

GAINSTRONG

OoliteV1.0 Spec

Specification Version 1.0.6

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July 9, 2018

Rev.	Date	Contents of Revision Change	Remark
1.0.1	2017-3-24	Modify spec layout	
1.0.2	2017-3-31	Add bootstrap setting	
1.0.3	2017-3-31	Fix the pins table	
1.0.4	2017-4-5	Add re-flow soldering temperature curve	
1.0.5	2017-4-6	Fix the TX/RX error	
1.0.6	2018-7-9	Modify Wireless speed to 150Mbps	James

1. INTRODUCTION



OoliteV1.0 is a highly integrated and cost effective IEEE 802.11n 1x1 2.4 GHz System-on-a-Chip(SoC) for wireless local area network(WLAN) AP and router module.

OoliteV1.0 includes a MIPS 24K processor and integrated serial Flash, DDR2, two-port IEEE 802.3 Ethernet Switch with MAC/PHY, one USB 2.0 interface , I2S/SPDIF-Out audio interface, SLIC VOIP/PCM interface, UART, and GPIOs that can be used for LED controls or other general purpose interface configurations.

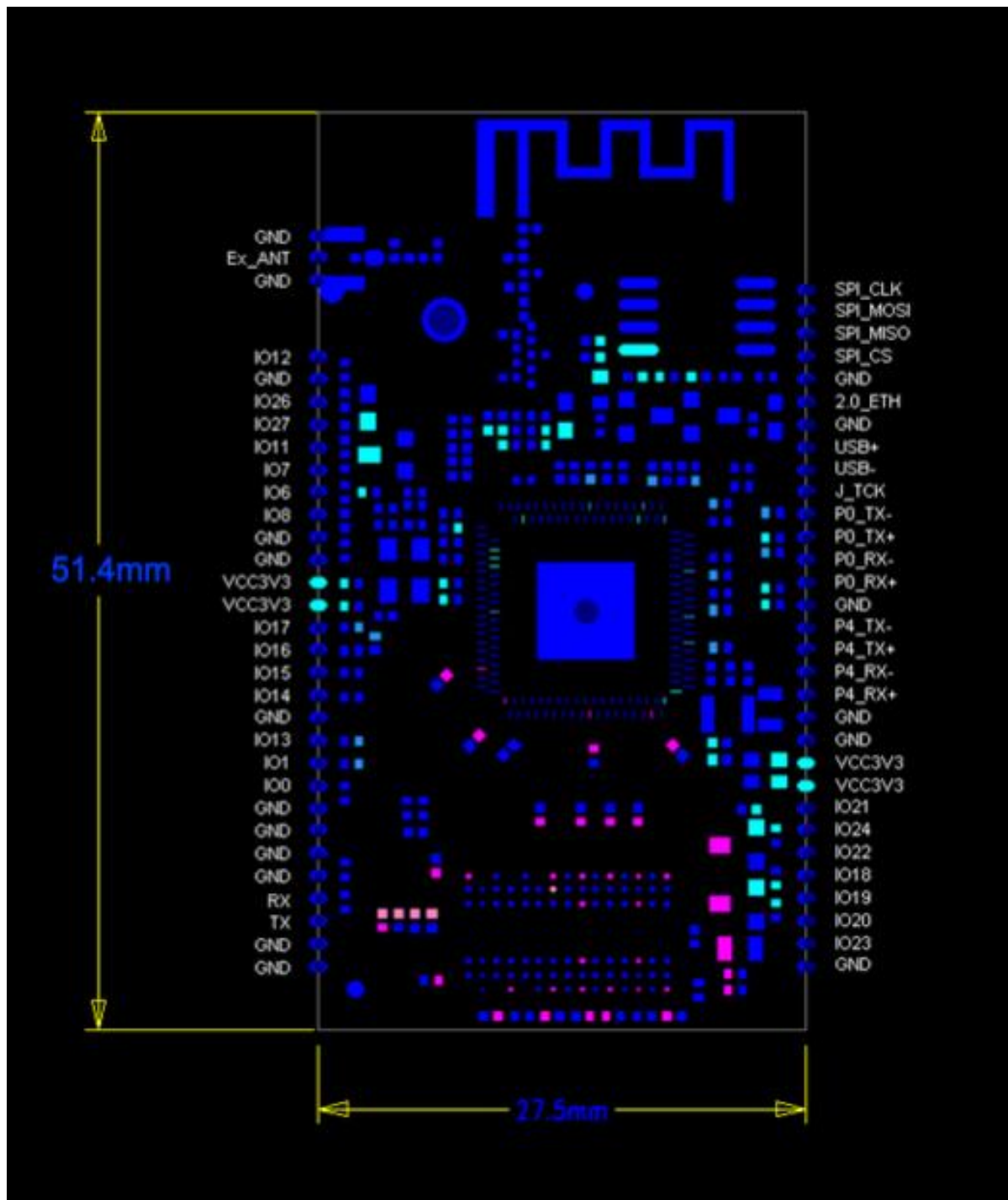
OoliteV1.0 is designed for smart home device, wifi hard disk, WiFi router board, remote monitoring, remote video, Industrial control DIY and so on

