SP1938
DC-DC Step-Up Converter for White LED

DESCRIPTION

The SP1938 is a step-up DC/DC converter for white LED driver with over voltage protection. The device can driver one to four LEDs in series from a single cell Lithium Ion battery.

Internal functions include current limiting; thermal shutdown; OVP and soft-start to prevent damage operate status. The SP1938 operates at 0.8MHz apply to Lithium-Ion powered systems. A low 95mV reference voltage minimizes power loss in the current setting resistor for better efficiency.

The SP1938 is available in small package SOT-23-6L.

APPLICATIONS

- Battery Power Equipment
- Notebook Computers
- PDA
- Cellular Phone

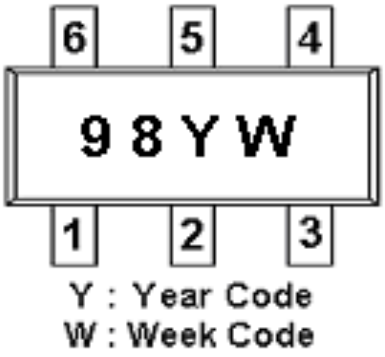
FEATURES

- Current Source with Over Voltage Protection
- Fast 0.8MHz Switching Frequency
- High Efficiency up to 87%
- Drives up to Four LEDs From 3.2V Supply
- Drives up to Six LEDs From a 5V Supply
- Low Quiescent Current
- Disconnects LEDs in Shutdown Mode
- Internal Over Temperature and Current Limiting Shutdown Function
- Internal Soft-Start Circuit
- 26V Rugged Bipolar Switch
- Available in a Small SOT-23-6L Package

PIN CONFIGURATION(SOT-23-6L)

