tyco Electronics

# The Complete Solution for AdvancedTCA®

COMMUNICATIONS, COMPUTER & CONSUMER ELECTRONICS

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Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are U.S. equivalents.

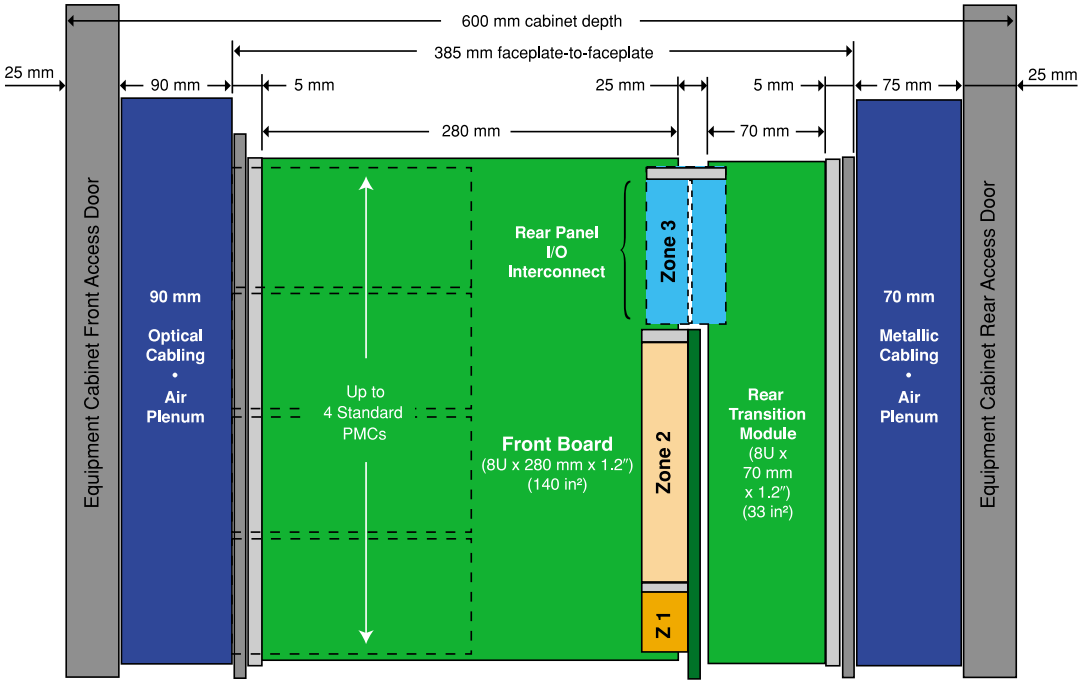
Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425
South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
Germany: 49-6251-133-0

**www.tycoelectronics.com**

All specifications subject to change. Consult Tyco Electronics for latest specifications.

## Introduction




### The Complete Solution For AdvancedTCA®

Hardware designers, particularly those working on blades or chassis, are currently faced with huge challenges. The needs of the communications network infrastructure, and next generation communication applications, are rapidly changing, which cannot be served by existing proprietary solutions.

Therefore AdvancedTCA® (Advanced Telecommunications Computing Architecture), an open industry standard, has been developed by PICMG® 3.0, to place high priority on cost effectiveness versus attempting to support a variety of potential future technologies, at the expense of cost and complexity.

This new standard is also supported by Tyco Electronics, which shows the full range of ATCA compliant components that can be offered suitable for the wide area of applications within telecommunication as well as data communication.

### Why Is AdvancedTCA® Important?

ATCA provides a means for the telecommunications equipment market to take advantage of standardized, off-the-shelf hardware (enabling differentiation through application-layer and system-level software rather than hardware).

- Shorter time to market
- Increased vendor choice
- Increased flexibility
  Multiple switch fabrics supported
  User defined I/O
- Lower cost
  (Acquisition CapEx/OpEx)

### Examples of Telecom & Network Equipment Manufacturers' Related AdvancedTCA® Applications & Systems

#### Wireless Infrastructure Equipment

- Base Stations
  3G (IMT-2000)
  WCDMA
  CDMA2000
  TD-SCDMA
- Radio Network Controllers (RNC)
- Serving Gateway Support Node (SGSN)
- Gateway GPRS Support Node (GGSN)
- Home Location Register (HLR)
- IP Multimedia Subsystem (IMS) Servers
- Media and Application Servers
- Media Gateways and Soft Switches

#### Wireline Networking Equipment

- DSLAMs
- Multi-service switches
- Media servers
- Blade servers
- VOIP Session Controllers

#### Fiber Optic Networking Equipment

## Introduction

### What Is AdvancedTCA®?

AdvancedTCA® (Advanced Telecommunications Computing Architecture) is an open industry standard, developed by PICMG® 3.0, to create a new blade (board) and chassis (shelf) form factor, tailored to meet the needs of the rapidly changing communications network infrastructure, and next generation communication applications, which cannot be served by existing proprietary solutions. This architecture places high priority on cost effectiveness versus attempting to support a variety of potential future technologies, at the expense of cost and complexity.

While the specification is founded on the requirements of the communications infrastructure, it is extensible to a variety of applications and environments where highly available, highly scalable, cost effective and open architecture modular solutions are required.

The architecture is optimized around connectivity requirements of signaling and media gateways, while also providing headroom for higher performance computing elements @ a 99.999% availability rate. ATCA offers a scalable backplane environment that supports:

- A variety of standard and proprietary fabric interfaces
- Robust system management
- Superior power and cooling capabilities.

Each board in ATCA (up to 16 boards a shelf and 3 shelves a rack) may support up to 200 W in a single slot. The power is supplied to each board via redundant -48 VDC feeds. Front and rear cabling practice is supported for standard 600 mm total depth cabinet practice, prevalent in Central Office facilities.

### What Is AdvancedTCA300®?

AdvancedTCA300® is an ATCA based equipment platform, but compliant with the ANSI and ETSI equipment practices requiring 300 mm total depth, front access included.

### What Is AdvancedMC®?

The AMC® (Advanced Mezzanine Card) standard, also developed by PICMG®, defines the base-level requirements for a wide-range of high-speed mezzanine cards, optimized for, but not limited to, AdvancedTCA® and MicroTCA® carrier blades. AMC® defines a modular add-on or “child” card that extends the functionality of an ATCA carrier board. In an ATCA equipment practice, the AMC® modules lie parallel to and are integrated onto the ATCA carrier board. The AMC cards can also be equipped in MicroTCA® shelves.

### What Is MicroTCA®?

MicroTCA® is complementary to ATCA, but is optimized for smaller scale and more price sensitive applications. The basic premise of MicroTCA® is to support mezzanine boards, conforming to the AMC® standard, connected to the backplane, and so not using an additional carrier board. Like ATCA, the MicroTCA® equipment practice is a modular, open standards based shelf level platform. The MicroTCA® standard has not finished completion yet.

www.tycoelectronics.com/products/atca

### An AdvancedTCA® System: where are components & modules typically used?

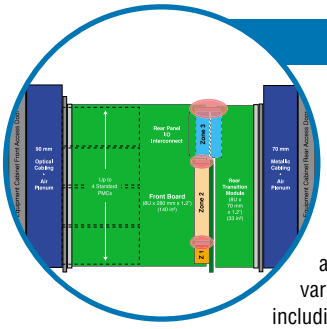
X Typical
(X) Possible

| Area of Application @ AdvancedTCA<br>Tyco Products & Services | BP<br>Backplane | LC @ Front<br>Line Cards Blades Boards | | LC @ Rear<br>Line Cards Blades Boards | SMM<br>Shelf Management Modules | PEM<br>Power Entry Modules | FTM @ Bottom Top<br>Fan Tray Modules | GCH Bottom Top<br>General Chassis Hardware |
|---|---|---|---|---|---|---|---|---|
| | | ATCA Front Blade | AMC Front Blade<br>Advanced Mezzanine Card | RTM Rear Blade<br>Rear Transition Module | | | | |
| Guide Modules | X | X | | X | (X) | (X) | | X |
| Zone 1 Power Connectors | X | X | | | | | | |
| Zone 2 High Speed Signal Connectors | X | X | | X | X | | | |
| Zone 3 Connectors | (X) | X | | X | (X) | | | |
| High Speed Mezzanine Connectors | | X | X | X | (X) | (X) | | |
| Advanced Mezzanine Card (AMC) Connectors | | X | | | | | | |
| Front & Rear I/O Connectors | | X | X | X | X | | | |
| Fiber Optic Connectors & Products | | X | X | X | | | | |
| Thermal Products & Services | | X | X | X | X | X | | (X) |
| Power Distribution & Management Modules | | X | X | (X) | (X) | (X) | | |
| Backplane & Chassis Assemblies | X | X | X | X | X | X | X | X |
| Cable Connectors & Cable Assemblies | | X | X | X | X | X | | |



All specifications subject to change. Consult Tyco Electronics for latest specifications.

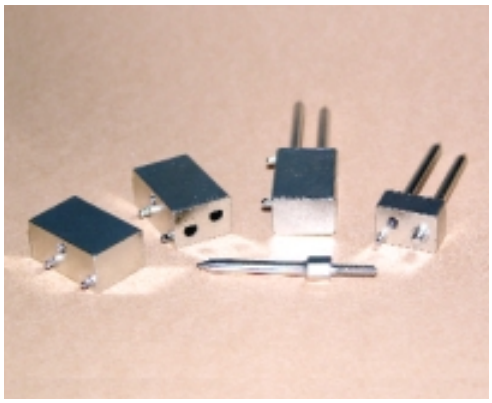
## AdvancedTCA® – Guide Modules




Tyco Electronics ATCA Guide Modules are available in various sizes and configurations and are suitable for use in a wide variety of applications including front board, mid plane, backplane, and a Rear Transition Module as specified in the AdvancedTCA specification. The guide hardware features improved locating features to ensure guidance is maintained across all component tolerances while the dual-keyed pin configuration allows for many different keying possibilities.

**FEATURES:**

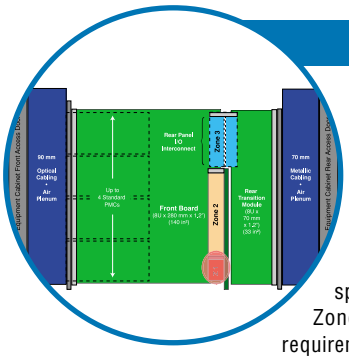
- Configurations for front board and backplane as well as mid-plane and coplanar applications in the RTM
- Vertical and right-angle pins to support right-angle and coplanar board configurations
- Guide pins are available in short or long lengths to accommodate various Tyco Electronics connectors



**www.tycoelectronics.com/products/atca**

**Catalog 1773095**

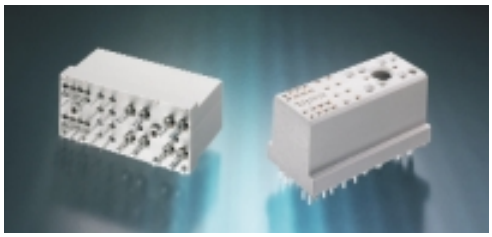
## AdvancedTCA® – Zone 1 Power Connectors




Tyco Electronics' ATCA Power Connector is designed to meet or exceed the PICMG 3.0 (AdvancedTCA) specification for Zone 1 connector requirements including four levels of sequential mating to ensure proper system functionality during live insertion or extraction of front boards. Integrated lead-in on the injection molded housing provides superior blind mate capability and is fully intermateable with competing connectors designed to meet the AdvancedTCA specification for power connectors.

**FEATURES:**

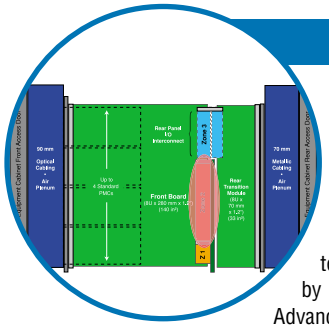
- High conductivity, precision formed contacts
- Selective plating in compliance with RoHS requirements
- Precision formed compliant terminations offers excellent retention to ensure a reliable connection



**www.tycoelectronics.com/products/atca**
**www.elconproducts.com**

**Catalog 1773096 / 1773095**
**Flyer 2-1773441-7**

## AdvancedTCA® – Zone 2 High Speed Signal Connectors – Z-PACK HM-Zd



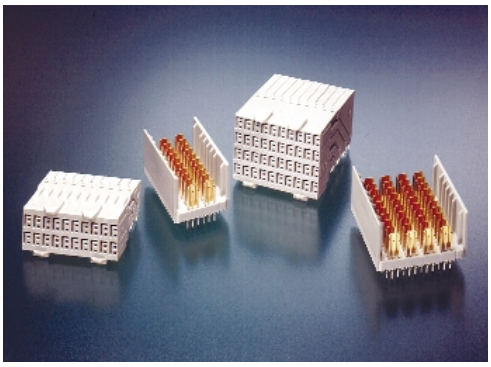
Z-PACK HM-Zd from Tyco Electronics is the high-speed, Advanced Differential Fabric Connector system specified by PICMG for use in AdvancedTCA Zone 2. The coplanar application version using the right-angled male and identical Zone 2 card connector (right-angled female), can be used in Zone 3. In addition to the four-pair connector modules specified for use in AdvancedTCA Zone 2, the product line includes two-pair and three-pair signal modules, coplanar connectors, and high-speed cable assemblies for use in Zone 3. A mezzanine style connector is also available in a four-pair version.

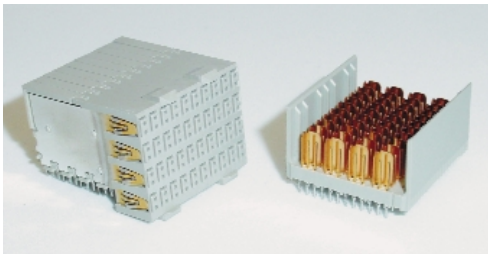
**www.tycoelectronics.com/products/atca**
**www.hmzd.tycoelectronics.com**

**Catalog 1773095**
**Flyer 1308658**

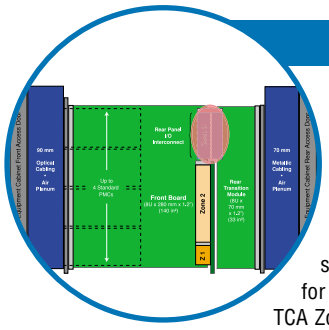
### FEATURES

- Designed specifically for high-speed differential applications (3.125 Gb/s to 10+Gb/s)
- A modular connector system with a standard module size of 25.00 [.984]
- Z-PACK HM-Zd is an extension of the Z-PACK 2 mm HM product line
- Pin header and receptacle have the exact same footprint to simplify PC board layout
- Optimized footprint supports quad routing techniques for improved electrical performance, ease of trace routing, and significant PCB manufacturing cost reductions
- Designed to meet Telcordia requirements





## AdvancedTCA® – Zone 3 Connectors – Z-PACK HM-Zd RAM



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**www.hmzd.tycoelectronics.com**

**Catalog 1773095**
**Flyer 1308658**

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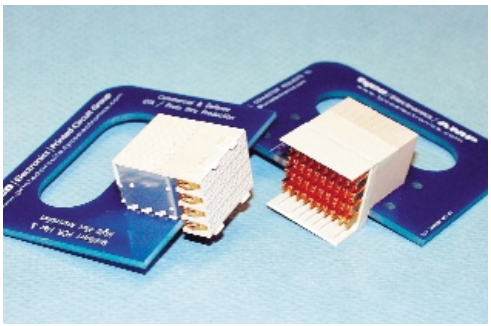
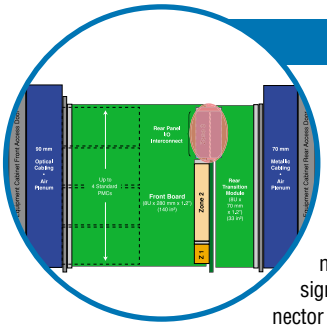


All specifications subject to change. Consult Tyco Electronics for latest specifications.

## AdvancedTCA® – Zone 3 Connectors – Z-PACK MAX



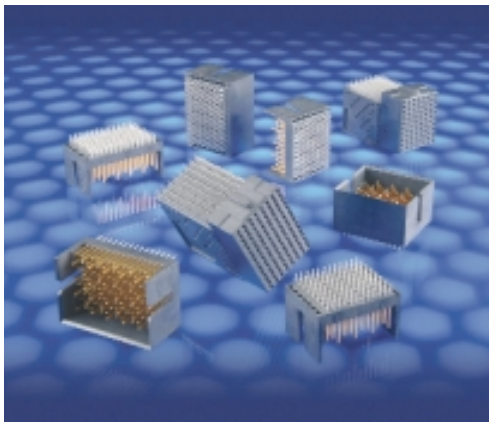
Z-PACK MAX, from Tyco Electronics, is a new high speed, 100-Ohm Impedance matched backplane connector with extreme signal density. This connector is designed without ground return shields and can be pinned out in for lower speed single ended lines too. The connector exists in a 4 and 5 pair per column version for backplane applications. Currently a right-angled male connector is under development for coplanar applications such as Zone 3 in ATCA.

**www.tycoelectronics.com/products/atca**

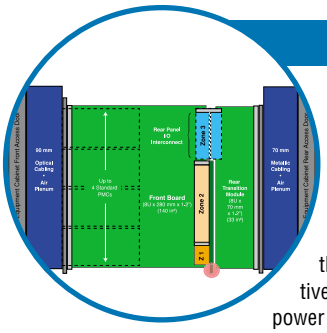
**Flyer 2-1773441-5**

**FEATURES:**

- High Speed: +10 Gbps
- High Density: 25 pairs/cm [66 pairs/inch]
- 4 and 5 pair per column
- Press-Fit termination
- Without ground blades
- Designed to meet Telcordia requirements



## AdvancedTCA® – Power Connectors – Multi-Beam XL



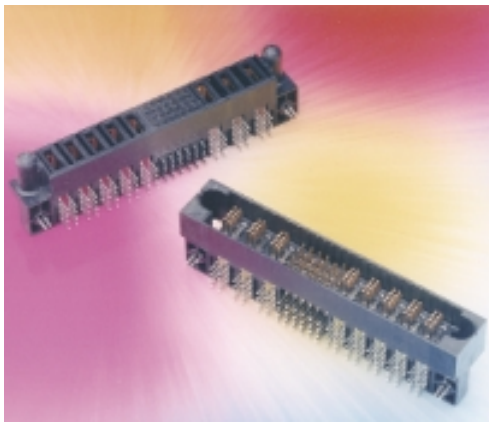
Multi-Beam XL™ is a versatile power interconnection system with many features, offering Design Engineers the most cost effective solution to their power distribution requirements. The Multi-Beam XL connector is a custom configurable modular design in single piece housing, available in right angle and straight versions for both headers and receptacles, solder tail or press fit termination.

**www.tycoelectronics.com/products/atca**
**www.mbxl.tycoelectronics.com**

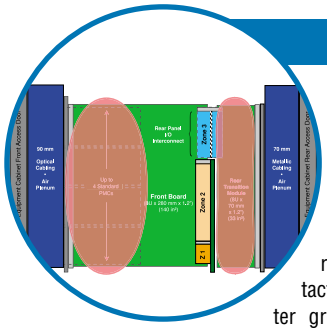
**Catalog 1773096**
**Flyer 1308662 / 1654850 / 1654497 / 2-1773441-6**

**FEATURES:**

- AC, DC and Signal in same connector meeting UL safety requirements
- 30 amp rating for power and up to 3 Amps per signal contact
- Three levels of sequencing, Pwr/Grnd, Pwr & Signal, Trigger Signal
- Unique blade design with multiple points of contact giving reduced mating forces, contact resistance and temperature rise
- Floating panel mount and cable to board versions give added flexibility in wide variety of applications



## AdvancedTCA® – High Speed Mezzanine Connectors – MICTOR



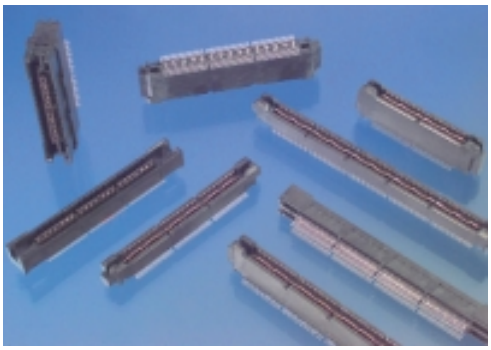
The MICTOR product family is based on the micro-strip construction concept, which utilizes two rows of signal contacts divided by a center ground plane to enhance electrical performance. Designed for vertical stacking applications requiring high-speed electrical connections to smaller boards containing ASICs, CPUs, I/O devices, or memory. Suited for use as a high-speed connection between daughter cards. Mezzanine connectors can enable flexible and cost effective system design through modularization of I/Os, ASICs and other high cost components. A wide range of vertical stack heights facilitates flexibility for adding board real estate within a system.

