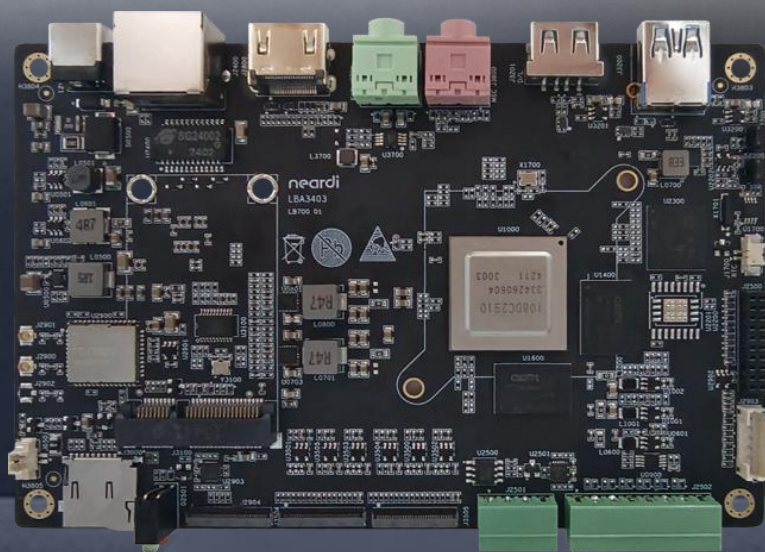




LBA3403 Development Board

Datasheet

V1.0



Shanghai Neardi Technology Co., Ltd.
www.neardi.com

© 2024 Shanghai Neardi Technology Co., Ltd. All rights reserved. Without written permission, no copy, photocopy, translate, or disseminate any content of this manual.

Notes: All contents only for explanatory and descriptive purposes. Please refer to the actual product. We strive to ensure consistency with the actual product. This document is provided for customers as a reference for product design and end application. It is better for you confirm the specifications and parameters carefully, provided in the document to ensure they meet the design or application requirements of the product. What's more, it is strongly recommended that customers conduct detailed tests based on our actual products in the actual application scenario to ensure they meet the final usage requirements. Neardi Technology does not assume any responsibility for any damage suffered due to the use of the document, materials, and product functions.

Due to product version upgrades or other needs, our company may update the manual. If you need the latest version of the manual, please contact our company. We always adhere to the principle of customer first and provide customers with fast and efficient support services. If you have any needs, please feel free to contact our company at any time. Contact information is as follows:

Shanghai Neardi Technology Co., Ltd.

Phone: +86 021-20952021

Website: www.neardi.com

Email: sales@neardi.com

Version History

Version	Date	Description
V1.0	2024/9/25	Initial version

Contents

1.Product Introduction	3
2. Function Overview	4
3. Technical Specifications	7
4. Appearance and Dimensions	9
5.Interface Definition	10
6. Pin Definition	12
7.Application Scenarios	16
8.Ordering Model	17
9.About Neardi	18

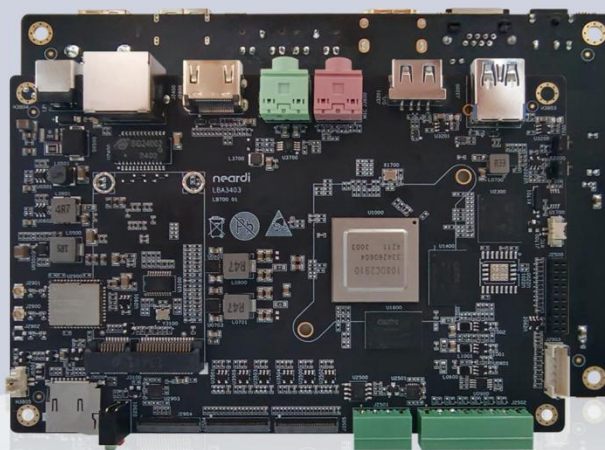
1.Product Introduction

The LBA3403 is a multifunctional industry board meticulously designed based on the Hisilicon Hi3403V100 chip platform. The board is versatile, rich in interfaces, compact in size, thin and flat, specifically designed for the surveillance market, and equipped with high-performance image processing capabilities and a wealth of interface options.

