KODENSHI AUK

S8100

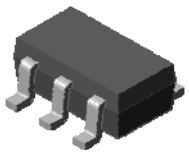
Power LED Driver IC

◈ Description

The S8100 is a PWM high-efficiency LED driver control IC. It allows efficient operation of High Brightness (HB) LEDs. The S8100 is capable to drive high current, high brightness LEDs up to 1.0 A by using additional external output stages as Power MOSFET. The S8100 provides a low-frequency PWM dimming input that can accept an external control signal with a duty ratio of 0-100% and a frequency of typical 100Hz. The output current can be programmed between a few milliamps and up to more than 1.0A. The device is a small surface mount package (SOT-26)

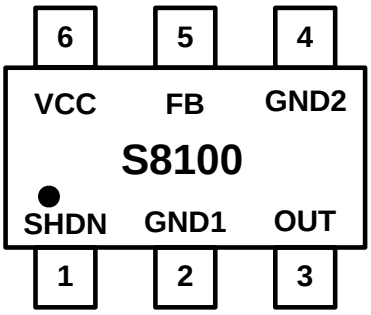
◈ Features

- Vcc : 2.5V~18V
- Low Quiescent Current : 0.8mA
- Output Source current : 0.15mA
- PWM Dimming with pull-up resistor control
- Stability compensation with 0.1μF ceramic capacitance
- Small Surface-Mount SOT-26 Package
- Halogen-Free Package is Available



Package : SOT-26

◈ Pin Assignment & Description



[Pin Assignment]

Pin	Symbol	Description
1	SHDN	Disable On/Off
2	GND1	Ground
3	OUTPUT	Gate
4	GND2	Bandgap GND
5	FB	Feedback / 170mV Reference
6	VCC	Power Supply

◈ Ordering Information

Package Type	Device Name	Marking
SOT-26	S8100	810□ ※

※ □ : Year&Week Code

◈ Absolute maximum ratings

[Ta=25℃]

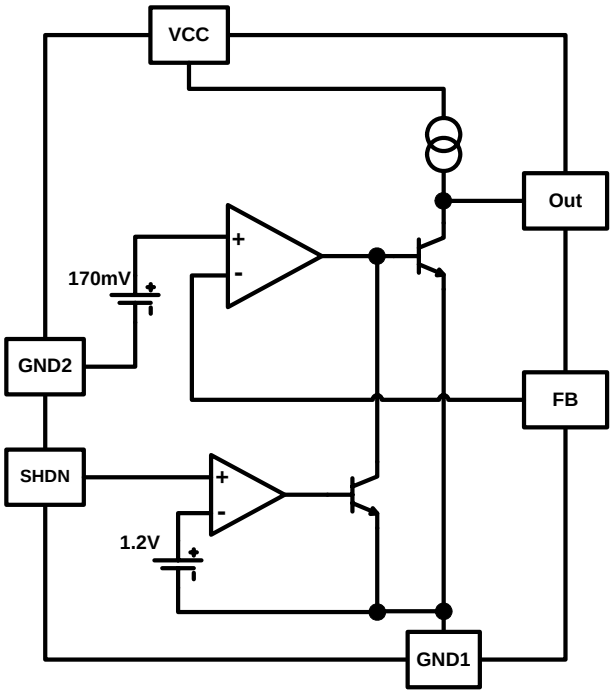
Characteristic	Symbol	Rating	Unit
Power Supply Voltage	$V_{CC(MAX)}$	18	V
Output Voltage	$V_{OUT(MAX)}$	16	V
Thermal Resistance Junction-Ambient	Rth(j-a)*	250	℃/W
Power Dissipation	P_D*	0.5	W
Operating Temperature Range	T_{opr}	-40 ~ +85	℃
Storage Temperature Range	T_{stg}	-55 ~ +150	℃

