



ORIENT DISPLAY
MAKE THINGS POSSIBLE

**SPECIFICATION
FOR
IoT Module**

**MODULE NO: ACV-3568JA1
REVISION NO: 0**

Customer's Approval:

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	SIGNATURE	DATE
PREPARED BY (RD ENGINEER)		
CHECKED BY		
APPROVED BY		

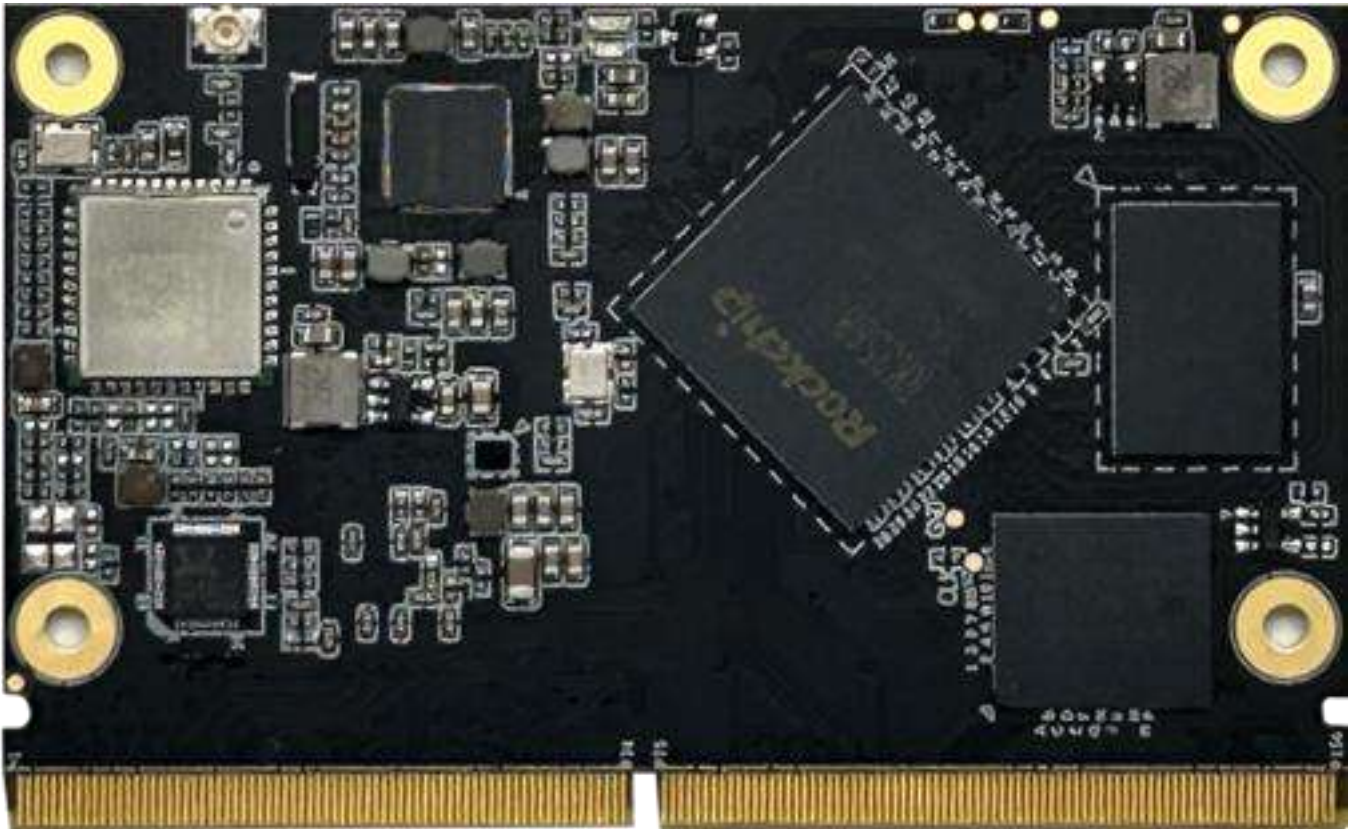
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1.MODULE DESCRIPTION

