



ORIENT DISPLAY
MAKE THINGS POSSIBLE

**SPECIFICATION
FOR
IoT Module**

**MODULE NO: ACV-MX8MA0
REVISION NO: 0**

Customer's Approval:

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

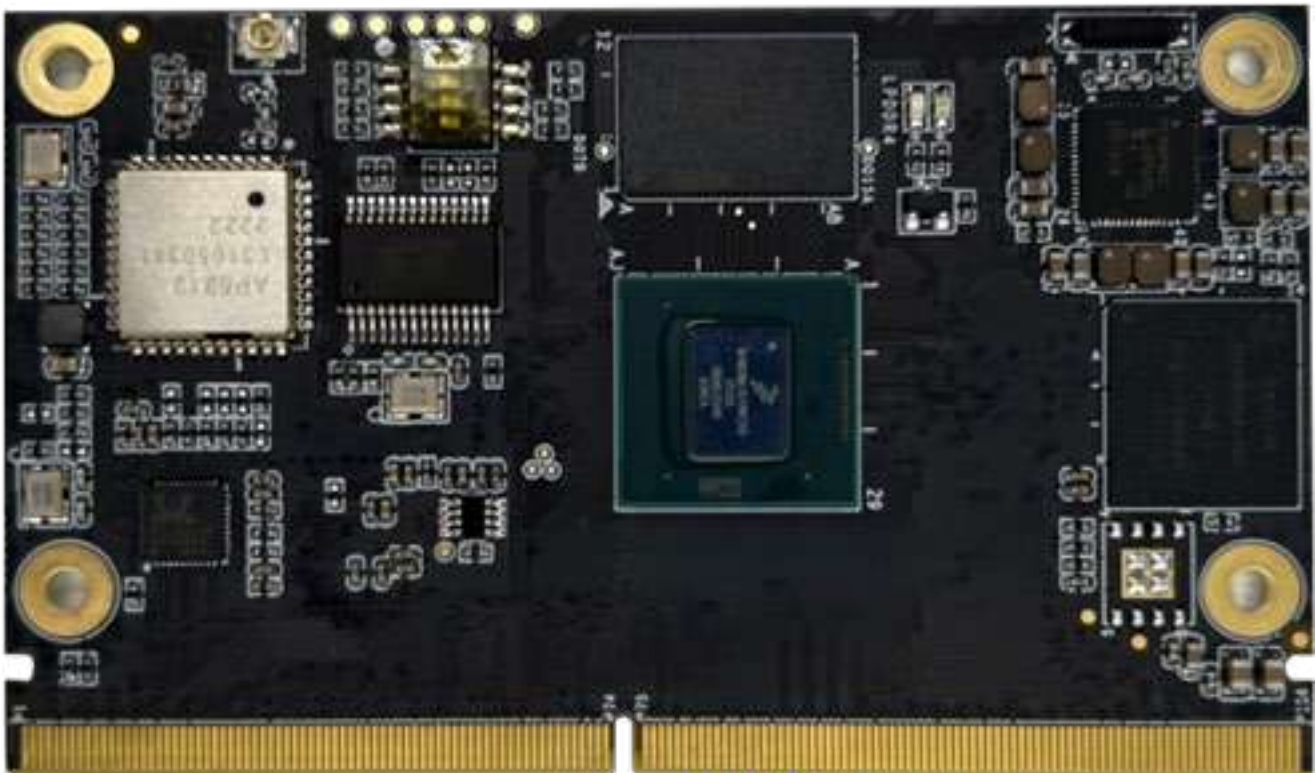
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1.MODULE DESCRIPTION

The core board adopts quad-core Cortex-A53 architecture, the main frequency is up to 2GHz, 2GB LPDDR4x, 16GB eMMC. The core board adopts PCA9450 power management chip and supports dynamic frequency modulation. and supports GC7000UL with 2D/3D Graphic Acceleration supporting 1G Pixel/s, OpenVG 1.1, Open GL ES3.1, Vulkan, and Open CL 1.2 FP.. Decoder: H.265, H.264, VP8/9 1080p Encoder:H.264, VP8 1080p video decoding. Image display supports LVDS, HDMI, and other display interfaces. Video input supports MIPI CSI RX Camera interfaces. Chip built-in NPU, computing power up to 2.3TOPS can be used for artificial intelligence and edge computing, The core board also supports PCIE interfaces.

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*6, I2C*3, SPI*2, USB 2.0 *3, USB 3.0*1,, PCIE 2.0*1,MIPI-CSI*2, LVDS *1,HDMI*1,I2S*1.

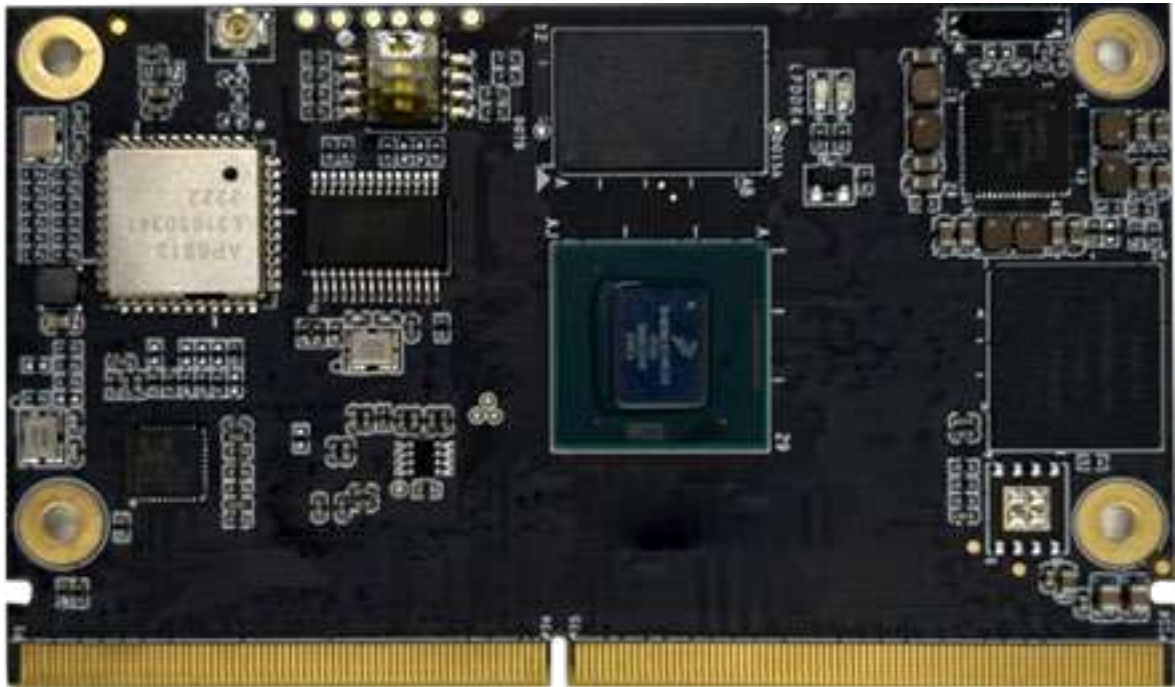


2.GENERAL INFORMATION

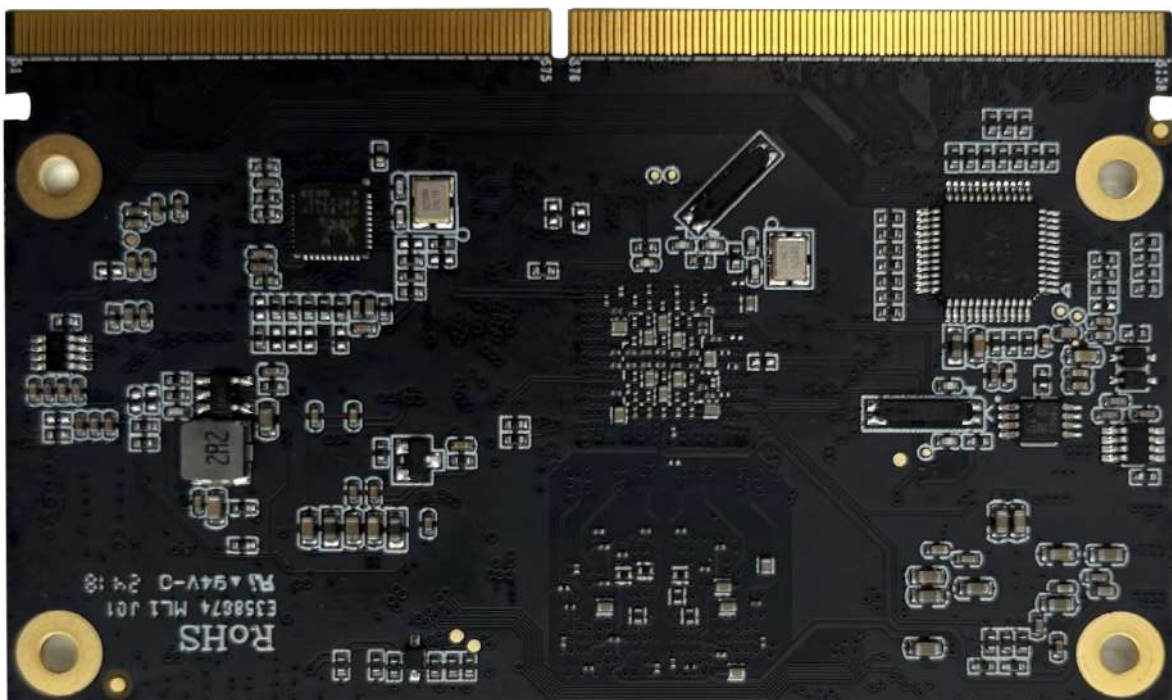
Product Introduce	
System	Linux/Android
CPU	NXP i.MX 8M Plus Cortex-A53 Quad core (up to 2GHz)
Store	LPDDR4x 2GB+eMMC 16GB
Support interface	ETH*2, SDIO TF*1, CAN*2, UART*6, I2C*3, SPI*2, USB 2.0 *3, USB 3.0*1,, PCIE 2.0*1,MIPI-CSI*2, LVDS *1,HDMI*1,I2S*1.
Module Power Supply	5V-5.5V DC
Module Power Consumption	4W
System Language	Multilingualism
Module Size	82*50MM
Weight	TBD

3.INTERFACE DESCRIPTION

Front view



Back view



Pin No.	Symbol	Pin No.	Symbol
P1	SAI5_RXC/GPIO3_20	S1	I2C2-SCL/GPIO5_16
