DONGWOON ANATECH

DW8522
High-Brightness Buck controller LED Driver IC

Descriptions

The DW8522 is a high efficiency step down (Buck) converter for LED driver IC which provide a solution for MR16, General lighting of flat panel displays and general DC voltage LED applications.
The DW8522 built in high-side current sensing circuit and protection circuit same as TSD, SS, Current limit.
It can use PWM dimming and Analog dimming
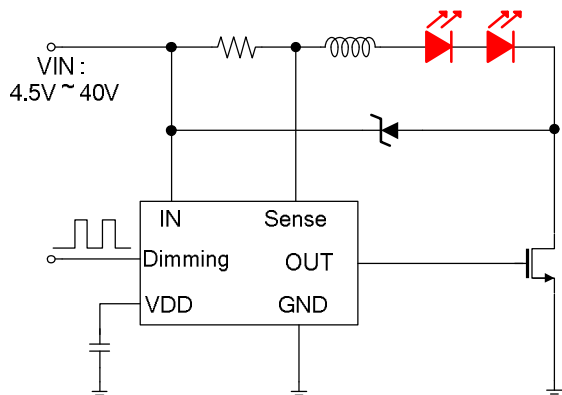The DW8522 is available in a tiny DFN package which saves module size.

Ordering Information

Device	Marking	Package	Operating Temp
DW8522	C22	6TDFN	-40~125℃

Features

- 4.5V to 40V Input Voltage Range
- Single Pin On/Off and Brightness Control
   Using DC Voltage and PWM
- Thermal Derating Function(150℃)
- High-Side Current Sense
- 20KHz Maximum Dimming Frequency
- Hysteretic Buck Control : Low Parts Count
- Up to 2MHz Switching Frequency
- ±5% LED Current Accuracy
- 5V Internal Regulator
- -40 to 125℃ Operating Temperature Range

Package Information

Package	Size
6 TDFN	3.0 x 3.0 x 0.75 (mm)

Applications

• MR16 Lighting
• Offline LED Lamps and fixtures
• General lighting of flat panel displays
• RGB backlighting LED driver
• Current stabilizer with DC/DC or AC/DC
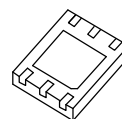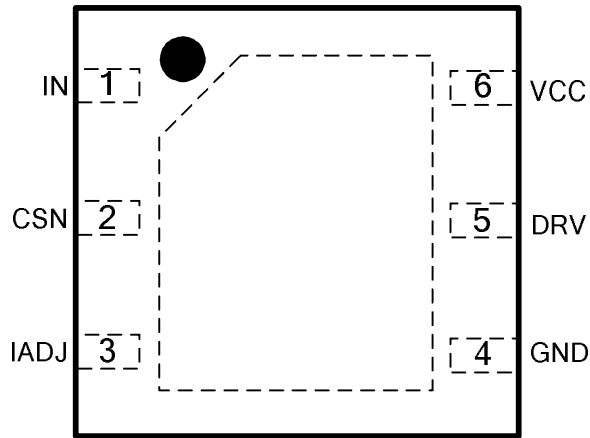• General purpose LED Lighting

Typical Application Circuit

Pin Connection

Top View

Pin Description

Pin	Name	Description
1	IN	Supply voltage Input. (4V to 40V). Decouple to GND with 1uF or higher value capacitor
2	CSN	Current sense input. Connect a resistor between IN and Sense.
3	IADJ	PWM/Analog dimming input. If not use dimming function, connect with VDD.
4	GND	Ground
5	OUT	Gate drive output.
6	VDD	Regulator output. Decouple to GND with 1uF.

Absolute Maximum Ratings

Characteristics		Symbol	Value	Unit
Supply Input voltage, Dimming, Sense		IN, Dimming, Sense	41	V
OUT, VDD		OUT,VDD	-0.3~6	V
SENSE to IN		Vsen_IN	-0.3~0.3	V
Package thermal resistance	TBD	Θ_{JA}	-	℃/W
Operating temperature		T_{OPR}	TBD	℃
Storage Temperature		T_{STG}	TBD	℃

Note 1. θja is measured in the convection at Ta=25℃ on a high effective thermal conductivity
test board(4 Layers, 2S2P) of JEDEC 51-7 thermal measurement standard.

