

SLN-TLHMI-IOT

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Revision History

Rev. Code	Date	By	Description
X1	2021-12-8	Vincent Fillatre	Draft version (based on 47810 rev D)
A	2022-3-22	Vincent Fillatre	Release
A1	2022-5-30	Vincent Fillatre	Change U7 from W25Q256JVEIQ to W25Q512JVEIQ. Change USB cable from 600-77372 to 600-77212. Populate R321. Change R23, R20 to 470-76214(RES MF 82K 1/16W 1% 0402). Release.
A2	2022-6-7	Vincent Fillatre	Set SW8 as "1000"

Jumper Table

REF DES	JUMPER	PAGE NAME
U5,J210	1-2	03 - USB & POWER
U203	1-2	07 - BOOT
U205	2-3	07 - BOOT

DNP Table

REF DES	ASSY_OPT	PAGE NAME
C210,C221,C224,C228,C229, C230,C231,R6,R216,R251,U204	DNP	03 - USB & POWER
R33,R36,R278,R280,R337,R339	DNP	04 - MIMXRT1170 PART1
C30,L209	DNP	06 - MIMXRT1170 PART3
R38,R39,R53,R59,R66	DNP	07 - BOOT
R48,R285,R288,R290	DNP	08 - SDRAM, FLASH
R223,R238	DNP	09 - RGB & IR CAMERAS
C65,R63,R65,R72,R73,R293, R294,R304	DNP	10 - DISPLAY
C39,C40,C49,C50,C51,C52,D7, R40,R41,R42,R43,R308,R316, R317	DNP	11 - WiFi & BT
R21,R24	DNP	12 - AUDIO AMPLIFIER
R201,R258	DNP	14 - USER INTERFACE

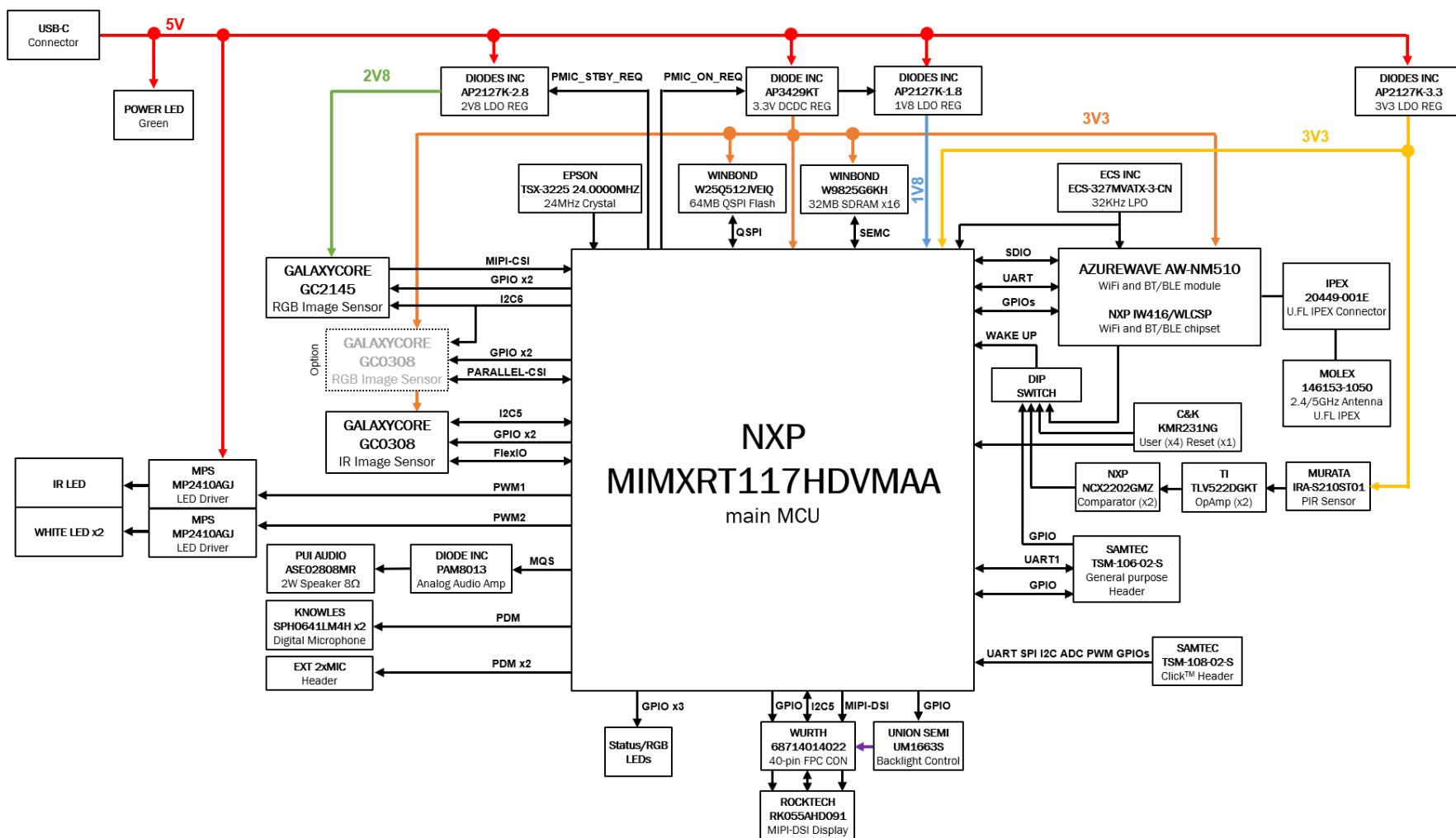
SWITCH Table

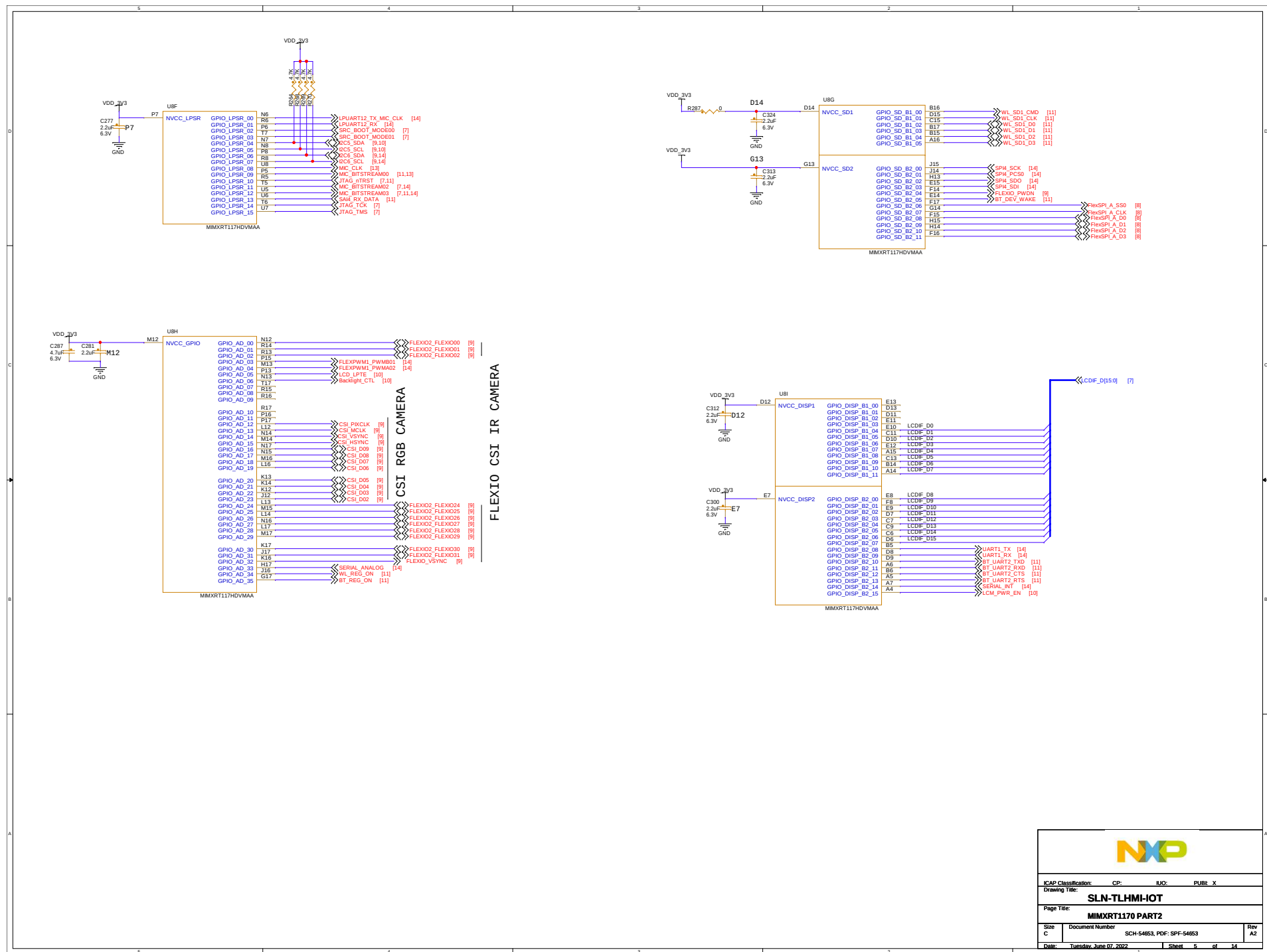
REF DES	SWITCH	PAGE NAME
SW8	1000	04 - MIMXRT1170 PART1

