Transphorm and Weltrend Semiconductor Partner to Release Integrated GaN System-in-Package

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System-in-Package Yields Compact, Cost-Effective, Faster-to-Market Solution for USB-C PD Adapters and Other Low Power Applications

Transphorm to Showcase in Booth #853 at 2023 Applied Power Electronics Conference

GOLETA, Calif. & HSINCHU, Taiwan--(BUSINESS WIRE)--Mar. 1, 2023-- Transphorm, Inc. (Nasdaq: TGAN)—a pioneer in and a global supplier of high reliability, high performance gallium nitride (GaN) power conversion products—and Weltrend Semiconductor Inc. (TWSE: 2436), the global leader in adapter USB Power Delivery (PD) Controller Integrated Circuits (ICs), today announced the release of their first GaN System-in-Package (SiP).

The WT7162RHUG24A is an integrated circuit designed for use in 45 to 100 watt USB-C PD power adapters charging smartphones, tablets, laptops, and other smart devices. It offers peak power efficiency of greater than 93%. Device samples will be available in the second quarter of 2023.

In addition to bringing a new product to market, this announcement marks another major achievement by Weltrend. This new GaN SiP now shows Weltrend's commitment to the AC-to-DC power market as they offer a complete system solution using Transphorm's SuperGaN® technology. For Transphorm, it is another key proof point that validates its GaN devices' ease of interface and superior performance.

Transphorm will showcase the Weltrend SiP for the first time at the 2023 Applied Power Electronics Conference (APEC) in booth #853. The companies will also release details on the related WTDB_008 65W USB PD Power Adapter Evaluation Board during the event.

"The WT7162RHUG24A is the industry's first publicly announced SiP using Transphorm GaN. It enables manufacturers to develop a less expensive system solution given fewer components are required and a smaller PCB can be used among other advantages. It also reduces system development time. Effectively, we're removing design barriers for adapter manufacturers," said Tony Lin, President, Weltrend. "Notably, this product also allows Weltrend to move into a new market. It is the first-ever SiP for our PWM controllers, validating our commitment to supporting high volume growth sectors. And, with the integration of the GaN FET, we've raised the level of performance output. A win for Weltrend, Transphorm, and our mutual customers."

"The adapter fast charger market is a fast growing segment for GaN adoption today. We are gaining market share and continue to innovate, most recently with this GaN SiP, which allows for even easier use of our GaN devices," said Primit Parikh, President and COO, Transphorm. "We're excited to integrate our industry leading SuperGaN platform with Weltrend's innovative adapter power controller technology. Weltrend has delivered a leading power conversion platform which creates a simple-to-use solution for adapter/fast charger customers that both companies can use to accelerate wins in this market."

WT7162RHUG24A Specifications and Features

The new SiP integrates Weltrend's WT7162RHSG08 multi-mode flyback PWM controller with Transphorm's 240 milliohm, 650 volt SuperGaN® FET. The surface mount device is available in a 24-pin 8x8 QFN package, reducing PCB size. Other key specifications include:

- Peak Power Efficiency: > 93%
- Power Density: 26 W/in^3
- Wide Output Voltage Operation: USB-C PD 3.0 and PPS 3.3V~21V
- Max Frequency: 180 kHz
- Targeted Topology: Flyback with QR Mode/Valley-switching Multi-mode Operation

Notable features include:

Feature	Advantage
Adjustable turn on/off speed of GaN FET	Increases flexibility of EMI testing and solution operation
External VDD linear regulator circuit not required	Reduces component count
Reduced package parasitics (inductance, resistance, capacitance)	Maximizes chip performance
700V ultra HV Start-up Current pulled directly from Line/Neutral of AC main voltage	Reduces component count
Fits in 8x8 QFN package despite PWM chip addition	Allows for low profile/small system footprint

Target Applications and Availability

The WT7162RHUG24A SiP is optimized for use in high-performance, low-profile USB-C power adapters for mobile/IoT devices such as smartphones, tablets, laptops, headphones, drones, speakers, cameras, and more.

To sample the device, contact sales@weltrend.com.tw for availability updates.

About Transphorm

Transphorm, Inc., a global leader in the GaN revolution, designs and manufactures high performance and high reliability GaN semiconductors for high voltage power conversion applications. Having one of the largest Power GaN IP portfolios of more than 1,000 owned or licensed patents, Transphorm produces the industry's first JEDEC and AEC-Q101 qualified high voltage GaN semiconductor devices. The Company's vertically integrated device business model allows for innovation at every development stage: design, fabrication, device, and application support. Transphorm's innovations

move power electronics beyond the limitations of silicon to achieve over 99% efficiency, 40% more power density and 20% lower system cost. Transphorm is headquartered in Goleta, California and has manufacturing operations in Goleta and Aizu, Japan. For more information, please visit www.transphormusa.com. Follow us on Twitter @transphormusa and WeChat @ Transphorm_GaN.

About Weltrend Semiconductor Inc.

Founded in 1989 in the "Silicon Valley of Taiwan", the Hsinchu Science Park, Weltrend Semiconductor, Inc. (TWSE: 2436) is a leading fabless semiconductor company specializing in the planning, design, testing, application development, and distribution of mixed-signal/digital IC products in power supplies, motor controls, image processing, and more across multiple applications. For more information, please visit www.weltrend.com.

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