

Compact High Efficiency Low Power Buck-boost Regulator

ISL9120

The ISL9120 is a highly integrated buck-boost switching regulator that accepts input voltages either above or below the regulated output voltage. This regulator automatically transitions between buck and boost modes without significant output disturbance. The ISL9120 also has automatic bypass functionality for when the input voltage is generally within 1% to 2% of the output voltage. Under this condition, there will be a direct bypass connection between the VIN and VOUT pins. In addition to the automatic bypass functionality, the ISL9120 also has forced bypass functionality with the use of the BYP pin.

This device is capable of delivering up to 800mA of output current ($V_{IN} = 2.5V$, $V_{OUT} = 3.3V$) and provides excellent efficiency due to its adaptive current limit pulse frequency modulation (PFM) control architecture.

The ISL9120 is designed for standalone applications and supports a 3.3V fixed output voltage or variable output voltages with an external resistor divider. The forced bypass power saving mode can be chosen if voltage regulation is not required. The device consumes less than 1µA of current over the operating temperature range in forced bypass mode.

The ISL9120 requires only a single inductor and very few external components. Power supply solution size is minimized by a 1.41mm x 1.41mm WLCSP.

Features

- Accepts input voltages above or below regulated output voltage
- Automatic bypass mode functionality
- Automatic and seamless transitions between buck and boost modes
- Input voltage range: 1.8V to 5.5V
- Selectable forced bypass power saving mode
- Adaptive multi-level current limit scheme to optimize efficiency at low and high currents
- Output current: up to 800mA ($V_{IN} = 2.5V$, $V_{OUT} = 3.3V$)
- High efficiency: up to 98%
- 41µA quiescent current maximizes light load efficiency
- Fully protected for over-temperature and undervoltage
- Small 1.41mm x 1.41mm WLCSP

Applications

- Smartphones and tablets
- Portable consumer and wearable devices

Related Literature

[UG023](#), "ISL9120IIX-EVZ Evaluation Board User Guide"

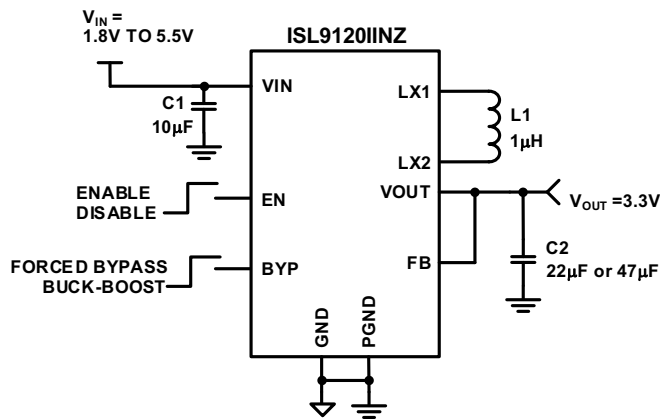


FIGURE 1. TYPICAL FIXED OUTPUT APPLICATION

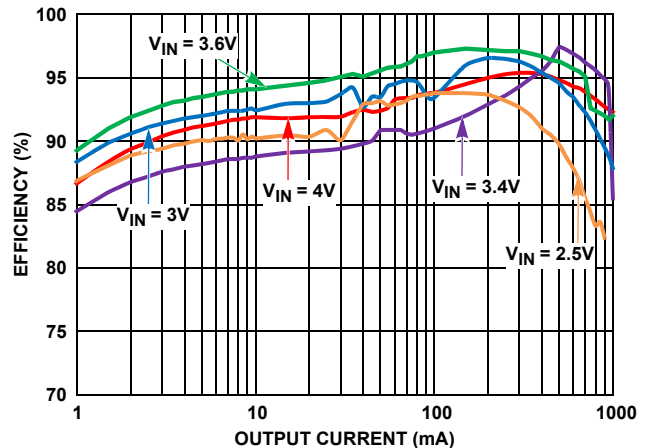


FIGURE 2. EFFICIENCY: $V_{OUT} = 3.3V$, $T_A = +25^\circ C$

For additional products, see www.intersil.com/en/products.html

Intersil products are manufactured, assembled and tested utilizing ISO9001 quality systems as noted in the quality certifications found at www.intersil.com/en/support/qualandreliability.html

Intersil products are sold by description only. Intersil Corporation reserves the right to make changes in circuit design, software and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that data sheets are current before placing orders. Information furnished by Intersil is believed to be accurate and reliable. However, no responsibility is assumed by Intersil or its subsidiaries for its use; nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Intersil or its subsidiaries.

For information regarding Intersil Corporation and its products, see www.intersil.com