Maximum flexibility, uncompromising performance

MWCT1011/12CFM and MWCT1111CLH Wireless Charging ICs

The MWCT1011 and MWCT1111 devices are NXP®'s solution for 15-watt consumer wireless charging transmitter applications.

MWCT1011/1012 ICs

The MWCT1011 and MWCT1012 wireless charging ICs are the standard offerings, featuring a complete system solution to implement the controller functions in a wireless charging transmitter system. The MWCT1011 and MWCT1012 support any industry-compliant 15-watt single-coil topology, providing a single solution with maximum flexibility.

The MWCT1011 and MWCT1012 ICs are based on NXP's proprietary core architecture optimized for power conversion applications. The DSP core engine and high-performance peripheral blocks allow our solution to perform tasks such as digital demodulation and foreign object detection (FOD) with minimal CPU overhead. Additionally, the MWCT1011 and MWCT1012 ICs provide unparalleled performance in executing the control loop function necessary for power supply regulation. This increased performance translates into higher efficiency—a value which can be immediately realized at the end-product level. Higher system efficiency results in a lower thermal footprint and lower operating temperature.

APPLICATIONS

▸ Mobile phone charging

▸ Tablet PC charging

▸ Point-of-sale terminals

▸ Hand-held medical devices

▸ Mobile phone accessories such as battery banks and active phone sleeves

MWCT1111 IC

The MWCT1111 is the premium version, offering additional programmability and customization options to provide maximum end product differentiation. Users are no longer confined to fixed-function solutions that provide little to no design freedom. With the MWCT1111 IC, users can differentiate their end product and provide value-added customizations and features. The MWCT1111 contains all of the features of the MWCT1012 and MWCT1011 but adds

additional hardware resources, such as program memory and I/Os for application development.

State-of-the art software components delivered in the form of a firmware library are combined with the MWCT1011 and MWCT1012 hardware. All wireless charging solutions consist of both production-level hardware and software. The wireless charging software is optimized firmware, providing all of the necessary functions of a wireless charging transmit controller. The firmware consists of six main blocks necessary to implement wireless charging: the state machine, the communications decoding block, power control, coil selection, error handling and the foreign object detection algorithm. NXP provides access to these core software blocks via APIs that provide maximum control to the application developer.

DEVELOPMENT TOOLS

WCT-15W1COILTX
BOM-cost optimized single-coil 15-watt reference platform for any type of closely coupled inductive charging application.

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.

WCT GUI
Graphical user interface tool allows for quick configuration and optimization of wireless charging transmitter solutions.

MWCT1x1x BLOCK DIAGRAM
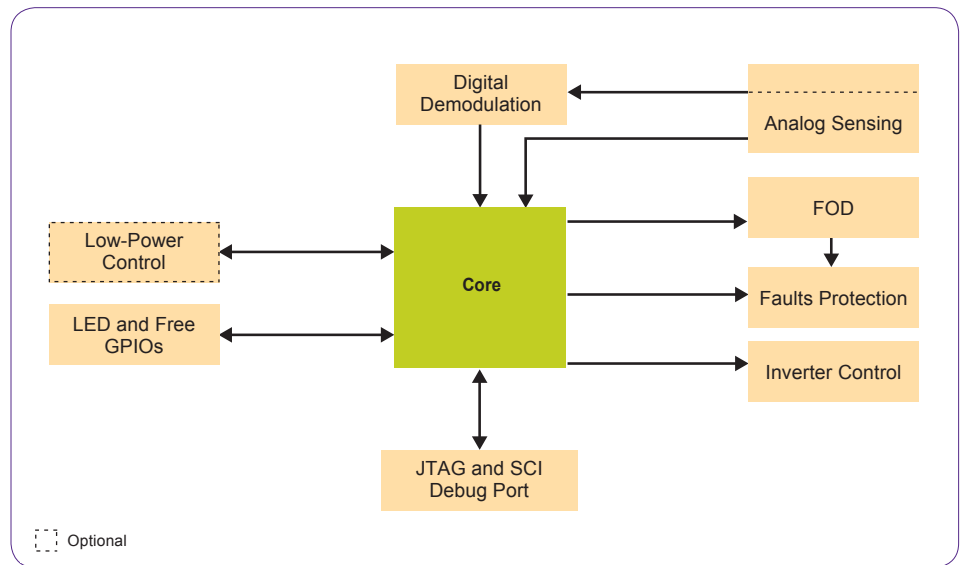
MWCT1x1x FEATURES AND BENEFITS

Features	Benefits
Compliant with Wireless Power Consortium (WPC) Qi specification	Ensures end solution meets industry specification
Transfer efficiency greater than 75%	Maximum energy transfer and lower thermal footprint
Meets FOD requirements	Ensures foreign objects are detected and provides safety function
Supports any type of 15-watt solution	Provides maximum design freedom and product differentiation
Low active RUN power	Increases overall operating efficiency
Low standby power	Low-power operating modes translate into lower power consumption during periods of inactivity
Support for current limited power sources	Operates from current limited power sources
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	Package	Available Flash Size	Key Features
MWCT1011	32-pin QFN	23 KB*	Complete controller solution, supports all 15 W single coil systems
MWCT1012	32-pin QFN	7 KB*	Complete controller solution, supports all 15 W single coil systems
MWCT1111	64-pin LQFP	23 KB*	Premium controller, I²C, UART, SPI, flash memory for application programming

*Available memory is an estimate only