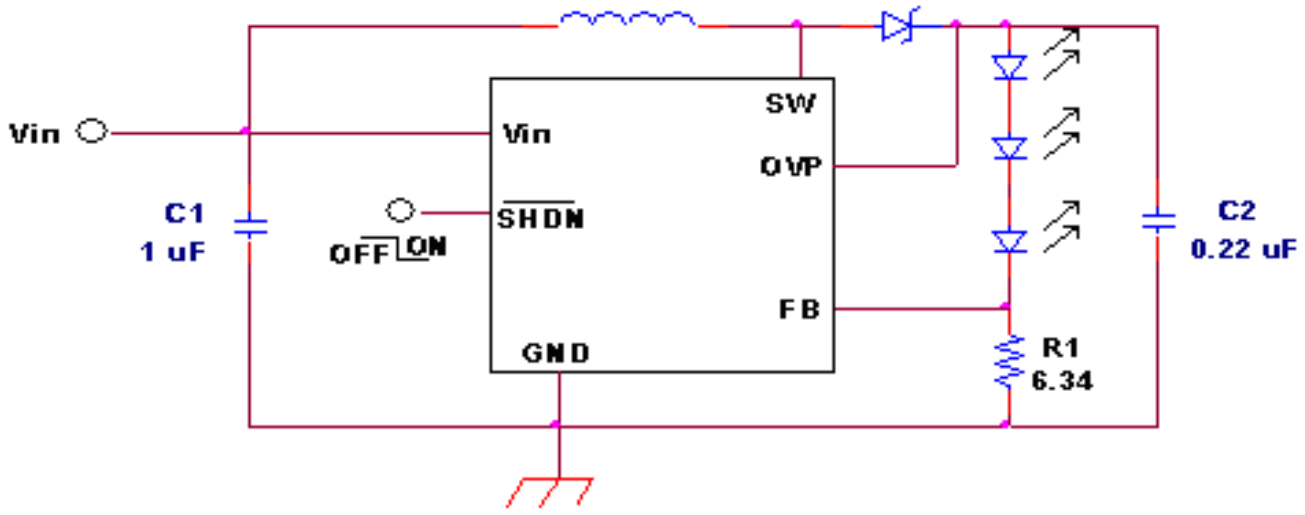


PART MARKING



Y : Year Code
W : Week Code

TYPICAL APPLCATION CIRCUIT



PIN DESCRIPTION

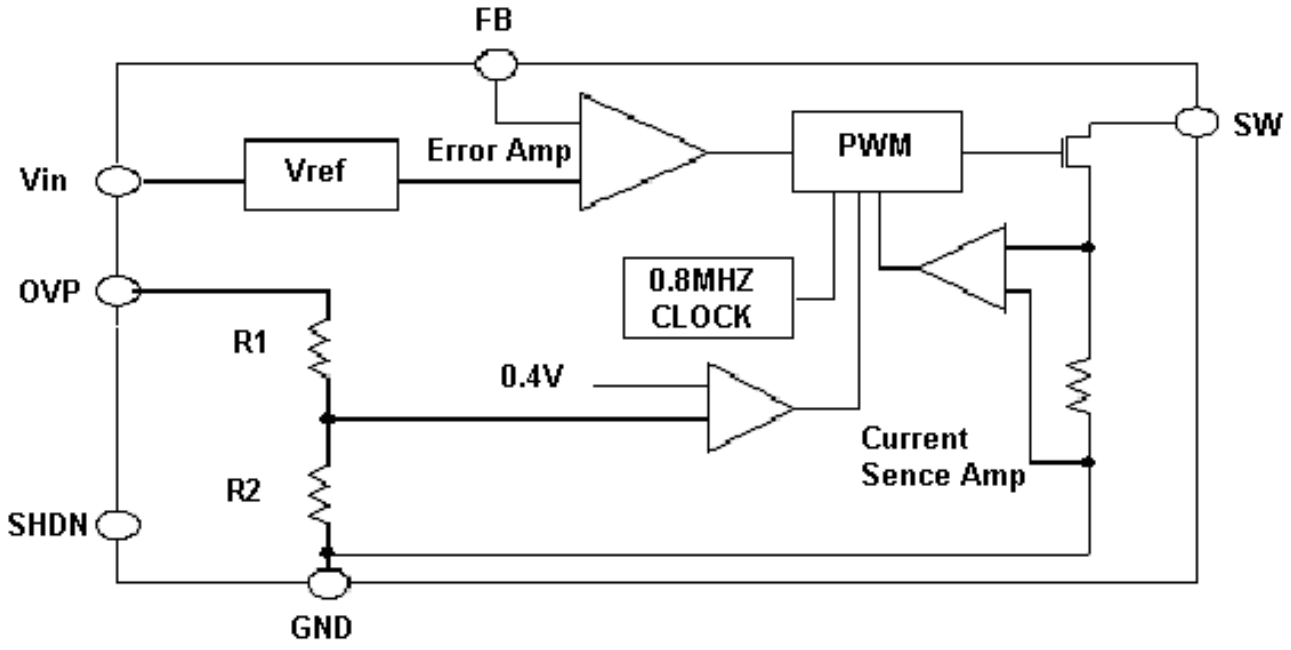
Pin	Symbol	Description
1	SW	Connect inductor/diode here
2	GND	Ground Pin
3	FB	Connect cathode of lowest LED and resistor here
4	SHDN	Combined active low enable and PWM control pin for LED dimming
5	OVP	Over voltage Protection and Connect to the output capacitor of the Converter
6	VIN	Supply Voltage Input

ORDERING INFORMATION

Part Number	Package	Part Marking
SP1938S26RGB	SOT-23-6L	98YW

※ Week Code : A ~ Z(1 ~ 26) ; a ~ z(27 ~ 52)
※ SP1938S26RGB : Tape Reel ; Pb – Free ; Halogen -Free

BLOCK DIAGRAM



ABSOULTE MAXIMUM RATINGS
(T_A=25℃ Unless otherwise specified)

Parameter	Symbol	Value	Unit
DC Supply Voltage	V_{IN}	10	V
SW Voltage	V_{SW}	26	V
FB Voltage	V_{FB}	10	V
SHDN Voltage	V_{SHDN}	10	V
Operating Temperature	T_{OPR}	-40～85	℃
Maximum Junction Temperature	$T_{J(Max)}$	125	℃
Storage Temperature	T_S	-65～150	℃

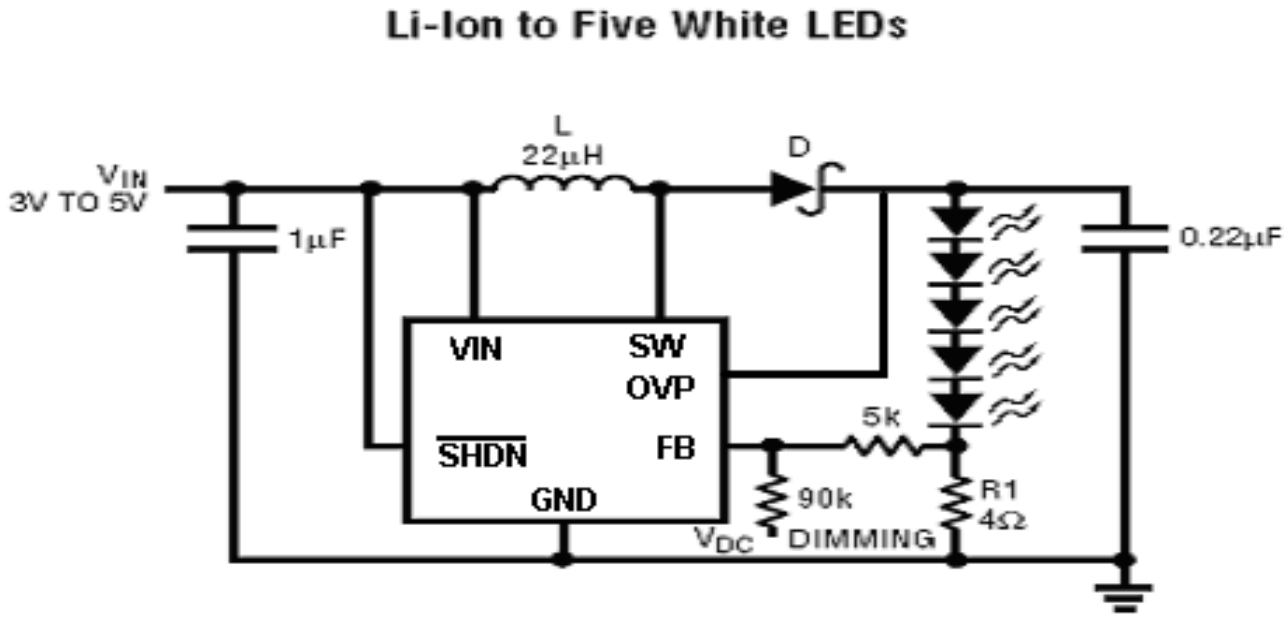
The IC has a protection circuit against static electricity. Do not apply high static electricity or high voltage that exceeds the performance of the protection circuit to the IC.

