



AS1350 350mA LED driver with internal FET

Preliminary

Description

The AS1350 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 30V. It can even reach 8 watts of output power, depending on supply voltage and external components. The AS1350 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

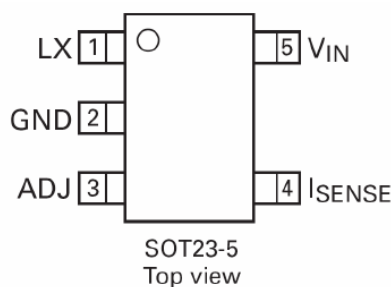
- Built in thermal and over current shut down.
- Internal 30V Power MOS switch
- 350mA output current
- Single pin on/off and dimming control using DC voltage or PWM at ADJ pin.
- Internal PWM filter
- Soft-start
- High efficiency (up to 90%)
- Wide input voltage range: 7V to 30V
- 40V transient capability
- Output shutdown
- Up to 1MHz switching frequency
- Inherent open-circuit LED protection
- Typical 5% output current accuracy

Applications

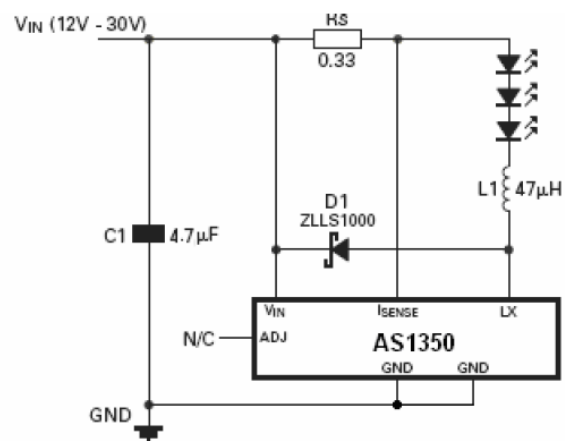
- MR16 and general lighting
- Automotive lighting
- Low voltage industrial lighting
- LED back lighting
- Illuminated signs

(*) Using standard external components as specified under electrical characteristics. Efficiency is dependent upon the number of LEDs driven and on external component types and values.

Pin Connections



Typical application circuit



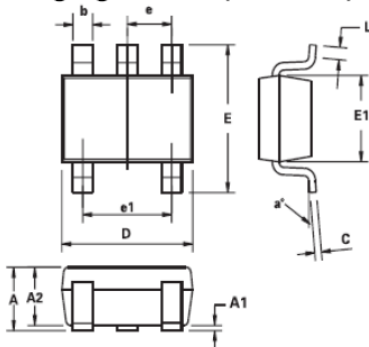


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Electrical Characteristics (test condition: Vin = 12V DC, Ta = 25C)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Vin	Input voltage		7		30	V
Vsu	Internal regulator start-up threshold	Vin rising		4.8		V
IINQoff	Quiescent supply current with output off	ADJ pin grounded		50		uA
IINQon	Quiescent supply current with output switching	ADJ pin floating f=250kHz		300		uA
VSENSE	Mean current sense threshold voltage (defines LED current setting accuracy)	Measured on ISENSE pin with respect to VIN VADJ =1.25V		100		mV
VSENSEHYS	Sense threshold hysteresis			+/-15%		
VREF	Internal reference voltage	Measured on ADJ pin with pin floating		1.2		V
VADJ	External control voltage range on ADJ pin for dc brightness control		0.3		2.0	V
ILX	Continuous LX switching current		.35			A
RLX	LX On Resistance			1.0		Ohm
TOP	Operating temperature. For function only. No guarantee for parametric.	Vin = 12V	-20		85	Deg C

Packaging outline (SOT23-5):



DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.45	0.0354	0.0570
A1	0.00	0.15	0.00	0.0059
A2	0.90	1.30	0.0354	0.0511
b	0.20	0.50	0.0078	0.0196
C	0.09	0.26	0.0035	0.0102
D	2.70	3.10	0.1062	0.1220
E	2.20	3.20	0.0866	0.1181
E1	1.30	1.80	0.0511	0.0708
e	0.95 REF		0.0374 REF	
e1	1.90 REF		0.0748 REF	
L	0.10	0.60	0.0039	0.0236
a°	0°	30°	0°	30°

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches