WT0132P4-A1

Datasheet

Version 1.0

September 12, 2024

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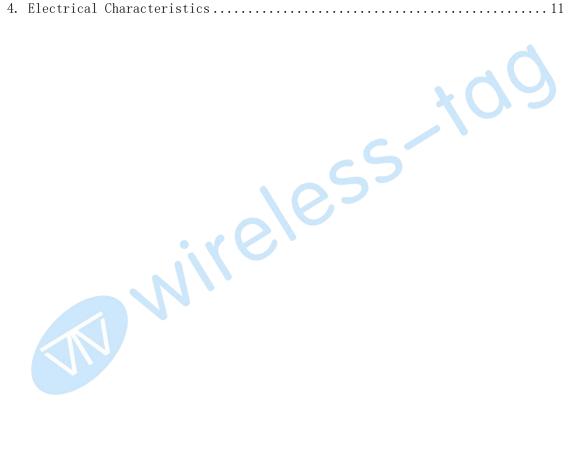
Revision History

Version	Modifier By	Date	Reason	Main changes
V1.0	Pail	2024. 9. 12	Creation	Creating Documents



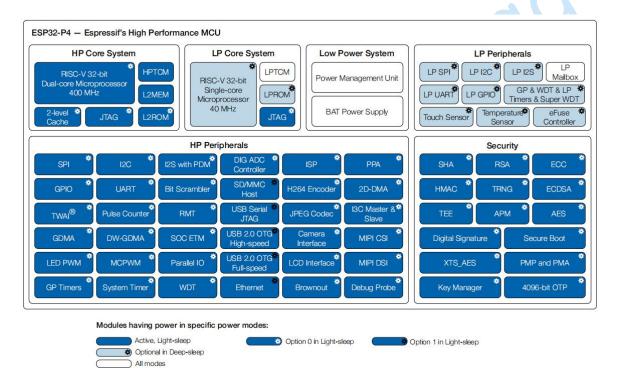
Catalogs

WT0132P4-A1
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1. Overview

WT0132P4-A1 is an integrated NOR FLASH small core board based on Espressif ESP32-P4 chip designed by Wireless-Tag Technology Co., Limited. The core processor chip, ESP32-P4, can be stacked with 16MB or 32MB PSRAM in the package, and contains a high-performance (HP) system and a low-power (LP) system; the HP system adopts a RISC-V dual-core processor with a main frequency up to 400MHz, and contains a JPEG encoder/decoder, pixel-processing gas pedal, H. 264 video encoder, and a MIPI interface; it has powerful image and voice processing capabilities. The HP system uses a RISC-V dual-core processor with up to 400MHz, including a JPEG coder/decoder, pixel processing accelerator, H. 264 video encoder, and MIPI interface.



Features

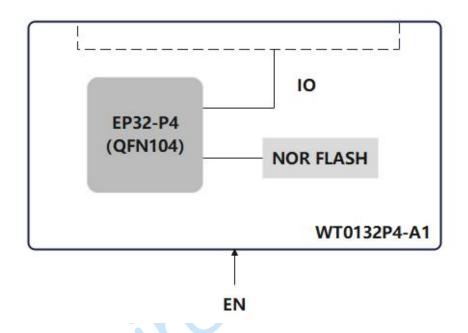
	32-bit RISC-V dual-core processor up to 400 MHz for HP system		
	32-bit RISC-V single-core processor up to 40 MHz for LP system		
CPU and	128 KB HP ROM		
Memory	16 KB LP ROM		
	768 KB HP L2MEM		
	32 KB LP SRAM		

Image and	JPEG Codec		
Voice	Pixel Processing Accelerator (PPA)		
Processing	Image Signal Processor (ISP)		
Interfaces	H264 Encoder		
	Programmable GPIOs		
	SPI * 4 (LP SPI * 1)		
	UART * 5 (LP UART * 1)		
	13C		
	I2C * 2 (LP I2C * 1)		
	I2S * 3 (LP I2S * 1)		
	RMT * 1		
	LED PWM (8 channels)		
	MCPWM * 2 (6 channels)		
Digital	TWAI® controllers * 3 (compatible with ISO 11898-1)		
interfaces	USB 2.0 OTG Hi-Speed		
	USB 2.0 OTG Full-Speed		
	USB 2.0 Full-Speed Serial/JTAG Controller		
	100 Mbit Ethernet		
	SD/MMC 3.0 host		
	MIPI CSI-2, 2-lane x 1.5 Gbps		
	MIPI DSI, 2-lane x 1.5 Gbps		
	24-bit LCD parallel port		
	16-bit CAM parallel port		
Parallel IO (PARLIO) Controller			
	12-bit multi-channel ADC * 2		
Analog	Temperature sensor		
Analog interface	Touch sensor		
Intellace	Analog Voltage Comparator		
	Brown-out detector		

