

High Performance LED Flicker Attenuator

Features

- Flicker Attenuator
- Maximum output current 1100mA,
- Maximum output LED voltage up to 100V.
- Automatic regulated loading current
- Internal soft start
- Built-in open LED protection circuit
- Built-in short LED protection circuit with latch mode
- Built-in thermal protection circuit with latch mode

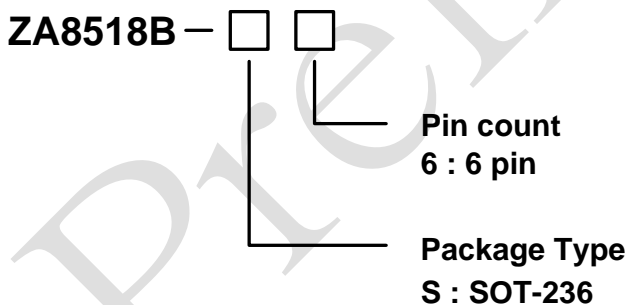
Description

The ZA8518B is an automatic current ripple attenuator for high power LED applications. At ZA8518B output terminal, one regulated current port is designed to provide a uniform and constant current sink for driving LEDs within a large range of V_F variations. The maximum output current of ZA8518B can be up to 1100mA, which gives users flexibility in controlling the light intensity of LEDs. ZA8518B has built in over temperature protection function, it prevents from the device damage due to excessive power dissipation.

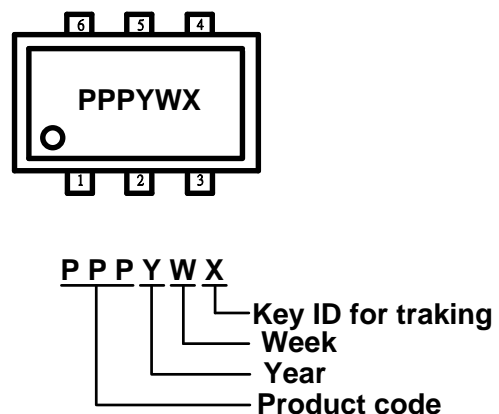
Application

- High Power LED Driver
- RGB Full Color Power LED driver
- Current stabilizer with AC/DC or DC/DC
- Others LED Lighting Applications
- General purpose constant current source

Ordering information



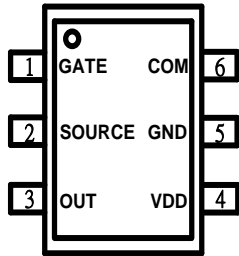
Marking Information



Pin Configuration (Top View)

Absolute Maximum Ratings

SOT-236



Parameter	Value
Supply Voltage VDD	60V
COM	-0.3 to 6V
OUT	100V
Junction Temperature	150°C
Operating Ambient Temperature	-20°C ~85°C
Storage Temperature Range	-65°C ~150°C
SOT-23-6 Package Thermal Resistance (junction to ambient)	320°C/W
Power Dissipation (SOT-23-6, at ambient temperature = 85°C)	250mW
Lead Temperature (All Pb free packages, soldering, 10 sec)	260°C
ESD voltage protection, machine model	200V
ESD voltage protection, human body model	2KV

