

ISL69133

Digital, Dual Output, 4-Phase Configurable, VR13/IMVP8 PWM Controller

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The [ISL69133](#) is a digital, dual output, flexible, multiphase ($X+Y \leq 4$) PWM controller designed to be compliant with Intel VR13/IMVP8 specifications. The digital multiphase controller can be configured to support any desired phase assignments up to a maximum of four phases across the two outputs (X and Y). For example, 3+1, 2+2, or even single output operation as a 4+0 configuration, are supported. With a flexible $X+Y \leq 4$ -phase assignment, PMBus, and SerialVID (SVID) interfaces, the ISL69133 is ideal for controlling the microprocessor core, memory, and system rails of Intel VR13/IMVP8 platforms.

The ISL69133 uses the Renesas proprietary, digital, linear, synthetic, current modulation scheme to achieve the industry's best combination of transient response and ease-of-tuning while addressing the challenges of powering the latest generation of Intel microprocessors. Device configuration and telemetry monitoring are accomplished using the intuitive Renesas PowerNavigator™ software. Diode emulation and automatic phase add/drop features allow the user to extract maximum efficiency from the converter regardless of load conditions.

The ISL69133 supports a comprehensive fault management system to enable the design of highly reliable systems. From an overcurrent protection scheme, including peak and average detection, to the configurable power-good and catastrophic fault protection flags, any need is accommodated.

With minimal external components, the ability to store eight configurations, robust fault management, and highly accurate regulation capability, implementing a high-performance, multiphase regulator has never been easier.

Related Literature

For a full list of related documents, visit our website

- [ISL69133](#) product page

Applications

- Core and memory for Intel VR13 and IMVP8 based designs
 - High performance server core and memory rails
 - High performance graphics rails
 - High-end desktop with overclocking option
 - Networking, data center, storage, and general purpose

Features

- Advanced, linear, digital modulation scheme
 - Zero latency, synthetic current control for excellent high frequency current balance
 - Auto phase add/drop for excellent load vs efficiency profile
 - Excellent Dynamic Voltage Identification (DVID) performance
 - Dual edge modulation for faster transient response
- Flexible phase assignment from 0 to 4 phases per output
- Up to 1MHz operation for high density designs
- Diode braking for overshoot reduction
- Diode emulation for enhanced light-load efficiency
- Differential remote voltage sensing supports $\pm 0.5\%$ closed-loop system accuracy over load, line, and temperature
- Highly accurate current sensing for excellent load-line regulation and accurate OCP
 - Supports ISL99227 60A smart power stages
 - Supports DCR sense with integrated temperature compensation
- Supports external input current sense required for NVDIMM
- Comprehensive fault management enables high reliability systems
 - Pulse-by-pulse phase current limiting
 - Total output current protection
 - Output and input OV/UV protection
 - Open voltage sense detect
 - Black box recording capability for faults
 - Configurable Catastrophic Failure Protection (CFP) flag output
- Intuitive configuration using [PowerNavigator](#)
- SMBus/PMBus v1.3 compatible
 - Up to 2MHz bus interface
 - NVM to store up to 8 configurations
- Pb-free (RoHS compliant)

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Renesas Electronics Corporation

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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
Tel: +82-2-558-3737, Fax: +82-2-558-5338



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Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.