

HK NATER TECH LIMITED

WL-AM01-5350 Specification

Customer: _____

Description: WL-AM01-5350-V1.2

Customer P/N: _____

Date: _____

Customer		
Approve	Auditing	Admit

Provider		
Approve	Auditing	Admit

Customer:

Add:

Tel:

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SPECIFICATIONS

IEEE 802.11 b/g/n 2.4GHz 1T1R

WL-AM01-5350 Module

Version 1.2

1.Introduction

WL-AM01-5350 is a AP Moudle

- ❖ CPU MIPS24K
- ❖ CLOCK 360MHz
- ❖ Memory 32MB
- ❖ Flash 8MB

The RT5350 SOC/Android combines Ralink's 802.11n draft compliant 1T1R MAC/BBP/PA/RF, a high performance 360MHz MIPS24KEc CPU core, 5-ports integrated 10/100 Ethernet Switch/PHY and an USB Host/Device. With the RT5350, there are very few external components required for 2.4GHz 11n wireless products. The RT5350 employs Ralink 2nd generation 11n technologies for longer range and better throughput. The embedded high performance CPU can process advanced applications effortlessly, such as WIFI data processing without overloading the host processor. In addition, the RT5350 has rich hardware interfaces (SPI/ I2S/ I2C/ PCM/ UART/ USB) to enable many possible applications.

2.Features

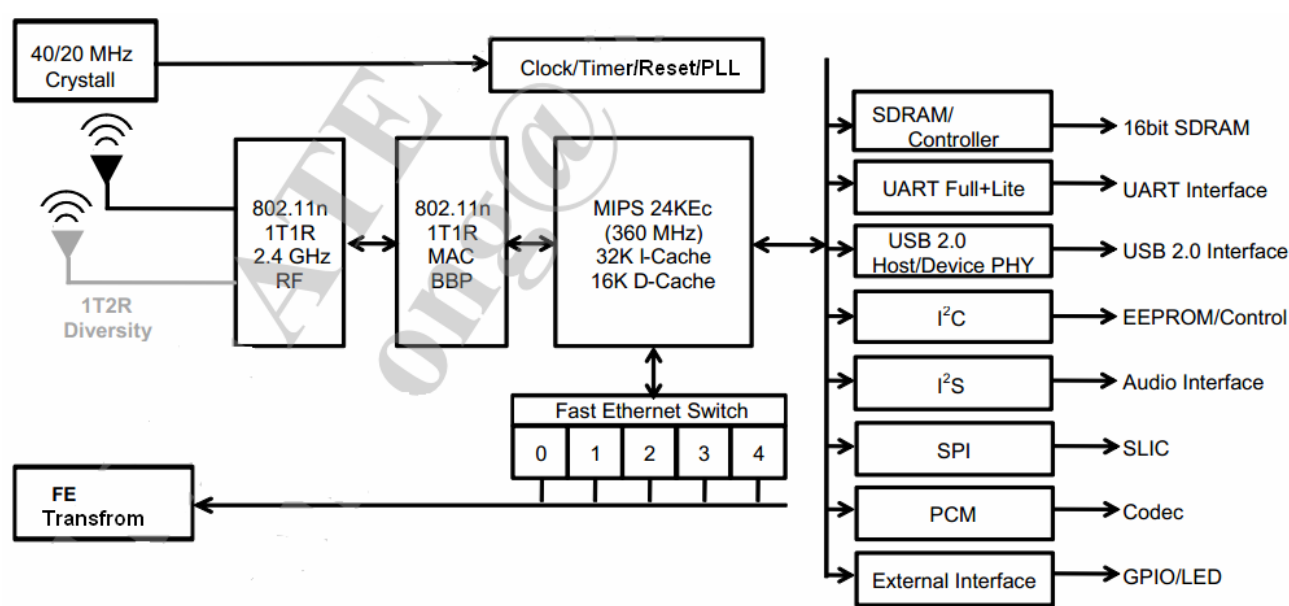
WL-AM01-5350 is the small size and low power module for IEEE 802.11b/g/n wireless LAN.

