WT51F116/108
EVB Starter Kit Board
Operation Manual

REV. 1.0

September 24, 2014

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Ver.	Date	Applicant	Description
1.0	2014/09/24	Louis	1st version

Table of contents

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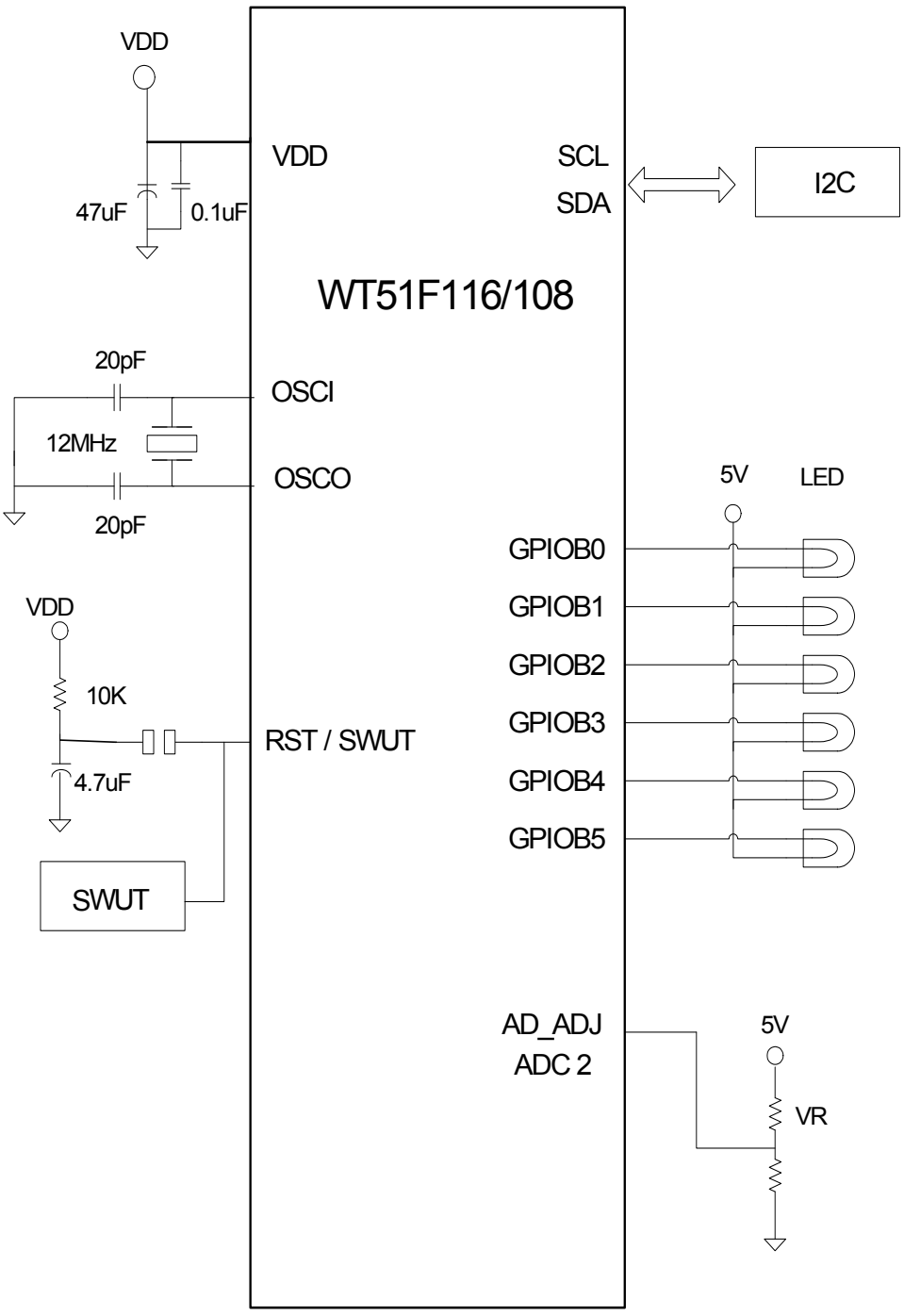
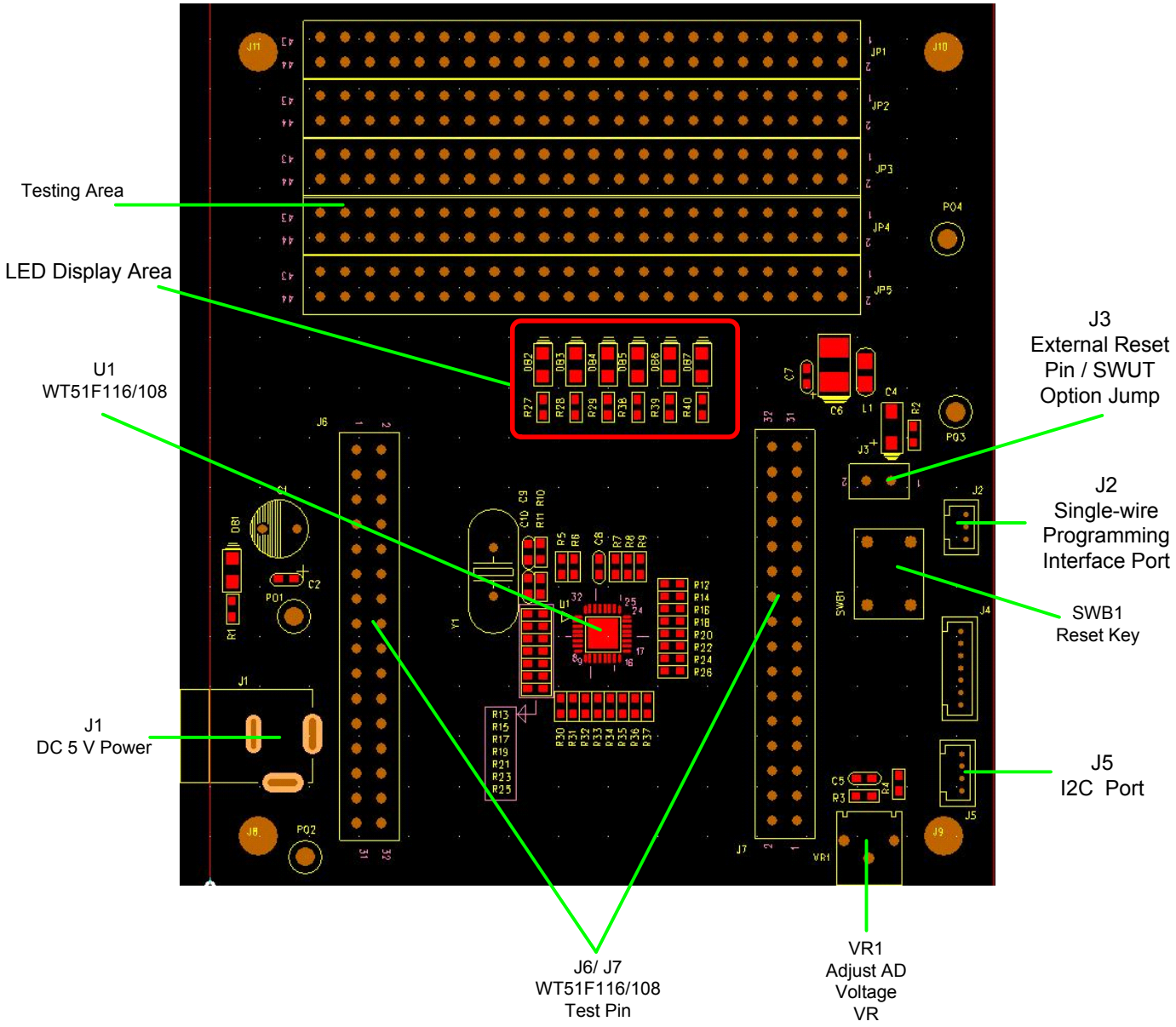
Chapter 1 WT51F116/108 Starter Kit Board Hardware Description

