

# Three Phase PWM Controller for Intel VR12.5™ CPUs

## ISL95821

The ISL95821 Pulse Width Modulation (PWM) controller IC provides a complete low-cost solution for Intel VR12.5™ compliant microprocessor core power supplies. It provides the control and protection for a Voltage Regulator (VR). The VR incorporates 3 integrated drivers and can operate in 3-, 2- or 1-phase configurations. The VR uses a serial control bus to communicate with the CPU and achieve lower cost and smaller board area.

The VR utilizes Intersil's Robust Ripple Regulator R3 Technology™. The R3™ modulator has many advantages compared to traditional modulators, including faster transient response, variable switching frequency in response to load transients, and improved light load efficiency due to diode emulation mode with load-dependent low switching frequency.

The ISL95821 has several other key features. It supports either DCR current sensing with a single NTC thermistor for DCR temperature compensation, or more precise resistor current sensing if desired. The output comes with remote voltage sense, programmable  $V_{BOOT}$  voltage,  $I_{MAX}$ , voltage transition slew rate and switching frequency, adjustable overcurrent protection and Power-Good signal.

## Features

- Serial data bus
- Configurable 3-, 2- or 1-phase output with integrated gate drivers
- R3™ modulator
  - Excellent transient response
  - Phase shedding with power state selection
  - Diode emulation in single-phase for high light-load efficiency
- 0.5% system accuracy over-temperature
- Supports multiple current sensing methods
  - Lossless inductor DCR current sensing
  - Precision resistor current sensing
- Differential remote voltage sensing
- Programmable  $V_{BOOT}$  voltage at start-up
- Resistor programmable  $I_{MAX}$ , loadline, diode emulation, slope compensation, and switching frequency
- Adaptive body diode conduction time reduction

## Applications

- Intel VR12.5 desktop computers

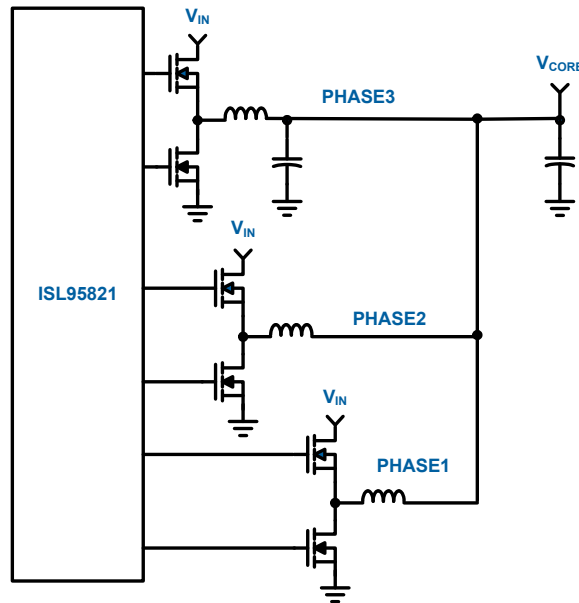


FIGURE 1. SIMPLIFIED APPLICATION CIRCUIT

For additional products, see [www.intersil.com/en/products.html](http://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](http://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](http://www.intersil.com)