

GAINSTRONG

QCA9531 2x2.4G with QCA9887 1x5G Wireless Module

Oolite V5.2 Spec

*Specification Version 1.1.0*Author : River*MAY 15, 2017*

Rev.	Date	Contents of Revision Change	Remark
1.0.0	2017-04-12	First release	

1.0.1	2017-05-05	Modify version number , Typesetting , Add physical map	
1.0.2	2017-05-06	Add pin footprint, reflow soldering temperature curve and so on. Modify some pictures.	
1.0.3	2017-05-08	Add outline	
1.0.4	2017-05-09	Modify layout , add Feature description	
1.0.5	2017-05-10	Modify Feature	James
1.0.6	2017-05-13	Add bootstrap setting	
1.0.7	2017-05-15	Modify layout	
1.0.8	2017-05-15	Delete some features	
1.0.9	2017-09-29	Add some GPIO note	Nolan
1.1.0	2020-04-15	Change pin 9 description from P4RX+ to P4TX+	jiapanyu

1. INTRODUCTION

Oolite V5.2 is a highly integrated and feature-rich IEEE 802.11n 2x2 2.4GHz and 1x1 5GHz System-on-a-Chip (SoC) for wireless local area network (WLAN) AP and router model. It supports 802.11n operations up to 144 Mbps for 20 MHz and 300 Mbps for 40 MHz, and 802.11b/g data rates.

Oolite V5.2 includes a MIPS 24Kc processor, five port IEEE802.3 Fast Ethernet Switch with MAC/PHY, one USB 2.0 interface, 4096 x8 bits EEPROM, The W25Q128FV (128M-bit) Serial Flash memory offers flexibility and performance well beyond ordinary Serial Flash devices. And GPIOs that can be used for LED controls or other general purpose interface configurations. Support Trans-flash Card expansion, too.

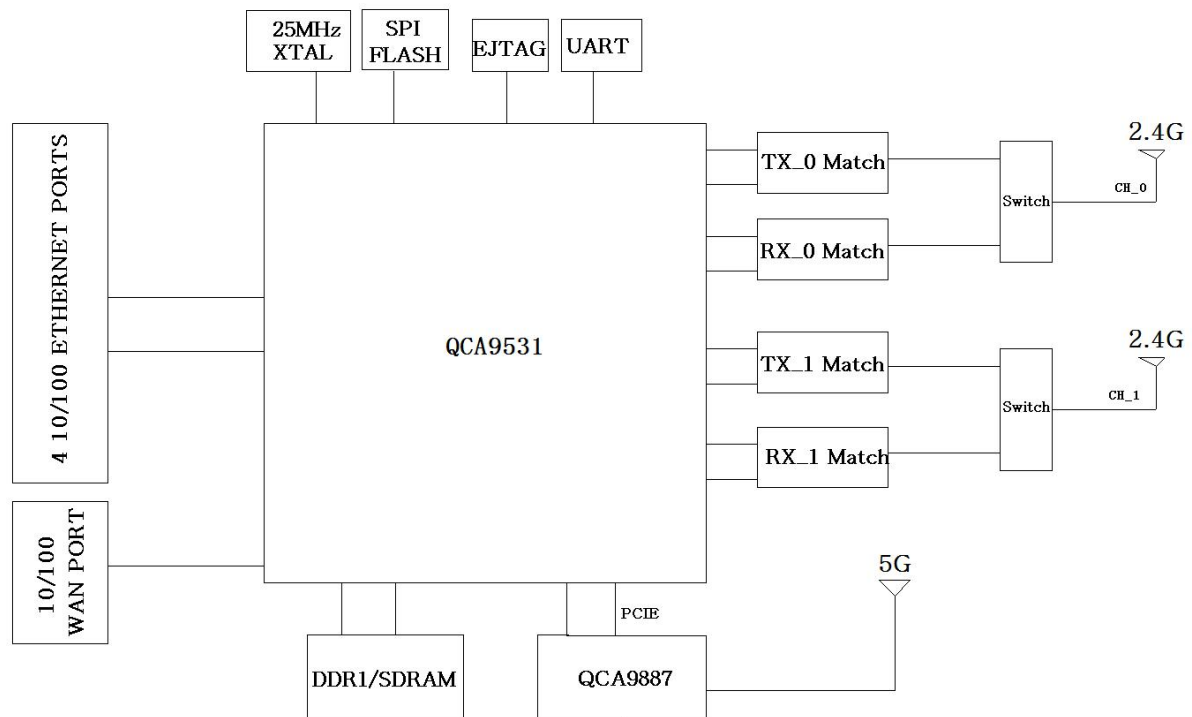
Oolite V5.2 use QCA9531, The Qualcomm Atheros QCA9531 is a highly integrated and feature-rich IEEE 802.11n 2x2 2.4 GHz System-on-a-Chip (SoC) for advanced WLAN platforms. It runs fast and function rich.