The core board adopts quad-core Cortex-55 architecture, the main frequency is up to 2GHz, 2G DDR3(DDR4 support), 16G EMMC. The core board adopts RK809 power management chip and supports dynamic frequency modulation. The GPU adopts dual-core ARM G52 2EE graphics processor, supports 2D/3D acceleration, and supports OpenGL ES 1.1, 2.0, and 3.2, OpenCL 2.0 graphics programming interfaces. Built-in VPU, support H.264, H.265, VP8, VP9, 4k@60fps video decoding, support H.264/AVC BP/MP/HP, H.265/HEVC, 1080p@100fps video coding. Image display supports LVDS, MIPI, HDMI, eDP and other display interfaces. Video input supports MIPI CSI RX and DVP Camera interfaces. Chip built-in NPU, computing power up to 0.8T can be used for artificial intelligence and edge computing, support TensorFlow, PyTorch and other deep learning frameworks. The core board also supports PCIE interfaces, which can be used to expand M2-interface SSDS for customers who need large-capacity storage.

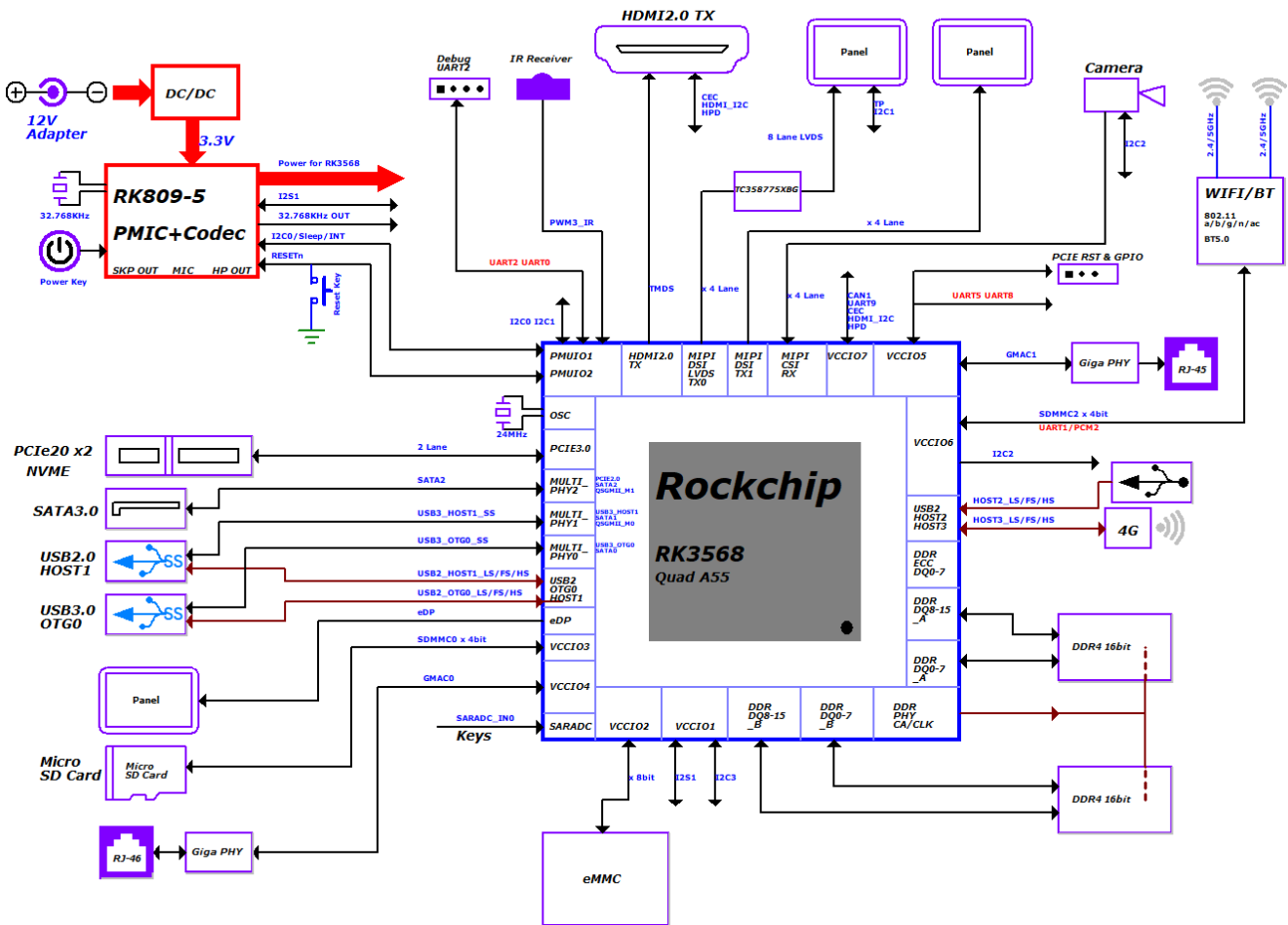
The core board adopts the connector connection mode, which is convenient for customers to customize the baseboard according to the industry needs. The core board leads to 314 PIN feet, and its interface is rich. Includes , ETH*2, SDIO TF*1, CAN*2, UART*3, I2C*3, SPI*2, USB 2.0 *2, USB 3.0*1, USB OTG*1, , PCIE 2.0*2, MIPI-DSI*1, MIPI-DSI OR LVDS*1, MIPI-CSI*1,HDMI*1, EDP*1, SATA*1,I2S*1.