**www.tycoelectronics.com/products/atca**

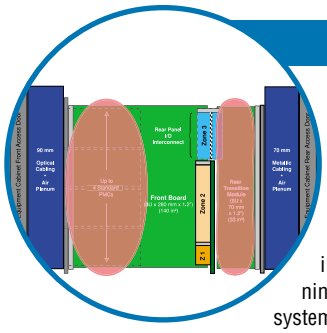
**Catalog 65194**

**FEATURES:**

- Designed specifically for high-speed applications with rise time as fast as 50 ps
- Controlled Impedance Design
- 38 to 266 positions, in increments of 38.
- 23 levels of stack height, from 5,00 to 31,90 mm.
- Surface mount design
- Redundant mating interface
- Polarized housings for correct mating
- Various packaging styles (Tube, Tape & Reel with or without vacuum cap)



## AdvancedTCA® – High Speed Mezzanine Connectors – MICTOR SB



MICTOR SB's Connector micro-strip construction results in a cost effective, high-speed, matched impedance mezzanine interconnection system with electrical performance capability to 6.5 GHz. This latest addition to the MICTOR family of products uses a cost effective Single Beam signal contact. Surface mount lead termination eliminates the need for thru-hole connections. This product can be configured for single ended, differential, high density, or mixed configurations. Designed for vertical stacking applications requiring high-speed electrical connections to smaller boards containing ASICs, CPUs, I/O devices or memory. Suited for use as a high-speed connection between daughter cards. Mezzanine connectors can enable flexible and cost effective system design through modularisation of I/Os, ASICs and other high cost components. A wide range of vertical stack heights facilitates flexibility for adding board real estate within a system.

**www.tycoelectronics.com/products/atca**

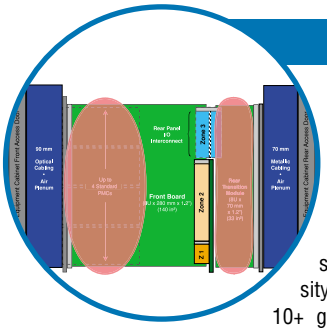
**Catalog 65194**
**Flyer 1654710**

**FEATURES:**

- Integral Ground Bus design
- Fully Surface Mountable
- Stack Heights: 5 mm to 30 mm
- 0.5 mm centerline: 60, 120, 180, 240 and 300 signals
- 0.8 mm centerline: 40, 80, 120, 160 and 200 signals
- Single Ended, Differential Pair, or mixed versions within a single connector
- 50 ohm Impedance
- Electrical performance to 6.5 GHz
- Location Pegs for placing product on PCB
- Available in Tray or Tape & Reel packaging
- High temperature plastic permits flexibility in reflow
- Caps available for use with vacuum pick & place
- Keyed Housing design
- Guides available on select versions

All specifications subject to change. Consult Tyco Electronics for latest specifications.

## AdvancedTCA® – High Speed Mezzanine Connectors – STEP-Z



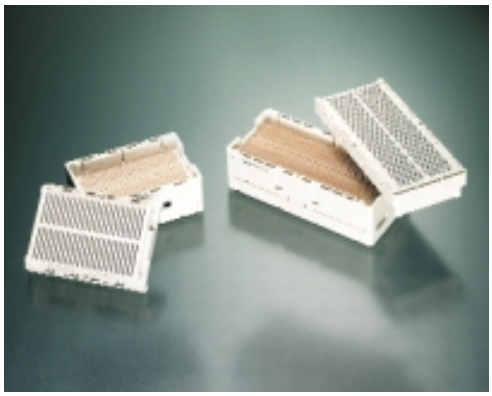
The new STEP-Z connector is a grid array mezzanine connector specifically designed for high-speed and high-density applications up to 10+ gigabits per second data rates. Pin out patterns for either differential pair or single ended applications provide excellent isolation of high-speed signals. Ground connections in close proximity to signal connections enable proper electrical coupling throughout the entire interconnect, dramatically reducing cross-talk. Ball Grid Array board attachment for both connector halves minimizes through hole effects and improves routing. The connector housing is polarized to ensure proper mating.

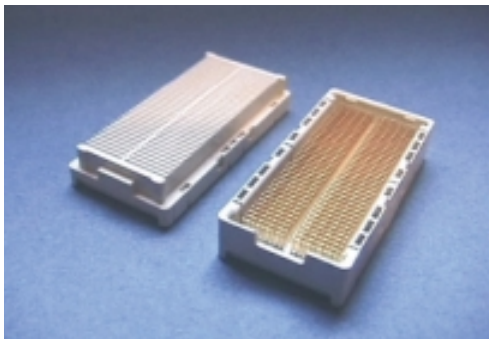
www.tycoelectronics.com/products/atca

**Catalog 65194**
**Flyer 1654776-1**

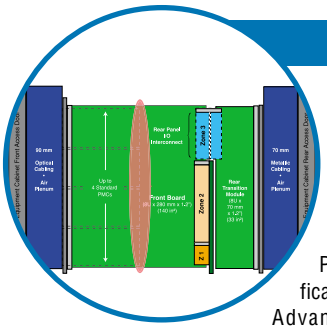
**FEATURES:**

- Electrical performance to 10+ Gbps
- 50 ohm Impedance for Single Ended configuration
- 100 ohm Impedance for Differential Pair configuration
- Various Stack heights ranging from 15 mm through 35 mm
- Connector sizes include 104, 200, or 296 signal contacts
- SMT BGA board connection on both connector halves
- Receptacle contacts completely protected
- Reliable, redundant contact design on every signal contact
- Packaging for Trays or Tape & Reel
- High temperature plastic
- Caps for use with vacuum pick & place
- Polarized Housing design
- Lead free compatible design





## AdvancedTCA® – Advanced Mezzanine Card (AMC) Connectors

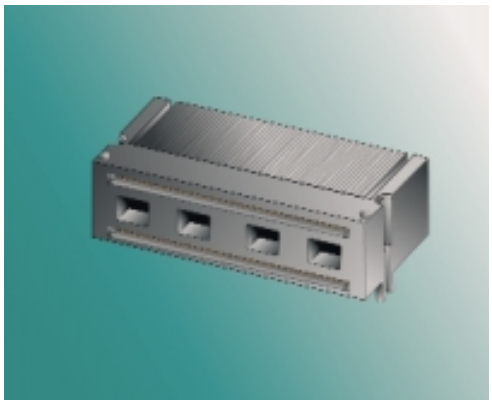


Tyco Electronics is developing an Advanced Mezzanine Card (AMC) connector designed to meet the PICMG AMC specification for use with AdvancedTCA carrier boards and other related applications. The AMC product family from Tyco Electronics will include single-part Z-Pluggable connectors in Extended (B+ and A+B+) styles as well as a unique A+ style for low-profile applications.

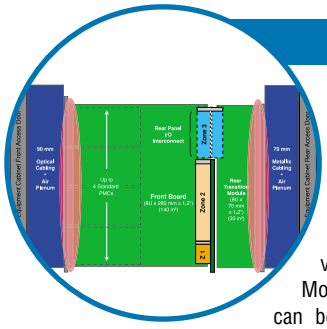
www.tycoelectronics.com/products/atca

**FEATURES:**

- A+, B+, A+B+ styles
  - Targeted for high-speed differential applications (3.125 Gb/s to 10+ Gb/s):
  - Precision formed compliant pin reduces stub effect and offers excellent retention to ensure a reliable connect
- Suitable for assembly processes using flat-rock tooling



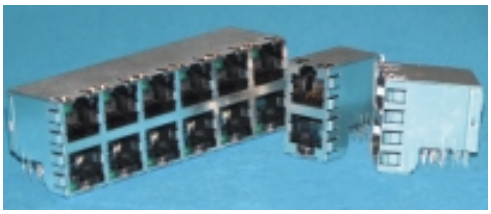
## AdvancedTCA® – Front & Rear I/O Connectors – RJ45 Modules



Tyco Electronics is developing a line of ATCA Offset Stacked Modular Jacks that will support Rear I/O via Rear Transition Modules (RTMs) and can be used in AdvancedTCA Zone 3. The low profile and narrow width design will allow more ports to be packed into less space. The contacts are insert molded for positive connection throughout the life of the equipment. The jacks are designed to be centered vertically on an ATCA panel faceplate. The complete ATCA offset stacked jack product family from Tyco Electronics will include the following configurations: 2x1, 2x4, 2x6, 2x8.

**FEATURES:**

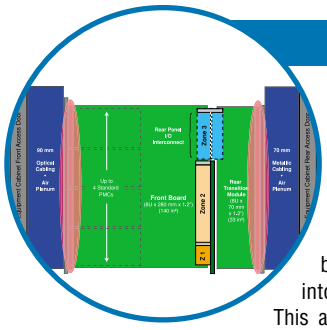
- Performance exceeds Near End Cross-talk (NEXT) requirements of -40 dB on all pair combinations at 100 MHz per EIA/TIA 568A
- All Offset Stacked Jacks have Category 5 performance
- Meets or exceeds FCC Part 68 rules and regulations with standard PC board footprints



**www.tycoelectronics.com/products/atca**

**Catalog 82066**
**Flyer 1773411**

## AdvancedTCA® – Front & Rear I/O Connectors – SFP Modules

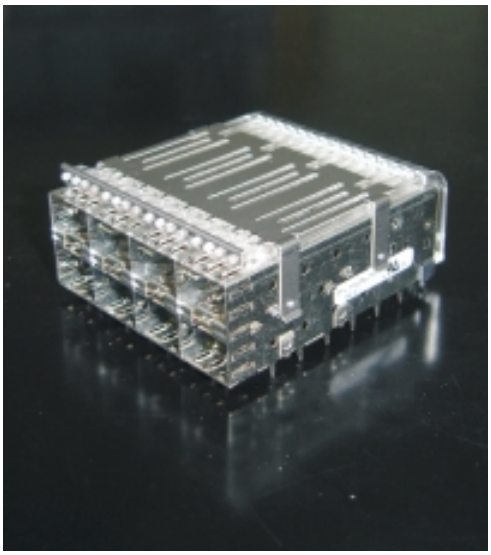


The SFP (Small Form-Factor Pluggable) supports hot swap of various types of fiber optics and copper based transceivers into host equipment. This allows the customer to have a flexible change between different protocols. The different applications are Fiber Channel, Ethernet, Infiniband. SFP board cages exist in multiple versions that fit ATCA systems.