* Mounted on a glass epoxy circuit board of 30x30mm Pad dimension of $50mm^2$

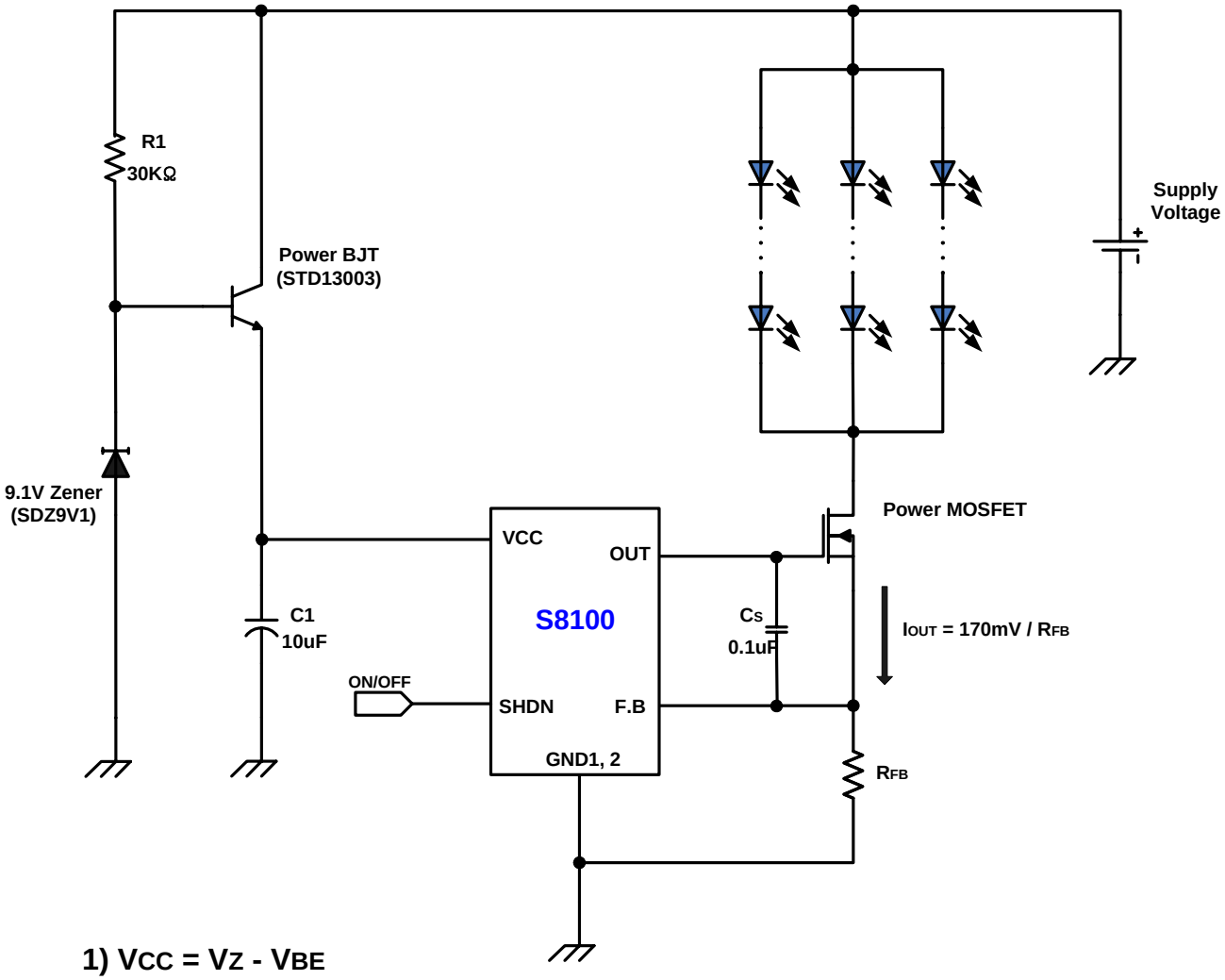
◈ Electrical Characteristics (Ta=25℃, unless otherwise noted.)

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Current 1	I_{Q1}	V_{CC}=5V, FB=V_{OUT}, SHDN=0V	-	0.8	2	mA
Supply Current 2	I_{Q2}	V_{CC}=14V, FB=V_{OUT}, SHDN=0V	-	1.0	2.2	mA
Feedback Voltage 1	V_{FB1}	V_{CC}=5V, FB=V_{OUT}, SHDN=0V	162	170	178	mV
Feedback Voltage 2	V_{FB2}	V_{CC}=14V, FB=V_{OUT}, SHDN=0V	162	170	178	mV
SHDN Voltage	V_{SHDN}	V_{CC}=5V	1.15	1.21	1.27	V
Dimming Frequency (SHDN)	F_{DIM}	Rp=Min500Ω ~Max1KΩ	-	100	-	Hz
Output Sink Current	I_{OS}	V_{CC}=5V	-	45	60	mA