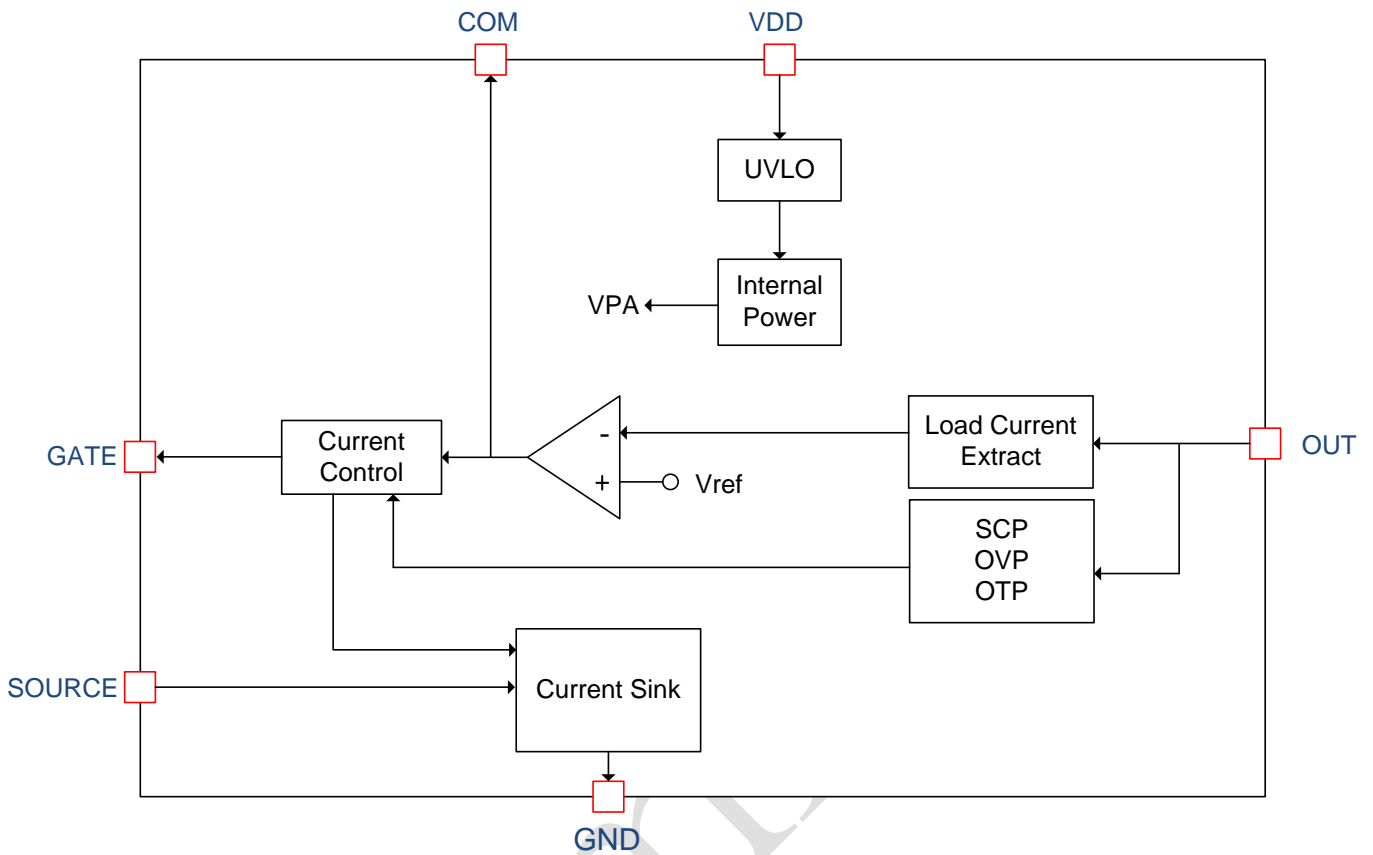
Pin Description

SOT-236	Name	Function
1	GATE	The Output Driver for Driving The External MOSFET Gate Pin
2	SOURCE	Current Regulator Series The External MOSFET Source Pin
3	OUT	Current Regulator Series The External MOSFET Drain Pin
4	VDD	Power Supply Pin
5	GND	Ground Pin
6	COM	Feedback Compensation Network