The LBA3403 is equipped with the Hi3403V100 chip, which features a quad-core ARM Cortex-A55 CPU, providing powerful computing capabilities. It integrates a single-core MCU suitable for applications with extremely high latency requirements. It is configured with a 10Tops INT8 neural network inference unit, supporting mainstream neural network frameworks, making it suitable for AI inference tasks.

The LBA3403 provides a 12V3A power supply input, 1 Gigabit Ethernet interface for stable network connections. It has 1 HDMI interface supporting 4K60fps video output, 1 MIC and 1 LINE to meet audio capture and playback needs. There is 1 USB2.0 and 1 USB3.0 for flexible data transfer and device expansion. It supports 2 MIPI-CSI camera inputs for high-definition camera connections. There is 1 MIPI-DSI for connecting display devices. 1 mini-PCIe supports RK1808, 3Tops NPU computing power expansion. It supports WiFi6, BT5.4, providing high-speed wireless connections. 3 UART and 1 RS485 as well as GPIO and other communication serial ports meet various peripheral connections and industrial applications.

The LBA3403 supports the Linux system, offering high performance, high reliability, and high expandability, 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 architecture processor (4*A55 1.4GHz), high performance, low power consumption
NPU	10.4 TOPS@INT8 dual-core heterogeneous architecture
VPU	4K video encoding, 10-channel 1080p video decoding, 4-channel 4MP30 in-device real-time hardened stitching
DDR	LPDDR4, with options for 4/8GB
eMMC	eMMC 5.1, optional 16/32/64GB



Rich Interfaces

- 1 HDMI 2.0 output, supporting 4K60fps
- 1 MIPI-DSI interface, supporting 4K60fps
- 2 MIPI-CSI interfaces, supporting up to 4 MIPI camera inputs
- 1 Gigabit Ethernet port, dual-band WiFi-6, BT5.4
- 1 MIPI PCIe interface, expandable for NPU computing cards
- 1 Type-A USB 2.0
- 1 Type-A USB 3.0
- 3 UART, 1 RS485



Open Source Materials

[Quick Start](#)

[Firmware Upgrade](#)

[Linux Development](#)

[Kernel Drivers](#)

[DEMO](#)

[System Customization](#)

[Accessories](#)

[Frequently Asked Questions \(FAQ\)](#)

[Release Notes](#)

Hardware Materials

[Chip Datasheet](#)

[Product 2D/3D Drawings](#)

[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	Hi3403V100; Quad-core 64-bit architecture processor (4*A55 1.4GHz)
NPU	10.4 TOPS@INT8 dual-core heterogeneous architecture
VPU	Supports H264/H265/MPEG-4 4K60fps + 1080P60fps
	Supports H264/H265 4k60fps+720P30fps 8K15fps
DDR	LPDDR4/4X, with options for 4GB/8GB
eMMC	eMMC 5.1, with options for 16GB/32GB/64GB
OS	Linux

Hardware specifications

Power	DC12V - 3A (DC Jack 5.5*2.1mm / PH2.0 wafer connector)
USB	1*Type-A USB3.0
	1* Type-A USB2.0
Display	1*Type-A HDMI 2.0 up to 4K@60fps
	1*MIPI DSI up to 4K@60fps
Audio	φ3.5mm earphone Jack with L/R audio out
	φ3.5mm microphone Jack with Mic in
Camera	2* MIPI CSI (4 Lane)
Mini-PCIe	mini PCIe for NPU RK1808
SD card	Compatible with SDIO 3.0 protocol, system boot up supported

