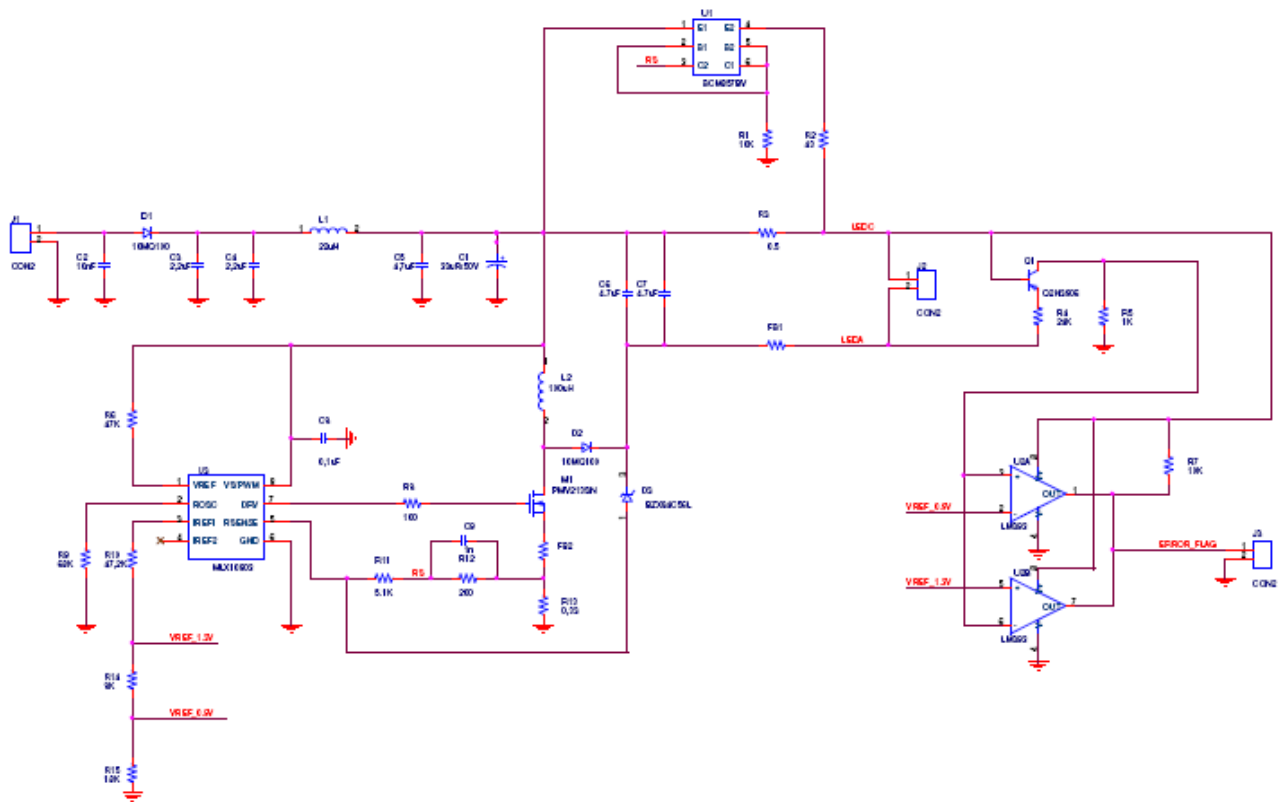


1 Scope

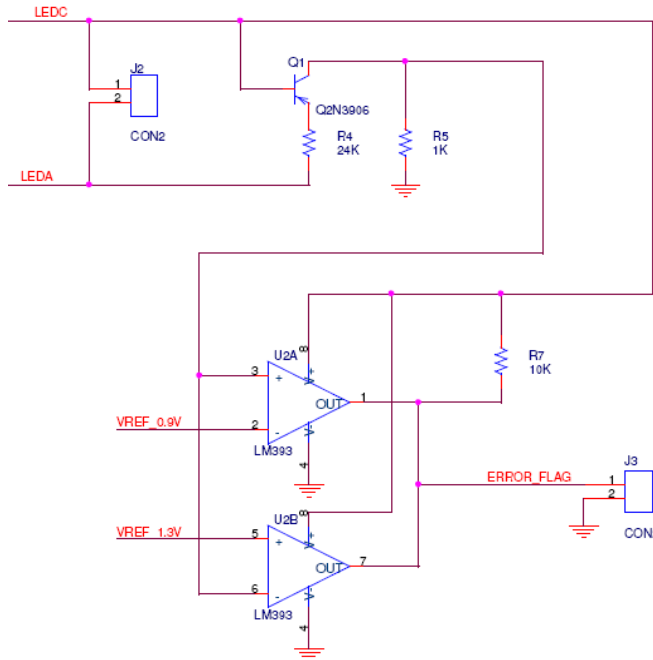
This application note explains how to diagnose failures on the LED string, and generate a digital feedback signal for the controller.

2 Application schematic

The MLX10803 IREF pins are temperature independent currents sources. The voltage realized from these pins can be used as reference voltages for comparator inputs.



Short/Open diagnostics feedback



zoom of diagnostics circuit

Assume an application where the total forward voltage of the LED string over binning and temperature can vary between 23V and 30V.

The input voltage on the comparators is defined as the LED forward voltage * R5/R4.

In this example the input voltage can vary from [0.96, 1.25]V.

The trigger voltages of the comparator are set by using the 50uA current source on IREF. See the datasheet for the tolerances on the current source.

This schematic allows to detect any failure mode on the LED string, including short to ground and to VBAT.

In principle it is also possible to detect the short of 1 LED in a string of LEDs. In this case a similar temperature dependence of the LEDs has to be implemented on the comparator reference voltages as well using an NTC.