

Metabee VPX High-Speed Backplane Connectors System Catalog

VPX High-Speed Backplane Connectors System

1. Introduction

Metabee's VPX high-speed backplane connectors system meets the interface dimensions for VITA 46 VPX connectors. VPX connectors are also called VITA 46 connectors. VME bus International Trade Association (VITA) working group defined these connectors. They are military-grade, high-density, high-speed, and modular electrical connector. They enable reliable high-speed data transmission between daughterboards and backplanes.

The connector series supports speeds to 25+ Gb/s, providing a sufficient performance margin in VPX applications. This modular connector system includes a protected pinless backplane connector and wafer-based design instead of pin contacts. Wafers are available for differential, single-ended, and power applications, and can be easily customized to meet specific customer requirements for characteristic impedance, propagation delay, and other electrical properties.

VPX connectors are used in a wide variety of applications, including defense, aerospace, and industrial automation.

2. Features:

- **Compatible:** Comply with VITA41/46/48 standards for VME bus systems;
- **Fast:** Meet bandwidth requirements ranging from 6.25Gbps to 25Gbps;
- **Customizable:** These connectors can be customized to meet unique application requirements;
- **Modular:** Modular combination structure can realize integrated mixed transmission of various signals such as differential, single-ended, power supply, single-ended and differential hybrid, etc.;
- **Press-fit:** The terminal connection method is press fit and no soldering is required
- **Rugged:** The contact design has four redundant contacts for optimal shock and vibration performance.

3. Key Specifications:

Basic Information:

| Series: | RT 2 | RT 2-R | RT 2-S | RT 3 |
|--|------------|------------|------------|------------|
| Speeds: | 10+ Gb/s | 10+ Gb/s | 16+ Gb/s | 25+ Gb/s |
| Ruggedized: | - | Yes | Yes | Yes |
| Durability: | 200 | 500 | 500 | 500 |
| Quad-redundant Contact System: | - | Yes | Yes | Yes |
| Flexibility with Wafer Configuration: | Yes | Yes | Yes | Yes |
| VITA 46 Compatible: | Yes | Yes | Yes | Yes |
| PCB Hole Dimension (Backplane): | 0.56 (Ref) | 0.56 (Ref) | 0.56 (Ref) | 0.37 (Ref) |
| PCB Hole Dimension (Daughtercard): | 0.46 (Ref) | 0.46 (Ref) | 0.46 (Ref) | 0.32 (Ref) |
| Open VPX Standard: | VITA 46.0 | VITA 46.0 | VITA 46.0 | VITA 46.30 |

Materials:

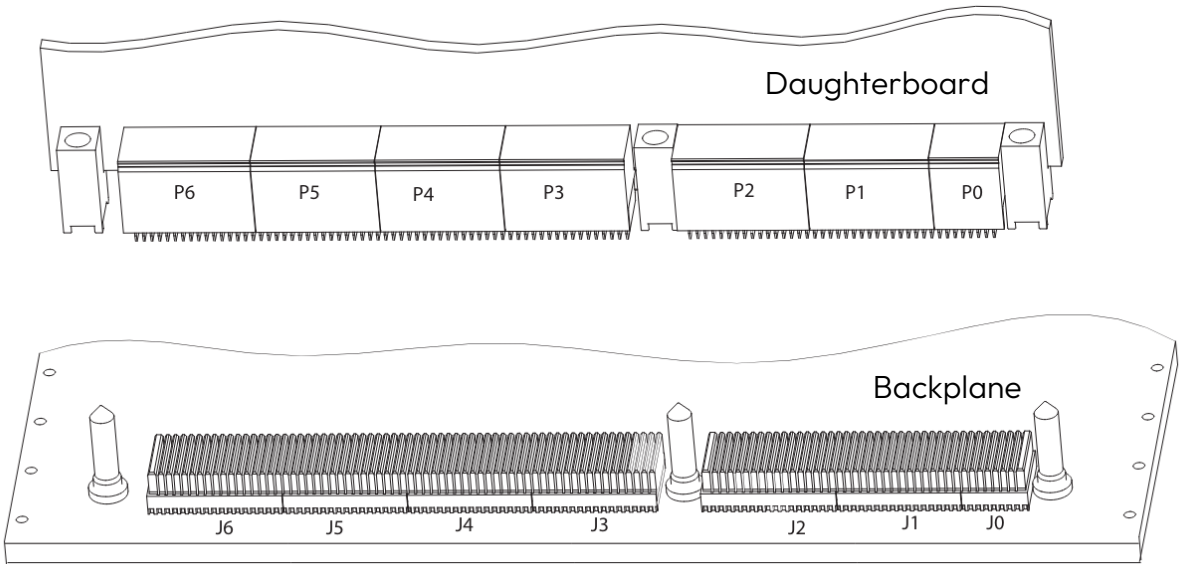
| | |
|-------------------------------|--|
| Contact Material: | High performance copper alloy |
| Contact Plating | 50 µm Au over 50 µm Ni in mating area, tin-lead on compliant pin tails |
| Housings: | High temperature thermoplastic |
| Rugged Guide Hardware: | Aluminum or passivated stainless steel |

