

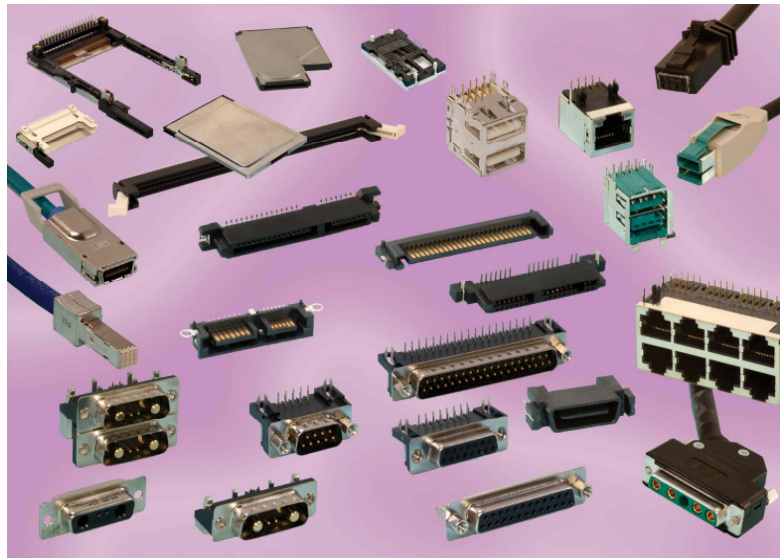


CONNECTIONS

D-SUBminiature Product Presentation

December 2009

Where does IO-connections stand for?



- FCI's I/O connector solutions:
 - high-density
 - high-speed interfaces
- Applications:
 - networking, storage, and memory, power distribution, media card systems, etc
- Industry standards:
 - Ethernet, SFF, Infiniband, USB, PCMCIA™ or HDMI™ , Compact Flash™ , SAS, SATA, etc.
- Custom solutions:
 - Cable assemblies.

CONNECTI/ONS

What products is IO Connections comprised of?



Data & Multimedia I/O's



- ▶ HDMI™
- ▶ USB
- ▶ Modular Jacks
- ▶ Latch-N-Lok™

High Speed I/O's



- ▶ DensiShield™ Systems
- ▶ Eyemax®
- ▶ Multilane SAS and SATA Connectors

D-Sub



- ▶ Standard Density
- ▶ High Density
- ▶ Cable Connectors
- ▶ Power Connectors
- ▶ [see more](#)

Cable Assemblies



- ▶ DensiShield™ I/O System
- ▶ Eyemax® - Infiniband Cable Assembly
- ▶ Fiber Optics
- ▶ Metral® Cable Assembly
- ▶ [see more...](#)



Memory & Media Card Systems



- ▶ Smartcard
- ▶ PCMCIA™
- ▶ ExpressCard™
- ▶ DDR Memory
- ▶ Flash memory products

Storage Interface



- ▶ Serial Attached SCSI (SAS) Connectors
- ▶ Serial-ATA (SATA) Connectors
- ▶ eSATA Connectors
- ▶ iVDR Connectors
- ▶ [see more...](#)

More information can be found on a dedicated website at www.fci.com/io

- ▶ Product selector tables;
- ▶ Data sheets;
- ▶ Product presentations;
- ▶ 3D view models & 2D drawings;
- ▶ Product specifications;
- ▶ Distributor inventory information;
- ▶ etc

D-SUB Introduction



FCI's D-SUBminiature connectors are part of an industry standard for applications requiring robust and reliable connectors. These D-SUBminiature connectors are one of the most popular Input - Output interconnects, addressing a wide variety of applications in Telecommunications, Data, Consumer, Industrial, Military, Instrumentation and Medical markets. Since many years FCI offers a wide range of D-SUBminiature connectors to meet all design requirements.

