RK3188-SOM, board revision C - GPIO layout

Please double check the orientation of the connectors and the starting pin. Pin numbers 1 & 2 are printed on near the plastic connector.

DOUBLE CHECK WHICH OF THE POWER PINS ARE INPUTS BEFORE PROVIDING POWER.

''RK3188 PIN'' field has the pin names as per “RK3188 datasheet V1.0.pdf”. For full details about a specific pin (multiplexing, usage, registers, etc) please refer to the mentioned RK3188 datasheet. It is highly recommended to refer to source documentation released by Rockchip.

Signals with (NC) in the name are routed to the corresponding processor pin but are disconnected by default.

''R3188 PIN NAME'' marked with ''-'' indicate that the signal is related to the power supply circuit. Such signals are not directly connected to the microcontroller and you should be careful when operating those signals. Improper use might lead to short-circuits.

The field “MULTIPLEXING” refers only to the design of RK3188-SOM; there might be multiplexing on the corresponding pin in design of the board of peripherals (RK3188-SOM-EVB).

LCD_CON

MULTIPLEXING	FUNCTION (S)	R3188 PIN	SIGNAL # NAME	#			#	SIGNAL # NAME	RK3188 PIN	FUNCTION (S)	MULTIPLEXING
-	POWER INPUT	-	+5V	1	o	o	2	GND	-	POWER GROUND	-
-	POWER OUTPUT	-	3.3V	3	o	o	4	GND	-	POWER GROUND	-
NO	LCD0	H5	LCD0_D16	5	o	o	6	LCD0_D17	H4	LCD0	NO
NO	LCD0	H3	LCD0_D18	7	o	o	8	LCD0_D19	H2	LCD0	NO
NO	LCD0	H1	LCD0_D20	9	o	o	10	LCD0_D21	K1	LCD0	NO
NO	LCD0	J3	LCD0_D22	11	o	o	12	LCD0_D23	J2	LCD0	NO
NO	LCD0	F3	LCD0_D8	13	o	o	14	LCD0_D9	F2	LCD0	NO
NO	LCD0	G5	LCD0_D10	15	o	o	16	LCD0_D11	G4	LCD0	NO
NO	LCD0	G3	LCD0_D12	17	o	o	18	LCD0_D13	G2	LCD0	NO
NO	LCD0	G1	LCD0_D14	19	o	o	20	LCD0_D15	H6	LCD0	NO
NO	LCD0	D0	LCD0_D0	21	o	o	22	LCD0_D1	E1	LCD0	NO
NO	LCD0	E2	LCD0_D2	23	o	o	24	LCD0_D3	E3	LCD0	NO
NO	LCD0	E4	LCD0_D4	25	o	o	26	LCD0_D5	G6	LCD0	NO
NO	LCD0	F5	LCD0_D6	27	o	o	28	LCD0_D7	F4	LCD0	NO
NO	LCD0	A1	LCD0_HSYNC	29	o	o	30	LCD0_VSYNC	B1	LCD0	NO
NO	LCD0	D2	LCD0_CLK	31	o	o	32	LCD0_DE	D3	LCD0	NO
NO*	NC*	NC/W11*	GPIO0_A6	33	o	o	34	GPIO0_A7	NC/AC7*	NC*	NO*
NO	GPIO	N22	GPIO3_D7/LCD0_PWRE	35	o	o	36	GPIO3_D4/PWM	R22	GPIO; PWM1; JTAG	NO
NO	NOT CONNECTED	NC	NC	37	o	o	38	NC	NC	NOT CONNECTED	NOT CONNECTED
NO	NOT CONNECTED	NC	NC	39	o	o	40	NC	NC	NOT CONNECTED	NOT CONNECTED

*PINS 33 AND 34 DO NOT REACH THE PROCESSOR DUE TO THE MISSING RESISTORS R59 AND R60. THE VALUES OF THESE PINS CAN BE USED TO CHANGE THE SCANNING MODE (ORIENTATION) OF THE OLIMEX DISPLAYS DINAMICALLY. THE DEFAUL SCANNING MODE IS “UP TO DOWN, RIGHT TOLEFT“. REFER TO THE DISPLAY DATASHEET FOR POSSIBLE VALUES. REFER TO THE DISPLAY SCHEMATIC TO FURTHER TRACE THE LCD SIGNALS.

