

FS1725

White LED Step-Up Converter

Features

Inherently Matched LED Current
High Efficiency: 84% Typical
Drives Up to Four LEDs from a 4V Supply
Drives Up to Seven LEDs from a 6V Supply
36V Rugged Bipolar Switch
Fast 1.2MHz Switching Frequency
Uses Tiny 1mm Tall Inductors
Requires Only 0.22mF Output Capacitor
Low Profile SOT23-6 Packaging

Applications

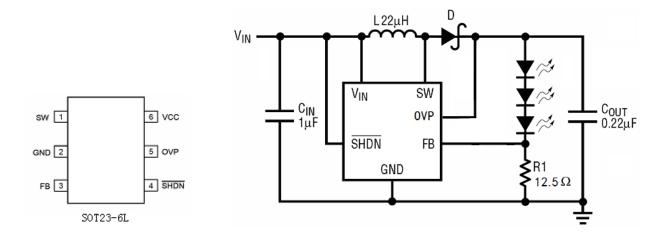
Cellular Phones
 PDAs, Handheld Computers
 Digital Cameras
 MP3 Players
 GPS Receivers

• General Description

The FS1725 is a step-up DC/DC converter specifically designed to drive white LEDs with a constant current. The device can drive two, three or four LEDs in series from a Li-lon cell. Series connection of the LEDs provides identical LED currents resulting in uniform brightness and eliminating the need for ballast resistors. The FS1725 switches at 1.2MHz, allowing the use of tiny external components. The output capacitor can be as small as 0.22uF, saving space and cost versus alternative solutions. A low 250mV feedback voltage minimizes power loss in the current setting resistor for better efficiency. The FS1725 is available in low profile SOT23-6 packages.

• Pin Configurations

Typical Application Circuit

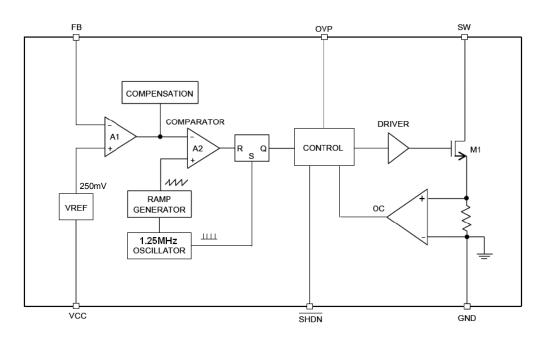


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• Pin Description

Pin No.	Pin Name	Pin Function				
1	SW	Switch Pin. Connect inductor/diode here. Minimize trace area at this pin to reduce EMI.				
2	GND	Ground Pin. Connect directly to local ground plane.				
3	FB	Feedback Pin. Reference voltage is 250mV.Connect cathode of lowest LED and resistor here.				
5		Calculate resistor value according to the formula: R_{FB} = 250mV/I _{LED}				
4	SHDN	Shutdown Pin. Connect to 1.8V or higher to enable device; 0.4V or less to disable device.				
5	OVP	Over Voltage Protection Sense Pin.				
6	VIN	Input Supply Pin. Must be locally bypassed.				

Functional Block Diagram



Absolute Maximum Ratings

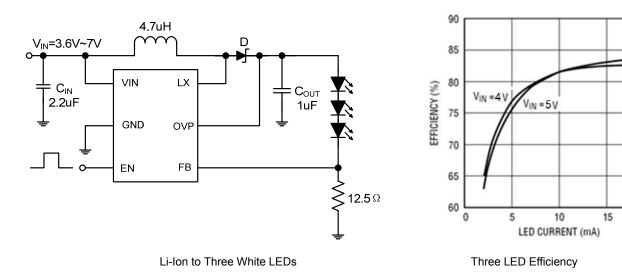
Parameter	Symbol	Ratings	Unit
IN Voltage	V _{IN}	12	V
SW/OVP Voltage	V _{OUT}	36	V
FB Voltage	V _{FB}	10	V
SHDN Voltage	V _{SHDN}	10	V
Operating Junction Temperature	T _{opr}	-40 to +85	°C
Storage Temperature Range	T _{stg}	-65 to +150	°C

• Electrical Characteristics

$(V_{\rm IN} = V_{\rm OUT} + 0)$	5V. VEN = VIN	$C_{OUT} = 1\mu E_{c} T_{L}$	= 25°C unless	otherwise specified)
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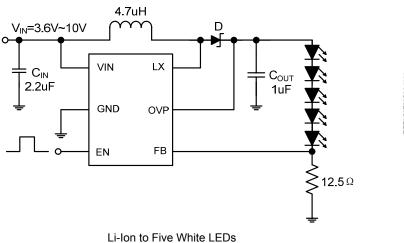
Parameter	Parameter	Min	Тур	Мах	Units
Operating Voltage		2.5		10	V
Feedback Voltage	I _{SW} = 100mA, Duty Cycle = 66%	235	250	265	mV
Over Voltage Protection Threshold			29		V
FB Pin Bias Current		10	45	100	nA
Quere la Querrant			1.9	2.5	mA
Supply Current	SHDN = 0V		0.1	1.0	mA
Switching Frequency		0.8	1.2	1.6	MHz
Maximum Duty Cycle			85	90	%
Switch Current Limit			340		mA
Switch VCESAT	I _{SW} = 250mA		30		mV
Switch Leakage Current	V _{SW} = 5V		0.01	5	mA
SHDN Voltage High		1.8			V
SHDN Voltage Low				0.4	V
SHDN Pin Bias Current			65		uA

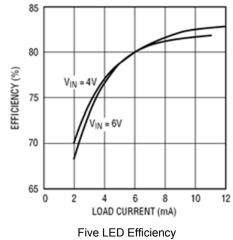
• Typical Performance Characteristics

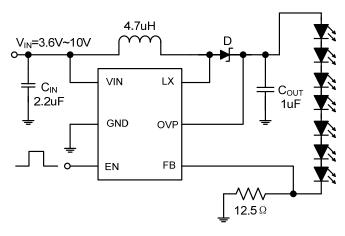


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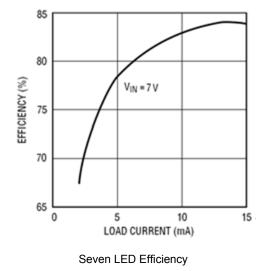
FS1725





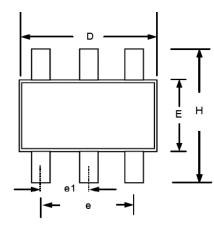


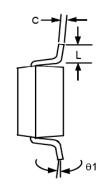
5V to Seven White LEDs

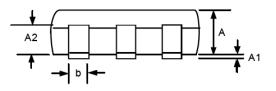


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Package Information







Symbol	Dimension mm			Dimension in inch		
	Min	Nom	Max	Min	Nom	Max
А	1.00	1.10	1.30	0.039	0.043	0.051
A1	0.00		0.10	0.000		0.004
A2	0.70	0.80	0.90	0.028	0.031	0.035
b	0.35	0.40	0.50	0.014	0.016	0.020
С	0.10	0.15	0.25	0.004	0.006	0.010
D	2.70	2.90	3.10	0.106	0.114	0.122
E	1.40	1.60	1.80	0.055	0.063	0.071
е	1.90(TYP)			0.075(TYP)		
Н	2.60	2.80	3.00	0.102	0.110	0.118
L	0.37			0.015		
θ1	1°	5°	9°	1°	5°	9°