2.GENERAL INFORMATION

Product Introduce	
System	Linux/Android
CPU	RK3568J ARM quad-core ARM Cortex-A55 , Highest frequency is 2.0GHz, Arm Mali-G52 GPU is embedded with High-performance 2D acceleration hardware, 4K H.265 and other decoding methods
Store	DDR 2G+EMMC 16G
Support interface	ETH*2, SDIO TF*1, CAN*2, UART*3, I2C*3, SPI*2, USB 2.0 *2, USB 3.0*1, USB OTG*1, , PCIE 2.0*2, MIPI-DSI*1, MIPI-DSI OR LVDS*1, MIPI-CSI*1, HDMI*1, EDP*1, SATA*1, I2S*1.
Module Power Supply	5V-5.5V DC
Module Power Consumption	4W
OSD Language	Multilingualism
Module Size	82*50MM
Weight	TBD

RK3568 Ref Block Diagram(Default configuration)

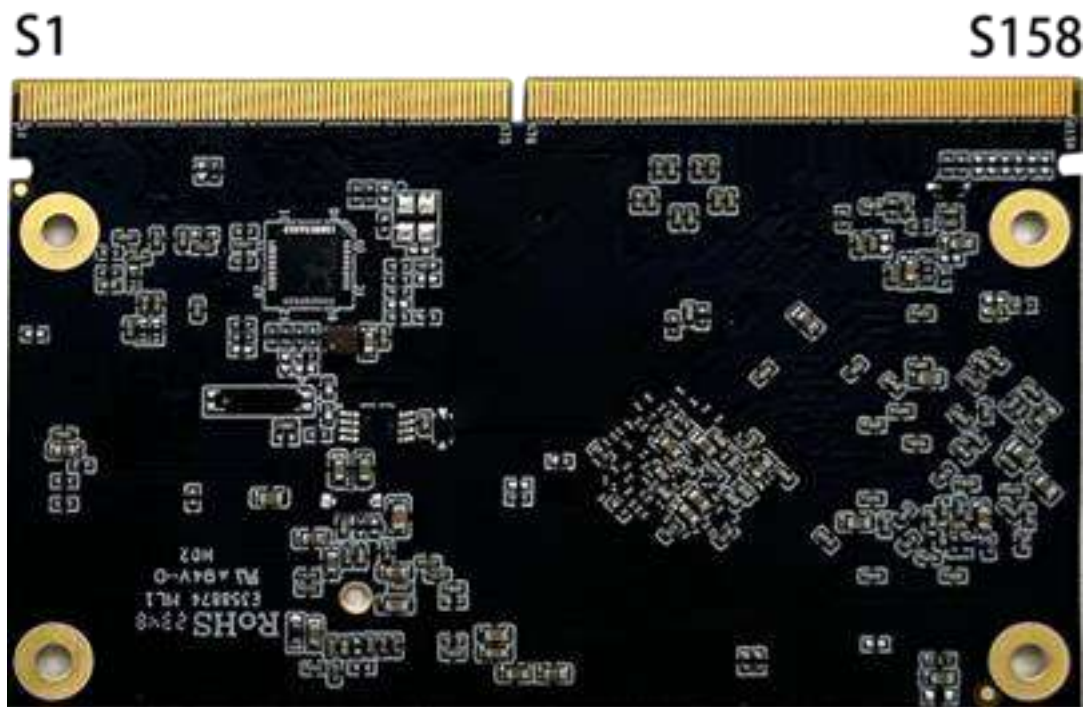


3.INTERFACE DESCRIPTION

Positive



Backside



Pin No.	Symbol	Pin No.	Symbol
P1	NC	S1	I2C2-SCL/GPIO4-B5-D
P2	GND	S2	I2C2-SDA/GPIO4-B4-D
P3	MIPI-CSI-RX-CLK0P	S3	GND
P4	MIPI-CSI-RX-CLK0N	S4	NC
P5	NC	S5	NC
P6	NC	S6	CAM-MCLK/GPIO4-C0-D
P7	MIPI-CSI-RX-D0P	S7	NC
P8	MIPI-CSI-RX-D0N	S8	NC
P9	GND	S9	NC
P10	MIPI-CSI-RX-D1P	S10	GND
P11	MIPI-CSI-RX-D1N	S11	NC
P12	GND	S12	NC
P13	MIPI-CSI-RX-D2P	S13	GND
P14	MIPI-CSI-RX-D2N	S14	NC
P15	GND	S15	NC
P16	MIPI-CSI-RX-D3P	S16	GND
P17	MIPI-CSI-RX-D3N	S17	GMAC1-MDI0+
P18	GND	S18	GMAC1-MDI0-
P19	GMAC0-MDI3-	S19	GMAC1-LINK100
P20	GMAC0-MDI3+	S20	GMAC1-MDI1+
P21	GMAC0-LINK100	S21	GMAC1-MDI1-
P22	GMAC0-LINK1000	S22	GMAC1-LINK1000
P23	GMAC0-MDI2-	S23	GMAC1-MDI2+
P24	GMAC0-MDI2+	S24	GMAC1-MDI2-
P25	GMAC0-LINK-ACT	S25	GND
P26	GMAC0-MDI1-	S26	GMAC1-MDI3+
P27	GMAC0-MDI1+	S27	GMAC1-MDI3-
P28	GMAC0-CTREF	S28	GMAC1-CTREF
P29	GMAC0-MDI0-	S29	NC
P30	GMAC0-MDI0+	S30	NC
P31	NC	S31	GMAC1-LINK-ACT
P32	GND	S32	NC