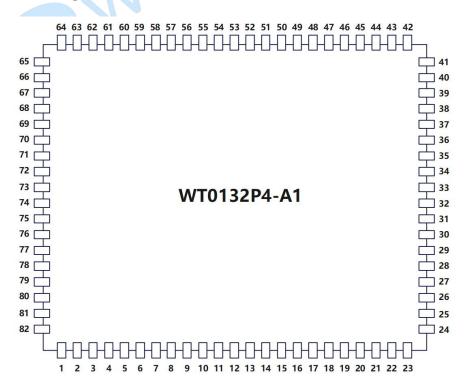
The core board contains two models to choose from, as shown in the table below.

Core Board Model	Flash	PSRAM	size (mm)	
WT0132P4-A1-N16R16	16MB	16MB	25*20	
WT0132P4-A1-N16R32	16MB	32MB	29*20	

2 .Core Board Functional Block Diagrams



3. Hardware Specifications



3.1 WT0132P4-A1 Pin Layout & Description

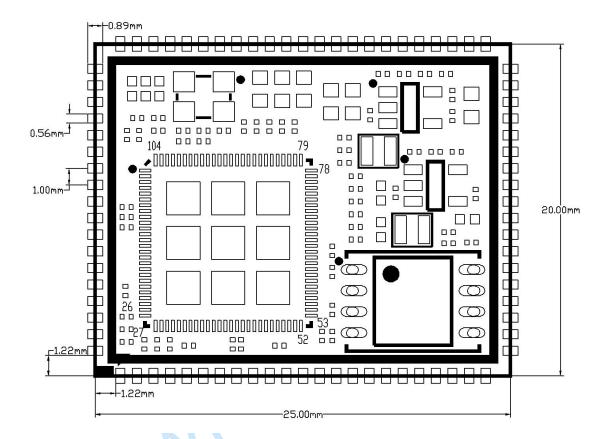
No.	Name	Function		
1	GND	GROUND		
2	DSI_DATAP1	MIPI DSI PHY DATAP1		
3	DSI_ DATAN1	MIPI DSI PHY DATAN1		
4	DSI_CLKN	MIPI DSI PHY CLKN		
5	DSI_CLKP	MIPI DSI PHY CLKP		
6	DSI_DATAP0	MIPI DSI PHY DATAPO		
7	DSI_ DATANO	MIPI DSI PHY DATANO		
8	GND	GROUND		
9	CSI_ DATANO	MIPI CSI PHY DATANO		
10	CSI_DATAPO	MIPI CSI PHY DATAPO		
11	CSI_CLKP	MIPI CSI PHY CLKP		
12	CSI_CLKN	MIPI CSI PHY CLKN		
13	CSI_DATAN1	MIPI CSI PHY DATAN1		
14	CSI_DATAP1	MIPI CSI PHY DATAP1		
15	GND	GROUND		
16	USB_DM	USB2 OTG PHY DM		
17 USB_DP USB2 OTG PHY DP		USB2 OTG PHY DP		
18	GND	GROUND		
19	GPI024	GPI024, USB1P1_N0		
20	GPI025	GPI025, USB1P1_P0		
21	GND	GROUND		
22	GPI026	GPI026, USB1P1_N1		
23	GPI027	GPI027, USB1P1_P1		
24	GPI028	GPIO28, GPSPI SPI2 CS, EMAC PHY RXDV, DBG_PSRAM_D		
25	GPI029	GPIO29, GPSPI SPI2 D, EMAC PHY RXDO, DBG_PSRAM_Q		
26	GPI030	GPI030, GPSPI SPI2 CK, EMAC PHY RXD1, DBG_PSRAM_WP		
27	GPI031	GPIO31, GPSPI SPI2 Q, EMAC PHY RXER, DBG_PSRAM_HOLD		

GP1032 GP1032 GP1032 GP1032 GP1033 GP1033 GP1033 GP1034 GP1034 GP1034 GP1035 GP1037 GP1038 G					
Page	28	GPI032	GPI032, I3CMST_SCL, GPSPI SPI2 HOLD.		
29 GP1033 EMAC PHY TXEN, DBG_PSRAM_DQ5 30 GP1034 GP1034, GPSPI SPI2 104, EMAC PHY TXD0, DBG_PSRAM_DQ6 31 GP1035 GP1035, GPSPI SPI2 105, EMAC PHY TXD1, DBG_PSRAM_DQ7 (1035 pulls down into download mode) GP1036, GPSPI SPI2 106, EMAC PHY TXER, DBG_PSRAM_DQSO 32 GND GP1036, GPSPI SPI2 106, EMAC PHY TXER, DBG_PSRAM_DQSO 34 GP1037 GP1037, UARTO_TXD, GPSPI SPI2 107 35 GP1038 GP1038, UARTO_RXD, GPSPI SPI2 DQS 36 GP1039 G P1039, SD1_CDATAO_PAD, REF_50M_CLK_PAD 37 GP1040 GP1040, SD1_CDATA1_P AD, GMAC_PHY_TXD0_PAD 38 GP1041 GP1041, SD1_CDATA2_PAD, GMAC_PHY_TXD0_PAD 39 GP1042 GP1042, S D1_CDATA3_PAD, GMAC_PHY_TXD1_PAD 40 GP1043 GP1043, SD1_CDLK_PAD, GMAC_PHY_TXD1_PAD 41 VCC POWER 42 GND GROUND 43 GP1044 GP1044, SD1_CCM_PAD, GMAC_PHY_RX DV_PAD 44 GP1045 GP1045, SD1_CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GP1046 GP1045, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 46<			EMAC RMII CLK, DBG_PSRAM_DQ4		
### GP1034 GP1034, GPSP1 SP12 104, EMAC PHY TXD0, DBG_PSRAM_DQ6 ### GP1035 GP1035, GPSP1 SP12 105, EMAC PHY TXD1, DBG_PSRAM_DQ7 ### GP1035 GP1035, GPSP1 SP12 105, EMAC PHY TXD1, DBG_PSRAM_DQ7 ### GP1035 GP1035, GPSP1 SP12 105, EMAC PHY TXD1, DBG_PSRAM_DQ7 ### GP1036 GP1036, GPSP1 SP12 106, EMAC PHY TXER, DBG_PSRAM_DQ80 ### GP1037 GP1037, UARTO_TXD, GPSP1 SP12 T07 ### GP1038 GP1039, UARTO_TXD, GPSP1 SP12 T07 ### GP1039 GP1039, SD1_CDATAO_PAD, REF_50M_CLK_PAD ### GP1040 GP1040, SD1_CDATA1_P AD, GMAC_PHY_TXEN_PA D ### GP1041 GP1041, SD1_CDATA2_PAD, GMAC_PHY_TXD0_PAD ### GP1042 GP1042, S D1_CDATA3_PAD, GMAC_PHY_TXD1_PAD ### GP1043 GP1043, SD1_CCLK_PAD, GMAC_PHY_TXD1_PAD ### GP1044 GP1043, SD1_CCLK_PAD, GMAC_PHY_TXD1_PAD ### GP1045 GP1045, SD1_CDATA4_PAD, GMAC_PHY_RX DV_PAD ### GP1046 GP1045, SD1_CDATA5_PAD, GMAC_PHY_RX DV_PAD ### GP1047 GP1046, SD1_CDATA6_PAD, GMAC_PHY_RX DV_PAD ### GP1048 GP1048, SD1_CDATA6_PAD, GMAC_PHY_RXD0_PAD ### GP1049 GP1048, SD1_CDATA6_PAD, GMAC_PHY_RXD0_PAD ### GP1048 GP1048, SD1_CDATA6_PAD, GMAC_PHY_RXD0_PAD ### GP1048 GP1049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	29	CD1033	gpio33, i3cmst_sda, gpspi spi2 wp.		
GP1035, GPSP1 SP12 105, EMAC PHY TXD1, DBG_PSRAM_DQ7 (1035 pulls down into download mode) 32 GND GROUND GP1036, GPSP1 SP12 106, EMAC PHY TXER, DBG_PSRAM_DQSO (Default 1035, 36 pull-up to enter SP1 Boot mode) 34 GP1037 GP1037, UARTO_TXD, GPSP1 SP12 107 35 GP1038 GP1038, UARTO_RXD, GPSP1 SP12 DQS 36 GP1039 GP1039, SD1_CDATAO_PAD, REF_50M_CLK_PAD 37 GP1040 GP1040, SD1_CDATA1_P AD, GMAC_PHY_TXEN_PA D 38 GP1041 GP1041, SD1_CDATA2_PAD, GMAC_PHY_TXD1_PAD 40 GP1043 GP1042, S D1_CDATA3_PAD, GMAC_PHY_TXD1_PAD 40 GP1043 GP1043, SD1_CCLK_PAD, GMAC_PHY_TXD1_PAD 41 VCC POWER 42 GND GROUND 43 GP1044 GP1044, SD1_CCMD_PAD, GMAC_PHY_RX DV_PAD 44 GP1045 GP1045, SD1_CDATA4_PAD, GMAC_PHY_RX DV_PAD 45 GP1046 GP1046, SD1_CDATA5_PAD, GMAC_PHY_RX DV_PAD 46 GP1047 GP1047, SD1_CDATA6_PAD, GMAC_PHY_RX DV_PAD 47 GP1048 GP1048, SD1_CDA TA7_PAD, GMAC_PHY_RXD1_PAD 48 GP1049 GP1049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	20	011000	EMAC PHY TXEN, DBG_PSRAM_DQ5		
GPI035 GROUND GROUND	30 GPI034 GPI034, GPSPI SPI2 IO4, EMAC PHY TXDO, I		GPIO34, GPSPI SPI2 IO4, EMAC PHY TXDO, DBG_PSRAM_DQ6		
GROUND GROUND GROUND GPI036, GPSPI SPI2 106, EMAC PHY TXER, DBG_PSRAM_DQSO GPI037 GPI037, UARTO_TXD, GPSPI SPI2 107 GPI038 GPI038 GPI038, UARTO_RXD, GPSPI SPI2 107 GPI039 GPI040 GPI040, SDI_CDATA1_P AD, GMAC_PHY_TXEN_PA D GPI041 GPI041, SDI_CDATA2_PAD, GMAC_PHY_TXD1_PAD GPI042 GPI042 SPI044 GPI043 GPI043 SPI044 GPI043 GPI044, SDI_CCLK_PAD GMAC_PHY_TXD1_PAD GPI043 GPI044 GPI044, SDI_CCLK_PAD GMAC_PHY_TXER_PAD GPI044 GPI045 GPI044, SDI_CCMD_PAD, GMAC_RMII_CLK_PAD GPI045 GPI045, SDI_CDATA3_PAD, GMAC_PHY_RXD0_PAD GPI046 GPI046, SDI_CDATA5_PAD, GMAC_PHY_RXD0_PAD GPI047 GPI048 GPI048 GPI049, GMAC_PHY_RXD1_PAD GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2 GPI048 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2 GPI041 GPI041 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2 GPI041 GPI041 GPI041 GPI049	2.1	CD1025	GPIO35, GPSPI SPI2 IO5, EMAC PHY TXD1, DBG_PSRAM_DQ7		
GPI036, GPSPI SPI2 IO6, EMAC PHY TXER, DBG_PSRAM_DQSO (Default I035, 36 pull-up to enter SPI Boot mode) 34	31	GF 1033	(IO35 pulls down into download mode)		
GPI036	32	GND	GROUND		
(Default 1035, 36 pull-up to enter SPI Boot mode) 34 GPI037 GPI037, UARTO_TXD, GPSPI SPI2 107 35 GPI038 GPI038, UARTO_RXD, GPSPI SPI2 DQS 36 GPI039 G PI039 , SDI_CDATAO_PAD, REF_50M_CLK_PAD 37 GPI040 GPI040, SDI_CDATA1_P AD, GMAC_PHY_TXEN_PA D 38 GPI041 GPI041, SDI_CDATA2_PAD, GMAC_PHY_TXDO_PAD 39 GPI0 42 GPI042 , S DI_CDATA3_PAD, GMAC_PHY_TXDI_PAD 40 GPI043 GPI043, SDI_CCLK_PAD , GMAC_PHY_TXER_PAD 41 VCC POWER 42 GND GROUND 43 GPI044 GPI044, SDI_CCMD_PAD, GMAC_RMII_CLK_PAD 44 GPI045 GPI045, SDI_CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPI046 GPI046, SDI_CDATA5_PAD, GMAC_PHY_RXDO_PAD 46 GPI047 GPI047, SDI_CDATA6_PAD, GMAC_PHY_RXDI_PAD 47 GPI048 GPI04 8, SDI_CDA TA7_PAD , GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	0.0	aproac	GPI036, GPSPI SPI2 I06, EMAC PHY TXER, DBG_PSRAM_DQS0		
35 GPI038 GPI039, UARTO_RXD, GPSPI SPI2 DQS 36 GPI039 G PI039, SD1_CDATAO_PAD, REF_50M_CLK_PAD 37 GPI040 GPI040, SD1_CDATA1_ P AD, GMAC_PHY_TXEN_PA D 38 GPI041 GPI041, SD1_CDATA2_PAD, GMAC_PHY_TXD0_PAD 39 GPI0 42 GPI042, S D1_ CDATA3_PAD, GMAC_PHY_TXD1_PAD 40 GPI043 GPI043, SD1_CCLK_PAD, GMAC_PHY_TXER_PAD 41 VCC POWER 42 GND GROUND 43 GPI044 GPI044, SD1_ CCMD_PAD, GMAC_RMII_CLK_PAD 44 GPI045 GPI045, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPI046 GPI046, SD1_CDATA5_PAD, GMAC_PHY_RXD0_PAD 46 GPI047 GPI047, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPI048 GPI04 8, SD1_ CDA TA7_PAD, GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	33	GP1036	(Default 1035, 36 pull-up to enter SPI Boot mode)		
