Constant Current LED Driver   IP7135

Description

The IP7135 is a constant current regulator for driving LEDs with low quiescent current and low dropout voltage. The current ranges from 100mA to 400mA with 10mA step.
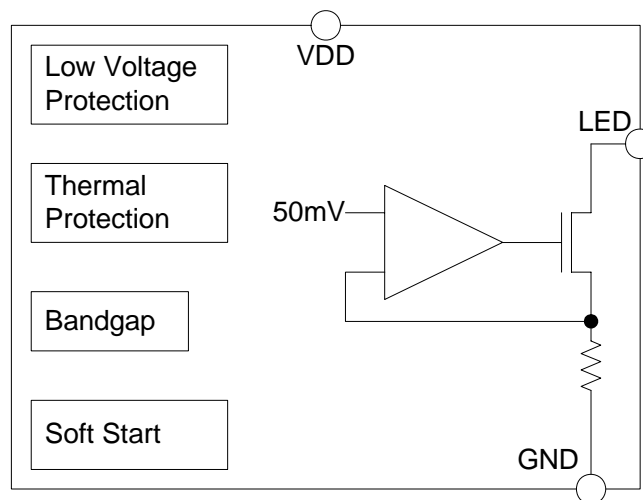
No external component is required to achieve a constant current LED driver.

Soft start, thermal protection and low voltage protection are also provided.
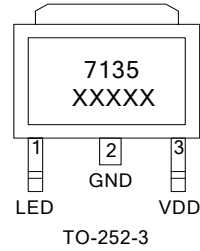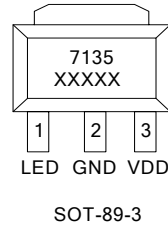
Applications

O   Power Led driver

Features

O   Sink current: 100mA to 400mA with 10mA step

O   Power supply voltage: 2.7-6V

O   Low drop out voltage: 100mV@350mA

O   Low quiescent current: 100uA

O   Thermal protection

O   Soft start

O   Low voltage protection: 2.5V

O   SOT-89-3 and TO-252-3 packages

Block Diagram

Pin Configuration

(Top View)

```
  7135                    7135
 XXXXX                   XXXXX

1   2   3            1      2      3
LED GND VDD         LED    GND    VDD

 SOT-89-3              TO-252-3
```

Absolute Maximum Ratings

Type	Symbol	Description	Value	Unit
Voltage	V_{MAX}	Maximum voltage on VDD and LED pins	8	V
	$V_{MIN-MAX}$	Voltage range on LED pin	-0.3~VDD+0.3	V
Current	$ILED_{MAX}$	Maximum current on LED pin	500	mA
Power dissipation	$P_{SOT-89-3}$	Maximum Power dissipation for SOT-89-3 package	0.5	W
	$P_{TO-252-3}$	Maximum Power dissipation for TO-252-3 package	0.8	W
Thermal	$T_{MIN-MAX}$	Operation temperature range	-20~85	℃
	Tstorage	Storage temperature range	-40~165	℃
ESD	V_{ESD}	ESD voltage for human body model	2000	V

Electrical Characteristics

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Sink current range		VDD=3.6V	100		400	mA
VDD range		ILED=350mA	2.7		5.5	V
Sink current accuracy	$\triangle$ ILED/ILED		-5		5	%
Load regulation		VLED=0.2V to 3V VDD=3.6V			2	mA/V
Line regulation		VDD=3V to 5.5V			2	mA/V
Output dropout voltage	V_{DO}			100		mV
Supply current	I_{DD}			100		μA
Low voltage protection			2.3	2.5	2.7	V

