# YADAN v1.0.1

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## REVISION HISTORY

| Date | Author | Version | Comments |
|---|---|---|---|
| 2019.11.19 | VeriMake | 0.1 | Initial Release |
| 2019.11.29 | VeriMake | 1.0 | |
| 2021.12.28 | VeriMake | 1.0.1 | |
| | | | |
| | | | |

Title: Cover
**YADAN v1.0.1**

Size: A3
Document Number: <Doc>
Rev: 1.0

# Power

TP6 3V3
L1 2.2UH
U1 EA3036

| Pin | Signal |
|---|---|
| 11 | SW1 |
| 14 | FB1 |
| 6 | SW2 |
| 3 | FB2 |
| 20 | SW3 |
| 2 | FB3 |
| 10 | VIN1 |
| 7 | VIN2 |
| 19 | VIN3 |
| 16 | VCC |
| 9 | EN1 |
| 8 | EN2 |
| 18 | EN3 |
| 17/4/13/15 | AGND |

C1 10UF  R2 680K  C2 18PF
R1 150K
1V2
TP7  C8 10UF  R4 150K  L2 2.2UH  C9 18PF
R5 150K
VESP_3V3
TP8  C11 10UF  R6 680K  L3 2.2UH  C12 18PF
R9 150K

5V
C4 10UF  C6 10UF  C7 10UF
C10 100NF

GND1 GND2 GND3 PAD
12 5 1 21

R1,R5,R9=150K
R4=150K;Vout=1.2V
R4=300K;Vout=1.8V
R4=680K;Vout=3.3V

5V  R21 4.7K  LED2  RED0603

# USB JTAG

USBCOM_P
USBCOM_N
U2 CH340E
C3 100NF
KEY1_RST

| Pin | Signal | | Signal | Pin |
|---|---|---|---|---|
| 1 | UD+ | V3 | 10 | |
| 2 | UD- | RXD | UART_RX 9 | |
| 3 | GND | TXD | UART_TX 8 | |
| 4 | RTS | VCC | 7 | |
| 5 | CTS | TNOW | 6 | |

3V3  C5 100NF

D1 AZ1045-04F
USBCOM_N 1 ... 10 USBCOM_N
USBCOM_P 2 ... 9 USBCOM_P
GNDGND 3 8

VBUS_5V  D2 DSK22

J1 USB_COM
VBUS M1 6
D- M2 7
D+ M3 8
ID M4 9
GND M5 10
M6 11

U2 GD32F150Gx (GD32F150G...)
R7 10K  BOOT  24M  24M
R12 1.5K
C13 18PF  C14 100NF
BOOT0 1
OSC_IN 2
OSC_OUT 3
NRST 4
VDDA 5
PA0 6
PA1 7
...
USBPUL  R3 1.5K
PA12 20 USBDP R8 22R USB_D+
PA11 19 USBDM R10 22R USB_D-
PA10 18 R11 0R USART_RX
PA9 17 LINK_STATE R13 0R USART_TX
PB1 16
PB0 15  3V3

R14 4.7K
3V3  R19 4.7K  R20 4.7K
LED1 BLUE0603

UART_TX R15 1.5K  R16 0R/NC ARM_TX
UART_RX R17 1.5K  R18 0R/NC ARM_RX
FPGA_RX
FPGA_TX

JTAG_TDO  JTAG_TDO
JTAG_TMS  JTAG_TMS
JTAG_TDI  JTAG_TDI
JTAG_TCK  JTAG_TCK

TP1 3V3
BOOT  TP2
USART_RX  TP3
USART_TX  TP4
TP5

# DVP Interface

J3 DVP_24_FPC-0.5-24P

| Pin | Signal | | Pin | Signal |
|---|---|---|---|---|
| 1 | Y0 | d0 | | |
| 2 | Y1 | d1 | | |
| 3 | Y4 | d4 | | |
| 4 | Y3 | d3 | | |
| 5 | Y5 | d5 | | |
| 6 | Y2 | d2 | | |
| 7 | Y6 | d6 | | |
| 8 | PCLK | d7 | | |
| 9 | Y7 | | | |
| 10 | DGND | d8 | | |
| 11 | Y8 | | | |
| 12 | XCLK | d9 | | |
| 13 | Y9 | | | |
| 14 | DOVDD | | | |
| 15 | DVDD | 1V2 | | |
| 16 | HREF | HREF | | |
| 17 | PWDN | PWDN | | |
| 18 | VSYNC | VSYNC | | |
| 19 | RESET | CAMRST | | |
| 20 | SIO_C | CAMSIOC | | |
| 21 | AVDD | AVDD | | |
| 22 | SIO_D | CAMSIOD | | |
| 23 | AGND | | | |
| 24 | NC | | | |

