深圳市必趣科技3D打印机G0B1项目

BIGTREETECH_HCB_V1.0_220520

SOC：_STM32MP175DAA1
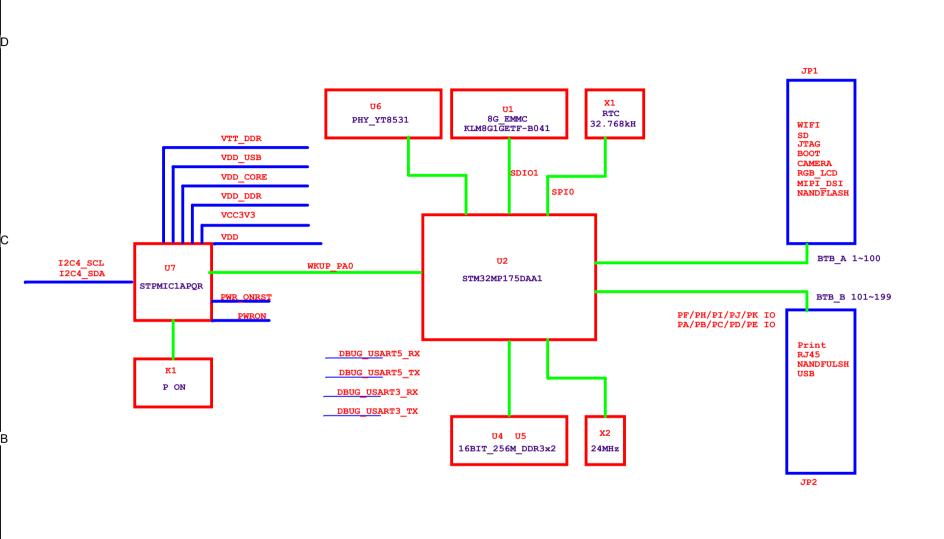DDR：_NT5CC256M16EP-EKI
EMMC：_KLM8G1GETF-B041
PHY：_YT8511C/H
DCDC：_STPMIC1APQR