G PIO39 G PIO39 , SD1_CDATAO_PAD, REF_50M_CLK_PAD GPIO40 GPIO40, SD1_CDATA1_ P AD, GMAC_PHY_TXEN_PA D GPIO41 GPIO41, SD1_CDATA2_PAD, GMAC_PHY_TXD0_PAD GPIO42 , S D1_ CDATA3_PAD, GMAC_PHY_TXD1_PAD GPIO43 GPIO43, SD1_CCLK_PAD , GMAC_PHY_TXD1_PAD GPIO44 GPIO43, SD1_CCLK_PAD , GMAC_PHY_TXER_PAD GROUND GPIO45 GPIO44, SD1_ CCMD_PAD, GMAC_RMII_CLK_PAD GPIO45 GPIO45, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD GPIO46 GPIO47, SD1_CDATA5_PAD, GMAC_PHY_RX DV_PAD GPIO47 GPIO47, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD GPIO48 GPIO48, SD1_ CDA TA7_PAD , GMAC_PHY_RXER_PAD GPIO49 GPIO49, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	34	GPI037	GPI037, UARTO_TXD, GPSPI SPI2 107		
37 GPI040 GPI040, SD1_CDATA1_ P AD, GMAC_PHY_TXEN_PA D 38 GPI041 GPI041, SD1_CDATA2_PAD, GMAC_PHY_TXD0_PAD 39 GPI0 42 GPI042, S D1_ CDATA3_PAD, GMAC_PHY_TXD1_PAD 40 GPI043 GPI043, SD1_CCLK_PAD, GMAC_PHY_TXER_PAD 41 VCC POWER 42 GND GROUND 43 GPI044 GPI044, SD1_ CCMD_PAD, GMAC_ RMII_CLK_PAD 44 GPI045 GPI045, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPI046 GPI046, SD1_CDATA5_PAD, GMAC_PHY_RXD0_PAD 46 GPI047 GPI047, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPI048 GPI04 8, SD1_ CDA TA7_PAD, GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	35	GP1038	GPI038, UARTO_RXD, GPSPI SPI2 DQS		
38 GPI041 GPI041, SD1_CDATA2_PAD, GMAC_PHY_TXD0_PAD 39 GPI0 42 GPI042, S D1_ CDATA3_PAD, GMAC_PHY_TXD1_PAD 40 GPI043 GPI043, SD1_CCLK_PAD, GMAC_PHY_TXER_PAD 41 VCC POWER 42 GND GROUND 43 GPI044 GPI044, SD1_ CCMD_PAD, GMAC_RMII_CLK_PAD 44 GPI045 GPI045, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPI046 GPI046, SD1_CDATA5_PAD, GMAC_PHY_RXD0_PAD 46 GPI047 GPI047, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPI048 GPI04 8, SD1_ CDA TA7_PAD, GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	36	GP1039	G PIO39 , SD1_CDATAO_PAD, REF_50M_CLK_PAD		
39 GPIO 42 GPIO42 , S D1_ CDATA3_PAD, GMAC_PHY_TXD1_PAD 40 GPIO43 GPIO43, SD1_CCLK _PAD , GMAC_PHY_ TXER_PAD 41 VCC POWER 42 GND GROUND 43 GPIO44 GPIO44, SD1_ CCMD_PAD, GMAC_ RMII_CLK_PAD 44 GPIO45 GPIO45, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPIO46 GPIO46, SD1_CDATA5_PAD, GMAC_PHY_RXD0_PAD 46 GPIO47 GPIO47, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPIO48 GPIO4 8, SD1_ CDA TA7_PAD , GMAC_PHY_RXER_PAD 48 GPIO49 GPIO49, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	37	GPI040	GPIO40, SD1_CDATA1_ P AD, GMAC_PHY_TXEN_PA D		
40 GPI043 GPI043, SD1_CCLK _PAD , GMAC_PHY_ TXER_PAD 41 VCC POWER 42 GND GROUND 43 GPI044 GPI044, SD1_ CCMD_PAD, GMAC_ RMII_CLK_PAD 44 GPI045 GPI045, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPI046 GPI046, SD1_CDATA5_PAD, GMAC_PHY_RXD0_PAD 46 GPI047 GPI047, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPI048 GPI04 8, SD1_ CDA TA7_PAD , GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	38	GPI041	GPIO41, SD1_CDATA2_PAD, GMAC_PHY_TXD0_PAD		