1.1 System Block Diagram

WT51F116/108 is an enhanced 8052 Micro Controller with LCD Driver functions, and the Starter Kit Board is designed for 32-pin QFN type IC to demonstrate its functions. System structure is as the figure below.



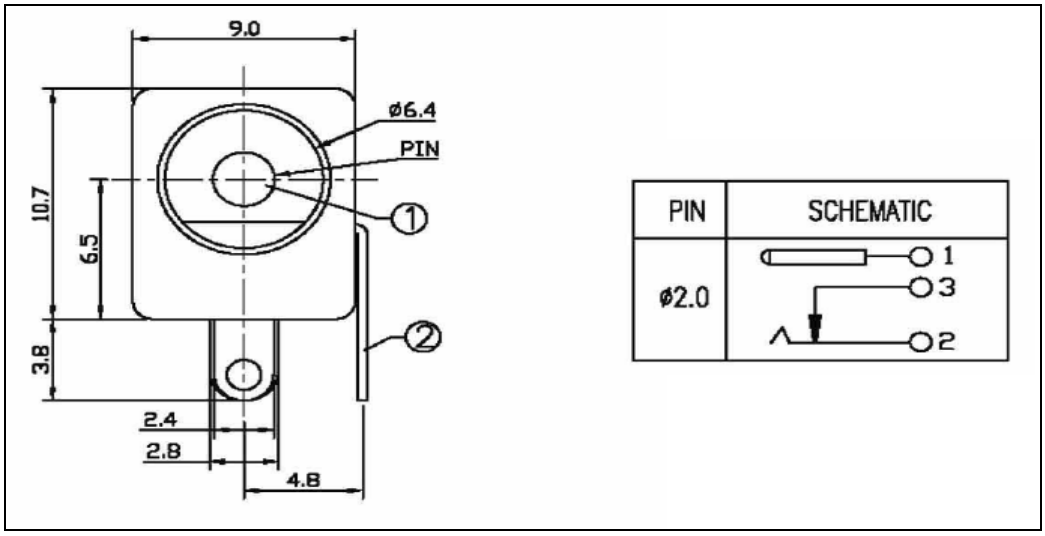
1.2 Starter Kit Board Components Location



Chapter 2 WT51F116/108 Starter Kit Board I/O Port Description

2.1 DC Input Connector (J1)

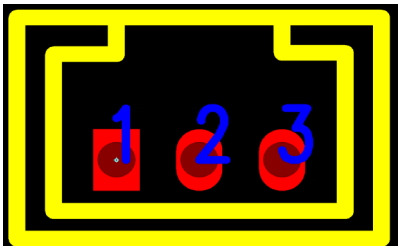
This is DC input connector for Starter Kit Board (supporting voltage: DC 5V).