Market Segment and Applications



- **D-SUBminiature is one of the most popular styles of connectors in the I/O category**
 - A family of plugs and sockets widely used mainly in Computer, Telecom, Datacom, Medical & Test instrumentation applications as well as in the Military and Aerospace fields

FCI D-SUB product lines are present in high technology areas

Market Segment	Applications
Communication	Base Stations
	Switching
	Transmission
	Asymmetric Digital Subscriber Line (ADSL)
Industrial & Instrumentation	Robotics
	Control Drives
	Power Supplies
	Medical Instruments
Data	Personal computers
	Laptops
	Computer peripherals
Consumer Electronics	Set-top-boxes
	Energy meters
Military	Airplanes
	Military Equipment



Communications



I & I



Data



Consumer



Military

PCB Applications

Product Features

- Signal standard density: 9 to 50 way connectors (up to 7.5 A)
- Signal high density solder: 15, 26, 44, 62 and 78 way connectors in right angle socket (up to 2.5 A)
- Power and coax : Wide range of layouts from 2V2 to 36W4 Power, up to 40 A including the new μ TCA high power IO
- Solder to board and press-fit terminations available
- Pin in Paste (Through Hole Reflow)
- New Dub Economy range (9 to 37 position) added to the product range



PCB Applications

Main products

STANDARD APPLICATION (Signal up to 5 A)

- Right angle solder-to-board - Delta D
- Right angle press-fit - Delta D
- Right angle press-fit - Delta D
- Straight solder-to-board - Delta D
- Straight press-fit - Delta D
- Right angle pin in paste (PIP) - Delta D
- Straight pin in paste (PIP) - Delta D
- R/A STB Socket - High Density
- R/A STB Socket PIP (15, 26 & 44)- High Density
- Press-fit 62 & 78 way - High Density



PCB Applications

Main products

POWER APPLICATION

(Full and Mix power – up to 40A)

- Straight and Right angle, Solder-to-board & Press-fit
 - DW series mixed power
 - Delta D power
 - μTCA high power IO

POWER APPLICATION

- Signal Right angle, Solder-to-board, Wire-wrap and Straight Solder-to-board
 - DP series (machined contacts allowing 7.5 A)

SEVERE ENVIRONMENT APPLICATION (MIL AERO)

- Signal and Power – DM series



■ Cable Applications

Product Features

- **SIGNAL:** 9 to 50 way connectors
- **POWER:** Wide range of layouts from 2V2 to 36W4
- **TERMINATION:** Solder bucket, Crimp and IDC
- **ACCESSORY:** Large variety of associated accessories



D-SUB product range in FCI



Cable Applications

Main products

STANDARD APPLICATION

- Std Solder bucket – Frugal D
- Std Wire crimp – 8656 series
- IDC Flat cable – 8657 series

POWER APPLICATION

(Full and Mix power - up to 40 A)

- Solder, Crimp contacts - DW series
- µTCA high power IO

DEMANDING APPLICATION

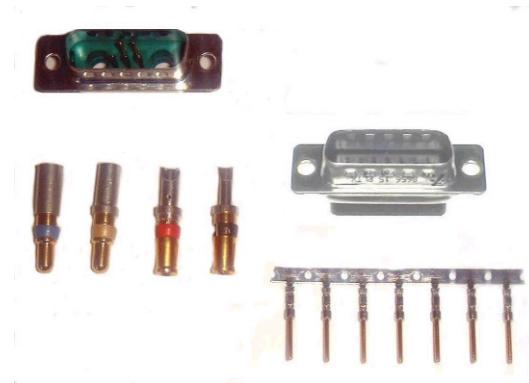
- Signal Solder bucket - DP series

SEVERE ENVIRONMENT APPLICATION (MIL AERO)

