

AN001 - Low Power LED Bulb (up to 4 watts)

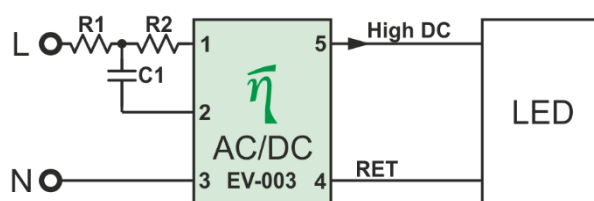
Abstract

Typical low power LED bulbs (up to 4 watts) use capacitive power supplies to drive the LEDs. These power supplies are reliable and inexpensive, however do not stabilize the LED current. Since the current is not stabilized, a lot more power needs to be considered, implying higher LED power and more heat that needs to be dissipated. This increases the BOM (Bill of Materials) cost.

The mains voltage variation (about $\pm 10\%$) together with the serial capacitor tolerance ($\pm 20\%$) result in power variation of almost 100% (two times the nominal power). This translates to a BOM cost that is twice that of a current-stabilized LED bulb.

Eta-Bar's EV-003 is a non-isolated high efficiency inductor-less AC to DC converter with regulated DC output (current or voltage).

EV-003 operates in wide temperature range and wide AC input voltage range.

**Main Features:**

- Topology : Capacitive power supply (inductor-less),
Non-isolated power supply
- Input voltage range : 85 to 140 VAC ; 50 to 60 Hz
185 to 265 VAC ; 50 to 60 Hz
- DC output :
 - Voltage mode: Regulated voltage: adjustable 0.7 to 70 V DC
Output current capabilities:
 - Average current: up to 60 mA
 - Peak current: up to 500 mA for less than 500 mSec
 - Current mode: Regulated current: adjustable 1mA to 60 mA DC
- Efficiency : >85% (Condition: at nominal output)
- Standby power : less than 5 mWatt (Conditions: R1 'inrush protector' < 1Ω)
- EMI filters : Not required