A31L123

Starter Kit
STK-A31L123-RLN-A

Starter Kit H/W Manual

Version 1.04

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1 Introduction of starter kit board

Figure 1 shows a starter kit board of A31L123-RLN-A. In Table 1, you can see main features of the starter kit board.

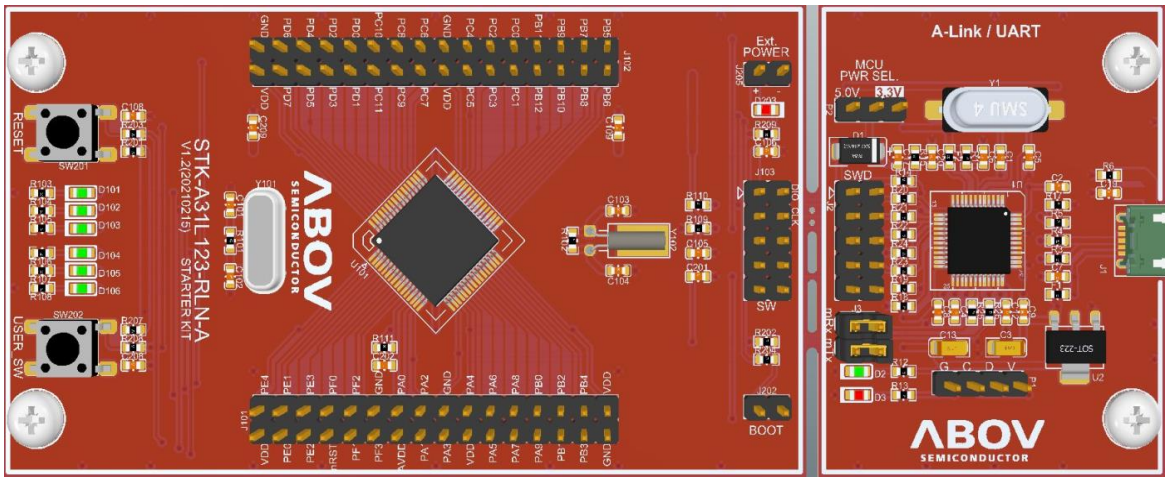


Figure 1. Starter Kit Board

Table 1. Main Features of Starter Kit Board

Main feature	Specifications	Remark
MCU	A31L123RLN	ARM CORTEX-M0+
Operating clock	8 MHz	Crystal Main
ROM	64 KB	Code Flash
RAM	8 KB	
Communication Port	USB 2.0	Micro USB Type B 5-pin
Debugging Port	SWD	10-pin Connector
Input Buttons	1 reset, 1 event input	TACT Switch

2 A-link part

In this chapter, A-link part of the starter kit board is introduced.

