RoHS COMPLIANT H F BFRs/CFRs/VC-Free

DW8508

Dimmable CC/CV IC with LED Protection functions

Ver. 1.3
2014-12.02

CONTENTS

1. General Description

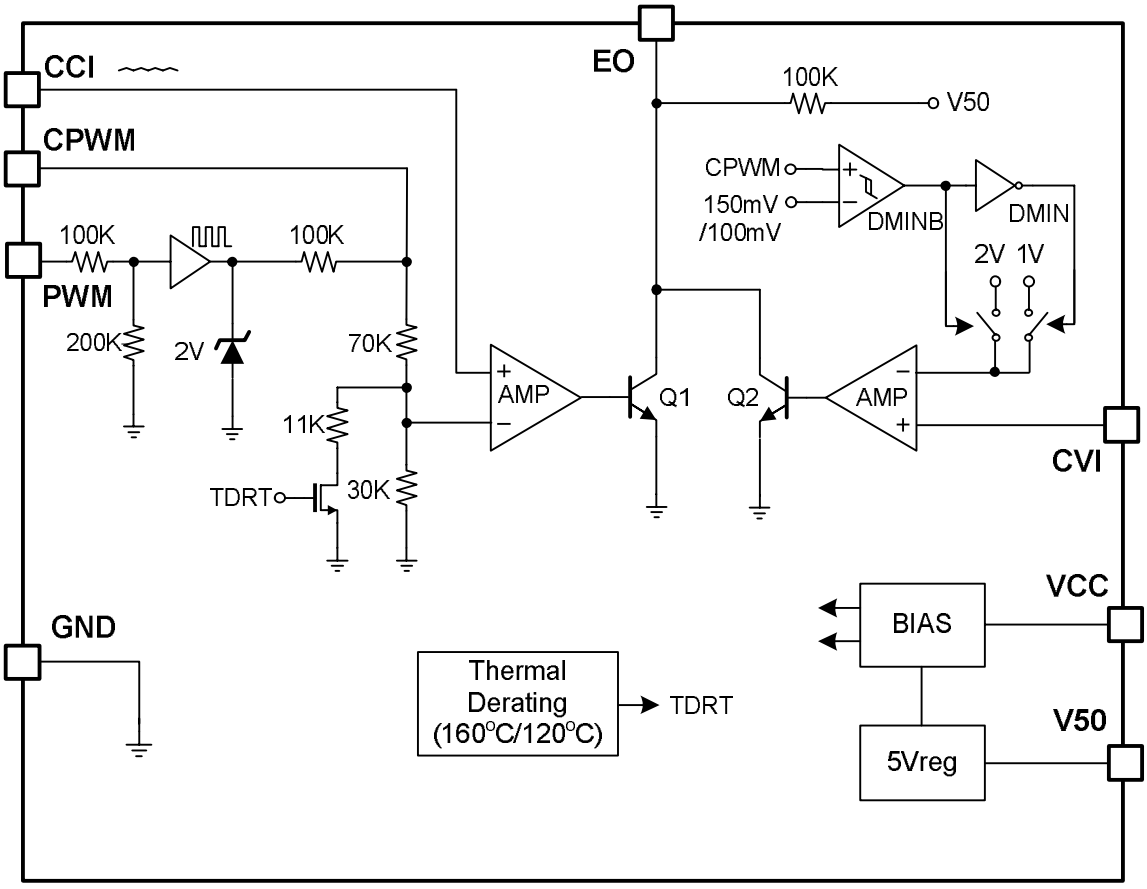
The DW8508 is CC/CV(Constant current & constant current) IC for stable LEDs driving in a secondary side . DW8508 built in protection circuit same as LED open, Short. It suitable for applications with operating voltage from 8V to 30V.

