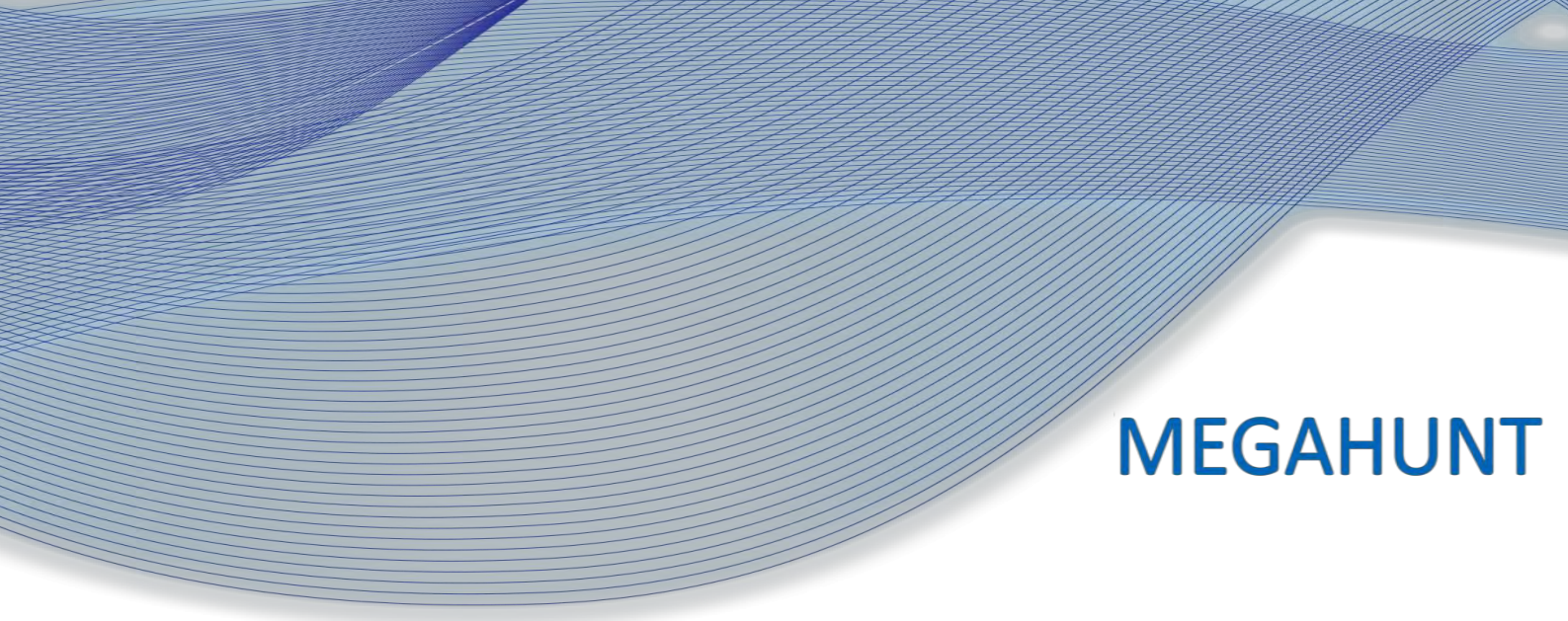




MEGAHUNT

MH1701

Brief Introduction

Low-power dual-interface microcontroller

Version: 1.10

Date: 2020-12-21



Megahunt Tehnologies Inc.

History of Revision

Date	Revision	Description	Author
2020-12-21	1.10	First draft completed	MEGAHUNT

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1. Description

MH1701 is a 32-bit low-power dual-interface microcontroller that supports various symmetric and asymmetric encryption functions, features low cost, high performance, and high security.

The contactless part complies with ISO/IEC14443 Type A standard and the contact part complies with ISO/IEC7816 standard. With built-in full hardware DES/TDES/AES/RSA/SHA, MH1701 has higher encryption performance. In addition to the ISO/IEC7816 interface, MH1701 also has 8 GPIOs (multiplexed with SPIM/SPIS/IIC), which can be applied to a variety of IoT security scenarios.

