Min. |
| Permeability | <2.0Mu |

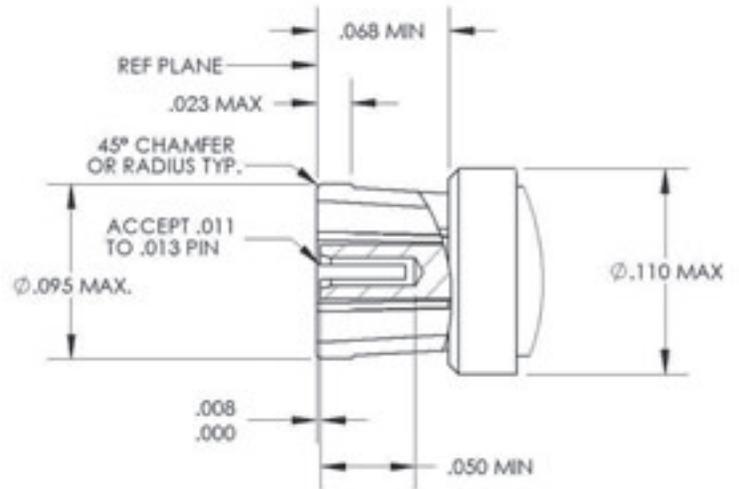
Environmental

| | |
|------------------------------|--|
| Operating Temperature | -65°C to +165°C |
| Storage Temperature | -65°C to +200°C |
| Corrosion | MIL-STD-202, Method 101 Test Condition B, 5% Salt Solution |
| Vibration | MIL-STD-202, Method 204 Test Condition B, 15 min/axis |
| Random Vibration | MIL-STD-202, Method 214 Test Condition F, 15 min/axis |
| Mechanical Shock | MIL-STD-202, Method 213 Test Condition I, 100g's Sawtooth Axis |
| Thermal Shock | MIL-STD-202, Method 107 Test Condition B, +165°C High Temp. |

* Individual connector may vary consult factory for specific specification



SMMPM Full Detent



Materials

Beryllium Copper (BeCu)

Per ASTM B 196 or ASTM B 197

Stainless Steel 303

Per ASTM A 484, ASTM A 582, ASTM A 555 or ASTM A 581

PTFE

Per ASTM D 1710

Brass

Per ASTM B 36, ASTM B 121, ASTM B 16 or ASTM B 16M

Kovar

Per ASTM F 15

Glass

Corning 7070

Standard Finish

Gold

Per MIL-DLT-45204 , Type III, Grade C Class 1

Nickel

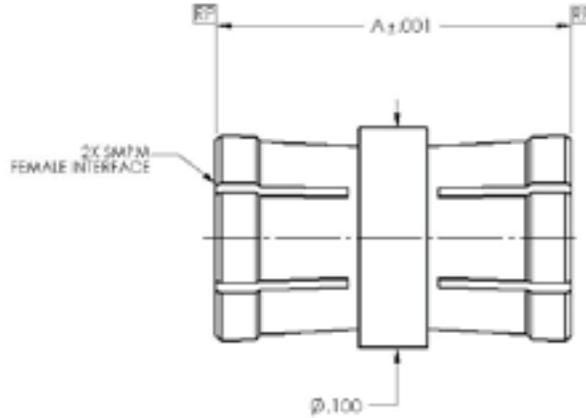
Per SAE ASM 2404

Passivate

Per ASTM A967 or SAE AMS 2700

SMPM INTERCONNECT (BULLET)

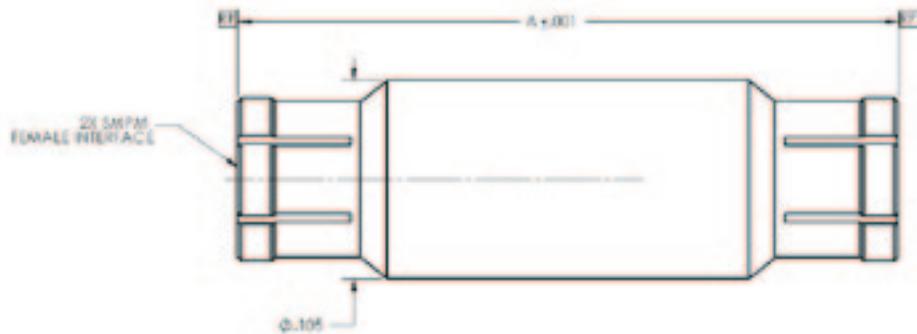
| Cristek Part Number | DIM A |
|---------------------|-------|
| MBI-MI61-SI | .161 |
| MBI-MI66-SI | .166 |



SMPM

SMPM INTERCONNECT (BULLET)

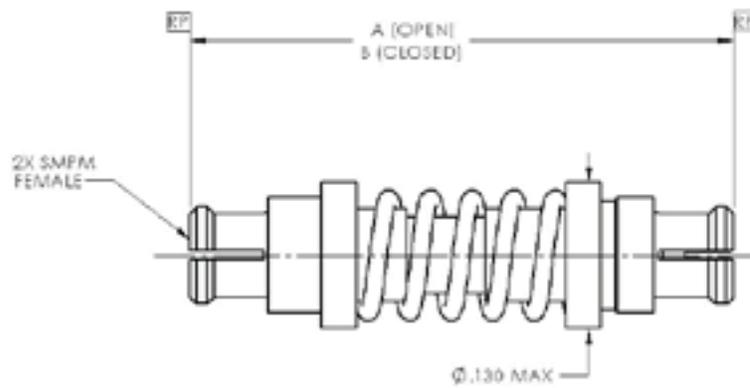
| Cristek Part Number | DIM A |
|---------------------|-------|
| MBI-M210-SI | .210 |
| MBI-M349-SI | .349 |
| MBI-M500-SI | .500 |



SMPM INTERCONNECT (BULLET)

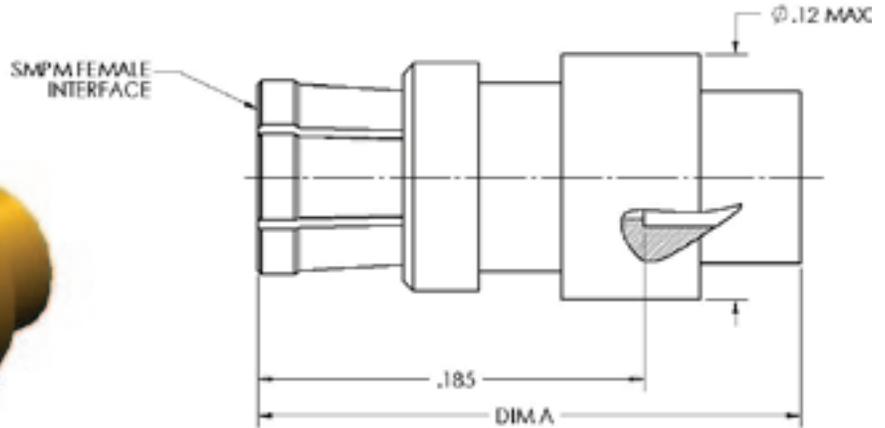
| Cristek Part Number | Dim A OPEN | Dim B CLOSED |
|---------------------|---------------|-----------------|
| MD-MFMF-L-001 | .530 | .480 |
| MD-MFMF-L-002 | .650 | .600 |

SMPM



SMPM FEMALE, STRAIGHT, SEMI-RIGID CABLE

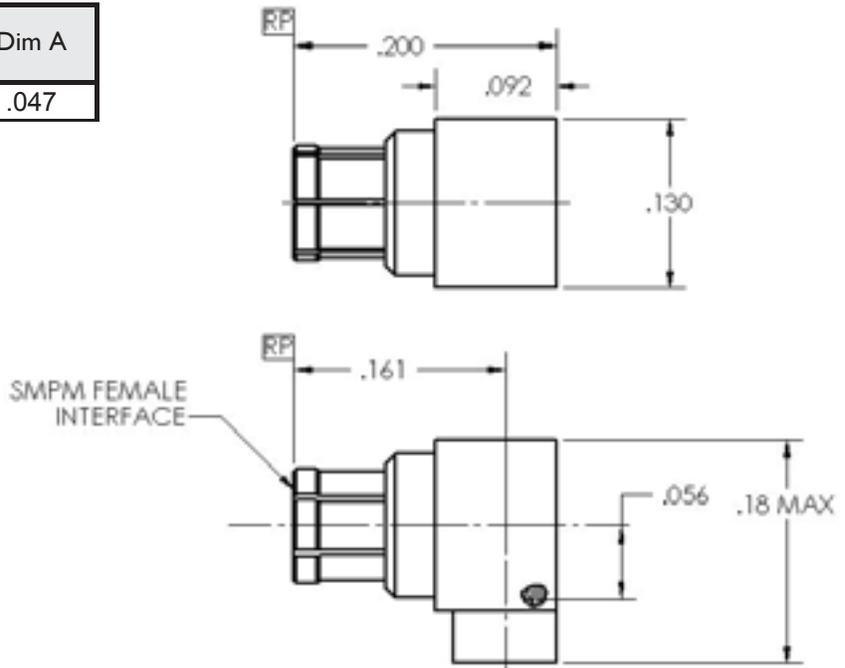
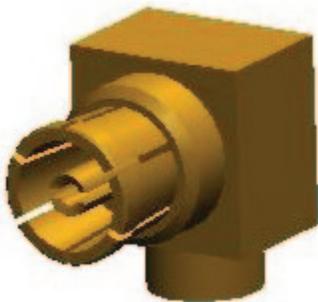
| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR .047 | MA-MFCS-02-001 | .260 |



SMPM

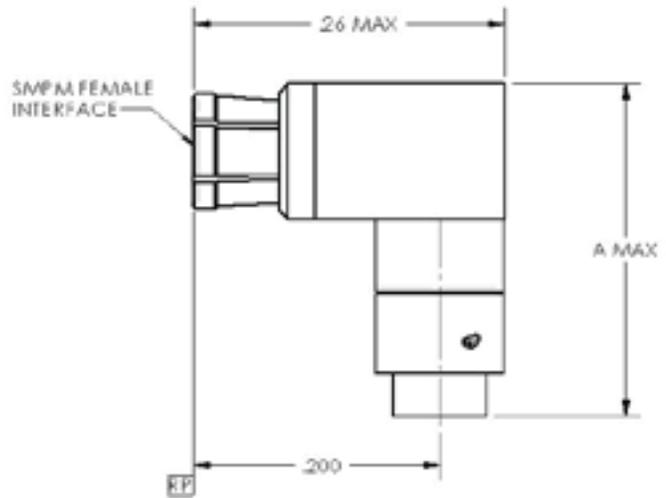
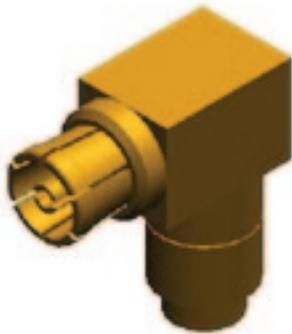
SMPM FEMALE, RIGHT ANGLE, SEMI-RIGID CABLE

| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR .047 | MA-MFCR-02-001 | .047 |



SMMPM FEMALE, RIGHT ANGLE, HIGH FREQUENCY, SEMI-RIGID CABLE

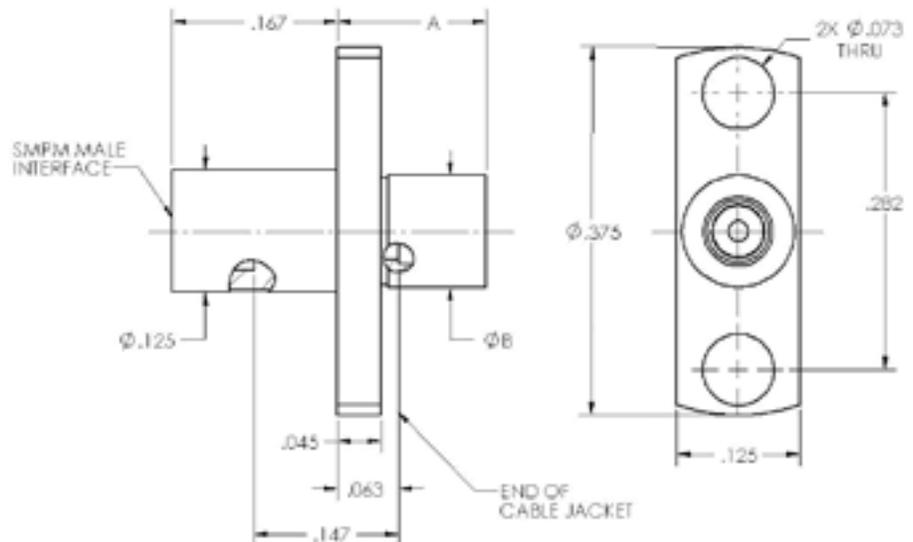
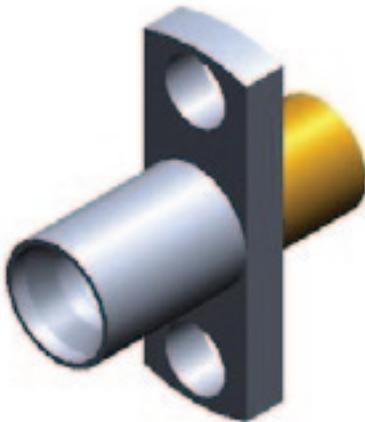
| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR .047 | MA-MFN-02-001 | .270 |



