



## NXP's Wireless Charging ICs

# WCT-15W1COILTX—Exceptional performance at the lowest cost

The 15W1COILTX reference design is a complete system solution, containing all of the hardware and software components necessary to quickly implement a cost effective, single-coil wireless charger solution.

### TARGET APPLICATIONS

- ▶ 15 W single-coil wireless charging applications
- ▶ Mobile phone chargers
- ▶ Tablet PCs
- ▶ Point-of-sale terminals
- ▶ Hand-held medical devices
- ▶ Mobile phone accessories such as battery banks and active phone sleeves

### OVERVIEW

The 15W1COILTX reference design is a 15 watt single-coil transmitter reference design based on NXP's MWCT1011 wireless charging IC. NXP's 15 W single-coil transmitter focuses on what the market needs most—highest performance at the lowest cost. The reference design provides the highest efficiency and active charging area available, while maintaining the most competitive electronic bill of materials (BOM) cost.

The 15W1COILTX reference design is a unique NXP design, comprising a 12 V DC input source, full-bridge inverter topology, and frequency control methodology and fully compliant with the latest Wireless Power Consortium (WPC) 15 W specification. NXP extends support to any coil topology which uses a 12 V input source reducing the need for different hardware to support multiple (and future) coil types with similar characteristics.

The reference design uses NXP's innovative wireless charging transmit controller IC to perform digital demodulation on incoming signals from the receiver. This unique feature provides a major reduction in BOM costs and reduces the PCB footprint.

An additional feature of the solution is a robust foreign object detection (FOD) algorithm. This feature detects metallic objects, such as aluminum or steel objects which may be present in the charging environment. NXP foreign object detection algorithms meet and exceed the latest standards within the industry.



The WCT-15W1COILTX reference design is a complete system solution, containing all of the hardware and software components necessary to quickly implement a single-coil charger solution. Special attention has been placed on BOM costs in order to deliver a production-ready design. NXP provides all of the necessary hardware documentation: including schematics, layout and assembly files, as well as a complete BOM. A firmware library is provided which contains all of the necessary wireless charging control blocks. Access to the library is provided via an API which lets users interact with parameters and settings contained in the firmware, providing maximum control to the engineer. Customers can choose to use a ready-to-use binary file provided by NXP or to take a more developmental approach and build an application around the firmware library.

### DEVELOPMENT TOOLS

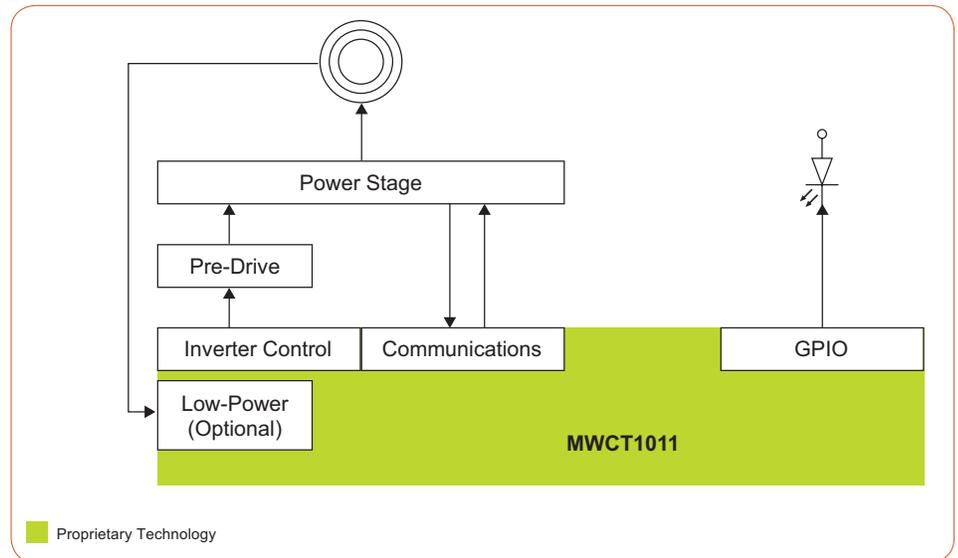
#### Eclipse™ based CodeWarrior Development Studio for Microcontrollers

A complete integrated development environment (IDE) that provides a highly-visual and automated framework to accelerate the development of the most complex embedded applications.

### WCTGUI

Graphical User Interface tool allows for quick configuring and optimizing wireless charging transmitter solutions.

## WCT-15W1COILTX SINGLE-COIL WIRELESS CHARGER BLOCK DIAGRAM



## WCT-15W1COILTX FEATURES AND BENEFITS

| Features   | Benefits  |
|--|---|
| Compliant with latest Wireless Power Consortium (WPC) Qi specification | Ensures end solution meets latest industry specification                                      |
| Transfer efficiency greater than 75%                                   | Maximum energy transfer and lower thermal footprint   |
| Meets latest FOD requirements  | Ensures foreign objects are detected and provides safety function                             |
| Supports any 15 W single-coil type using a 12 V power source           | Provides a broad range of magnetics support with a single solution                            |
| Low standby power  | Low power operating modes translate into lower power consumption during periods of inactivity |
| SPI, UART, I2C communication interfaces                                | Communicate to and from wireless charging IC to transfer charging information (MWCT1111 only) |
| On-chip digital demodulation   | Lower system bill-of-materials (BOM) and greater performance                                  |
| Run-time calibration   | Fast and accurate system calibration, saving time and effort to optimize system performance   |

## PACKAGE OPTIONS

| Part Number | Available Flash Size | Key Features   | Package     |
|-------------|----------------------|--|-------------|
| MWCT1011    | NA                   | Complete controller solution, supports most Qi 15 W single coil systems      | 32-pin QFN  |
| MWCT1111    | 40 KB*               | Premium controller, I2C, UART, SPI, flash memory for application programming | 64-pin LQFP |