

Features

- Wide 4.5V to 40V Input Voltage Range
- 0.155V CS adjustable LED drive current
- Minimum Drop Out 1.5V
- Fixed 150kHz Switching Frequency
- 2A Constant Output Current Capability
- Internal Optimize Power Transistor
- Excellent line and load regulation
- PWM pin with dimming function
- Built in thermal shutdown function
- Built in current limit function
- Built in output over voltage protection
- TO252-5L package

Applications

- LED Lighting
- LED Constant Current Driver

General Description

The FS2602 is a 150KHz fixed frequency PWM buck / buck_boost LED driver, capable of driving a 2A load with high efficiency, low ripple and excellent line and load regulation. Requiring a minimum number of external components, the regulator is simple to use and include internal frequency compensation and a fixed-frequency oscillator.

The PWM control circuit is able to adjust the duty ratio linearly from 0 to 100%. An PWM dimming function, an over current protection function is built inside. An internal compensation block is built in to minimize external component count.

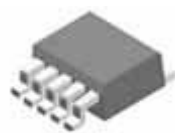


Figure1. Package Type of FS2602

Pin Configurations

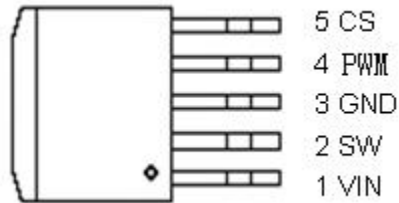


Figure2. Pin Configuration of FS2602 (Top View)

Table 1 Pin Description

Pin Number	Pin Name	Description
1	VIN	Supply Voltage Input Pin. FS2602 operates from a 4.5V to 40V DC voltage. Bypass Vin to GND with a suitably large capacitor to eliminate noise on the input.
2	SW	Power Switch Output Pin (SW). Output is the switch node that supplies power to the output.
3	GND	Ground Pin.(Note: Connected the back exposed PAD to Pin3.)
4	PWM	PWM dimming Pin (PWM). The PWM dimming threshold voltage is 1.4V. (“LOW” is ON, “HIGH” is OFF;)
5	CS	Output Current Sense Pin; (Iload=0.155V/Rcs)

