Pwr Blade+™

Customer Presentation

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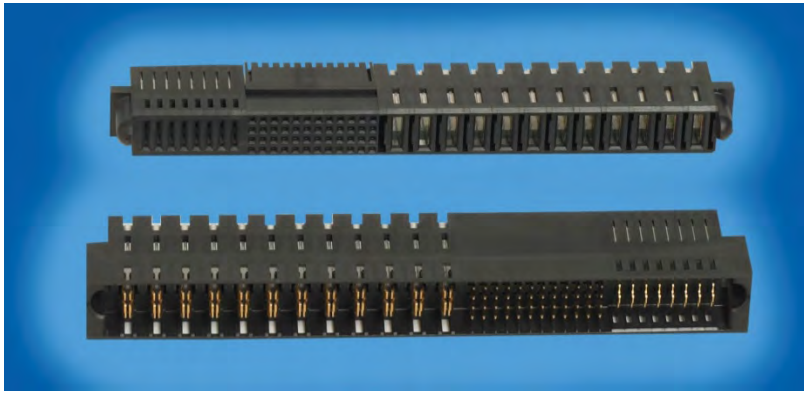
April 2014

Pwr Blade+™

High Performance PwrBlade® Connector – Overview

- Similar to PwrBlade® but with an enhanced power contact design for increased linear current density
  - Includes a 48 A/contact high power option (8 contacts energized; 30 ° C T-rise in still air); represents an increase versus existing PwrBlade® power contacts
  - Also includes a 27 A/contact lower power option (8 contacts energized; 30 ° C T-rise in still air); for multiple voltage applications with lower power but high density requirements
  - Both power contact options are hot-pluggable
- For next generation 1U and 2U pluggable power supplies with higher current density requirements
- Modular tooling design with capability for many combinations of high and low power contacts as well as signal contacts for power control
- High Power contacts of 5.08mm, 6.35mm, 7.62 and customised pitch is available upon request
- Half-bullet guide offers a smaller PCB needed size
- Licensed second-source agreement is already in place (see next slide)
- R/A header, R/A receptacle and vertical receptacle samples from production tooling are available at Q1 of 2012; vertical header samples are available in Q3 2012



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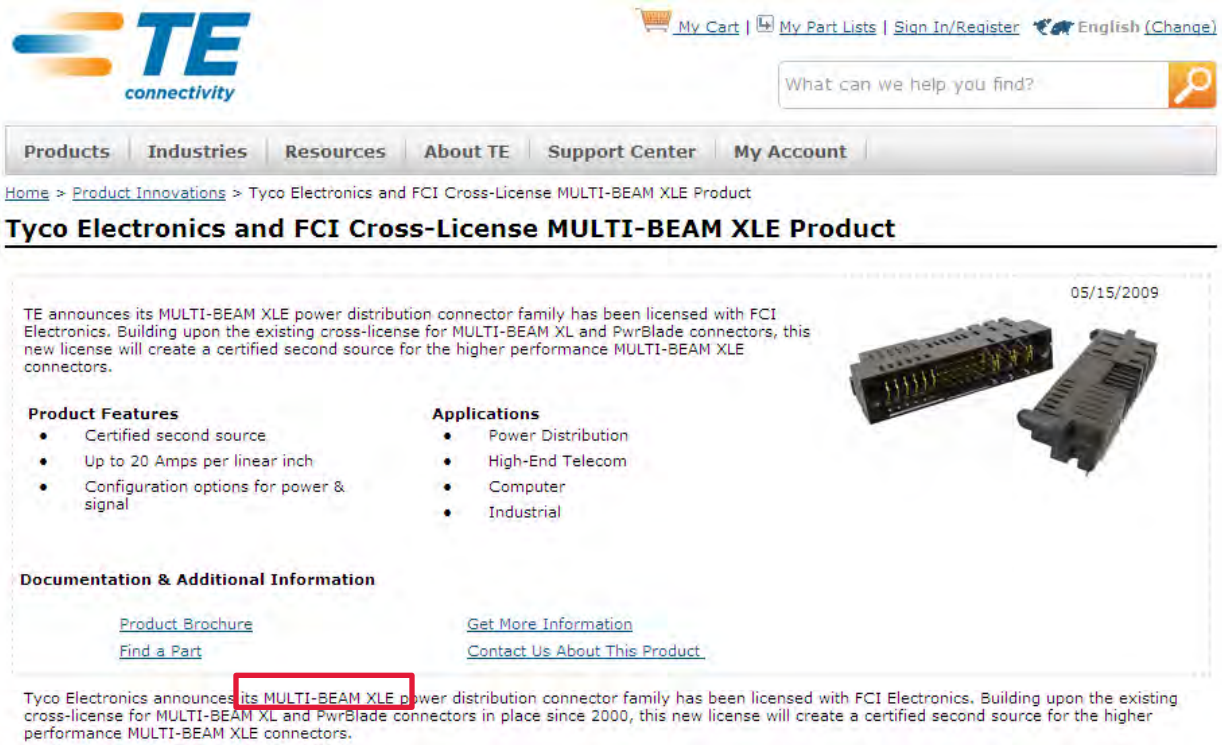
Product Development Background

- Licensed from TE MBXLE
- TE and FCI target to be 2nd source to each other to secure the supply to worldwide end equipment manufacturers
- http://www.te.com/aboutus/news/prodinnov.aspx?id=1675



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Tyco Electronics and FCI Cross-License MULTI-BEAM XLE Product

05/15/2009

TE announces its MULTI-BEAM XLE power distribution connector family has been licensed with FCI Electronics. Building upon the existing cross-license for MULTI-BEAM XL and PwrBlade connectors, this new license will create a certified second source for the higher performance MULTI-BEAM XLE connectors.