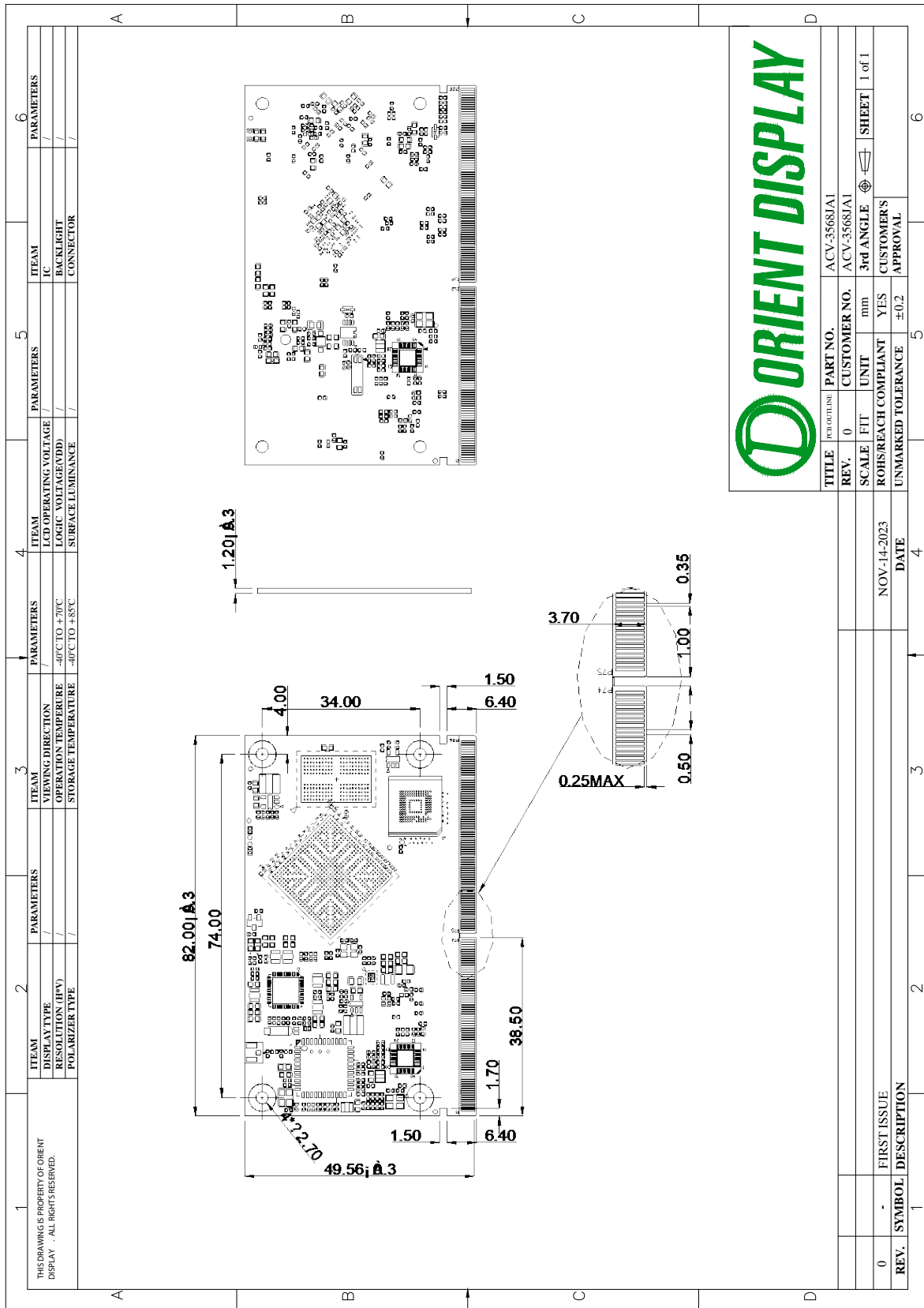
Pin No.	Symbol	Pin No.	Symbol
P33	NC	S33	NC
P34	SDC0-CMD/GPIO2-A1-U	S34	GND
P35	SDC0-DET/GPIO0-A4-U	S35	NC
C36	SDC0-CLK/GPIO2-A2-D	S36	NC
P37	NC	S37	USB3-OTG0-VBUSDET
P38	GND	S38	I2S1-MCLK/GPIO1-A2-D
P39	SDC0-D0/GPIO1-D5-U	S39	I2S1-LRCK/GPIO1-A5-D
P40	SDC0-D1/GPIO1-D6-U	S40	I2S1-SDO0/GPIO1-A7-D
P41	SDC0-D2/GPIO1-D7-U	S41	I2S1-SDI0/GPIO1-B3-D
P42	SDC0-D3/GPIO2-A0-U	S42	I2S1-SCLK/GPIO1-A3-D
P43	SPI0-CS/GPIO2-D2-D	S43	NC
P44	SPI0-CLK/GPIO2-D3-D	S44	NC
P45	SPI0-MOSI/GPIO2-D1-D	S45	NC
P46	SPI0-MISO/GPIO2-D0-D	S46	NC
P47	GND	S47	GND
P48	SATA1-TXP	S48	I2C3-SCL/GPIO1-A1-U
P49	SATA1-TXN	S49	I2C3-SDA/GPIO1-A0-U
P50	GND	S50	NC
P51	SATA1-RXP	S51	NC
P52	SATA1-RXN	S52	NC
P53	GND	S53	NC
P54	SPI3-CS/GPIO4-A6-D	S54	SATA-ACT//GPIO4-B7-D
P55	SPI3-CS1/GPIO4-A7-D	S55	NC
P56	SPI3-CLK/GPIO4-B3-D	S56	NC
P57	SPI3-MOSI/GPIO4-B2-D	S57	NC
P58	SPI3-MISO/GPIO4-B0-D	S58	NC
P59	GND	S59	NC
P60	USB3-HOST1-DP	S60	NC
P61	USB3-HOST1-DM	S61	GND
P62	GPIO0-A6-D	S62	USB3-OTG0-SSTXP
P63	NC	S63	USB3-OTG0-SSTXN
P64	USB3-OTG0-ID	S64	GND

