

## Ganged Board to Board SMP Solutions Catalog



**cinch**  
CONNECTIVITY SOLUTIONS  
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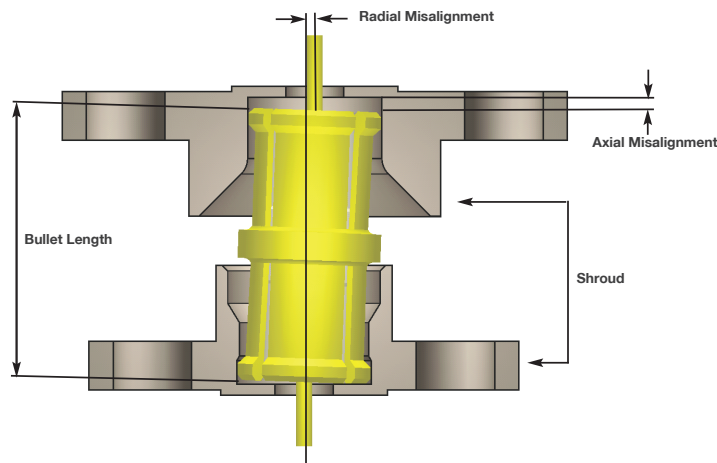
# SMP CONNECTORS

One of the key benefits of the SMP connector interface is its use in high frequency blind-mate applications. The design of the SMP bullet and shroud system allows for both axial and radial misalignment. The basic system is comprised of an inner “bullet” adapter, and two outer receptacles called “shrouds”. The bullet provides a flexible link between the shroud connections.

In blind-mate applications, one shroud connector specified as a snap-on interface and the other as a slide-on. This ensures that the bullet adapter remains fixed in the same shroud connector when the connection is disengaged.

The two snap-on interfaces Full Detent (FD) and Limited Detent (LD) each have different engage and disengage coupling forces. The LD is typically selected as the snap-on interface in PCB mount or blind-mate applications, while the FD is mainly used for cabled connections where higher retention forces are required.

The two slide-on interfaces Smooth Bore (SM) and Catcher's Mit (CM) allow for reduced connection forces as compared to the snap-on versions. The push-on interface creates a sliding connection that does not physically locate the mating reference planes, allowing for axial and radial misalignment. Both the SM and CM have the same engage/disengage forces; however the CM is typically specified as the shroud configuration in blind-mate applications as its generous lead-in chamfer helps capture and guide the bullet into place.



## CUSTOM RF SOLUTIONS

Cinch Connectivity Solutions' SMP Ganged and Board to Board RF Connector Solutions. Our SMP Product Family is launching a standard offering of a 4 port board to board solution, which can also be configured as a cable assembly to a ganged connector offering. The 4 port version can be optimized and customized to meet customers' needs, for number of ports, board spacing, connector separation spacing, and cable type/lengths, etc.

### Features

- Mating force spec 15 lbs engagement/ 5 lbs disengagement per SMP Full Detent specs, complies with MIL-STD-348A SMP specifications.
- Frequency range: DC to 40 GHz
- 50 ohms, Brass or Stainless Steel
- Scalable & cost effective up to 8 ports with one or two rows

### Applications

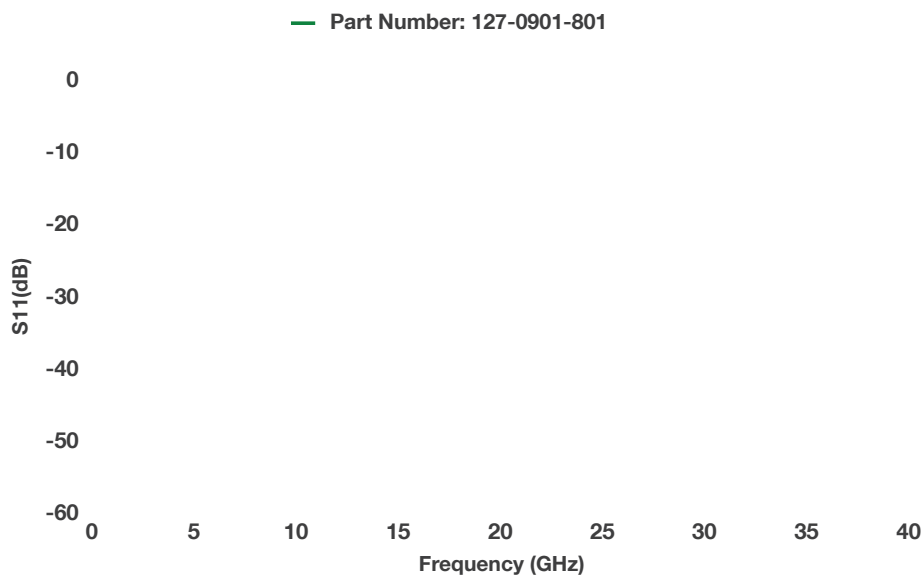
- Networking router and switches
- Test and Measurement rack system
- Instrumentation Test Fixture Equipment
- Semiconductor ATE Test Boards
- Wireless Infrastructure Antenna Systems
- Radar Systems

