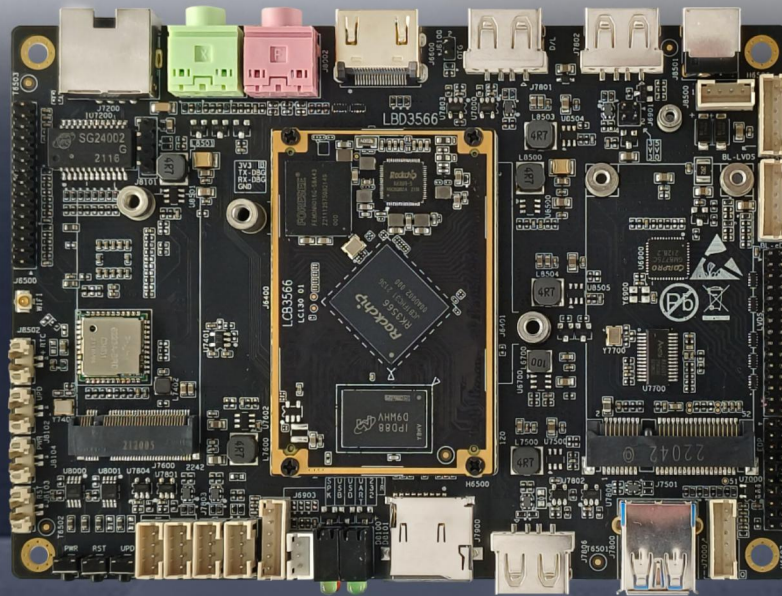


LKD3566 Development Board

Datasheet

V1.1



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Version History

Version	Date	Description
V1.0	2024/5/20	Initial version
V1.1	2024/10/29	Update document

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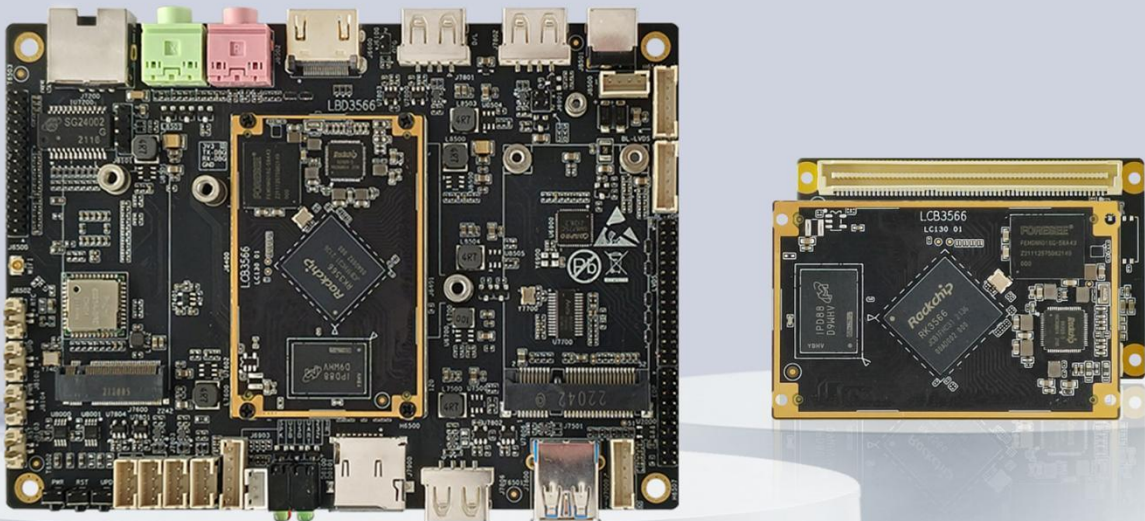
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1.Product Introduction

The LKD3566 is a multifunctional industry application board exquisitely designed based on the Rockchip RK3566 chip platform, consisting of our company's LCB3566 core module and baseboard. The core module is connected to the baseboard using a B2B connector and secured with four M2 screws, ensuring stability and reliability. The board is versatile, rich in interfaces, compact in size, and slim and flat, suitable for product deployment in various scenarios.

