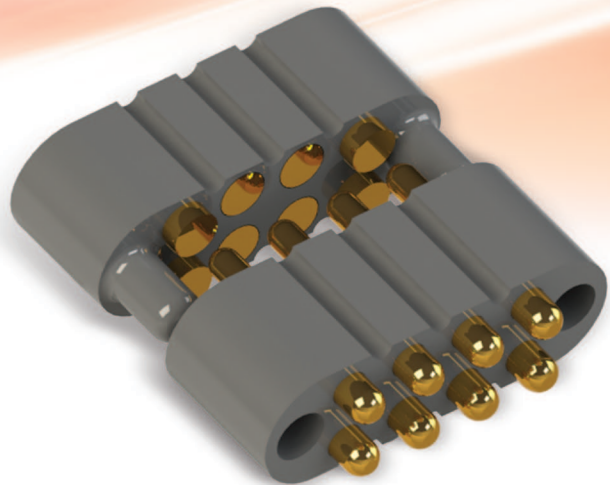
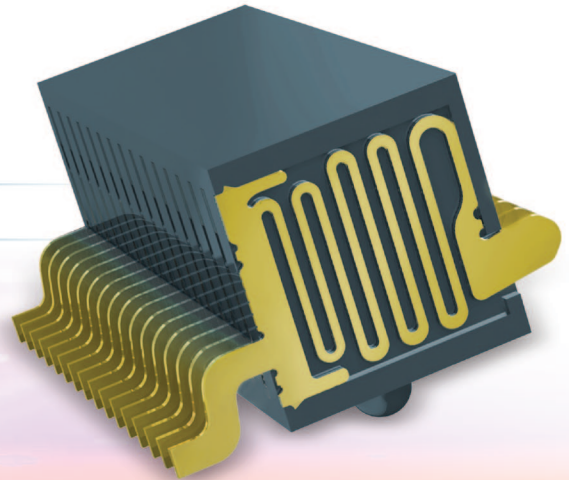


compliant **connectors**





energy
exploration

industrial

military

medical

telecom



industry experience

proven design and innovation

CCS's performance connectors maintain the highest level of contact reliability. From energy exploration to aerospace, CCS satisfies today's most challenging application needs with a comprehensive line of patented interconnect technologies. Discover how CCS's five decades of industry experience and innovation can solve your next interconnect challenge.

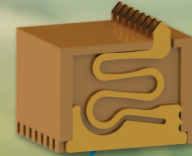
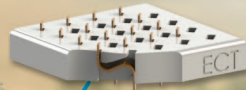
consumer

aerospace

connector capabilities

solutions for your needs

CCS is your engineering resource. Where other companies are limited to offering standardized products, CCS is uniquely positioned to design integrated solutions that meet your specifications. CCS supports the mid and low volume needs of customers that require design intensive, high compliance, long cycle life connectors.



electrical

high current
high power
high frequency
low inductance

mechanical

low profile, high compliance
high to low force
high cycle life
shock and vibration tolerant
flexibility

unique

Rohs/Reach Friendly options
sealed connectors for harsh or sterile environments
miniature options for tight, dense packaging
self-cleaning contacts
multiple 2D and 3D tip options

unique solutions

for complicated applications

Each application demands specific connector attributes; i.e., material and chemical sensitive industries require sealed, self-cleaning connectors still capable of high-speed data transmission, while shock and vibration tolerant connectors are necessary for rugged environments. CCS offers electrical, mechanical, and specialized solutions to meet these demands.

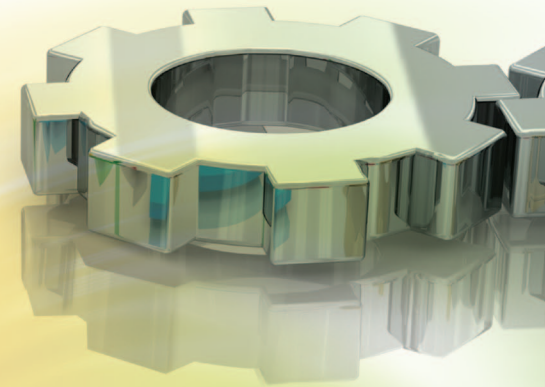


integrated **project management**

from concept to completion

CCS teams are coordinated by an assigned project manager.

