COOLED
ACDrv1.1 LED Driver

Low cost, High Efficiency,
Easy to Use, AC Driving, 1 Segments

Datasheet

Features:

- LEDs driven directly from AC line
- Adjustable power setting
- Flexible with different kinds of Vf LEDs
- Built in MOSFETs, up to 15W per driver
- Constant current precision at 3%
- High efficiency, more than 90% at optimized configuration
- High power factor, up to 0.9
- Compatible with AC100V/220V operation
- 50/60 Hz operation
- Over voltage protection
- Over temperature protection
- Minimum number of external components
- package TO252

Application:

- LED Bulb
- LED Filament
- Spot Light
- Down Light
- Ceiling lamp

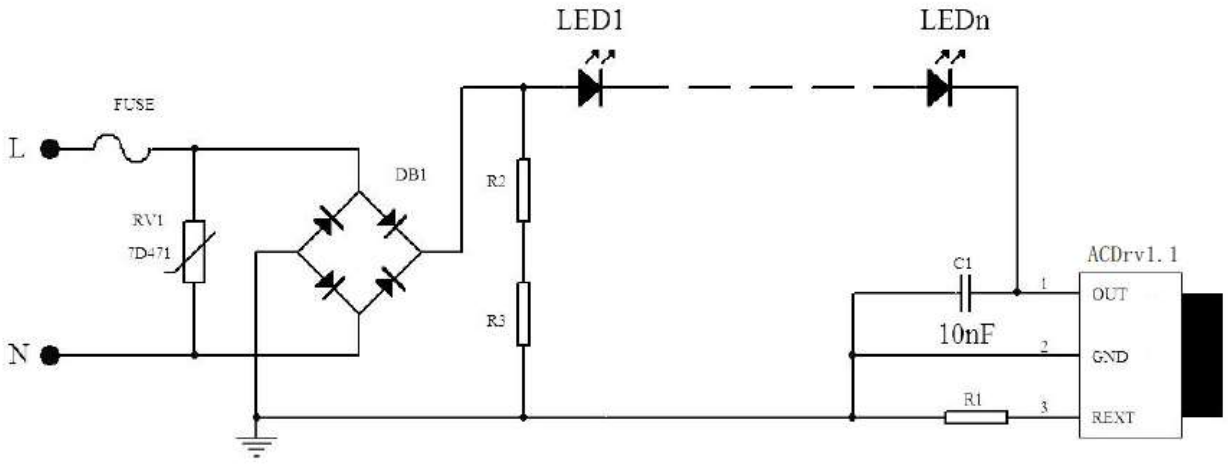
Description:

ACDrv1.1 is designed For AC directly driving LED, with creative architecture, ACDrv1.1 eliminates the Bulk capacitor and transformer, which are the bottleneck of LED lamp life time. ACDrv1.1 provides a ideal driver for LED lighting with low cost, compact size, stable and long lifetime.
ACDrv1.1 integrates all the necessary components including MOSFET in single chip. With external resistors, the LED current could be set,
Driver based on ACDrv1.1 has a ideal power parameters such as PF, Efficiency, EMI.

Order Information

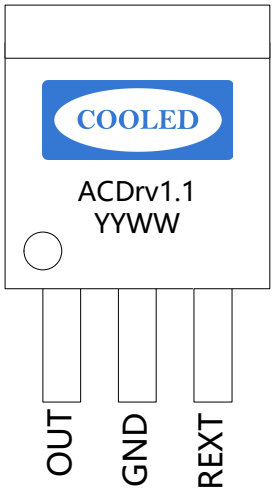
PART No	PACKAGE	DELIVERY
ACDrv1.1	TO252	2000/Reel

Application Schematics



Reference Application

Pin Description



No	Name	Type	Description
1	OUT	output	control output
2	GND	Input	Ground of driver
3	REXT	Input	Current feedback

Operation Principle

A series string of LEDs or HVLEDs, for example at 120V input voltage, the LED could be Vf 9V HVLEDs, is connected with driver in series.
The 120 VAC line is connected to a bridge rectifier to generate a rectified half sine waveform.
The LEDs and Driver are powered by the rectified AC voltage.
Current of LEDs are set by the external sense resistors.
As the rectified voltage rises from 0V and exceeds the Vf of LED string, the internal control logic will control the LED to be Lighted on and set current in constant level.
Note the total voltage in series could be close to the peak voltage of peak rectified voltage in order to have a high conversion efficiency. For example in 220V application, the suggested total Vf of LED is from 240-260V. For 120V application, the suggested total Vf of LED is from 120-130V.

