

FC1350

350mA LED Lighting Driver

Description

The FC1350 is capable of driving single or multiple series connected LEDs efficiently from a voltage source higher than the LED voltage. This step-down converter provides an externally adjustable output current of up to 350mA from an input supply between 7V and 32V. It can even reach 8 watts of output power, depending on supply voltage and external components.

The FC1350 consists of an output switch and a high-side output current sensing circuit that uses an external resistor to set the nominal average output current. Through applying an external control signal to

the 'ADJ' pin, it can adjust the output current to above or below the set value. The ADJ pin will accept either a DC voltage or a PWM waveform to provide a continuous or a gated output current.

The chip contains a PWM filter which provides a soft-start feature by controlling the rise of input/output current. It can raise the soft-start by using an external capacitor from the ADJ pin to ground. Applying a voltage of 0.2V or lower to the ADJ pin turns the output off and switches the device into a low current standby state.

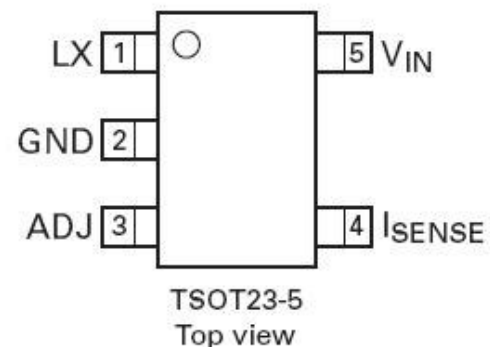
Features

- Built in thermal and over current shut down.
- Internal 32V Power MOS switch
- 350mA output current
- Single pin on/off and dimming control using DC voltage or PWM at ADJ pin.
- Internal PWM filter
- Soft-start
- High efficiency (up to 90%)
- Wide input voltage range: 7V to 32V
- 40V transient capability
- Output shutdown
- Up to 1MHz switching frequency
- Inherent open-circuit LED protection
- Typical 5% output current accuracy

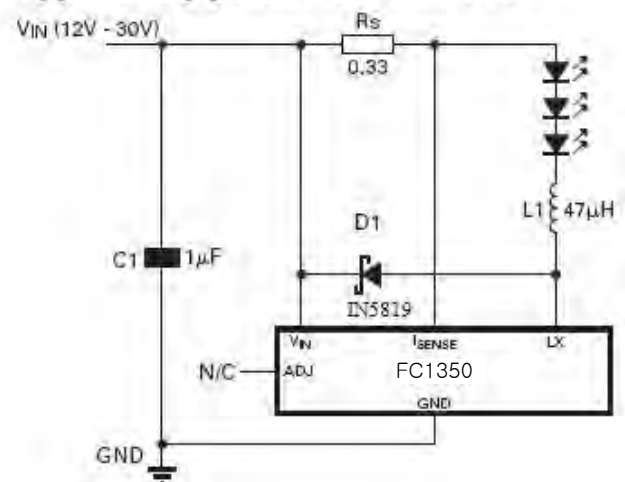
Applications

- MR16 and general lighting
- Automotive lighting
- Low voltage industrial lighting
- LED back lighting
- Illuminated signs

Pin connections



Typical application circuit





Electrical Characteristics (test condition: $V_{in} = 12V$ DC, $T_a = 25C$)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{in}	Input voltage		7		32	V
V_{su}	Internal regulator start-up threshold	V_{in} rising		4.8		V
I_{INQo}	Quiescent supply current with output o	ADJ pin grounded		20		μA
I_{INQon}	Quiescent supply current with output switching	ADJ pin oating $f=250kHz$		500		μA
V_{SENSE}	Mean current sense threshold voltage (defines LED current setting accuracy)	Measured on ISENSE pin with respect to V_{IN} V_{ADJ} $=1.25V$		100		mV
$V_{SENSEHYS}$	Sense threshold hysteresis			+/-15%		
V_{REF}	Internal reference voltage	Measured on ADJ pin with pin oating		1.25		V
V_{ADJ}	External control voltage range on ADJ pin for dc brightness control (†)		0.3		2.5	V
TOP	Operating temperature. For function only. No guarantee for parametric.	$V_{in} = 12V$	-20		85	Deg C

Block diagram

