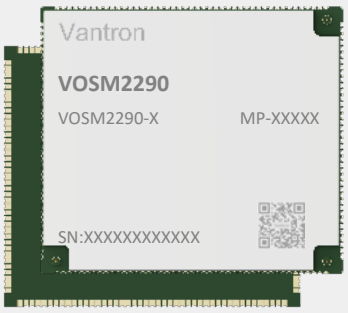
VOSM2290 System-on-Module



Product Brief

VOSM2290 system-on-module is powered by Qualcomm QCS2290 processor with a main frequency of up to 2.0GHz. The module integrates a quad-core ARM Cortex-A53 processor and Qualcomm Adreno 702 GPU that supports 3D graphics accelerator with 64-bit addressing. The on-board RF module is ready for use, offering 2.4GHz & 5GHz Wi-Fi, Bluetooth 5.0, and FM features.

VOSM2290 offers high-definition display, up to 25MP camera ISP, as well as an internal Hexagon DSP for high-quality multimedia applications. In addition, the module features an LGA packaging that allows for direct welding, eliminating the need for additional connectors. It is compliant with the Open Standard Module (OSM) standard V1.1, which enables seamless integration into various products. Moreover, the module provides an extended service life that meets the rigorous demands of industrial customers.

Users may choose the evaluation kit that includes a touchscreen monitor for reducing the time-to-market. Vosm2290 is versatile and suitable for diverse application scenarios such as retail point-of-sale (POS), industrial handhelds, smart home, and camera applications.

Features and benefits

VOSM2290

- Improved power performance
- Enhanced DSP, dedicated noise cancellation
- 1080p @30fps video codec
- On-board Wi-Fi & Bluetooth
- Android 13 and later systems supported
- Compact size, LGA packaging, easy integration
- Open Standard Module (OSM) V1.1 compliant
- Extended service life (7+ years)

Application Scenarios

AIDC

Smart Retail

Camera System

Home Appliance

Industrial IoT

Smart Fitness

VOSM2290 System-on-Module Datasheet

Specifications			
System	CPU	Qualcomm QCS2290 Quad-core ARM Cortex-A53 processor, up to 2.0GHz	
	GPU	Qualcomm Adreno 702 GPU @ 845 MHz	
	Memory	4GB LPDDR4x	
	Storage	32GB eMMC 5.1	
	EEPROM	2Kb (for hardware configuration information)	
Communication	Wi-Fi & Bluetooth	Wi-Fi 802.11 a/b/g/n/ac & Bluetooth 5.0	
Media	Video processing	1080p 30 8-bit decoder for HEVC (H.265)/H.264/VP9	1080p 30 8-bit encoder for HEVC (H.265)/H.264
	Graphics processing	Support OpenGL ES 3.1, OpenCL 2.0, Vulkan 1.1	
	DSP	Qualcomm Hexagon DSP (QDSP6), for multimedia acceleration	
Power	Input	5V/2A DC input	
	Consumption	Idle current: 130mA @5V DC	Operating current: 370mA @5V DC
Software	Operating system	Android 13+	
	Device management	BlueSphere MDM (Optional)	
Mechanical	Dimensions	45mm x 45mm x 2.79mm (with shield)	
Environment Condition	Temperature	Operating: -20℃ ~ +60℃	Storage: -40℃ ~ +80℃
	Humidity	≤95% RH (Non-condensing)	
	Certification	FCC, ISED, CE	

I/Os			
Display	1 x 4-lane MIPI DSI (HD+, 720 x 1680 @60 Hz) / 1 x HDMI 1.4 (up to 720p @ 60Hz)		
Camera	1 x 4-lane MIPI CSI (25MP @30 fps ZSL)		
Audio	1 x Combo audio	1 x Microphone input	1 x Speaker output
I^2S	1 x I^2S (support 1 x SDI, 1 x SDO)		
USB	1 x USB 3.1 Type-C / Micro USB		
SDIO	1 x 4-bit SDIO V3.0		
ADC	1 x ADC input		
SPI	2 x SPI		
UART	1 x Debug UART (1.8V level)	2 x Communication UART (TTL)	
JTAG	Supported		
I^2C	2 x I^2C		
GPIO	50 x GPIO (Max.)		
PWM	4 x PWM		
Key	1 x Power key	2 x Volume +/- key	

Electrical Characteristics

Absolute Maximum Ratings

Voltage beyond absolute maximum ratings may cause permanent damage to the module. Operation of the module outside of recommended conditions may result in reduced lifetime and/or reliability problems even if the absolute maximum ratings are not exceeded.