The one port cages are available in a one piece design (press-fit or solder) and a two piece design (press-fit, solder or SMT). Ganged versions (available in 1x6; 1x4; 1x2) are available with or without light pipes. The ganged product has the option of integrated host connector. Tyco is currently developing stacked versions (2x4 as primary option) that fit ATCA requirements.

**FEATURES:**

- Products according to MSA
- Uses 20 positions PT connector
- Hot Swappable
- Three stage sequencing
- Supports data-rates up to 5 Gbps
- Chassis ground for pass through EMI protection to 12.5 Gbps
- Accepts copper and fiber optic transceivers
- Direct attach copper cable assemblies available with or without active equalization.



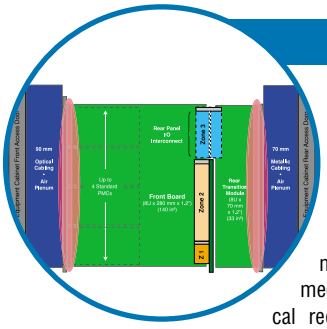
**www.tycoelectronics.com/product/atca**
**www.sfp.tycoelectronics.com**

**Catalog 1773408**
**Flyer 1654720 / 1654095 / 1773078**



All specifications subject to change. Consult Tyco Electronics for latest specifications.

## AdvancedTCA® – Front & Rear I/O Connectors – XFP Modules

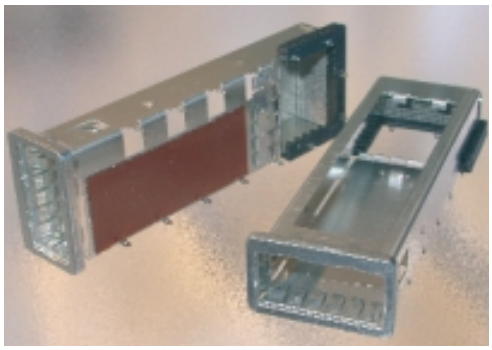


The XFP Multi-Source Agreement specifies the next generation pluggable transceiver. The MSA document specifies the mechanical and electrical requirements for the pluggable modules, cage hardware, thermal heat sinks and PCB connector. This technology converts serial electrical signals to external serial optical or electrical signals and is intended to be flexible enough to support OC192/STM-64, 10 G Fibre Channel, G.709, and 10 G Ethernet. The module design and forecasted volumes are expected to enable very low cost 10 Gb/s solutions.

The XFP module is a hot pluggable, small footprint, serial-to-serial, optical transceiver. It's designed to be data-agnostic, providing multi-rate module support for SONET OC-192, 10 Gb/s Ethernet, 10 Gb/s Fibre Channel and G.709 links. Pluggable modules support all data encodings for the above technologies and are expected to be available in single mode or multi-mode serial optical interfaces at 850 nm, 1310 nm, or 1550 nm.

**FEATURES:**

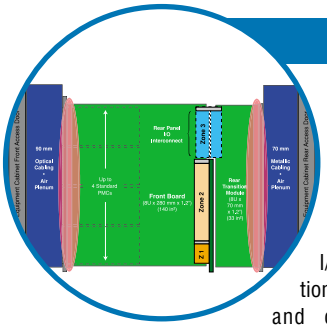
- Products according to MSA
- Uses 30 positions PT connector
- Hot Swappable
- Supports data-rates up to 10 Gbps
- EMI controlled by gaskets on the cage and bezel
- Heat sink designs are specified by the customer. Standard heat sinks available for SAN, PCI and Networking applications
- Accepts copper and fiber optic transceivers
- Direct attach copper cable assemblies available with or without active equalization.



**www.tycoelectronics.com/products/atca**
**www.xfp.tycoelectronics.com**

**Flyer 1654713 / 1654716**

## AdvancedTCA® – Front & Rear I/O Connectors – Mini RJ21



Tyco Electronics has developed a high density I/O interconnect, the MRJ 21, which will support Rear I/O via Rear Transition Modules (RTMs) and can be used in AdvancedTCA Zone 3. The connector is fully shielded and provides density savings for current 10/100 or GbE RJ45/RJ21 applications. The low profile and narrow width design will allow more ports to be packed into less space. Tyco offers a full end user solution with cleaner cabling solutions over RJ45s and patch panels for plug and play environment including data centers and zone cabled or open office environments. Future configurations include the 1x2 and 1x4, both of which have integrated magnetics and options for POE enabling pins. This further reduces board space and offers the user a fully integrated, high density solution.

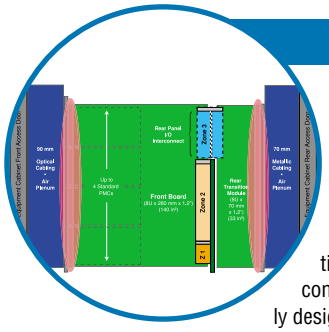
**FEATURES:**

- 1.5 to 4 times the port density of 2 x 6 stacked Mod Jack (RJ45). 3 times the port density of RJ21
- Contact layout and footprint for differential pairs creates reduced cross-talk and built in compensation
- Connector is designed to meet or exceed Cat 5e cross-talk
- Fully shielded system to control EMI
- Robust die cast cable covers provide 45 degrees left or right cable exit for ease of routing
- 1 mm pair spacing, 1.5 mm pair to pair spacing

**www.tycoelectronics.com/products/atca**

**Catalog 82066**
**Flyer 1654566 / 1674775**

## AdvancedTCA® – Front & Rear I/O Connectors – Slim I/O

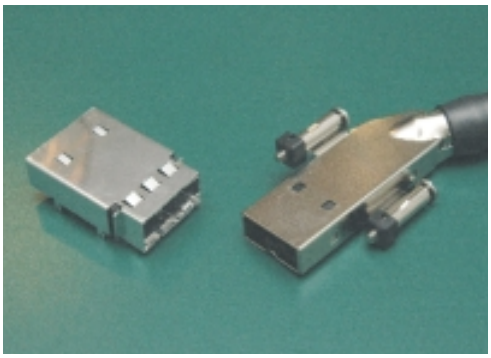


Tyco Electronics is pleased to introduce a newly designed "SLIM I/O" cable connector for panel applications. The "Slim I/O" connector is specifically designed to enhance the I/O flexibility product line for Base Transmission Stations (BTS) and other communication applications. The "Slim I/O" connector enables the designer to incorporate Hard Metric packaging practice, in Telecommunication and Computer systems as well as instrumentation applications with slot pitch as narrow as 15 mm, giving excellent electrical performance and mechanical characteristics at an economical price. The "Slim I/O" connector complies with IEC 917 and IEC 61076-4-101. It supports applications at data rates of up to 2.5 Gbps (differential signaling) with edge rates of 100 psec. Combined with slow signals and power.

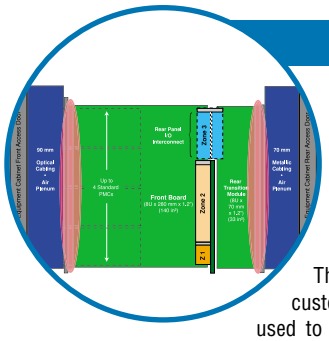
**www.tycoelectronics.com/products/atca**

### FEATURES:

- Slim I/O is a hybrid cable connector designed for I/O applications such as:
  - Power & Signals in one Connector
  - High-Speed Long-Reach Cable Connector
  - Small Form Factor, Slim and Simple
  - Flexible Signal Assignment
  - Optional Passive Equalized Signals
- Designed specifically to fit into 15 mm slot pitch and/or wider
- Design in accordance with IEC 917-2-2 and IEC 61076-4-101 specs
- Perform well in the Gigabit speeds
- Right Angle Header:
  - Robust with Good EMI provision for panel cutout
  - Through Hole/Lead Free soldering
  - Safe Design
- Plug:
  - Retention – 100 N min.
  - It has polarization features
  - Accepts cable outer diameters in the range of 6 – 9 mm
  - Terminate STP, UTP, Coax and Power cable types



## AdvancedTCA® – Fiber Optic Connectors & Products



Fiber Optic Splitter Modules, for monitoring purposes, can be supplied by Tyco Electronics.

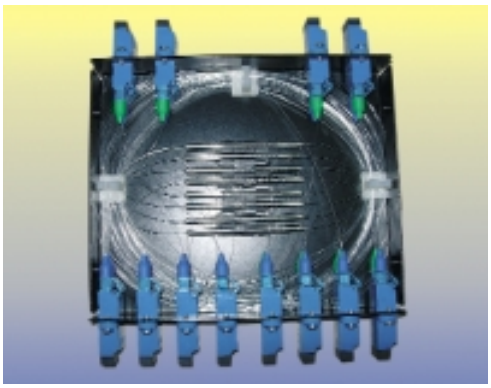
These cassettes are customized and can be used to provide a monitoring function on the fiber optic lines of ATCA Racks.

**www.tycoelectronics.com/products/atca**
**www.tycoelectronics.com/fiberoptics**

**Catalog 1307895**
**Flyer 1773338 / 1773080**

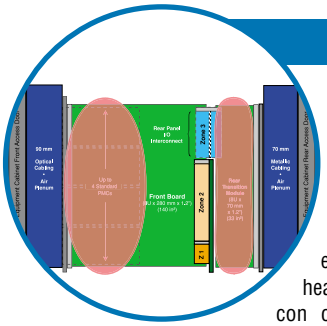
### FEATURES:

- Telcordia 1209 and 1221 compliant passive components
- Customized products
- Use of high quality industry standard components in a robust design
- Plug and play
- Module tested to IEC standards



All specifications subject to change. Consult Tyco Electronics for latest specifications.

## AdvancedTCA® – Thermal Products & Services



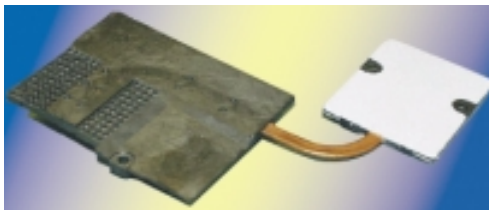
Thermal Interface Products are mandatory for reducing the waste heat and cooling the system in the most efficient way. Waste heat reduces the silicon chip reliability and performance. Besides the products Tyco Electronics is offering such as Heat Sinks, Heat Pipes and Chip Coolers, in all shapes and sizes, Tyco Electronics offers state of the art Thermal Management Services. Thermal Management is the design practice of moving waste heat to locations that do not affect the equipment or overall device performance. Each Thermal Product can be fully customized to fulfill the specific requested system cooling requirements.

