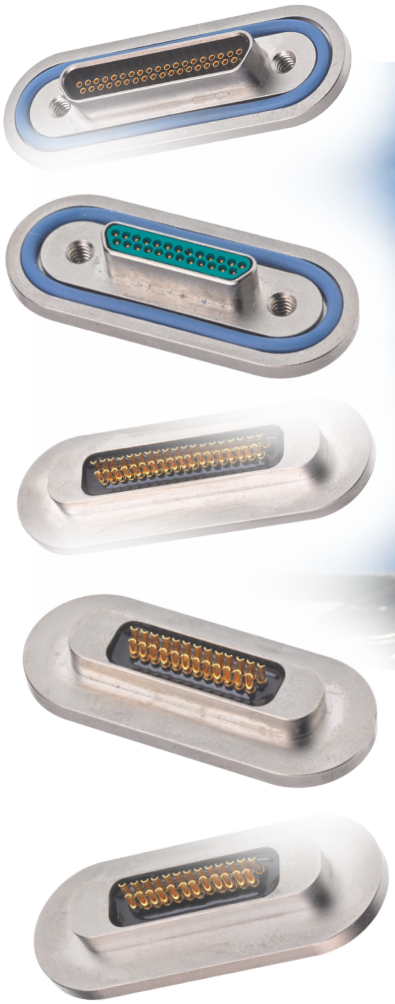
Hermetic Connectors

Electronics in Harsh Environments



Cinch Connectivity Solutions specializes in the science of hermetic sealing design and manufacturing. Our product engineering and development activities employ cutting edge technologies, various technologies and expertise enable us to deliver the right solutions and products to meet your application needs.

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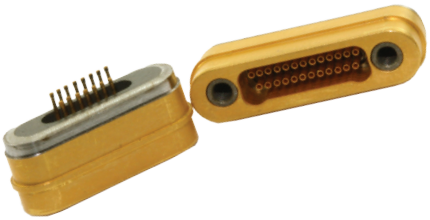
Dual Lobe Nano-Miniature Connector

Cinch Nano connectors are ideal for smaller, lighter microwave packages as well as applications such as Cryogenic, Space, Optical, Petroleum, and UAV systems. Our standard offering includes the dual row and single row laser weldable hermetic Nano connectors in aluminum, titanium, and stainless steel with beryllium copper contacts individually sealed utilizing our exclusive ceramic dielectric insulator. Ours are the most reliable hermetic connectors available, and they meet or exceed MIL-DTL-32139 requirements.

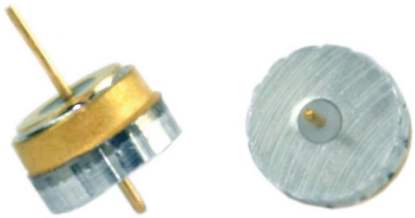


General Design Specifications

- Contact Configurations: Available in 9, 15, 21, 25, 31, 37, and 51
- Leak rate is less than $1X10^{-9}$ cc /sec He at one atmosphere differential pressure
- Internal pins can be configured to accept insulated wire, wirebonds, ribbon welds, or flex
- Current rating: 1 amp per contact
- Operating temperature range for hermetic receptacles -200˚C to 350˚C
- Insulation resistance is > 5,000Megohms at 250 VDC
- DWV: Connectors show no evidence of breakdown or flashover at 300 VAC

Aluminum Weldable Stabilizer Series, RF Feedthroughs

Featuring an exclusive press-in knurled flange, Cinch aluminum laser weldable 50 ohm feedthroughs align the feedthrough and maintain its position during welding, eliminating the tendency for the feedthrough to move during the welding process. This results in superior grounding to the housing. The press-in feature requires a less complex hole detail in the housing and provides consistent grounding each and every time. The press-in feature is available in all form factors of coaxial feedthroughs including flange mount adaptable (FMA), SMA, SSMA, SMP, SMPM, and SMPS.



General Design Specifications

- All interfaces manufactured in accordance with MIL-STD-348
- Leak Rate is less than 1 X 10^{-9} cc/sec He at one atmosphere differential pressure
- Operating temperature range for RF feedthroughs -65ºC to +200ºC
- Dielectric is Corning 7070 equivalent glass
- Nominal Impedance is 50 Ohms
- RF grounding spring is made of Nickel/Gold plated beryllium copper

UHV Vacuum Products

Cinch offers the most extensive line of multipin feedthroughs in the vacuum industry. Our feedthroughs and connectors are designed to be laser welded into flanges or fittings and configurations are available in stainless steel and aluminum, and titanium flanges can manufactured upon request. In addition to flange mounted connectors and feedthroughs on standard vacuum flanges, custom configurations or multiple connectors on a single flange are also available in virtually any material.

Cinch multipin connectors utilize our exclusive dielectric compound in conjunction with BeCu contacts to create the best hermetic seal on the market. Our ceramic dielectric material seals provide superior reliability to conventional glass seals and lesser ceramics.

General Design Specifications

- All conductors are made with vacuum compatible materials
- Leak Rate is less than 1 X 10^{-9} cc/sec He at one atmosphere differential pressure

Micro-D Dura-Con™
MIL-DTL-83513, Hermetic Connectors

Cinch Dura-Con™ Hermetic Compound Connectors offer a high performance hermetic seal designed into the standard Cinch Dura-Con™ Connector. The Cinch Microminiature Dura-Con™ line of connectors qualified (QPL) to MIL-DTL-83513 is one of the most widely used .050 inch (1.27mm) pitch connectors for military and high-end commercial applications. Dura-Con™ is ideal where packaging requires a small size and low weight, as well as a highly reliable and rugged connector that has electrical and mechanical integrity under extreme vibration and shock conditions. The heart of the Dura-Con™ System is the unique wire form pin that provides seven points of contact when mated to the socket.