Oolite V5.2 can be used indoors, hotels, supermarkets and other indoor and outdoor location. It can make life more convenient and quickly. It is fully for human production and life.

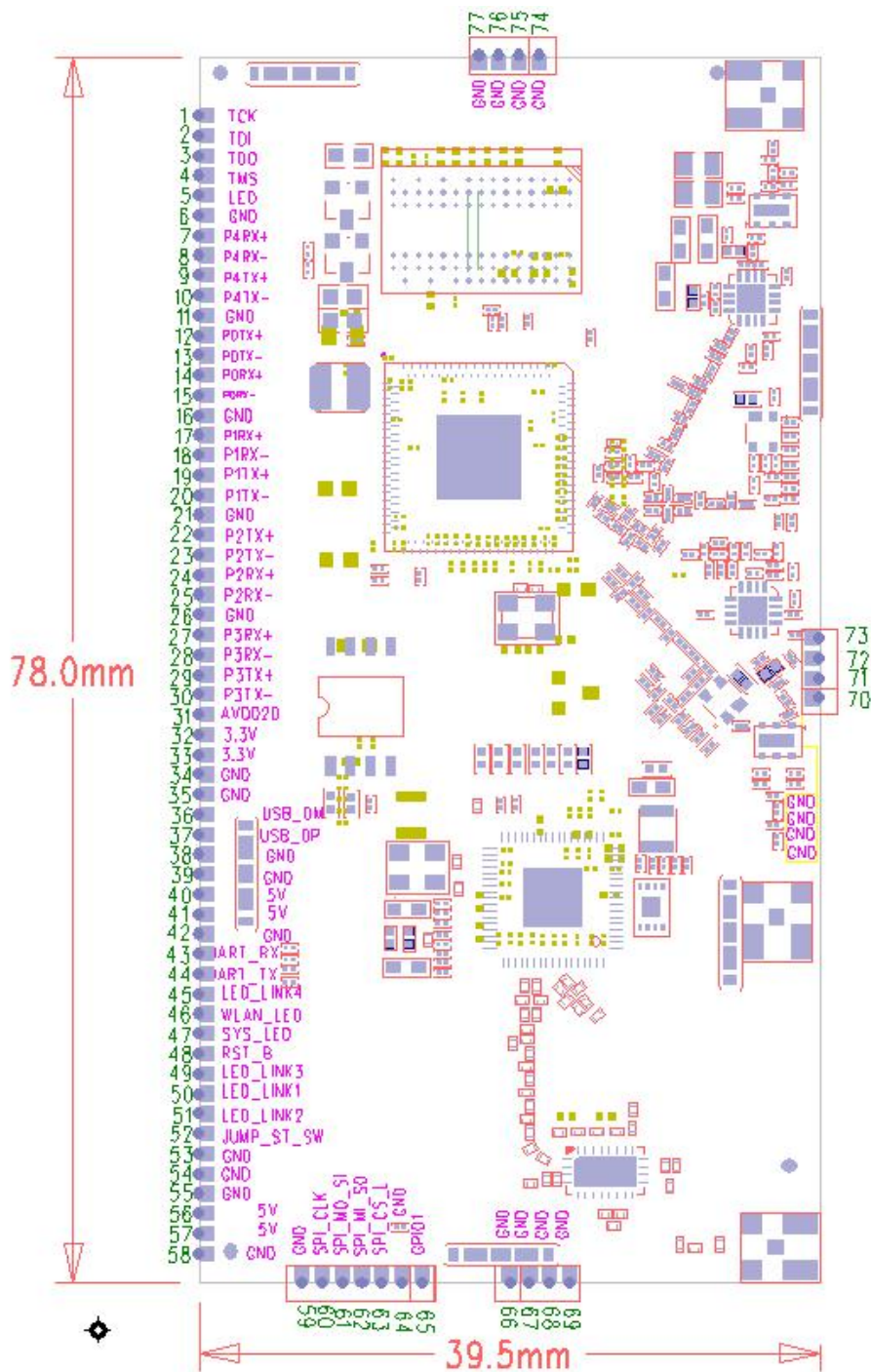
2. FEATURES

- QCA9531 2*2 MIMO 2.4GHz WiFi 802.11 b/g/n
- QCA9887 1*1 MIMO 5GHz WiFi 802.11 an/ac;
- Single side components and stamp hole pins;
- 1*PCI Express 1.1 interface(Used by QCA9887);
- 4*LAN and 1*WAN port;
- RAM:DDR2 64MBytes/128MBytes Option;
- ROM:SPI Flash 8Mbyte/16Mbyte Option;
- 1*USB 2.0 interface Host Mode;
- Data Rates:733Mbps(300Mbps+433Mbps);
- 18*GPIO(Configurable)
- 3*External antenna i-pex socket;
- 3.3V Power supply voltage;
- Size:39.5 mm* 78.0mm.

3. FUNCTIONAL BLOCK DIAGRAM



4. Pins



PIN NO	NAME	PIN STATE	SPEC
1	TCK	Floating ouput	I/O JTAG_TCK GPIO0
2	TDI	Floating ouput	I/O JTAG_TDI GPIO1
3	TDO	Floating ouput	I/O JTAG_TDO GPIO2
4	TMS	Floating ouput	I/O JTAG_TMS GPIO3
5	LED	Floating ouput	INTERNET_LED GPIO4
6	GND		GROUND
7	P4RX+		P4 Network Port
8	P4RX-		
9	P4TX+		
10	P4TX-		
11	GND		
12	P0TX+		P0 Network Port
13	P0TX-		
14	P0RX+		
15	P0RX-		
16	GND		
17	P1RX+		P1 Network Port
