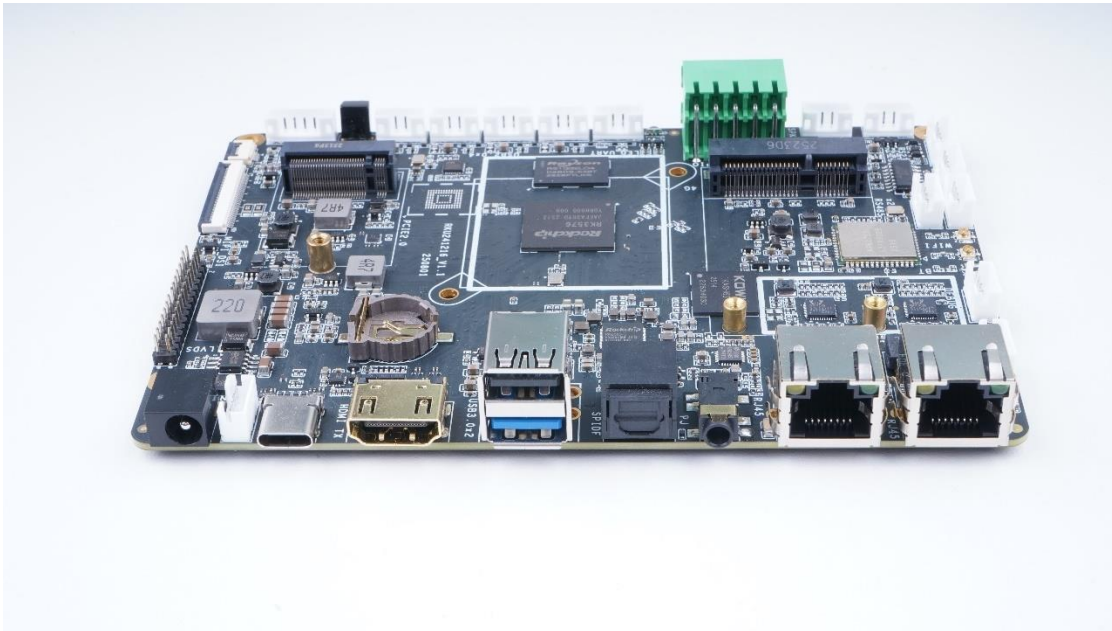


DB3576

Hardware User Guide



Powered by:

Geniatech

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1 Introduction

DB3576 is an intelligent development board based on RK3576/RK3576J, which is a low power, high performance processor for ARM-based PC and Edge Computing device with below new features:

(I) Quad-core Cortex-A72 and Quad-core Cortex-A53

(II) ARM Mali-G52 MC4 GPU, Support OpenGL ES1.1/2.0/3.2, OpenCL2.0 and Vulkan 1.1

(III) NPU: Neural network acceleration engine with processing performance up to 6 TOPS

(IV) Support Android 14.0 / Linux Debian12

(V) Support 4GB/8GB/16GB LPDDR4, 16~256GB eMMC, External expansion M.2/USB storage

(VI) Dual Ethernet 10/100/1000M

(VII) 2T2R 802.11 ax/ac/a/b/g/n Wi-Fi + BT 5.0 Module, LTE 4G Module (options)

(VIII) 1 * HDMI Out, 1 * LVDS, 1 * MIPI DSI support multi-screen simultaneous display, multi-screen different display, multi-screen rotation splicing, multi-channel video source simultaneous decoding, etc. Display method

(IX) Support 2 * RS232 + 2 * RS485 + 1 * Can + 1 * GPIO industrial control bus

(X) 1 * USB3.0 + 1 * type-c (full-featured) + 5 * USB2.0

(XI) Support hardware WDT & RTC + 1 * M.2 (Scalable 2242 PCIe NVMe SSD) + 1 * Speaker + 1 * SPDIF

(XII) Support USB and I2C TP

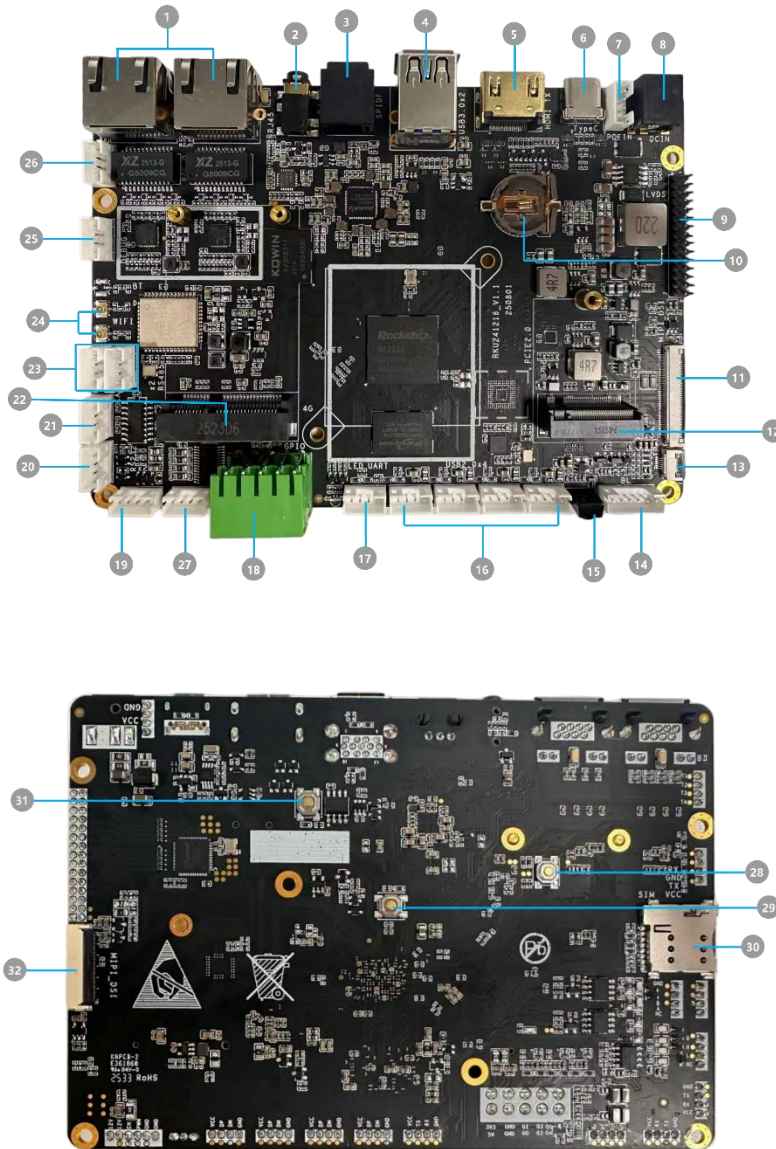
(XIII) Support wide voltage 12~24V power and POE module (options) power supply input, standard EMC and ESD protection design