Mechanical:

| | |
|-------------------------------|---------------------------------------|
| Operating Temperature: | -55 to +105°C |
| Mating Force: | 0.75 N [2.70 ozf] maximum per contact |

4. Part Numbers

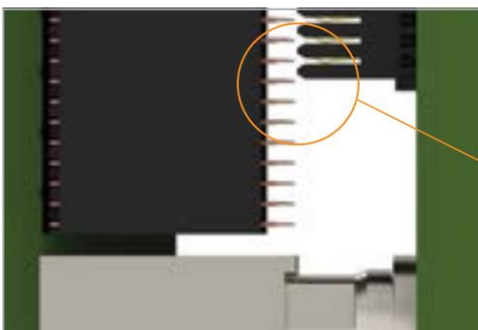
(1) VITA 46 VPX Part Numbers



| Position | RT 2 | | RT 2-R | | RT 2-S | RT 3 | RT 3 Highspeed with Power |
|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------------------|
| | Differential | Single Ended | Differential | Single Ended | Differential | Differential | Differential |
| P0 | 1410189-3 | | 2102772-1 | | 2102772-1 | 2102772-1 | 2332816-1 |
| P1, 2, 3, 4, 5, 6 | 1410187-3 | 1410190-3 | 2102771-1 | 2102847-1 | 2302317-1 | 2302785-1 | |
| J0 | 1410186-1 | | 2102735-1 | | 2102735-1 | 2102735-1 | 2332817-1 |
| J1, 3, 4, 5 | 1410140-1 | | 2102736-1 | | 2102736-1 | 2302789-1 | |
| J2, 6 | 1410142-1 | | 2102737-1 | | 2102737-1 | 2302790-1 | |

Note:

1. RT 2-S connectors are plug-in module only, and mate with RT 2, RT 2-R and RT 3 backplane connectors.
2. Part numbers with tin-lead plated tails are listed above.



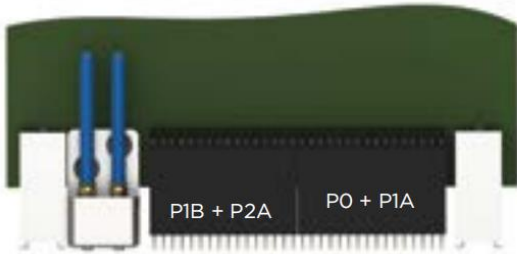
Thinner End Wall

An alternate right end backplane connector module with a thinner end wall can be utilized to eliminate this risk of damage to the plug-in module

THIN WALL RIGHT END BACKPLANE CONNECTORS

| MULTIGIG Series | Part Number |
|-----------------|-------------|
| RT 2-R | 2371552-1 |
| RT 3 | 2364030-1 |

