



# SP2260

## 60V Buck LED Driver

### DESCRIPTION

SP2260 is the monolithic IC designed for a step-down LED driver capable of driving 1.5A/3A load without an additional transistor. The input voltage range is up to 60V. Its feedback voltage, VFB, is 200mV. The SP2260 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<sub>STBY</sub>~50µA (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. SP2260 is available in standard TO-263 and SOP-8 with power pad. package.

### APPLICATIONS

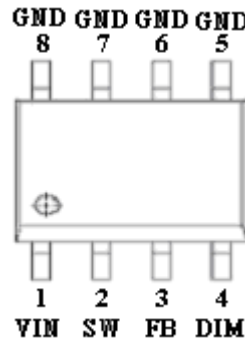
- DC/DC LED driver applications
- Backlighting for flat panel displays
- General purpose constant current source
- Automotive
- Chargers

### FEATURES

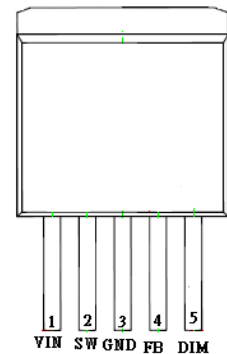
- VIN Max = 60V
- VFB = 200mV
- Frequency 52kHz
- I<sub>LED</sub> Max 1.5A with PSOP-8L
- I<sub>LED</sub> Max 3.0A with TO-263-5L
- On/Off input may be used for the Analog Dimming
- Thermal protection
- Cycle-by-cycle current limit

### PIN CONFIGURATION

PSOP-8L



TO-263-5L



### PART MARKING

PSOP-8L



A : Lot Code  
B : Date Code

TO-263-5L



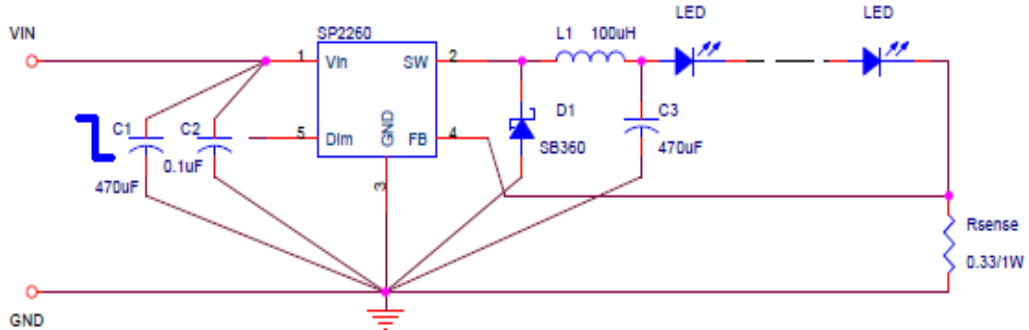
A : Lot Code  
B : Date Code



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### TYPICAL APPLICATION CIRCUIT



### PIN DESCRIPTION

Pin (PSOP-8L)	Pin (TO263-5)	Symbol	Description
1	1	V <sub>IN</sub>	Supply Voltage Input
2	2	SW	Switch
3	4	FB	Feedback
4	5	DIM	ON/Off and Linear Dimming
5~8	3	GND	Ground with Heat Sink

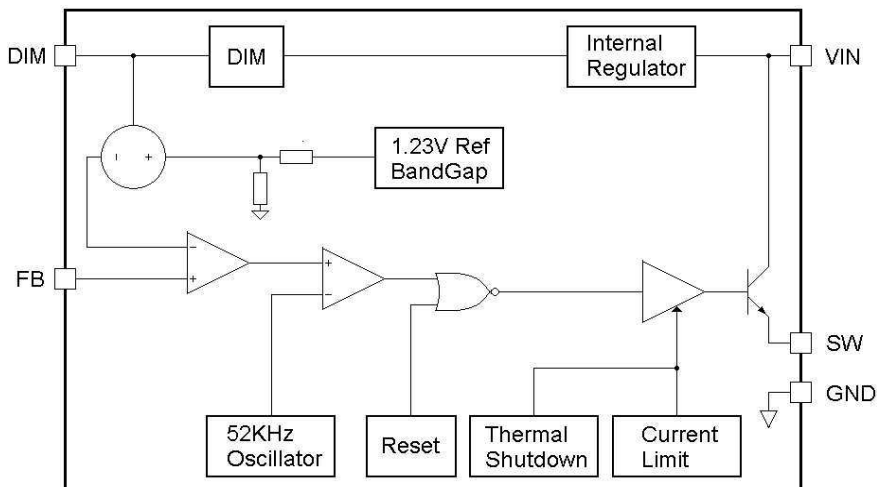
### ORDERING INFORMATION

Part Number	Package	Part Marking
SP2260S8RG	PSOP- 8L	SP2260
SP2260T265RG	TO-263-5L	SP2260

