

# SEVERE ENVIRONMENT TESTING



Stephen Brutscher, Samtec Inc.  
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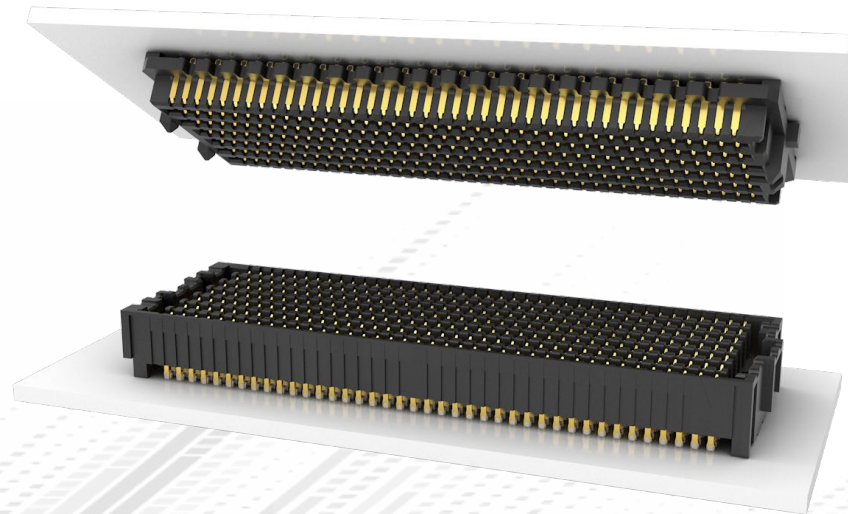
# ORIGINS OF SEVERE ENVIRONMENT TESTING

- Overview: current offering of interconnect testing in the industry
- Demand for more readily available, less expensive, ruggedized / high-functioning COTS interconnects
- Samtec's Severe Environment Testing (SET) has proven beneficial in providing confidence in product performance and durability in severe / harsh environment applications



# WHAT IS SEVERE ENVIRONMENT TESTING

- Severe Environment Testing (SET) is a new Samtec initiative to test products beyond typical industry standards & specifications, many set forth by common requirements for rugged industries
- SET was derived from VITA 47.0 – 47.3 Standards
- Samtec SET is a free service performed in-house and can be customized to specific requirements



samtec	
Project Number: Severe Environment Test Report	Tracking Code: 1724374_Report_Rev_1
Requested by: Mark Shireman	Date: 8/23/2019
Part #: SEAM-50-11.0-S-10-2-A-K-TR/SEAF-50-07.5-S-10-2-A-K-TR	
Part description: SEAM/SEAF	Tech: Tony Wagoner
Test Start: 1/31/2019	Test Completed: 3/25/2019

**Temperature Cycling**

Group 1  
SEAM-50-11.0-S-10-2-A-K-TR  
SEAF-50-07.5-S-10-2-A-K-TR  
8 Assemblies  
500 Thermal Cycles  
Note: Reference MIL-STD-202G, Method 107, Thermal Shock

Step	Description
1.	Continuity (Initial)
2.	Temperature Cycles(1) - Non Standard Cycles = 500 Cycles Continuity = Monitor for 1 MicroSecond Interruptions Throughout
3.	Continuity (Following Last Cycle)

(1) Temperature Cycles = Other  
Max Temperature = 125° C  
Min Temperature = -65° C  
Dwell Time = 30 minutes at each extreme  
Ramp Rate = 10° C/min  
VITA 47.1

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SEVERE ENVIRONMENT TEST REPORT  
SEAM/SEAF  
SEAF-50-07.5-S-10-2-A-K-TR

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# SET | QUICK REFERENCE GUIDE