P2	GND	S2	I2C2-SDA/GPIO5_17
P3	CSI1_CKP	S3	GND
P4	CSI1_CKN	S4	NC
P5	NC	S5	NC
P6	NC	S6	CSI1_MCLK/GPIO1_IO15
P7	CSI1_DP0	S7	NC
P8	CSI1_DN0	S8	CSI2_CKP
P9	GND	S9	CSI2_CKN
P10	CSI1_DP1	S10	GND
P11	CSI1_DN1	S11	CSI2_DP0
P12	GND	S12	CSI2_DN0
P13	CSI1_DP2	S13	GND
P14	CSI1_DN2	S14	CSI2_DP1
P15	GND	S15	CSI2_DN1
P16	CSI1_DP3	S16	GND
P17	CSI1_DN3	S17	GBE1_MDI0+
P18	GND	S18	GBE1_MDI0-
P19	GBE0_MDI3-	S19	GBE1_LINK100#
P20	GBE0_MDI3+	S20	GBE1_MDI1+
P21	GBE0_LINK100#	S21	GBE1_MDI1-
P22	GBE0_LINK1000#	S22	GBE1_LINK1000#
P23	GBE0_MDI2-	S23	GBE1_MDI2+
P24	GBE0_MDI2+	S24	GBE1_MDI2-
P25	GBE0_LINK-ACT	S25	GND
P26	GBE0_MDI1-	S26	GBE1_MDI3+
P27	GBE0_MDI1+	S27	GBE1_MDI3-
P28	NC	S28	NC
P29	GBE0_MDI0-	S29	NC
P30	GBE0_MDI0+	S30	NC
P31	NC	S31	GBE1_LINK-ACT
P32	GND	S32	NC