GPIO_1

MULTIPLEXING	FUNCTION (S)	R3188 PIN	SIGNAL # NAME	#			#	SIGNAL # NAME	R3188 PIN	FUNCTION (S)	MULTIPLEXING
-	POWER INPUT	-	+5V	1	o	o	2	GND	-	POWER GROUND	-
NO	GPIO; I2S	Y13	GPIO1_C0/I2S0_CLK	3	o	o	4	GPIO1_C3/I2S0_LRCK_TX	Y14	GPIO; I2S	NO
NO	GPIO; I2S	W16	GPIO1_C1/I2S0_SCLK	5	o	o	6	GPIO1_C4/I2S0_SDI	AB13	GPIO; I2S	NO
NO	GPIO; I2S	AC19	GPIO1_C2/I2S0_LRCK_RX	7	o	o	8	GPIO0_B0	W8	GPIO	NO
NO	GPIO	Y6	GPIO0_A1	9	o	o	10	GPIO0_B1	AA7	GPIO	NO
NO	GPIO	AA5	GPIO0_A2	11	o	o	12	GPIO0_B2	AB6	GPIO	NO
NO	GPIO	W7	GPIO0_A3/HOST_DRV	13	o	o	14	GPIO0_B4/LED1	AC10	GPIO	YES – LED1
NO	GPIO	W6	GPIO0_A5	15	o	o	16	RTC_INT	AB10	GPIO	NO
NO	GPIO	W11	GPIO0_A6	17	o	o	18	GPIO0_B6/LED2	Y11	GPIO	YES – LED2
NO	GPIO	AC7	GPIO0_A7	19	o	o	20	GPIO0_B7	AA11	GPIO	NO
NO	GPIO; CAMERA; HSADC	AC2	CIF_D0	21	o	o	22	CIF_HREF	AB2	CAMERA	NO
NO	GPIO; CAMERA; HSADC	AC1	CIF_D1	23	o	o	24	CIF_CLKI	V2	CAMERA; HSADC; GPS	NO
NO	CAMERA; HSADC	AB3	CIF_D2	25	o	o	26	CIF_CLKO	Y5	GPIO; CAMERA	NO
NO	CAMERA; HSADC	W1	CIF_D3	27	o	o	28	CIF_VSYNC	AA3	CAMERA; HSADC	NO
NO	CAMERA; HSADC	W2	CIF_D4	29	o	o	30	CIF_D15	AB1	CAMERA	NO
NO	CAMERA; HSADC	W3	CIF_D5	31	o	o	32	CIF_D14	AA2	CAMERA	NO
NO	CAMERA; HSADC	V4	CIF_D6	33	o	o	34	CIF_D13	Y2	CAMERA	NO
NO	CAMERA; HSADC	Y3	CIF_D7	35	o	o	36	CIF_D12	Y1	CAMERA	NO
NO	CAMERA; HSADC	Y4	CIF_D8	37	o	o	38	CIF_D11	AB4	GPIO; CAMERA; I2C3	NO
NO	CAMERA; HSADC	W4	CIF_D9	39	o	o	40	CIF_D10	AA4	GPIO; CAMERA; I2C3	NO

