

LE5010/5110 Brief

Confidential

Date

2019-05-20

Revision history

Revision	Date	Changes	Author
V1.0	2019-05-02	Initial Release	jxjin
V1.1	2020-04-07	Update the SOP16/QFN48 Pinout	jxjin
V1.2	2021-03-03	Update the Ordering Information	Jxjin
V1.3	2021-09-15	Added the rules of product naming	Gbzhang
V1.4	2022-01-19	Added SOP24 package	Gbzhang

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1.1 Key Features

- ◆ Compiles with Bluetooth 5.0 / 5.1
 - Support 125Kbps/500Kbps/1Mbps/2Mbps
 - Rx Sensitivity: -99.7dBm @1Mbps
-96dBm @2Mbps
-105dBm @125kbps
 - Tx Power: +12dBm
 - Link Gain: 117dB @125kbps
 - Support Single-Ended Antenna Output
- ◆ Bluetooth MESH
 - Support Bluetooth SIG Mesh
 - Support Private MESH
- ◆ MCU Core
 - 32-bit CPU
 - Frequency up to 64MHz
 - 64 Kbytes of SRAM Memory
 - 512 Kbytes of Flash Memory
 - Serial Wire Debug Support
- ◆ System Power Consumption
 - RX Mode: 4.5mA @3.3V
 - TX Mode: 4.3mA @3.3V 0dBm
 - DeepSleep Mode: 1.1uA (RTC+GPIO Wakeup)
 - ShutDown Mode: 700nA (GPIO Wakeup)
- ◆ Power/Reset
 - Supply Voltage range: 1.8V ~3.6V
 - POR,BOR,LVD
- ◆ Clock
 - 16MHz crystal
 - 24MHz RC oscillator
 - 32.768KHz crystal
 - 32KHz RC oscillator
- ◆ System Peripheral
 - Direct Memory access(DMA): Up to 8 Channel
 - Independent and System Window watchdog timers(IWDT/WWDT)
 - Peripheral interconnection (PIS)

- SysTick Timer
- ◆ Security and computing acceleration Unit
 - 256-bit Elliptic Curve Cryptography(ECC)
 - 256/192/128-bit Advanced Encryption Standard(AES)
 - 192/128/64-bit Triple Data Encryption Standard(T/DES)
 - True Random Number Generator(TRNG)
 - Calculator(CALC)
- ◆ 定时器
 - One 16-bit advanced-control timer for 7-channel PWM output(ADTIM), 3 complementary PWM with dead-time insertion
 - One 32-bit general-purpose timer for 4-channel PWM output(GPTIMA)
 - One 16-bit general-purpose timer for 4-channel PWM output(GPTIMB)
 - One 16-bit general-purpose timer for 3-channel PWM output(GPTIMC), 1 complementary PWM with dead-time insertion
 - One basic timer (BSTIM)
 - One low-power timer (LPTIM)
- ◆ Real-time clock (RTC)
 - High Precision HW temperature Compensation Support
- ◆ Analog to digital converter (ADC)
 - 12-bit 200 ksps SAR ADC
 - 9 External Channel Support
 - 3 Internal Channel Support
 - Temperature Sensor
 - 1/8,1/4,1/2,3/8 VDD33
 - Inside1.4V Reference Resources
- ◆ Communication interface
 - 2 x I²C Controllers at 100kHz,400khz or 1MHz
 - SMBus/PMBus Support
 - 2 x SPI Controllers
 - TI Mode Support
 - 3 x UARTs up to 4 Mbps
 - ISO7816/LIN/IrDA Support
- ◆ Audio Interface
 - 2 x PDM Interface, Digital MIC Support
 - I2S/PCM master/slave interface
- ◆ General Purpose I/O
 - Up to 34 General Purpose I/Os

1.2 Block Diagram

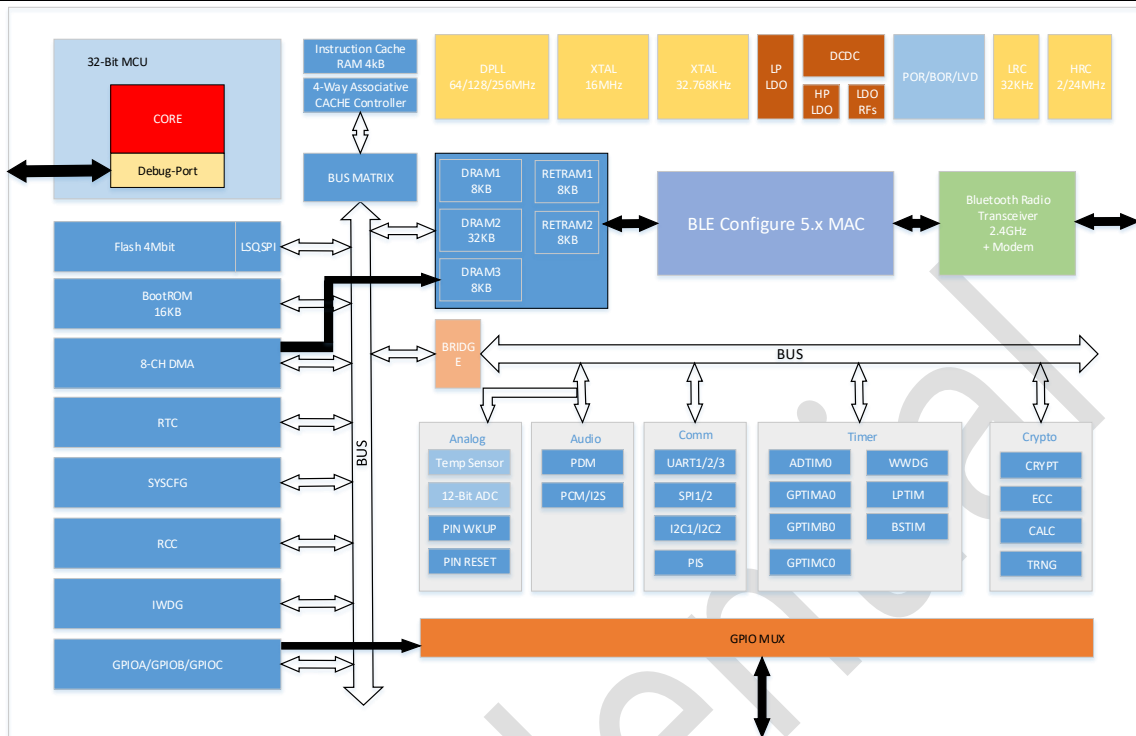


Figure 1-1 Block Diagram

1.3 Pinout and pin descriptions

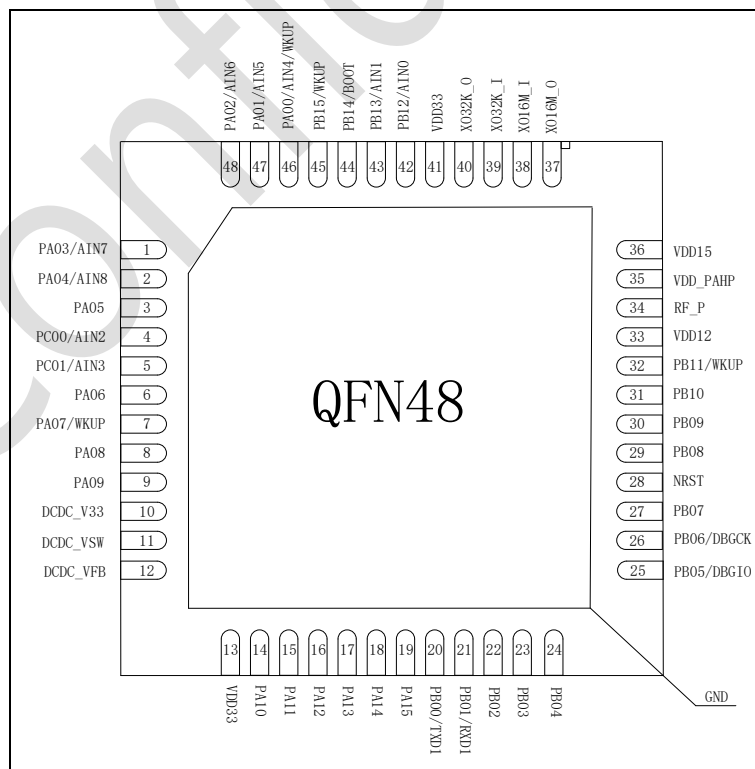


Figure 1-2 QFN48 Package Pinout(Top view)

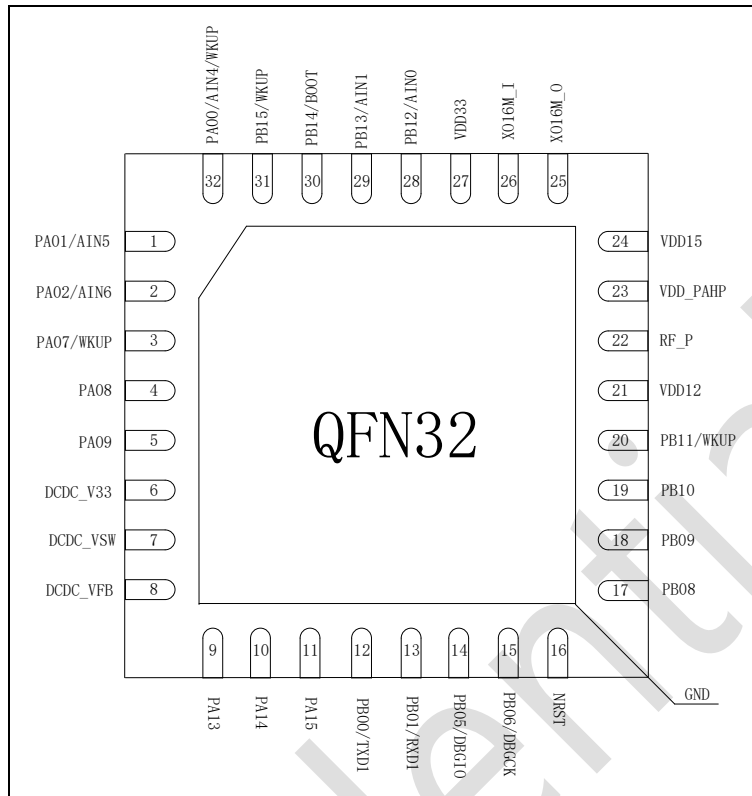


Figure 1-2 QFN32 Package Pinout(Top view)

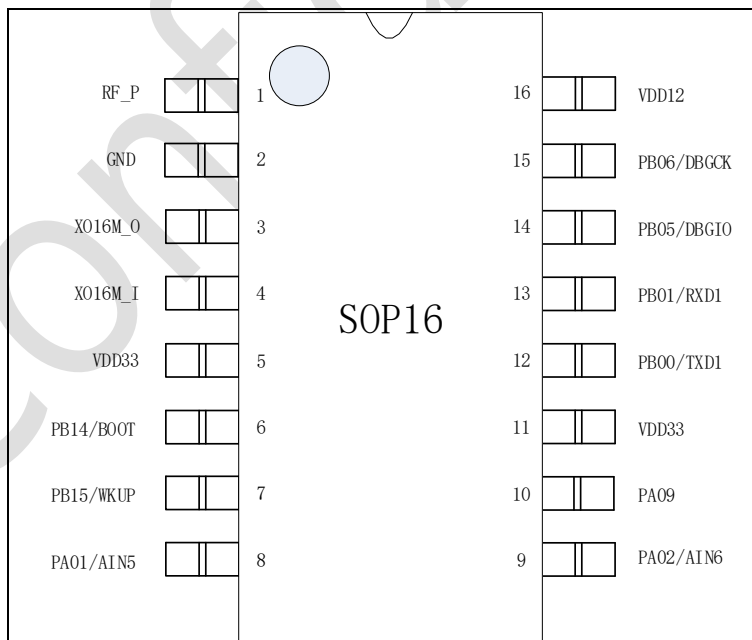


Figure 1-4 SOP16 Package Pinout(Top view)

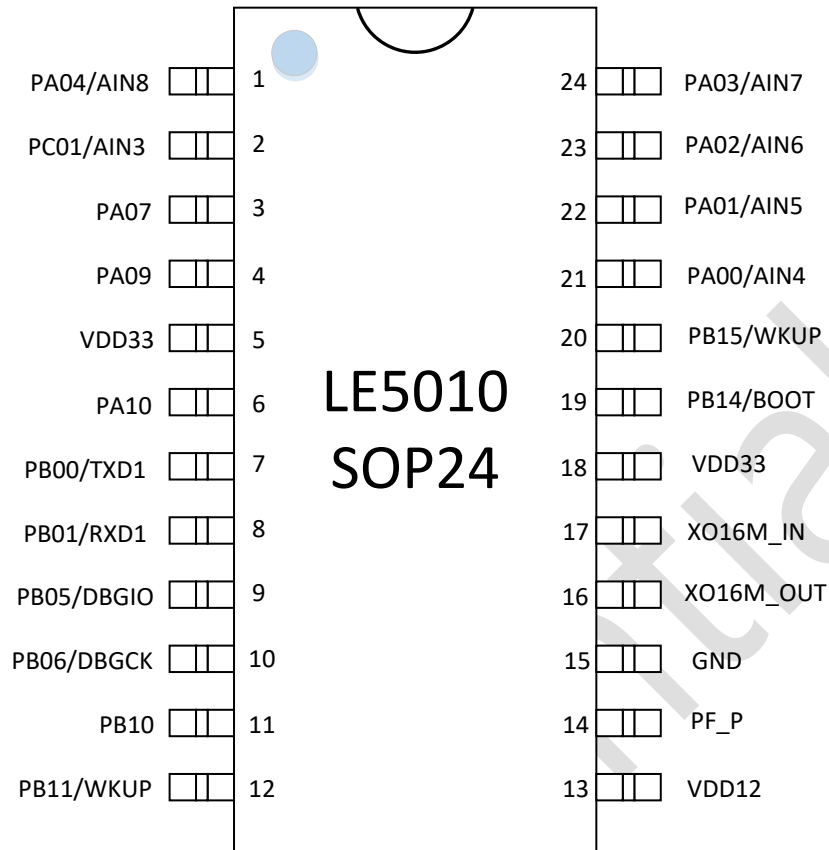


图 1-5 SOP24

1.3.1 Port Definition

Pin Number	Port Name	Descriptions
1	PA03	GPIO/ADC Channel 7
2	PA04	GPIO/ADC Channel 8
3	PA05	GPIO
4	PC00	GPIO/ADC Channel 2
5	PC01	GPIO/ADC Channel 3
6	PA06	GPIO
7	PA07	GPIO/Wakeup
8	PA08	GPIO
9	PA09	GPIO
10	DCDC_V33	Buck 3.3V Power Supply
11	DCDC_VSW	Buck SW Output
12	DCDC_VFB	Buck FeedBack
13	VDD33	3.3V Power Supply
14	PA10	GPIO
15	PA11	GPIO

16	PA12	GPIO
17	PA13	GPIO
18	PA14	GPIO
19	PA15	GPIO
20	PB00	GPIO/UART1_TXD
21	PB01	GPIO/UART1_RXD
22	PB02	GPIO
23	PB03	GPIO
24	PB04	GPIO
25	PB05	GPIO/SWD_IO
26	PB06	GPIO/SWD_CK
27	PB07	GPIO
28	NRST	Reset
29	PB08	GPIO
30	PB09	GPIO
31	PB10	GPIO
32	PB11	GPIO/Wakeup
33	VDD12	1.2V Power(O)
34	RF_P	RF Pin
35	VDD_PAHP	High-Power PA Power output
36	VDD15	1.5V Power Supply
37	XO16M_O	16M Crystal output
38	XO16M_I	16M Crystal input
39	XO32K_I	32.768K Crystal input
40	XO32K_O	32.768K Crystal output
41	VDD33	3.3V Power Supply
42	PB12	GPIO/ADC Channel 0
43	PB13	GPIO/ADC Channel 1
44	PB14	GPIO/Boot
45	PB15	GPIO/Wakeup
46	PA00	GPIO/ADC Channel 4/Wakeup
47	PA01	GPIO/ADC Channel 5
48	PA02	GPIO/ADC Channel 6

Table 1-1 QFN48 Pin Definition

Pin Number	Port Name	Descriptions
1	PA01	GPIO/ADC Channel 5
2	PA02	GPIO/ADC Channel 6
3	PA07	GPIO/Wakeup
4	PA08	GPIO
5	PA09	GPIO
6	DCDC_V33	Buck 3.3V Power Supply
7	DCDC_VSW	Buck SW Output

8	DCDC_VFB	Buck FeedBack
9	PA13	GPIO
10	PA14	GPIO
11	PA15	GPIO
12	PB00	GPIO/UART1_TXD
13	PB01	GPIO/UART1_RXD
14	PB05	GPIO/SWD_IO
15	PB06	GPIO/SWD_CK
16	P_NRST	Reset
17	PB08	GPIO
18	PB09	GPIO
19	PB10	GPIO
20	PB11	GPIO/Wakeup
21	VDD12	1.2V Power Output
22	RFP	RF Pin
23	VDD_PAHP	High-Power PA Power output
24	VDD15	1.5V Power Supply
25	XO16M_O	16M Crystal output
26	XO16M_I	16M Crystal input
27	VDD33	3.3V Power Supply
28	PB12	GPIO/ADC Channel 0
29	PB13	GPIO/ADC Channel 1
30	PB14	GPIO/Boot
31	PB15	GPIO/Wakeup
32	PA00	GPIO/ADC Channel 4/Wakeup

Table 1-1 QFN32 Pin Definition

Pin Number	Port Name	Descriptions
1	RF_P	RF Pin
2	GND	Ground
3	XO16M_O	16M Crystal output
4	XO16M_I	16M Crystal input
5	VDD33	3.3V Power Supply
6	PB14	GPIO/Boot
7	PB15	GPIO/Wakeup
8	PA01	GPIO/ADC Channel 5
9	PA02	GPIO/ADC Channel6
10	PA09	GPIO
11	VDD33	3.3V Power Supply
12	PB00	GPIO/UART1_TXD
13	PB01	GPIO/UART1_RXD
14	PB05	GPIO/SWD_IO
15	PB06	GPIO/SWD_CK
16	VDD12	1.2V Power Output

Table 1-3 SOP16 Pin Definition

Pin Number	Port Name	Descriptions
1	PA04	GPIO/ADC 通道 8
2	PC01	GPIO/ADC 通道 3
3	PA07	GPIO
4	PA09	GPIO
5	VDD33	芯片 3.3V 电源
6	PA10	GPIO
7	PB00	GPIO/UART1_TXD
8	PB01	GPIO/UART1_RXD
9	PB05	GPIO (调试数据接口)
10	PB06	GPIO (调试时钟接口)
11	PB10	GPIO
12	PB11	GPIO/睡眠唤醒
13	VDD12	芯片 1.2V 电源
14	RF_P	射频引脚
15	GND	芯片地
16	XO16M_O	16M 晶振输出
17	XO16M_I	16M 晶振输入
18	VDD33	芯片 3.3V 电源
19	PB14	GPIO/BOOT 控制
20	PB15	GPIO/睡眠唤醒
21	PA00	GPIO/ADC 通道 4
22	PA01	GPIO/ADC 通道 5
23	PA02	GPIO/ADC 通道 6
24	PA03	GPIO/ADC 通道 7

Table 1-4 SOP24 Pin Definition

Appendix A Package Information

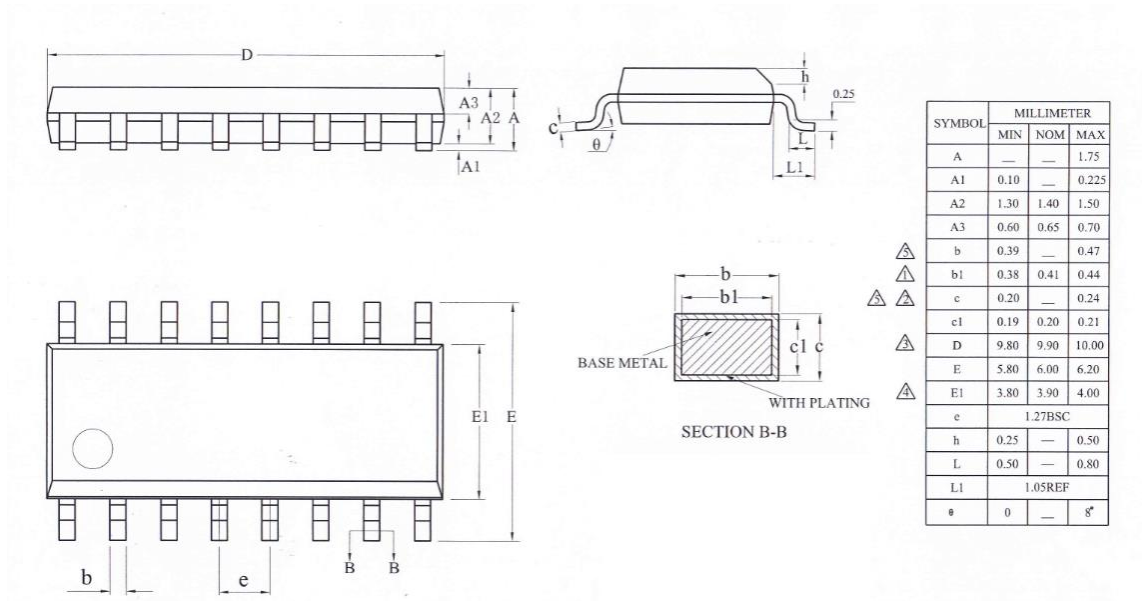


Figure 1-3 SOP16 package information

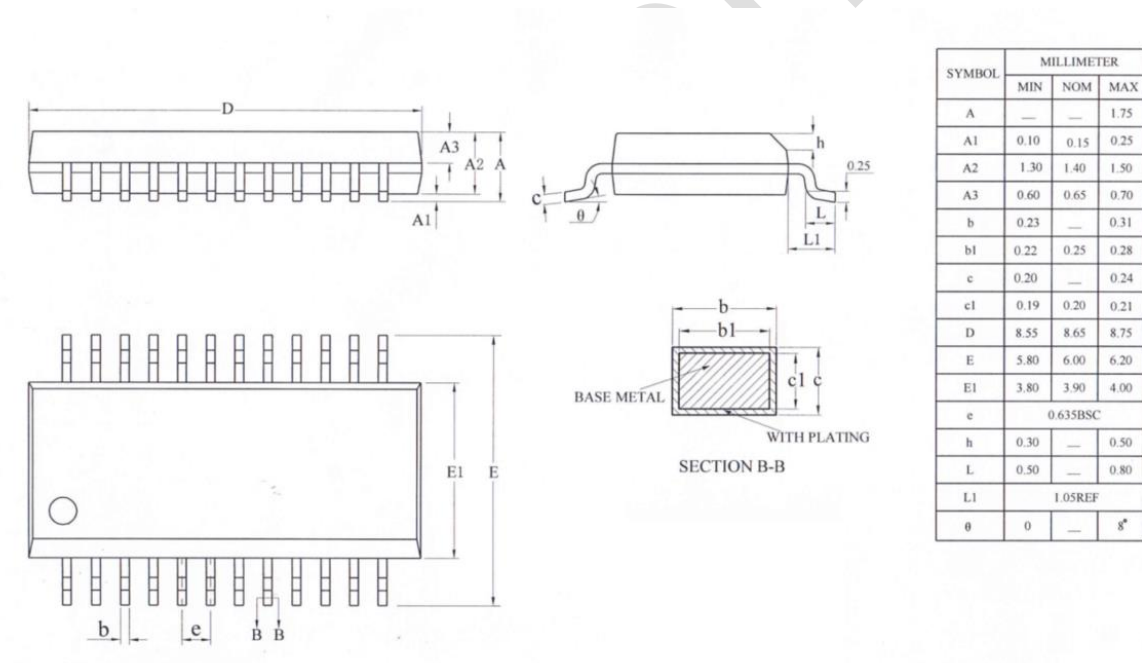


Figure 1-4 SOP24 package information

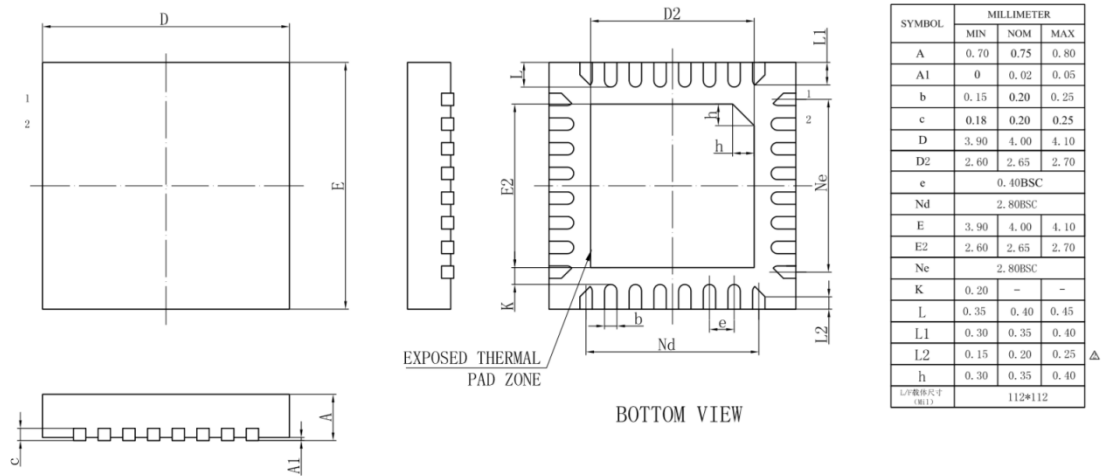


Figure 1-5 QFN32 package information

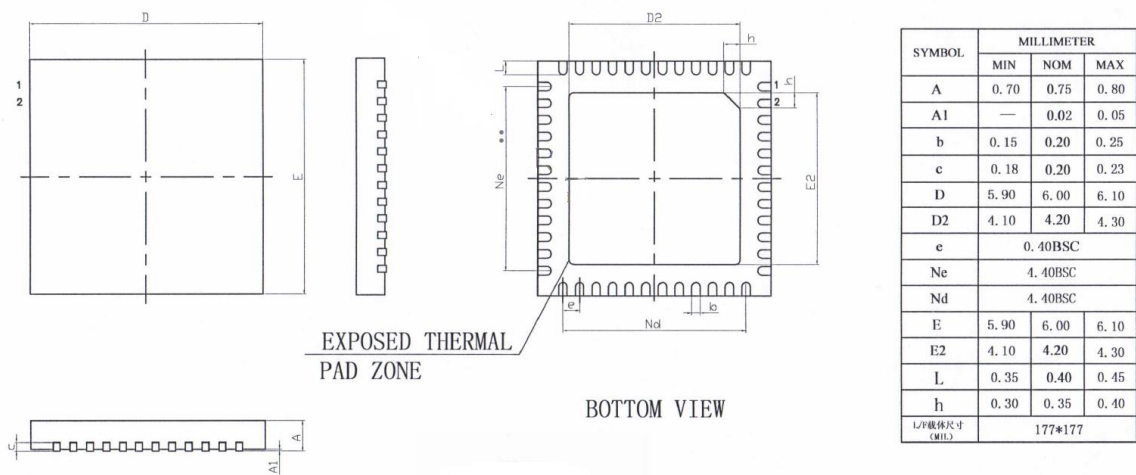


Figure 1-6 QFN48 package information

Appendix B Ordering Information

Device	Protocol	Packing	Pack Quantity	Package
LE5010AI	BLE5.0	Reel	5000	QFN32
LE5010AJ	BLE5.0	Reel	5000	QFN32
LE5010BI	BLE5.0	Reel	2500	QFN48
LE5010BJ	BLE5.0	Reel	2500	QFN48
LE5010TI	BLE5.0	Tube	50	SOP24
LE5010SI	BLE5.0	Tube	50	SOP16
LE5110AI	BLE5.1	Reel	5000	QFN32
LE5110AJ	BLE5.1	Reel	5000	QFN32
LE5110BI	BLE5.1	Reel	2500	QFN48
LE5110BJ	BLE5.1	Reel	2500	QFN48
LE5110TI	BLE5.1	Tube	50	SOP24
LE5110SI	BLE5.1	Tube	50	SOP16

Appendix C the rules of product naming

