CINCH

CIN::APSE®

It takes more than an ordinary connector to support advanced performance interconnect applications. It takes CIN::APSE, a proven solderless Z-axis connector technology that offers exceptional mechanical and electrical performance at signals well above 20 GHz.

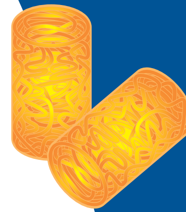


Figure 1

If you have an interconnect challenge, and need to overcome the restrictions of ordinary connector devices, CIN::APSE can provide the versatile and reliable interconnect solution you need.

Innovative Compression-Mount Technology

CIN::APSE is a unique, Z-Axis compression interconnect which provides superior mechanical and electrical performance. The contact construction consists of randomly wound gold plated molybdenum wire, formed into a cylindrical shape (Figure 1). Standard contact diameters are 0.020" (0.508 mm) and 0.040" (1.016 mm).

The basic CIN::APSE contact configuration consists of a contact installed into a customized plastic insulator with the patented Cinch hourglass hole design (Figure 2). Once in place, the contact extends on both sides of the insulator.

Figure 2

Quick, Solderless Installation

CIN::APSE is easily installed in two basic steps, without soldering. First, using alignment features, the CIN::APSE interconnect is positioned between two components with matching connection footprints. Next, the two components are compressed and fastened together (Figure 3).

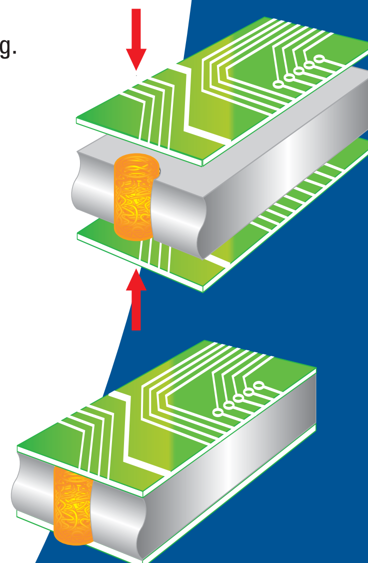


Figure 3

Low Compression Force, Low Contact Resistance

The CIN::APSE contact offers one of the best force/deflection ratios in the industry. An average compression force of only 2.5 ounces will yield a typical contact resistance of less than 20 mΩ. This means high I/O count applications can achieve excellent electrical performance with only minimal Z-Axis compression force (Figure 4).

