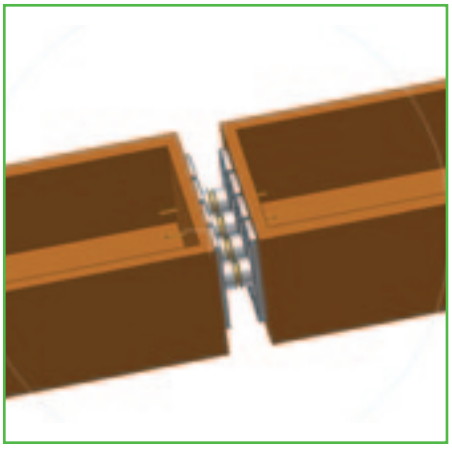
SMPM

CRISTEK INTERCONNECTS, INC.

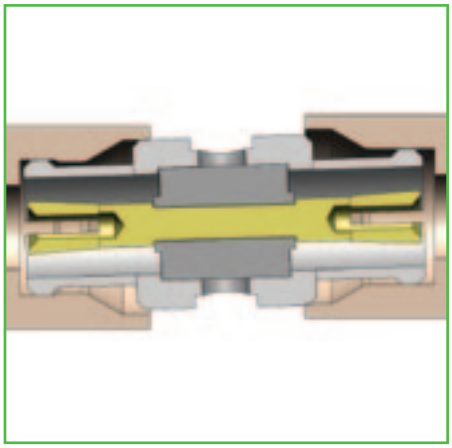
SMPM High Frequency Push-on

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



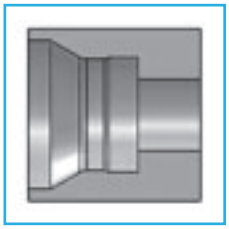
Module to Module (board to board)

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.

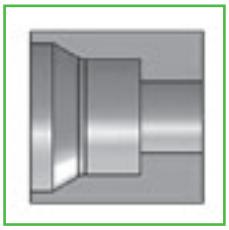


Misalignment

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 ±.010"(.25mm) Axial and ±.010" (.25mm) Radial float.



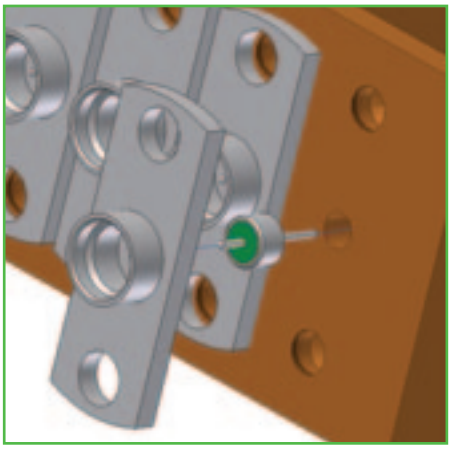
Full Detent



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

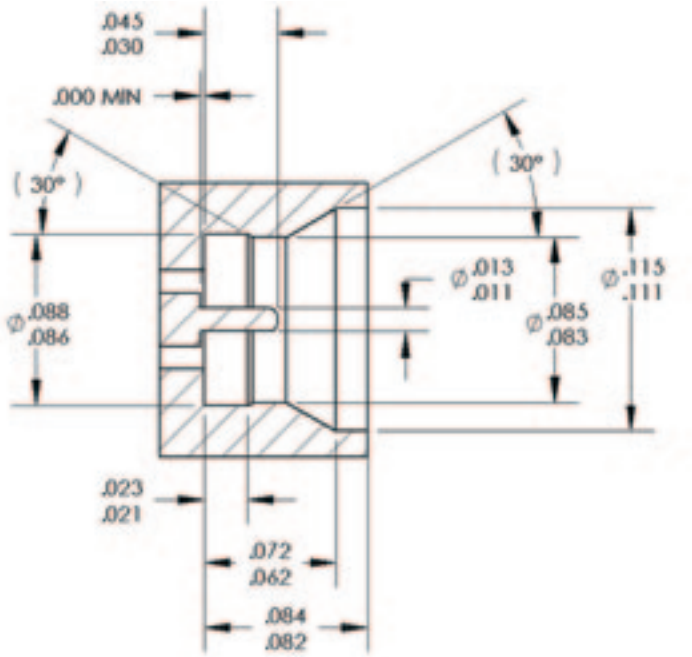
Axial Misalignment	.010" (.25mm) Max.
Radial Misalignment	±.010" (.25mm)
Durability	
Full Detent	100 Cycle
Smooth Bore	1000 Cycles
Force to Engage	
Full Detent	6 lbs (26.6N) Max.
Smooth Bore	3 lbs (13.3N) Max.
Force to Disengage	
Full Detent	7 lbs (31.1N) Min.
Smooth Bore	0.5 (2.2N) Min.
Permeability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

Environmental

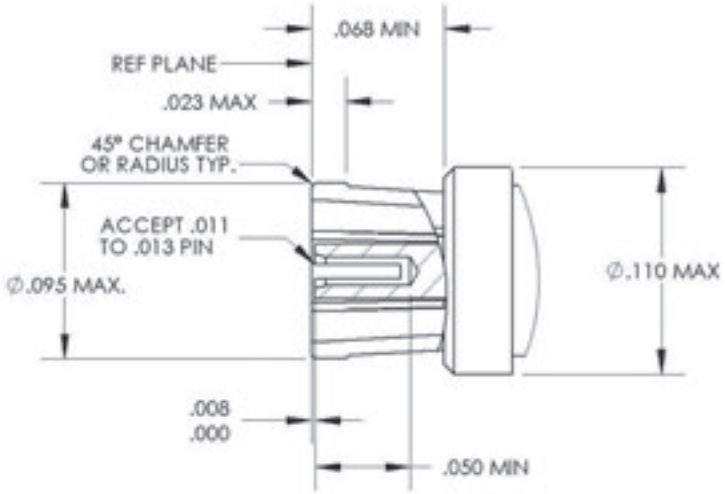
Operating Temperature	-65°C to +165°C
Storage Temperature	-65°C to +200°C
Corrosion	MIL-STD-202, Method 101 Test Condition B, 5% Salt Solution
Vibration	MIL-STD-202, Method 204 Test Condition B, 15 min/axis
Random Vibration	MIL-STD-202, Method 214 Test Condition F, 15 min/axis
Mechanical Shock	MIL-STD-202, 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

