NU8040Q: Integrated Power Stage for High-Integration and High-Efficiency Medium-Power Wireless Power Transmitter

1 Features

- Wide Input Voltage: 4V to 21V
- Integrated 9A rating High-Efficiency Full- Bridge FETs
- Integrated FET Driver Optimized for Low EMI
- Integrated 5V DC/DC for IC power supply
- Integrated 3.3V (2.5V configurable) LDO to Bias External Circuit and Provide Reference Voltage
- High-Accuracy, Lossless Current Measurement for FOD and In-Band Communication
- Integrated Lossless Q Factor Detection
- Integrated Low-Error-Rate Digital Demodulation
- Input UVLO and OVP
- Over-Current Protection
- Thermal Shutdown
- I²C Interface
- AEC-Q100 Grade 2 qualified
- 4mm×4mm QFN Package

2 Applications

- Wireless Power Transmitter Compliant with WPC V1.2.4 Extended Power Profile (EPP)
- Wireless Power Transmitter for Automotive market Applications
- Motor Drivers

3 Descriptions

NU8040Q is a family of highly integrated full-bridge power stage IC optimized for wireless power transmitter solutions. The device integrates all critical functions, such as high-efficiency power FETs, low-EMI FET drivers, bootstrap circuit, 5V integrated DC/DC power supply, 3.3V (2.5V configurable) LDO and lossless current measurement. The proprietary current-measurement circuit provides the accurate current reading used for the FOD (Foreign Object Detection) power measurement, in-band communication, Q factor detection, and digital demodulation.

NU8040Q is qualified for automotive applications. For higher power cases like 50W, NU8040Q can be used in parallel to handle it with good thermal dissipation methods.

The IC also includes protection functions such as input under-voltage lockout, over-voltage protection, over current protection, and thermal shutdown. These provisions further enhance the reliability of the total system solution.

I²C interface is used for communication with the controller and can easily be extended to multi-coil solutions. The device is housed in a thermally enhanced 4mm×4mm QFN package.