Parameter		Min.	Max.	Unit
Voltage of the SOM		-0.3	6.5	V
Voltage of LPDDR4x	LPDDR4x VDD1	-0.4	2.1	V
	LPDDR4x VDD2	-0.4	1.5	V
	LPDDR4x VDDQ	-0.4	1	V
Storage temperature		-20	70	℃

Recommended Operating Conditions

You are recommended to operate the module in the following conditions to achieve optimized performance of the module.

Parameter		Min.	Max.	Unit
VDD_APC	Turbo-L2	0.87	1.23	V
	Turbo-L1	0.82	1.16	V
	Turbo	0.76	1.07	V
	Nominal-L1	0.71	1.00	V
	Nominal	0.68	0.94	V
	SVS-L1	0.62	0.86	V
	SVS	0.57	0.78	V
	Low-SVS	0.57	0.69	V

(To be continued…)

Recommended Operating Conditions (Cont'd)

Parameter		Min.	Max.	Unit
VDD_CX (Digital core circuits)	Turbo-L1	0.79	1.07	V
	Turbo	0.73	1.07	V
	Nominal-L1	0.69	1.00	V
	Nominal	0.66	0.94	V
	SVS-U1	0.60	0.86	V
	SVS	0.55	0.78	V
	Low-SVS	0.49	0.69	V
VDD_CX_LPI (LPI digital core circuits)	Turbo	0.73	1.07	V
	Nominal	0.66	0.94	V
	SVS-U1	0.60	0.86	V
	SVS	0.55	0.78	V
	Low-SVS	0.49	0.69	V
VDD_MX_LPI (LPI memory circuits)	Turbo	0.79	1.07	V
	Nominal	0.79	1.00	V
VDD_MX VDD_MX_TXDAC VDD_A_APC_PLL_0P9 VDD_A_EBI_0_0P9 VDD_A_EBI_1_0P9 VDD_A_DSI_0P9 VDD_A_EBI_CC_0P9	Memory and analog PLL circuits			
	Turbo	0.79	1.07	V
	Nominal	0.79	1.00	V
VDD_CX_WLAN (WLAN core circuits)	Nominal	0.55	0.78	V

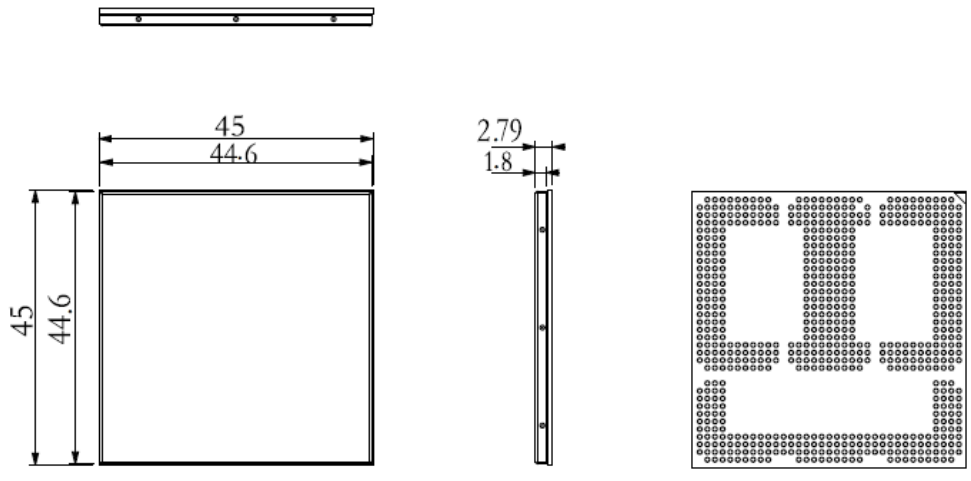
Parameter		Min.	Typ.	Max.	Unit
VDD_A_EBI_PLL_0P9	EBI PLL circuit	0.89	0.92	0.95	V
VDD_A_QREFS_0P9	Reference voltage for QREFS 0P9 circuit				
VDD_A_USB_HS_1P8	USB HS 1.8 V circuit	1.74	1.80	1.87	V
VDD_A_USB_SS_1P8	USB SS 1.8 V circuit				
VDD_A_AUDIO_PLL_1P	Audio PLL circuit				
VDD_A_CAMSS_PLL_1P8	Camera PLL circuit				
VDD_PX11	CXO pad				
VDD_QFPROM	QFPR OM circuit				
VDD_A2	High voltage – analog circuit				
VDD_A_WLAN_PLL_1P8	WLAN PLL circuit				
VDD_A_CSI_0_1P2	CSI0 1.2 V circuit	1.15	1.20	1.26	V
VDD_A_CSI_1_1P2	CSI1 1.2 V circuit				
VDD_A_DSI_PLL_1P2	DSI PLL circuit				
VDD_A_DSI_1P2	DSI 1.2 V circuit				
VDD_A1	Low voltage – analog circuit				
VDD_A_PLL_HV_CC_EBI_1P2	EBI PLL high voltage circuit				