Function Block

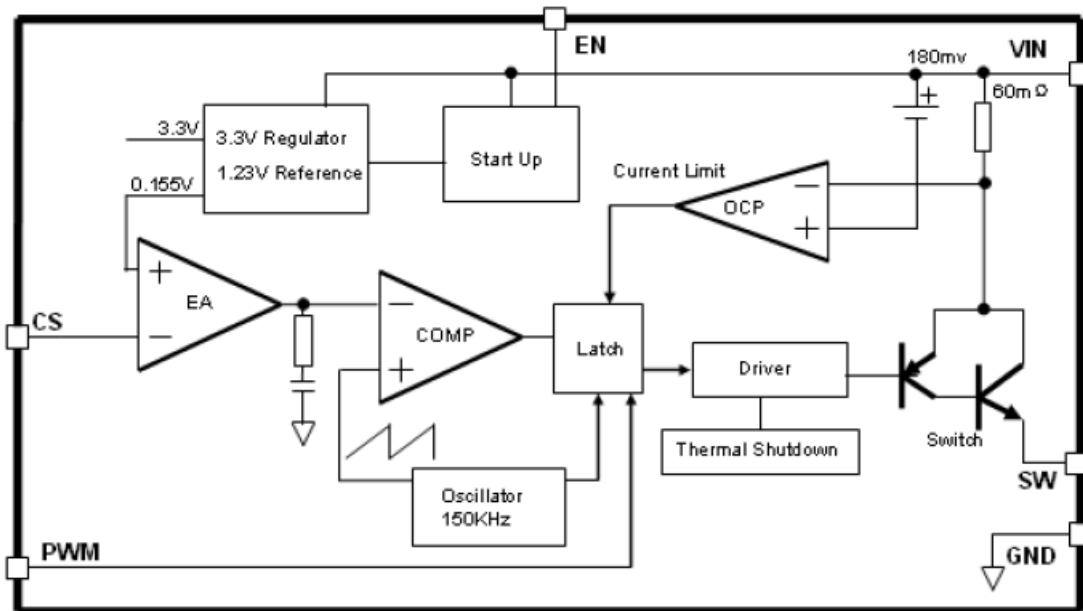


Figure3. Function Block Diagram of FS2602

**Typical Application Circuit
(Buck Topology LED Lighting)**

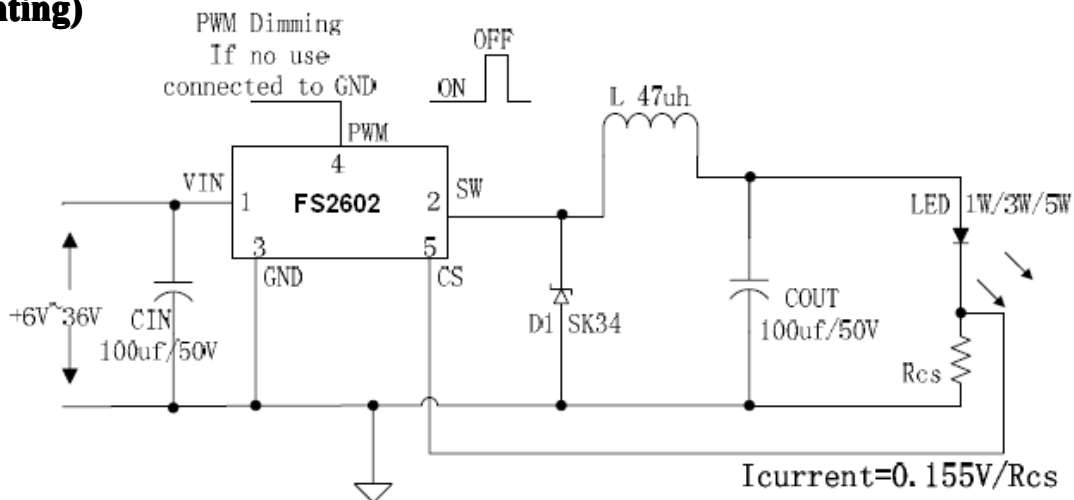


Figure4. FS2602 Typical Application Circuit (LED Lighting)

Ordering Information

Package	Temperature Range	Part Number	Marking ID	Packing Type
		Lead Free	Lead Free	
		FS2602E1	FS2602E1	Tube
FS2602TRE1	FS2602E1	Tape & Reel		

Pb-free products, as designated with “E1” suffix in the part number, are RoHS

Absolute Maximum Ratings (Note1)

Parameter	Symbol	Value	Unit
Input Voltage	V_{in}	-0.3 to 45	V
PWM Pin Voltage	V_{PWM}	-0.3 to V_{in}	V
SW Pin Voltage	V_{SW}	-0.3 to V_{in}	V
Power Dissipation	P_D	Internally limited	mW
Thermal Resistance (Junction to Ambient, No Heatsink, Free Air)	R_{JA}	50	°C/W
Operating Junction Temperature	T_J	-40 to 125	°C
Storage Temperature	T_{STG}	-65 to 150	°C
Lead Temperature (Soldering, 10 sec)	T_{LEAD}	260	°C
ESD (HBM)		2000	V

Note1: Stresses greater than those listed under Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

2A 150kHz 40V Buck/Buck-Boost LED Constant Current Driver FS2602产品说明书

Electrical Characteristics (DC Parameters)

$V_{in} = 12V$, $GND=0V$, V_{in} & GND parallel connect a 220uf/50V capacitor; $I_{out}=500mA$, $T_a = 25^{\circ}C$; the others floating unless otherwise specified

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input operation voltage	V_{in}		4.5		40	V
Quiescent Supply Current	I_q	$V_{CS} = V_{in}$		2	5	mA
Oscillator Frequency	F_{osc}		127	150	172	Khz
Switch Current Limit	I_L	$V_{CS} = 0$		3		A
PWM Pin Threshold	V_{PWM}	High (Regulator OFF) Low (Regulator ON)		1.4 0.8		V
Output Saturation Voltage	V_{CE}	$V_{FB}=0V$ $I_{sw}=2A$		1.1	1.4	V
Constant current sense Voltage	V_{CS}		0.132	0.155	0.178	V

Schottky Diode Selection Table

Current	Surface Mount	Through Hole	VR (The same as system maximum input voltage)				
			20V	30V	40V	50V	60V
1A		√	1N5817	1N5818	1N5819		
		√	1N5820	1N5821	1N5822		
3A		√	MBR320	MBR330	MBR340	MBR350	MBR360
	√		SK32	SK33	SK34	SK35	SK36
	√			30WQ03	30WQ04	30WQ05	
		√		31DQ03	31DQ04	31DQ05	
		√	SR302	SR303	SR304	SR305	SR306