※ SP2260S8RG : 13" Tape Reel ; Pb – Free

※ SP2260T265RG : 13" Tape Reel ; Pb - Free

### BLOCK DIAGRAM





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### ABSOLUTE MAXIMUM RATINGS

( $T_A=25^{\circ}\text{C}$  Unless otherwise specified)

Parameter	Symbol	Value	Unit
DC Supply Voltage	$V_{IN}$	63	V
ON/OFF and Dimming Voltage	DIM	-0.3~ $V_{IN}$	V
SW Voltage	SW	-0.8	V
FB Voltage	FB	-0.3~ $V_{IN}$	V
Operating Temperature	$T_{OPR}$	-40~125	$^{\circ}\text{C}$
Maximum Junction Temperature	$T_{J(\text{Max})}$	150	$^{\circ}\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$ (TO263-5)	30	$^{\circ}\text{C}/\text{W}$
	$R_{\theta JA}$ (PSOP-8L)	50	$^{\circ}\text{C}/\text{W}$
Storage Temperature	$T_S$	-65~150	$^{\circ}\text{C}$

The IC has a protection circuit against static electricity. Do not apply high static electricity or high voltage that exceeds the performance of the protection circuit to the IC.

### ELECTRICAL CHARACTERISTICS

( $T_j=25^{\circ}\text{C}$ ,  $V_{IN}=12\text{V}$ ,  $I_{LOAD}=350\text{mA}$  Unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{IN}$	Operating Voltage		5.5		60	V
$V_{FB}$	Feedback Voltage	$V_{IN} = 12\text{V}$ , $I_{LOAD} = 350\text{mA}$ , $DIM = 0\text{V}$	190	200	210	mV
		$V_{IN} = 5.5\text{V}\sim 60\text{V}$ , $I_{LOAD} = 350\text{mA}$ , $V_{DIM} = 0\text{V}$	180		220	mV
$I_{FB}$	Feedback Current	$V_{FB} = 250\text{mV}$ , $DIM = 0\text{V}$	-150	-50	150	nA
$F_{OSC}$	Oscillator Frequency		47	52	58	KHz
$V_{SAT}$	Saturation Current	$I_{SW}=1.5\text{A}$ PSOP-8L		1.35	1.5	V
		$I_{SW}=3.0\text{A}$ TO-263-5L		1.35	1.5	V
$D_{MAX}$	Max Duty				100	%
$I_{LO}$	SW Leakage Current	$V_{IN}=60\text{V}$ , $V_{FB} = 1.5\text{V}$ , $V_{SW} = 0\text{V}$	-0.3	-0.07		mA
$I_{CL}$	Current Limit	PSOP-8L	2.5		4.5	A
		TO-263-5L	4.5		6.5	A
$V_{TH}$	DIM Threshold Voltage		1.0	1.4	2.0	V
$I_{IH}$	Input Current On/Off	$V_{On/Off} = 2.5\text{V}$	-1.0	0.01	1.0	$\mu\text{A}$
$I_{IL}$	Input Current On/Off	$V_{On/Off} = 0\text{V}$	-1.0	-0.3	1.0	$\mu\text{A}$
$I_Q$	Quiescent Current	$V_{FB} = 1.5\text{V}$		5.3	10	mA
$I_{STBY}$	Standby Current	$V_{IN}=60\text{V}$ , $V_{DIM} = 5\text{V}$		50	200	$\mu\text{A}$
$V_{DIM}$	Dimming Voltage	$V_{IN} = 12\text{V}$ , $I_{LOAD} = 0$	600	670	750	mV



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### PERFORMANCE CHARACTERISTICS

(Circuit for typical application circuit)