2.1 A-link section

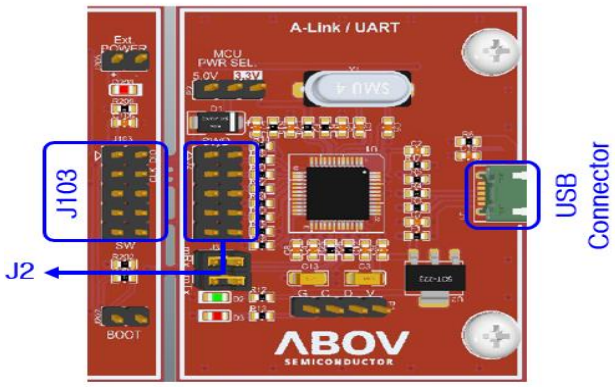


Figure 2. A-Link Section

2.1.1 USB connector (micro USB type B)

- PC USB interface (Debug Keil, IAR ..)
- CMSIS-DAP (Debug)
- COM Port

2.1.2 J103 (Box Header): SWD Connector on MCU Board

Table 2. SWD Pin Description on MCU Board

V-Sense	1	2	SWDIO
GND	3	4	SWCLK
GND	5	6	NC
NC	7	8	NC
GND	9	10	nRESET

2.1.3 J2 (Pin Header): SWD Connector on A-Link Board

Table 3. A-Link SWD Pin Description

V-Sense	1	2	SWDIO
GND	3	4	SWCLK
GND	5	6	NC
NC	7	8	NC
GND	9	10	nRESET

2.2 Power, USB to UART section

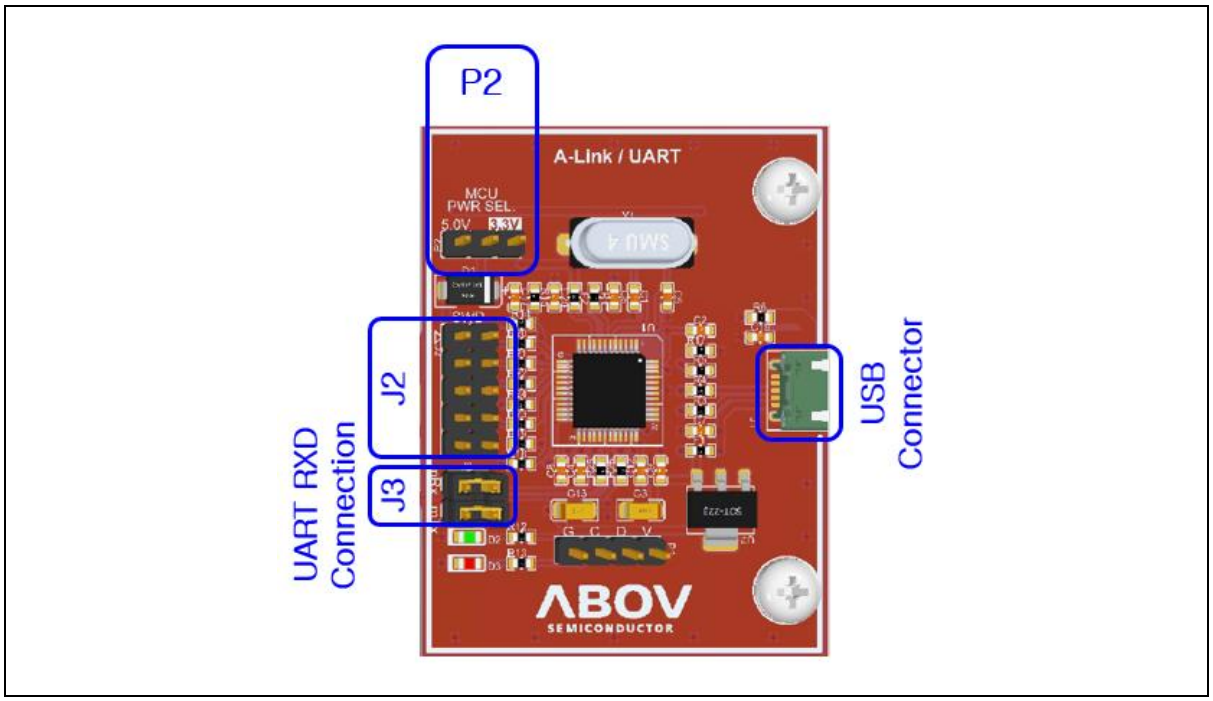


Figure 3. Power, USB to UART Section

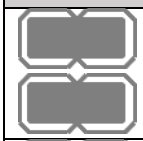
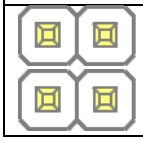
2.2.1 P2: MCU Power Selector

Table 4. P2 MCU Power Selector

P2	VDD
	Off (Don't use it)
	3.3V
	External Power

2.2.2 J3: USB to UART connection

Table 5. USB to UART Description

J3	Pin	Connection
	Short	(mRX) MCU RXD ← PC TXD (mTX) MCU TXD → PC RXD
	Open	(mRx) MCU RXD Open (mTx) MCU TXD Open

3 Device part

In this chapter, power, a boot mode selector and switches of the starter kit board are introduced.