(XIV) Specially designed for smart express cabinet, smart commercial display, smart vending machine, digital signage, smart home, etc.

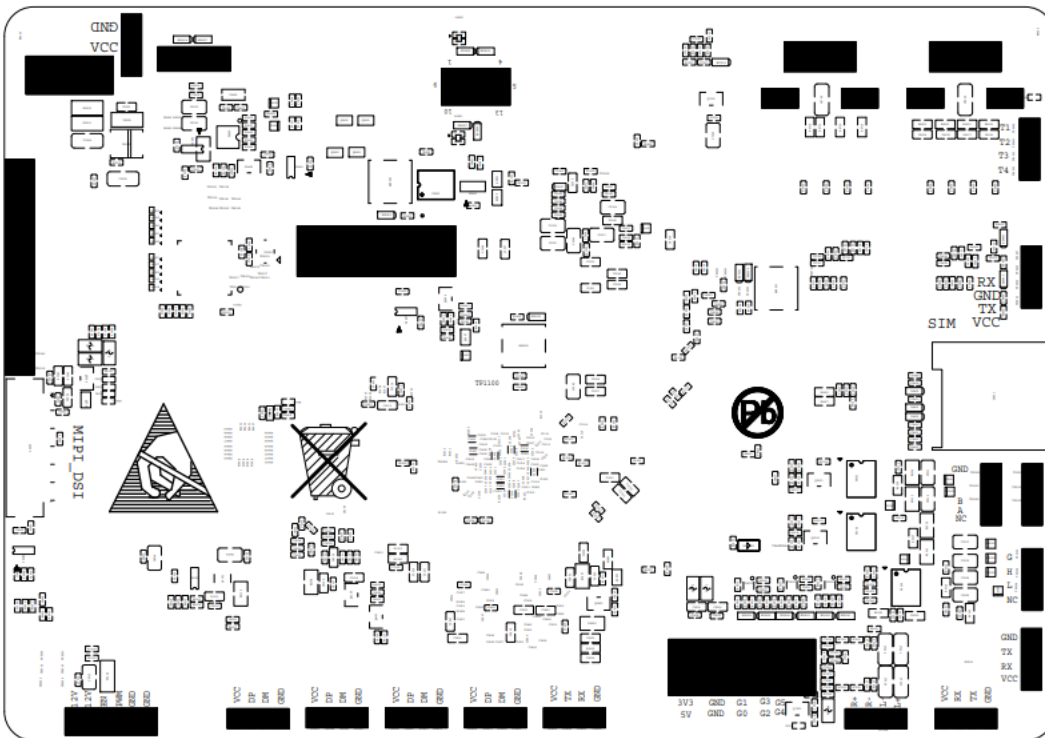
1.1 Board Overview

2 What's in the Developer Board

The Developer Board contains one DB3576.



No	Name	Description
1	LAN	2*10M/100M/1000M
2	speaker	3.5mm phone Jack
3	SPDIF	SPDIF
4	USB3.0	1*USB3.0&1*USB-C2.0-
5	HDMI OUT	1*HDMI
6	TYPE-C	1*TYPE-C
7	POE-IN	1 * 4Pin 2.0mm
8	DC In	1*(DCΦ5.5mm / φ2.1mm)
9	LVDS	1 * (2x15Pin 2.0mm)
10	RTC battery	Battery connector
11	MIPI-DSI	1 * 40P FPC, pitch 0.5mm
12	M.2 Key-M	NGFF 2230
13	I2C(TP)	1 * 6P FPC, pitch 0.5mm
14	Backlight	1 * 6Pin 2.0mm
15	IR	1 * IR
16	USB2.0(4)	4 * 4P , pitch 2.0mm
17	UART	1 * 4Pin 2.0mm
18	GPIO/3.3V/5V	2 * 10P 3.81mm phoenix
19	RS 232-1	1 * 4P , pitch 2.0mm
20	RS 232-2	1 * 4P , pitch 2.0mm
21	CAN	1 * 4P , pitch 2.0mm
22	LTE	1 * Mini PCIE
23	RS485(2)	2 * 4P , pitch 2.0mm
24	WiFi/BT Antenna	1*IPEX
25	Debug	1 * 4Pin 2.0mm
26	POE-OUT	1 * 4P , pitch 2.0mm
27	Speaker connector	1 * 4Pin 2.0mm
28	recovery key	1 * Switch
29	reset key	1 * Switch
30	Micro SIM	1* Micro SIM
31	power key	1 * Switch
32	MIPI-CSI	1 * 40P FPC, pitch 0.5mm



3 Getting started

3.1 Prerequisites

Before you power up your DB3576 for the first time you will need the following:

- DB3576 board
- A DB3576 board compliant power supply (sold separately by Geniatech).
- A DB3576 board compliant IR remote (sold separately by Geniatech).
- A LVDS LCD that supports a resolution of 1280*800 or or MIPI LCD that supports a resolution of 1080P.
- LVDS-LVDS cable to connect the board to the LCD.
- A computer keyboard/mouse with USB interface.

3.2 Starting the board for the first time

To start the board, follow these simple steps:

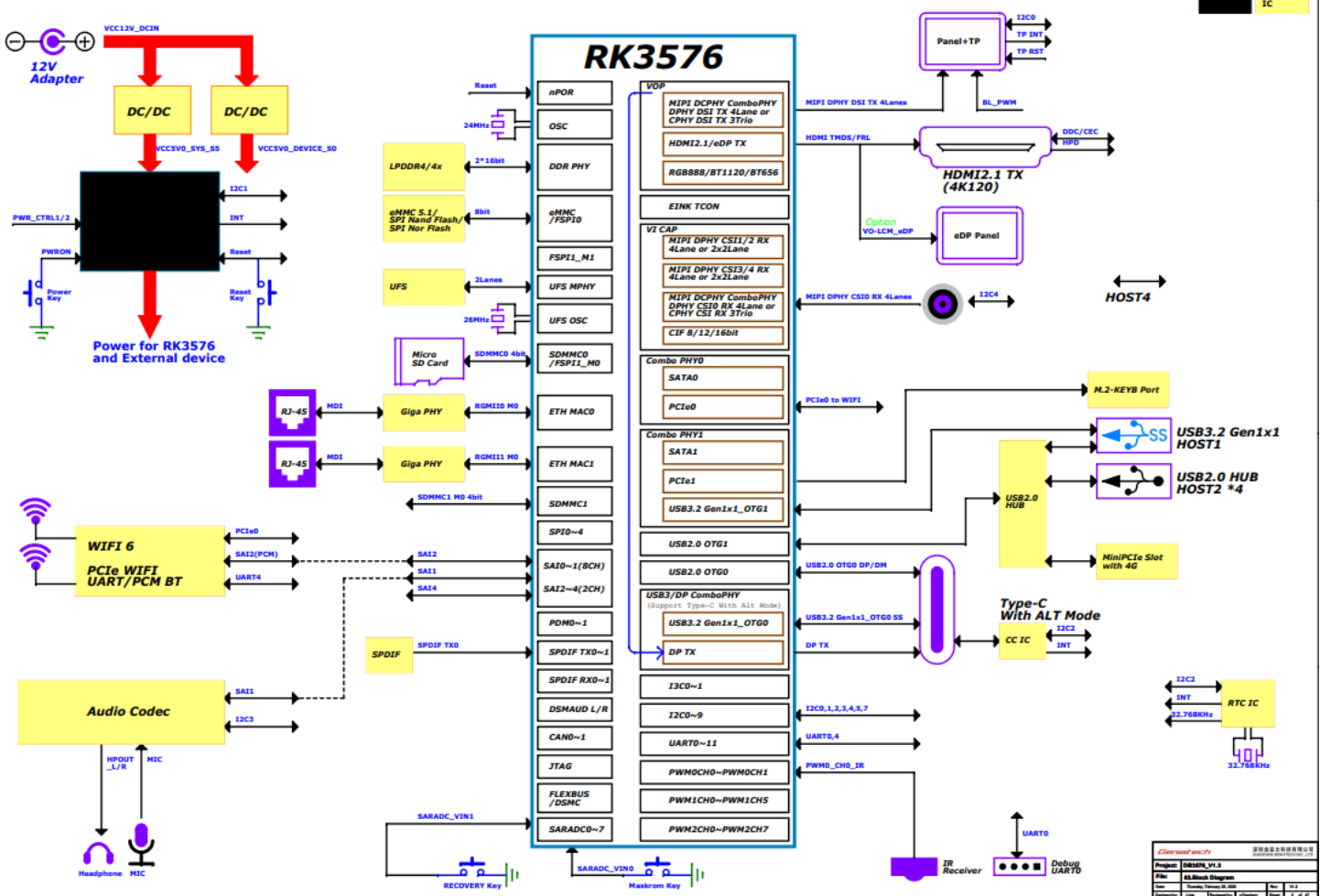
- step 1. Connect the LVDS /MIPI cable to the DB3576 connector (marked) and to the LCD Monitor.
- step 2. Connect the keyboard to the boards USB connector marked or connect the mouse to the USB connector marked. (It doesn't matter which order you connect it in. You can also connect via an external USB Hub.)
- step 3. Connect the power supply to power connector marked.

Power on (Plug power adapter), toggle the power switch, then the board will boot up and you will see the boot up logo.

