VIPER® Hi-Speed, High Density Modular Interconnects

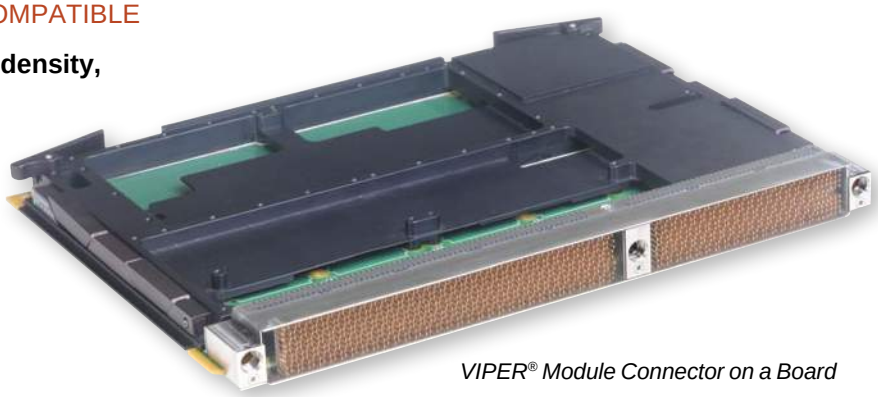
Amphenol
Backplane Systems

VITA 46, VITA 48 & VITA 60 FOOTPRINT COMPATIBLE

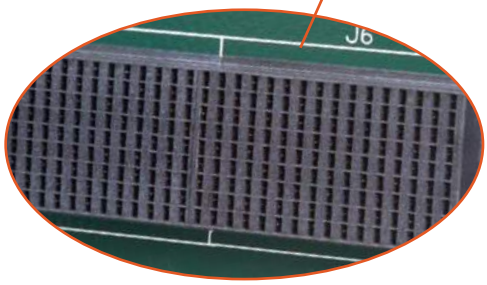
The VIPER® Connector is a shielded, high-density, hi-speed modular interconnect with press-fit termination.

Amphenol Backplane Systems* developed the VIPER interconnect platform to meet or exceed future avionic high-level requirements such as:

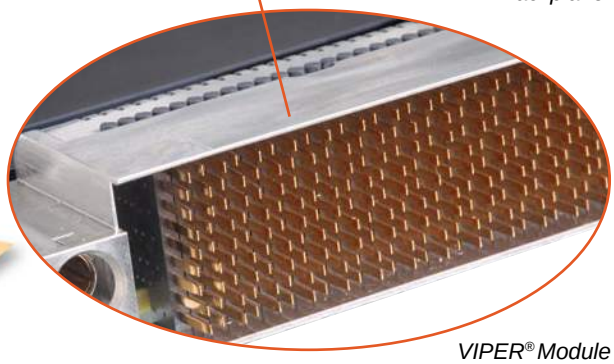
- High-level vibration and mechanical shock protection
- Condensing moisture resistance
- Ruggedization in packaging that can scale to higher bandwidths without costly and time-consuming chassis redesigns. The VIPER connector platform offers the ability to scale from 80 Mbps to over 10 Gb/s while retaining the same Vita 46 platform slot pitch at 20.3mm to 25.4mm.