RJ-45	1*10/100/1000-Mbps data transfer rates
-------	--

RTC	RTC power on and off supported
-----	--------------------------------

Serial port	3*Uart, RS485, 10*GPIO
-------------	------------------------

Keys	2* keys (reset, update)
------	-------------------------

Other Parameters

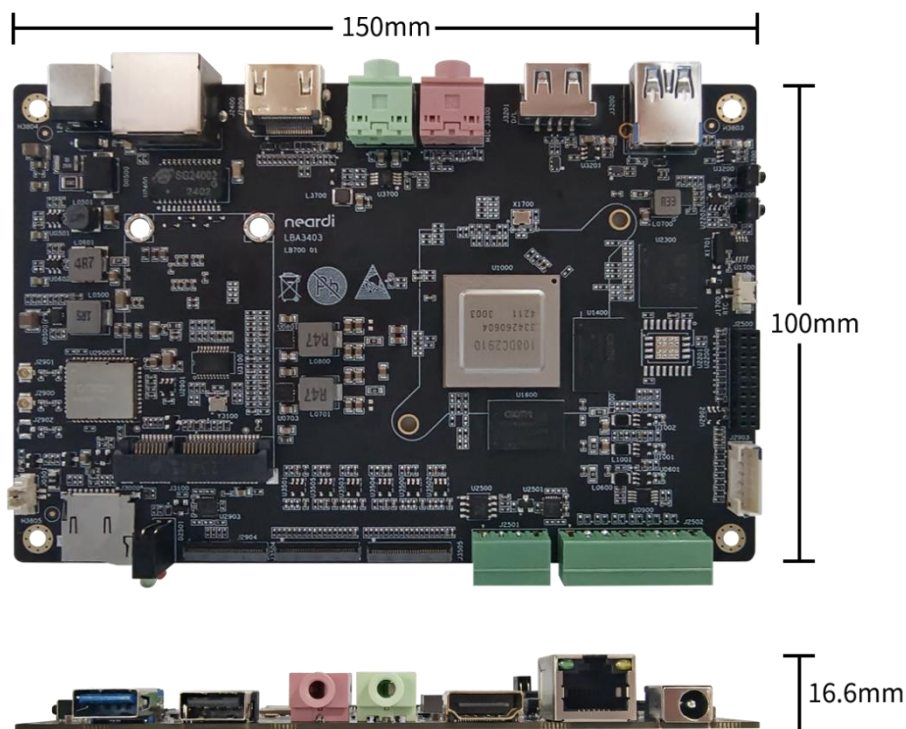
Dimensions	Length * Width * Height (mm) 150*100*16.67
------------	--

Operating Temperature	-10 ~ 70°C
--------------------------	------------

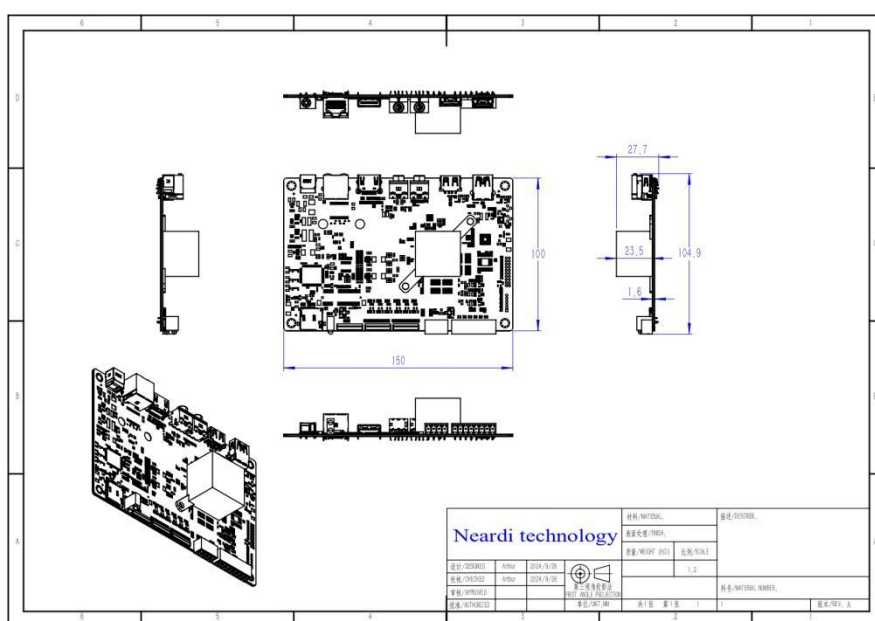
Weight	Approximately 96g (excluding peripherals)
--------	---