Parameter		Min.	Typ.	Max.	Unit
VDD_IO_EBI_0_CK	EBI0 I/O clock circuit	0.59	0.60	0.63	V
VDD_IO_EBI_1_CK	EBI1 I/O clock circuit				
VDD_IO_EBI	EBI I/O clock circuit				
VDD_A_WLAN_ADCDAC 0_1P3	WLAN ADC and DAC 0	1.25	-	1.30	V
VDD_A_WLAN_ADCDAC 1_1P3	WLAN ADC and DAC 1				
VDD_A_USB_SS_0P9	USB SS 0.9 V circuit	0.89	0.92	0.95	V
VDD_USB_HS_0P9	USB HS 0.9 V circuit				
VDD_A_USB_HS_3P1	USB HS 3.1 V circuit	2.95	3.10	3.20	V
VDD_SDCREF_1P25	Ref. voltage for SDC	1.15	1.25	1.30	V
VDD_PX0	Pad group 0	1.70	1.80	1.90	V
VDD_PX1	EBI I/O circuit	1.05	1.10	1.15	V
VDD_PX2 (Pad group 2-SDC2 pad)	Low voltage	1.70	1.80	1.90	V
	High voltage	2.70	2.95	3.10	V
VDD_PX3	Pad group 3–most I/O pad	1.70	1.80	1.90	V
VDD_PX7	Pad group 7–eMMC pad	1.70	1.80	1.90	V
Thermal conditions					
Operating temperature	T	Ambient = -30	-	Junction = +95	°C

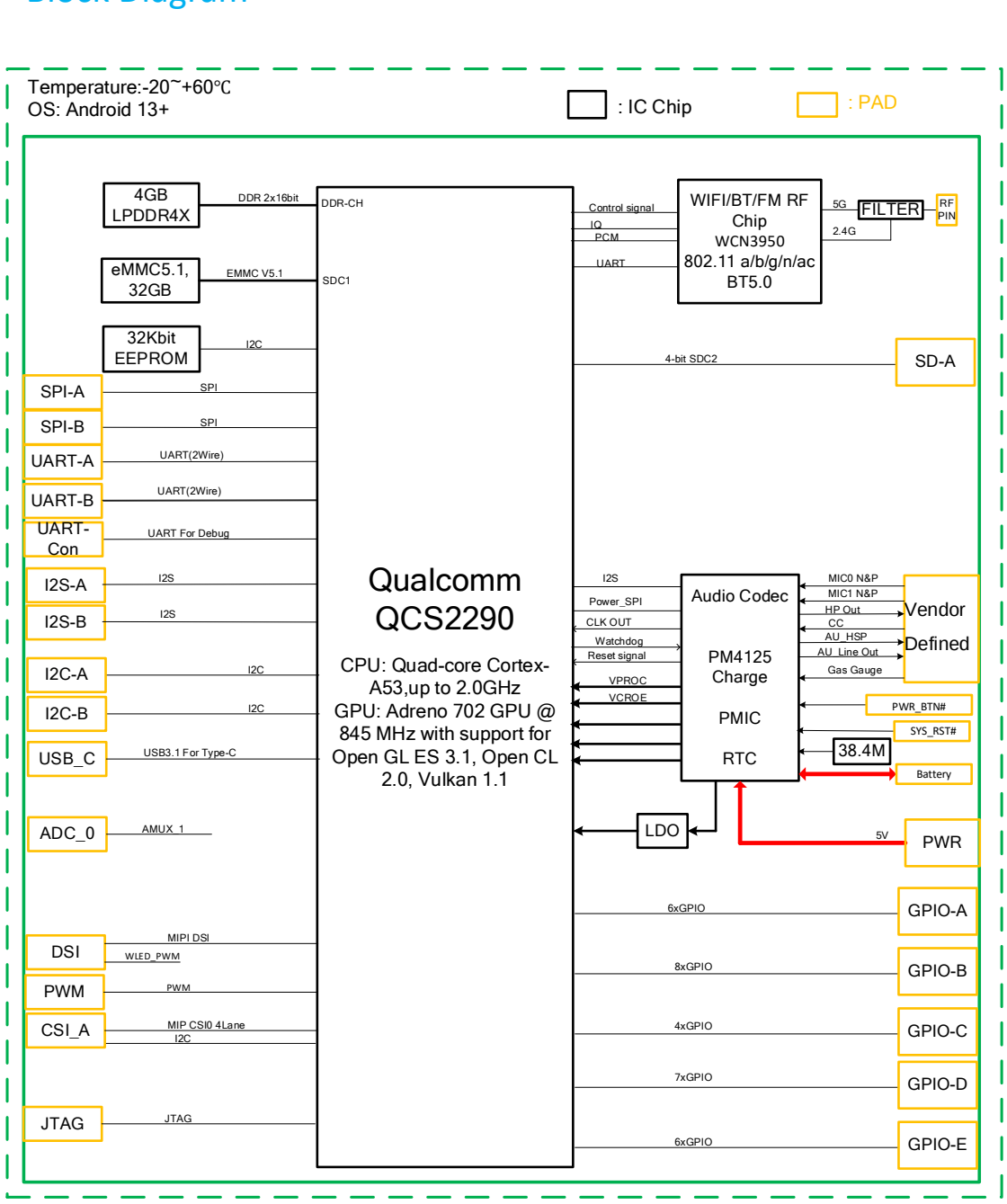
VDD_CORE (Retention mode)	Bit 31 (MSB)	Bit 30	Bit 29 (LSB)
0.4V	1	0	0
0.45V	0	1	1
0.5V	0	1	0
0.55V	0	0	1
0.60V	0	0	0