SMMPM

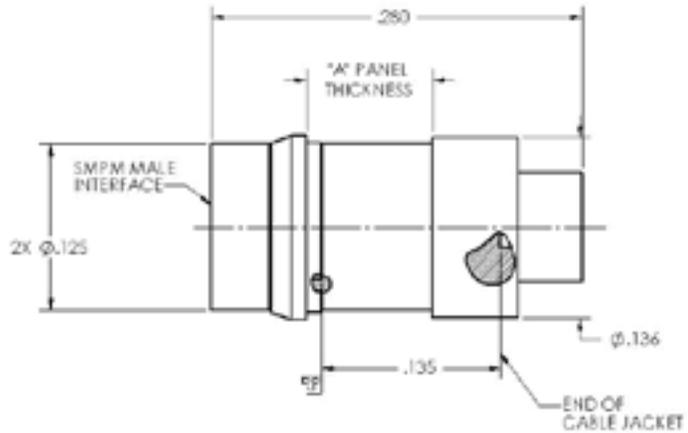
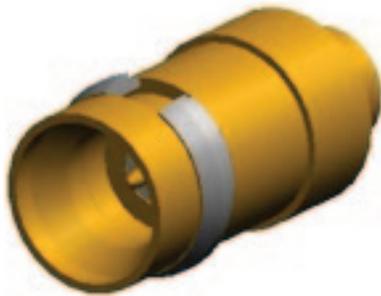
SMMPM FEED THRU, FLANGE MOUNT, SEMI-RIGID CABLE

| Cable Type | Cristek Part Number | Dim A | Dim B |
|------------|---------------------|-------|-------|
| SR 086 | MA-MMCF-01-001 | .153 | .116 |
| SR 047 | MA-MMCF-02-001 | .095 | .076 |



SMPM SNAP IN SHROUD, PANEL MOUNT, SEMI-RIGID CABLE

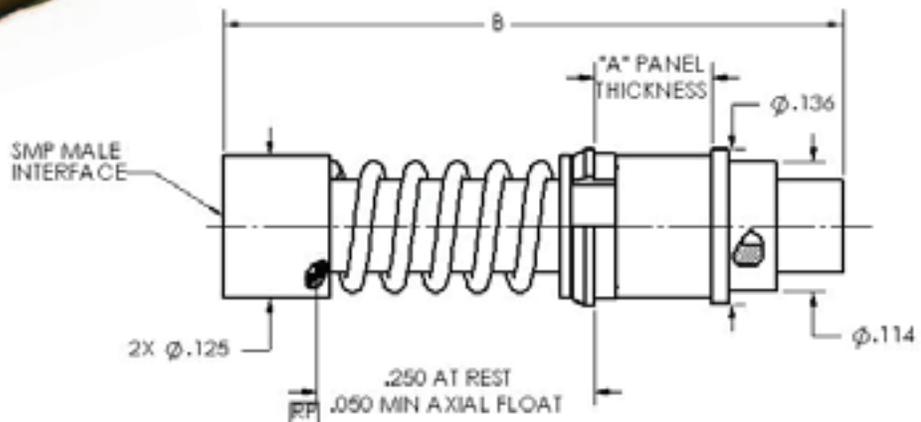
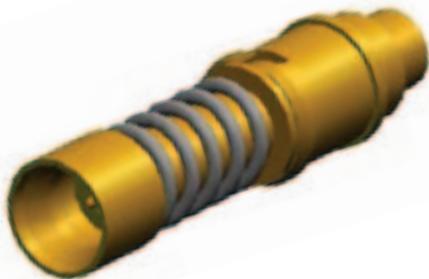
| CABLE TYPE | Cristek PN | PANEL THICKNESS |
|------------|----------------|-----------------|
| SR.047 | MA-MMCJ-02-001 | .093 |
| SR.047 | MA-MMCJ-02-002 | .125 |



SMPM

SMPM SNAP IN SHROUD, FLOAT MOUNT, SEMI-RIGID CABLE

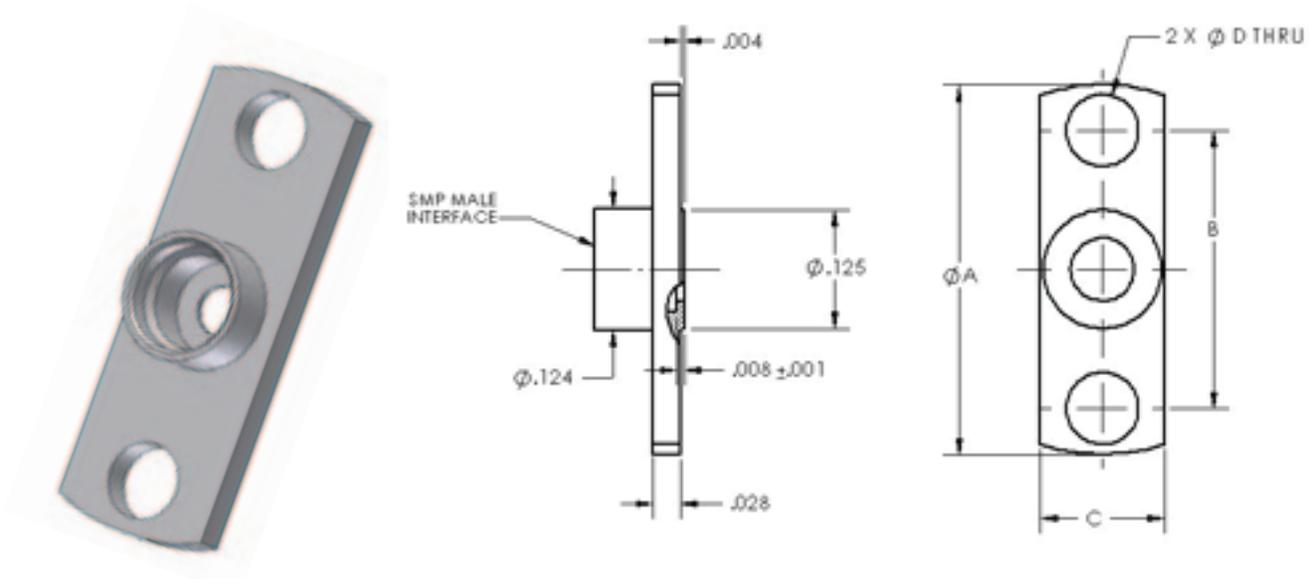
| Cable Type | Cristek PN | "A" PANEL THICKNESS | Dim B |
|------------|----------------|---------------------|-------|
| SR.047 | MA-MMCM-02-001 | .093 | .548 |
| SR.047 | MA-MMCM-02-002 | .125 | .580 |



SMP FLANGE MOUNT SHROUD

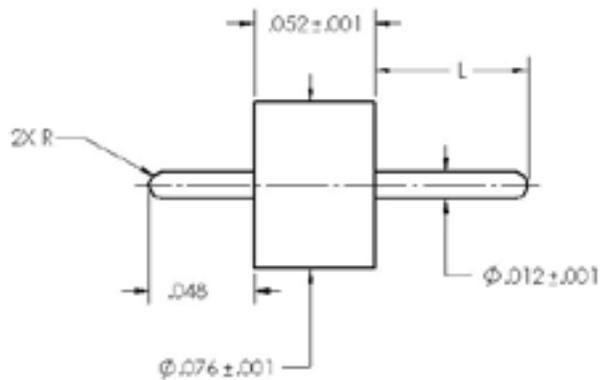
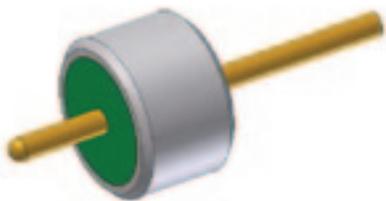
| Cristek Part Number | Detent | Dim A | Dim B | Dim C | Dim D |
|---------------------|--------|-------|-------|-------|-------|
| MA1-MMMF-001-FD | FD | Ø.375 | .282 | .125 | Ø.073 |
| MA1-MMMF-001-SB | SB | Ø.375 | .282 | .125 | Ø.073 |
| MA1-MMMF-002-FD | FD | Ø.625 | .481 | .150 | Ø.103 |
| MA1-MMMF-002-SB | SB | Ø.625 | .481 | .150 | Ø.103 |

SMPM



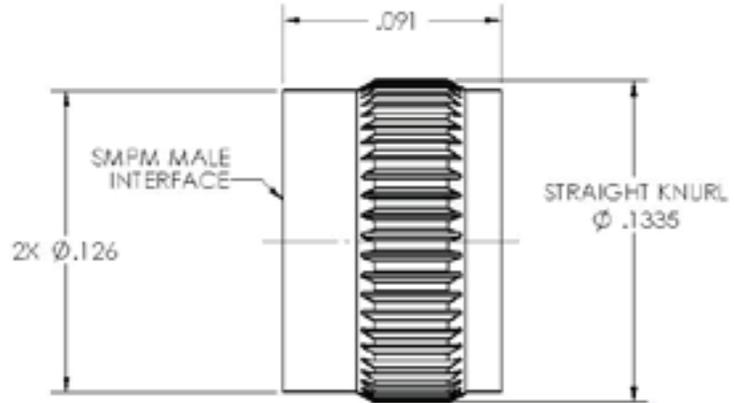
SMPM HERMETIC FEED THRU, .012 DIAMETER PIN

| Cristek Part Number | "L" |
|---------------------|------|
| MCN1-MH-002-070 | .070 |
| MCN1-MH-002-090 | .090 |
| MCN1-MH-002-120 | .120 |
| MCN1-MH-002-150 | .150 |



SMPM PRESS IN SHROUD

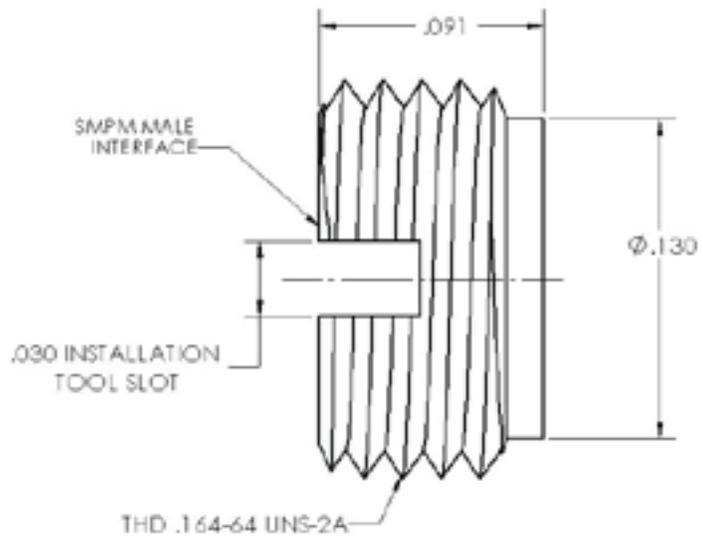
| Cristek Part Number | Detent |
|---------------------|--------|
| MA1-MMMP-001-FD | FD |
| MA1-MMMP-001-SB | SB |



SMPM

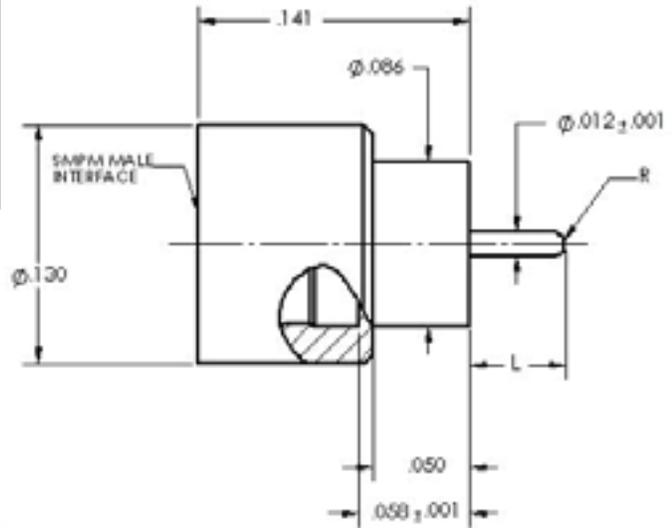
SMPM THREAD IN SHROUD

| Cristek Part Number | Detent |
|---------------------|--------|
| MA1-MMMT-001-FD | FD |
| MA1-MMMT-001-SB | SB |



