

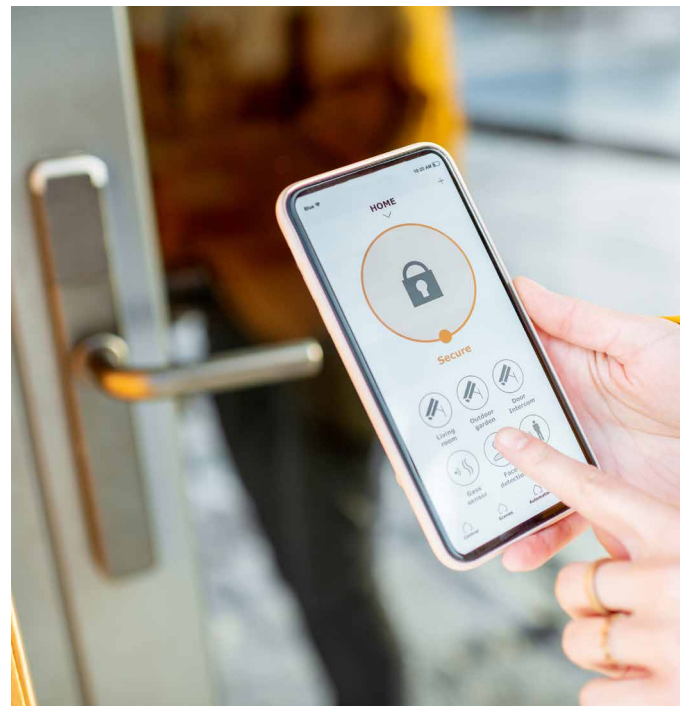
SINGLE CHIP SOLUTION WITH HIGH PERFORMANCE NFC READER, CUSTOMIZABLE MCU AND SECURITY TOOLBOX

This innovative, single-chip solution enables a full NFC system, complete with robust contactless communication, a full toolbox for security processing, and extensive system programmability.

TARGET APPLICATIONS

- Secure physical access control
 - Smart residential door locks and doorbells
 - Corporate and hospitality locks
 - Electronic lockers
- Secure authentication of consumables and accessories
 - Home appliances
 - Printers
 - Gateways: IoT device onboarding
 - Medical devices
- Secure contactless data communication
 - Battery communication controller for light electric vehicles
 - Closed-loop payments
 - Trusted ID readers

Combining a high-performance NFC reader, a low-power Arm® Cortex® M33-based MCU with 180 kB of programmable flash memory, and a SESIP-certified security system optimized for cryptography and secure key storage, the PN7642 is a highly integrated, customizable solution that takes the place of an additional MCU. A rich set of controller and host interfaces, plus a comprehensive product support package, support fast design-in.



FEATURES

- Arm Cortex M-33 core: 90 MHz, 20 kB user RAM, 180 kB user Flash
- NFC Forum-compliant NFC reader supporting Read/Write (R/W) and Card Emulation (CE) modes
 - R/W mode: ISO/IEC 14443A-B and legacy B', FeliCa™, ISO15693, ISO18000 EPC-HF. Complete MIFARE®, MIFARE DESFire®, NTAG® (NTAG 5 up to 212 kbit/s), ICODE® and SmartMX® families
 - CE mode: ISO/IEC 14443-4A with ALM/PLM, up to 848 kbps
- High output power 2W: 350mA maximum operating transmitter current with Dynamic Power Control (DPC 2.0) and Automatic Waveshape Control (AWC)
- Integrated DC/DC allows single 3.3V supply with max Tx power

- Ultra-Low Power Card Detection (22 μ A typical)
- Supports ECP 2.0 (Apple Enhanced Contactless Polling)
- Security and crypto features:
 - HW acceleration for symmetric and asymmetric algorithms
 - Secure key store for up to 13 pcs 128-bit symmetric keys (or 6 pcs 256-bit keys)
 - Secure key store extension for up to 7 pcs 256-bit asymmetric keys (or 384-bit keys)
 - Software protection against side channel attacks
- Power supply from 2.4 to 5.5V
- Rich set of interfaces:
 - SPI (up to 15 Mbit/s) and I²C (up to 3.4 Mbit/s) controller
 - I²C, I³C (up to 3.4 Mbit/s) and SPI target
 - Up to 21 GPIOs
 - USB device and HSUART
 - 3 PWM interfaces, ADC (10b) (in no DPC configuration)
 - ISO-AUX interface for connecting TDAs
 - 4 x GP 32b Timers, 1 x WD Timer, SWD interface
- Extensive support tools including integration into MCUXpresso IDE/SDK
- Firmware update from host interface, NFC and user application
- Extended operating temperature range: -40 to +105°C
- GlobalPlatform certified SESIP Level 2
- VFBGA64 package (4.5 x 4.5 x 0.8 mm)