OoliteV1.0 power consumption is very low, usually no more than 0.4W, suitable for battery products, it has a 150M wireless transmission rate, up to 21 gpio's. All can be defined for input or output.

2. CHARACTERISTICS

- ◆ CPU: AR9331 400Mhz MIPS core
- ◆ RAM: 64M DDR2 RAM
- ◆ Flash: 16M SPI flash (4/8/32m option)
- ◆ Wireless speed: 150Mbps
- ◆ General GPIO: 21 (except TX, RX)
- ◆ USB: Usb 2.0 master interface, support USB hub extension
- ◆ Power supply voltage: 3.3V.
- ◆ Port: 1WAN and 1LAN 10/100Mbps network interface
- ◆ Antenna: the built-in PCB /IPX external antenna.
- ◆ Debug: serial debugging interface has been out.
- ◆ Board Power: 0.36W
- ◆ Product size: 27.5 * 51.4MM +- 0.1mm
- ◆ SPI interface pin out.

3. PINS



Pin No	Name	GPIO state	spec
1	GND		GROUND
2	EX_ANT	disconnected	Extenal Antenna reserved
3	GND		GROUND
4	GPIO12	10K GND	I/O I2S_MICIN/UART_CTS
5	GND		GROUND
6	GPIO26	Floating ouput	I/O
7	GPIO27/SYS_LED	3K led 3.3v output	I/O
8	GPIO11	1K 100PF GND input	I/O Reset button I2S_MCK/UART_RTS
9	GPIO7	10K GND output	I/O JTAG_TDO/I2S_WS
10	GPIO6	10K GND output	I/O JTAG_TDI/I2S_CK
11	GPIO8	10K GND output	I/O JTAG_TMS/I2S_SD
12	GND		
13	GND		
14	VCC3V3		
15	VCC3V3		
16	GPIO17	10K 2.5v output	I/O
17	GPIO16	10K GND output	I/O
18	GPIO15	10K GND output	I/O
19	GPIO14	10K GND output	I/O
20	GND		
21	GPIO13	10K 2.5v output	I/O
22	GPIO1	10K 2.5v output	I/O
23	GPIO0	10K GND output	I/O
24	GND		
25	GND		
26	GND		

