

N32G432x8/xB

Product Brief

N32G432 series uses 32-bit ARM Cortex-M4F core, maximum working frequency 108MHz, support floating point operation and DSP instructions, integrated up to 128KB embedded encryption Flash, 32KB SRAM, integrated with rich high-performance analog interface, Built-in one 12bit 5Msps ADC, two independent rail-to-rail operational amplifiers, two high-speed comparators, one 1Msps 12bit DAC, Integrated multi-channel U(S)ART, I2C, SPI, USB, CAN and other digital communication interfaces, built-in password algorithm hardware acceleration engine

Main features

- **CPU core**
 - 32-bit ARM Cortex-M4 core + FPU, single-cycle hardware multiply and divide instructions, support DSP instructions and MPU.
 - Built-in 2KB instruction Cache, support Flash acceleration unit execution program 0 wait
 - The highest frequency is 108MHz, 135DMIPS
- **Cryptographic memory**
 - Up to 128KByte in-chip Flash, support encrypted storage, partition management and data protection, support hardware ECC verification, 100,000 erasing times, 10 years of data retention
 - Up to 32KByte in-chip SRAM, including 24Kbyte SRAM1(Stop2 mode can be configured as retention) and 8 Kbyte SRAM2(both Standby and Stop2 modes can be configured as retention), supporting hardware parity check
- **Low power management**
 - Support Run, Sleep, LP Run, LP Sleep, Stop2, Standby mode
- **High-performance analog interface**
 - 1x 12bit 5Msps ADC, 12/10/8/6 bits configurable, up to 16 external single-ended input channels, supporting differential mode
 - 1x 12bit DAC, sampling rate 1Msps
 - Internal 2.048V independent reference voltage reference source
- **The clock**
 - 4MHz~32MHz external high-speed crystal
 - 32.768KHz External low-speed crystal
 - Internal high-speed RC(HSI) 16MHz
 - Internal multi-speed RC(MSI) 100K~4MHz
 - Internal low-speed RC(LSI) 40KHz
 - Built-in high-speed PLL
 - Supports one clock output, which can be configured as low-speed or high-speed clock output
- **reset**
 - Support power on, brown-out, and external pin reset
 - Support watchdog reset, software reset
- **Support up to 52 GPIOs.**
- **Communication interface**
 - Five U(S)ART interfaces, including three USART interfaces (support 1xISO7816, 1xIrDA, LIN) and two UART interfaces
 - One LPUART, support STOP2 to wake up MCU in low power consumption state

