HL7546

0.8A Synchronous Step-Down Converter

Description

HL7546 is a synchronous buck converter optimized to supply different sub systems of portable applications. Its input voltage range is 2.5V to 5.5V.

HL7546 can deliver up to 0.8A with high efficiency, while maintaining over 92% efficiency at load currents as low as 1mA. It operates at a high frequency of 1.5MHz, which greatly reduces the value of the external components. A wide range of output capacitors can be used to optimize VOUT stability during load transients. Inductors 2.2μH may be used without affecting loop stability.

At moderate to light loads, Pulse Frequency Modulation (PFM) is used to maintain conversion efficiency with a typical non-switching quiescent current of 2.6uA, Even with such a low quiescent current, HL7546 maintains excellent load and line transient responses. The PFM mode may introduce noise, HL7546 can be configurable as OOA (Out of Audio) mode in which the min switching frequency is 25kHz. At higher loads, the system automatically switches to fixed-frequency Pulse Width Modulation (PWM) operation for minimum VOUT ripple and optimal load transient response. In Shutdown Mode, the supply current drops below 1uA, reducing power consumption.

The HL7546 is available in a 1.54mm x 0.77mm WLCSP-8 package.

Features

- 2.6-μA Operating quiescent current
- Up to 1.5-MHz switching frequency
- 1% Output voltage accuracy
- DVS output from 0.5 V to 3.3 V (10/20-mV steps)
- VSEL-pin to toggle VOUT during operation
- Power good indication
- Supports <6-mm² solution size
- Supports <0.6-mm solution height
- Tiny 8-pin, 0.35-mm pitch WCSP package
- Optimized pinout to support 0201 components
- Comprehensive Protections
  - Input Under-Voltage Lockout (UVLO)
  - Over-Current Protection
  - Short-Circuit Protection
  - Thermal Shut-down

Applications

- Wearables
- Fitness Trackers
- Smart Watches

Typical Application Diagram

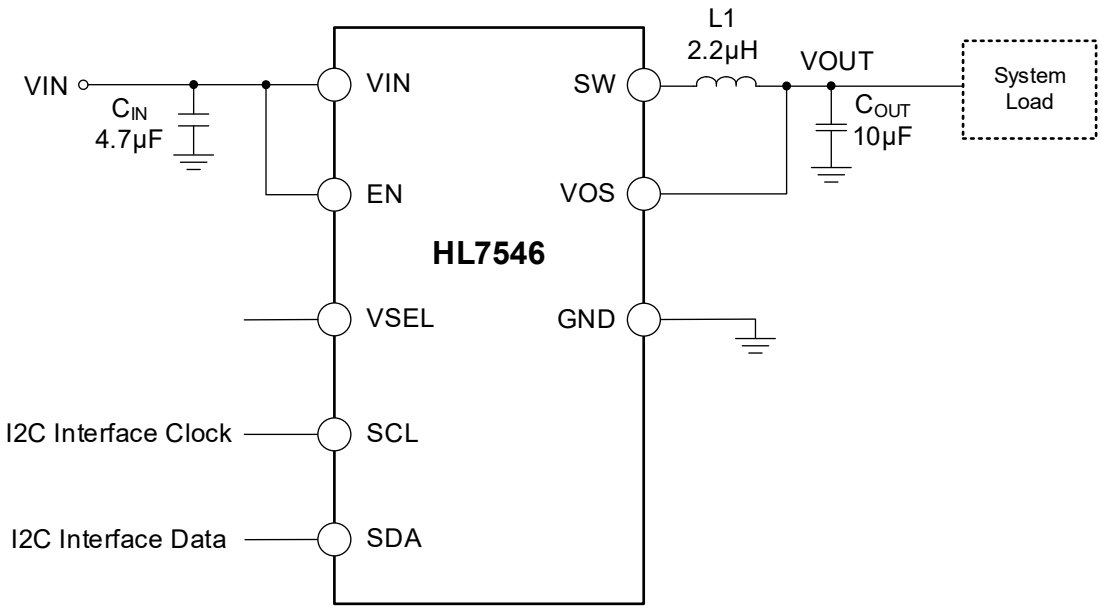

Figure 1. Typical Application Diagram

Order Information

PART NUMBER	VSEL function	Max Load CURRENT	f_{sw}	PACKAGE
HL7546WL01	V_{SEL} =0, V_{OUT} =0V. (Reg0x02 = 0x00, Adjustable with I^2C); V_{SEL} =1, V_{OUT} =1.8V. (Reg0x01 = 0x82, Adjustable with I^2C);	0.8 A	1.5MHz	WLCSP
HL7546WL02	V_{SEL} =0, V_{OUT} =1.2V. (Reg0x02 = 0x46, Adjustable with I^2C); V_{SEL} =1, V_{OUT} =0.9V. (Reg0x01 = 0x28, Adjustable with I^2C);	0.8 A	1.5MHz	WLCSP
HL7546WL03	0.6V, 0.7 V, 0.8V, 1.0V	0.8 A	1.5MHz	WLCSP
HL7546WL04	1.05V, 0.9V, 0.87V, 0.62V	0.8 A	1.5MHz	WLCSP

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