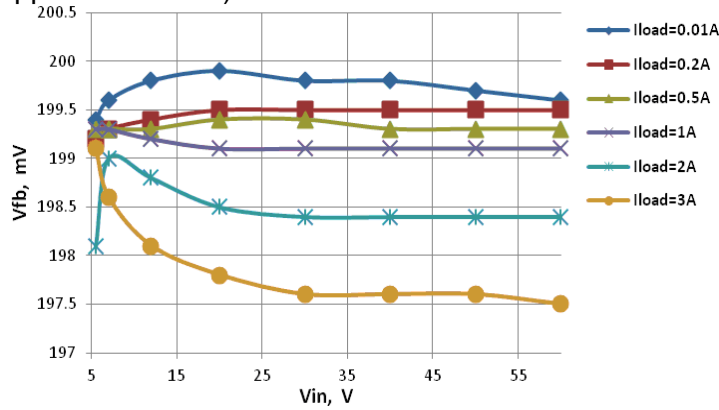


Fig.1 Feedback Voltage

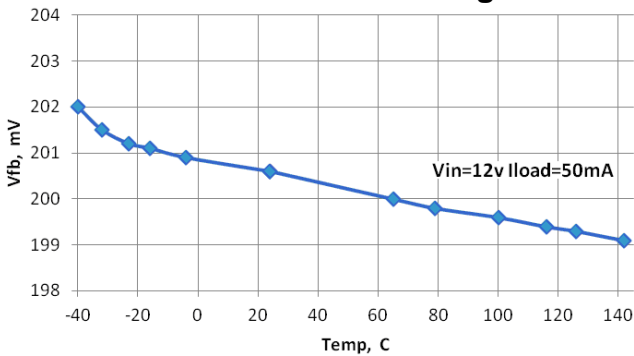


Fig.2 Normalized Feedback Voltage

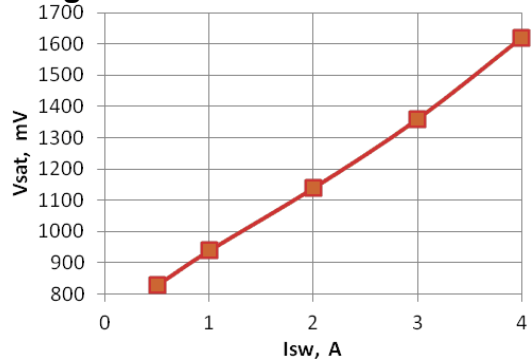


Fig.3 Switch Saturation Voltage  
(no any components connected to SW-pin. Vfb=0)