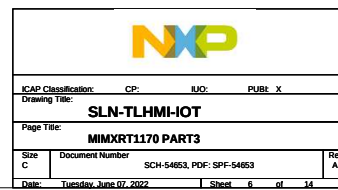
700 BOM Notes:

(Speaker)
MFG_PN# ASE02808MR-LW150-R APN# 510-78384
(USB Cable)
MFG_PN# A-USB31C-31A-100 APN# 600-77212
(LCD)
MFG_PN# RK055HDMIPI4MA0 APN# 700-53237
(Camera)
MFG_PN# GC03-0SLN-F0 MFG: Ningbo Jinshengxin
(Camera)
MFG_PN# GC20-0SLN-F0 MFG: Ningbo Jinshengxin
(Antenna)
MFG_PN# 1461531050 MFG: Molex
(Sensor)
MFG_PN# IML-0685 MFG: Murata

		Microcontroller Product Group 6501 William Cannon Drive West Austin, TX 78735-8598	
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ICAP Classification: CP		EUC: PUB: X	
Designer: Vincent Fillatre	Drawing Title: SLN-TLHMI-IOT		
Drawn by: Jun Qiao	Page Title: COVER		
Approved: Vincent Fillatre	Size C	Document Number SCH-54653, PDF: SPF-54653	Rev A2
Date: Tuesday, June 07, 2022		Sheet 1 of 14	





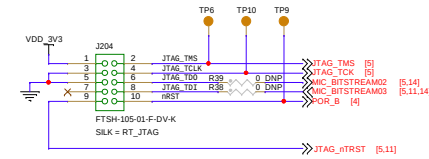


Boot MODE pin settings

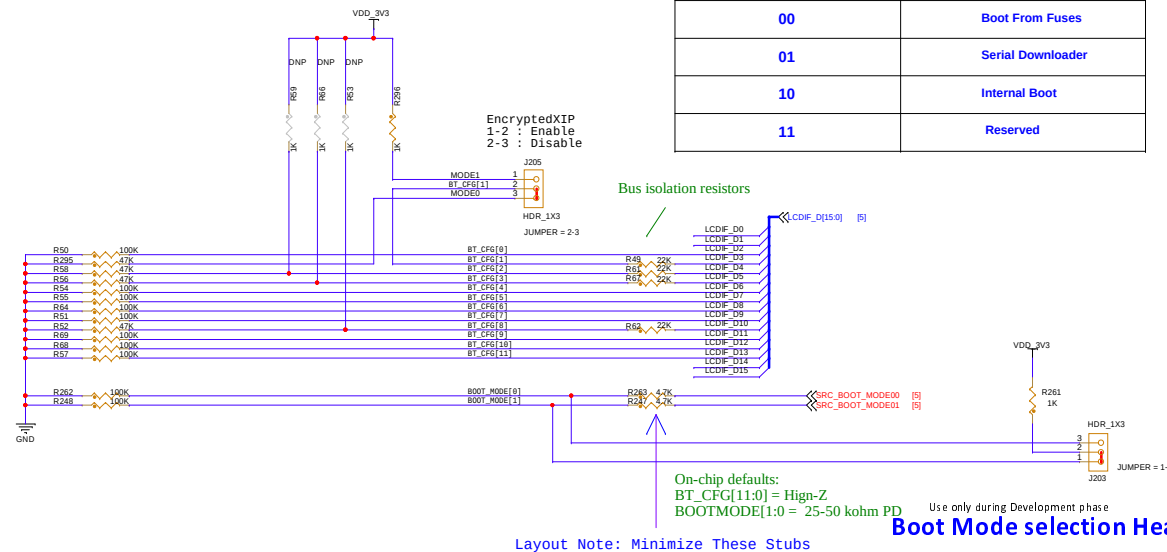
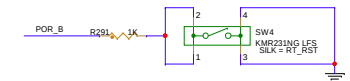
Boot Configuration.

