

## 16.8V, 14A高效升压转换器

### 16.8V, 14A Boost Converter

#### ■ FEATURES

- Input voltage range: 2.7V to 16V
- Output voltage range: up to 16.8V
- Internal Fixed PWM frequency: 360kHz
- Programmable switch peak current limit: up to 14A
- High Efficiency
- 94% (VIN = 7.2V, VOUT=9.3V, IOU =1.5A)
- 90% (VIN = 7.2V, VOUT=9.3V, IOU =7A)
- 93% (VIN = 7.2V, VOUT=12V, IOU =1.5A)
- 90% (VIN = 7.2V, VOUT=12V, IOU =5.5A)
- 90% (VIN = 3.6V, VOUT=12V, IOU =1A)
- 85% (VIN = 3.6V, VOUT=12V, IOU =2.2A)
- 1.0 $\mu$ A current consumption during shutdown
- Two modes with different tr/tf for EMI solution
- Programmable soft start
- Output overvoltage protection (at 18V), thermal shutdown protection
- Pb-free Packages,ESOP8, DFN3 $\times$ 3-10L

- 输入电压范围: 2.7V-16V
- 输出电压范围: 最高16.8V
- 固定开关频率: 360kHz
- 可编程峰值电流: 14A
- 高转换效率:
- 94% (VIN = 7.2V, VOUT=9.3V, IOU =1.5A)
- 90% (VIN = 7.2V, VOUT=9.3V, IOU =7A)
- 93% (VIN = 7.2V, VOUT=12V, IOU =1.5A)
- 90% (VIN = 7.2V, VOUT=12V, IOU =5.5A)
- 90% (VIN = 3.6V, VOUT=12V, IOU =1A)
- 85% (VIN = 3.6V, VOUT=12V, IOU =2.2A)
- 低关断功耗, 关断电流1 $\mu$ A
- 支持两种tr/tf模式, 应对EMI挑战
- 可编程软启动
- 输出过压 (18V)、热关断等保护
- ESOP8, DFN3 $\times$ 3-10L无铅封装

#### ■ APPLICATIONS

- |   |                       |                   |          |
|---|-----------------------|-------------------|----------|
| · Wireless/ Speakers                        | · Portable Speakers   | · 无线音箱            | · 便携式音箱  |
| · Power Bank                                | · Chargers            | · 移动电源            | · 充电设备   |
| · Power Interface (USB Type-C, Thunderbolt) |                       | · USB TYPE-C 电源传输 | · 拉杆音箱   |
| · POS Terminal                              | · Tablet PC/Note Book | · 平板电脑, 笔记本电脑     | · POS机终端 |

### DESCRIPTION

The HT7181 is a high-power density, asynchronous boost converter with a 20mΩ power switch to provide a high efficiency and small size solution in portable systems. The HT7181 has wide input voltage range from 2.7 V to 16 V to support applications with single cell, two cell Lithium batteries and 12V lead-acid batteries. The device has 14A switch current capability and can provide an output voltage up to 16.8V.

The HT7181 also implements a programmable soft-start function and an adjustable switching peak current limit function. HT7181 integrates two modes with different tr/ff to balance different requirements of EMI and efficiency.

In addition, the device provides 18V output overvoltage protection, and thermal shutdown protection.

