N32M01x Product Brief

N32M01x series based on Arm® Cortex®-M0, run up to 64MHz, supports fast FLASH execution of instructions, up to 64KB embedded Flash, 6KB SRAM, integrated analog interface, 1x12bit 1Msps ADC, 3x differential rail to rail operational amplifiers, 1x high-speed comparator, 1xNTC, 4x complementary electronic control TIM, integrated 3x UART, 2x I2C, 2x SPI communication interfaces, 1x 3-channel DMA. Integrated pre-driver 3P3N/6N, LDO, supports 40V/150V/600V platforms.

Key features

- **Core**
  - A 32-bit general-purpose microcontroller based on the Arm® Cortex®-M0 core, Single-cycle hardware multiply instruction
  - Run up to 64MHz
- **Encrypted memory**
  - Up to 64KByte embedded Flash memory, data 100,000 cycling and 10 years of data retention
  - SRAM of 6KB, STOP modes can be configured as retention
- **Low-power management**
  - Run mode: all peripherals configurable
  - STOP mode: TIM6, IWDG, UART3, COMP configurable operation, SRAM retention, all IO retention
- **Clock**
  - HSI_64M: Internal high-speed RC OSC 64MHz
  - LSI: Internal low-speed RC OSC 32KHz
  - MCO: Support 1-way clock output, configurable SYSCLK, HSI, and LSI clock output.
- **Reset**
  - Support power-on / power-off / external pin reset
  - Support watchdog reset, Support software reset
- **Communication interface**
  - 3x UART, data rate up to 4Mbps, supports asynchronous mode, multiprocessor communication mode, single-wire half-duplex mode, hardware 485 mode, UART3 supports low-power wake-up.
  - 2x SPI, up to 16 MHz
  - 2x I2C, up to 1 MHz, configurable master/slave mode
- **1 x DMA, 3-channel, channel source address and destination address can be arbitrarily configurable**
- **Accelerator**
  - Supports 32-bit signed/unsigned dividers
  - Supports 32-bit unsigned root opening

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- **Analog interface**
  - 1 x 12bit 1Msps ADC, up to 11 external single-ended input channels
  - 3x rail to rail differential operational amplifiers, built-in bias 1.8V, 1/2 VDDA, 1/4 VDDA, built-in maximum 32x programmable gain amplifier
  - 1x high-speed analog comparator with built-in 256 level adjustable comparison benchmark
  - Support internal NTC
  - Internal independent reference voltage reference source
  - Internal integrated voltage inspection unit
- **Supports up to 29 GPIOs that support reuse functionality**
- **Timer counter**
  - 1x 16-bit advanced timer counters, support input capture, complementary output, each timer supports 7 independent channels. 4 channels support 8 complementary PWM outputs
  - 1x 16-bit general purpose timer counters, 4 independent channels, supports input capture/output compare/PWM output
  - 1x 32-bit general purpose timer counters, 3 independent channels, supports input capture/output compare/PWM output
  - 1x 32-bit basic timer counters, supports low-power wake-up.
  - 1x 24-bit SysTick
  - 1x 14-bit independent watchdog (IWDG)
- **Programming Mode**
  - Support SWD online debugging interface
  - Support UART Bootloader
- **Security features**
  - Support write protection (WRP)
  - Support multiple read protection (RDP) levels (L0/L1/L2)
- **96-bit UID and 128-bit UCID**
- **Working conditions**
  - Operating voltage Range: 2.0V~5.5V
  - Operating Temperature Range: -40℃~105℃
- **Features of Integrated Pre-driver Module**
  - N32M012E8P7: 3P3N driver with up to 40V support, compatible with 5V LDO
  - N32M016H8Q7: 6N driver with up to 150V support, compatible with 5V LDO
  - N32M018C8L7: 6N driver with up to 600V support, compatible with 5V LDO
- **Package**
  - SSOP24 (8.65 x 3.9 mm)
  - QFN40 (5 x 5 mm)
  - LQFP48 (7 x 7 mm)

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1. Ordering Information

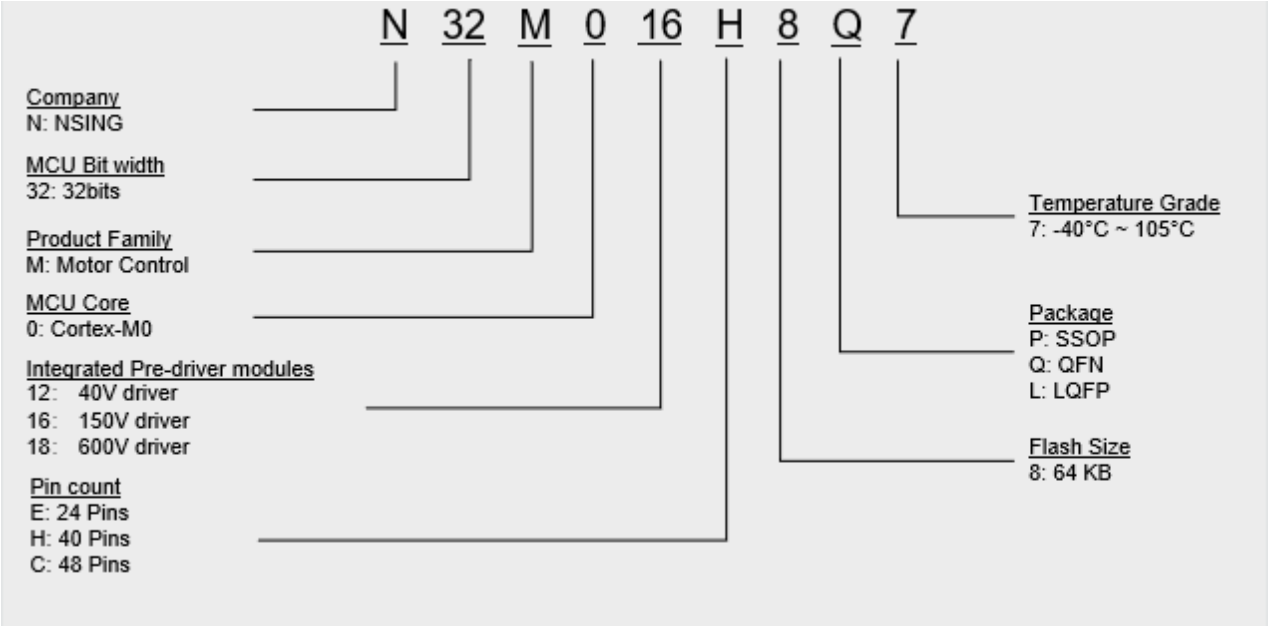

Table 1-1 N32M01x series ordering code information

Order Code [1]	Package	Package Size	Packaging [2]	SPQ [3]	Operating Temp
N32M012E8P7	**SSPQ24**	**8.65 mm x 3.90 mm**	**Tube**	**50**	**-40°C to 105°C**
N32M016H8Q7	**QFN40**	**5.00 mm x 5.00 mm**	**Tray**	**490**	**-40°C to 105°C**
N32M018C8L7	**LQFP48**	**7.00 mm x 7.00 mm**	**Tray**	**250**	**-40°C to 105°C**

1. For the latest detailed ordering information, please refer to the selection manual.
2. This packaging is the basic packaging. If you have any other requirements, please contact NSING
3. Minimum packaging quantity

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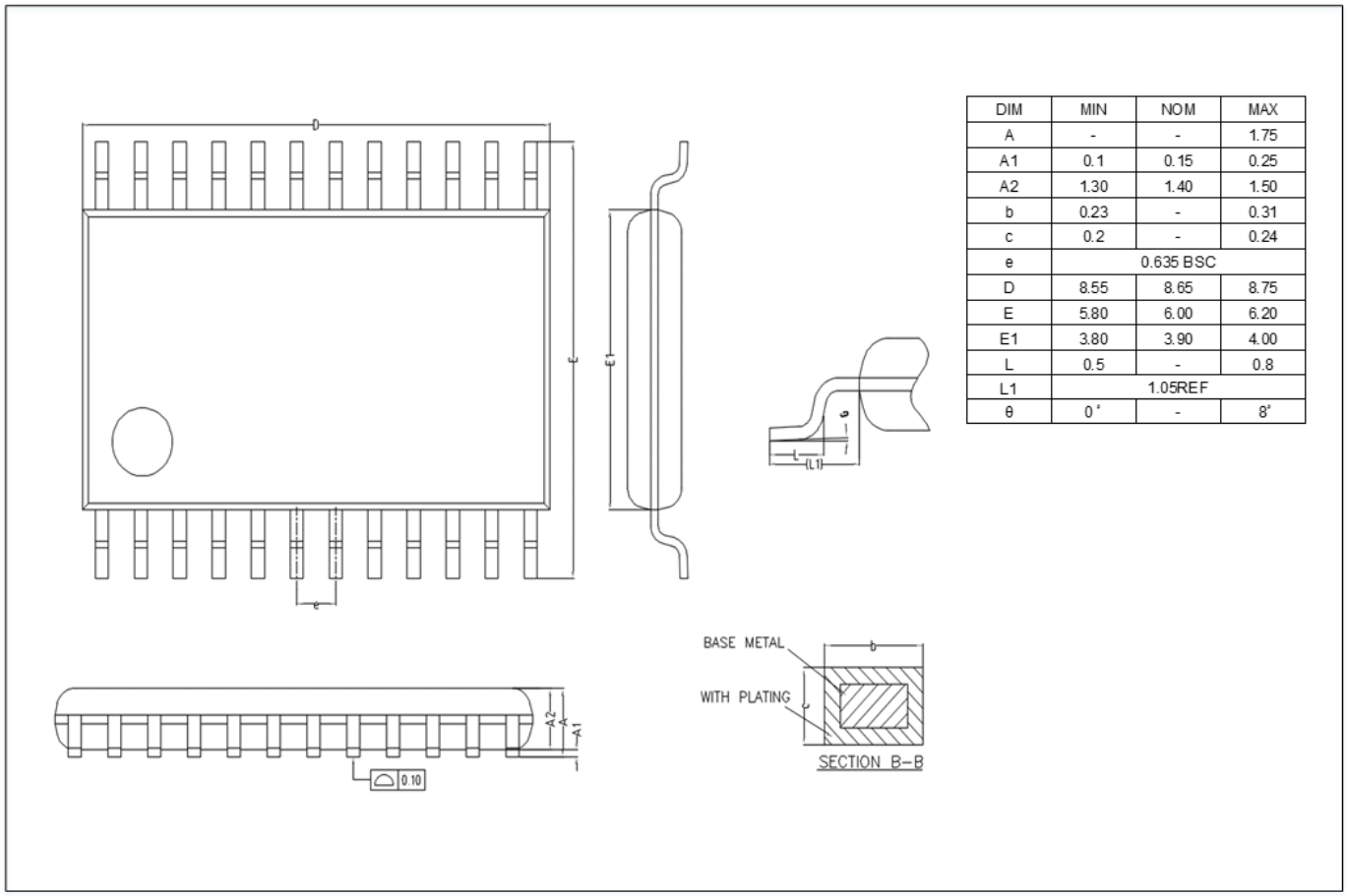
2. Packaging

2.1 SSOP24 Package Size (8.65 x 3.9 mm)



DIM	MIN	NOM	MAX
A	-	-	1.75
A1	0.1	0.15	0.25
A2	1.30	1.40	1.50
b	0.23	-	0.31
c	0.2	-	0.24
e		0.635 BSC	
D	8.55	8.65	8.75
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
L	0.5	-	0.8
L1		1.05REF	
θ	0°	-	8°