27	GND		
28	Uart RX / GPIO9		RX SPI_CS_1/UART_SIN
29	Uart TX / GPIO10		TX SPI_CS_2/UART_SOUT
30	GND		GROUND
31	GND		
32	GND		
33	GPIO23	Floating output	I/O SPDIF_OUT
34	GPIO20	Floating output	I/O I2S_SD/SLIC_FS_IN
35	GPIO19	Floating output	I/O I2S_WS/SLIC_FS_OUT
36	GPIO18	Floating output	I/O I2S_CK/SLIC_CLK
37	GPIO22	Floating output	I/O I2S_MICIN/SLIC_DATA_IN
38	GPIO24	Floating output	I/O
39	GPIO21	Floating output	I/O I2S_MCK/SLIC_DATA_OUT
40	VCC3V3		
41	VCC3V3		
42	GND		
43	GND		
44	P4_RX+		P4 Network Port
45	P4_RX-		
46	P4_TX+		
47	P4_TX-		
48	GND		
49	P0_RX+		P0 Network Port
50	P0_RX-		
51	P0_TX+		
52	P0_TX-		
53	JTAG_TCK		JTAG TCK
54	USB-		USB Master USB+

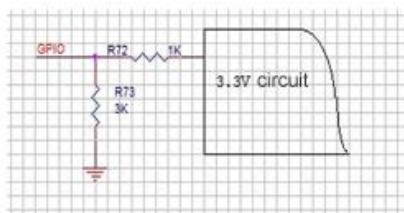
55	USB+		USB Master USB-
56	GND		GROUND
57	E_2.0V		Bias power output
58	GND		GROUND
59	SPI_CS0/ GPIO2	IO2	
60	SPI_MISO / GPIO5		
61	SPI_MOSI / GPIO4		
62	SPI_CLK / GPIO3		

NOTE:

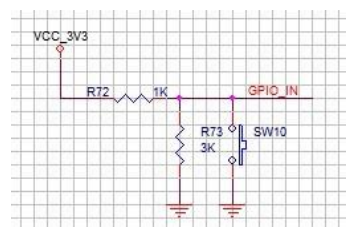
1. All power supply pins (VCC3V3) can power on, recommended 14 and 15 pin
2. Unused GPIOs can floating, no need pull-up or pull-down.
3. The power supply voltage of GPIO is 2.62V, when the GPIO outputs high, the voltage is 2.62V, the low voltage is 0V.

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

Input mode:



