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High Efficiency Buck-Boost Regulator with 4.5A Switches

ISL91127

The [ISL91127](#) is a high-current buck-boost switching regulator for systems using new battery chemistries. It uses Intersil's proprietary buck-boost algorithm to maintain voltage regulation while providing excellent efficiency and very low output voltage ripple when the input voltage is close to the output voltage.

The ISL91127 is capable of delivering at least 2.1A continuous output current ($V_{OUT} = 3.3V$) over a battery voltage range of 2.5V to 4.35V. This maximizes the energy utilization of advanced single-cell Li-ion battery chemistries that have significant capacity left at voltages below the system voltage. Its fully synchronous low ON-resistance 4-switch architecture and a low quiescent current of only 30μA optimize efficiency under all load conditions.

The ISL91127 supports stand-alone applications with a fixed 3.3V or 3.5V output voltage or adjustable output voltage with an external resistor divider. Output voltages as low as 1V or as high as 5.2V are supported.

The ISL91127 is available in a 20 bump, 0.4mm pitch WLCSP (2.15mmx1.74mm) with a 2.5MHz switching frequency, which further reduces the size of external components.

Related Literature

- [UG045](#), "ISL91127IIX-EVZ Evaluation Boards User Guide"

Features

- Accepts input voltages above or below regulated output voltage
- Automatic and seamless transitions between buck and boost modes
- Input voltage range: 1.8V to 5.5V
- Continuous output current: up to 2.1A ($P_{VIN} = 2.5V$, $V_{OUT} = 3.3V$)
- Burst current: up to 3A in boost mode ($P_{VIN} = 3V$, $V_{OUT} = 3.3V$, $t_{ON} < 600\mu s$, $t = 4.6ms$)
- High efficiency: up to 96%
- 30μA quiescent current maximizes light-load efficiency
- 2.5MHz switching frequency minimizes external component size
- Fully protected for short-circuit, over-temperature and undervoltage
- Small 2.15mmx1.74mm WLCSP

Applications

- Brownout-free system voltage for smartphones and tablet PCs
- Wireless communication devices
- 2G/3G/4G RF power amplifiers

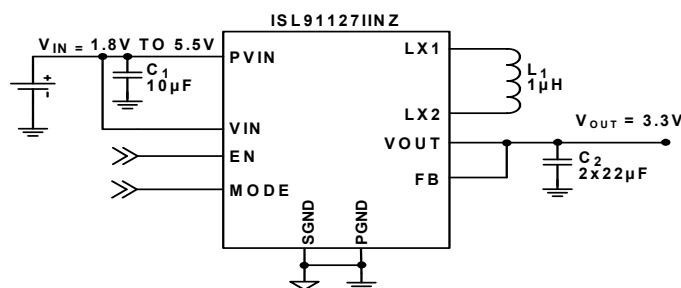


FIGURE 1. TYPICAL APPLICATION: $V_{OUT} = 3.3V$

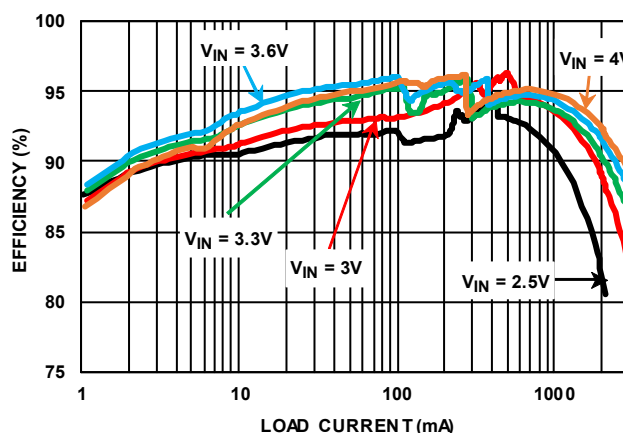


FIGURE 2. EFFICIENCY: $V_{OUT} = 3.3V$

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