# SPECIFICATIONS

## ELECTRICAL SPECIFICATIONS

Impedance	50 Ohms				
Frequency Range:	Bullet Adapter (.254" length), Ganged Cabled Connector .....	0-40 GHz			
	Ganged PC Mount Connector .....	0-26.5 GHz			
VSWR: (maximum)	Bullet Adapter (.254" length):	0-18 GHz	18-23 GHz	23-26.5 GHz	26.5-40 GHz
		1.10	1.15	1.30	1.70
	Semi-Rigid Ganged Cabled Connector:	0-18 GHz	18-26.5 GHz	26.5-40 GHz	
		1.25	1.35	1.5	
	Ganged PC Mount Connector:	0-18 GHz	18-26.5 GHz		
		1.25	1.50		
Insertion Loss: (dB maximum, tested at 10 GHz)	Bullet Adapter .....				0.10 √ F (GHz)
	Semi-Rigid Cabled Connectors .....				0.12 √ F (GHz)
Working Voltage:	335 Vrms maximum at sea level, 65 Vrms maximum at 70,000 feet				
Dielectric Withstanding Voltage:	500 Vrms minimum at sea level				
RF High Potential Withstanding Voltage:	325 Vrms minimum at sea level, tested at 4 and 7 MHz				
Corona Level:	190 Vrms minimum at 70,000 feet				
Contact Resistance: (milliohms maximum initial, not applicable after environmental testing)	Center Contact (Connectors and Adapters) .....				6.0
	Outer Contact (Connectors and Adapters) .....				2.0
	Cable Shield to Body (Semi-Rigid Cabled Connectors Only) .....				0.5
Insulation Resistance:	5000 megohms minimum				
RF Leakage: (dB typical, tested at 2.5 GHz)	Cabled and Field Replaceable Connectors .....				-80
	Bullet Adapter, Ganged PC Mount Connector (Between Ports) .....				-65

### Typical Measured Return Loss: Bullet Adapter



# SPECIFICATIONS

## MECHANICAL SPECIFICATIONS

Interface Design: MIL-STD-348A, Series SMP

Engagement Force: (pounds maximum, mated pair)	Full Detent (FD) .....	15.0
	Limited Detent (LD) .....	10.0
	Smooth Bore (SB) .....	2.0

Disengagement Force: (pounds minimum, mated pair)	Full Detent (FD) .....	5.0
	Limited Detent (LD) .....	12.0
	Smooth Bore (SB) .....	0.5

Mated Radial Misalignment: (inches maximum allowed, female adapters only)	Between Centerlines of Mating Planes (SB) .....	0.010
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Mated Axial Misalignment:	Maximum allowed between mating planes .....	0.010
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Durability: (mating cycles minimum)	Full Detent .....	100
	Limited Detent .....	500
	Smooth Bore .....	1000

Contact Retention:	1.5 pounds minimum axial force (captivated contacts only)
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Cable Retention: (minimum)		Axial Force* (lbs)	Torque (in-oz)
	Cabled Connectors for RG-405 (.086 Semi-Rigid)	30	16.0
	Cabled Connectors for M17/151 (.047 Semi-Rigid)	20	N/A
*Or cable breaking strength, whichever is less			

Connector and Adapter Bodies:	Beryllium Copper per ASTM B196, Gold* plated per MIL-DTL-45204 (.00005" min)
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Connector and Adapter Insulators:	PTFE per ASTM D1710, Gold* plated per MIL-DTL-45204 (.00003" min)
*All gold plated parts include a .00005" min nickel barrier layer.	