2. Main Features

2.1. Hardware Features

- ARM SecureCore™ 32-bit RISC core cadenced at 72Mh with eMPU.
- 16KB random scrambled SRAM
- 4KB PKE accelerated CRAM
- 512KB of secure User NVM memory including 512B of User OTP area:
 - 25-year data retention
 - 500 000 Erase/Write cycle endurance
 - Page Erasing (512Byte)
 - Flexible programming from word to half page (4-256Byte)
- Secure encryption algorithm acceleration engine:
 - Symmetric algorithm: DES/TDES、AES-128/192/256
 - Asymmetric algorithm: RSA-512/1024/2048/4096、ECC192/256/384/521
 - HASH verification algorithm: SHA-1/224/256/384/512
- 7816 interface:
 - Support Class A/Class B/Class C
 - Support T=0/1 protocols
 - Automatic ATR first byte (0x3B)
- Contactless interface according to ISO/IEC 14443 Type A/Type B that support enhanced rate of 106/212/424/848Kbps.
- High speed SPI Master/Slave interface.
- True random number generator. (according to NIST SP800-22)
- DMA controller supporting 1 channel DMA transfer.
- Hardware CRC module supporting 16Bit/32Bit various commonly used polynomial calculations.
- IIC interface.
- Support up to 8 GPIO (including multiplexing support).

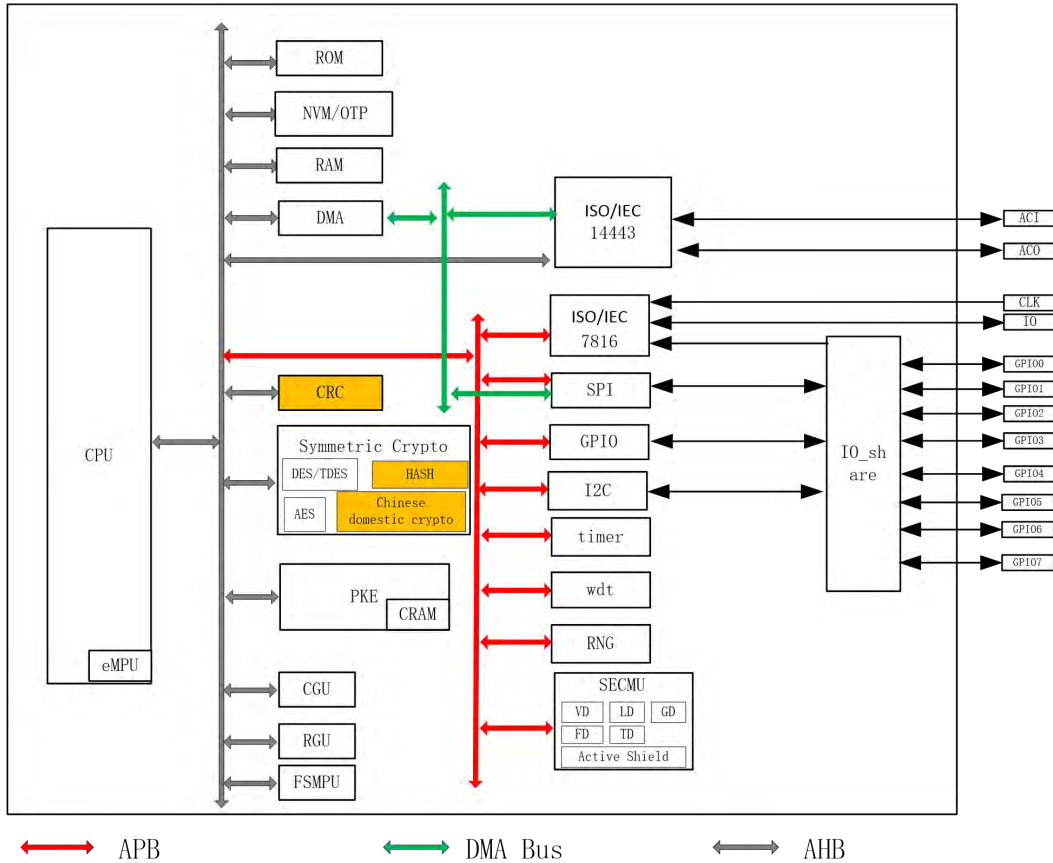
2.2. Security Features

- Voltage sensor
- Temperature sensor
- Frequency sensor
- Glitch sensor
- Light sensor
- Active shielding
- Support 1.62V to 5.5V wide range supply voltages
- SOGIS CC EAL6+ and EMVCo security certification

