



**Connector Products Division
Power Presentation**

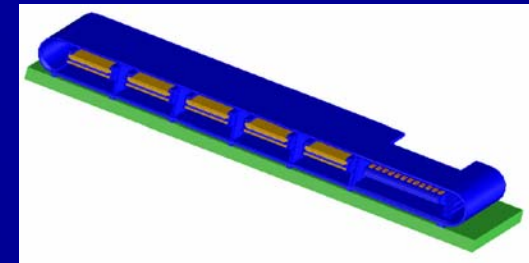
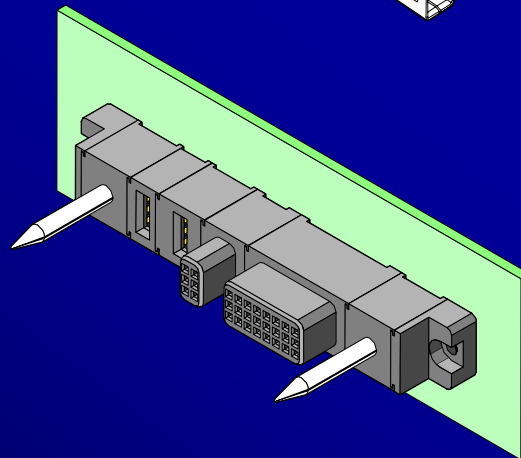
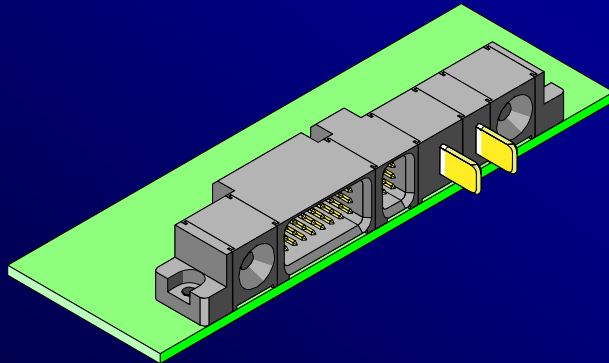
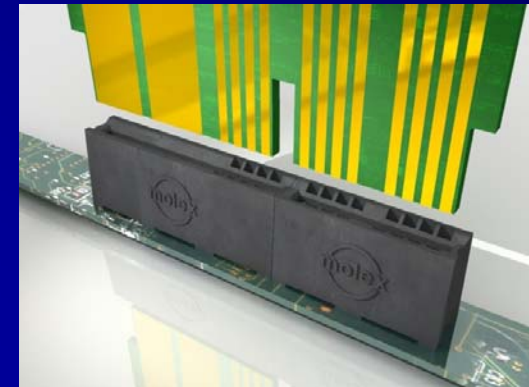
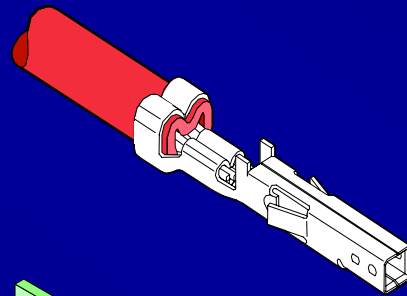
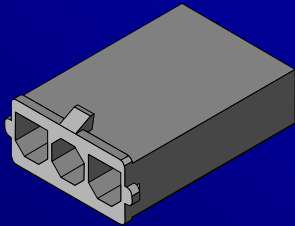
Michael Bean

Molex Product Manager

September 2006

Molex Overview

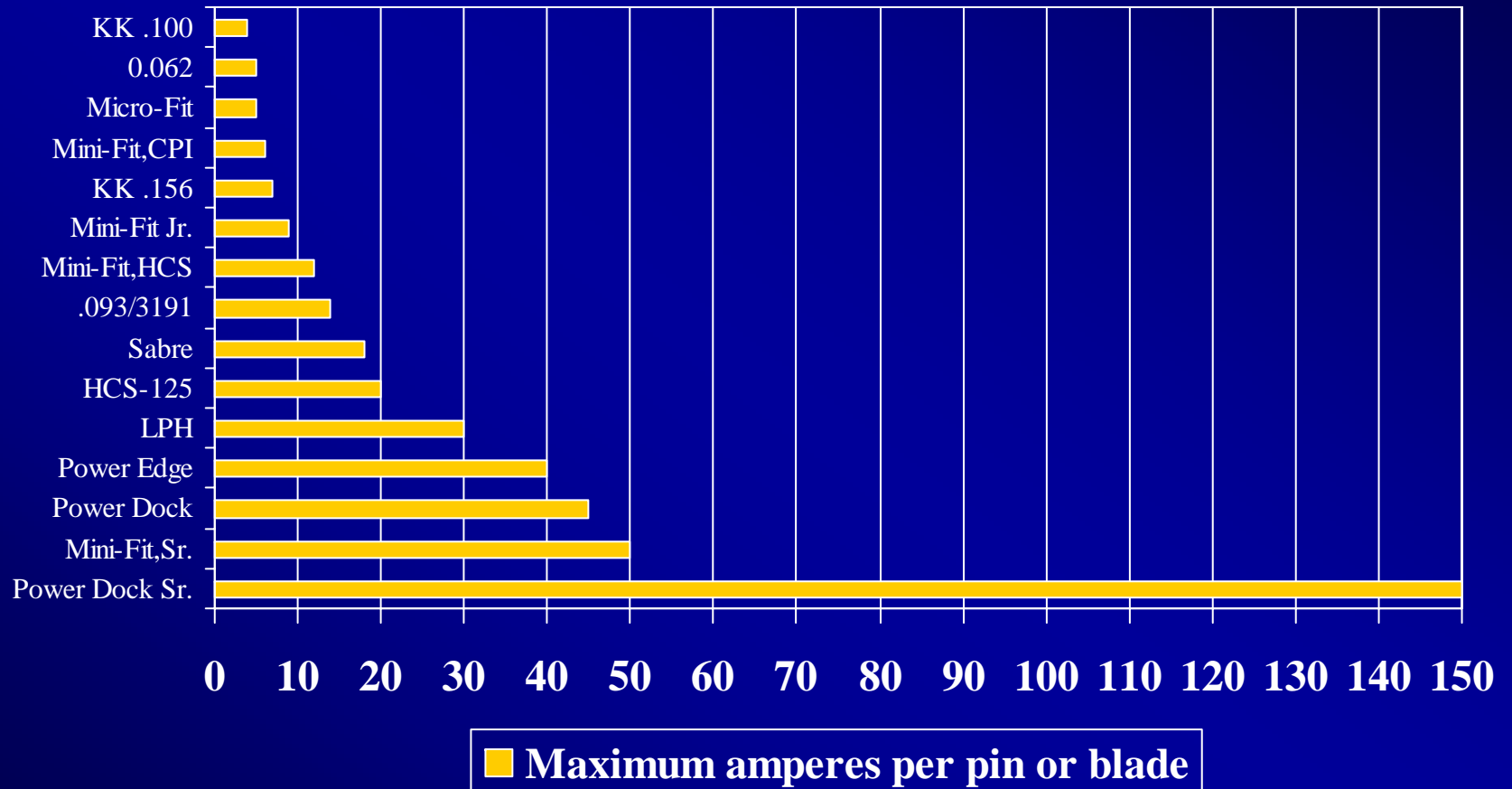
■ *Over 60 years of developing market leading interconnect products for distributing power through electric and electronic devices*



Power Comes in all Sizes !