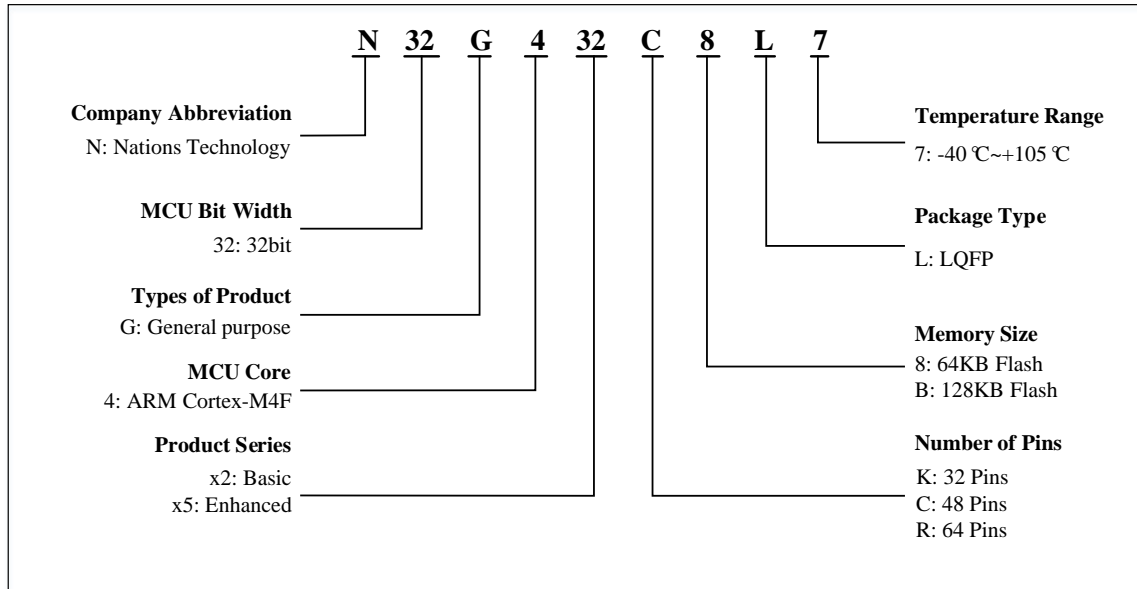
- Two SPI interfaces, the rate is up to 27 Mbps, support I2S communication
- Two I2C interfaces, the rate is up to 1 MHz, which can be configured in master/slave mode and support dual address response in slave mode
- One USB2.0 FS Device interface
- One CAN 2.0A/B bus interface
- **One high-speed DMA controller, each controller supports 8 channels, channel source address and destination address can be configured arbitrarily**
- **RTC real-time clock, support leap year perpetual calendar, alarm event, periodic wake up, support internal and external clock calibration**
- **Timer counter**
 - Two 16bit advanced timer counters, support input capture, complementary output, quadrature encoding input, the highest control accuracy is 9.25ns, each timer has four independent channels, three of which support six-channel complementary PWM output
 - Five 16bit general purpose timer counters, each timer has 4 independent channels, support input capture/output comparison /PWM output
 - Two 16bit basic timer counters
 - One 16bit low power timer counter, support double pulse counting function, can work in STOP2 mode
 - 1x 24bit SysTick
 - 1x 7bit window Watchdog (WWDG)
 - 1x 12bit independent Watchdog (IWDG)
- **Programming method**
 - Support SWD/JTAG online debugging interface
 - Support UART and USB Bootloader
- **Security features**
 - Built-in cryptographic algorithm hardware acceleration engine
 - Support AES, DES, TDES, SHA1/224/256, SM1, SM3, SM4, and SM7 algorithms
 - Flash storage encryption, multi-user partition management (MMU)
 - TRNG true random number generator
 - CRC16/32 calculation
 - Support write protection (WRP), multiple read protection (RDP) levels (L0/L1/L2)
 - Support security start, program encryption download, security updates
 - Support external clock failure detection, tamper detection
- **96-bit UID and 128-bit UCID**
- **The working conditions**
 - Operating voltage range: 1.8V~3.6V
 - Operating temperature range: -40°C ~ 105°C
 - ESD: ±4KV (HBM model), ±1KV (CDM model)
- **Package**
 - LQFP32(7mm x 7mm)

- LQFP48(7mm x 7mm)
- LQFP64(10mm x 10mm)

● **Order model**

Type	Model
N32G432x8	N32G432K8L7, N32G432C8L7, N32G432R8L7
N32G432xB	N32G432KBL7, N32G432CBL7, N32G432RBL7

