100V Input, 3A Asynchronous Step Down Regulator

1 Description

The SY5401 develops a peak current mode control, asynchronous buck DC/DC converter capable of delivering 3A output current. The SY5401 operates over a wide input voltage range from 5V to 100V and integrates main switch with very low RDS(ON) to minimize the conduction loss. The regulator has an ultra-low current of 15uA in off mode for extended battery life. The internal loop compensation means that the user does not have to undertake the tedious work of designing loop compensation components and can also minimize the number of external components of the IC. The switching frequency is adjustable from 200kHz to 500kHz using an external resistor. In addition, the device has a variety of built-in protection features: cycle-by-cycle peak current limit protection(current limit is typical 5A), thermal shutdown protection, and over-voltage and under-voltage protection.

2 Applications

Non-isolated Telecommunication Buck Regulator

Secondary High Voltage Post Regulator

High-Power LED Drivers

GPS Tracker

Automotive Systems

Electric Bicycle

3 Features

- Low $R_{DS(ON)}$ for Internal N-channel Power FET(TOP):130mΩ
- 5-100V Input Voltage Range
- 1V ~30V Output Voltage Range
- 3A Output Current Capability
- Adjustable Switching Frequency Range: 200kHz to 500kHz
- 0.8V± 1% Reference Voltage Accuracy
- 5A Cycle-by-cycle Peak Current Limit
- Internal Soft-start Limits the Inrush Current
- Internal compensation for easy use
- 15uA Shutdown Current
- Compact Package: ESOP8

4 Typical Application Circuit

V_{IN} = 48V, V_{OUT}=5V, C_{IN}=1μF, C_{OUT}=22μF*4, L_1=22μH, T_a=25℃ (unless otherwise noted)

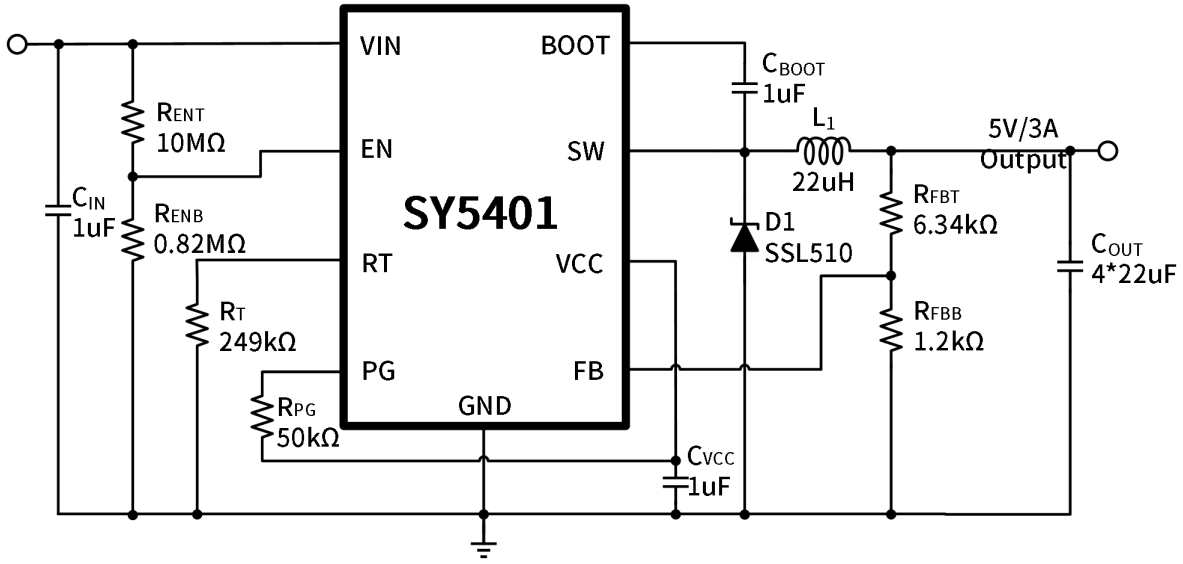

Figure 4- 1. Typical Application Circuit