- Signal and Power Solder bucket - DM series

ACCESSORIES

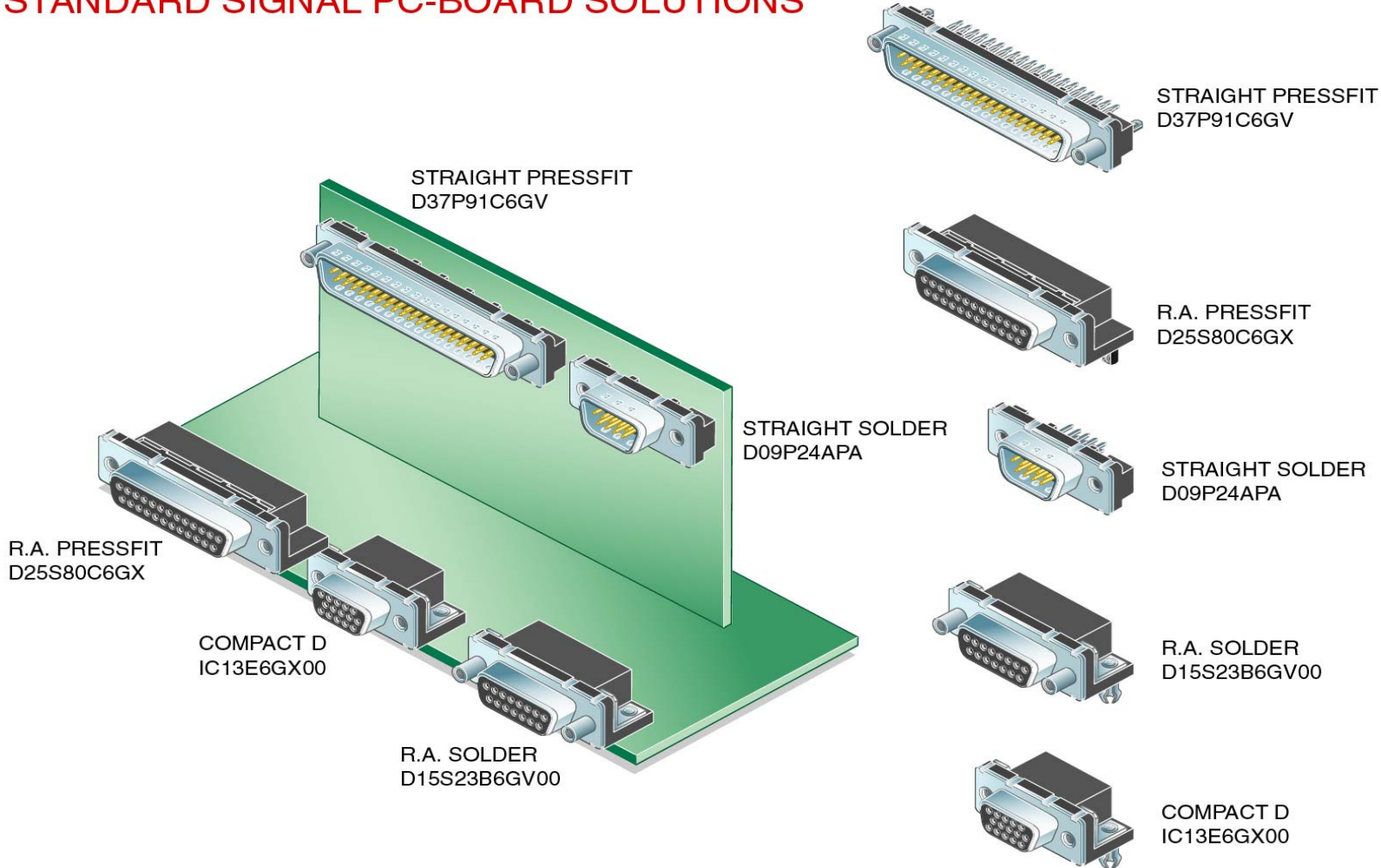
- Hoods (Plastic, Metallised and Metallic)
- Locking devices
- Dust caps (Plastic, Metal)



Signal PCB D-SUB offering



STANDARD SIGNAL PC-BOARD SOLUTIONS



Delta D pin-in-paste



■ What is Pin In Paste?

- Pin In Paste is a through hole technology to solder connectors on boards by using a reflow process (SMT) instead of a traditional wave soldering or press-fit

■ Product advantages

- Time saving:
 - Pin In Paste connectors can be automatically positioned on the board using automatic pick and place processes (vacuum nozzle or gripper) whereas solder to board requires a manual placement
 - Compared with press-fit, PIP requires no manual additional operation
- Higher quality :
 - Pin In Paste is a more stabilized process when compared with solder to board
 - Less control time and less re-work time for repairing

■ Pin In Paste versus Surface Mount Technology

- Pin In Paste D-SUB connectors at FCI are derived from the solder to board design providing robustness and pre-existing true positioning
- Surface Mount Technology D-SUB requires a specific and complex design in order to achieve co-planarity generating higher costs
- Consequence: the average connector price is lower in Pin In Paste than SMT -20 % on average
- **As the process cost for a D-SUB PIP and a SMT is 100 % equivalent, the total applied cost for a Pin In Paste is lower than SMT !**

