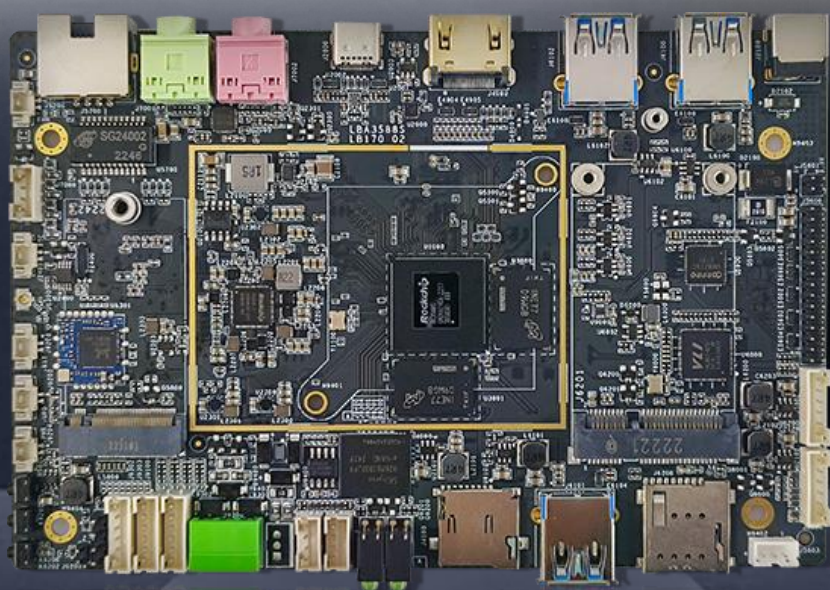


LBA3588S 行业板
产品手册
V2.1



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版本历史

版本	日期	说明
V1.0	2023/7/31	初始版本
V2.0	2024/4/25	更新数据
V2.1	2024/7/29	更新数据

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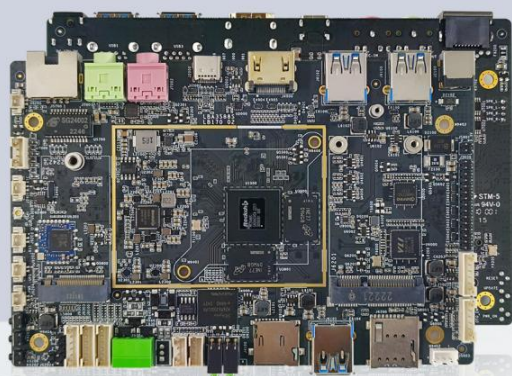
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1.产品介绍

LBA3588S 是基于瑞芯微 RK3588S 芯片平台精心设计的一款多功能行业板。整板功能多样，接口丰富，尺寸小巧，轻薄平整，适用于结构空间受限的产品。

LBA3588S 板载 3 路 Type-A USB3.0, 1 路 Type-C USB 3.1, 可以外接多个 USB 摄像头;板载 1 个 mini-PCIe 接口, 支持扩展 4G/5G 模块外或基于 RK1808 的 mini-PCIe 接口 NPU 计算卡;板载 1 个 M.2 M-Key, 支持扩展存储空间或 NPU 算力卡; LBA3588S 还支持双频 WIFI6、BT5.0、1 路 1000M 以太网、UART、RS232、I2C、RS485、CANBUS 等常用通讯模块接口, 支持多路 mipi-csi 摄像头接口输入以及 1 路 HDMI2.0 接口输出, 1 路双通道 LVDS 显示输出。

LBA3588S 支持 Android、buildroot、Debian 和 Ubuntu 系统, 具备高性能、高可靠性、高扩展性等优势, 为用户开放系统源码。用户可基于此款产品二次开发和定制, 我司为开发者和企业用户提供全方位的技术支持, 使其高效的完成研究开发工作, 大量缩短产品研发量产周期。



2. 功能概述



高性能处理器

CPU	8nm 先进制程, 8 核 64 位架构处理器 (4*A76+4*A55) , 高性能, 低功耗
GPU	ARM Mali-G610 MC4 GPU, 专用 2D 图形加速模块
NPU	6TOPS 算力
VPU	8K 视频编解码 , 8K 显示输出
DDR	LPDDR4,可选 4/8/16GB
eMMC	eMMC 5.1,可选 32/64/128GB



接口丰富

-
- 1 路 HDMI2.0 输出, 支持 8K 60Hz ;1 路 type-C 带 DP 显示接口输出, 一路双 8 位 LVDS 输出
 - 4 路 mipi-csi 接口, 最多 6 个 mipi 摄像头输入
 - 1 路千兆网口, 双频 WIFI-6, BT-5.0
 - 1 路 MIPI PCIE 接口, 可扩展 4/5G 模块, 可扩展算力卡
 - 1 路 M.2 M-Key 接口, 支持扩展 NVMe 协议 2240 规格
 - 3 路 Type-A USB3.0
-



可扩展 NPU 算力

NPU 算力可扩展至 35TOPS; 可外接 1 块 26TOPS 算力卡, 1 块 3TOPS 算力卡

提供 Demo 程序



操作系统

Android

Linux (Buildroot / Debian / Ubuntu)



开源资料

WIKI 资料 <http://www.neardi.com/cms/index/wiki.html>

快速入门

升级固件

Android 开发

Linux 开发

内核驱动

DEMO

系统定制

配件

常见问题

发布说明

硬件资料

芯片 Datasheet

产品 2/3D 图

软件资料

烧写工具及驱动

Android 源码及镜像

uboot 及内核源码

Debian/Ubuntu/Buildroot 的系统文件

3.规格参数

基本参数

SOC	RK3588S 8nm; 8 核 64 位架构处理器 (4*A76+4*A55)
GPU	ARM Mali-G610 MC4; OpenGL ES 1.1/2.0/3.1/3.2; Vulkan 1.1/1.2 OpenCL 1.1/1.23/2.0; 高性能 2D 图像加速模块
NPU	6TOPS 算力 / 3 核架构; 支持 int4/int8/int16/FP16/BF16/TF32
VPU	支持 H.265/H.264/AV1/VP9/AVS2 视频解码, 最高支持 8K60FPS 支持 H.264/H.265 视频编码, 最高支持 8K30FPS
DDR	LPDDR4, 可选 4GB/8GB/16GB
eMMC	eMMC 5.1, 可选 32GB/64GB/128GB
PMU	RK806
系统	Android / Ubuntu / Buildroot / Debian

硬件参数

Power	DC12V - 3A (DC Jack 5.5*2.1mm / PH2.0 wafer connector)
USB	3*Type-A USB3.0 1* Type-C USB3.1
Display	1*Type-A HDMI 2.1 up to 8K@60fps or 4K@120fps Duel channel LVDS up to 1080P@60HZ

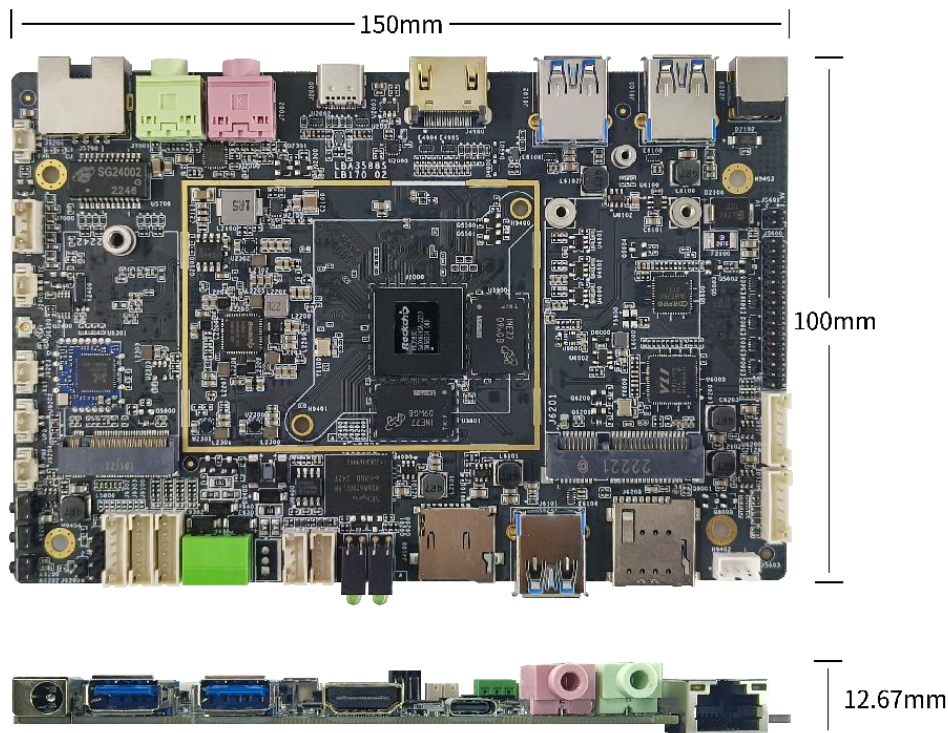
Audio	φ3.5mm earphone Jack with L/R audio out
	φ3.5mm microphone Jack with Mic in
	2*2.7W/4Ω speaker out with L/R channel
Camera	3* MIPI CSI (4 Lane) or 2*MIPI CSI (2 Lane) + 2* MIPI CSI (4 Lane)
Mini-PCIe	mini PCIe for 2G/3G/4G/5G module
	RK1808 AI computing card
M.2	M.2 NGFF (M-KEY) PCIE V3.0 x4 with NVMe SSD supported
SD card	Compatible with SDIO 3.0 protocol, system boot up supported
SIM card	Micro sim slot for Mini-PCIe 4G LTE module
RJ-45	1*10/100/1000-Mbps data transfer rates
RTC	RTC power on and off supported
Serial port	2*Uart, 1*CANBUS, 2*RS232, RS485, 1*I2C
Keys	3* keys (power, reset, update)

其他参数

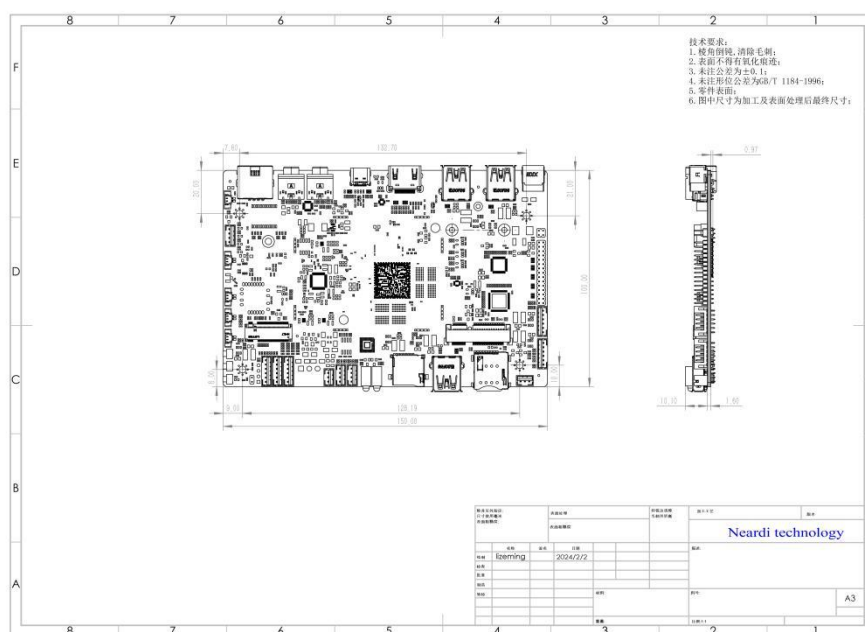
尺寸	L*W*H(mm) 150*100*12.67
温度	工作温度 -10 - 70°C
重量	约 112g (不含外设)

4. 外观和尺寸

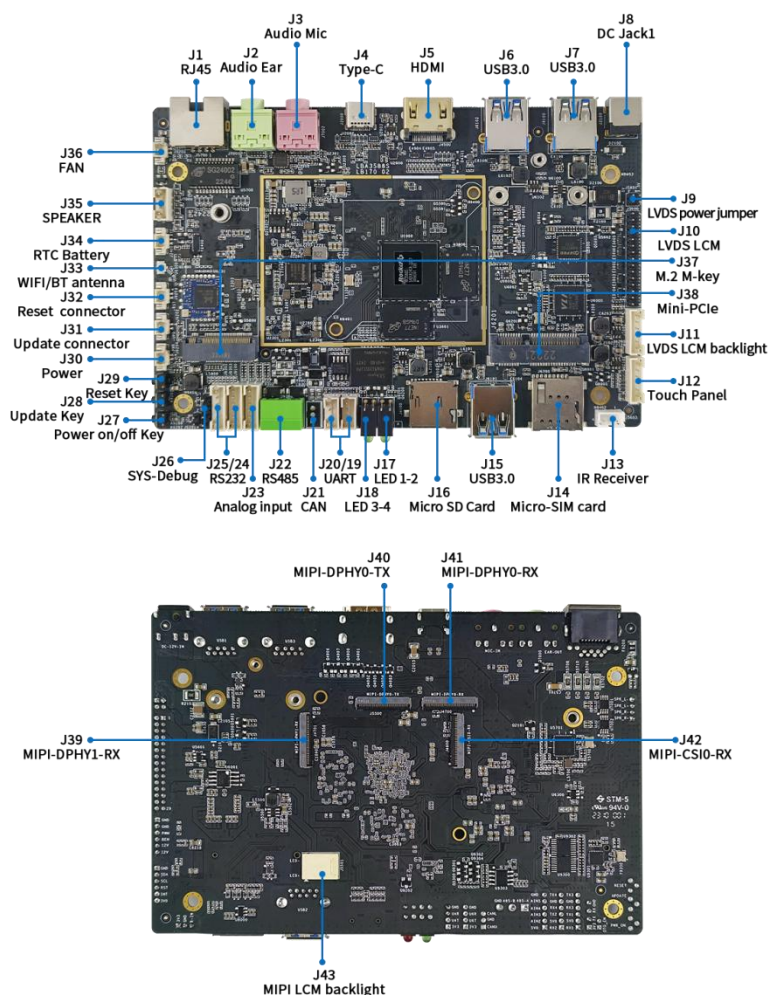
4.1 外观



4.2 尺寸



5.接口定义



Part

Part reference	Part Name	Part Specifications	Part Description
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J1	RJ45	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
J2	Audio Jack-Ear	φ3.5mm 3-L Jack	L/R audio out
J3	Audio Jack-Mic	φ3.5mm 3-L Jack	Micphone In
J4	Type-C	Type-C USB connector	Type-C with USB3.0 and Display port /Debug
J5	HDMI	Type-A HDMI connector	HDMI2.1 TX up to 7680x4320@60Hz
J6	USB3.0 -1	Type-A USB3.0	USB3.0
J7	USB3.0 -2	Type-A USB3.0	USB3.0
J8	DC Jack1	DC 5.5*2.1mm	Main power supply, DC12V – 3A
J9	LVDS power jumper	2.0mm Pitch 2X2Pin header	5V/3.3V power supply jumper for LCM
J10	LVDS LCM	2.0mm Pitch 2X15Pin header	dual 8bit lvds signals for LCM

J11	LVDS LCM backlight	PH2.0mm 6pin wafer	backlight power and control signals for LVDS LCM
J12	Touch Panel	PH2.0mm 6pin wafer	power and I2C signals for Touch Panel
J13	IR Receiver	PH2.0mm 3pin wafer	power and signals for IR Receiver
J14	Micro-SIM card	Push-Push Micro SIM Socket	Micro SIM Card
J15	USB3.0 -3	Type-A USB3.0	USB3.0
J16	Micro SD Card	Push-Push Micro SD socket	Micro SD Card
J17	LED 1-2	Green led *2	Power status indicate LED and diy LED
J18	LED 3-4	Red and Green LEDs	4G/5G net status indicate LED and diy LED
J19	UART -1	PH2.0mm 4pin wafer	1.8V UART-TTL signals
J20	UART -2	PH2.0mm 4pin wafer	1.8V UART-TTL signals
J21	CAN (optional)	PH2.0mm 3pin wafer	CAN Bus signals
J22	RS485	3.81mm pitch 3Pin Connector	RS485 Bus signals
J23	Analog input	PH2.0mm 6pin header	12bit, 1MS/s, up to 12V, analog input signals
J24	RS232 1-2	PH2.0mm 6pin wafer	Dual channel RS232 signals
J25	RS232 3-4	PH2.0mm 6pin wafer	Dual channel RS232 signals
J26	SYS-Debug	PH2.0mm 4pin wafer	1.8V UART-TTL signals for system debug
J27	Power on/off Key	push-button	Key for system Power on/off
J28	Update Key	push-button	Key for system recovery or other function
J29	Reset Key	push-button	Key for system reset
J30	Power on/off connector	PH2.0mm 2pin wafer	Socket for External Power Key
J31	Update connector	PH2.0mm 2pin wafer	Socket for External Update Key
J32	Reset connector	PH2.0mm 2pin wafer	Socket for External Reset Key
J33	WIFI/BT antenna	I-PXE,MHF Φ=2.0	Antenna1 for WiFi/BT
J34	RTC Battery	PH2.0mm 2pin wafer	Battery for RTC 3.0V Input
J35	SPEAKER	PH2.0mm 4pin wafer	L/R channel audio signals Output for 2.7W@8 Ω Speaker
J36	FAN	PH2.0mm 2pin wafer	12V power output for cooling FAN
J37	M.2 M-key	Standard 2240 M.2 M-key connector	M.2 NGFF (M-KEY) with PCIE2.0x2
J38	Mini-PCle	Mini-PCle 52pin socket	USB3.0signals for 4G/5G LTE module
J39	MIPI-DPHY1-RX	0.5mm Pitch 30Pin FPC connector	mipi csi 4-lane signals for camera
J40	MIPI-DPHY0-TX	0.5mm Pitch 30Pin FPC connector	mipi dsi 4-lane signals for LCM
J41	MIPI-DPHY0-RX	0.5mm Pitch 30Pin FPC connector	mipi csi 4-lane signals for camera
J42	MIPI-CSIO-RX	0.5mm Pitch 30Pin FPC connector	mipi csi 4-lane signals for camera
J43	MIPI LCM backlight	3.5mm Pitch 2Pin wafer	backlight power for mipi LCM

6.引脚定义

LVDS power jumper (J9)

Pin number	Pin name	Voltage level	Notice
1-2	1 和 2 短接	3.3V	-
3-4	3 和 4 短接	5V	-

LVDS LCM (J10)

Pin number	Pin name	Voltage level	Notice
1	VCC_LVDS	3.3V/5V optional by J9 jumper	-
2	VCC_LVDS		-
3	VCC_LVDS		-
4	GND	GND	-
5	GND	GND	-
6	GND	GND	-
7	RXO0M	-	-
8	RXO0P	-	-
9	RXO1M	-	-
10	RXO1P	-	-
11	RXO2M	-	-
12	RXO2P	-	-
13	GND	GND	-
14	GND	GND	-
15	RXOCM	-	-
16	RXOCP	-	-
17	RXO3M	-	-
18	RXO3P	-	-
19	RXE0M	-	-
20	RXE0P	-	-
21	RXE1M	-	-
22	RXE1P	-	-
23	RXE2M	-	-
24	RXE2P	-	-
25	GND	GND	-
26	GND	GND	-
27	RXECM	-	-
28	RXECP	-	-
29	RXE3M	-	-
30	RXE3P	-	-

LCM_BackLight (J11)

Pin number	Pin name	Voltage level	Notice
1	GND	GND	-

2	GND	GND	-
3	BL_ADJ	3.3V	PWM5_M1
4	BL_EN	3.3V	GPIO4_B2
5	VCC12V_BL	12V	-
6	VCC12V_BL	12V	-

Touch Panel (J12)

Pin number	Pin name	Voltage level	Notice
1	GND	GND	-
2	I2C_SDA_TP	3.0V	I2C4_SDA_M3
3	I2C_SCL_TP	3.0V	I2C4_SCL_M3
4	TP_RESET	1.8V	GPIO1_B4
5	TP_INT	1.8V	GPIO1_B5
6	VCC3V0_TOUCH	3.0V	Power for Touch panel

IR Receiver (J13)

Pin number	Pin name	Voltage level	Notice
1	VCC3V3_PMU	+3.3V	3.3V Output for IR Module
2	GND	GND	-
3	IR_IN	1.8V	GPIO0_B4

LED 1-2 (J17)

Pin number	Pin name	Voltage level	Notice
LED1 (上)	-	-	Power status indicate LED
LED2 (下)	-	-	DIY led, controlled by GPIO1_D2

LED 3-4 (J18)

Pin number	Pin name	Voltage level	Notice
LED3 (上)	-	-	4G/5G net status indicate LED
LED4 (下)	-	-	DIY led, controlled by GPIO1_D3

UART -1 (J19)

Pin number	Pin name	Voltage level	Notice
1	3.3V	+3.3V	3.3V Output
2	UART TX	1.8V	GPIO1_B3/UART4_Tx_M2
3	UART RX	1.8V	GPIO1_B2/UART4_Rx_M2
4	GND	GND	-

UART -2 (J20)

Pin number	Pin name	Voltage level	Notice
1	3.3V	+3.3V	3.3V Output
2	UART TX	1.8V	GPIO1_A1/UART6_TX_M1
3	UART RX	1.8V	GPIO1_A0/UART6_RX_M1
4	GND	GND	-

CAN BUS (J21)

Pin number	Pin name	Voltage level	Notice
1	CAN_H	-	-
2	GND	GND	-
3	CAN_L	-	-

RS485 (J22)

Pin number	Pin name	Voltage level	Notice
1	RS485-A	-	UART9_TX_M2/UART9_RX_M2
2	RS485-B	-	UART9_TX_M2/UART9_RX_M2
3	GND	-	-

Analog input (J23)

Pin number	Pin name	Voltage level	Notice
1	5.0V	-	-
2	SARADC_VIN2	0~12V	-
3	SARADC_VIN3	0~12V	-
4	SARADC_VIN4	0~12V	-
5	SARADC_VIN5	0~12V	-
6	GND	-	-

RS232 * 2 (J24)

Pin number	Pin name	Voltage level	Notice
1	RS232_RX2	-	-
2	5.0V	+5V	+5V Output
3	RS232_TX2	-	-
4	RS232_RX4	-	-
5	GND	GND	-
6	RS232_TX4	-	-

RS232 * 2 (J25)

Pin number	Pin name	Voltage level	Notice
1	RS232_RX1	-	-
2	5.0V	+5V	+5V Output
3	RS232_TX1	-	-
4	RS232_RX3	-	-
5	GND	GND	-
6	RS232_TX3	-	-

SYS-Debug (J26)

Pin number	Pin name	Voltage level	Notice
1	3.3V	3.3V	-
2	DBG UART RX	1.8V	-
3	DBG UART TX	1.8V	-
4	GND	GND	-

Power on/off connector (J30)

Pin number	Pin name	Voltage level	Notice
1	PWR_KEY	-	Socket for External Power Key
2	GND	GND	-

Update connector (J31)

Pin number	Pin name	Voltage level	Notice
1	SARADC_VIN0	1.8V	Socket for External Update Key
2	GND	GND	-

Reset connector (J32)

Pin number	Pin name	Voltage level	Notice
1	RESETn	-	Socket for External Reset Key
2	D-	GND	-

RTC Battery (J34)

Pin number	Pin name	Voltage level	Notice
1	VRTC_IN	3.0V	-
2	GND	GND	-

SPEAKER (J35)

Pin number	Pin name	Voltage level	Notice
1	SPK_OUT_R+	-	2.7W ClassD audio Output
2	SPK_OUT_R-	-	-
3	SPK_OUT_L+	-	2.7W ClassD audio Output
4	SPK_OUT_L-	-	-

FAN (J36)

Pin number	Pin name	Voltage level	Notice
1	Fan Power out	+12V	+12V out for fan power
2	GND	GND	-

MIPI-DPHY1-RX (J39)

Pin number	Pin name	Voltage level	Notice
1	GND	-	-
2	MIPI_DPHY1_RX_D0P	-	-
3	MIPI_DPHY1_RX_D0N	-	-
4	GND	-	-
5	MIPI_DPHY1_RX_D1P	-	-
6	MIPI_DPHY1_RX_D1N	-	-
7	GND	-	-
8	MIPI_DPHY1_RX_CLKN	-	-
9	MIPI_DPHY1_RX_CLKP	-	-
10	GND	-	-
11	MIPI_DPHY1_RX_D2P	-	-
12	MIPI_DPHY1_RX_D2N	-	-
13	GND	-	-
14	MIPI_DPHY1_RX_D3P	-	-
15	MIPI_DPHY1_RX_D3N	-	-
16	GND	-	-
17	NC	-	-
18	NC	-	-
19	GND	-	-
20	MIPI_CAM_CLKOUT	1.8V	GPIO1_B6
21	MIPI_CAM_RST	1.8V	GPIO3_C4
22	MIPI_CAM_PDN_L	1.8V	GPIO3_C6

23	NC	-	-
24	NC	-	-
25	I2C3_SCL_M1	1.8V	GPIO3_B7
26	I2C3_SDA_M1	1.8V	GPIO3_C0
27	VCC_1V8_CAM1	1.8V	-
28	VCC_1V2_CAM1	1.2V	-
29	VCC_2V8_CAM1	2.8V	-
30	VCC2V8_AVDD_DVP	2.8V	-

MIPI-DPHY0-TX (J40)

Pin number	Pin name	Voltage level	Notice
1	VCC12V	-	-
2	VCC12V	-	-
3	VCC12V	-	-
4	VCC5V	-	-
5	VCC5V	-	-
6	VCC3.3V	-	-
7	VCC3.3V	-	-
8	VCC1.8V	-	-
9	I2C4_SCL_M3	3.3V	GPIO1_A3
10	I2C4_SDA_M3	3.3V	GPIO1_A2
11	MIPI_BL_PWM	1.8V	GPIO0_D0/PWM7_IR_M0
12	MIPI_BL_EN	1.8V	GPIO0_D3
13	LCD_PWREN	1.8V	GPIO1_B0
14	MIPI_LCD_RST	3.3V	GPIO4_A3
15	GND	-	-
16	MIPI_DPHY0_TX_D3N	-	-
17	MIPI_DPHY0_TX_D3P	-	-
18	GND	-	-
19	MIPI_DPHY0_TX_D2N	-	-
20	MIPI_DPHY0_TX_D2P	-	-
21	GND	-	-
22	MIPI_DPHY0_TX_CLKN	-	-
23	MIPI_DPHY0_TX_CLKP	-	-
24	GND	-	-
25	MIPI_DPHY0_TX_D1N	-	-
26	MIPI_DPHY0_TX_D1P	-	-
27	GND	-	-
28	MIPI_DPHY0_TX_D0N	-	-
29	MIPI_DPHY0_TX_D0P	-	-
30	GND	-	-

MIPI-DPHY0-RX (J41)

Pin number	Pin name	Voltage level		Notice
1	GND	-	-	
2	MIPI_DPHY1_RX_D0P	-	-	
3	MIPI_DPHY1_RX_D0N	-	-	
4	GND	-	-	
5	MIPI_DPHY1_RX_D1P	-	-	
6	MIPI_DPHY1_RX_D1N	-	-	
7	GND	-	-	
8	MIPI_DPHY1_RX_CLKN	-	-	
9	MIPI_DPHY1_RX_CLKP	-	-	
10	GND	-	-	
11	MIPI_DPHY1_RX_D2P	-	-	
12	MIPI_DPHY1_RX_D2N	-	-	
13	GND	-	-	
14	MIPI_DPHY1_RX_D3P	-	-	
15	MIPI_DPHY1_RX_D3N	-	-	
16	GND	-	-	
17	NC	-	-	
18	NC	-	-	
19	GND	-	-	
20	MIPI_CAM_CLKOUT	1.8V	GPIO1_B6	
21	MIPI_CAM_RST	1.8V	GPIO3_c4	
22	MIPI_CAM_PDN_L	1.8V	GPIO3_C6	
23	NC	-	-	
24	NC	-	-	
25	I2C8_SCL_M2	1.8V	GPIO1_D6	
26	I2C8_SDA_M2	1.8V	GPIO1_D7	
27	VCC_1V8_CAM1	1.8V	-	
28	VCC_1V2_CAM1	1.2V	-	
29	VCC_2V8_CAM1	2.8V	-	
30	VCC2V8_AVDD_DVP	2.8V	-	

MIPI-CSIO-RX (J42)

Pin number	Pin name	Voltage level		Notice
1	GND	-	-	
2	MIPI_CSIO_RX_D0P	-	-	
3	MIPI_CSIO_RX_D0N	-	-	
4	GND	-	-	
5	MIPI_CSIO_RX_D1P	-	-	
6	MIPI_CSIO_RX_D1N	-	-	
7	GND	-	-	
8	MIPI_CSIO_RX_CLK0N	-	-	
9	MIPI_CSIO_RX_CLK0P	-	-	

10	GND	-	-
11	MIPI_CSI0_RX_D2P	-	-
12	MIPI_CSI0_RX_D2N	-	-
13	GND	-	-
14	MIPI_CSI0_RX_D3P	-	-
15	MIPI_CSI0_RX_D3N	-	-
16	GND	-	-
17	MIPI_CSI0_RX_CLK1P	-	-
18	MIPI_CSI0_RX_CLK1N	-	-
19	GND	-	-
20	MIPI_CAM_CLKOUT	1.8V	GPIO1_B6
21	MIPI_CAM_RST	1.8V	GPIO3_C4
22	MIPI_CAM_PDN_L	1.8V	GPIO3_C6
23	MIPI_CAM_X2_RST	1.8V	GPIO1_A4
24	MIPI_CAM_X2_PDN_L	1.8V	GPIO1_A7
25	I2C8_SCL_M2	1.8V	GPIO1_D6
26	I2C8_SDA_M2	1.8V	GPIO1_D7
27	VCC_1V8_CAM1	1.8V	-
28	VCC_1V2_CAM1	1.2V	-
29	VCC_2V8_CAM1	2.8V	-
30	VCC2V8_AVDD_DVP	2.8V	-

MIPI LCM backlight (J43)

Pin number	Pin name	Voltage level	Notice
1	LED+	-	-
2	LED-	-	-

7.应用场景



人工智能



机器视觉



工业控制



能源电力



智慧平板



虚拟现实 VR



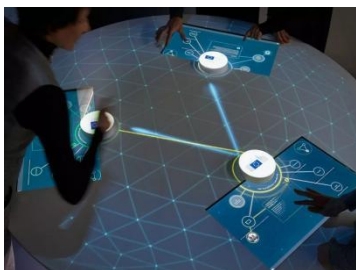
智慧物流



新零售



智慧商显



物体识别



车载终端



安防监控

8.订购型号

产品型号	状 态	CPU 型号	DDR 容量	eMMC 容量	工作温度
LB17043200	ACTIVE	RK3588S	4GB	32GB	-10°C - 70°C
LB17086400	ACTIVE	RK3588S	8GB	64GB	-10°C - 70°C
LB1709A800	ACTIVE	RK3588S	16GB	128GB	-10°C - 70°C

*非标定制请邮件咨询 sales@neardi.com

9.关于临滴

上海临滴科技有限公司成立于 2014 年，国家级高新技术企业，瑞芯微战略合作伙伴，黑芝麻智能授权代理商。专注于企业级开源硬件平台的研发和生产，为客户提供核心模块、行业板、开发板、触控平板和工控主机等产品。公司坚持技术创新和专业服务的核心理念，以临滴科技的技术优势和行业经验，帮助合作伙伴实现产品快速量产。



公众号



淘宝店铺



B 站

Rockchip-产品线

核心模块



LCB3588/J



LCB3568/J



LCB3566



LCB3399Pro



LCB3399

开发板/行业板



LKD3588/J



LKD3568/J



LKD3566



LKD3399Pro



LKD3399

嵌入式智能计算机



LPB3588



LPM3588



LPC3588



LPB3568



LPB3399Pro

BST 黑芝麻-产品线



SOM-A-A1000



SOM-π-A1000



SOM-B-A1000



SOM-A1000 开发者套件

车载终端-产品线



LPA3588



LPA3568



LPA3399Pro



LPS3399Pro

WIFI 模块-产品线



FD7352S



FD7352P



FD7352M



FD7155U



FD7256S