Pin No.	Symbol	Pin No.	Symbol
P65	USB2-HOST2-DP	S65	USB3-OTG0-SSRXP
P66	USB2-HOST2-DM	S66	USB3-OTG0-SSRXN
P67	GPIO0-A5-D	S67	GND
P68	GND	S68	USB3-OTG0-DP
P69	USB2-HOST3-DP	S69	USB3-OTG0-DM
P70	USB2-HOST3-DM	S70	GND
P71	GPIO4-C4-D	S71	NC
P72	NC	S72	NC
P73	NC	S73	GND
P74	GPIO4-D2-D	S74	NC
P75	PCIE20-PERS/GPIO1-B2-D	S75	NC
P76	NC	S76	PCIE30-PERS/GPIO2-D6-D
P77	PCIE30-CLK/GPIO2-D4-D	S77	NC
P78	PCIE20-CLK/GPIO1-B0-D	S78	NC
P79	GND	S79	NC
P80	NC	S80	GND
P81	NC	S81	NC
P82	GND	S82	NC
P83	PCIE20-REFCLKP	S83	GND
P84	PCIE20-REFCLKN	S84	PCIE30-REFCLKP
P85	GND	S85	PCIE30-REFCLKN
P86	PCIE20-RXP	S86	GND
P87	PCIE20-RXN	S87	PCIE30-RX0P
P88	GND	S88	PCIE30-RX0N
P89	PCIE20-TXP	S89	GND
P90	PCIE20-TXN	S90	PCIE30-TX0P
P91	GND	S91	PCIE30-TX0N
P92	HDMI-TX2P	S92	GND
P93	HDMI-TX2N	S93	EDP-TX-D0P
P94	GND	S94	EDP-TX-D0N
P95	HDMI-TX1P	S95	NC
P96	HDMI-TX1N	S96	EDP-TX-D1P

Pin No.	Symbol	Pin No.	Symbol
P97	GND	S97	EDP-TX-D1N
P98	HDMI-TX0P	S98	NC
P99	HDMI-TX0N	S99	EDP-TX-D2P
P100	GND	S100	EDP-TX-D2N
P101	HDMI-TXCLKP	S101	GND
P102	HDMI-TXCLKN	S102	EDP-TX-D3P
P103	GND	S103	EDP-TX-D3N
P104	HDMI-HPDIN	S104	GPIO2-D5-D
P105	HDMI-SCL	S105	EDP-TX-AUXP
P106	HDMI-SDA	S106	EDP-TX-AUXN
P107	HDMI-CEC	S107	PWM3-IR/GPIO0-C2-D
P108	NC	S108	MIPI-DSI-TX1-CLKP
P109	GPIO0-D4-D/IO-1.8V	S109	MIPI-DSI-TX1-CLKN
P110	NC	S110	GND
P111	GPIO0-D6-D/IO-1.8V	S111	MIPI-DSI-TX1-D0P
P112	GPIO0-C0-D	S112	MIPI-DSI-TX1-D0N
P113	GPIO0-C1-D	S113	EDP-HPD/GPIO0-D5-D
P114	GPIO4-C5-D	S114	MIPI-DSI-TX1-D1P
P115	GPIO4-C6-D	S115	MIPI-DSI-TX1-D1N
P116	GPIO3-A0-D	S116	PWM4/GPIO0-C3-D
P117	GPIO2-D7-D	S117	MIPI-DSI-TX1-D2P
P118	GPIO3-C2-D	S118	MIPI-DSI-TX1-D2N
P119	GPIO3-C3-D	S119	GND
P120	GND	S120	MIPI-DSI-TX1-D3P
P121	NC	S121	MIPI-DSI-TX1-D3N
P122	NC	S122	PWM6/GPIO0-C5-D
P123	NC	S123	NC
P124	NC	S124	GND
P125	NC	S125	MIPI-DSI-TX0-D0P/LVDS-D0P
P126	NC	S126	MIPI-DSI-TX0-D0N/LVDS-D0N
P127	RESETn	S127	GPIO0-C7-D
P128	POWER-KEY	S128	MIPI-DSI-TX0-D1P/LVDS-D1P