This ensures that your essential specifications and critical timeline will be met. With a single point of contact you will be kept updated on every phase of your program.





application delivery

CCS's front end team will learn your specific application requirements.



solution concept

A tailor made solution will be developed from CCS's broad suite of intellectual property.



design analysis

CCS's engineers can deliver a broad spectrum of simulation and characterization.



prototyping

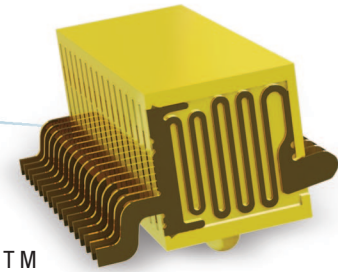
CCS's prototype shop can deliver usable prototypes for your initial qualifications.



production

CCS's production department will meet your delivery schedule and produce all necessary quality documentation.





accordion™

| | |
|--------------------|------------------------------------|
| Z-Height: | Flexible - Designed to requirement |
| Compliance Travel: | Excellent > .8mm |
| Inline Spacing: | Excellent < .127mm |
| Array Spacing: | OK - 1mm |
| Tip Selection: | 2D - Single or Multitip |

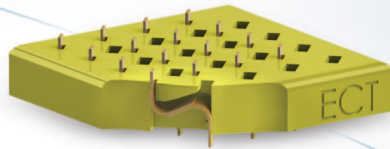


peak portfolio

technology and talent

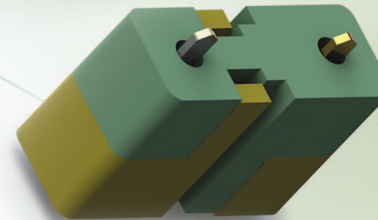
A connector is only as good as the sum of its parts; that's why CCS utilizes a unique portfolio of proprietary electro-mechanical contacts that evolved in the demanding test and measurement industry. Matching these elevated interconnect technologies with specifically designed integrated solutions allows CCS to deliver reliable, versatile, and robust connectors.

sliver



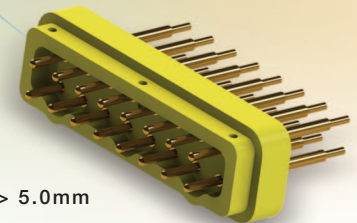
| | |
|--------------------|-------------------------|
| Z-Height: | Excellent < 1.0mm |
| Compliance Travel: | Excellent > .25mm |
| Inline Spacing: | Excellent > .5mm |
| Array Spacing: | Good > .65mm |
| Tip Selection: | 2D - Single or Multitip |

ZIP



| | |
|--------------------|-------------------------|
| Z-Height: | Good > 2.0mm |
| Compliance Travel: | Excellent > .8mm |
| Inline Spacing: | Excellent > .3mm |
| Array Spacing: | Excellent > .3mm |
| Tip Selection: | 2D - Single or Multitip |

Pogo



| | |
|--------------------|----------------------------------|
| Z-Height: | OK > 5.0mm |
| Compliance Travel: | Excellent > .8mm |
| Inline Spacing: | OK - .5mm |
| Array Spacing: | OK > .5mm |
| Tip Selection: | 3D - Multitip, Cup, or Spherical |

accordion™

simple flexibility with reliability

Design

Simple and elegant single piece construction; designed per customer specifications.

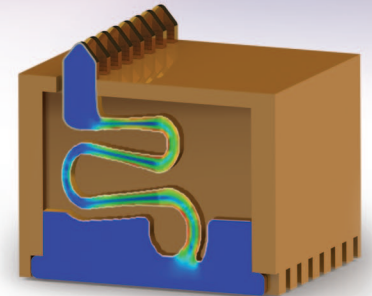
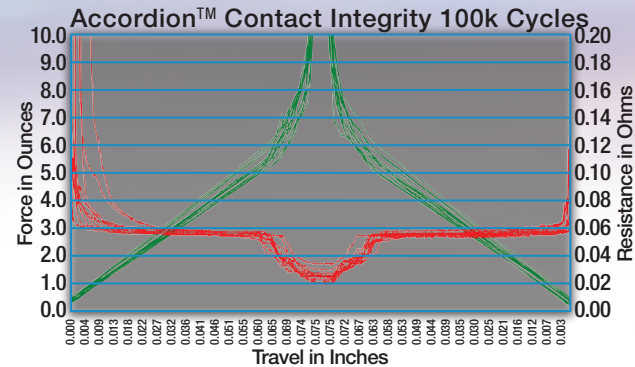
Application Highlights

The accordion™ is ideal in harsh environments; utilizing a single contact eliminates the threat of liquid and debris build up between parts while also being tolerant of vibration and shock.