CIN::APSE®
High Speed Z-Axis Compression Technology

Typical Curve for a 0.020" Dia. Contact in an Insulator 0.032" [0.81] thick

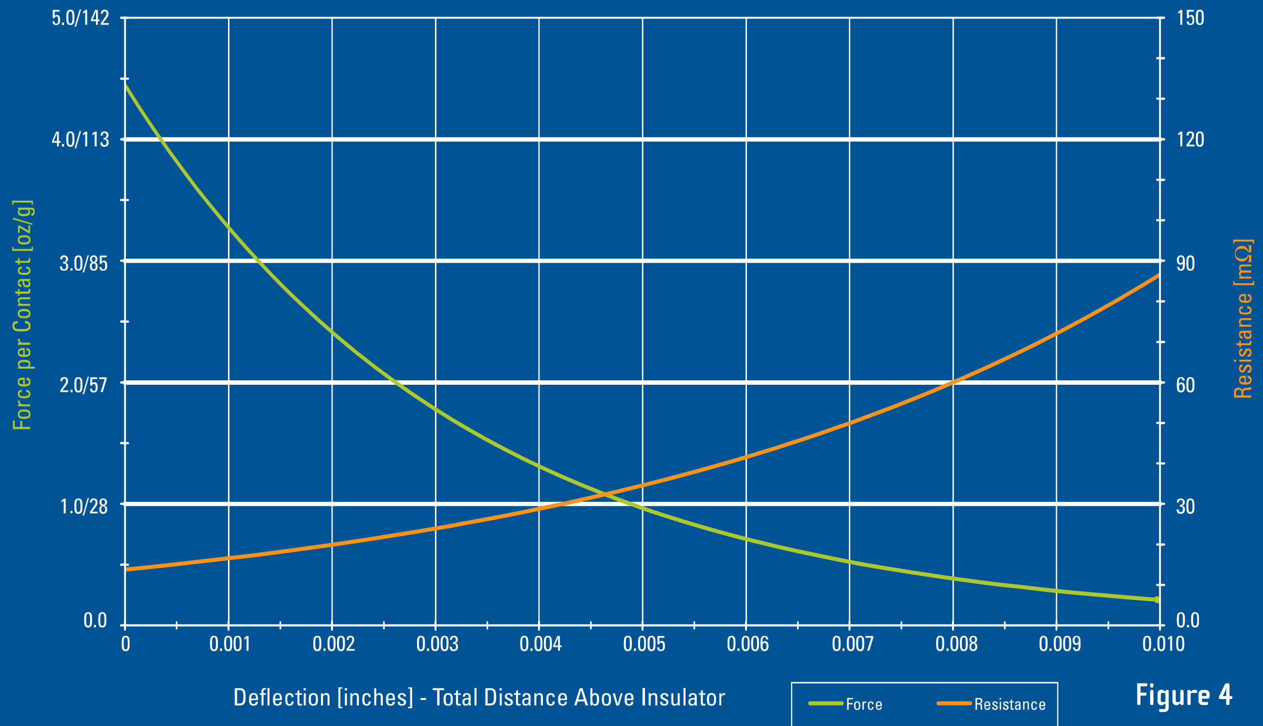


Figure 4

Mechanical Characteristics

- Small form factor: 0.020" [0.508 mm] diameter by 0.032" [0.813 mm] high
- Low compression force: Approximately 2.5 oz minimum per contact
- Multiple beam structures
- Several points of contact per contact
- Extremely lightweight
- Contact wiping action

Electrical Characteristics

- Short signal path
- Extremely low inductance and resistance
- Signal integrity in the GHz range

Environmental Characteristics

- Contact does not relax under the effects of time, temperature, thermal cycling and humidity
- Extremely shock and vibration resistant

Benefits of CIN::APSE

CIN::APSE has been designed and constructed to benefit just about any imaginable application for advanced performance interconnects.

- Solderless interconnect: Enhances product reliability and manufacturing yield
- Low-profile, small pitch: Assist miniaturization efforts
- Distortion-free, high-speed signal conduction: Results in ultimate data integrity
- Field reliability: Resistant to shock and vibration, extreme temperatures, and harsh environments

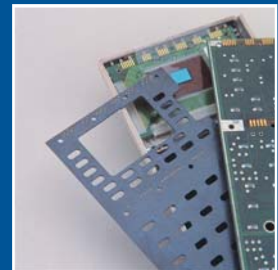
Material Specifications		
Contact Material	Molybdenum with 20-30 µin. gold plating	
Insulator Housing	Liquid Crystal Polymer	
Packaging Material	Anti-static ABS	

Performance Characteristics		
Characteristic	**Test Condition**	**Result**
Electrical		
Contact Resistance	20mV open circuit @ 100 mA	<15 mΩ typical
Current-carrying Capacity	Maximum current for 30˚ temperature rise	3 - 6 A
Inductance		<0.5 nH
Insulation Resistance	@ 500 VDC	>1,000 MΩ
Dielectric Withstanding	500 VAC (sea level)	No breakdown
Mechanical		
Durability	Room temperature	>25,000 cycles
Vibration	20 Gs; 10-2,000 Hz; no discontinuity greater than 2 nanoseconds	No discontinuity
Shock	100 Gs; 6 milliseconds; no discontinuity greater than 2 nanoseconds	No discontinuity
Environmental		
Temperature Life	1,000 hours @ 200˚C	<5% resistance change
	5,000 hours @ 170˚C	<5% resistance change
Thermal Shock	100 cycles -55˚C to +85˚C	<5 mΩ change
	2,000 cycles -20˚C to +110˚C	<5 mΩ change
Low Temperature	Liquid nitrogen (-200˚C)	<5 mΩ change
Humidity	5,000 hours @ 30˚C to 80˚C, 85% relative humidity	<5 mΩ change
Salt Spray	96 hours	<5 mΩ change

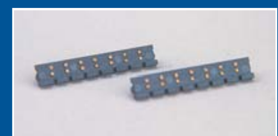
Typical CIN::APSE Applications

- Board to Board
- Component to Board
- Chip to Board
- Flex to Board

CIN::APSE can be used to interconnect virtually any gold-plated surface (pad) to another pad. It is the ideal interconnect solution for applications in which high reliability, high-speed signals, tight envelope dimensions, high density, and extreme environmental conditions need to be met.