Product Features

- Certified second source
- Up to 20 Amps per linear inch
- Configuration options for power & signal

Applications

- Power Distribution
- High-End Telecom
- Computer
- Industrial

Documentation & Additional Information

Product Brochure
Find a Part
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Tyco Electronics announces its MULTI-BEAM XLE power distribution connector family has been licensed with FCI Electronics. Building upon the existing cross-license for MULTI-BEAM XL and PwrBlade connectors in place since 2000, this new license will create a certified second source for the higher performance MULTI-BEAM XLE connectors.

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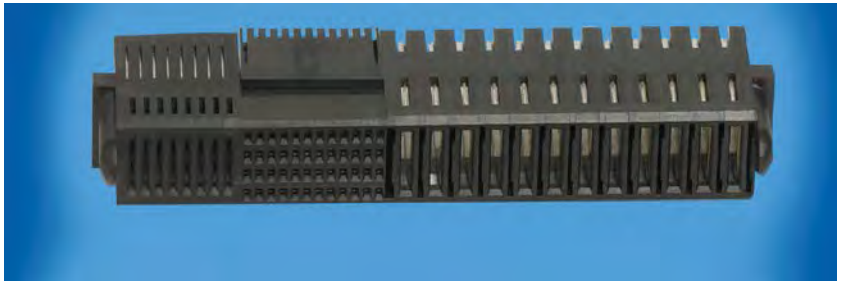
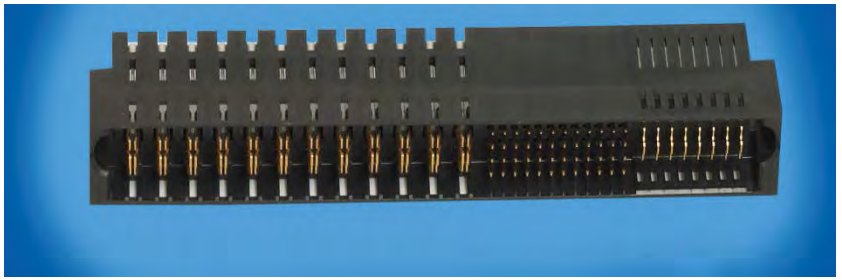
Product Series





Products PB+	Tail		Configurations
	STB	PF	
R/A HDR	Yes	Yes	P+S+P, S+P, P+S, Only P, Only S
R/A REC	Yes	Yes	P+S+P, S+P, P+S, Only P, Only S
Vtl HDR	Yes	Yes	P+S+P, S+P, P+S, Only P, Only S
Vtl Rec	Yes	Yes	P+S+P, S+P, P+S, Only P, Only S

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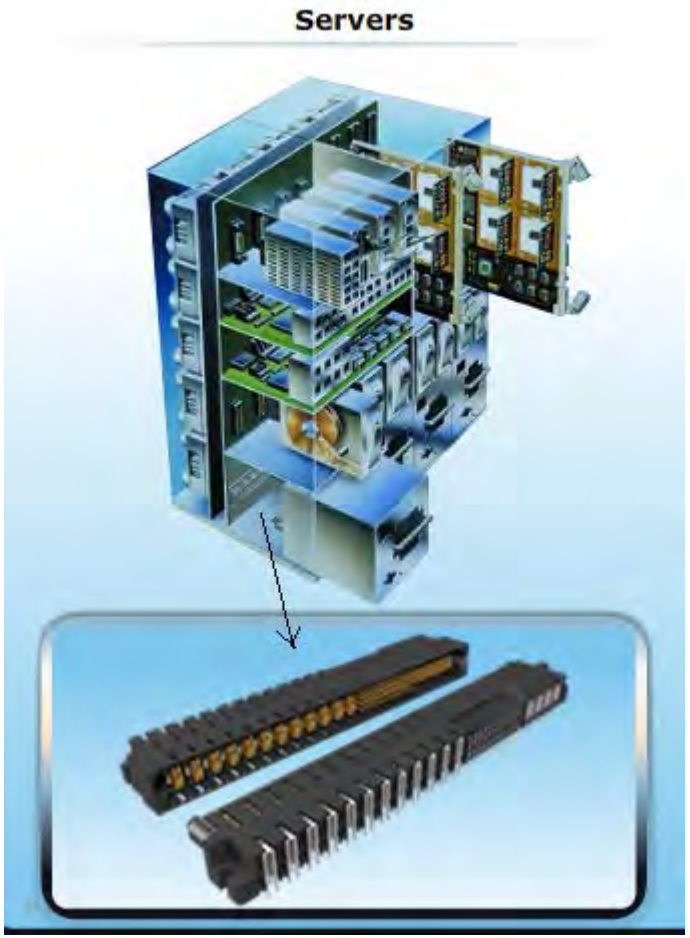
Product Application 1/3 : Servers