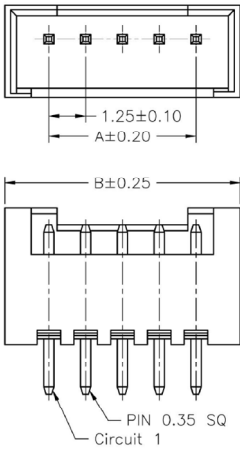
Pad Number	Description
1	Positive Input Pin
2	--
3	Negative Input Pin

2.2 SWUT (Single-wire UART) Programming Interface Port (J2)

WT51F116/108 Single-wire programming port as below:



Pitch (1.25 mm)



Ordering Information & Dimensions

PART NO.	Dimensions	
	A	B
2P	1.25	4.25
3P	2.50	5.50
4P	3.75	6.75
5P	5.00	8.00
6P	6.25	9.25
7P	7.50	10.50
8P	8.75	11.75
9P	10.00	13.00
10P	11.25	14.25
11P	12.50	15.50
12P	13.75	16.75
13P	15.00	18.00
14P	16.25	19.25
15P	17.50	20.50

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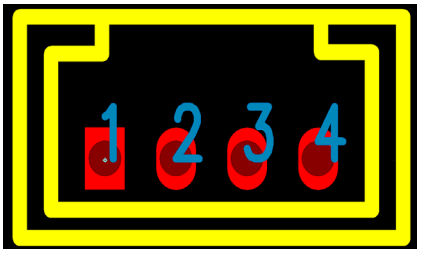
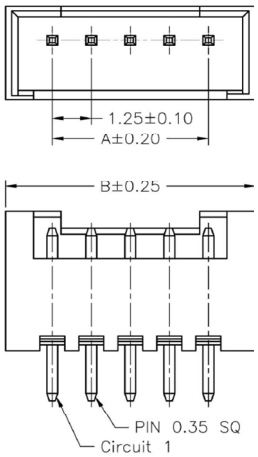
Pad Number	Description
1	VDD
2	SWUT
3	GND

2.3 WT51F116/108 I²C Interface Port

Components Location (J5): Slave I²C Interface Port.



Pitch (1.25 mm)



Ordering Information & Dimensions

PART NO.	Dimensions	
	A	B
2P	1.25	4.25
3P	2.50	5.50
4P	3.75	6.75
5P	5.00	8.00
6P	6.25	9.25
7P	7.50	10.50
8P	8.75	11.75
9P	10.00	13.00
10P	11.25	14.25
11P	12.50	15.50
12P	13.75	16.75
13P	15.00	18.00
14P	16.25	19.25
15P	17.50	20.50

Pad Number	Description
1	VDD
2	Slave_SCL
3	Slave_SDA
4	GND

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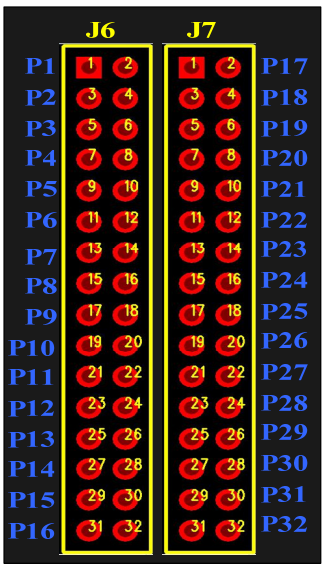
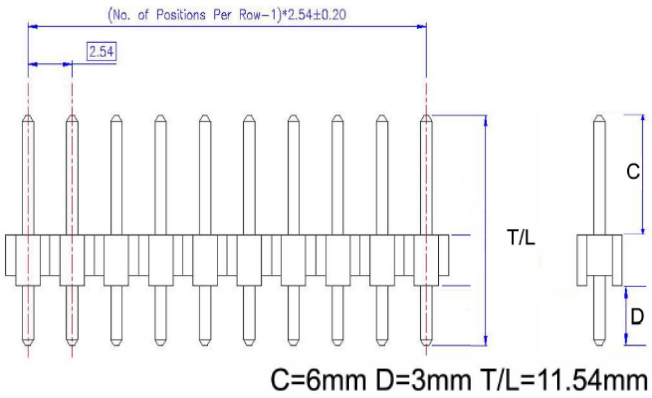
2.4 Testing Pins (J6/J7)

These are testing signal pins.



Pitch (2.54 mm)



C=6mm D=3mm T/L=11.54mm

J6		J7	
Pad Number	**Description**	**Pad Number**	**Description**
1-2	GPIOA5DH/IRQ15/ADC15/OSCI/PWM1B/P00	1-2	GPIOC2D/ PWM2C/P06
3-4	GPIOA4DH/IRQ14/ADC14/OSCO/PWM0B/P01	3-4	GPIOC1D/IRQ7/ADC7/P05
5-6	GPIOB5D/IRQ12/ADC12/RXA/PWM1A/P02	5-6	GPIOC0D/IRQ6/ADC6/PWM3B/P04
7-8	GPIOB4D/IRQ11/ADC11/TXA/PWM1D/P03	7-8	GPIOB2D/IRQ5/ADC5/STB/PWM0D
9-10	GPIOB3D/IRQ10/ADC10/PWM0A	9-10	GPIOB1D/IRQ4/ADC4/MOSI/PWM3A
11-12	GPIOC5D/IRQ9/ADC9	11-12	GPIOB0D/IRQ3/ADC3/PWM2A
13-14	GPIOC4D/IRQ8/ADC8	13-14	GPIOA2DH/IRQ2/ADC2/CMPO/PWM1C
15-16	GPIOC3D/PWM3C/P07	15-16	GPIOA1DHIRQ1/ADC1/VREF/CMPN/SCKA/ MISOB/RXA/SCL/PWM2B
17-18	GPIOA7DH	17-18	GPIOD5
19-20	GPIOA6DH	19-20	GPIOD4
21-22	GPIOB7D	21-22	GPIOA0DH//IRQ0/ADC0/CMPP/MISOA/ SCKB/TXA/SDA/PWM0D
23-24	GPIOB6D	23-24	VSS
25-26	GPIOC7D	25-26	VDD
27-28	GPIOC6D	27-28	GPIA3D/IRQ13/ADC13/NRST/SWUT
29-30	GPIOD1	29-30	GPIOD3
31-32	GPIOD0	31-32	GPIOD2

