



Designed with
automotive in mind

MWCT1011A/13A Wireless Charging ICs

The MWCT1011A and MWCT1013A devices are NXP®'s 15-watt solutions for automotive wireless charging applications.

MWCT1011A IC

The MWCT1011A IC is the standard offering, featuring a complete system solution to implement the controller functions in a wireless charging transmitter system. MWCT1011A supports 15-watt multi-coil topologies, providing a single solution with maximum flexibility for automotive applications.

This IC also uses NXP's proprietary core architecture, optimized for power conversion applications. The DSP core engine and high-performance peripheral blocks on the MWCT1011A device allows our solution to perform tasks such as digital demodulation and foreign object detection (FOD) with minimal CPU overhead. Additionally, the MWCT1011A IC provides unparalleled performance executing the control loop function that is 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, which are important considerations in a complex automotive operating environment.

APPLICATIONS

- ▶ Mobile phone charging in car
- ▶ Tablet charging in car

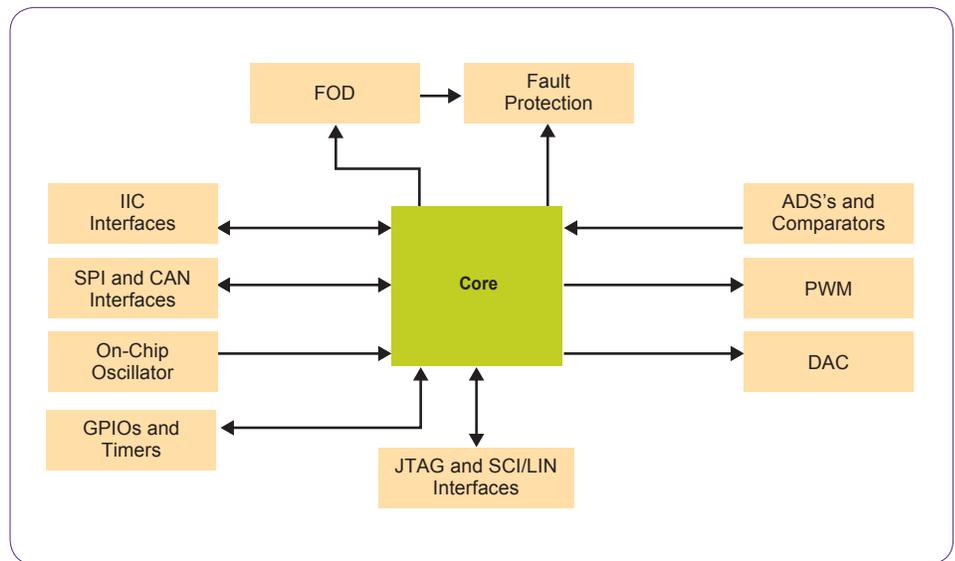
MWCT1013A IC

The MWCT1013A IC 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 MWCT1013A, users can differentiate their end product and provide value-added customizations and features. It contains all of the features of the MWCT1011A but adds additional hardware resources, such as program memory and IOs for application development.



State-of-the-art software components delivered in the form of a firmware library are combined with the MWCT1011A hardware. All wireless charging solutions consist of 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.

MWCT1x1xA BLOCK DIAGRAM



DEVELOPMENT TOOLS

WCT-15WTXAUTO

Automotive-optimized multi-coil 15-watt reference design.

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.

MWCT1x1xA FEATURES AND BENEFITS

Features	Benefits
Compliant with Wireless Power Consortium (WPC) Qi specification	Ensures end solution meets industry specification
Transfer efficiency greater than 70%	Maximum energy transfer and lower thermal footprint
Meets FOD requirements	Ensures foreign objects are detected and provides safety function
Supports all 15-watt multi-coil types	Provides maximum design freedom and product differentiation
Low active RUN power	Low-power operating modes translate into lower power consumption during periods of inactivity
Low standby power	Low-power operating modes translate into lower power consumption during periods of inactivity
SPI, UART, I ² C communication interfaces	Communicate to and from wireless charging IC to transfer charging information
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
Integrated CAN/LIN support	Connect to the vehicle network for control and management
Meets AEC-Q100 (Grade 2) guidelines	Meets automotive requirements
Supports operation frequency dithering technology	Eliminate AM band and key FOB interference

PACKAGE OPTIONS

Part Number	Package	Available Flash Size	Key Features
MWCT1011A	64-pin LQFP	18 KB*	Complete 15 W automotive controller solution
MWCT1013A	64-pin LQFP	242 KB*	Premium solution for additional feature integration

*Available memory is an estimate only