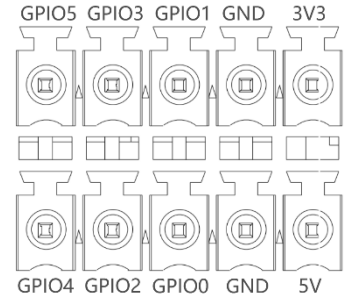
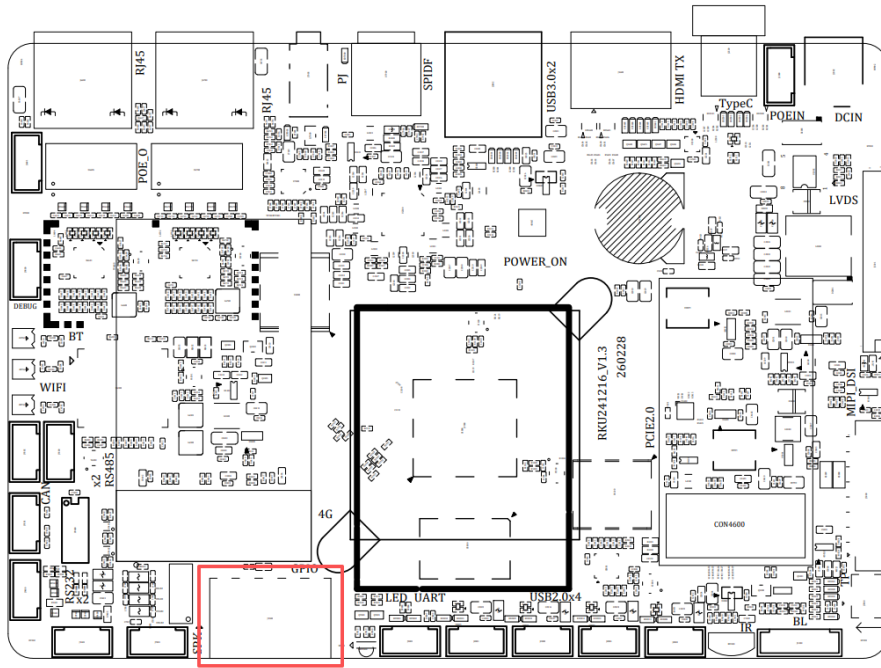
Please note that the first boot takes several minutes due to Androids initialization. Subsequent boot times should be faster.

Block Diagram:

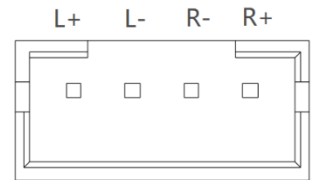
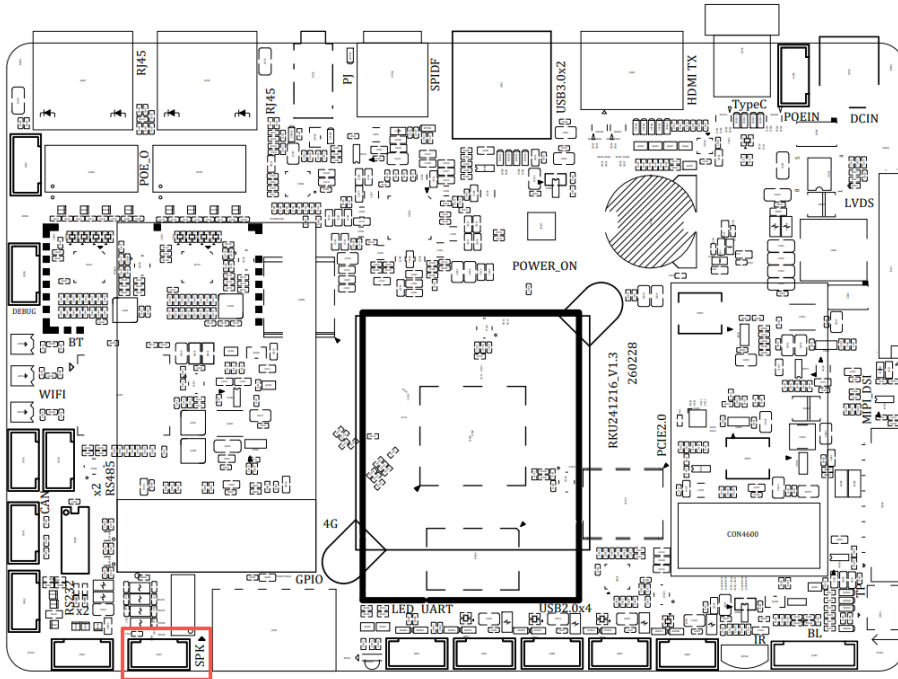
RK3576 Ref Block Diagram(Typical Application Case)