SMPM
SMPM Connector Interfaces & Materials



SMPM Full Detent



Materials

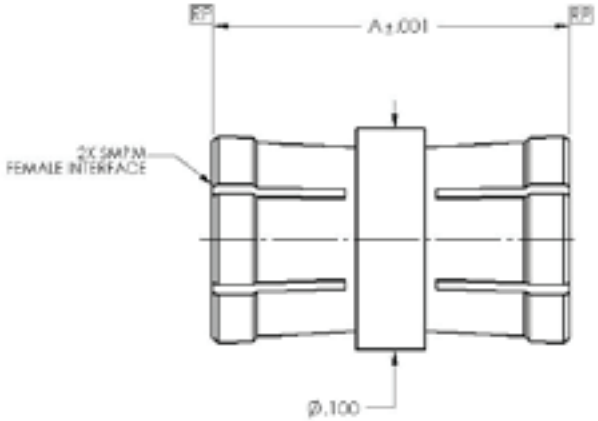
Beryllium Copper (BeCu)	Per ASTM B 196 or ASTM B 197
Stainless Steel 303	Per ASTM A 484, ASTM A 582, ASTM A 555 or ASTM A 581
PTFE	Per ASTM D 1710
Brass	Per ASTM B 36, ASTM B 121, ASTM B 16 or ASTM B 16M
Kovar	Per ASTM F 15
Glass	Corning 7070

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

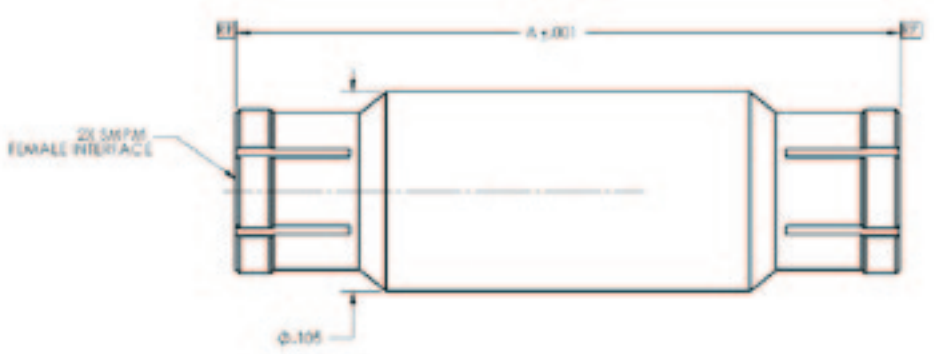
SMPM INTERCONNECT (BULLET)

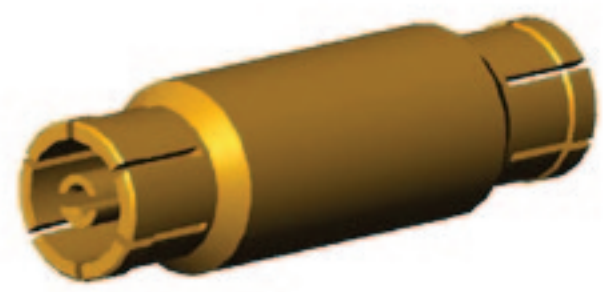
Cristek Part Number	DIM A
MB1-M161-S1	.161
MB1-M166-S1	.166



SMPM INTERCONNECT (BULLET)

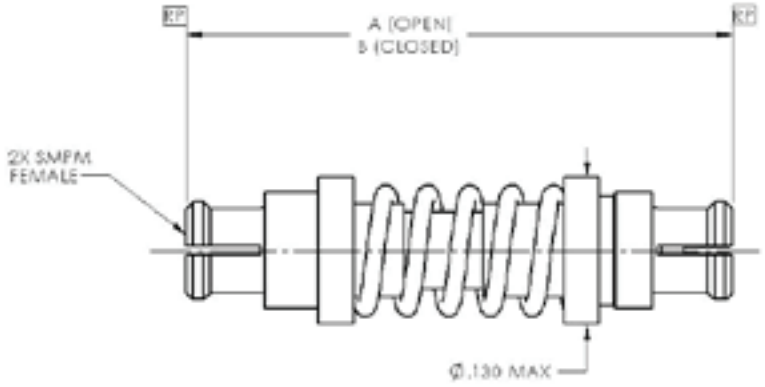
Cristek Part Number	DIM A
MB1-M210-S1	.210
MB1-M349-S1	.349
MB1-M500-S1	.500





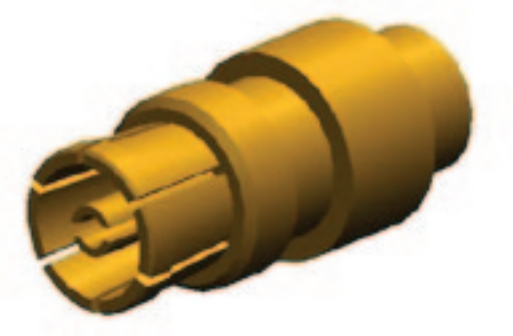
SMPM INTERCONNECT (BULLET)

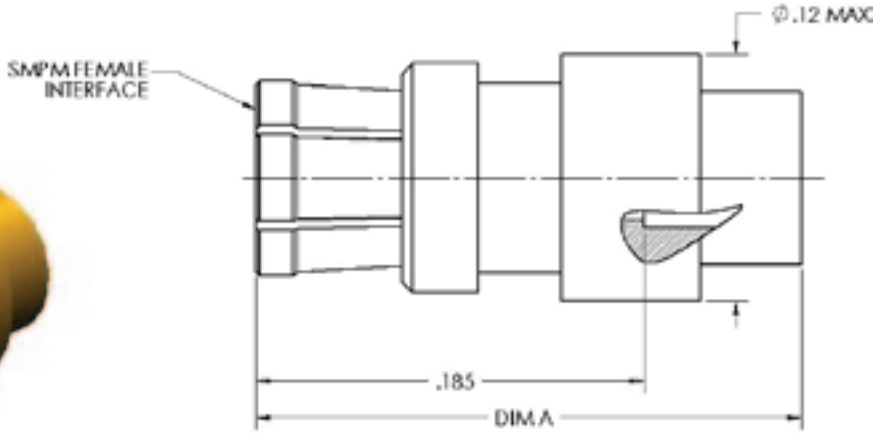
Cristek Part Number	Dim A OPEN	Dim B CLOSED
MD-MFMF-L-001	.530	.480
MD-MFMF-L-002	.650	.600



SMPM FEMALE, STRAIGHT, SEMI-RIGID CABLE

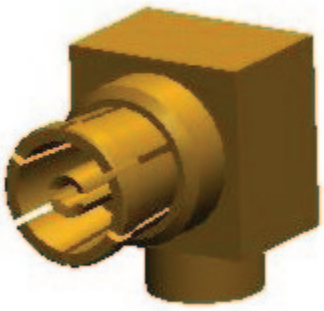
Cable Type	Cristek Part Number	Dim A
SR .047	MA-MFCS-02-001	.260

