



Designed with
automotive in mind

MWCT101xS Wireless Charging ICs

The MWCT1014S, MWCT1015S and MWCT1016S devices are NXP®'s 15-watt wireless power transmitter devices for in-vehicle wireless charging applications.

MWCT1014S IC

The MWCT1014S IC is the standard offering, featuring a complete system software to implement power transfer and control functions in a wireless charging transmitter system including AutoSAR software environment with CAN-FD connectivity. MWCT1014S supports 15-watt multi-coil topologies, providing a single device with maximum flexibility for automotive applications.

This IC also uses NXP's proprietary peripherals, optimized for power conversion applications. The high-performance peripheral blocks on the MWCT1014S devices allow our solution to perform tasks such as digital demodulation and foreign object detection (FOD) with minimal CPU overhead. Additionally, the MWCT1014S 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

MWCT1015S and MWCT1016S IC

The MWCT1015S and MWCT1016S IC are the premium versions, 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 MWCT1015S and MWCT1016S, users can differentiate their end product and provide value-added customizations and features. They contain all of the features of the MWCT1014S but adds additional hardware resources, such as program memory and IOs for application development and OTA.

State-of-the-art software components delivered in the form of an AutoSAR CDD are combined with the MWCT101xS 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 in AutoSAR SW environment.

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-15WTXAUTOS

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

S32 Design Studio IDE® 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 quick configuration and optimization of wireless charging transmitter solutions.

MWCT101xS FEATURES AND BENEFITS

Features	Benefits
Compliant with Wireless Power Consortium (WPC) Qi specification	Ensures end solution meets industry specification
AutoSAR SW compliant	Follows Automotive SW requirements
OTA FW updates	Firmware updates in the field
On-chip digital demodulation	Lower system bill of materials (BOM) and greater performance
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
SPI, UART, I2C communication interfaces	Communicate to and from wireless charging IC to transfer charging information
Run-time calibration	Fast and accurate system calibration
CAN-FD/LIN support	Connects to the vehicle network for control and management
Meets AEC-Q100 (Grade 2) guidelines	Meets automotive requirements
Supports operation frequency dithering technology	Eliminates AM band and key FOB interference

PACKAGE OPTIONS

Part Number	Package	Flash Size	RAM Size
MWCT1014S	LQFP-64	512 KB	64 KB
	LQFP-100		
MWCT1015S	LQFP-100	1 MB	128 KB
	BGA-100		
MWCT1016S	BGA-100	2 MB	256 KB

MWCT1x1xS BLOCK DIAGRAM