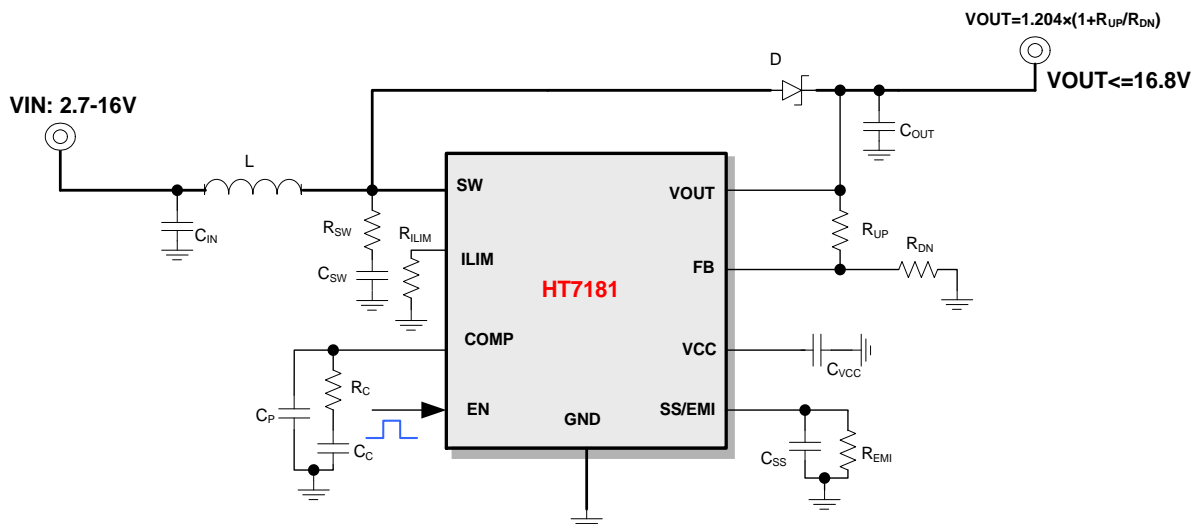
HT7181是一款高功率异步升压转换器，集成20mΩ功率开关管，为便携式系统提供高效的小尺寸解决方案。

HT7181具有2.7V至16V宽输入电压范围，可为采用单节或两节锂电池，或12V铅酸电池的应用提供支持。该器件具备14A开关电流能力，并且能够提供高达16.8V的输出电压。

HT7181还支持可编程的软启动，以及可调节的开关峰值电流限制。HT7181还支持两种不同的tr/ff，以适应不同的EMI和效率需求。

此外，该器件还提供有18V输出过压保护、和热关断保护。

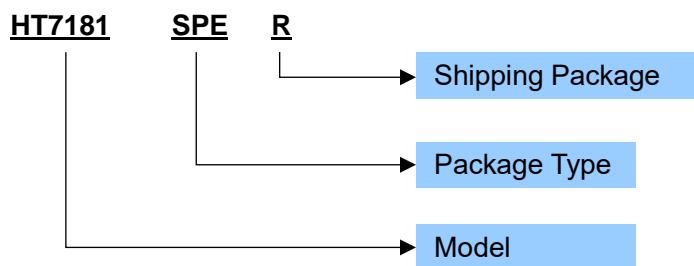
### TYPICAL APPLICATION



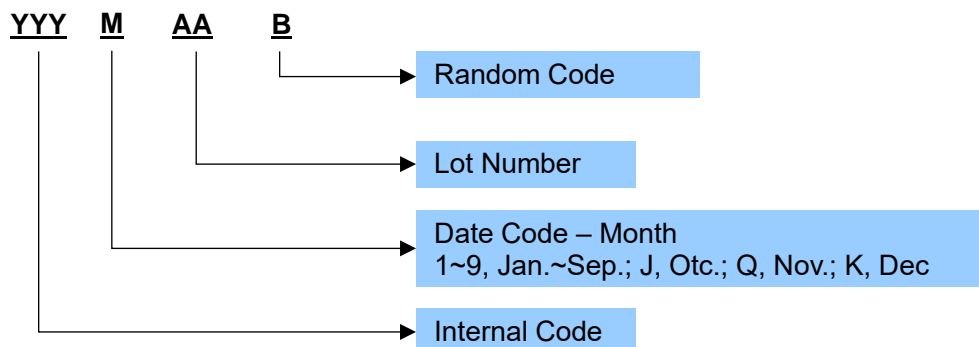
**ORDERING INFORMATION**

Part Number	Package Type	Marking	Operating Temperature Range	Shipping Package / MOQ
HT7181SPER	ESOP8 (SPE)	HT7181 YYYMAAB <sup>1</sup>	-40℃~85℃	Tape and Reel (R)/ 2500pcs
HT7181SPET	ESOP8 (SPE)	HT7181 YYYMAAB	-40℃~85℃	Tube (T) / 100pcs
HT7181DNER	DFN3x3-10L (DNE)	HT7181 YYYMAAB	-40℃~85℃	Tape and Reel (R)/ 5000pcs

