



# HL7600

## 2A Boost Regulator with Bypass Mode

### Overview

The HL7600 provides a power supply solution for products powered by Li-ion battery. By combining built-in power transistors, synchronous rectification, and low supply current, this IC is optimized for single-cell portable applications like smartphones or tablet PCs.

The HL7600 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. 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 2A. The regulator has a smooth transition between a bypass mode and a normal boost mode. The device can be forced into the bypass mode to reduce a quiescent current.

The HL7600 is available in a 16-bump, 0.4mm pitch, wafer-level chip-scale package (WLCSP).

### Features

- Input voltage ranges: 2.35-5.50V
- Fixed output voltage options: 3-6V
- Maximum output current: 2A
- 2.5MHz operation frequency with seamless PWM/PFM transition for light-load efficiency
- Optional auto bypass mode and forced bypass mode
- VSEL control (H7600WL01 and HL7600WL02) to optimize target VOUT
- Output capacitor discharge
- Low operating quiescent current
- Comprehensive protections
  - Input under-voltage lockout (UVLO)
  - Over-current and short-circuit protections
  - Thermal shutdown
- Soft start
- 16-bump, 0.4mm pitch WLCSP

### Applications

- Smartphones
- Tablet PCs
- Wireless Communication Devices
- 2G/3G/4G RF Power Amplifiers
- Audio Power Amplifiers
- USB OTG Power Sources