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3A		√	1N5820	1N5821	1N5822		
		√	MBR320	MBR330	MBR340	MBR350	MBR360
	√		SK32	SK33	SK34	SK35	SK36
	√			30WQ03	30WQ04	30WQ05	
		√		31DQ03	31DQ04	31DQ05	
		√	SR302	SR303	SR304	SR305	SR306

Typical Application Circuit (Buck Drive one 1W/3W/5W LED unit)

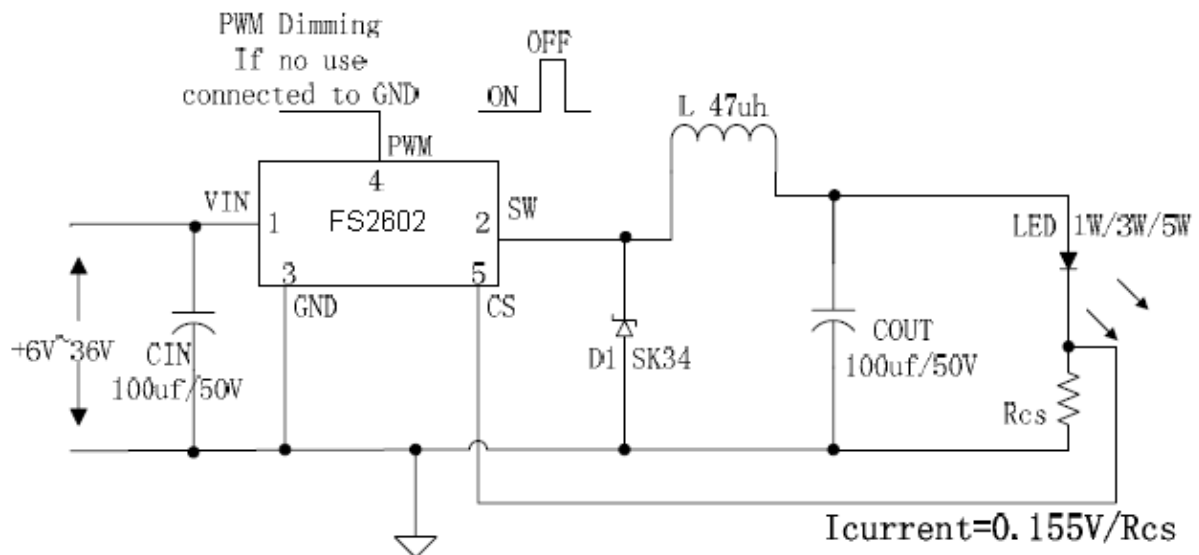


Figure5. FS2602 Typical Application Circuit (LED Lighting)

Typical Application Circuit (Buck Drive 3 series 1W/3W/5W LED units)