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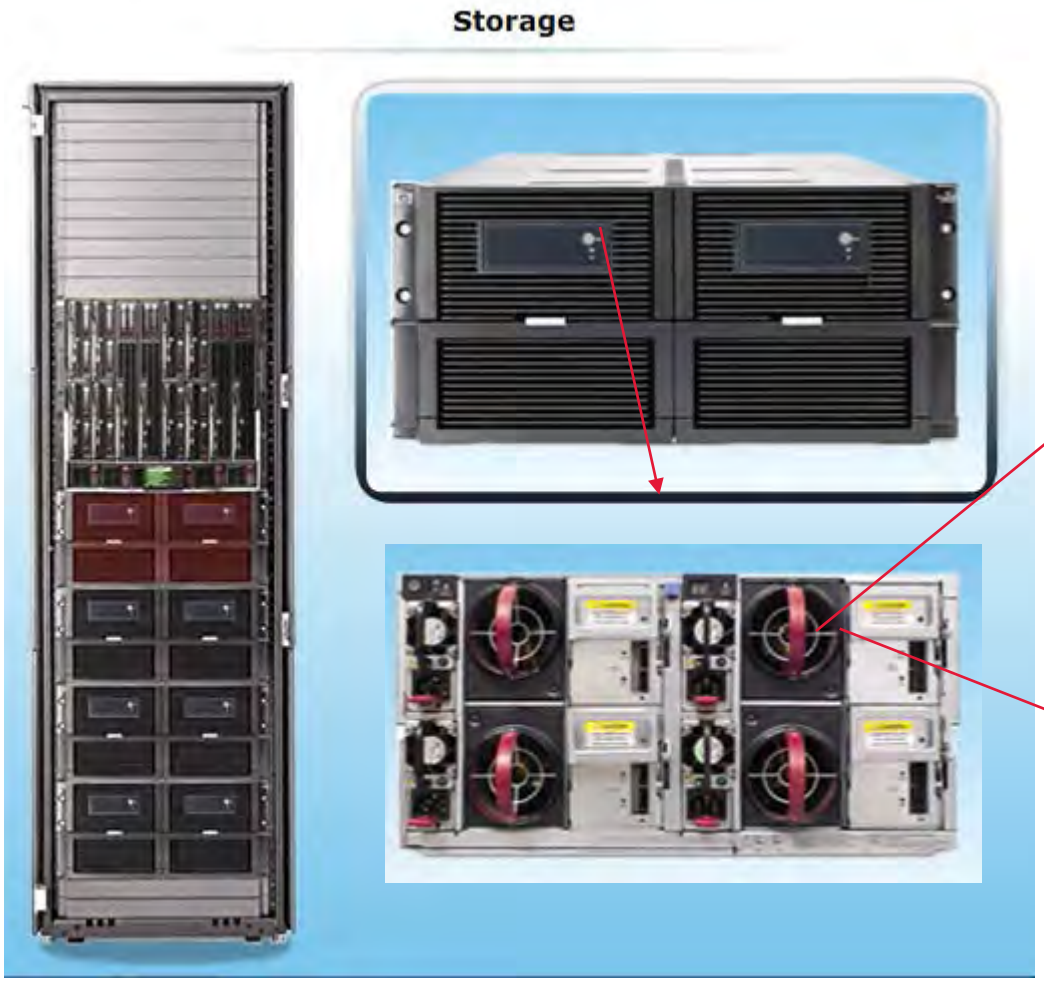
Product Application 2/3 : Storage



Front view

Back view

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Product Application 3/3 : Switches, Routers, Base Station

Switches

Routers

Base station

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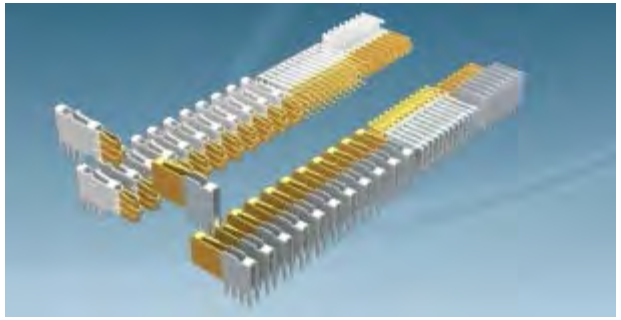
High Power Contacts



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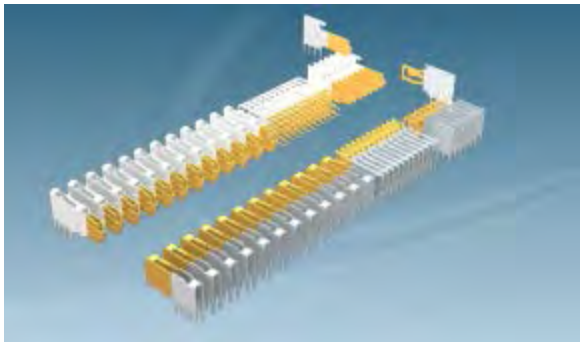
Low Power Contacts



