



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, V_{FB} , is 200mV. The SP2260 operates at a switching frequency of 52kHz. The external shutdown function is controlled by a logic level on the EN pin and then the circuit comes into the standby mode with $I_{STBY} \sim 50\mu A$ (typ.). As the voltage on the EN 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

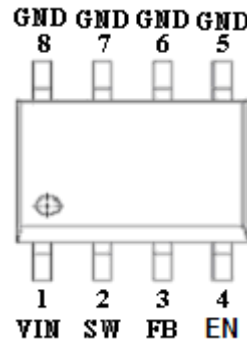
- DC/DC LED driver applications
- Backlighting for flat panel displays
- General purpose constant current source
- Automotive
- Chargers

FEATURES

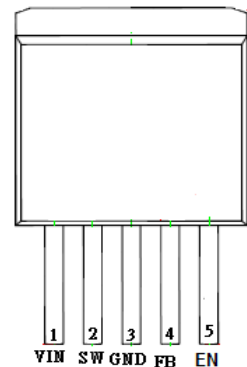
- V_{IN} Max = 60V
- V_{FB} = 200mV
- Frequency 52kHz
- I_{LED} Max 1.5A with PSOP-8L
- I_{LED} Max 3.0A with TO-263-5L
- On/Off control input may be used for the EN pin
- Thermal protection
- Cycle-by-cycle current limit

PIN CONFIGURATION

PSOP-8L



TO-263-5L



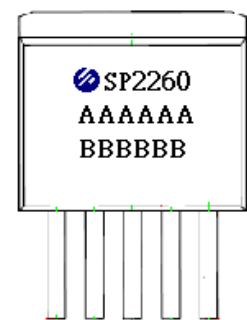
PART MARKING

PSOP-8L



A : Lot Code
B : Date Code

TO-263-5L



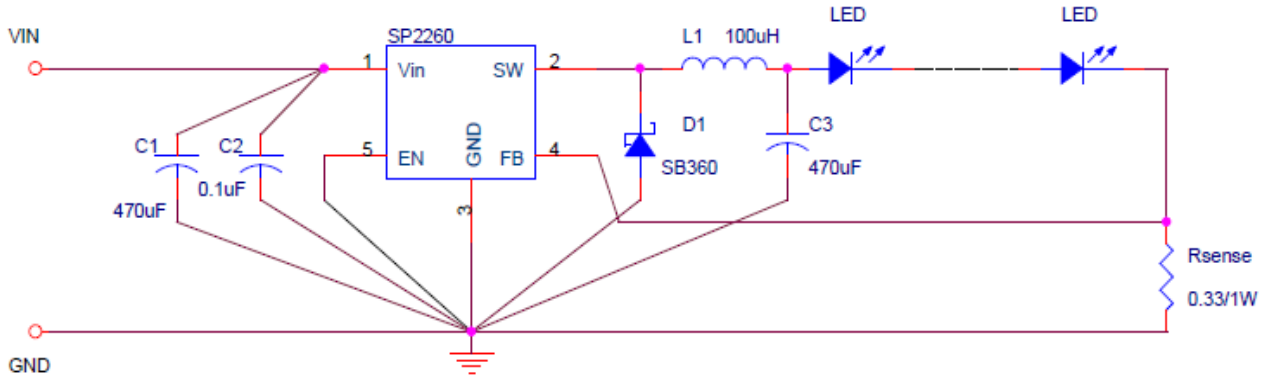
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TYPICAL APPLICATION CIRCUIT