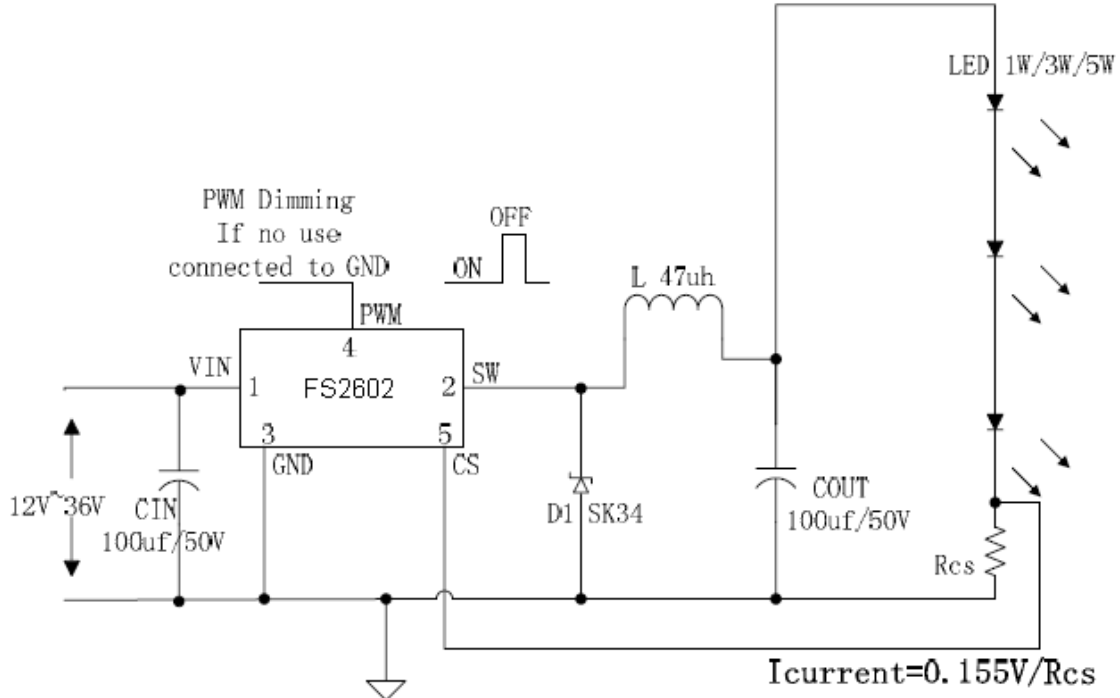


Figure6. FS2602 Typical Application Circuit (LED Lighting)

Typical Application Circuit (Buck Drive 3 series 1W/3W/5W LED units with LED open protection function)

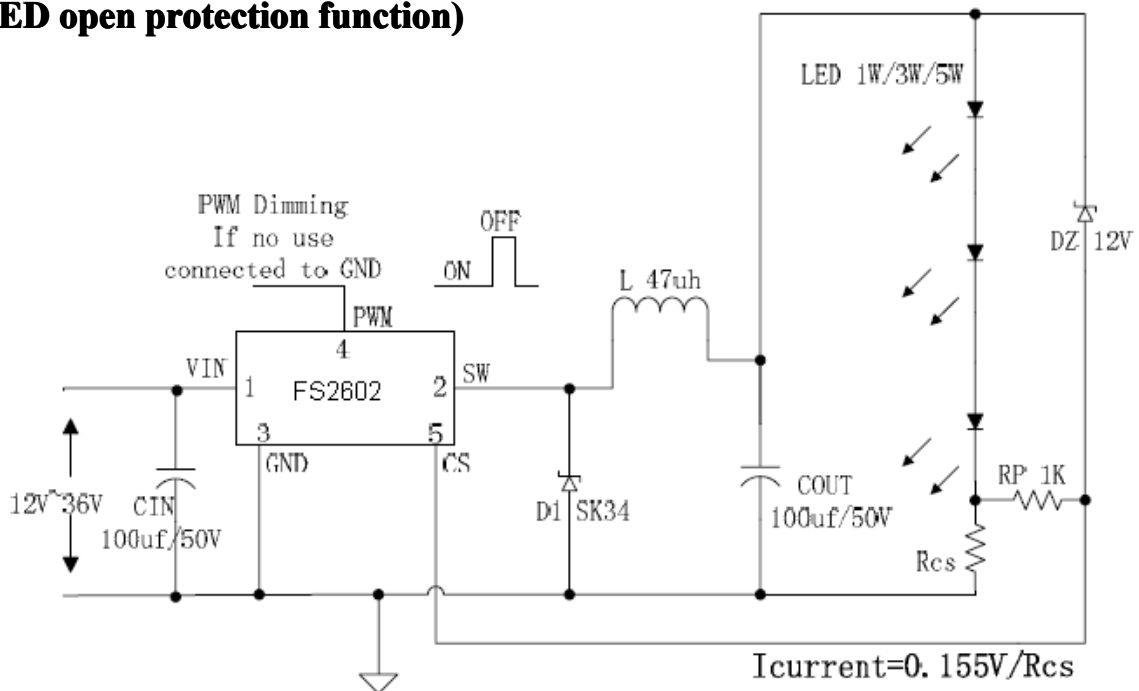


Figure7. FS2602 Typical Application Circuit (with LED open protection function)

Typical Application Circuit (Buck_Boost Drive 3 series 1W/3W LED units)

