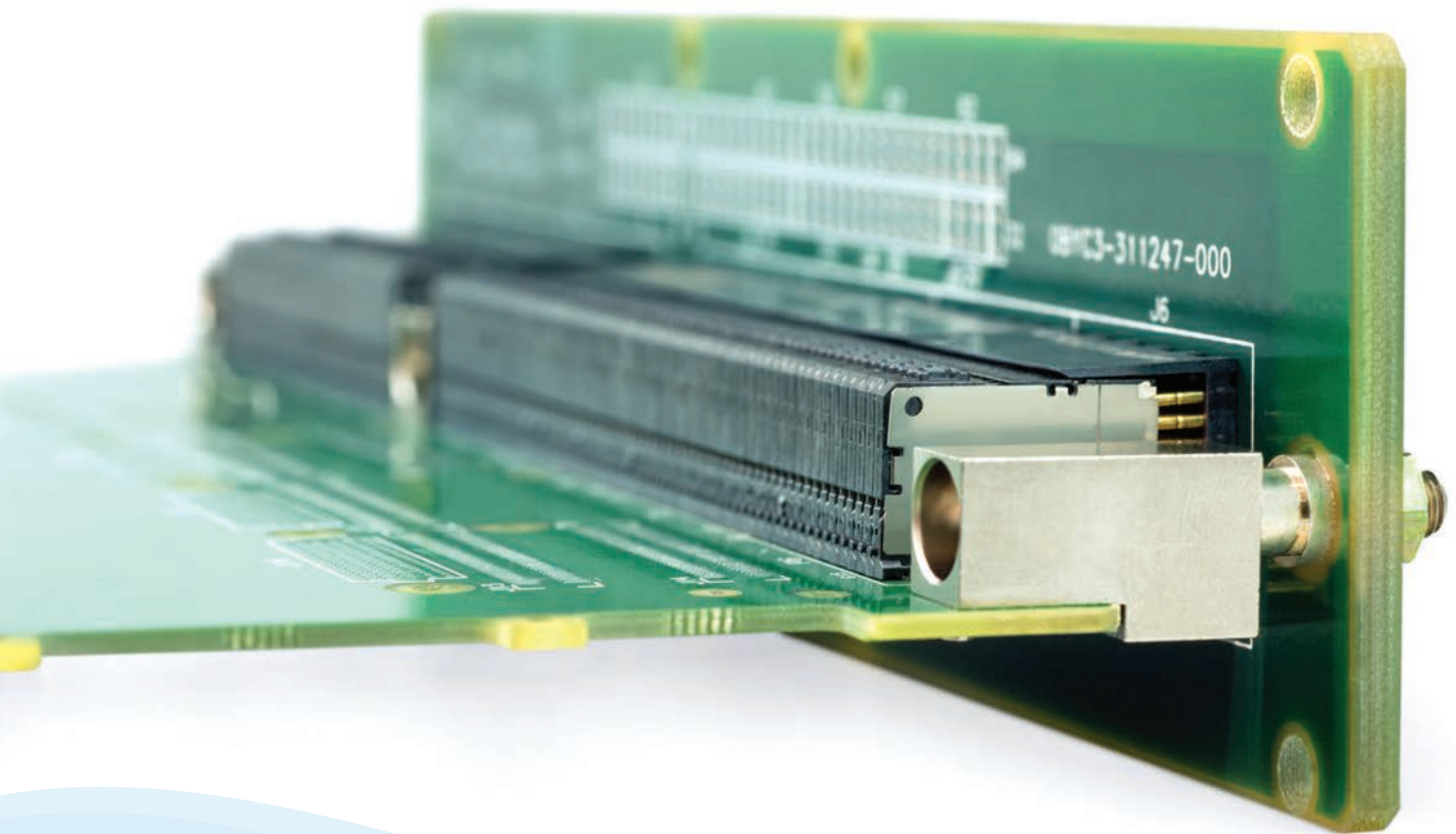


# KVPX<sup>®</sup>

## CONNECTOR SERIES

*Rugged High Speed, High Density Interconnects*



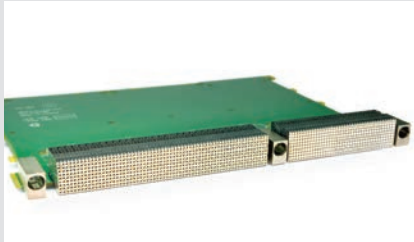
# TECHNOLOGIES

## DAUGHTERCARD

**KX1HCP01C1TBH:** KVPX Daughtercard Half Power Module with Sn-Pb Press-Fit Tails

**KX1FCS01C1TBH:** KVPX Daughtercard Full Single-Ended Module with Sn-Pb Press-Fit Tails

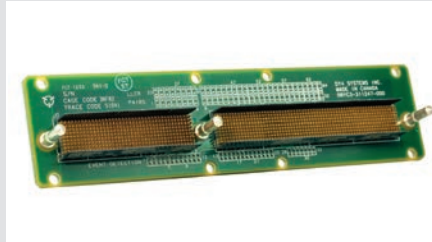
**KX1FCD01C1TBH:** KVPX Daughtercard Full Differential Pair Module with Sn-Pb Press-Fit Tails