PIN DESCRIPTION

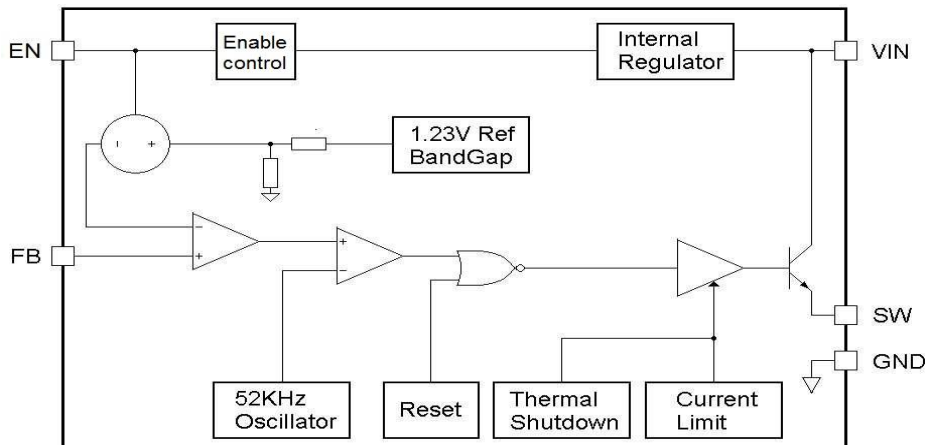
Pin (PSOP-8L)	Pin (TO263-5)	Symbol	Description
1	1	V _{IN}	Supply Voltage Input
2	2	SW	Switch
3	4	FB	Feedback
4	5	EN	Enable control, Active low
5~8	3	GND	Ground

ORDERING INFORMATION

Part Number	Package	Part Marking
SP2260S8RGB	PSOP- 8L	SP2260
SP2260T265RGB	TO-263-5L	SP2260

- ※ SP2260S8RG : 13" Tape Reel ; Pb – Free
- ※ SP2260S8RGB : 13" Tape Reel ; Pb – Free; Halogen – Free
- ※ SP2260T265RG : 13" Tape Reel ; Pb – Free
- ※ SP2260T265RGB : 13" Tape Reel ; Pb – Free; Halogen – 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
EN Voltage	EN	-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	$^{\circ}\text{C}$
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	$V_{IN} = 12\text{V}$, $I_{LOAD} = 350\text{mA}$, $EN = 0\text{V}$	190	200	210	mV
		$V_{IN} = 5.5\text{V}\sim 60\text{V}$, $I_{LOAD} = 350\text{mA}$, $V_{EN} = 0\text{V}$	180		220	mV
I_{FB}	Feedback Current	$V_{FB} = 250\text{mV}$, $EN = 0\text{V}$	-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	$V_{IN}=48\text{V}$, $V_{FB}=1.5\text{V}$, $V_{SW}=0\text{V}$	-0.3	-0.07		mA
CL	Current Limit	PSOP-8L	2.5		4.5	A
		TO-263-5L	4.5		6.5	A
V_{TH}	EN Threshold Voltage		1.0	1.4	2.0	V
I_{IH}	Input Current On/Off	$V_{EN} = 2.5\text{V}$	-1.0	0.01	1.0	μA
I_{IL}	Input Current On/Off	$V_{EN} = 0\text{V}$	-1.0	-0.3	1.0	μA
I_Q	Quiescent Current	$V_{FB} = 1.5\text{V}$		5.3	10	mA
I_{STBY}	Standby Current	$V_{IN}=60\text{V}$, $V_{EN} = 5\text{V}$		50	200	μA
V_{EN}	Enable Voltage	$V_{IN} = 12\text{V}$, $I_{LOAD} = 0$	600	670	750	mV



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PERFORMANCE CHARACTERISTICS (Circuit for typical application circuit)