1 Ordering information



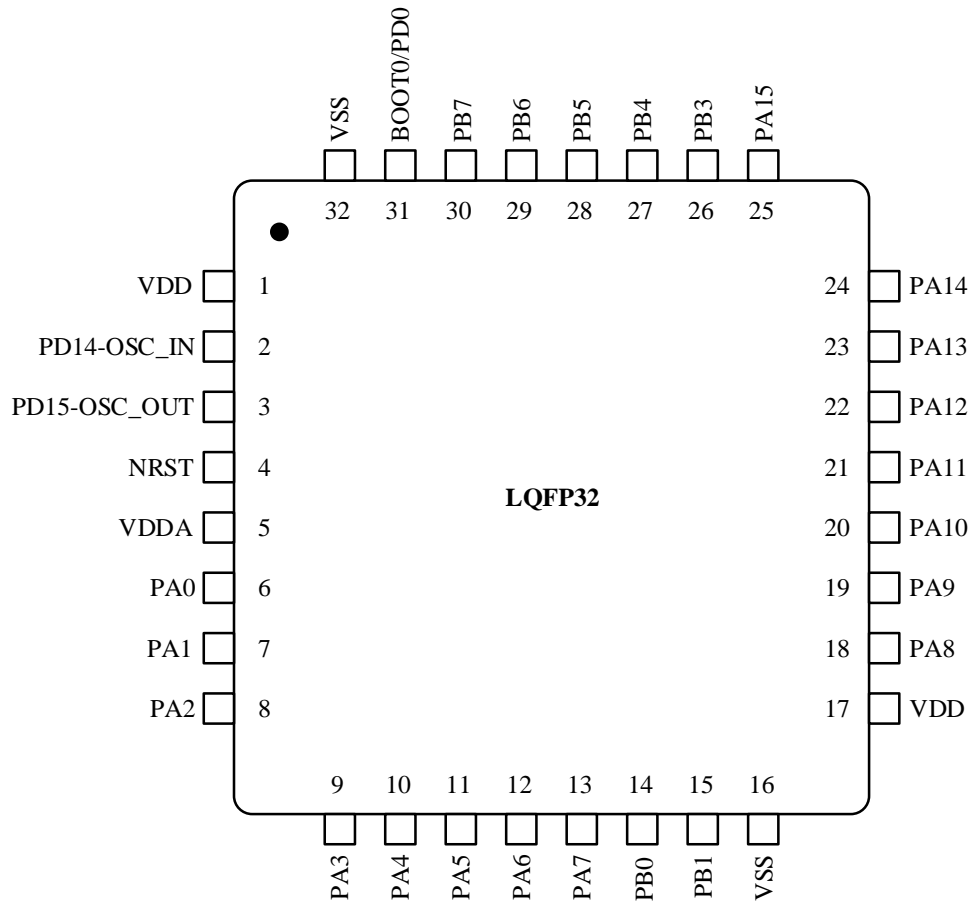
2 List of devices

Type of device	N32G432K8/B		N32G432C8/B		N32G432R8/B	
Flash size (KB)	64	128	64	128	64	128
SRAM size (KB)	24	32	24	32	24	32
CPU frequency	ARM Cortex-M4 @108MHz,135DMIPS					
Work environment	1.8~3.6V/-40~105℃					
Timer	General	5				
	Advanced	2				
	Basic	2				
	LPTIM	1				
Communication interface	SPI	2				
	I2S	2				
	I2C	2				
	UART	2				
	USART	2	3			
	LPUART	1				
	USB	1				
	CAN	1				
GPIO	26	38		52		
DMA	1x					
Number of Channels	8 Channel					
12bit ADC	1x	1x		1x		
Number of Channels	10Channel	10Channel		16Channel		
12bit DAC	1x					
Number of Channels	2Channel					
Algorithm support	DES/TDES、AES、SHA1/SHA224/SHA256、SM1、SM3、SM4、SM7、CRC16/CRC32、TRNG					
Security and protection	Read and write protection (RDP/WRP), storage encryption, partition protection, and security startup					
Package	LQFP32	LQFP48		LQFP64		

