

Thermal Shock Chamber 300°C Specification



High-temperature exposure up to 300°C, allowing high heat load

Today, the automotive industry accelerates electronic multi-functions. According to this trend, safety standards such as ISO26262 and IEC61508 require high environmental stress that is generated by thermal shock chambers for higher reliability of vehicle equipments.

The power semiconductors required for power conversion circuits in the power supply control of home appliances and motor control of hybrid vehicles for high efficiency use of electrical energy are changing from silicon to silicon carbide (SiC). Silicon carbide, with its low power loss, pressure resistance, and high thermal conductivity, is being heralded as the next-generation power semiconductor. These next-generation power semiconductors are required to be heat resistant to high-temperature stress resulting from high-capacity current, and, therefore, ESPEC offers thermal shock chambers with temperature control up to 300°C.

Features

- Increased high-temperature exposure to +300°C.
- Perform two-zone and three-zone tests without auxiliary cooling.
- Fixed test chamber design provides easy cable wiring for test measurements and voltage application.(TSA series)



Test area interior (TSA series)

- Equipped with an automatic safety door lock function that automatically locks the door and prevents opening when the internal chamber temperature is +190°C or higher.
- Eco operation can be performed during thermal shock testing from -70 to +200°C, thereby reducing power consumption by up to 35%. Power consumption can be further economized during tests with multiple cycles and long exposure time.



Instrumentation

Main specifications

Model		TSA-202ES-W (300°C model)	TSD-100 (300°C model)	TSE-11-A-S (300°C model)	
Test area	High-temp. exposure range	+60 to +300°C			
	Low-temp. exposure range	-70 to 0°C	-65 to 0°C	-65 to 0°C	
	Temperature fluctuation	±1.0°C	±0.5°C	±0.5°C	
Hot chamber	Pre-heat upper limit	+350°C	+305°C	+330°C	
	Temperature pull-down time	Within 40 minutes from ambient temperature to +350°C	Within 100 minutes from ambient temperature to +300°C	Within 60 minutes from ambient temperature to +300°C	
Cold chamber	Pre-cool lower limit	-75°C	-77°C	-75°C	
	Temperature pull-down time	Within 45 minutes from ambient temperature to -75°C	Within 90 minutes from ambient temperature to -77°C	Within 90 minutes from ambient temperature to -65°C	
Temperature recovery performance	Condition	High temperature exposure	+250°C 60 minutes	+270°C 40 minutes	+300°C 30 minutes
		Low temperature exposure	-40°C 60 minutes	-40°C 40 minutes	-45°C 30 minutes
	Sensor location	Up-stream side			
	Specimen	No specimen	Plastic mold IC 5 kg	Plastic mold IC 1 kg	

		Temperature recovery time	Within 20 minutes	Within 5 minutes	Within 10 minutes
Test area dimensions (mm)			W650×H460×D670	W710×H345×D410	W320×H148×D230



TSD-100 Thermal Shock Chamber, 300°C model



TSE-11-A-S Compact Thermal Shock Chamber, 300°C model

Examples

· $-30^{\circ}\text{C} \Leftrightarrow +260^{\circ}\text{C}$ Specimen: Molded plastic components around vehicle engine

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