BOOT_MODE[1:0]	Boot Type
00	Boot From Fuses
01	Serial Downloader
10	Internal Boot
11	Reserved

i.MXRT Debug & Programming



i.MXRT Reset Button

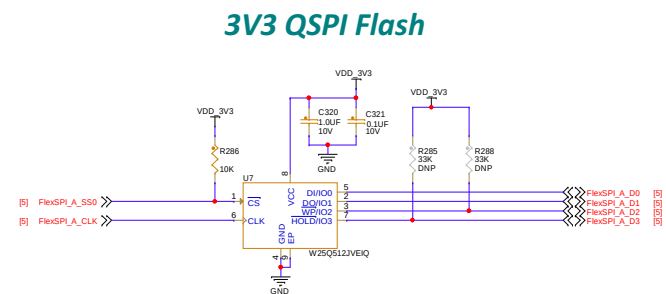
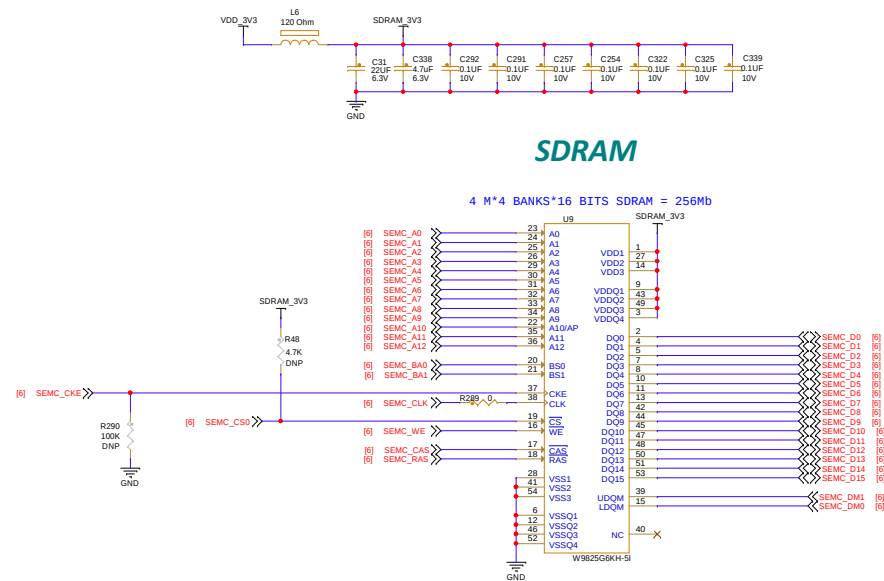


Boot Configuration

TYPE	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
	BOOT_CFG[11]	BOOT_CFG[10]	BOOT_CFG[9]	BOOT_CFG[8]	BOOT_CFG[7]	BOOT_CFG[6]	BOOT_CFG[5]	BOOT_CFG[4]	BOOT_CFG[3]	BOOT_CFG[2]	BOOT_CFG[1]	BOOT_CFG[0]
FlexSPI1 - Serial NOR	FLEXSPI1_INSTANCE 0 - FLEXSPI1 1 - FLEXSPI2	xSPI_FLASH_TYPE 0 - Boot with default 0x03 Read Enabled / 1 - Reserved 2 - HyperFLASH 1V8 / 3 - HyperFLASH 3V0 4 - MXIC Octal Read / 5 - Micron Octal Read			0	0	0	0	FLASH_PROBE_TYPE 0 - QuadSPI NOR 1 - MXIC Octal 2 - Micron Octal 3 - Adesto Octal		ENCRYPT_XIP_EN	FLASH_AUTO_PROBE_EN
SD Card	Reserved	Reserved	Bus Width: 0 - 1-bit 1 - 4-bit	Reserved	0	1	SD/SDXC Speed: 00 - Normal/SDR12 01 - High/SDR25 10 - SDR50 11 - SDR104		SD Power Cycle Enable: '0' - No power cycle '1' - Enabled via USDHC_RST pad	SD Loopback Clock Source Sel: (for SDR50 and SDR104 only) '0' - through SD '1' - direct	Port Select: 0 - eSDHC1 1 - eSDHC2	Reserved
SEMC (NAND)	Reserved	SEMC Access Command: 0 - IPG 1 - AXI	SEMC EDO Mode: 0 - EDO Mode 1 - Non-EDO mode	ONFI compliant: 0 - Yes, ONFI 1 - No, spec	0	0	1	BOOT_SEARCH_STRIDE: Search Stride for FCB and DBBT Search strides in terms of page 0000 - 64 other: Value = 2^(BOOT_SEARCH_STRIDE)				BOOT_SEARCH_COUNT: 0 - 1 1 - 2