The DW8508 is offered in 8 SOIC

■ **Features**

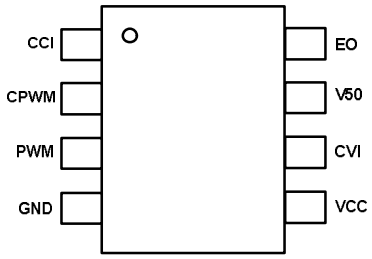
- Constant current & Constant voltage Driving
- Wide range operating voltage (8V~30V)
- Built in 5V Regulator
- PWM/Analog Dimming Control
- Thermal Derating Function
- Built in Protection circuit (LED Open/Short)
- Low feedback voltage (0.3V)

2. Block Diagram



3. Pin Information

■ Pin Placement



8SOIC

■ Pin Description

No.	Pin Name	Description	I/O
1	CCI	Constant Current Control Input	I
2	CPWM	PWM Dimming Capacitor	I
3	PWM	PWM Input Voltage	I
4	GND	Ground	-
5	VCC	Power Supply Input Voltage	I
6	CVI	Constant Voltage Control Input	I
7	V50	5.0V Reference Output	O
8	EO	Error Amplifier Output	O

4. Absolute Maximum Ratings

Symbol	Parameter	Ratings
V_{CC}	Power Supply Input Voltage	36 V
V_{IN}	Input Voltage	-0.3 ~ 7 V
V50	5.0V Reference Output Voltage	7 V
V_{EO}	Error Amplifier Output Voltage	7 V
T_{OPR}	Operating Free-air Temperature Range	-140 ~ +125 °C
T_J	Maximum Junction Temperature Range	150 °C

5. Recommended Operating Condition

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{CC}	Supply voltage	8	15	30	V

6. Electrical Specification

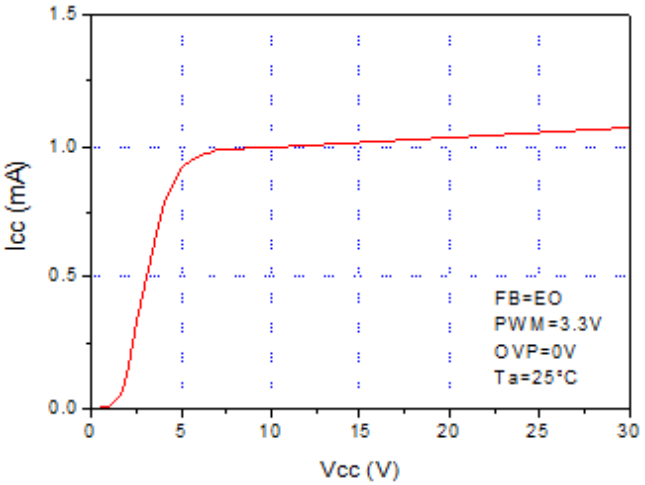
(Vcc=15V, Ta=25°C, unless otherwise specified.)

Characteristic	Symbol	Condition	Min	Typ	Max	Unit
Power Supply Input Voltage Range	V_{CC}		8	15	30	V
VCC Operating Current	I_{CC}	V_{EO}=High	0.5	1	1.5	mA
Quiescent Current	I_Q		0.5	1	1.5	mA
V50 Reference Output Voltage	V50	I_{OUT}=2mA	4.5	5	5.5	V
V50 Maximum Current	I50	V50=4V	-15	-10	-5	mA
V50 Short Current	I_{SC}	V50=0V	-15	-8	-3	mA
PWM High Input Level	V_{HPWM}		2	-	-	V
PWM Low Input Level	V_{LPWM}		-	-	0.8	V
PWM Dimming Frequency Range	F_{PWM}		100	-	1000	Hz
PWM Duty Range	D_{PWM}		10	-	100	%
D_{MIN} Threshold Voltage	$V_{DMIN}1$		100	150	200	mV
	$V_{DMIN}2$		70	100	130	mV
PWM Input Bias Current	I_{PWM}		6	12	18	nA
PWM Input Resistance	R_{CPWM}		70	100	130	Kohm
CCI Maximum Input Voltage	V_{CCI}		294	300	306	mV
CCI Input Bias Current	I_{CCI}		-500	-100	500	nA
Erramp Output High Voltage	V_{EOH}	I_{SOURCE}=10uA	4.5	-	-	V
Erramp Output Low Voltage	V_{EOL}	I_{SINK}=3mA	-	0.3	0.6	V
Erramp Output Sink Current	I_{SINK}	V_{EO}=1V	2	5	15	mA
CV Reference Voltage	V_{CVI}		1.8	2	2.2	V
CV Input Bias Current	I_{CVI}		-500	-100	500	nA
Thermal Derating	T_{DRT}		-	160	-	°C
TDRT Hysteresis	T_{DRT_HYS}		-	40	-	°C