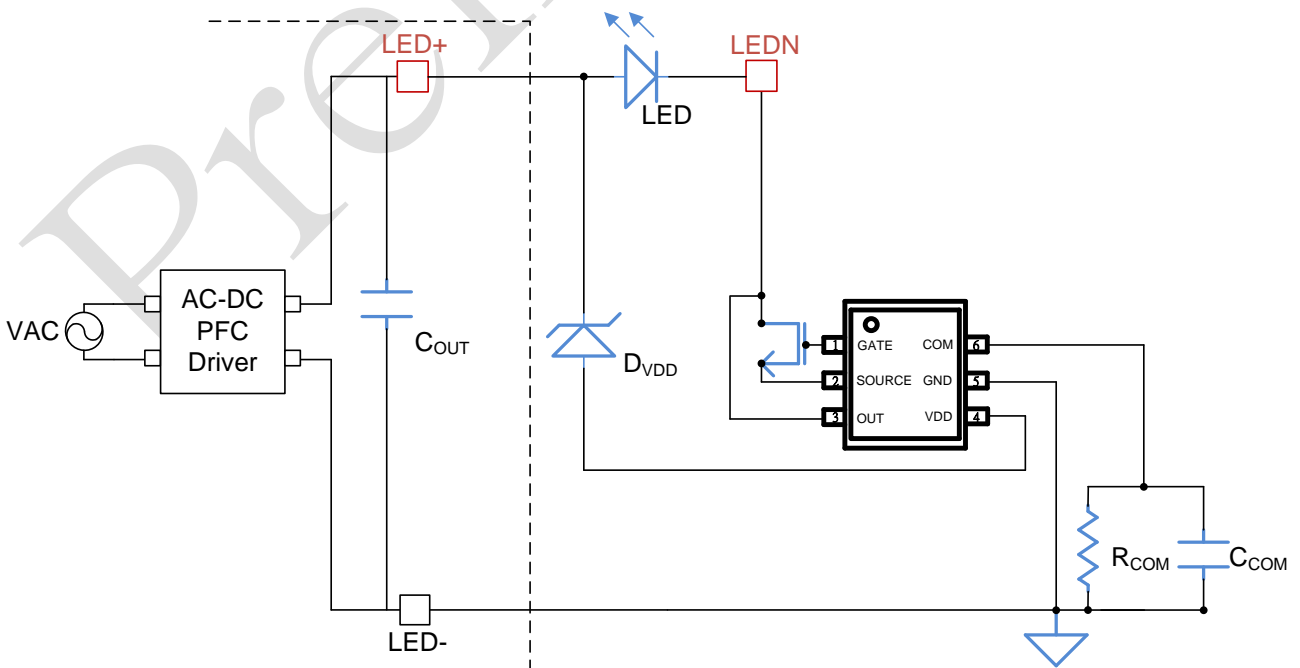
Recommended Operating Condition

Symbol	Parameter	Min/Max	Unit
VDD	Power Supply Pin	5 to 60	V
TA	Operating Ambient Temperature	-20 to 85	°C