## Simplified Application Diagrams

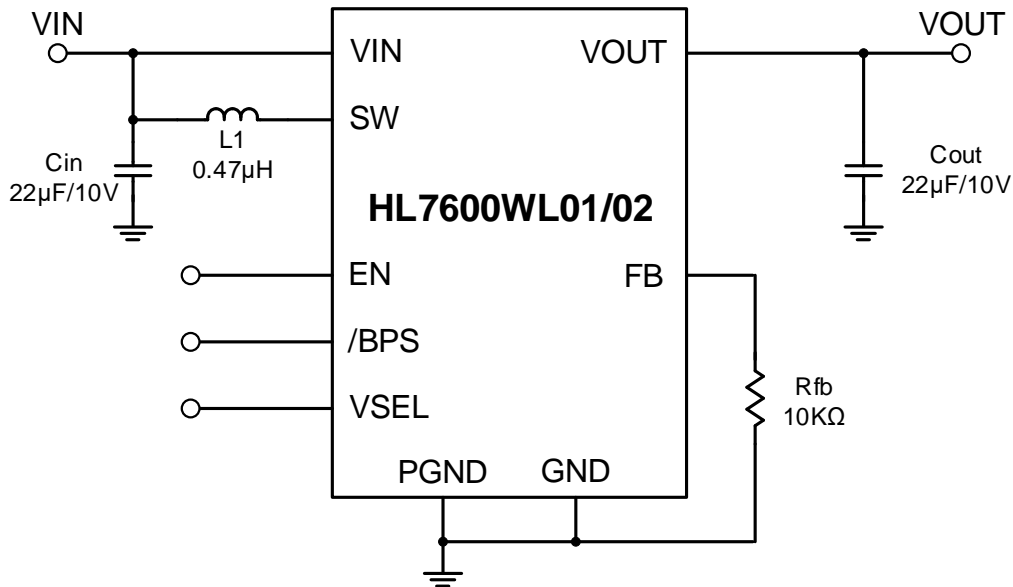


Figure 1. HL7600WL01/02 Simplified Application Diagram, Set VOUT by VSEL

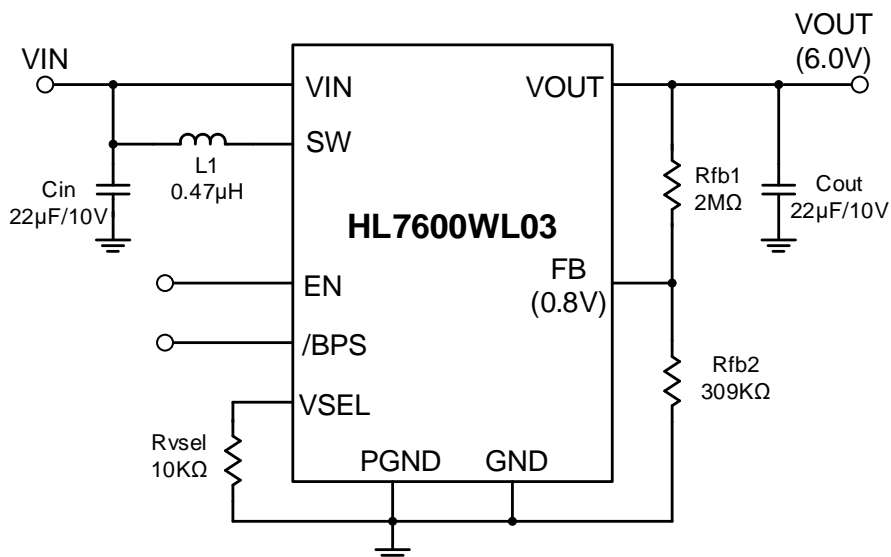
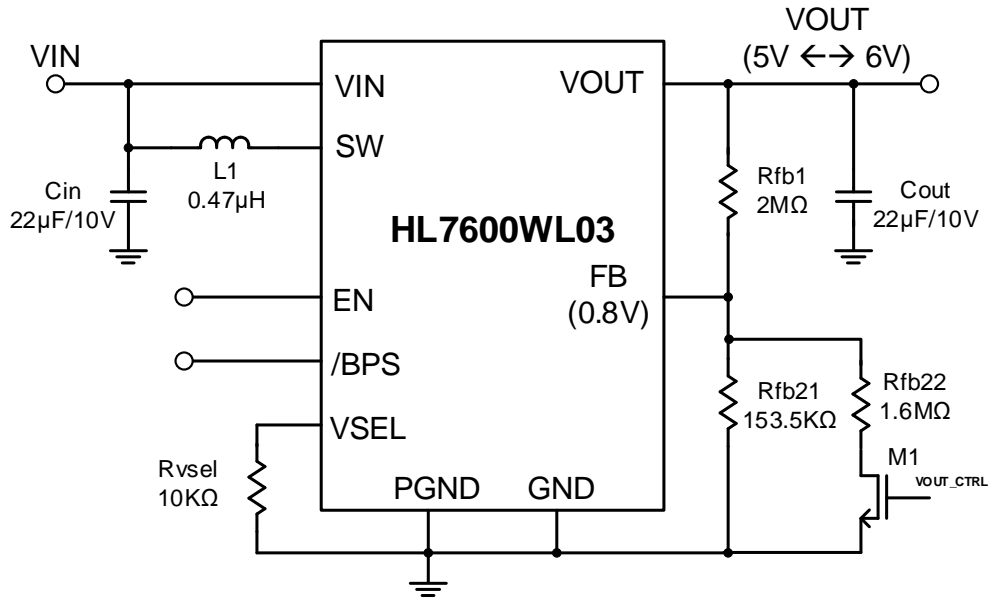
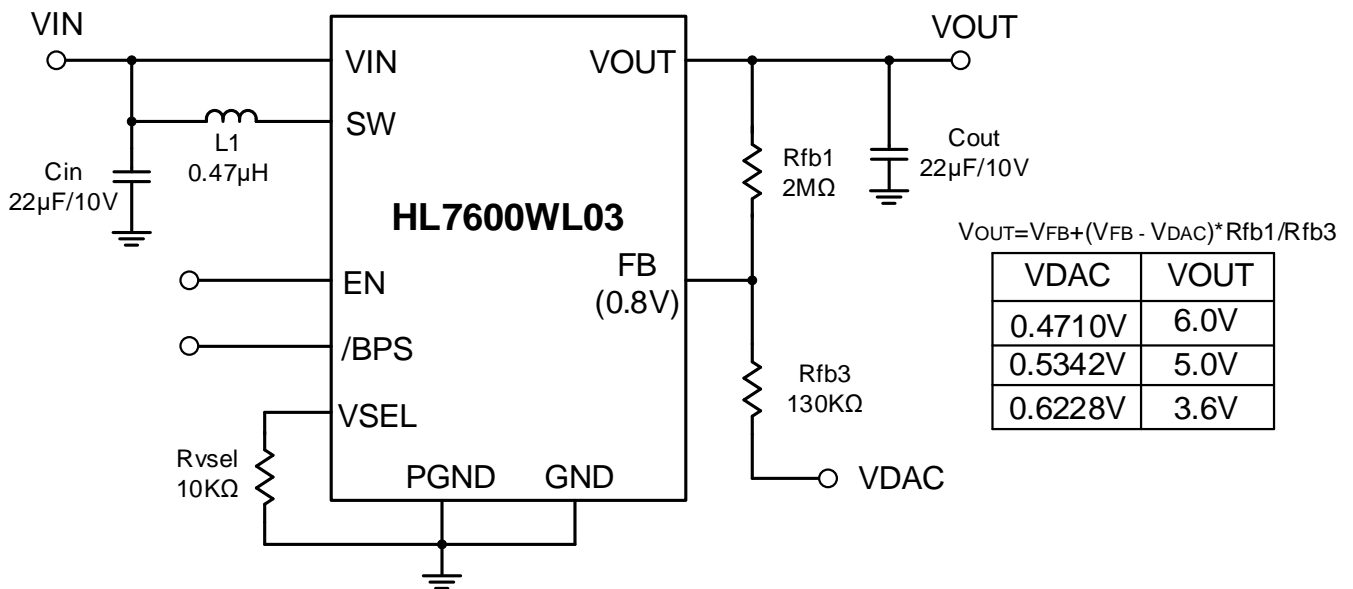


Figure 2. HL7600WL03 Simplified Application Diagram, Set VOUT by FB

**Simplified Application Diagrams**



**Figure 3. HL7600WL03 Simplified Application Diagram, Set VOUT by VOUT\_CTRL**



**Figure 4. HL7600WL03 Simplified Application Diagram, Set VOUT by VDAC**

## Ordering Information

Part Number	VSEL Function	FB Function	Max Load Current
HL7600WL01	Enable. $V_{SEL}=0$ , $V_{OUT}=4.80V$ $V_{SEL}=1$ , $V_{OUT}=5.35V$	Disable. Connecting FB to GND through 10K resistor is recommended.	2A
HL7600WL02	Enable. $V_{SEL}=0$ , $V_{OUT}=5.00V$ $V_{SEL}=1$ , $V_{OUT}=5.85V$	Disable. Connecting FB to GND through 10K resistor is recommended.	2A
HL7600WL03	Disable. Connecting VSEL to GND through 10K resistor is recommended	Enable. $V_{OUT}$ is set by FB, not VSET	2A

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