◈ Functional block diagram



◈ Typical Applications



1) $V_{CC} = V_Z - V_{BE}$

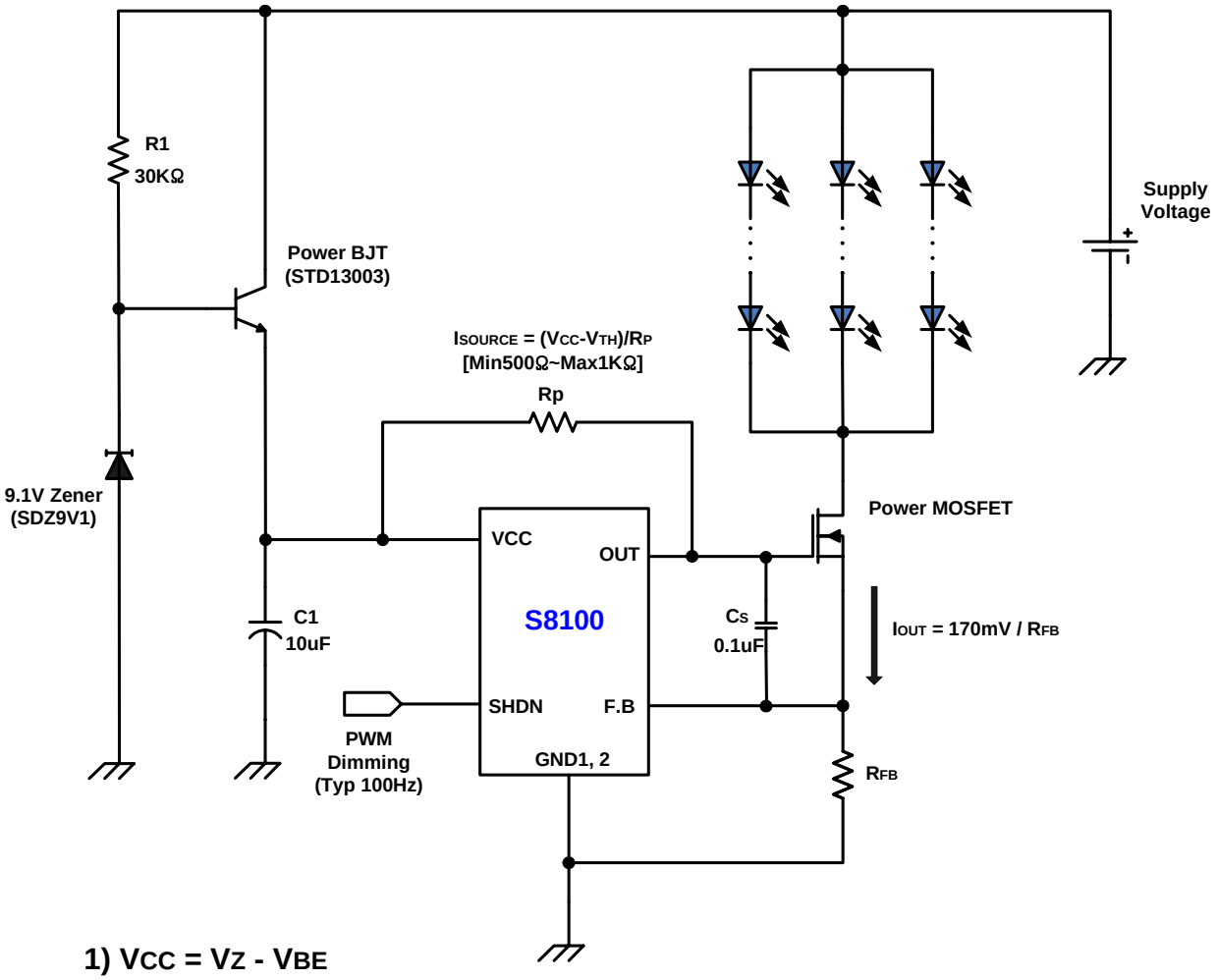
2) R1 supplies the base current which is necessary to Power BJT base.

3) If does not use an SHDN function, connect SHDN Pin with the ground.

4) Must supply the above of the voltage FETs V_{TH} could operate enough to Vcc.

<Application 1. Constant Current LED Driver Circuit>

◈ Typical Applications



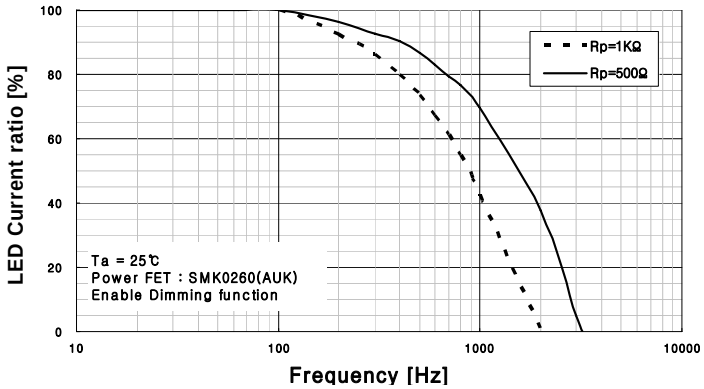
1) VCC = VZ - VBE

2) R1 supplies the base current which is necessary to Power BJT base.

