



DW8506A

Low Power High Accuracy LED Driver

Preliminary

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Ver. 0.2

2014-07-09

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1. General Description

DW8506A is LED driver IC for low power LED applications. Unlike DW850x series which can adjust output current to resistor, the output current is fixed at 60mA. Each input and output voltage is available up to 36V and 20V. By virtue of WLCSP (Wafer Level Chip Scale Package) package, the area is reduced by a few times compared with other packages, SOT-23 or SOT-89. Build-in thermal protection prevents the IC from thermal damage. You can find further details in our application notes. DW8506A, which takes characteristics like small parts, low cost and small size, is a perfect solution for low power applications.

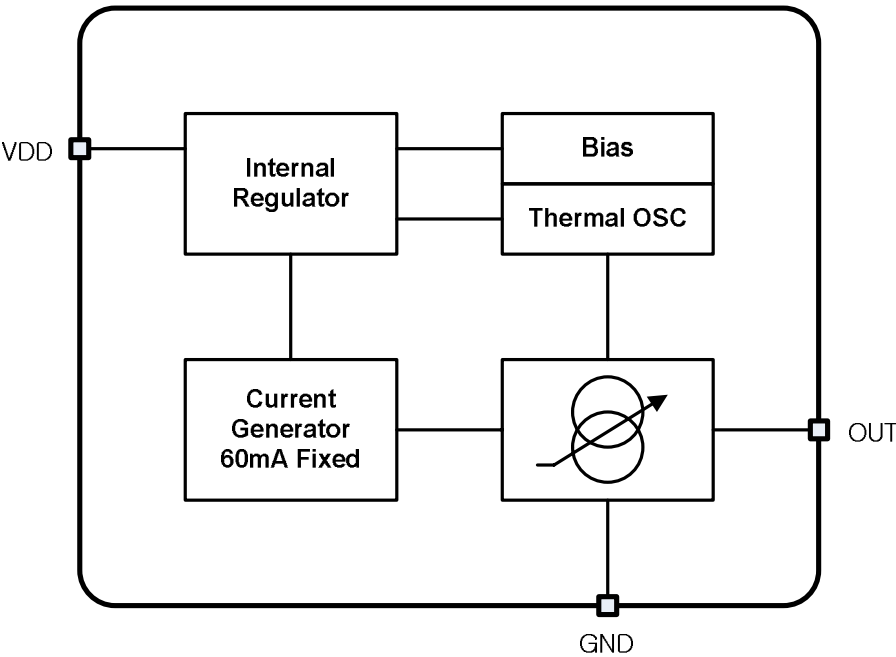
■ Features

- Constant output current invariant to supply and load voltage change
- 6.5V to 36V supply voltage
- 60mA fixed regulated output current
- Max. 0.5V output drop-out Voltage
- Built-in thermal derating circuit
- Package : 4pin WLCSP

■ Applications

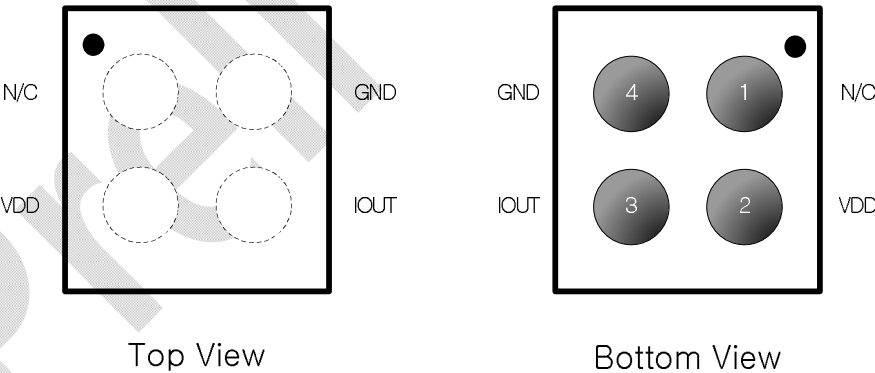
- LED light bulbs
- Signage and decorative LED lighting
- General lighting of flat panel displays
- RGB backlighting LED driver
- Current stabilizer with DC/DC or AC/DC
- General purpose constant current source

2. Block Diagram



3. Pin Information

■ Pin placement and IC dimension



■ Pin Description

No.	Pin Name	Description	Note
1	N/C	No connection	
2	VDD	Supply voltage input	
3	IOUT	Output pin, To sink a constant 60mA current	
4	GND	Ground	

4. Absolute Maximum Ratings

Symbol	Parameter	Ratings
VDD	Supply voltage	38V
V _{OUT}	Output voltage	18V
T _J	Junction operating temperature	150℃
T _{STG}	Storage temperature	-55 ~ +150℃
P _d	Power dissipation	TBD

■ Absolute Maximum Ratings

Use of the IC in excess of absolute maximum ratings such as the applied voltage or operating temperature range (T_J) may result in IC damage. Assumptions should not be made regarding the state of the IC (short mode or open mode) when such damage is suffered. The implementation of a physical safety measure such as a fuse should be considered when use of the IC in a special mode when the absolute maximum ratings may be exceeded is anticipated.