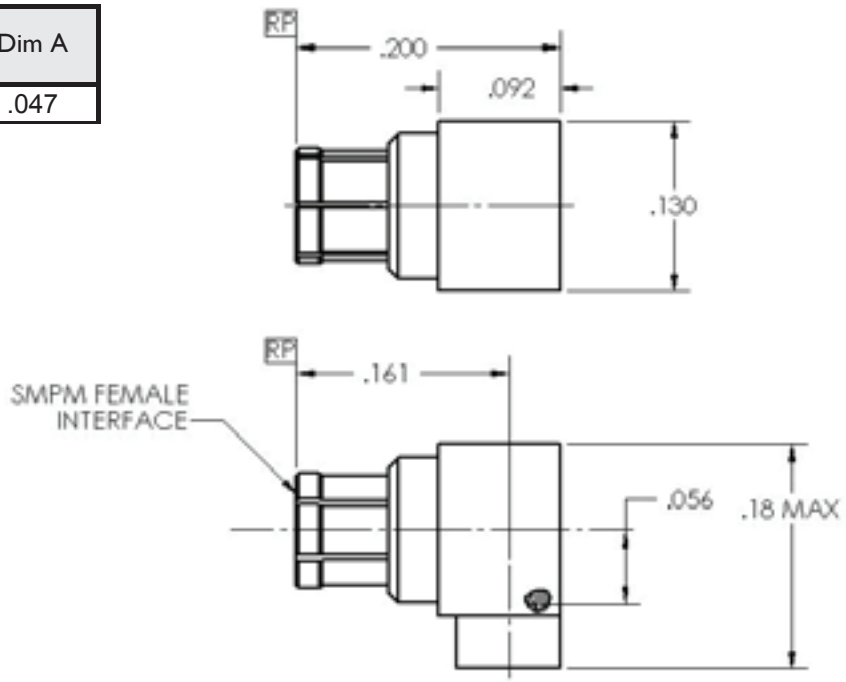




SMPM FEMALE, RIGHT ANGLE, SEMI-RIGID CABLE

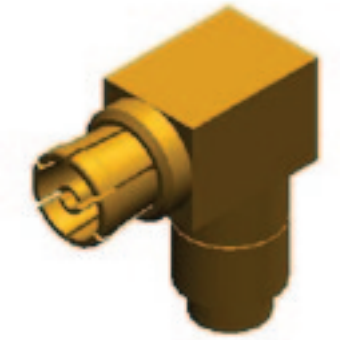
Cable Type	Cristek Part Number	Dim A
SR .047	MA-MFCR-02-001	.047

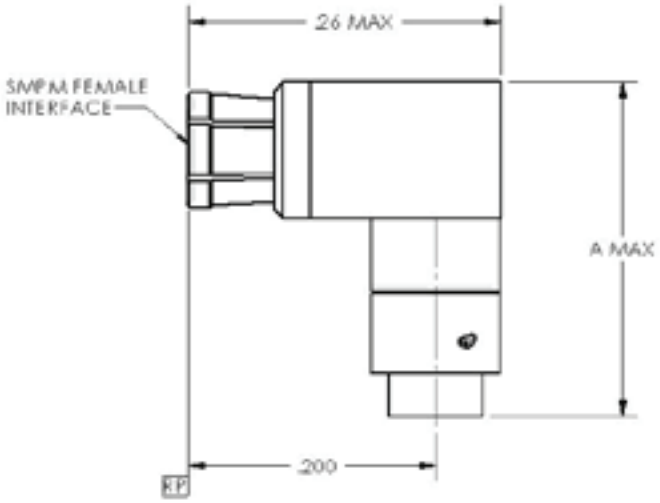




SMPM FEMALE, RIGHT ANGLE, HIGH FREQUENCY, SEMI-RIGID CABLE

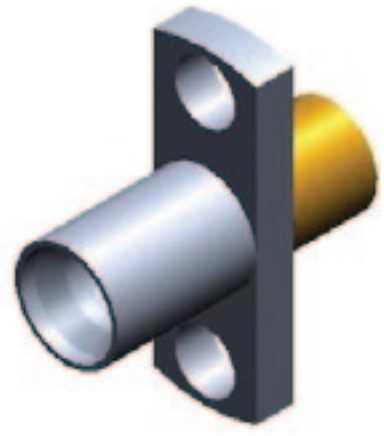
Cable Type	Cristek Part Number	Dim A
SR .047	MA-MFN-02-001	.270

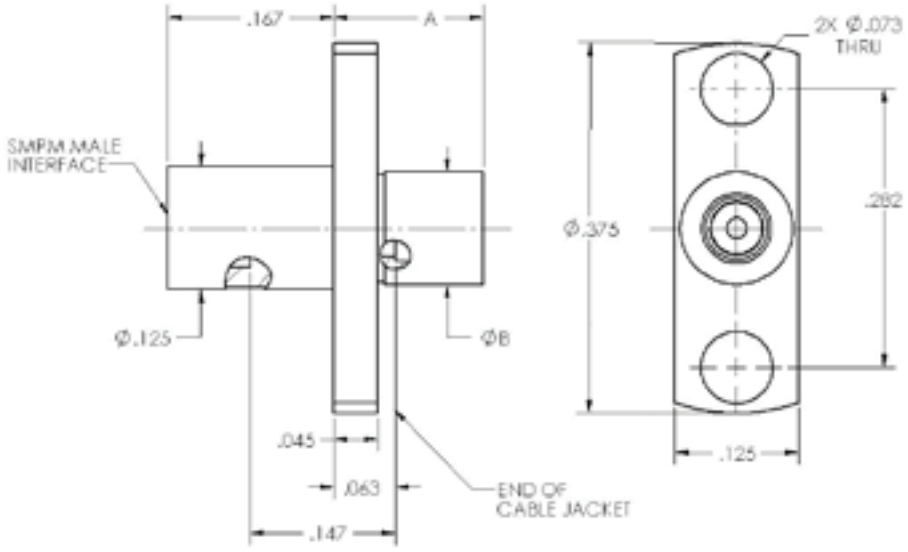




SMPM FEED THRU, FLANGE MOUNT, SEMI-RIGID CABLE

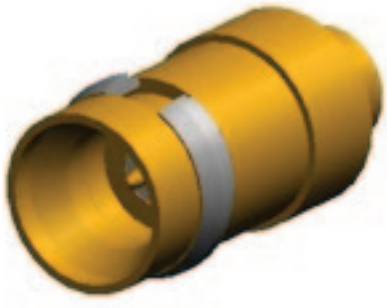
Cable Type	Cristek Part Number	Dim A	Dim B
SR 086	MA-MMCF-01-001	.153	.116
SR 047	MA-MMCF-02-001	.095	.076