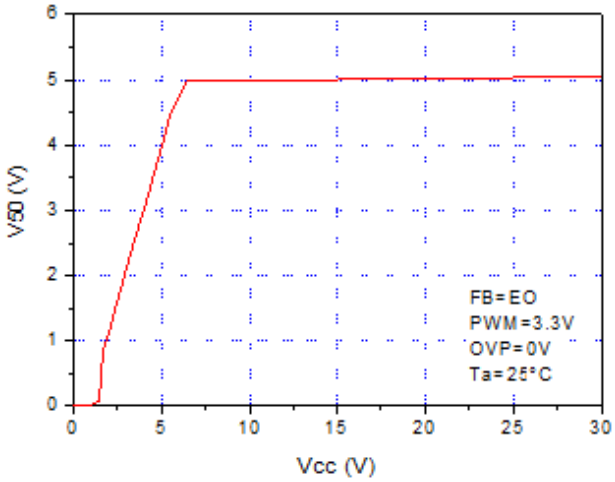
7. Typical Operating Characteristics

(Vcc = 15V, Ta = -35°C ~ +85°C, unless otherwise specified . Typical values are at Ta = +25°C)

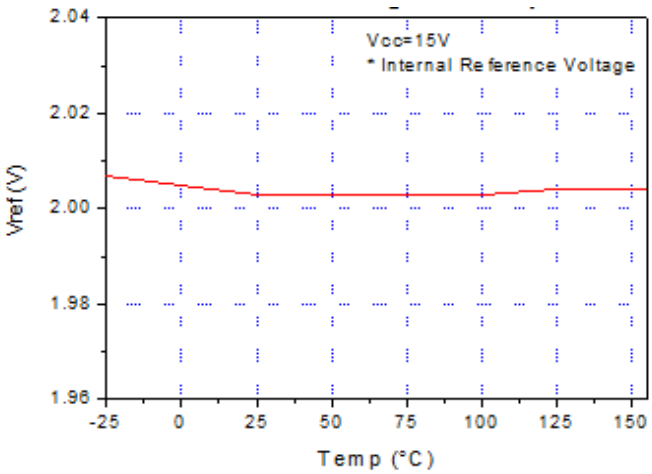
VCC Operating Current



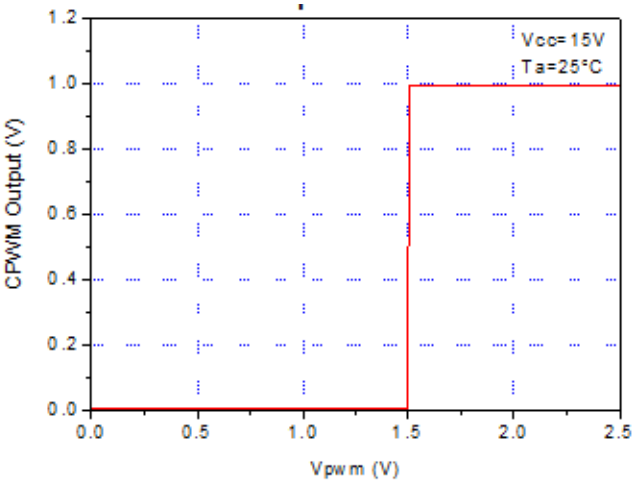
V50 Reference Voltage



Reference Voltage vs. Temp



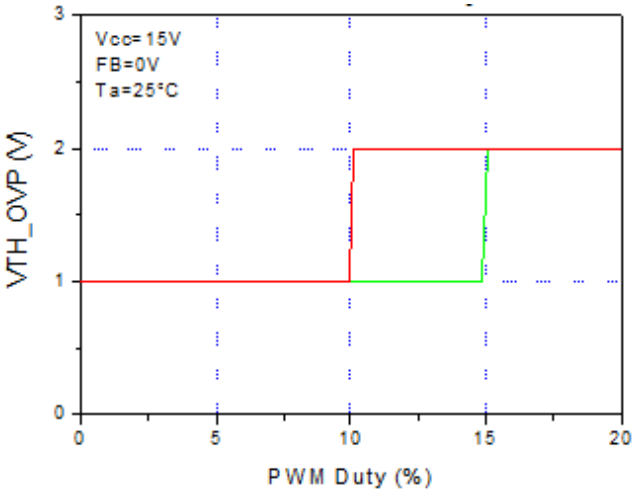
Disable Threshold Voltage



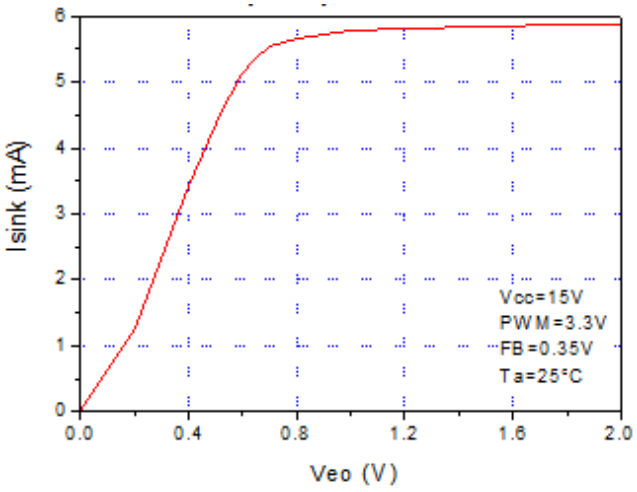
7.1. Typical Operating Characteristics

(Vcc = 15V, Ta = -35°C ~ +85°C, unless otherwise specified . Typical values are at Ta = +25°C)

