4V~42V输入，3.5A同步降压变换器

4~42V Input, 3.5A, Synchronous Buck Converter

■ FEATURES

- 3.5A converter with 90mΩ+60mΩ FET
- Input voltage range: 4V~42V
- Pulse Skipping Mode (PSM) to keep high efficiency in light load
- 115μA Quiescent Current
- Up to 2MHz Programmable Switching Frequency
- Peak current mode control
- Low Dropout Mode Operation
- Over-voltage , Over-current and Over-Temperature Protection
- Packages: Pb-free Packages, ESOP8

- 3.5A降压，内置90mΩ+60mΩ功率管
- 输入电压范围：4V~42V
- 脉冲跳跃模式使得轻载下高效率
- 115uA静态电流
- 最高2MHz可编程开关频率
- 峰值电流控制架构
- 欠压保护、过流保护和过热关断保护
- 无铅封装，ESOP8

■ APPLICATIONS

- 12V, 24V Industry and Telecom Power System
- Automotive Systems
- Distributed Power Systems
- High Voltage Power Conversion

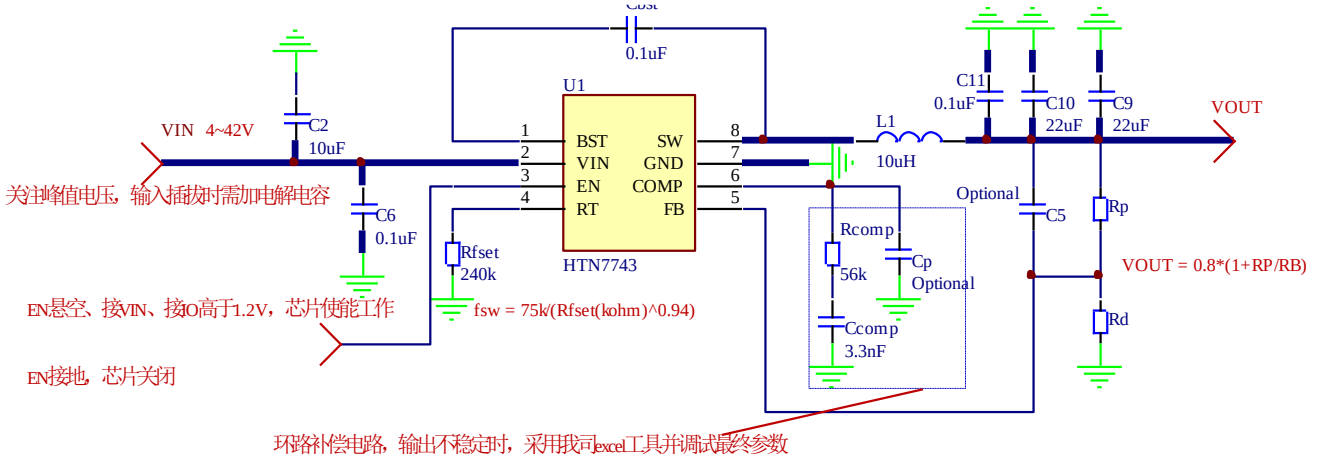
- 12V，24V工业和电信电源轨系统
- 汽车系统
- 分布式电源系统
- 高压电源转换

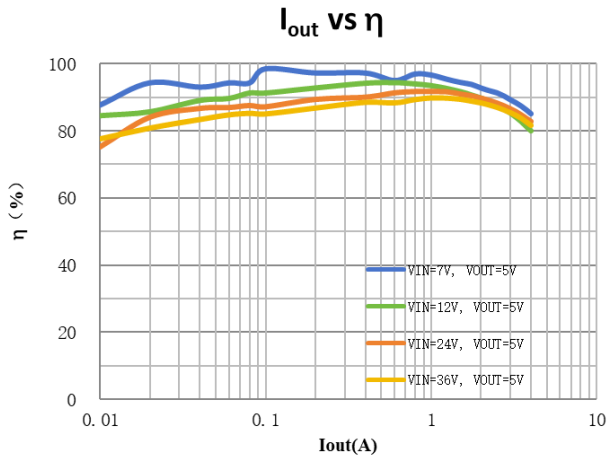
DESCRIPTION

The HTN7743 is 3.5A buck converters with wide input voltage, ranging from 4V to 42V, which integrates an 90mΩ high-side MOSFET and an 60mΩ low-side MOSFET. The HTN7743, adopting the peak current mode control, supports the Pulse Skipping Modulation (PSM) which assists the converter on achieving high efficiency at light load. The HTN7743 features programmable switching frequency from 100kHz to 2MHz with an external resistor. The HTN7743 allows power conversion from high input voltage to low output voltage with a minimum 120ns on-time of switch MOS. The device offers fixed 2.5mS soft start to prevent inrush current during the startup. The HTN7743 features external loop compensation to provide the flexibility to optimize either loop stability or loop response. The HTN7743 provides cycle-by-cycle current limit, thermal shutdown protection, output over-voltage protection, output over load protection and input voltage under-voltage protection. The device is available in an ESOP8 package.