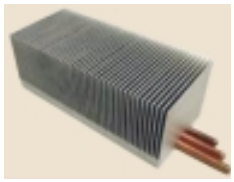
**www.tycoelectronics.com/products/atca**
**www.thermal.tycoelectronics.com**

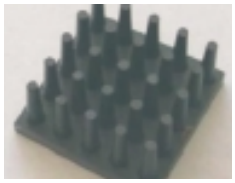
**Catalog 1309431**
**Flyer 1308225**

### FEATURES:

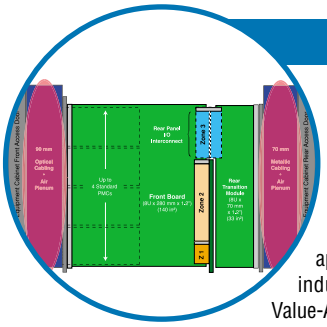
- Tyco thermal solutions provide optimum cooling for active components like BGA, MCM modules, optical modules and power devices
- Compatible to most ATCA connector form factors, low profile solutions
- Off the shelf as well as customized products
- Heat pipe technology in combination with passive heat sinks
- Advanced thermal conductive polymer for weight and cost reduction
- Full CFD (Computational Fluid Dynamics) simulation and analysis, optimum Thermal design numerical and analytical approaches







## AdvancedTCA® – Cable Connectors & Cable Assemblies



Tyco Electronics produces a wide range of standard and custom Cable Assemblies for use in an endless list of applications in every industry we serve. Value-Added Cable Assemblies can be custom designed to meet customer requirements. To better serve our customers, we offer global manufacturing capabilities for demand fulfilment based on our customers needs.

Tyco Electronics manufacturers a number of components, which makes it a truly vertically integrated cable assembly manufacturer.

With the design and production of bulk cable, connectors, labels, shrink tubes, application machines,…. Tyco Electronics has its supply chain firmly under control and can supply the most diverse types of Cable Assemblies.

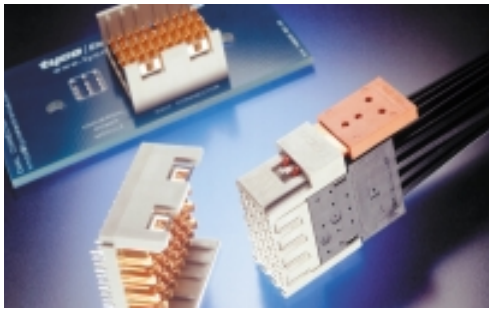
Tyco Electronics CCCE Cable Systems Group (CSG) also strives to support its customer with a tailored logistics solution anywhere in the world. Like this lead-times are reduced to a minimum. With the regionally set-up engineering centers, customer specific Cable Assemblies can be designed in close co-operation with the customer, reducing the time-to-market and production start-up.

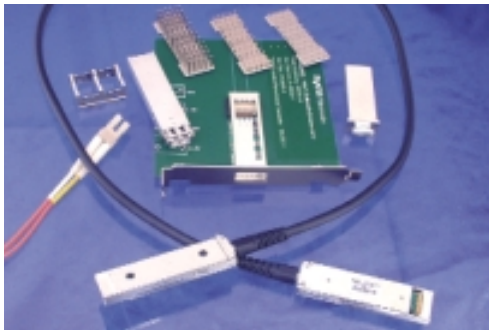
### FEATURES:

Being the world largest Cable Assembly manufacturer*, Tyco has one of the broadest portfolios on Cable Assemblies for the Telecom and Data Communications Market:

- RF Coaxial Cable Assemblies (e.g. SMA, SMC, TNC, QMA, N, 7/16, …)
- High Speed Cable Assemblies (e.g. HSSDC, SFP, HM-Zd, XFP, ...)
- High Density Cable Assemblies (e.g. MRJ21, …)
- Power Cable Assemblies (e.g. Multi Beam XL, …)
- Fiber Optic Cable Assemblies (e.g. LC, SC, MT-RJ, MPO, ...)
- Standardized Cable Assembly types (e.g. IEE1394, USB2.x, S-ATA, …)
- Customer / Application Specific Cable Assemblies

* Fleck Research 'Analysis of Worldwide Cable Assemblies' R-1350/05



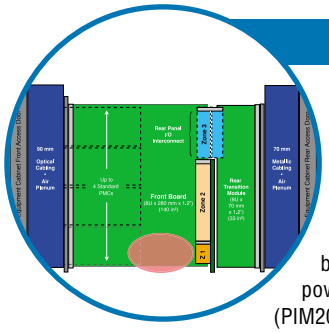


The High Speed and RF Coaxial Cable Assemblies are designed in co-operation with the connector teams to fine-tune the design for optimum performance. The local Circuit & Design centers contribute to this by supporting the engineering teams. The C&D centers will simulate the designs and feed back the information so designs can be changed for better High Speed characteristics before going into sampling or production. Once samples are available, the C&D team will conduct validation tests to ensure the performance requirements are met. With this set-up, the design of customer specific High Speed solutions is in good hands with Tyco Electronics.

Cable Assemblies for interconnecting the multiple ATCA shelves in a rack, or rack to rack, also can be supplied by Tyco Electronics. Front or Rear I/O Cable Assemblies, interconnecting to an ATCA Blade or RTM, make the ATCA product offering more than complete.

**www.tycoelectronics.com/products/atca**

**Flyer 1773079 / 1654713 / 1654850 / 2-1773441-6 / 1654566 / 1654926**



## AdvancedTCA® – Power Distribution & Management Modules

Tyco Electronics Power Systems introduces industry's first power input management solution for ATCA boards. The ATCA power input module (PIM200) is designed in collaboration with industry leading ATCA board manufacturers and provides innovative features and compact design. PIM200 modules incorporate all the features required by ATCA specifications (PICMG 3.0) and enable designers to save valuable board real estate and reduce overall board cost and time to market compared to discrete solutions.

### A Complete Power Architecture

PIM200 series along with Tyco's isolated DC/DC and bus converters and point of load modules, provide a complete and low-cost power architectural solution while complying with AdvancedTCA board power requirements.

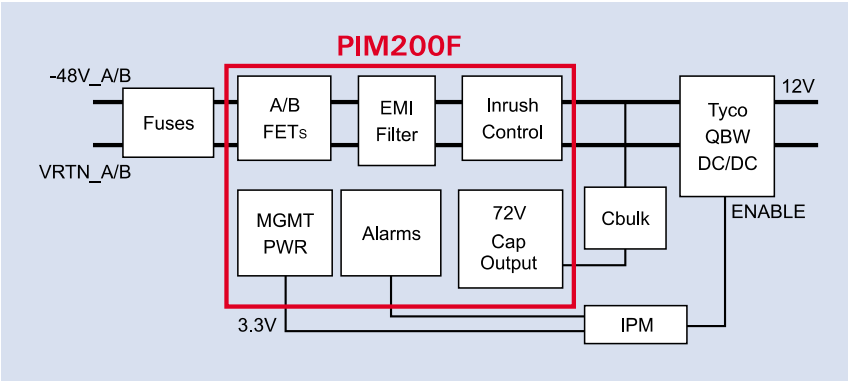
**www.tycoelectronics.com/products/atca**
**www.power.tycoelectronics.com**

**Flyer PIM05-001**

### FEATURES:

- 200 W of power (per PICMG 3.0)
- Inrush control protection
- Integrated EMI filter designed to meet CISPR Class B Limits
- Directive 2002/95/EC RoHS compliant
- 8 W of Isolated auxiliary power supply for IPMI (3.3 V or 5 V)
- O-Ring FETs for -48 V A&B feeds
- A/B feed loss alarm
- Hot-swap control
- 72 V charging voltage for holdup/bulk capacitors
- Through-hole and surface mount (SMT) versions
- Input under-voltage and over-voltage protections
- Over current and thermal protections
- UL/CSA/CE/VDE approved (pending)

| | PIM200 | Discrete |
|---|---|---|
| PICMG 3.0 compliant | Yes | Board level |
| Fully tested & burned-in | Yes | Board level |
| Fully qualified | Yes | Board level |
| Parts count | 1 | > 100 |
| Design-in time | Lower | Higher |
| Assembly cost | Lower | Higher |
| Yield/Repair cost | Lower | Higher |
| Time to market | Lower | Higher |
| Second sourced | Yes | No |
| Standard off-shelf part | Yes | No |




| Device Code | Input Voltage | Output Power | $V_{mg/mt}$ Output | Connector Type | Comcode | Options* |
|---|---|---|---|---|---|---|
| PIM200F | -48 V (-38 to -75 V DC) | 200 W | -3.3 V DC | Thru Hole | 108994471 | -S (SMT) |
| PIM200A | -48 V (-38 to -75 V DC) | 200 W | -5.0 V DC | Thru Hole | 108996288 | -S (SMT) |

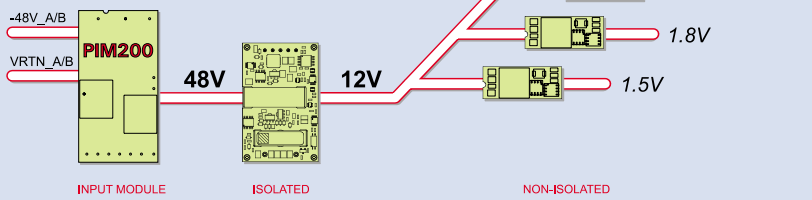


All specifications subject to change. Consult Tyco Electronics for latest specifications.

## AdvancedTCA® – Power Distribution & Management Modules (continued)

### A Complete Power Architecture

PIM200 series along with Tyco's isolated DC/DC and bus converters and point of load modules, provide a complete and low-cost power architectural solutions while complying with AdvancedTCA board power requirements.

