

HL7603

2.5MHz Synchronous Boost Converter with Bypass Mode

Description

The HL7603 provides a power supply solution for products powered by Li-Ion Battery, Silicon Anode Battery or LiFePO4 Battery. By combining built-in power transistors, synchronous rectifier, and low supply current, this IC is optimized for single-cell portable applications like in mobile devices, tablet PCs, wearable devices or accessories.

The HL7603 is a boost regulator designed to provide a minimum output voltage from a single-cell Li-Ion battery, even when the battery voltage is below system minimum requirement. This extends the battery run-time and overcomes input current and voltage limitations of the powered system. The output voltage regulation is guaranteed up to a maximum load current of 4A in continue and 5A in peak(<10mS). The regulator can transit smoothly between Bypass Mode and normal Boost Mode and also can work under Forced Bypass Mode for minimizing quiescent current.

The HL7603 is available in a 16-bump, 0.4mm pitch, Wafer-Level Chip-Scale Package (WLCSP).

Features

- Input Voltage Range: 2.3V~5.5V
- Output Voltage Range:
 - Adjustable by I²C: 2.85V to 5.5V
- Low IQ operating current:
 - 15uA IQ under Low IQ Forced Bypass Mode
 - 20uA IQ under Normal Forced Bypass Mode
 - 35uA IQ under Auto PFM Mode
- Maximum Output Current:
 - Continuous 4A with 2.7V to 3.6V
 - Peak 5A@10mS with 2.7V to 3.6V
- 2.5MHz Operation Frequency with Seamless PWM/PFM Transition
- Bypass Mode Rdson: 10mohm@TYP
- Optional Auto Bypass Mode and Forced Bypass Mode
- Optional Forced PWM Mode and Auto PFM Mode for Boost Operating Mode.
- Output Active Discharge Availability
- Comprehensive Protections
 - Input Under-Voltage Lockout (UVLO)
 - Over Current and Short-Circuit Protection
 - Thermal Shut-down
 - VIN Over Voltage Protection
 - VOUT Over Voltage Protection



HL7603 PRODUCT BRIEF

2.5MHz Synchronous Boost Converter with Bypass Mode

- Compatible with 1.2V or 1.8V I/O Logic Voltage Level
- WLCSP-16, 1.80mm * 1.80mm = 3.24 mm² with 0.4mm Pitch

Applications

- Smart Phone
- Tablet PC
- Wireless Communication Device
- 2G/3G/4G RF Power Amplifier
- Audio Power Amplifier
- USB OTG Power Source

Typical Application Diagram

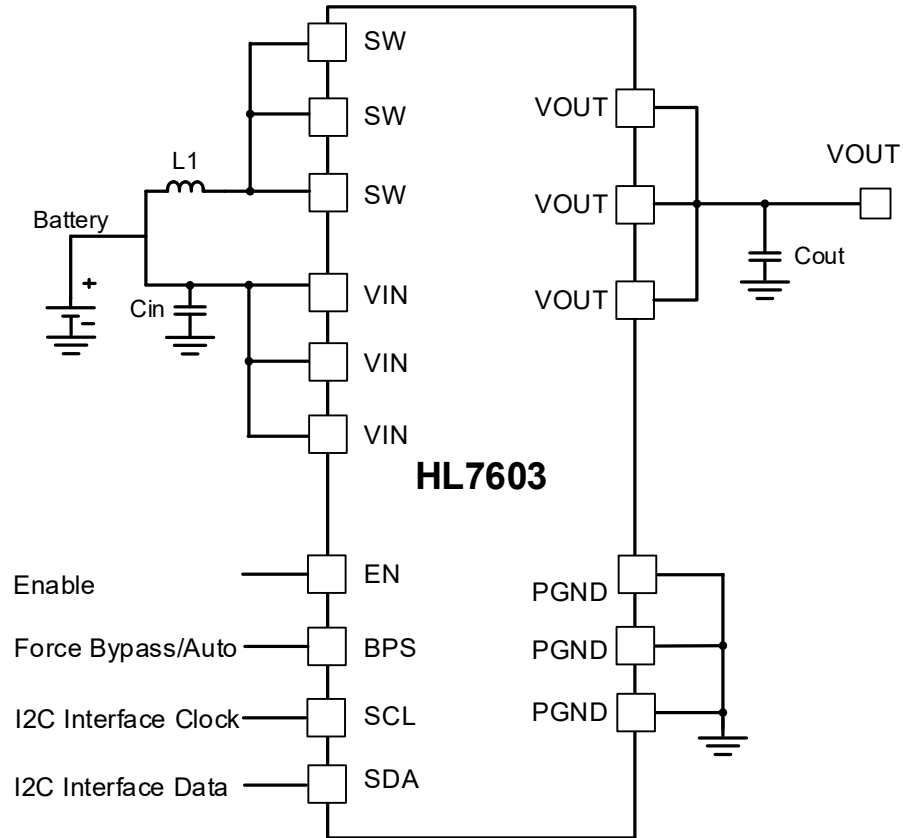


Figure 1. Typical Application Diagram

Order Information

Part Number	Default VOUT	Enable & BPS Logic	7bit I ² C ADDR	D1 PIN
HL7603WL01	V _{OUT} =3.6V.	EN=L, BPS=L/H, Shutdown EN=H, BPS=L, Normal Forced Bypass EN=H, BPS=H, Auto Bypass Mode	0X75	BPS
HL7603WL02	V _{OUT} =3.6V	EN=L, BPS=L, Low IQ Forced Bypass EN=L, BPS=H, Shutdown EN=H, BPS=L, Normal Forced Bypass EN=H, BPS=H, Auto Bypass Mode	0X75	BPS
HL7603WL03	V _{OUT} =3.6V	EN=H enable device(DEV_EN bit = 1b by default) Default Mode: Auto Bypass Mode	0X75	AGND
HL7603WL04	V _{OUT} =3.6V	EN=H && DEV_EN bit = 1b enable device(DEV_EN bit = 0b by default) Default Mode: Auto Bypass Mode	0X75	AGND
HL7603WL05	V _{OUT} =3.6V	EN=H enable device(DEV_EN bit = 1b by default), Default Mode: Auto Bypass Mode	ADDR = L, 0X75 ADDR = H, 0X76 ADDR = FLOAT, 0X77	ADDR
HL7603WL06	V _{OUT} =3.6V	EN=H && DEV_EN bit = 1b enable device(DEV_EN bit = 0b by default) Default Mode: Auto Bypass Mode	ADDR = L, 0X75 ADDR = H, 0X76 ADDR = FLOAT, 0X77	ADDR
HL7603WL07	V _{OUT} =3.4V	EN=H enable device(DEV_EN bit = 1b by default), Default Mode: Auto Bypass Mode	ADDR = L, 0X75 ADDR = H, 0X76 ADDR = FLOAT, 0X77	ADDR

Important Notice

HMI reserves the rights to modify, update, improve, and discontinue its products, services, documentations and more without advance notice. We encourage customers to contact HMI's sales representative for the most up to date product information.

HMI's products, solutions, and documents must not be used for any medical or military purposes without a proper legal authorization from HMI. HMI disclaims any responsibilities and liabilities for personal or property damages arising from such applications.

All content, visuals, trademarks within this document, and any other intellectual property embedded in the product and document remains the sole property of HMI. Reproduction, alteration, distribution, or publication of any part or whole of this document is prohibited without legal consent from HMI.