

An Overview of Mictor connector Technology and breakout adapter ZX104, ZX105, ZX110, ZX111, ZX112

Mictor Connectors was initially introduced by AMP with wide industry acceptance in high speed board to board interconnect solutions. Through corporate transactions, Tyco Electronics, TE, is the owner and sole manufacturer of Mictor connectors. Zebax offers high quality breakout adaptors tailored for testing, bringup, software development testing and emulation applications. This document outlines general features of Mictor connector technology and outlines benefits of ZX104 ZX105 ZX110 ZX111 ZX112 breakout adapters in today's GHz applications.

This document identifies:

1. Mictor connector Technology
2. Industry acceptance of Mictor connectors
3. Application of ZX104, ZX105 ZX110 ZX111 ZX112 Breakout Adapters

Revision History

| Version | Date | Description |
|---------|--------------|-------------------|
| v01 | Jan 14, 2011 | Initial release – |
| | | |

1 Mictor Connector Technology

The Mictor connector product line is based on microstrip concept of two rows of signal contacts divided by a **center power ground** plane. The **center power ground** is a solid copper plate with multiple pins extending to Printed Circuit Board, PCB. Figure 1 is cross section of the Mictor connector assemblies where both Plug (Header or Male) and Receptacle (Socket, Female) connectors. In Figure 1, the center power ground plates that hold pins extending to PCBoard. The center power ground pins plays vital role in Mictor connector microstrip concept where each active signal is exposed and guarded to system ground. Figure 2 exhibits typical application of Mictor connector where the Receptacle is used on the Host PCB. Figure 3 explores the connection of the ground bus as it runs as a contagious ground bus for each bank. Each bank's ground bus may be used for different system ground per design requirements: AGND DGND, GND, CPGND. Mictor connectors are **0.64" (0.025mm)** centerline contact spacing (Pitch) offered in several connector heights and pin counts meeting multiple design requirements, figure 4. Any Mictor connector height does mate with counter part with any height.

The Mictor connectors are designed for DC to GHz bandwidth with characteristic impedance of contacts at 50 Ω and isolation resistance of 10,000 M Ω . Good design can achieve DC to 8GHz bandwidth or higher when properly designed both at circuit and meeting industry standard guidelines in PCB layout design. Although typical application of today design is limited to 0.8Volts to 3.3Volts, however Mictor connectors are rated at 30Vac with current rating of 1.0Amps (11.5A with ground rated). Operating temperature of Mictor connectors is rated at -55°C to +150°C.

The most common Mictor connector is 38 pins (1 Bank) that is configured in 19 pins per 2 rows totaling 38 pins. Mictors are offered in 38 (19pins x 2 rows - 1 Bank), 76 (19pins x 2 rows 2 Banks) 114 (3 Banks) 152 190 228 and 256 pins Unlike Samtec Q-Strip® HI-SPEED connectors, Mictor is not offered in differential pair, see figure 5.

The center power ground plate of Mictor connector constitutes 5 pins per bank enforcing solid connector ground connection to system ground., figure 6 and 7 outlines the 3D outline of the center power ground pins for 38 pin and 76 pin Mictor receptacles respectively.