- ❖ Support iOS system Wireless and wired voice receiving player function.
- ❖ Embedded 1T1R 2.4G CMOS RF;
- ❖ Embedded 802.11n 1T1R MAC/BBP w/MLD enhancement
- ❖ 150Mbps PHY data rate
- ❖ 20Mhz/40Mhz channel width
- ❖ Legacy and high throughout modes
- ❖ Compressed block ACK
- ❖ Bluetooth Co-existence
- ❖ Multiple BSSID (up to 16)
- ❖ WEP64/128, WPA, WPA2, WAPI engines
- ❖ QOS - WMM, WMM Power Save
- ❖ Hardware frame aggregation
- ❖ Supports 802.11h TPC
- ❖ MIPS 24KEc 360 Mhz with 32 KB I cache/16 KB D cache
- ❖ Supports 16-bit SDR SDRAM (up to 64 MB)
- ❖ Supports boot from ROM, FLASH
- ❖ USB 2.0 HOST/Device dual mode x1
- ❖ Embedded 5-port 10/100 Mbps Ethernet switch and 5-port UTP PHY
- ❖ Supports 5 10/100 UTP ports
- ❖ Slow speed I/O : GPIO, SPI, I²C, I²S, PCM, UART, and JTAG
- ❖ I/O: 3.3 V I/O

3.Ordering Information

Model	Description
WL-AM01-5350-V1.2	Wi-Fi Module,1T1R,1WAN,1LAN

4.Module Block Diagram



5. Absolute Maximum Ratings

Caution : The specifications in Table 1 define levels at which permanent damage to the device can occur. Function operation is not guaranteed under these conditions. Operating at absolute maximum conditions for extend periods can adversely affect the long-term reliability of the device.

Temperature Range -10 to 55°C
Core Supply Voltage..... 1.2V +/- 5%
I/O Supply Voltage 3.3V +/- 10%

- 1) Do not use or store modules in the corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are contained. Also, avoid exposure to moisture.
- 2) Store the modules where the temperature and relative humidity do not exceed 5 to 40 and 20 to 60%.
- 3) Assemble the modules within 6 months.
Check the soldering ability in case of 6 months over.

6 .Specification

Model Name	WL-AM01-5350-V1.2
Network Standard	IEEE 802.11b/g/n
Hardware Support	Flash:4M (25Q32) SDRAM:32M (W9825G6EH-6)
Operation Conditions	
Temperature	Storage : -10°C ~ + 40°C Operating : -10°C ~ +55°C
Humidity	Storage : 5 ~ 95% (Non-Condensing) Operating : 10 ~ 90% (Non-Condensing)
Dimension	36.0mm *25.0mm * 3.6mm (+-0.2mm)
Package	BGA
WiFi Part	
Standard	IEEE 802.11 b/g/n

7. Standard Test Conditions

The Test for electrical specification shall be performed under the following Condition unless otherwise specified.

- 1). Ambient condition
Temperature: $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
Humidity: $65\% \pm 5\%$ R.H.
- 2). Power supply voltages
3.3V input power at the Module
- 3). Current consumption over recommended range of supply voltage and operating conditions is like below.
When it's tested, it must be supplied more than 2 times of maximal current.

8. Electrical Specifications

1) DC Characteristics

Module	Voltage	Current Consumption (linking)
WL-AM01-5350-V1.2	3.3V	420MA(上网或者看电影时的功耗)
	1.8V	70MA(上网或者看电影时的功耗)

2) RF Characteristics for IEEE802.11b (11Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11b			
Mode	DSSS/CCK 11 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX (per)	-85 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (17 ± 2 dBm)		17		dBm
EVM (≤ -18)	-	-18		dB

3) RF Characteristics for IEEE802.11g (54Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11g			
Mode	OFDM 54 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX (per)	-70 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (14±2 dBm)		14		dBm
EVM (≤-28)		≤-28		dB

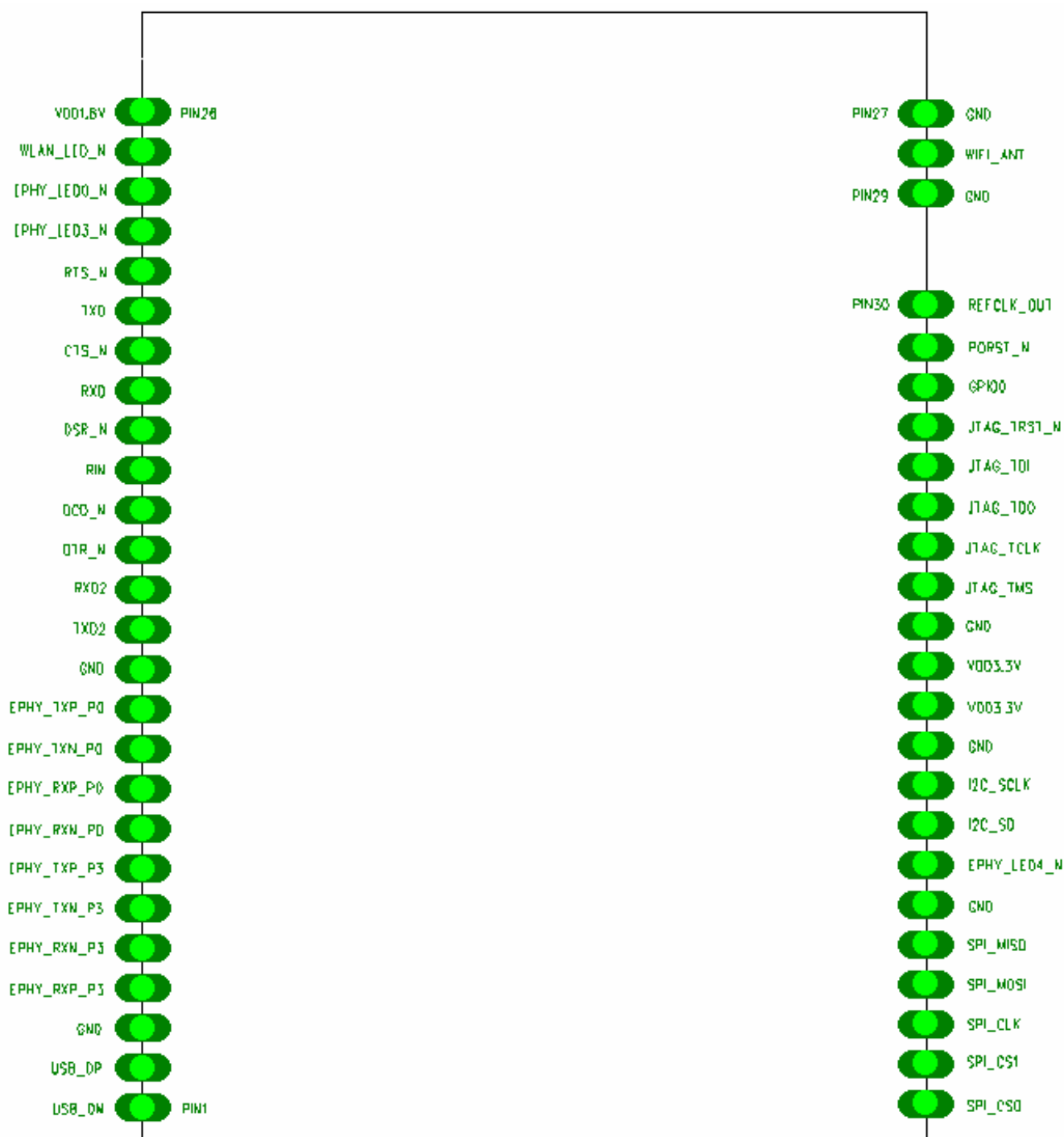
* Normal Condition : 25℃, VDD= 3.3V

4) RF Characteristics for IEEE802.11n (54Mbps mode unless otherwise specified)

Items	Contents			
Specification	IEEE802.11n			
Mode	OFDM 135 Mbps			
Channel frequency	2412 ~ 2484 MHz			
RX (per)	-65 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (13±2 dBm)		13		dBm
EVM (≤-28)		≤-28		dB