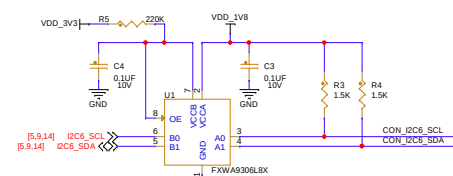
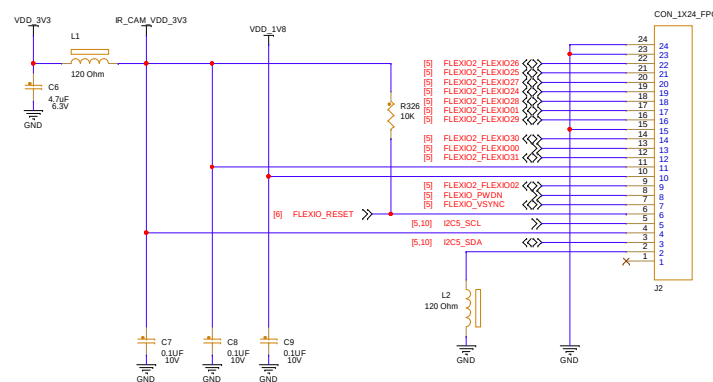


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Drawing Title:	SLN-TLHMI-HOT		
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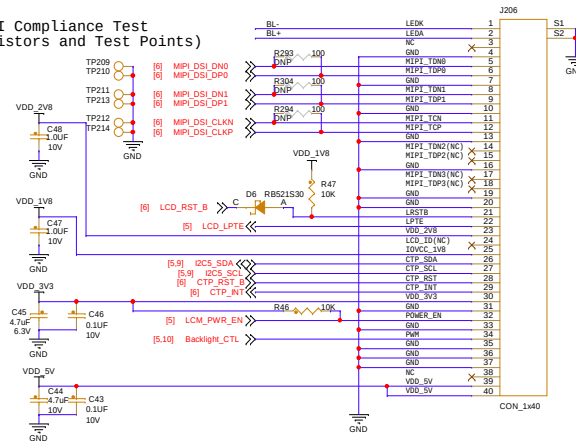
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Page Title:	SDRAM, FLASH		
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Ningbo Single-GC0308 IR Camera Module Connector