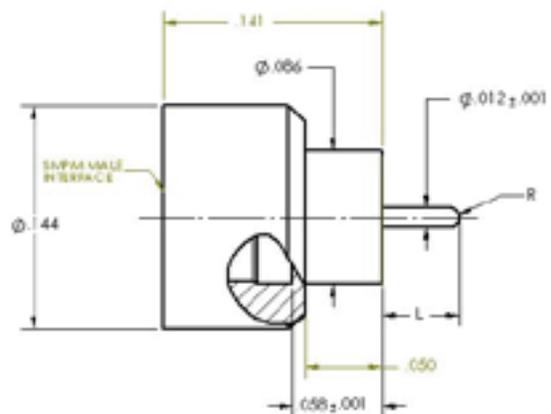
SMPM HERMETIC FEED THRU, SHROUDED, Ø.130

| Cristek Part Number | Detent | "L" |
|---------------------|--------|------|
| MA-MMZH-001-FD-050 | FD | .050 |
| MA-MMZH-001-SB-050 | SB | .050 |
| MA-MMZH-001-FD-070 | FD | .070 |
| MA-MMZH-001-SB-070 | SB | .070 |
| MA-MMZH-001-FD-090 | FD | .090 |
| MA-MMZH-001-SB-090 | SB | .090 |



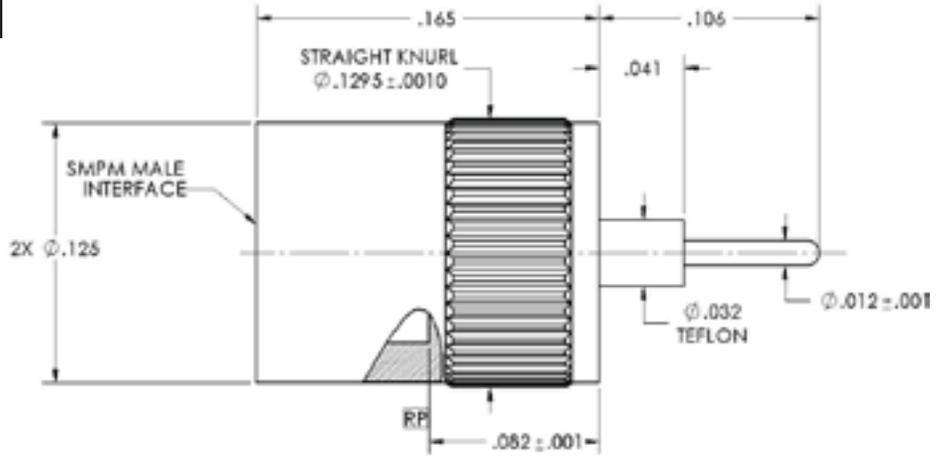
SMPM HERMETIC FEED THRU, SHROUDED, Ø.144

| Cristek Part Number | Detent | "L" |
|---------------------|--------|------|
| MA-MMZH-002-FD-050 | FD | .050 |
| MA-MMZH-002-SB-050 | SB | .050 |
| MA-MMZH-002-FD-070 | FD | .070 |
| MA-MMZH-002-SB-070 | SB | .070 |
| MA-MMZH-002-FD-090 | FD | .090 |
| MA-MMZH-002-SB-090 | SB | .090 |



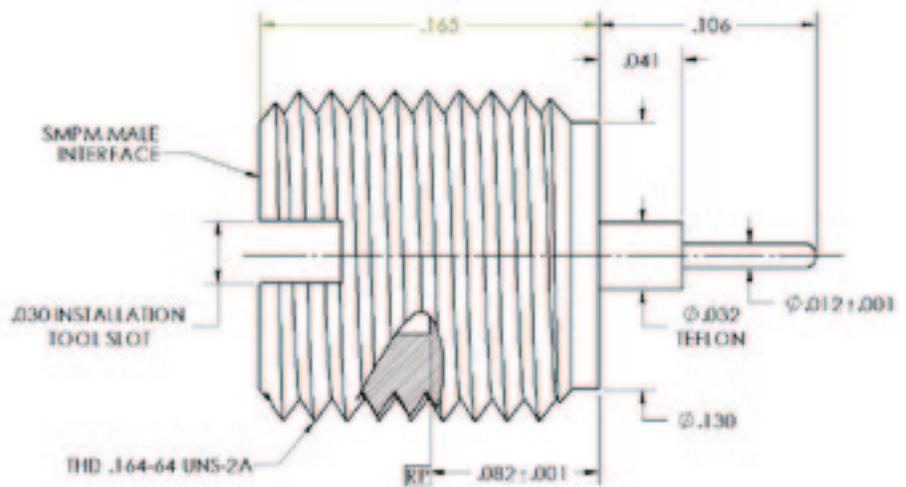
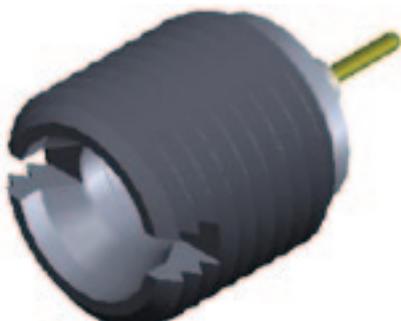
SMPM PRESS IN "SPARK PLUG"

| Cristek Part Number | Detent |
|---------------------|--------|
| MA-MMZP-001-FD | FD |
| MA-MMZP-001-SB | SB |



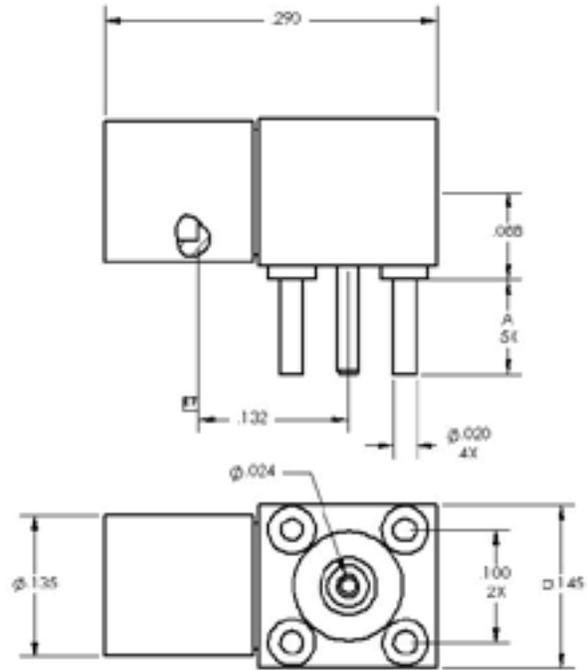
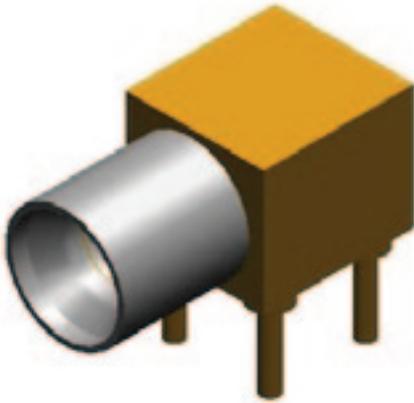
SMPM THREAD IN "SPARK PLUG"

| Cristek Part Number | Detent |
|---------------------|--------|
| MA-MMZT-001-FD | FD |
| MA-MMZT-001-SB | SB |



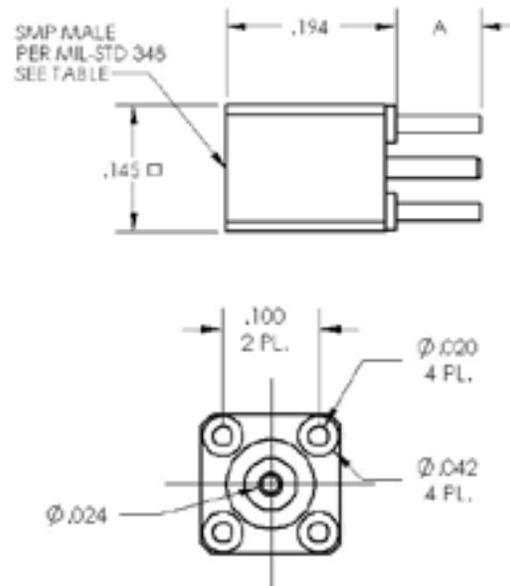
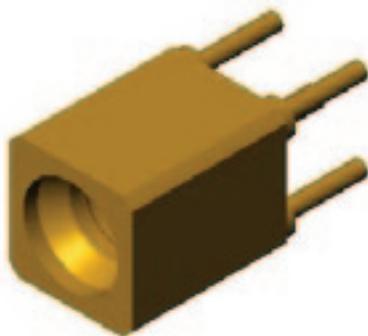
SMPM MALE, RIGHT ANGLE, THRU HOLE, PCB

| Cristek PN | Dim A | Detent |
|----------------|-------|--------|
| MA-MMDR-001-FD | .096 | FD |
| MA-MMDR-001-SB | .096 | LD |



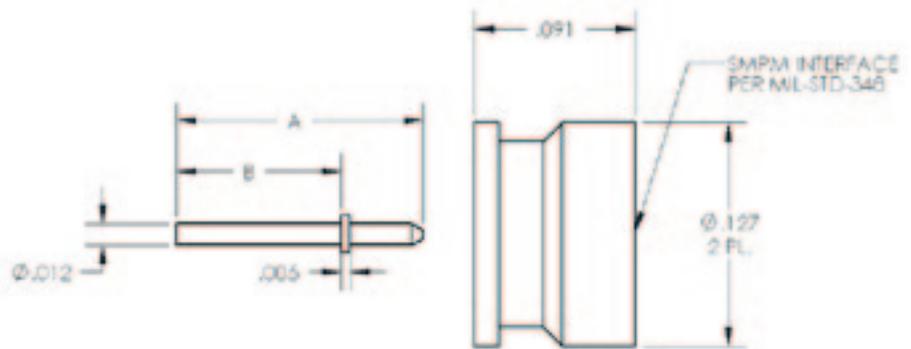
SMPM MALE, VERTICAL, PCB

| Cristek PN | Dim A | Detent |
|----------------|-------|--------|
| MA-MMDS-001-FD | .096 | FD |
| MA-MMDS-001-SB | .096 | SB |



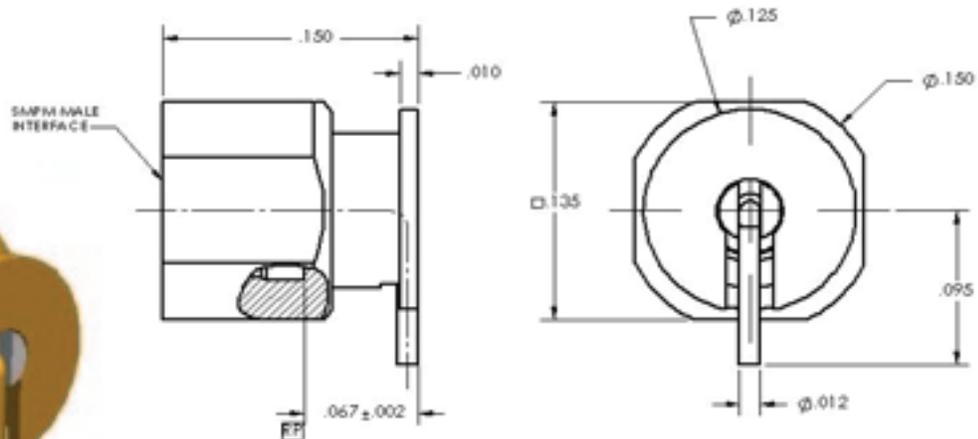
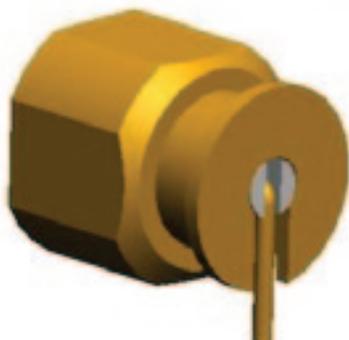
SMPM MALE, VERTICAL, SURFACE MOUNT, PCB

| Cristek PN | Detent | DIM A | DIM B |
|----------------|--------|-------|-------|
| MA-MMUS-001-FD | FD | .140 | .093 |
| MA-MMUS-002-SB | SB | .140 | .093 |
| MA-MMUS-003-FD | FD | .052 | .005 |
| MA-MMUS-003-SB | SB | .052 | .005 |
| MA-MMUS-004-FD | FD | .163 | .093 |
| MA-MMUS-004-SB | SB | .163 | .093 |