* Normal Condition : 25℃, VDD= 3.3V

9. Pin Definition



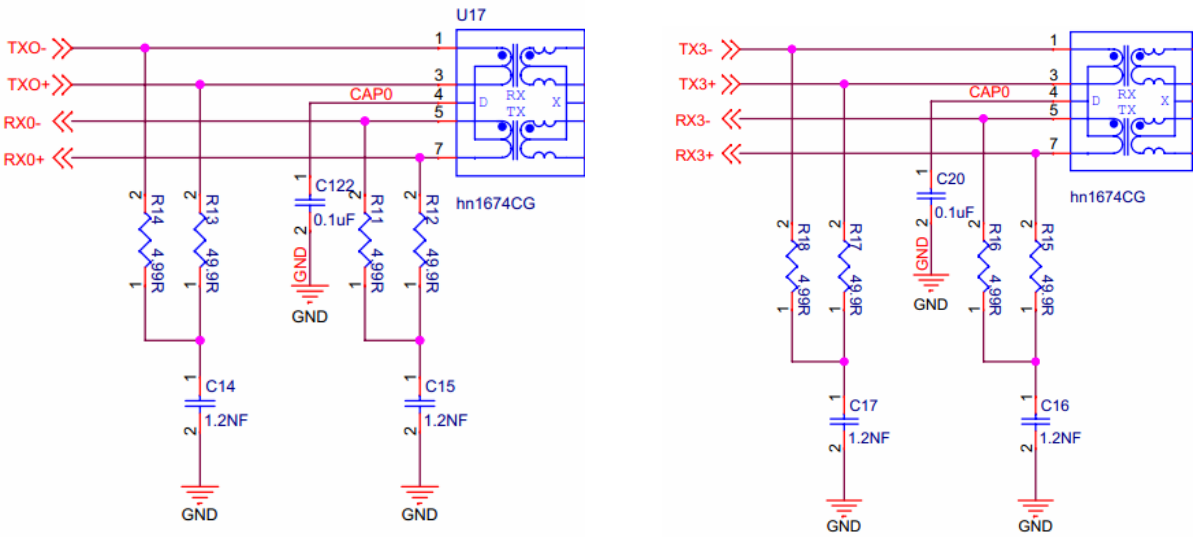
Pin	Definition	I/O	Description
1	USB_DM		USB DATA D-
2	USB_DP		USB DATA D+
3	GND		Ground
4	EPHY_RXP_P3		10/100 PHY Port #3 RXP
5	EPHY_RXN_P3		10/100 PHY Port #3 RXN
6	EPHY_TXN_P3		10/100 PHY Port #3 TXN
7	EPHY_TXP_P3		10/100 PHY Port #3 TXP
8	EPHY_RXN_P0		10/100 PHY Port #0 RXN
9	EPHY_RXP_P0		10/100 PHY Port #0 RXP
10	EPHY_TXN_P0		10/100 PHY Port #0 TXN-
11	EPHY_TXP_P0		10/100 PHY Port #0 TXP-
12	GND		Ground
13	TXD2		UART Lite TXD
14	RXD2		UART Lite RXD
15	DTR_N		UART DTR
16	DCD_N		UART DCD_N
17	RIN		UART RIN
18	DSR_N		UART DSR_N
19	RXD		UART RXD
20	CTS_N		UART CTS_N
21	TXD		UART TXD
22	RTS_N		UART RTS
23	EPHY_LED3_N		10/100 PHY Port #3 Activity LED
24	EPHY_LED0_N		10/100 Phy Port #0 Activity Led
25	WLAN_LED_N		WFI Indicator LED
26	VDD1.8V		1.8V The module provides
27	GND		Ground
28	WIFI_ANT		WIFI_ANT
29	GND		Ground
30	REFCLK_OUT		REFCLK_OUT
31	PORST_N		Power On Reset
32	GPIO0		GPIO0

33	JTAG_TRST_N		JTAG_TRST_N
34	JTAG_TDI		JTAG_TDI
35	JTAG_TDO		JTAG_TDO
36	JTAG_TCLK		JTAG_TCLK
37	JTAG_TMS		JTAG TMS
38	GND		Ground
39	VDD3.3V		3.3 V supply for band gap reference
40	VDD3.3V		3.3 V supply for band gap reference
41	GND		Ground
42	I2C_SCLK		I2C Group1 clock
43	I2C_SD		I2C Group1 data
44	EPHY_LED4_N		10/100 PHY Port #4 Activity LED
45	GND		Ground
46	SPI_MISO		Master in slave out
47	SPI_MOSI		Master out slave in
48	SPI_CLK		SPI Clock
49	SPI_CS1		SPI Chip Select 1
50	SPI_CS0		SPI Chip Select 0