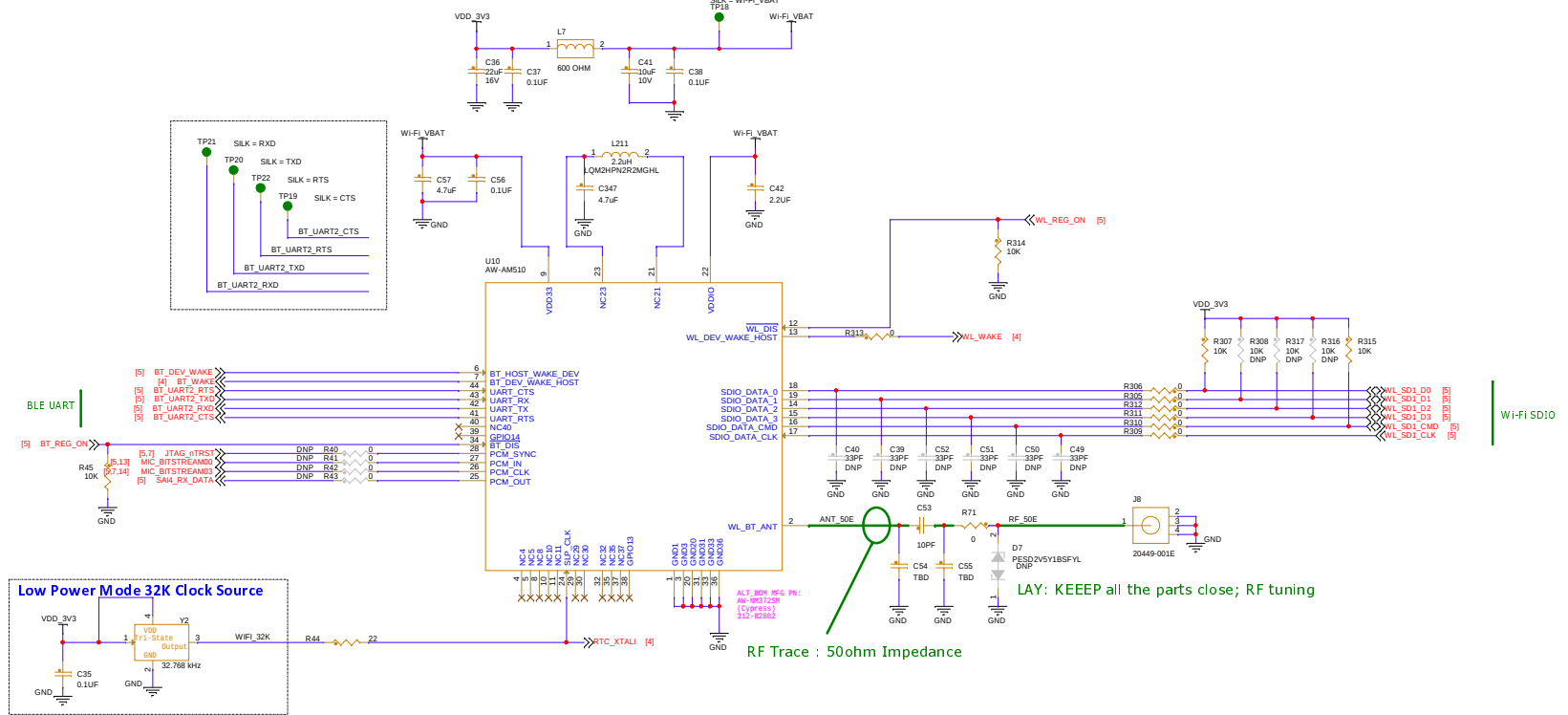
MiPi CON

For MIPI DSI Compliance Test
(100ohm resistors and Test Points)



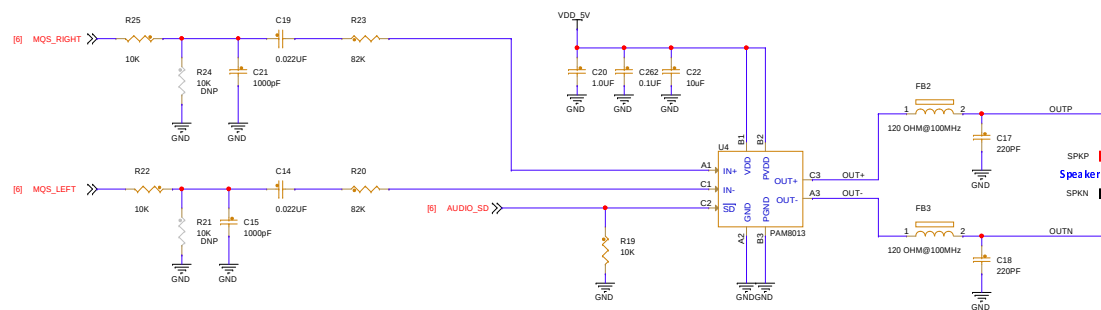
WIFI# AW-AM510

RF SoC Supply Filter



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Audio Amplifier

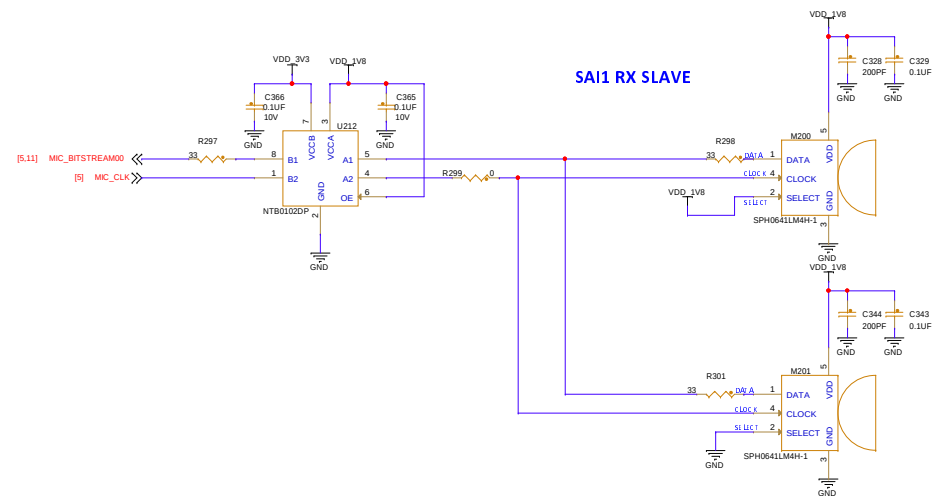


PE Note:
Include ASE02808MR-LW150-R
(510-78384) in the kit BOM



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PDM MICROPHONE Interface



Notes :

1. Decoupling capacitors mounted as close as possible are required for optimum SNR.
2. RF filter capacitors in the range of 20-200 pF may be needed depending upon the RF environment.
3. If both decoupling capacitors and RF filter capacitors are used, the RF filter capacitors should be close to the microphone.



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Pushbuttons

The image displays four circuit diagrams for pushbutton connections, labeled [4] PB_WAKE, [6] SW1, [5] SW2, and [6] SW3. Each circuit includes a pull-up resistor (R201, R203, R205, R207) connected to VDD_3V3, a 0.1uF decoupling capacitor (C200, C201, C202, C203) connected to ground, and a TL3301PF160QG pushbutton. The buttons are connected to a microcontroller pin (labeled [4], [6], [5], [6] respectively) and ground.