■ Pin In Paste versus Surface Mount Technology

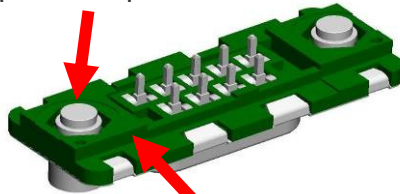
- Fast and easy move from a wave soldering/press-fit to a reflow process
 - Surface Mount Technology D-SUBs require a specific PCB design
 - no significant re-design of the board for PiP :
 - same lay-out
 - same hole diameters for signal contacts !
- Higher robustness in Pin In Paste
 - thanks to through hole pins and metal pegs.
- Easier control and repairing possible
 - After reflow visual inspection is easier in PiP than SMT,
 - Easy repairing in PiP

D-SUB PiP – Straight and right angle version



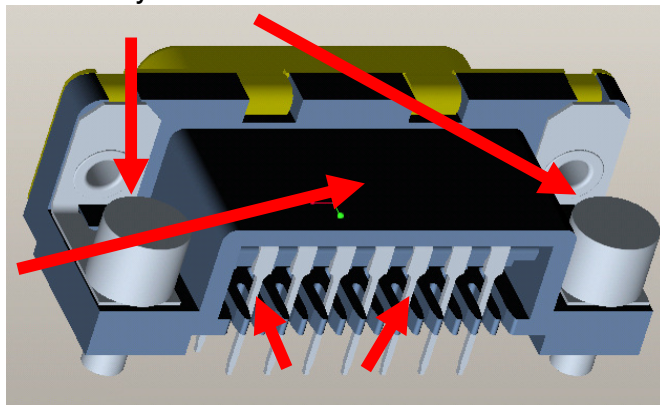
Low insertion force

Specific metal pegs allowing low insertion forces for a full compatibility with automatic pick and place processes.



High temperature plastic compatible with standard reflow process temperatures.

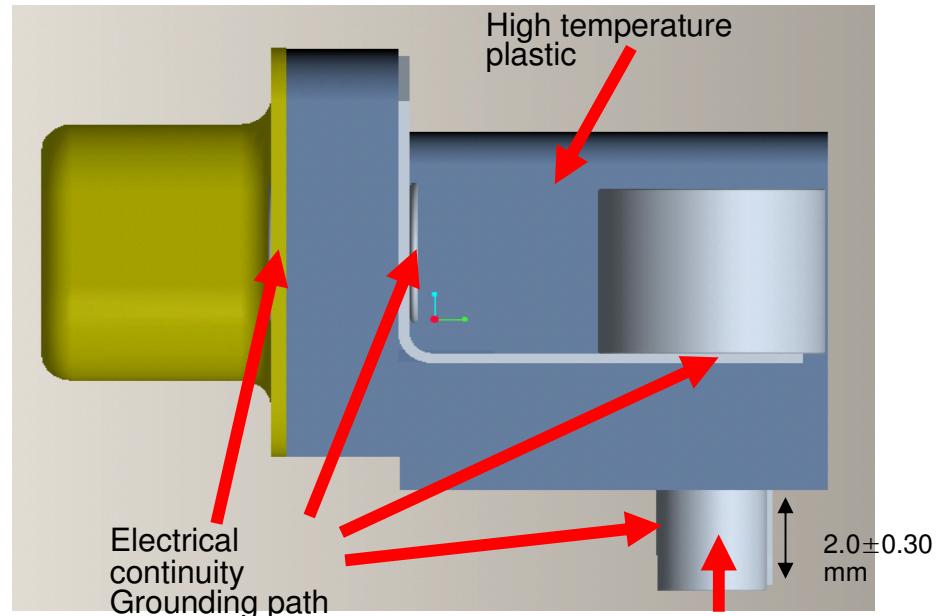
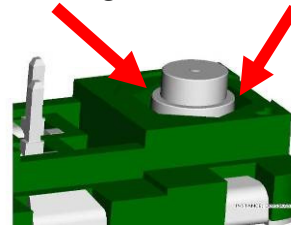
Balancing Weight for stability before reflow



Large area for vacuum nozzle pick and place

Improved True Positioning of Contacts (heat staking)

Enlarged area around the metal peg to avoid paste interaction between the plastic back housing and the PCB.