Pin No.	Symbol	Pin No.	Symbol
P129	UART8-TX/GPIO2-C5-D	S129	MIPI-DSI-TX0-D1N/LVDS-D1N
P130	UART8-RX/GPIO2-C6-D	S130	GND
P131	UART8-RTS/GPIO2-B1-D	S131	MIPI-DSI-TX0-D2P/LVDS-D2P
P132	UART8-CTS/GPIO2-B2-U	S132	MIPI-DSI-TX0-D2N/LVDS-D2N
P133	GND	S133	PWM5/GPIO0-C4-D
P134	UART7-TX/GPIO4-A2-D	S134	MIPI-DSI-TX0-CLKP/LVDS-CLKP
P135	UART7-RX/GPIO4-A3-D	S135	MIPI-DSI-TX0-CLKN/LVDS-CLKN
P136	NC	S136	GND
P137	NC	S137	MIPI-DSI-TX0-D3P/LVDS-D3P
P138	NC	S138	MIPI-DSI-TX0-D3N/LVDS-D3N
P139	NC	S139	I2C2-SCL/GPIO0-B5-U
P140	UART9-TX/GPIO4-A4-D	S140	I2C2-SDA/GPIO0-B6-U
P141	UART9-RX/GPIO4-A5-D	S141	PWM7/GPIO0-C6-D
P142	GND	S142	NC
P143	CAN0-TX/GPIO0-B3-U	S143	GND
P144	CAN0-RX/GPIO0-B4-U	S144	NC
P145	CAN1-TX/GPIO4-C3-D	S145	NC
P146	CAN1-RX/GPIO4-C2-D	S146	PCIE-WAKE/GPIO3-A1-D
P147	VCC5V-SYS	S147	RTC-VCC/3.3V
P148	VCC5V-SYS	S148	GPIO1-D0-D/NC
P149	VCC5V-SYS	S149	NC
P150	VCC5V-SYS	S150	NC
P151	VCC5V-SYS	S151	GPIO1-D1-D/NC
P152	VCC5V-SYS	S152	GPIO1-D2-D/NC
P153	VCC5V-SYS	S153	GPIO1-D3-D/NC
P154	VCC5V-SYS	S154	NC
P155	VCC5V-SYS	S155	SARADC-VIN0
P156	VCC5V-SYS	S156	GPIO1-D4-D/NC
		S157	NC
		S158	GND

4. MOUDLE EXTERNAL DIMENSIONS



5.ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min.	Max.	Unit
Power Supply Input Voltage(Module)	VDD	5.0	5.5	V
Supply Current (Normal Temp.)	IVDD	-	TBD	mA
Operation Temperature	Top	-40	+70	°C
Storage Temperature	Tst	-40	+85	°C
Humidity	RH	-	90%	%RH

6.RELIABILITY TEST CONDITIONS

No.	Test Item	Test condition	Inspection after test
1	High Temperature Storage Test	+85°C/120 hours	Inspection after 2~4 hours storage at room temperature, the sample shall be free from defects : 1.Current changing value before test and after test is 50% larger; 2. Function defect : Non-display, abnormal-display 3.Visual defect : Glass crack.
2	Low Temperature Storage Test	-40°C/120 hours	
3	High Temperature Operating Test	+70°C/120 hours	
4	Low Temperature Operating Test	-40°C/120 hours	
5	Temperature Cycle Storage Test	-40°C ~ 25°C ~ +85°C/10 cycles (30 min.) (10 min.) (30 min.)	
6	High Temperature High Humidity Test	+40°C*90% RH/120 hours	
7	Vibration Test	Frequency : 250 r/min Amplitude : 1 inch Time: 45 min	
8	Drop Test	Drop direction: 1 corner/3 edges/6 sides ,10 times	
		Packing weight(kg)	
		<11	80±1.6
		11≤G<21	60±1.2
		21≤G<31	50±1.0
31≤G<40	40±0.8		
9	ESD Test	Air discharge: ±8 KV, 10 times Contact discharge: ±4 KV, 10 times	

Remark :

- 1.The tested samples should be applied to only one test item.
- 2.Sample size for each test item is 3~5 pcs.
- 3.For High temperature high humidity test, Pure water(Resistance>10MΩ) should be used.
- 4.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.
- 5.Failure judgement criterion: Basic specification, Electrical characteristic, Mechanical characteristic, Optical characteristic.

7.REMARK:

- Avoid any inappropriate external force or strong vibration in the assembly process.
- High temperature, high humidity or rapid temperature changes may affect performance. Store and use the product in an appropriate environment.
- Avoid dust, oil mist, acid, alkali and chloride damage to the product.
- Wear wrist straps, antistatic gloves and clothes during assembly to prevent electrostatic discharge (ESD).
- When assembling, use ionic fan to prevent electrostatic discharge (ESD).
- Follow the correct time sequence when operating.
- Turn off the power when connecting or disconnecting the circuit.
- 使用环境中确保整机外壳与大地(PE)连接..