GPIO_2

MULTIPLEXING	FUNCTION (S)	R3188 PIN	SIGNAL # NAME	#			#	SIGNAL # NAME	R3188 PIN	FUNCTION (S)	MULTIPLEXING
-	POWER OUTPUT	-	3.3V	1	o	o	2	GND	-	POWER GROUND	-
YES – ACT8846	GPIO; I2C1	G19	I2C1_SCL	3	o	o	4	I2C1_SDA	G20	GPIO; I2C1	YES – ACT8846
NO	GPIO; I2S	AC13	GPIO1_C5/I2S0_SDO0	5	o	o	6	RESET	AC5	RESET	NO
NO	GPIO; LCD1; SMC; TRACE	M3	GPIO2_B0/LCD1_D8	7	o	o	8	GPIO2_D7/OTG_DRV	F22	GPIO; TEST	NO
NO	GPIO; LCD1; SMC; TRACE	L3	GPIO2_B1/LCD1_D9	9	o	o	10	GPIO2_D6/HDMI_INT	U4	GPIO; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	L2	GPIO2_B2/LCD1_D10	11	o	o	12	GPIO2_D5	U3	GPIO; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	L1	GPIO2_B3/LCD1_D11	13	o	o	14	GPIO2_D4	U2	GPIO; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	M2	GPIO2_B4/LCD1_D12	15	o	o	16	GPIO2_D3/LCD1_VSYNC	U1	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	N4	GPIO2_B6/LCD1_D14	17	o	o	18	GPIO2_D2/LCD1_HSYNC	T3	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	P4	GPIO2_B5/LCD1_D13	19	o	o	20	GPIO2_D1/LCD1_DEN	T2	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	N3	GPIO2_B7/LCD1_D15	21	o	o	22	GPIO2_D0/LCD1_DCLK	T1	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	K6	GPIO2_A0/LCD1_D0	23	o	o	24	GPIO2_C7/LCD1_D23	T4	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	K5	GPIO2_A1/LCD1_D1	25	o	o	26	GPIO2_C6/LCD1_D22	R2	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	L4	GPIO2_A2/LCD1_D2	27	o	o	28	GPIO2_C5/LCD1_D21	R3	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	K4	GPIO2_A3/LCD1_D3	29	o	o	30	GPIO2_C4/LCD1_D20	P3	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	K3	GPIO2_A4/LCD1_D4	31	o	o	32	GPIO2_C3/LCD1_D19	P2	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	K2	GPIO2_A5/LCD1_D5	33	o	o	34	GPIO2_C2/LCD1_D18	P1	GPIO; LCD1; SMC	NO
NO	GPIO; LCD1; SMC; TRACE	L6	GPIO2_A6/LCD1_D6	35	o	o	36	GPIO2_C1/LCD1_D17	N1	GPIO; LCD1; SMC; TRACE	NO
NO	GPIO; LCD1; SMC; TRACE	L5	GPIO2_A7/LCD1_D7	37	o	o	38	GPIO2_C0/LCD1_D16	N2	GPIO; LCD1; SMC; TRACE	NO
NO	GPIO; I2S	AC11	GPIO1_D6	39	o	o	40	GPIO1_D7	AA15	GPIO; I2S	NO