Molex Power Connector Offering



Power Connectors

Definition and Overview

- Power connectors are loosely defined as those connectors that carry 5 amps (per contact) or greater
- Power Connector Segments
 - Power Distribution
 - Lower currents (generally below 30 amp)
 - Mini Fit Families
 - Pin and Socket
 - Power Delivery (generally above 30 amp)
 - Power Dock
 - Power Edge
 - Power Plus (SSI)
 - LPH (Low Profile Hybrid)
 - Power Dock Sr.
 - BBC (Bus Bar Connector)



Power Connector Market Overview

- **Constant demand for size reduction is driving demand for smaller designs in Power solutions.**
 - More current, less space
 - Challenging de-rating curves
 - Need a “systems” approach to design solutions
- **Heat becoming critical design consideration**
 - Lower voltage silicon, faster swings
 - More chips in smaller space
 - Thermal modeling becoming a common need
- **Hybrids or mixed layouts are in demand**
 - Power blades, Signal pins, Guidance,
 - Space and cost reduction factors
- **Reducing voltage drop is a critical interface design criteria**
 - Molex now has power contacts with less than 1 milliohm contact resistance plane-to-plane

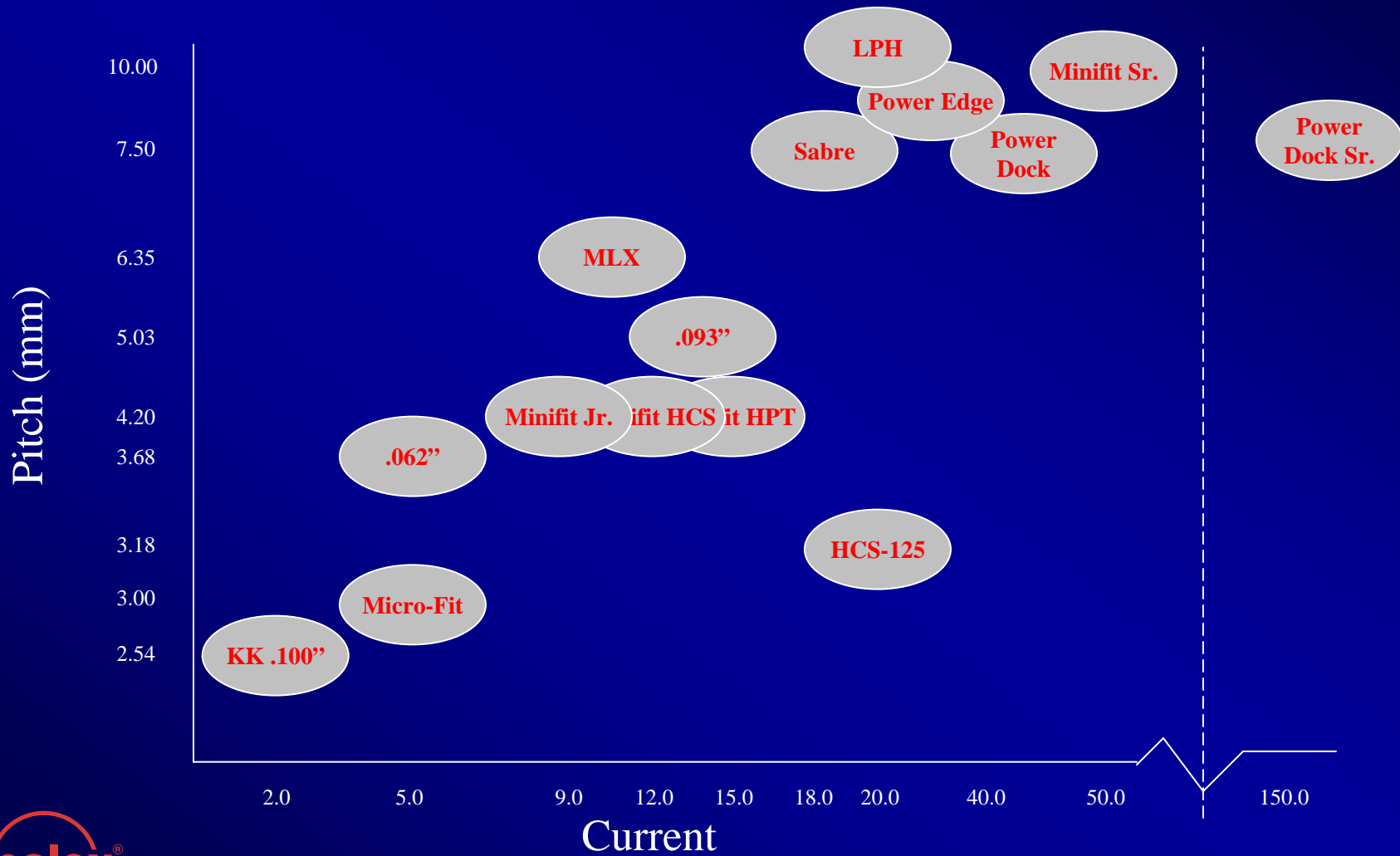


High Power Market

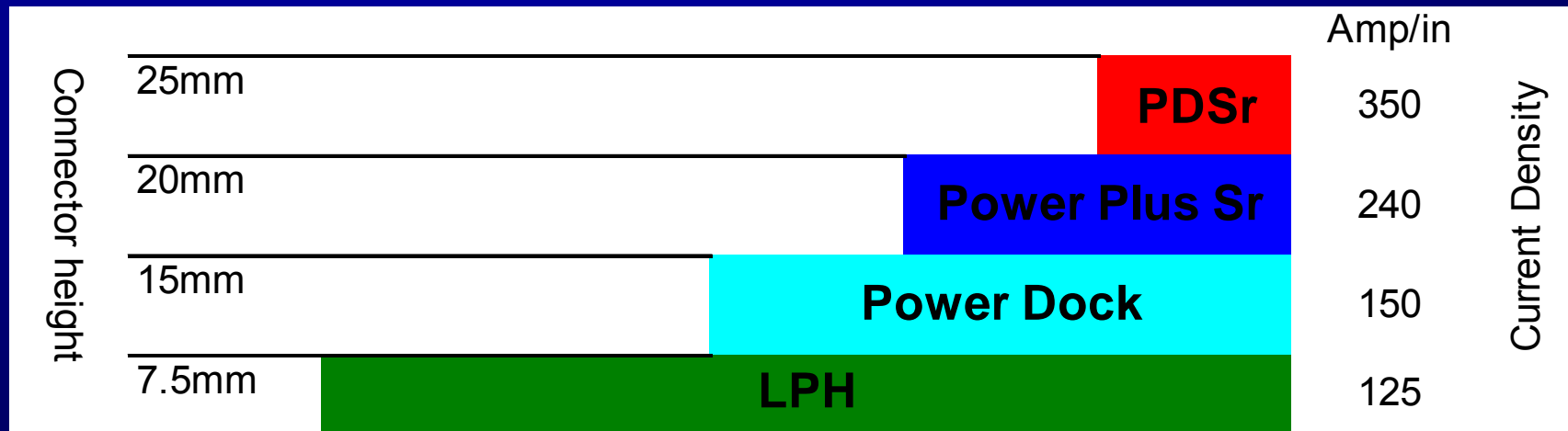
- **Everyone needs more Power!**
 - 2000 watt and higher power supplies
- **Current density is a significant challenge**
- **Factors affecting current density**
 - Space (height, width, depth)
 - PCB copper
 - Airflow
 - Copper Conductivity
 - Molex has developed high performance alloys
- **Testing**
 - Specifications are only a reference point
 - Actual performance is application specific



Molex Map of Centerline Pitch



More Current, Less Space Height vs. Length



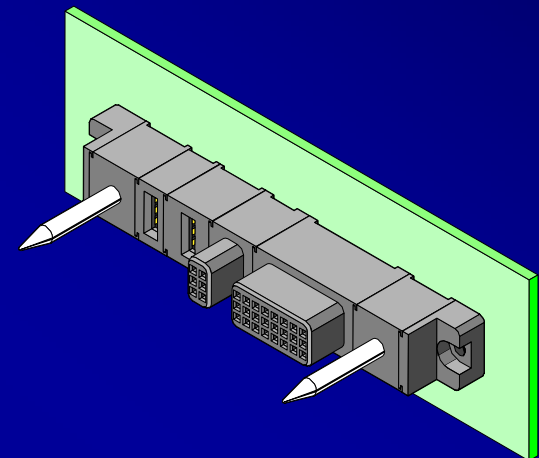
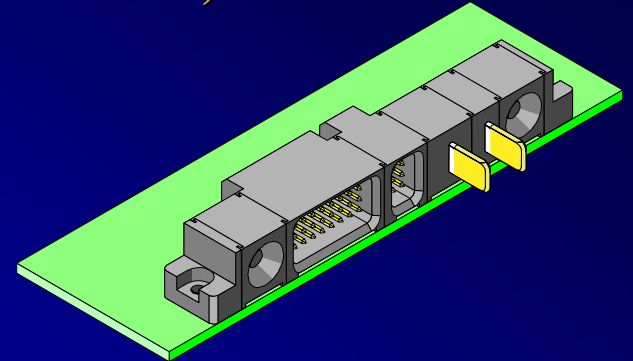
New Power Products