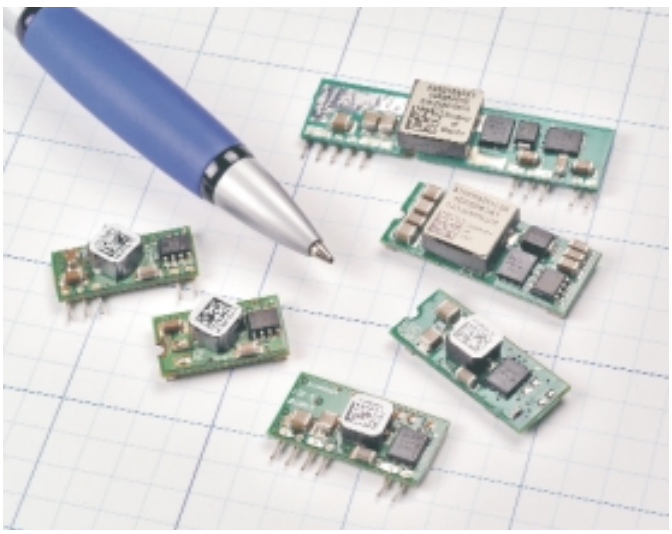


### Isolated Bus Converters

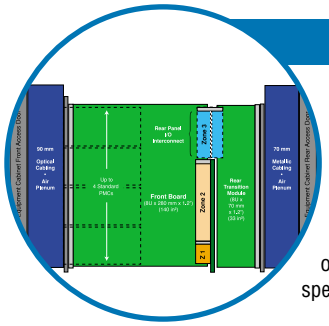
| Full Featured DC-DC Converter Series | Output Power (W) | Output Current (A) | Input Voltage (V) | Output Voltage (V) | Efficiency (%) | Current Share | Form Factor | Connection Type | Base Plate |
|---|---|---|---|---|---|---|---|---|---|
| EQW006A0B | 72 W | 6 A | 48 V (36 – 75) | 12 V (11.6 – 12.4) | 92 % | No | Eight-Brick | TH/SMT | No |
| QRW010A0B | 120 W | 10 A | 48 V (36 – 75) | 12 V (11.7 – 12.3) | 93 % | No | Qtr-Brick | TH | Yes |
| QBW018A0B | 200 W | 18 A | 48 V (36 – 75) | 12 V (11.4 – 12.6) | 94 % | Yes | Qtr-Brick | TH | Yes |
| JRB017A0B | 200 W | 17 A | 48 V (36 – 75) | 12 V (11.7 – 12.3) | 92 % | Yes | Half-Brick | TH | Yes |

### Non-Isolated DC-DC Converters

| Austin Lynx Series | Output Current (A) | Input Voltage Range (V) | Output Voltage Range (V) | Efficiency (%) | Output Programmable | Remote On/Off | Remote Sense | EZ-Sequence | Connector Type |
|---|---|---|---|---|---|---|---|---|---|
| Austin MiniLynx | 3 A | 8.3 – 14 V | 0.75 – 5.0 V | 91 % | Yes | Yes | No | No | SIP/SMT |
| Austin MicroLynx | 5 A | 10 – 14 V | 0.75 – 5.0 V | 89 % | Yes | Yes | No | No | SIP/SMT |
| Austin Lynx | 10 A | 10 – 14 V | 0.75 – 5.0 V | 93 % | Yes | Yes | Yes | No | SIP/SMT |
| Austin SuperLynx | 16 A | 10 – 14 V | 0.75 – 5.0 V | 92 % | Yes | Yes | Yes | No | SIP/SMT |
| | | | | | | | | | |
| **Austin Lynx II Series** | **Output Current (A)** | **Input Voltage Range (V)** | **Output Voltage Range (V)** | **Efficiency (%)** | **Output Programmable** | **Remote On/Off** | **Remote Sense** | **EZ-Sequence** | **Connector Type** |
| Austin MicroLynx II | 6 A | 8.3 – 14 V | 0.75 – 5.0 V | 89 % | Yes | Yes | No | Yes | SIP/SMT |
| Austin Lynx II | 10 A | 8.3 – 14 V | 0.75 – 5.0 V | 93 % | Yes | Yes | Yes | Yes | SIP/SMT |
| Austin SuperLynx II | 16 A | 8.3 – 14 V | 0.75 – 5.0 V | 92 % | Yes | Yes | Yes | Yes | SIP/SMT |
| Austin MegaLynx II | 25 A | 6.0 – 14 V | 0.75 – 5.0 V | 92.5 % | Yes | Yes | Yes | Yes | SIP/SMT |



## AdvancedTCA® – Backplane & Chassis Assemblies



Tyco Electronics has introduced a line of backplanes and chassis assemblies to meet the requirements of the PICMG 3.0 specification for ATCA.

### ATCA Rack-Mount Chassis

Our next-generation chassis is 13U high and features a 14-slot "Dual Star" backplane using Tyco Electronics HM-Zd connectors and power connectors. Other features include 200 watts/slot cooling, push-pull fan trays with speed control, -48 V Power Entry Modules, internal or external shelf management, and front/rear cabling provisions. "Full Mesh" backplanes complete the Tyco ATCA-Shelf product offering.

### Customized System Design and Manufacturing Services

Tyco Electronics is a recognized leader in the design and assembly of state-of-the-art backplane systems. Our CompactPCI designs are currently incorporated in two of the industry-leading wireless base station systems. This capability is available to meet your specialized ATCA requirements. Our engineering group can design and model a system to meet your specifications. Our unique Quad-Routing technique offers the capability to design 5+ Gbps backplanes with reduced layer count and reduced cost.

With the largest printed circuit manufacturing capability in North America, we can supply advanced line cards and back-panels for ATCA-based systems. Our assembly facilities in North America and Asia can supply systems, backplanes, and accessories for standard and customized ATCA designs.

**www.tycoelectronics.com/products/atca**
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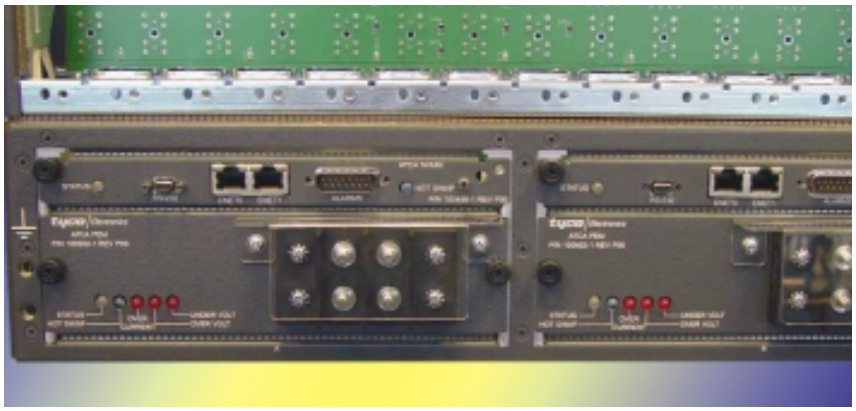
### FEATURES:

- Electronic packaging solution specialist
- 13U 14-slot rack-mount (19" & 23") ready systems
- Standard and customized ATCA systems:
  - Dual Star, Full Mesh, and Dual-Dual Star backplanes
  - Redundant, hot-pluggable "push-pull" fan trays
  - Redundant, hot-pluggable -48 V Power Entry Modules
  - Redundant, hot-pluggable Shelf Management Modules
- Alternate configurations available for onboard shelf management
- Cable management schemes for front/rear
- Design services available world-wide:
  - Unique Quad-Routing technique
  - System modeling and simulation services
  - Complete thermal simulation and testing services
  - System qualification to industry standards
  - Printed circuits for line cards and backplanes
  - Complete chassis assembly services
  - ISO qualified assembly facilities in North America and Asia
  - Total system support from Tyco Electronics





All specifications subject to change. Consult Tyco Electronics for latest specifications.

## AdvancedTCA Zone 1

### Front Board Connector
**Right Angle Header**
**Part Number 1766500-1***

### Backplane Connector
**Vertical Receptacle**
**Part Number 1766501-1***

### Front Board Connector Right Angle, Compliant Press Fit Part Number 1766500-1*

#### Material and Finish

**Insulators** — Thermoplastic, glass reinforced, black, UL94V-0

**Signal Pins** — Copper alloy

**Power Contacts** — High conductivity copper alloy, plated 0.00076 [.000030] min. gold in mating area per Tyco Electronics Specification 112-162-5, over 0.00130 [.000050] min. nickel per Tyco Electronics Specification 112-25-2

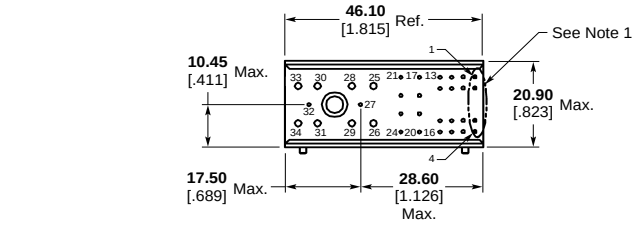
**Solder Tails** — 0.0030 - 0.0043 [.000120 - .000170] tin plated per lead free Tyco Electronics Specification 112-65-1, matt finish

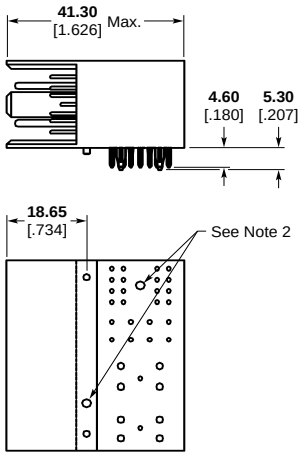
**Notes:**
1. Mounting Holes (Ø 2.00 [.079] x 5.00 [.197] DP) for use with self tapping screw (customer supplied).
2. Positions 1–4 not populated and reserved for future use.

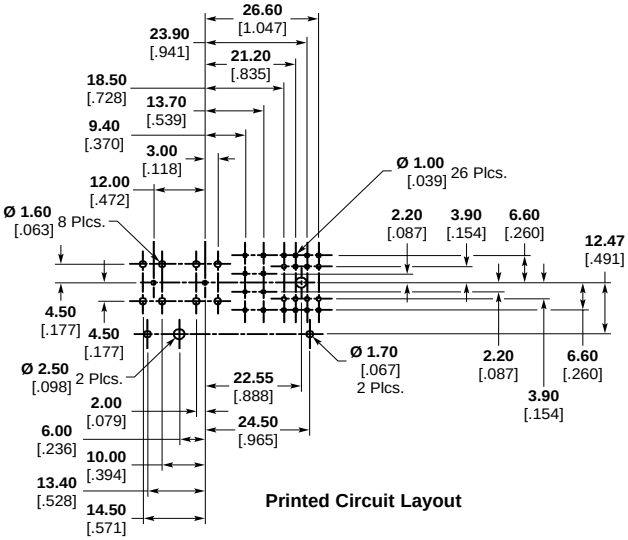
*RoHS Compliant

Front Board Connector

Backplane Connector




Printed Circuit Layout

### Backplane Connector Straight, Compliant Press Fit, Part Number 1766501-1*

#### Material and Finish

**Insulators** — Thermoplastic, glass reinforced, black, UL94V-0

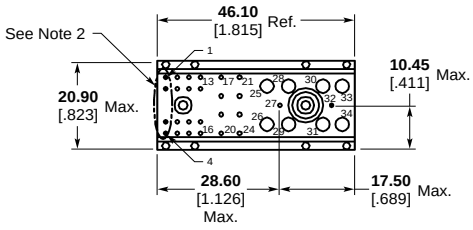
**Signal Pins** — Copper alloy

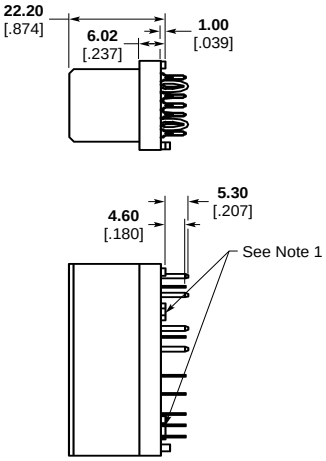
**Power Contacts** — High conductivity copper alloy, plated 0.0076 [.000030] min. gold in mating area per Tyco Electronics Specification 112-162-5, over 0.00130 [.000050] min. nickel per Tyco Electronics Specification 112-25-2