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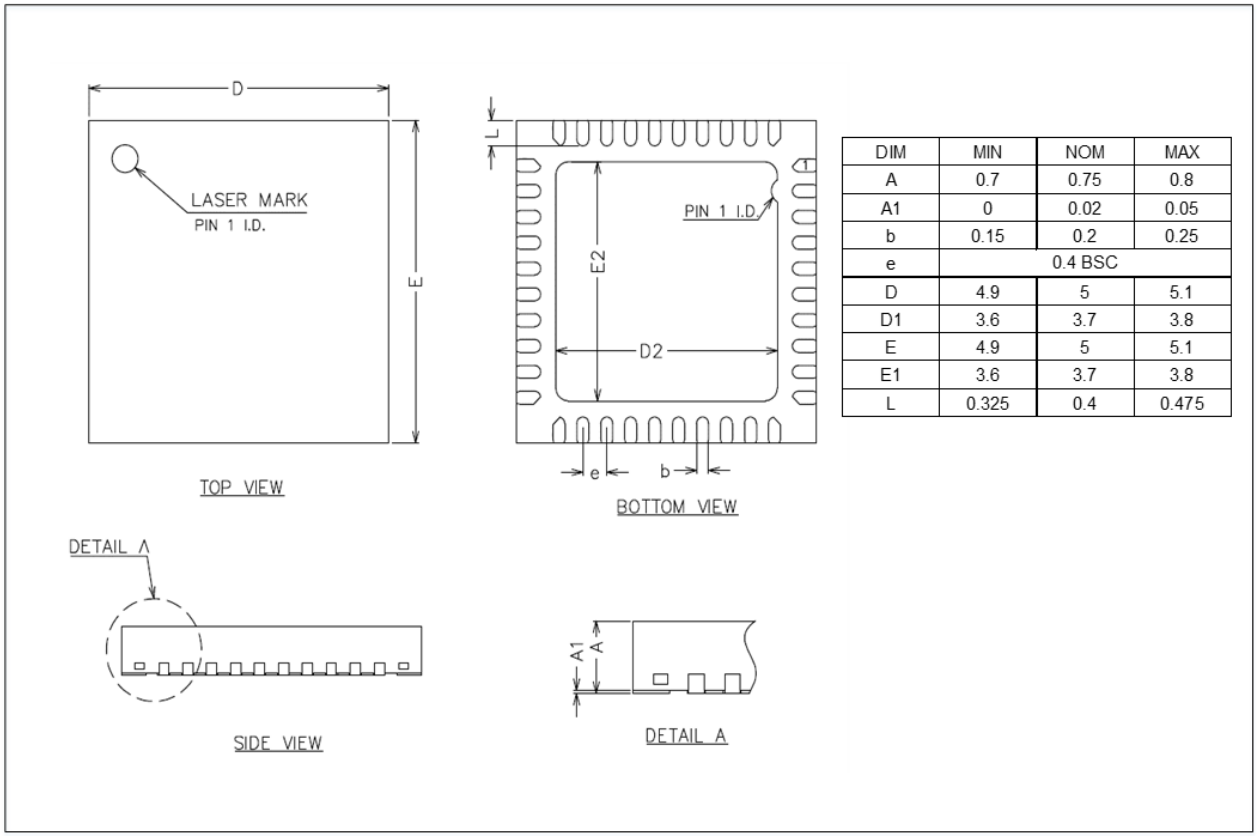
2.2 QFN40 (5x5mm) Package Size



DIM	MIN	NOM	MAX
A	0.7	0.75	0.8
A1	0	0.02	0.05
b	0.15	0.2	0.25
e		0.4 BSC	
D	4.9	5	5.1
D1	3.6	3.7	3.8
E	4.9	5	5.1
E1	3.6	3.7	3.8
L	0.325	0.4	0.475