## BACKPLANE

**KX2HCU01C1TAH:** KVPX Backplane Half Power Module with Gold Press-Fit Tails

**KX2FCU01C1TAH:** 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**



# KVPX® SERIES

- ▶ **Resistant to Shock & Vibration**
- ▶ **High Speed 6.25 to 10 Gbps**
- ▶ **Faceplate to Protect Daughtercard Pins**

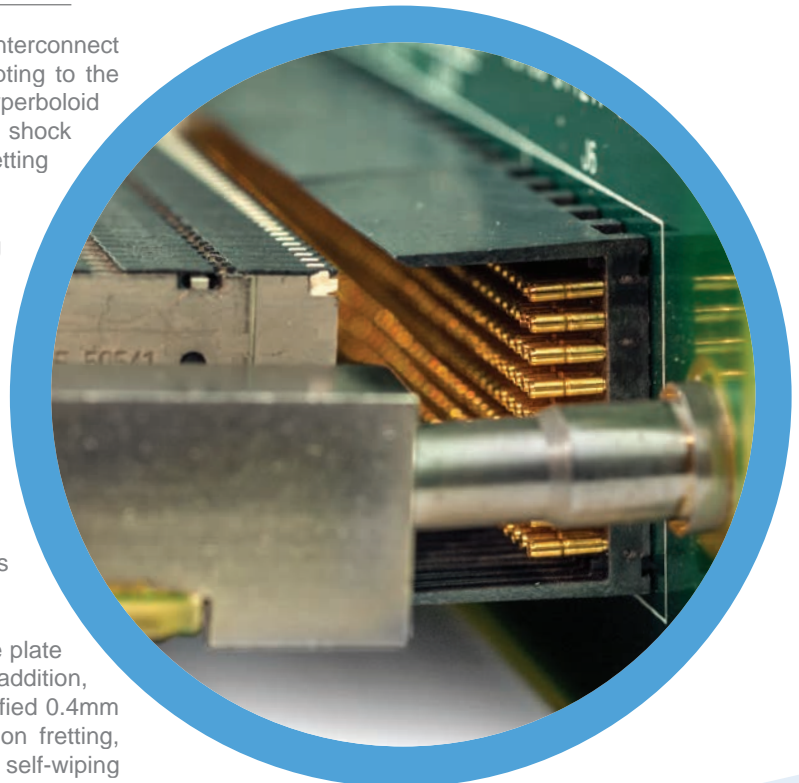
Smiths Connectors introduces the KVPX Series, an embedded system interconnect that provides unrivaled performance in harsh environments while adapting to the VITA standard design requirements. By utilizing the Hypertac superior hyperboloid contact technology, the KVPX Series ensures exceptional tolerance 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 and defense systems platforms. This is especially problematic at the backplane interface of embedded computers such as avionics, radar, sensors, motor controls, data storage, communications and weapon systems.

To solve this problem, Smiths Connectors has integrated its legendary Hypertac contact system into a VITA 46/48 form factor by evolving its space proven cPCI connector technology. The new 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 unmated connectors and modules.

To that end, the KVPX daughtercard connectors incorporate a front face plate which prevents damage to the male contacts in an unmated condition. In addition, the KVPX backplane connectors utilize Smiths Connectors' space qualified 0.4mm hyperboloid sockets, known to 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.

Like all Smiths Connectors products, the KVPX Series is highly engineered to guarantee top performance under the most severe conditions in aerospace, defense, and industrial applications where failure is not an option.



# TECHNICAL CHARACTERISTICS

## 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 µin gold over nickel

**Flammability Rating:** UL94-VO

**Dielectric Withstanding Voltage:** 500 VAC

**Low Level Circuit Resistance:** 8 milliohms maximum

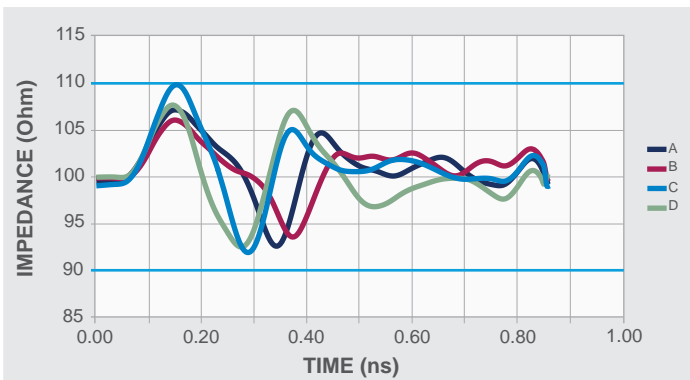
**Insulation Resistance:** 500 megohms maximum