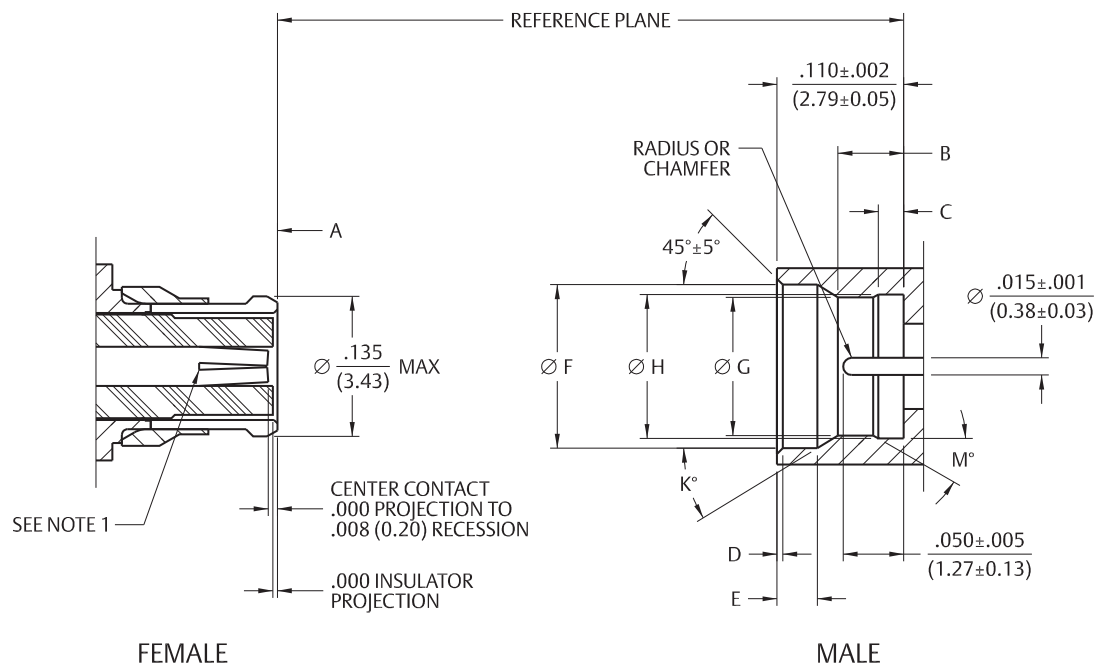
## ENVIRONMENTAL SPECIFICATIONS

Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012

Operating Temperature:	-65°C to +165°C
Thermal Shock:	MIL-STD-202, Method 107, Condition B (except high temp +165°C or max high temp of cable)
Corrosion:	MIL-STD-202, Method 101, Condition B
Vibration:	MIL-STD-202, Method 204, Condition D
Shock: (specified pulse)	MIL-STD-202, Method 213, Condition I
Moisture Resistance:	MIL-STD-202, Method 106 (except step 7b omitted)

# SPECIFICATIONS

## Mating Engagement for SMP Series per MIL-STD-348A



- Notes:
- 1. Socket to accept mating pin Ø.015±.001 (0.38±0.03).
  - 2. All dimensions shown in inches. Metric equivalents (rounded to nearest 0.01mm) are given for general information only.

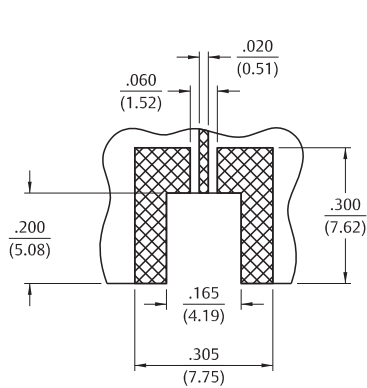
### SMP Female Connector Interface

Dimension	Cabled		Uncabled	
	Minimum	Maximum	Minimum	Maximum
A	.025 (0.64)	.035 (0.89)	.018 (0.46)	.025 (0.64)