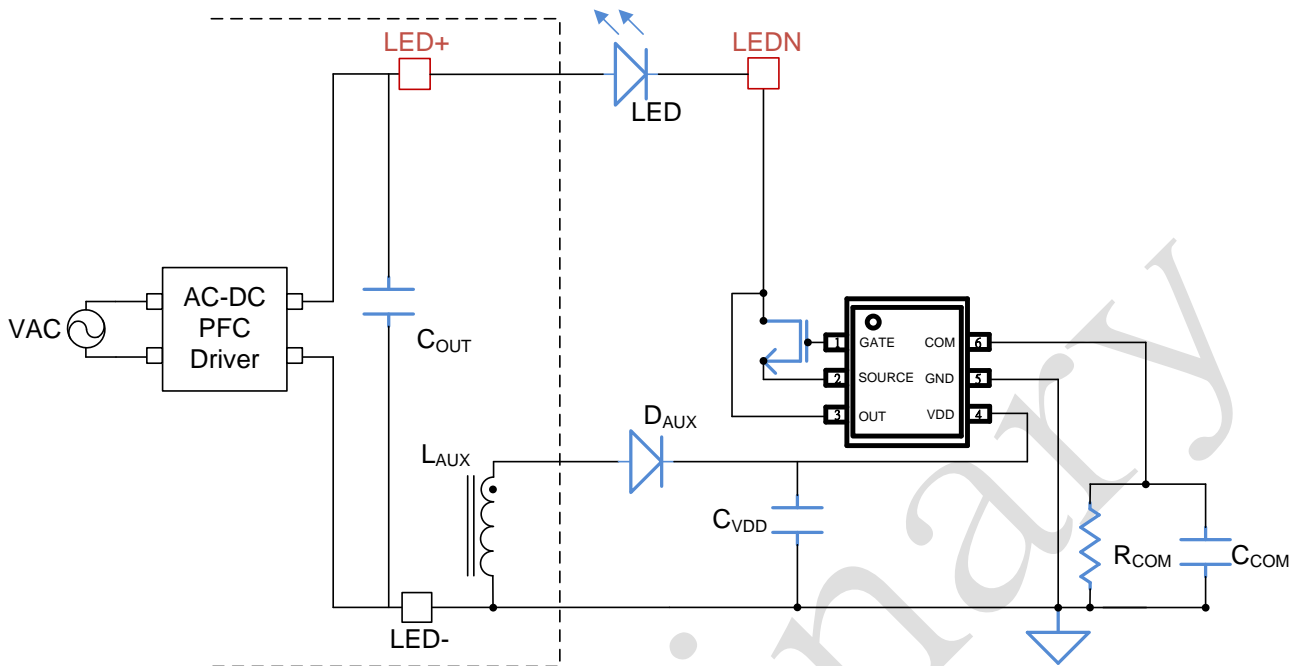
Function Block



Application Circuit (1)



Application Circuit (2)



Electrical Characteristics (VCC = 15.0V & TA = +25°C, unless otherwise specified.)

DC ELECTRICAL CHARACTERISTICS					
Parameter	Test Conditions	Min	Typ	Max	Units
SUPPLY VOLTAGE					
Supply Current Consumption		--	1	--	mA
Standby Current	Com < 0.6V	--	0.5	--	mA
Supply Voltage				60	V
UVLO(on)		--	5	--	V
UVLO(off)		--	3	--	V
VOLTAGE FEEDBACK					
Amplifier source current	1 < VCOM < 2		12		uA
OUTPUT CURRENT					
Output current		1100			mA
OUT Pin					
Vout breakdown voltage	BVdss Vgs=0	100	--	--	V
PROTECTION					
Thermal Protection Temperature		--	155	--	°C
Short-circuit protection VDD release voltage		--	3	--	V

Application Information

Operation

The ZA8518B is an adaptive linear current regulator to eliminate low frequency current ripple targeting at LED lighting applications.

It is applied as a current ripple filter to the output of a LED driver, especially single stage LED driver. It is adaptive for wide output speculation, the output voltage is wide dispense on external MOSFET breakdown voltage, and also can be operated in parallel to support higher LED current.

ZA8518B provides reliable protections such as Short LED Protection (SLP) with latch mode, Open LED Protection (OLP) with auto-recovery and Over Temperature Protection (OTP) with auto-recovery.

VDD Pin

When the voltage of VDD Pin rise to UVLO (on), ZA8518B begins to work; and the start-up time is very fast. It can reduce the total start-up time of the power module. The operation voltage is from 5V to 60V.

Dimming Control

ZA8518B can support dimming control request, of front-driver. It does easily correspond to the variation of the system load.

Loading Setting

ZA8518B can automatically detect the output current of front-driver and support to drive up to 1100mA. The system is also at constant current mode.

C_{COM} Selection

Using C_{COM} to reduce output current ripple. The suggested value is large than 4.7uF, the large Cap can reduce current ripple obviously and make the system feedback slow.

GATE Pin

ZA8518B is a controller for driving external MOSFET to remove the 100/120Hz LED current ripple, The drain of external NMOSFET is connected to the cathode of LED string. The gate of external MOSFET is connected to the GATE Pin of ZA8518B. It drives MOSFET to transfer the LED current ripple to voltage ripple on MOSFET, and ensures the constant voltage across LED string and constant current flow through LED string.

