NXP next-gen multi-protocol NFC frontend CLRC663 *plus*

Push your NFC design further

If you need the best NFC performance or the lowest power consumption, use this remarkably efficient yet highly flexible frontend to push your design further. It offers an extended temp range, pin-to-pin compatibility, and time-saving software tools.

KEY BENEFITS

High performance and more flexible antenna design

- Maximum transmitter current: 350 mA operating with limiting value of 500mA
- Freely programmable 6 kByte EEPROM

Longer battery life

- Supply voltage: 2.5 to 5.5 V
- Power-save modes: hard power-down, standby, extended LPCD options

Industrial/Automotive temp range (-40 to +105 °C)
Multiple interfaces to support a broad range of microcontrollers and high-security reader implementations

- Host interfaces: SPI, I²C, UART
- Up to 8 GPIO
- SAM interface
- 512 byte FIFO buffer reduces performance requirements of host controller

Fast development

- Supports NFC Cockpit and NFC Reader Library
- Complete development kits

Included licenses

- Includes NXP ISO/IEC14443-A and Innovatron ISO/IEC14443-B intellectual property licensing rights

EMVCo ready

- EMVCo 2.6 L1 analog & digital compliance

Full RF standard compliance

- ISO/IEC 14443A/MIFARE
- ISO/IEC 14443B
- JIS X 6319-4 (comparable with FeliCa1 scheme)
- ISO/IEC 15693 (ICODE-SLI)
- ICODE EPC UID/ EPC OTP
- ISO/IEC 18000-3 mode 3/ EPC Class-1 HF (ICODE-ILT)
- Peer-to-Peer Mode: ISO/IEC 18092 passive initiator

Compatible with all NXP smartcard products

- Complete MIFARE® family: Ultralight, Classic 1K & 4K, DESFire EV1 & EV2 and Plus EV1
- Complete NTAG® family incl. NTAG I²C *plus*
- Complete SmartMX® family incl. SmartMX2 P40 & P60

Compact, time-saving package

- HVQFN32 with wettable flanks to support high production yield
- Pin-compatible to CLRC663 makes it easy to upgrade for existing designs

APPLICATIONS

- Access control
- Payment
- Gaming
- Industrial

The NXP CLRC663 *plus*, the follow-on to the groundbreaking CLRC663, is a next-generation, multi-protocol NFC frontend. It delivers optimal performance in every application, and offers special-low-power support to make battery-powered systems more efficient.

It offers the flexibility, backward compatibility, and fast time-to-market needed to deliver best-in-class NFC systems for a wide range of applications, including access control, payment, gaming, and industrial.

HIGH PERFORMANCE, LOW POWER

Compared to its predecessor, the CLRC663 *plus* offers up to 2.5 times the detection range. It features new configuration options that optimize LPCD operation.

Operating from a lower supply voltage, down to 2.5 V, makes it possible to use the CLRC663 *plus* in systems that use a less powerful battery.

TEMPERATURE RANGE

The CLRC663 *plus* offers an extended temperature range, from -40 to + 105 °C, so it's an ideal choice for applications that need to operate under challenging conditions, including outdoors, such physical access or car/bike sharing, or in industrial environments.

EXTRA RF POWER

With a maximum operating transmitter current of 350mA with limiting value of 500 mA, the CLRC663 *plus* delivers up to twice the transmitter current of the CLRC663. The higher current improves performance by compensating for losses in the RF field, such as those introduced by the nearby presence of metals.

Other features that improve performance while increasing flexibility include support for ISO/IEC 15693 NFC Forum T5T reads, integrated support for MIFARE (Crypto 1), and advanced waveform control for overshoot protection.

RELIABLE ASSEMBLY

A compact HVQFN32 (5 x 5 x 0.85 mm) package with wettable flanks makes it easier to see if the package successfully soldered to the PCB, so post-assembly inspection is simpler, faster, and more efficient. The package is pin-for-pin compatible with the CLRC663, for easy upgrades.

QUICKER DEPLOYMENT

Advanced design tools make it easier than ever to deliver a contactless design. The CLRC663 *plus* development kit (OM26630) includes a development board (CLEV6630B) with extended LPCD and optimizations for access-control applications, plus antenna boards, NFC sample cards, and ten CLRC663 *plus* samples in HVQFN packages.

The NFC Cockpit is an intuitive, Windows-based GUI with a VCOM interface that lets you control test applications and configure settings, such as EEPROM, RF field control, card operation, and LPCD operation – all without writing a single line of software code.

The free, easily scalable NFC Reader Library speeds development, since it includes APIs and sample applications, and is easy to port to standard microcontroller cores. The NFC Reader Library also simplifies certification, with test applications for EMVCo L1, NFC Forum, and ISO/IEC 10373-6 PICC/PCD.

Device comparison: CLRC663 versus CLRC663 *plus*

	CLRC663	CLRC663 *plus*
Operating transmitter current	250 mA	350 mA (max.), 500 mA (lim.)
LPCD range (EMVCo RefPICC)	26 mm	66 mm
Temp range	-25 to +85 °C	-40 to +105 °C
RF transmitter supply voltage	3.0 to 5.5 V	2.5 to 5.5 V
Package	HVQFN32	HVQFN32 with wettable flanks

nfc everywhere

www.nxp.com

Date of release: April 2015
Document order number: 9397 750 17656
Printed in the Netherlands