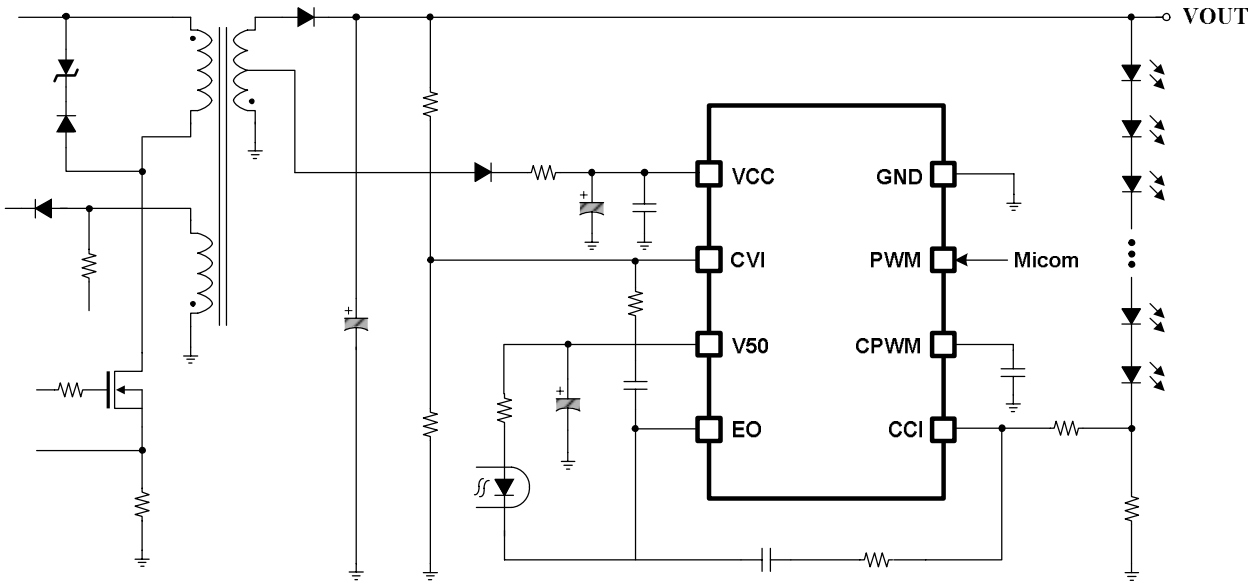
PWM Minimum Duty



Erramp Output Sink Current



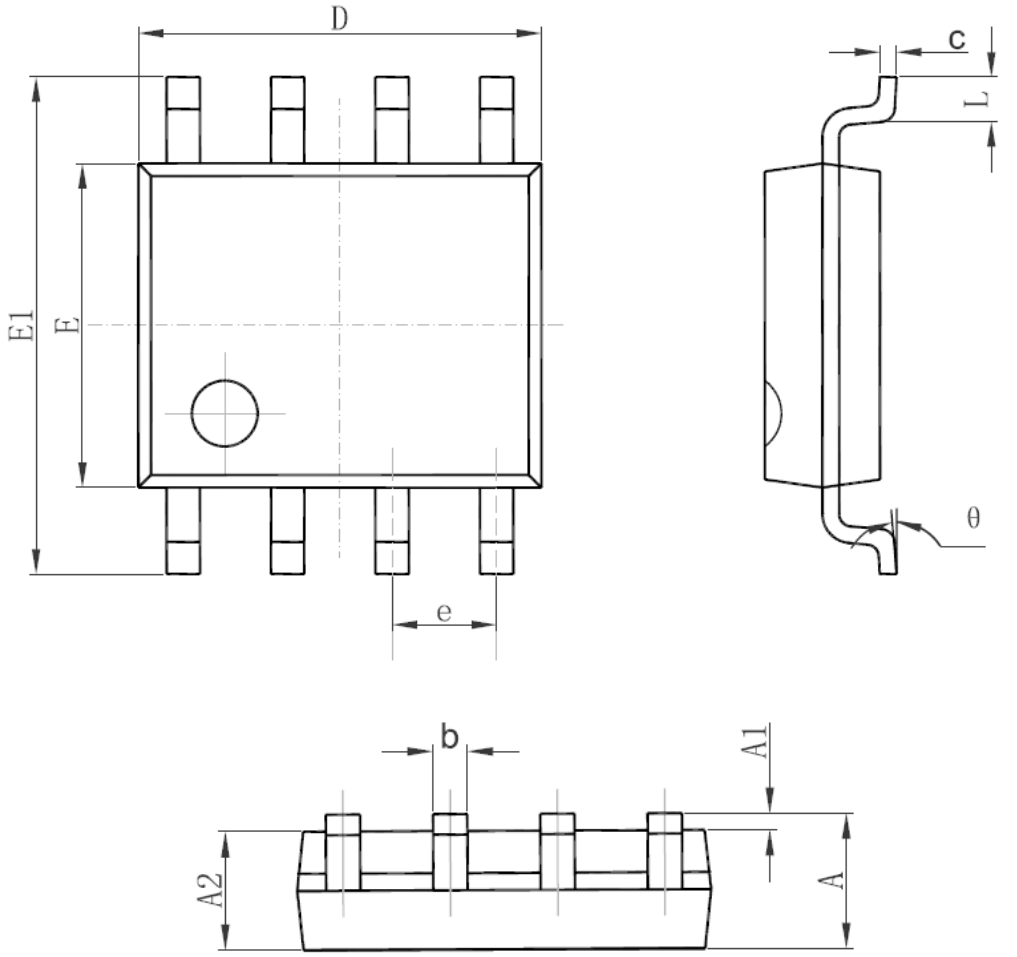
8. Typical Application Circuit



9. Package Dimension

Package Dimension

- Package Name : 8 SOIC,
- Package Size : 4.9mm * 6.0mm, Thickness : 1.4mm
- Pin Pitch : 1.27mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°