- 1) Power Dock
- 2) Power Edge
- 3) Power Dock Sr.
- 4) Low Profile Hybrid
- 5) Bus Bar connector
- 6) Mini Fit Plus



Power Dock (45481, 48542, 45483, 45484 & 45485)

- Custom configurable
 - Power (45 amp per mod) & Signal
 - Active and Passive guides
 - Spacers and kinked tails
- Hot pluggable, Blind Mating
- Solder tail or press fit
- UL/CSA/TUV Approved
- Visit www.power-dock.com
 - Configurator
 - Dimensions
 - Sample orders





Power Dock™ Configurator

Print

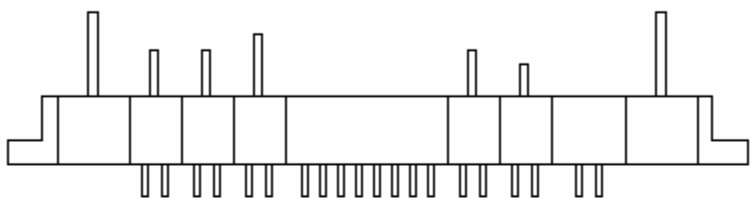
Products

Search By:

Product -

Molex Part No.

GO



Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Module																
Module	PD500	PD503	PD101	PD101	PD102	PD400	PD101	PD103	PD412	PD503	PD501					

Step 1

Choose from the following modules below. Click the Add link below a module to add to the assembly. Selecting the position button above will change where the next module will be inserted. To change an already selected module, select it, and then add a new module in that position. Click the Finished button when you are finished creating your assembly.

Finished

Mounting and Guide Modules		Solder Terminated Modules	
Flange Mounts	250V Power Modules - Vertical	250V Power Modules - Right Angle	



Power Dock™ Configurator

Print

Products

Search By:

Select -

Molex Part No.

GO

- Introduction
- Selection Matrix
- Configurator
- Order Sheet
- Product Specifications

45481

POWER DOCK™ ASSEMBLY

THIS IS A PROPOSAL DRAWING FOR QUOTING PURPOSES ONLY. FOR A SALES DRAWING INCLUDING DIMENSIONAL TOLERANCES AND PCB LAYOUT, SEND A REQUEST TO: powerdockadmin@molex.com

.295 .472 .295 .295 .295 1.043 .295 .295 .453 .472 .295

.295 .472 .295 .295 .295 1.043 .295 .295 .453 .472 .295

NOTES:

- MATERIALS:
HOUSING: LCP, GLASS FILLED, UL94V0, COLOR-BLACK
CONTACTS: COPPER ALLOY
GUIDES: BRASS
- FINISH:
SELECT GOLD: 30 M.I. MIN
SELECT TIN: 150 M.I. BOTH OVER NICKEL
- PRODUCT SPECIFICATION: PS-45424-001
- PACKAGING SPECIFICATION: PK-45481-001
- THIS ASSEMBLY MATES TO MOLEX POWER DOCK MODULES