Low Insertion Force Metal pegs (same as straight versions)

D-SUB PiP – Straight version



Three types of packaging for three processes

- Standard tray packaging for manual positioning

Low volume applications

	Pin count				
	9	15	25	37	50
Pin	D09P24A6RV09LF	D15P24A6RV09LF	D25P24A6RV09LF	D37P24A6RV09LF	D50P24A6RV09LF
Socket	D09S24A6RV09LF	D15S24A6RV09LF	D25S24A6RV09LF	D37S24A6RV09LF	D50S24A6RV09LF

- Tape and reel packaging and Pick-up cap for vacuum nozzle.

Higher connector price due to additional high temperature cap.

Medium volume applications

	Pin count				
	9	15	25	37	50
Pin	D09P24A6RV22LF	D15P24A6RV22LF	D25P24A6RV22LF		
Socket	D09S24A6RV22LF	D15S24A6RV22LF	D25S24A6RV22LF		

- Tape and reel packaging for pick and place with gripper.

For medium and high volume applications (lower price than solution 2 : no pick-up cap)

Medium & high volume applications

	Pin count				
	9	15	25	37	50
Pin	D09P24A6RV12LF	D15P24A6RV12LF	D25P24A6RV12LF		
Socket	D09S24A6RV12LF	D15S24A6RV12LF	D25S24A6RV12LF		

- Note : Female screw lock and threaded insert accessories available.

D-SUB PiP – Right angle version



Two types of packaging for three processes

- Standard tray packaging for manual positioning

Low volume applications

		Pin count				
		9	15	25	37	50
Europe std	Pin	D09P13A6RV09LF	D15P13A6RV09LF	D25P13A6RV09LF	D37P13A6RV09LF	
	Socket	D09S13A6RV09LF	D15S13A6RV09LF	D25S13A6RV09LF	D37S13A6RV09LF	
US standard	Pin	D09P33E6RV09LF	D15P33E6RV09LF	D25P33E6RV09LF	D37P33E6RV09LF	
	Socket	D09S33E6RV09LF	D15S33E6RV09LF	D25S33E6RV09LF	D37S33E6RV09LF	

- Tape and reel packaging for vacuum nozzle and gripper

Medium & high volume applications

		Pin count				
		9	15	25	37	50
Europe std	Pin	D09P13A6RV12LF	D15P13A6RV12LF	D25P13A6RV12LF	D37P13A6RV12LF	
	Socket	D09S13A6RV12LF	D15S13A6RV12LF	D25S13A6RV12LF	D37S13A6RV12LF	
US standard	Pin	D09P33E6RV12LF	D15P33E6RV12LF	D25P33E6RV12LF	D37P33E6RV12LF	
	Socket	D09S33E6RV12LF	D15S33E6RV12LF	D25S33E6RV12LF	D37S33E6RV12LF	

- Note 1: Female screw lock and threaded insert accessories available
 - Note 2: 37 pos Delta D PiP recently added to the above range
 - ready for mass production
 - Note 3: 15, 26 and 44 pos high density D-SUB PiP versions are launched now

▲ FCI offers a large choice of PiP D-SUB connectors...

- ▲ Straight and Right angle versions, signal connectors
- ▲ Full power connectors (3W3, 5W5, please consult us)
- ▲ Signal high density right angle socket (15, 26 and 44 pos. please consult us)

... with a large choice of packaging compatible with existing processes at customers ...

- ▲ Standard tray for manual positioning
- ▲ Tape and Reel packaging for vacuum nozzle and gripper

... to help our customers to significantly reduce the total applied cost of the applications, by avoiding the traditional wave soldering or press-fit operations

μ TCA™ power D-SUB



What is μ TCA™?



■ Introduction

μ TCA™ is designed as per the building practice standards set by PCI Industrial Computer Manufacturers Group (PICMG).