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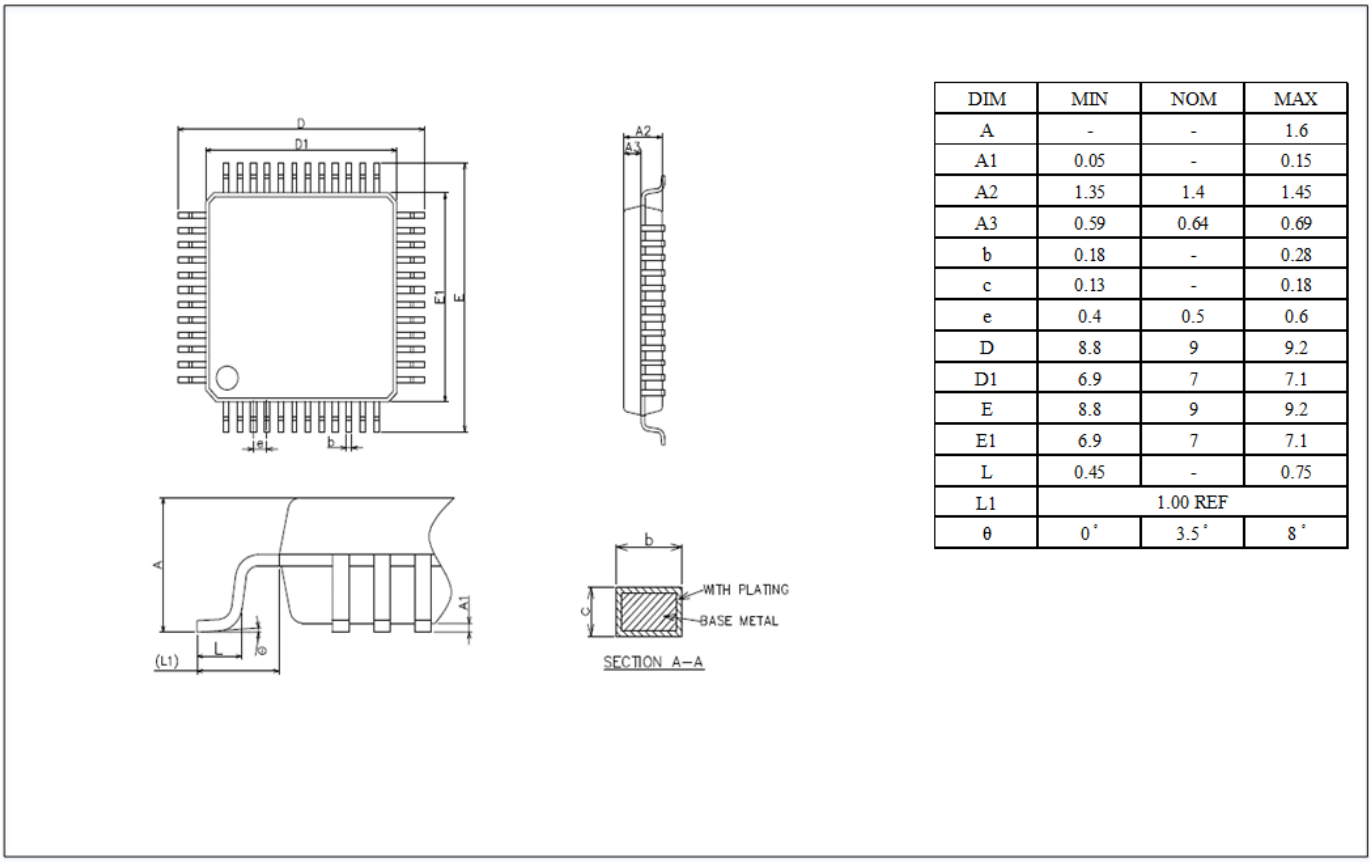
2.3 LQFP48 (7 x 7 mm)



DIM	MIN	NOM	MAX
A	-	-	1.6
A1	0.05	-	0.15
A2	1.35	1.4	1.45
A3	0.59	0.64	0.69
b	0.18	-	0.28
c	0.13	-	0.18
e	0.4	0.5	0.6
D	8.8	9	9.2
D1	6.9	7	7.1
E	8.8	9	9.2
E1	6.9	7	7.1
L	0.45	-	0.75
L1	1.00 REF		
θ	0°	3.5°	8°