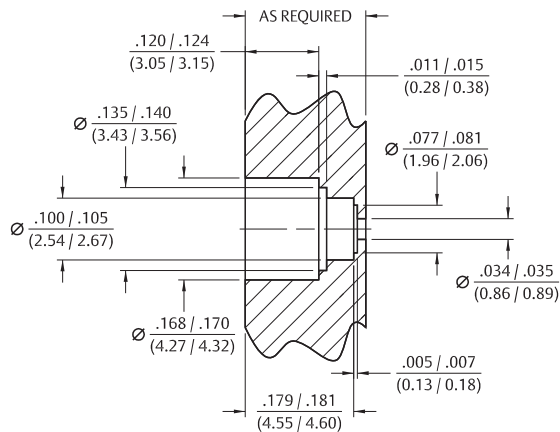
### SMP Male Connector Interface

Dimension	Full Detent		Limited Detent		Smooth Bore		Catcher's Mit	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
B	.051 (1.30)	.057 (1.45)	.054 (1.37)	.060 (1.52)	.059 (1.50)	.065 (1.65)	N/A	N/A
C	.0205 (0.52)	.0235 (0.60)	.0205 (0.52)	.0235 (0.60)	N/A	N/A	N/A	N/A
D	.003 (0.08)	.008 (0.20)	.003 (0.08)	.008 (0.20)	.003 (0.08)	.008 (0.20)	.043 (1.09)	.047 (1.19)
E	.033 (0.84)	.037 (0.94)	.033 (0.84)	.037 (0.94)	.033 (0.84)	.037 (0.94)	N/A	N/A
F	.139 (3.53)	.145 (3.68)	.139 (3.53)	.145 (3.68)	.139 (3.53)	.145 (3.68)	.123 (3.12)	.127 (3.23)
G	.114 (2.90)	.118 (3.00)	.118 (3.00)	.122 (3.10)	.123 (3.12)	.127 (3.23)	N/A	N/A
H	.124 (3.15)	.126 (3.20)	.124 (3.15)	.126 (3.20)	N/A	N/A	N/A	N/A
K	35° REF	35° REF	35° REF	35° REF	35° REF	35° REF	N/A	N/A
M	30° REF	30° REF	30° REF	30° REF	N/A	N/A	N/A	N/A

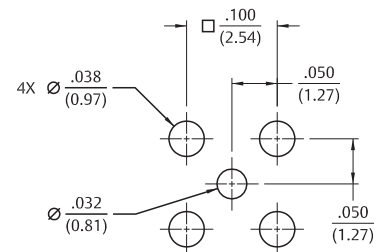
## MOUNTING HOLES



**Fig 1**



**Fig 2**



**Fig 3**

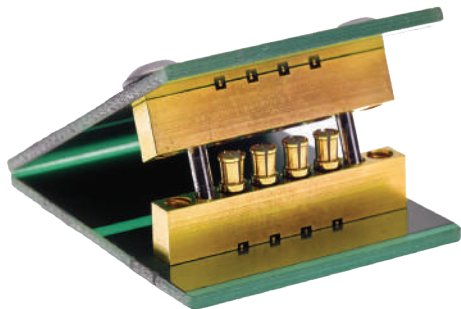
\*This pattern is for reference only. Pattern will vary depending on board type and specific electrical and mechanical requirements.

## CONFIGURATIONS

## Stacked

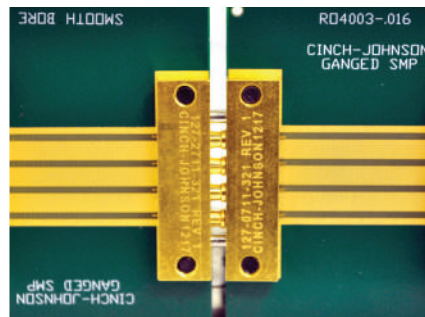
### Vertical PC SMT SB or LD to a Vertical PCB SMT FD

(0.484" spacing – fully mated)



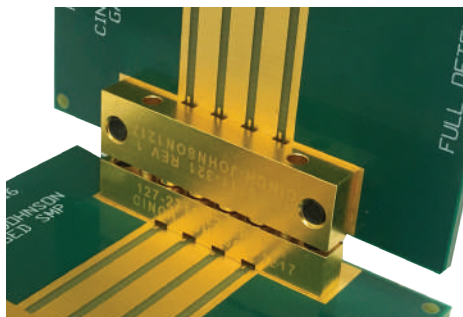
## Orthogonal Right Angle PC SMT SB or LD to a Right Angle PCB SMT FD

(0.034" spacing – fully mated)



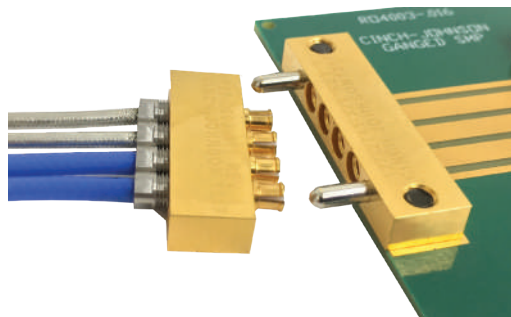
## Coplanar Vertical PC SMT SB or LD to a Right Angle PCB SMT FD