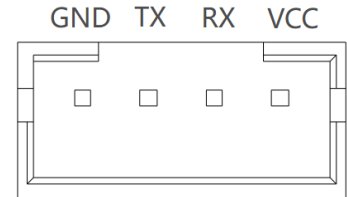
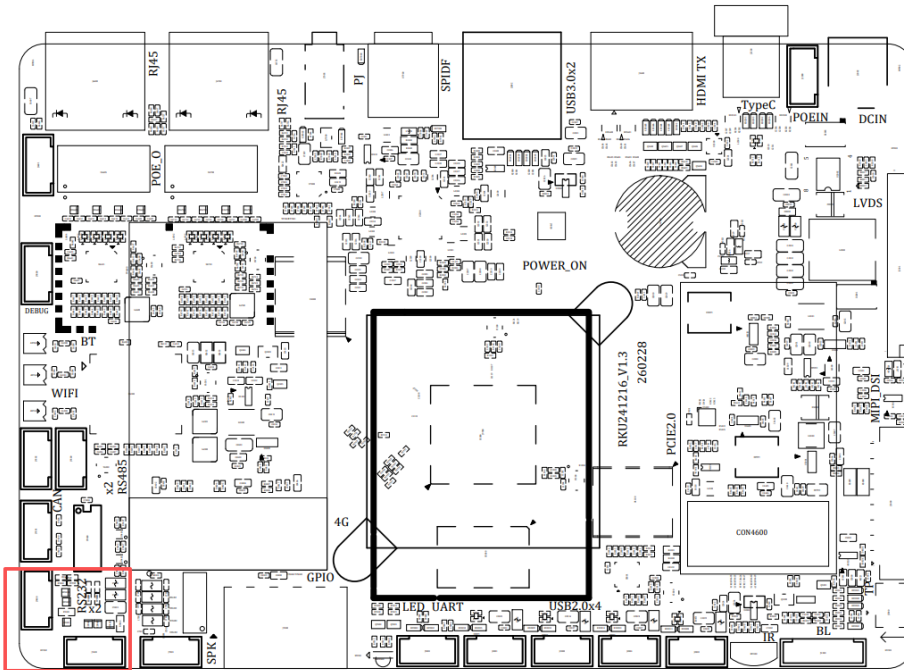
4.2.3 GPIO (J9500)



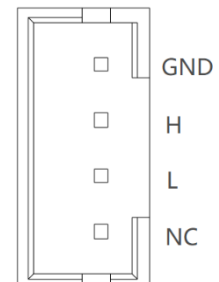
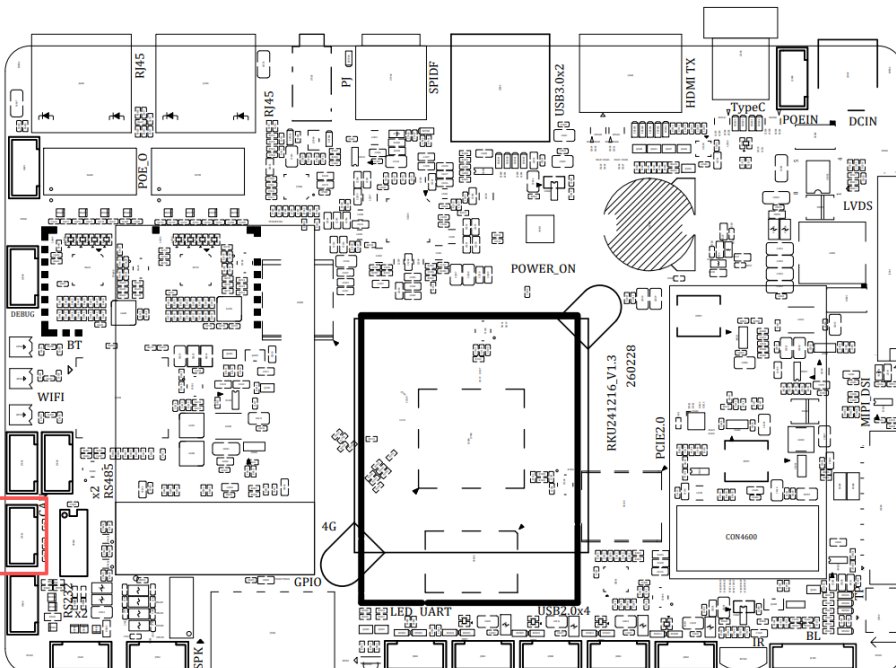
4.2.4 SPK (J7001)

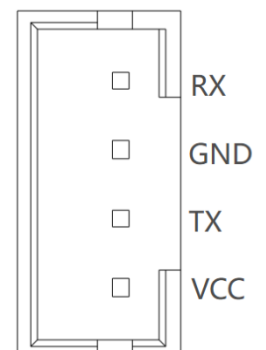
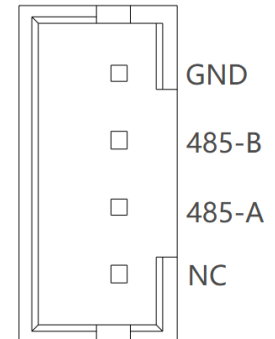