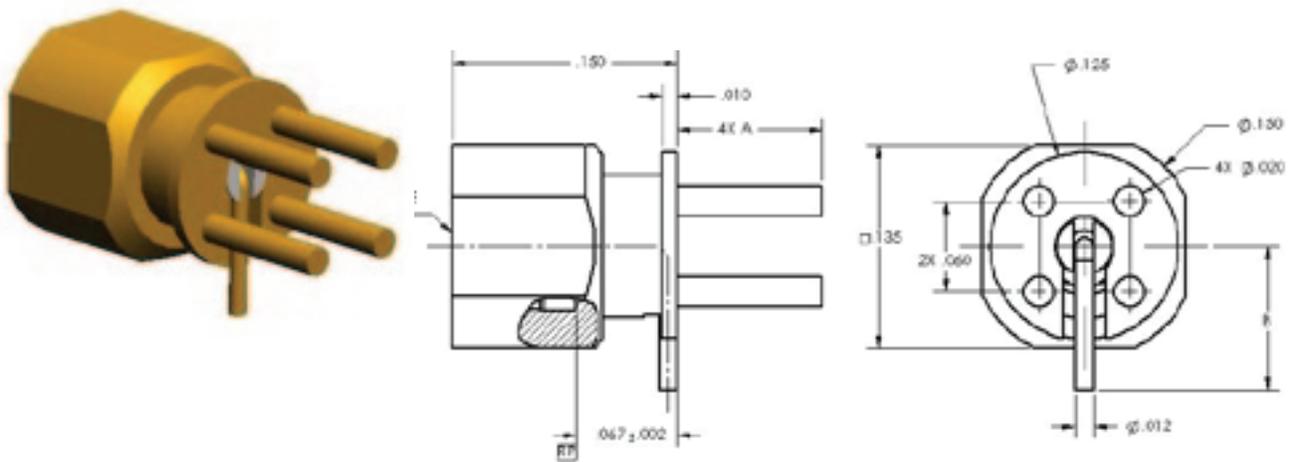
SMPM MALE, VERTICAL, SURFACE MOUNT, PCB

| Cristek PN | Detent |
|----------------|--------|
| MA-MMUN-001-FD | FD |
| MA-MMUN-001-SB | SB |



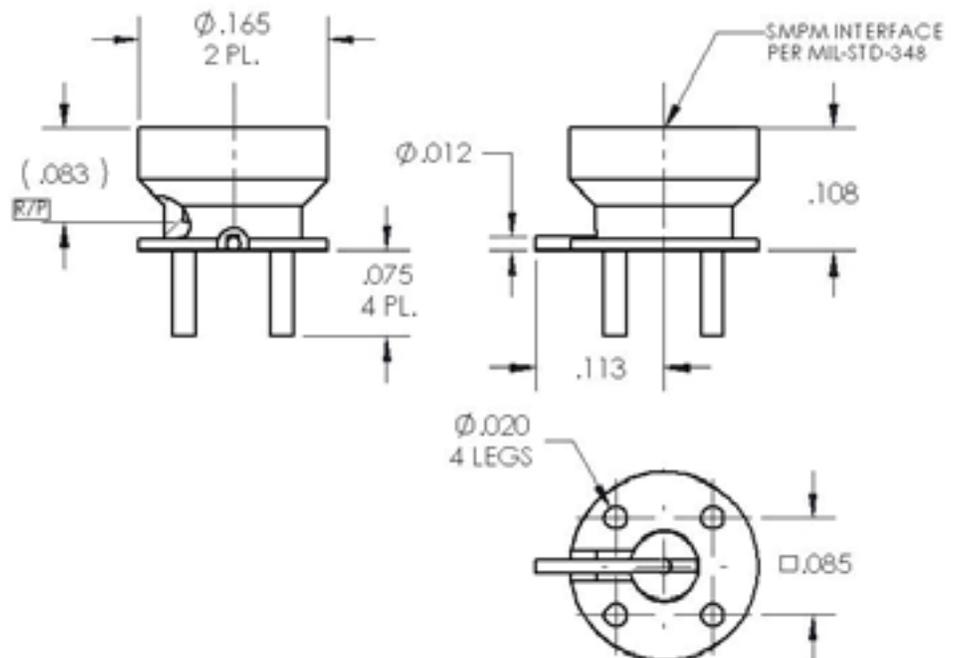
SMPM MALE, VERTICAL, SURFACE MOUNT WITH THRU LEGS, PCB

| Cristek PN | Dim A | Dim B | De- tent |
|----------------|-------|-------|-------------|
| MA-MMUN-002-FD | .096 | .149 | FD |
| MA-MMUN-002-SB | .096 | .149 | LD |



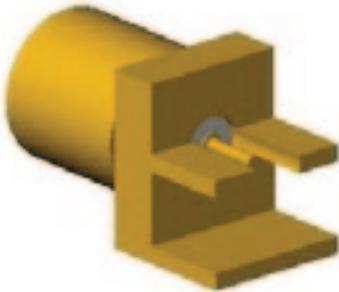
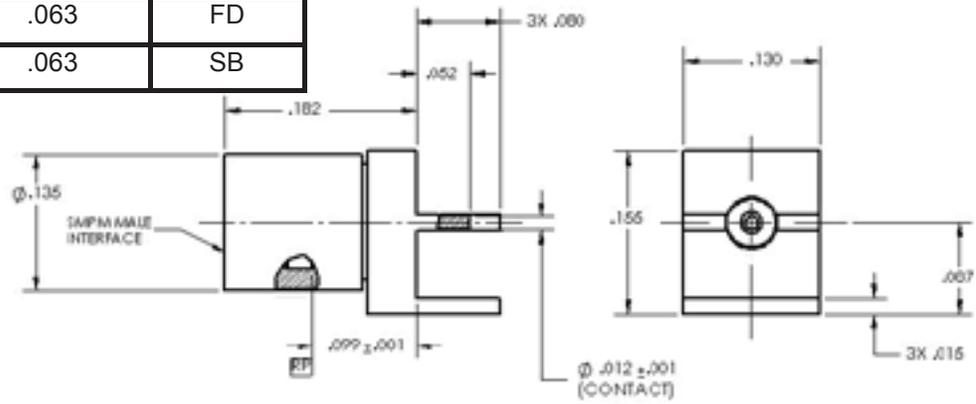
SMPM MALE, VERTICAL, SURFACE MOUNT WITH THRU LEGS, PCB, LOW PROFILE

| Cristek PN | Detent |
|----------------|--------|
| MA-MMUN-003-FD | FD |
| MA-MMUN-003-SB | SB |



SMPM MALE, EDGE LAUNCH , PCB

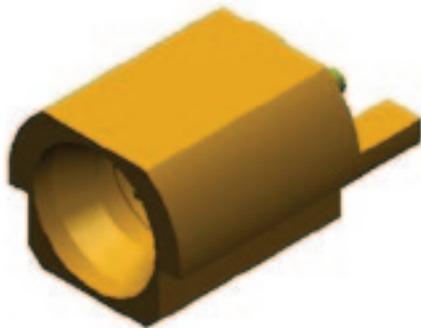
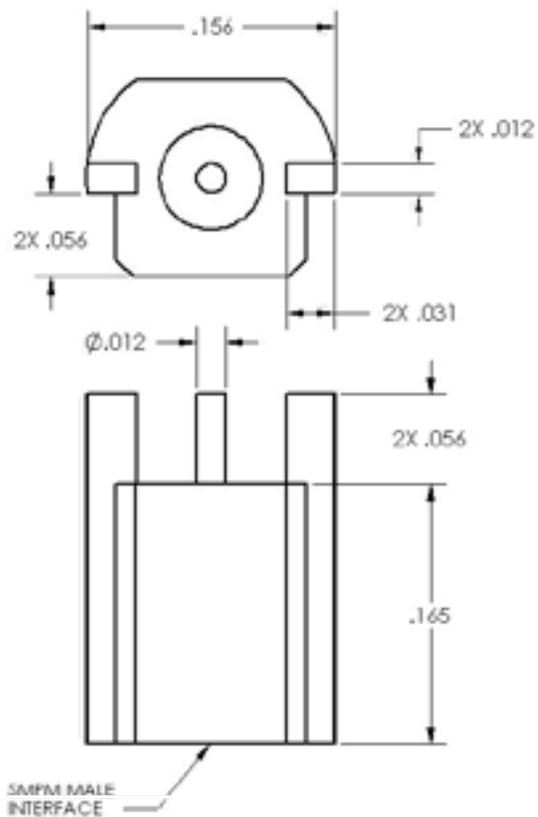
| Cristek PN | BOARD THICKNESS | Detent |
|----------------|-----------------|--------|
| MA-MMZE-001-FD | .063 | FD |
| MA-MMZE-001-SB | .063 | SB |



SMPM

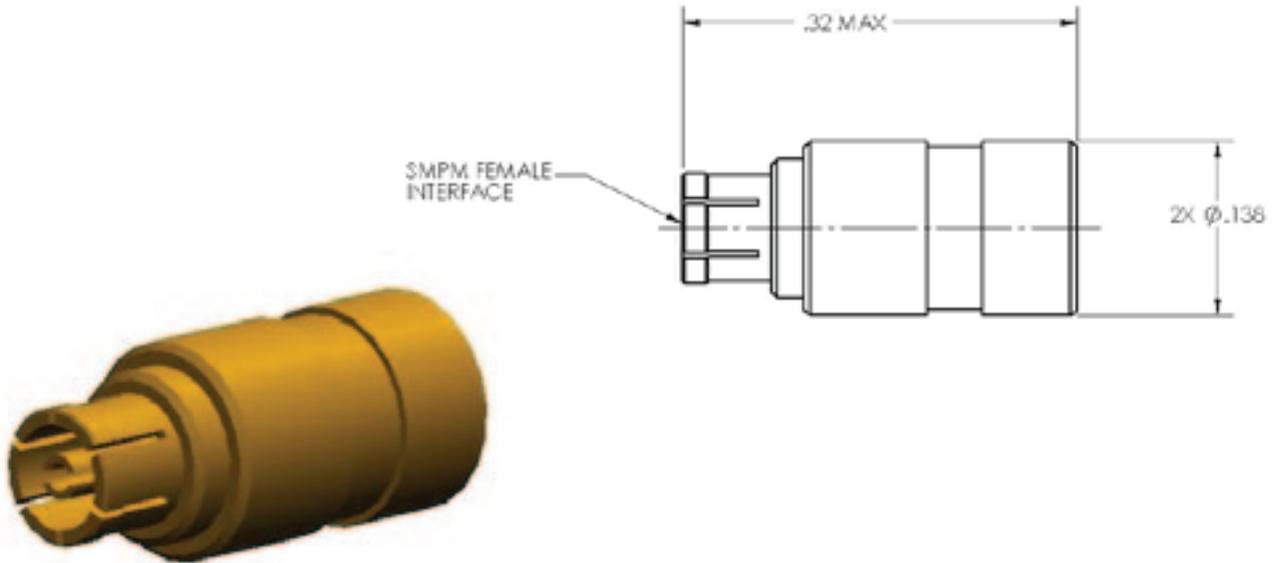
SMPM MALE, NOTCH EDGE LAUNCH PCB

| Cristek PN | Detent |
|----------------|--------|
| MA-MMZE-002-FD | FD |
| MA-MMZE-002-SB | SB |



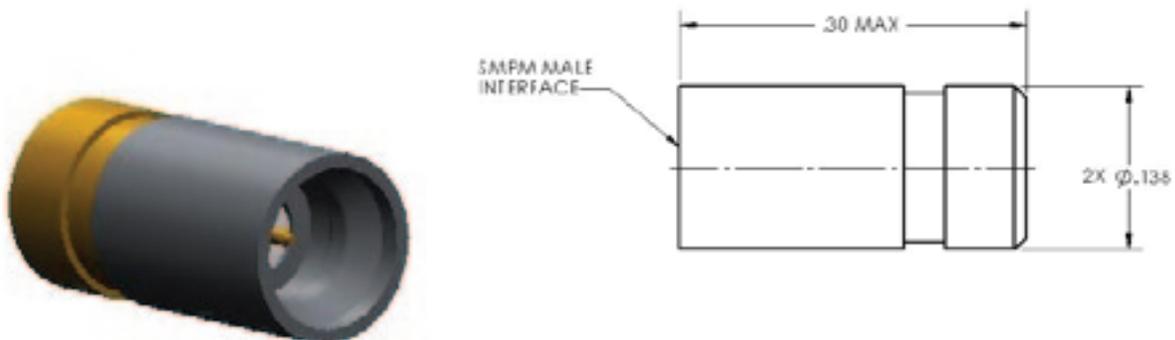
SMMPM FEMALE , 50 OHM FIELD GRADE TERMINATION

| Cristek PN | VSWR MAX. | FREQUENCY RANGE | POWER MAX. |
|--------------|------------------|------------------------------|------------|
| MA1-MFTS-002 | 1.15:1 1.30:1 | DC to 18 GHz 18 to 50 GHz | .25 Watts |



SMMPM MALE, 50 OHM FIELD GRADE TERMINATION

| Cristek PN | Detent | VSWR MAX | FREQUENCY RANGE | POWER MAX. |
|----------------|--------|------------------|------------------------------|--------------|
| MA-MMTS-002-FD | FD | 1.15:1 1.30:1 | DC TO 18 GHZ 18 TO 50 GHZ | .25 WATTS |
| MA-MMTS-002-SB | SB | | | |