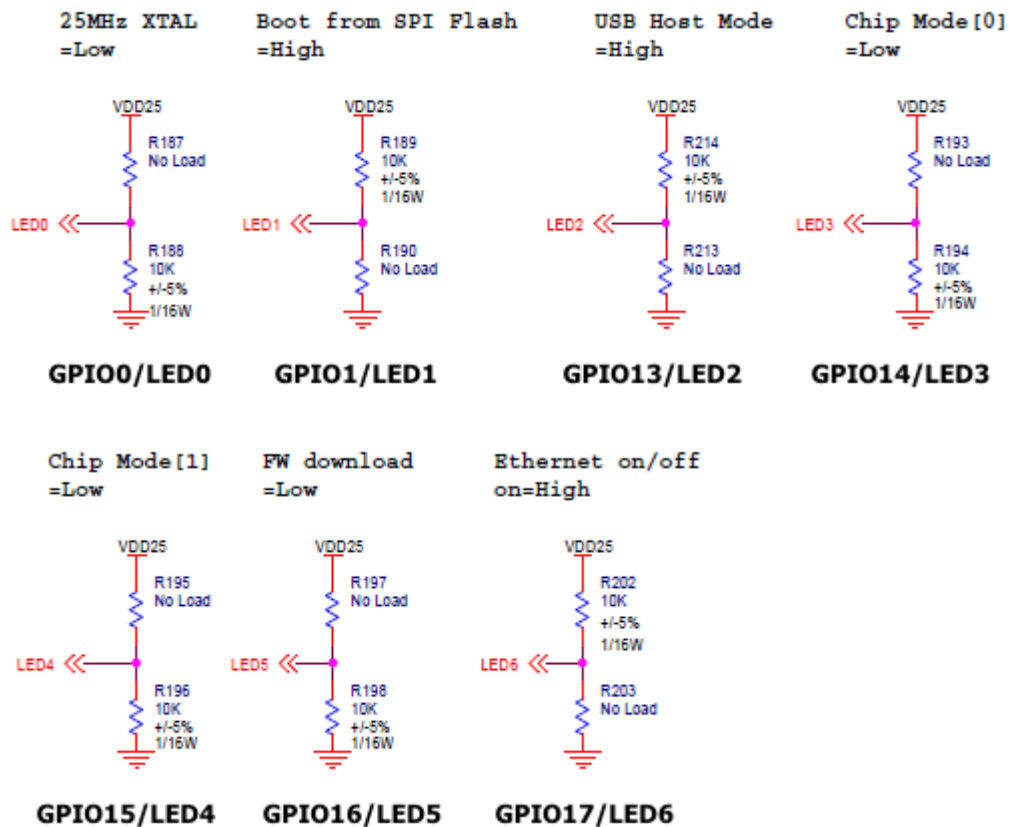
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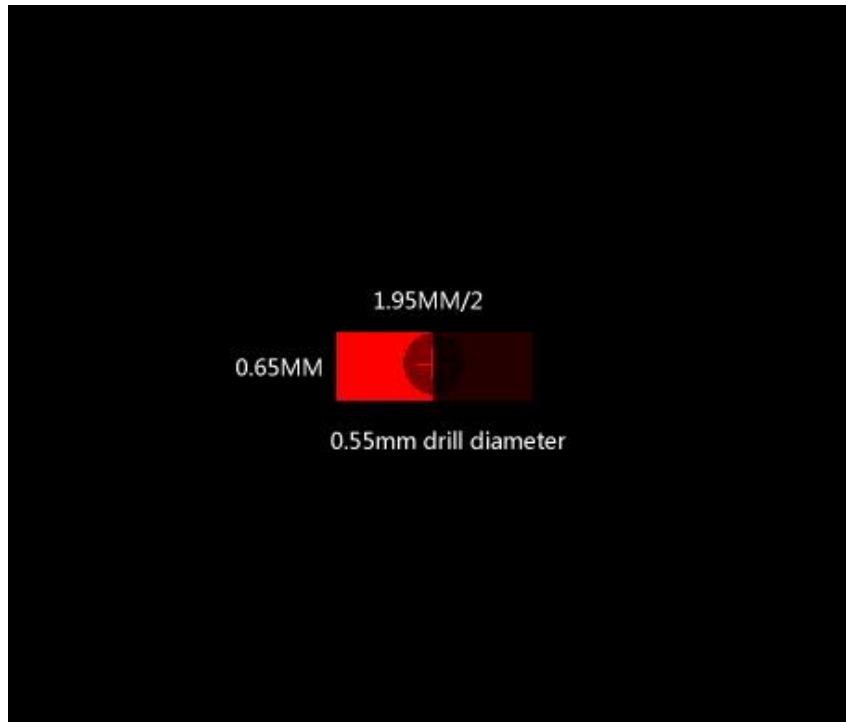
(B)

4. NET_POW, Network transformer bias power output. The output of 2.2V, to offset the use of wired network transformer
5. network port(default): P0、P4 Lan/Wan can be programmer

6. Bootstrap setting



4. PIN FOOTPRINT



OoliteV1.0.0.dxf

5. RADIO TRANSMITTER CHARACTERISTICS

Symbol	Parameter	Min	Typ	Max	Unit
F _{tx}	Transmit output frequency range	2.412	—	2.472	GHz
P _{out}	Mask Compliant CCK output power	—	18	—	dBm
	Mask Compliant OFDM output power				
	802.11g BPSK 6 Mbps	—	18	—	dBm
	HT20, MCS0	—	15	—	
	HT40, MCS0	—	14	—	
	EVM Compliant OFDM output power				
	802.11g 64 QAM 54 Mbps	—	18	—	dBm
	HT20, MCS7	—	15	—	
	HT40, MCS7	—	14	—	