Typical Application Circuit

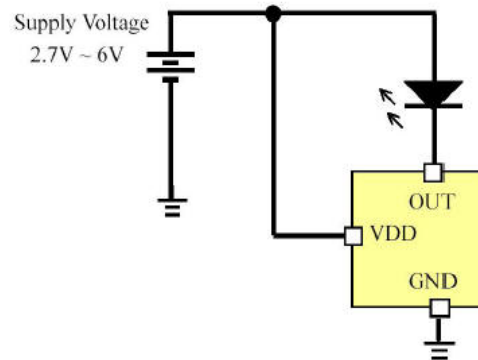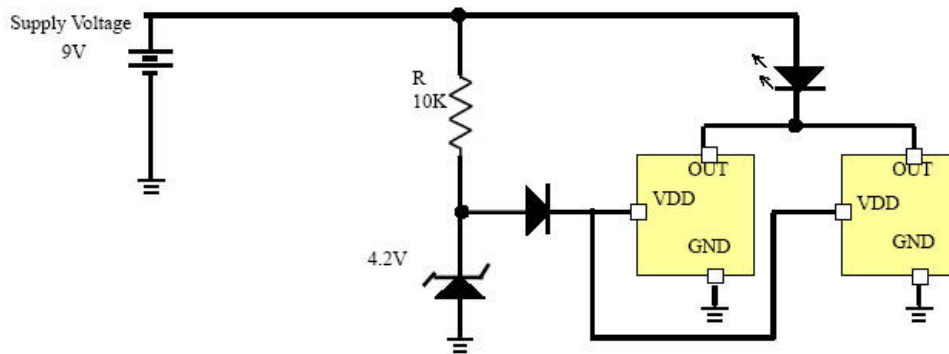Figure1.　IP7135 for Low voltage application（Drive 1W LED）

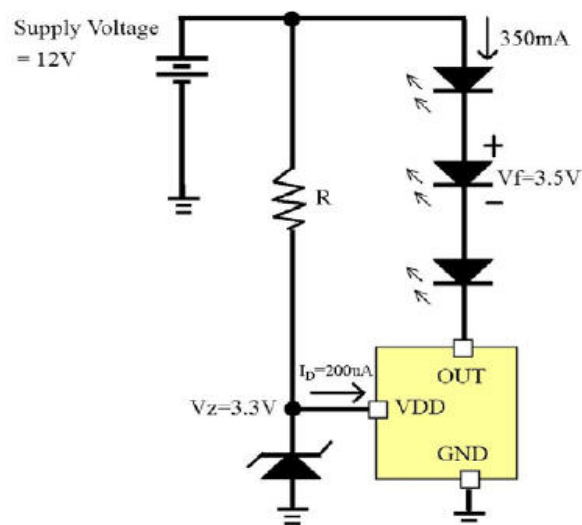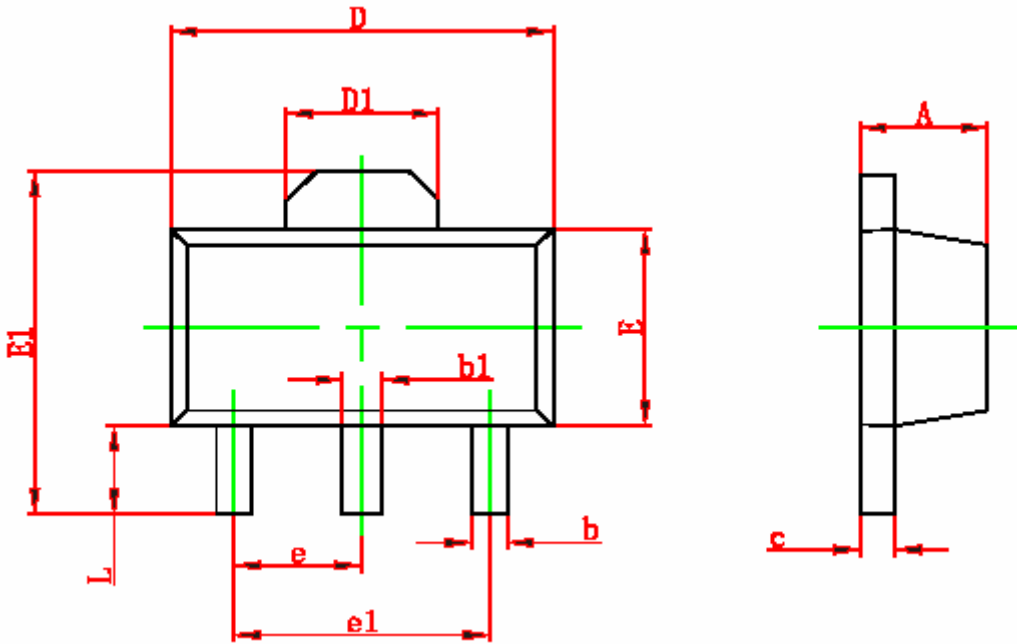Figure1.　IP7135 for 3W LED application

Figure1.　IP7135 for High voltage application

Package

1. SOT-89-3 package outline dimensions

Symbol	Dimensions In millimeter		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047

2. TO-252-3 package outline dimensions

LAND PATTERN RECOMMENDATION