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3. Label Marking

Fig 3.1: LQFP/QFN label marking

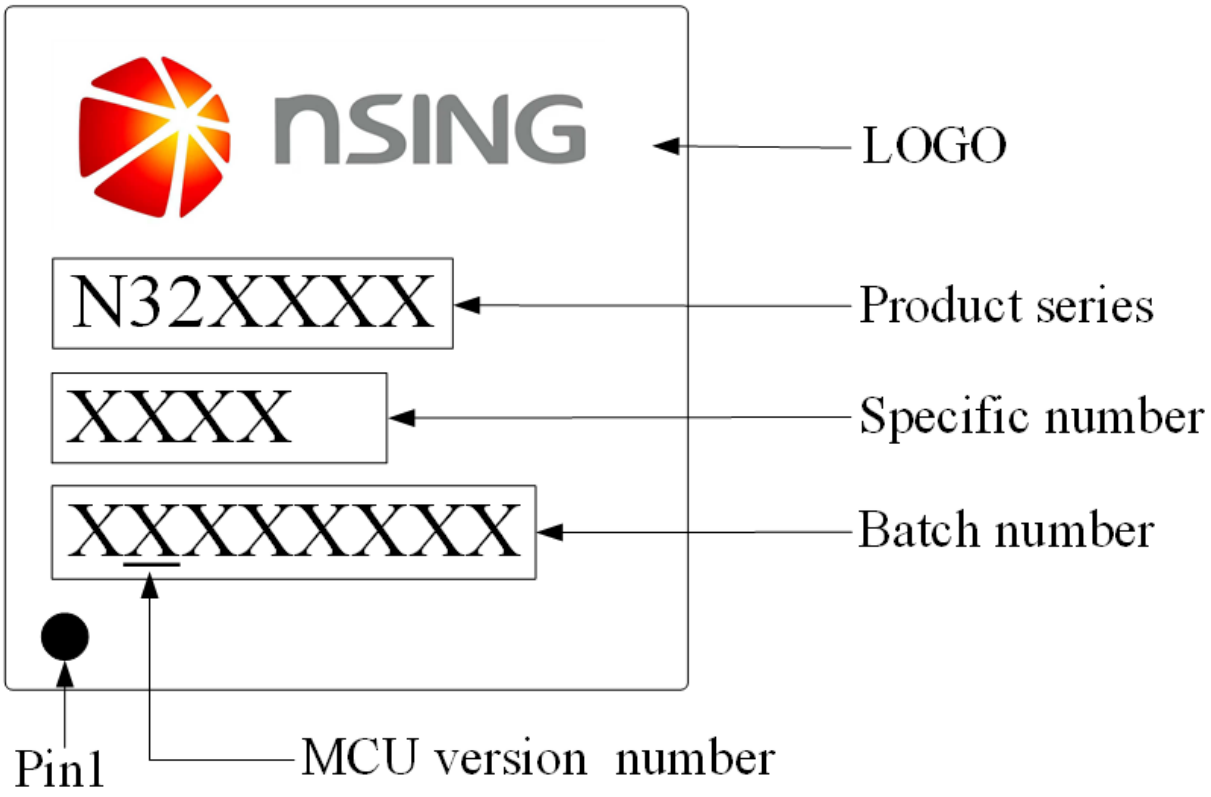
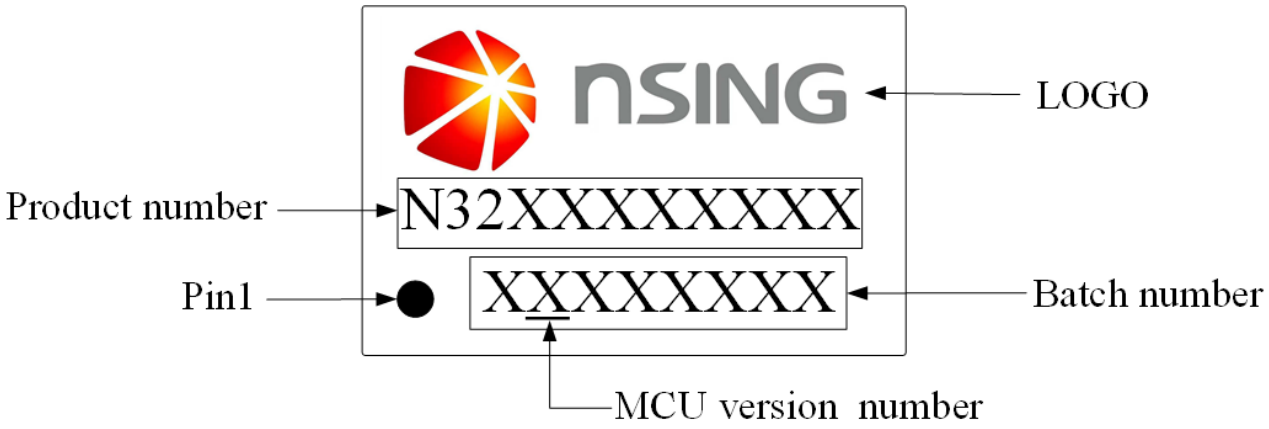


Fig 3.2: SSOP24 Label Marking



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4. Version history

Date	Version	Modify
V1.0.0	2025.10.22	Initial version

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