3.1 Power, Boot mode selector and switch

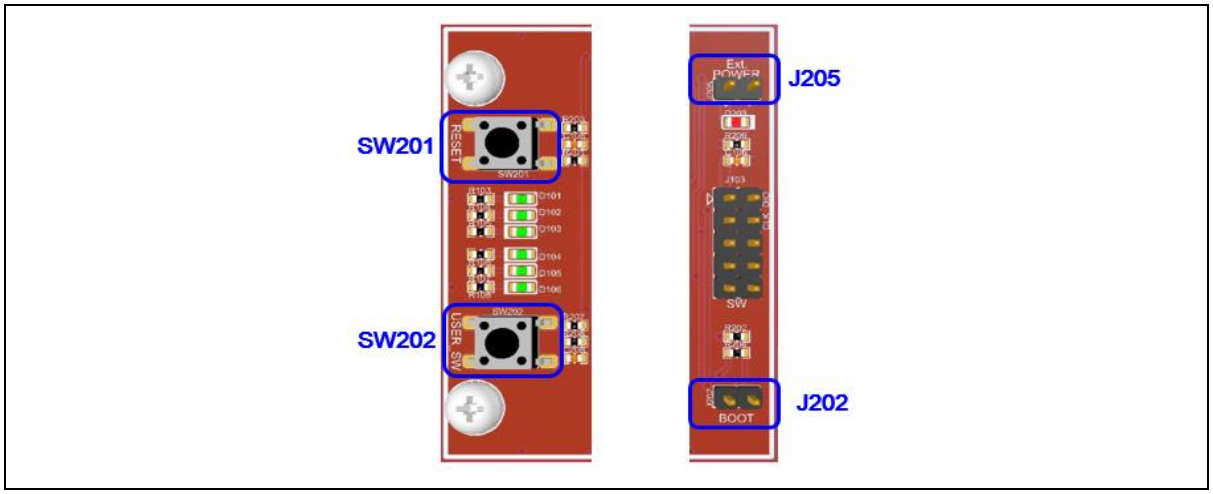


Figure 4. Power, Boot mode and Switch

3.1.1 J205: external power (not used)

Table 6. J205 Description and Connection

J205	Pin name	Connection
	VDD	+3.3 ~ 3.6V
	GND	0V

3.1.2 J202: mode select (boot/normal) pins

Table 7. J202 Boot Mode Selector

J202	Pin name	Connection
	Short	Boot mode
	Open	Normal mode

3.1.3 SW201, SW202: switch

Table 8. SW201, SW202 Description and Function

Switch	Function
SW201	nRESET
SW202	PB12

3.2 LED display (D101 – D106)

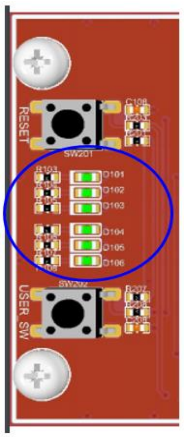


Figure 5. LED Display

3.2.1 LED schematic

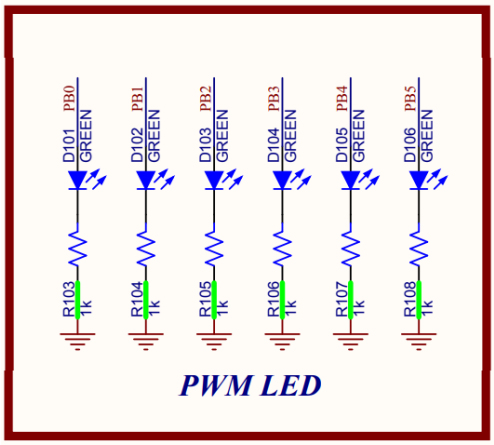


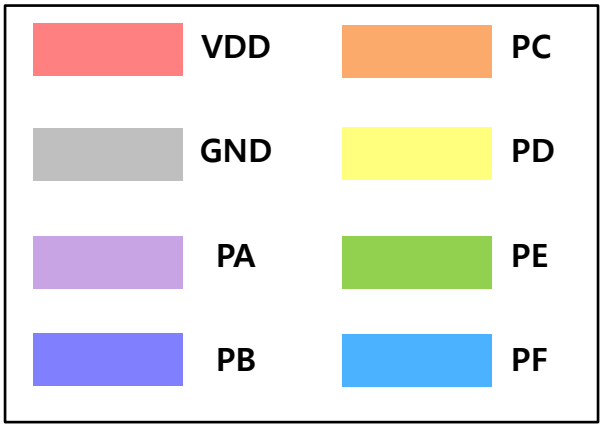
Figure 6. LED Schematic

3.2.2 LED pin assignment

Table 9. LED Pin Description

LED name	PORT
D101	PB0
D102	PB1
D103	PB2
D104	PB3
D105	PB4
D106	PB5

3.3 Pin assignment



CN1

1	VDD	PE4/RTCOUT	2
3	PE0/SXIN	PE1/SXOUT	4
5	PE2/XIN	PE3/XOUT	6
7	nRESET	PF0/EC50/AN12/SEG23	8
9	PF1/T50OUT/AN13/SEG22	PF2/T50INP/MISO0/AN14/SEG21	10
11	PF3/MOSI0/AN15/SEG20	AVSS	12
13	AVDD	PA0/T40OUTA/T40INP/AN0/CP0OUT/CP0N0	14
15	PA1/T40OUTB/EC40/T42INP/SS10/AN1/CP0P0/SEG19	PA2/T41OUTA/T41INP/TXD10/MOSI10/AN2/CP1OUT/CP1N0/SEG18	16
17	PA3/T41OUTB/EC41/RXD10/MISO10/ADTRG/AN3/CP1P0/SEG17	VSS	18
19	VDD	PA4/T43INP/SCK10/SS1/AN4/CP0N1/CP1N1	20
21	PA5/T40OUTA/T40INP/SCK1/AN5/CP0N2/CP1N2	PA6/T43OUTA/T43INP/MISO1/AN6/CP0OUT/SEG16	22
23	PA7/T43OUTB/EC43/MOSI1/AN7/CP1OUT/CP1P1/SEG15	PA8/LPTXD/AN8/SEG14	24
25	PA9/LPRXD/AN9/SEG13	PB0/AN10/TXD1/SEG12	26