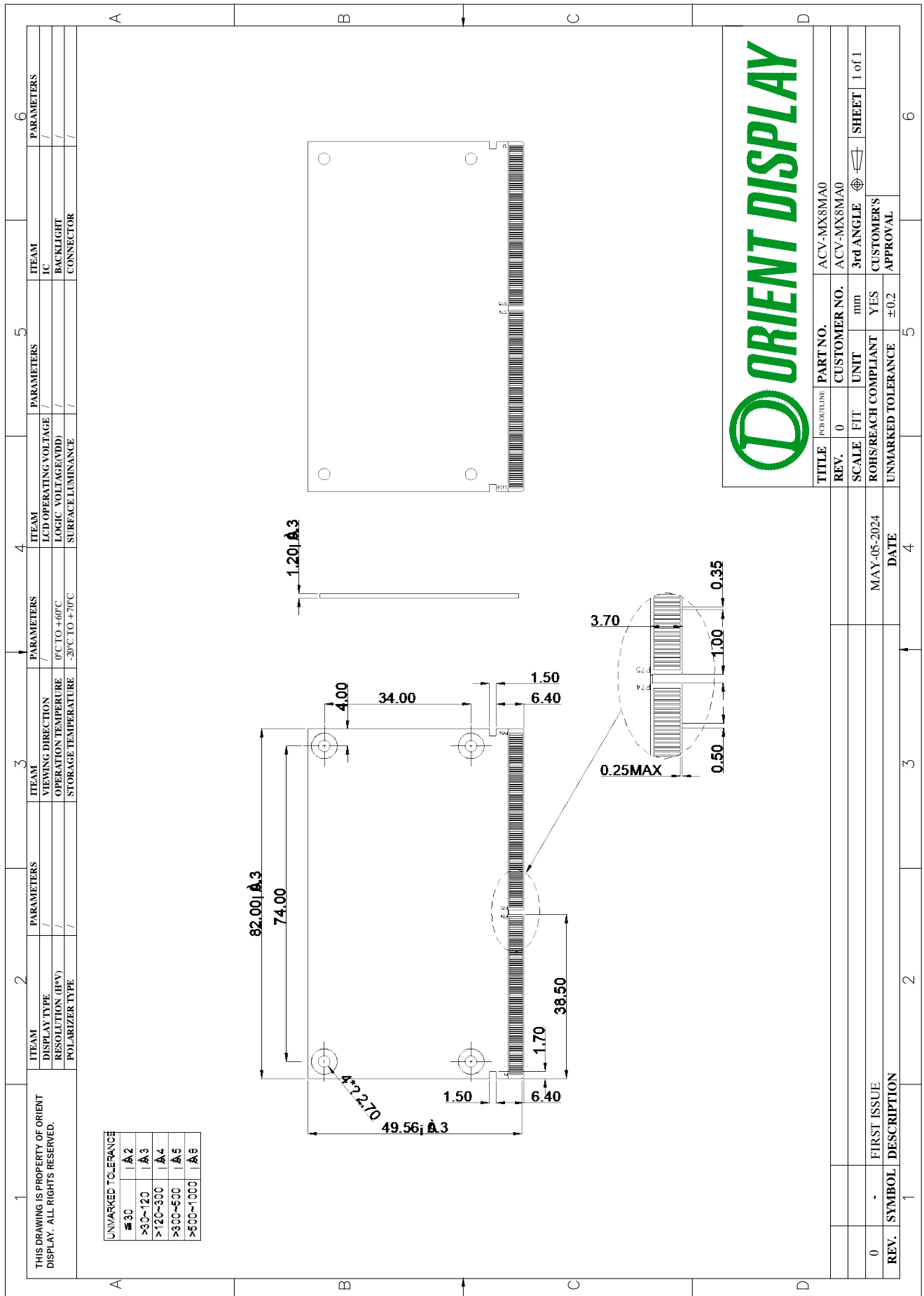
Pin No.	Symbol	Pin No.	Symbol
P33	SD2_WP/GPIO2_20	S33	NC
P34	SD2_CMD/GPIO2_14	S34	GND
P35	SD2_nCD/GPIO2_12	S35	NC
C36	SD2_CLK/GPIO2_13	S36	NC
P37	NC	S37	USB1_VBUS_3V3
P38	GND	S38	SAI3_MCLK/GPIO5_2
P39	SD2_DATA0/GPIO2_15	S39	SAI3_TXFS/GPIO4_31
P40	SD2_DATA1/GPIO2_16	S40	SAI3_TXD/GPIO5_1
P41	SD2_DATA2/GPIO2_17	S41	SAI3_RXD/GPIO4_30
P42	SD2_DATA3/GPIO2_18	S42	SAI3_TXC/GPIO5_0
P43	ECSPI2_SS0/GPIO5_13	S43	NC
P44	ECSPI2_SCLK/GPIO5_10	S44	NC
P45	ECSPI2_MISO/GPIO5_12	S45	NC
P46	ECSPI2_MOSI/GPIO5_11	S46	NC
P47	GND	S47	GND
P48	NC	S48	UARTA_TX
P49	NC	S49	UARTA_RX
P50	GND	S50	NC
P51	NC	S51	NC
P52	NC	S52	NC
P53	GND	S53	NC
P54	ECSPI1_SS0/GPIO5_9	S54	GPIO5_5
P55	NC	S55	NC
P56	ECSPI1_SCLK/GPIO5_6	S56	NC
P57	ECSPI1_MISO/GPIO5_8	S57	NC
P58	ECSPI1_MOSI/GPIO5_7	S58	NC
P59	GND	S59	NC
P60	HUB_D1+	S60	NC
P61	HUB_D1-	S61	GND
P62	GPIO3_14	S62	USB1_TXP
P63	NC	S63	USB1_TXN
P64	NC	S64	GND

