

Thermal Shock Chamber

High and low temperature Thermal Shock Chamber suitable for products in various industries

This product is suitable for safety performance testing, reliability testing, product screening testing, etc. of electronic components and materials, which can shorten the development cycle and improve the reliability and quality control level of products. It is an indispensable and powerful partner for related enterprises, research institutions, etc. Widely used in thermal shock testing in industries such as aerospace, automotive, electrical and electronic, semiconductor, battery, new energy, solar photovoltaic modules, etc.

Used to test and determine the parameters and performance of electrical, electronic, and other products and materials after temperature environmental impact changes during high and low temperature testing.

Features

Short temperature recovery time

► Multiple industry standards require the control of surface recovery time for specimen, and the standard STT sensor can be linked with the controller to easily and perfectly reproduce standard conditions. The standard temperature recovery time of the specimen can reach within 15 minutes.

(* Refer to the figure on the right: when the temperature is set to +100 °C and -68 °C and the plastic mold IC specimen is 10KG)

Improved temperature uniformity

► Uniform airflow in the test area allows outstanding temperature uniformity. Uniform thermal stress is applied to each specimen, minimizing variation in test results.

Smooth specimen transfer

► "Soft move mode" is automatically activated when specimens move between the hot and cold chambers to reduce vibration and shock.

Test area anti-drop mechanism to protect specimens

► The test area's drive unit is equipped with a braking device to prevent specimens from falling the test area under any abnormal situations.

Comprehensive safety system

► A double safety system ensures that any transfer between test areas stops automatically when the door is open, and that the door locks while transfer is in progress.

Specimen Temperature Trigger (STT)

► With up to two sensors attached to specimen(s), the STT function begins counting the exposure time once the specimen reaches a set temperature, or promptly activates moving of the specimen for the next exposure. This reduces overall testing time and ensures accurate specimen temperatures. Temperature readings can be recorded for each specimen and test area by connecting a temperature recorder.

Cable ports on right sides (100mm) as standard to allow easy wiring access.

► A cable port on right side allows for easy wiring specimen measurement.



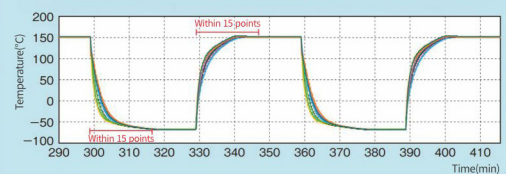
Specimen temperature recovery example

Test conditions

Hot exposure: +150°C for 30 min.
Cold exposure: -65°C for 30 min.
Specimens: ICs, 10 kg

Measurement conditions

Thermocouples were embedded in 10 ICs placed on two levels in each corner and in the center of a specimen basket. (Specimens embedded with thermocouples were placed beneath other ICs.)



GTSD specimen temperature recovery example



Features:

Safe specimen handling thanks to ambient temperature recovery

▶The ambient temperature recovery feature intakes external air to return the test area to an ambient temperature after testing has finished or been paused.

Viewing window (including light) as standard

▶Can check the status of specimen at any time during the test.

Interface (option)for device communication can be selected between RS-485, GPIB, and RS-232C.

Color LCD touch screen controller, easy to operate

▶Temperature settings and measurements can be stored in the internal memory and exported with the use of USB flashdrives. This enables them to be displayed as graphs on web browsers and stored for back-up purposes.Test data can also be recorded in real time to a USB flash drive.

* USB flash drives not included

▶Programmed operation allows storing 40 program operation patterns, each up to 99 steps. temperature ramp settings and a maximum of 999 repeat cycles.

▶Can change the display language from Japanese to English,Simplified Chinese,Traditional Chinese at any time from the language icon.

Remote monitor and control(Ethernet connection)

▶The chamber comes with an ESPEC original web application. Connecting to the chamber Ethernet port (LAN's port) makes it possible to control chamber monitoring, pattern setting, operation start/stop, and other operations from a computer web browser. Installation of special software is not required.

All you need is a standard computer web browser to connect with the chamber.