18	P1RX-		
19	P1TX+		
20	P1TX-		
21	GND		
22	P2TX+		P2 Network Port
23	P2TX-		
24	P2RX+		
25	P2RX-		
26	GND		
27	P3RX+		P3 Network Port
28	P3RX-		
29	P3TX+		
30	P3TX-		
31	AVDD20		2.0V OUTPUT
32	3.3V		
33	3.3V		

34	GND		GROUND
35	GND		GROUND
36	USB_DM	Floating output	USB Master USB-
37	USB_DP	Floating output	USB Master USB+
38	GND		GROUND
39	GND		GROUND
40	5V		
41	5V		
42	GND		GROUND
43	UART_RX	10K GND INPUT	UART RX GPIO9
44	UART_TX	10K GND	UART TX GPIO10
45	LED_LINK4	Floating output	External LED GPIO11
46	WLAN_LE	Floating output	External LED GPIO12
47	SYS_LED	10K GND	External LED GPIO13
48	RST_B	10K 3.3V	RESET
49	LED_LINK3	Floating output	External LED GPIO14
50	LED_LINK1	Floating output	External LED GPIO16
51	LED_LINK2	Floating output	External LED GPIO15
52	JUMP_ST_	Floating output	open-drain GPIO 17
53	GND		GROUND
54	GND		GROUND
55	GND		GROUND
56	5V		
57	5V		
58	GND		GROUND
59	GND		GROUND
60	SPI_CLK	Floating output	SPI_CLK GPIO6
61	SPI_MO_SI	Floating output	SPI_MO_SI GPIO7
62	SPI_MI_SO	300Ω	SPI_MI_SO GPIO8
63	SPI_CS_L	10K 3.3V	SPI_CS_L GPIO5
64	GND		GROUND
65	GPIO1		I/O
66	GND		GROUND
67	GND		GROUND