Features & Benefits

- Flat, single contact
 - Allows for tight pitch spacing
 - Stable electrical performance
 - Allows for tight pitch spacing; down to .127mm inline and 1mm array
 - Flexible Z-Height, designed to requirement
 - Can achieve .8mm compliance
 - Low Cost, perfect for low to mid volume applications
- Patented scrub action
 - Removes oxides from contacts and mates
 - Wipes foreign debris
 - Overcomes failure from plating breakdown

- Detailed tip geometries
 - Pointed
 - 2D cupped
 - Radius
- Infinite configurations
- Advantages over common single beam designs
 - Superior manufacturing process allows for greater accuracy and feature repeatability
 - Distribution of material stress allows contacts that last much longer than competitive designs



HYPERcore™
[base material]
option available; page 12

sliver

low profile, high value

Design

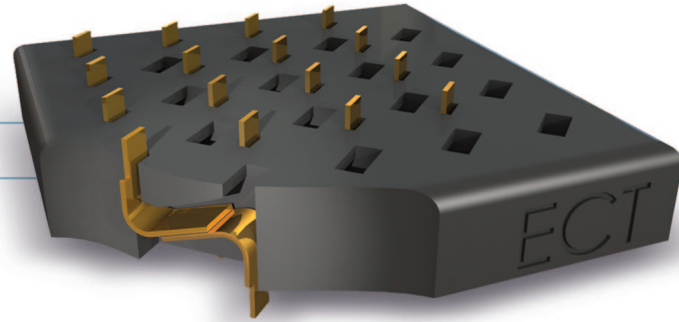
Innovative dual contact construction; designed per customer specifications

Application Highlights

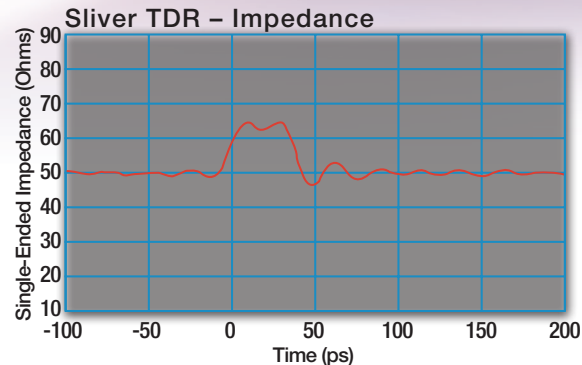
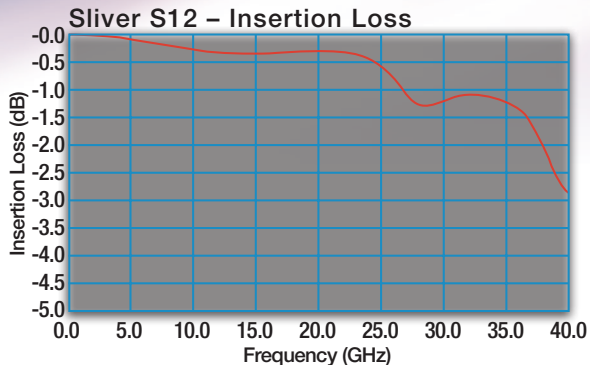
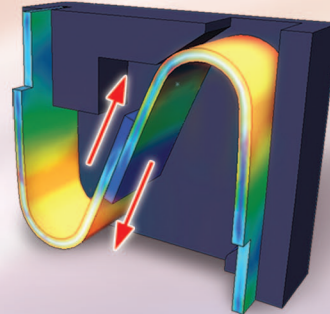
Efficient use of Z axis makes the Sliver ideal for low profile and difficult packaging applications

