



AS1380 TRIAC Dimmable AC-DC PWM for LED Lightings (Preliminary)

Descriptions

The AC-DC Controller is a highly integrated current mode PWM control IC optimized for high performance, low standby power and a cost effective offline flyback converter applications.

Leading-edge blanking on current sense(CS) input removes the signal glitch due to snubber circuit diode reverse recovery and thus reduces the RC filtering in the design. Triac dimming is an additional features particularly suitable for LED lighting.

Automatic self-recovery feature including Cycle-by-Cycle current limiting (OCP), over load protection (OLP), under voltage lockout (UVLO).

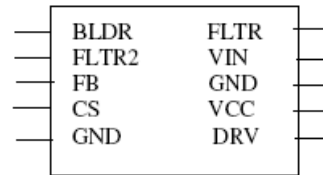
The Gate-drive output capability has 250mA peak which is able to drive a high gate charge MOSFET. Excellent EMI performance is achieved with frequency jittering technique.

Features

- TRIAC based Dimming for LED lightings
- Very low startup current
- FB direct connect to the opto-coupler
- Auto-Recovery Internal Output Short-Circuit Protection
- Current-Mode with Adjustable Skip-Cycle Capability
- Internal Leading Edge Blanking
- Internally Fixed Frequency
- Undervoltage Lockout

Applications

- LED Lighting Applications



IC - Top View *

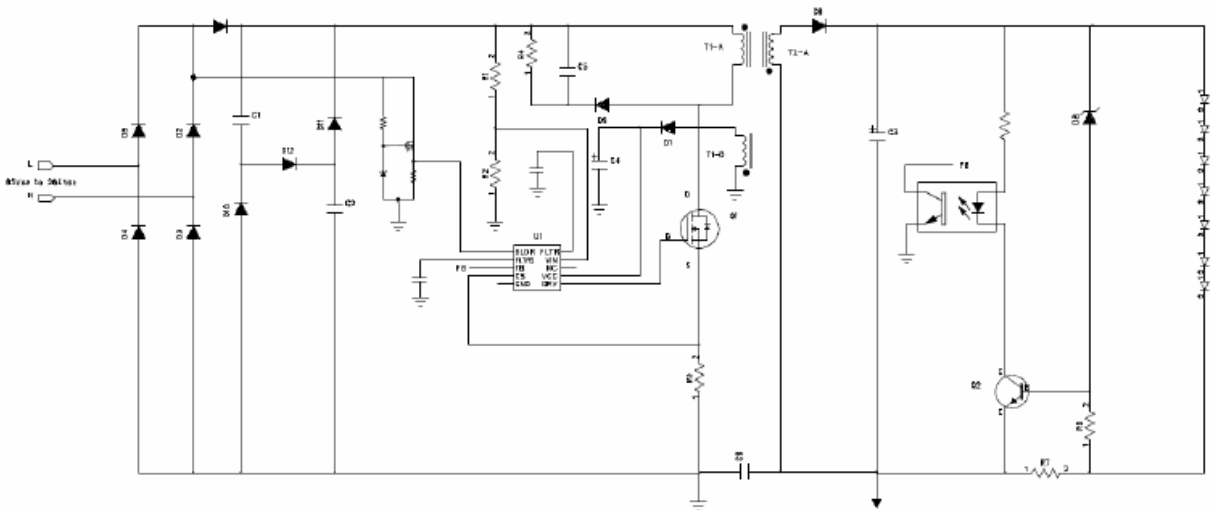


Figure 1 LED Lighting Application



AS1380 AC-DC PWM for LED Lightings

| Pin | Name | Function |
|-----|-------|---|
| 1 | BLDR | Ensure proper firing of the triac dimmer. |
| 2 | FLTR2 | Filter the dimming signal. |
| 3 | FB | Direct connect to the opto-coupler for controlling the output voltage regulation. |
| 4 | CS | This pin senses the primary current and routes it to the internal comparator via an L.E.B. |
| 5 | Gnd | IC Ground |
| 6 | Drv | The driver's output to an external MOSFET. |
| 7 | Vcc | IC Supply. This pin is connected to an external bulk capacitor |
| 8 | Gnd | IC Ground |
| 9 | Vin | Connected to the ac bridge-rectified voltage. This is for brownout detection and also for the current compensation of high line and low line. |
| 10 | FLTR | Filter the PWM signal to a DC signal, and then make use of the signal to control the brightness of the output LED. |

ELECTRICAL CHARACTERISTICS (For typical values $T_J = 25^\circ\text{C}$, $V_{CC} = 11\text{ V}$ unless otherwise noted.)*

| Characteristic | Symbol | Pin | Min | Typ | Max | Unit |
|---|----------|-----|-----|-----|-----|------|
| Supply Section | | | | | | |
| Turn-on threshold level, Vcc going up | Vcc(off) | | | 13 | | V |
| Minimum Operating voltage after turn-on | Vcc(on) | | | 8 | | V |
| Startup Current | Istart | | | 60 | | uA |
| Normal Operating Current with output switching | Icc | | | 5 | | mA |
| Drive Output | | | | | | |
| Output Voltage Rise-Time at CL=1nF, 10% to 90% of output signal | Tr | | | 80 | | ns |
| Output Voltage Fall-Time at CL=1nF, 10% to 90% of output signal | Tf | | | 80 | | ns |
| Internal Oscillator | | | | | | |
| Switching Frequency | fsw | | | 64 | | kHz |
| Maximum Duty Cycle | Dmax | | | 75 | | % |
| Current Sense Section | | | | | | |
| Primary Peak Current Limit Voltage | Vcs | | | 1 | | V |

*The specifications, with pin assignments, are subject to change according to the real situations.

(Preliminary)