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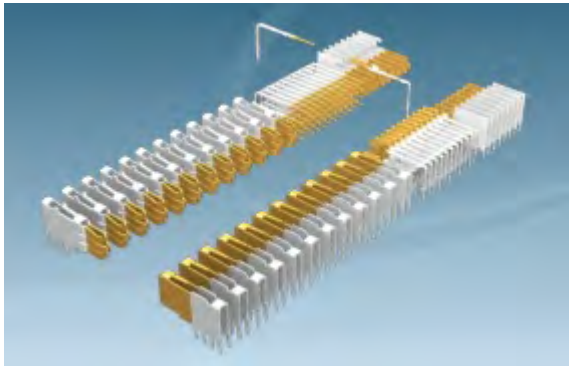
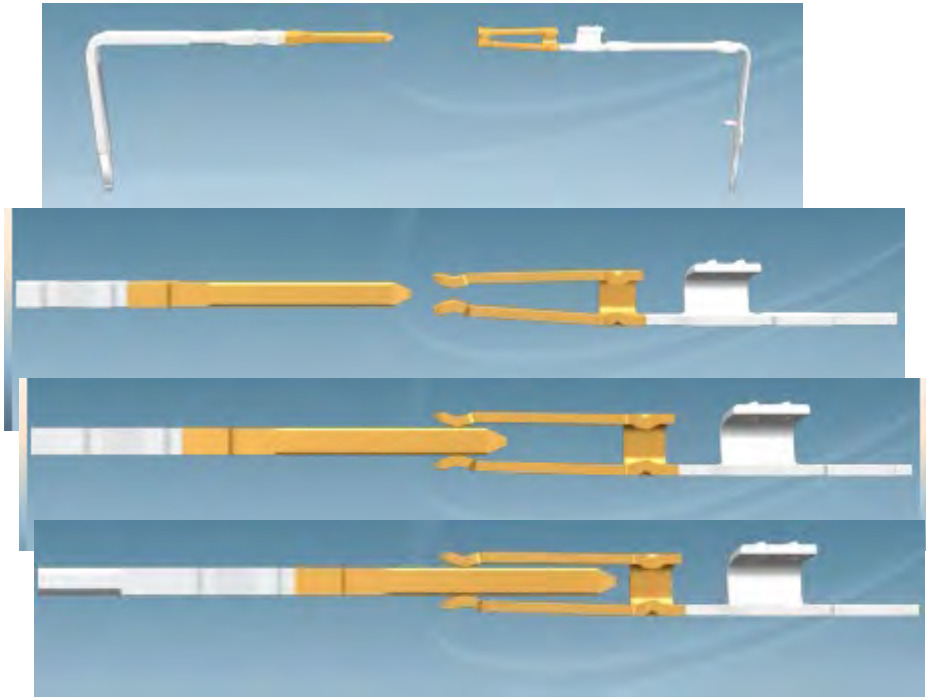
Signal Contacts





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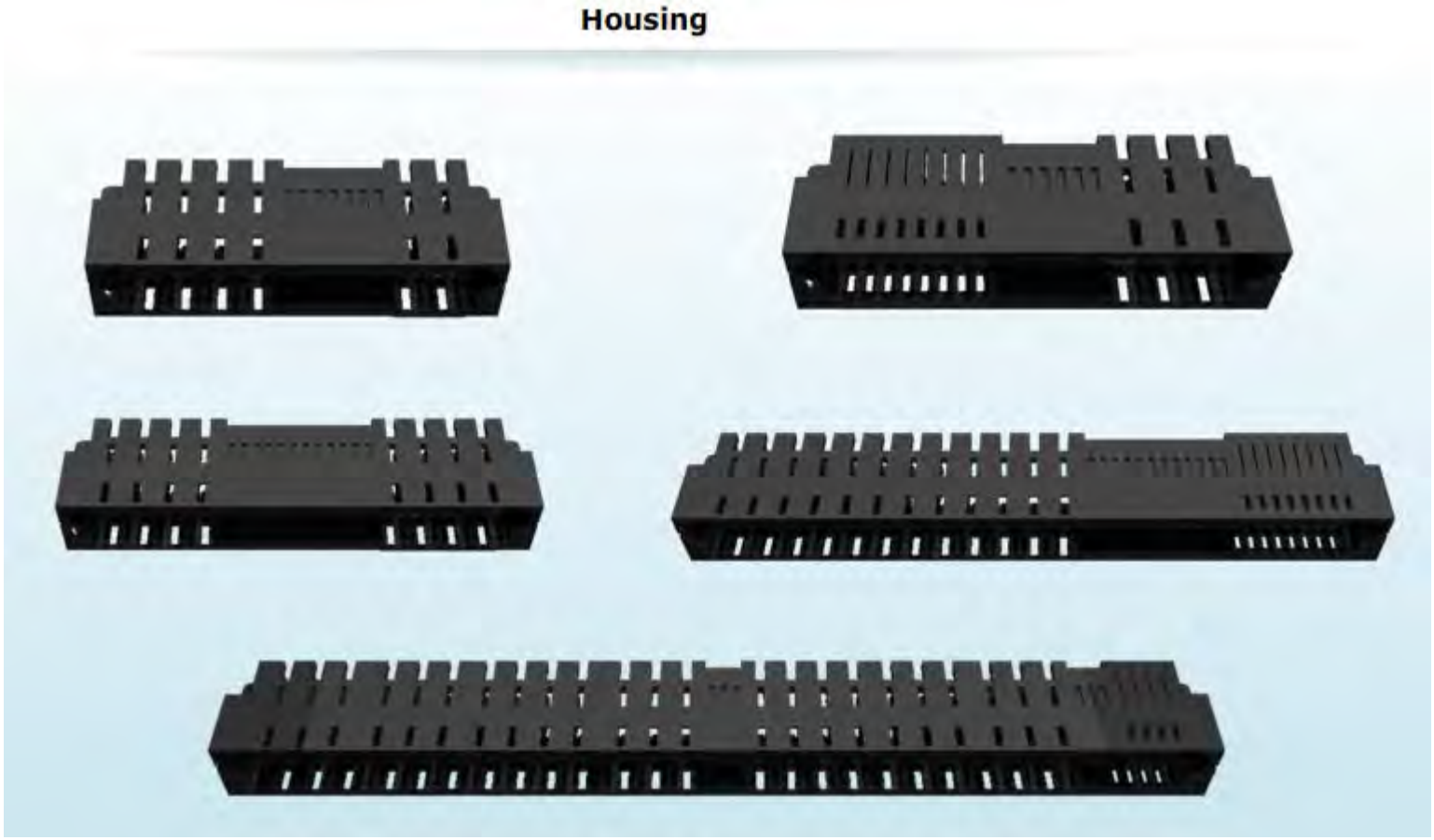
Plastic Housing