The adjustable Rcom function of ZA8518B can regulate the cathode voltage of LED string to minimum to improve the efficiency of the system.

Over Temperature Protection

However, the maximum junction temperature ratings should not be exceeded under normal load conditions. The thermal protection circuit of ZA8518B prevents from the device damage due to excessive power dissipation.

When the temperature is higher than 155 °C, the ZA8518B will turn off output current until system restart.

Short circuit protection

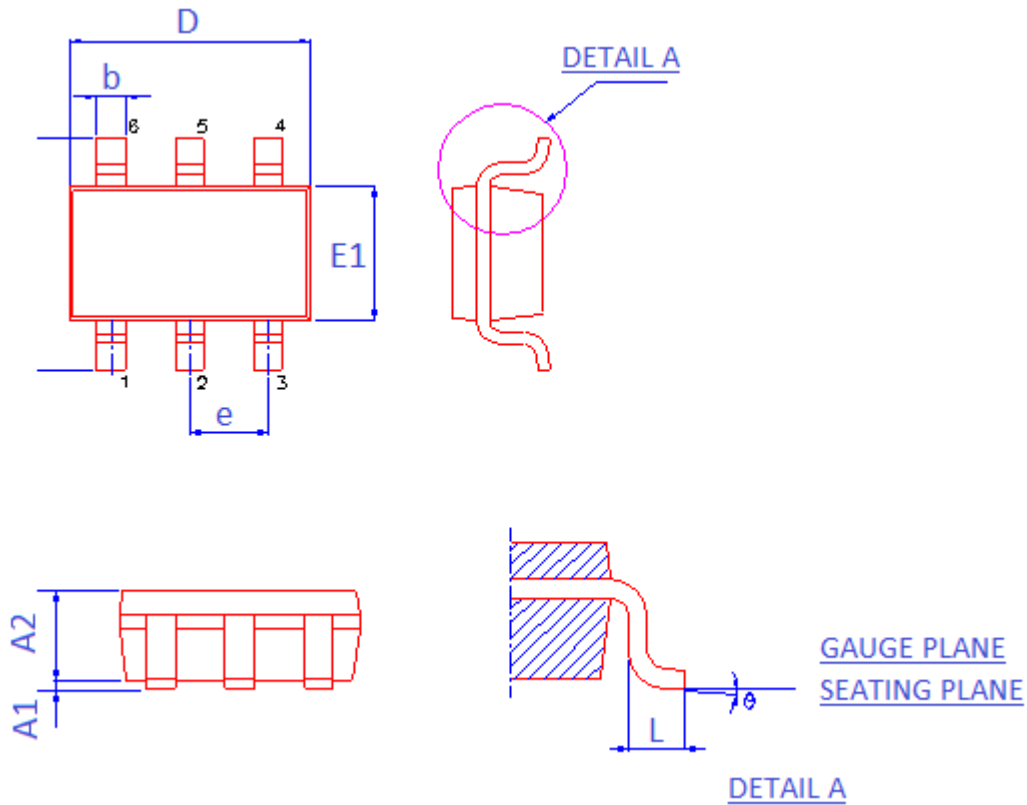
ZA8518B has short circuit protection, when LED is shorted, Out pin exceeds short circuit threshold, ZA8518B shuts down inside MOSFET, and enters latch mode. The system will restart and exit latch mode if VDD be lower than UVLO(off) and then higher than UVLO(on) again.

Parallel operation application

When the output current of LED power module is higher than the ZA8518B output capability, Multiple ZA8518B could be used to operate in parallel to support higher LED current.

Package Information

SOT23-6 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		
	Min.	NOM.	Max.
A	-	-	1.45
A1	0.000	-	0.15
A2	0.90	1.15	1.30
b	0.30	-	0.50
D	2.90 BSC		
E	2.80 BSC		
E1	1.60 BSC		
e	0.95 BSC		
L	0.30	0.46	0.60
θ	0°	4°	8°