3. Operating Parameter

Symbol	Parameter		Minimum	Typical	Maximum	Unit
Tfe	NVM page erase time (512B)			600		uS
Tfph	NVM page programme time (512B)			1200		uS
Tfpw	NVM word programme time			140		uS
Tfdr	NVM data retention time		25			year
Nse	NVM erase/write cycle endurance		500K			Cycle
Vcc	Operating Voltage		1.62		5.5	V
Vio	IO Voltage		1.62		5.5	V
Vesd	ESD safe voltage (HBM)		4000			kV
Fct	7816 contact interface frequency		1		5	Mhz
Topr	Operating temperature		-25		85	°C
Tst	Storage temperature		-40		125	°C
Ism	Stop mode current	5.0V		90		uA
		3.0V		75		uA
		1.8V		55		uA
Iwk	Working current (72Mhz)			4	11	mA

3.1. Module Diagram



4. Development Kits

- Test sample chip
- Software SDK
- Downloading hardware and software tools
- Development documents

5. Package

- Contact \ Contactless \ Dual interface modules
- QFN-16

5.1. Definition of pin

PIN No.	PIN name	Remark
1	GPIO5	
2	VCC	Chip power supply
3	GPIO4	GPIO4 need to be pulled high during chip reset.
4	GPIO3	
5	VSS	Chip Ground
6	7816_IO	
7	NC	
8	NC	
9	ANT2	
10	ANT1	
11	GPIO6	
12	GPIO7	GPIO7 is output high during reset.This pin is configured is auxiliary output when in download mode.
13	7816_CLK	
14	GPIO0	GPIO0 ouput low during reset
15	GPIO1	
16	GPIO2	

5.2. Information on package

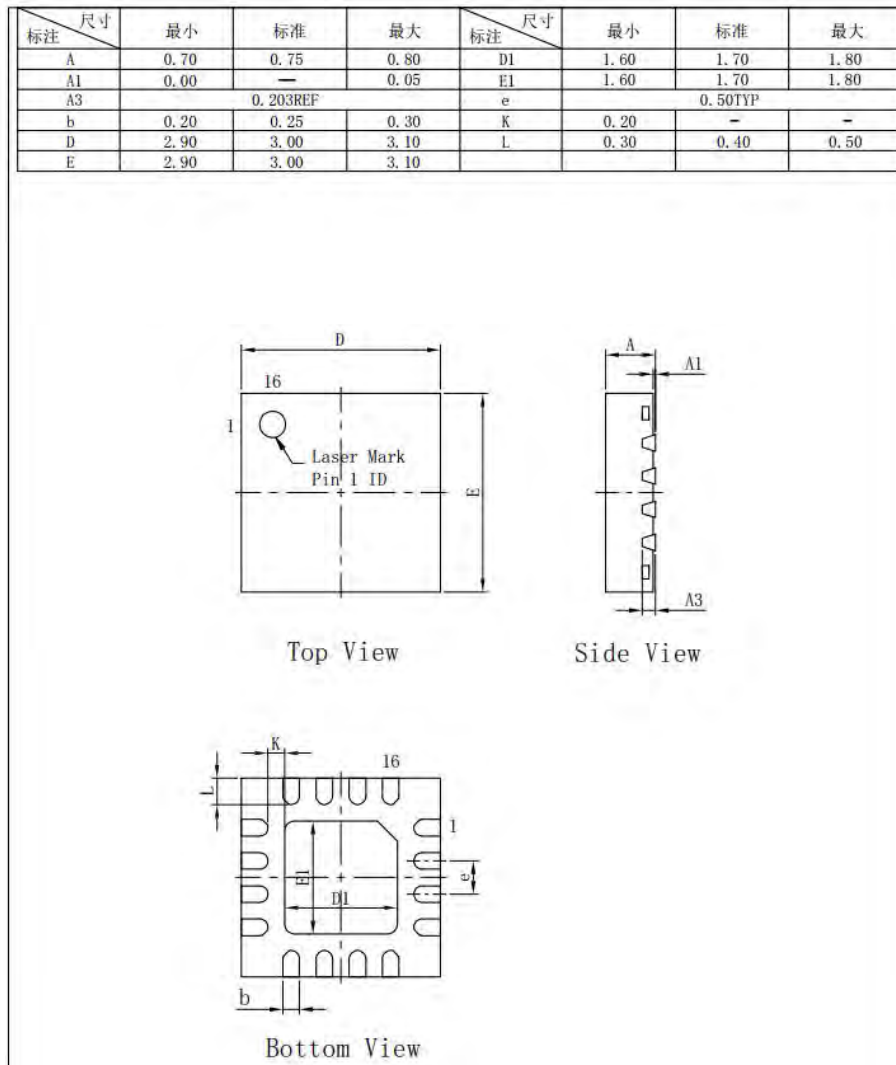


Figure 1 MH1701 QFN16 3mm*3mm Packaging Dimension