**News Release**

No.: REN0797(A)

**Renesas 100V Half-Bridge Drivers Safely Drive MOSFETs for Bidirectional Controller in 12V-48V Automotive Hybrid Powertrains**

*Advanced ISL784x4 MOSFET Driver Family Enables High Current DC/DC Conversion with Adjustable Dead Time and Maximum Efficiency*

Düsseldorf, November 7, 2018 – Renesas Electronics Corporation (TSE:6723), a premier supplier of advanced semiconductor solutions, today announced a new family of automotive-grade 100V, 4A half-bridge N-channel MOSFET drivers. The ISL784x4 family features three devices: the ISL78424 and ISL78444 with single tri-level PWM input for controlling both gate drivers, and the ISL78434, which has dual independent inputs that separately control the high-side and low-side drivers. The ISL784x4 half-bridge N-MOSFET drivers complement the ISL78224 4-phase bidirectional controller, enabling it to provide up to 3kW of power and greater than 95 percent efficiency in 12V-48V converters used in mild hybrid vehicles. The ISL784x4 drivers are also well suited for 12V-24V bidirectional DC/DC converters, as well as other high current buck or boost applications.

The ISL784x4 drivers simplify driving high-current MOSFETs by offering independent sourcing and sinking MOSFET gate drive pins. This makes it easy for designers to use external gate resistors to tune the slew rate of the rising and falling DC/DC switch node transitions, thereby reducing electromagnetic interference (EMI). The ISL784x4 also provide adaptive dead-time control to ensure accurate break-before-make switching operations that prevent shoot-through current that would occur if both DC/DC converter switches were allowed to close simultaneously. Additionally, the ISL78424 and ISL78434’s adaptive dead time function is able to sense at the gate of the MOSFETs, eliminating potential errors introduced by voltage drops across the external gate resistors controlling the switching node slew rate.

The ISL784x4 drivers are a great fit in high current DC/DC applications like the 12-48V converter for 48V mild hybrids. They improve efficiency by delivering robust gate drive with 3A peak sourcing current and 4A peak sinking current. Strong gate drive allows them to rapidly switch high current MOSFETs with large gate capacitance, which reduces switching losses. The half-bridge MOSFET drivers’ adaptive dead time control minimizes excess dead time to reduce conduction losses and further increase DC/DC conversion efficiency. In addition, the ISL784x4 drivers offer voltage ratings that are ideal for 48V automotive systems with the switching node tolerating 70V DC and up to 86V for infrequent transients. Similarly, the high-side driver’s bootstrap node can tolerate 86V DC and up to 100V during transients.

“Our new ISL784x4 half-bridge driver family is the first to combine gate-sensed adaptive dead time control with independent source/sink pins for slew-rate control,” said Akira Omichi, Vice President, Automotive System Project Management Division, Renesas Electronics Corporation. “Several best-in-class features enable the highly integrated ISL78424, ISL78434 and ISL78444 to outperform competitive half-bridge drivers, giving our customers the ultimate in performance and ease of use.”

**Key Features of ISL78424, ISL78434 and ISL78444**

* 3A sourcing / 4A sinking output current
* Tri-level PWM input (ISL78424 and ISL78444)
* Independent HI/LI inputs (ISL78434)
* Separate source/sink pins at driver outputs (ISL78424 and ISL78434)
* Wide supply voltage range operates from 8V to 18V
* On-chip 3Ω bootstrap FET switch eliminates need for external Schottky diode
* Adaptive dead time control and programmable dead time delay with single resistor
* AEC-Q100 Grade-1 qualified and specified for operation from -40°C to +140°C

The ISL78424 and ISL78444 using tri-level PWM signals can be combined with the [ISL78224](http://www.renesas.com/products/isl78224) 4-phase bidirectional, synchronous PWM controller to perform power conversion between 12V and 48V buses in 48V mild hybrid vehicles. Designers can add a Renesas [RH850](https://www.renesas.com/products/microcontrollers-microprocessors/rh850.html) microcontroller to provide ASIL safety monitoring, system control and vehicle communication. The ISL78424 and ISL78444 can also be combined with the [ISL78225](http://www.renesas.com/products/isl78225) 4-phase controller or [ISL78220](http://www.renesas.com/products/isl78220) 6-phase controller to create an automotive audio amplifier power supply.

**Pricing and Availability**

All three half-bridge drivers–ISL78424, ISL78434, and ISL78444–and evaluation boards are available now. Each device comes in a 14-lead HTSSOP package priced at $1.70 USD in 1k quantities.

For more information on the ISL78424, please visit: [www.renesas.com/products/isl78424](http://www.renesas.com/products/isl78424).

For more information on the ISL78434, please visit: [www.renesas.com/products/isl78434](http://www.renesas.com/products/isl78434).

For more information on the ISL78444, please visit: [www.renesas.com/products/isl78444](http://www.renesas.com/products/isl78444).

**About Renesas Electronics Corporation**

Renesas Electronics Corporation ([TSE: 6723](https://www.jpx.co.jp/english/)) delivers trusted embedded design innovation with complete semiconductor solutions that enable billions of connected, intelligent devices to enhance the way people work and live—securely and safely. A [global](https://www.renesas.com/en-hq/about/company/profile/global.html) leader in microcontrollers, analog, power, SoC products and integrated platforms, Renesas provides the expertise, quality, and comprehensive solutions for a broad range of Automotive, Industrial, Home Electronics, Office Automation and Information Communication Technology applications to help shape a limitless future. Learn more at [renesas.com](https://www.renesas.com/en-us/).

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