FOR OVERALL ASSEMBLY LENGTH ADD SUM OF ALL MODULE DIMENSIONS

ASSEMBLY PROPOSAL NO.: 45481-0002

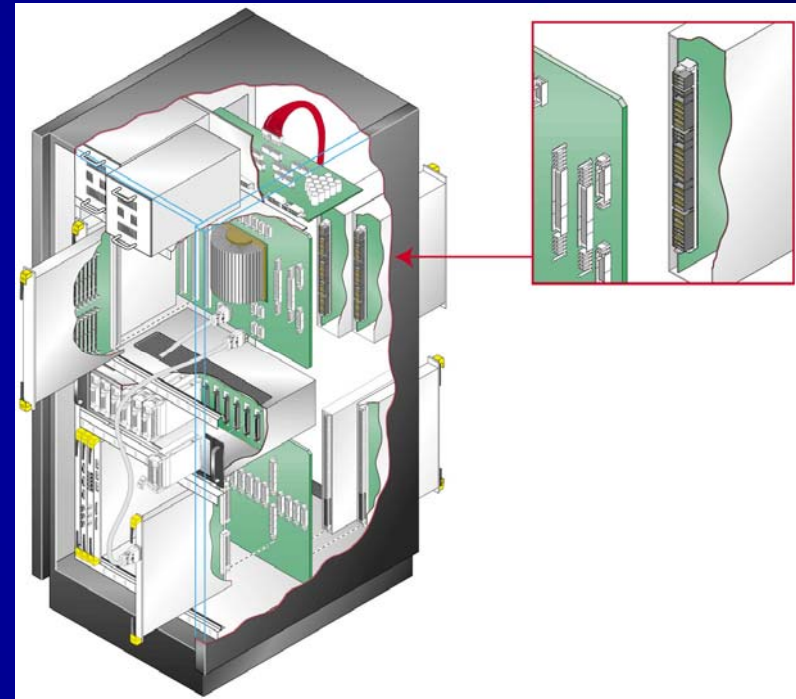
BOARD THICKNESS SELECTED: .093

DATE CREATED: 10/7/2003

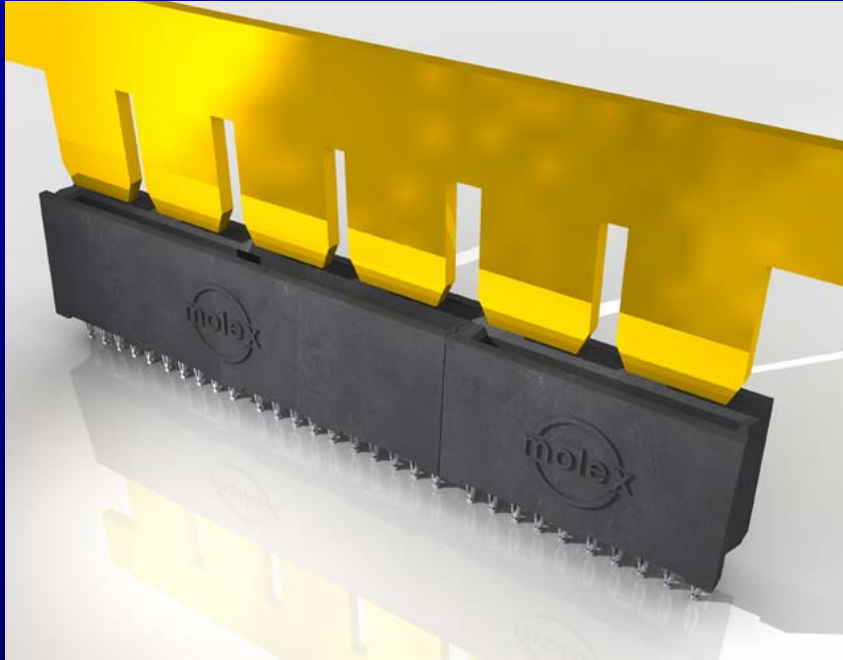
DIMENSIONS IN INCHES

Power Dock Sr. Preview

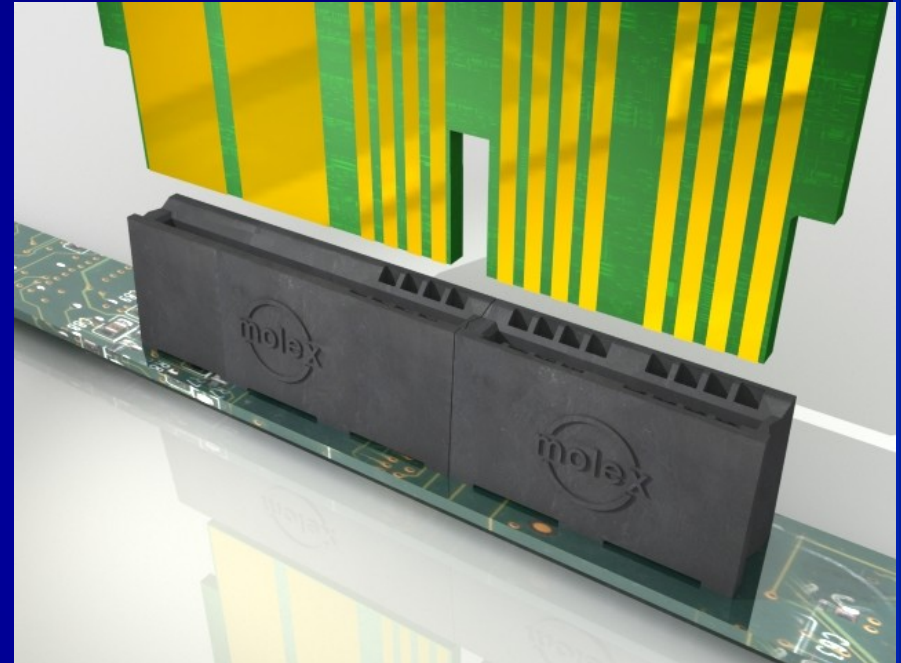
- Designed for large chassis based systems
- Highest Current Density B-B Available
 - 350 amperes/inch
- Hybrid design
 - Power modules:
 - 150 ampere
 - 80 ampere
 - 40 ampere HV
 - Signal modules:
 - 24-64 ckts.
 - Robust guide modules
- Modular design
 - Any pwr, sig, guide arrangement requested
- RoHS compliant



Power Edge™



Multiple bus bar tabs (all power)



PCB card edge (mixed power and signal shown)



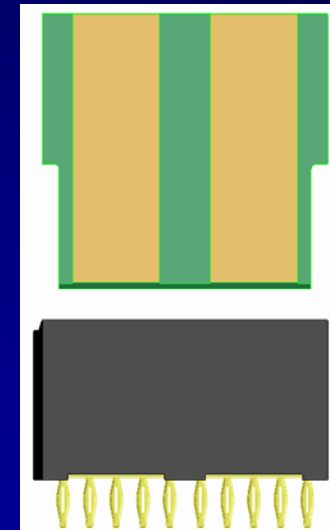
Power Edge™

Applications

- Board-to-Board card edge power & signal for 0.062" PCB or bus bar

Features

- Hybrid card edge power & signal
- Two, three and four segment options
 - 35 amps max per contact, two isolated power contacts per bay
 - 8 signal circuits per bay
 - Power & signal can be mixed in multiple configurations
- CSA, UL, TUV approved
- End to end stackable
- Solder tail or press fit

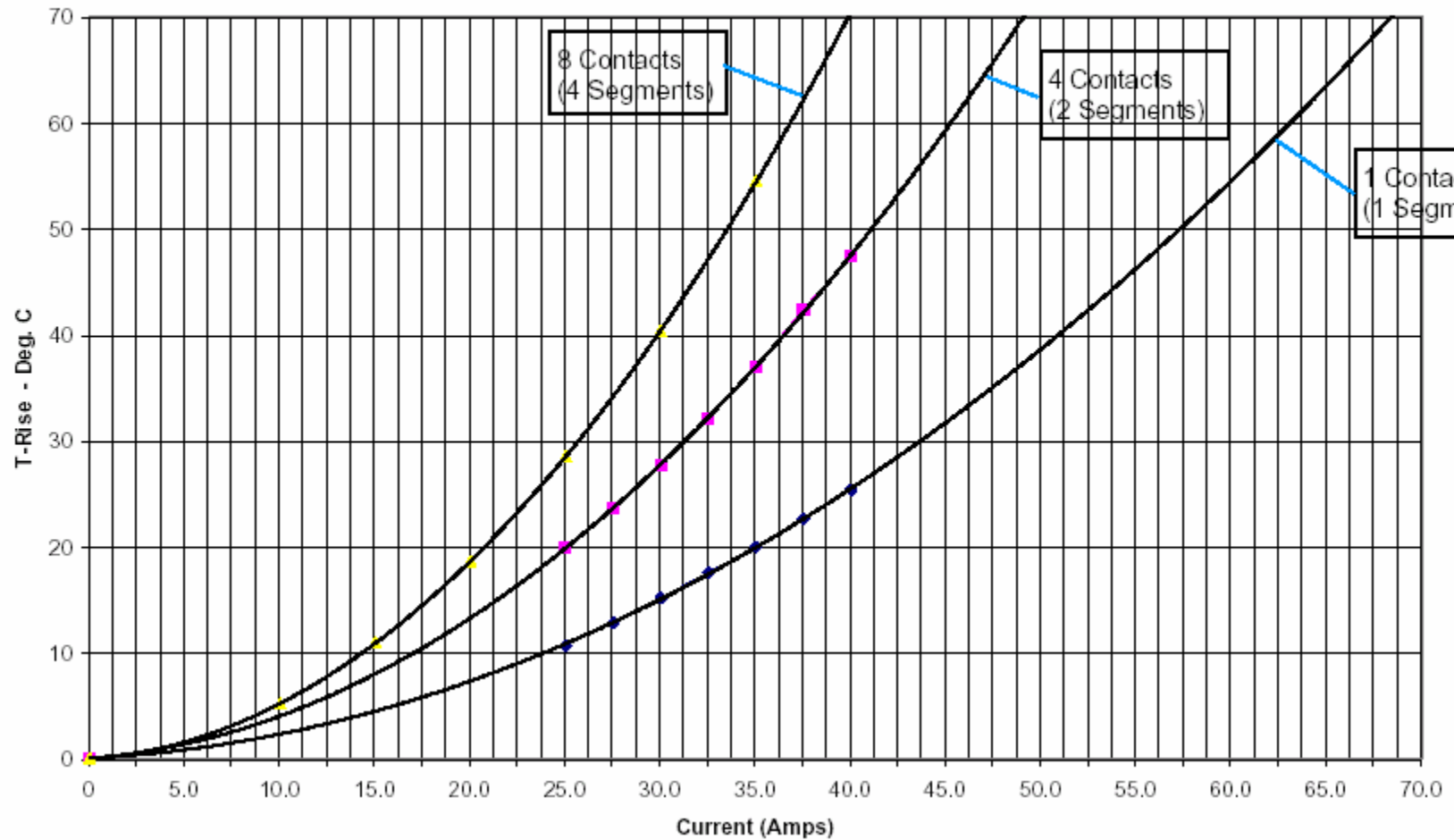


Engineering Series	Style
45714	All power, press fit
45719	All power, solder tail
45844	All signal, solder tail
45845	All signal, press fit
45911	Mixed, solder tail
45912	Mixed, press fit

