

Eggtronic Introduces High-Efficiency 500W Microinverter Reference Platform with Renesas

MODENA, EMILIA-ROMAGNA, ITALY, June 22, 2026 /EINPresswire.com/ -- [Eggtronic](#), a semiconductor company innovating in high-performance IC controllers for power electronics, today announced the release of a jointly developed 500W solar microinverter reference platform with [Renesas Electronics Corporation](#).

The design combines Eggtronic's EPIC™ mixed-signal controller technology with Renesas' bidirectional Gallium Nitride (GaN) switch to demonstrate a high-efficiency architecture to support microinverter OEMs and system manufacturers in developing next-generation solar microinverters and power conversion applications.

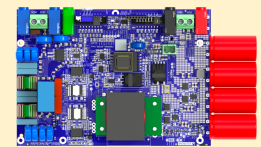
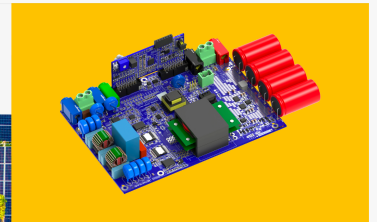
The reference platform achieves 96.1% average efficiency under CEC standards and 95.9% under EU standards, validating the performance potential of a single-stage DC-to-AC topology enabled by advanced digital control and wide-bandgap semiconductors.



This reference platform highlights how advanced digital control combined with high-performance GaN devices can support OEM partners in developing efficient and compact microinverter solutions.”
Igor Spinella, CEO of Eggtronic

engineering balance.

500W microinverter DC/AC DAB cycloconverter.



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As photovoltaic (PV) module output continues to increase beyond 400W, microinverter manufacturers must continuously optimize efficiency, thermal performance, component integration, and overall system cost. Many established architectures — whether based on interleaving, multi-stage topologies, or advanced GaN implementations — involve design trade-offs between complexity, power density, and cost that require careful

The jointly developed reference design demonstrates how semiconductor-level innovation — combining intelligent mixed signal control and high-performance bidirectional GaN switching devices — can enable OEMs to explore alternative architectures that optimize efficiency and power density while maintaining system reliability.

At the core of the platform is Eggtronic's proprietary EPIC™ mixed-signal controller EPIC2ACO01. The controller executes patented Variable Frequency Modulation (VFM) and current-mode strategies designed to maintain Zero-Voltage Switching (ZVS) across the full load range. This single stage approach minimizes BOM cost, switching losses, reduces reactive power circulation, and maintains low Total Harmonic Distortion (THD), while enabling operation at switching frequencies up to 1 MHz — significantly reducing the size of magnetic components.

The platform leverages Renesas' TP65B110HRU bidirectional GaN switch, integrated in a common-drain configuration suitable for cycloconverter-based AC switching. The device's low on-resistance and fast switching characteristics enable high-frequency operation and reduced conduction losses, supporting compact and thermally optimized designs.

"This reference platform highlights how advanced digital control combined with high-performance GaN devices can support OEM partners in developing efficient and compact microinverter solutions," said Igor Spinella, CEO of Eggtronic. "Our objective is to provide enabling semiconductor technologies that help established and emerging manufacturers accelerate innovation while optimizing overall system performance."

"We are pleased to collaborate with Eggtronic on this high-efficiency reference design," said Pietro Scalia, Sr. Director, Power System Marketing and Architecture at Renesas. "Our bidirectional GaN technology combined with advanced control solutions serves as a strong foundation for next-generation microinverter systems developed by our customers."

Key Features of the 500W Reference Platform

- High Efficiency Demonstration: 96.1% average efficiency (CEC) and 95.9% average efficiency (EU), with a flat efficiency curve across operating conditions
- 500W Continuous Output Power: Designed to support modern high-power PV modules
- High-Frequency Operation: Switching frequencies up to 1 MHz to reduce magnetics size
- Low THD Performance: <3%, compliant with IEEE 1547 standards
- Single-Stage Cost Optimize Architecture: Designed to help OEMs reduce component count and optimize cost

Availability

The 500W Microinverter Reference Design (ERD00718) is available for evaluation by qualified OEM and system manufacturer customers. The design incorporates the EPIC2ACO01 controller, optimized for this topology, together with Renesas' TP65B110HRU bidirectional GaN device.

For additional information, please visit <https://www.eggtronic.com/power-converters/solaregg/>

or <https://www.renesas.com/en/products/tp65b110hru>.

About Eggtronic

Eggtronic is a fabless semiconductor company, specialized in the design and manufacture of mixed-signal controllers for power conversion and wireless power applications.

From consumer electronics (smartphones, PCs, TVs, and routers) to data centers, industrial automation, renewable energy, telecommunications, and transportation (e-bikes, e-scooters, hybrid/electric cars, and trains), Eggtronic chips have applications across a broad range of industries.

Our integrated circuits (ICs) enable more efficient, affordable, and compact power solutions for an increasingly electrified world, with high configurability to meet diverse application needs. In the wireless power domain, Eggtronic chips have the ability to convert any surface — walls, desks, floors and more — into universal wireless charging systems. This allows for the seamless, cable-free powering of computers, phones, TVs, appliances, robots, and vehicles, with total flexibility in placement and positioning.

www.eggtronic.com

About Renesas Electronics Corporation

Renesas Electronics Corporation (TSE: 6723) empowers a safer, smarter and more sustainable future where technology helps make our lives easier. A leading global provider of microcontrollers, Renesas combines our expertise in embedded processing, analog, power and connectivity to deliver complete semiconductor solutions. These Winning Combinations accelerate time to market for automotive, industrial, infrastructure and IoT applications, enabling billions of connected, intelligent devices that enhance the way people work and live. Learn more at renesas.com.

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