The LKD3566 features 1 USB 3.0 HOST, 4 USB 2.0 HOSTs, and 1 USB 2.0 OTG interface, capable of connecting multiple USB cameras externally. It also has 1 mini-PCIe interface for connecting a 4G module. Additionally, the LKD3566 supports dual-band WIFI6, BT5.0, 1000M Ethernet, UART, I2C, RS232, and other common communication module interfaces, and supports multiple display interfaces such as 1 HDMI output, 1 dual-channel LVDS, and 1 eDP interface.

The LKD3566 supports Android, buildroot, Debian, and Ubuntu operating systems, offering advantages such as high performance, high reliability, and high scalability, and provides users with open system source code. Users can develop and customize based on this product, and our company provides comprehensive technical support for developers and enterprise users, enabling them to efficiently complete research and development work and significantly shorten the product development and mass production cycle.



2. Function Overview



High-Performance Processor

CPU	Quad-core 64-bit Cortex-A55, with a maximum clock speed of 2.0GHz.
GPU	ARM G52 2EE, with embedded high-performance 2D acceleration hardware.
NPU	1 TOPS of computational power.
VPU	Capable of 4K video decoding and 1080P video encoding.
DDR	LPDDR4/4x, with options for 1GB, 2GB, 4GB, or 8GB configurations.
eMMC	eMMC 5.1, with options for 8GB, 16GB, 32GB, 64GB, or 128GB storage capacities.



Rich Interfaces

Multiple display interfaces: eDP, HDMI 2.0, dual-channel LVDS, supporting multi-screen independent display.

UART, RS232, I2C, I2S, GPIO.

1 Gigabit Ethernet port, dual-band WIFI 5, BT5.0.

1 MIPI PCIe interface, expandable for 4G/5G modules.

1 M.2 M-Key interface, supporting external NVMe protocol SSDs.

1 Type-A USB 3.0 HOST, 1 Type-A USB 2.0 OTG, 2 USB 2.0 HOSTs, 2 internal USB 2.0 4Pin sockets.



Operating System

Android

Linux (Buildroot / Debian / Ubuntu)



Open Source Materials

WIKI Documentation <http://www.neardi.com/cms/en/wiki.html>

Quick Start

Firmware Upgrade

Android Development

Linux Development

Kernel Drivers

DEMO

System Customization

Accessories

Frequently Asked Questions (FAQ)

Release Notes

Hardware Materials

Chip Datasheet

Product 2D/3D Drawings

Core Board Pin Definitions

Baseboard Reference Schematic

Baseboard Reference PCB

Key Bill of Materials (BOM)

Software Materials

Firmware Tools and Drivers

Android Source Code and Images

U-Boot and Kernel Source Code

Debian/Ubuntu/Buildroot System Files

3. Technical Specifications

Basic Parameters

SOC	RK3566, 22nm process, quad-core 64-bit Cortex-A55
GPU	ARM G52 2EE, OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1, high quality 2D Graphics Engine build in
NPU	The build-in NPU supports INT8/INT16/FP16/BFP16 MAC hybrid operation. 4KP60 H.265/H.264/VP9 video decoder
VPU	1080P60 H.264/H.265 video encoder 8M ISP
DDR	LPDDR4/LPDDR4X RAM is available in optional capacities of 1GB, 2GB, 4GB, or 8GB.
eMMC	eMMC 5.1 storage, with options for 8GB/16GB/32GB/64GB/128GB (Optional).
PMU	RK806
OS	Android / Ubuntu / Buildroot / Debian

Hardware Specifications

Power	DC12V - 3A (DC Jack 5.5*2.1mm / PH2.0 wafer connector)
USB	1*Type-A USB3.0 HOST, 1*Type-A USB2.0 OTG, 2*Type-A USB2.0 HOST + 2*wafer USB2.0 HOST
Display output	Type-A HDMI 2.0 up to 4K@60fps MIPI-DSI V1.2 4-Lane LCD up to 1920x1080@60Hz