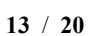
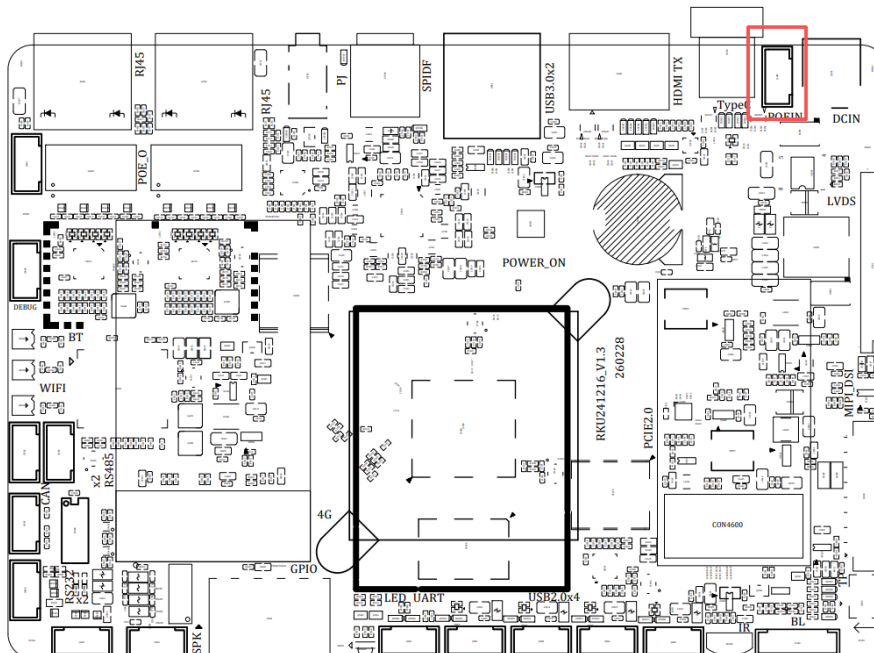
4.2.5 RS232 (J9401/J9400)



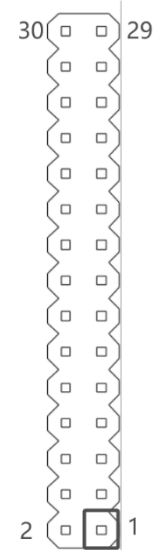
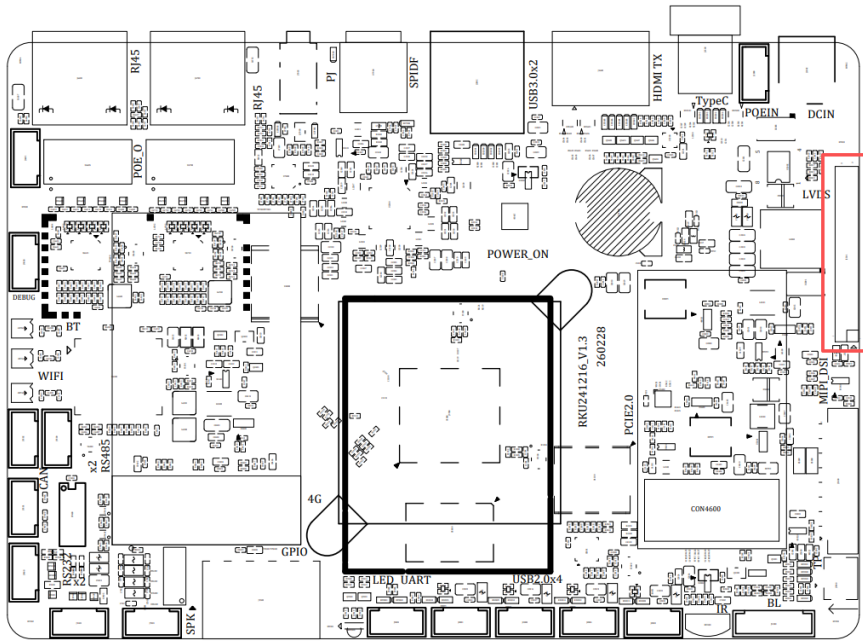
4.2.6 CAN (J9301)



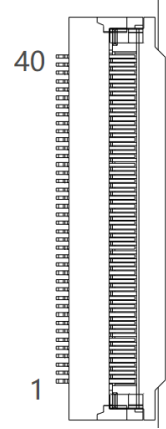
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4.2.11 LVDS (J5301)

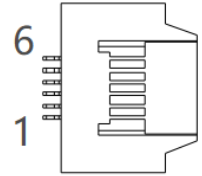
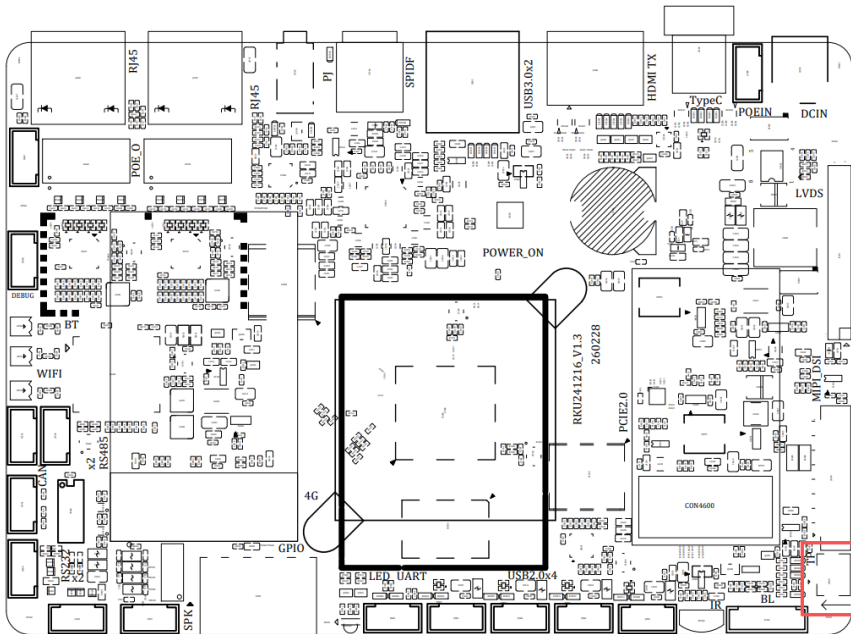


