

Features

- $V_{INMAX} = 60V$
- $V_{FB} = 200mV$
- Frequency 52kHz
- $I_{LEDMAX} = 3A$
- On/Off input may be used for the Analog Dimming
- Thermal protection
- Cycle-by-cycle current limit

Applications

- LED Driver

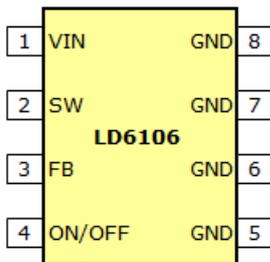
General Description

The LD6106 is the monolithic IC designed for a step-down DC/DC converter capable of driving 3A load without an additional transistor. The input voltage range is up to 60V. Its feedback voltage, V_{FB} , is 200mV. The 3TL76K operates at a switching frequency of 52kHz. The external shutdown function is controlled by a logic level on the ON/OFF pin and then the circuit comes into the standby mode with $I_{STBY} \sim 50\mu A$ (typ.). The ON/OFF pin may be used for the analog dimming. As the voltage on the ON/OFF pin is increased from 0.07V to 0.67V, the voltage on the FB pin falls from 200mV to 0.

The self-protection features include a cycle-by-cycle current limit and a thermal protection.

The LD6106 is available in standard packages TO-220, TO-263, and SOP-8 (for $I_{LOAD} < 2.1A$).

Package Pin Out



Pin Assignment of TO220-5L and TO263-5L

Pin	Name
1	VIN
2	SW
3	GND
4	FB
5	ON/OFF

Ordering Information

Part No.	Package	Packing Options	
		Tube (TU)	Tape & Reel (TR)
LD6106	SOP-8	LD6106S1-TU	LD6106S1-TR
	TO220-5L	LD6106T4-TU	LD6106T4-TR
	TO263-5L	LD6106T9-TU	LD6106T9-TR

- Package material default is "Green" package.

Product Marking

LD8888	◇ Line 1 – "LD" is a fixed character
SSSSS...	8888: product name
●	◇ Line 2 – SSSSS...: lot number

Absolute Maximum Ratings^{*1}

Parameter	Maximum	Unit
V _{IN} supply voltage	63	V
Operating V _{IN} supply voltage	60	V
ON/OFF pin voltage	$-0.3 \leq V \leq V_{IN}$	V
FB pin voltage	$-0.3 \leq V \leq V_{IN}$	V
SW pin to GND	-0.8	V
Junction temperature	150	°C
Operating temperature range	-40 to +125	°C

The values beyond the boundaries of absolute maximum rating may cause the damage to the device. Functional operation in this context is not implied. Continuous use of the device at the absolute rating level might influence device reliability. All voltages have their reference to device ground.

Electrical Characteristics

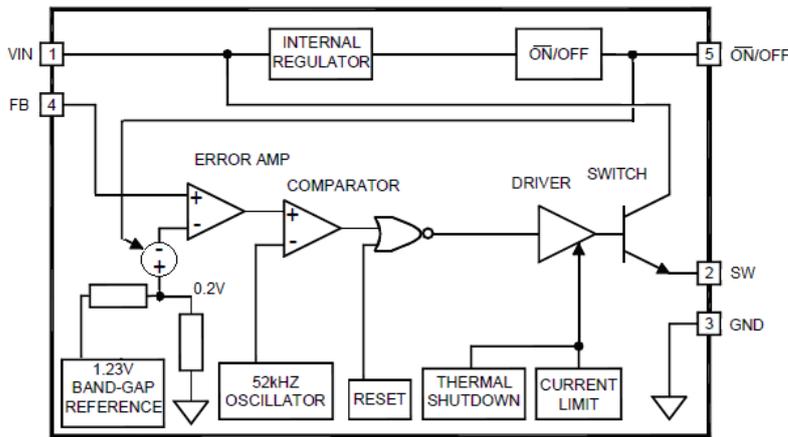
V_{IN}=12V, I_{LOAD}=350mA, T_A=25°C unless specified

Parameter	Symbol	Condition	Min	Typ. ^{*2}	Max	Unit
System Parameters ^{*3}						
Feedback voltage	V _{FB}	V _{IN} =12V, I _{LOAD} =350mA, V _{ON/OFF} =0V	190	200	210	mV
		5.5V ≤ V _{IN} ≤ 60V, 0.2A ≤ I _{LOAD} ≤ 3A	184	–	216	
		5.5V ≤ V _{IN} ≤ 60V, 0.2A ≤ I _{LOAD} ≤ 3A ^{*2}	180	–	220	
Efficiency	η	V _{IN} =12V, I _{LOAD} =3A	–	65	–	%
Device Parameters						
Feedback bias current	I _{FB}	V _{FB} =250mV, V _{ON/OFF} =0V	–	50	150	nA
		V _{FB} =250mV, V _{ON/OFF} =0V ^{*2}	–	–	500	
Oscillator frequency	F _{OSC}	–	47	52	58	KHz
		*2	42	–	63	
Saturation voltage	V _{SAT}	I _{SW} =3A	–	1.35	1.50	V
		I _{SW} =3A ^{*2}	–	–	1.70	
Current limit	I _{CL}	–	2.5	3.4	4.6	A
Maximum duty cycle	DC _{MAX}	–	100	100	–	%
SW leakage current	I _{SWLK}	V _{IN} =60V, V _{FB} =1.5V, V _{SW} =0V	-0.3	-0.07	–	mA
		V _{IN} =60V, V _{FB} =1.5V, V _{SW} =1.5V	-30	-8	–	
Threshold voltage (ON/OFF pin)	V _{TH}	–	1.0	1.4	2.0	V
		*2	0.8	–	2.2	
ON/OFF pin input current	I _{IH}	V _{ON/OFF} =2.5V(off)	-5	0.01	5	mA
	I _{IL}	V _{ON/OFF} =0V(on)	-2	-0.3	–	
Quiescent current	I _Q	V _{FB} =1.5V	–	5.3	10	mA
Standby current	I _{STB}	V _{ON/OFF} =5V, V _{IN} =60V	–	50	200	μA
Dimming voltage (ON/OFF pin)	V _{ON/OFF}	I _{LED} =0V, V _{IN} =12V	600	670	750	mV