Figure 1 – Mictor connector interconnect cross-section
Plug – Receptacle

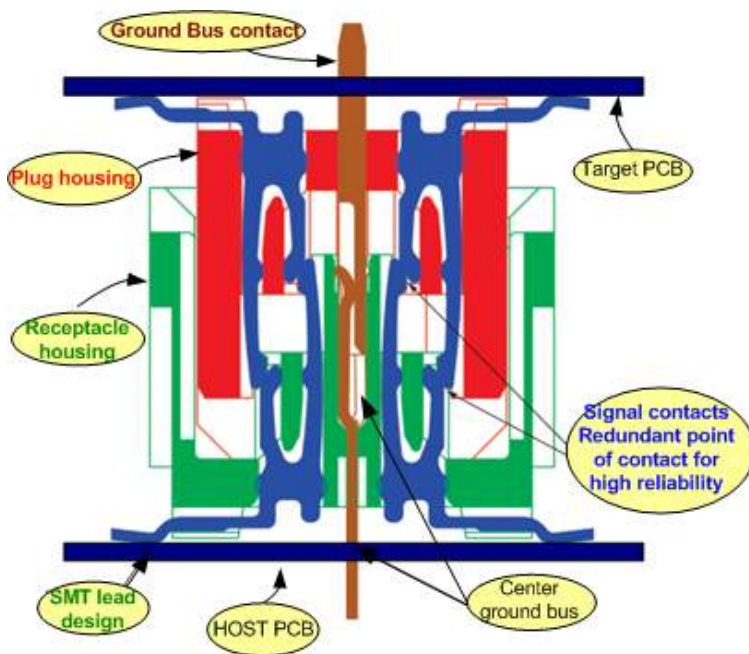


Figure 2 – typical application of Mictor connector

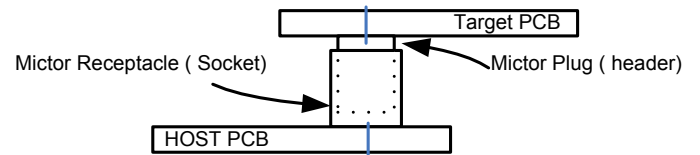


Figure 3 – Outlining Mictor’s central ground bus as it is solid ground bus contact that runs throughout each bank
Red marked region is the contiguous ground bus for each bank

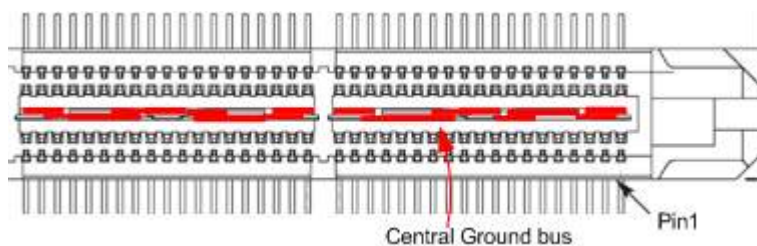


Figure 4- Mictor connector offering in Plug and Receptacle height - 0.26" (6.6mm) is commonly used

