PRODUCT TESTING GUIDE

Samtec interconnects are subject to a wide variety of standard test procedures that push the industry limits to help ensure quality and durability in any application.

DESIGN QUALIFICATION TESTING

All Samtec series undergo Design Qualification Testing (DQT). This includes Gas Tight, Normal Force, Thermal Aging, Mating/Unmating/Durability, IR/DWV and Current Carrying Capacity (CCC).

EXTENDED LIFE PRODUCT™

E.L.P.™ certified products are tested to additional, rigorous standards which evaluate contact resistance in simulated storage and field conditions.

Products are exposed to 10-year Mixed Flowing Gas, where sulfur dioxide, chlorine, hydrogen sulfide and nitrogen dioxide flow around parts for 14 days, and achieve high mating cycles (250 to 2,500). Certain plating and/or contact options apply.

For additional details, including a list of qualifying products and test results, visit **samtec.com/ELP** or contact the Customer Engineering Support Group at **ASG@samtec.com**.

SEVERE ENVIRONMENT TESTING

Severe Environment Testing (SET) is a new Samtec initiative to test products beyond typical industry standards and specifications, many set forth by common requirements for rugged / harsh environment industries.

These products undergo additional testing to ensure they are more than suitable for industrial, military, automotive and other extreme applications. Visit **samtec.com/SET** or contact **set@samtec.com** for additional information and current available test results.

Additional Testing Includes:

- Higher Mating Cycles with 100% Humidity
- Intense Shock and Vibration: LLCR & Event Detection
- Temperature Cycling (500 Cycles)
- Non-Operating Class Temperature
- DWV at Altitude
- Electrostatic Discharge (ESD)

All series undergo Design Qualification Testing (DQT). Extended Life Product™ testing and Severe Environment Testing are performed in addition to DQT. Please visit **samtec.com** for details.

PRODUCT TESTING QUICK REFERENCE GUIDE

TEST	DESIGN QUALIFICATION TESTING (DQT)	EXTENDED LIFE PRODUCT™ (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 & 7.56gRMS Avg, 2 Hr / Axis)	✓* (100 G Peak, 6 ms, Half Sine & 7.56gRMS Avg, 2 Hr / Axis)	✓ (40 G Peak, 11 ms, Half Sine & 12gRMS, 5 - 2,000 Hz, 1 Hr / Axis)
Mechanical Shock / Random Vibration / Nanosecond Event Detection	✓ (100 G Peak, 6 ms, Half Sine & 7.56gRMS Avg, 2 Hr / Axis)	✓* (100 G Peak, 6 ms, Half Sine & 7.56gRMS Avg, 2 Hr / Axis)	✓ (40 G Peak, 11 ms, Half Sine & 12gRMS, 5 - 2,000 Hz, 1 Hr / 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 (250 to 2,500)	N/A	✓	N/A

Gas Tight*
Measures LLCR change after mated product is exposed in nitric acid for 1 hour. This test verifies there is enough normal force between contacts that a gas tight seal is created at the interface.

Normal Force*
Measures the contact gap compared to the print before taking normal force measurements; contact gaps are measured after thermal aging.

Thermal Aging*
Measures the change in LLCR and mating/unmating force after products have been thermally exposed.

Mating / Unmating / Durability*
Measures the change in LLCR and mating / unmating after products have been cycled and exposed to various environmental conditions.

Insulation Resistance / Dielectric Withstanding Voltage (IR/DWV)*
Determines the testing voltage and then ensures environmental exposure will not cause the product to fail at the test voltage.

Current Carrying Capacity (CCC)*
Establishes the maximum CCC versus ambient temperature.

Mechanical Shock / Random Vibration / LLCR*
Measures the product's ability to withstand a series of mechanical shocks and random vibration. LLCR is a before and after check for damage.

Mechanical Shock / Random Vibration / Nanosecond Event Detection*
Measures the product's ability to withstand a series of mechanical shocks and vibrations. Event detection monitors continuity during testing.

Temperature Cycling
Evaluates the product's reliability through thermal fatigue by cycling through two temperature extremes (-65° C to 125° C, 30 minute dwell time at each extreme).

Non-Operating Class Temperature
Determines the temperature range at which the product operates at peak level (-55° C to 125° C at 100 cycles, and -65° C to 125° C at 100 cycles; 200 total cycles).

Electrostatic Discharge (ESD)
Measures the level of electrostatic voltage the product can withstand (exposure to 5k, 10k and 15k Volts, repeated 10 times).

10-Year Mixed Flowing Gas (MFG)
Measures the change in LLCR after the product has been cycled and exposed to various environmental conditions.

Mating Cycles
Measures the maximum number of mating/unmating cycles the product can withstand while maintaining the maximum resistance & pull force.

DWV at Altitude
Measures the peak voltage that a product can withstand before dielectric breakdown at high altitudes (70,000 feet).

** Completed as part of initial Design Qualification Testing (DQT).* All series undergo DQT. Extended Life Product™ testing and Severe Environment Testing are performed in addition to DQT. Please visit samtec.com for details.