VIPER® Module Connector on a Board



VIPER® Backplane Closeup

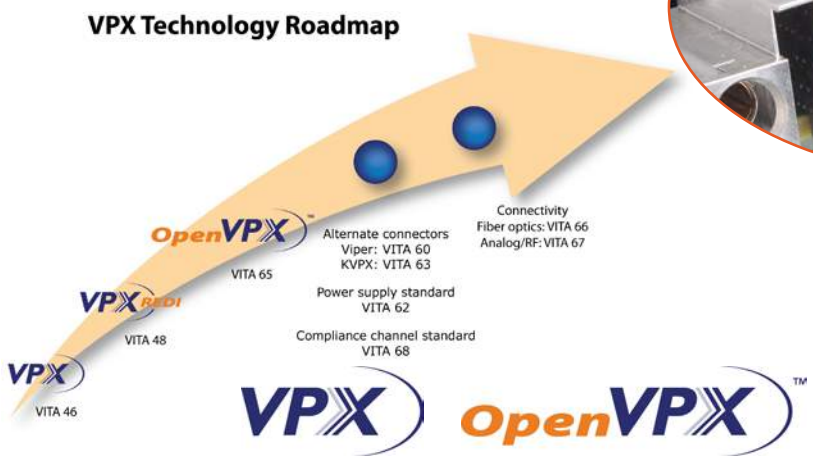


VIPER® Module Closeup

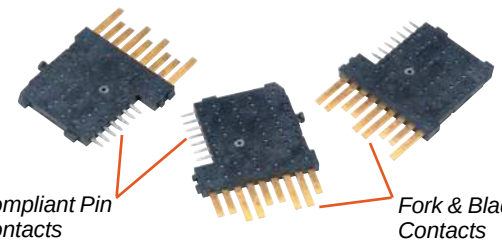
Key Features of VIPER®

- Fully footprint-compatible with VITA 60, VITA 46 and VITA 48 standards
- Hi-Speed: the VIPER is designed for 10 + Gb/s data rate performance
- 100 ohm impedance for differential pair configuration
- The daughtercard assembly is optimized for differential pair architecture on a 1.8mm x 1.35mm grid.
- The daughtercard is waferized, and provides single-ended and power wafer options integrated onto a stainless steel stiffener with stainless steel frame** and keying elements
- The backplane has signal contacts that incorporate a highly reliable 4-point-of-contact beam design, and ground contacts which are robust compliant pin & contact fork design
- ±0.52mm nom. translation in fully mated condition
- ESD protection supports 2-level maintenance designs
- Flexible modular design is ideal for standard 3U and 6U applications, as well as unique custom configurations incorporating RF and fiber optic MT solutions

Amphenol's VIPER® Interconnect is Designed in accordance with the VPX Technology Roadmap



Overmolded Wafers that Populate the Module



Compliant Pin Contacts

Fork & Blade Contacts

Note: VPX Tecnology Roadmap, VPX and Open VPX Logos are copywrite of VITA

* Consult Amphenol Backplane Systems for more information on VIPER® Interconnects:
Amphenol Backplane Systems, 18 Celina Avenue, Nashua, NH 03063
Phone: 603-883-5100. Website: www.amphenol-abs.com

** Light-weight alternative available; consult Amphenol-Backplane Systems.

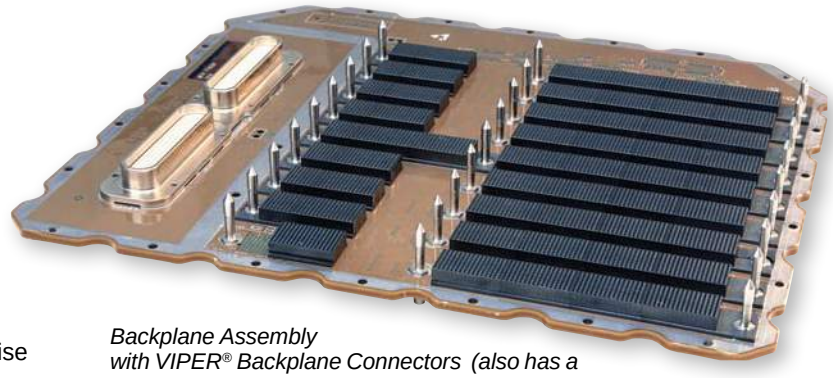
VIPER® Hi-Speed, High Density Modular Interconnects (VITA 60)

Amphenol
Backplane Systems

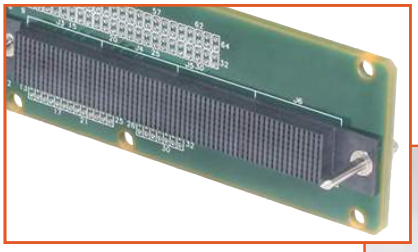
SPECIFICATIONS

VIPER® Electrical Specifications

- Data Rate: 10 Gbps
- Differential Impedance: 100 ohms
- Differential Insertion Loss: –5 dB up to 5 GHz (10 Gbps)
- Differential Return Loss: – 5 dB up to 5 GHz (10 Gbps)
- Far End Crosstalk: –35 dB up to 8 GHz
- Near End Crosstalk: –33 dB up to 8 GHz
- Signal Contacts: 1 amp
- Power Wafer: 12 amps per wafer at 30° C T-Rise
- Compliant Pin to Plated Through Hole Resistance: 1 milliohm max
- Dielectric Withstanding Voltage: 500 volts RMS
- Insulation Resistance: 1000 megohms