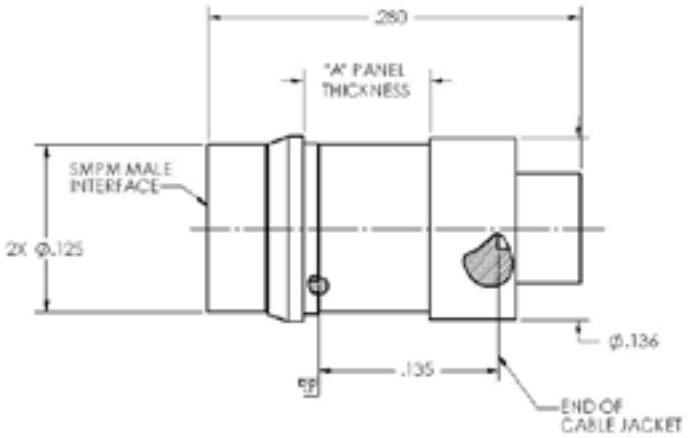




SMPM SNAP IN SHROUD, PANEL MOUNT, SEMI-RIGID CABLE

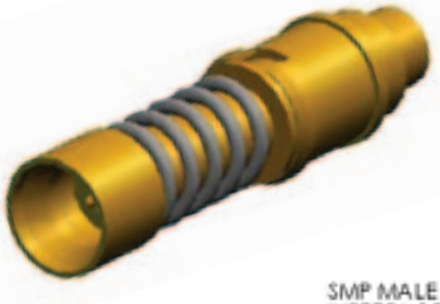
CABLE TYPE	Cristek PN	PANEL THICKNESS
SR.047	MA-MMCJ-02-001	.093
SR.047	MA-MMCJ-02-002	.125

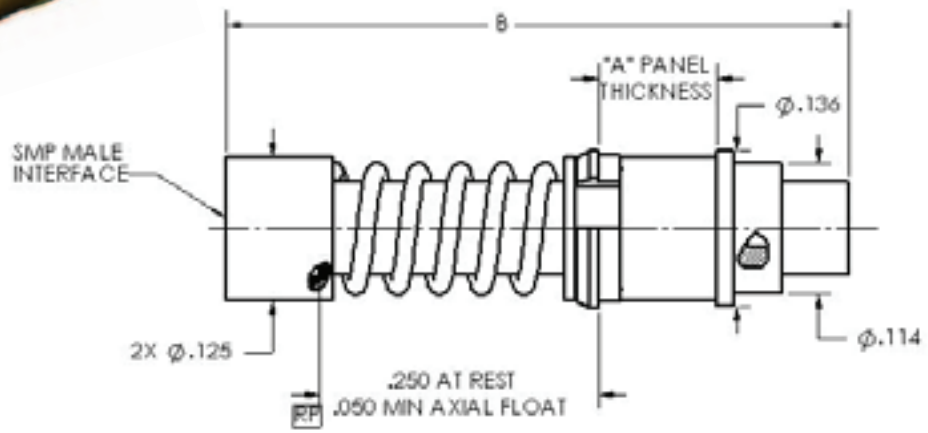




SMPM SNAP IN SHROUD, FLOAT MOUNT, SEMI-RIGID CABLE

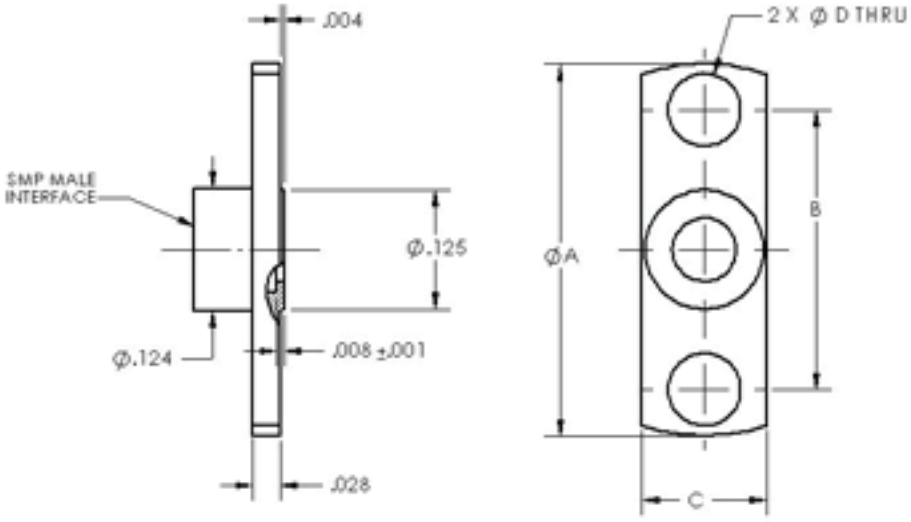
Cable Type	Cristek PN	"A" PANEL THICKNESS	Dim B
SR.047	MA-MMCM-02-001	.093	.548
SR.047	MA-MMCM-02-002	.125	.580





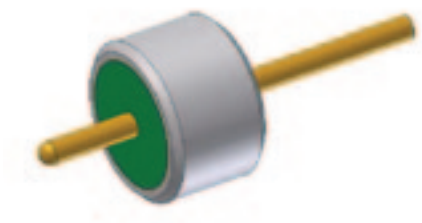
SMP FLANGE MOUNT SHROUD

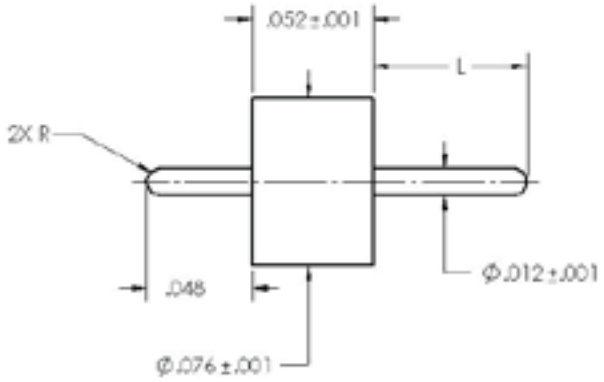
Cristek Part Number	Detent	Dim A	Dim B	Dim C	Dim D
MA1-MMMF-001-FD	FD	Ø.375	.282	.125	Ø.073
MA1-MMMF-001-SB	SB	Ø.375	.282	.125	Ø.073
MA1-MMMF-002-FD	FD	Ø.625	.481	.150	Ø.103
MA1-MMMF-002-SB	SB	Ø.625	.481	.150	Ø.103