4. Appearance and Dimensions

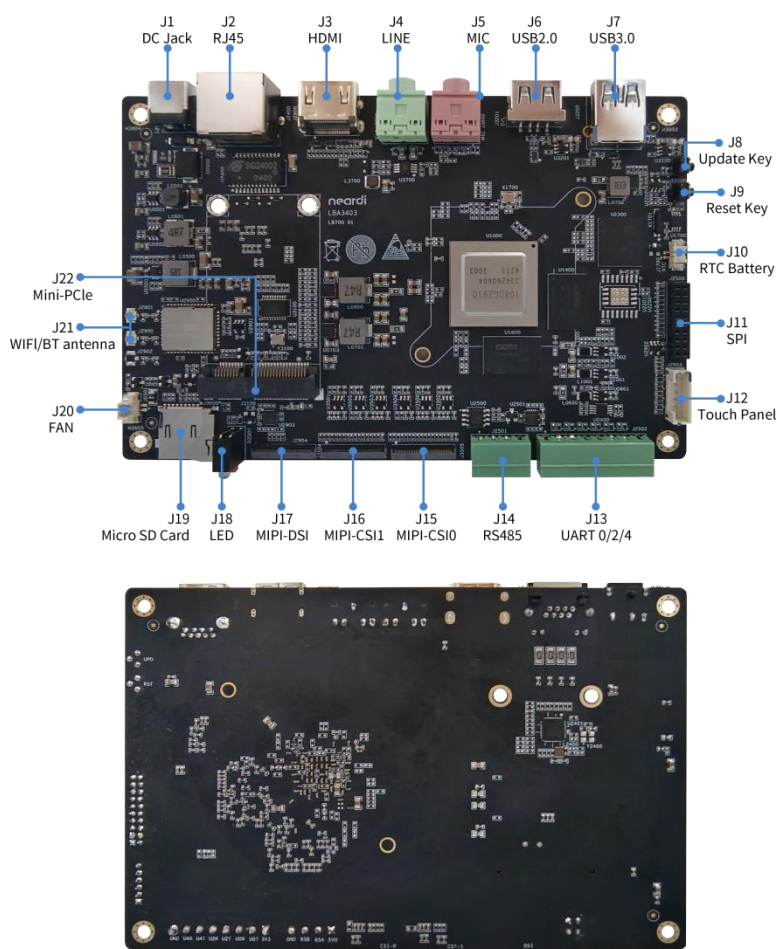
4.1 Appearance



4.2 Dimensions



5.Interface Definition



Part

reference

Part Name

Part Specifications

Part Description

J1	DC Jack	DC 5.5*2.1mm	Main power supply, DC12V – 3A
J2	RJ45	Gigabit Ethernet	10/100/1000-Mbps data transfer rates
J3	HDMI	Type-A HDMI connector	HDMI2.0 TX up to 7680x4320@60Hz
J4	LINE	φ3.5mm 3-L Jack	L/R audio out
J5	MIC	φ3.5mm 3-L Jack	Micphone In
J6	USB2.0	Type-A USB2.0	USB2.0
J7	USB3.0	Type-A USB3.0	USB3.0
J8	Update Key	push-button	Key for system recovery or other function
J9	Reset Key	push-button	Key for system reset

J10	RTC Battery	PH2.0mm 2pin wafer	Battery for RTC 3.0V Input
J11	SPI	2.0mm Pitch 2X10Pin header	-
J12	Touch Panel	PH2.0mm 6pin wafer	power and I2C signals for Touch Panel
J13	UART 0/2/4	3.81mm 8pin wafer	1.8V UART-TTL signals
J14	RS485	3.81mm pitch 4Pin Connector	RS485 Bus signals
J15	MIPI-CSIO	0.5mm Pitch 30Pin FPC connector	mipi csi 4-lane signals for camera
J16	MIPI-CSI1	0.5mm Pitch 30Pin FPC connector	mipi csi 4-lane signals for camera
J17	MIPI-DSI	0.5mm Pitch 30Pin FPC connector	mipi dsi 4-lane signals for LCM
J18	LED	Red and Green LEDs	Power status indicate LED and diy LED
J19	Micro SD Card	Push-Push Micro SD socket	Micro SD Card
J20	FAN	PH2.0mm 2pin wafer	12V power output for cooling FAN
J21	WIFI/BT antenna	I-PXE,MHF $\Phi=2.0 * 2$	Antenna1 for WiFi/BT
J22	Mini-PCle	Mini-PCle 52pin socket	USB3.0 signals for NPU module