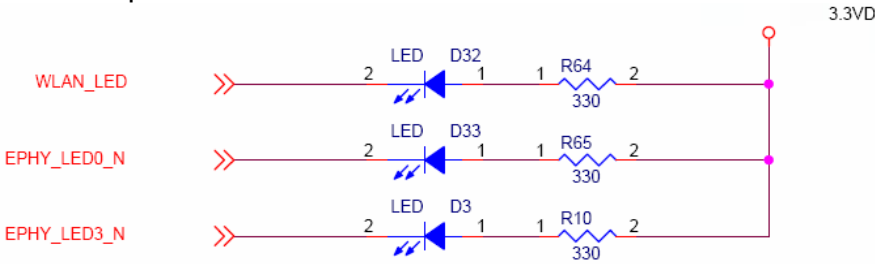


10. Peripheral principle diagram reference

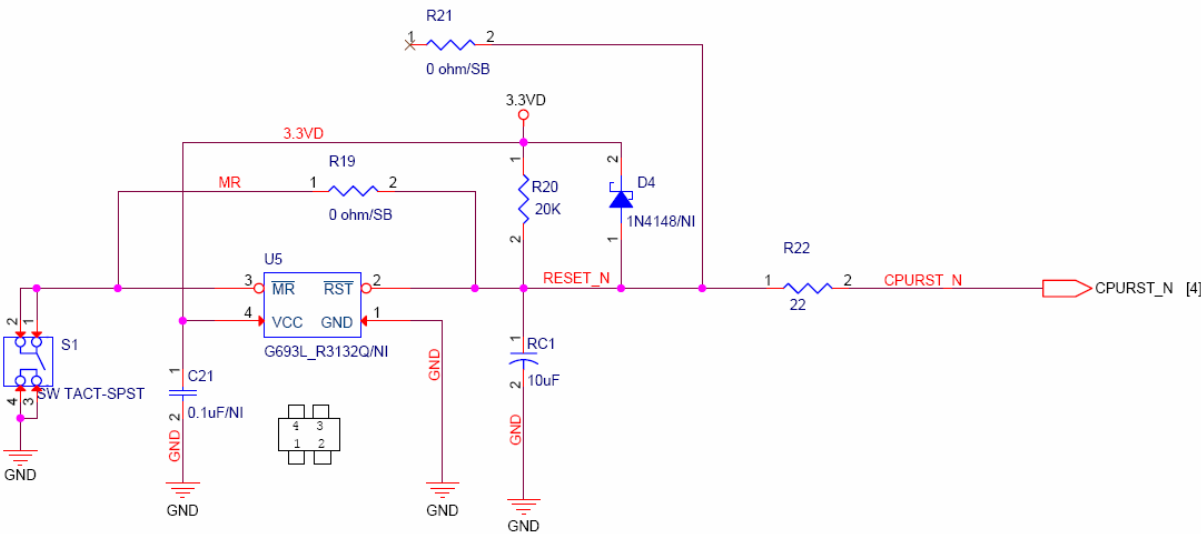
1). Peripheral circuit reference



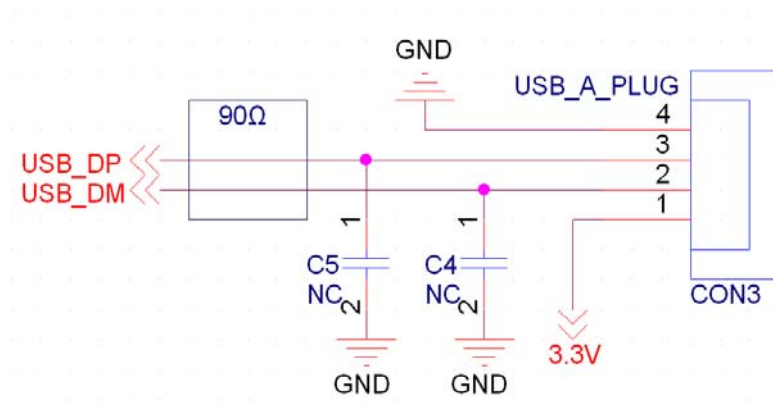
2). LED Part Peripheral circuit reference.



3).Reset Circuit reference.

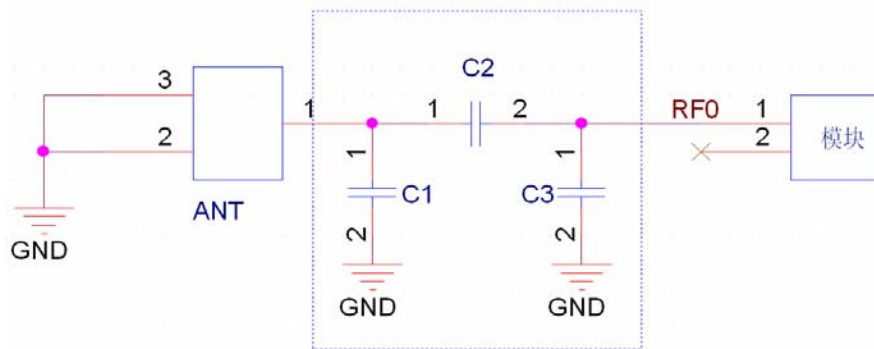


4).USB Circuit reference.



Two root go line do difference, but also required to make 90 Ω the impedance test.

5).WIFI Circuit reference.



注:1.以上虚线框的部分需要进行天线匹配,以实际天线匹配的电子器件参数为准.

2.以上为 RF 走线要做 50 欧姆阻抗,走线不能走 90 度,走线长度不能超过 15mm.

1) PIN 38/39脚, 外供3.3V,
2) PIN 26脚 外供1.8V

$1.8V = 0.6V * (1 + 200K/100K)$

11. Size reference

Mechanical

Dimensions (mm)	Length	Width	Height
	36.0	25.0	3.6
	(Tolerance:±0.2mm)	(Tolerance:±0.2mm)	(Tolerance:±0.2mm)

12. Packaging