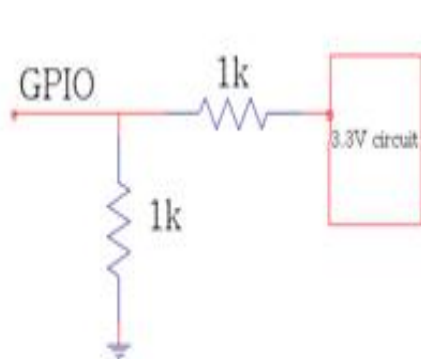
68	GND		GROUND
69	GND		GROUND
70	GND		GROUND
71	GND		GROUND
72	GND		GROUND
73	GND		GROUND
74	GND		GROUND
75	GND		GROUND
76	GND		GROUND
77	GND		GROUND

NOTE:

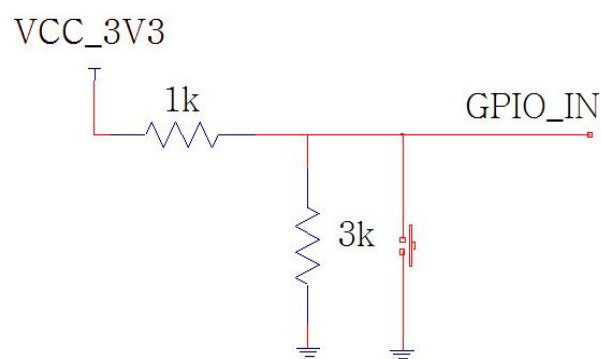
1. power supply pin 32 and pin 33 can input 3.3V. power supply pin40, 41, 56 and 57 can input 5V.pin 31 can output 2.0V.
2. Unused GPIOs can floating, no need pull-up or pull-down.
3. The power supply voltage of GPIO is 2.62V, when the GPIO outputs high,the voltage is 2.62V, the low voltage is 0V.

If the control circuit of GPIO access to 3.3V, recommended circuit:

Input mode :

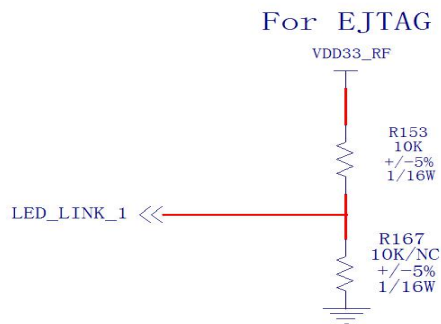


(A)

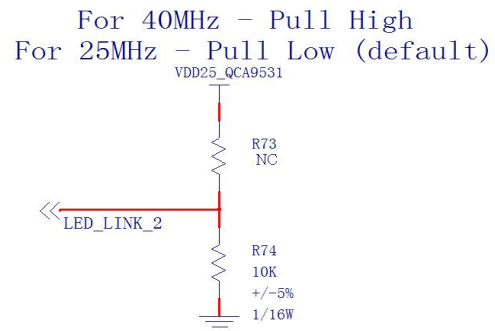


(B)

