1700V No-Opto Flyback Converters

MAX25350/MAX25351/MAX25351B

General Description

The MAX25350/MAX25351/MAX25351B are high-voltage flyback converters that sense the output voltage and current from the flyback waveform, requiring no optocoupler for feedback. The MAX25350/MAX25351/MAX25351B have an integrated 1700V switch which enables them to deliver isolated power from high-voltage battery packs. The devices sample the output voltage from the waveform appearing across an auxiliary winding. High-frequency, quasi-resonant boundary mode operation improves load regulation, reduces transformer size, and maintains high efficiency.

The MAX25350/MAX25351/MAX25351B incorporate an integrated self-biased start-up circuit that removes the need for external resistor dividers or a separate bias supply. After startup, the controller automatically transitions to being powered from the auxiliary winding, improving overall efficiency and reducing component count. They also include a dedicated temperature compensation pin that minimizes output-voltage drift caused by the diode's forward-voltage variation over temperature. The MAX25351B features higher EN pull-up current as compared to MAX25350/MAX25351.

The MAX25350/MAX25351/MAX25351B operate from a wide range of input supply voltages and can deliver up to 50W of power. They are available in a 28-pin SSOP package with a 7.5mm footprint to meet the creepage and clearance requirements for high voltage.

The MAX25350/MAX25351/MAX25351B have a robust design for the automotive environment and are rated up to ASIL B. Safety documents are available on request. The low quiescent current architecture allows for use in always-on applications, saving critical battery life and extending range.

Applications

- Auxiliary and Redundant Power Supply from High-Voltage Input (EV Chargers, Energy Systems)
- Gate Driver Bias Power (Traction Inverter)

Benefits and Features

Isolated High-Voltage Power Supply

- Input Voltage Range: 30V to 1200V
- Integrated High-Voltage Switch (1700V)
- No-Opto Flyback
- Boundary Mode, DCM Operation for High Efficiency
- Low Quiescent BIAS Current (200µA) in Burst Mode
- Integrated On-Chip Self-Biased Start-up Supply with Short-Circuit Protection
- Programmable Current Limit and Soft-Start
- Fast Start-up Time(s)
- Maximum Switching Frequency up to 300 kHz
- Valley Detection Control for Lower Switching Losses
- TC Pin to Compensate for Output Diode Forward-Voltage Drift over Temperature
- Constant-Current/Constant-Voltage (CC/CV) Regulation

ASIL B Compliant

- Redundant Reference and Self-Diagnostics for OV/UV Monitoring
- Accurate (±1.5%) OV/UV Monitor
- Built-in Self-Test (BIST) for OV/UV Comparators

General

- 10.3mm x 7.5mm x 2.5mm, 28-Pin SSOP Package
- 7.5mm Clearance/Creepage between High- and Low-Voltage Pins
- AEC-Q100 Qualified – See *Ordering Information* for /V Parts
- -40°C to +125°C Temperature Range

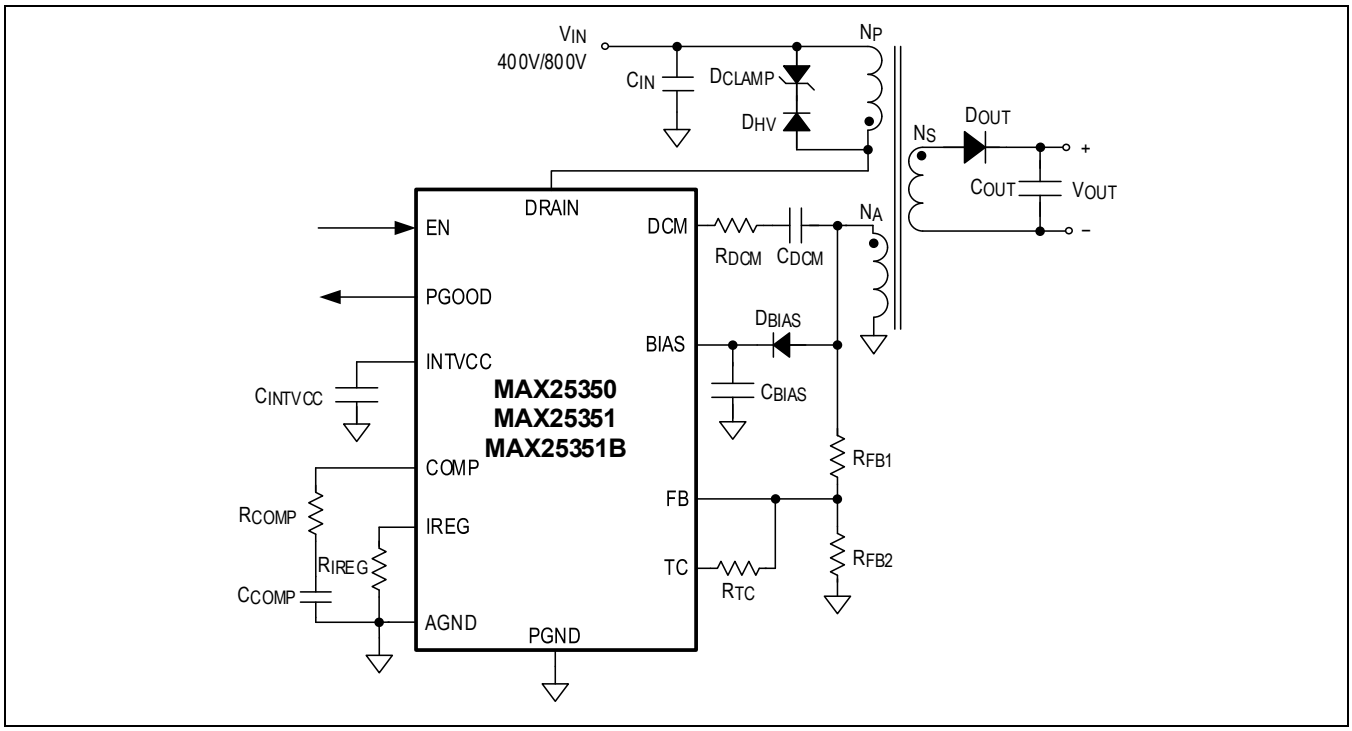
***Ordering Information** appears at end of data sheet.*

Visit Web Support to complete the nondisclosure agreement (NDA) required to receive additional product information.

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Simplified Application Diagram



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