■ The features and benefits of PICMG standard are as follows:

- Open standard based on standard modules to combine.
- More cost effective than Advanced Telecommunications Computing Architecture (ATCA). The estimated difference in cost is 40 to 50 %.
- Multiple applications possible, including outdoor.
- Supporting committee members: Ericsson, Lucent, Intel, Artesyn, Schroff, and Agere
- Supported by Siemens, Rittal, Force and Radisys

■ Market Segments & Applications

- Communication
- Industrial and Instrumentation
- Military (For power supply applications)

- **High power I/O system comprises of right angle PCB connectors and cable connectors.**
- **The μ TCA™ committee voted for the D-SUB solution. Two layouts are to be used for better prevention of mis-mating:**
 - 7W2 for 48V / 24A power I/O with 2 power contacts and only 2 signals
 - this is fully available in FCI range
 - 9W4 for 24V / 49A power I/O with only 2 power contacts and 2 signals
 - product launch will be made based on market requirements
- **Basic system requirements are as follows (Reference: μ TCA.0 Specification Draft 0.95, May 2, 2006):**
 - Fixed mating dimensions, electrical and environmental requirements
 - Maximum rise in temperature of 30 °C for full loaded connectors
 - Touch proof for cable connector
 - Angle output for the cable hoods
 - EMI (Electro Magnetic Interface) shielding and filtering options available
 - Retention mechanism based on female screw-locks from standard D-SUB
 - Field Repairable

Part numbers 48V/24A



■ PCB dual connector 10070158-001xxxLF
10070158-002xxxLF



■ PCB single connector 10070158-003xxxLF
10070158-004xxxLF



■ Cable connector 10070165-xxx19ALF



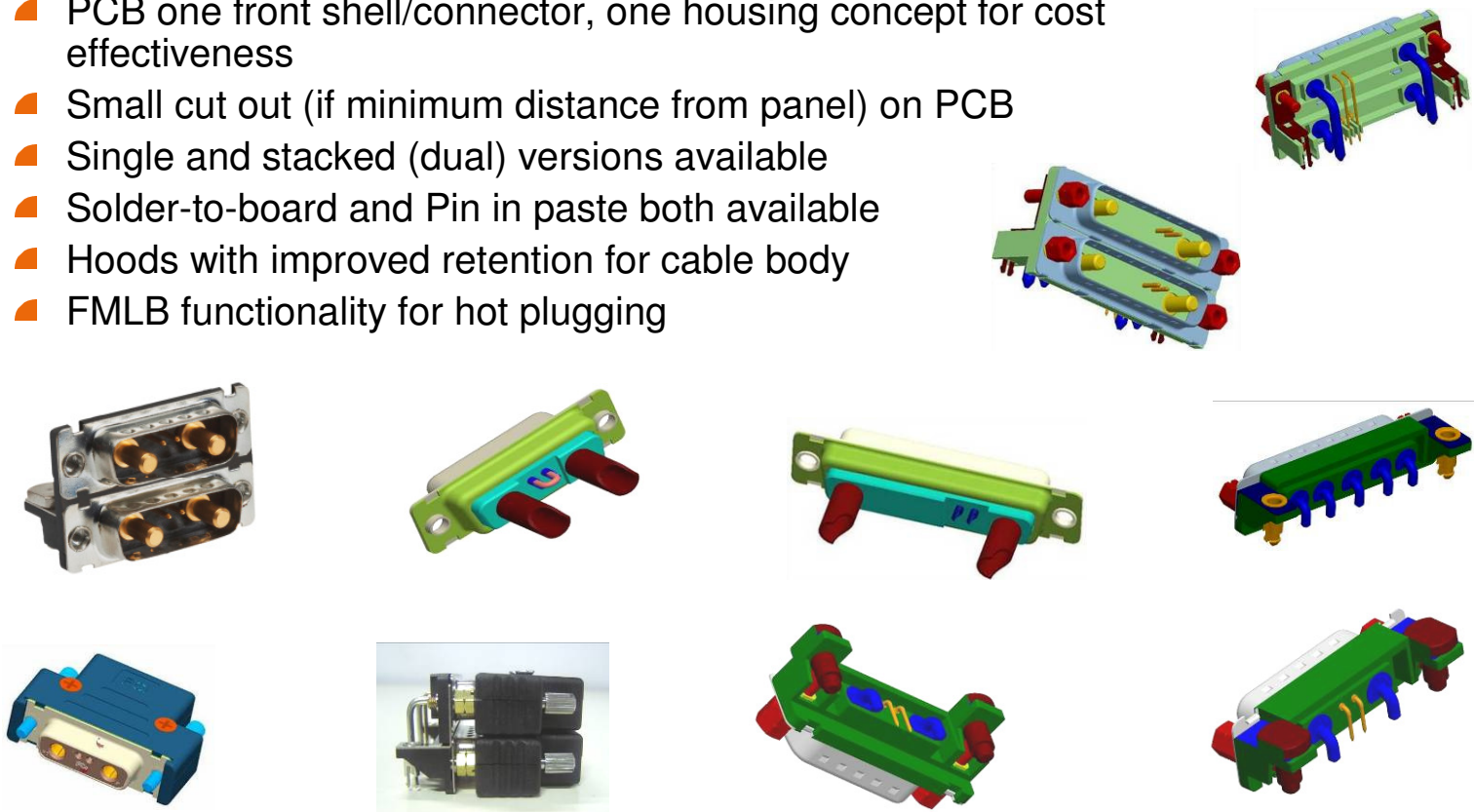
■ Cable power contacts 8638PSS4005LF
8638PPC3005LF