- [4] PB_WAKE:** Pull-up resistor R201 (10K) to VDD_3V3. Decoupling capacitor C200 (0.1uF, 10V) to ground. Pushbutton TL3301PF160QG connected between pin 1 and 2, with pin 3 to ground and pin 4 to the microcontroller pin [4].
- [6] SW1:** Pull-up resistor R203 (10K) to VDD_3V3. Decoupling capacitor C201 (0.1uF, 10V) to ground. Pushbutton TL3301PF160QG connected between pin 1 and 2, with pin 3 to ground and pin 4 to the microcontroller pin [6].
- [5] SW2:** Pull-up resistor R205 (10K) to VDD_3V3. Decoupling capacitor C202 (0.1uF, 10V) to ground. Pushbutton TL3301PF160QG connected between pin 1 and 2, with pin 3 to ground and pin 4 to the microcontroller pin [5].
- [6] SW3:** Pull-up resistor R207 (10K) to VDD_3V3. Decoupling capacitor C203 (0.1uF, 10V) to ground. Pushbutton TL3301PF160QG connected between pin 1 and 2, with pin 3 to ground and pin 4 to the microcontroller pin [6].

Mikro Bus headers

The diagram illustrates the Mikro Bus headers J200 and J202. Header J200 is connected to VDD_3V3 and GND via a 10k resistor (R214). Header J202 is connected to VDD_5V and GND via a 10k resistor (R246). Both headers are connected to various Mikro Bus signals.

J200 Connections:

- 1: SERIAL_ANALOG
- 2: SERIAL_RST
- 3: SPH_PCS0
- 4: SPH_SCK
- 5: SPH_SDI
- 6: SPH_SDO
- 7: GND
- 8: GND

J202 Connections:

- 1: FLEXPWM3_PWMAGC
- 2: SERIAL_INT
- 3: LPUART12_RX
- 4: LPUART12_TX
- 5: I2C5_SCL
- 6: I2C5_SDA
- 7: GND
- 8: GND

J201 Connections:

- 1: MC_BITSTREAM02 [B:7]
- 2: MC_BITSTREAM03 [B:7,11]
- 3: GND
- 4: GND

LAY: Place J201 in line with J200 or J202

General purpose header

The diagram illustrates a General purpose header J9 connected to VDD_3V3 and GND. The header is connected to various Mikro Bus signals.

J9 Connections:

- 1: GND
- 2: GND
- 3: LUART1_RX
- 4: LUART1_TX
- 5: EXT_GPD01
- 6: EXT_WAKE_3V3

The image displays three circuit diagrams for driving different types of LEDs using the MP2410A AG3-2 converter.

IR LED

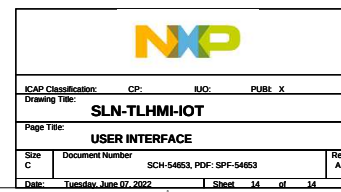
This circuit is designed for an IR LED. It features a VDD_5V supply connected to the EN/DIM pin (pin 5) of the MP2410A AG3-2. The BST pin (pin 6) is connected to the SW pin (pin 2). The FB pin (pin 4) is connected to a feedback network consisting of a 2.2kΩ resistor (R211) and a 10.01μF capacitor (C209). The SW pin is connected to an inductor L201 (2.2μH) and a diode D2. The output of the diode is connected to the anode (A1) of the IR LED, which is also connected to a 10μF capacitor (C2) and a 10V supply. The cathode (C) of the IR LED is connected to ground. The MP2410A AG3-2 is connected to ground at pins 1, 3, and 4. A 30kΩ resistor (R210) is connected between the EN/DIM pin and ground.

