

TP102
Off-Line Digital Green-Mode LED Driver, Charger
Integrated with Power BJT

DIGITAL IC

1.0 General Description

The TP102 is a high performance AC/DC power supply control device which uses digital control technology to build peak current mode PWM flyback power supplies. This device includes an internal power BJT and operates in quasi-resonant mode to provide high efficiency along with a number of key built-in protection features while minimizing the external component count, simplifying EMI design, and lowering the total bill of material cost. The TP102 removes the need for secondary feedback circuit while achieving excellent line and load regulation. It also eliminates the need for loop compensation components while maintaining stability in all operating conditions. The built-in power limit function enables optimized transformer design in universal off-line applications and allows for a wide input voltage range.

GlobalSemi's innovative proprietary technology ensures that power supplies built with the TP102 can achieve the highest average efficiency, lowest standby power consumption, and fast smooth startup with a wide range of output voltage, that are ideal for LED lighting applications.

Features

- ◆ No-load power consumption < 30mW at 230VAC with typical application circuit
- ◆ Supports universal input voltage range (90VAC to 277VAC)
- ◆ Isolated design without opto-coupler
- ◆ Internal 800V power bipolar junction transistor (BJT)
- ◆ Very tight LED current regulation ($\pm 5\%$) across line and load, and within primary inductance tolerance ($\pm 20\%$)
- ◆ Supports wide range of capacitive loads (from 33 μ F to 2000 μ F or higher)
- ◆ Intrinsically low common mode noise
- ◆ Adaptively controlled soft start-up enables fast and smooth LED current start-up
- ◆ Optimized 72kHz maximum PWM switching frequency achieves best size and efficiency
- ◆ Quasi-resonant operation for highest overall efficiency
- ◆ Dynamic base current control to drive internal BJT
- ◆ No external compensation components required
- ◆ Built-in short circuit protection and output overvoltage protection
- ◆ No audible noise over entire operating range
- ◆ No external compensation

Applications

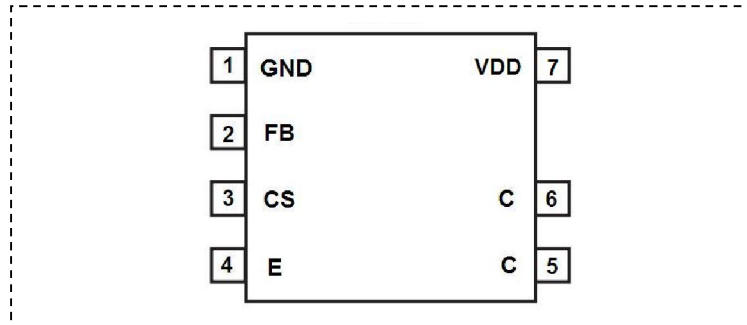
- Cell Phone Charger
 - Solid-state LED lighting
 - LED lighting ballast
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2.0 Products Information

2.1 Pin configuration



Pin Configuration: TP102 Series (SOP7)

Pin Name	I/O	Description
GND	P	Ground.
FB	I	Analog Input Auxiliary voltage sense (used for primary regulation).
CS	I	Analog Input Primary current sense. Used for cycle-by-cycle peak current control and limit.
E	Emitter	Emitter of internal BJT (pin3 and pin4 must be shorted externally on the PCB) .
C	Collector	Collector of internal bipolar junction transistor (BJT) .
VDD	P	Power supply for control logic.