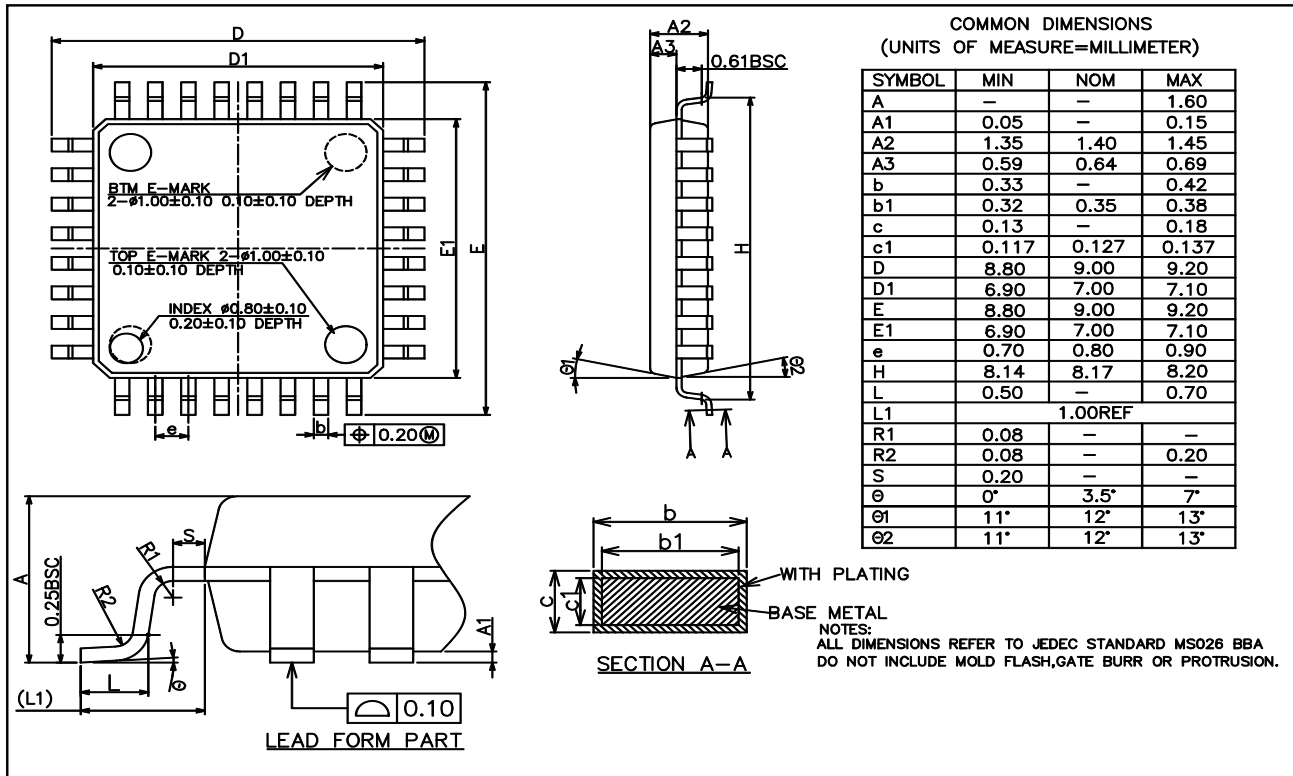
3 Package

3.1 LQFP32

3.1.1 LQFP32 pinout

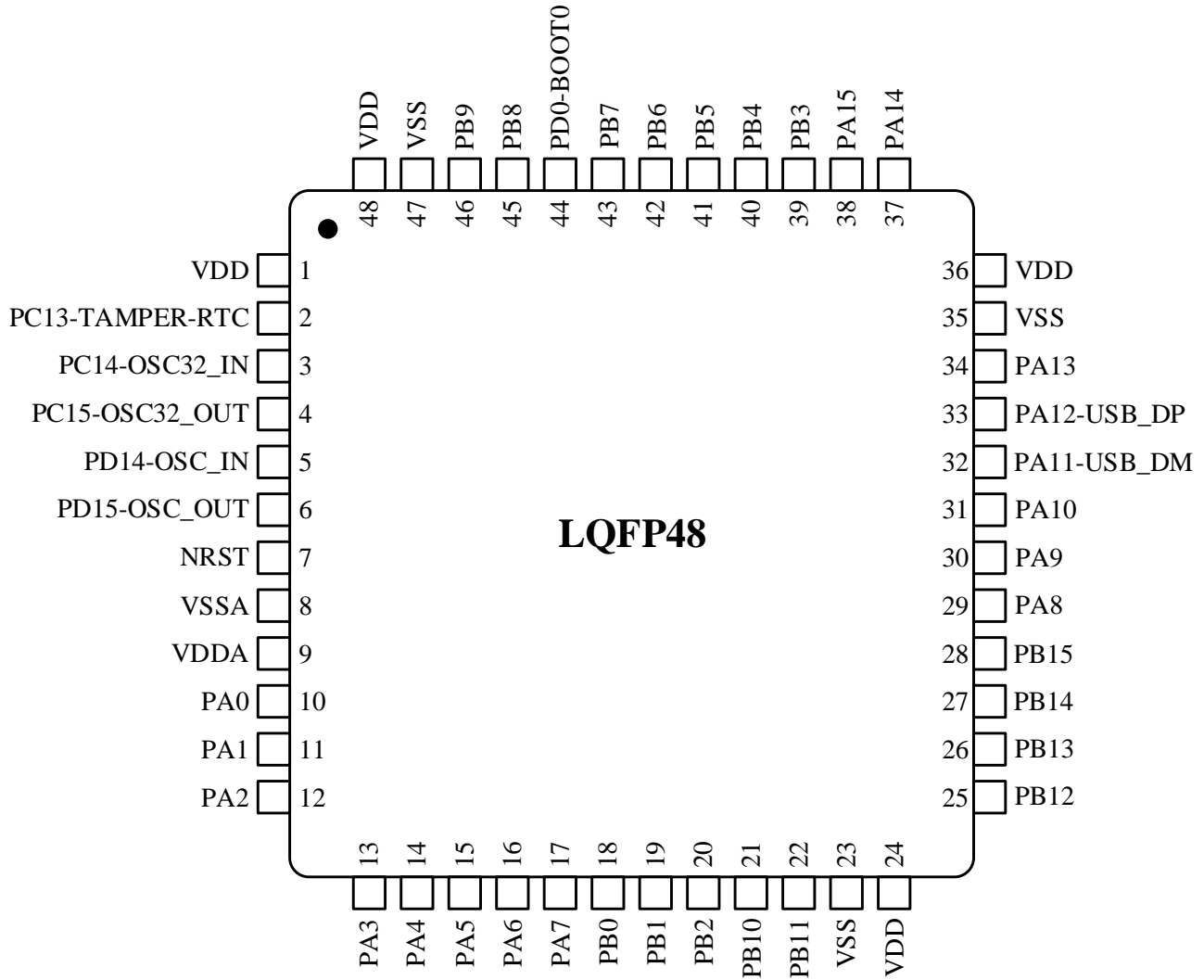


3.1.2 LQFP32 package