Pin No.	Symbol	Pin No.	Symbol
P65	HUB_D3+	S65	USB1_RXP
P66	HUB_D3-	S66	USB1_RXN
P67	GPIO4_23	S67	GND
P68	GND	S68	USB1_DP
P69	HUB_D4+	S69	USB1_DN
P70	HUB_D4-	S70	GND
P71	GPIO2_11	S71	NC
P72	NC	S72	NC
P73	NC	S73	GND
P74	GPIO2_6	S74	NC
P75	NC	S75	NC
P76	NC	S76	GPIO2_7
P77	PCIE_CLK/GPIO4_18	S77	NC
P78	NC	S78	NC
P79	GND	S79	NC
P80	NC	S80	GND
P81	NC	S81	NC
P82	GND	S82	NC
P83	NC	S83	GND
P84	NC	S84	PCIE_CLKP
P85	GND	S85	PCIE_CLKN
P86	NC	S86	GND
P87	NC	S87	PCIE_RXP
P88	GND	S88	PCIE_RXN
P89	NC	S89	GND
P90	NC	S90	PCIE_TXP
P91	GND	S91	PCIE_TXN
P92	HDMI-TX2P	S92	GND
P93	HDMI-TX2N	S93	NC
P94	GND	S94	NC
P95	HDMI-TX1P	S95	NC
P96	HDMI-TX1N	S96	NC