Features & Benefits

- Patented low profile, high compliance contact
 - Low cost, ideal for high volume applications
 - Can achieve compliance equaling 50% of its overall length
 - Less than 1.0mm compressed height
 - Superior conductive path with low inductance
 - Allows for tight pitch spacing; down to .5mm inline and .65mm array
- Single piece molded housing
 - Lowers tooling costs



- Patented sliding action
 - Provides maximum compliance while maintaining the lowest Z-Height package in the industry
 - Mitigates internal stresses





high performance and value

Design

Patented flat technology with external spring construction. Custom and standard product options available

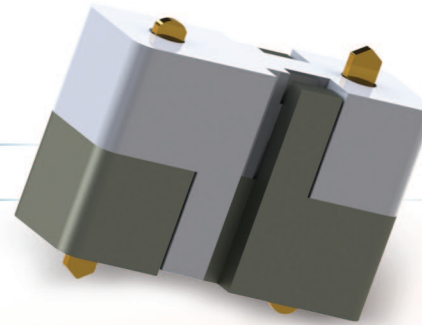
Application Highlights

With .15mm to .8mm solutions, ZIP is great for high density, low profile interposers.

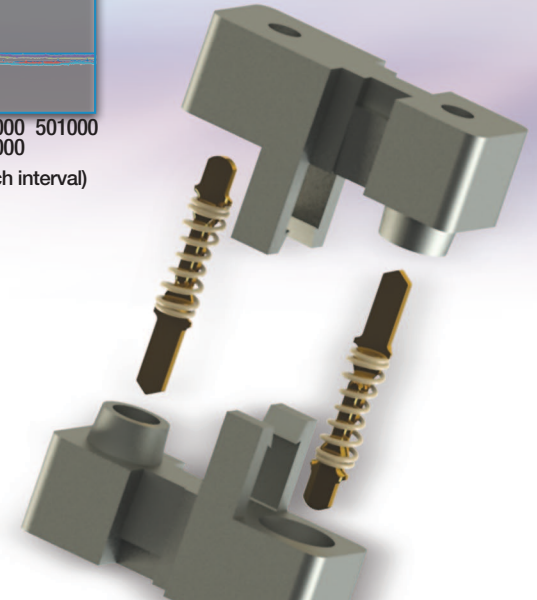
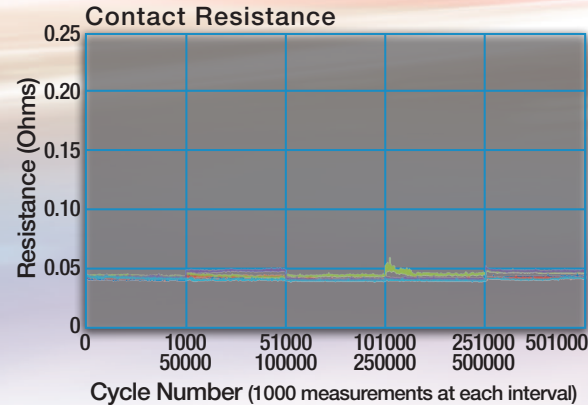
Features & Benefits

- Patented ZIP flat architecture contact
 - Proven reliability in the challenging semiconductor test industry
 - Designs exceeding 40GHz
 - Low Inductance
 - Compressed heights from 1.59mm to 7mm
 - Custom lengths available
 - Allows for tight pitch spacing; down to .3mm inline and array
- Patented scrub action
 - Removes oxides from contacts and mates
 - Wipes foreign debris
 - Overcomes failure from plating breakdown
- Off the shelf capability
 - Short run and high volume manufacturing

HYPERcore™
[base material]
option available; page 12



- Detailed tip geometries
 - 2D; single or multitip





pogo[®]

versatility and variety

Design

Proven multi-piece radial construction. Custom and standard product options available

Application Highlights

Mature design portfolio fits countless applications and provides outstanding performance.