5. Recommended Operating Condition

Symbol	Parameter	Min.	Typ.	Max.	Unit
VDD	Supply voltage	6.5		36	V

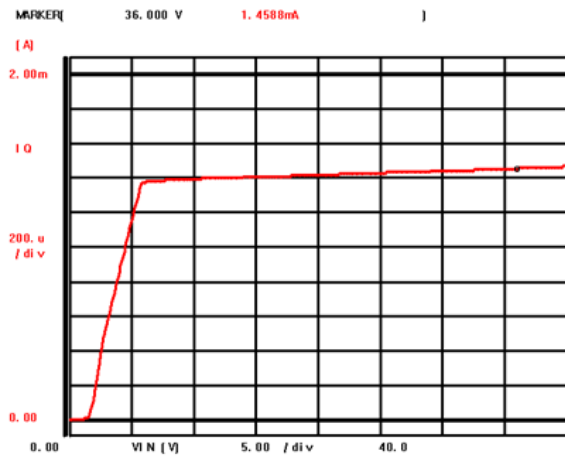
6. Electrical Specification

(VDD = 24V, T_A = -35℃~+85℃, unless otherwise specified. Typical values are at T_A=+25℃)

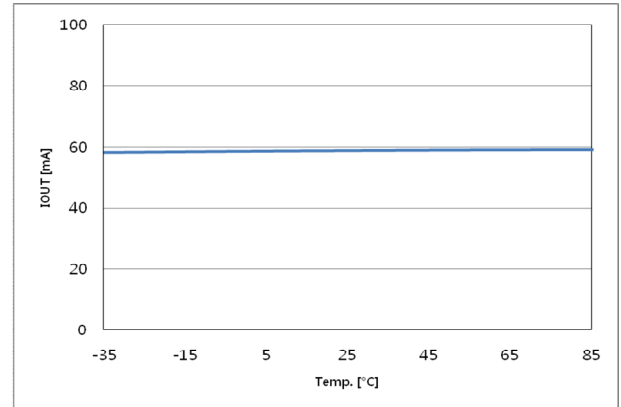
Characteristic	Symbol	Condition	Min	Typ	Max	Unit
Input supply voltage	V _{DD}		6.5	-	36	V
Output linearity voltage	V _{OUT_LINE}		-	-	3	V
Quiescent current	I _Q		1.2	-	1.8	mA
LED output drop-out voltage	V _{DROP}		-	-	500	mV
Output current	I _{OUT}	V _{LED} = 21V	57	60	63	mA
Thermal derating	T _D		-	140	-	℃
Thermal derating hysteresis	T _{DHYS}		-	20	-	℃

7. Typical Operating Characteristics

(VDD = 24V, T_A = -35°C ~ +85°C, unless otherwise specified. Typical values are at T_A = +25°C)