BIGTREETECH_HCB_V1.0_220520

深圳市必趣科技有限公司

Title: BIGTREETECH_HCB_V1.0

Design

Bron Bai

Size: A4

Document Number: 02_Index

Rev: V1.0

U6
PHY_YT8531

U1
8G_EMMC
KLM8G1GETF-B041

X1
RTC
32.768kH

JP1

WIFI
SD
JTAG
BOOT
CAMERA
RGB_LCD
MIPI_DSI
NANDFLASH

VTT_DDR
VDD_USB
VDD_CORE
VDD_DDR
VCC3V3
VDD

SDIO1

SPI0

U7
STPMIC1APQR

I2C4_SCL
I2C4_SDA

WKUP_PA0

U2
STM32MP175DAA1

BTB_A 1~100

PWR_ONRST

PWRON

BTB_B 101~199

PF/PH/PI/PJ/PK IO
PA/PB/PC/PD/PE IO

K1
P ON

DBUG_USART5_RX
DBUG_USART5_TX
DBUG_USART3_RX
DBUG_USART3_TX

Print
RJ45
NANDFULSH
USB

U4   U5
16BIT_256M_DDR3x2

X2
24MHz

JP2
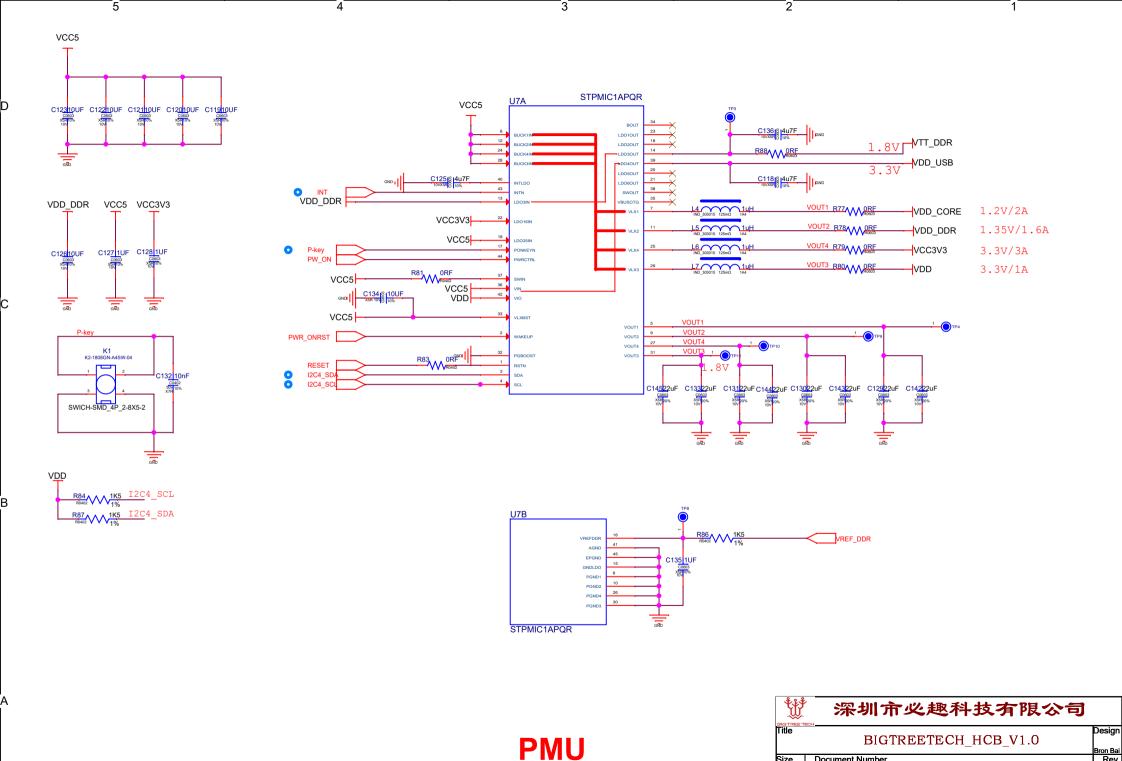
版本历史

版本	日期	修改者	修改说明	批准
V01	2022.02.15	JIANG KUN	初始花版本	
V02	2022.04.12	Byron Bai		

深圳市必趣科技有限公司

Title	BIGTREETECH_HCB_V1.0	Design
		Bron Bai
Size A4	Document Number 04_Revision History	Rev
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PMU

U2A

Pin Label	Pin
PA0	AA3
PA1	V4
PA2	AB2
PA3	T4
PA4	V6
PA5	U5
PA6	W9
PA7	Y9
PA8	B13
PA9	A11
PA10	Y17
PA11	Y16
PA12	W16
PA13	R3
PA14	R3
PA15	E11

Left-side signal labels:
- INT
- ETH_RX_CLK
- ETH_MDIO
- HDMI_RESET
- ADC118_DAC1
- ADC119_DAC2
- DCMI_PIXCLK
- ETH_RX_DV
- SDMMC2_D4 (EMMC)
- SDMMC2_D5
- OTG_ID
- I2C5_SCL
- I2C5_SDA
- BT_WAKEUP_HOST
- 6D_INT
- DSI_RESET

Pin Label	Pin
PB0	AB5
PB1	AA5
PB2	V13
PB3	A12
PB4	C13
PB5	AA8
PB6	W13
PB7	F11
PB8	AB8
PB9	F12
PB10	V9
PB11	Y5
PB12	AA7
PB13	V10
PB14	A13
PB15	B12

Left-side signal labels:
- ETH_RXD2
- ETH_RXD3
- UART4_RX
- SDMMC2_D2 (EMMC)
- SDMMC2_D3
- SPDIF_TX
- HDMI_CEC
- DCMI_VSYNC
- DCMI_D6
- SDMMC1_CDIR
- I2S_CK
- ETH_TX_EN
- USART5_RX
- USART5_TX
- SDMMC2_D0 (EMMC)
- SDMMC2_D1

Pin Label	Pin
PC0	U10
PC1	AB3
PC2	Y1
PC3	L3
PC4	AB6
PC5	AA6
PC6	E13
PC7	D13
PC8	E14
PC9	D14
PC10	F14
PC11	D15
PC12	E12
PC13	N2
PC14	P1
PC15	P2

Left-side signal labels:
- QSPI_BK2_NCS
- ETH_MDC
- ETH_TXD2
- I2S_SDO
- ETH_RXD0
- ETH_RXD1
- DSI_TE
- SDMMC1_D123DIR
- SDMMC1_D0
- SDMMC1_D1
- SDMMC1_D2
- SDMMC1_D3
- SDMMC1_CK
- GBC_KEY
- 32KHz_IN
- 32KHz_OUT

LFBGA448

STM32MP157SDAA1

Crystal circuit:
- 12PF C51
- X1 32.768KHz
- C52 12PF
- 32KHz_IN
- 32KHz_OUT

Title: BIGTREETECH_HCB_V1.0

Document Number: 07_MP157_SOC_B_PD/PE/PF

Size: A3
Rev: V1.0

Design: Bron Bai

Date: Friday, May 27, 2022

U2B — STM32MP157/SDMA1 — LFBGA448

Left net labels (PD group):
NAND_D2, NAND_D3, SDMMC1_CMD, SDMMC2_D7 (EMMC), NAND_NOE, NAND_NWE, NAND_NWAIT, SDMMC3_D3, USART3_TX, USART3_RX, uSD_DETECT, NAND_CLE, NAND_ALE, LCD_BL, NAND_D0, NAND_D1

PD0–PD15 pins: C10, B10, D12, B11, C9, A9, L3, F10, M1, M2, A8, AB9, W12, V14, M3, L1

Left net labels (PE group):
SAI2_MCLKA, DCMI_RESET, ETH_TXD3, SDMMC2_CK (EMMC), SDMMC1_CKIN (EMMC), SDMMC2_D6, DCMI_D7, NAND_D4, NAND_D5, NAND_D6, NAND_D7, DCMI_PWDN, SAI2_SCKB, SAI2_FSB, SAI2_MCLKB, T_MISO