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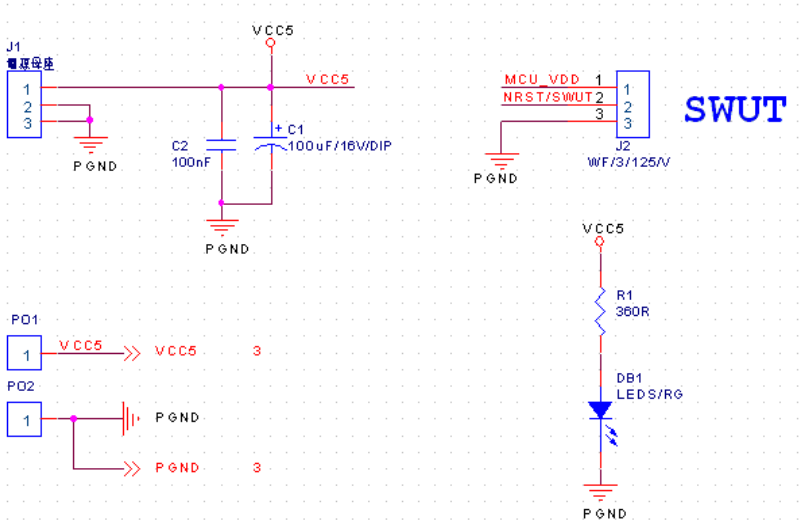
Chapter 3 WT51F116/108 Starter Kit Board Circuit Description

3.1 VDD Power Selection

There are three main power options for WT51F116/108 Starter Kit Board.
(External power input cannot exceed Max. 5.5V as spec definition).

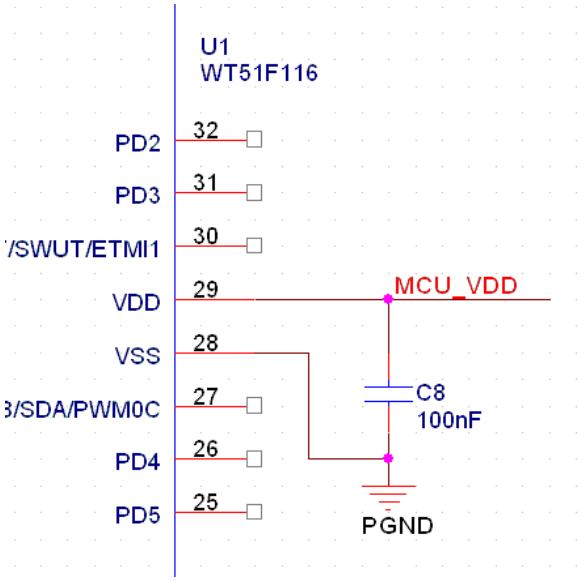
1. 5V adapter, J1 DC Jack (VDD).
2. External VDD: PO1 positive input, PO2 negative power, external VDD cannot exceed Max 5.5V as spec definition.
3. WLINK-SWUT VDD: Using WLINK-SWUT VDD supplies WT51F116/108 VDD power.

If power works normally, DB1 LED will light up.



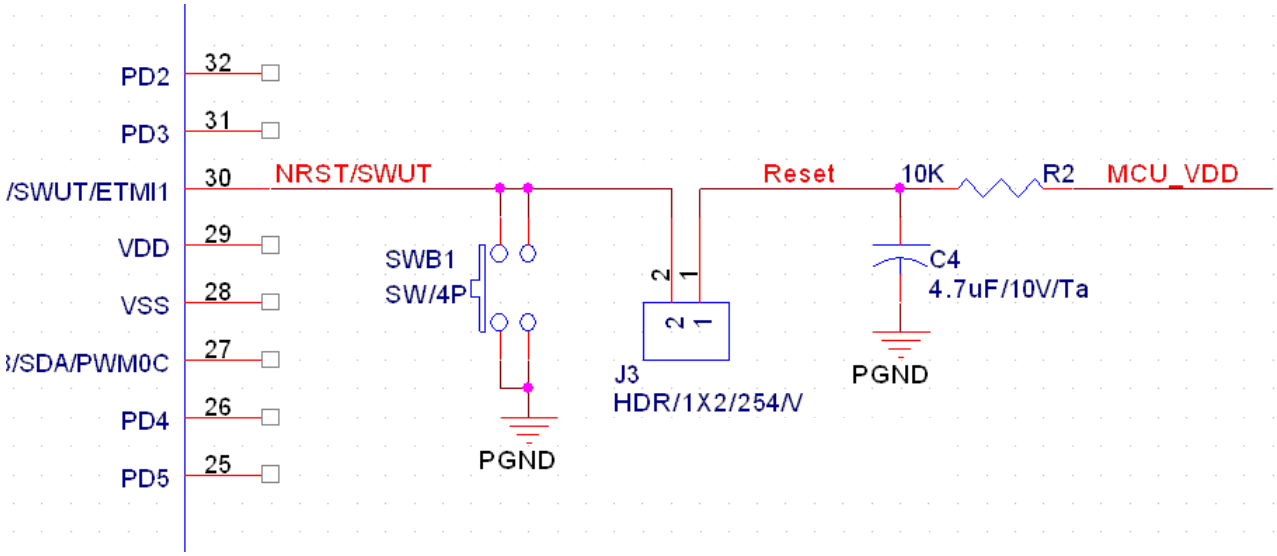
3.2 Power circuit

VDD power input should be with filter capacitance, this is best that the layout is close to the pin.