(2) Modules for vita 66 and 67 half module 3u applications



VITA 66 or 67 Half Module

| Position | RT 2 (10 Gb/s) | RT 2-R (Rugged 10 Gb/s) | RT 2-S (16+ Gb/s) | RT 3 (32+ Gb/s) |
|-----------|-------------------|--|--|--|
| PO + P1A | 1410326-3 | 2286250-1 | 2345723-1 | 2313237-1 |
| JO + J1A | 1410140-1 | 2102736-1 | 2102736-1 (RT 2-R) | 2313238-1 |
| P1B + P2A | 1410187-3 | 2102771-1 | 2302317-1 | 2302785-1 |
| J1B + J2A | 1410142-1 | 2102737-1 (or thin wall 2371552-1) | 2102737-1 (or thin wall 2371552-1) | 2302790-1 (or thin wall 2364030-1) |

Note:

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2. Part numbers with tin-lead plated tails are listed above.

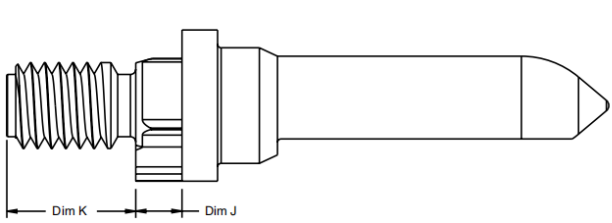
(3) VITA 46 Guide Modules – Keying Options

| Key Orientation (Degrees) | Standard (Diecast) | Rugged (Machined Aluminum) | Rugged (Machined Stainless Steel) |
|------------------------------|-----------------------|----------------------------------|---|
| 0 | 1-1469492-1 | 2000713-1 | 2000713-7 |
| 45 | 1-1469492-2 | 2000713-2 | 2000713-8 |
| 90 | 1-1469492-3 | 2000713-3 | 2000713-9 |
| 135 | | 1-2000713-4 | — |
| 180 | | 1-2000713-5 | — |
| 225 | | 1-2000713-6 | — |
| 270 | 1-1469492-7 | 2000713-4 | 1-2000713-0 |
| 315 | 1-1469492-8 | 2000713-5 | 1-2000713-3 |
| Without Keying | 1-1469492-9 | 2000713-6 | 1-2000713-2 |

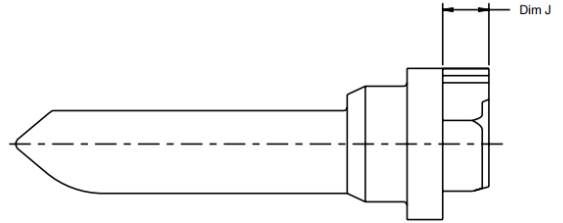


(4) Modules for vita 66 and 67 half module 3u applications

| Shoulder Depth into Backplane (DimJ) | External Thread | | | | Internal Thread | | |
|--------------------------------------|-----------------------|------------------------|--------------------------|-------------|---------------------------|------------------------|--------------------------|
| | Thread Length (Dim K) | Thread Type (External) | Rugged (Stainless Steel) | Diecast | Internal Thread Max Depth | Thread Type (Internal) | Rugged (Stainless Steel) |
| 1.32 | 7.25 | 10-32 UNF | 2000676-1 | | 5.67 | 8-36 UNF | 2327906-2 |
| 2.60 | 7.25 | 10-32 UNF | 2000676-2 | 1-1469491-2 | 6.95 | 8-36 UNF | 2327906-4 |
| 4.20 | 7.25 | 10-32 UNF | 2000676-3 | 1-1469491-3 | 8.55 | 8-36 UNF | 2327906-6 |
| 5.70 | 7.25 | 10-32 UNF | 2000676-4 | 1-1469491-4 | 10.05 | 8-36 UNF | 2327906-8 |
| 7.30 | 7.25 | 10-32 UNF | 2000676-5 | | 11.65 | 8-36 UNF | 1-2327906-0 |
| 5.70 | 10.35 | 10-32 UNF | 2000676-6 | | | | |
| 3.40 | 9.00 | M5 x 0.8 - 6g | 2000676-7 | | 7.75 | M2 .5X.45 | 1-2327906-4 |
| 2.40 | 6.30 | M5 x 0.8 - 6g | 2000676-9 | | 6.75 | M2 .5X.45 | 1-2327906-8 |

