Quality is more than a word

ESPEC

Highly Accelerated Thermal Shock
TSH-13-W

Accelerated thermal shock test

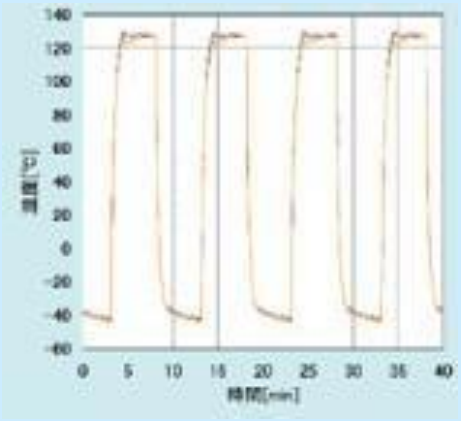
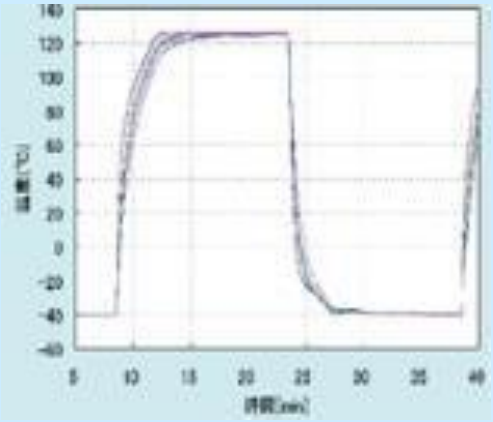
In the automobile industry, which is becoming more multifunctional and electronic, it is necessary to take measures for functional safety represented by the automobile functional safety standard "ISO26262" and the basic safety standard "IEC61508", and due to the demand for high reliability of in-vehicle devices, there is a need for a thermal shock device that can bear more severe environmental stress.

Features

- development is shortened, which poses a dilemma at the development site. The TSH-13-W achieves a temperature recovery of 5 minutes between +125 and -40C by increased airspeed and unique airflow control. We have successfully reduced the test time by 1/3.
- Enables you to obtain test results that correlate with conventional thermal shock tests.*
- The defrost-free function prevents frost formation and eliminates the need for defrosting, interrupting the test.
- By having a function to control and reduce the wind speed, the conventional thermal shock test can also be performed.

Reference: The thermal shock test is based on the "Eyring Model." It is applied to high-temperature oxidation of contact materials, growth of intermetallic compounds in solder joints, and reduction of the strength of resin materials. Still, the exposure time is not part of the factors here. Therefore, it can be judged that the exposure time does not affect the result. The same trend has been observed in our sample test.

Acceleration Verification (the exposure time reduced to 1/3)

		Highly Accelerated Air-to-Air Thermal Shock		Conventional Thermal Shock	
Temp. Range		-40℃ and +125℃(⊿t=165℃)			
Exposure time		5 minutes		15 minutes	
Test Profile					
		HOT (+123°C or higher)	COLD (-38℃ or less)	High temperature (+123°C or higher)	Low temperature (-38℃ or less)
	Recovery Time	1.1 to 1.3 Minute	1.5 to 2.5 Minute	3.4 to 7.9 Minute	3.7 to 6.2 Minute
	Dwell Time	3.7 to 3.9 Minute	2.5 to 3.5 Minute	7.1 to 11.6 Minute	8.8 to 11.3 Minute

Specifications

Model		TSH-13-W
Type		Highly Accelerated Thermal Shock (HAATS)
Performance	Hot Chamber	+60C to +200C
	Cold Chamber	-70C to 0C
	Temperature Recovery	Hot Dwell: +125C 5 min Cold Dwell: -40C 5 min Samples: 1.36kg Epoxy PCB Recovery Time: < 5 min
Refrigeration System		Mechanical Water-Cooled Cascade Refrigeration
Configurations	Capacity	12L
	Test Area	W300×H200×D200mm
	External Dimensions	W1,430 × H1,945 × D1,470mm*
	Weight	約1,070kg*

*References only.

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LEAF No.CP20200815E (As of October, 2020.)