Full Modular design for Housing Tooling to meet various kinds of customer requirement for product configurations



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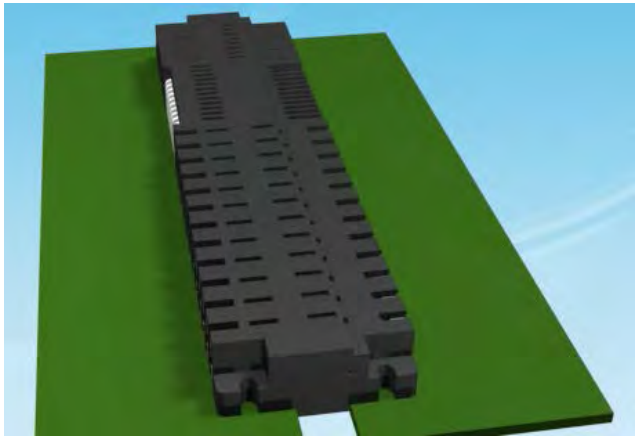
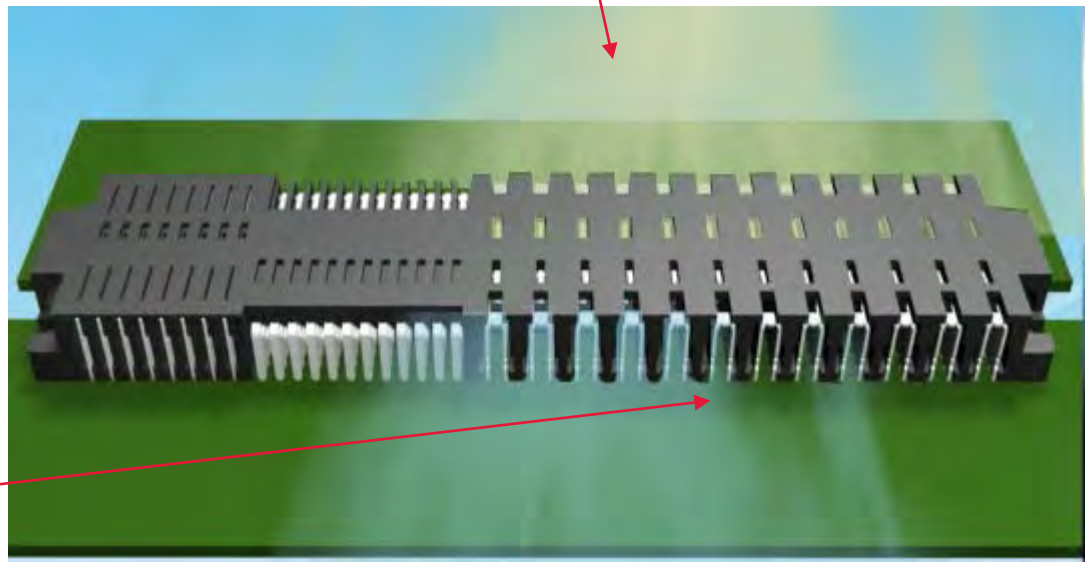
Special Vent–designed HSG for better heat distribution



Heat distribution through and over the connectors



Heat distribution through and over the connectors

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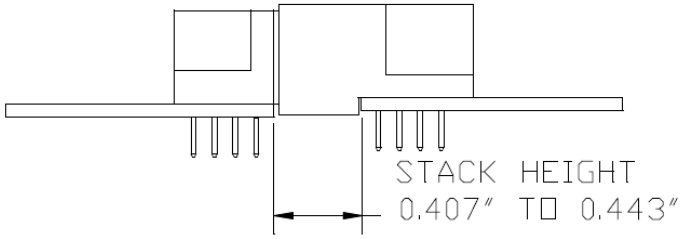
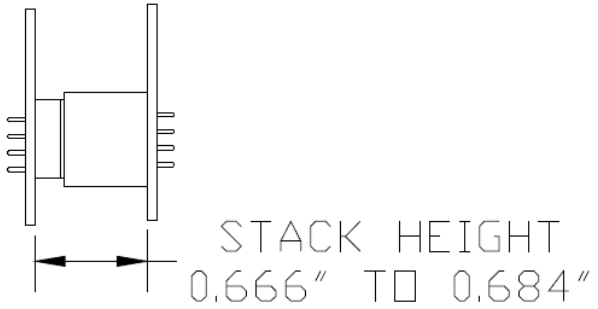
Mating distance between PCB

