

ISL95866C

4+3 Multiphase R3 PWM Regulator for Intel IMVP8 Desktop CFL/CNL CPUs with SMBus Support

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The [ISL95866C](#) is compliant with Intel IMVP8™, and provides a complete power solution for desktop microprocessors supporting core (IA), graphics (GT), or unsliced graphics (GTUS or GTX). The controller provides control and protection for two Voltage Regulators (VR). The first VR 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 ISL95866C has several other key features. The controller features three integrated +12V gate drivers with two on the VR A 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 a single VR_READY power-good indicator. The ISL95866C features an SMBus interface, which supports enabling or disabling droop, output voltage offset adjustment, and disabling of OVP and OCP protections.

Features

- Supports Intel CEC requirements
- Supports Intel serial data bus interface
- SMBus/PMBus/I²C interface with SVID conflict free
 - Droop, OVP, and OCP enable/disable
 - Voltage offset adjustment
- 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

Applications

- IMVP8 compliant desktop computers

Related Literature

- For a full list of related documents, visit our website
 - [ISL95866C](#) product page

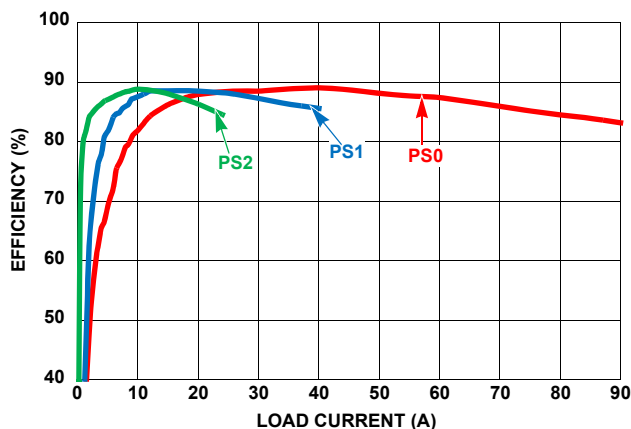


Figure 1. 4-Phase Efficiency vs Load

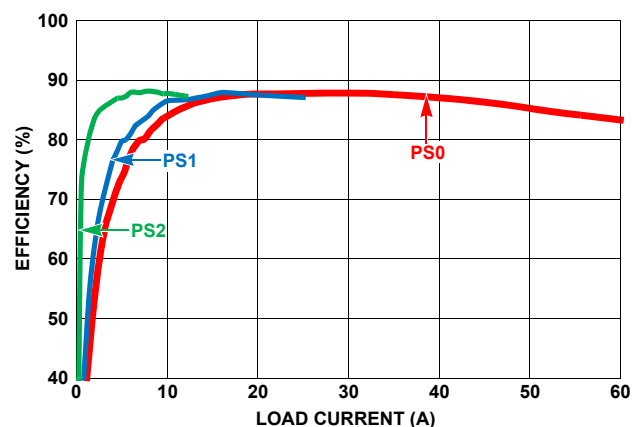


Figure 2. 3-Phase Efficiency vs Load

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Renesas Electronics America Inc.
1001 Murphy Ranch Road, Milpitas, CA 95035, U.S.A.
Tel: +1-408-432-8888, Fax: +1-408-434-5351

Renesas Electronics Canada Limited
9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3
Tel: +1-905-237-2004

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-651-700, Fax: +44-1628-651-804

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
Room 1709 Quantum Plaza, No.27 ZhichunLu, Haidian District, Beijing, 100191 P. R. China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, 200333 P. R. China
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited
Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2265-6688, Fax: +852-2886-9022

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei 10543, Taiwan
Tel: +886-2-8175-9600, Fax: +886-2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre, Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.
Unit 1207, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics India Pvt. Ltd.
No.777C, 100 Feet Road, HAL 2nd Stage, Indiranagar, Bangalore 560 038, India
Tel: +91-80-67208700, Fax: +91-80-67208777

Renesas Electronics Korea Co., Ltd.
17F, KAMCO Yangjae Tower, 262, Gangnam-daero, Gangnam-gu, Seoul, 06265 Korea
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Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru