

N32G003x5

Product Brief

N32G003 series uses a 32-bit ARM Cortex®-M0 core, with a maximum operating frequency of 48MHz. It integrates up to 29.5KB of encrypted Flash, 3KB SRAM, multiple communication bus interfaces like UART, I2C, SPI, and analog interfaces such as 12-bit ADC and COMP.

Key Features

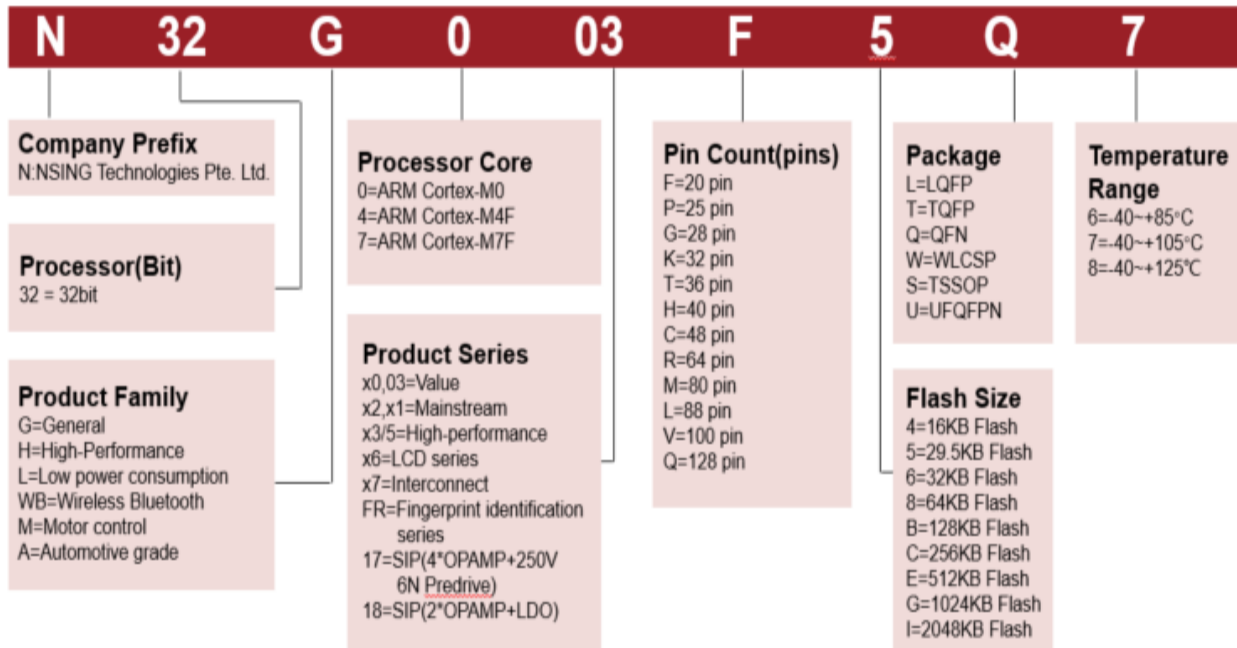
- CPU core
 - A 32-bit ARM Cortex®-M0 core, supporting single-cycle hardware multiply instruction
 - Maximum frequency of 48MHz
- Memories
 - Up to 29.5KByte on-chip Flash, 100,000 erase/write cycles and 10-year data retention
 - Up to 3KB on-chip SRAM
- Low power management
 - RUN mode: All peripherals are configurable
 - STOP mode: TIM6, IWDG can be configured, SRAM retained, and all IOs retained
 - PD mode: All power supply off, support NRST, PA1_WKUP0, PA2_WKUP1 wake-up
- Clock
 - HSI: High-speed internal RC 48MHz/40MHz (optional)
 - LSI: Low-speed internal RC 32KHz
 - MCO: Supports 1-channel clock output, configurable as system clock, HSI or LSI divisional output
- Reset
 - Supports power-on/power-down/external pin reset
 - Supports programmable low voltage detection and reset
 - Supports watchdog reset, software reset
- Communication interfaces
 - 2x UART, which support asynchronous mode, multiprocessor communication mode, single-wire half-duplex mode
 - 1x SPI interface with speed up to 12MHz
 - 1x I2C interface (Master/Slave) with speed up to 1MHz
- Analog interfaces

- 1x 12-bit high-speed ADC with 1Msps, up to 9 external single-ended input channels and 1 internal channel connected to the 1.2V reference
- 1x high-speed analog comparator, whose positive terminal input supports four adjustable dropout voltages of 0mV/100mV/200mV/ 300mV
- GPIO
 - Up to 18 GPIOs that support multiplexed functions
- Beeper
 - Supports complementary output
- Timers
 - 1x 16-bit advanced timer, supports input capture, output compare. Each timer has 4 independent channels, 3 of which support 6-channel complementary PWM output
 - 1x 16-bit general purpose timer, each timer has 2 independent channels, which supports input capture/output compare/PWM output
 - 1x 16-bit basic timer, supports STOP, wake-up, low-power mode
 - 1x 24-bit SysTick timer
 - 1x 12-bit Independent watchdog (IWDG)
- Programming methods
 - Support SWD online debugging interface
- Security features
 - CRC16 computation
 - Support multiple levels (L0/L1/L2) of read protection (RDP)
- 96-bit UID and 128-bit UCID
- Operating conditions
 - Operating voltage range: 2V~5.5V
 - Operating temperature range: -40°C~105°C
 - ESD: ±4KV (HBM model), ±1KV (CDM model)
- Packages
 - QFN20 (3mm x 3mm)
 - TSSOP20 (6.5mm x 4.4mm)
- Ordering information

Reference	Part Number
N32G003x5	N32G003F5S7, N32G003F5Q7
N32G003x4	N32G003F4S7, N32G003F4Q7