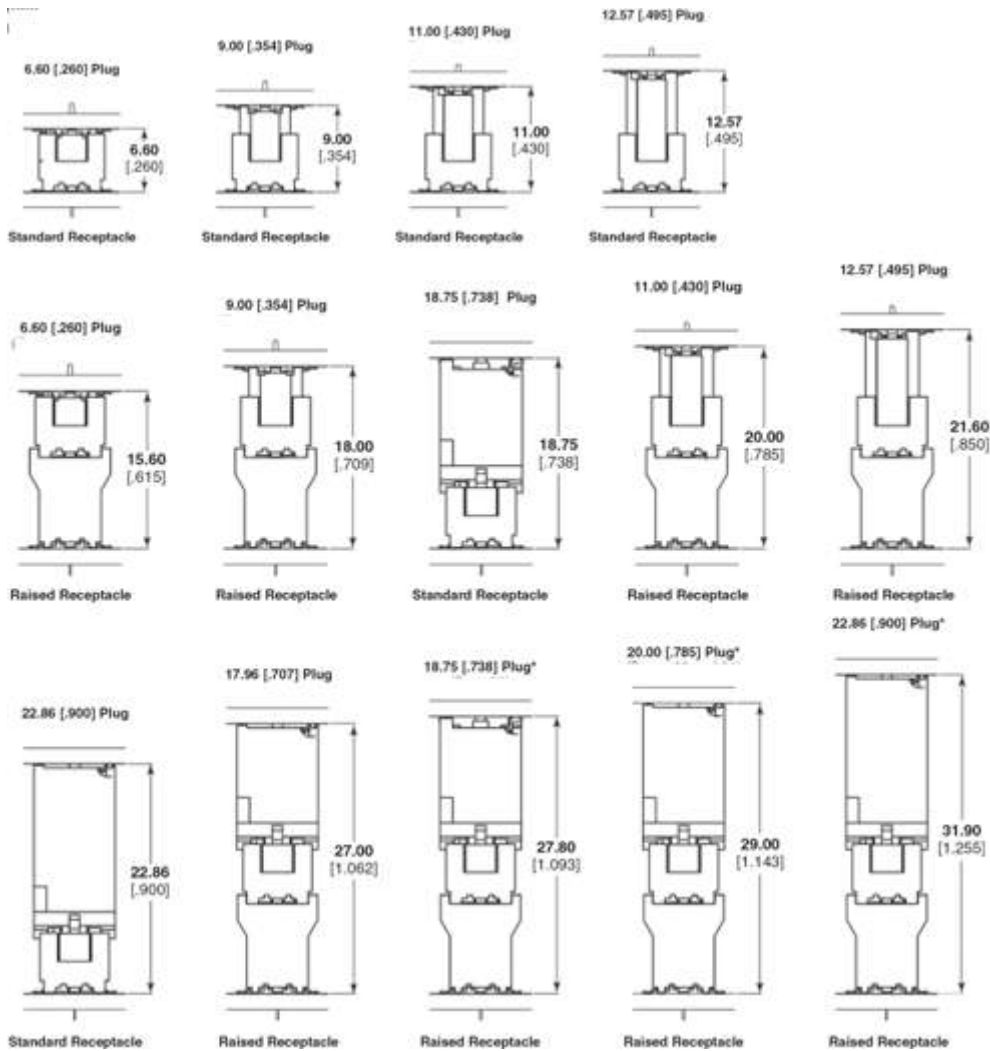


Figure 5 – Mictor Connector Plug mechanical outline- bank segment

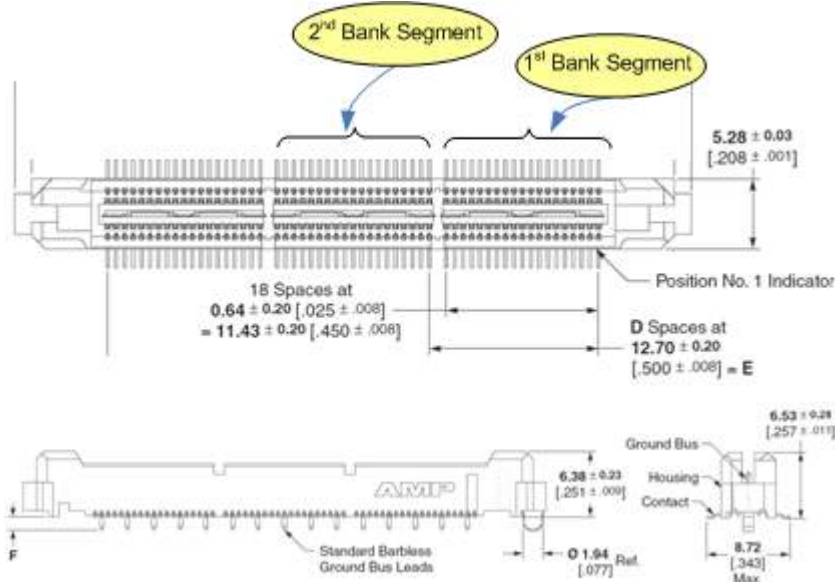
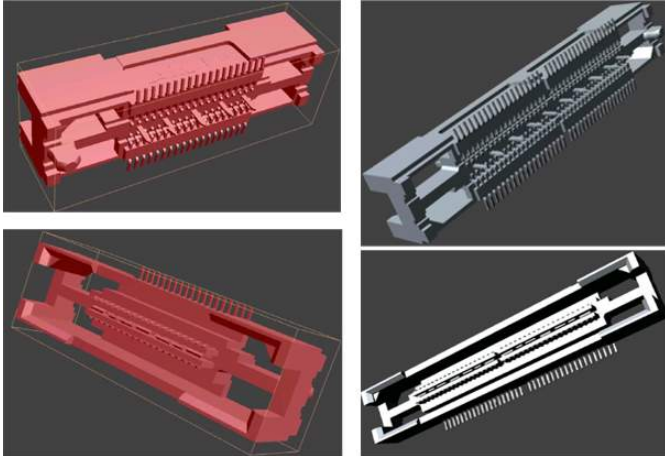