Model		GTSD-100	
Power supply(Voltage fluctuation: rating $\pm 10\%$)		AC380V 3 ϕ 4W 50Hz	
Maximum load current		34A	
System		2-zone transition by vertical transfer of specimens	
Ambient temp. range		+5°C~+40°C (For places with an ambient temperature of 0-40 °C and an ambient humidity of 75% RH (+23 °C is optimal))	
performance ※	Test area	Hot exposure range	+60°C ~ +205°C
		Cold exposure range	-77°C ~ 0°C
	Hot chamber	Temp. fluctuation ※	$\pm 1.0^\circ\text{C}$
		Pre-heat upper limit	+205°C
	Cold chamber	Heat-up time	Within 90 min from ambient temp.to +200°C (Setting: +205°C)
		Pull-down time	-77°C
	Temp.recovery performance (2-zone)	Recovery conditions	Within 90 min from ambient temp.to-77°C(Setting:-77°C)
		Temp. recovery time	•Hot exposure: +150°C (setting: +155°C 30 min) •Cold exposure: -65°C (setting: -68°C 30 min) •Power supply rated voltage•Sensor position: downstream•Specimen:Plastic molded ICs, 10kg Specimen IC temp. within 15 min ※2
	Transfer time between hot & cold chambers		Within 10 seconds
	Ambient recovery	Recovery conditions	•Hot exposure: +150°C to max.+55°C •Ambient temp.:+23°C
Ambient temp. recovery time		•Power supply rated voltage •Plastic molded ICs, 10 kg Within 90 min	
Noise level ※3 (ISO1996-1:2016)		Max.65dB	
Exhaust heat rate		12600KJ/h(3000kcal/h)	
Test area		shelf brackets on 2 levels (up to 4 baskets can be installed)	
Door		Door handle (right handle, left hinge), door lock mechanism components 2 sets	
Refrigeration unit	System	Mechanical cascade refrigeration system (Water-cooled condenser)	
	Compressor	Scroll-type Compressor	
	Compressor capacity	3.73kW(5HP)※4 x2sets	
	Refrigerant	R404A/R23	
Cooler		Plate fin cooler and cold accumulator	
Elevating unit		Power slider (250W)	
Equipment		USB memory port, Ethernet port (LAN port), specimen power supply control terminal,time signal output terminal (x2), specimen temperature input terminal (x2),cable port ϕ 100mm (x1) on right side (left side available as option).	
Standard accessories		Stainless steel specimen baskets * 2 (5 mesh (wire diameter ϕ 0.8mm) made of wire mesh; W700×H40×D410mm; 1.1kg/piece; Each load is 5kg (equally distributed load); Bracket 0.25kg/piece * 4 pieces; Glass tube fuse (spare parts AC380V specification B type 250V 3A, 5A, 7A, 10A, 15A); 2 rubber plugs for cable port; 1 cable port cover; 2 specimen temperature measurement thermocouples; 2 specimen temperature input connectors; Pipe joint R 1 1/4" (32A); filter R 1 1/4" (32A); circuit breaker handle block * 1 set; 1 set of user manual (CD, installation manual); One standard inspection report; *Power cables are not included.	
Inside dimensions (W×H×Dmm)		W710×H345×D410mm	
Test area capacity (L)		100L	
Load capacity of test area (kg)		30 kg (When using the test area floor or heavy-duty shelves (option))	
Specimen basket load capacity (kg)		5kg per basket	
Outside dimensions		W1100×H1885×D1965mm (Excluding protrusions)	
Weight (Kg)		Approx. 1100 kg	
Utilities	Cooling water supply pressure※5	0.2 ~ 0.5Mpa(2~5Kg/cm ² G)	
	Cooling water supply rate ※6※7	2050L/h(at reference water temp.+25°C)	
	Piping connection size	32A RC 1 1/4" (32A)	
	Cooling water temp. range	+5°C~ +38°C	

※1 Under the conditions of a +23°C ambient temperature, cooling water temperature +25°C, rated voltage, and no specimen inside the test area. The performance values are based on IEC 60068-3-5:2001 & JIS C60068-3-5:2006. JTM K07:2007. The temperature Heat-up time and temperature Pull-down time are the performance of each chamber is operated independently.

※2 Two specimen baskets are set in the testing area from the top layer to the bottom layer. The surface temperature of the plastic mold IC (QFP208 pin) placed in the center of each 5kg specimen in the specimen baskets is measured.

※3 Measurements are to be taken in an anechoic room at a height of 1.2m from the floor, and a distance of 1m from the front panel (ISO 1996-1:2016 characteristics). According to different environmental settings and the influence of surrounding echoes, the noise level may increase, and attention should be paid to the installation environment of the equipment.

※4 The compressor is represented by HP, and kW represents the conversion value.

※5 A pressure regulator valve is required if the pressure exceeds 0.5MPa(5Kg/cm²G).

※6 When using a chiller for cooling water, if the cooling water temperature is lower than the ambient temperature, the pipes inside and outside the product may condense and drip water. If you believe that the cooling temperature provided to the device is low, please contact after-sales service.

※7 Rate depends on the cleanliness of the heat exchanger.



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