(0.259" spacing – fully mated)



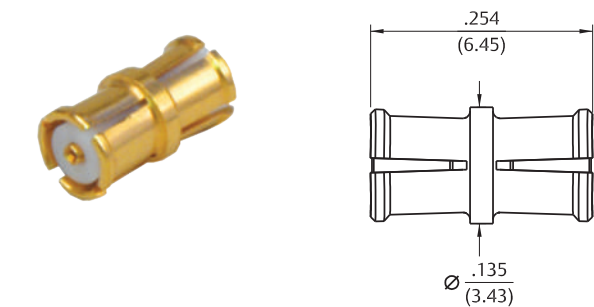
## Right Angle PC SMT SB or LD to a Straight Cable Mount FD

(0.034" spacing – fully mated)



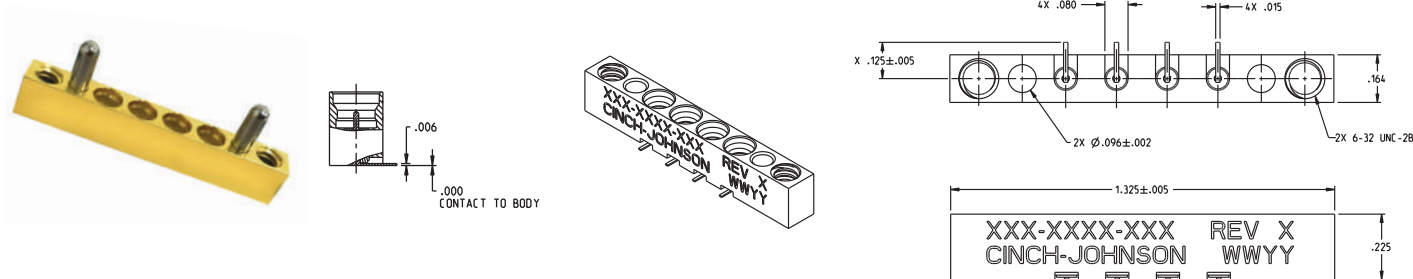
Female to Female Bullet Adapter

Part Number	Description				
127-0901-801	Female to Female	Bullet Adapter	SMP	0.254"	



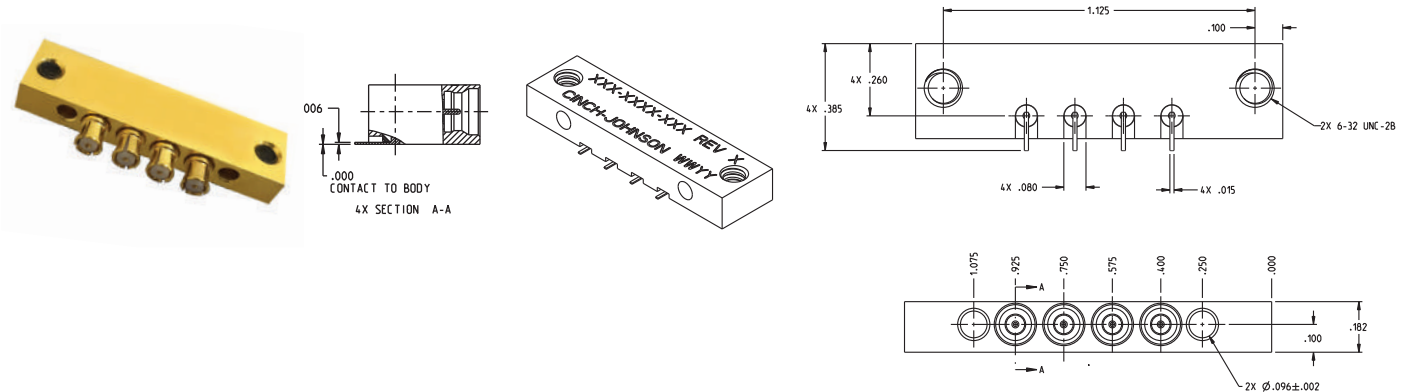
Male, Full Detent, Vertical PCB Surface Mount

Part Number	Description				
127-0711-221	Male	Full Detent	Vertical PC Surface Mount	SMP	4 Position