6. RADIO RECEIVER CHARACTERISTICS

Symbol	Parameter	Min	Typ	Max	Unit
F_{rx}	Receiver output frequency range	2.412	—	2.472	GHz
S_{rf}	Sensitivity				
	CCK, 1 Mbps	-77	-88	—	dBm
	CCK 11 Mbps	-73	-84	—	
	OFDM, 6 Mbps	-79	-85	—	
	OFDM, 54 Mbps	-65	-68	—	dBm
	HT20, MCS0, 1 stream, 1 Tx, 1 Rx	-79	-85	—	
	HT20, MCS7, 1 stream, 1 Tx, 1 Rx	-61	-65	—	
	HT40, MCS0, 1 stream 1 Tx, 1 Rx	-76	-82	—	
	HT40, MCS7, 1 stream 1 Tx, 1 Rx	-55	-60	—	
Z_{RFIn_input}	Recommended ext_antenna differential drive impedance	—	50	—	Ω

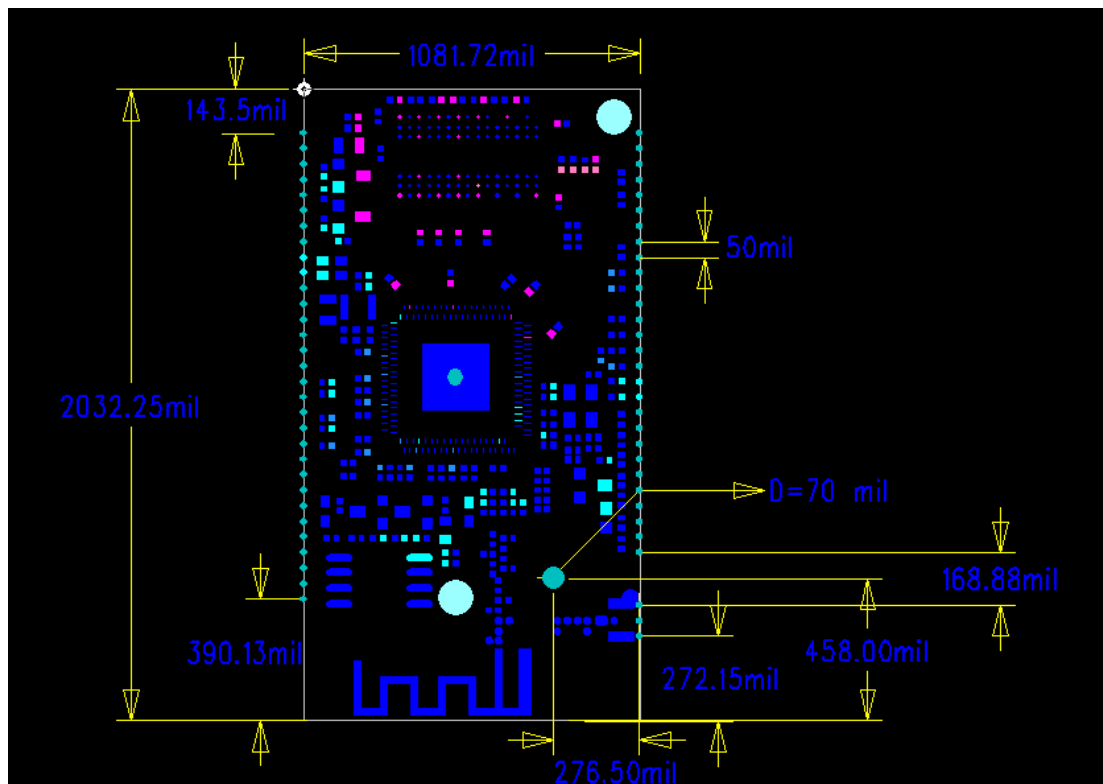
7. MODULE OPERATING ENVIRONMENT

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.



