

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 491

TEC TEMPERATURE CONTROLLER

LTC1923EUH

DESCRIPTION

Demonstration circuit 491 features the LTC1923EUH thermoelectric cooler (TEC) controller. The LTC1923EUH comes in a small 32-lead QFN package (5mm by 5mm). Since the switching frequency of the circuit is 1MHz, small size inductors and capacitors are used as output filters. The main components are within a small assembly area about 0.75" by 0.5". DC491 provides a complete temperature control solution for TEC based temperature control of fiber-optic lasers. Laser temperature may be controlled at temperatures above or below ambient with

set point stability typically well within 0.05°C over widely varying ambient temperature. Temperature set point is established with a potentiometer. Considerably more detail relating to TEC temperature control issues is available in LTC Application Note AN-89, *A Thermoelectric Cooler Temperature Controller for Fiber Optic Lasers*. This publication should be reviewed before demo board results are evaluated.

Design files for this circuit board are available. Call the LTC factory.

QUICK START PROCEDURE

Demonstration circuit 491 is easy to set up to evaluate the performance of the LTC1923EUH. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. Connect a turned-off power supply (2.7–5.5V) to the VDD and GND terminals.
2. Connect a thermistor to the NTC+ and NTC– terminals. Although the thermistor is not a polarized device, one of its leads may be committed to the lasers case ground. If this is so, this lead should be connected to NTC–. Shielded cable should be used for the thermistor leads, with the shield connected to ground.
3. Adjust the temperature set point potentiometer (R15) using a small screwdriver.
4. Connect the TEC leads from the laser to the boards TEC+ and TEC– terminals. Observe polarity.
5. Turn on the power supply. The board will typically pull hundreds of milliamps for several seconds. Once the temperature set point is reached the current drops and settles to some sustaining value.
6. Performance optimization for any particular laser is achievable by following the procedures and guidelines given in LTC Application Note AN-89.

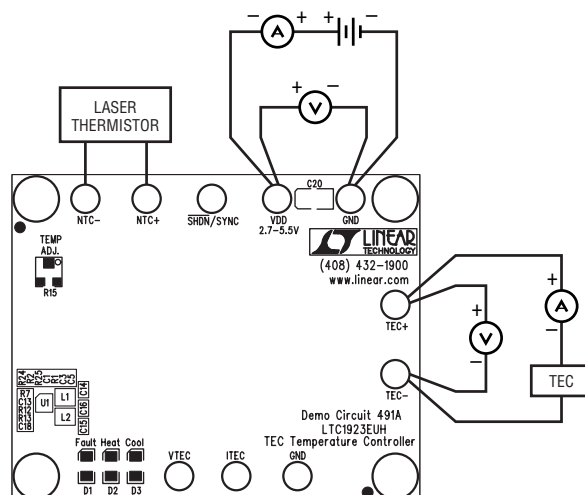


Figure 1. Proper Measurement Equipment Setup