NXP® multi-protocol NFC frontend CLRC663 *plus* family

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 family to push your design further. It offers an extended temp range, pin-to-pin compatibility, and time-saving software tools.

CLRC663 *plus* KEY BENEFITS

High performance and more flexible antenna design

- 350mA maximum operating transmitter current
- Freely programmable 6 kByte EEPROM
- Advanced waveform control for overshoot protection
- Integrated support for MIFARE (Crypto 1)

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

Full RF standard compliance

- ISO/IEC 14443A: MIFARE® family incl. DESFire family and NTAG® family incl. NTAG I²C *plus*
- ISO/IEC 14443B
- JIS X 6319-4: comparable with FeliCa1 scheme
- ISO/IEC 15693: NTAG 5 family, ICODE SLIX, SLIX2, DNA
- ISO/IEC 18000-3 mode 3/EPC Class-1 HF: ICODE ILT
- Peer-to-Peer Mode: ISO/IEC 18092 passive initiator
- Compatible with SmartMX® family incl. SmartMX2 P40 & P60

Compact, time-saving package

- HVQFN32 (5 × 5 × 0.85 mm) with wettable flanks and VFBGA36 (3.5 × 3.5 × 0.8 mm) packages
- Pin-compatible to CLRC663 family for easy upgrade of existing designs

APPLICATIONS

- Access control
- Close-loop payment
- Gaming
- Industrial

The CLRC663 *plus* family, including CLRC663 *plus*, CLRC661 *plus*, MFRC631 *plus*, MFRC630 *plus*, and SLRC610 *plus*, offers special low-power support to make battery-powered systems more efficient, the flexibility, backward compatibility, and fast time-to-market needed to deliver best-in-class NFC system for a wide range of applications, including access control, payment, gaming, and industrial.

TEMPERATURE RANGE

The CLRC663 *plus* family 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, the CLRC663 *plus* family ensures best 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 AND COMPACT DESIGNS

The HVQFN32 (5 x 5 x 0.85 mm) package with wettable flanks makes post-assembly inspection simpler, faster, and more efficient.

The new VFBGA36 (3.5 × 3.5 × 0.8 mm) package enables the most compact designs.

QUICKER DEPLOYMENT

Advanced design tools make it easier than ever to deliver a contactless design. The CLRC663 *plus* Arduino interface board (CLEV6630ARD) will kick start your development with any boards featuring Arduino header whereas the CLRC663 *plus* development board (CLEV6630B, included in the OM26630 kit) together with the antenna development kit (OM29263ADK) will allow you to optimize your complete system design.

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

The NFC Reader Library not only speeds development, since it includes APIs and sample applications and is easy to port to standard microcontroller cores, but also simplifies certification with test applications for EMVCo L1, NFC Forum, and ISO/IEC 10373-6 PICC/PCD.

DEVICE COMPARISON

	CLRC663 *plus*	CLRC661 *plus*	MFRC631 *plus*	MFRC630 *plus*	SLRC610 *plus*
ISO/IEC 14443A – MIFARE/NTAG	yes	yes	yes	yes	
ISO/IEC 14443B	yes		yes		
JIS X 6319-4 – FeliCa	yes				
ISO/IEC 15693 – ICODE SLIX/DNA	yes	yes			yes
ISO/IEC 18000-3m3 – ICODE ILT	yes	yes			yes
ISO/IEC 18092 passive initiator	yes				
Operating transmitter current	350 mA (max.), 500 mA (lim.)				
LPCD(1) range(2) (EMVCo RefPICC)	66 mm				
Operating ambient temp. range	VFBGA36: -40 to +85 °C | HVQFN32: -40 to +105 °C				
RF transmitter supply voltage	2.5 to 5.5 V				
HVQFN32 (5×5×0.85mm)	CLRC66303HN	CLRC66103HN	MFRC63103HN	MFRC63003HN	SLRC61003HN
12NC single tray delivery	9353 062 08551	9353 639 69551	9353 062 14551	9353 062 17551	9353 062 19551
12NC reel delivery	9353 062 08518	9353 639 69518	9353 062 14518	9353 062 17518	9353 062 19518
VFBGA36 (3.5×3.5×0.8mm)	CLRC66303EV				
12NC reel delivery	9353 804 29118				
Development kit / board	OM26630FDK (12NC 9353 391 51699) / CLEV6630B (12NC 9353 391 49699)				
Antenna development kit	OM29263ADK (12NC 9353 615 98598)				
Arduino interface board	CLEV6630ARD (12NC 9353 894 12598)				

(1) Low Power Card Detection

(2) all detection ranges measured using the standard CLRC663 *plus* development board (CLEV6630B) operated with external power supply at room temperature

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