

Product Overview

FAN7688: Advanced Secondary Side LLC Resonant Converter Controller with Synchronous Rectifier Control

For complete documentation, see the data sheet.

The FAN7688 is an advanced Pulse Frequency Modulated (PFM) controller for LLC resonant converters with Synchronous Rectification (SR) that offers best in class efficiency for isolated DC/DC converters. It employs a current mode control technique based on a charge control, where the triangular waveform from the oscillator is combined with the integrated switch current information to determine the switching frequency. This provides a better control-to-output transfer function of the power stage simplifying the feedback loop design while allowing true input power limit capability. Closed-loop soft-start prevents saturation of the error amplifier and allows monotonic rising of the output voltage regardless of load condition. A dual edge tracking adaptive dead time control minimizes the body diode conduction time thus maximizing efficiency.

Features

- Secondary Side PFM Controller for LLC Resonant Converter with Synchronous Rectifier Control
- Charge Current Control for Better Transient Response and Easy Feedback Loop Design
- Adaptive Synchronous Rectification Control with Dual Edge Tracking
- Closed Loop Soft-Start for Monotonic Rising Output
- Wide Operating Frequency (39 kHz ~ 690 kHz)
- Green Functions to Improve Light-Load Efficiency - Symmetric PWM Control at Light-Load to Limit the Switching Frequency while Reducing Switching Losses - Disabling SR at Light-Load Condition
- Protection Functions with Auto-Restart - Over-Current Protection (OCP) - Output Short Protection (OSP) - NON Zero-Voltage Switching Prevention (NZS) by Compensation Cutback (Frequency Shift) - Power Limit by Compensation Cutback (Frequency Shift) - Overload Protection (OLP) with Programmable Shutdown Delay Time - Over-Temperature Protection (OTP)
- Programmable Dead Times for Primary Side Switches and Secondary Side Synchronous Rectifiers
- VDD Under-Voltage Lockout (UVLO)
- Wide Operating Temperature Range -40°C to +125°C

For more features, see the data sheet

Applications

- Desktop PC
- Fully Configured Entry Level PC Server
- Game Console
- LED TV
- PC Server

Part Electrical Specifications

Product	Compliance	Status	Topology	Control Mode	f_{sw} Typ (kHz)	Stand-by Mode	UVLO (V)	Short Circuit Protection	Latch	Soft Start	V_{CC} Max (V)	Drive Cap. (mA)	Package Type
FAN7688SJX	Pb-free Halide free	Active	Half-Bridge	Current Mode	Up to 690	Yes	8.5	Yes	No	Yes	20	100 / 100	SOP-16

For more information please contact your local sales support at www.onsemi.com.

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