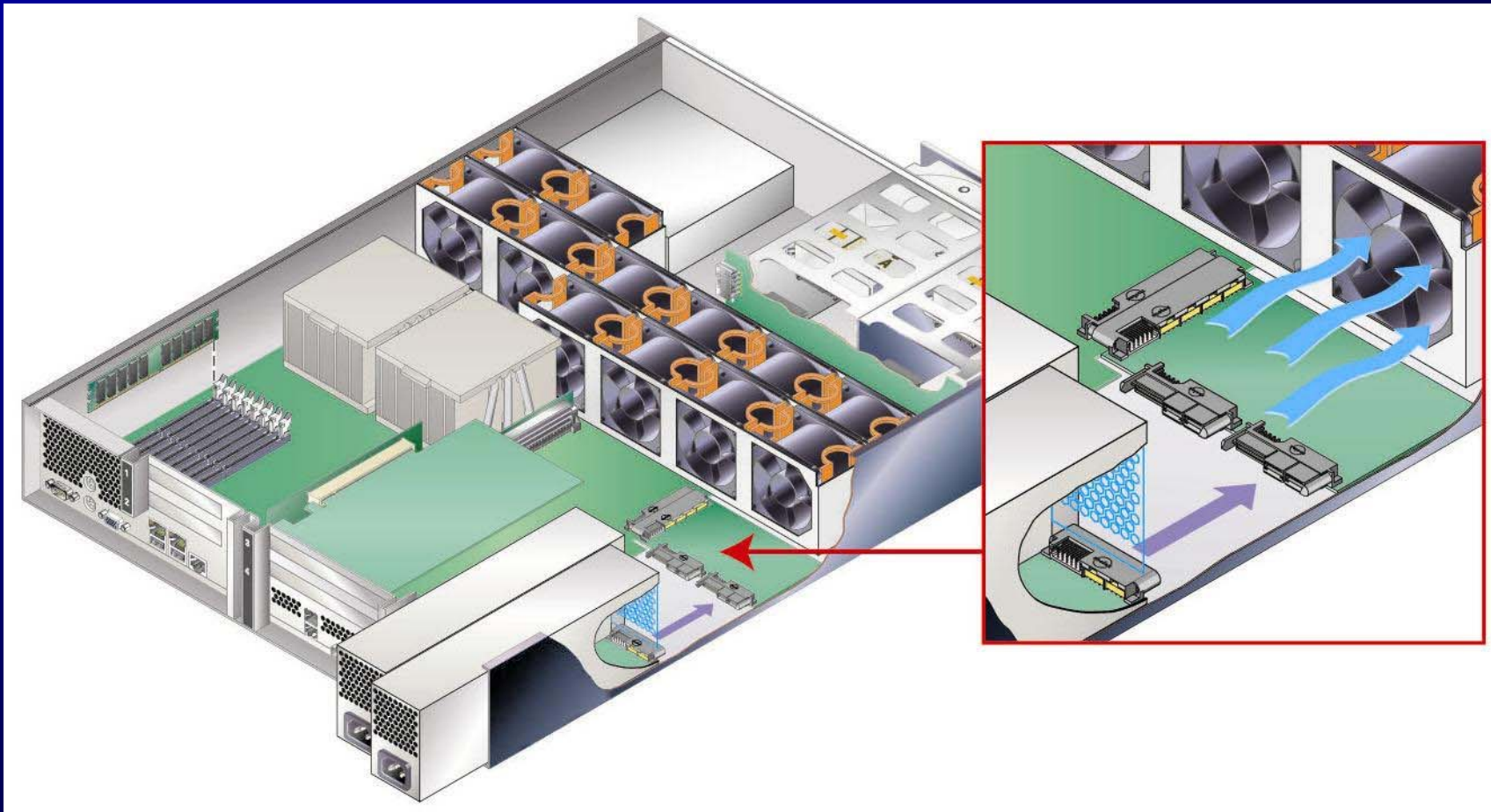


T Rise

Power Edge, Dual Sided - 5oz. Cu PCB
T-Rise Current Chart



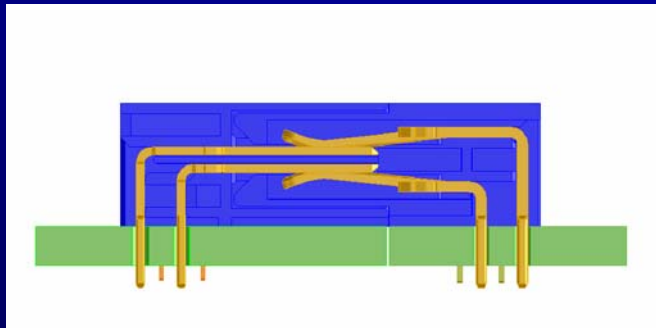
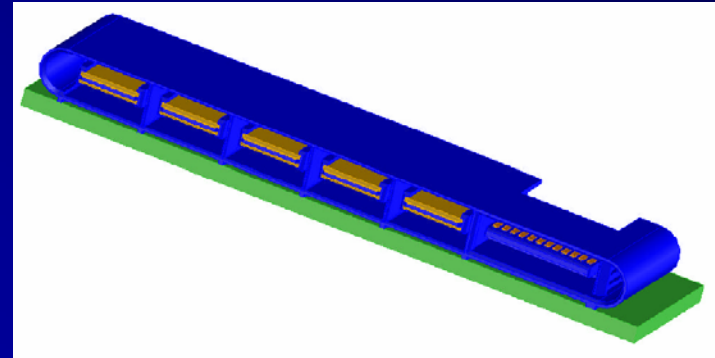
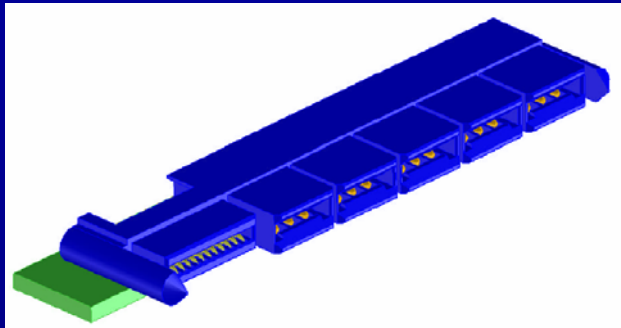
LPH™ (Low Profile Hybrid)



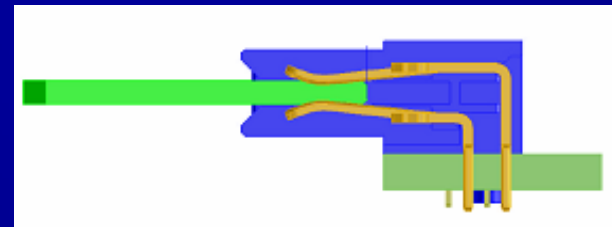
Server style application



LPH™ (Low Profile Hybrid)



Two Piece



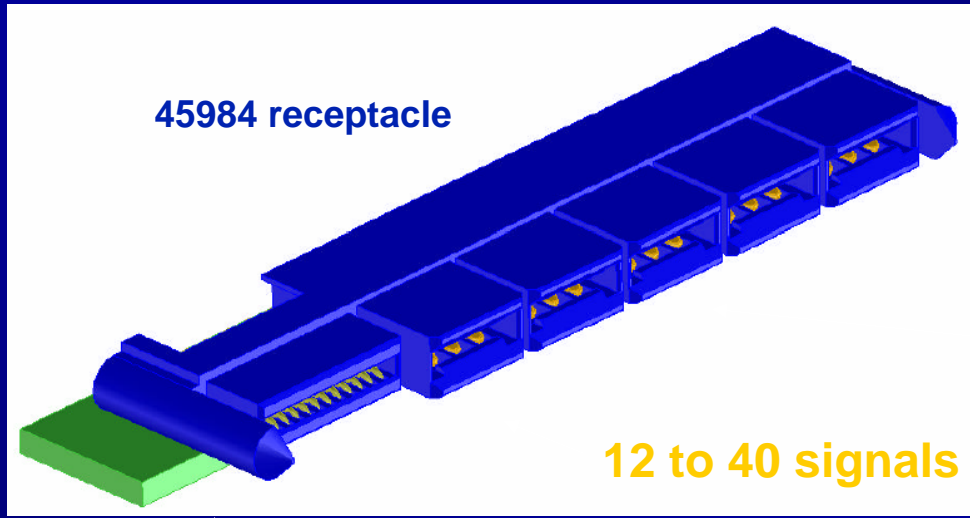
Card Edge

LPH Features & Benefits

- **7.5mm height**
 - Improves system airflow
- **Excellent current density vs. height**
 - 120 amps per inch
- **Hybrid design**
 - Mixed Power & Signal
- **Flexible configuration**
 - 4 to 10 power blades
 - 12 to 40 signals (4 circuit increments)
- **Two piece or Edge card options**



LPHTM (Low Profile Hybrid)

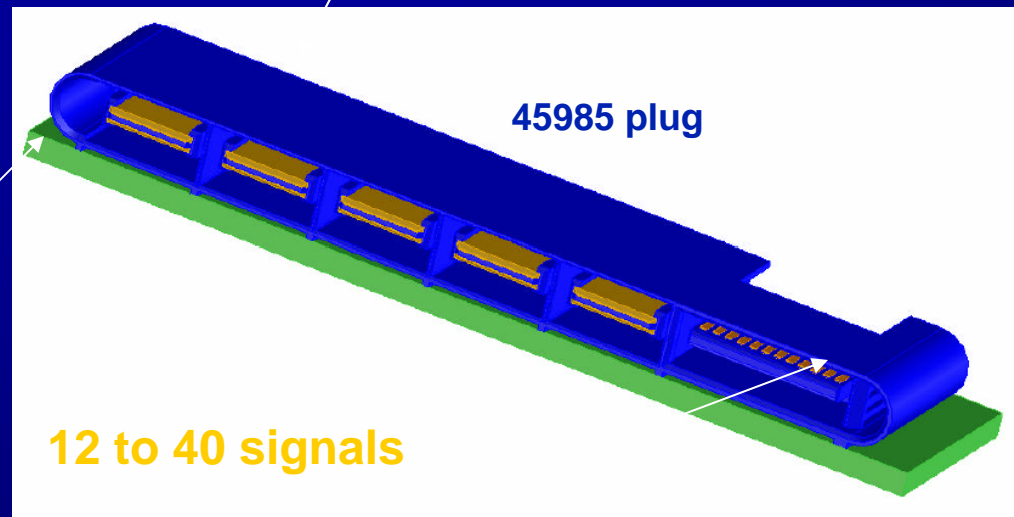


RoHS Compliant!