SMPM HERMETIC FEED THRU, .012 DIAMETER PIN

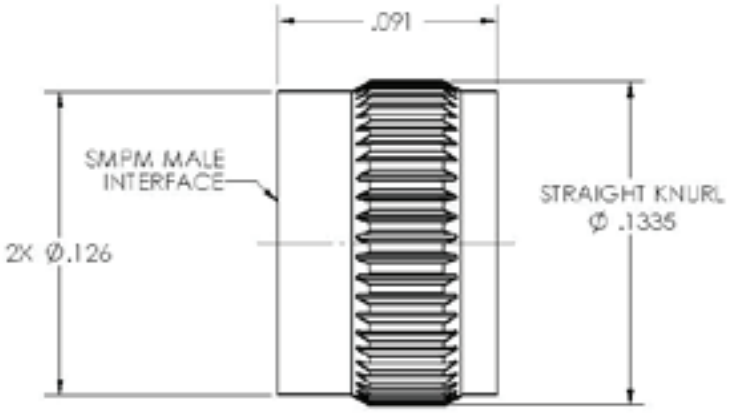
Cristek Part Number	"L"
MCN1-MH-002-070	.070
MCN1-MH-002-090	.090
MCN1-MH-002-120	.120
MCN1-MH-002-150	.150





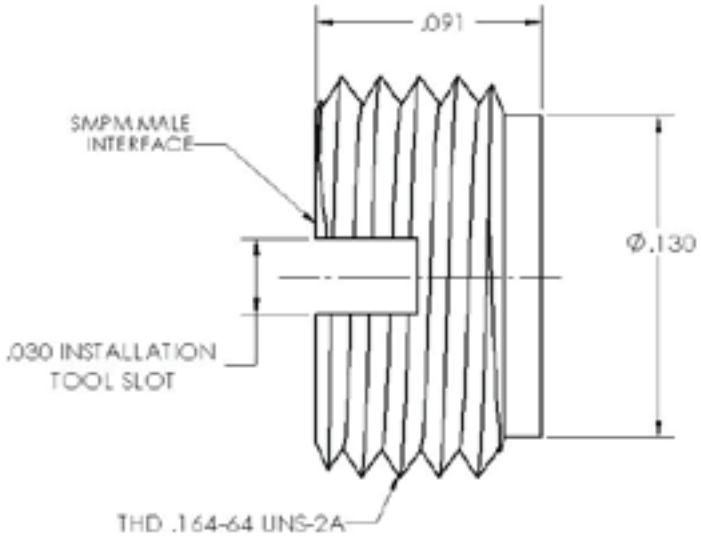
SMPM PRESS IN SHROUD

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



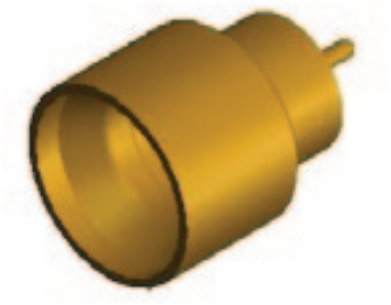
SMPM THREAD IN SHROUD

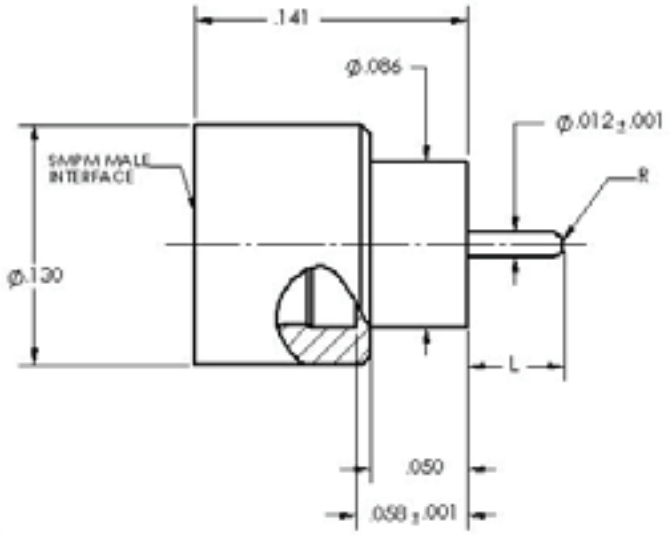
Cristek Part Number	Detent
MA1-MMMT-001-FD	FD
MA1-MMMT-001-SB	SB



SMPM HERMETIC FEED THRU, SHROUDED, Ø.130

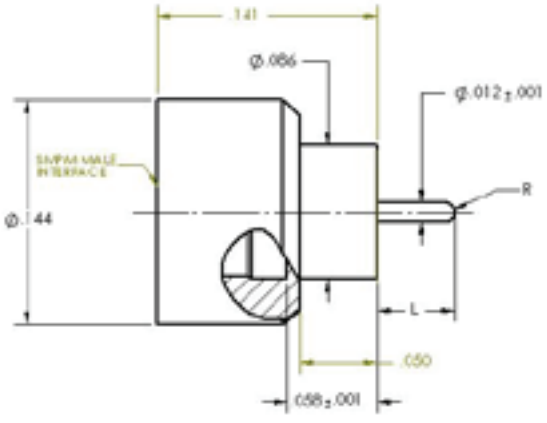
Cristek Part Number	Detent	"L"
MA-MMZH-001-FD-050	FD	.050
MA-MMZH-001-SB-050	SB	.050
MA-MMZH-001-FD-070	FD	.070
MA-MMZH-001-SB-070	SB	.070
MA-MMZH-001-FD-090	FD	.090
MA-MMZH-001-SB-090	SB	.090





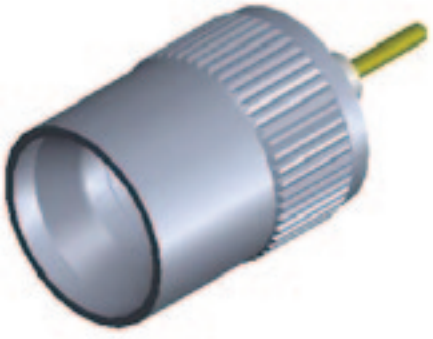
SMPM HERMETIC FEED THRU, SHROUDED, Ø.144

