

High Performance Synchronous CV/CC Buck Converter

General Description

PN4042 is a High Efficiency Synchronous DC-DC Buck Converters with CV / CC modes, which can output up to 4.2 A in a wide input range from 6 V to 38 V. The PN4042 operates either in CV (Constant Voltage) mode or CC (Constant Current) mode. With the CV / CC mode, adjustable current limit and output voltage, the PN4042 is particularly suitable for QC 2.0 / 3.0 (12 V / 1.5 A, 9 V / 2 A and 5 V / 3 A), Type-C PD (5 V / 3 A) and Apple portable device (5 V / 2.4 A) applications. The output voltage and CC limit can be programmed through the FB, CSP and CSN pins respectively.

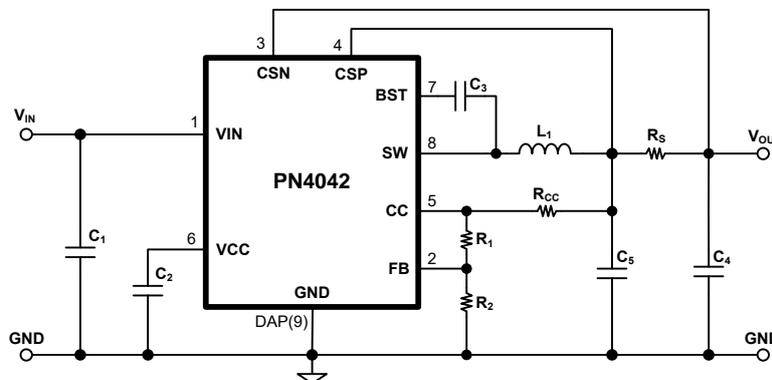
In order to achieve better EMI performance and comply with Apple's MFi standard, the switching frequency was fixed at 125 kHz. PN4042 is capable to operate in CC mode down to 3 V output voltage to protect the soft-short condition that is from the over current of the portable device

A discharge circuitry is integrated to quickly and reliably discharge output capacitors to avoid the faulty voltage delivery in case of output over voltage and ensure safe operation for QC 2.0 / 3.0 application. The hiccup mode output Under Voltage Protection(UVP) can reduce the average input current to 50 mA. Features such as output cord voltage drop compensation and low voltage drop operation is especially suitable for car charger. PN4042 is available in SOP8-EP package which is beneficial for compact solution as well as thermal dissipation.

Applications

- Car Charger
- Portable Charging Devices
- CV / CC regulation DC / DC converter

Simplified Application Circuit



Features

- Wide Input Supply Voltage Range of 6 V ~ 38 V
- Up to 4.2 A Output Current
- Up to 95 % Efficiency
- 125 kHz Fixed Switching Frequency
- Internal Soft Start Circuitry
- Compensation for Output Cord Voltage Drop
- Input Under Voltage Lockout
- Input Over Voltage Protection
- Adjustable Constant Current Limit
- Output Over Voltage Protection
- Output Auto Discharge
- Cycle by Cycle Peak Current Limit
- Hiccup Mode Output UVP for Soft-short ≤ 3 V
- Thermal Shutdown
- Thermally Enhanced SOP8-EP Package

Typical Application Efficiency

