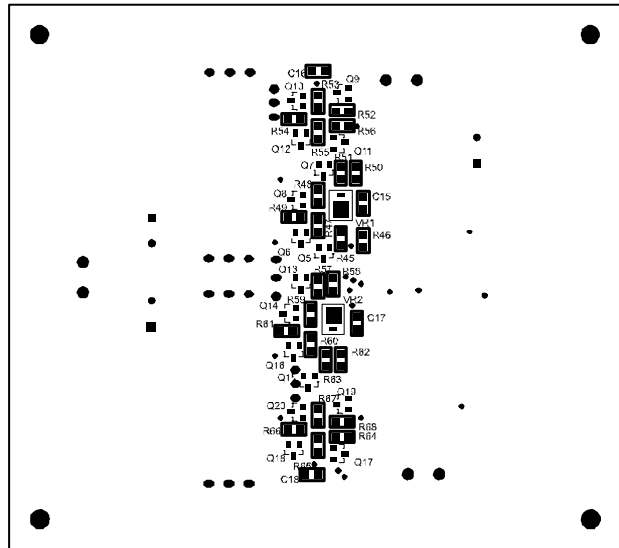
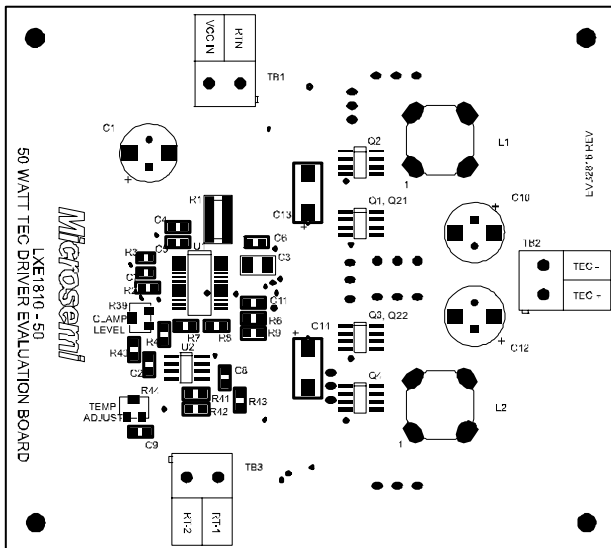


DESCRIPTION
KEY FEATURES

- 50 Watt Output.
- Input Voltage +12 to +15 Volts Max.
- Output current is 7A Maximum at 7V to 5A at 10V.
- Assy # LXEV1810-50.
- Thermister Input is not polarity sensitive for RT-1 and RT-2.
- If the set temperature is lower than the room temperature when power is applied; the output drive will put a positive potential across the Thermo electric cooler.
- Adjust R44 for Temperature setting.
- Adjust R39 for Maximum voltage output.
- Maximum Voltage output divided by TEC device resistance is maximum current output. Maximum current not to exceed 7A.
- Air flow required across circuit board for continuous 50W operation.

IMPORTANT: For the most current data, consult *MICROSEMI*'s website:
<http://www.microsemi.com>



APPLICATION NOTE

The LX1810 has an internal 5V reference at PIN 1. This reference is used with the POT adjustment that is the temperature setting and with the thermister resister divider that is the temperature feedback. The value of R43 is set equal to the value of the thermister at the temperature of operation, ($\pm 20\%$).

The values for R42, R41, R40, C8, & C2 are used to set the loop compensation for stable closed loop operation. This Eval board has been compensated for a Marlow Industries Inc. MI1012T-01, TEC device.

The value of R39 sets the peak output voltage limit of the power amplifier. The pot allows the user to adjust the output voltage for the TEC device resistance which sets the maximum output current. The LX1810 has an internal cycle by cycle current limit that is activated after a count of 9 cycles of over current. When activated the LX1810 goes into a hiccup mode until it has 2 cycles of normal current. This mode will prevent damage when the output has a short circuit.

The inductors, L1 and L2 are designed for the continuous current rating required by the device being driven by the power amplifier. At the 300kHz switching frequency an inductance value between $5\mu\text{H}$ and $10\mu\text{H}$ should be used. C22 and C23 provide an LC low pass filter. The TEC devices have a slow rate of change of temperature with time, which means the loop bandwidth will probably be under 10Hz. This means that the LC filters can be set in the range of 500Hz. Therefore, you can use the largest cap value with the voltage and package size required by your design.

The LX1810 has its FET drivers buffered so that the Eval board is capable of driving the highest power SO-8 package MOSFETs. An example of these devices are the Vishay Si4835DY P-Channel MOSFET, capable of 15 amps and the Si4842DY N-Channel MOSFET, capable of 15 amps. With these devices and the proper inductors, and the correct amount of heat sink, the power amplifier is capable of 7 amps continuous at an output voltage of 7 volts. So, any output power design is feasible up to this maximum design with the proper selection of components.

APPLICATION