ELECTRICAL CHARACTERISTICS

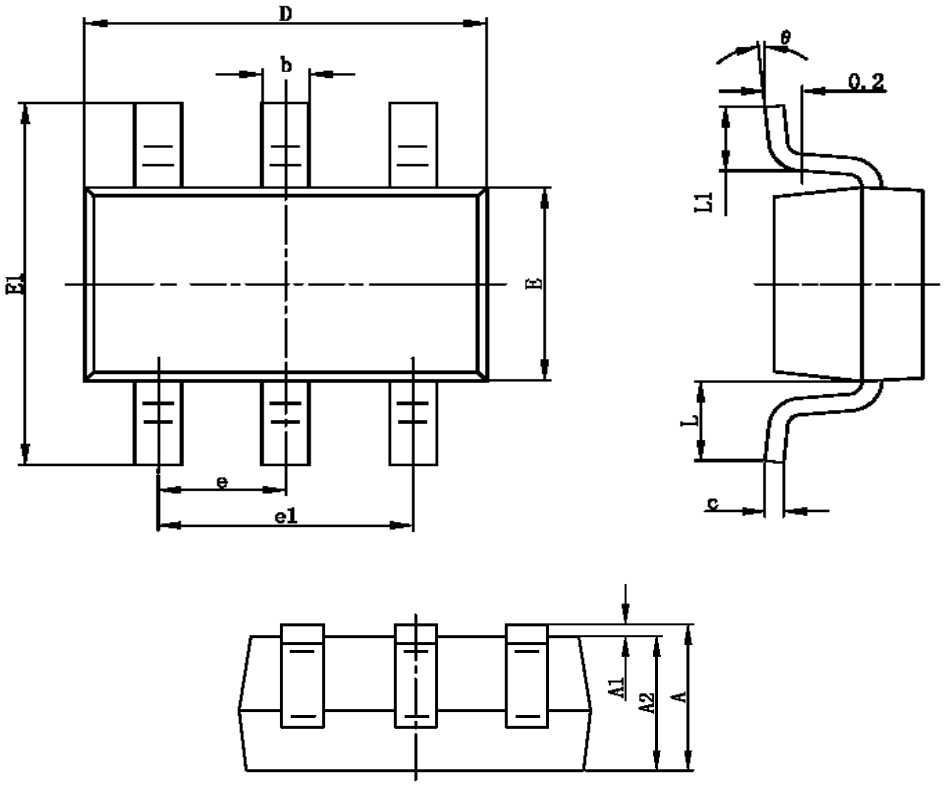
(T_A=25℃, V_{IN}=3V, V_{SHDN}=3V, Unless otherwise specified)

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating Voltage		2.5		9	V
Feedback Voltage	Isw=100mA, Duty Cycle = 66%	86		110	mV
FB Pin Bias Current				150	nA
Supply Current			2.8	3.5	mA
	V_{SHDN} = 0V		0.05	1.0	μA
Switching Frequency		0.8	1.2	1.6	MHz
Maximum Duty Cycle			85		%
Switch Current Limit			320		mA
Switch Leakage Current	Vsw= 5V		0.01	5	μA
Switch Saturation Voltage	Isw = 200mA		150		mV
SHDN Voltage High		1.5			V
SHDN Voltage Low				0.4	V
SHDN Pin Current			90		uA
Over Voltage Protection	V_{OUT} rising	18.4			V

APPLICATION CIRCUIT



SOT-23-6L PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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