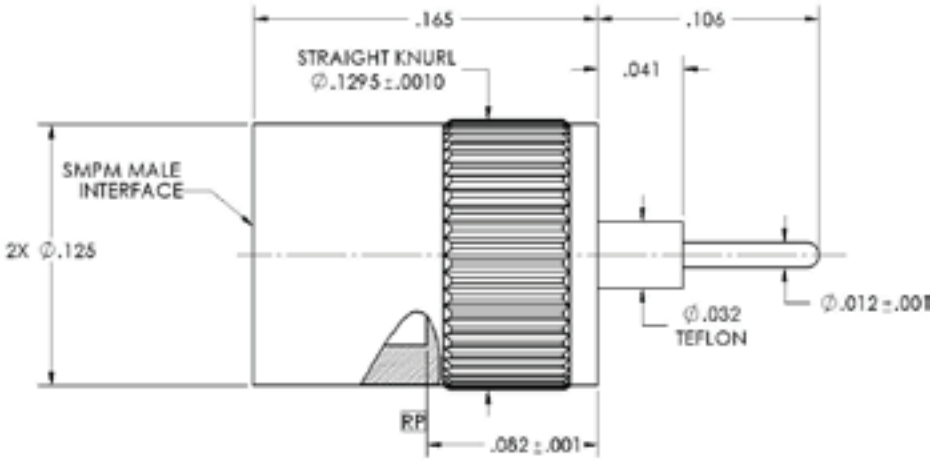
Cristek Part Number	Detent	"L"
MA-MMZH-002-FD-050	FD	.050
MA-MMZH-002-SB-050	SB	.050
MA-MMZH-002-FD-070	FD	.070
MA-MMZH-002-SB-070	SB	.070
MA-MMZH-002-FD-090	FD	.090
MA-MMZH-002-SB-090	SB	.090



SMPM PRESS IN "SPARK PLUG"

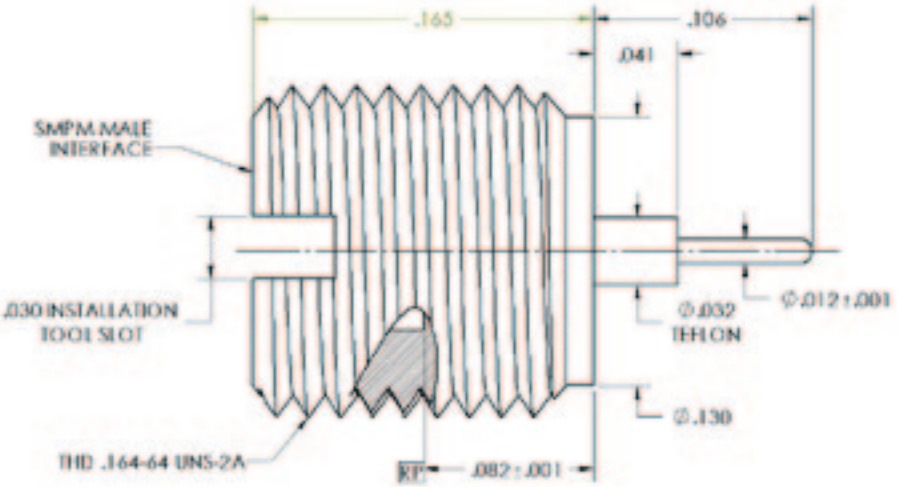
Cristek Part Number	Detent
MA-MMZP-001-FD	FD
MA-MMZP-001-SB	SB





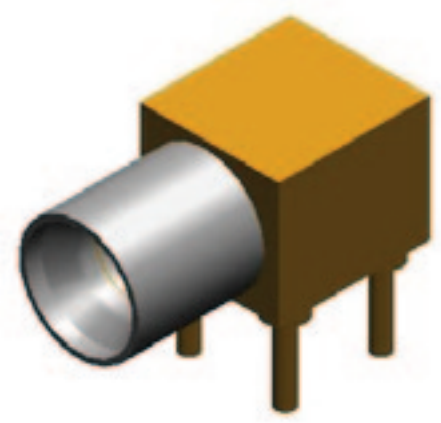
SMPM THREAD IN "SPARK PLUG"

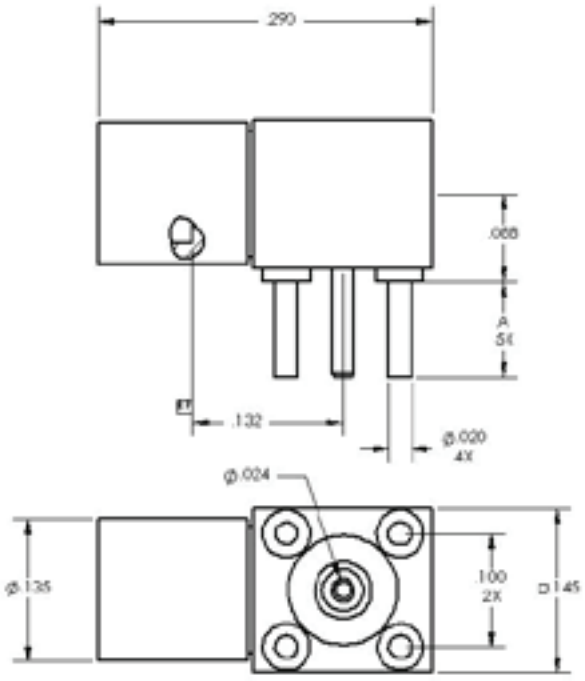
Cristek Part Number	Detent
MA-MMZT-001-FD	FD
MA-MMZT-001-SB	SB



SMPM MALE, RIGHT ANGLE, THRU HOLE, PCB

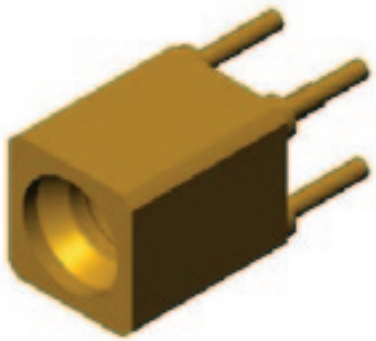
Cristek PN	Dim A	Detent
MA-MMDR-001-FD	.096	FD
MA-MMDR-001-SB	.096	LD

