

High Power-factor Constant current offline LED driver IC ADT6001

DESCRIPTION

The ADT6001 is a low power, high power-factor, constant current offline LED driver IC. It can operate with wide input voltage range from 90V to 270VAC. It supports flyback topology and achieves very high power factor.

It supports LED Dimming feature. It detects toggle of wall switch and changes the LED current accordingly. It can replace then existing any light bulb with ADT6001 LED light bulb without any rewiring.

It provides 3 dimming step, full power, 30%, and 15%.

It also include over-temperature protection, it turns off the switching when its junction temperature exceeds $150\,^{\circ}$ C.

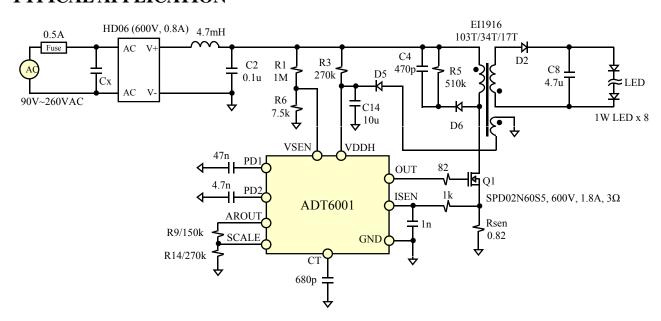
FEATURES

- 90V to 270VAC wide input range
- High power factor architecture
- High efficiency: up to 88% sinusoidal flyback Lighting for public buildings including
- No need for any electrolytic capacitor
- 450mV current-limit voltage
- Natural current-limited soft start (no inrush current)
- Over-temperature protection
- No-load protection, open feedback loop protection
- Available in MSOP-10 package

APPLICATIONS

- General LED lighting
- Stairway, hallway, or warehouse lighting
- Lighting for public buildings including airports, train stations, subway stations, schools, factories

TYPICAL APPLICATION



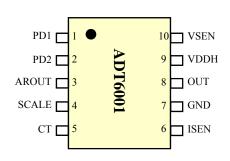
^{*} This specifications are subject to be changed without notice



PIN DESCRIPTION

Pin No.	Pin Name	Description	
1	PD1	Peak detector for sense input	
2	PD2	Peak detector for auto range output	
3	AROUT	Auto range signal output	
4	SCALE	Auto range signal scale voltage input	
5	СТ	Sets the Toff length and the nominal switching frequency	
6	ISEN	Current sense voltage input	
7	GND	Ground	
8	OUT	Gate driver output for external MOSFET	
9	VDDH	Chip supply voltage	
10	VSEN	Voltage sense input	

PIN CONFIGURATION



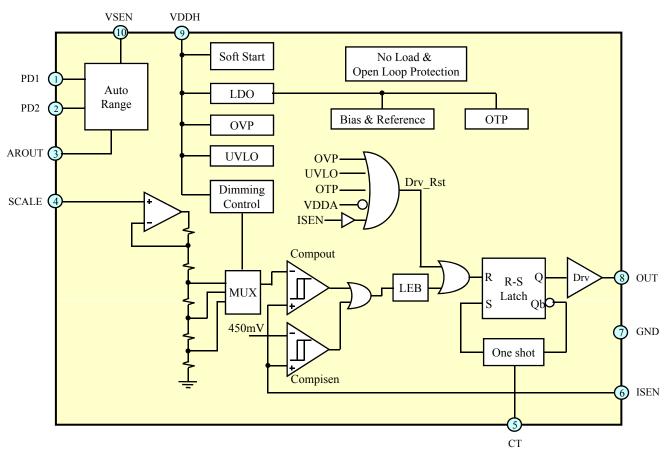


Jun. 26. 2013 2/5 http://www.ad-tech.co.kr

^{*} This specifications are subject to be changed without notice



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta = 25°C, Note1)

PARAMETER	SYMBOL	RATING	UNIT
Ground Voltage	GND	-0.3	V
Power Voltage	VDDH	20	V
Gate Driver Output	OUT	20	V
Power Outputs and Controls	PD1, PD2, AROUT SCALE, CT, ISEN	6	V
Power Dissipation (Note2)	P_{D}	0.64	W
Storage Temperature	T_{stg}	- 65 ∼ 150	$^{\circ}\! \mathbb{C}$
Thermal Resistance (Note3)	$ heta_{ m JA}$	193.3	°C/W

Note1. Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device.