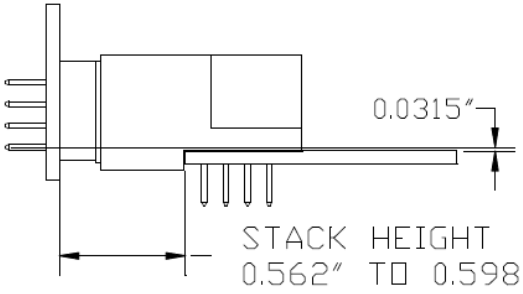
Right-Angle Receptacle to Right-Angle Header



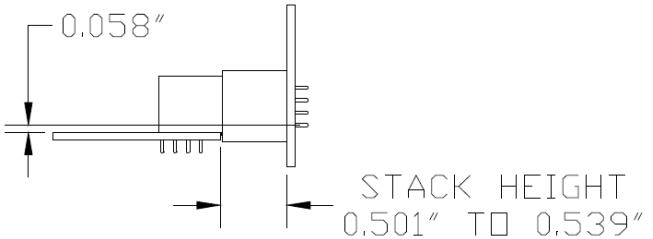
Vertical Receptacle to Vertical Header



Vertical Receptacle to Right-Angle Header



Right-Angle Receptacle to Vertical Header



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User PCB thickness guide

FCI recommend connector users to follow the below table guide to choose PCB to have a good application and process.

PC BOARD THICKNESS			
CONNECTOR WITH PRESS-FIT CONTACTS	CONNECTOR WITH SOLDER TYPE CONTACTS		
	2.28 ± 0.40 TAIL LENGTH	3.43 ± 0.40 TAIL LENGTH	4.19±0.40 TAIL LENGTH
1.35 [.053] Min	1.40~1.75 [.055~.069]	2.11~2.62 [.083~.103]	2.92~3.43[.115~.135]

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User PCB Soldering

FCI recommend connector users to follow the below table guide to soldering connector onto PCB, by using Tin or Tin-lead solder material, PIP Process requires for Pwrblade Plus Special Part Number.to meet application request

SOLDERING PROCESS	WAVE TEMPERATURE	TIME (At Maximum Temperature)
Wave	265 ℃ [509°F]	10 Seconds

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Electrical Performance

Right comparison chart here showing how FCI's resistance is actually lower than TE's.

Low Level Contact Resistance (LLCR) – The low level contact resistance shall not exceed
High Power contacts: 10 milliohm initially and 20milliohm final
Low Power contacts: 15 milliohm initially and 20milliohm final
Signal contacts: 20milliohm final
after environmental exposure when measured in accordance with EIA-364-23 .The following details shall apply,

a) Test Voltage – 20 millivolts DC max open circuit volatge.

b) Test Current – Not to exceed 100 milliamps.

LLCR at 3rd party joint qualification report				mΩ MAX.
		Spec	FCI/FCI	TE/TE
Group 1	High Power	10	0.3	0.4
		10	0.3	0.9
		10	0.3	0.4
		10	0.3	0.9
Group 2	High Power	10	0.4	0.4
		10	0.4	0.5
Group 4	High Power	10	0.5	1.8
		10	0.8	1.8
Group 5	High Power	10	0.3	0.4
		10	0.3	0.6
		10	0.4	0.9
		10	2.6	2.0
		10	1.8	2.3

Current rating

Note: Connectors are applied to test boards with 10 layers X 2 ounce copper power plane

Types	Pitch (mm)	Single Contact	4 adjacent Contacts	8 adjacent Contacts	12 adjacent Contacts
High Power Contact	7.62	75	67	N.A.	N.A.
High Power Contact	6.35	75	63	48	45
High Power Contact	5.08	75	58	45	43
Low Power Contact	2.92	49	28	27	N.A.

Types	Pitch (mm)	Single Contact	24 adjacent Contacts	48 adjacent Contacts
Signal Contact	2.54	3	1.5	1

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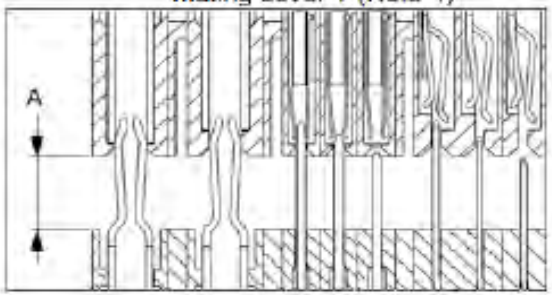
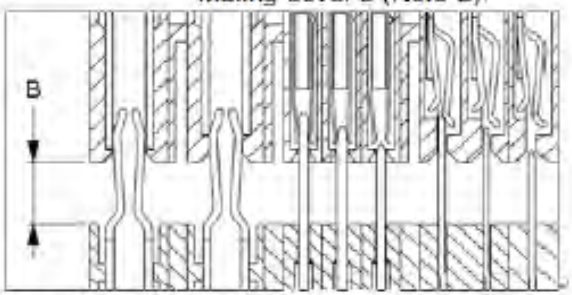
Mating Sequences

High Power Contacts

Mating Level 1 (Note 1)



Mating Level 2 (Note 2)