Features & Benefits

- Spring probe contact (many patented designs)
 - Generous travel, can achieve .8mm compliance
 - Down to .5mm pitch inline and array spacing
 - High to low force
 - High cycle life
 - High current
 - High reliability
 - Designed for rapid and repeated cycling
 - Compressed height down to 5mm
 - Deliberate biasing

- 3D tip options
 - Multitip
 - Cup
 - Spherical
- Mechanically superior to conductive elastomers

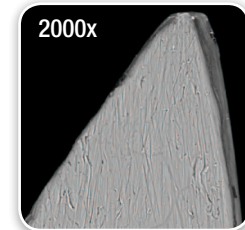
HYPERcore™

[base material]

ultra durable and conductive

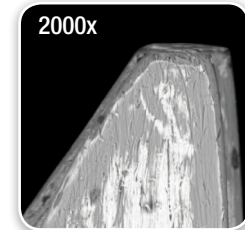
Born from the demanding high volume semiconductor testing world, HyperCore is a proprietary base material developed for CCS's ZIP, Accordion™ and Sliver connectors. HyperCore™ Base Material requires no plating and features high hardness of 600 Knoop. It resists tip deformation and wear typically generated by high volume insertions or cleaning cycles. As it is non-plated, it can be repeatedly cycled or cleaned, providing unprecedented connector life. Contact resistance and RF behavior is equal to gold-plated BeCu. HyperCore™ also resists oxides similar to gold, yielding performance that will not waver even in the most stringent environments.

500k Cycles Against Steel



HyperCore™

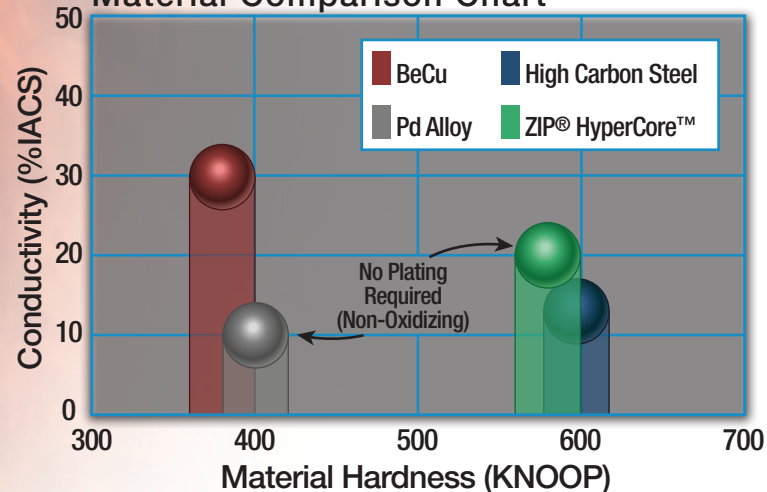
- No deformation
- No cleaning wear
- No solder adhesion



BeCu

- Enlarged flat spots
- Solder adhesion (even after cleaning)
- Gold and Nickel plating worn

Material Comparison Chart





MAKING CONTACT

COMPLIANT CONNECTOR SOLUTIONS

North America

CCS Headquarters

487 Jefferson Boulevard

Warwick, RI 02886

Phone: (401) 739-7310 ext 212

Email: Cheryl.rivers@ectinfo.com

Fax: (401) 732-4927

ECT Headquarters

14570 Meyer Canyon Drive

Suite 100

Fontana, CA 92336

Phone: (909) 625-5551

Fax: (909) 624-9746

Europe

ECT Munich

Muenchener Strasse 19

D-85540 Haar

Germany

Phone: +49 89-429204

Email: ectmuc@ectinfo.com

ECT United Kingdom

Fence House

Fence Avenue

Macclesfield

Cheshire

SK10 1LW

United Kingdom

Phone: +44 1625-615015

Email: dave.burrows@ectinfo.com

Asia

China

Everett Charles Technologies Ltd.

1F, B2, Tingwei Industrial Park 6 Liufang
Road, Bao Cheng

Baoan District, ShenZhen, China 518067

Phone: +86-755-2685-0535

Fax: +86-755-2688-6450

Singapore

Block 161, Kallang Way

06-18/26

Singapore, 349247

Phone: +65-62938966

Email: Ect.singapore@ectinfo.com

Fax: +65-6293-9866



an *Xcerra* company

www.ect-cpg.com

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