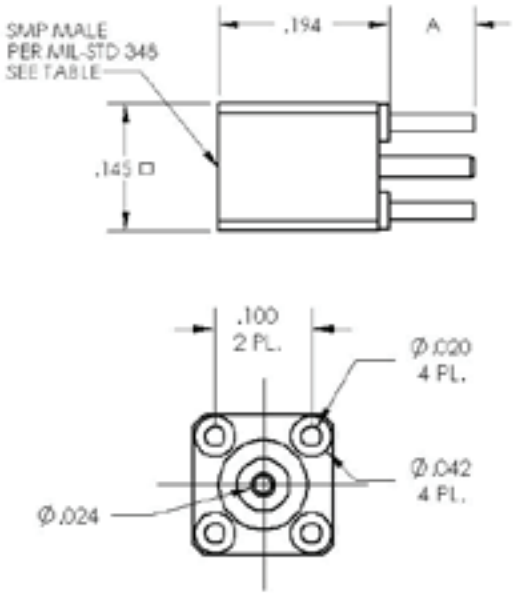




SMPM MALE, VERTICAL, PCB

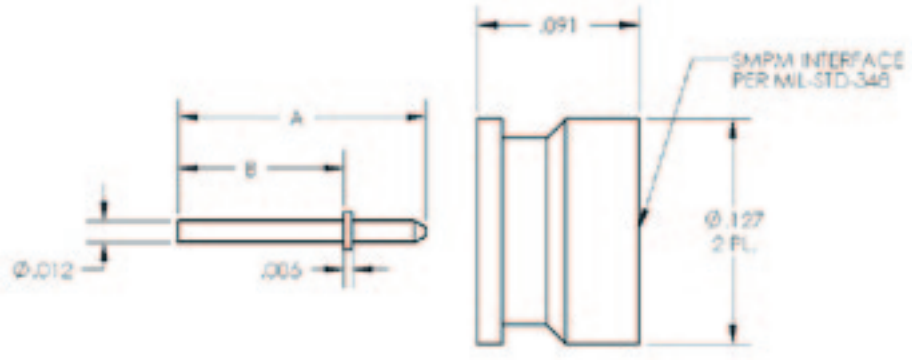
Cristek PN	Dim A	Detent
MA-MMDS-001-FD	.096	FD
MA-MMDS-001-SB	.096	SB





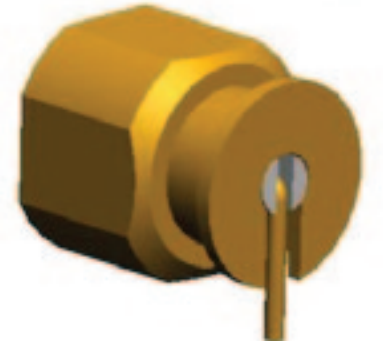
SMPM MALE, VERTICAL, SURFACE MOUNT, PCB

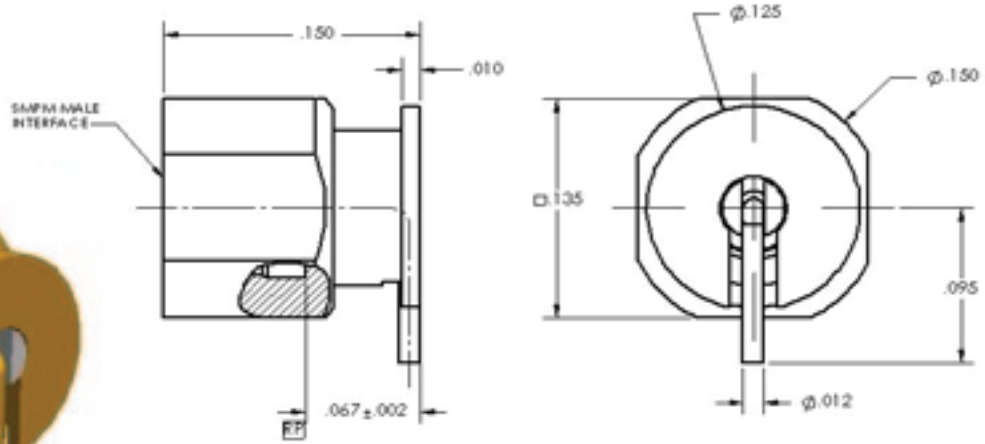
Cristek PN	Detent	DIM A	DIM B
MA-MMUS-001-FD	FD	.140	.093
MA-MMUS-002-SB	SB	.140	.093
MA-MMUS-003-FD	FD	.052	.005
MA-MMUS-003-SB	SB	.052	.005
MA-MMUS-004-FD	FD	.163	.093
MA-MMUS-004-SB	SB	.163	.093



SMPM MALE, VERTICAL, SURFACE MOUNT, PCB

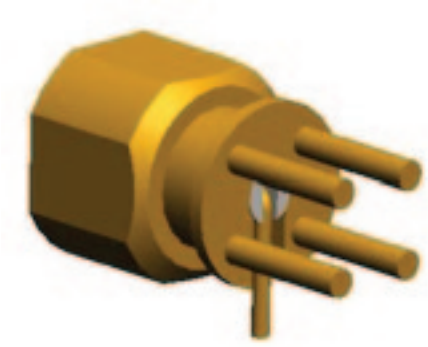
Cristek PN	Detent
MA-MMUN-001-FD	FD
MA-MMUN-001-SB	SB

