**How To Order**

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<td>Center</td>
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<td>Tin/lead/gold (daughtercard)</td>
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**KVPX® Series**

Rugged High speed, Backplane Connector System
The KVPX Series is an embedded interconnect system that provides unrivaled performance in harsh environments while adapting to the VITA standard design requirements. By utilizing the Hypertac® superior hyperboloid contact technology, the KVPX Series ensures exceptional tolerance to shock and vibration, low insertion forces, high current ratings and the lowest fretting corrosion available.

Fretting corrosion caused by the relative movement of contacts during continual shock and vibration in harsh environments is the leading cause of failure in aerospace, space and defense systems platforms. This is especially problematic at the backplane interface of embedded computers such as avionics, radar, sensors, motor controls, weapon systems, and space applications, such as launchers and satellites.

To solve this problem, Smiths Interconnect has integrated its legendary Hypertac contact system into a VITA 46/48 form factor by evolving its space proven™ PCI connector technology. The KVPX interconnect system meets all of the high-speed electrical requirements of VITA 46/48 while vastly increasing the mechanical reliability and physical ruggedness of unated connectors and modules.

To that end, the KVPX utilizes a reverse gender versus other backplane connectors, further protecting the male pins from damage. KVPX connectors are equipped with Hypertac® space qualified qualified 0.4mm hyperboloid sockets and provide immunity to shock and vibration fretting, numerous linear paths of contact, low-forces, high mating cycles, and a self-wiping cleaning action that results in consistently better integrity in extreme environments.

The KVPX Series is highly engineered to guarantee top performance under he most severe condition in demanding applications where failure is not an option.

### Specifications

**Number of Contacts:**
- Half module - 72, Full module - 144

**Pitch:**
- 1.8mm

**Current Rating:**
- 1.5625 A per contact (derated using a 30°C temperature rise and 1 oz copper)

**Extraction Force:**
- 1.2 oz per contact typical

**Temperature Rating:**
- -55°C to 125°C

**Insulator Material:**
- LCP (Liquid Crystal Polymer)

**Features:**
- Compatible with VITA 46, 47 and 78 (Space) standards
- Up to 16 Gbps data rate performance
- 100 Ohm impedance for differential pair configuration

### Performance

Speed is another critical factor when comparing VPX connector solutions and as technology evolution continues to push the limits. For system solution providers speed is a critical element in their ability to address the computation and I/O requirements of data driven applications. When evaluating the speed capability of a connector the key factors are: impedance, return loss, insertion loss and crosstalk.

The use of impedance-controlled connectors is standard practice in radio frequency applications and is now being utilized for high-speed data transmission. In a transmission line, impedance matching is necessary to minimize reflections, to deliver the correct amplitude signal and to maximize power at the receiving end. To maximize signal performance, it is critical to maintain a differential impedance as close to 100 Ω as possible. The KVPX connector has an impedance variation <10% of the target 100 Ω with a 50 ps rise time (0%, no signal, to 100%, full signal) which is representative of the rise time of a 6 Gbps signal.

Due to the matched impedance profile and low loss performance of KVPX, signals travel with minimal disruption through it. The eye patterns of the intrinsic connector indicates a low amount of jitter and a wide eye opening which indicates that the KVPX connector is more than capable for 16 Gbps data rates. The eye pattern combines the impacts of impedance matching, return loss, insertion loss and crosstalk talk performance to ultimately determine the speed capability of the connector.

**Measured impedance through TDR**

50 ps Rise Time

**Eye diagram @ 10 Gbps**

Crosstalk from 6 Adjacent Channels (NEXT and FEXT)

*See back for ordering information
technologies

KVPX® series

Resistant to Shock & Vibration
High Speed up to 16 Gbps
Faceplate to Protect Daughtercard Pins

Smiths Interconnect’s KVPX Series is an embedded interconnect system that provides unrivaled performance in harsh environments while adapting to the VITA standard design requirements. By utilizing the Hypertac® superior hyperboloid contact technology, the KVPX Series ensures exceptional tolerance to shock and vibration, low insertion forces, high current ratings and the lowest fretting corrosion available.

Fretting corrosion caused by the relative movement of contacts during continual shock and vibration in harsh environments is the leading cause of failure in aerospace, space and defense systems platforms. This is especially problematic at the backplane interface of embedded computers such as avionics, radar, sensors, motor controls, weapon systems, and space applications, such as launchers and satellites.

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The KVPX Series is highly engineered to guarantee top performance under he most severe condition in demanding applications where failure is not an option.

Daughtercard
KX1HCP01CTBTH: KVPX Daughtercard Half Power Module with Sn-Pb Press-Fit Tails
KX1FCD01CTBTH: KVPX Daughtercard Full Differential Pair Module with Sn-Pb Press-Fit Tails

Backplane
KX2HC01CTFAH: KVPX Backplane Half Universal Module with Gold Press-Fit Tails
KX2FCU01CTFAH: KVPX Backplane Full Universal Module with Gold Press-Fit Tails

Hypertac® contacts
Immunity to shock & vibration
Low insertion/extraction forces
Minimal contact resistance
Industry leading mating cycles
Self-clean wipe action for better signal integrity

Hypeartz contacts

Features
■ Compatible with VITA 46, 47 and 78 (Space) standards
■ Up to 16 Gbps data rate performance
■ 100 Ohm impedance for differential pair configuration

Specifications

Number of Contacts:
Half module - 72, Full module - 144
Pitch:
1.8mm
Current Rating:
1.5625 A per contact, 12.5 A per power wafer (derated using a 30°C temperature rise and 1 oz copper)
Extraction Force:
1.2 oz per contact typical
Temperature Rating:
-55°C to 125°C
Insulator Material:
LCP (Liquid Crystal Polymer)

Contact Plating:
50 μn gold over nickel
Flammability Rating:
UL94-V0
Dielectric Withstanding Voltage:
500 VAC
Low Level Circuit Resistance:
8 milliohms maximum
Insulation Resistance:
500 megohms maximum
Random Vibration:
11.95 Gms 50 to 2000 Hz for 90 mins per axis
Mechanical Shock:
50G

Features
■ Differential, single-ended and power modules
■ 0.56 mm (0.022”) diameter via for backplane connector
■ Flexible modular design for standard 3U and 6U as well as custom configurations
■ Press-fit termination
■ Reliable Hypertac hyperboloid contact technology

Performance

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*See back for ordering information
# How To Order

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| **1** | **KVPX connector series**
   | (Fixed) |   |   |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |
| **2** | **Connector type**
   |   | Daughtercard  | Backplane  |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |
| **3** | **Module size**
   |   | Half  | Full  |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |
| **4** | **Module style**
   |   | Center  | Right end  |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |
| **5** | **Module type**
   |   | Power/Utility  | Differential pair  | Single ended  | Universal (all backplane modules) |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |
| **6** | **Module type variant**
   |   | Variant 01 |   |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |
| **7** | **Termination style**
   |   | Compliant press-fit | Contact |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |
| **8** | **Termination Length**
   |   | Daughtercard length 1.8 mm  | Backplane length 3.3 mm |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |
| **9** | **Termination plating**
   |   | Tin/lead/gold (daughtercard) | Gold (backplane) |   |   |   |   |   |   |

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