ISL6216

Precise 2-Phase Buck PWM Controller for Intel® Mobile Voltage Positioning IMVP-IV™

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The ISL6216 2-Phase Buck PWM control IC, with ISL6206 or ISL6207 half bridge gate drivers, provides a precision voltage regulation system for advanced microprocessors in notebook computers. Two phase operation and discrete external gate drivers address the thermal management issues and load demand of Intel's latest high performance processors. This control IC features both input voltage feed-forward and average current mode control for excellent dynamic response, lossless current sensing using the lower MOSFET's $r_{DS(ON)}$, and user selectable switching frequencies from 200kHz to 1MHz.

The ISL6216 includes a 6 bit digital-to-analog converter (DAC) that dynamically adjusts the CORE PWM output voltage from 0.700V to 1.708V and conforms to the Intel IMVP-IV mobile VID specification. The ISL6216 also has logic inputs to detect between Active mode and Deep Sleep/ Deeper Sleep suspend modes. To improve efficiency at light load operation, single channel PWM is available during Deeper Sleep operation. A precision reference, remote sensing and proprietary architecture with programmable droop compensation, provide excellent static and dynamic CORE voltage regulation.

Another feature of this controller IC is the PG_IN monitor circuit which allows a companion V_{CCP} and V_{CC_MCH} controller to inhibit the ISL6216 PGOOD until the V_{CCP} and V_{CC_MCH} voltages are within regulation. The Over-Voltage threshold is 1.724V, and CORE output voltage above this level results in converter shutting down. Under-Voltage, at 86% of the programmed level, results in PGOOD being pulled low. Over-Current protection features pulse by pulse current limiting. PG_IN, PGOOD, Over-Voltage, Under-Voltage and Over-Current features provide monitoring and protection for the microprocessor and power system.

The ISL6216 IC package is available in 28 lead SSOP.

Ordering Information

PART NUMBER	TEMP. (°C)	PACKAGE	PKG. DWG. #
ISL6216CA	-10 to 85	28 Lead SSOP	M28.15

Features

- 2-Phase or Single Phase Power Conversion
- High Efficiency Current Sensing
  - Option for thermal compensation
  - Optional Current-Sense Resistor for Precision Over-Current
- Precision CORE Voltage Regulation
  - 1% System Accuracy Over Temperature
- Microprocessor Voltage Identification Input
  - 6-Bit VID Input
  - 0.700V to 1.708V in 16mV steps
  - Programmable Droop Voltage
- DSEN# (STP_CPU#) and DRSEN (DPRSLPVR) logic inputs for low power states
- DSV voltage input for DEEP SLEEP Mode
- DRSV voltage input for DEEPER SLEEP Mode
- Programmable slew rate control on output voltage
- Excellent Dynamic Response
  - Combined Input Voltage Feed-Forward, Average Current Mode Control and Output Voltage Feedback
- Over-Voltage, Under-Voltage and Over-Current Protection
- 2 or 1 Phase User Selectable Operation
- Power-Good Output and PG_IN input
- User selectable Switching Frequency of 200kHz -1MHz
  - 400kHz - 2.0 MHz Effective Ripple Frequency

Pinout

ISL6216 (28 LEAD SSOP)
TOP VIEW