Pin Name	Pin No.	Pin No.	Pin Name
VCC_PANEL	1	2	VCC_PANEL
VCC_PANEL	3	4	GND
GND	5	6	GND
LVDS_A0_N	7	8	LVDS_A0_P
LVDS_A1_N	9	10	LVDS_A1_P
LVDS_A2_N	11	12	LVDS_A2_P
GND	13	14	GND
LVDS_ACLK_N	15	16	LVDS_ACLK_P
LVDS_A3_N	17	18	LVDS_A3_P
LVDS_B0_N	19	20	LVDS_B0_P
LVDS_B1_N	21	22	LVDS_B1_P
LVDS_B2_N	23	24	LVDS_B2_P
GND	25	26	GND
LVDS_BCLK_N	27	28	LVDS_BCLK_P
LVDS_B3_N	29	30	LVDS_B3_P



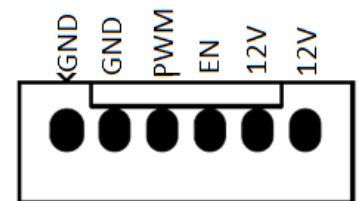
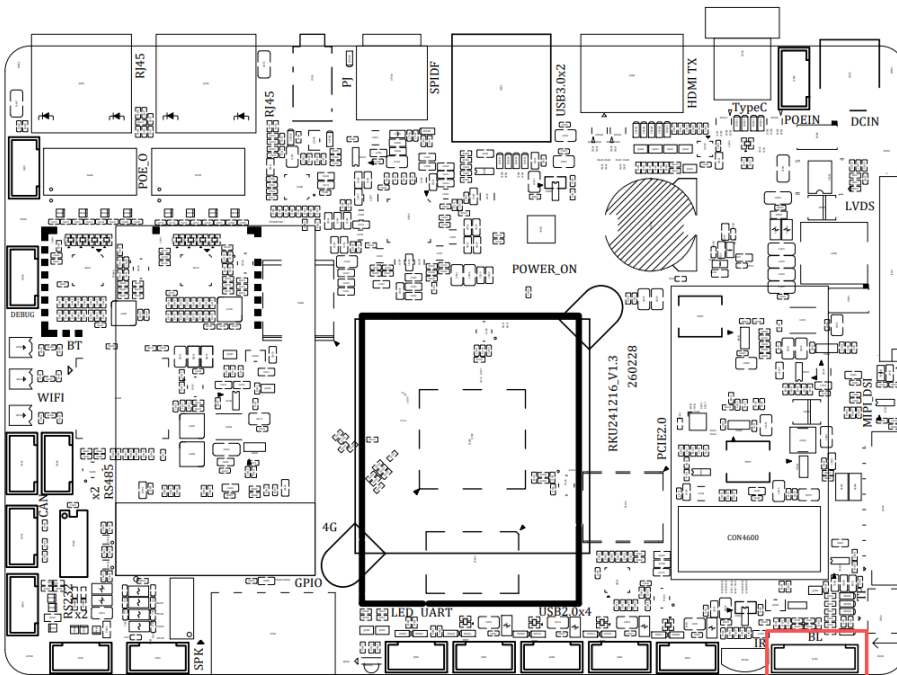
Pin No.	Pin Name	Pin No.	Pin Name
1	NC	21	MIPI_D3P
2	MIPI-VCC-3V3	22	GND
3	MIPI-VCC-3V3	23	NC
4	GND	24	NC
5	RESET	25	GND
6	NC	26	NC
7	GND	27	NC
8	MIPI_D0N	28	NC
9	MIPI_D0P	29	NC
10	GND	30	GND
11	MIPI_D1N	31	VCC_LED1-
12	MIPI_D1P	32	VCC_LED2-
13	GND	33	NC
14	MIPI_CKN	34	NC
15	MIPI_CKN	35	NC
16	GND	36	NC
17	MIPI_D2N	37	NC
18	MIPI_D2P	38	NC
19	GND	39	VCC_LED1+
20	MIPI_D3N	40	VCC_LED2+

4.2.13 TP (J5900)

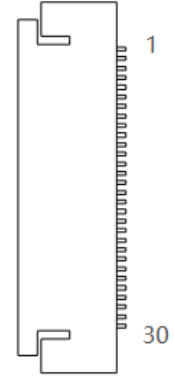
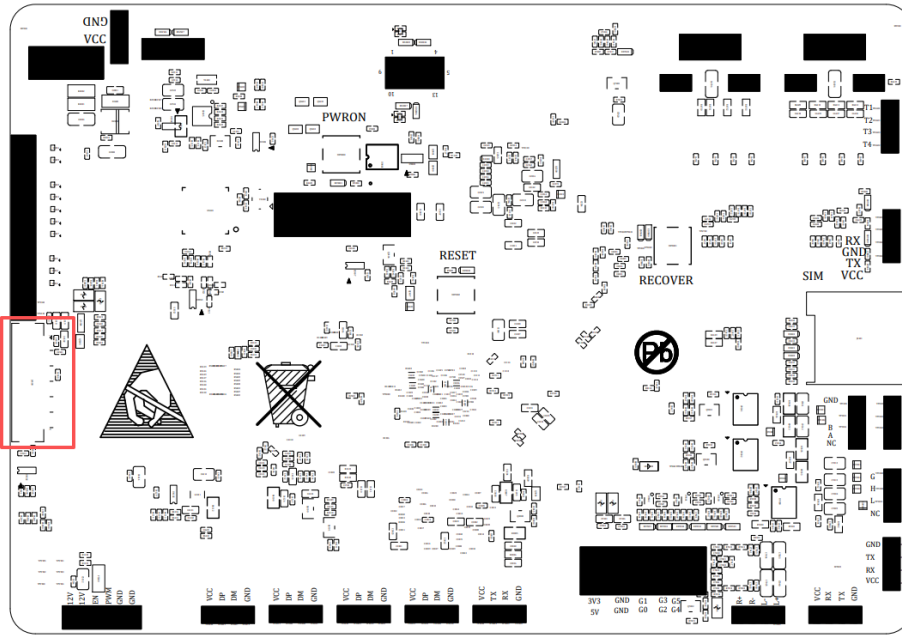


