Theta JC

Theta JC is the thermal resistance measured between the juntion and the case of a package. The Theta JA is thus equal to the sum of Theta JC and resistance from the case of the package to the air. This second component of thermal resistance is exremely non-linear, and depends to a large degree upon physical characteristics of the package and the airflow. The Theta JC is relatively easier to measure, and the apparatus used for this measurement is shown below.

The package is mounted on a copper block that is placed inside the oven, and maintained at 60 degrees C constant. The setup is protected by the outer box that can be seen inside the oven from the picture, in order to minimize the amount of heat transfer through convection. The voltage and power to the package are then gradually increased till the package is dissipating 1 watt at steady state. Then the temperature difference is measured between the junction, and the case where it meets the copper block.