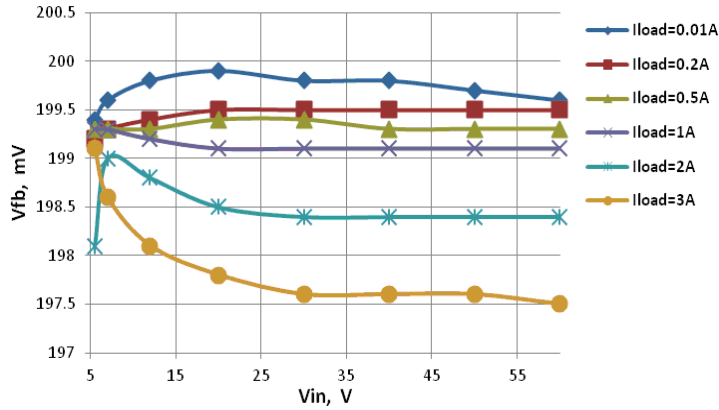


Fig.1 Feedback Voltage

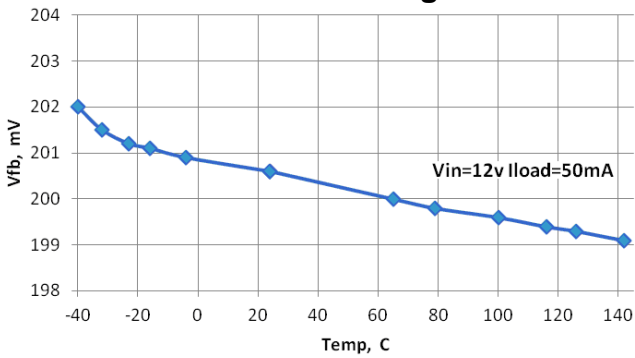


Fig.2 Normalized Feedback Voltage

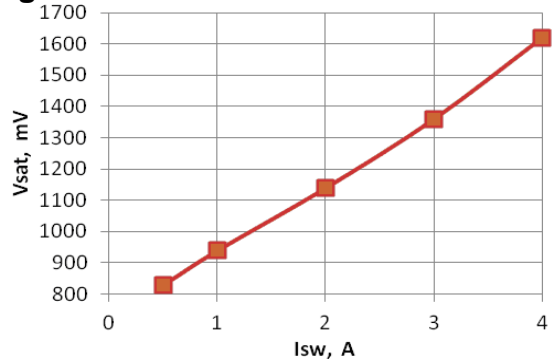


Fig.3 Switch Saturation Voltage
(no any components connected to SW-pin. Vfb=0)