Test Type	Design Qualification Testing (DQT)	Extended Life Products™ Testing (E.L.P.™)	Severe Environment Testing (SET)
Gas Tight	✓	✓*	✓*
Normal Force	✓	✓*	✓*
Thermal Aging	✓	✓*	✓*
Mating / Unmating / Durability (240 Hrs)	✓ (90-98% Relative Humidity, 100 Cycles)	✓* (90-98% Relative Humidity, 100 Cycles)	✓ (100% Relative Humidity, 250 Cycles)
IR/DWV	✓	✓*	✓ (At Altitude of 70,000 Feet)
CCC	✓	✓*	✓*
Mechanical Shock / Random Vibration / LLCR	✓ (100 G Peak, 6 ms, Half Sine and 7.56gRMS Avg, 2 Hr/Axis)	✓* (100 G Peak, 6 ms, Half Sine and 7.56gRMS Avg, 2 Hr / Axis)	✓ (40 G Peak, 11 ms, Half Sine & 12gRMS, 5 - 2,000 Hz, 1 Hour/Axis)
Mechanical Shock / Random Vibration / Nanosecond Event Detection	✓ (100 G Peak, 6 ms, Half Sine and 7.56gRMS Avg, 2 Hr/Axis)	✓* (100 G Peak, 6 ms, Half Sine and 7.56gRMS Avg, 2 Hr / Axis)	✓ (40 G Peak, 11 ms, Half Sine & 12gRMS, 5 - 2,000 Hz, 1 Hour/Axis)
Temperature Cycling (500 Cycles)	N/A	N/A	✓
Non-operating Class Temperature	N/A	N/A	✓
Electrostatic Discharge (Esd)	N/A	N/A	✓
10 Year Mfg (Mixed Flowing Gas)	N/A	✓	N/A
Mating Cycles From 250 To 2,500	N/A	✓	N/A

All series undergo Samtec Design Qualification Testing. SET and E.L.P.™ are complimentary tests in addition to Design Qualification Testing. Please visit [samtec.com](http://samtec.com) for more information.

\* Completed as part of initial Design Qualification Testing (DQT).

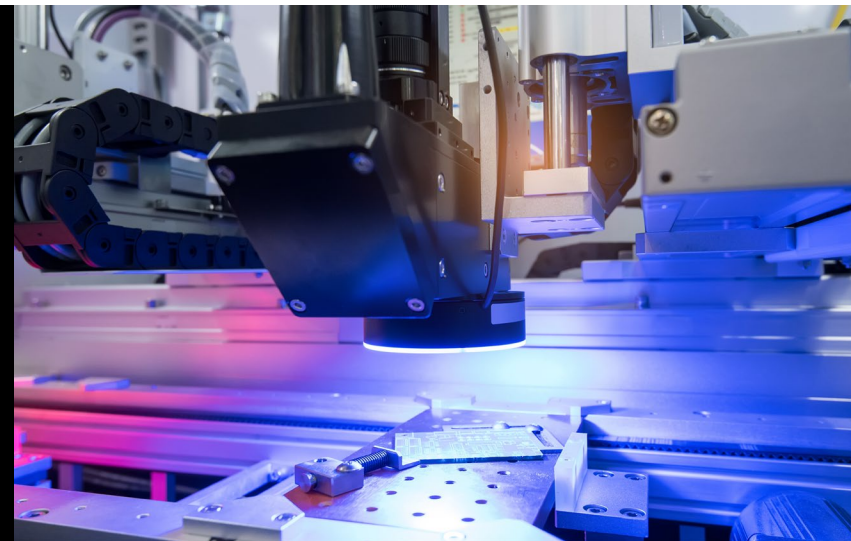
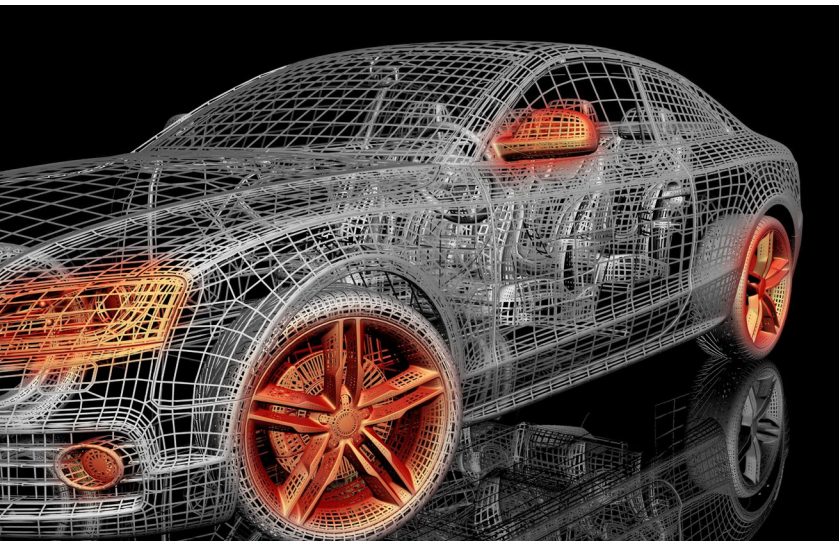