Current Setting

The current going through LEDs is constant controlled. Adjusting the external resistor connected with REXT pin, the peak current could be set from 5mA to 60mA. Rs is the resistor connected with REXT and GND
The step current is set as following
$I_{D1}=V_{ref}/Rs$ mA

Over Temperature Setting

Built in temperature detection circuit will detect the temperature on board, when the ambient temperature is too high, the over temperature protection will lower the power of driver by decreasing the internal reference voltage, in order to lower the generated heat. The start point of protection temperature is from 120 degree, when temperature increase 10 degree, the power is reduced 20% to have a new heat balance.

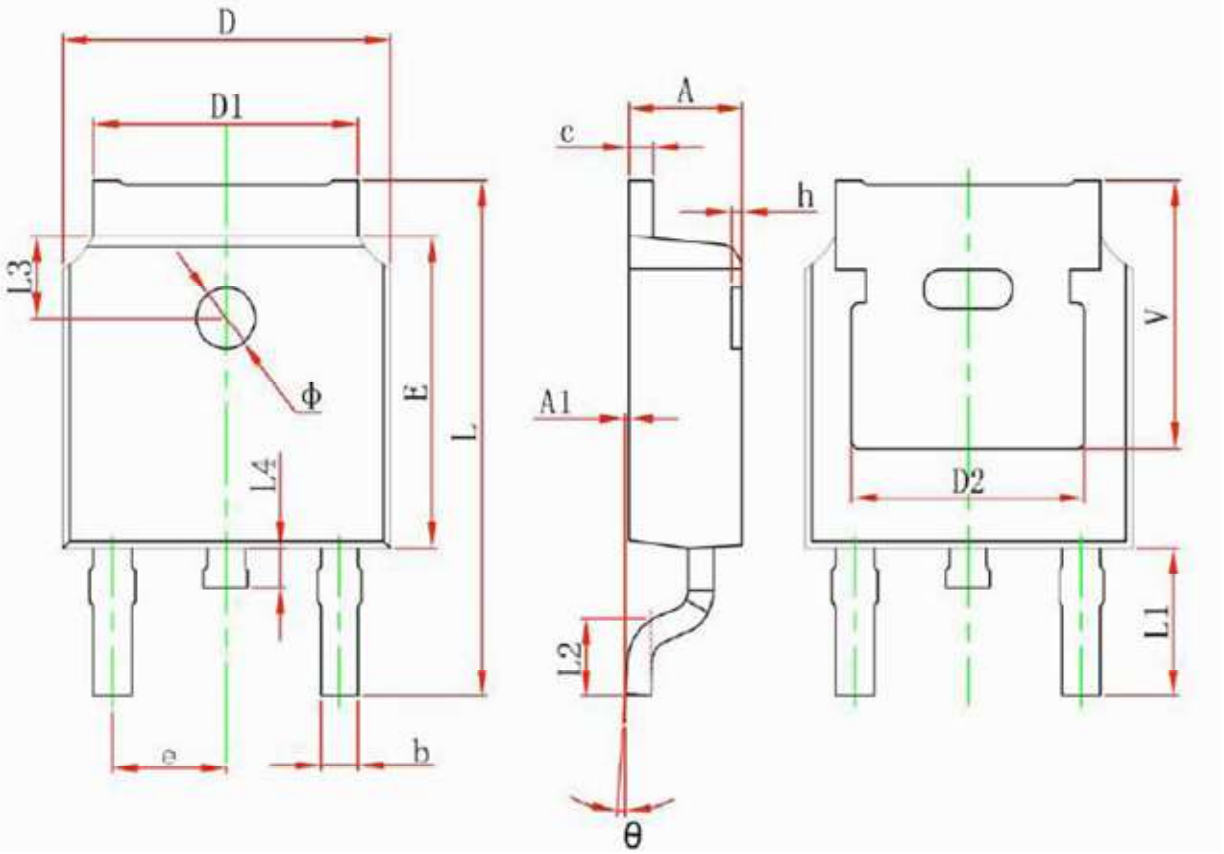
DC Electrical Characteristics

Parameters	Condition	Min	Typ	Max	Uint
Operating Current			200		uA
VREF Voltage	@25C	-3%	0.6	+3%	V
VREFO TC			100		ppm
MOS FET working current		0		60	mA
Protection Section					
Over Temperature threshold			120		°C
Temperature Window			20		°C

Absolute Maximum Ratings

Item	Description	Unit
Voltage on CS	5	V
Voltage on OUT	600	V
Current on OUT to GND	90	mA
Package Power	2	W
Working Junction temperature	-40-150	°C
Junction to Package (Back Metal Pad)	3	°C/W
Junction to Package (Top Plastic)	8	°C/W
Junction to Ambient	60	°C/W
Storage Temperature	-40-150	°C

Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	