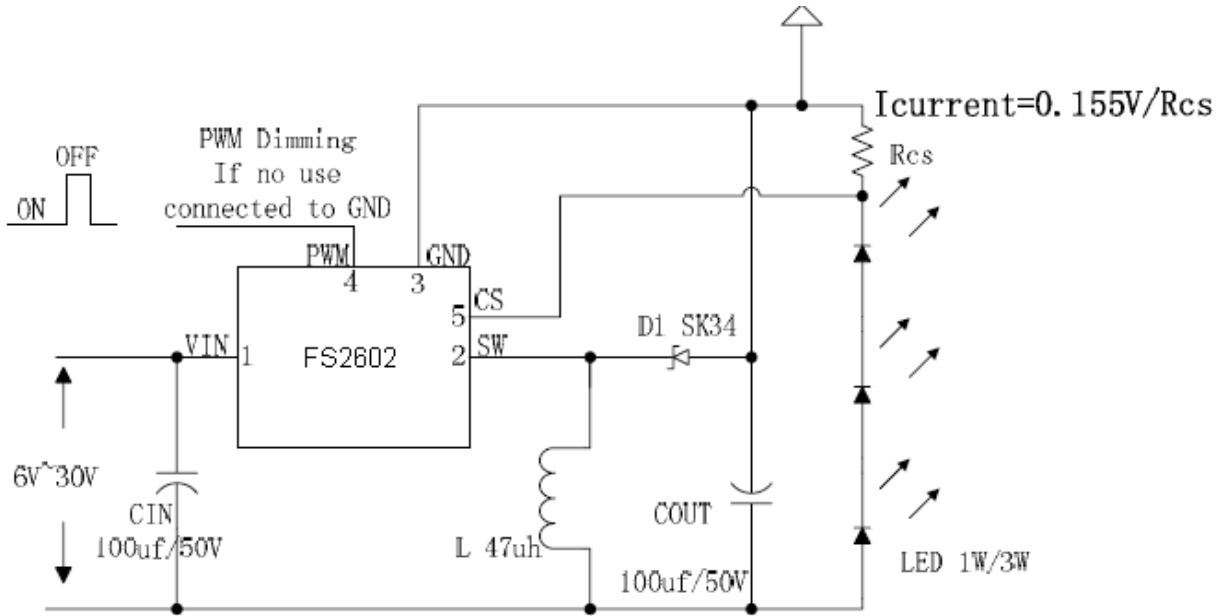
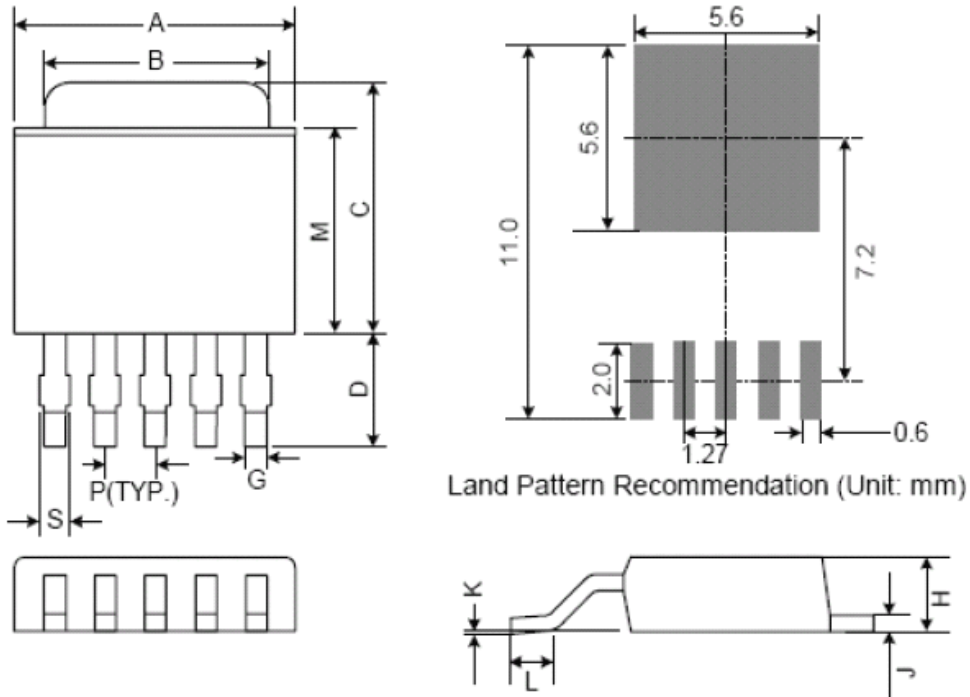


Figure8. FS2602 Typical Application Circuit (Buck-Boost LED Lighting)

Package Information

TO252-5L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	6.35	6.60	6.85	0.250	0.260	0.270
B	5.20	5.35	5.50	0.205	0.211	0.217
C	6.80	7.00	7.30	0.268	0.276	0.287
D	2.20	2.50	2.80	0.087	0.098	0.110
P	1.27 REF.			0.050 REF.		
S	0.50	0.65	0.80	0.020	0.026	0.031
G	0.40	0.50	0.63	0.016	0.020	0.025
H	2.20	2.30	2.40	0.087	0.091	0.094
J	0.45	0.52	0.58	0.018	0.020	0.023
K	0.00	0.08	0.15	0.000	0.003	0.006
L	0.90	1.20	1.63	0.035	0.047	0.064
M	5.40	5.80	6.20	0.213	0.228	0.244