

PowerGaN – E-mode power transistors



GaN power conversion from a partner you can trust



PowerGaN devices enable outstanding power density and efficiency, along with a beneficial reduction in size

PowerGaN brings the efficiency and power density advantages of gallium nitride to your design, backed by decades of power semiconductor expertise. Our enhancement-mode p-GaN gate architecture delivers normally-off operation through a voltage-driven gate structure. PowerGaN discrete transistors span 100 V* to 700 V in multiple package options, supported by a complete system-level ecosystem: dedicated GaN gate drivers, digital power controllers, protection ICs, and proven reference designs.

**(100 V class under development)*

KEY FEATURES AND BENEFITS

- Very high switching speed (rise/fall 2–5 ns typ.)
- Extremely low parasitic capacitances
- Kelvin source pad for optimum gate driving and clean switching
- Zero Qrr — no hard-switching penalty at high fsw
- Integrated ESD — no external protection needed
- Low gate charge, voltage-driven gate

KEY APPLICATIONS

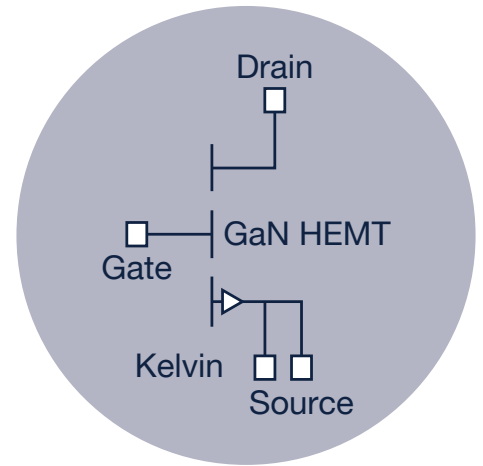
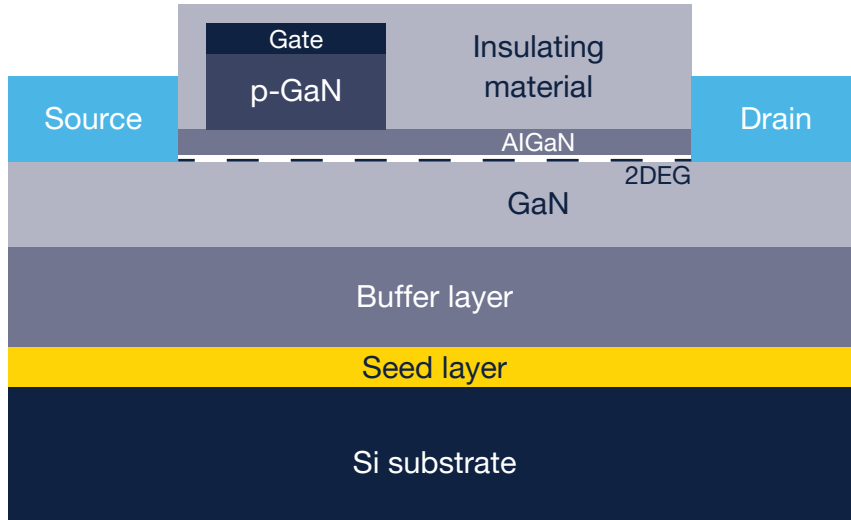
- AC-DC and DC-DC power converters
- Solar inverters and MPPT
- USB Type-C PD adapters and fast chargers
- Industrial motor drives
- Datacenter & telecom SMPS (totem-pole PFC, LLC)
- On-board chargers and EV DC-DC converters
- Battery energy storage systems (BESS)
- Wireless charging
- Notebook, tablet and all-in-one adapters

Why p-GaN architecture matters

PowerGaN uses the p-GaN gate, the industry-standard approach to achieving normally-off operation in GaN transistors. A p-type GaN layer beneath the gate depletes the two-dimensional electron gas (2DEG) at zero bias. Positive gate voltage restores the channel. The gate is voltage-driven with low charge, enabling simple drive circuits with minimal power consumption.

For design-in decisions requiring multiple independent semiconductor companies, p-GaN provides the right level of architectural freedom.

e-Mode (p-GaN)



Package options

PowerGaN 700 V devices are available in multiple packages to match your power level and layout requirements:

- TO-LL (TO-Leadless) – High-current SMD with dedicated Kelvin source pin
- DPAK – Cost-effective standard SMD for moderate power levels
- PowerFLAT 8x8 HV – Compact SMD option with dedicated Kelvin source pin

More packages in development, including PowerFLAT 5x6 HV – Compact SMD with dedicated Kelvin source pin. Industry-standard footprint.



PowerFLAT 8x8 HV



TO-LL



DPAK

[Find out more](#)



© STMicroelectronics - April 2026 - Printed in the United Kingdom - All rights reserved
 ST and the ST logo are registered and/or unregistered trademarks of STMicroelectronics International NV or its affiliates in the EU and/or elsewhere. In particular, ST and the ST logo are Registered in the US Patent and Trademark Office.
 For additional information about ST trademarks, please refer to www.st.com/trademarks.
 All other product or service names are the property of their respective owners.