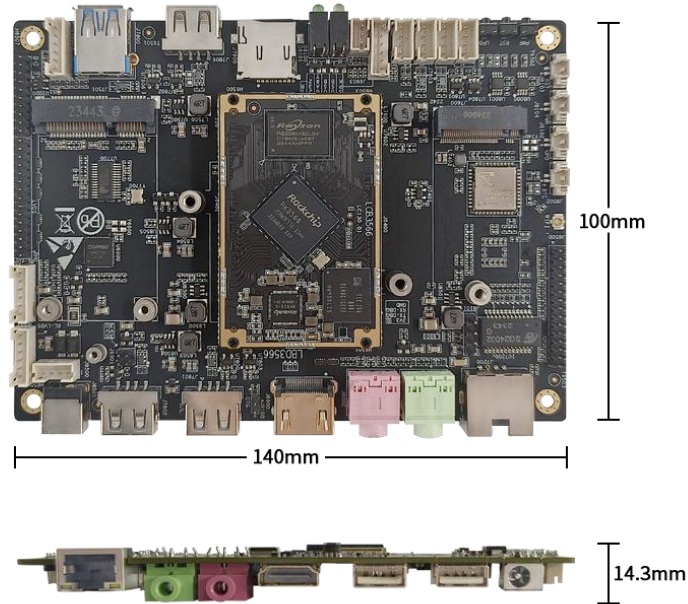
	1x eDP1.3 4-Lane 2.7Gbps up to 2560x1600@60Hz
	Dual channel LVDS up to 1080P@60HZ
Audio	φ3.5mm earphone Jack with L/R audio out
	φ3.5mm microphone Jack with Mic in
	Stereo Speaker output 2.7W@8Ω
	HDMI audio out
Display input	MIPI-CSI V1.2 Camera Interface
	4 data lanes, 2.5Gbps maximum data rate per lane
Mini-PCIe	1*mini PCIe for 2G/3G/4G module (USB2.0)
M.2	M.2 NGFF (M-KEY) PCIE V2.1 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 Ethernet
Others	Uart, CANBUS, I2C, RS232

Other Parameters

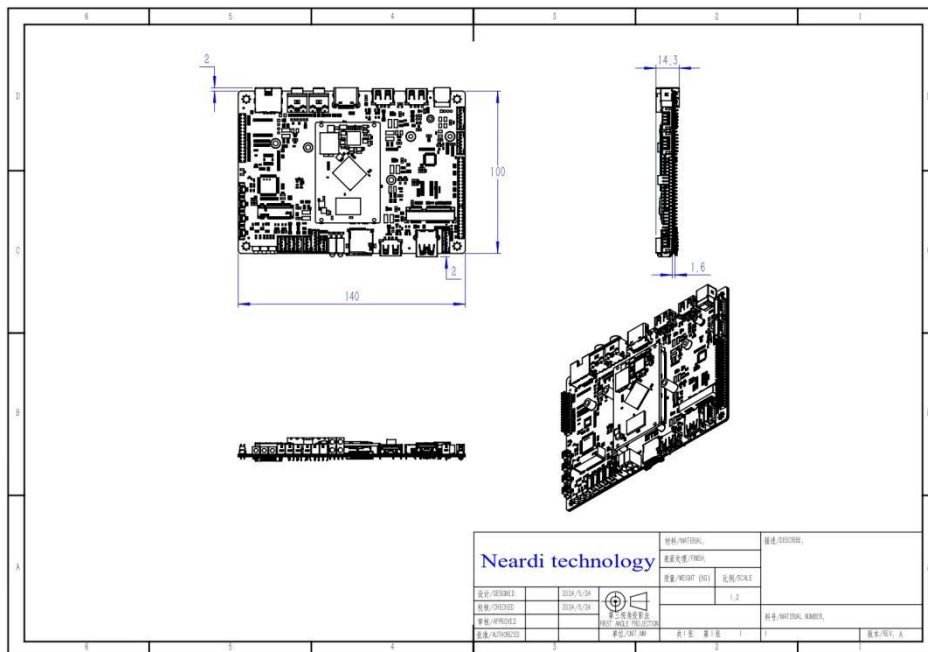
Dimensions	Length * Width * Height (mm) 140*100*14.3
Operating Temperature	-20 ~ 70°C
Weight	Approximately 115.3g (excluding peripherals)

