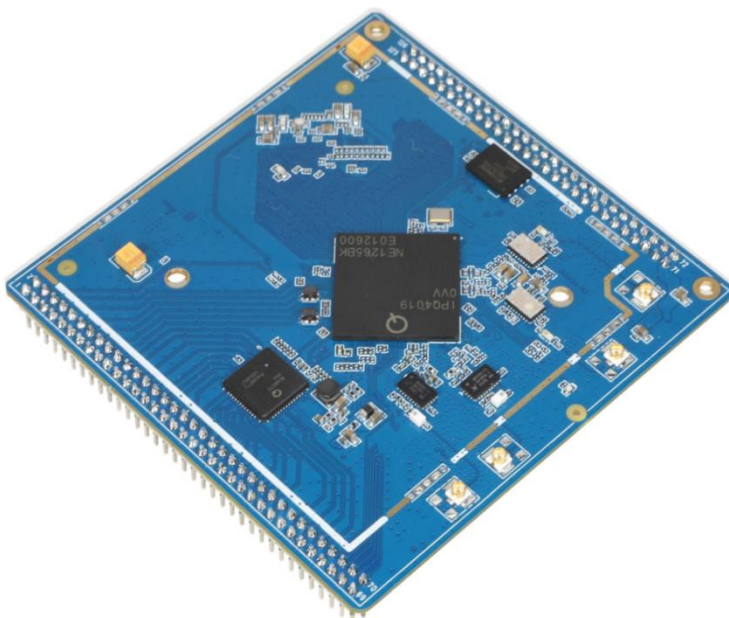# GAINSTRONG

Oolite-IPQ4019 V2_SPEC_EN

Header Pin Module

Version 1.0.1

Author：WSY

May 24, 2024

Revision	Date	Contents of Revision Change	Remark
1.0.1	2024-05-24	update version	WSY

1 INTRODUTION

The IPQ4019 is a highly integrated system-on-chip (SoC) designed for high-performance, power efficient, and cost-effective 2×2, 802.11ac, dual-band concurrent access-point applications. The SoC incorporates a quad-core ARM Cortex A7 processor, two dual-band, concurrent 802.11ac Wave-2 Wi-Fi subsystems, and a five-port Gigabit Ethernet Layer2/3/4 multilayer switch supporting line rate network address translation (NAT). It supports one USB3.0 and one USB2.0. It also supports other miscellaneous interfaces, which can be configured as general-purpose I/O pins.

Oolite-IPQ4019 V2.0 is Qualcomm IPQ4019 chipset based dualband 11AC WiFi router module, comply with IEEE 802.11a/b/g/n/ac Wave 2 protocol, wireless speed upto 1200Mbps, Oolite-IPQ4019 V2.0 has various port 5 * Gigabit Ethernet Port,2 * SPI,2 * UART,1 * SDIO,1 * JTAG etc..., with PH2.0 connectors can work as a fantastic embedded board expand to other board.
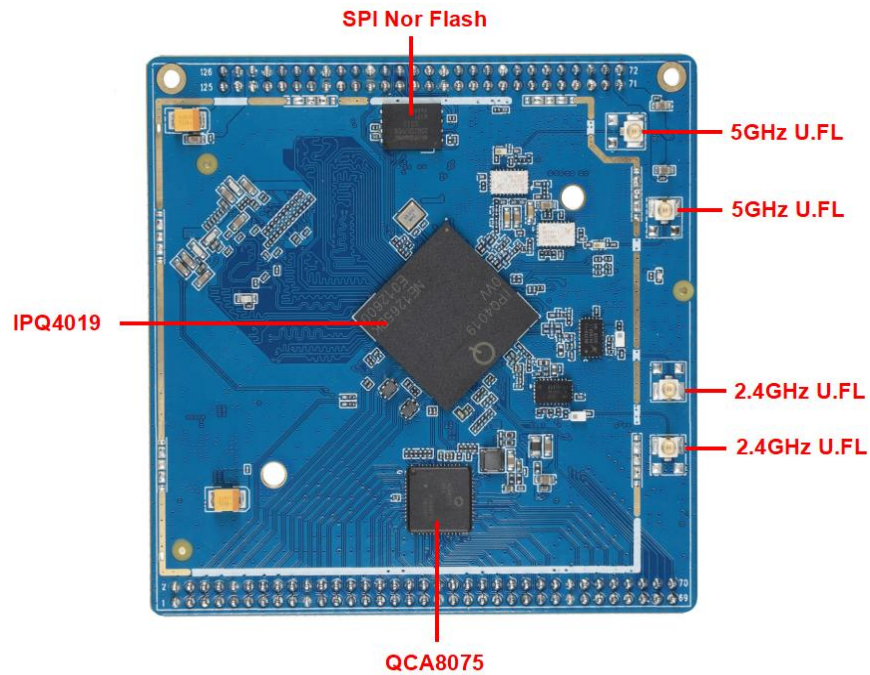
Features

- IPQ4019 Quad-core ARM Cortex-A7 at 716.8 MHz

- SPI Nor Flash: default 16MByte (32MByte/64MByte optional)

- RAM: default 512MByte DDR3(256MByte/1GB optional)

- Parallel Nand Flash: None by default (128MByte / 256MByte optional)

- Support High Power IEEE802.11 a/b/g/n/ac,5.8GHz ,2*2 867Mpbs,2*2 MIMO

  IEEE802.11 b/g/n,2.4GHz ,300Mpbs, 2*2 MIMO

  Up to 1.2Gbps

- 2.4GHz RF output can up to 23dbm(2.4GHz 2T2R)
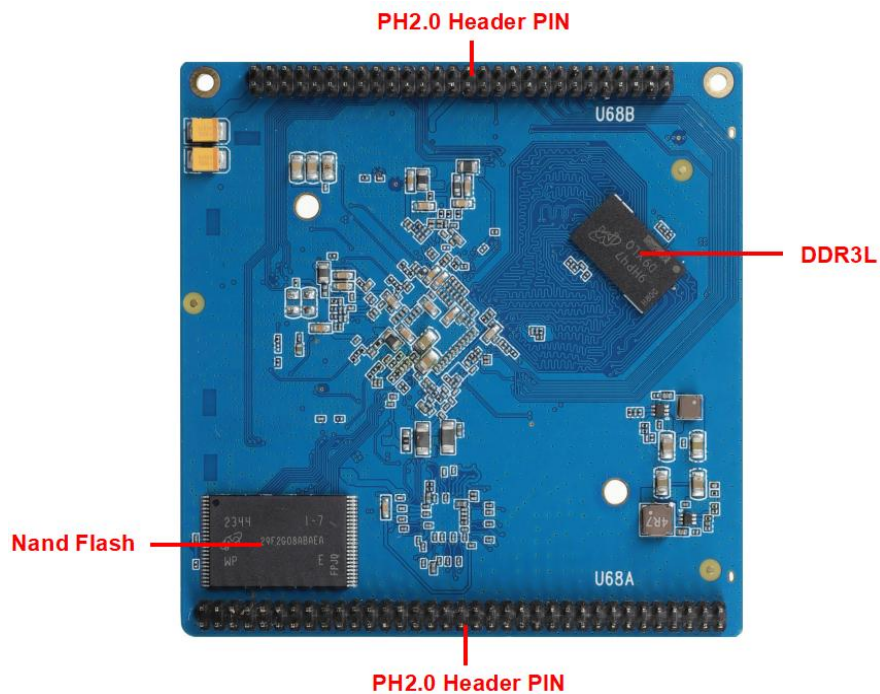
- 5GHz RF output can up to 23dbm(5GHz 2T2R)

- 5-port 10/100/1000Mbps ethernet

- 1 x USB 3.0,1x PCIe,GPIOs,TF Card, 2x SPI ,2x UART

- Support JTAG interface

- 2 x 2.4GHz U.FL connectors+2 x 5.8GHz U.FL connectors

- Power supply voltage: 2 x 5V 2A For PA , 5V/2A or 12/1A, 3.3 V/3A

- Size: 75mm x 75mm x 9.5mm

- 23.05 OpenWrt / Linux 5.15 SDK

2 PICTURES

TOP:

SPI Nor Flash

5GHz U.FL

5GHz U.FL

IPQ4019

2.4GHz U.FL

2.4GHz U.FL

QCA8075

Bottom:

PH2.0 Header PIN

U68B

DDR3L

Nand Flash

U68A

PH2.0 Header PIN

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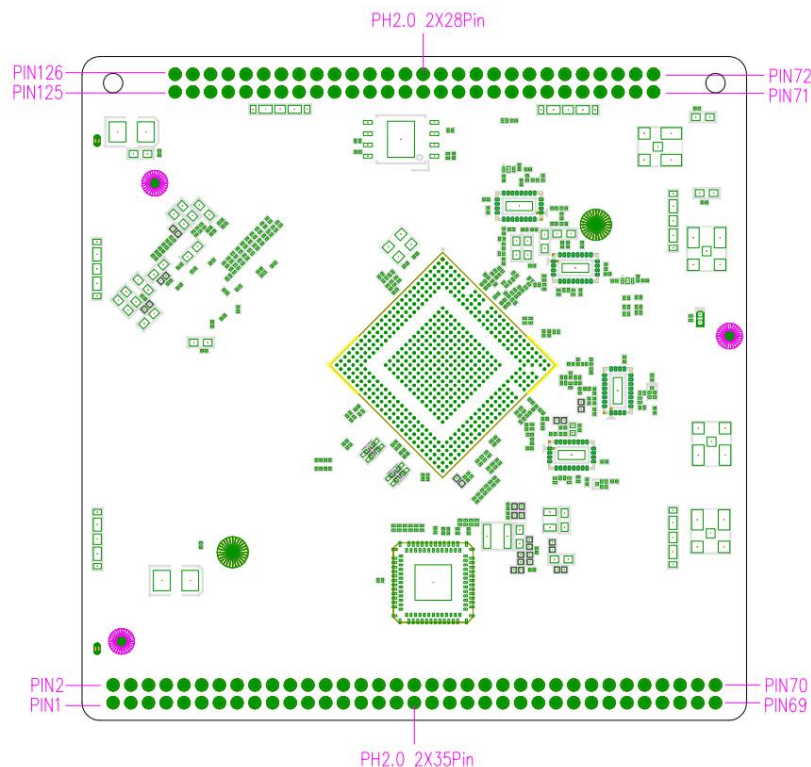
3 PINS DESCRIPTION

PINs	Name	Descriptions	PINs	Name	Descriptions
1	GND		71	2GXPA_5V	5V/2A
2	GND		72	2GXPA_5V	
3	PCIE_CLKOUT_P		73	5GXPA_5V	5V/2A
4	PCIE_CLKOUT_N		74	5GXPA_5V	
5	PCIE_TXP		75	GND	
6	PCIE_TXN		76	GND	
7	PCIE_RXP		77	GPIO47_SPI1_MISO	GPIO47
8	PCIE_RXN		78	GPIO46_SPI1_MOSI	GPIO46
9	PCIE_RST_N		79	GPIO45_SPI1_SS0_N	GPIO45

10	GND		80	GPIO44_SPI1_SCK	GPIO44
11	USB2_DP		81	JTAG_TDO	GPIO3
12	USB2_DM		82	JTAG_RST_N	GPIO4
13	USB3_SS_TX_P		83	JTAG_TCK	GPIO1
14	USB3_SS_TX_N		84	JTAG_TDI	GPIO0
15	USB3_SS_RX_P		85	JTAG_TMS	GPIO2
16	USB3_SS_RX_N		86	JTAG_TRST_N	GPIO5
17	USB3_HS_DP		87	CHIP_PWD_L	Chip power-on reset
18	USB3_HS_DM		88	GND	
19	GND		89	BISP_UART1_TXD	GPIO8
20	GND		90	BISP_UART1_RXD	GPIO9
21	P0_TRX0+		91	BISP_UART1_RTS	GPIO11
22	P0_TRX0-		92	BISP_UART1_CTS	GPIO10
23	P0_TRX1+		93	BISP_UART0_TXD	GPIO17
24	P0_TRX1-		94	BISP_UART0_RXD	GPIO16
25	P0_TRX2+		95	GND	
26	P0_TRX2-		96	GND	
27	P0_TRX3+		97	DVDD33_SPI	Power supply for the NOR flash within the module
28	P0_TRX3-		98	BISP_SPI0_HOLD	The NOR flash within the module is already in use.

29	P1_TRX0+		99	BISP_SPI0_SCK	The NOR flash within the module is already in use.
30	P1_TRX0-		100	BISP_SPI0_MOSI	The NOR flash within the module is already in use.
31	P1_TRX1+		101	BISP_SPI0_WP	The NOR flash within the module is already in use.
32	P1_TRX1-		102	BISP_SPI0_MISO	The NOR flash within the module is already in use.
33	P1_TRX2+		103	BISP_SPI0_SS0_N	The NOR flash within the module is already in use.
34	P1_TRX2-		104	SS_RST_N_GPIO18	GPIO18
35	P1_TRX3+		105	GND	
36	P1_TRX3-		106	GND	
37	GND		107	BLSP_I2C0_SDA	GPIO21
38	GND		108	BLSP_I2C0_SCK	GPIO20
39	P2_TRX0+		109	BLSP_I2C1_SDA	GPIO35
40	P2_TRX0-		110	BLSP_I2C1_SCK	GPIO34
41	P2_TRX1+		111	GND	
42	P2_TRX1-		112	GND	
43	P2_TRX2+		113	SDIO_DAT_1	GPIO24
44	P2_TRX2-		114	SDIO_CMD	GPIO28

45	P2_TRX3+		115	SDIO_CLK	GPIO27
46	P2_TRX3-		116	SDIO_CD	GPIO22
47	P3_TRX0+		117	SDIO_DAT_0	GPIO23
48	P3_TRX0-		118	SDIO_DAT_3	GPIO26
49	P3_TRX1+		119	SDIO_DAT_2	GPIO25
50	P3_TRX1-		120	GND	
51	P3_TRX2+		121	GND	
52	P3_TRX2-		122	GND	
53	P3_TRX3+		123	DVDD33	3.3V/3A
54	P3_TRX3-		124	DVDD33	
55	GND		125	DC5-12V	5V/2A or 12V/1A
56	GND		126	DC5-12V	
57	P4_TRX0+				
58	P4_TRX0-				
59	P4_TRX1+				
60	P4_TRX1-				
61	P4_TRX2+				
62	P4_TRX2-				
63	P4_TRX3+				
64	P4_TRX3-				
65	P0_1000_LED				
66	P1_1000_LED				
67	P2_1000_LED				

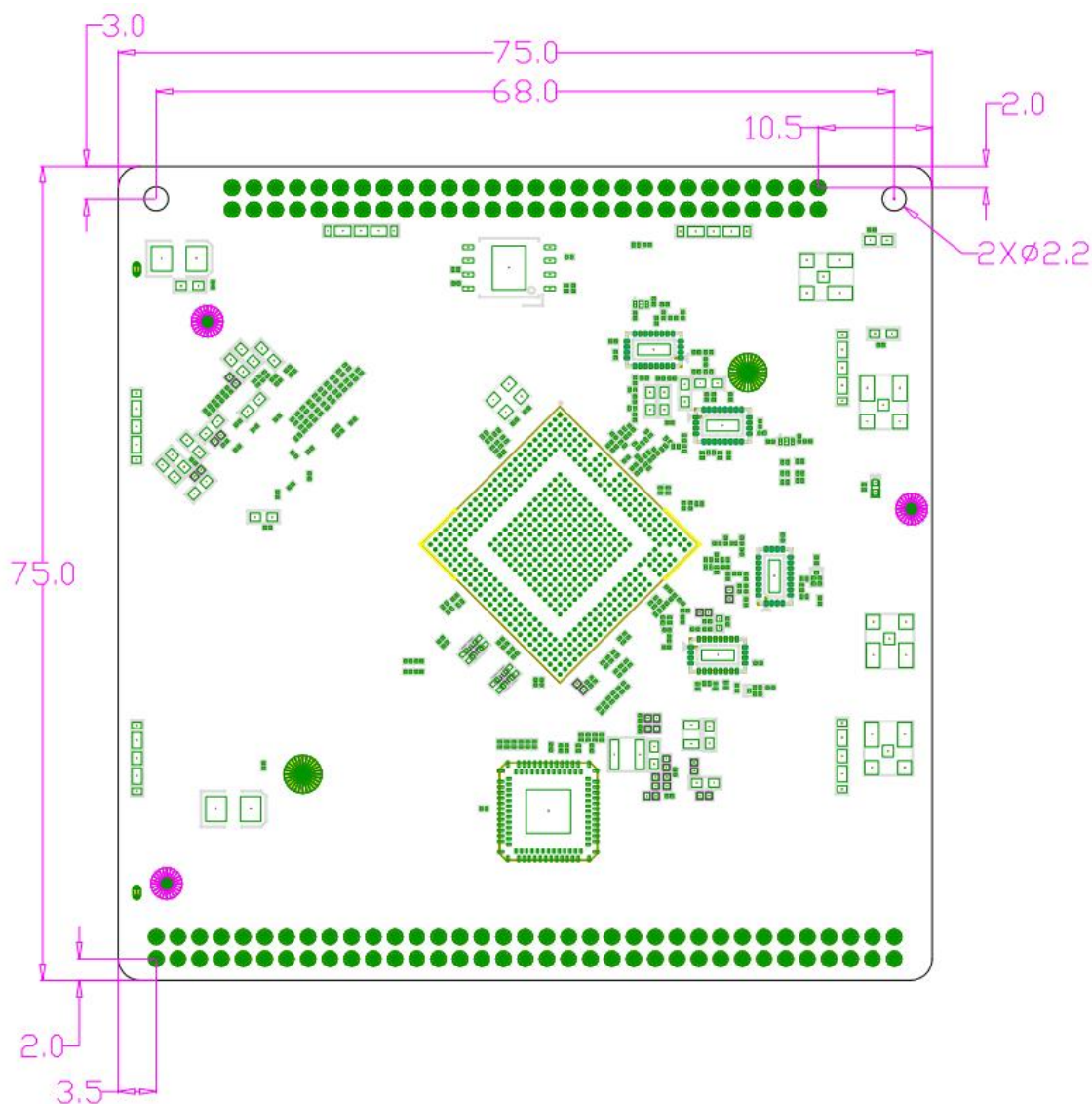| 68	P3_1000_LED				
69	P4_1000_LED				
70	DVDD27_MALIBU	RJ45 LED Power			

Notes:

1. The Ethernet port LED power must be supplied through PIN70 with a voltage of 2.7V. It cannot be used for other purposes.

2. PINs 71 and 72 (2GXPA_5V) supply power to the 2.4G PA with a voltage of 5V and require a current reserve of 2A.

3. PINs 73 and 74 (5GXPA_5V) supply power to the 5G PA with a voltage of 5V and require a current reserve of 2A.

4. PINs 123 and 124 (DVDD33) supply power to the module core with a voltage of 3.3V and require a current reserve of 2A. If external devices such as a TF card or I2C are connected, it is recommended to reserve 3A.

5. PINs 125 and 126 (DC5-12V) supply power to the module with a voltage range of 5-12V. When the voltage is 5V, a current reserve of 2A is required.

6. For GPIO 20~35, the PIN voltage is 3.3V when no TF card is inserted. When a TF card is inserted, the PIN voltage is 1.8V.

4 MECHANICAL

Dimensions (mm)	Length	Width	Height
	75	75	9.5
	(Tolerance:±0.2mm)	(Tolerance:±0.2mm)	(Tolerance:±0.2mm)

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5 MODULE OPERATING ENVIRONMENT

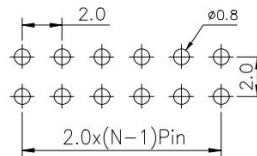|	
Operating Temperature	0℃ ~45℃
Storage Temperature	-40℃ ~ 80℃
Operating Humidity	10%~90% non-condensing
Storage Humidity	5%~90% non-condensing

