

Analysis of a Power Factor Correction Converter for Light Emitting Diode Driver Application

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Abstract : This paper proposes a switched capacitor based driver circuit for high power light emitting diodes with a front end rectifier. LEDs are low-voltage light sources, requiring a constant DC voltage or current to operate optimally. LEDs, therefore, require a device that can convert incoming AC power to the proper DC voltage, and regulate the current flowing through the LED during operation. Proposed topology has a front end converter. It is an AC-DC rectifier that works on bridgeless boost topology which shapes the input current waveform. The front end converter is followed by a DC-DC converter which provides a constant DC voltage across the LEDs. A 12V AC input is given to the input of frontend converter which rectifies and boost the voltage to 24v DC and gives it to the DC-DC converter. The DC-DC converter converts the 24V DC and regulates this constant DC voltage across the LEDs.

Keywords : bridgeless rectifier, power factor correction(PFC), SC converter, total harmonic distortion (THD)

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