- 2 to 5 power bays
- 2 contacts per bay
- 30 amps per contact
- MLBF available

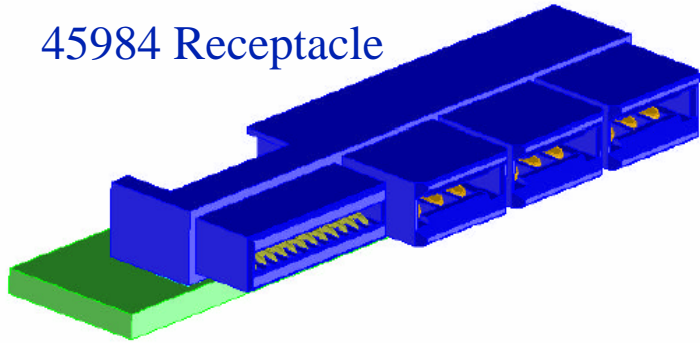
Optional
alignment guides
(pegs under)

Upper and lower
power blade

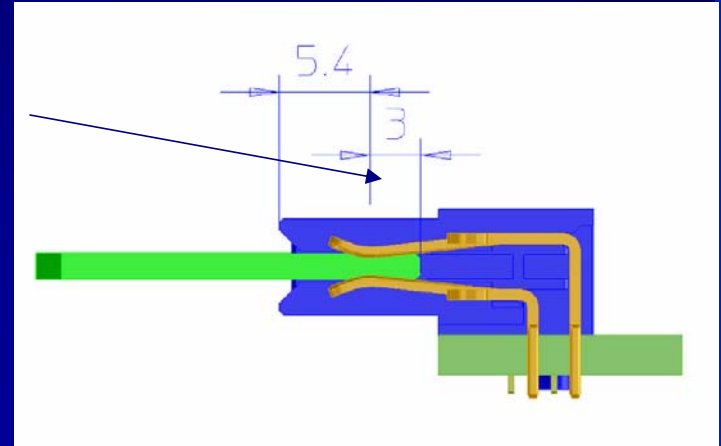


LPH Single Piece Edge Card Interconnect

45984 Receptacle

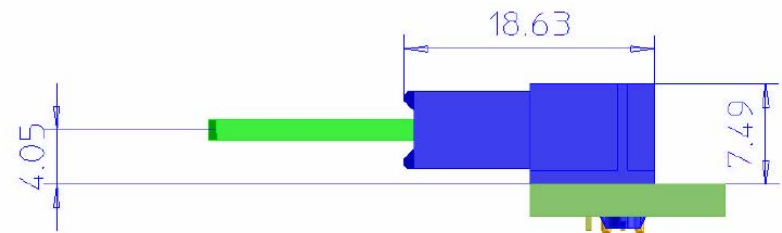
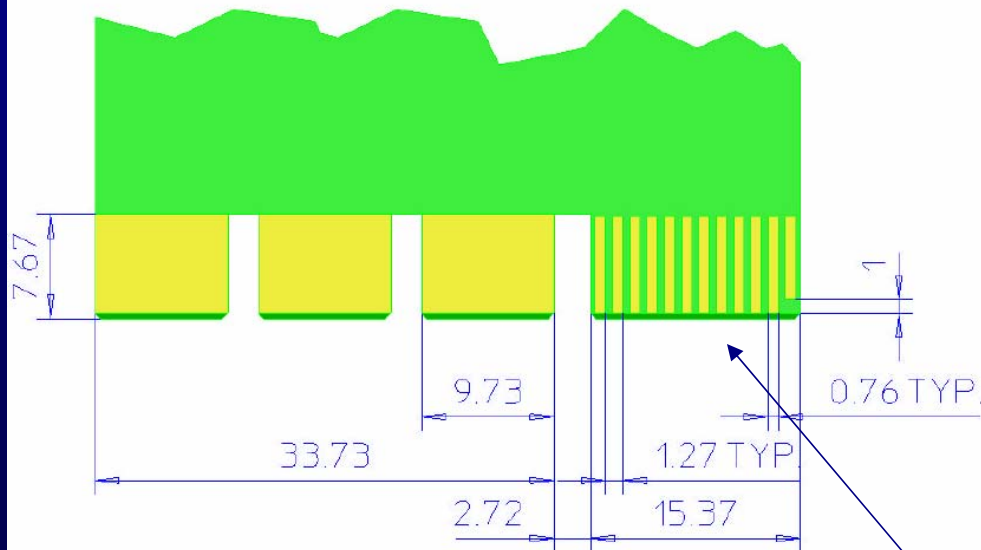