KEY BENEFITS

- Robust contactless communication even in metal environments, with data rate up to 848 kbit/s
- Faster transaction time than pure software implementation thanks to embedded hardware crypto processing
- Very compact designs due to higher level of integration (NFC + MCU + Security)

SINGLE-CHIP SYSTEM: NFC + MCU + SECURITY

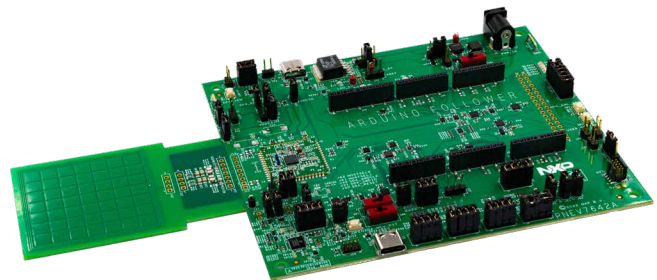
By combining a high-performance NFC reader, a programmable Cortex-M33 microcontroller, and a secure cryptographic subsystem with secure key storage, the PN7642 brings significant advantages to applications that need NFC programmability and secure authentication. Symmetric and asymmetric operations are faster than with software-based implementations or solutions using standalone components, and the tiny VFBGA64 package (4.5 x 4.5 x 0.8 mm) shrinks the design footprint while lowering the bill of materials. Also, because the security keys can be loaded directly into the crypto subsystems, without passing through the CPU, the PN7642 enables a system with enhanced confidentiality.

FAST COMMUNICATION WITH NTAG 5

The PN7642 is ideally suited for use with the NXP NTAG 5, an ISO/IEC 15693-based, NFC Forum-compliant I²C bridge for tiny devices such as IoT sensors. With data rates of up to 212 kbit/s, the PN7642 can add extra use cases to the device, including personalization, fast sensor-data transfer, or over-the-air firmware updates.

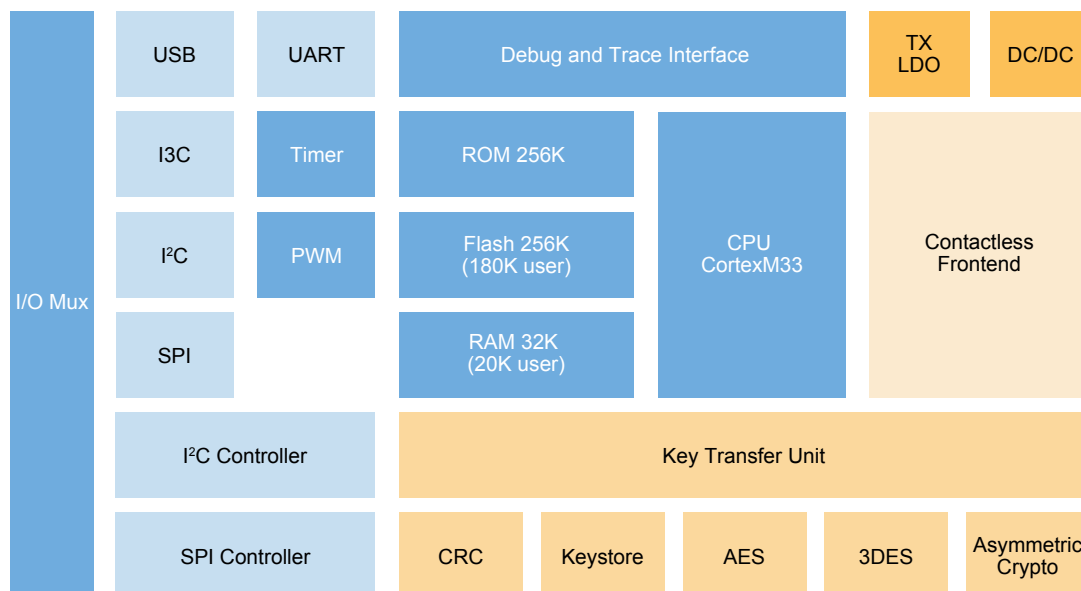
QUICK DEVELOPMENT

To simplify design-in, the PN7642 is delivered either with a complete development kit with Arduino header (OM27642EVK) or a versatile, modular development board (OM27642DB). NXP's NFC Reader Library includes a complete, fully modifiable NFC protocol stack, and the development board's intuitive GUI, the NFC Cockpit, makes it easy to configure and adapt IC setting, without writing a single line of code. Available software examples include NFC card/device detection and simple data transfer, usage of host interfaces (SPI, I²C), command exchange with external MCU, and key provisioning.



OM27642DB Development Board

BLOCK DIAGRAM



ORDERING INFORMATION

Part Number	Packing	MOQ	Marking	12NC
PN7642EV/C100Y	Reel	4000	7642	9354 378 87518
PN7642EV/C100E	Tray	2450	7642	9354 378 87557

Part Number	Description	12NC
OM27642EVK	PN7642 DEV KIT	9354 344 86598
OM27642DB	PN7642 DEV BOARD	9354 344 85598

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