# APPLICATIONS

Military / Aerospace • Medical • Industrial • Automotive / Transportation



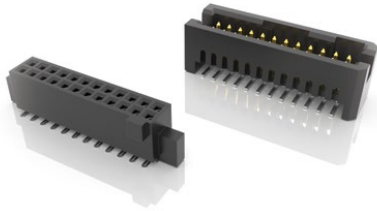


# SET | TESTING ROADMAP

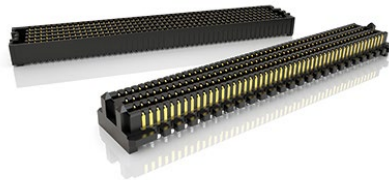


## QUALIFIED PRODUCTS

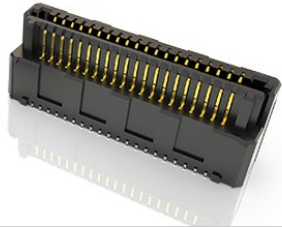
Tiger Eye™ 1.27 mm Pitch Micro Rugged Connector System



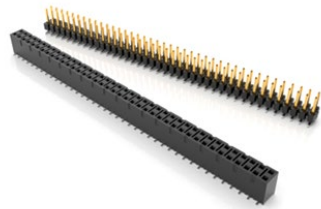
SEARAY™ 1.27 mm Pitch Open-Pin-Field High-Density Arrays



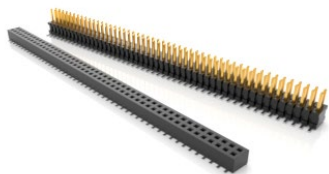
Razor Beam™ 0.50 mm Pitch Hermaphroditic Strips



.100" (2.54 mm) Pitch Square Post Header & Socket



.050" (1.27 mm) Pitch Header & Socket System



Edge Rate® 0.80 mm Pitch Rugged High-Speed Strips



## 2020 QUALIFICATION QUEUE

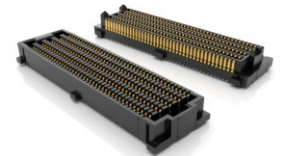
Q Strip® 0.50 mm Pitch Low Profile Ground Plane Connectors



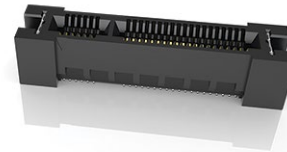
Q Rate® 0.50 mm Pitch Slim Body Ground Plane Connectors



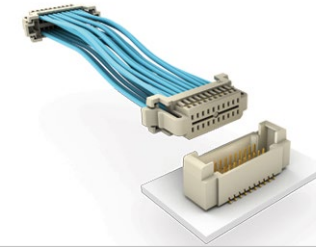
SEARAY™ 0.80 mm Pitch Open-Pin-Field High-Density Arrays



Edge Rate® 0.80 mm Pitch Edge Card Socket



1.00 mm Pitch Discrete Wire Cable Assemblies



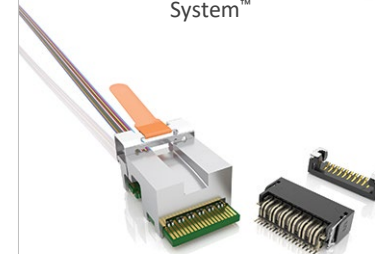
Tiger Eye™ 0.50" Pitch Discrete Wire Cable Assemblies



High-Speed Micro Coax & Twinax Cable Assemblies



FireFly™ Optical Micro Flyover System™



AccliMate™ IP67IP68 Rugged Sealed Cable Systems





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