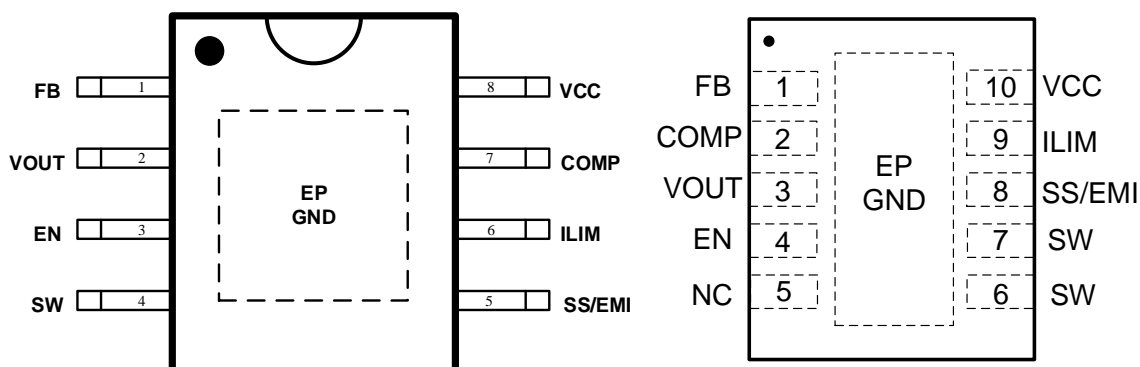
**Part Number**



**Production Tracking Code**



<sup>1</sup> YYYMAAB is production tracking code

**■ TERMINAL CONFIGURATION**

**SPE (ESOP8) Top View**
**DNE (DFN3×3-10L) Top View**
**■ TERMINAL FUNCTION**

Terminal No.		Name	I/O <sup>1</sup>	Description
SPE	DNE			
1	1	FB	I	Voltage feedback. 电压反馈
2	3	VOUT	P	Power supply. 电源供电
3	4	EN	I	Enable logic input. Logic high level enables the device. Logic low level disables the device and turns it into shutdown mode. 使能输入，高电平芯片工作；低电平芯片进入关断状态
4	6,7	SW	P	The switching node pin of the converter. 开关转换端
5	8	SS/EMI	O	Soft-start programming pin. An external capacitor C <sub>ss</sub> connected to ground sets the ramp rate of the internal error amplifier's reference voltage during soft-start, 100nF is usually recommended. 软启动时间设置，接电容C <sub>ss</sub> 到地，一般建议用100nF Also used as mode setting for different tr/td, an external resistor connected to ground sets a flatter tr/td. 同时作为tr/td设置脚，当同时外接1个330k电阻到地时，选择较缓的tr/td
6	9	ILIM	I	Adjustable switch peak current limit. An external resistor should be connected between this pin and the GND pin. 峰值电流设置端，接电阻到地
7	2	COMP	O	Output of the internal error amplifier, the loop compensation network should be connected between this pin and the GND pin. 环路补偿端
8	10	VCC	O	Output of the internal regulator. A ceramic capacitor of 1uF is required between this pin and ground. 内部整流输出，外接1uF电容到地
/	5	NC	/	No connection, connect to GND. 无电气连接，可连接至地。
EP	EP	GND	G	Provides both <b>electrical and thermal connection</b> from the device to the board. <b>A matching ground pad must be provided on the PCB and the device connected to it via solder.</b> For proper electrical operation, this ground pad must be connected to the system ground. 既是地，又是散热PAD

<sup>1</sup> I: Input; O: Output; G: Ground; P: Power; BST: BOOT Strap; OD: Open drain

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