SMA



Electrical

| | |
|--|-------------------------------------|
| Impedance | 50 Ohms |
| Operating Frequency | DC to 26 GHz |
| VSWR | |
| Straight | 1.05 + .005 x Freq GHz |
| Right angle (non swept) | 1.10 + .010 x Freq GHz |
| Right angle (swept) | 1.10 + .007 x Freq GHz |
| Insertion Loss | |
| Straight | .03 x Sqrt(Freq GHz) |
| Right angle (non swept) | .06 x Sqrt (Freq GHz) (12 GHz Max.) |
| Right angle (swept) | .04 x Sqrt (freq GHz) |
| Dielectric Withstanding Voltage (60 Hz) | |
| Sea level | 1500 Volts RMS Min |
| Insulation Resistance | 5000 Megaohms |
| Voltage Rating | 335 Volts RMS Max |
| RF leakage | >-100 dB |

Mechanical

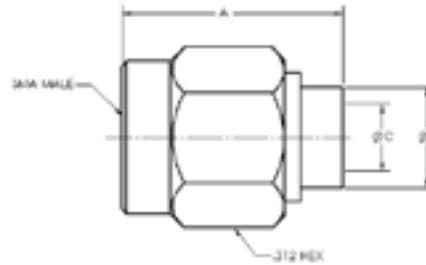
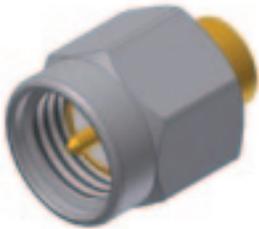
| | |
|---------------------------|-----------------|
| Durability | 500 cycles Min. |
| Force to Engage/Disengage | 2.0 lb Max. |
| Recommended Torque | 7 to 10 in-lb |

Environmental

| | |
|-----------------------|--|
| Operating Temperature | -65°C to +165°C |
| Storage Temperature | -65°C to +200°C |
| Corrosion | MIL-STD-202, Method 101 Test Condition B, 5% Salt Solution |
| Vibration | MIL-STD-202, Method 204 Test Condition B, 15 min/axis |
| Random Vibration | MIL-STD-202, Method 214 Test Condition F, 15 min/axis |
| Mechanical Shock | MIL-STD-202, Method 213 Test Condition I, 100g's Sawtooth Axis |
| Thermal Shock | MIL-STD-202, Method 107 Test Condition B, +165°C High Temp. |

SMA STRAIGHT CABLE PLUG CONTACT

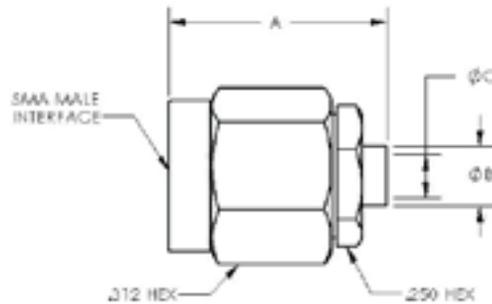
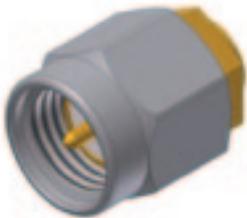
| Cable Type | Cristek Part Number | Dim A | Dim B | Dim C |
|------------|---------------------|-------|-------|-------|
| SR086 | MA-AMCS-01-001 | .440 | .120 | .090 |
| SR141 | MA-AMCS-03-002 | .440 | .180 | .145 |



SMA

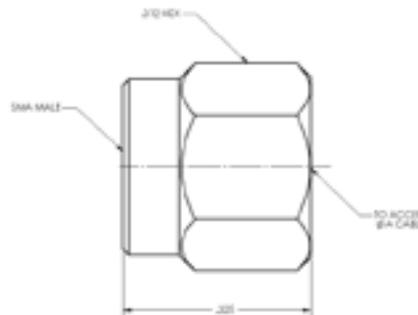
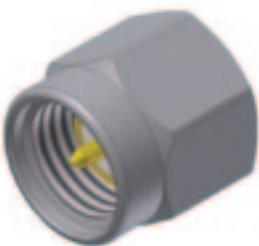
SMA STRAIGHT CABLE PLUG WITH ANTI-TORQUE HEX

| Cable Type | Cristek Part Number | Dim A | Dim B | Dim C |
|------------|---------------------|-------|-------|-------|
| SR086 | MA-AMCA-01-001 | .440 | .120 | .090 |
| SR141 | MA-AMCA-03-001 | .440 | .180 | .145 |



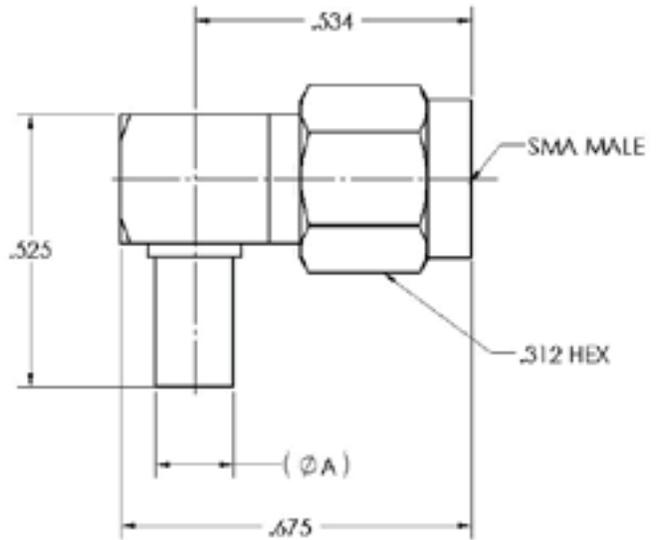
SMA MALE, LOW PROFILE, CAPTIVE CONTACT

| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR141 | MA-AMCS-01-002 | .330 |



SMA, PLUG, RIGHT ANGLE, SEMI RIGID CABLE

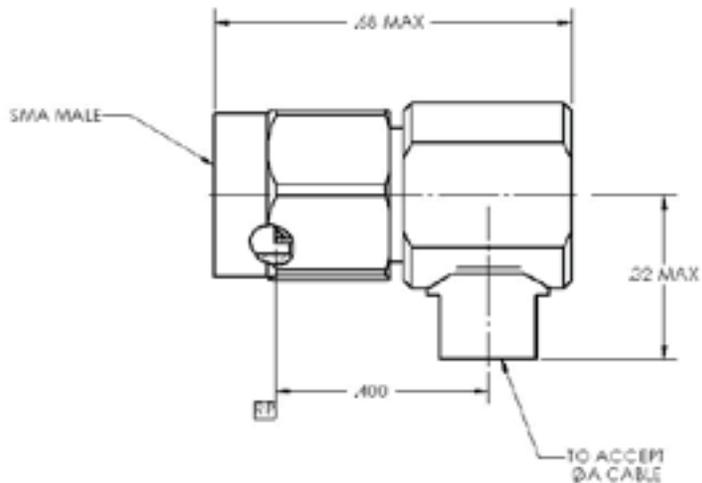
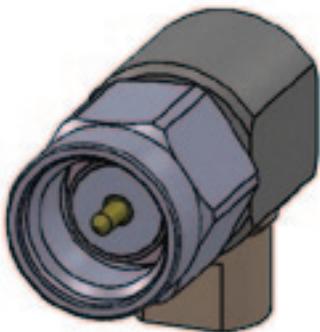
| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR086 | MA-AMCR-01-001 | .120 |
| SR141 | MA-AMCR-03-001 | .180 |



SMA

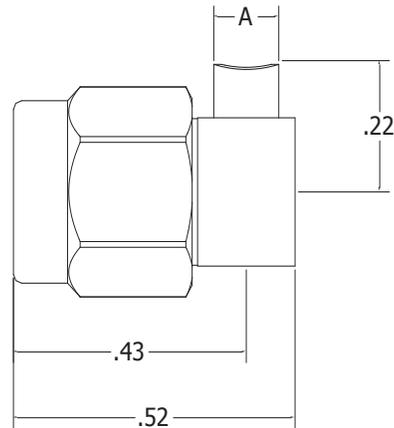
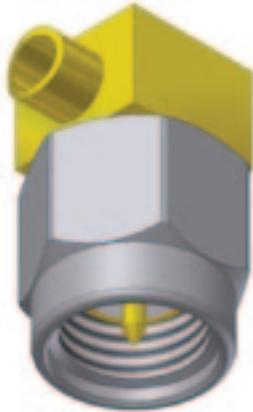
SMA PLUG, RIGHT ANGLE, SWEEP CONTACT

| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR086 | MAI-AMCN-01-001 | .086 |
| SR141 | MAI-AMCN-03-001 | .141 |



SMA PLUG, RIGHT ANGLE, LOW PROFILE

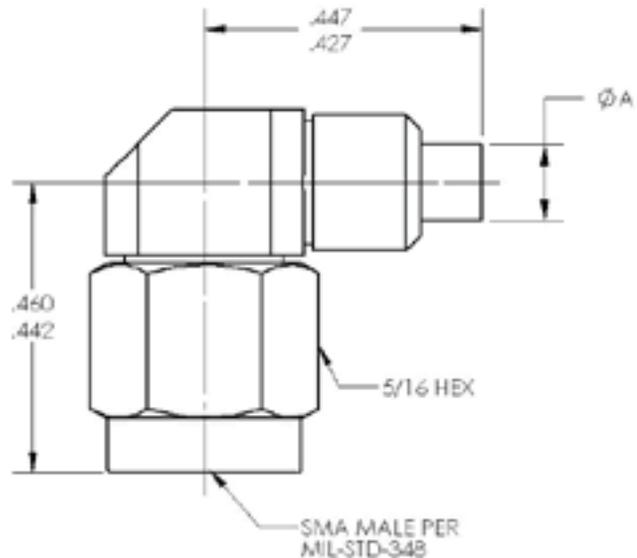
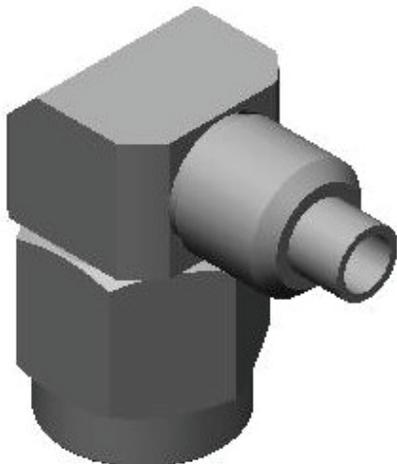
| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR086 | MAI-AMCR-01-002 | .120 |
| SR141 | MAI-AMCR-03-002 | .180 |



SMA

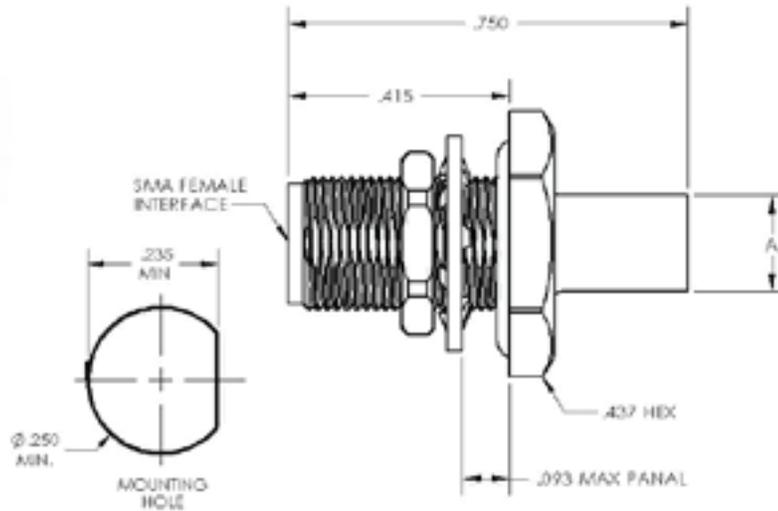
SMA PLUG, RIGHT ANGLE, LOW PROFILE, SWEEP CONTACT

| Cable Type | Cristek PN | Dim A |
|------------|-----------------|-------|
| SR086 | MAI-AMCN-01-002 | .120 |
| SR141 | MAI-AMCN-03-002 | .180 |



SMA FEMALE , BULKHEAD

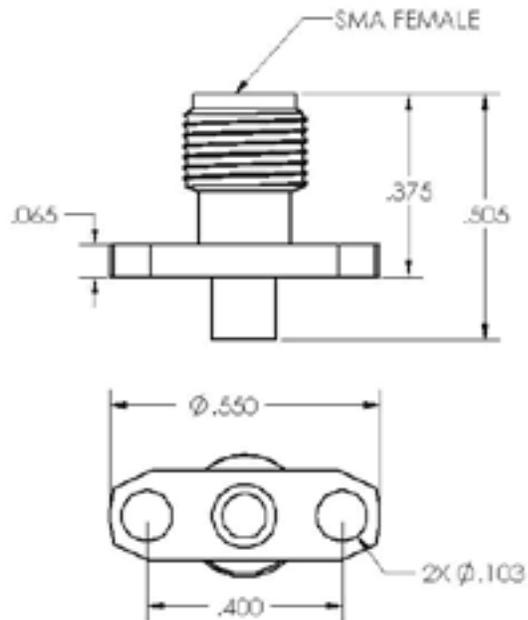
| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR086 | MA-AFCK-01-001 | .120 |
| SR141 | MA-AFCK-03-001 | .180 |



