

NEWS RELEASE

# Power Integrations Unveils High-Efficiency Quasi-Resonant PFC IC with 750 V GaN Switch

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HiperPFS-5 ICs enable compact, efficient power-factor stage for ultra-fast adapters, consumer electronics, computer and appliance power supplies

HOUSTON--(BUSINESS WIRE)-- **APEC 2022** –**Power Integrations** (Nasdaq: **POWI**), the leader in high-voltage integrated circuits (ICs) for energy-efficient power conversion, today announced the **HiperPFS™-5** family of power-factor-correction (PFC) ICs with an integrated 750 V PowiGaN™ gallium-nitride switch. With efficiency of up to 98.3 percent, the new ICs deliver up to 240 W without a heat sink and can achieve a power factor of better than 0.98. HiperPFS-5 ICs are ideal for high-power USB PD adapters, TVs, game consoles, all-in-one computers and appliances.

HiperPFS-5 ICs enable compact, efficient power-factor stage for ultra-fast adapters, consumer electronics, computer and appliance power supplies (Photo: Business Wire)

Commented Edward Ong, senior product marketing manager at Power Integrations: “With OEMs

and after-market suppliers racing to create the fastest, smallest, most versatile USB PD chargers for mobile devices, HiperPFS-5 ICs give engineers a critical advantage. We have combined our proprietary PowiGaN switch with a quasi-resonant, variable-frequency discontinuous mode boost PFC topology. By pairing HiperPFS-5 ICs with our new HiperLCS™2 chipset or our InnoSwitch™4-CZ active-clamp flyback ICs, designers can easily beat even the most aggressive efficiency regulations while cutting the bill of materials by half and achieving extremely attractive form factors for ultra-fast chargers.”

The capacitors and inductors used in power supplies generate a phase change between current and voltage, causing losses in the power lines and potentially disrupting other equipment connected to the AC mains. Many countries require power supplies over 75 W to adjust for this effect with so-called power factor correction, or PFC. While there are many PFC solutions available, HiperPFS-5 ICs with PowiGaN technology and a quasi-resonant (QR)

control scheme represent the pinnacle of the art and science of off-line power quality enhancement.

HiperPFS-5's innovative QR discontinuous conduction mode (DCM) control technique adjusts the switching frequency across output load, input line voltage and input line cycle. QR DCM control ensures low switching losses and permits the use of a low-cost boost diode. The variable frequency engine allows the reduction of boost inductor size by more than 50 percent compared to conventional critical-conduction-mode (CRM) boost PFC circuits. Low switching and conduction losses—which are further reinforced by the PowiGaN switch—together with lossless current sensing, mean that HiperPFS-5 ICs offer high efficiency across the entire load range, with efficiency rising as high as 98.3 percent. HiperPFS-5 ICs provide a PF higher than 0.98 at full load. At light loads an innovative power-factor-enhancement (PFE) feature compensates for input filter capacitance, maintaining a high PF of 0.96 even at 20 percent load. No-load power consumption is just 38 mW.

Other benefits accrue due to the robust 750 V PowiGaN switch. In many locations worldwide the mains' power can be highly unstable, often leading to over-voltage failure of power supply components. HiperPFS-5 ICs maintain a high power factor up to 305 VAC and can operate continuously at up to 460 VAC during line swells. Additionally, HiperPFS-5 ICs incorporate Power Integrations' automatic X-capacitor discharge (CAPZero™) function, including the required redundant pins to meet safety regulations, and high-voltage self-start-up—all in a low-profile, InSOP™-T28F SMD power package. Exposed cooling pads featured in the package are at source potential, providing effective cooling and simplifying the EMI solution. Digital line-peak-voltage detection ensures robust performance, even in the presence of distorted input from uninterruptable power supplies or generators.

## Availability & Resources

Reference design **DER-672** is available to download for designers wishing to evaluate the HiperPFS-5 quasi-resonant PFC controller ICs. Devices are priced at \$2.34 in 10,000-unit quantities. For further information contact a Power Integrations sales representative or visit [power.com](http://power.com).

## About Power Integrations

**Power Integrations, Inc.** is a leading innovator in semiconductor technologies for high-voltage power conversion. The company's products are key building blocks in the clean-power ecosystem, enabling the generation of renewable energy as well as the efficient transmission and consumption of power in applications ranging from milliwatts to megawatts. For more information, please visit [www.power.com](http://www.power.com).

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