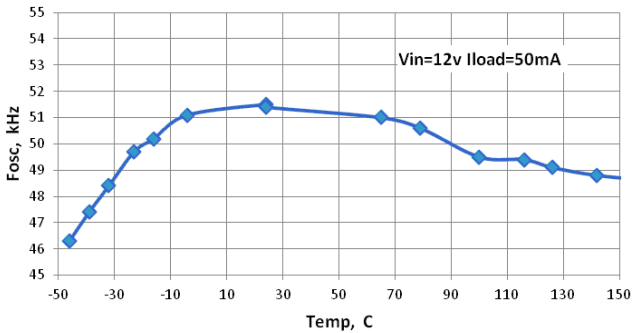


Fig.4 Oscillator Frequency

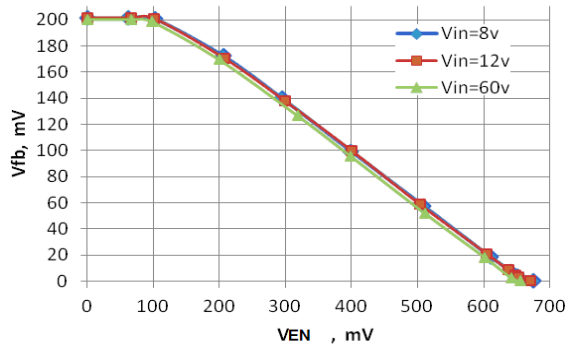


Fig.5 EN vs Vfb Voltage

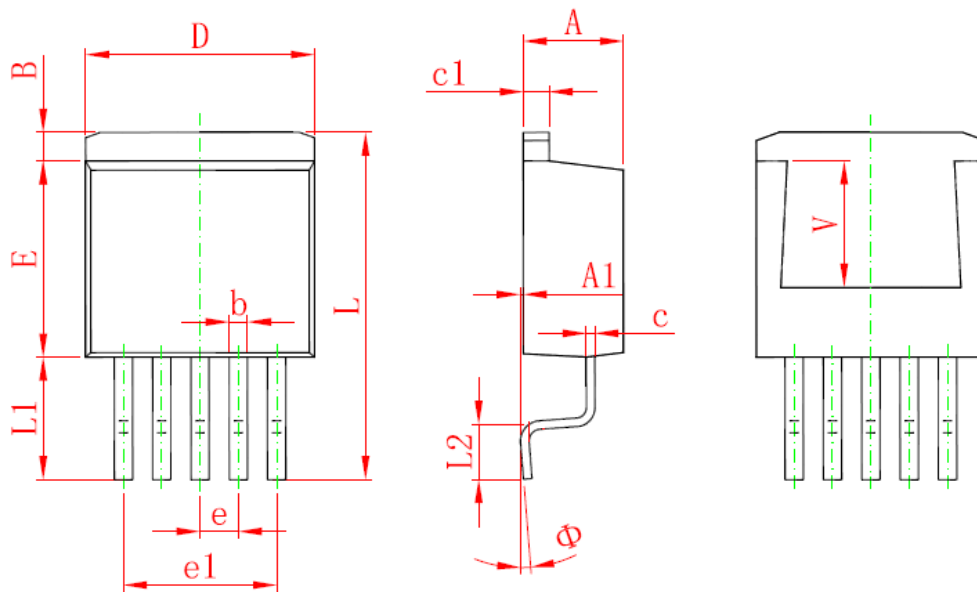


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TO-263-5L PACKAGE OUTLINE

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.	

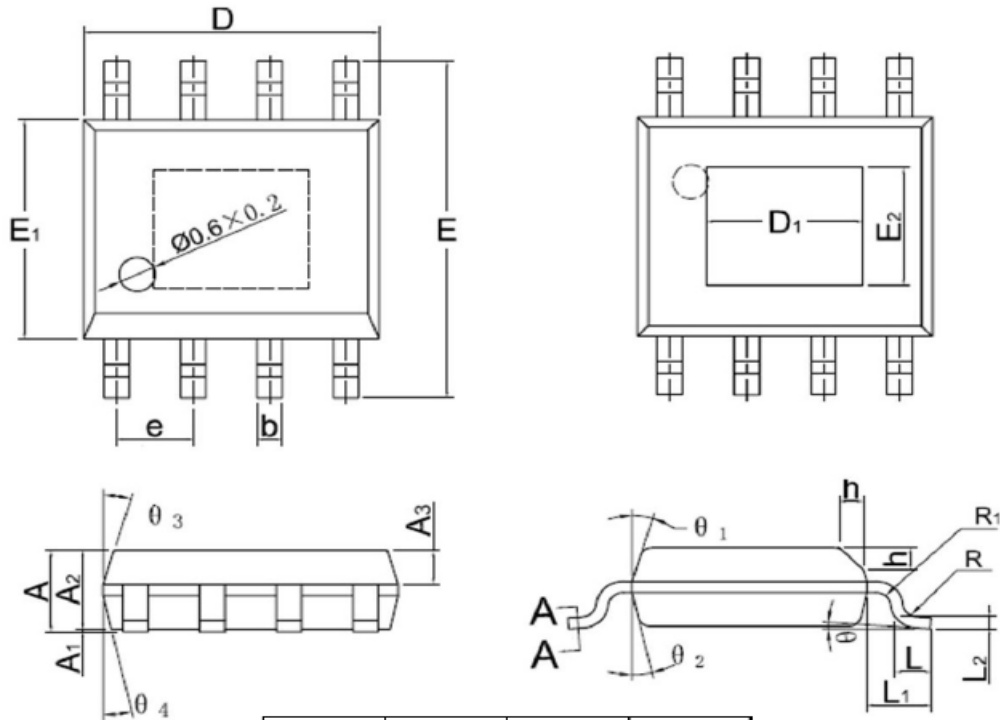


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PSOP-8L PACKAGE OUTLINE

PSOP-8L PACKAGE OUTLINE



SYMBOL	MIN	NOM	MAX
A	1.35	--	1.75
A1	0.00	--	0.15
A2	1.25	1.40	1.65
A3	0.50	0.60	0.70
b	0.33	-	0.51
c	0.17	--	0.25
D	4.80	4.90	5.00
D1	2.65	--	3.30
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
E2	1.93	--	2.41
e	1.17	1.27	1.37
L	0.45	0.60	0.80
L1	1.04 REF		
L2	0.25BSC		
R	0.07	--	--
R1	0.07	--	--
h	0.25	--	0.50
θ	0°	--	8°
θ1	15°	17°	19°
θ2	11°	13°	15°
θ3	15°	17°	19°
θ4	11°	13°	15°



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