

Isolating High Side Switch for Thermal Printer SMPS

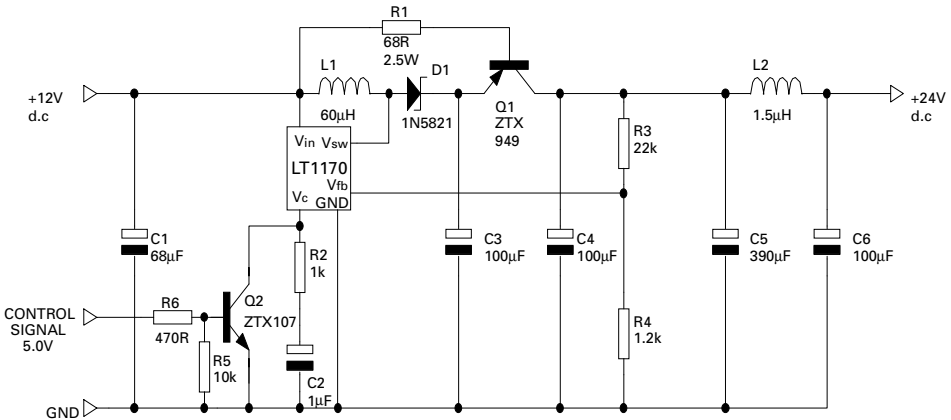


Figure 1
LT1170 Effected Boost Converter Circuit using a ZTX949 to Isolate Supply.

This circuit has been designed for use in thermal printers, to isolate the output of a boost converter from the input supply.

This allows the print head to be powered down when not in use, so that the thermal paper is not discoloured - this can be a problem with this converter topology as even when the converter IC is disabled, a direct path is available through the boost inductor L1 and the Schottky diode D1.

The circuit modification includes a low $V_{CE(sat)}$, high current PNP transistor - the ZTX949, as a high side switch controlled via the ZTX107. These components are

used with the original circuit to provide an isolated 24V 2A high efficiency power supply.

The low $V_{CE(sat)}$ of the ZTX949 (rated at a BV_{CEO} of 30V, a continuous collector current of 4.5A and a pulsed current at 20A) enables the device to switch low duty cycle pulse trains up to 7A without a heatsink.

Similar isolating switches can be configured using P-Channel MOSFETs, but due to their lower silicon efficiency these parts do not permit cost and space effective designs.