PCLK  XCLK  d[9:0]
VESP_3V3
FB1 BLM18AG601SN1  VESP_3V3
C15 100NF
PAD1 M1
PAD2 M2

# USB-C

J1 Type-C

VBUS_5V  A4 VBUS
A5 CC1  SBU2 B8
USB_D+ A6 D0+  D- B7  USB_D-
USB_D- A7 D0-  D+ B6  USB_D+
A8 SBU1  CC2 B5
A1 GND  VBUS B4  VBUS_5V
GND B1
SH1 SH2 SH3 SH4
R22 5.1K  R23 5.1K

VBUS_5V  F1 1A/6V/0603L100SL  5V

D3 AZ1045-04F
USB_D+ 1 ... 10 USB_D+
USB_D- 2 ... 9 USB_D-
GNDGND 3 8

Title: POWER_JTAG_WIFI  YADAN v1.0.1
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# FPGA

**U4A**
BANK IO

| | |
|---|---|
| FPGA_D0 | 2 IO_L1_1 |
| FPGA_D1 | 3 IO_L2_1 |
| FPGA_D2 | 4 IO_L1N_1 |
| FPGA_D3 | 5 IO_L1P_1 |
| FPGA_D4 | 10 IO_L4_1 |
| FPGA_D5 | 11 IO_L5_1,GCLKIOL_2 |
| FPGA_D6 | 12 IO_L6_1,GCLKIOL_5 |
| FPGA_D7 | 13 IO_L7_1,GCLKIOL_4 |
| FPGA_B0 | 14 IO_L8_1 |
| FPGA_B1 | 16 IO_L1N_2 |
| FPGA_B2 | 17 IO_L1P_2 |
| FPGA_B3 | 18 IO_L1_2 |
| FPGA_B4 | 19 IO_L2_2 |
| FPGA_B5 | 23 IO_B1_3 |
| d0 | 27 IO_B4_3 |
| d1 | 28 IO_BE1N_3 |
| d4 | 29 IO_BE1P_3 |
| d3 | 30 IO_B5_3 |
| d5 | 31 IO_B6_3 |
| d2 | 32 IO_BE2P_3 |
| d6 | 33 IO_BE2N_3 |
| 24M | 34 IO_B7_3,GCLKIOB_5 |
| PCLK | 35 IO_B1_4,GCLKIOB_2 |
| d7 | 37 IO_BE1P_4 |
| XCLK | 39 IO_BE1N_4 |
| d9 | 40 IO_B2_4 |
| HREF | 41 IO_BE2N_4 |
| PWDN | 42 IO_BE2P_4 |
| HSWAPEN | 44 IO_B3_4 |
| | IO_B4_4,HSWAPEN |

| | |
|---|---|
| IO_TE1N_8,D2,ADC_CH_6 | 87 FPGA_A5 |
| IO_TE1P_8,D1,ADC_CH_5 | 86 FPGA_A4 |
| IO_T8_7,GCLKIOB_0 | 79 fpga_hold |
| IO_T2P_7,GCLKIOT_5 | 78 fpga_wp |
| IO_TE2N_7,GCLKIOT_4 | 77 USER_mosi |
| IO_T7_7,D5 | 76 USER_cclk |
| IO_T6_7,GCLKIOT_7 | 75 USER_hold |
| IO_T5_7,D6 | 74 USER_wp |
| IO_T4_7,D7 | 72 USER_miso |
| IO_TE1N_7,D4 | 71 USER_cs |
| IO_TE1P_7,D3 | 70 FPGA_C5 |
| IO_R4_6 | 66 FPGA_C4 |
| IO_R2P_6 | 64 FPGA_C3 |
| IO_R2N_6 | 63 FPGA_C2 |
| IO_R3_6 | 62 FPGA_C1 |
| IO_R1N_6 | 61 FPGA_C0 |
| IO_R1P_6 | 60 FPGA_A3 |
| IO_R2_6 | 59 FPGA_A2 |
| IO_R1_6,GCLKIOR_4 | 57 FPGA_A1 |
| IO_R3P_5,GCLKIOR_1 | 55 FPGA_A0 |
| IO_R3N_5,GCLKIOR_5 | 54 FPGA_RX |
| IO_R3_5 | 52 FPGA_TX |
| IO_R2_5 | 51 FPGA_KEY1 |
| IO_R2N_5 | 50 FPGA_KEY2 |
| IO_R2P_5 | 49 CAMSIOD |
| IO_R1N_5 | 48 CAMSIOC |
| IO_R1P_5 | 47 CAMRST |
| IO_R1_5 | 45 VSYNC |

**CONFIG**

| | |
|---|---|
| IO_L3_1,DONE | 8 DONE |
| IO_T2_7,INIT_N | 68 INITN |
| IO_T1_7,PROGRAM_B | 67 PROGRAM |
| IO_T_8,CCLK | 82 fpga_cclk |
| IO_T_8,MOSI | 81 fpga_mosi |
| IO_T_8,D0,MISO | 80 fpga_miso |
| IO_T3_7,CSO_B | 69 fpga_cs |

