

# ISL95856

## 4+3 Multiphase PWM Regulator for Intel IMVP8™ Desktop CPUs

FN8728

Rev 2.00

June 3, 2016

Compliant with Intel IMVP8™, the [ISL95856](#) provides a complete power solution for desktop microprocessors supporting both the core (IA) and graphics (GT) rails. The controller provides control and protection for one Voltage Regulator (VR), which can be configured for 4-, 3-, 2- or 1-phase operation. The second VR is configurable for 3-, 2- or 1-phase operation. The VRs feature a programmable SVID address to allow maximum flexibility in supporting desktop processor SKUs. Both controller outputs share a common serial control bus to communicate with the CPU and achieve lower cost and smaller board area compared with a two-chip approach.

Based on Intersil's Robust Ripple Regulator R3™ technology, the R3™ modulator has many advantages compared to traditional modulators. These include faster transient settling time, 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 ISL95856 has several other key features. The controller features three integrated +12V gate drivers with two drivers on the VR B output. The controller supports either DCR current sensing with a single NTC thermistor for DCR temperature compensation or more precision through resistor current sensing, if desired. Both outputs feature remote voltage sense, programmable  $I_{MAX}$ , adjustable switching frequency, OC protection and single VR\_READY power-good indicator.

## Features

- Supports Intel serial data bus interface
- SMBus/PMBus/I<sup>2</sup>C interface with SVID conflict free
- **Green hybrid digital R3™** modulator
  - Excellent transient response
  - Phase shedding with power state selection
  - Diode emulation in single-phase for high light-load efficiency
- Dual output controller
  - Voltage regulator A: 4-, 3-, 2-, or 1-phase designs with two +12V integrated gate drivers
  - Voltage regulator B: 3-, 2-, or 1-phase designs with one +12V integrated gate driver
- 0.5% system accuracy over-temperature
- Supports multiple current sensing methods
  - Lossless inductor DCR current sensing
  - Precision resistor current sensing
- Differential remote voltage sensing
- Resistor programmable address selection,  $I_{MAX}$  and switching frequency for both outputs
- Adaptive body diode conduction time reduction

## Applications

- IMVP8™ compliant desktops

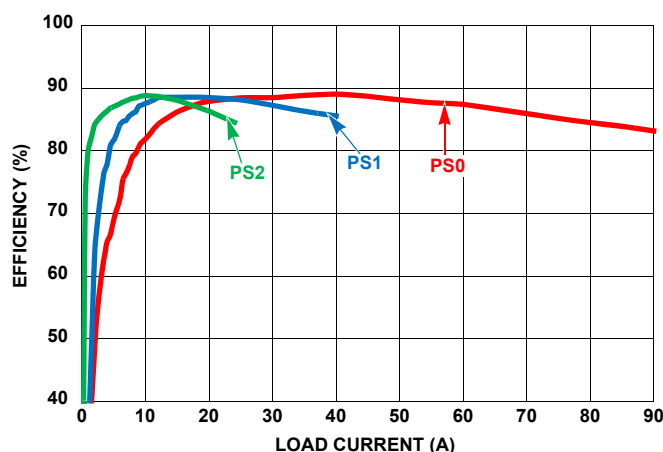


FIGURE 1. EFFICIENCY vs LOAD

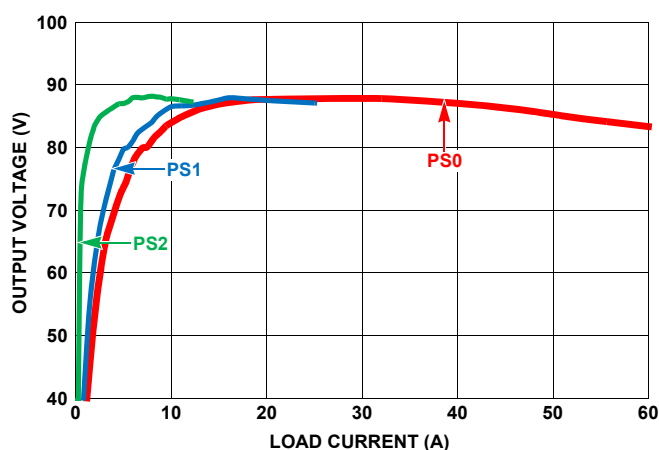


FIGURE 2.  $V_{OUT}$  vs LOAD

© Copyright Intersil Americas LLC 2015-2016. All Rights Reserved.  
All trademarks and registered trademarks are the property of their respective owners.

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 may modify the circuit design and/or specifications of products at any time without notice, provided that such modification does not, in Intersil's sole judgment, affect the form, fit or function of the product. Accordingly, the reader is cautioned to verify that datasheets 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)

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Renesas Electronics:](#)

[ISL95856HRZ-T](#) [ISL95856IRZ](#) [ISL95856HRZ](#) [ISL95856IRZ-T](#)