

sTEem-at-Work

Puzzle #31

Thermodiode voltage response to temperature changes

An advantage of thermodiodes over other types of temperature sensors is their compatibility with computer chip manufacturing procedures. They can be easily manufactured as small scale devices in large quantities and low manufacturing cost per batch and are widely used for automotive and appliance applications. Their down side is the fact that the temperature range where they provide a linear response to temperature changes is subject to the internal characteristic manufactured into the device. Thus, technicians always quality test each batch of devices before they leave the manufacturing facility as well as report when a batch does not meet performance expectations. The Tech knows that for a specific current there is a specific voltage value across the device (the forward bias potential) that is also inversely dependent on the temperature surrounding the device. It is also understood that when the temperature is too high the diode current drops drastically and the device is no longer sensitive to temperature changes in its surroundings. The tech has recorded the performance of three different batches.

- 1) All three batches of these devices have to be reported as not meeting performance expectations.

yes no