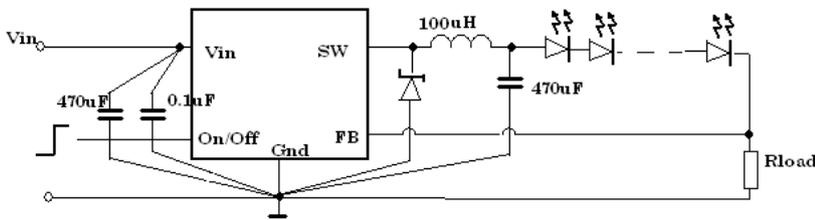
Notes:

1. LED must be ensured with load current (I_{LOAD}) at V_{IN} Minimum.
2. This applied over full operation temperature range.

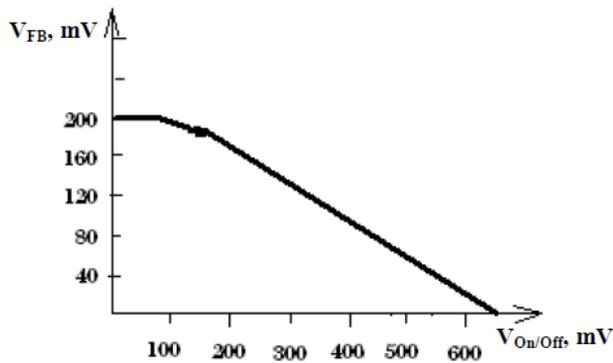
Block Diagram



Typical Application Circuit



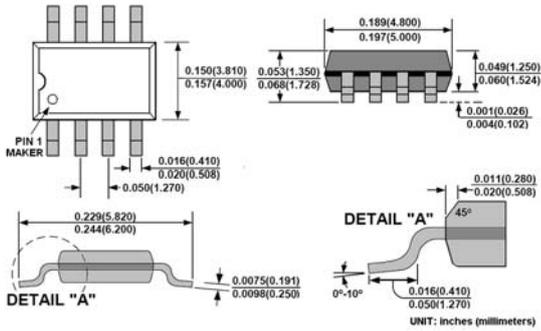
C_{in} , C_{out} , L should be kept close to the pins. Keep the feedback wiring away from the inductor flux.



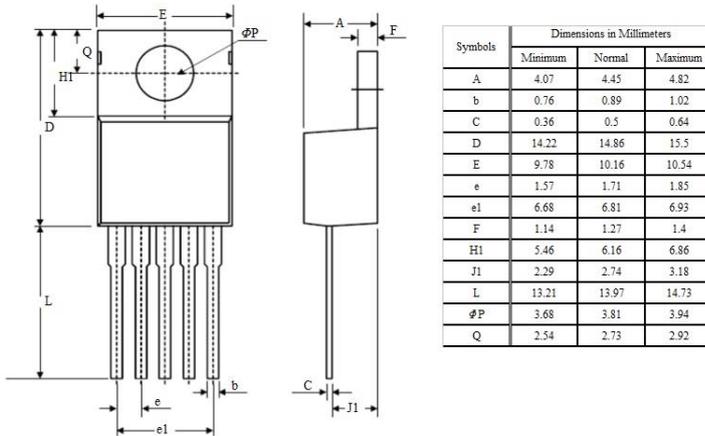
Dimming voltage (typical), $V_{FB} = f(V_{On/Off})$

Package Outline

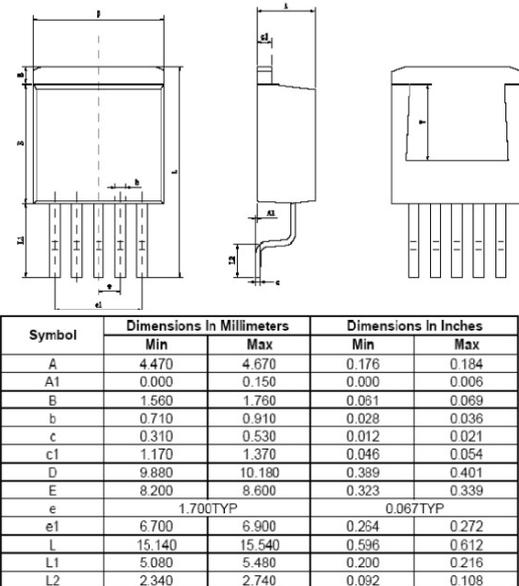
SOP8:



TO220-5:



TO263-5:



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