Applications include electronics in missiles, aircraft, launch vehicles, satellites and computers. As well as Standard Parts, Cinch provides a wide variety of specials and wired harnesses to industry.

General Design Specifications

- All interfaces manufactured in accordance with MIL-DTL-83513
- Count Pin/Socket Configuration: Available in 9, 15, 21, 25, 31, 37, 51 and 10
- Leak rates are typically ≤1 x 10^{-8} mbar liter/sec He at one atmosphere differential pressure
- Operating temperature range -255°C to +125°C
- Connectors are tested to MIL-DTL-83513
- Supplied terminated with insulated wire or custom flex circuits
- Alternate termination available with solder cups or configured to accept wire bonds

Micro-D Connectors
MIL-DTL-83513, Ceramic Dielectric Material

Cinch's hermetic Micro-D connectors with our exclusive ceramic dielectric material option in conjunction with BeCu contacts create the best hermetic seal on the market. These seals provide superior hermetic reliability to conventional glass seals and lesser ceramics. The Cinch ceramic dielectric material is impervious to crack propagation, the #1 failure mode of conventional glass seals and lesser ceramics.

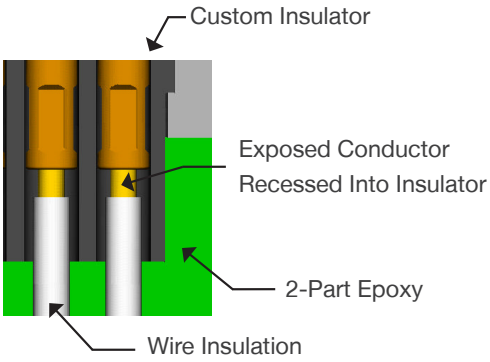
Available in 9, 15, 21, 25, 31, 37, 51, and 100 count pin/socket configurations, these connectors are qualified to MIL-DTL-83513. The non-mating side can be supplied with insulated wire, custom flex circuits, solder cups, or configured to accept wire bonds. Leak rates are less than 1 X 10^{-9} cc/sec He at one atmosphere differential pressure. The Micro-D connectors have a temperature range of -200°C to 200°C. These connectors are ideal for space applications, IR systems, UAVs, and integrated microwave assemblies.

General Design Specifications

- All interfaces manufactured in accordance with MIL-DTL-83513
- Leak Rate is less than 1 X 10^{-9} cc/sec He at one atmosphere differential pressure
- Internal pins can be configured to accept insulated wire, wire bonds, solder cups, or flex
- Operating temperature range for Micro-D connectors -200°C to +200°C
- Beryllium-Copper Pin/Sockets are individually sealed with our exclusive ceramic dielectric material
- Current rating: 3 amps per contact

Dura-Con™ Twist Pin Technology

The heart of the Dura-Con™ system is the twist pin contact. The pairing of a high temperature insulator and Cinch's patented twist pin design, featuring 7 points of contact and the proven ability to operate under extreme conditions of shock and vibration, results in an ideal interconnect solution delivering maximum dependability with a minimal physical footprint.



General Design Specifications

- All interfaces manufactured in accordance with MIL-DTL-83513
- Operating temperature range for Micro-D connectors -55°C to 175°C (-40°F to 347°F)
- Shock 50 G's per MIL-STD-1344, Method 2004, Condition E (EIA-364-27, Condition E)
- Vibration 20 G's per MIL-STD-1344, Method 2005, Condition IV (EIA-364-28, Condition IV)
- Current rating: 3 amps per contact
- Contacts:
  Pins - Copper alloy, sockets - Copper alloy machined

Advanced Technology & Performance

Cinch's exclusive ceramic dielectric material, is a core technology used in the production of our advanced connector line, setting new performance standards and displacing the traditional methods of glass to ferrous alloy sealing. Our multiphase devitrified ceramic compound is used as a direct replacement for glass. When fused to copper alloy or stainless steel contacts, the seals provide superior hermetic reliability in harsh environments that would simply destroy competing products. Our advanced process join dissimilar metals through an explosion welding, vacuum brazing, diffusion bonding and laser welding. This core manufacturing technology strengthens weak points within an assembly by eliminating solder joints while providing the ability to customize physical properties such as thermal conductivity, weight, stiffness or expansion rate. Cinch delivers high performance hermetic assemblies from materials not often supplied by others in the industry, allowing us to provide unrivaled performance and reliability.

Applications include electronics in missiles, aircraft, launch vehicles, satellites and computers. Cinch provides a wide variety of special and wired harnesses to the industry to meet your design needs.

Exclusive Ceramic Dielectric Material Seals
- Copper Alloy Contacts
- Nickel Alloy Contacts
- Titanium Alloy Contacts

Precision Machining
- Milling
- Turning

Engineering
- 3D Design
- Design-to-Cost Analysis
- Process Support

Wire Assembly
- Wire Attachment
- Harness Termination

Metal-to-Metal Joining
- Explosion Welding
- Laser Welding
- Vacuum Brazing/Soldering
- Diffusion Bonding
- Furnace H2 Brazing/Soldering

Metal-to-Ceramic Joining
- Active Brazing

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