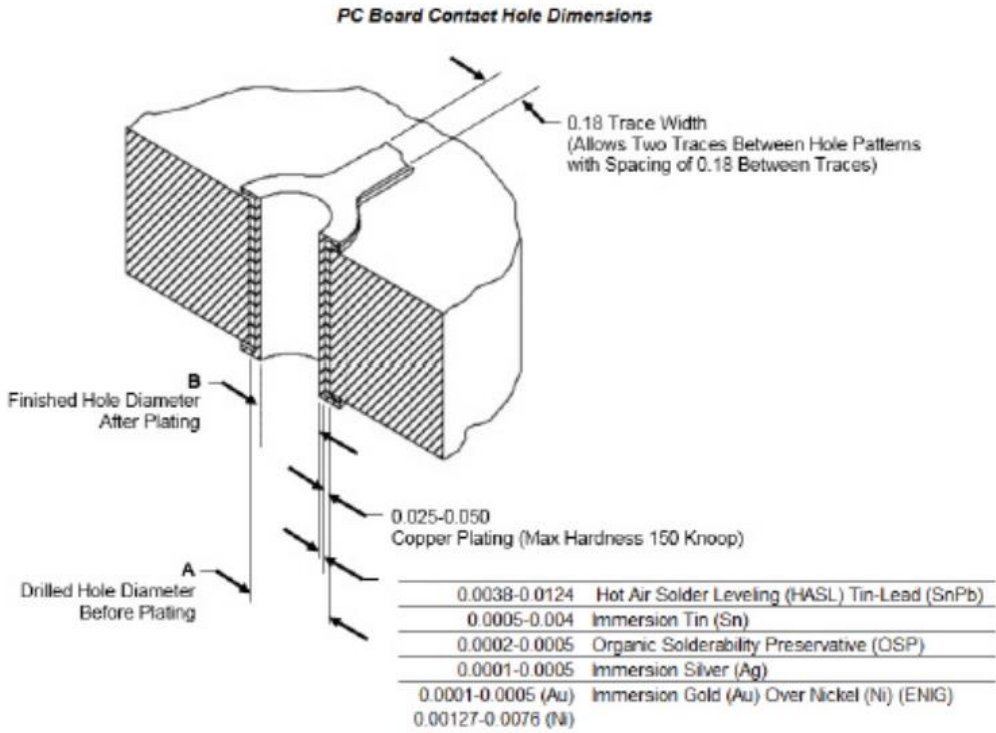


External Thread Guide Pins



Internal Thread Guide Pins

5. PCB Board Contact Hole Dimensions



| TIER | CONNECTOR | DIMENSIONS | |
|--------|---------------------------------|-------------|-------------|
| | | A | B (nominal) |
| RT 2 | Vertical Receptacle (Backplane) | 0.63-0.67 | 0.56 (Ref) |
| RT 2-R | Right-Angle Plug (Daughtercard) | 0.53 - 0.57 | 0.46 (Ref) |
| RT 2-S | | | |
| RT 3 | Vertical Receptacle (Backplane) | 0.43 - 0.47 | 0.37 (Ref) |
| | Right-Angle Plug (Daughtercard) | 0.38 - 0.42 | 0.32 (Ref) |

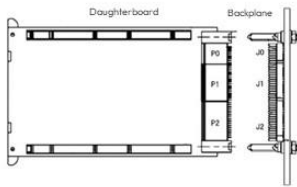
Note:

All holes in the pc board must be precisely located to ensure proper placement and optimum performance. The pc board layout must be designed using the dimensions provided on the customer drawing.

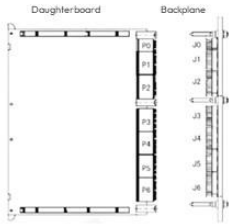
6. Applications

- Military Electronics/C4ISR
- Avionics
- Ground Defense
- Missile Defense
- Space

3U Applications



6U Applications



Learn more about our *high-speed board-to-board connectors.*

Thank You!