GPIO_3

MULTIPLEXING	FUNCTION (S)	R3188 PIN	SIGNAL # NAME	#			#	SIGNAL # NAME	R3188 PIN	FUNCTION (S)	MULTIPLEXING
-	POWER OUTPUT	-	VDD_HDMI	1	o	o	2	VDD_PHY	-	POWER OUTPUT	-
-	POWER OUTPUT	-	VCC_1.8	3	o	o	4	GND	-	POWER GROUND	-
NO	SAR-ADC	H21	ADC_IN0	5	o	o	6	RTC_CLKOUT	AB5	RTC CLOCK INPUT	YES - ACT8846
NO	SAR-ADC	H19	ADC_IN2	7	o	o	8	GPIO0_C0	W22	GPIO; NAND FLASH	NO
NO	GPIO; UART3; GPS	U21	GPIO1_B2	9	o	o	10	GPIO0_C1	W20	GPIO; NAND FLASH	NO
NO	GPIO; UART3; GPS	T22	GPIO1_B3	11	o	o	12	GPIO0_C2	W21	GPIO; NAND FLASH	NO
NO	GPIO; UART3; GPS	T23	GPIO1_B4	13	o	o	14	GPIO0_C3	Y23	GPIO; NAND FLASH	NO
NO	GPIO; UART3	P21	GPIO1_B5	15	o	o	16	GPIO0_C4	AB23	GPIO; NAND FLASH	NO
NO	GPIO; SPDIF; SPI1	N20	GPIO1_B6/SPDIF_TX	17	o	o	18	GPIO0_C5	V21	GPIO; NAND FLASH	NO
NO	GPIO; UART1; SPI0	AB12	GPIO1_B7	19	o	o	20	GPIO0_C6	V19	GPIO; NAND FLASH	NO
NO	GPIO; SDMMC1; RMII	G23	GPIO3_D0/RMII_MD	21	o	o	22	GPIO0_C7	W23	GPIO; NAND FLASH	NO
NO	GPIO; SDMMC1; RMII	H22	GPIO3_D1/RMII_MDCLK	23	o	o	24	GPIO3_B1	M22	GPIO	NO
NO	GPIO; SDMMC1	H23	GPIO3_D2/RMII_INT	25	o	o	26	GPIO3_B2/HDMI_RST	F20	GPIO	NO
YES - LED3	GPIO; PWM2; JTAG; USB OTG	P22	GPIO3_D5/PWM2	27	o	o	28	GPIO3_C0/RMII_TXEN	L22	GPIO; SDMMC1; RMII	NO
NO	GPIO; PWM3; JTAG; USB HOST	P23	GPIO3_D6	29	o	o	30	GPIO3_C1/RMII_TXD1	K22	GPIO; SDMMC1; RMII	NO
NO	GPIO; I2C0	G22	GPIO1_D0	31	o	o	32	GPIO3_C2/RMII_TXD0	K23	GPIO; SDMMC1; RMII	NO
NO	GPIO; I2C0	G21	GPIO1_D1	33	o	o	34	GPIO3_C3/RMII_RXD0	K19	GPIO; SDMMC1; RMII	NO
NO	GPIO; I2C2	F21	GPIO1_D4/I2C2_SDA	35	o	o	36	GPIO3_C4/RMII_RXD1	K20	GPIO; SDMMC1; RMII	NO
NO	GPIO; I2C2	E20	GPIO1_D5/I2C2_SCL	37	o	o	38	GPIO3_C5/RMII_CLK	K21	GPIO; SDMMC1; RMII	NO
NO	GPIO; SDMMC1; RMII	J22	GPIO3_C7/RMII_CRS_DVALID	39	o	o	40	GPIO3_C6/RMII_RX_ERR	J21	GPIO; SDMMC1; RMII	NO