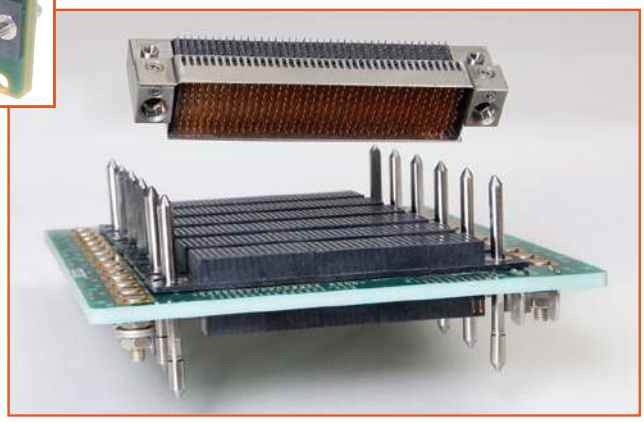
Backplane Assembly with VIPER® Backplane Connectors (also has a Brush Rack & Panel Connector Pair on left side)



One VIPER® Backplane on a Board

VIPER® Mechanical Specifications

- Signal and Ground Contact:
  - Normal Force: 85 grams per beam
  - Engagement force: 45 grams max, 35 grams typical
  - Separation force: 30 grams max, 25 grams typical
  - Durability: 500 cycles minimum
- Backplane Signal and Ground Compliant Pin:
  - Insertion Force: 4.9 kilograms maximum; 1.5 kilograms to 4.9 kilograms depending on the surface finish of PCB
  - Retention Force: 1.4 kilograms minimum
- Daughtercard Wafer Compliant Pin:
  - Insertion Force: 1.8 kilograms to 3.6 kilograms depending on the surface finish of PCB
  - Retention Force: 1.6 kilograms minimum
- Radial hole wall deformation: 0.04mm per side measured from drilled hole
- Axial hole wall deformation: 0.03mm measured in the vertical plane
- Translation: ±0.52mm nom. fully mated
- Slot Pitch: 20.30mm



Six VIPER® Backplane Connectors on a Board and one Mating Viper® Module above

VIPER® Environmental Specifications

- Temperature: ›55°C to 125°C
- Random Vibration: 90 minutes per X, Y and Z axis at 0.6 G^2/Hz
- Mechanical Shock: 50 G'rms in Y axis, 80 G'rms in X and Z axis, 11 milliseconds, half sine
- Temperature Life: 1000 hours at 125°C

Printed Circuit Board Specifications

- Minimum Backplane and Daughtercard thickness: 1.85mm and 1.53mm
- Daughtercard pattern primary drilled hole size: 0.55mm
- Daughtercard pattern finished hole size: 0.46 ±0.05mm
- Backplane pattern primary drilled hole size: 0.65mm
- Backplane pattern finished hole size: 0.56 ±0.05mm

VIPER® Materials and Finishes

Backplane Signal and Ground Contacts: C7025 copper alloy, 0.23mm. Finish is 0.00127mm nickel minimum all over per SAE-AMS-QQ-N-290, Class I. Selective 0.00127mm gold minimum per ASTM-B488, Type II, Grade C, Class 1.27 in the mating area. 0.0076mm 60/40 reflowed tin/lead minimum selectively plated in the compliant pin area.

Differential, Power, and Single-ended Daughtercard Wafer Leadframes: C7025 copper alloy, 0.38mm. Finish is 0.00127mm nickel minimum all over per SAEAMS-QQ-N-290, class I. Selective 0.00127 gold minimum per ASTM-B488, Type II, Grade C, Class 1.27 in the mating area. 0.0076mm 60/40 reflowed tin/lead minimum selectively plated in the compliant pin area.

Backplane Insulators and Daughtercard Wafer Insert Mold Material: Glass reinforced polyester (Liquid Crystal Polymer), UL 94V-0, color black.

Front and Rear Stiffeners: Stainless steel, 0.6mm, Type 301, 1/2 Hard. finish per Mill 2B.

Backplane Guide Pin: Stainless steel, Type 303, passivated.

Daughtercard Connector Header* and Keying Components: Stainless steel, Type 440, passivated.

* Light-weight aluminum header version available; consult Amphenol Backplane Systems