41 VCC POWER 42 GND GROUND 43 GPI044 GPI044, SD1_ CCMD_PAD, GMAC_ RMII_CLK_PAD 44 GPI045 GPI045, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPI046 GPI046, SD1_CDATA5_PAD, GMAC_PHY_RXDO_PAD 46 GPI047 GPI047, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPI048 GPI048, SD1_ CDA TA7_PAD , GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	39 GPIO 42 GPIO42 , S D1_ CDATA3_PAD, GN		GPIO42, S D1_ CDATA3_PAD, GMAC_PHY_TXD1_PAD		
42 GND GROUND 43 GPI044 GPI044, SD1_ CCMD_PAD, GMAC_ RMII_CLK_PAD 44 GPI045 GPI045, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPI046 GPI046, SD1_CDATA5_PAD, GMAC_PHY_RXD0_PAD 46 GPI047 GPI047, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPI048 GPI04 8, SD1_ CDA TA7_PAD , GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	40	GPI043	GPIO43, SD1_CCLK _PAD , GMAC_PHY_ TXER_PAD		
43 GPI044 GPI044, SD1_ CCMD_PAD, GMAC_ RMII_CLK_PAD 44 GPI045 GPI045, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPI046 GPI046, SD1_CDATA5_PAD, GMAC_PHY_RXD0_PAD 46 GPI047 GPI047, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPI048 GPI04 8, SD1_ CDA TA7_PAD , GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	41	VCC	POWER		
44 GPI045 GPI045, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD 45 GPI046 GPI046, SD1_CDATA5_PAD, GMAC_PHY_RXD0_PAD 46 GPI047 GPI047, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPI048 GPI04 8, SD1_ CDA TA7_PAD , GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	42 GND GROUND		GROUND		
45 GPI046 GPI046, SD1_CDATA5_PAD, GMAC_PHY_RXD0_PAD 46 GPI047 GPI047, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPI048 GPI04 8, SD1_ CDA TA7_PAD , GMAC_PHY_RXER_PAD 48 GPI049 GPI049, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	43	GPI044	GPIO44, SD1_ CCMD_PAD, GMAC_ RMII_CLK_PAD		
46 GPIO47 GPIO47, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PAD 47 GPIO48 GPIO4 8, SD1_ CDA TA7_PAD , GMAC _PHY_RXER_PAD 48 GPIO49 GPIO49, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	44	GPI045	GPIO45, SD1_ CDATA 4_PAD, GMAC_PHY_RX DV_PAD		
47 GPIO48 GPIO4 8, SD1_ CDA TA7_PAD , GMAC _PHY_RXER_PAD 48 GPIO49 GPIO49, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	45	GPI046	GPIO46, SD1_CDATA5_PAD, GMAC_PHY_RXDO_PAD		
48 GPIO49 GPIO49, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2	46	46 GPIO47 GPIO47, SD1_CDATA6_PAD, GMAC_PHY_RXD1_PA			
	47	GPI048	GPIO4 8, SD1_ CDA TA7_PAD , GMAC _PHY_RXER_PAD		
49 GPIO50 GPIO50, GMAC_RMII_CLK_PAD, ADC2_CHANNEL3	48	GPI049	GPIO49, GMAC_PHY_TXEN_PAD, ADC2_CHANNEL2		
	49	49 GP1050 GP1050, GMAC_RMII_CLK_PAD, ADC2_CHANN			
50 GPIO51 GPIO51, GMAC_PHY_RXDV_PAD, ADC2_CHANNEL4, ANA_COMPO	50	GPI051	GPIO51, GMAC_PHY_RXDV_PAD, ADC2_CHANNEL4, ANA_COMPO		
51 GPIO52 GPIO52, GMAC_PHY_RXDO_PAD, ADC2_CHANNEL5, ANA_COMPO	51 GPI052 GPI052, GMAC_PHY_RXD0_PAD, ADC2_CHANNEL5,		GPIO52, GMAC_PHY_RXDO_PAD, ADC2_CHANNEL5, ANA_COMPO		
52 GPI053 GPI053, GMAC_PHY_RXD1_PAD, ADC2_CHANNEL6, ANA_COMP1	52	GPI053	GPIO53, GMAC_PHY_RXD1_PAD, ADC2_CHANNEL6, ANA_COMP1		