VDD_MEM (Retention mode)	Bit 19 (MSB)	Bit 18	Bit 17 (LSB)
0.49V	1	0	0
0.55V	0	1	1
0.58V	0	1	0
0.65V	0	0	1
0.70V	0	0	0

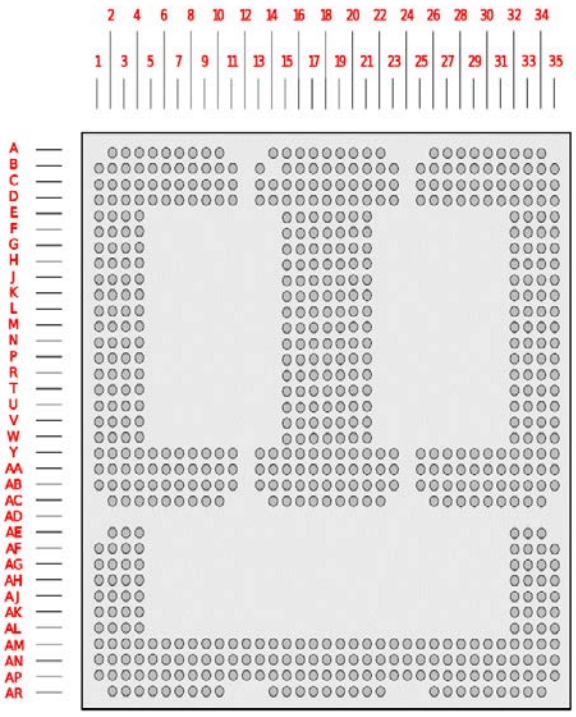
Product Outlines



Block Diagram



Pinout



Pin	Signal*	CPU Pad Name*	Description
U19, R18, W17, M19	NC		No connection
V17	LPI_GPIO_2	LPI_GPIO_2	GPIO
T17	FORCED_USB_BOOT	GPIO_95	To enter recovery mode if carrier board is at low level
AA9	PHONE_ON_N	KYPDPWR_N (PM4125)	Power button input from carrier board. Carrier to float the line in inactive state. Active low, level sensitive. Should be de-bounced on the module
U17	PM_RESIN_N		Reset input from carrier board, active low
AB18	VCC_BAT		Power input, battery voltage
AA18	VCC_BAT		Power input, battery voltage
Y16, Y20, Y3, C5, AA33, B29	NC		No connection
Y17, Y8, Y9	NC		No connection
Y10, Y11, AE4, AF4, AG4, AH3	NC		No connection
Y25, Y26, Y27, Y28	VCC_IN_5V		5V power input
AH4, AJ3, AJ4, AK4, Y19, U18	NC		No connection
D18, E15, E21, F16, F20, J16	GND		Ground
J20, L18, M16, M20, P18	GND		Ground
R16, R20, V16, V20, Y18	GND		Ground

* Signal refers to the pin name used by Vantron.
* CPU Pad Name refers to corresponding pad name on QCS2290 CPU.