3) If does not use an SHDN function, connect SHDN Pin with the ground.

4) Must supply the above of the voltage FETs VTH could operate enough to Vcc.

<Application 2. PWM Dimming LED Driver Circuit>



※ LED current ratio must pay attention according to Rp value and Power FET types.

◈ Electrical Characteristic Curves

Fig.1 Supply current vs Ambient Temperature

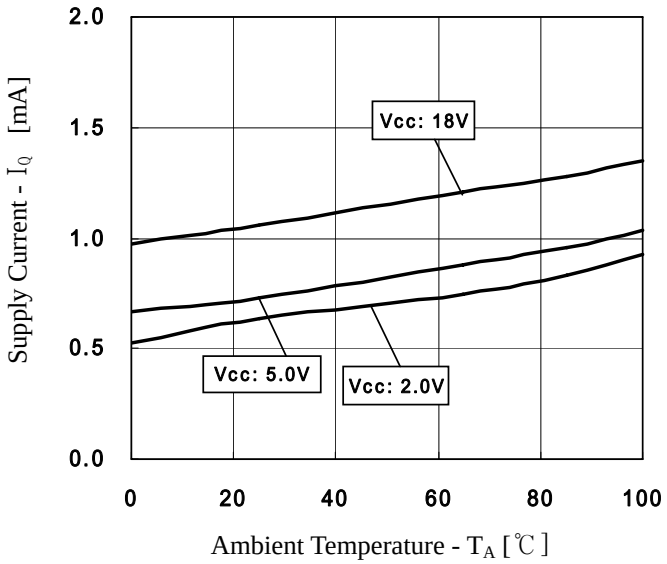


Fig.2 V_{SHDN} vs Ambient Temperature

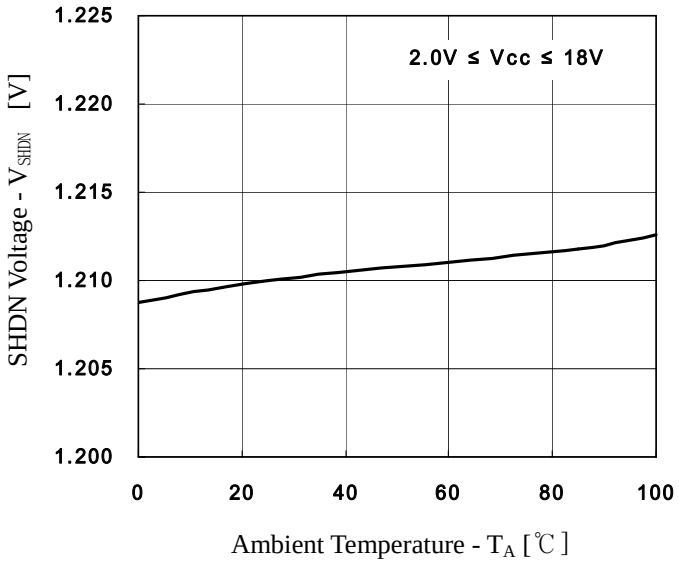


Fig.3 V_{FB} vs Ambient Temperature

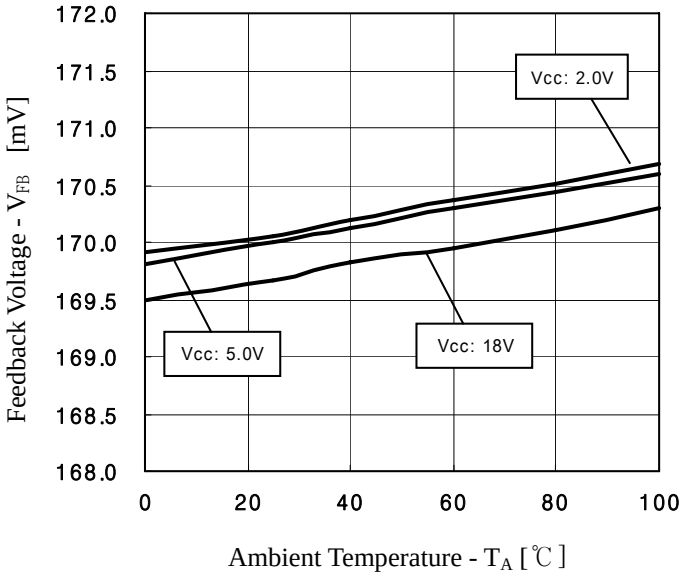