27	PB1/LPDE/AN11/RXD1/SEG11	PB2/T50OUT/SEG10	28
29	PB3/T41OUTA/T41INP/SCK0/LPTXD/SCL1/ADTRG/SEG9	PB4/T41OUTB/EC41/LPRXD/SDA1/ADTRG/SEG8	30
31	VSS	VDD	32

CN2

32	VDD	VSS	31
30	PD7/SS0/SDA0/COM3	PD6/SCL0/SEG32	29
28	PD5/BOOT	PD4/T50INP/SDA0/RXD0/SC1PWR/CP1P5	27
26	PD3/SCL0/TXD0/SC1IN/CP1P4/VLC0	PD2/EC50/T43OUTB/EC43/SC1TXD/SC1DATA/MOSI1/CP1P3/SEG31	25
24	PD1/T43OUTA/T43INP/SC1RXD/SC1RST/MISO1/CP1P2/SEG30	PD0/T40OUTB/EC40/SC1CLK/SCK1/CP1N3/SEG29	23
22	PC11/RXD1/LPDE/COM7/SEG28	PC10/TXD1/SC0IN/COM6/SEG27	21
20	PC9/SS10/SC0PWR/LPRXD/COM5/SEG26	PC8/SCK10/SC0CLK/LPTXD/COM4/SEG25	19
18	PC7/T40OUTA/T40INP/RXD10/MISO10/SC0RXD/SC0RST/SS1/SEG24	PC6/TXD10/MOSI10/SC0TXD/SC0DATA/SWCLK	17
16	VDD	VSS	15
14	PC5/SWDIO	PC4/MOSI1/SC0TXD/SC0DATA/CP1OUT	13
12	PC3/MISO1/SC0RXD/SC0RST/CP0OUT	PC2/RXD0/SC0CLK/COM2	11
10	PC1/CLKO/TXD0/SC0PWR/COM1	PC0/CLKO/SC0IN/COM0	9
8	PB12/T42INP/SEG0	PB11/T43INP/SEG1	7
6	PB10/T43OUTB/EC43/SEG2	PB9/T43OUTA/T43INP/SEG3	5
4	PB8/MOSI0/SEG4	PB7/T42OUTB/EC42/RTCOUT/MISO0/LPDE/SDA1/ADTRG/SEG5	3
2	PB6/T42OUTA/T42INP/SCK0/SCL1/SEG6	PB5/SS0/LPDE/SEG7	1

Figure 7. Pin Assignment

Revision history

Date	Version	Description
20.03.31	1.00	Document created
21.01.28	1.01	Updated Starter Kit figures. Modified item name to match STK with a PCB silk.
22.02.09	1.02	Revised Document Updated Table 1 (Crystal 16MHz → 8MHz), Figure 1, Figure 2, Figure 3, Figure 4
22.11.22	1.03	Revised the font of this document
24.12.02	1.04	Updated the disclaimer.

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