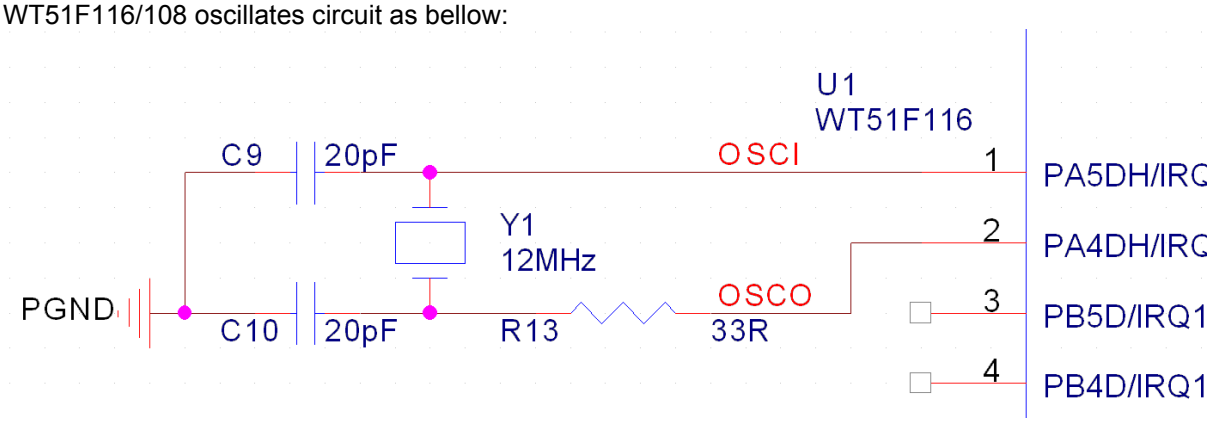
3.3 RESET Circuit

WT51F116/108 RESET circuit and SWUT (Single-wire programming) use the same pin, the related circuit description as below. When SWUT on programming, J3 JUMP should be removed, and disconnect from the external RC RESET. After programming finished, J2 JUMP should be plugged back, if the REST function had been used.



3.4 Oscillate Circuit

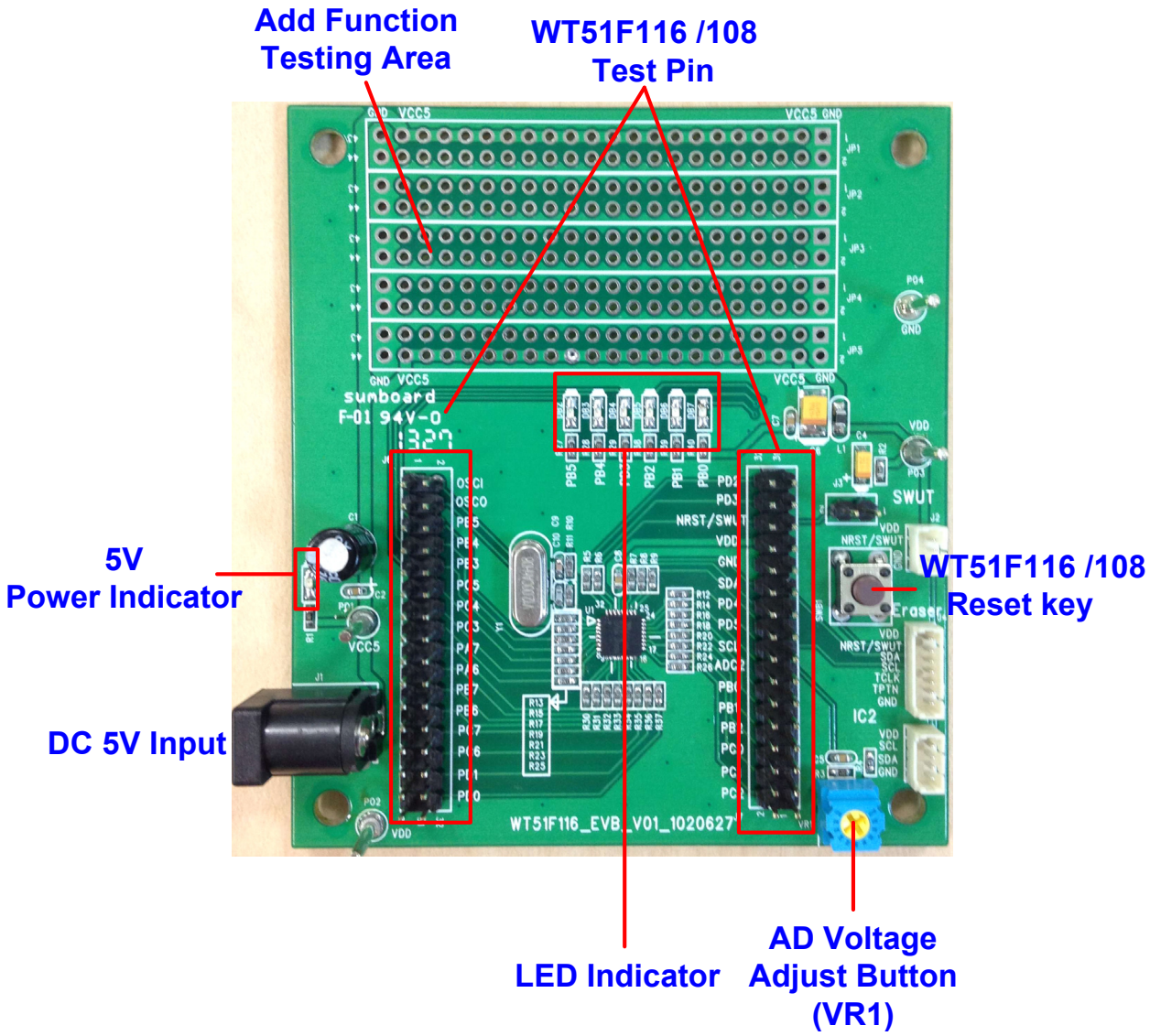
WT51F116/108 oscillates circuit as bellow:



Chapter 4 WT51F116/108 Starter Kit Board Operation Manual

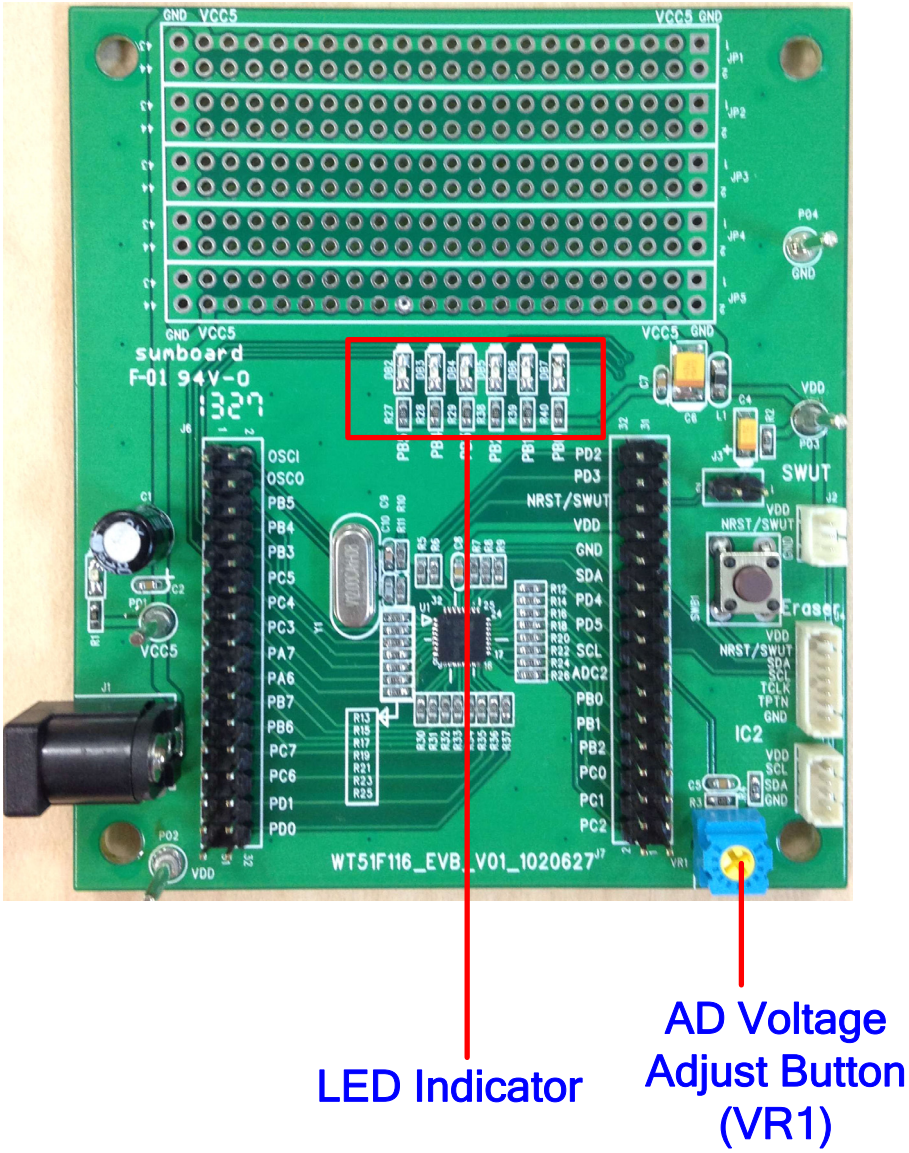
4.1 WT51F116/108 testing and demo platform

WT51F116/108 Starter Kit Board built in a single and easy led flash to display functions, and reserved some pins for testing usage.



4.2 LED display

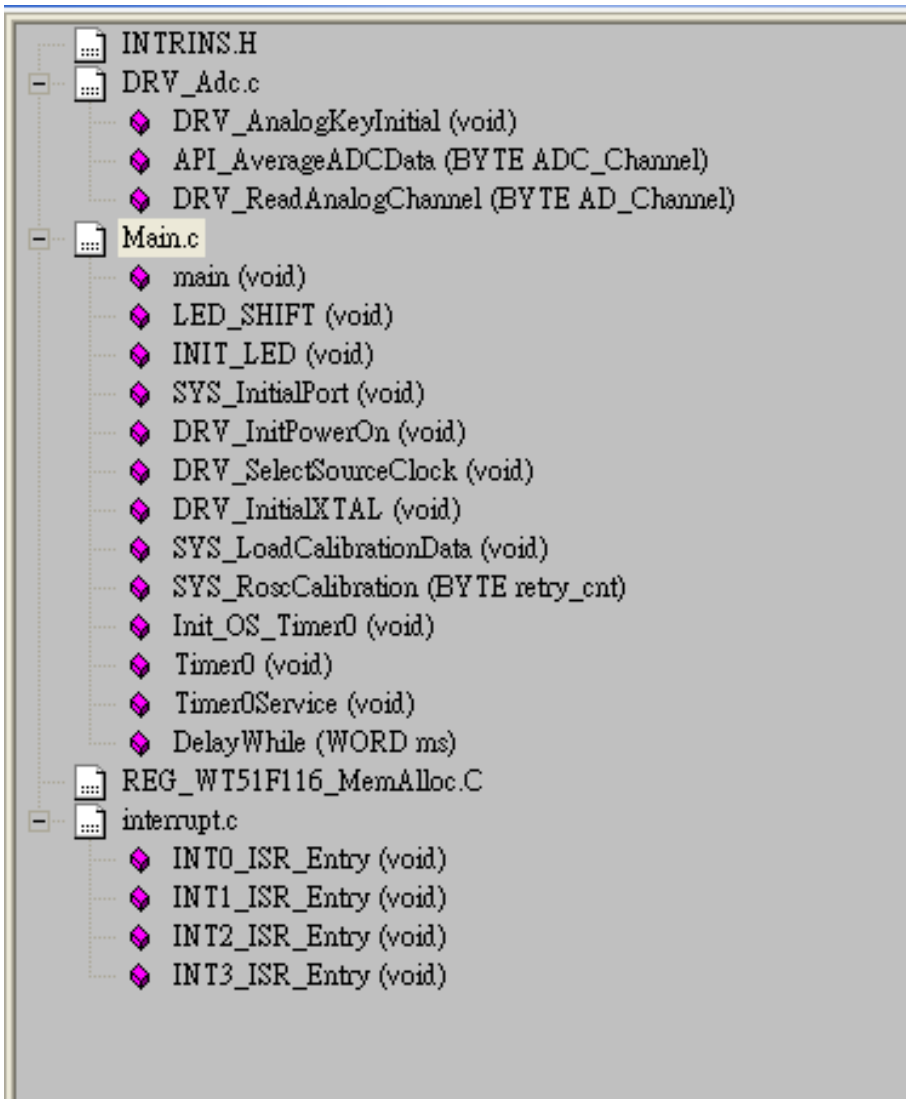
After Power on, LED will alternately blink on the EVB board. Meanwhile, adjusting VR1 can change LED blinking speed.