SMA

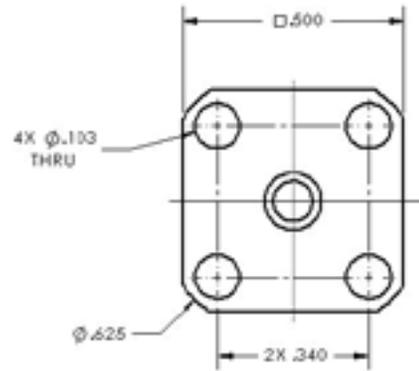
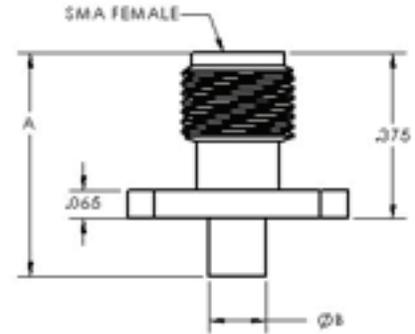
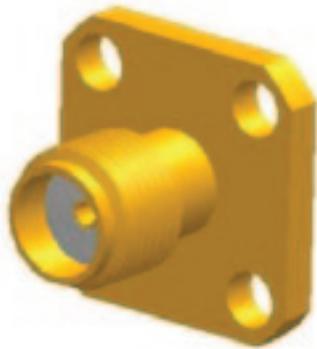
SMA FEMALE, 2 HOLE FLNAGE

| Cable Type | Cristek Part Number | Dim A | Dim B |
|------------|---------------------|-------|-------|
| SR.086 | MA1-AFCF-01-001 | .265 | .120 |
| SR.141 | MA1-AFCF-03-001 | .230 | .180 |



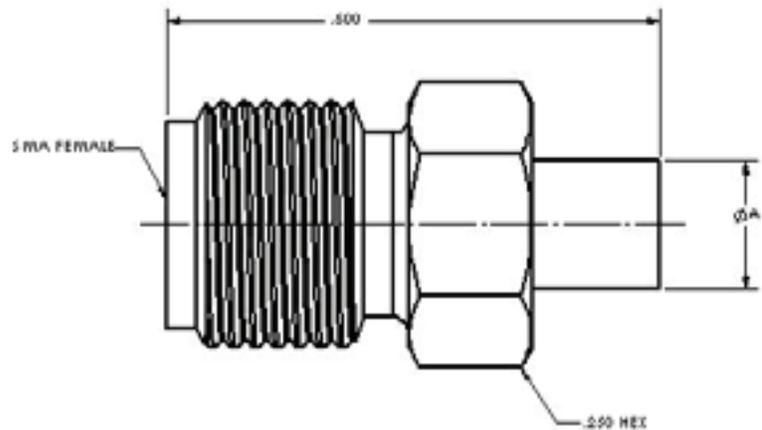
SMA JACK, 4 HOLE FLANGE

| Cable Type | Cristek PN | Dim A | Dim B |
|------------|----------------|-------|-------|
| SR086 | MA-AFCG-01-001 | .500 | .120 |
| SR141 | MA-AFCG-03-001 | .550 | .180 |



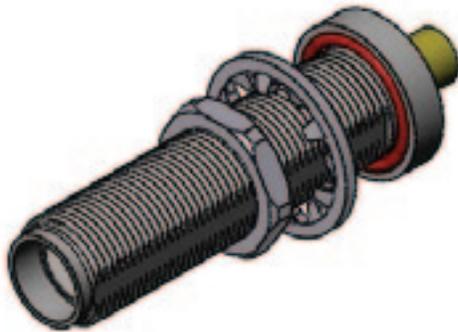
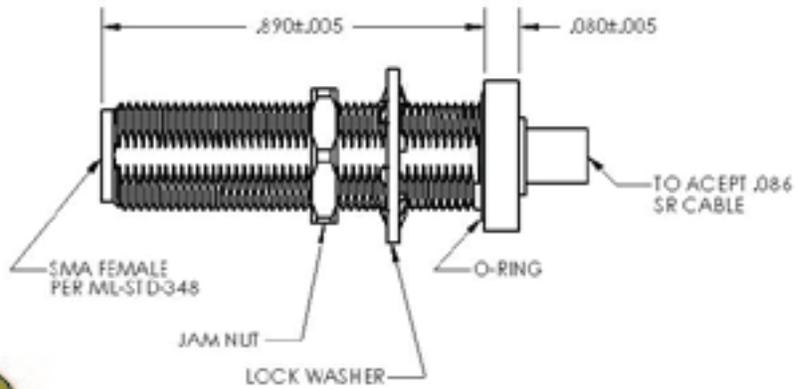
SMA JACK, STRAIGHT

| Cable Type | Cristek Part Number | Dim A |
|------------|---------------------|-------|
| SR086 | MA-AFCA-01-001 | .120 |
| SR141 | MA-AFCA-03-001 | .180 |



SMA JACK , HERMETIC BULKHEAD

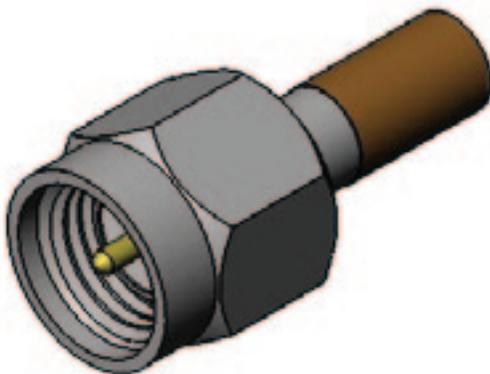
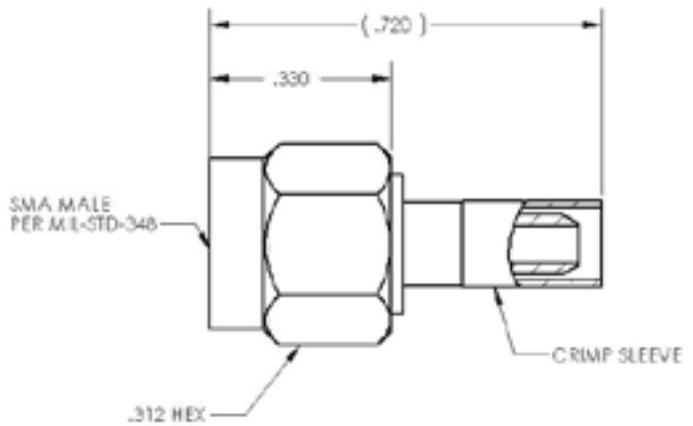
| Cable Type | Cristek Part Number |
|------------|---------------------|
| SR086 | MA-AFCK-01-002 |



SMA

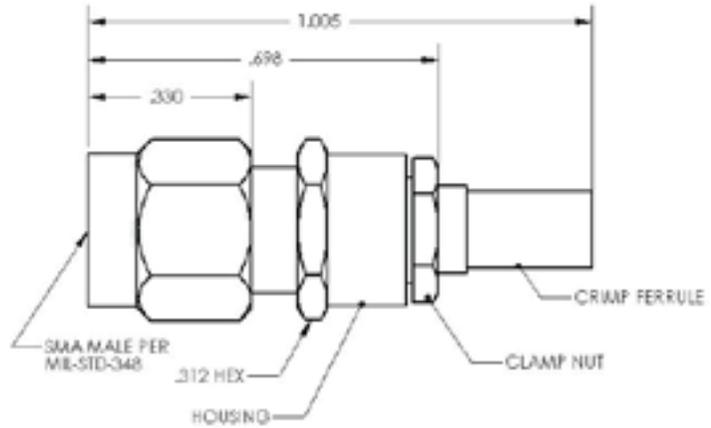
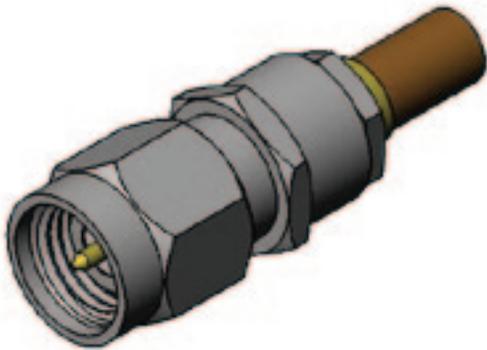
SMA PLUG , STRAIGHT CRIMP

| Cable Type | Cristek Part Number |
|------------|---------------------|
| RG316 | MA-AMCS-06-001 |
| RD316 | MA-AMCS-13-001 |
| RG142 | MA-AMCS-07-001 |



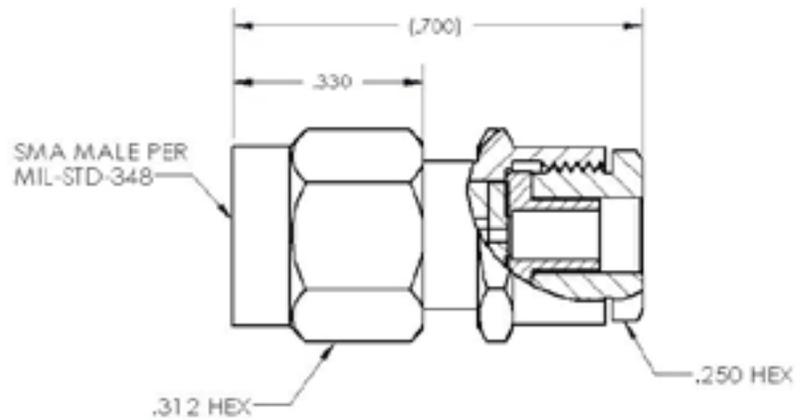
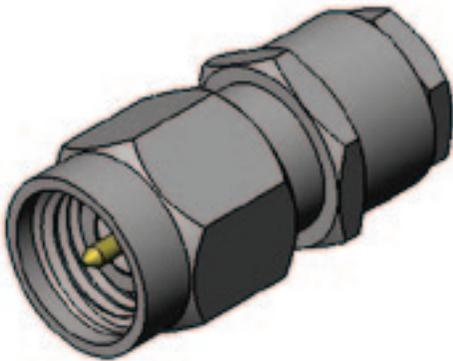
SMA STRAIGHT MALE , CRIMP CLAMP

| Cable Type | Cristek Part Number |
|------------|---------------------|
| RG316 | MA-AMCS-06-002 |
| RD316 | MA-AMCS-13-002 |
| RG142 | MA-AMCS-07-002 |



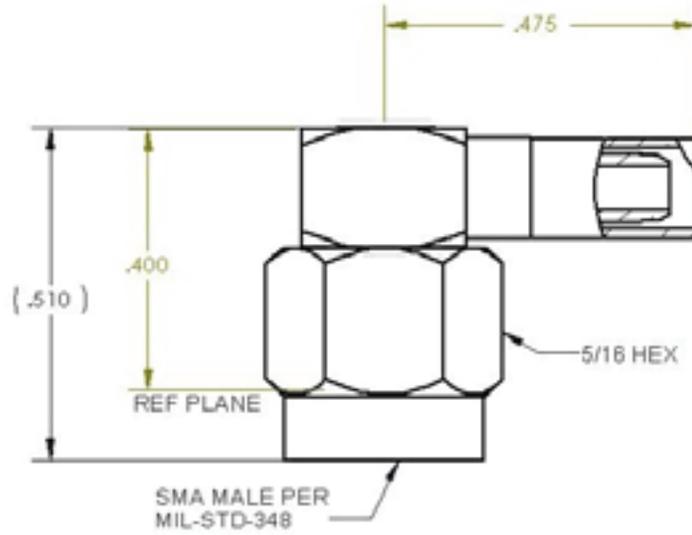
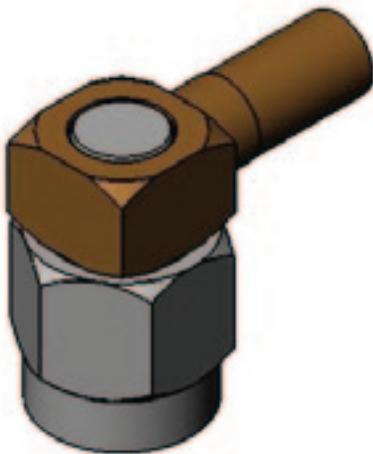
SMA STRAIGHT MALE , SOLDER CLAMP

| Cable Type | Cristek Part Number |
|------------|---------------------|
| RG316 | MA-AMCS-06-003 |
| RD316 | MA-AMCS-13-003 |
| RG142 | MA-AMCS-07-003 |



SMA PLUG , RIGHT ANGLE CRIMP LOW PROFILE

| Cable Type | Cristek Part Number |
|------------|---------------------|
| RG316 | MA-AMCR-06-001 |
| RD316 | MA-AMCR-13-001 |



SMA



Other Connectors





Cristek's microwave connector product line is constantly expanding so we offer many connector configurations and interfaces not yet shown in this catalog. This rapid expansion is driven by customers who trust us with their most demanding and unique applications as well as our own needs as a cable assembly house requiring reliable connectors which are cost effective to assemble. All connectors are designed to meet the latest military and/or industry specifications for the specific connector types. We also have developed several unique interfaces/styles to suit customer applications. In many cases these connectors will exceed the related specification in both performance and frequency range. The following is a list of some of the connectors offered by Cristek.