**Random Vibration:** 11.95 Grms 50 to 2000 Hz for 90 mins per axis

**Mechanical Shock:** 50G 11 msec 3 shocks/direction (18 total)

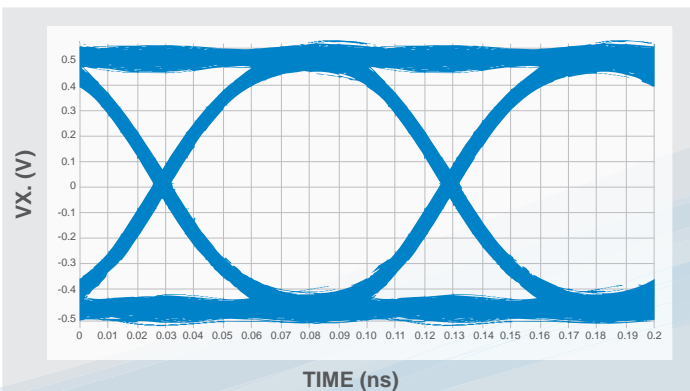
## FEATURES

- ▶ **Compatible with VITA 46 and 48 standard applications**
- ▶ **Verified for 6.25 and 10 Gbps data rate performance**
- ▶ **100 Ohm impedance for differential pair configuration**
- ▶ **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 compliant tail**
- ▶ **Reliable Hypertac hyperboloid contact technology**



### MEASURED IMPEDANCE THROUGH TDR

50 ps Rise Time



### EYE DIAGRAM @ 10 Gbps

Crosstalk from 6 Adjacent Channels (NEXT and FEXT)

## 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 10 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.

\* See back for ordering information

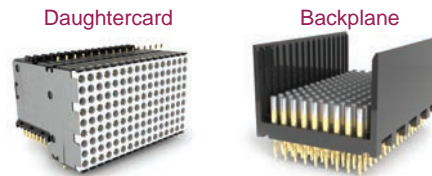
# HOW TO ORDER



**1** ▶ KVPX CONNECTOR SERIES *[Fixed]*

**2** ▶ CONNECTOR TYPE

- 1** DAUGHTERCARD
- 2** BACKPLANE



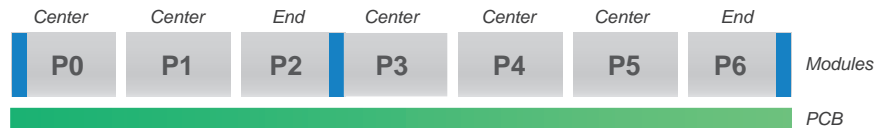
**3** ▶ MODULE SIZE

- H** HALF
- F** FULL



**4** ▶ MODULE STYLE

- C** CENTER
- E** RIGHT END



**5** ▶ MODULE TYPE

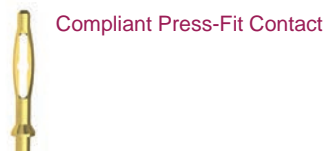
- P** POWER/UTILITY
- S** SINGLE ENDED
- D** DIFFERENTIAL PAIR
- U** UNIVERSAL (ALL BACKPLANE MODULES)

**6** ▶ MODULE TYPE VARIANT

- 01** VARIANT 01

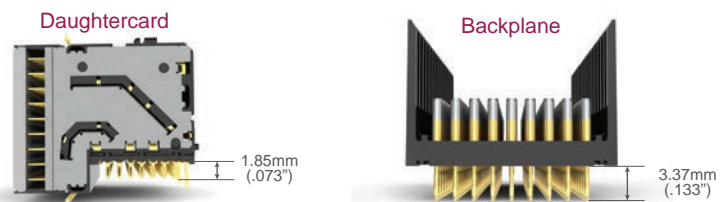
**7** ▶ TERMINATION STYLE *[Fixed]*

- C** COMPLIANT PRESS-FIT



**8** ▶ TERMINATION LENGTH *[Fixed]*

- 1** DAUGHTERCARD LENGTH 1.8mm / BACKPLANE LENGTH 3.3mm



**9** ▶ TERMINATION PLATING

- T B H** TIN/LEAD/GOLD (DAUGHTERCARD)
- T A H** GOLD (BACKPLANE)

smiths connectors