Low Power Contacts and Signal Contacts

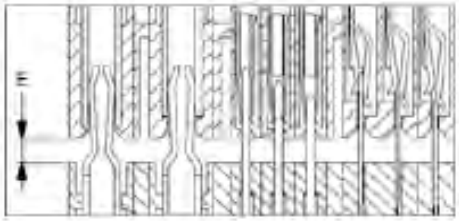
Mating Level 2 (Note 2)

Mating Level 3

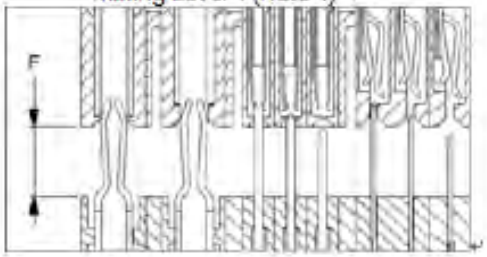
Low Power Contacts

Signal Contacts

Mating Level 4



Mating Level 1 (Note 1)



Note 1 The offset distance between "A" and "F" is not enough to consider these as separate levels
Note 2 The offset distance between "B" and "C" is not enough to consider these as separate levels

Pwr Blade+™

Mechanical Performance

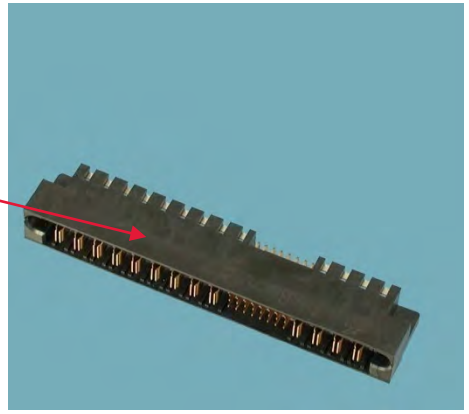
- Operating temp : -40 degree C –125 degree C
- Durability : 500cycles
- MFG test : Class-IIA, 14Days Duration

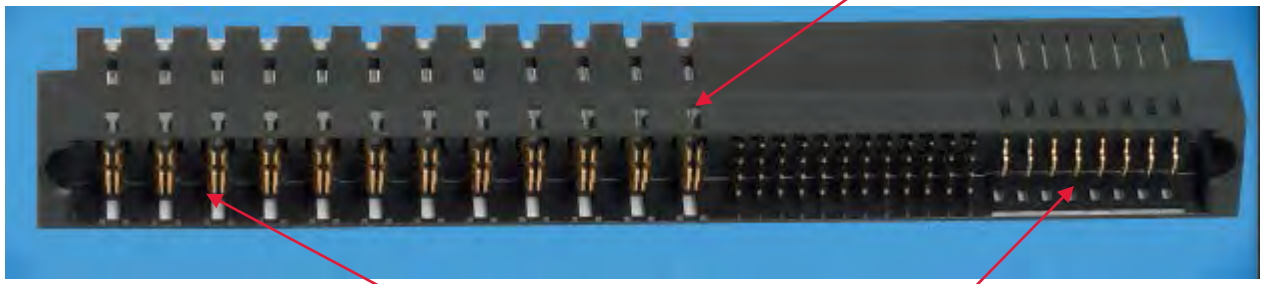
PwrBlade® vs Pwr Blade+™

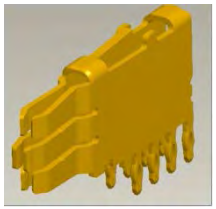
- Pwr blade = TE MBXL Pwr blade Plus=TE MBXLE

PB=Full Guide pin/post, PB+ is Half

Additional vent holes on PB+

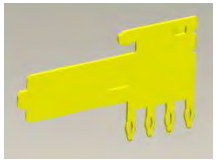






High Power Pins, 3 beams

Low Power pins



PwrBlade® vs Pwr Blade+™

- Pwr blade = TE MBXL Pwr blade Plus=TE MBXLE

Difference of PB and PB+

Items	PB+	PB
Mating cycles	500	200
Current Performance (30Degree C, still air, 8Ppins at 6.35mm)	48A	30A
End Module	Half	Full
Terminal thickness	PB+ TML thickness 40% more than PB	

Similarities of PB and PB+

Operating temperature: -40 to 125Degree C
Height above PCB
Stack Height
HSG width
Signal pin
Contact pitch same options
LLCR
Contact Resistance
PCB hole size

Pwr Blade+™

Material

- The HSG made with glass filled high temp. nylon, UL94V-0
- The Terminal: High Conductivity Copper Alloy
- Hold Down: Copper Alloy
- Platg: Performance based platg for functional area, and SnPb or Sn over Ni for PCB interface

Pwr Blade+™ and TE MBXLE 3rd party testing

Test and Certificate

- FCI Internal test: done and test report available upon request
- UL: E66906
- Joint test with TE MBXLE: Done, report available upon request
- RoHS compliance: Done, report available upon request
- Industry Stadadard: EIA-364