Figure 6 – 38 and 76 pins Mictor Receptacle 3D view of center power ground (top) and pins connecting ground to PCB



2 Industry acceptance of Mictor connectors

Adaptation of Mictor connectors in electronic industry is wide spread. Typical application is not limited to analog or digital, it is widely used for characterization of memory interface, bringup and validation of design. In addition Mictors are used as observation bus interface, testing points, and general Board to Board interconnect solution.

Agilent and Tektronix logic analyzers have employed Mictor or Samtec connector at probe assemblies enabling ease of interface for signal capture and analysis. 38 pin Mictor connector is used in Agilent E5339A, E5334A, E5331A to name the few. Zebax Mictor breakout adapters are designed enabling debugging of today's high density mixed-signal designs. Zebax Mictor breakout adapter enable ease of interface with logic analyzer and scope by providing accessible headers with dedicated ground **test point** for external ground shielding to an external ground for improved signal integrity.

Zebax Mictor breakout adapters provide full interface enabling Host to Target solutions. Host Boards are defined as the main board and the Target is referred to daughter or secondary board that is connected to the Host board via Mictor Board-to-Board connector assemblies. **Zebax ZX104 ZX105 ZX110 ZX111 ZX112 Mictor breakout adapters** are designed in 4 layers PCB with no via and 50 Ω impedance traces meeting both analog as well as digital worlds requirements with both internal layers as GND plane with precision GND stitching design enabling full Mictor connector signal bandwidth performance.

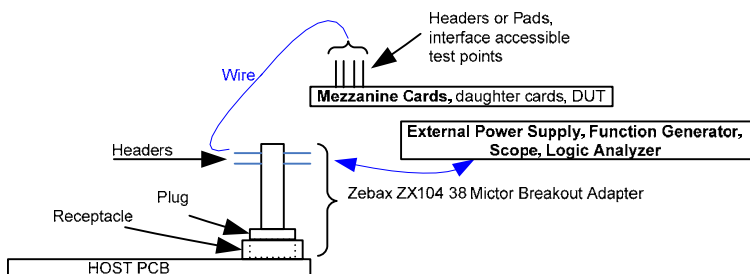
ZX105 is designed for use with logic analyzer probes.

3 Application of ZX104, ZX105 ZX110 ZX111 ZX112 Breakout Adapters

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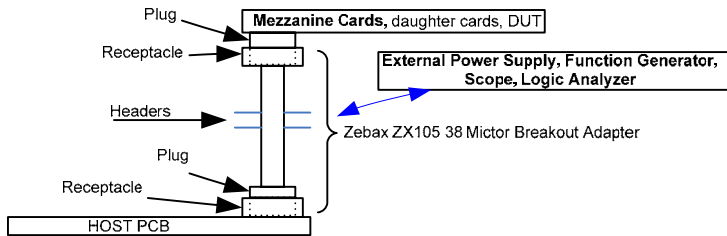
ZX104 38 pin Mictor breakout adapter is offered with Plug connector that interfaces with HOST (housing Receptacle). It provides debugging and interface solution for bringup, validation and testing of any prototype or evaluation board. ZX104 provides accessible headers for interface to scope or logic Analyzer, Agilent or Tektronix, figure 7.

Figure 7 – Zebax ZX104 38 Mictor Breakout adapter using Mictor Plug - typical application



ZX105 38 pin Mictor breakout adapter is offered with **both Plug and Receptacle** connectors facilitates interface of any prototype, evaluation board, or daughter cards to HOST by providing accessible headers for debugging via scope or logic Analyzer, Agilent or Tektronix, figure 8.

