NCT65

Remote Trip Point Temperature Sensor with Overtemperature Shutdown

Description

The NCT65 is a low power temperature monitor housed in an

Table 2. ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Unit
	–	
	–	
–	–	
	–	
	–	
–	±	
		°
	–	°

Theory of Operation

The NCT65 is a remote trip point temperature sensor for use in a vide variety of applications from smart phones to embedded systems. The remote temperature is measured by the NCT65 and then compared with a fixed limit set by the internal device reference. The limit for the $\overline{\text{THERM1}}$ pin is 70

Remote Sensing Diode

The NCT65 is designed to work with substrate transistors built into processors or with discrete transistors. Substrate transistors are generally PNP types with the collector connected to the substrate. Discrete types are either PNP or NPN transistors connected as diodes (base-shorted to collector). If an NPN transistor is used, the collector and base are connected to D+ and the emitter to D−. If a PNP transistor is used, the collector and base are connected to D− and the emitter to D+.

Layout Considerations

Digital boards can be electrically noisy environments, and the NCT65 is measuring very small voltages from the remote sensor, so care must be taken to minimize noise induced at the sensor inputs. Take the following precautions:

- Place the NCT65 as close as possible to the remote sensing diode. Provided that the worst noise sources, that is, clock generators, data/address busses etc., are avoided, this distance can be 4 to 8 inches.
- Route the D+ and D− tracks close together, in parallel, with grounded guard tracks on each side. To minimize inductance and reduce noise pickup, a 5 mil track width and spacing is recommended. Provide a ground plane under the tracks, if possible.
- Place a 0.1 μF bypass capacitor close to the V_{DD} pin. In extremely noisy environments, place an input filter capacitor across D+ and D− close to the NCT65. This capacitance can effect the temperature measurement, so ensure that any capacitance seen at D+ and D− is, at maximum, 1,000 pF. This maximum value includes the filter capacitance, plus any cable or stray capacitance between the pins and the sensor diode.

PACKAGE DIMENSIONS

MSOP8