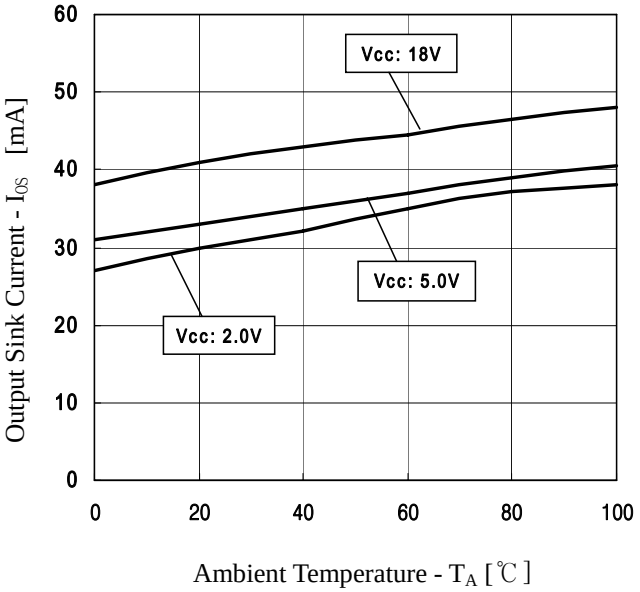
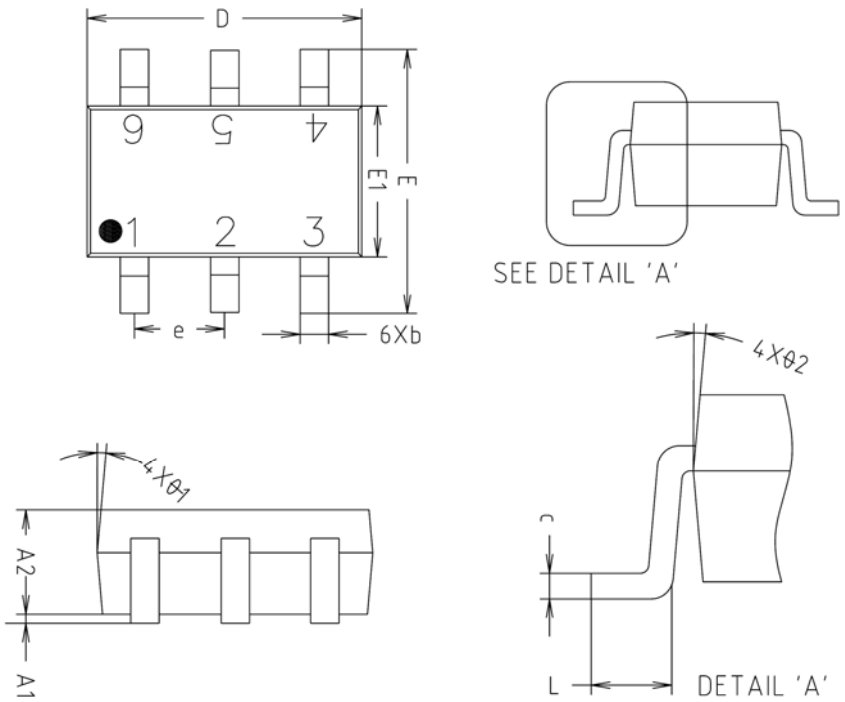


Fig.4 Output Sink Current vs Ambient Temperature

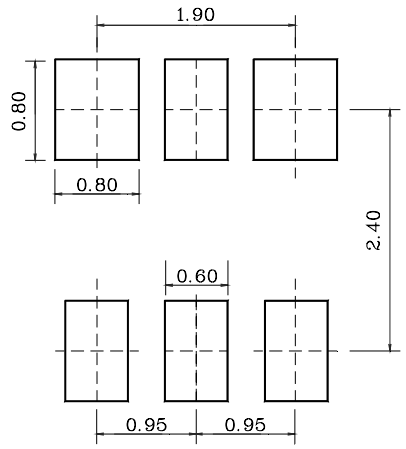


SOT-26 Outline Dimension(mm)



SYMBOL	MILLIMETERS(mm)			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A1	0.000	0.050	0.100	
A2	1.000	1.100	1.200	
b	-	0.400	0.450	
c	0.110	0.150	0.190	
D	2.800	2.900	3.000	
E	2.600	2.800	3.000	
E1	1.500	1.600	1.700	
e	0.930	0.950	0.970	
L	0.400	-	-	
θ1	5° REF			
θ2	5° REF			

※ Recommend PCB solder land [Unit: mm]



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