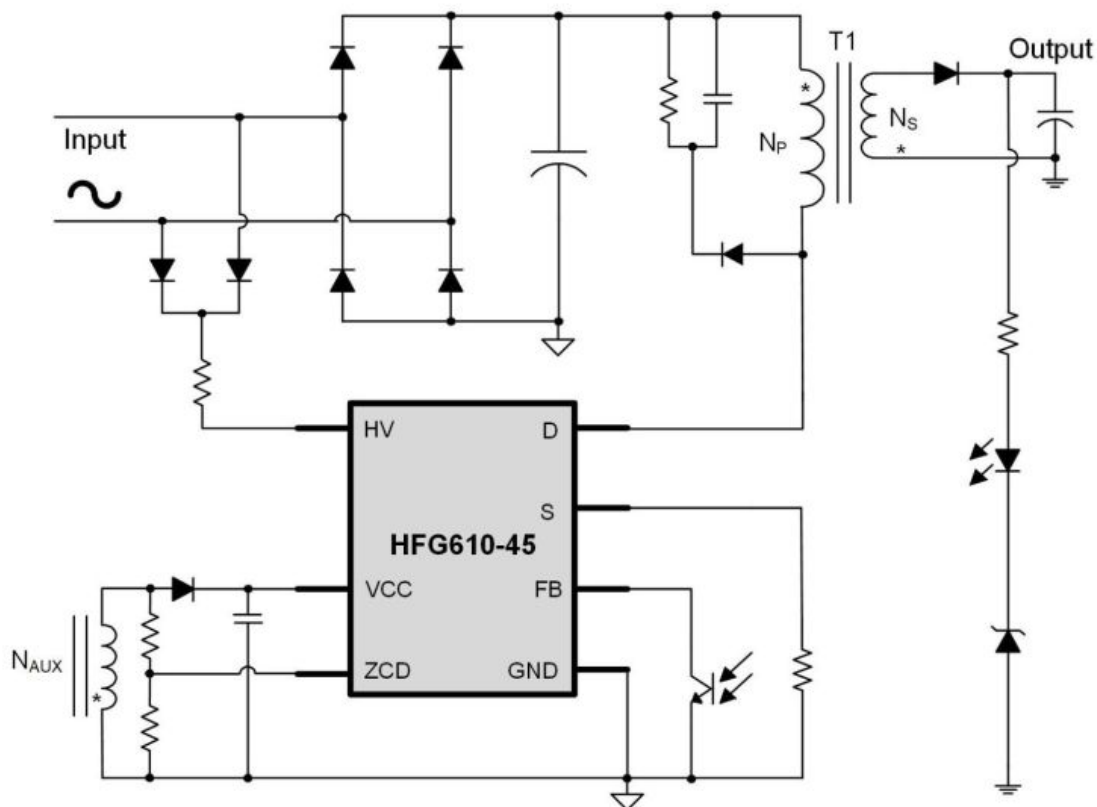


High-Frequency, Quasi-Resonant Flyback Regulator with Integrated 270mΩ GaN FET

The HFG610-45 is a quasi-resonant (QR) flyback regulator with an integrated GaN FET, which is suitable for high-performance and high-frequency designs. Unlike conventional QR flyback regulators, the HFG610-45's frequency foldback guarantees high efficiency across the entire load range.

The device is a secondary-side regulation (SSR) based primary regulator, and must work with secondary-side feedback circuitry. The higher frequency shrinks the passive component size and achieves higher power density. The HFG610-45 integrates a high-voltage start-up circuit and an X-capacitor discharger circuit, in addition to an ultra-low quiescent current (I_Q) in burst mode. The no-load power consumption can be less than 30mW.

The HFG610-45 adopts MPS's patented valley lock technique to restrain jumping from one valley to another valley during steady state operation, which can avoid audible noise completely. The wide supply voltage (V_{CC}) range makes the device suitable for applications with a wide output voltage (V_{OUT}) range without adding auxiliary winding.



Advanced protections include primary-sense output over-voltage protection (ZCD OVP), primary-sense output under-voltage protection (ZCD UVP), V_{CC} over-voltage protection (V_{CC} OVP), output overload protection (OLP), internal brown-in/brownout (BI/BO), short-

circuit protection (SCP), current-sense short protection (SSP), internal thermal shutdown (OTP), and under-voltage lockout (UVLO).

The HFG610-45 is available in QFN-21 (5mmx6mm) and QFN-25 (7mmx7mm) packages.

Features & Benefits

- Integrated 700V/270mΩ GaN FET
- Novel Patented Quasi-Resonant (QR) Control to Eliminate Audible Noise
- Frequency Foldback and Burst Mode for Low Light-Load Power Consumption
- Ultra-Wide Supply Voltage (V_{CC}) Range to Support USB Power Delivery (PD) Applications
- Built-In X-Capacitor Discharger
- Built-In, High-Voltage Start-Up Circuit
- Ultra-Low Standby Power Consumption with PD Protocol IC (<30mW)
- Peak Current Mode Control and Leading-Edge Blanking (LEB)
- Under-Voltage Lockout (UVLO), V_{CC} Over-Voltage Protection (OVP), Primary-Sense Output Over-Voltage Protection (ZCD OVP), Primary-Sense Output Under-Voltage Protection (ZCD UVP), Overload Protection (OLP), Internal Brown-In (BI) and Brownout (BO), Short-Circuit Protection (SCP), Current-Sense Short Protection (SSP), and Over-Temperature Protection (OTP)
- Available in QFN-21 (5mmx6mm) and QFN-25 (7mmx7mm) Packages