

# VIPERGAN50/65/100

## Innovative PWM controllers with 650V GaN HEMT for chargers and power supplies



### Advanced, quasi-resonant, high-voltage converter with E-mode GaN HEMT

ST's VIPer® family of high-voltage power converters is enriched with the introduction of GaN HEMT (high-electron-mobility transistor) technology.

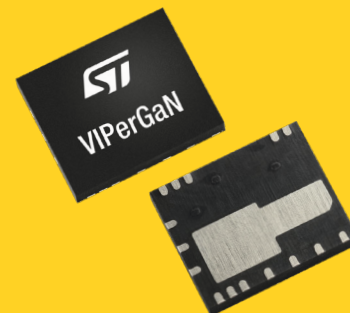
The use of a GaN transistor in the **VIPerGaN®** series (VIPERGAN50, VIPERGAN65 and VIPERGAN100) leads to higher power density, efficiency, and switching frequency with a consequently smaller and lighter PCB, simplifying the design of SMPS and improving their overall performance.

#### KEY FEATURES & BENEFITS

- Quasi-resonant (QR) flyback controller
- 650V E-mode power GaN transistor (850V transient voltage)
- Minimal standby power consumptions
- Embedded sense FET
- Dynamic blanking time and adjustable valley synchronization delay
- Output OVP protection
- Input voltage feedforward compensation for mains independent OPP variation
- Brown-in and brown-out
- Input OVP protection
- Embedded thermal shutdown
- Frequency jitter for EMI suppression

#### KEY APPLICATIONS

- USB-PD fast chargers
- Adapters
- Home appliances
- Air conditioning
- Consumer devices
- Industrial applications

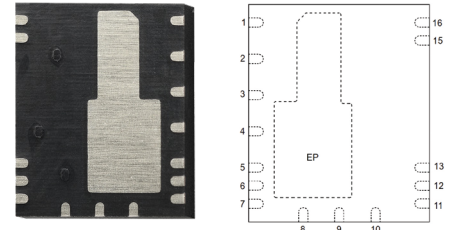


## Device description

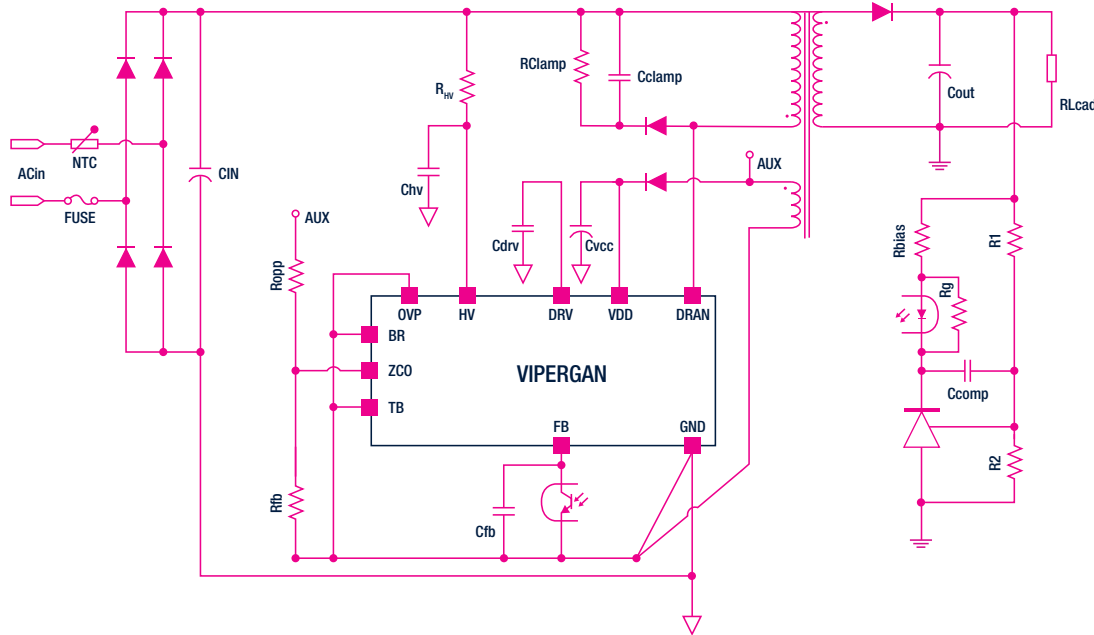
The VIPerGaN® high-voltage converter series is designed for flyback topologies and embeds a PWM controller and 650V GaN power transistor (850V max. transient voltage). It supports a flyback configuration with secondary-side regulation (SSR) using a standard optocoupler. The converter implements quasi-resonant operation with dynamic blanking time and a valley synchronization function to reduce switching losses and maximize overall efficiency across all input line and load conditions.

This highly functional VIPerGaN® series in tiny QFN 5x6 package offers unique design opportunities for extremely light and portable 100W chargers and adapters for personal electronics applications. The number of external components required to integrate the device in existing applications is minimal. This simplifies design and development efforts and contributes to higher power density in power supplies for home appliances, industrial markets, lighting, and air conditioning.

Advanced power management with low quiescent ensure very low standby consumption, and feedforward compensation minimizes input peak power variation over the entire input voltage range. Its very low standby consumption is in line with global energy sector targets regarding energy usage and emissions.



## Application block diagram



## Main characteristics

Order code	Package	$R_{DS(ON)}$ @ 25°C	Max GaN HEMT transient voltage	Max $P_{OUT}$ @ 85-265V <sub>AC</sub>	Max $P_{OUT}$ @ 185-265V <sub>AC</sub>	Evaluation board order code
<a href="#">VIPERGAN50TR</a>	QFN 5x6 with exposed pad	0.45Ω	850V	50W	75W	<a href="#">EVLVIPGAN50PD</a> , <a href="#">EVLVIPGAN50FL</a>
<a href="#">VIPERGAN65TR</a>	QFN 5x6 with exposed pad	0.26Ω	850V	65W	85W	<a href="#">EVLVIPGAN65PD</a>
<a href="#">VIPERGAN100TR</a>	QFN 5x6 with exposed pad	0.225Ω	850V	75W	100W	<a href="#">EVLVIPGAN100PD*</a>

\*Availability Q1 2023



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