Contact Wipe



Mated Configuration

All dims in mm

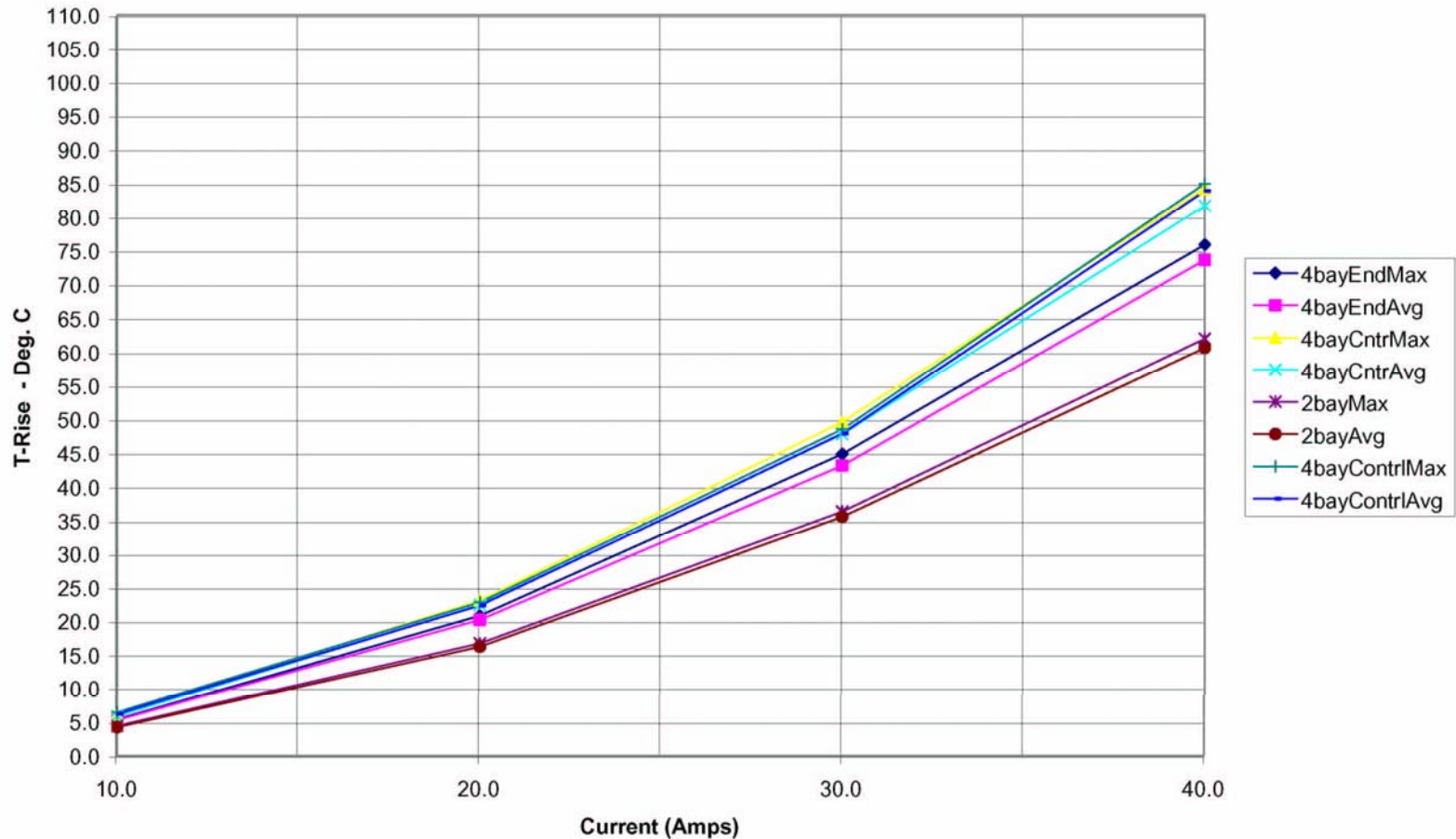


Mating PCB Layout

Adjust PCB trace lengths for pre and post mate!

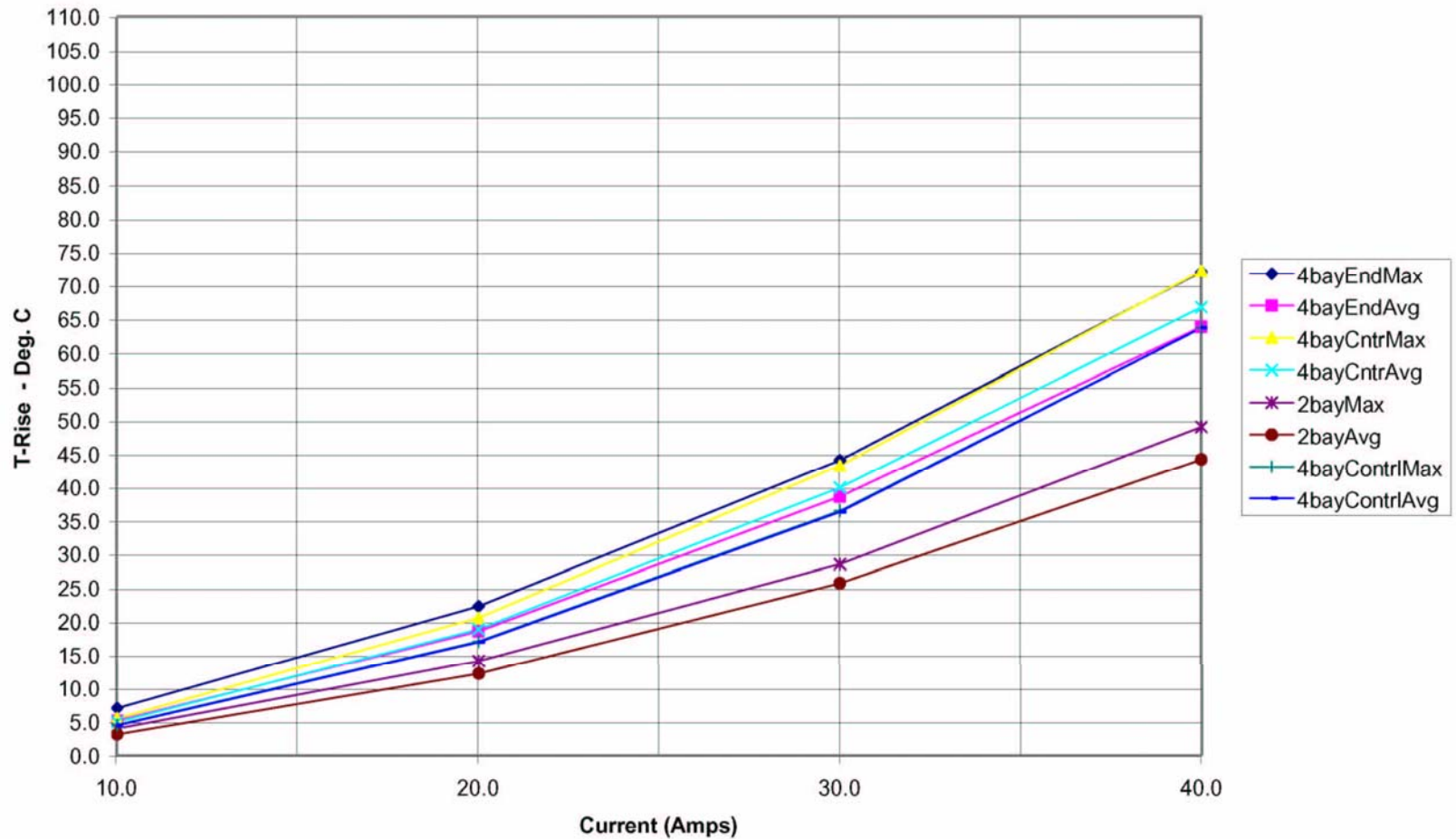
High Current DC - Temp Rise

LPH 4oz Cu PCB, 4-Bay & 2 Bay, (Max & Avg)
T-Rise Current Chart

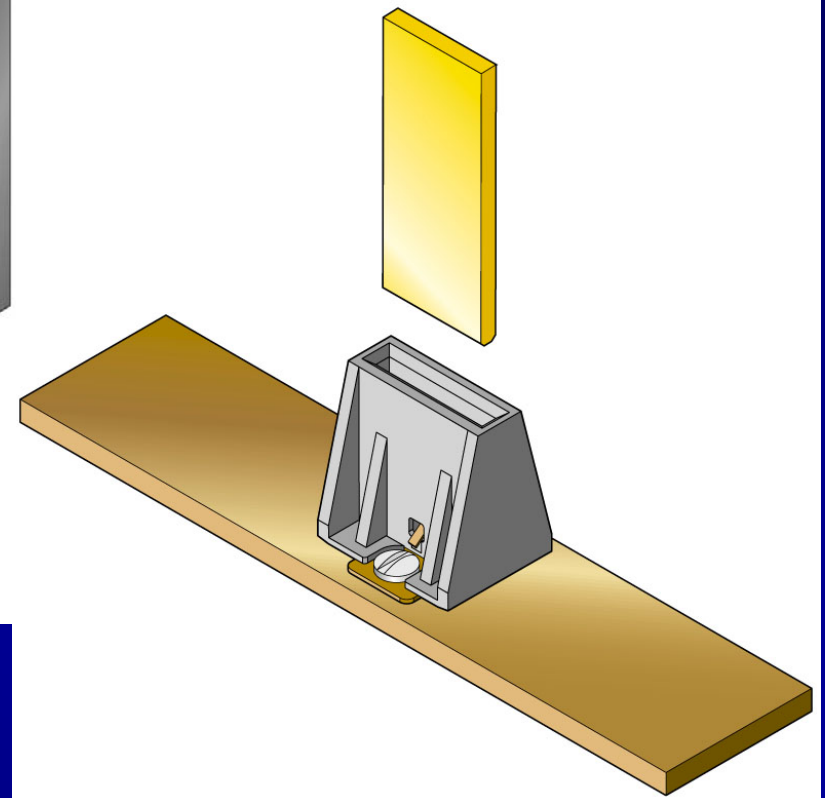
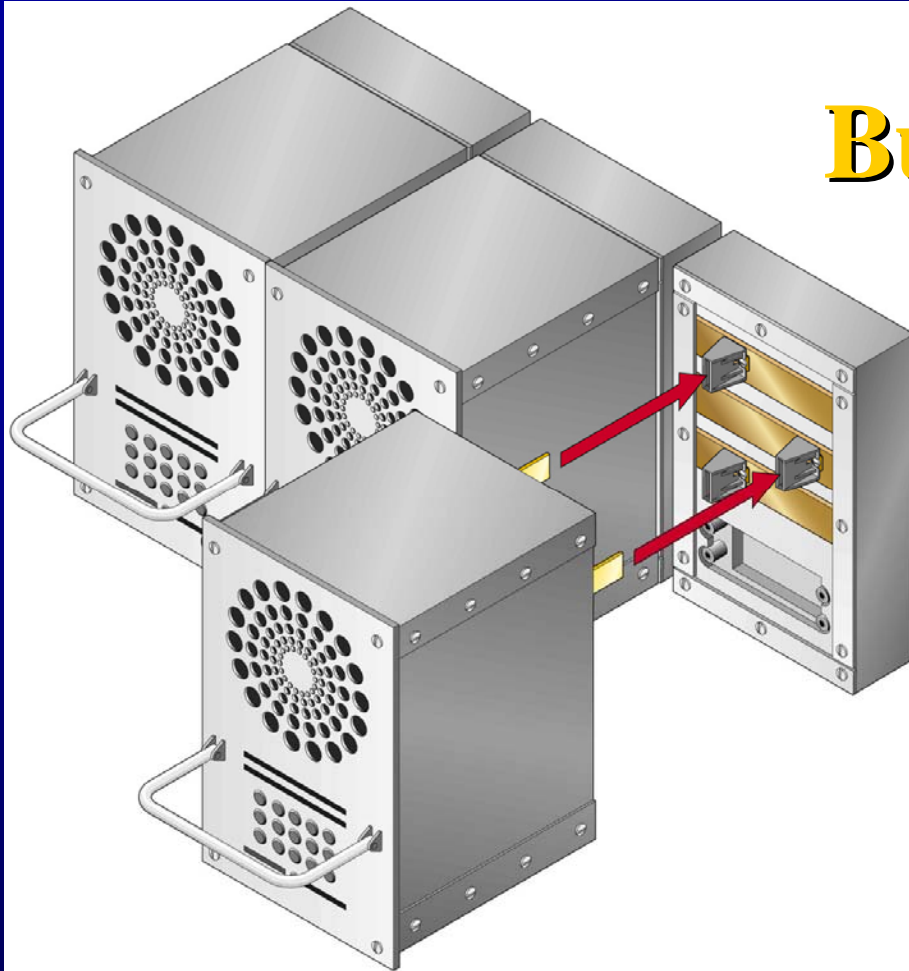


