LedVCloud

■ Up to 8GPIOs

ML3369T-P

Embedded

Product

Version：RGBCW-US3369

Features

● Support IEEE802.11 b/g/n standards

● Support WEP, WPA and WPA2 encryption

● Support UART/PWM/ADC/GPIO/I2C

interfaces

● Support STA/AP/AP+STA modes

● Support SmartConfig

● Support TLS/SSL protocols

● Support PCB antenna

● 3.3V power supply

●Wi-Fi related features

   ■ Support 802.11 b/g/n with 20M

      and 40M bandwidth

   ■ Support station and soft AP

   ■ Support SmartConfig and AP

configuration

   ■ Integrated balun/PA/LNA

   ■ TCP/IP stack optimized for IoT

application

   ■PCB antenna

●Peripheral

   ■1x UART

   ■ 1x ADC

   ■ 5x PWM

● Working temperature: -20℃ to +85℃

● 10-Pin golden finger type

Applications

● Smart transportation

● Smart home / appliances

● Instruments

● Health care

● Industrial automation

● Intelligent security

● Smart energy

Model	Antenna type	Note
ML3369T-P	PCB antenna	Default

Model

Content

1. Overview

ML3369T-P is a cost-effective embedded Wi-Fi module designed by BroadLink, which supports 802.11 b/g/n standards and UART communication with other devices. The module integrates radio transceiver, MAC, baseband, all Wi-Fi protocols, configurations and network stack. It can be widely used in applications like smart home devices, remote monitoring devices and medical care instruments.

The module integrates an ARM Cortex-M4 processor speed up to 160MHz with 352KB SRAM and 1MB flash.

2. Basic Specifications

2.1. Power Consumption

Please refer to Table 1 for power consumption data.

Table 1   BL3369T-P Power Consumption Data

Specifications	Min.	Typ.	Max.	Units
VDD[1]	**3.3**		**4**	V
VIL(input low voltage)	0		0.3VDD	V
VIH(input high voltage)	0.7VDD		VDD	V
VOL(output low voltage)		0		V
VOH(output high voltage)		VDD		V
Io			10	mA
Standby (SP mini)				mA
pulse current @TX 11b @17dBm 11Mbps				mA
pulse current @TX 11g @15dBm 54Mbps				mA
pulse current @TX 11n @14dBm 65Mbps				mA

Note: Make sure VDD is not lower than 3.3V

2.2. Working Environment

Please refer to Table 2 for working environment data.

Table 2   ML3369T-P Working Environment Data

Symbol	Description	Min.	Max.	Units
Ts	Storage temperature	-40	125	℃
TA	Ambient operating temperature	-20	85	℃
Vdd	Supply voltage	**3.3**	**4**	V
Vio	Voltage on IO pin	0	VDD	V
ESD	HBM	1000	2000	V

3. Radio Specifications

3.1. Basic Radio Specification

Please refer to Table 3 for radio specification.

BL3369Table 3   BL3369T-P Radio Specification

Radio range	2.412 GHz - 2.472 GHz
Wireless standards	IEEE 802.11 b/g/n
Radio output	802.11b :17dBm ±1.5dBm 802.11g :14dBm ±1.5dBm 802.11n:12.5dBm±1.5dBm
Antenna type	Internal: PCB antenna
	External: Not supported
Receiving sensitivity	802.11b<-83dBm@11Mbps 802.11g<-72dBm@54Mbps 802.11n<-71dBm@MCS7
Stack	IPv4, TCP/UDP/FTP/HTTP/HTTPS/TLS/mDNS
Data rate (max)	11M@802.11b, 54M@802.11g, MCS7@802.11n
Security	Encryption standard: Open/WEP-Open/WPA/WPA2 Encryption algorithm: WEP64/WEP128/TKIP/AES
Network types	STA/AP/STA+AP/WIFI Direct

3.2. Radio Performance

3.2.1. IEEE 802.11b

Table 4 Basic specifications under IEEE802.11b

ITEM	Specification
Modulation Type	DSSS / CCK
Frequency range	2412MHz~2462MHz
Channel	CH1 to CH11
Data rate	1, 2, 5.5, 11Mbps

Table 5 Transmitting performance under IEEE802.11b

TX Characteristics	Min.	Typical	Max.	Unit
Power@11Mbps		**17**		dBm
Frequency Error	**-10**		**+10**	ppm
EVM@11Mbps			**-20**	dB
Transmit spectrum mask				
Pass				

Table 6 Receiving performance under IEEE802.11b

RX Characteristics	Min.	Typical	Max.	Unit
Minimum Input Level Sensitivity				
11Mbps (FER≦8%)			**-83**	dBm
Maximum Input Level (FER≦8%)			**-3**	dBm

3.2.2. IEEE 802.11g

Table 7 Basic specifications under IEEE802.11g

ITEM	Specification
Modulation Type	OFDM
Frequency range	2412MHz~2462MHz

Channel	CH1 to CH11
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps

Table 8 Transmitting performance under IEEE802.11g

TX Characteristics	Min.	Typical	Max.	Unit
Power@54Mbps		**14**		dBm
Frequency Error	**-10**		**+10**	ppm
EVM@54Mbps		-31	-29	dB
Transmit spectrum mask				
Pass				

Table 9 Receiving performance under IEEE802.11g

RX Characteristics	Min.	Typical	Max.	Unit
Minimum Input Level Sensitivity				
54Mbps			-71	dBm
Maximum Input Level (FER≦10%)			-8	dBm

3.2.3 IEEE802.11n

IEEE802.11n 20MHz bandwidth mode

Table 10Basic specifications under IEEE802.11n with 20MHz

ITEM	Specification
Modulation Type	OFDM
Frequency range	2412MHz~2462MHz
Channel	CH1 to CH11
Data rate	MCS0/1/2/3/4/5/6/7

Table 11 Transmitting performance under IEEE802.11n with 20MHz

TX Characteristics	Min.	Typical	Max.	Unit
Power@HT20, MCS7		**13.5**		dBm
Frequency Error	**-10**		**+10**	ppm
EVM@HT20, MCS7		**-31**	**-30**	dB
Transmit spectrum mask				
Pass				

Table 12 Receiving performance under IEEE802.11n with 20MHz

RX Characteristics	Min.	Typical	Max.	Unit
Minimum Input Level Sensitivity				
MCS7			-69	dBm
Maximum Input Level (FER≦10%)			-8	dBm

IEEE802.11n 40MHz bandwidth mode

Table 13Basic specifications under IEEE802.11n with 40MHz

ITEM	Specification
Modulation Type	OFDM
Frequency range	2412MHz~2452MHz
Channel	CH3 to CH9
Data rate	MCS0/1/2/3/4/5/6/7

Table 14 Transmitting performance under IEEE802.11n with 40MHz

TX Characteristics	Min.	Typical	Max.	Unit
Power@HT40, MCS7		**13.5**		dBm
Frequency Error	**-10**		**+10**	ppm
EVM@HT40, MCS7		**-31**	**-30**	dB
Transmit spectrum mask				
Pass				

Table 15 Receiving performance under IEEE802.11n with 40MHz

RX Characteristics	Min.	Typical	Max.	Unit
Minimum Input Level Sensitivity				
MCS7			-67	dBm
Maximum Input Level (FER≦10%)			-8	dBm

4. ML3369T-P Hardware Information

4.1. PIN Sequence
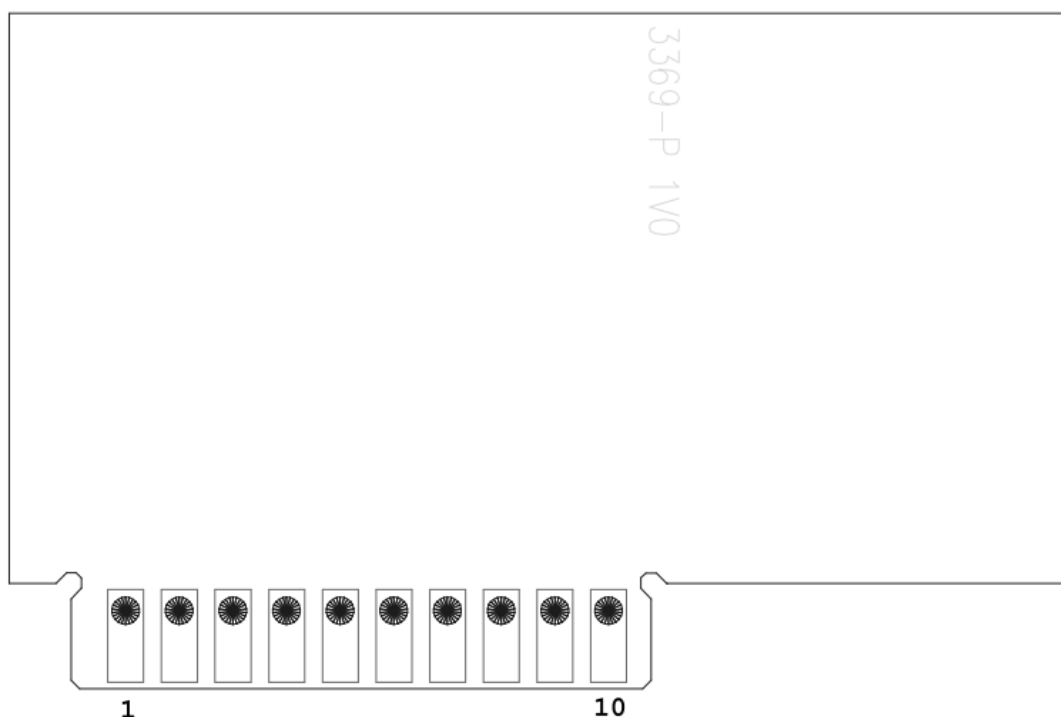
Please refer to Fig 1 for the pin sequence of ML3369T-P.

Fig 1　ML3369T-P pin sequence

4.2. PIN Definitions

Please refer to Table 16 for the hardware pin definitions.

Table 16　ML3369T-P pin definitions

Pin	Function 1	Function 2
1	VDD	
2	GND	
3	GPIO8	PWM0
4	GPIO13	PWM1
5	GPIO0	PWM2
6	GPIO25	PWM3
7	GPIO3	PWT
8	GPIO6	ADC
9	UART_TX	GPIO27
10	UART_RX	GPIO26

Note:

1.　In default, UART is used for output of debugging information and burning firmware. Please refer to the description in DC Characteristics for UART output current level.

2.　The pins for reset button and LED indication should be defined according to actual firmware and circuit design.

3.　The ADC is 10-bit with input voltage 0-2V

4.　The power supply VDD should not be lower than 3.3V.

4.3. PCB Antenna

The module support PCB antenna in 2.4G~2.5G frequency with S11 port less than -10dB and max gain of 0.6dB at 2.45GHz.

The following precautions should be considered during designing with PCB antenna:

1. Do not place any electrical components or grounding in antenna area on main board and it's better to leave this area blank on PCB.

2. It is recommended to not place any electrical components within 30mm range of module antenna and not design any circuit or bond copper on main board under this area.

3. Do not use the module inside any metal case or containers with metal painting.

4.4. Mechanical Dimensions

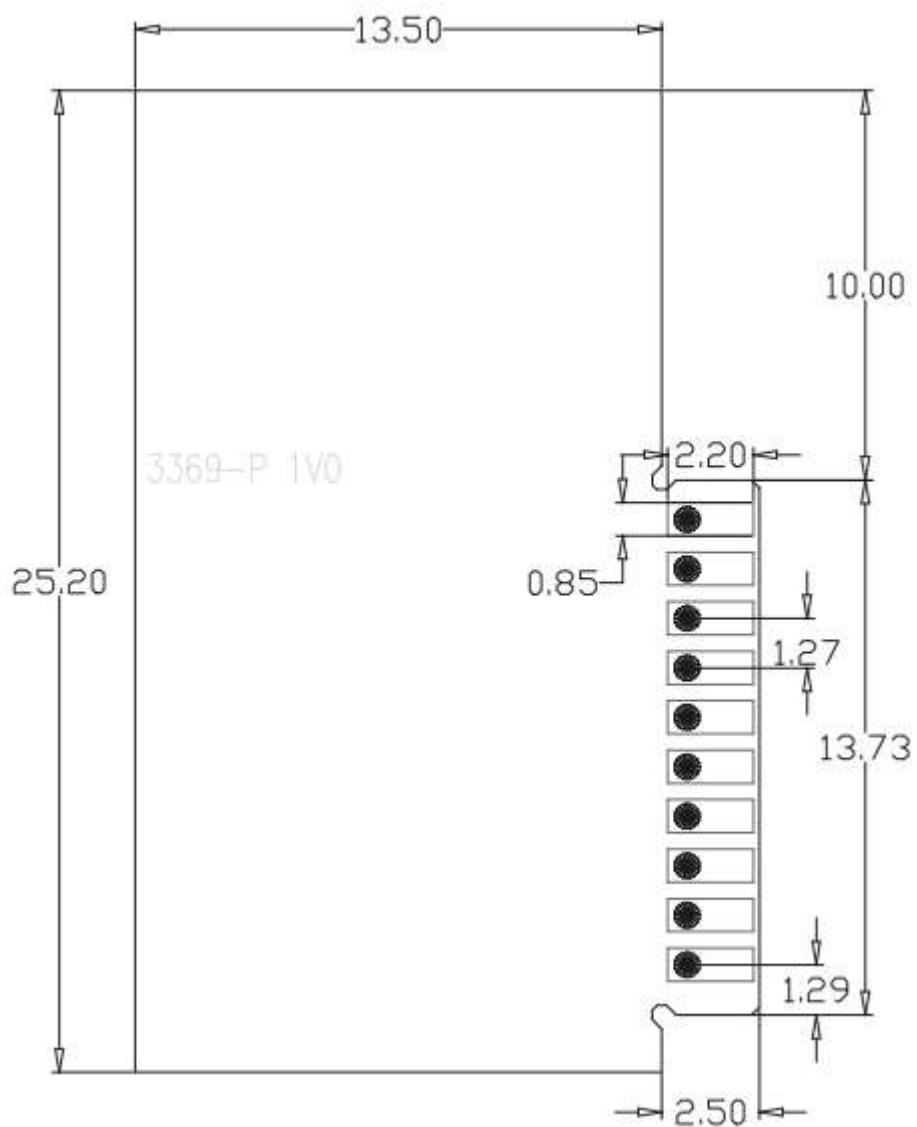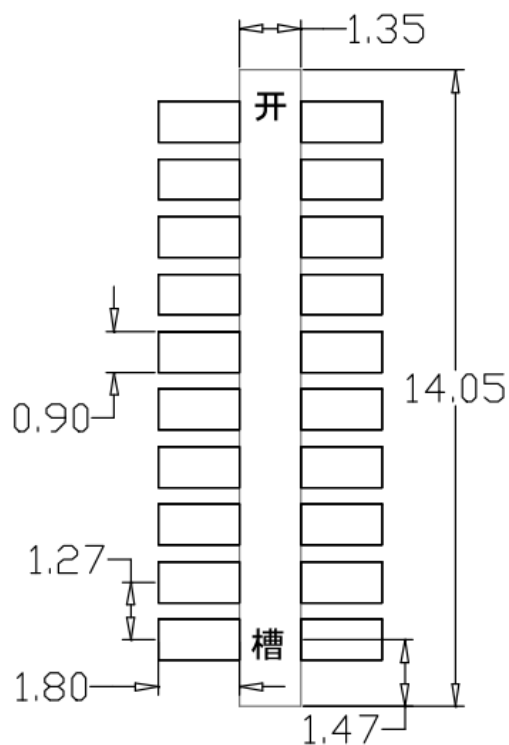Please refer to Fig 2 for the dimensions of ML3369T-P module.