GPIO_4

MULTIPLEXING	FUNCTION (S)	R3188 PIN	SIGNAL # NAME	#			#	SIGNAL # NAME	R3188 PIN	FUNCTION (S)	MULTIPLEXING
-	OPTIONAL POWER**	-	+5V_OTG_PWR**	1	o	o	2	GND	-	POWER GROUND	-
NO	USB OTG	Y17	OTG_ID	3	o	o	4	OTG_VBUS	AA17	USB OTG	NO
YES - NAND	NAND FLASH; EMMC	Y18	NWP	5	o	o	6	OTG_DP	AC14	USB OTG	NO
YES - NAND	NAND FLASH	W17	NRB0	7	o	o	8	OTG_DM	AB14	USB OTG	NO
YES - NAND	NAND FLASH; EMMC	AC20	NDQ0	9	o	o	10	HOST_DM	AB16	USB HOST	NO
YES - NAND	NAND FLASH; EMMC	AB21	NDQ1	11	o	o	12	HOST_DP	AC16	USB HOST	NO
YES - NAND	NAND FLASH; EMMC	AA21	NDQ2	13	o	o	14	NRE	AB19	NAND FLASH	YES - NAND
YES - NAND	NAND FLASH; EMMC	Y22	NDQ3	15	o	o	16	NCLE	W18	NAND FLASH	YES - NAND
YES - NAND	NAND FLASH; EMMC	AC22	NDQ4	17	o	o	18	NALE	U19	NAND FLASH	YES - NAND
YES - NAND	NAND FLASH; EMMC	Y21	NDQ5	19	o	o	20	NWE	H19	NAND FLASH	YES - NAND
YES - NAND	NAND FLASH; EMMC	AC23	NDQ6	21	o	o	22	NCE0	Y19	NAND FLASH	YES - NAND
YES - NAND	NAND FLASH; EMMC	AB22	NDQ7	23	o	o	24	GPIO3_A0	N19	GPIO; SDMMC0	NO
YES - NAND	GPIO; NAND FLASH; EMMC	AB20	GPIO0_D0/FLASH_DQS	25	o	o	26	GPIO1_A7	AB12	GPIO; UART1; SPI0	NO
YES - NAND	GPIO; NAND FLASH	Y20	GPIO0_D1/FLASH_CSN1	27	o	o	28	GPIO1_A6	AA13	GPIO; UART1; SPI0	NO
YES - NAND	GPIO; NAND FLASH; EMMC	AA22	GPIO0_D2/FLASH_CSN2	29	o	o	30	GPIO1_A5	Y16	GPIO; UART1; SPI0	NO
YES - NAND	GPIO; NAND FLASH; EMMC	AA20	GPIO0_D3/FLASH_CSN3	31	o	o	32	GPIO1_A4	AA12	GPIO; UART1; SPI0	NO
NO	GPIO; SPI1	U23	GPIO0_D4	33	o	o	34	GPIO1_A3	L23	GPIO; UART0	NO
NO	GPIO; SPI1	R21	GPIO0_D5	35	o	o	36	GPIO1_A2	L21	GPIO; UART0	NO
NO	GPIO; SPI1	T21	GPIO0_D6	37	o	o	38	GPIO1_A1	L19	GPIO; UART0	NO
NO	GPIO; SPI1	T20	GPIO0_D7	39	o	o	40	GPIO1_A0	L20	GPIO; UART0	NO

**+5V_OTG_PWR IS DISCONNECTED FROM THE MAIN PROCESSOR. IF YOU DECIDE TO USE THIS LINE INSPECT D1, R38 AND R39. IT IS JUST AND OPTIONAL POWER LINE THAT WOULD REQUIRE ADDITIONAL HARDWARE SHOULD YOU CHOOSE TO USE IT.

POWER	+5V PINS ARE INPUTS. YOU CAN PROVIDE REGULATED 5V DC TO POWER THE BOARD AT ONE OF THESE PINS; 3.3V PINS ARE OUTPUTS - DO NOT USE THEM TO POWER THE BOARD; GND IS DIGITAL GROUND - COMMON FOR THE BOARD
PWMs 1,2,3	PULSE WIDTH MODULATION OUTPUTS #1, #2, #3
I2Cs 0,1,2,3	I2C INTERFACES #0, #1, #2, #3
UART0	SERIAL INTERFACE #0
UART1; SPI0	SERIAL INTERFACE #1; SPI INTERFACE 0
UART3	SERIAL INTERFACE #3
SPI1; SPDIF	SPI INTERFACE #1; SPDIF BIPHASE DATA OUTPUT
I2S	I2S/PCM AUDIO INTERFACE
TRACE	EMBEDDED TRACE MACROCELL (ETM TRACE) DEBUG INTERFACE. SHARES PINS WITH LCD1 INTERFACE (DEFAULT FOR RK3188-SOM-EVB) AND SMARTMEDIA CARD.