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Product Key Documents

- Prod Spec. : GS-12-658
- Prod. Application : BUS-20-141

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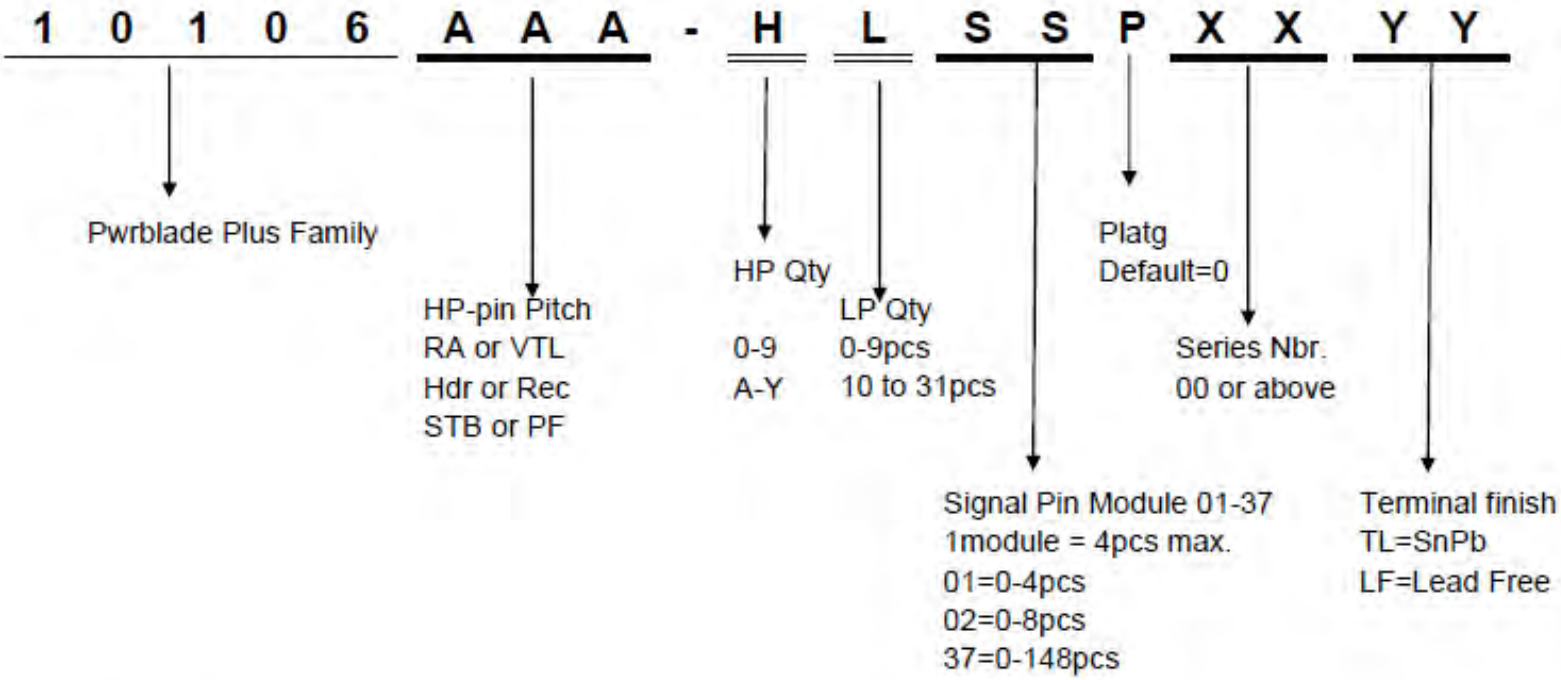
Part Numbers



Up to May, 2013

1) We have created PNs total 325

2) 160 out of 325 are already been approved by customer and becomes active in GPS for PO in

3) FCI is already been in first Inquiry-to position for about 40% inquiries from customers

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Part Numbers

Base PN 10106

AAA	High Power Contact Pitch	Right Angle/ Vertical	Header / Receptacle	Solder to Board/ Press Fit
116	7.62 mm	Right Angle	Header	Solder To Board
117				Press Fit
118			Receptacle	Solder To Board
119				Press Fit
120		Vertical	Header	Solder To Board
121				Press Fit
122			Receptacle	Solder To Board
123				Press Fit
124	6.35 mm	Right Angle	Header	Solder To Board
125				Press Fit
126			Receptacle	Solder To Board
127				Press Fit
128		Vertical	Header	Solder To Board
129				Press Fit
130			Receptacle	Solder To Board
131				Press Fit
132	5.08 mm	Right Angle	Header	Solder To Board
133				Press Fit
134			Receptacle	Solder To Board
135				Press Fit
136		Vertical	Header	Solder To Board
137				Press Fit
138			Receptacle	Solder To Board
139				Press Fit
262	Hybrid design or other customized pitch	Right Angle	Header	Solder To Board
263				Press Fit
264			Receptacle	Solder To Board
265				Press Fit
266		Vertical	Header	Solder To Board
267				Press Fit
268			Receptacle	Solder To Board
269				Press Fit

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Service Plan

Power Blade + @ HPL 552	P/N and Drawing LT	Sample plant LT	Plant mass PO PELT	Quotation
PB RA HDR @ S&OP 5EEF PB RA Rec @ S&OP 5EFF PB Vertical HDR @ S&OP 5EGF PB Vertical Rec @ S&OP 5EHF	3 work days	4~5 wks, and target to meet 2~3wks in the future	5 wks	2 work days

Key contact name	
Technical Inquiry	AP - DON Pwrbld Plus Team
Prod Manager	Daisy Liu
Guardian Engineer	Fancy Zhang
SCM Planner	Qin Liu

THANK YOU