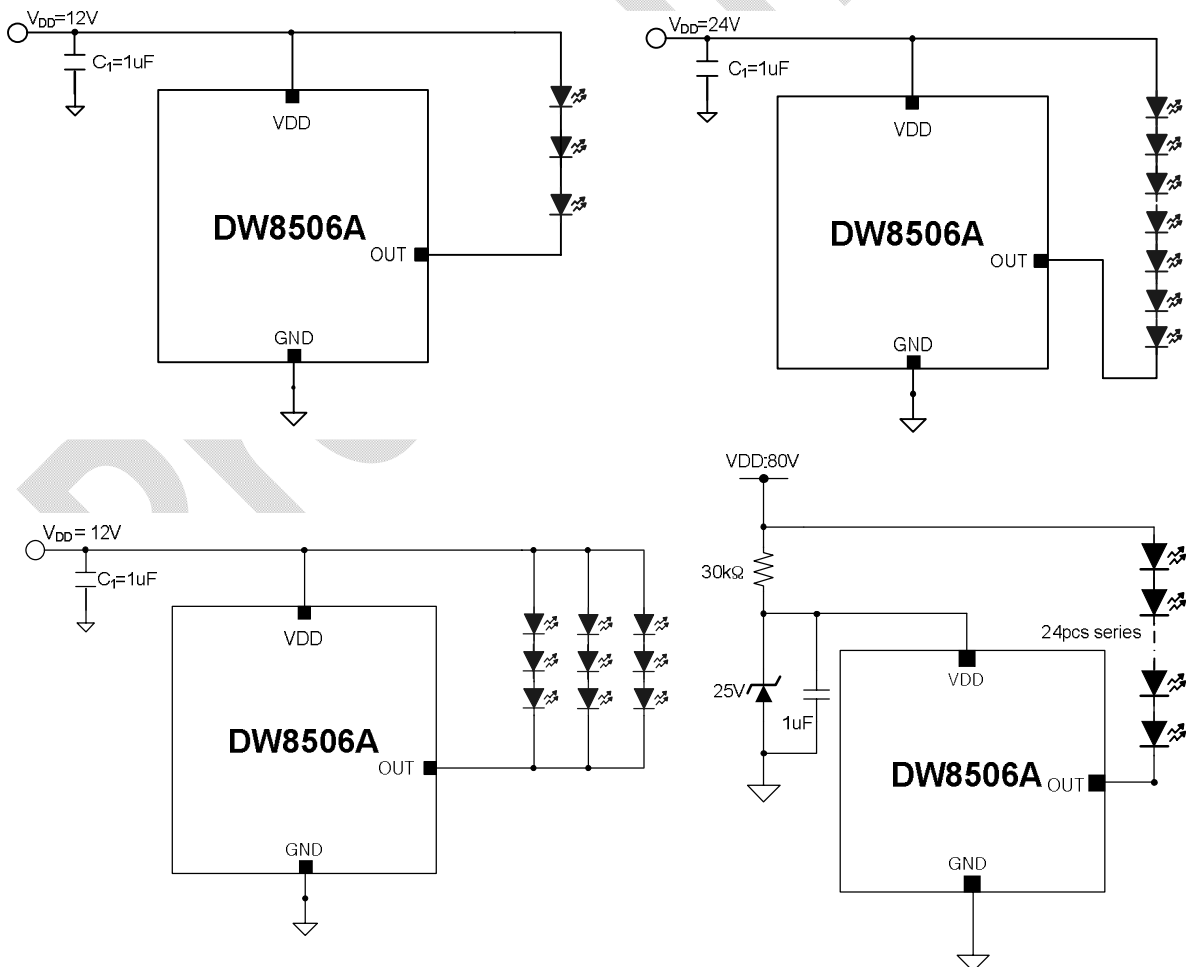


Quiescent vs. VIN



I_{OUT} vs. Temperature

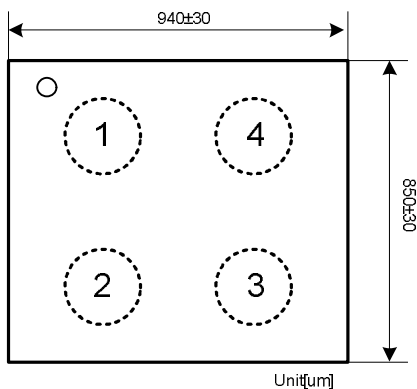
8. Typical Applications



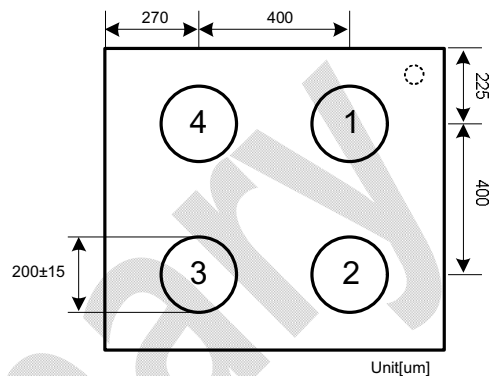
9. Package Dimension

Package Dimension (0.94mm X 0.85mm X 0.45mm)

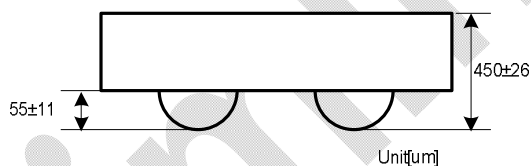
- Package Name : WLCSP
- Package Size : 940um * 850um, Thickness : 450um
- Ball Pitch : 200um



Top View



Bottom View



Side View

10. Foot-Print