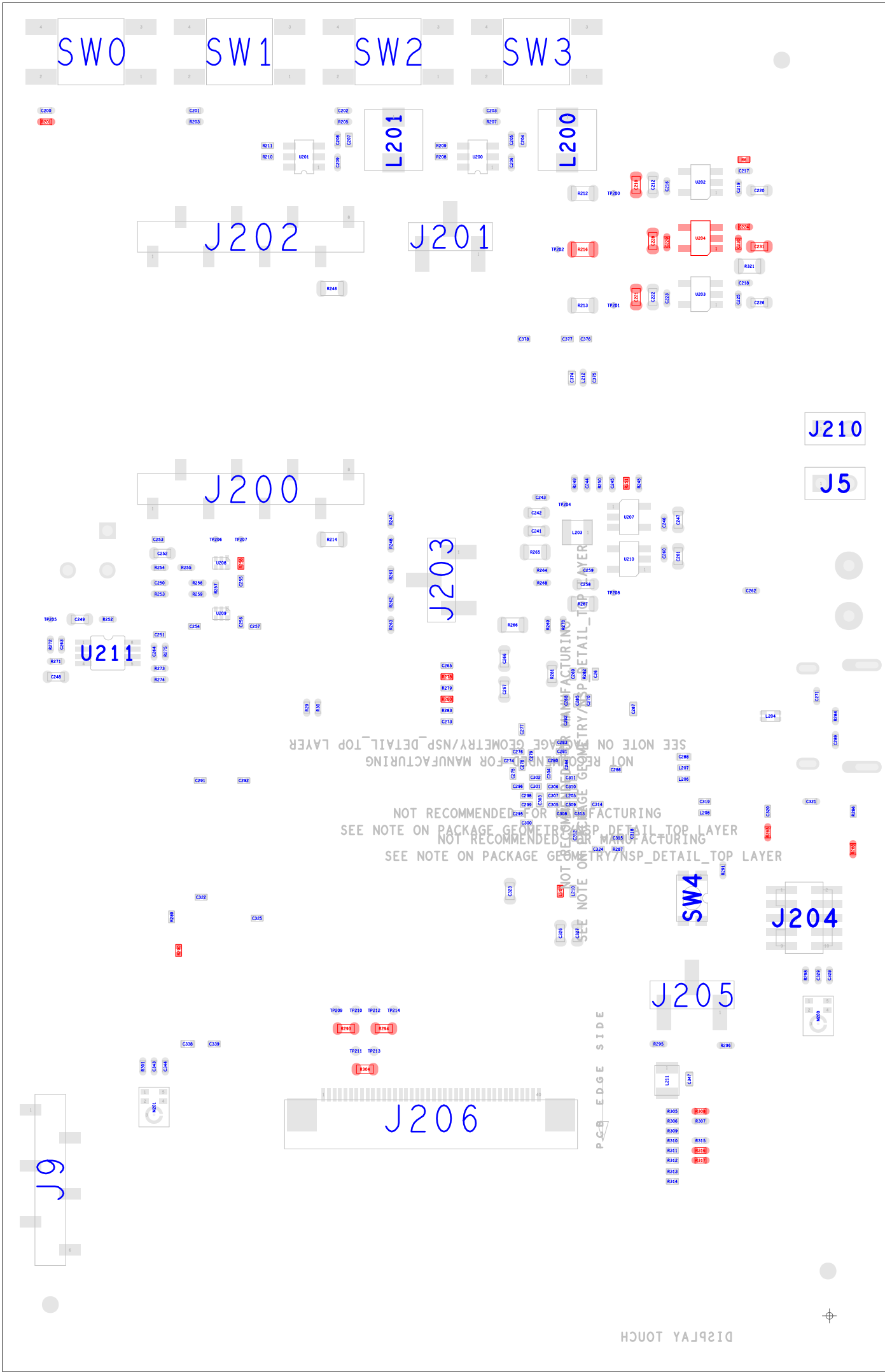
White LED

This circuit is designed for a White LED. It features a VDD_5V supply connected to the EN/DIM pin (pin 5) of the MP2410A AG3-2. The BST pin (pin 6) is connected to the SW pin (pin 2). The FB pin (pin 4) is connected to a feedback network consisting of a 2.2kΩ resistor (R208) and a 10.01μF capacitor (C206). The SW pin is connected to an inductor L200 (2.2μH) and a diode D1. The output of the diode is connected to the anode (A) of the White LED, which is also connected to a 10μF capacitor (C1) and a 10V supply. The cathode (C) of the White LED is connected to ground. The MP2410A AG3-2 is connected to ground at pins 1, 3, and 4. A 30kΩ resistor (R208) is connected between the EN/DIM pin and ground.

RGB LED

This circuit is designed for an RGB LED. It features a VDD_5V supply connected to the EN/DIM pin (pin 5) of the MP2410A AG3-2. The BST pin (pin 6) is connected to the SW pin (pin 2). The FB pin (pin 4) is connected to a feedback network consisting of a 2.2kΩ resistor (R29) and a 10.01μF capacitor (C206). The SW pin is connected to an inductor L200 (2.2μH) and a diode D1. The output of the diode is connected to the anode (A) of the RGB LED, which is also connected to a 10μF capacitor (C1) and a 10V supply. The cathode (C) of the RGB LED is connected to ground. The MP2410A AG3-2 is connected to ground at pins 1, 3, and 4. A 30kΩ resistor (R208) is connected between the EN/DIM pin and ground.

[illegible]



DNP - ASSYBOTTOM-LAY - 54653 REV A1