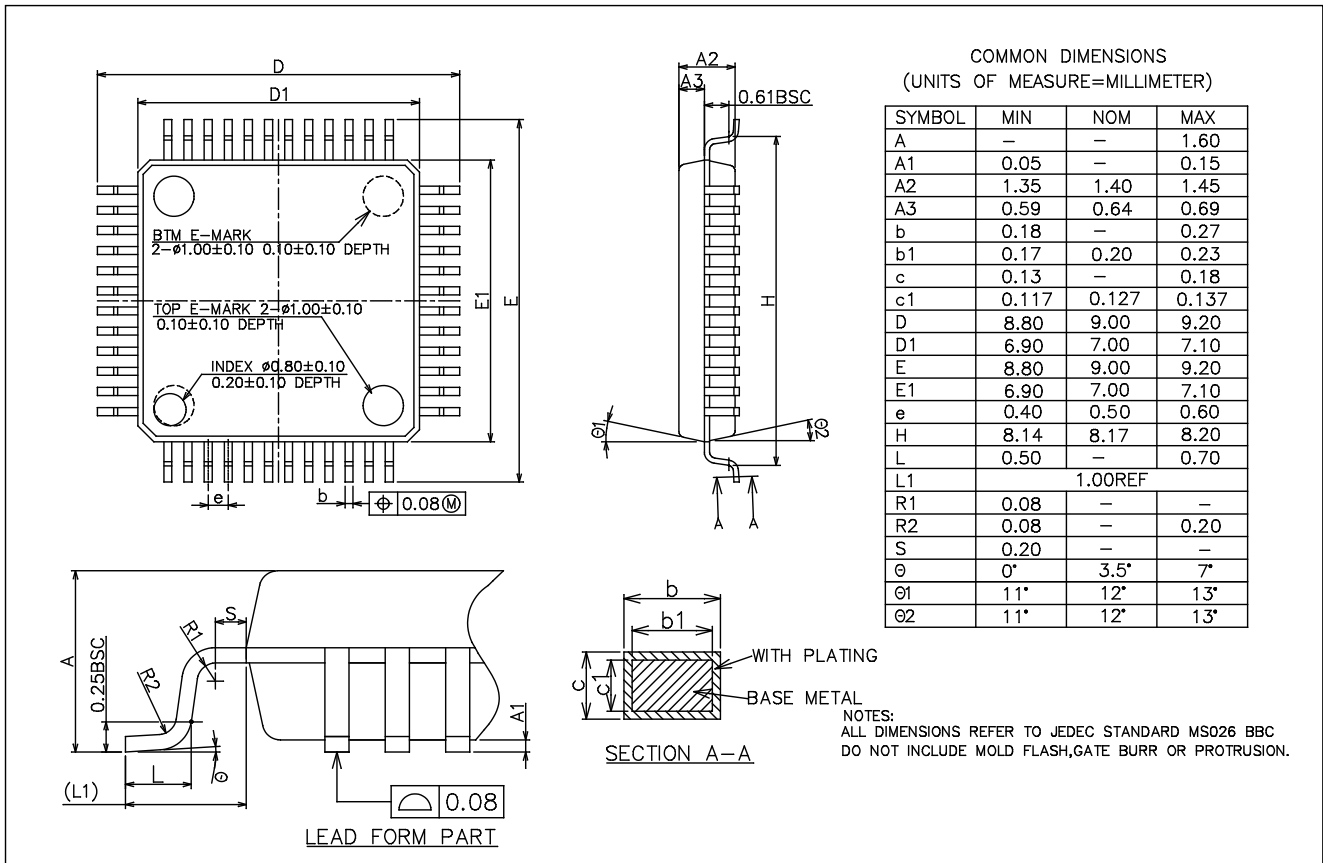


3.2 LQFP48

3.2.1 LQFP48 pinout

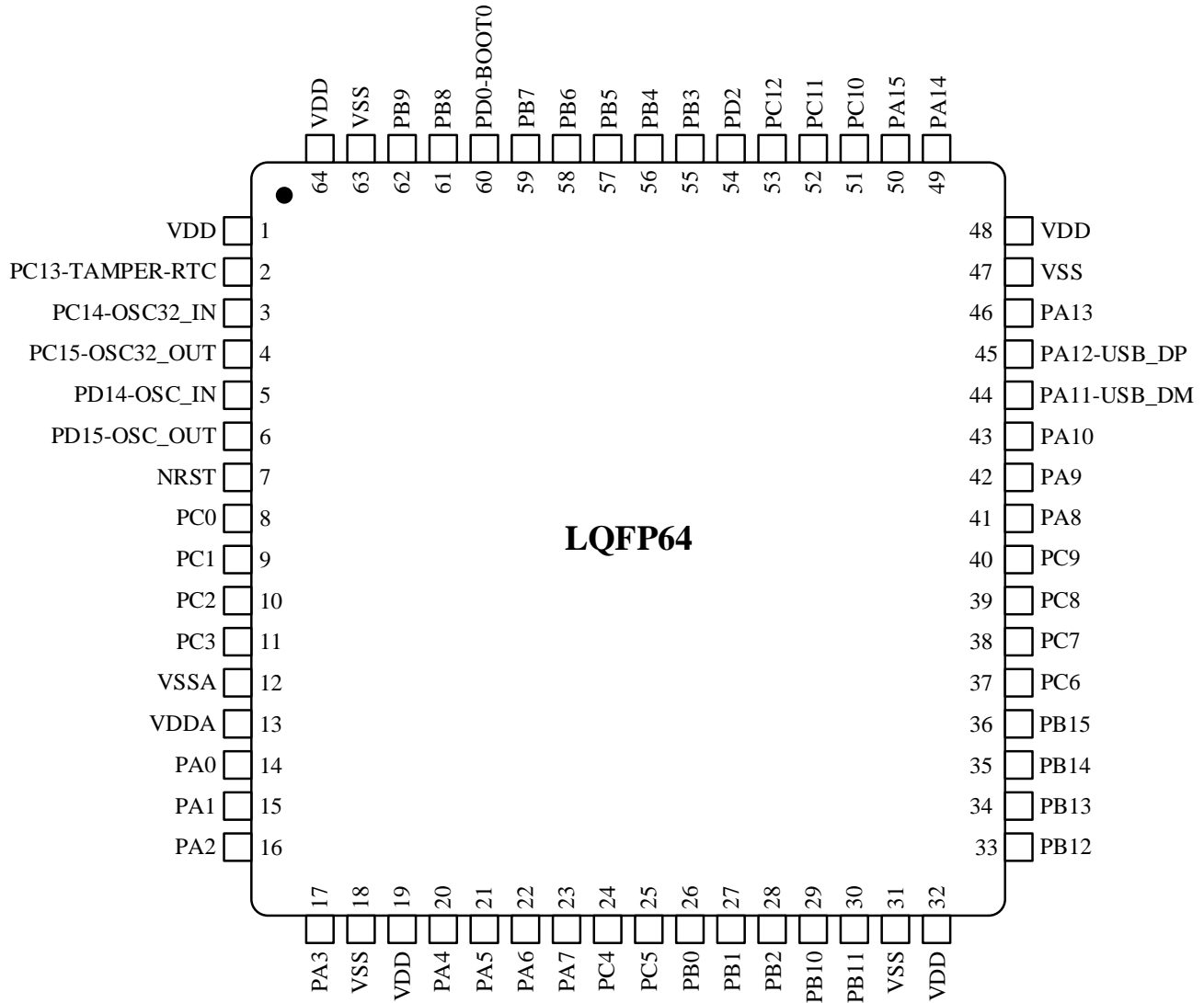


3.2.2 LQFP48 package

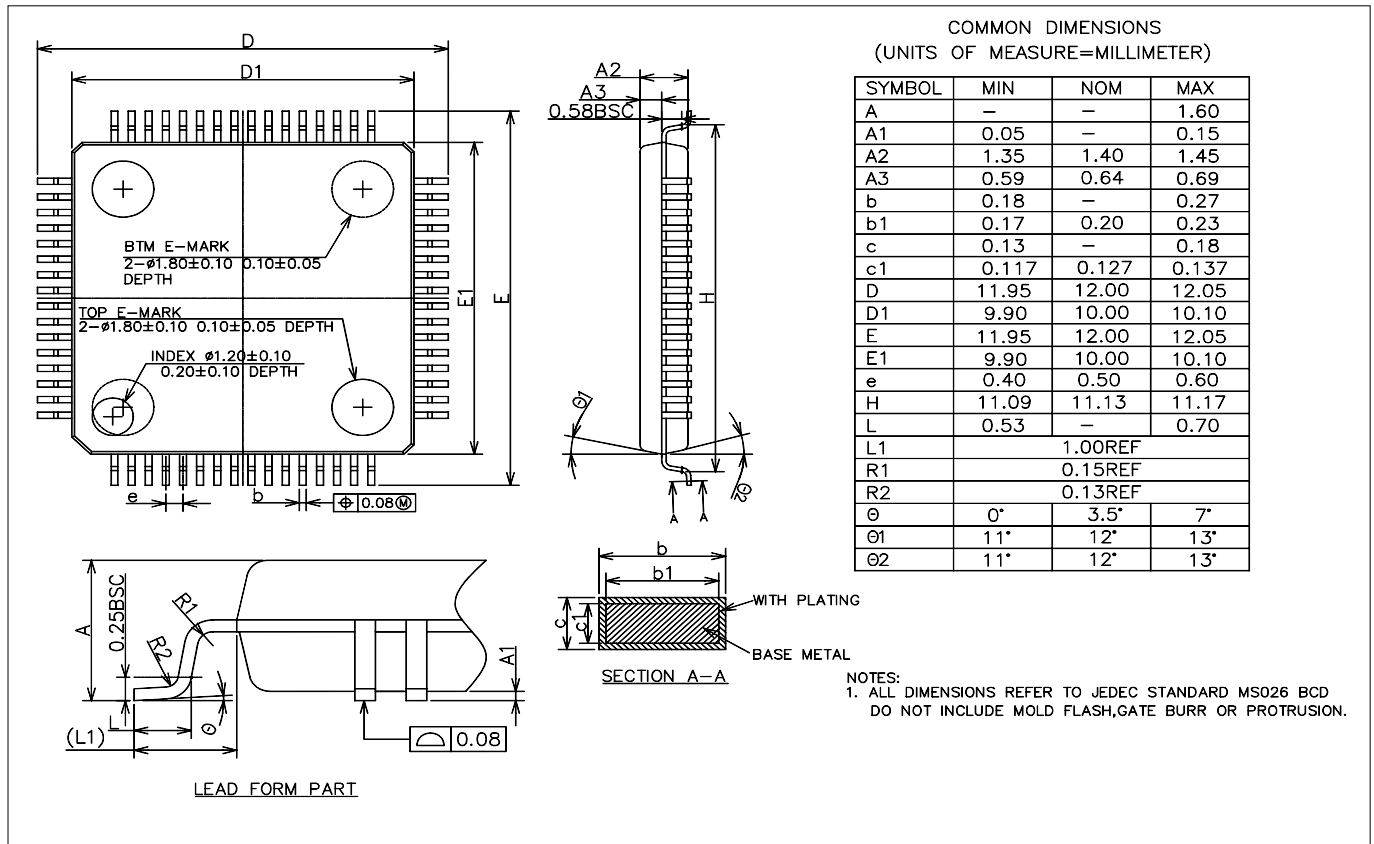


3.3 LQFP64 package

3.3.1 LQFP64 pinout



3.3.2 LQFP64 package



4 Version history

Version	Date	Note
V1.0	2020.6.12	Initial release
V1.2	2021.4.14	1. Updated product model resource configuration
V1.3	2022.7.6	1. Modify the description of low power

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