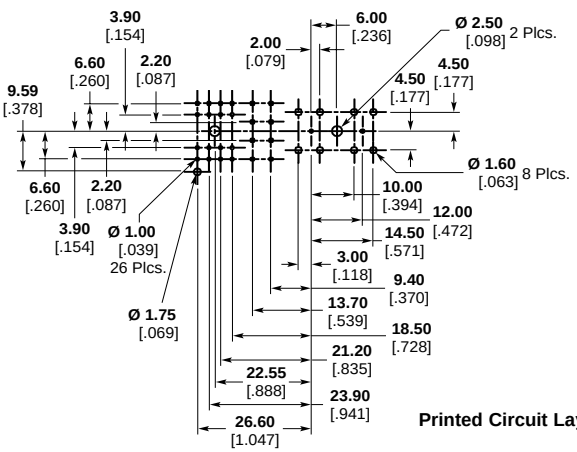
**Solder tails** — 0.0030 - 0.0043 [.000120 - .000170] tin plated per lead free Tyco Electronics Specification 112-65-1, matt finish

**Notes:**
1. Mounting Holes (Ø2.00 [.079] x 5.00 [.197] DP) for use with self tapping screw (customer supplied).
2. Positions 1–4 not populated and reserved for future use.

*RoHS Compliant



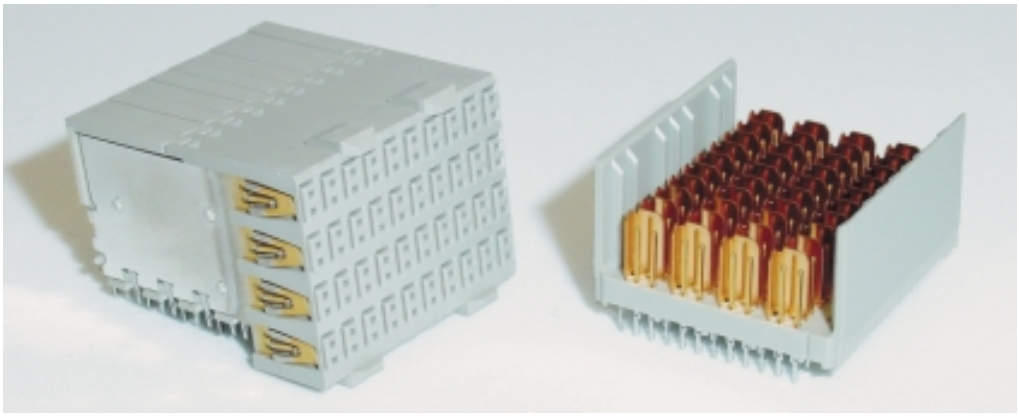




Printed Circuit Layout

## AdvancedTCA Zone 2

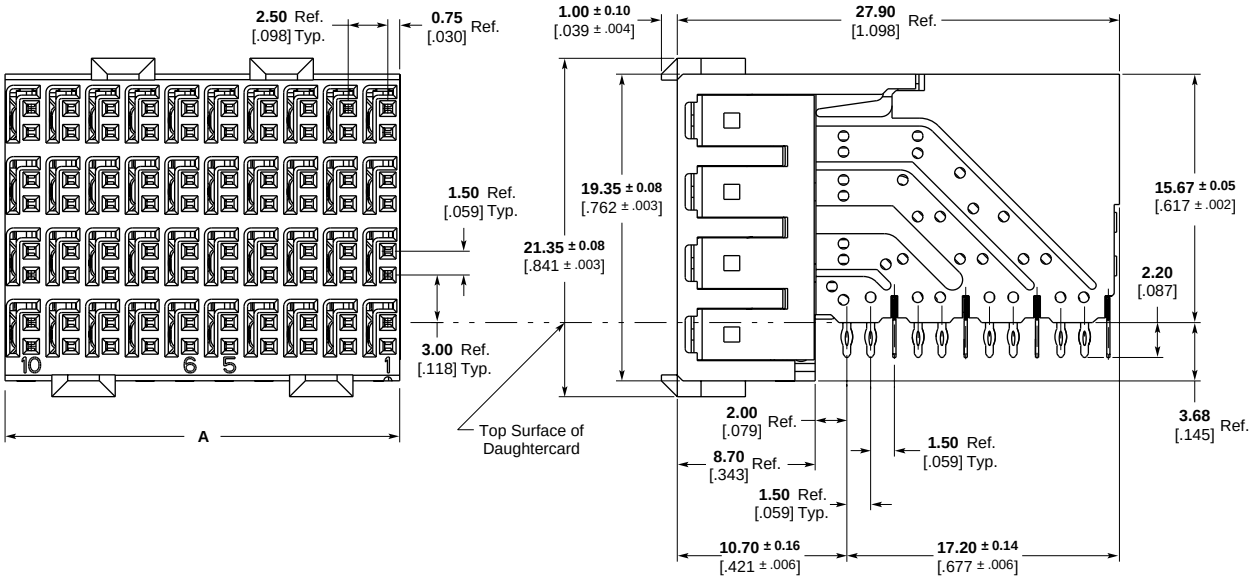
### Front Board Connector
**4 Pair Right Angle Receptacle**
**Part Number 6469001-1***

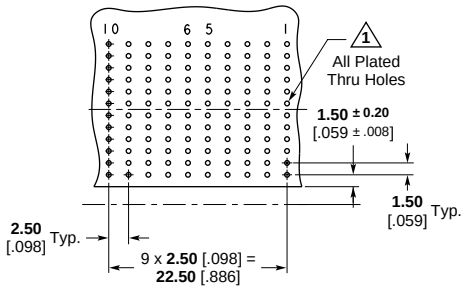
### Backplane Connector
**4 Pair Vertical Header**
**Part Number 6469002-1***



**Front Board Connector** **Backplane Connector**

### 4 Pair Right Angle Receptacle Assemblies




**Recommended PC Board Layout**
**Daughter Board, Component Side Shown**

1 PCB Hole Dim.
Drilled Hole = **0.7000 ± 0.025** [.02756 ± .0010]
Finished Hole = **0.60 ± 0.05** [.024 ± .002]
Cu Thickness = **0.375 ± 0.0125** [.0148 ± .00049]
SnPb Thickness = **0.007 ± 0.003** [.0003 ± .0001]

**Note:** For finishes other than tin-lead, reference Application Specification 114-13059.

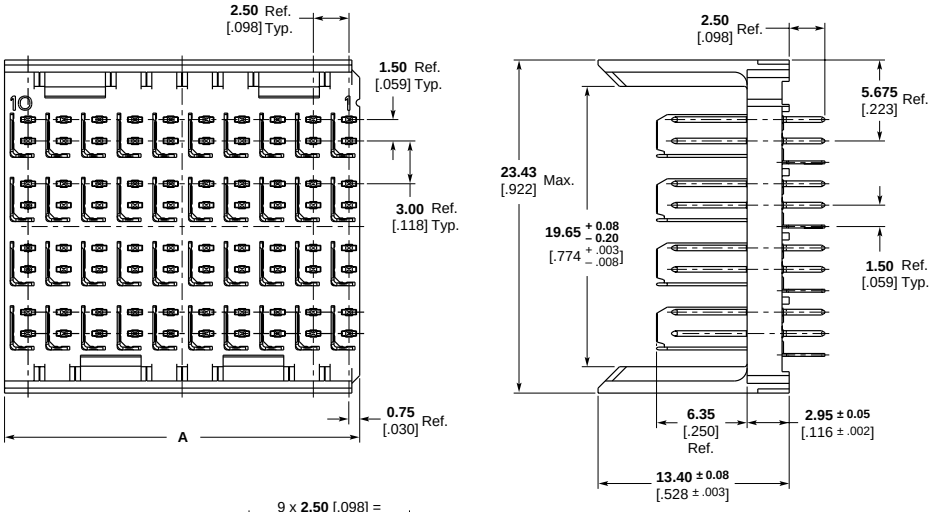
| Part Number | Column Count | Module Length (Dim. A) | Signals | Grounds | Application Tooling | | |
|---|---|---|---|---|---|---|---|
| | | | | | Insertion | Repair | |
| | | | | | Receptacle | Housing Removal | Chiclet Removal |
| 6469001-1[1]* | 10 | **25.00** .984 | 80 | 40 | 91347-1 | 1583224-1 | 1583248-1 |
| 6469286-1* | 12 | **30.00** 1.181 | 96 | 48 | 91347-3 | 1583224-2 | 1583248-1 |
| 6469294-1* | 15 | **37.50** 1.476 | 120 | 60 | 91347-2 | 1583224-3 | 1583248-1 |
| 6469061-1* | 20 | **50.00** 1.969 | 160 | 80 | 91347-4 | 1583224-4 | 1583248-1 |

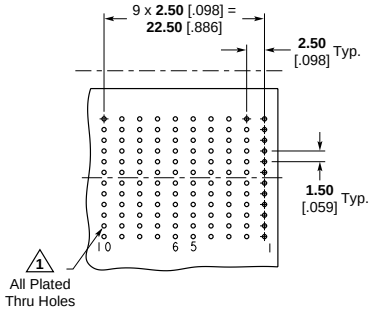
[1] **AdvancedTCA Zone 2 Daughtercard Connector.**
* RoHS Compliant



All specifications subject to change. Consult Tyco Electronics for latest specifications.

