HL7227

Dual-Phase 60W Charge Pump Converter

Description

The HL7227 is a dual phase, up to 98% efficiency and 10V/6A maximum output power switched capacitor down conversion solution. This architecture and the integrated FETs are optimized to enable a 50% duty cycle under CP Mode, CP_FWD allows output voltage VOUT is around half of input voltage WPC/PMID and input current to be half the current delivered to the output, reducing the losses over the input power cable as well as limiting the temperature rise in the application. CP_REV allows output voltage WPC/PMID is around twice of input voltage VOUT and output current to be half of input current. The dual-phase architecture reduces the input cap requirements as well as reducing the input voltage ripple.

Besides CP Mode, HL7227 also has BP Mode. BP_FWD allows WPC/PMID forwardly passing through internal power FETs to VOUT without any conversion. BP_REV allows VOUT reversely passing through internal power FETs to WPC/PMID without any conversion. In between PMID and VOUT, HL7227 allows loading current up to 5A. In between WPC and VOUT, HL7227 allows loading current up to 3.0A. HL7227 also supports BP Mode and CP Mode switch automatically switch in forward direction. The switch mode switch threshold is configurable.

HL7227 Integrates all the necessary protections to ensure safe operation, including Input UVLO, WPC/PMID OVP, VOUT OVP, PMID to VOUT OVP/UVP, CFLY SCP, Current Limit, OTP etc. HL7227 supports Master-Slave operation for expanding maximum driving capability from 5A to 12A under CP_FWD.

The HL7227 is available in a 2.6mm x 2.8mm 36-bump wafer level CSP package.

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Features

- 22V Max Operational Input Voltage with 26V Tolerance for CAP Divider 2:1 Mode
- 10V Max Operational Input Voltage with 16V Tolerance for CAP Divider 1:2 Mode
- 11V Max Operational Output Voltage for CAP Divider 2: 1 Mode
- 13V Max Operation Output Voltage for Bypass Mode
- 98% Efficient at 10V/3A Output
- 97.5% Efficient at 10V/4.5A Output
- Dual Input Supply Ports WPC or PMID
- Charge Pump Mode (CP Mode)
  - CAP Divider 2:1 mode (CP_FWD)
  - Voltage Doubler mode (CP_REV)
  - Up to 6A Output under CP_FWD
  - Up to 3A Output under CP_REV
- Dual-Phase Switched Capacitor Architecture Optimized for 50% Duty Cycle under CP Mode
- 200 kHz to 1000 kHz Switching Frequency
- Bypass Mode (BP Mode)
  - WPC/PMID to VOUT (BP_FWD)
  - VOUT to WPC/PMID (BP_REV)
  - Up to 3.0A Capability between VOUT and WPC
  - Up to 5A Capability between VOUT and PMID
- Low Input Voltage 4V to 13V for BP Mode
- Automatic switch between BP Mode and CP Mode in forward direction
- Protection
  - Over Temperature Protection
  - Input UVLO protection
  - Input Over-Voltage Protection
  - PMID Input Over-Current Protection
  - Output Over-Voltage Protection
  - Output Short-Circuit Protection
  - CFLY Short-Circuit Protection
- 2.6mm x 2.8mm 6x6=36-bump WLCSP Package

Applications

- Mobile Devices
- Wireless Charging Accessories

Typical Application Diagram

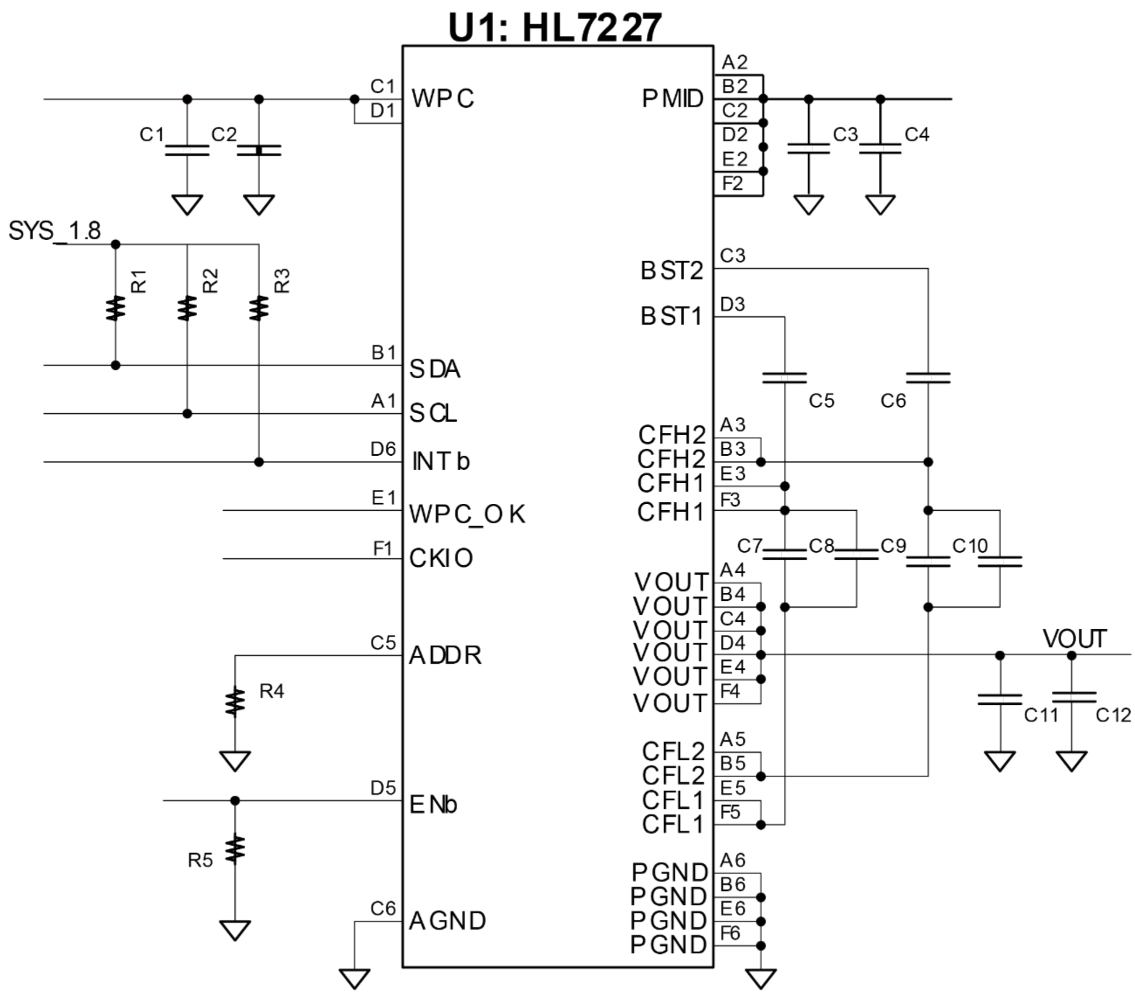

Figure 1. Typical Application Diagram

Order Information

Part Number	Default Working Mode	VOUT OVP	Top Marking	Package	Packing Method	MSL
HL7227WL01	Forward BP Mode	8.45V	REG10 = 0xA8	WLCSP-36	Tape & Reel	1
HL7227WL02	Forward BP Mode	8.45V	REG10 = 0xA8	WLCSP-36	Tape & Reel	1
HL7227WL03	Forward CP Mode	10.00V	REG10 = 0xA8	WLCSP-36	Tape & Reel	1

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