Bottom line.....If you don't see it in this catalog, give us a call. There is a good chance we have just what you are looking for!

| Sub Miniature | MIL-Spec | Industry Standard |
|---------------|----------|-------------------|
|---------------|----------|-------------------|

| | | |
|------|--------|-------|
| SSMA | TYPE-N | 3.5mm |
| SMA | BNC | 2.9mm |
| SMB | TNC | 2.4mm |
| SMC | TNCA | 7mm |
| SMK | SC | 1.8mm |
| | HN | |
| | TK | |

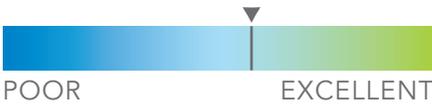
| Blind Mates | Other Standards | Cristek Proprietary |
|-------------|-----------------|---------------------|
|-------------|-----------------|---------------------|

| | | |
|------|------|-----|
| BMA | 7/16 | LMP |
| BMMA | LC | FMP |
| BMZ | ZMA | CMP |
| | TRB | |



Cable Assemblies

Cristek designs and manufactures semi-rigid and flexible microwave coaxial cable assemblies for interconnect and instrumentation applications from DC to 65 GHz. Contact Cristek early in your design process so our application experts can assist you with recommending the most cost effective solution to meet your environmental, electrical and mechanical requirements. Cristek defines cable assemblies in several categories as described below. Whichever category you choose and not matter how touch your application you may be confident in Cristek's design experience and "best in class" process controls.



Cable Rating Scale

Cristek has developed the cable rating scale to illustrate, on the following pages, some cable/connector selection guidelines to assist users designing to fulfill a particular application. Cristek has developed a comparative cable rating scale determined by scoring different cable types based on attributes and other factors. These attributes and factors include frequency range, attenuation, shielding, phase stability, temperature range, availability of connectors, cost, flexibility, ease of assembly, environmental conditions and durability. Please note that all cable assemblies built by Cristek are quality assemblies and cable assemblies with lower scores may still be the best fit for the application given based on the specification and price.

Cristek designs and manufactures semi-rigid and flexible microwave coaxial cable assemblies for interconnect and instrumentation applications from DC to 65 GHz. Contact Cristek early in your design process so our application experts can assist you with recommending the most cost effective solution to meet your environmental, electrical and mechanical requirements. Cristek defines cable assemblies in several categories as described below. Whichever category you choose and not matter how touch your application you may be confident in Cristek's design experience and "best in class" process controls.

Build to Print Cable assemblies built to a specific technical data package (drawings, specifications, prescribed bill of materials) provided by a customer. Upon receipt of a customer's package, Cristek will review it and will process with the package as documented or sometimes make suggestions to improve affordability, reliability and availability.

Build to Spec Cable assemblies built using materials and processes selected by our experts upon review of a customer's specification requirements. When a customer provides us with the mechanical, electrical and environmental requirements for their application, Cristek will select the most affordable, and readily available combination of cable and connectors to reliably meet the specifications.

Custom Cable assemblies that incorporate customized components and/or processes to meet a customer's particularly demanding application. Cristek excels in solving the most demanding and unique electrical, environmental and mechanical challenges. Let us show you how we can address your challenge with a reliable solution that will meet both your budget and timeframe.

Formed A specific type of custom and build to print type assemblies. These cables are custom formed with semi-rigid cable and in accordance with exacting customer requirements and tolerances. To assist in repeatability and precision, You can rely on minimal variation and maximum precision because Cristek employs the latest in automated bending technology and specialized custom fixtures and tooling.

Standard Cable assemblies designed to meet or exceed industry standards using standard Cristek parts. The difference between these cable assemblies and the build to spec type is that the electrical, mechanical and environmental specifications are predetermined and are not specific to a drawing or specification.

Flexible Rg Cable

POOR

RG ASSEMBLIES

EXCELLENT



Example Construction

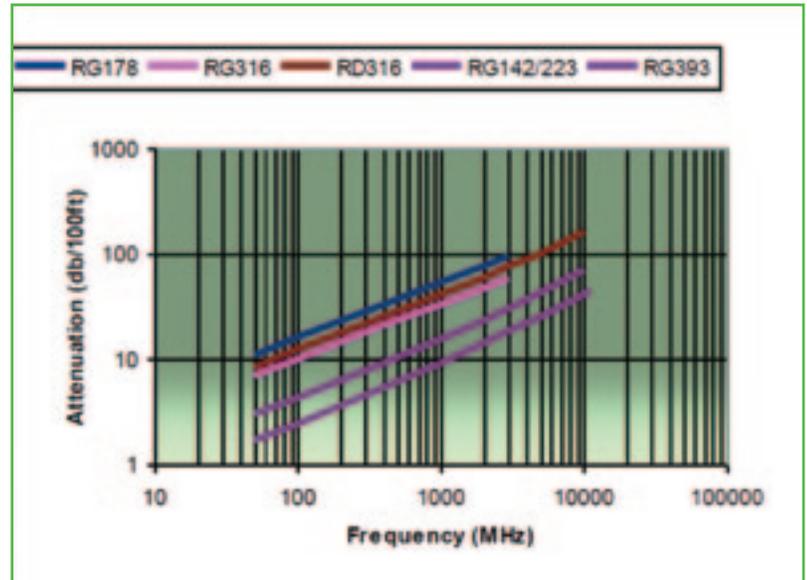
Cable construction may vary, see specific slash sheets for actual sizes and construction.

RG Cable uses standard MIL-DTL-17 cable and standard Cristek or other commercially available connectors. These cables have the widest diameter and connector selection range. Cable sizes are from 0.067 inches (1.7mm) to 0.500 inches (12.7mm) and come in both single and double braided styles. Frequency ranges are limited to 12.4 GHz and cables will have good to average performance.

The table to the right depicts appropriate connector interfaces to use with several example cables from this class.

Applications

- General Interconnect
- Rack, enclosure and panel applications
- Cost sensitive applications under 6 GHz



| | RG178 | RG316 / RD316 | RG142 / RG223 | RG393 | MAX FREQ** |
|--------|-------|---------------|---------------|-------|------------|
| SMPM | ✓ | | | | 12.4 |
| SMP | ✓ | ✓ | | | 12.4 |
| MMCX | ✓ | | | | 6 |
| MCX | ✓ | ✓ | | | 6 |
| SSMA | ✓ | ✓ | | | 12.4 |
| SMA | ✓ | ✓ | ✓ | | 12.4 |
| TYPE N | | | ✓ | ✓ | 12.4 |
| TNC | | ✓ | ✓ | ✓ | 12.4 |
| BNC | | ✓ | ✓ | | 2 |
| SMB | ✓ | ✓ | | | 3 |
| SMC | ✓ | ✓ | | | 3 |
| BMMA | ✓ | ✓ | | | 12.4 |
| BMA | ✓ | ✓ | ✓ | | 12.4 |
| SC | | | | ✓ | 10 |
| HN | | | | ✓ | 10 |
| C | | | | ✓ | 6 |
| BMZ | | | ✓ | | 12.4 |

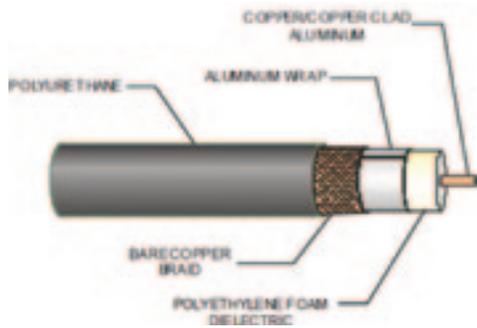
**Frequencies are based on maximum frequencies of the connector on RG cable. The type of cable selected will limit the maximum frequency of

Low Loss Foam Cable

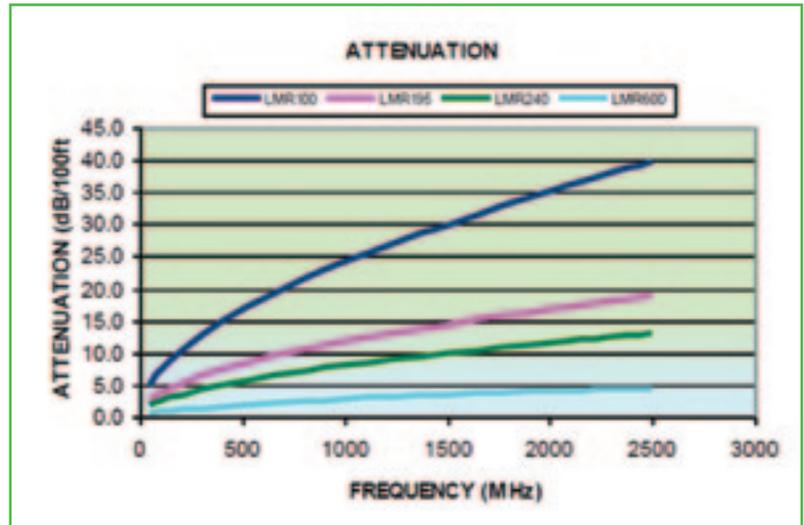
POOR

FOAM CABLE ASSEMBLIES

EXCELLENT



Example Construction



Low Loss Foam Cable Types were developed for the Telecom industry. This low loss cable is an alternative to some of the RG cable types. These cable assemblies use standard Cristek or other commercially available connectors and cable sizes range from 0.100 inches (2.5mm) to 0.600 inches (15.3mm). These cables are lower loss and higher shielded than the equivalent size RG cable, but are limited in Temperature and Frequency ranges.

The table to the right depicts appropriate connector interfaces to use with several example cables from this class.

Applications

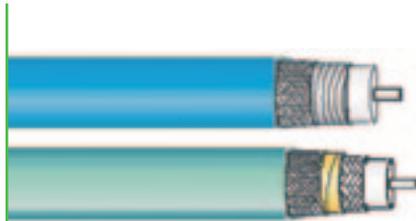
- Telecom applications
- General Interconnect
- Low Temp rack, enclosure and panel applications
- Cost sensitive applications under 6 GHz

| | LMR100® | LMR195® | LMR240® | LMR600® |
|--------|---------|---------|---------|---------|
| SMP | ✓ | | | |
| MMCX | ✓ | | | |
| MCX | ✓ | | | |
| SSMA | ✓ | | | |
| SMA | ✓ | ✓ | ✓ | |
| TYPE N | | ✓ | ✓ | ✓ |
| TNC | | ✓ | ✓ | ✓ |
| BNC | | ✓ | ✓ | |
| SMB | ✓ | | | |
| SMC | ✓ | | | |
| BMMA | ✓ | | | |
| BMA | ✓ | ✓ | | |
| SC | | | | ✓ |
| HN | | | | ✓ |
| C | | | | ✓ |

LMR is a registered trademark of Times Microwave

CABLE ASSEMBLIES

R-Flex and S-Flex Improved Performance Cables



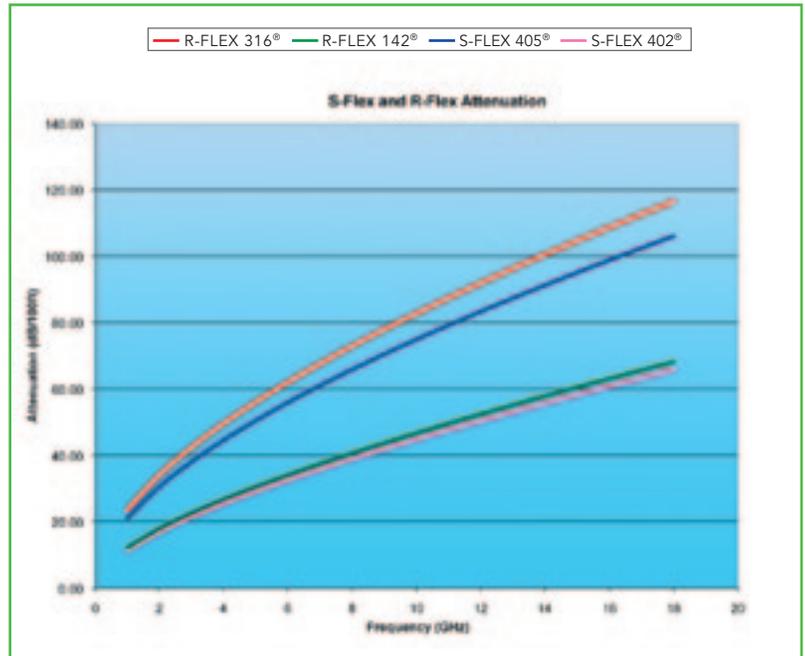
Example Construction

Improved Performance Cables were developed to provide higher performance and improved frequency range than standard RG cables. They are also a flexible option to semi-rigid cable assemblies. With improved shielding and braid design these cables can work up to 20 GHz while still using some off the shelf connectors.