Pin	Signal	CPU Pad Name	Description
AA14, AA17, AA19, AA22, AB15, AB21	GND		Ground
A4, A7, A10, B2, B5, B8, B9, C11, D1, D5	GND		Ground
D8, E2, H2, H4, L2, L4, P2, P4, R1, U2	GND		Ground
U4, V1, W3, Y2, AA1, AA4, AA7, AA8, AB3	GND		Ground
AA10, AA11, AB6, AB9, AC4, AC7, AC10	GND		Ground
A26, A29, A32, B27, B28, B30, B33, C25	GND		Ground
C32, C35, D28, D34, F33, F35, G34, H32	GND		Ground
J33, J35, K34, M35, N34, T34, W34, AE2	GND		Ground
AA25, AA26, AA27, AA28, AA32, AB28	GND		Ground
AB31, AB34, AC27, AC30, AC33, AE34	GND		Ground
AG3, AH2, AK3, AL2, AF35, AH34, AJ35	GND		Ground
AL34, AM13, AM16, AM19, AM22, AM35	GND		Ground
AN3, AN6, AN9, AP2, AN11, AN15, AN18	GND		Ground
AN21, AN33, AP5, AP8, AP13, AP16	GND		Ground
AP19, AP22, AP25, AP28, AP31, AP34	GND		Ground
AR14, AR17, AR20, AR26, AR29, AR32	GND		Ground
T18, T19, Y13, Y14, AA13, N2, AA2, J32	NC		No connection
K32, K33, L32, M32, M33, N32, P32, P34	NC		No connection
R32, R33, T32, T33, AB25, AB26, AE32	NC		No connection
AL3, AL4, AM3, AM4, AM5, AM6	NC		No connection
AM7, AM8, AM9, AM10, AM23, AM24	NC		No connection
AM25, AM26, AM27, AM28, AM29	NC		No connection
AM30, AM31, AN2, AN5, AN7, AN8	NC		No connection
AN24, AN25, AN26, AN27, AN28, AN29	NC		No connection

(To be continued…)

Pin	Signal	CPU Pad Name	Description
AN30, AN31, AP10	NC		No connection
C2	CAM_MCLK0	GPIO_20	Camera master clock 0
G3	GPIO_61	GPIO_61	Camera power enable, active high output
G4	GPIO_56	GPIO_56	Camera reset signal output
B3	CSI0_A0_CLK_M	CSI0_A0_CLK_M	MIPI CSI 0 (DPHY), differential clock - minus
B4	CSI0_NC_CLK_P	CSI0_NC_CLK_P	MIPI CSI 0 (DPHY), differential clock - plus
C1	CSI0_C0_LN0_M	CSI0_C0_LN0_M	MIPI CSI 0 (DPHY), differential lane 0 - minus
B1	CSI0_B0_LN0_P	CSI0_B0_LN0_P	MIPI CSI 0 (DPHY), differential lane 0 - plus
A2	CSI0_B1_LN1_M	CSI0_B1_LN1_M	MIPI CSI 0 (DPHY), differential lane 1 - minus
A3	CSI0_A1_LN1_P	CSI0_A1_LN1_P	MIPI CSI 0 (DPHY), differential lane 1 - plus
A5	CSI0_A2_LN2_M	CSI0_A2_LN2_M	MIPI CSI 0 (DPHY), differential lane 2 - minus
A6	CSI0_C1_LN2_P	CSI0_C1_LN2_P	MIPI CSI 0 (DPHY), differential lane 2 - plus
B6	CSI0_C2_LN3_M	CSI0_C2_LN3_M	MIPI CSI 0 (DPHY), differential lane 3 - minus
B7	CSI0_B2_LN3_P	CSI0_B2_LN3_P	MIPI CSI 0 (DPHY), differential lane 3 - plus
C4	CCI_I2C_SCL0	CCI_I2C_SCL0	I2C clock signal
C3	CCI_I2C_SDA0	CCI_I2C_SDA0	I2C data signal
F4	GPIO_40	GPIO_40	GPIO
E18	WLED_PWM	GPIO_02(PM4125)	Primary display brightness control through PWM
F3	GPIO_41	GPIO_41	GPIO
AB8	DSI0_CLK_M	DSI0_CLK_M	DSI differential clock output (point to point)
AB7	DSI0_CLK_P	DSI0_CLK_P	DSI differential clock output (point to point)
AB11	DSI0_LN0_M	DSI0_LN0_M	DSI differential lane 0 (point to point)
AB10	DSI0_LN0_P	DSI0_LN0_P	DSI differential lane 0 (point to point)
AC9	DSI0_LN1_M	DSI0_LN1_M	DSI differential lane 1 (point to point)
AC8	DSI0_LN1_P	DSI0_LN1_P	DSI differential lane 1 (point to point)
AC6	DSI0_LN2_M	DSI0_LN2_M	DSI differential lane 2 (point to point)
AC5	DSI0_LN2_P	DSI0_LN2_P	DSI differential lane 2 (point to point)
AB5	DSI0_LN3_M	DSI0_LN3_M	DSI differential lane 3 (point to point)
AB4	DSI0_LN3_P	DSI0_LN3_P	DSI differential lane 3 (point to point)
AA3	GPIO_101	GPIO_101	GPIO
M18	ADC_THERM	AMUX_1 (PM4125)	Analog multiplexer (AMUX) input 1
N18, AC18, D6, P19, C18, C16	NC		No connection