Fig 2 BL3369T-P Dimensions

a． Thickness of PCB: 1.2mm±10%

Hole diameter: 0.65mm

The diameter of stamp holes at sides edge for soldering is 0.6mm.

4.5. Recommended Pad Size

Unit: mm

5. Reference Design

5.1. Power Supply Requirement

If an LDO is used to supply the module with 3.3V power, C1 capacitor can be considered to be used with 10u-22u; If a DCDC is used to supply 3.3V power, C1 capacitor can be considered to be used with 22uF.

It is recommended to supply the module with power higher than 400mA to ensure enough power supply to the module and avoid power down during data transmission.

5.2. Certifications

The QR code contains information including but not limited to:

CMIIT ID: xxxxxxxx,

FCC ID: 2AXPC-ML3369T-P

Manufacturer:

SHENZHEN YUECHUANGKONGJIAN TECHNOLOGY CO.,LTD

Room 1401, Sangtai building, Lishan Road, Taoyuan Street, Nanshan

District,   Shenzhen

Information to Users

This device complies with Part 15 of the FCC Rules. Operation is subject to the
following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that
may cause undesired operation.

Note: This product has been tested and found to comply with the limits for a Class
B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to
provide reasonable protection against harmful interference in a residential
installation. This product generates, uses, and can radiate radio frequency energy
and, if not installed and used in accordance with the instructions, may cause
harmful interference to radio communications. However, there is no guarantee that
interference will not occur in a particular installation. If this product does cause
harmful interference to radio or television reception, which can be determined by
turning the equipment off and on, the user is encouraged to try to correct the
interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the

receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC &IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

2.2 List of applicable FCC rules
FCC Part 15.247

2.6 RF exposure considerations
This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

2.8 Label and compliance information
FCC ID label on the final system must be labeled with "Contains FCC ID: 2AXPC-ML3369T-P" or "Contains transmitter module FCC ID: 2AXPC-ML3369T-P ".

2.9 Information on test modes and additional testing requirements

Contact SHENZHEN YUECHUANGKONGJIAN TECHNOLOGY CO.,LTD will provide stand-alone modular transmitter test mode. Additional testing and certification may be necessary when multiple modules are used in a host.

2.10 Additional testing, Part 15 Subpart B disclaimer

To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Supplier's Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements. Since this may depend on the details of how the module is integrated with the host, SHENZHEN YUECHUANGKONGJIAN TECHNOLOGY CO.,LTD shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:
(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radioexempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CE Caution:

Use the Product in the environment with the temperature Between -20℃ and 85℃; Otherwise, it may damage your product. Products can only be used below 2000m altitude

For the following equipment:

Product Name: WiFi Module

Model: ML3369T-P

Brand Name:

SHENZHEN YUECHUANGKONGJIAN TECHNOLOGY CO.,LTD

E-mail: amy.wu@lemaker.com

CE

hereby declares that this [Name: WiFi Module, Model: ML3369T-P is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

This product is intended for sale and application in a business environment.

RED Article 10 2

-This product can be used across EU member states

RED Article 10 10

-The product is class 1 product, No restrictions

Wi-Fi (2.4G)

Frequency Range:

2412-2472MHz for 802.11b/g/n(HT20)

2422-2462MHz for 802.11b/g/n(HT40)

Max.RF Output Power: 16.98dBm (EIRP)

The RF distance between product and body is 20cm