Male, Full Detent, Right Angle PCB Surface Mount

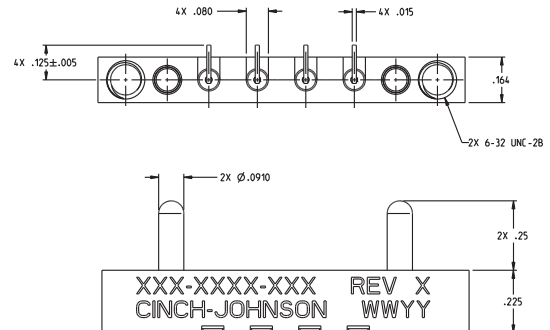
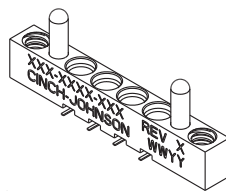
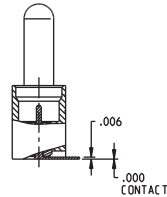
Part Number	Description				
127-0711-321	Male	Full Detent	Right Angle PCB Surface Mount	SMP	4 Position





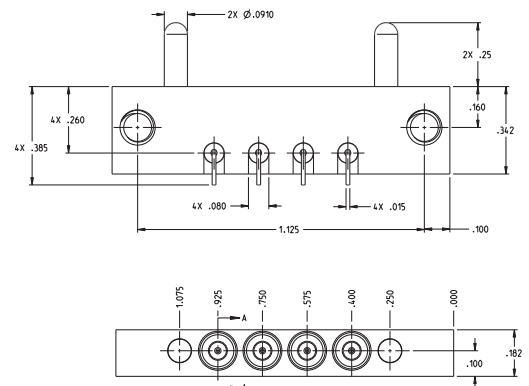
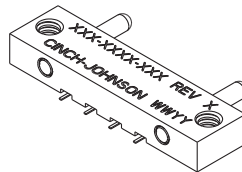
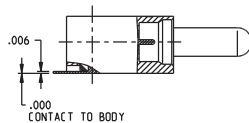
## Male, Smooth Bore/Limited Detent, Vertical PCB Surface Mount

Part Number	Description				
127-2711-221	Male	Smooth Bore	Vertical PCB Surface Mount	SMP	4 Position
127-1721-221	Male	Limited Detent	Vertical PCB Surface Mount	SMP	4 Position



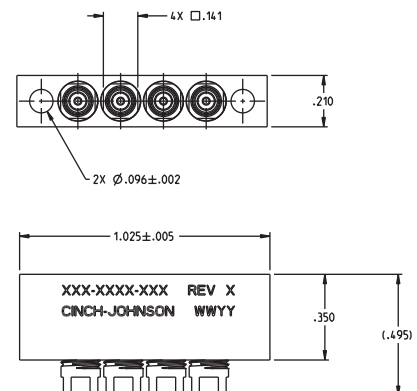
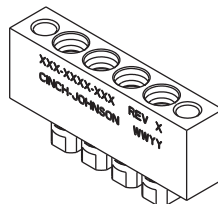
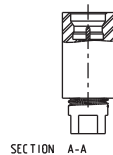
## Male, Smooth Bore/Limited Detent Right Angle PCB Surface Mount

Part Number	Description				
127-2711-321	Male	Smooth Bore	Right Angle PCB Surface Mount	SMP	4 Position
127-1721-321	Male	Limited Detent	Right Angle PCB Surface Mount	SMP	4 Position



## Male, Full Detent, Cabled

Part Number	Description				
127-0593-011	Male	Full Detent	Cabled	SMP	4 Position







## **Innovative Interconnect Solutions Across the Globe**

In operation since 1917, Cinch supplies high quality, high performance connectors and cables globally to the Aerospace, Military/Defense, Commercial Transportation, Oil & Gas, High End Computer, and other markets. We provide custom solutions with our creative, hands on engineering and end to end approach.

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Our diverse product offerings include: connectors, enclosures and cable assemblies utilizing multiple contact technologies including copper and fiber optics. Our product engineering and development activities employ cutting edge technologies for design and modeling, and our various technologies and expertise enable us to deliver custom solutions and products for our strategic partnerships. We also serve a broad range of commercial markets, largely through our highly efficient distribution network.

We aim to exceed our customer's expectations, and to continually provide innovative solutions to the rapidly changing needs of the markets, and customers, we serve. For more information, visit [belfuse.com/cinch](http://belfuse.com/cinch)