4. Appearance and Dimensions

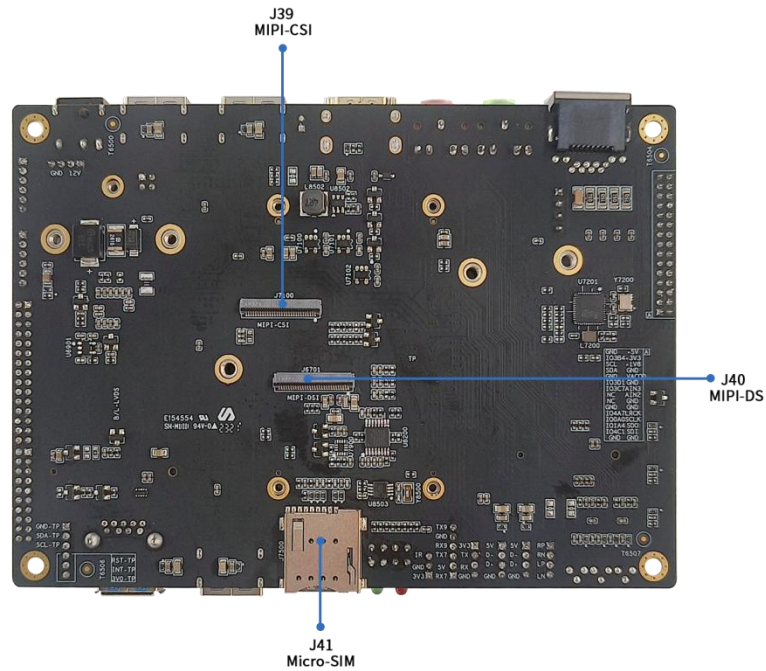
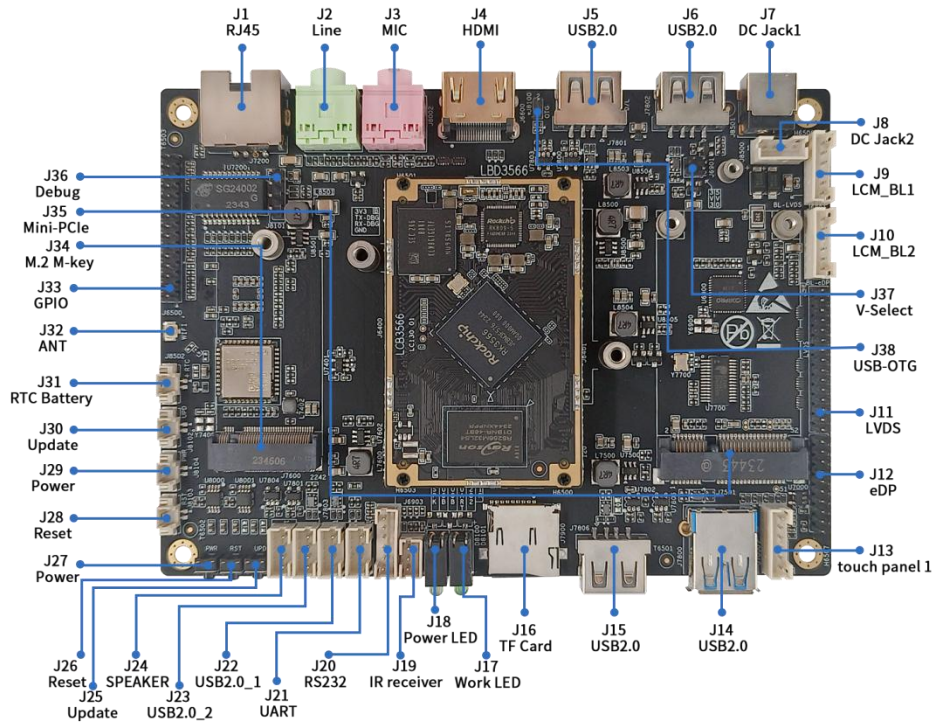
4.1 Appearance