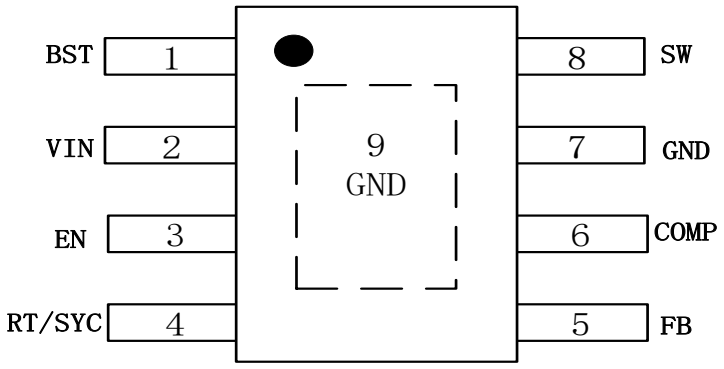
HTN7743是3.5A降压转换器，具有从4V到42V的宽输入电压，集成了90mΩ高侧MOSFET和60mΩ低端MOSFET。HTN7743采用峰值电流模式控制，支持跳周期调制（PSM），有助于转换器在轻负载下实现高效率。HTN7743具有100kHz至2MHz的可编程开关频率，外部电阻可调。HTN7743允许从高输入电压到低输出电压的功率转换，开关MOS的最小导通时间为120ns。该设备提供2.5mS的固定软启动，以防止启动过程中的涌入电流。HTN7743具有外部环路补偿功能，可灵活优化环路稳定性或环路响应。HTN7743提供逐周期电流限制、热关断保护、输出过压保护、输出过载保护和输入电压欠压保护。该设备采用ESOP8封装。

TYPICAL APPLICATION





■ TERMINAL CONFIGURATION



HTN7743(ESOP8) Top View

■ TERMINAL FUNCTION

Name	Description	
1	BST	Bootstrap. Power supply for the high-side MOSFET driver. Connect a bypass capacitor between BST and SW. BST是内部高端MOSFET驱动器的正电源。在BST和SW之间连接一个旁路电容器。
2	VIN	Input supply. VIN supplies power to all of the internal control circuitries. A decoupling capacitor to ground must be placed close to VIN to minimize switching spikes. 输入电源。VIN为所有内部控制电路供电。接地滤波电容必须放置在VIN附近，以减少开关尖峰。
3	EN	Enable pin to the regulator with internal pull-up current source. Pull below 1.2V to disable the converter. Float or connect to VIN to enable the converter. The tap of resistor divider from VIN to GND connecting EN pin can adjust the input voltage lockout threshold. 稳压器使能引脚，带内部上拉电流源。将电压降至1.2V以下禁用转换器。悬空或连接到VIN可以启动转换器。从VIN到GND的电阻分压抽头连接EN引脚的可以调节输入电压锁定阈值。
4	RT/SYC	Set the internal oscillator clock frequency or synchronize to an external clock. Connect a resistor from this pin to ground to set switching frequency. An external clock can be input directly to the RT/CLK pin. The internal oscillator synchronizes to the external clock frequency with PLL. If detected clocking edges stops, the operation mode automatically returns to resistor programmed frequency. 设置内部振荡器时钟频率或与外部时钟同步。将一个电阻器从该引脚连接到地，以设置开关频率。外部时钟可以直接输入到RT/SYC引脚。内部振荡器通过PLL与外部时钟频率同步。如果检测到的时钟边沿停止，操作模式将自动返回电阻器编程频率。
5	FB	Feedback. Connect resistor divider to output voltage. 反馈。接分压电阻到输出电压。
6	COMP	Error amplifier output. Connect to frequency loop compensation network. 误差放大器输出。连接到频率环路补偿网络。
7	GND	Ground. GND should be placed as close to the output capacitor as possible to avoid the high-current switch paths. 地。GND应尽可能靠近输出电容，以避免高电流开关路径。
8	SW	Switch node,Connect SW to an external power inductor 开关端口，连接外部功率电感。
9	GND	Heat dissipation path of die. Electrically connection to GND pin. 芯片散热路径。与GND引脚电气相连。