Pin	Signal	CPU Pad Name	Description
R19	JTAG_TRST_N	JTAG_TRST_N	JTAG reset, active low, suggest not using
N17	JTAG_TCK	JTAG_TCK	JTAG clock, suggest not using
P17	JTAG_TDI	JTAG_TDI	JTAG data input, suggest not using
R17	JTAG_TDO	JTAG_TDO	JTAG data output, suggest not using
N19	JTAG_TMS	JTAG_TMS	JTAG mode select, suggest not using
B22	BATT_THERM	BAT_THERM (PM4125)	Battery temperature input to ADC for measuring the pack temperature
P16	BATT_ID	BAT_ID (PM4125)	Battery ID input to the ADC
D7	CDC_HS_DET	CDC_HS_DET (PM4125)	Headset detection input
Y29	MIC1_INM	MIC1_INM (PM4125)	Microphone channel 1 negative input
Y30	MIC2_INM	MIC2_INM (PM4125)	Microphone channel 2 negative input
Y31	LINEOUT_N	LINEOUT_N (PM4125)	Line out negative output
AA29	MIC1_INP	MIC1_INP (PM4125)	Microphone channel 1 positive input
AA30	MIC2_INP	MIC2_INP (PM4125)	Microphone channel 2 positive input
AA31	LINEOUT_P	LINEOUT_P (PM4125)	Line out positive output
AK32	KEY_VOLP_N	GPIO_96	Volume + input
AK33	CDC_HPH_L	CDC_HPH_L (PM4125)	Headphone left channel output
AL32	CDC_HPH_R	CDC_HPH_R (PM4125)	Headphone right channel output
AL33	CDC_HPH_REF	CDC_HPH_REF (PM4125)	Headphone reference ground
AM32	VBATT_CONN_VSNS_P	VBATT_SNS_P (PM4125)	Battery voltage sensing input plus. Connect to the battery positive remote sensing node or connect directly to the battery positive node
AM33	PACK_VSNS_M	PACK_SNS_M (PM4125)	Battery voltage sense input minus. Connect to the battery negative remote sense node or connect directly to the battery negative node
F18	NC		No connection
G18	GPIO_52	GPIO_52	GPIO
H18	GPIO_72	GPIO_72	GPIO
J18	GPIO_74	GPIO_74	GPIO
K18	GPIO_75	GPIO_75	GPIO
AB17, AC17, C14, AB19, AC19, C13	NC		No connection

(To be continued…)