Recommended Operation Conditions

| Characteristics	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	IN	4.5	-	40	V

Electrical Characteristics

IN=Dimming=12V,Rsense=0.5ohm,Ta = -35℃~+85℃, unless otherwise specified. Typical values are at T_A=+25℃

Characteristics	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input voltage range	IN		4.5		40	V
Under voltage Lockout	UVLO			3.8		V
Under voltage Lockout hysteresis	UVLO			0.5		V
Quiescent current		OUT open			1.5	mA
Shutdown current		Dimming=GND		100		uA
Sense						
Sense Voltage Threshold			200	210	220	mV
Sense threshold hysteresis				10		%
Current sense input current		VIN-Vsense=200mV			1	uA
Propagation Delay to Output High				80		ns
Propagation Delay to Output Low				80		ns
GATE Driver						
Source current				0.5		A
Sink current				1		A
Gate Driver Output-Voltage High			VDD-0.5			V
Gate Driver Output-Voltage Low					0.5	V
Regulator						
Regulator output voltage			4.5		5.5	V
Current Limit		VIN=5V, VDD=0V		50		mA
		VIN=5V, VDD=4.5V		20		mA
Regulator output Delay time				300		Us
Dimming						
Dimming frequency					30	kHz
Dimming Input voltage High			2			V
Maximum Duty					95	%
Minimum Duty			5			%
Dimming Input voltage low					0.8	V

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Block Diagram

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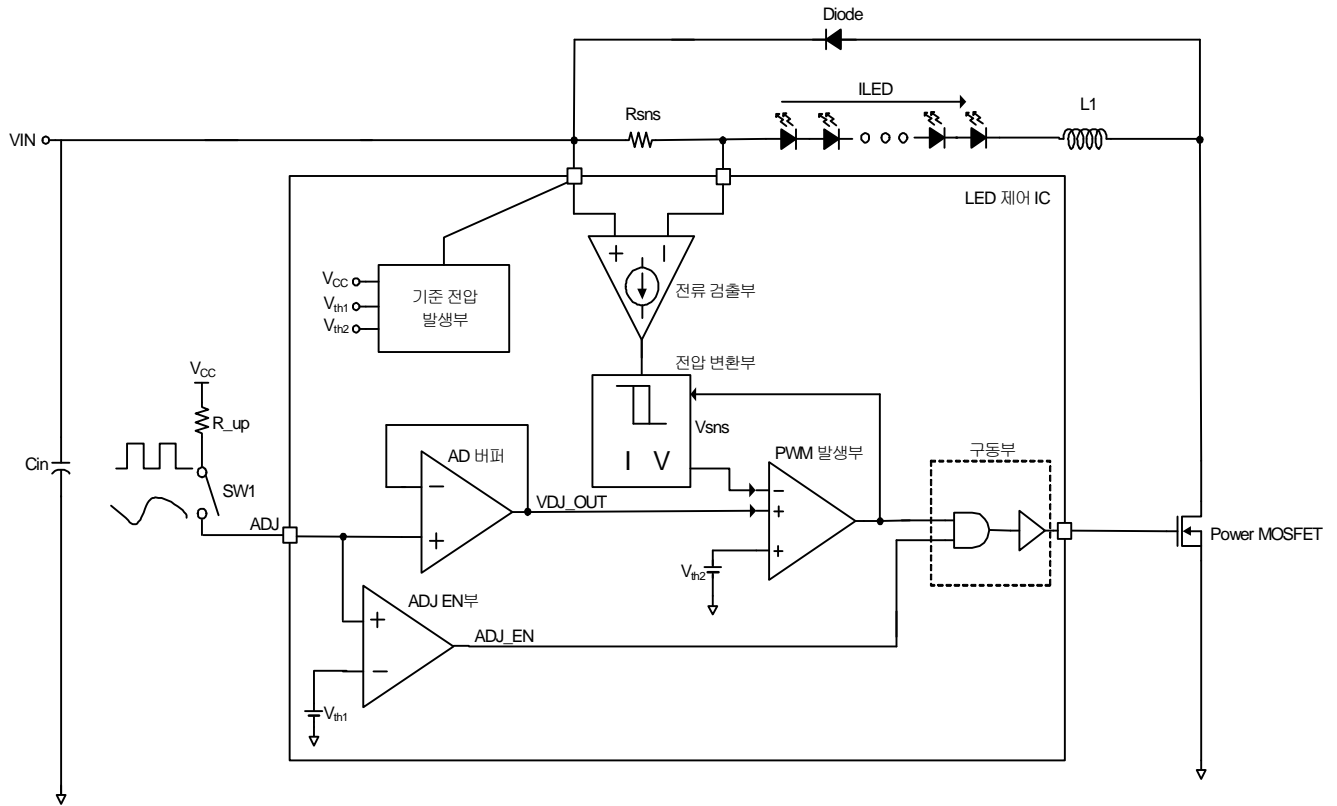
Package Dimension (6 TDFN 3.0 * 3.0 * 0.75)