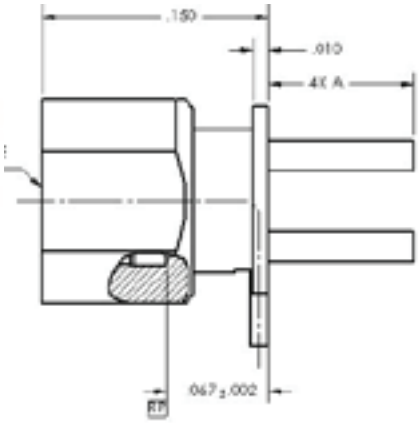


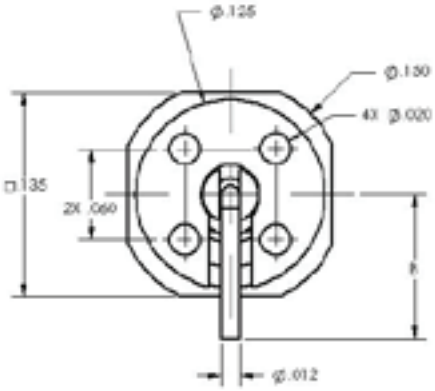


SMPM MALE, VERTICAL, SURFACE MOUNT WITH THRU LEGS, PCB

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

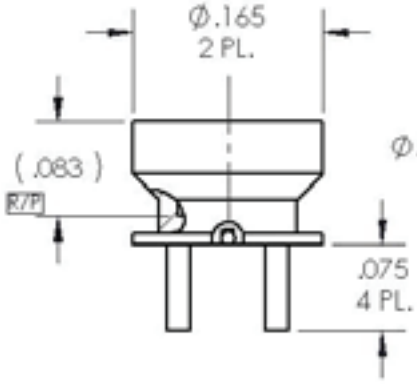


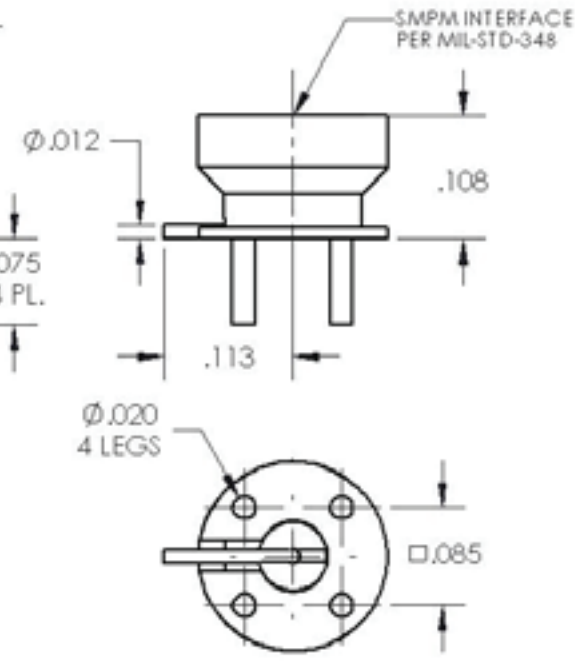




SMPM MALE, VERTICAL, SURFACE MOUNT WITH THRU LEGS, PCB, LOW PROFILE

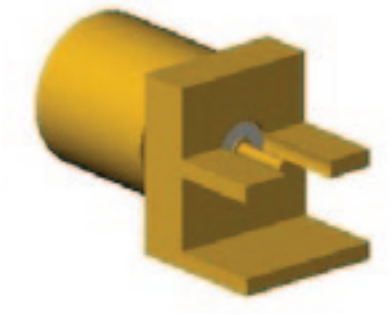
Cristek PN	Detent
MA-MMUN-003-FD	FD
MA-MMUN-003-SB	SB

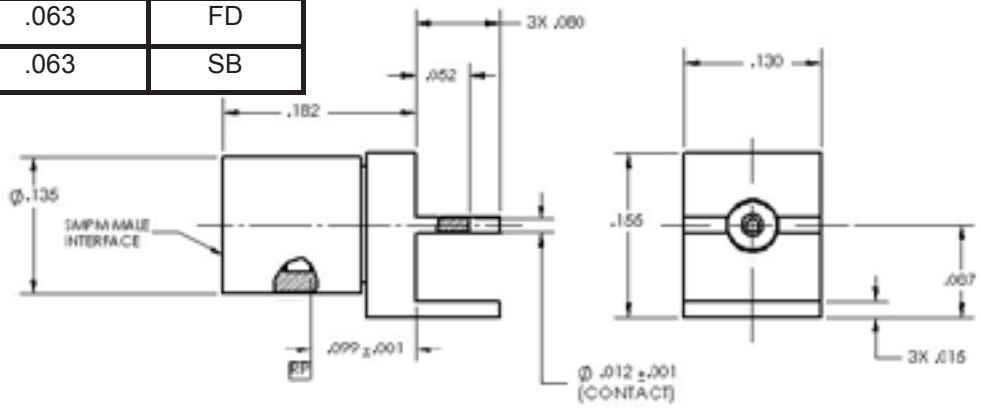




SMPM MALE, EDGE LAUNCH , PCB

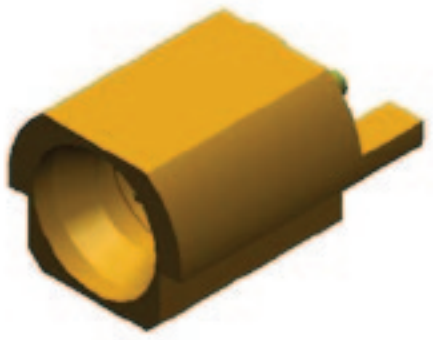
Cristek PN	BOARD THICKNESS	Detent
MA-MMZE-001-FD	.063	FD
MA-MMZE-001-SB	.063	SB

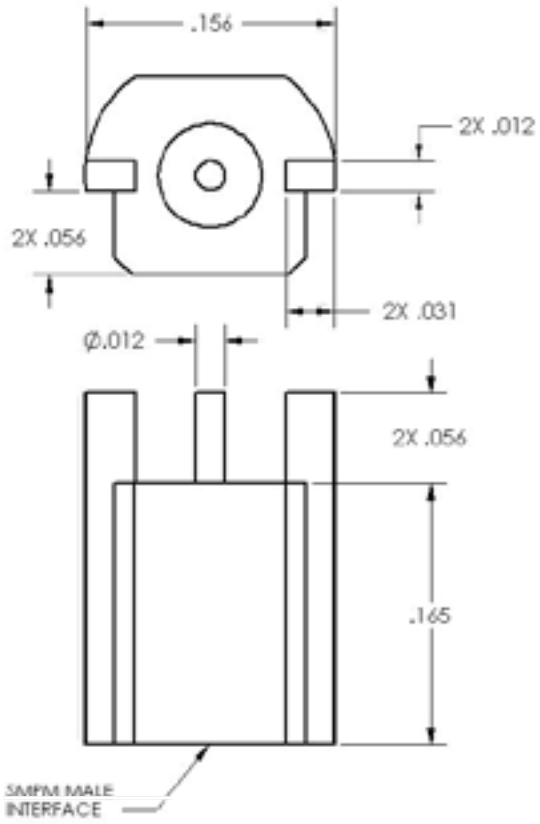




SMPM MALE, NOTCH EDGE LAUNCH PCB

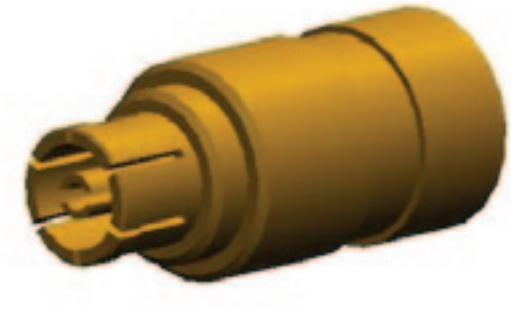
Cristek PN	Detent
MA-MMZE-002-FD	FD
MA-MMZE-002-SB	SB

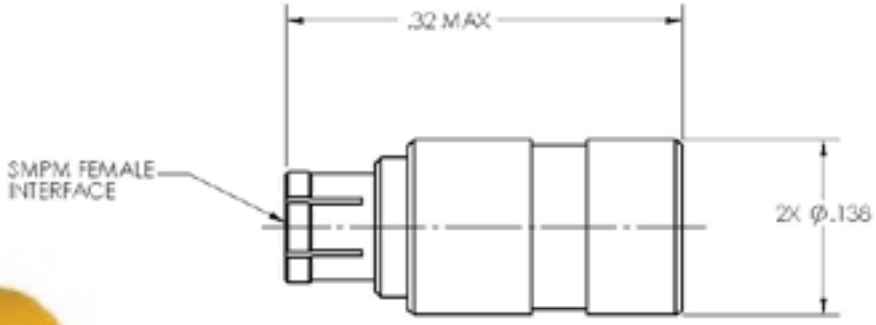




SMPM FEMALE , 50 OHM FIELD GRADE TERMINATION

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





SMPM 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