

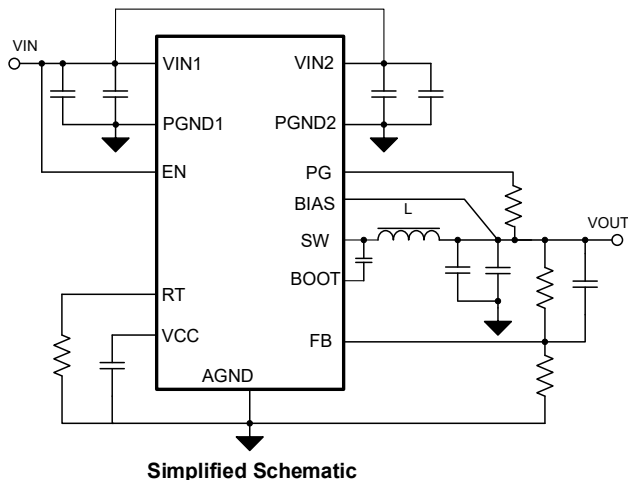
3.5-V to 36-V, 6-A Automotive Synchronous Step-Down Converter

1 Features

- AEC-Q100 qualified for automotive applications:
 - Temperature grade 1: -40°C to +125°C
- Wide Input Voltage: 3.5V to 36V
- Up to 6A continuous output current
- Optimized for ultra low EMI requirements
 - Parallel input path minimize switch node ringing
 - Spread spectrum reduces peak emissions
- Designed for reliable auto-application
 - Support 40-V automotive load dump
 - 1V±1% feedback reference voltage
 - V_{OUT} adjustable from 1 V to 95% of V_{IN}
 - Low drop-out mode
- High efficiency power conversion
 - 18-μA no load current at 13.5 V_{IN}, 5 V_{OUT}
 - 87% PFM efficiency at 1-mA, 13.5 V_{IN}, 5 V_{OUT}
 - External bias option for improved efficiency
- Precision enable threshold for adjustable input voltage lock-out protection
- Adjustable frequency from 200kHz to 2.2MHz
- 5ms internal soft-start time
- Internal Compensation
- Robust OVP, OCP, SCP and OTP Protection
- Wettable Flank package, easy for soldering check
- 4mm×3.5mm QFN-14L Package

2 Applications

- Automotive infotainment and cluster: head-unit, media hub, USB charger, display
- Automotive wireless charger
- Automotive ADAS and body electronics



3 Descriptions

The NUQ3536 is an automotive-grade, high-performance buck converter with wide input voltage, ranging from 3.5-36V, tolerant of 40V load dump. It integrates two low-R_{dson} high-side and low-side MOSFETs, has up to 6A continuous output current capability. The NUQ3536 implements soft-recovery from dropout which can eliminate overshoot on the output.

The NUQ3536 features adjustable switching frequency from 200 kHz and 2.2 MHz with an external resistor. The operation frequency can be selected to avoid noise sensitive bands, to improve efficiency at low operating frequency, or to get smaller solution size at high operating frequency.

The NUQ3536 is an EMI friendly buck converter implements optimized design for EMI reduction. It adopts FC-QFN package with parallel input path which can minimize switch node ringing. The NUQ3536 employs a triangle wave to modulate the internal oscillator, the FSS frequency span is ±7%, which can minimize the peak emissions at specific frequencies.

The NUQ3536 supports pulse-skip-modulation at light load, the no-load input current is only 18uA (typical), ensures high efficiency across the whole load range.

Device Information

Part Number	Package	Dimension
NUQ3536	QFN-14	4mm×3.5mm