6. Pin Definition

SPI (J11)

Pin number	Pin name	Voltage level	Notice
1,2,3,4,9,10	GND	GND	-
5	P_IRIS_CONTROL1	-	-
6,8	3V3_PER	3V3	-
7	DC_IRIS_PWM	-	-
11	SPI2_SCLK	-	-
12	SPI1_SCLK/I2C5_SCL	-	-
13	SPI2_SDO	-	-
14	SPI1_SDO/I2C5_SDA	-	-
15	SPI2_SDI	-	-
16	SPI1_SDI/I2C4_SCL	-	-
17	SPI2_CSN	-	-
18	SPI1_CSN0/I2C4_SDA	-	-
19,20	5V0	5V0	-

Touch Panel (J12)

Pin number	Pin name	Voltage level	Notice
1	GND	GND	-
2	I2C_SDA_TP	-	I2C0_SDA
3	I2C_SCL_TP	-	I2C0_SDA
4	TP_RST_IO	3V3	I2C0_SDA
5	TP_INT_IO	3V3	TP_INT_3V3
6	VCC3V0_TOUCH	3V0	-

UART 0/2/4 (J13)

Pin number	Pin name	Voltage level	Notice
1	3V3_PER	3V3	-
2	UART0_TXD_3V3_IO	3V3	-
3	UART0_RXD_3V3_IO	3V3	-
4	UART2_TXD_IO	-	-
5	UART2_RXD_IO	-	-
6	UART4_TXD_3V3_IO	3V3	-
7	UART4_RXD_3V3_IO	3V3	-
8	GND	GND	-

RS485 (J14)

Pin number	Pin name	Voltage level	Notice
1	5V0	5V0	-
2	RS485_2_A_D+	-	-
3	RS485_2_B_D	-	-

4	GND	GND	-
---	-----	-----	---

MIPI-CSIO (J15)

Pin number	Pin name	Voltage level	Notice
1	GND	-	-
2	MIPI_CAM1_RX_D0P	-	-
3	MIPI_CAM1_RX_D0N	-	-
4	GND	-	-
5	MIPI_CAM1_RX_D1P	-	-
6	MIPI_CAM1_RX_D1N	-	-
7	GND	-	-
8	MIPI_CAM1_RX_CLK0N	-	-
9	MIPI_CAM1_RX_CLK0P	-	-
10	GND	-	-
11	MIPI_CAM1_RX_D2P	-	-
12	MIPI_CAM1_RX_D2N	-	-
13	GND	-	-
14	MIPI_CAM1_RX_D3P	-	-
15	MIPI_CAM1_RX_D3N	-	-
16	GND	-	-
17	MIPI_CAM1_RX_CLK1P	-	-
18	MIPI_CAM1_RX_CLK1N	-	-
19	GND	-	-
20	MIPI_CAM1_MCLK	-	SENSOR0_CLK/UPS_MODE0
21	CAM1_RST1	-	SENSOR0_RSTN
22	CAM1_PDN1_L	-	GPIO9_5
23	CAM1_RST2	-	SENSOR0_RSTN
24	CAM1_PDN2_L	-	GPIO9_5
25	I2C_SCL_CAM1	-	SPI0_SCLK/I2C2_SCL
26	I2C_SDA_CAM1	-	SPI0_SDO/I2C2_SDA
27	VCC1V8_D0VDD_DVP2	1.8V	-
28	VDD1V2_DVDD_DVP2	1.2V	-
29	VCC2V8_DVP2	2.8V	-
30	VCC2V8_AVDD_DVP2	2.8V	-

MIPI-CSIO (J15)

Pin number	Pin name	Voltage level	Notice
1	GND	-	-
2	MIPI_CAM2_RX_D0P	-	-
3	MIPI_CAM2_RX_D0N	-	-
4	GND	-	-
5	MIPI_CAM2_RX_D1P	-	-
6	MIPI_CAM2_RX_D1N	-	-

7	GND	-	-
8	MIPI_CAM2_RX_CLK0N	-	-
9	MIPI_CAM2_RX_CLK0P	-	-
10	GND	-	-
11	MIPI_CAM2_RX_D2P	-	-
12	MIPI_CAM2_RX_D2N	-	-
13	GND	-	-
14	MIPI_CAM2_RX_D3P	-	-
15	MIPI_CAM2_RX_D3N	-	-
16	GND	-	-
17	MIPI_CAM2_RX_CLK1P	-	-
18	MIPI_CAM2_RX_CLK1N	-	-
19	GND	-	-
20	MIPI_CAM2_CLK	-	SENSOR2_CLK/RGMII0_VDD33_SEL
21	CAM2_RST1	-	SENSOR1_RSTN
22	CAM2_PDN1_L	-	GPIO9_6
23	CAM2_RST2	-	SENSOR1_RSTN
24	CAM2_PDN2_L	-	GPIO9_6
25	I2C_SCL_CAM2	-	SPI0_SDI/I2C3_SCL
26	I2C_SDA_CAM2	-	SPI0_CSN/I2C3_SDA
27	VCC1V8_DOVDD_DVP1	1.8V	-
28	VDD1V2_DVDD_DVP1	1.2V	-
29	VCC2V8_DVP1	2.8V	-
30	VCC2V8_AVDD_DVP1	2.8V	-

MIPI-DSI (J16)

Pin number	Pin name	Voltage level	Notice
1,2,3	12V_IN	12V	-
4,5	5V0	5V	-
6,7	3V3_PER	3V3	-
8	1V8_PER	1V8	-
9	I2C0_SCL_1V8	1V8	-
10	I2C0_SDA_1V8	1V8	-
11	LCD_BL_PWM1_CH1_M0	-	PWM_LCD/SDIO1_VD3318_SEL
12	LCD_BL_EN	1V8	JTAG_TMS/P_IRIS_CONTROL4_1V8
13	LCD_PWREN_H	-	GPIO0_2_PWM0_O15
14	MIPI_LCD_RST	-	JTAG_TDO/LCD_RESET
16	DSI_D3N	-	-
17	DSI_D3P	-	-
19	DSI_D2N	-	-
20	DSI_D2P	-	-
22	DSI_CKN	-	-

23	DSI_CKP	-	-
25	DSI_D1N	-	-
25	DSI_D1P	-	-
28	DSI_D0N	-	-
29	DSI_D0P	-	-
15,18,21,24,27,30	GND	GND	-

7.Application Scenarios



AI



Machine Vision



Industrial Control



Energy and Power



Smart Tablet



VR



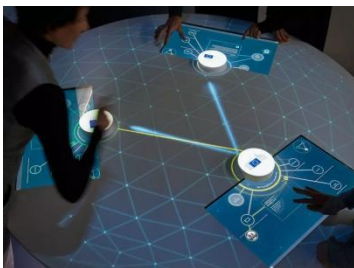
Smart Logistics



New



Smart Commercial



Object Recognition



Vehicle terminal



Security Surveillance

8.Ordering Model

Product Model	Status	CPU	DDR	eMMC	Operating Temperature
LB70041600	ACTIVE	Hi3403V100	4GB	16GB	-10°C - 70°C
LB70043200	ACTIVE	Hi3403V100	4GB	32GB	-10°C - 70°C
LB70086400	ACTIVE	Hi3403V100	8GB	64GB	-10°C - 70°C

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

9.About Nearadi

Shanghai Nearadi Technology Co., Ltd., established in 2014, is a national high-tech enterprise, a strategic partner of Rockchip, and an authorized agent of Black Sesame Technologies. The company supports a variety of chip platforms including Rockchip, HISI, NVIDIA, Black Sesame Technologies, and WiFi modules. It focuses on the research and development and production of enterprise-level open-source hardware platforms, providing customers with core modules, industry boards, development boards, touch panels, and industrial control hosts. Adhering to the core concepts of technological innovation and professional service, the company leverages its technical strengths and industry experience to help partners achieve rapid product mass production.

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

Vehicle Terminal



LPA3588



LPA3568



LPA3399Pro



LPS3399Pro

WIFI Module



FD7352S



FD7352P



FD7352M



FD7155U



FD7256S