TOP VIEW

BOTTOM VIEW
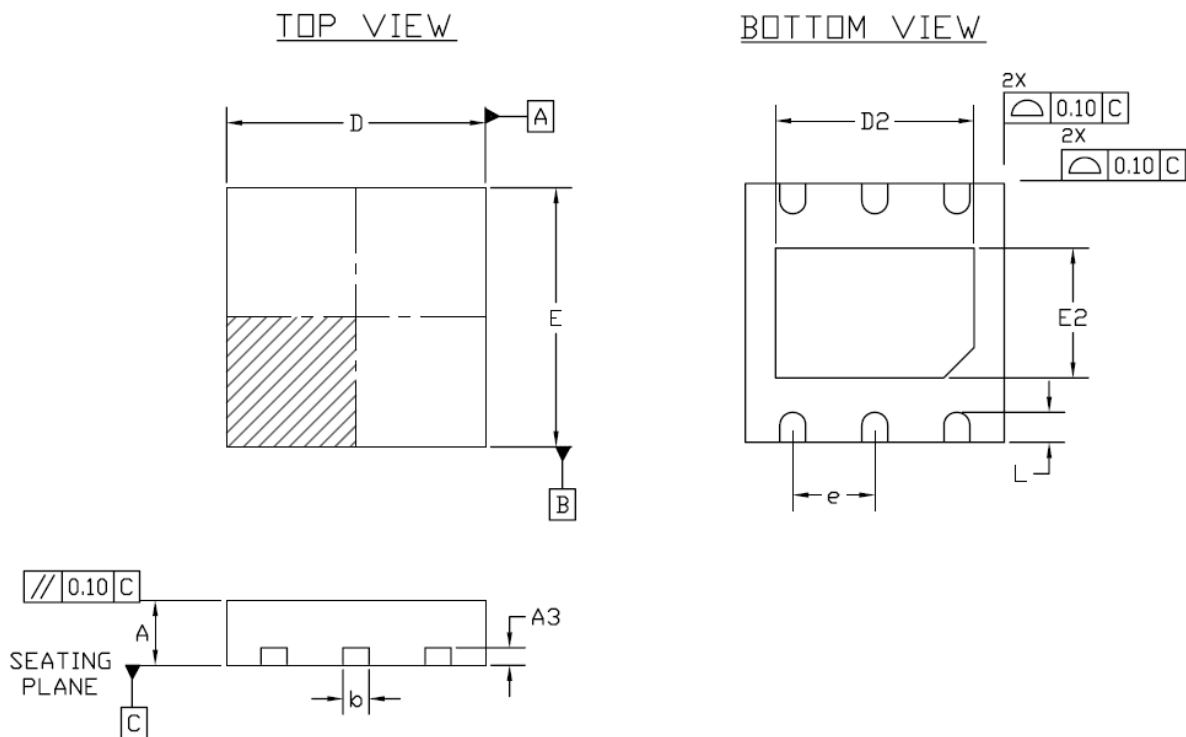
SYMBOL	COMMON					
	DIMENSIONS MILLIMETER			DIMENSIONS INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	SEE VARIATION "A"					
A3	0.203 REF			0.008 REF		
b	0.25	0.30	0.35	0.010	0.012	0.014
D	2.90	3.00	3.10	0.114	0.118	0.122
D2	2.25	2.30	2.35	0.089	0.091	0.093
E	2.90	3.00	3.10	0.114	0.118	0.122
E2	1.45	1.50	1.55	0.057	0.059	0.061
e	0.95 BSC			0.037 BSC		
L	0.30	0.35	0.40	0.012	0.014	0.016

SYMBOL	VARIATION "A"					
	DIMENSIONS MILLIMETER			DIMENSIONS INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
TDFN	0.70	0.75	0.80	0.027	0.029	0.031
DFN	0.85	0.90	0.95	0.033	0.035	0.037