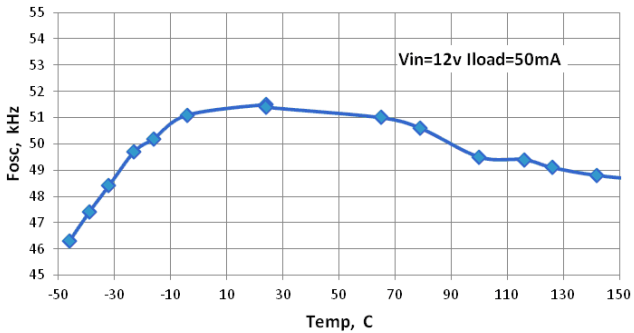


Fig.4 Oscillator Frequency

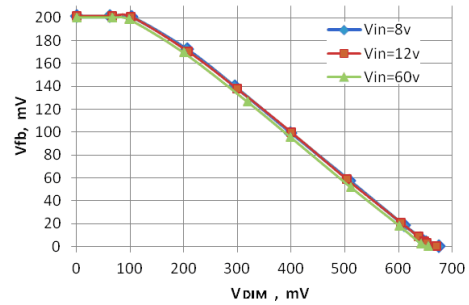


Fig.5 Dimming Voltage

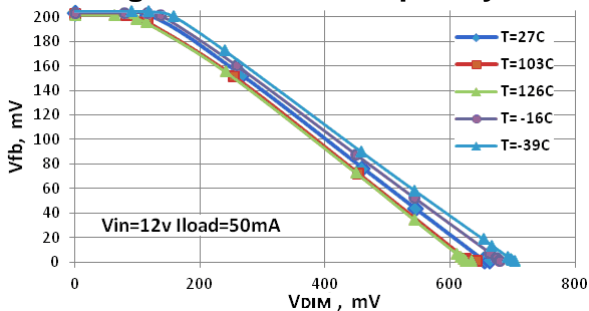


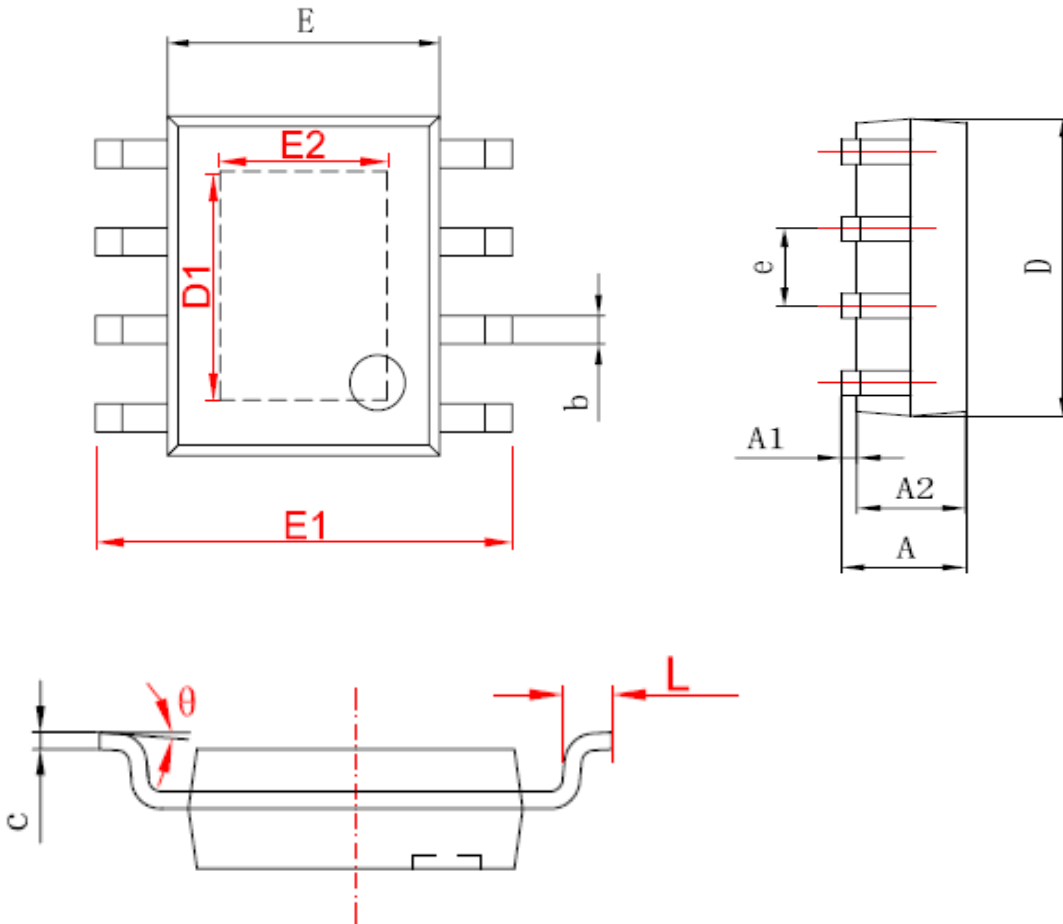
Fig.6 Normalized Dimming Voltage



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### PSOP- 8L PACKAGE OUTLINE



字符	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.050	0.150	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
D1	3.202	3.402	0.126	0.134
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2	2.313	2.513	0.091	0.099
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

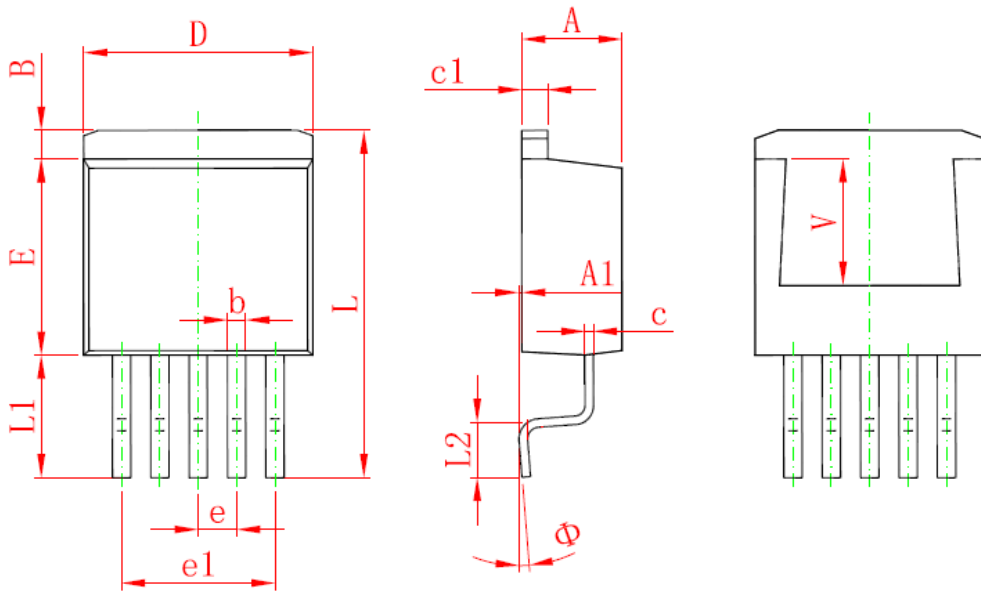


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### TO-263 PACKAGE OUTLINE

#### TO-263-5L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.560	1.760	0.061	0.069
b	0.710	0.910	0.028	0.036
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	9.880	10.180	0.389	0.401
E	8.200	8.600	0.323	0.339
e	1.700 TYP.		0.067 TYP.	
e1	6.700	6.900	0.264	0.272
L	15.140	15.540	0.596	0.612
L1	5.080	5.480	0.200	0.216
L2	2.340	2.740	0.092	0.108
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	



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