High Current DC - Temp Rise

LPH 10oz Cu PCB, 4-Bay & 2 Bay, (Max & Avg)
T-Rise Current Chart



The BBC Bus Bar Connector

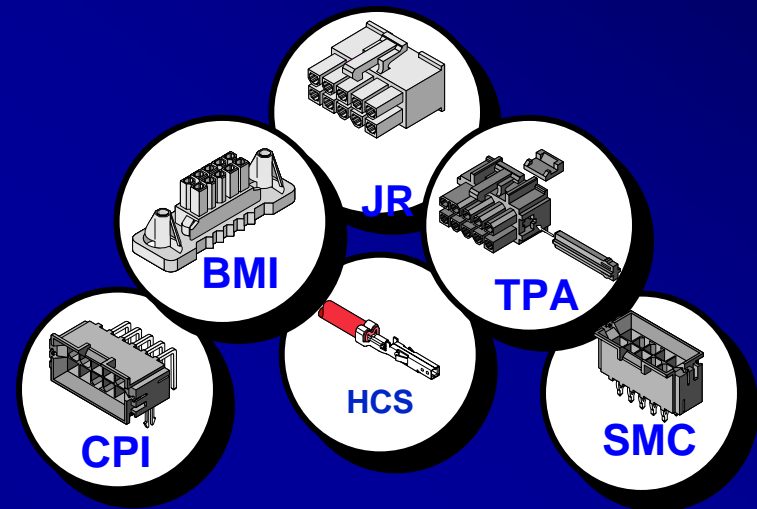


320 Amperes



MiniFit Product Upgrades

- Market leader
- High Current in small space
 - 4.2mm pitch
 - 9A Max std. terminal
 - 12A max HCS terminal
- 4 points of contact
- W-W, W-B, B-B configurations
- Globally manufactured



New Mini-Fit Plus™ Terminal

- **New Molex Patented Design!**
 - Mini Fit Plus™
 - Mini Fit Plus HCS™
 - Mini Fit High Cycle™
- **Fits in all existing housings. Works in all existing applicators**
- **Increased Current Density (HCS version)**
 - From 9 amp to 12 amp
- **Increased Durability**
 - From 30 to 75 mating cycles (tin, 100 cycles Au)
 - Over 2500 cycles with Paladium Nickel
- **Hot Plug**
 - 8 amps at 24 volts (50 cycles)
 - Gold plate only

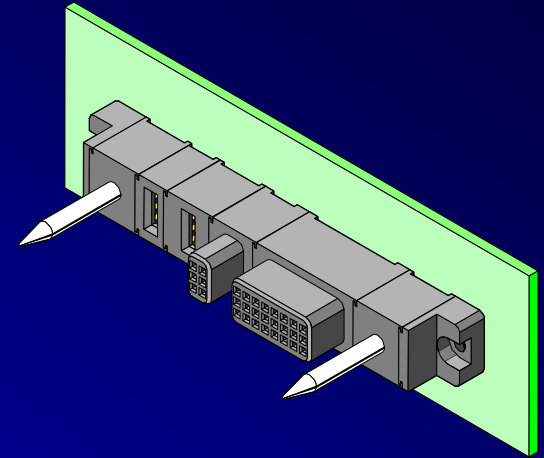
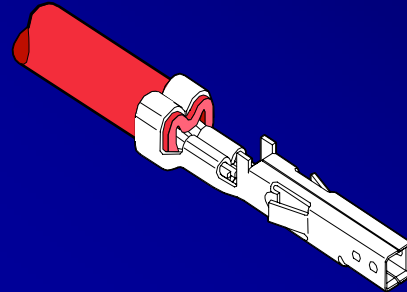
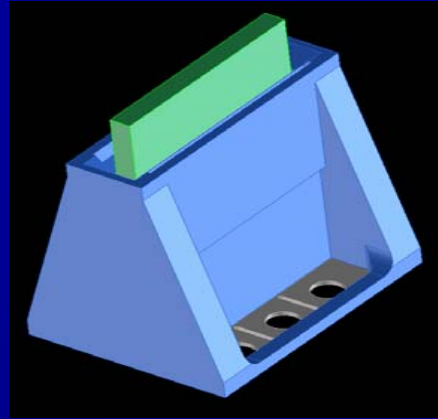


New Mini-Fit Plus™ Terminal

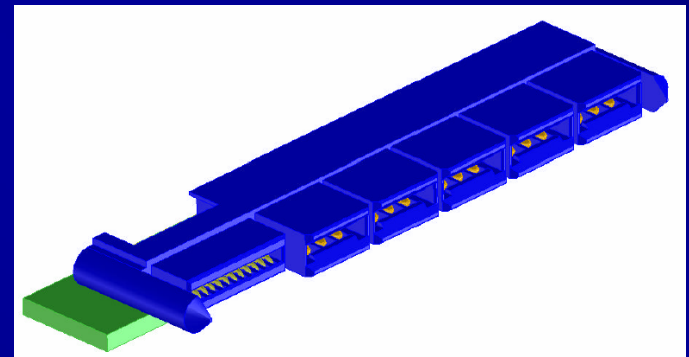
	Current (hi/low)	Durabilty	Hot Plug	Style
Mini Fit Plus™	10/6	75/100	NO	Jr, BMI, TPA
Mini Fit Plus HCS™	12/11	75/100	YES	Jr, BMI, TPA
Mini Fit High Cycle™	12/11	2,500+	NO	BMI

All new Mini Fit Plus products to
be released in July 2006





Thank you!





Technical Seminar Series

Be Smart — Choose the Right Part

Q&A Session Begins Now



Technical Seminar Series

Be Smart — Choose the Right Part

Resources & Links:

http://www.ttiinc.com/object/ME_TS_20060926Resources