Figure 8 – Zebax ZX105 38 Mictor Breakout adapter using Mictor Plug and Receptacle -typical application



ZX110 38 pin Mictor breakout adapter is offered with **both Plug and Receptacle** connectors. It is designed to meet Agilent logic analyzer probe pin out assignment. E5339A, E5334A, E5351AB. ZX110 can certainly be used for any debugging, and testing due to its accessible headers, figures 9,10.

Figure 9 – Zebax ZX110 38 Mictor Breakout adapter typical application

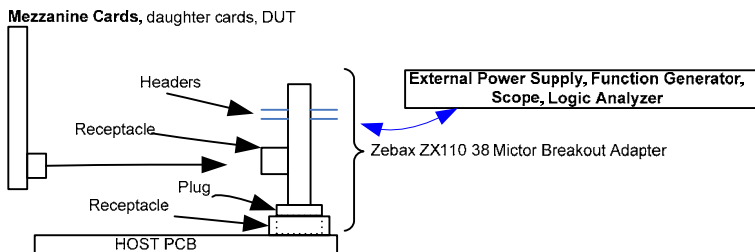
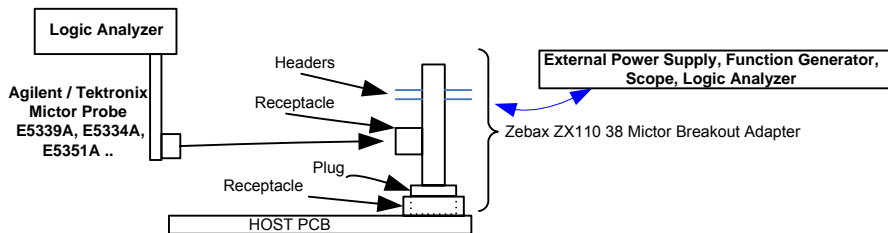
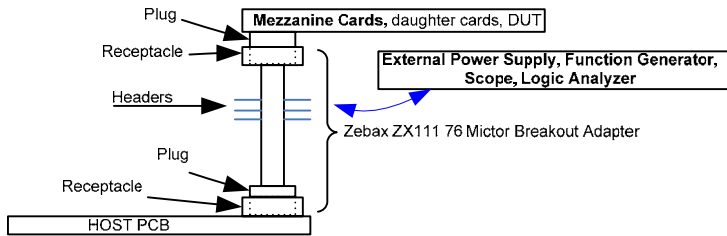


Figure 10 – Zebax ZX110 38 Mictor Breakout adapter typical application



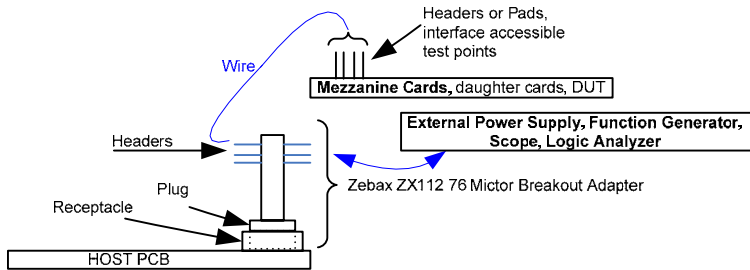
ZX111 76 pin Mictor breakout adapter is offered with **both Plug and Receptacle** connectors. It is designed to meet debugging, characterization, interface solutions for Mictor Board-to-Board interconnect designs, figure 11.

Figure 11 – Zebax ZX111 76 Mictor Breakout adapter using Mictor Plug and Receptacle - typical application



ZX112 76 pin Mictor breakout adapter is offered with **Plug** connector. It is designed to meet debugging, characterization, interface solutions for Mictor Board-to-Board interconnect designs, figure 12

Figure 12 – Zebax ZX112 76 Mictor Breakout adapter typical application



All Zebax Mictor breakout adapters include test point for external ground shielding. TP1 , TP2 ground test points may be connected to external ground for improved signal integrity along with shielding requirements. Traditionally the Tp1 or Tp2 ground test points are used for proper Scope or logic analyzer ground interface.

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