■ Cable hood 10070163-01LF



■ FCI can propose an optimized design in accordance with μ TCA™ D-SUB power I/O standards:

- PCB one front shell/connector, one housing concept for cost effectiveness
- Small cut out (if minimum distance from panel) on PCB
- Single and stacked (dual) versions available
- Solder-to-board and Pin in paste both available
- Hoods with improved retention for cable body
- FMLB functionality for hot plugging



D-SUB Cable Assembly

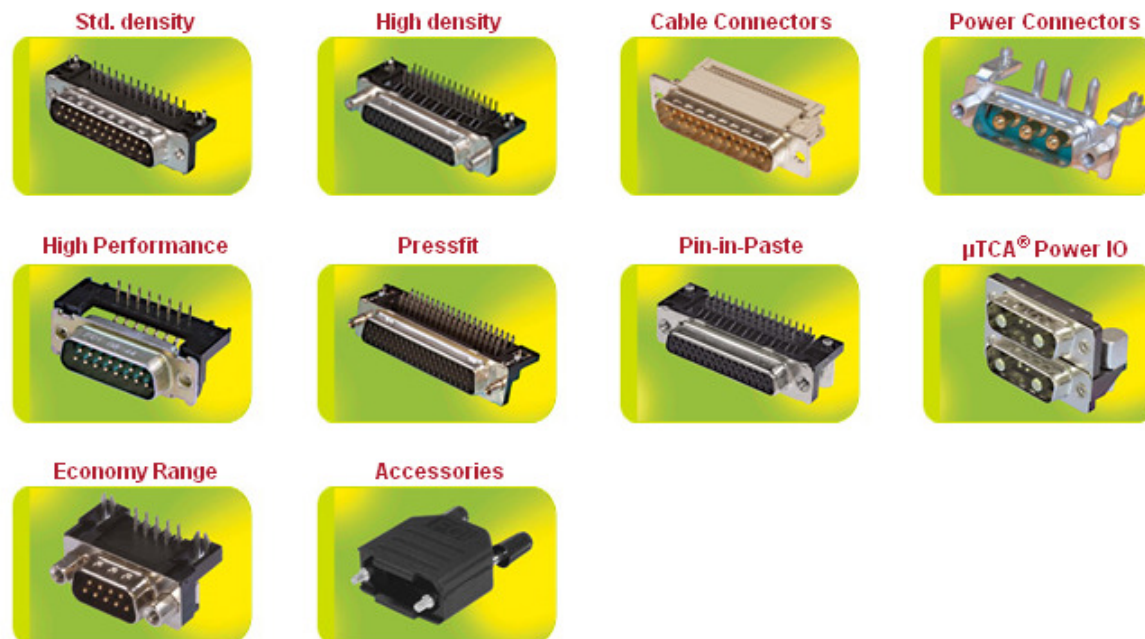


FCI can also support various D-SUB cable assembly solutions according to customer requests



■ Ten product categories for an easier product search:

- Standard density
- High density
- Cable connectors
- Power connectors
- High Performance connectors
- Press fit connectors
- Pin-in-Paste connectors
- μ TCA™ high power IO
- Economy Range connectors
- Accessories



- **Product selection with**
 - Selection chart
 - Customer drawings
 - 3D Models for popular parts
 - Mating connector info
 - Product specifications
 - Product Brochures & Catalogues
 - Product presentations



For detailed information about FCI's D-SUB program
please visit:

www.fci.com/dsub