Board to Board



Component to Board

Explore the Potential of CIN::APSE in your Application

The more you know about CIN::APSE, the more you realize its advantages and suitability in virtually any advanced performance interconnect application.

CIN::APSE has a demonstrated record of reliable performance as the interconnect technology powering many of today's most advanced computer applications. CIN::APSE also provides the same board to board advantages for high-speed telecom, stringent military and aerospace, and demanding automotive applications.

To discuss your ideas for current or future applications, contact CIN::APSE Marketing department at 1-800-323-9612 or e-mail directly to cinapse@cinch.com.

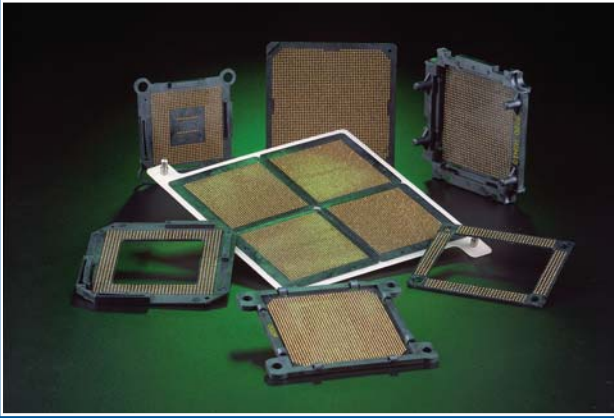
For more information about CIN::APSE and other quality products, visit the Cinch website at www.cinch.com.

Chip Package to Board

Flex to Board

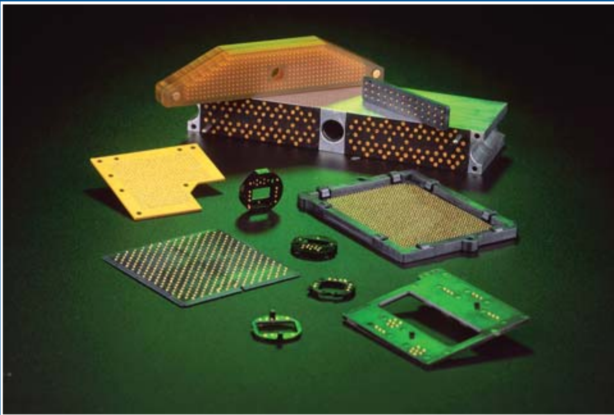
CIN::APSE®

High Speed Z-Axis Compression Technology



Computer LGA's

Telecommunications



Military and Aerospace

Transportation and other applications

CIN::APSE®
High Speed Z-Axis Compression Technology

Proven Excellence

For over 70 years, Cinch has been a reliable supplier of a variety of quality connector products to various industries. We are a multi-national manufacturer with manufacturing facilities in the U.S., U.K. and Mexico.

Cinch has applied it's extensive expertise in interconnection technology to engineer and manufacture connectors of various complexities using state-of-the-art technology and tooling. Mechanical design is accomplished using Pro/E® 3D solid modeling and AutoCAD® supported by nonlinear and linear Finite Element Analysis, and Mold Flow software.

Our engineers utilize in-house capabilities in high frequency interconnect simulation, SPICE model generation and high frequency testing to develop the optimum product.

All products are validated in Cinch's First Article, mechanical, electrical, and environmental test facilities ensuring the finished products meet our customers' most stringent specifications.

Simply, your connectors are manufactured in state-of-the-art facilities that are committed to customer satisfaction and continuous improvement.

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