MSEL
R26 4.7K M0 83 IO_T_8,M0
R30 4.7K M1 84 IO_T_8,M1,ADC_CH_0

JTAG_TDO 21 IO_L3_2,TDO
JTAG_TMS 22 IO_L4_2,TMS
JTAG_TDI 25 IO_B2_3,TDI
JTAG_TCK 26 IO_B3_3,TCK

ES4S20NG88

d[9:0]

R24 4.7K/NC
R28 4.7K

R24 R28只焊其中一个
R24焊接，复位后未使用IO口为高阻态
R28焊接，复位后未使用IO为弱上拉(默认)

# Memory

**U5 SPIFLASH**
| | | | |
|---|---|---|---|
| fpga_cs | 1 CS | VCC 8 | |
| fpga_miso | 2 MISO | HOLD 7 | fpga_hold |
| fpga_wp | 3 WP | CLK 6 | fpga_cclk |
| | 4 GND | MOSI 5 | fpga_mosi |

**U6 SPIFLASH**
| | | | |
|---|---|---|---|
| USER_cs | 1 CS | VCC 8 | |
| USER_miso | 2 MISO | HOLD 7 | USER_hold |
| USER_wp | 3 WP | CLK 6 | USER_cclk |
| | 4 GND | MOSI 5 | USER_mosi |

3V3 C16 100NF
3V3 C18 100NF

# OSC

**Y1**
| | |
|---|---|
| 1 NC | VDD 4 |
| 2 GND | OUT 3 24M |

C17 100NF

**U4B ES4S20NG88**
88 VCCAUX VCC 36
7,9 VCCIO1 VCC 56
15,20 VCCIO2 VCC
24,43 VCCIO3
46,53 VCCIO4
58,65 VCCIO5
73,85 VCCIO6
VCCIO7
VCCIO8 GND 6
EPAD 89

# Fliter

C19 C20 C21 C22 C23 C25 C26 C27 C28 C29 C30 C31 — 100NF
C32 C33 C34 — 100NF

DONE 2 LED3 1 R27 470R Yellow0603
R25 4.7K
R29 10K
R31 4.7K
PROGRAM

SW1 HCH_STS-A5

LED4 Yellow0603 FPGA_TX R32 1.5K
LED5 Green0603 FPGA_RX R33 1.5K

# Arduino

**JP1 A2545WV-08P**
5V VESP_3V3
R38 0R
R40 0R/NC
IOREF
KEY1_RST
VESP_3V3

**JP2 A2545WV-10P**
| 10 | JP_SCL | 4 | 5 FPGA_A4 |
| 9 | JP_SDA | 3 | 6 FPGA_A5 |
| 8 | JP_B5 | 2 | 7 FPGA_B5 |
| 7 | JP_B4 | 1 | 8 FPGA_B4 |
| 4 | JP_B3 | 5 | 5 FPGA_B3 |
| 3 | JP_B2 | 3 | 6 FPGA_B2 |
| 2 | JP_B1 | 2 | 7 FPGA_B1 |
| 1 | JP_B0 | 1 | 8 FPGA_B0 |

R41 2.2K LED6 Red0603
FPGA_A4 B4

**JP4 A2545WV-06P**
1 FPGA_A0
2 FPGA_A1
3 FPGA_A2
4 FPGA_A3
5 FPGA_A4 ADC_CH5
6 FPGA_A5 ADC_CH6

**JP5 A2545WV-08P**
| 1 | JP_D0 | 1 | 8 FPGA_D0 |
| 2 | JP_D1 | 2 | 7 FPGA_D1 |
| 3 | JP_D2 | 3 | 6 FPGA_D2 |
| 4 | JP_D3 | 4 | 5 FPGA_D3 |
| 5 | JP_D4 | 1 | 8 FPGA_D4 |
| 6 | JP_D5 | 2 | 7 FPGA_D5 |
| 7 | JP_D6 | 3 | 6 FPGA_D6 |
| 8 | JP_D7 | 4 | 5 FPGA_D7 |

KEY1_RST
R34 2.2K R35 2.2K
FPGA_KEY1
FPGA_KEY2 KEY1_RST
SW2 HCH_STS-A5
SW3 HCH_STS-A5

3V3
R36 R37 R42 R43 R44 R45 10K
SD_d1 FPGA_C0 8
SD_d0 FPGA_C1 7
SD_CLK FPGA_C2
SD_CMD FPGA_C3
SD_d3 FPGA_C4
SD_d2 FPGA_C5
C35 100NF
**J4 TF-SD**
SW1 10
SW2 9
R39 0R

FPGA_C4 TP9 TP12 FPGA_C5
FPGA_C2 TP10 TP13 FPGA_C3
FPGA_C0 TP11 TP14 FPGA_C1
TP15 TP16 3V3