1 Naming Convention

Figure 1-1 N32G003 Series Part Number Information



2 Product Configurations

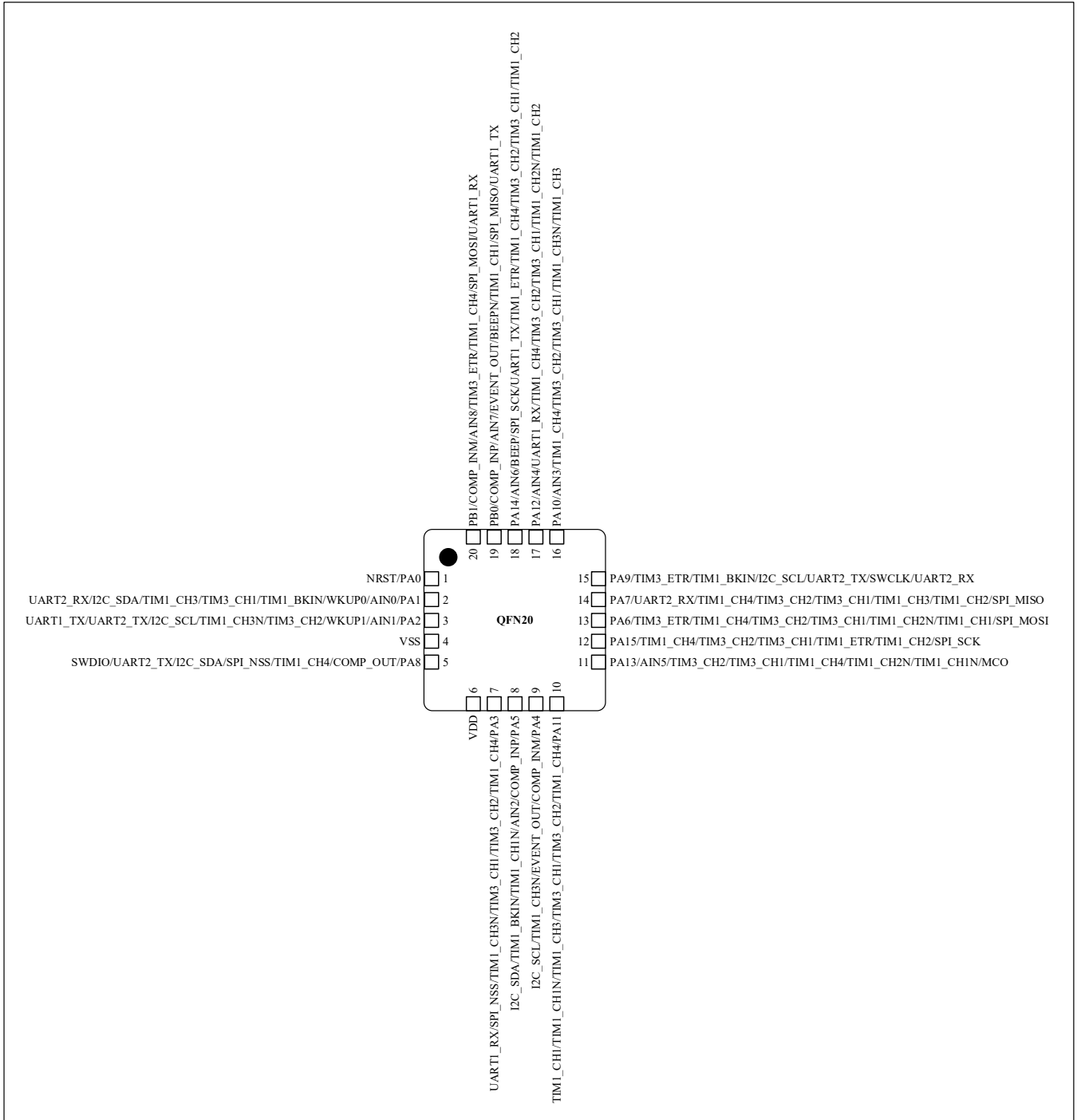
Table 2-1 N32G003 Series Resource Configuration

Device	N32G003F5Q7/F4Q7	N32G003F5S7/F4S7
Flash capacity (KB)	29.5/16	29.5/16
SRAM capacity (KB)	3	3
CPU frequency	ARM Cortex [®] -M0 @48MHz	
Operating conditions	2~5.5V/-40~105°C	
Timers	General	1
	Advanced	1
	Basic	1
Communication interfaces	SPI	1
	I2C	1
	UART	2
GPIO	18	
12bit ADC	1	1
ADC channels	9 Channel	9 Channel
COMP	1	1
Beeper	1	1
Algorithm support	CRC16	CRC16
Security protection	Read protection (RDP)	
Packages	QFN20	TSSOP20