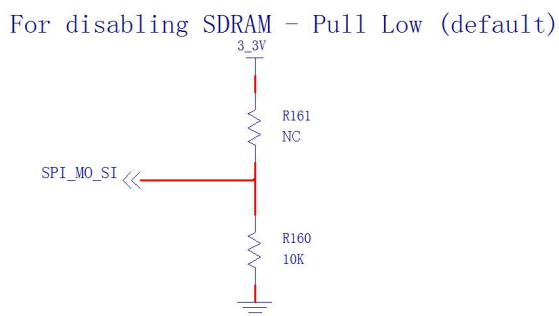
5. BOOTSTRAP SETTING



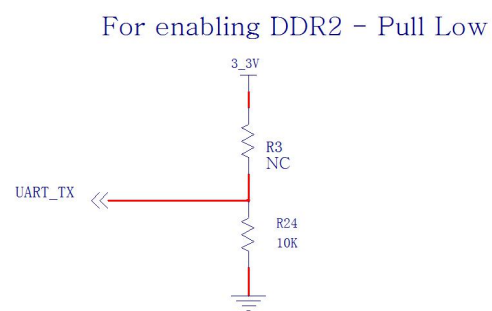
GPIO 16



GPIO 15

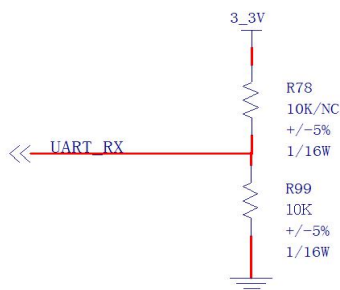


GPIO 7



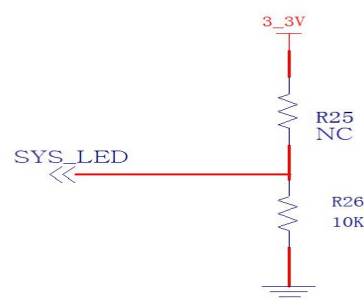
GPIO 10

For enabling DDR1 - Pull High



GPIO 9

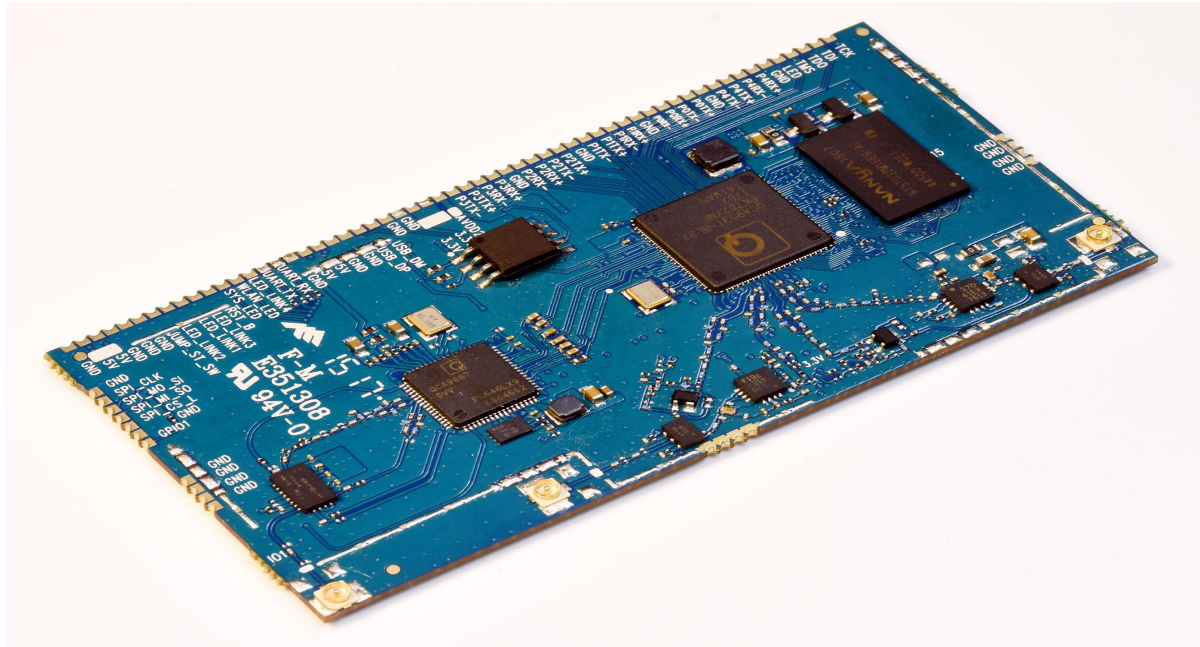
For enabling USB HOST



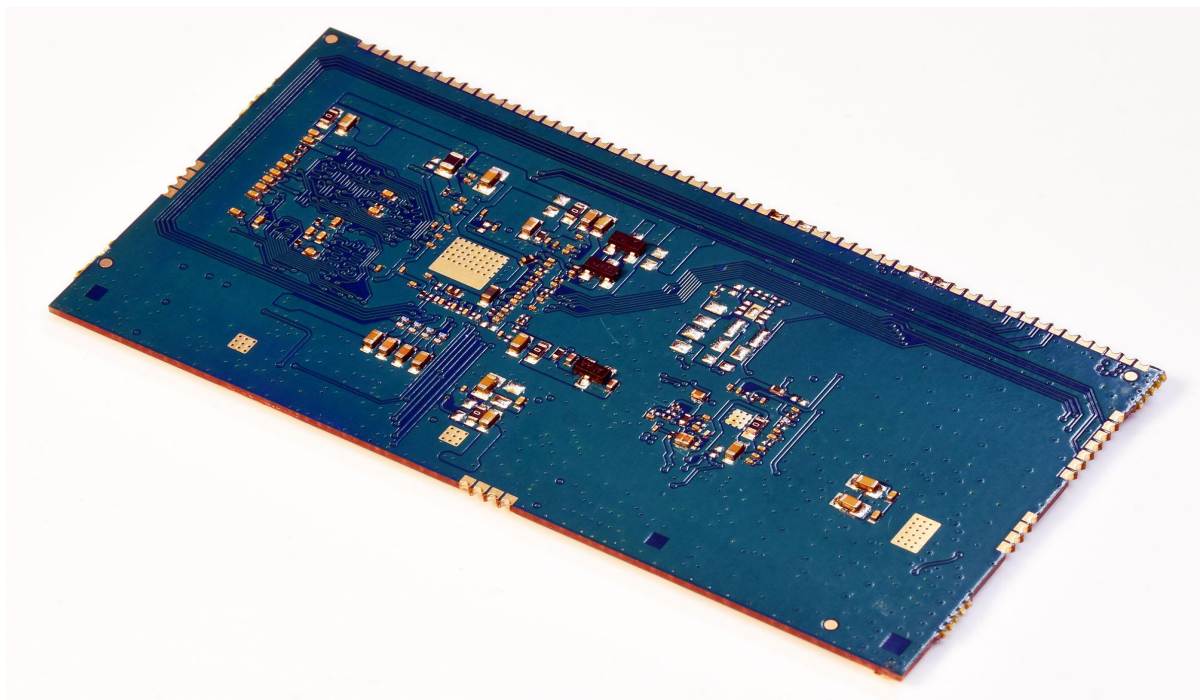
GPIO 13

6. PICTURE