Open source code link:

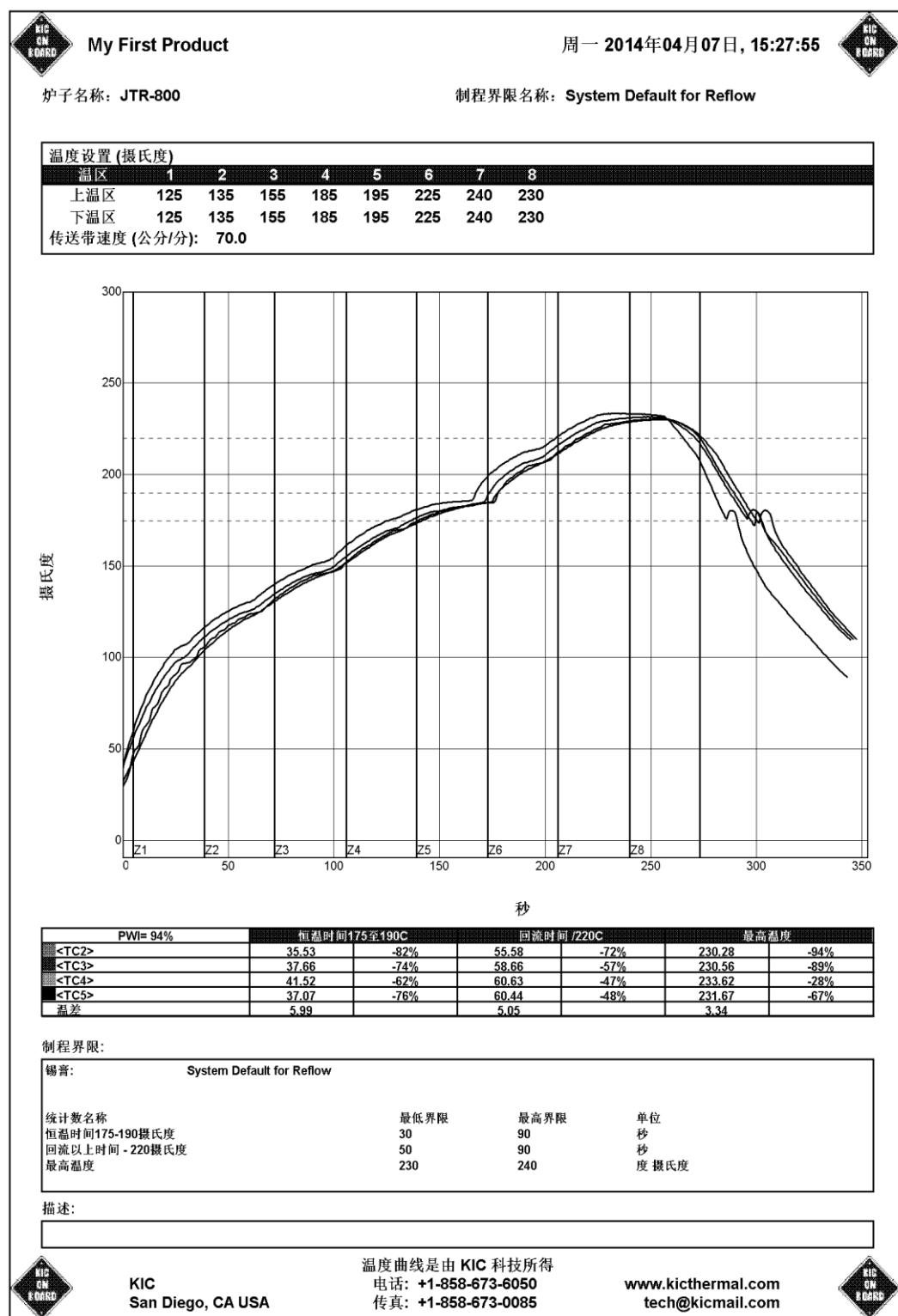
<http://oolite.cn>

<https://github.com/ooioe/Oolitev1>

<http://www.ooiot.com/oolitev1/openwrt>

<http://wiki.openwrt.org/toh/oolite/oolitev1>

8. REFLOW SOLDERING TEMPERATURE CURVE



9. PACKAGE



30pcs/tray, 300pcs/package