4.2 Dimensions



5. Interface Definition



Part reference	Part Name	Part Specifications	Part Description
J1	RJ45	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
J2	HeadPhone	φ3.5mm 3-pole Jack	L/R audio out
J3	MIC	φ3.5mm 3-pole Jack	Micphone In
J4	HDMI	Type-A HDMI 2.0	HDMI 2.0 Transmitter up to 4K@60HZ
J5	USB2.0	Type-A USB2.0 host	The first USB2.0 host for external devices
J6	USB2.0	Type-A USB2.0 host	The second USB2.0 host for external devices
J7	DC Jack1	DC-5521	12V/3A DCIN
J8	DC Jack2	PH2.0 4pin wafer	12V/3A DCIN
J9	LCM_BL1	PH2.0mm 6pin wafer	The second LCM backlight control
J10	LCM_BL2	PH2.0mm 6pin wafer	The second LCM backlight control
J11	LVDS	PH2.0mm 2x15pin header	Dual channel 24bit LVDS output
J12	eDP	A2005WV-2X10P	eDP LCM
J13	touch panel 1	PH2.0mm 6pin wafer	touch panel
J14	USB3.0	Type-A USB3.0	USB3.0 HOST
J15	USB2.0	TPYEA_ USB2.0	The third USB2.0 host for external devices
J16	TF Card	Push-Push TF socket	TF Card
J17	work LED	Green led *2	Work status and 3G/4G Module Status Indicator
J18	Power LED	Red and Green LEDs	Power status indicate
J19	IR receiver	CON-PH-3PZC-DIP	IR receiver
J20	RS232	PH2.0mm 6pin wafer	RS232 bus signal
J21	UART	PH2.0mm 4pin wafer	UART bus signal
J22	USB2.0_1	PH2.0mm 4pin wafer	The number four USB2.0 host for external devices
J23	USB2.0_2	PH2.0mm 4pin wafer	The fifthUSB2.0 host for external devices
J24	Speaker	PH2.0mm 4pin wafer	Dual channel audio Output for Speaker
J25	Udata	push-button	Key for system recovery or other function
J26	Reset	push-button	Key for system reset
J27	Power	push-button	-
J28	Reset	PH2.0mm 2pin wafer	Connector for external Reset key
J29	Power	PH2.0mm 2pin wafer	-
J30	Udata	PH2.0mm 2pin wafer	Connector for external update key
J31	RTC Battery	CR1220 Socket	RTC battery power input 3.0V
J32	ANT	I-PXE	WL_BT_ANT
J33	GPIO	PH-2X15	I2S,I2C

J34	M.2 M-key	Standard M.2 M-key connector	M.2 NGFF (M-KEY) with PCIE V3.0*4Lane
J35	Mini-PCle	Mini-PCle 52pin socket	For 2G/3G/4G LTE module used
J36	Debug	PH2.54 pin header	CPU-DBG
J37	V-select	PH2.0 pin header	-
J38	USB-OTG	PH2.0 pin header	USB OTG
J39	MIPI-CSI	30pin 0.5pitch FPC Socket	MIPI-CSI 4lane or 2*2Lane for external cameras
J40	MIPI-DSI	30pin 0.5pitch FPC Socket	Dual MIPI 4Lane Rx
J41	Micro-SIM	Push-Push Micro SIM Socket	For Micro SIM Card (1.8/3.3V)

6. Pin Definition

DC jack1 (J7)

Pin number	Pin name	Voltage level	Notice
1	DC_IN	12V	VCC12V_DCIN
2	GND	GND	-

DC jack2 (J8)

Pin number	Pin name	Voltage level	Notice
1,2	DC_IN	12V	VCC12V_DCIN
3,4	GND	GND	-

LCM_BL1 (J9)

Pin number	Pin name	Voltage level	Notice
1,2	GND	GND	-
3	LVDS_BL_PWM0	3.3V	-
4	LVDS_BL_EN	3.3V	-
5,6	VCC12V_OUT	12V	VCC12V

LCM_BL2 (J10)

Pin number	Pin name	Voltage level	Notice
1,2	GND	GND	-
3	GPIO0_C4-eDP_BL_PWM_IO	3.3V	-
4	GPIO4_C6_eDP_BLEN	3.3V	-
5,6	VCC12V_OUT	12V	VCC12V

LVDS (J11)

Pin number	Pin name	Voltage level	Notice
1,2,3,	VDD_LVDS1	3.3V or 5.0V	Selected by J37
4,5,6,13,14,25,26	GND	GND	-
7	RXO0M	-	-
8	RXO0P	-	-
9	RXO1M	-	-
10	RXO1P	-	-
11	RXO2M	-	-
12	RXO2P	-	-
15	RXOCM	-	-
16	RXOCP	-	-
17	RXO3M	-	-
18	RXO3P	-	-
19	RXE0M	-	-
20	RXE0P	-	-
21	RXE1M	-	-
22	RXE1P	-	-

23	RXE2M	-	-
24	RXE2P	-	-
27	RXECM	-	-
28	RXECP	-	-
29	RXE3M	-	-
30	RXE3P	-	-

eDP (J12)

Pin number	Pin name	Voltage level	Notice
1,2	VDD_EDP	3.3V	VCC3V3_SYS
3,4,13,14,17,18,19	GND	GND	-
5	EDP_TX_D0N	-	-
6	EDP_TX_D0P	-	-
7	EDP_TX_D1N	-	-
8	EDP_TX_D1P	-	-
9	EDP_TX_D2N	-	-
10	EDP_TX_D2P	-	-
11	EDP_TX_D3N	-	-
12	EDP_TX_D3P	-	-
15	EDP_TX_AUXN	-	-
16	EDP_TX_AUXP	-	-
20	EDP_HPDIIN	-	-

touch panel 1 (J13)

Pin number	Pin name	Voltage level	Notice
1	GND	GND	-
2	I2C_SDA_TP	3.3V	I2C1_SDA_TP_PMUIO2
3	I2C_SCL_TP	3.3V	I2C1_SCL_TP_PMUIO2
4	TP_RST	3.3V	TP_RST_L_PMUIO2
5	TP_INT	3.3V	TP_INT_L_PMUIO2
6	VCC3V0_TOUCH	3.0V	-

IR Receiver (J19)

Pin number	Pin name	Voltage level	Notice
1	VCC3V3_PMU	3.3V	VCC3V3_PMU
2	GND	GND	-
3	IR_IN	-	PWM3_IR

RS232 (J20)

Pin number	Pin name	Voltage level	Notice
1	RS232_RX7	RS232	UART7
2	VCC5V0_EXT	5V	VCC5V0_EXT
3	RS232_TX7	RS232	UART7
4	RS232_RX9	RS232	UART9
5	GND	GND	-

6	RS232_TX9	RS232	UART9
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UART (J21)

Pin number	Pin name	Voltage level	Notice
1	VCC3V3_EXT	3.3V	-
2	UART1_TX_OUT	3.3V	UART1
3	UART1_RX_OUT	3.3V	UART1
4	GND	GND	-

USB 2.0_1 (J22)

Pin number	Pin name	Voltage level	Notice
1	VCC5V0_HUB2	5V	-
2	HUB20_USB2_DM_J	-	-
3	HUB20_USB2_DP_J	-	-
4	GND	GND	-

USB 2.0_2 (J23)

Pin number	Pin name	Voltage level	Notice
1	VCC5V0_HUB2	5V	-
2	HUB20_USB3_DM_J	-	-
3	HUB20_USB3_DP_J	-	-
4	GND	GND	-

Speaker (J24)

Pin number	Pin name	Voltage level	Notice
1	SPK_OUT_RP	Analog	-
2	SPK_OUT_RN	Analog	-
3	SPK_OUT_LP	Analog	-
4	SPK_OUT_LN	Analog	-

GPIO/Analog (J33)

Pin number	Pin name	Voltage level	Notice
1,2,11,12,14, 20,21,24,29	GND	GND	-
13, 15, 17	NC	NC	-
3	CIF_8BIT_CLKIN	3.3V	GPIO4_C1
4	I2S2_SDI_M0	1.8V	GPIO2_C5
5	PDM_CLK1_M0	3.3V	GPIO1_A4
6	I2S2_SDO_M0	1.8V	GPIO2_C4
7	REFCLK_OUT	3.3V	GPIO0_A0
8	I2S2_SCLK_TX_M0	1.8V	GPIO2_C2
9	MIPI_MCLK_B	3.3V	GPIO4_A7
10	I2S2_LRCK_TX_M0	1.8V	GPIO2_C3
16	Analog-In2	-	-
18	Analog-In3	-	-
19	MIPI_CSI_SEL	3.3V	GPIO3_D1
22	VCCIO_ACODEC	3.3V Default	-

23	I2C3_SDA_ACODEC	3.3V	GPIO1_A0
25	I2C3_SCL_ACODEC	3.3V	GPIO1_A1
26	VCC_1V8_OUT	1.8V	1.5A Max
27	RMII_RXER	1.8V	GPIO3_B4
28	VCC3V3_OUT	3.3V	2.0A MAX
30	VCC5V0_OUT	5.0V	2.0A MAX

7.Application Scenarios



AI



Machine Vision



Industrial Control



Energy and Power



Smart Tablet



VR



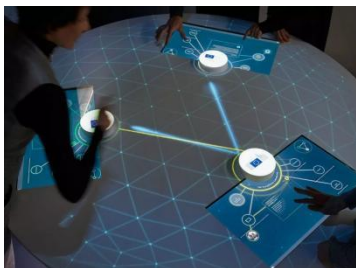
Smart Logistics



New



Smart Commercial



Object Recognition



Vehicle terminal



Security Surveillance

8. Ordering Model

Product Model	Status	CPU	DDR	eMMC	Operating Temperature
LZ13021600	ACTIVE	RK3566	2GB	16GB	-10°C - 70°C
LZ13043200	ACTIVE	RK3566	4GB	32GB	-10°C - 70°C
LZ13083200	ACTIVE	RK3566	8GB	32GB	-10°C - 70°C

*For customized non-standard orders, please contact us via email at sales@neardi.com.

9.About NearDi
















Shanghai NearDi Technology Co., Ltd., established in 2014, is a national-level high-tech enterprise, a strategic partner of Rockchip, and an authorized agent for Black Sesame Technologies. We focus on the research and development and production of enterprise-level open-source hardware platforms, offering customers core modules, industry-specific boards, development boards, touch panels, and industrial control hosts. Adhering to the core philosophy of technological innovation and professional service, leveraging NearDi Technology's technical strengths and industry experience, we assist our partners in achieving rapid mass production of their products.

Company Advantages

Software Design / Custom OS / Product ODM / Bulk Delivery

Products

Rockchip

System On Module				
 LCB3588/J	 LCB3568/J	 LCB3566	 LCB3399Pro	 LCB3399
Development Board				
 LKD3588/J	 LKD3568/J	 LKD3566	 LKD3399Pro	 LKD3399
Embedded Computer				
 LPB3588	 LPM3588	 LPC3588	 LPB3568	 LPB3399Pro

Black Sesame Technologies

 SOM-A-A1000	 SOM-π-A1000	 SOM-B-A1000	 SOM-A1000 Development kit
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Vehicle Terminal

 LPA3588	 LPA3568	 LPA3399Pro	 LPS3399Pro
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WIFI Module

 FD7352S	 FD7352P	 FD7352M	 FD7155U	 FD7256S
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