



# NC-100

## Natural Convection Chamber

### CHAMBER FOR SEMICONDUCTOR NATURAL CONVECTION (STILL-AIR) THERMAL MEASUREMENTS

#### DESCRIPTION

The NC-100 Chamber is specifically designed for characterizing semiconductor devices and heat sinks in a standardized still-air environment. This unit will allow users to determine the thermal resistance of chip/package ( $\theta_{JA}$ ) and package/heat sink ( $\theta_{JHS}$ ) combinations. The NC-100 meets the requirements of EIA/ JEDEC JESD51-2 (Integrated Circuits Thermal Test Method Environmental Conditions - Natural Convection (Still Air)).

The internal dimensions of the chamber provide a 1ft<sup>3</sup> environment that is thermally isolated from the surrounding external environment. The chamber has been designed to minimize all thermal conduction paths through the chamber walls. Two 1" wide plastic frames keep external objects from contact with the side, top and bottom walls. The front door provides full access to the chamber interior, either by swinging it fully open or by lifting it off its pin-hinges. Hardware for the door latches are placed outside of the chamber. When fully latched, the seal material mounted on the door is slightly compressed to insure that external air flow does not get into the chamber. A thermocouple for measuring the chamber internal ambient temperature is positioned by a plastic tube mounted on the rear wall. The NC-100 is normally supplied with a Type-T thermocouple and subminiature connector but other thermocouple and connector types are available; please consult TEA for specific requirements.

The NC-100 comes with a blank Test Section Plate and four mounting screws. This plate can be easily user-modified to suit custom setup requirements. A Test Section Plate setup for accepting the JESD51 Thermal Test Boards (shown at right) is optionally available; the user provides the cabling and mating connector to the thermal test system.



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## FEATURES & BENEFITS

- Meets requirements of JESD51-2 standard to insure credible data measurements
- Removable Test Section Plate eases test sample setup
- Minimal thermal transfer through chamber walls
- Minimal heat plume perturbations
- Removable chamber door simplifies internal chamber setup
- Protected footprint minimizes impact of external heat sources
- Customizable Test Section Plate adaptable to wide variety of measurement requirements
- Test Section Plate can also be used on WT-100 Forced Convection Wind Tunnel

## SPECIFICATIONS

<b>Chamber Internal Dimensions</b>	<b>12" X 12" X 12" (304 X 304 X 304 mm)</b>
<b>Chamber External Footprint</b>	<b>14" H X 14" W X 28" (356 X 356 X 711 mm)</b> includes door swing in front & cable clearance in rear
<b>Internal Ambient Temperature Monitor</b>	<b>Type-T with subminiature thermocouple connector (Omega Engineering SMP-T-M or equiv.)</b>
<b>Test Section Plate Mounting</b>	<b>4 thumb screws into rear wall; internally flush with rear wall</b>
<b>Door Closing Mechanism</b>	<b>2 mechanical twist latches insure tight seal against gasket material</b>
<b>Door Hinge Mechanism</b>	<b>2 bullet-nosed pin hinges provide lift-off capability</b>

## ORDERING INFORMATION

<b>Model Number</b>	<b>Description</b>
<b>NC-100</b>	<b>Base Unit with blank Test Section Plate (see Note 1)</b>
<b>NC-100-01</b>	<b>Test Section Plate (Blank)</b> For customer designed and fabricated specimen mounting
<b>NC-100-02</b>	<b>Test Section Plate (JESD51 Thermal Test Board Setup)</b> Provides standoff and mating edge-card connector for standard test boards; customer provides cable and mating connector to thermal test system
<b>NC-100-03</b>	<b>Base Unit with Test Section Plate (JESD51 Thermal Test Board Setup)</b> Does not include blank Test Section Plate (NC-100-01)

Note 1: Type-T thermocouple and connector normally supplied; other types available – consult TEA for further information.