53	GND	GROUND	
54	GPI054	GPI054, GMAC_PHY_RXER_PAD, ADC2_CHANNEL7, ANA_COMP1	
55	GPI02	GPIO2, MTCK, LP_GPIO 2, TOUCH_CHANNELO	
56	GPI03	GPIO3, MTDI, LP_GPIO 3, TOUCH_CHANNEL1	
57	GPI04	GPIO4, MTMS, LP_GPIO4, TOUCH_CHANNEL2	
58	GPI05	GPIO5, MTDO, LP_GPIO5, TOUCH_CHANNEL3	
59	GPI06	GPIO6, SPI2_HOLD_PAD, LP_GPIO6, TOUCH_CHANNEL4	
60	GPIO7	GPIO7, SPI2_CS_PAD, LP_GPIO7, TOUCH_CHANNEL5	
61	GPI08	GPIO8, UARTO_RTS_PAD, SPI2_D_PAD, LP_GPIO8, TOUCH_CHANNEL6	
62	GPI09	GPIO9, UARTO_CTS_PAD, SPI2_CK_PAD, LP_GPIO9, TOUCH_CHANNEL7	
63	GPI010	GPI010, UART1_TXD_PAD, SPI2_Q_PAD, LP_GPI010, TOUCH_CHANNEL8	
64	GND	GROUND	
65	GPI011	GPI011, UART1_RXD_PAD, SPI2_WP_PAD, LP_GPI011, TOUCH_CHANNEL9	
66	GPI012	GPI012, UART1_RTS_PAD , LP_GPI012, TOUCH_CHANNEL10	
67	GPI013	GPI013, UART1_CTS_PAD, LP_GPI013, TOUCH_CHANNEL11	
68	GPI014	GPI014, LP_GPI014, LP_UART_TXD_PAD, TOUCH_CHANNEL12	
69	GPI015	GPIO15, LP_GPIO15, LP _UART_R XD_PA D, TOUCH_CHANNEL13	
70	CHIP_PU	Enable P4 chip (internal 10K pull-up)	
71	GPI00	GPIOO, LP_GPIOO , XTAL_32K_N	
72	GPIO 1	GPIO1, LP_GPIO1, XTAL_32K_P	
73	GND	GROUND	
74	GPI016	GPI016, ADC1_CHANNEL0	
75	GPI017	GPI017, ADC1_CHANNEL1	
76	GPI018	GPI018, ADC1_CHANNEL2	
77	GPI019	GPI019, ADC1_CHANNEL3	
78	GPI020	GPI020, ADC1_CHANNEL4	
79	GPI021	GPIO21, ADC1_CHANNEL5	
80	GPI022	GPI022, ADC1_CHANNEL6	
81	GPI023	GPI023, ADC1_CHANNEL7, REF_50M_CLK_PAD	

82	GND	GROUND
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3.2 WT0132P4-A1 Core Board Dimensions



4. Electrical Characteristics

Parameter	Min	Тур	Max	Unit
Input Voltage	-	5	-	V
Operating Temperature	-40	-	85	$^{\circ}$