## 4 Pair Vertical Pin Header Assemblies




**Recommended PC Board Layout**
**Backplane Component Side Shown**

1 PCB Hole Dim.
Drilled Hole = **0.7000 ± 0.025** [.02756 ± .0010]
Finished Hole = **0.60 ± 0.05** [.024 ± .002]
Cu Thickness = **0.375 ± 0.0125** [.0148 ± .00049]
SnPb Thickness = **0.007 ± 0.003** [.0003 ± .0001]

**Note:** For finishes other than tin-lead, reference Application Specification 114-13059.

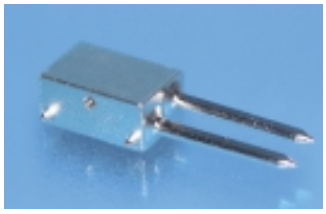
| Part Number | Tail Length | Mating Pin Length | Column Count | Module Length (Dim. A) | Signals | Grounds | Application Tooling | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Insertion | Repair | | |
| | | | | | | | Pin Header | Pin Removal | Housing Removal | Pin Insertion |
| 6469002-1[1]* | **2.50** .098 | **5.30** .209 | 10 | **25.00** .984 | 80 | 40 | 91349-1 | 1583237-1 | 1583220-1 | 1583255-1 |
| 6469046-1[2]* | **2.50** .098 | **5.30** .209 | 10 | **25.00** .984 | 80 | 40 | 91349-1 | 1583237-1 | 1583220-1 | 1583255-1 |
| 6469074-1* | **1.80** .071 | **5.30** .209 | 10 | **25.00** .984 | 80 | 40 | 91349-1 | 1583237-1 | 1583220-1 | 1583255-1 |
| 6469287-1* | **2.50** .098 | **5.30** .209 | 12 | **30.00** 1.181 | 96 | 48 | 91349-3 | 1583237-1 | 1583220-1 | 1583255-1 |
| 6469296-1* | **2.50** .098 | **5.30** .209 | 15 | **37.50** 1.476 | 120 | 60 | 91349-2 | 1583237-1 | 1583220-1 | 1583255-1 |
| 6469062-1* | **2.50** .098 | **5.30** .209 | 20 | **50.00** 1.969 | 160 | 80 | 91349-4 | 1583237-1 | 1583220-1 | 1583255-1 |
| 6469099-1* | **1.80** .071 | **5.30** .209 | 20 | **50.00** 1.969 | 160 | 80 | 91349-4 | 1583237-1 | 1583220-1 | 1583255-1 |

[1] **AdvancedTCA Zone 2 Backplane Connector.**
[2] Shallow Wall for Daughtercards thicker than 3.50 [.138].
* RoHS Compliant

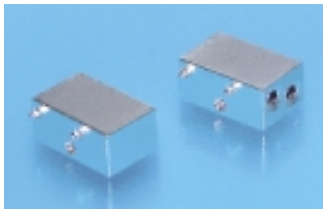
## AdvancedTCA Guide/ Keying Modules

The AdvancedTCA Guide Modules can be used in a wide variety of applications. For *motherboard-to-daughtercard applications* the vertical pin and right angle socket are used. This popular configuration is further supported by our wide offering of available keying positions. Each of the two keyed guide pins and guide sockets per module can be produced in a variety of different key positions. For *co-planar applications*, the right angle guide pins are used along with the right angle guide sockets. Both vertical and right angle guide pins are available in short or long sizes, to accommodate being used with different Tyco Electronics connectors.

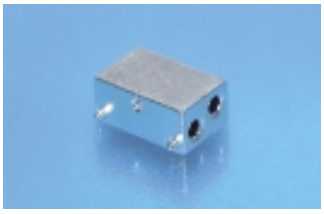
**rA1**



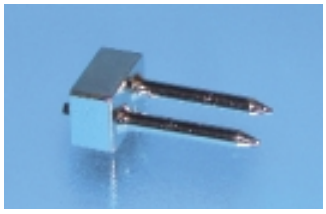
**A2 (RTM)**



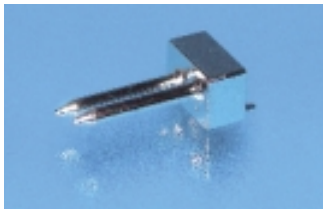
**K1/K2**



**rK1**



**A1**



**A2**

| ATCA Name | ATCA Location | Description | Part Number |
|---|---|---|---|
| rA1 | Backplane | Rear Alignment Post<br>**3.00 – 4.00** [.118 – .157] PCB Thickness | 1469269-2* |
| rA1 | Backplane | Rear Alignment Post<br>**4.10 – 6.00** [.161 – .236] PCB Thickness | 1469269-4* |
| rA1 | Backplane | Rear Alignment Post<br>**6.10 – 8.00** [.240 – .315] PCB Thickness | 1469269-6* |
| A2 (RTM) | Rear Transition Module | Right Angle Male, Keyed | 1-1469372-1* |
| K1/K2 | Front Board | Right Angle Female, Keyed | 1-1469373-1* |
| K1/K2 | Front Board | Right Angle Female, Unkeyed Dummy | 9-1469373-9* |
| rK1 | Rear Transition | Right Angle Female | 1469374-1* |
| A1 | Backplane | Vertical Male, Keyed, Short | 1-1469387-1* |
| A2 | Mid-Plane | Vertical Male, Keyed, Long | 1-1469388-1* |

* RoHS Compliant

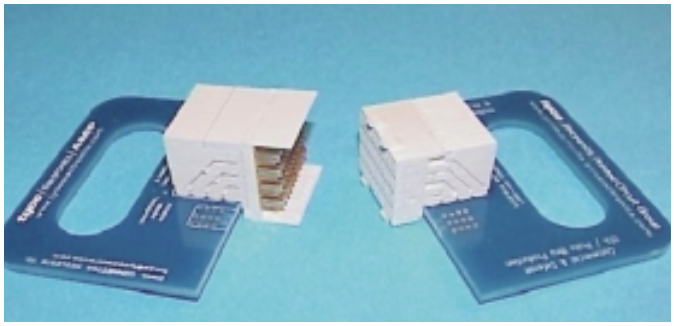


All specifications subject to change. Consult Tyco Electronics for latest specifications.

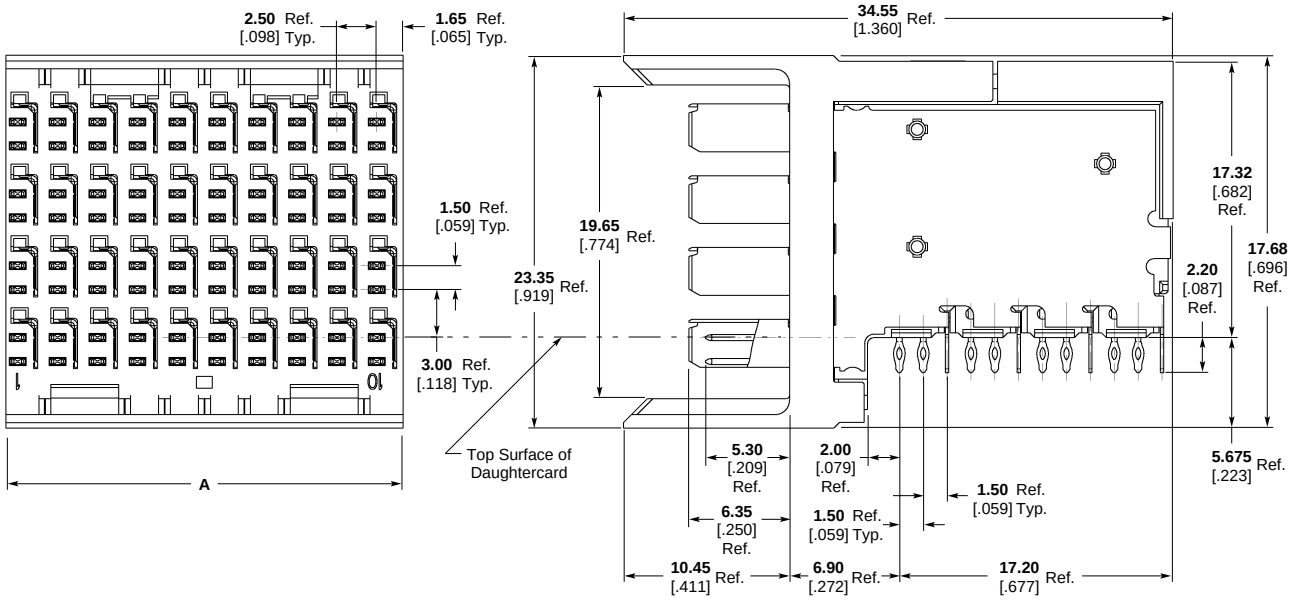
## AdvancedTCA Zone 3

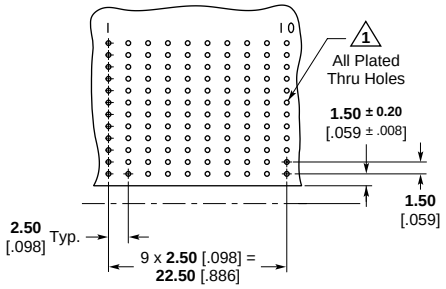
### RTM Board Connector
**4 Pair Right Angle Header**
**Part Number 6469048-1***

### Front Board Connector
**4 Pair Right Angle Receptacle**
**Part Number 6469001-1***
(see page 16)



### 4 Pair
### Right Angle Pin Header
### Assemblies




**Recommended PC Board Layout**
**Component Side Shown**

1 PCB Hole Dim.
Drilled Hole = **0.7000 ± 0.025** [.02756 ± .0010]
Finished Hole = **0.60 ± 0.05** [.024 ± .002]
Cu Thickness = **0.0375 ± 0.0125** [.00148 ± .00049]
SnPb Thickness = **0.007 ± 0.003** [.0003 ± .0001]

**Note:** For finishes other than tin-lead, reference Application Specification 114-13059.

| Part Number | Tail Length | Mating Pin Length | Column Count | Module Length (Dim. A) | Signals | Grounds | Application Tooling | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Insertion | Repair | |
| | | | | | | | Pin Header | Housing Removal | Chiclet Removal |
| 6469048-1* | **2.20** .087 | **5.30** .209 | 10 | **25.00** .984 | 80 | 40 | 91378-1 | 1804174-1 | 1804177-1 |
| 6469375-1* | **2.20** .087 | **5.30** .209 | 12 | **30.00** 1.181 | 96 | 48 | 91378-3 | 1804174-1 | 1804177-1 |

* RoHS Compliant

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Fax: +1-248-273-3322

**Customer Service:**
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**New Zealand** – Auckland
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**Philippines** – Makati City
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Fax: +632-867-8661

**People's Republic of China**
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Fax: +852-2735-0243

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Fax: +86-21-6485-6222

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**Vietnam** – Ho Chi Minh City
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