Chapter 5 Driver Module

5.1 Driver Module Summary

Please refer to the Driver module display, as below:



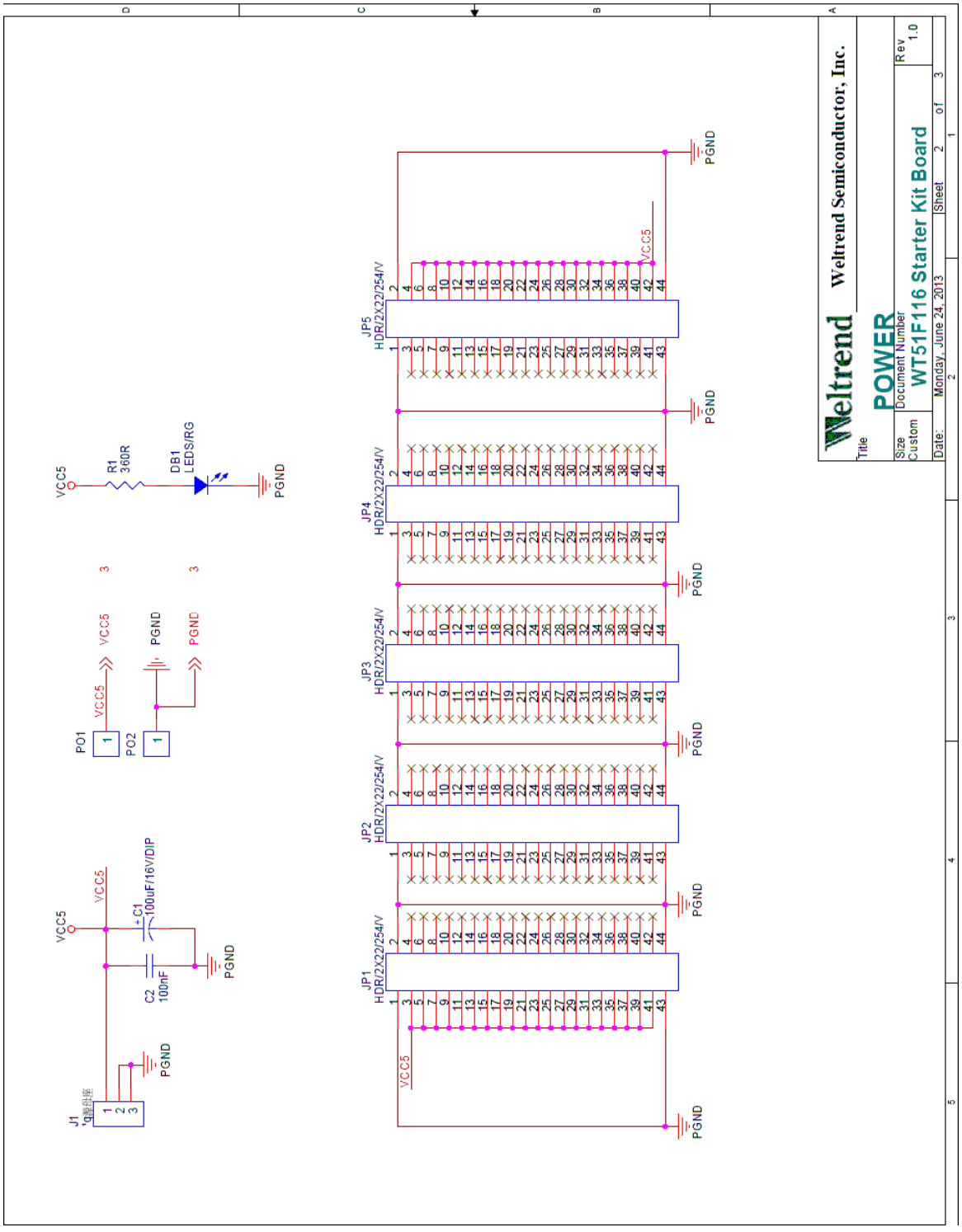
5.2 Main Program <Main.c>

Function	Description
void INIT_LED(void)	Initialize “LED port” (Driver layer)
void LED_SHIFT (void)	Rotate “LED” light (Application layer)

