

OVERVIEW

The LDM-4982M is designed to accommodate an 8-pin mini-DIL laser diode module. The package sits on a temperature controlled cold finger above the ZIF socket. The mount includes case temperature control with a temperature range of -5°C to 85°C.

This technical note describes the process of defining the maximum thermal load that the case temperature control can maintain at -5°C.

TEST SET UP

A Fairchild Semiconductor RHRP30120 diode was used as the heat load and mounted on a standard LDM-4982M. The TEC current was controlled and the temperature of the mount was monitored with a LDT-5980 High Power Precision Temperature Controller. Current was supplied directly to the heat load by an LDX-3232 High Compliance Current Source.

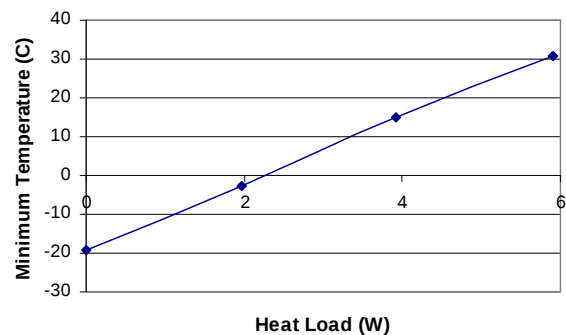
TEST PROCEDURE

The TEC current was set to 5A (84% of maximum cooling power) and the temperature was allowed to reach steady state at heat loads of 0W, 2W, 4W and 6W. The steady state temperature was recorded for each power level. The results are displayed on the following graph.

The heat load was determined by multiplying the current and voltage output of the LDX-3232.

$$P = VI$$

Minimum Temperature vs. Heat Load



RESULTS

The relationship between the applied heat load and the minimum temperature is defined by the following equation derived from the best fit trend-line of the graph above:

$$T = 8.5436 \cdot P - 19.818$$

For example, using the equation, a thermal load of 6 W can be controlled at a minimum of 31°C.

Through this experiment it was determined that the specified minimum temperature of the LDM-4982M of -5°C is attainable with a maximum heat load of 1.5 W.

CONCLUSION

The LDM-4982M mount can achieve a temperature control range of -5°C to 85°C at a maximum heat load of 1.5 W. At higher heat loads the minimum achievable temperature can be calculated from the equation above.