The table to the right depicts the connector interfaces that are appropriate to several example cables from this class.

Applications

- General Interconnect
- High frequency rack and panel designs
- Cost sensitive applications up to 20 GHz
- Replace semi-rigid cables.
- Communications
- Antennas
- High shielding applications

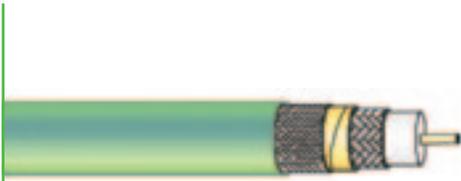


| | R-FLEX 316® | R-FLEX 142® | S-FLEX 405® | S-FLEX 402® |
|--------|-------------|-------------|-------------|-------------|
| SMP | ✓ | | ✓ | |
| MMCX | ✓ | | ✓ | |
| MCX | ✓ | | ✓ | |
| SSMA | ✓ | | ✓ | |
| SMA | ✓ | ✓ | ✓ | ✓ |
| TYPE N | | ✓ | | ✓ |
| TNC | | ✓ | | ✓ |
| BNC | | ✓ | | ✓ |
| SMB | ✓ | | ✓ | |
| SMC | ✓ | | ✓ | |
| BMMA | ✓ | | ✓ | |
| BMA | ✓ | ✓ | ✓ | ✓ |
| 2.92MM | | | ✓ | |
| 3.5MM | | | ✓ | ✓ |
| 2.4MM | | | ✓ | |

L-Flex Low Loss, High Frequency Cable

POOR

LOW LOSS CABLE ASSEMBLIES — EXCELLENT



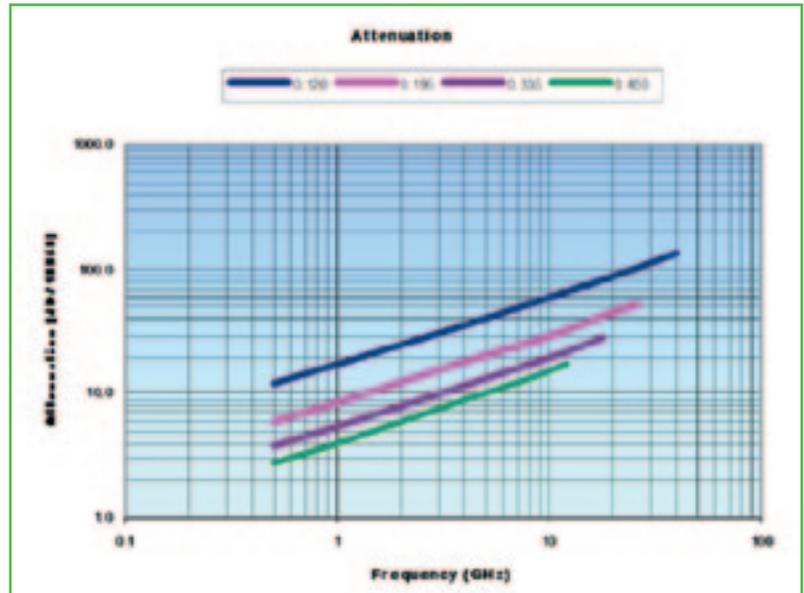
Example Construction

Low Loss High Frequency. These low loss custom cables give the best performance over a sizeable frequency range. With expanded PTFE tape wrapped cores and silver plated copper shielding these cables work up to 40 GHz. Because of the special construction, custom connectors are used maximize performance through each connector's frequency range. The improved shielding and low density core allows for improved phase stability over flexure and temperature while its robust design makes it ideal for test equipment applications.

The table to the right depicts the connector interfaces that are appropriate to several example cables from this class.

Applications

- High frequency rack and panel designs
- Test and Measurement
- Phase Stable requirements.
- Phase Array Antennas
- High shielding applications
- Airborne, Sea and Ground Systems
- Extreme environmental conditions.



| | .120 | .195 | .305 | .450 |
|--------|------|------|------|------|
| SMP | ✓ | | ✓ | |
| SSMA | ✓ | | ✓ | |
| SMA | ✓ | ✓ | ✓ | ✓ |
| TYPE N | | ✓ | | ✓ |
| TNC | | ✓ | | ✓ |
| TNCA | | ✓ | | |
| BNC | | ✓ | | ✓ |
| BMMA | ✓ | | ✓ | |
| BMA | ✓ | ✓ | ✓ | ✓ |
| SC | | | ✓ | ✓ |
| HN | | | ✓ | ✓ |
| C | | | | ✓ |
| 7/16 | | | | ✓ |
| 2.92MM | ✓ | | | |
| 3.5MM | ✓ | ✓ | | |
| 2.4MM | ✓ | | | |

CABLE ASSEMBLIES

Glossary



A

Attenuation – the reduction in signal strength that occurs when it travels over a long distance. Measured in dB.

B

Blind Mate – SMP and SMPM are blind mate or “push-on” connectors. They make interconnections without the need of coupling nuts and tools. Useful when making connections in tight spaces or in conjunction with bullets which compensate for axial or radial misalignment.

Bullets – female to female interconnects. Can help reduce insertion loss by eliminating the need for some cable assemblies with female to female connections. Bullets also compensate for radial and/or axial misalignment when blind mating.

C

Center Line Spacing – the distance from the center of adjacent contacts as installed in a system and/or within a connector housing. Varies depending on the mounting configuration and can be as low as .160” on the SMP connectors. Critical for high density spacing applications.

Contact Resistance – area of potential power loss in a system due to the contact itself. For low loss in a microwave transmission system, contacts are plated in gold or silver because of their low resistance characteristics. The specific plating can be requested and may depend on the application. Expressed in milliohms.

Corona Level – the minimum voltage level at which there is no breakdown of air gaps between the conductors. This is a situation that can develop in low pressure conditions experienced, for example, at high altitudes. Corona will create noise and distort the transmission signal.

D

Decibel – the basic unit is a “Bel” named for Alexander Graham Bell. A decibel then is 1/10th of a Bel. The number expresses the loss in power or voltage as a signal goes from point A to point B and is calculated by dividing the power the signal had at A by the power it has when it reaches B. To keep the numbers easier to express, a factored logarithmic scale is used where 10 dB is 10 to one, 20 dB is 100 to one and 30 dB is 1000 to one.

Delay Lines – devices used to slow down a signal by a time interval in an electrical network. There are two basic types: passive and active. Passive delay lines are built with analog components and can delay analog and digital signals. Active delay lines are built with digital components and are normally used to delay digital signals. Measured in units of time.

Dielectric Material – insulator material chosen to conform to specification and application to minimize power absorption and hence power loss in the system due to the connectors. For example, we use Expanded Teflon for low loss applications.

Dielectric Withstanding Voltage (DWW) – the maximum voltage the insulator in the connector can withstand without breaking down. For example, the value for TFE is 150 volt rms but other considerations may come into play. In circumstances where high radiation will be a factor (space applications) other materials will be required.

F

Flexible Cable – braided and or helically wrapped outer conductor covered by a flexible outer jacket, conductor can be 1 to 3 layers. Center conductor can be solid or stranded wire, dielectric can be solid or low-loss. Ranges in diameter from .050” to .500” and bend radius capability is determined by the cable diameter and construction. Average to excellent performance.

Force to Mate & Unmate – the amount of force required to mate or unmate a connector expressed in maximum or minimum pounds. An SMP with full detent has a mating (engaging) force of 15 lbs max and an unmating (disengaging) force of 5 lbs min.

Frequency – the number of cycles per second of a given wavelength and expressed in Hz. So, 1 Hz = 1 cps, 1 MHz = 1 million cps, GHz = 1 billion cps, etc. An RF signal is an AC waveform.

Frequency Range or Operating Frequency – that range of frequencies the connector must work within. Typical ranges for microwave products are K band (18-26 GHz), X band (8-12.4GHz), mm range (40-100 GHz) and C (4-8 GHz). The frequency range a major consideration in selecting the appropriate connector and cable to fit design requirements and price requirements.

H

Hand-conformable cable – solder-dipped, braided outer conductor. Gives better flexibility than semi-rigid but lower performance (higher VSWR and lower operating frequencies). Sizes limited to .047”, .086” and .141” and have limited bend radius. Not available with low-loss dielectric.

Hermetic – permanent seal by fusion, solder or other means to prevent incursion of air, moisture, vapor or any other gases. Since all materials have some degree of permeability, customer spec will define acceptable levels for “sealing.”

Hertz (Hz) – expresses a unit of one cycle per second (cps), named for Heinrich Hertz. The number of cycles per second defines the Frequency and the distance covered in one cycle is the Wavelength. The higher the frequency the shorter the wavelength.

I

Impedance – the normal standard for microwave systems is 50Ω. Of concern in RF/Microwave systems is impedance mismatch where components in the system do not have the same impedance. For example, a 50Ω connector on a 75Ω cable. Ideally all components would be matched to the same impedance reducing signal loss, a situation which becomes especially important in the microwave range.

I ...Continued

Insertion Loss – indicates the total loss in power reaching the load point after installing the connector in the transmission line. Insertion Loss can also be due to the power absorbed by the component itself. Other factors contributing to Insertion Loss are Insulation Resistance, Contact Resistance, RF Leakage, Reflection and Attenuation. Directly related to the lengths of cables since cable has an expected insertion loss expressed in a per foot value.

Insulation Resistance – loss due to power being absorbed by the dielectric material. Expressed in Megohms, typical measurement is 5,000 Megohms.

Isolation from Ground – the outer conductor of the cable acts as a shield and carries the signal ground and is a key part of RF/Microwave transmissions. The signal ground of the cable and the connectors need to be isolated from the system (or enclosure) ground to avoid ground loops which in turn directly affect the signal integrity.

J

Jacks – cable jacks mate to Plugs and typically have socket contacts

M

M39012 – Basic military spec defining RF connectors, including electrical and physical characteristics. Current designation is MIL-PRF-39012; see Mil Standards and Specs page.

MIL-C-17 – government listing for coaxial cables, replaces RG designations for military applications.

MIL-STD-202 – one of the commonly used Mil standards that gives the test method and conditions for various environmental situations. These conditions include Corrosion, Vibration and Thermal Shock.

O

Outgassing – De-aeration or other gaseous emission from materials such as plastics when exposed to pressure and/or heat. Cristek utilized materials that minimize outgassing in all connectors and cables.

P

Permeability – the degree to which a material allows liquids or gases to pass through. Permeability is also used to indicate the magnetic properties of materials.

Phase Matching and Electrical Length – the electrical length of a connector is its physical length expressed in wavelength at a specified frequency and also in degrees of phase angle for that frequency. The Electrical Length is critical in manufacturing phase matched cable assemblies for applications such as phased array radar. "Out of phase" components can result in misreading of the signal message but, for example, physically adjusting the length of the transmission line can cure the mismatch.

Plugs – cable plugs typically have a male pin contact and coupling nuts. Designed to mate with Receptacles or Jacks.

Power Loss – also expressed as Voltage Drop or Signal Attenuation, just means that the signal strength decreases as you go further down the transmission line. Loss is the result of the resistance in the conductor and the losses in the dielectric material. The unit of measure is a decibel or dB.

Power Rating – this is the maximum power a connector can handle and is frequency related. As the frequency increases the power handling capability decreases, also high altitude reduces the rating. Basically, the Power Rating is how well the connector and/or cable dissipate heat generated by high RF power.

Push-On Connectors – connectors that mate without the need for a threaded coupling nut. Can have a "snap-in" locking feature.

R

Receptacles – Typically have socket contacts and terminate to a wire rather than cable. Designed to mate to Plugs and can be mounted on a panel or chassis.

Reflection – when a connector is inserted into the line, a loss of signal strength or attenuation is seen. Some of the signal is actually re-lected back on itself and when this occurs it sets up a standing wave between the connector and the source. The result is diminished signal strength. The loss is expressed in several terms including return loss, VSWR and insertion loss.

Reflection Coefficient – this is an expression of loss between a value of zero and one. Zero means no reflection and one is total reflection.

Return Loss – this loss factor is stated in dB and it is the ratio of the incident power to the reflected power at a point of discontinuity in the line (such as a connector). Using the method of measurement, 0 dB means a total loss and about 67 dB means almost no loss. A way to express reflected power.

RF High Potential – the minimum voltage requirement for the connector at frequencies above 1 MHz. At this minimum voltage level, the connector will not have excessive leakage current or dielectric failure.

RF Leakage – signal that escapes from the connector or the cable. The cable shielding in coax cable prevents both outside interference and the signal escaping into the environment. Double- and triple-shielded cable may be used to prevent leakage at very high frequencies and to avoid RFI. Expressed as dB to frequency.

RG/U – stands for Radio Guide /Universal. Designation for coaxial cable sizes.