Pin No.	Pin Name
1	RST
2	VCC
3	GND
4	INT
5	SDA
6	SCL

4.2.14 Backlight (J5300)

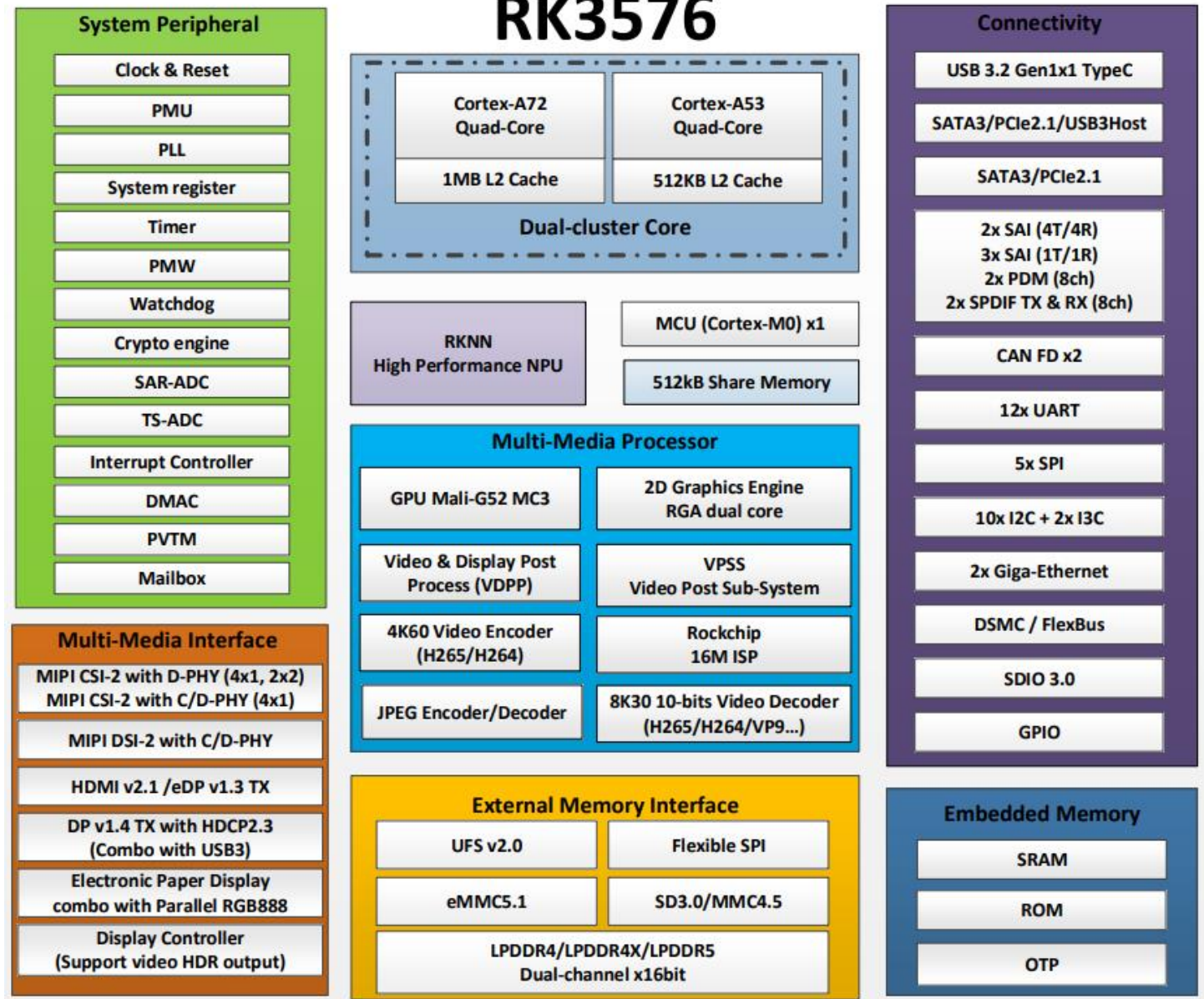


4.2.15 MIPI-CSI (J4500)



Pin No.	Pin Name	Pin No.	Pin Name
1	NC	16	DP3
2	VCC-2V8	17	DN3
3	VCC-1V2	18	GND
4	VCC-1V8	19	DP2
5	NC	20	DN3
6	GND	21	GND
7	VCC-2V8	22	DP1
8	GND	23	DN1
9	SDA	24	GND
10	SCL	25	CLKP
11	RST	26	CLKN
12	VCC-1V8	27	GND
13	GND	28	DP0
14	MCLK	29	DN0
15	GND	30	GND

4.3 System Block Diagram



5. FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF Exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.