Pin	Signal	CPU Pad Name	Description
A14	BT_SENS_UART_1_RX	LPI_GPIO_26	UART serial port data input
B13	BT_SENS_UART_1_TX	LPI_GPIO_25	UART serial port data output
D16, D15	NC		No connection
D14	SSC_UART2_RX	LPI_GPIO_112	UART serial port data input
D13	SSC_UART2_TX	LPI_GPIO_111	UART serial port data output
A22, B23, C22, C23, V19, W19	NC		No connection
D22	DBG_UART_RX	GPIO_13	UART serial port data input, for AP debugging, 1.8V
D23	DBG_UART_TX	GPIO_12	UART serial port data output, for AP debugging, 1.8V
V21	LPI_MI2S1_DATA0	GPIO_104	LPI_MI2S 1 data 0
W21	LPI_MI2S1_DATA1	GPIO_105	LPI_MI2S 1 data 1
W20	LPI_MI2S1_CLK	GPIO_102	LPI_MI2S 1 clock
W18	LPI_MI2S1_WS	GPIO_103	LPI_MI2S 1 word select
V18	I2S_MCLK	GPIO_108	MI2S master clock 1_A
AB2	USB0_SS_TX1_P	USB0_SS_TX1_P	USB 0 super-speed transmit 1 - plus
AB1	USB0_SS_TX1_M	USB0_SS_TX1_M	USB 0 super-speed transmit 1 - minus
AC3	USB0_SS_RX1_P	USB0_SS_RX1_P	USB 0 super-speed receive 1 - plus
AC2	USB0_SS_RX1_M	USB0_SS_RX1_M	USB 0 super-speed receive 1 - minus
V2, M34, L34, L35, K35, L33	NC		No connection
W2, Y1, W1, R2, T1, U1, T2	NC		No connection
D11	USB0_HS_DM	USB0_HS_DM	USB 0 high-speed data – minus
D10	USB0_HS_DP	USB0_HS_DP	USB 0 high-speed data – plus
C10	LPI_GPIO_22	LPI_GPIO_22	GPIO
D9	USB_CC1	CC1 (PM4125)	Input contact to announce OTG device insertion on USB 2.0 port
C8	USB_CC2	CC2 (PM4125)	USB over-current for port A
B11	USB0_SS_RX0_M	USB0_SS_RX0_M	USB 0 super-speed receive 0 – minus
B10	USB0_SS_RX0_P	USB0_SS_RX0_P	USB 0 super-speed receive 0 – plus
A9	USB0_SS_TX0_M	USB0_SS_TX0_M	USB 0 super-speed transmit 0 – minus
A8	USB0_SS_TX0_P	USB0_SS_TX0_P	USB 0 super-speed transmit 0 – plus
C9	GPIO_100	GPIO_100	USB 0 port power detection
D26, D25, C26, D27, C28, B26	NC		No connection
B25, A28, A27, C27, AB13, AC14	NC		No connection
AC16, AB14, AC15, AB16	NC		No connection

Pin	Signal	CPU Pad Name	Description
AA15	SNS_I2C_SCL	GPIO_110	I2C port A clock signal
AA16	SNS_I2C_SDA	GPIO_109	I2C port A data signal
AA20	TS_I2C_SCL	GPIO_7	I2C port B clock signal
AA21	TS_I2C_SDA	GPIO_6	I2C port B data signal
AB23, AC22, AC20, AB22, AC21, AB20	NC		No connection
J21	SD_CARD_DET_N	GPIO_88	SDIO A card detection
F21	SDC2_CLK	SDC2_CLK	Secure digital controller 2 clock
E20	SDC2_CMD	SDC2_CMD	Secure digital controller 2 command
G20	SDC2_DATA_0	SDC2_DATA_0	Secure digital controller 2 data bit 0
G21	SDC2_DATA_1	SDC2_DATA_1	Secure digital controller 2 data bit 1
H20	SDC2_DATA_2	SDC2_DATA_2	Secure digital controller 2 data bit 2
H21	SDC2_DATA_3	SDC2_DATA_3	Secure digital controller 2 data bit 3
C20	VREG_L21A_2P96	VREG_L21 (PM4125)	SDIO A Voltage. Used to provide the IO voltage level
D21, D20, T21	NC		No connection
K20	GPIO_30	GPIO_30	GPIO
K21	GPIO_46	GPIO_46	GPIO
L20	GPIO_60	GPIO_60	GPIO
L21	GPIO_57	GPIO_57	GPIO
M21	GPIO_107	GPIO_107	GPIO
N20, N21, P20	NC		No connection
P21, R21, U21	NC		No connection
U20, AJ32, AJ33	NC		No connection
D17	GPIO_45	GPIO_45	GPIO
E17	GPIO_31	GPIO_31	GPIO
F17	GPIO_64	GPIO_64	GPIO
G17	GPIO_63	GPIO_63	GPIO
H17	GPIO_28	GPIO_28	GPIO
J17	GPIO_37	GPIO_37	GPIO
D19	GPIO_36	GPIO_36	GPIO
E19	GPIO_32	GPIO_32	GPIO
F19	GPIO_33	GPIO_33	GPIO
G19	GPIO_34	GPIO_34	GPIO
H19	GPIO_35	GPIO_35	GPIO
J19	GPIO_39	GPIO_39	GPIO
K19	GPIO_44	GPIO_44	GPIO
L19	GPIO_38	GPIO_38	GPIO
D3	GPIO_62	GPIO_62	GPIO
D4	GPIO_77	GPIO_77	GPIO
E3	GPIO_79	GPIO_79	GPIO
E4	GPIO_78	GPIO_78	GPIO
U32	GPIO_114	GPIO_114	GPIO