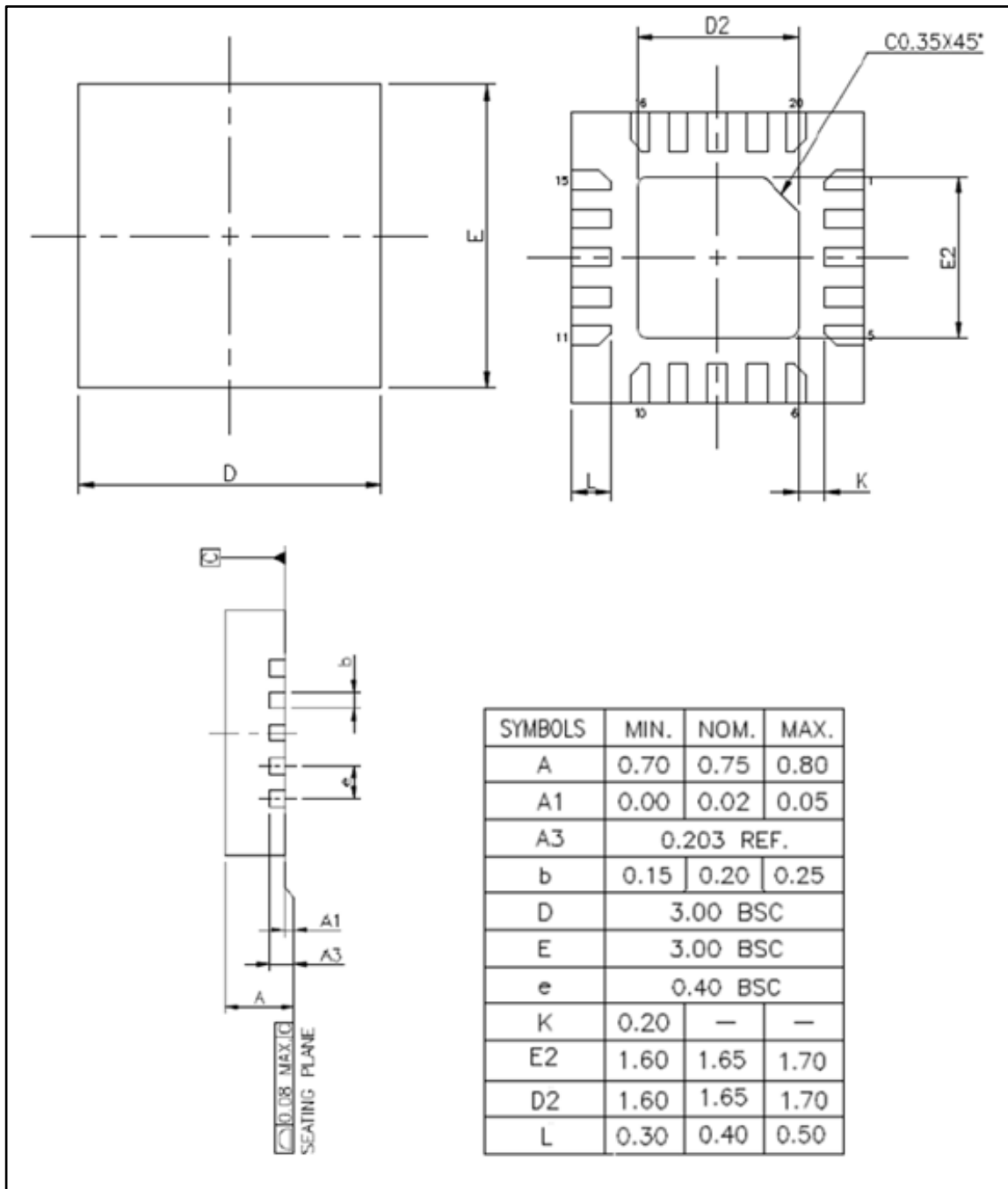
3 Packages

3.1 QFN20 Package

3.1.1 QFN20 Pin Assignment

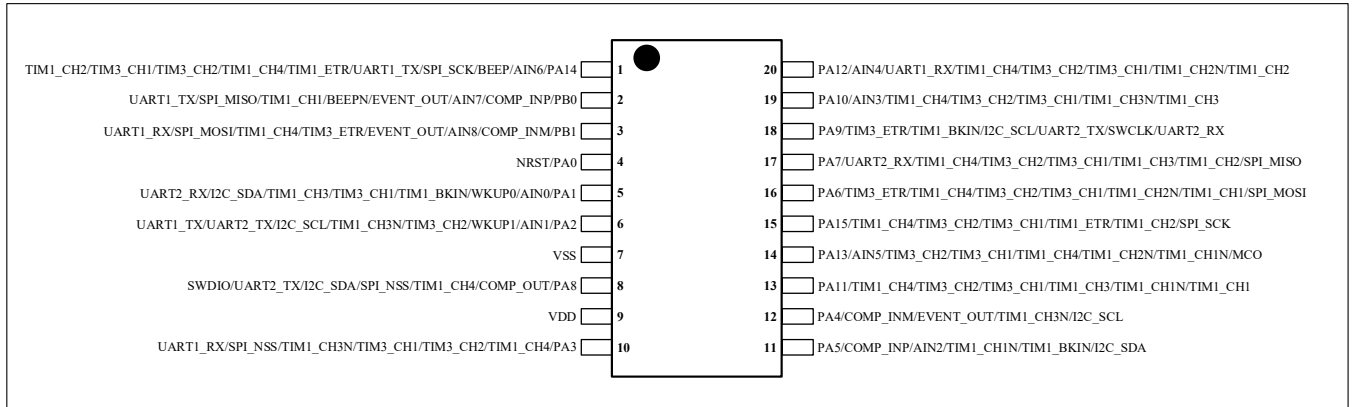


3.1.2 QFN20 (3mm x 3mm) Package Dimensions

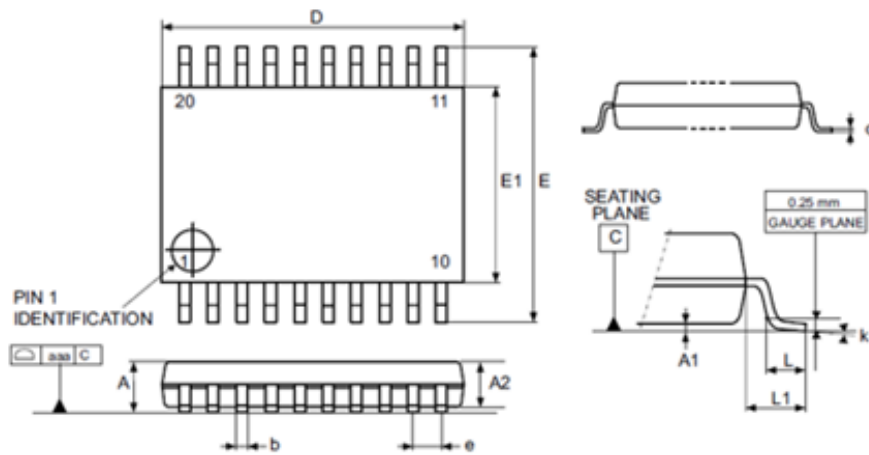


3.2 TSSOP20 Package

3.2.1 TSSOP20 Pin Assignment



3.2.2 TSSOP20 (6.5mm x 4.4mm) Package Dimensions



Symbol	millimeters			inches ⁽¹⁾		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	-	1.200	-	-	0.0472
A1	0.050	-	0.150	0.0020	-	0.0059
A2	0.800	1.000	1.050	0.0315	0.0394	0.0413
b	0.190	-	0.300	0.0075	-	0.0118
c	0.090	-	0.200	0.0035	-	0.0079
D ⁽²⁾	6.400	6.500	6.600	0.2520	0.2559	0.2598
E	6.200	6.400	6.600	0.2441	0.2520	0.2598
E1 ⁽³⁾	4.300	4.400	4.500	0.1693	0.1732	0.1772
e	-	0.650	-	-	0.0256	-
L	0.450	0.600	0.750	0.0177	0.0236	0.0295
L1	-	1.000	-	-	0.0394	-
k	0°	-	8°	0°	-	8°
aaa	-	-	0.100	-	-	0.0039

1. Values in inches are converted from mm and rounded to four decimal digits.
2. Dimension "D" does not include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.15mm per side.
3. Dimension "E1" does not include interlead Flash or protrusions. Interlead Flash or protrusions shall not exceed 0.25mm per side.

4 Version History

Version	Date	Changes
V1.0.0	2022.9.1	Initial release
V1.1.0	2023.7.14	1) Added N32G003F4S7\N32G003F4Q7 model chips 2) Modified pinout diagram: PA9 adds UART2_RX function

5 Disclaimer

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