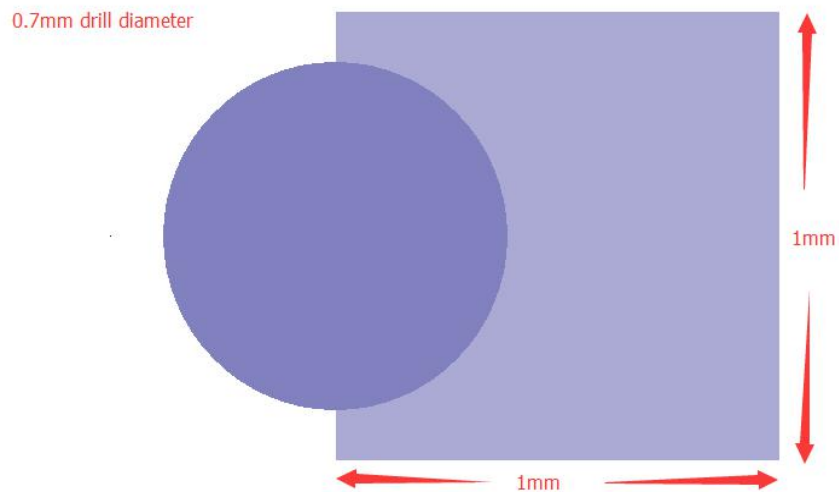
TOP



BOTTOM

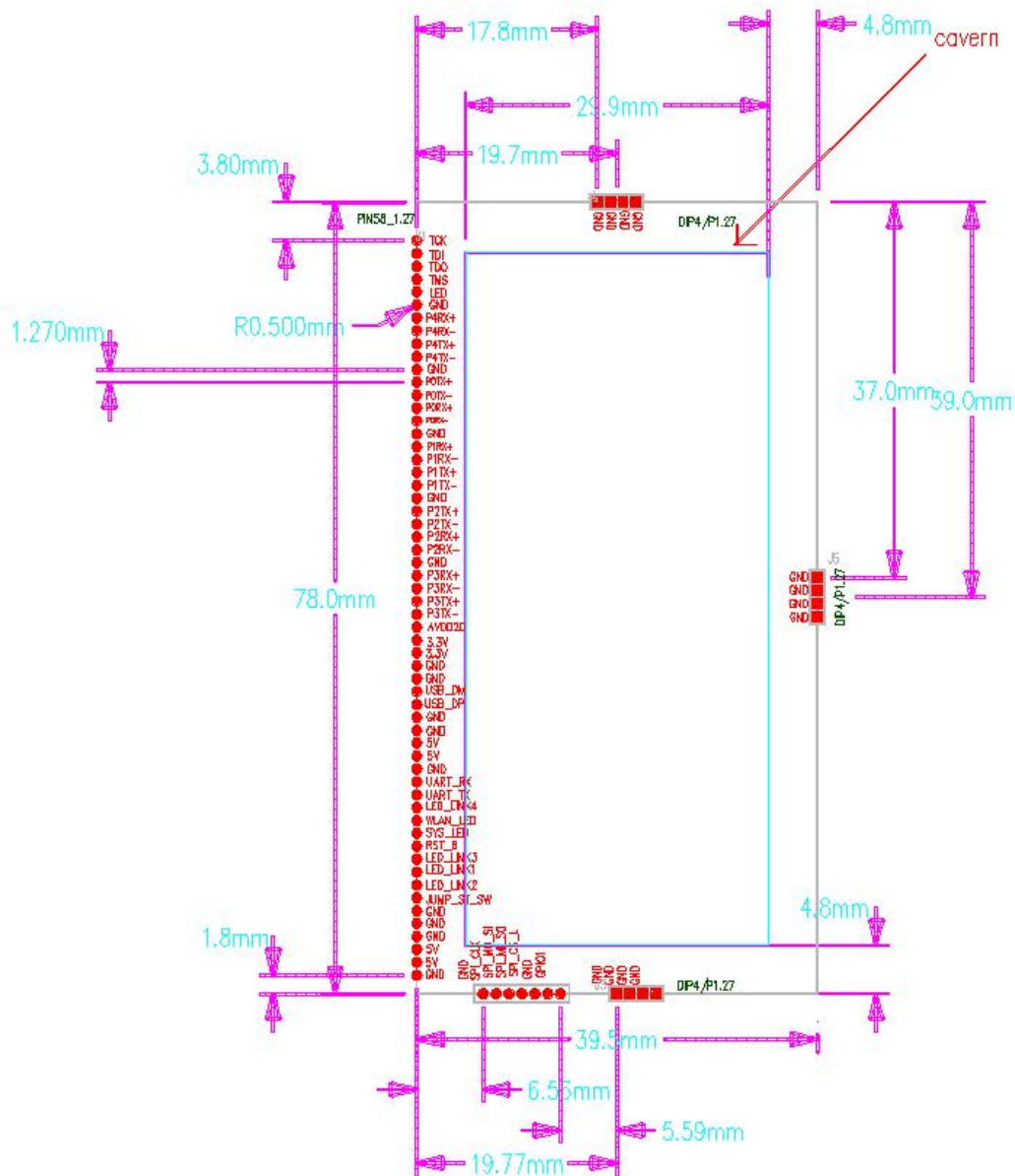


7. PIN FOOTPRINT

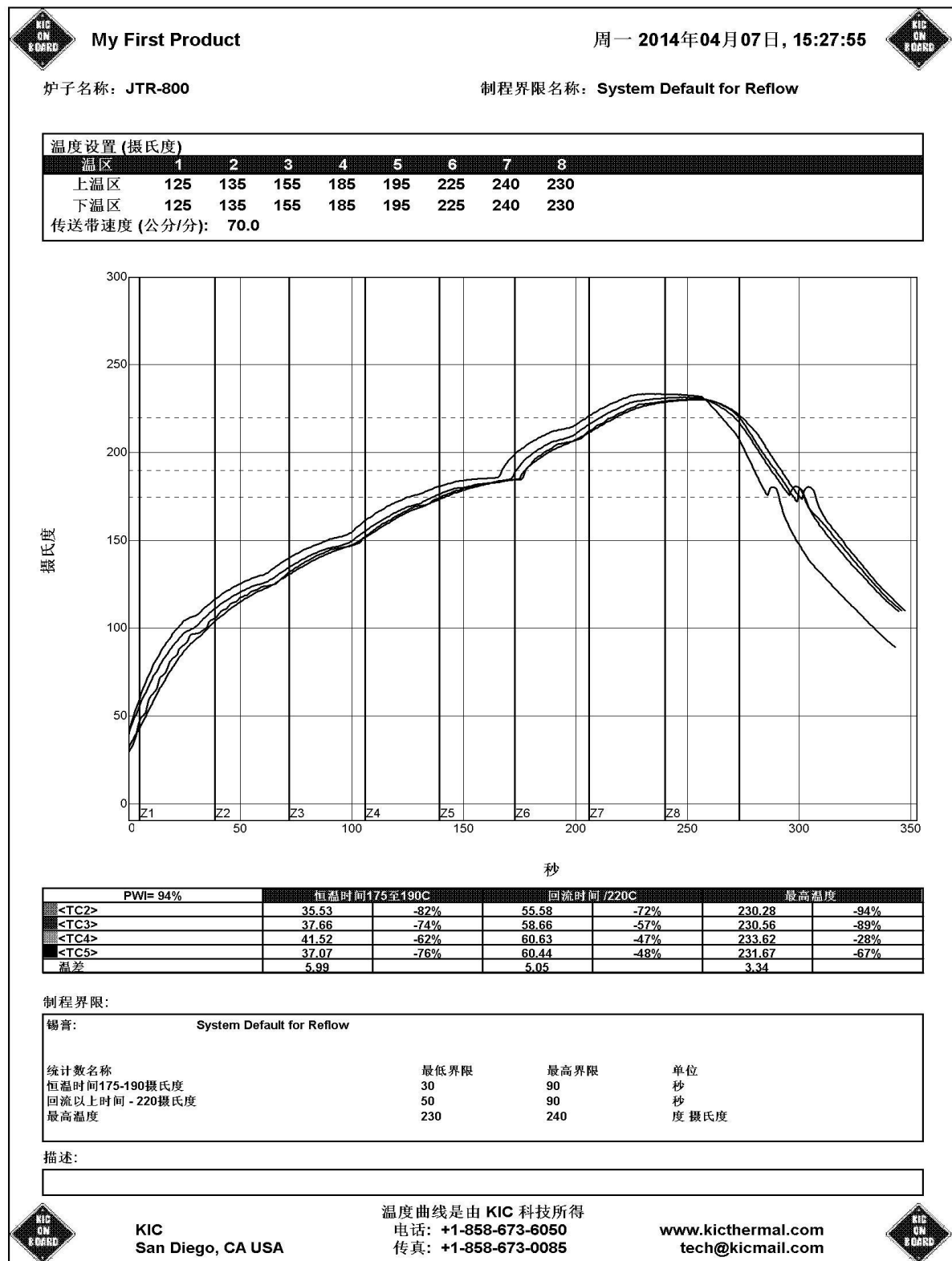



OoliteV5.2.dxf

PACKAGE



8. REFLOW SOLDERING TEMPERATURE CURVE



9. MODULE OPERATING ENVIRONMENT

Working temperature: 0 °C to 40 °C;

Storage temperature: -40 °C to 70 °C;

Humidity: 10% to 90% RH no condensation;

Storage humidity: 5% to 90% RH no condensation.