



Product Preview

uT83NC480

**SMARTCARD MCU WITH 480KB FLASH AND
2048-BIT CRYPTO CO-PROCESSOR**

Revision 0.21

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1 INTRODUCTION

The uT83NC480 is a smart card microcontroller (MCU) designed for high security applications. It complies with ISO7816 standard.

uT83NC480 features a high speed low power 8052 CPU which is typically three times faster than traditional 8051.

It is targeting for high security applications such as Banking, Identity Card, E-commerce, transportation and Document Digital Signature. The built-in crypto co-processor can speed up cryptographic calculation with up to 2048 bits modulo exponentiation ($A^B \text{ mod } N$) and other similar calculations such as Elliptic Curve Cryptography (ECC). It supports up to 2048-bit RSA and 512-bit GF(p) ECC calculation. With the built-in AES, it is suitable for the latest banking applications. uT83NC480 features 480KB Flash which can be used for data area or program code area according to application requirement. The program code can be protected by hardware for ROM emulation.

1.1 FEATURES

1.1.1 General Features

- High speed 8052 compatible CPU core
- Total 480k-byte user Flash
 - 480KB configurable for data or program area (256B/page)
 - support single byte or N-byte programming
 - support chip erase
- Total 6.25K-byte user RAM and 2K-byte Crypto RAM
- Three 16-bit programmable timer with precaler
- High speed SCI interface with ISO7816 T=0 support
- 40MHz Internal Oscillator RC1
- CPU clock divider (divide by 1,2,4 or 8) and selectable clock source
- Maximum standby current during stop: 100uA (no external clock at 3.3V)
- ESD protection at least 4KV (HBM)
- Operating voltage: 1.62V to 5.5V (ISO7816 Class A/B/C)
- Operation temperature range: -25C to +85C

1.1.2 Security Features

- Low Voltage Reset and Low Frequency Reset
- Tamper Monitor
- Protection Features Against Security Attacks
- True Random number generator
- High Speed single DES and Triple DES engine
- Advanced Encryption Standard (AES) engine with ECB/CBC modes up to 256-bit key
- High Speed 2048-bit Crypto Co-processor with RSA and ECC support
- CRC 16 Engine per ISO 13239 and compatible with ISO14443-3 CRC requirement
- Powerful Memory Management Unit (MMU)
- Support supervisor mode and user mode
- Optimized layout for security
- Unique identification code

1.1.3 Supported Standards

- ISO/IEC 7816
- PBOC 3.0
- EMV
- ETSI/TS 102-221

2 GENERAL OVERVIEW

The uT83NC480 is a contact mode smart card MCU for high security level smart card applications and also best fit for banking and ID applications. The block diagram of the is shown in Figure 1.

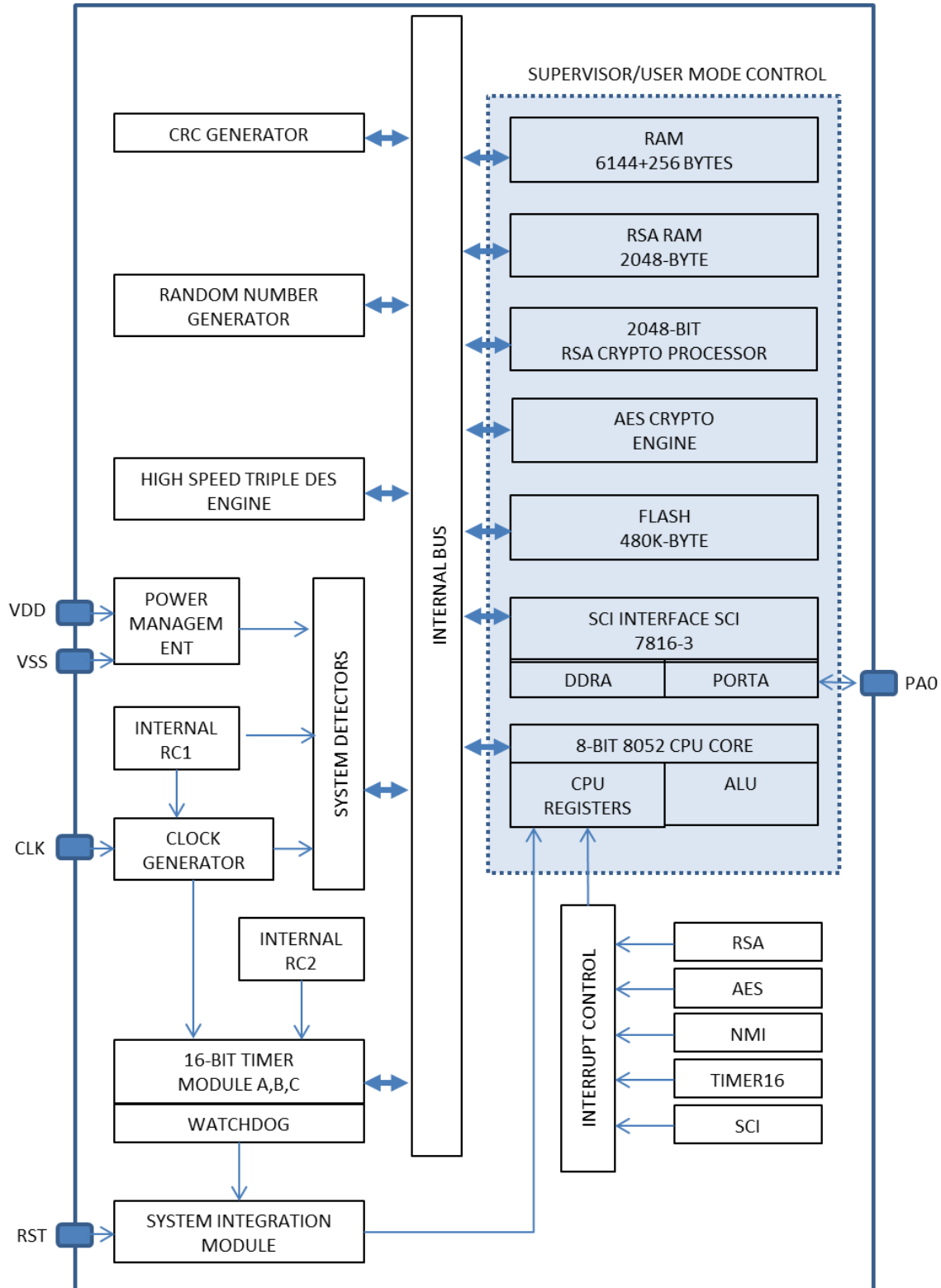


Figure 1: uT83NC480 MCU Block Diagram