Note2. Derate $17\text{mW}/^{\circ}\text{C}$ above $+25^{\circ}\text{C}$. This is recommended to operate under this power dissipation specification.

Note3. Measured on JESD51-7, 4-layer PCB

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	MAX	UNIT
VDDH supply voltage range	VDDH	7	15	V
Operating Temperature	T_{OPR}	-40	85	${\mathbb C}$

^{*} This specifications are subject to be changed without notice



ELECTRICAL CHARACTERISTICS (VDDH=12V, Typical values are at T_A =25 $^{\circ}$ C)

CHARATERISTICS	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating current	Fsw=100kHz, Ciss=1nF	-	2.0	3.0	mA
OVP trip point		17.0	18.0	19.0	V
OVP hysteresis		-	1	-	V
UVLO Turn-on threshold voltage		10.0	12.0	16.0	V
UVLO Turn-off threshold voltage		5.0	6.0	7.0	V
Internal OTP shutdown threshold	Switching is turned off. (Note 1)	-	150	-	${\mathbb C}$
Internal OTP shutdown reset	Switching is resumed. (Note 1)	-	100	-	${\mathbb C}$
Gate Driver source current	Fsw=100kHz	100	200	-	mA
Gate Driver sink current	Fsw=100kHz	100	300	-	mA
Current limit reference voltage		400	450	550	mV
Leading edge blanking time		-	350	-	ns
Propagation delay	From OCP to VOUT drops to 0.9*VDDH (Note 1)	-	100	-	ns
Toff length	CT=680pF (Note 2)	7.03	7.6	8.24	us

Note 1: The parameter is guaranteed by design. It is not tested in production.

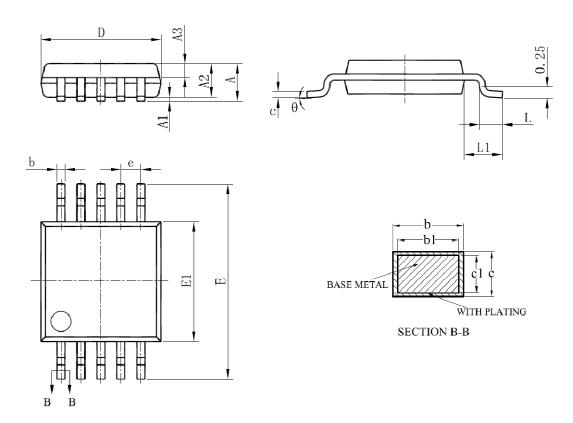
Jun. 26. 2013 4/5 http://www.ad-tech.co.kr

Note 2: The CT capacitance required for a target Toff is, CT=Toff/11.2k.



PACKAGE DIMENSTION

MSOP-10



C11	Dimensions In Millimeters			
Symbol	Min	Nom	Max	
A	_	-	1.10	
A1	0.05	-	0.15	
A2	0.75	0.85	0.95	
A3	0.30	0.35	0.40	
b	0.19	1	0.28	
b1	0.18	0.20	0.23	
c	0.15	1	0.20	
c1	0.14	0.152	0.16	
D	2.90	3.00	3.10	
Е	4.70	4.90	5.10	
E1	2.90	3.00	3.10	
e	0.50BSC			
L	0.40	_	0.70	
L1	0.95BSC			
θ	0°	_	8°	

^{*} This specifications are subject to be changed without notice