Pin No.	Symbol	Pin No.	Symbol
P97	GND	S97	NC
P98	HDMI-TX0P	S98	NC
P99	HDMI-TX0N	S99	NC
P100	GND	S100	NC
P101	HDMI-TXCLKP	S101	GND
P102	HDMI-TXCLKN	S102	NC
P103	GND	S103	NC
P104	HDMI-HPDIN	S104	PCIE_WAKE/GPIO4_19
P105	HDMI-SCL	S105	NC
P106	HDMI-SDA	S106	NC
P107	HDMI-CEC	S107	NC
P108	GPIO1_IO05	S108	LVDS1_CLK_P
P109	GPIO1_IO06	S109	LVDS1_CLK_N
P110	GPIO1_IO07	S110	GND
P111	GPIO1_IO08	S111	LVDS1_TX0_P
P112	UARTD_RX	S112	LVDS1_TX0_N
P113	UARTD_TX	S113	NC
P114	GPIO1_IO09	S114	LVDS1_TX1_P
P115	GPIO1_IO10	S115	LVDS1_TX1_N
P116	GPIO1_IO11	S116	GPIO1_IO00
P117	GPIO1_IO12	S117	LVDS1_TX2_P
P118	UARTC_TX	S118	LVDS1_TX2_N
P119	UARTC_RX	S119	GND
P120	GND	S120	LVDS1_TX3_P
P121	I2C3_SCL/GPIO5_18	S121	LVDS1_TX3_N
P122	I2C3_SDA/GPIO5_19	S122	NC
P123	NC	S123	NC
P124	NC	S124	GND
P125	NC	S125	LVDS0_TX0_P
P126	NC	S126	LVDS0_TX0_N
P127	SYS_nRST	S127	GPIO1_IO01
P128	ONOFF	S128	LVDS0_TX1_P

Pin No.	Symbol	Pin No.	Symbol
P129	UART2_TXD/GPIO5_25	S129	LVDS0_TX1_N
P130	UART2_RXD/GPIO5_24	S130	GND
P131	NC	S131	LVDS0_TX2_P
P132	NC	S132	LVDS0_TX2_N
P133	GND	S133	NC
P134	UART4_TXD/GPIO5_29	S134	LVDS0_CLK_P
P135	UART4_RXD/GPIO5_28	S135	LVDS0_CLK_N
P136	NC	S136	GND
P137	NC	S137	LVDS0_TX3_P
P138	NC	S138	LVDS0_TX3_N
P139	NC	S139	I2C4_SCL/GPIO5_20
P140	UARTB_TX	S140	I2C4_SDA/GPIO5_21
P141	UARTB_RX	S141	NC
P142	GND	S142	NC
P143	CAN1_TX/GPIO5_3	S143	GND
P144	CAN1_RX/GPIO5_4	S144	NC
P145	CAN2_TX/GPIO3_24	S145	NC
P146	CAN2_RX/GPIO3_25	S146	GPIO4_25
P147	VCC5V-SYS	S147	RTC-VCC/3.3V
P148	VCC5V-SYS	S148	GPIO4_26
P149	VCC5V-SYS	S149	GPIO4_28
P150	VCC5V-SYS	S150	GPIO4_29
P151	VCC5V-SYS	S151	SAI5_RXFS/GPIO3_19
P152	VCC5V-SYS	S152	SAI5_RXD0/GPIO3_21
P153	VCC5V-SYS	S153	SAI5_RXD1/GPIO3_22
P154	VCC5V-SYS	S154	SAI5_RXD2/GPIO3_23
P155	VCC5V-SYS	S155	GPIO4_20
P156	VCC5V-SYS	S156	GPIO4_0
		S157	GPIO4_1
		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	0	+60	°C
Storage Temperature	Tst	-20	+70	°C
Humidity	RH	-	90%	%RH

6.RELIABILITY TEST CONDITIONS

No.	Test Item	Test condition		Inspection after test
1	High Temperature Storage Test	+70°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	-20°C/120 hours		
3	High Temperature Operating Test	+60°C/120 hours		
4	Low Temperature Operating Test	0°C/120 hours		
5	Temperature Cycle Storage Test	-20°C ~ 25°C ~ +70°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)	Drop height(cm)	
		<11	80±1.6	
		11≤G<21	60±1.2	
		21≤G<31	50±1.0	
		31≤G<40	40±0.8	

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.
- Ensure that the shell is connected to the earth (PE) in the use environment.