6 DEVELOPMENT BOARD FUNCTION DESCRIPTION
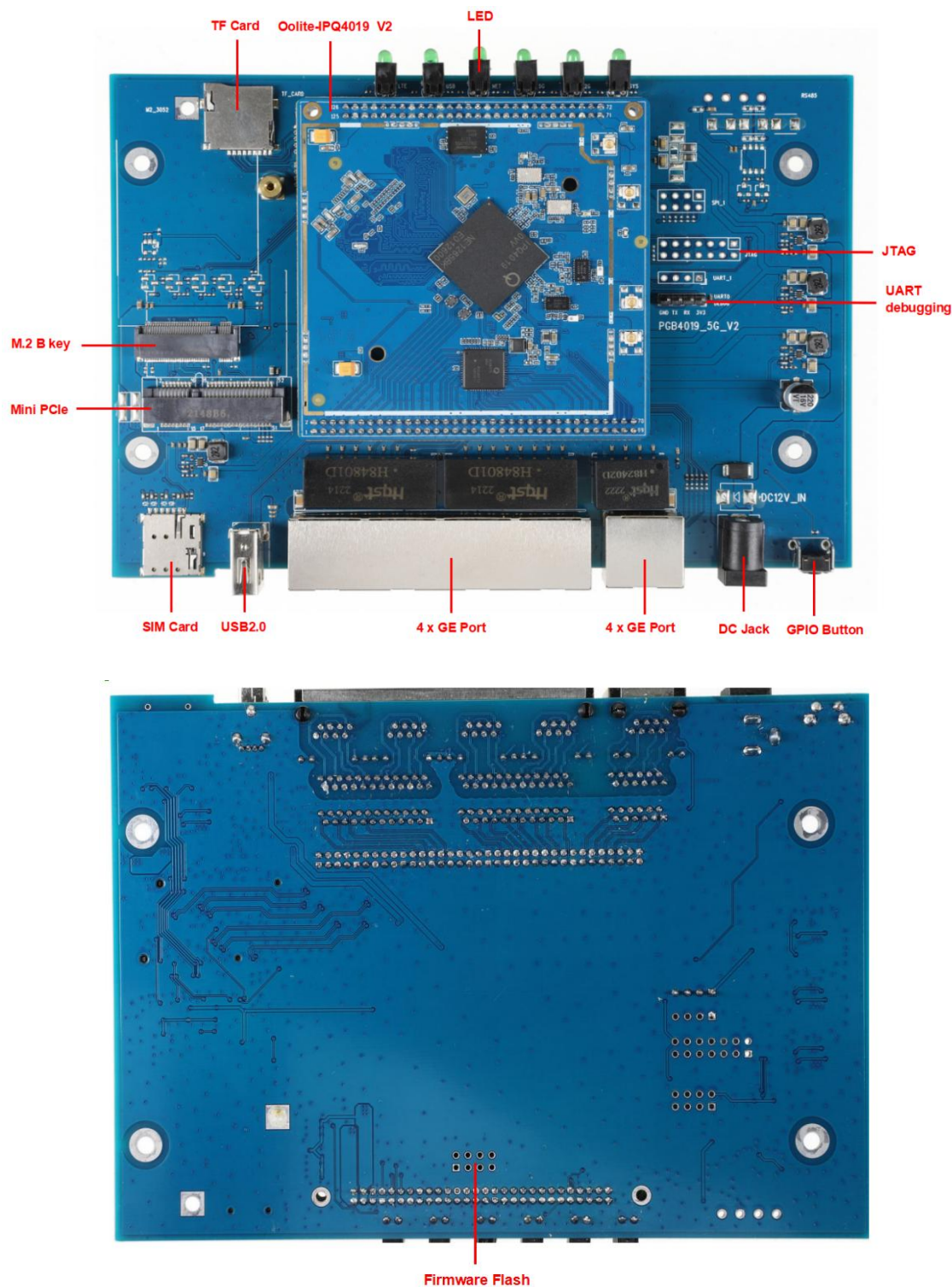
7 FOR COMPONENT SELECTION

Header reference specifications

SPECIFICATIONS
Rated Current:1.5AMP
Contact Resistance:20mΩ Max
Withstand Voltage:500V AC/DC
Insulation Resistance:1000MΩ Min
Operation Temperature:−40'c to +105'c

Contact Material:Brass
Contact Plating:Au or Sn Over Ni
Insulator Material:Polyester(UL94V−0)
Standard: PA6T
Max.Processing Temp: 230'C for 30−60 seconds
                    (260'C for 10 seconds)

2.0xNo.of Positions+0.5±0.3
2.0x(N−1)Pin±0.15
2.0±0.1
4.5±0.15

Recommended P.C.B Layout(Top Side)
(PCB BOARD TOLERANCE±0.05)
2.0   ø0.8
2.0
2.0x(N−1)Pin

4.3±0.15
2.0±0.1   PIN 0.5X0.2

2.8±0.2
2.0±0.2