(To be continued…)

Pin	Signal	CPU Pad Name	Description
U33	GPIO_113	GPIO_113	GPIO
V32	GPIO_69	GPIO_69	GPIO
V33	GPIO_82	GPIO_82	GPIO
W32	GPIO_70	GPIO_70	GPIO
W33	GPIO_86	GPIO_86	GPIO
Y32	LPI_GPIO_21	LPI_GPIO_21	GPIO
AF32	GPIO_80	GPIO_80	GPIO
AG32	GPIO_71	GPIO_71	GPIO
AG33	GPIO_97	GPIO_97	GPIO
AH32	GPIO_81	GPIO_81	GPIO
AH33	GPIO_98	GPIO_98	GPIO
W15, W16, K17	NC		No connection
Y15	SPI_CS_N	GPIO_17	SPI A master chip select 0
U16	SPI_SCLK	GPIO_16	SPI A serial data clock
U15	SPI_MISO	GPIO_14	SPI A serial data input
V15	SPI_MOSI	GPIO_15	SPI A serial data output
AA23	NFC_SPI_CS_N	GPIO_3	SPI B master chip select 0
L17, Y33, D29	NC		No connection
Y21	NFC_SPI_SCLK	GPIO_2	SPI B serial data clock
Y22	NFC_SPI_MISO	GPIO_0	SPI B serial data input
Y23	NFC_SPI_MOSI	GPIO_1	SPI B serial data output
C30	GPIO_21	GPIO_21	GPIO
C29	GPIO_27	GPIO_27	GPIO
D30	GPIO_18	GPIO_18	GPIO

Pin	Signal	CPU Pad Name	Description
F15	GPIO_19	GPIO_19	GPIO
E16	GPIO_25	GPIO_25	GPIO
R15	GPIO_48	GPIO_48	GPIO
M15	GPIO_59	GPIO_59	GPIO
L16	GPIO_55	GPIO_55	GPIO
N15	GPIO_58	GPIO_58	GPIO
P15	GPIO_49	GPIO_49	GPIO
J15	GPIO_26	GPIO_26	GPIO
K16	GPIO_76	GPIO_76	GPIO
K15	GPIO_42	GPIO_42	GPIO
L15	GPIO_54	GPIO_54	GPIO
H15	GPIO_47	GPIO_47	GPIO
G15	GPIO_29	GPIO_29	GPIO
H16	GPIO_43	GPIO_43	GPIO
G16	GPIO_24	GPIO_24	GPIO
N16	GPIO_50	GPIO_50	GPIO
T16	GPIO_106	GPIO_106	GPIO
T15	GPIO_73	GPIO_73	GPIO
A15	GND		Power return and reference GND
A17	GND		Power return and reference GND
B15	GND		Power return and reference GND
B16	GND		Power return and reference GND
B17	GND		Power return and reference GND
A16	WLAN_2G_BT_5G_RF		WIFI/BT antenna

* Apart from those specified here, any pins not included in these sheets are not connected.

Ordering Information

Ordering No.	Chipset	Memory	Storage	Description
VOSM2290	QCS2290	4GB LPDDR4x	32GB eMMC	MIPI DSI/HDMI, MIPI CSI, SPI, UART, USB, I^2C, GPIO
VT-SBC-VOSM2290-EVB	QCS2290	4GB LPDDR4x	32GB eMMC	VOSM2290 + Carrier board, MIPI DSI/HDMI, MIPI CSI, UART, USB, I^2C, GPIO, TP

* More variants are available, please contact the sales executive for details.

Packing list	
VOSM2290 system-on-module	1

Optional accessory	
Wi-Fi and BT antenna	1

Company Profile

Since its establishment in 2002 by two Silicon Valley entrepreneurs, Vantron Technology has been at the forefront of the connected IoT devices and IoT platform solutions. Today, Vantron boasts a global customer base that includes many Fortune Global 500 companies. Its product lines cover edge intelligent hardware, IoT communication devices, industrial displays and BlueSphere cloud platforms.

With over 20 years of experience in R&D of embedded edge intelligent hardware, Vantron has provided users with diverse embedded solutions featuring ARM and X86 architectures. Its offerings range from Linux to Windows, from embedded to desktop level, and from gateway to server. In addition, it provides users with system trimming, driver transplantation and more to cater to the unique needs of its users.