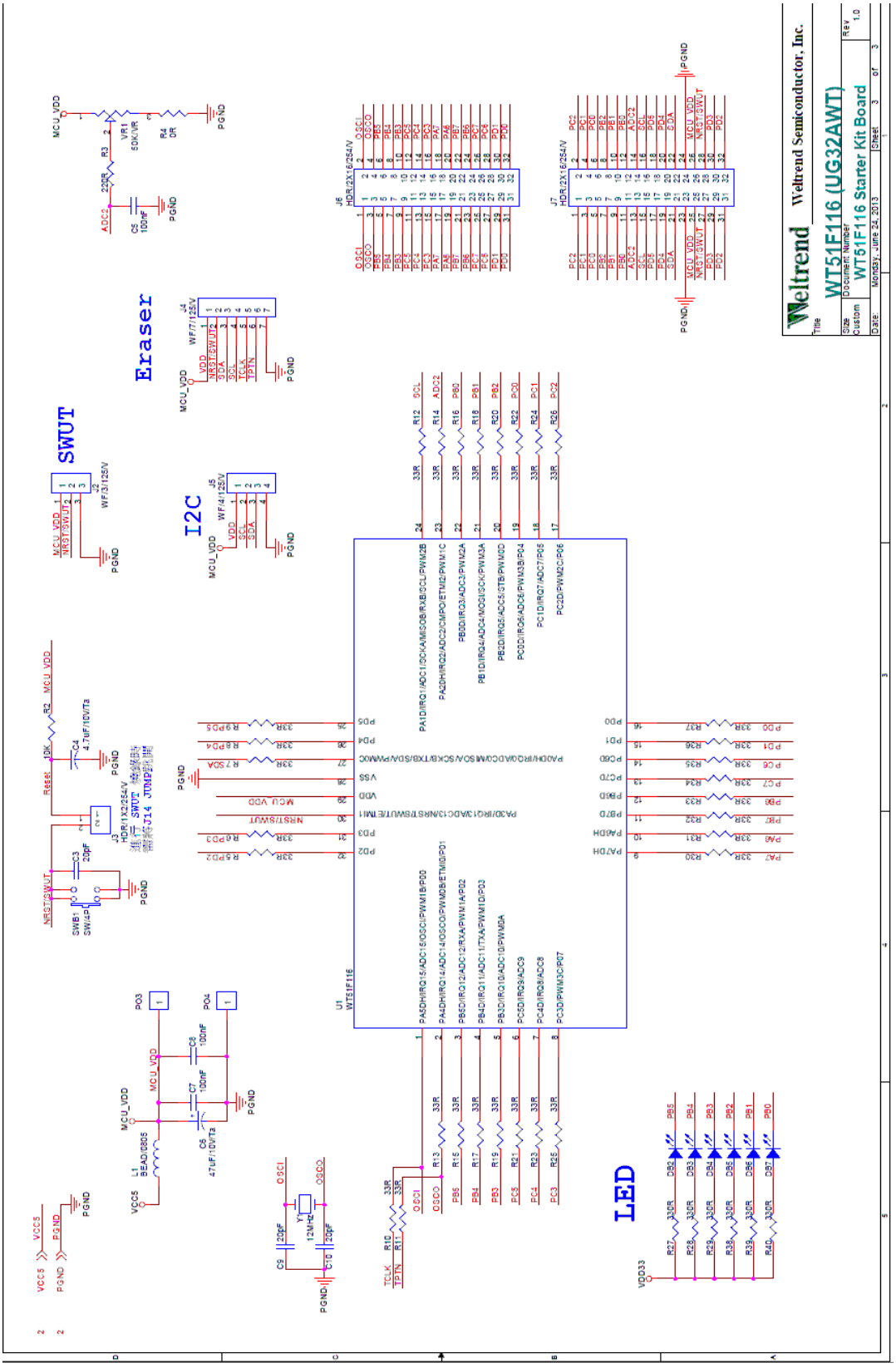
Chapter 6 Appendix

6.1 Circuit

1. Power



2. WT51F116/108 (MCU)



6.2 BOM

WT51F116 EVB BOM				
Item	Quantity	Reference	Part	PCB Footprint
1	3	C3, C9, C10	20pF	SC0603
2	4	C2, C5, C7, C8	100nF	SC0603
3	1	C1	100uF/16V/DIP	DCE030
4	1	C4	4.7uF/10V/Ta	SCE3216
5	1	C6	47uF/10V/Ta	SCE-B
6	7	DB1, DB2, DB3, DB4, DB5, DB6, DB7	LEDS/RG	SLED0805
7	5	JP1, JP2, JP3, JP4, JP5	HDR/2X22/254/V	Header2X22-2.54-V
8	1	J1	電源母座	JACK-3P
9	1	J2	WF/3/125/V	Wafter3P-1.25-V
10	1	J3	HDR/1X2/254/V	Header1X2-2.54-V
11	1	J4	WF/7/125/V	Wafter4P-1.25-V
12	1	J5	WF/4/125/V	Wafter4P-1.25-V
13	2	J7, J6	HDR/2X16/254/V	Header2X19-2.54-V
14	1	L1	BEAD/0805	SL0805
15	4	P01, P02, P03, P04	TERMINAL/DIP	TESTPIN_H3XP1.9XSILK3.5
16	1	R1	360R	SR0603
17	1	R2	10K	SR0603
18	1	R3	220R	SR0603
19	1	R4	0R	SR0603
20	30	R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R30, R31, R32, R33, R34, R35, R36, R37	33R	SR0603
21	6	R27, R28, R29, R38, R39, R40	330R	SR0603
22	1	SWB1	SW/4P	KEY
23	1	U1	WT51F116	QFN32
24	1	VR1	50K/VR	VR3-DIP
25	1	Y1	12MHz	HC49US

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6.3 Ordering Information

1. WT51F116/108 Development Kit

Kit	Product Name	Number
WT51F116/108 Development Kit	Single-wire Programming Board PL-2303 (WLINK-SWUT) x 1	WA000
	Simple Version (WT51F116/108 Starter Kit Board) x 1	WB010
	SWUT Programming Wire x 1	

2. WT51F116/108 Starter Kit Board (Simple Version)

Kit	Product Name	Number
WT51F116/108 Simple Version	Simple Version (WT51F116/108 Starter Kit Board)	WB010
	EVB Operation Manual	DOC28

3. Single-wire Programming Board (WLINK-SWUT)

Kit	Product Name	Number
Single-wire Programming Board WLINK-SWUT	Single-wire Programming Board PL-2303 (WLINK-SWUT)	WA000
	WLINK-SWUT Operation Manual	DOC2

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