PE0–PE15 pins: C5, D7, Y2, A10, F15, C12, E9, W10, Y12, W11, W14, D5, E4, A4, B4, C4

Left net labels (PF group):
SDMMC3_D0, SDMMC3_CMD, SDMMC1_D0DIR, LED1, SDMMC3_D1, SDMMC3_D2, UART7_RX, UART7_TX, UART7_RTS, UART7_CTS, QSPI_CLK, SAI2_SDB, CAN_FD_STBY, WIFI_REG_EN, I2C1_SCL, I2C1_SDA

PF0–PF15 pins: E10, B9, F13, V3, F9, D9, AA11, AA10, AB10, AB11, V12, W8, V8, W7, V7, W6

U2C

Net	Pin	Function
ETH_MDINT	PG0 / W5	PG0/DFSDM1_DATIN0/ETH1_GMII_TXD4/FMC_A10
WIFI_WKUP_HOST	PG1 / Y4	PG1/ETH1_GMII_TXD5/FMC_A11
USB_INT	PG2 / W4	PG2/MCO2/TIM8_BKIN/ETH1_GMII_TXD6/FMC_A12
KEY0	PG3 / U4	PG3/TIM8_BKIN2/DFSDM1_CKIN1/ETH1_GMII_TXD7/FMC_A13
ETH_GTX_CLK	PG4 / AB4	PG4/TIM1_BKIN2/ETH1_GMII_RGMII_GTX_CLK/FMC_A14
ETH_CLK125	PG5 / U8	PG5/TIM1_ETR/ETH1_GMII_RGMII_CLK125/FMC_A15
SDMMC2_CMD	PG6 / D11	PG6/TIM17_BKIN/SDMMC2_CMD/DCMI_D12/LCD_R7
QSPI_BK2_IO3	PG7 / Y11	PG7/SAI1_MCLK_A/USART6_CK/USART8_RTS_DE/QUADSPI_CLK/QUADSPI_BK2_IO3/DCMI_D13/LCD_CLK
ETH_CLK	PG8 / Y8	PG8/TIM2_CH1/TIM2_TIM8_ETR/ETH_CLK/SPI6_NSS/SAI4_D2/USART6_RTS_DE/USART3_NSS_DE/SPDIFRX/SAI4_FS_A/ETH1_PPS_OUT/LCD_G7
NAND_NCE	PG9 / W15	PG9/DBTRGO/USART6_RX/SPDIFRX_IN3/QUADSPI_BK2_IO2/SAI2_FS_B/FMC_NCE/FMC_NE2/DCMI_VSYNC/LCD_R1
QSPI_BK2_IO2	PG10 / AA9	PG10/UART8_CTS/LCD_G3/SAI2_SD_B/QUADSPI_BK2_IO2/FMC_NE3/DCMI_D2/LCD_B2
UART4_TX	PG11 / U11	PG11/USART1_UART4_TX/SPDIFRX_IN0/ETH1_GMII_MII_RMII_TX_EN/ETH1_RGMII_TX_CTL/DCMI_D3/LCD_B3
SPDIF_RX	PG12 / J4	PG12/LPTIM1_IN1/SPI6_MISO/SAI4_CK2/USART6_RTS_DE/SPDIFRX_IN1/LCD_B4/SAI4_SCK_A/ETH1_PHY_INTN/FMC_NE4/LCD_B1
ETH_TXD0	PG13 / AA1	PG13/LPTIM1_OUT/SAI1_CK2/SAI4_CK1/SPI6_SCK/SAI1_SCK_A/USART6_CTS_NSS/SAI4_MCLK_A/ETH1_GMII_MII_RGMII_RMII_TXD0/FMC_A24/LCD_R0
ETH_TXD1	PG14 / AA2	PG14/LPTIM1_ETR/SPI6_MOSI/SAI4_D1/USART6_TX/QUADSPI_BK2_IO3/SAI4_SD_A/ETH1_GMII_MII_RGMII_RMII_TXD1/FMC_A25/LCD_B0
SDMMC3_CK	PG15 / D10	PG15/SAI1_D2/I2C2_SDA/SAI1_FS_A/USART6_CTS_NSS/SDMMC3_CK/DCMI_D13
	PH0 / T1	PH0-OSC_IN
	PH1 / T2	PH1-OSC_OUT
QSPI_BK2_IO0	PH2 / AB7	PH2/LPTIM1_IN2/QUADSPI_BK2_IO0/ETH1_GMII_MII_CRS/LCD_R0
QSPI_BK2_IO1	PH3 / Y6	PH3/DFSDM1_CKIN4/QUADSPI_BK2_IO1/SAI2_MCLK_B/ETH1_GMII_MII_COL/LCD_R1
I2C2_SCL	PH4 / A3	PH4/I2C2_SCL/LCD_G5/LCD_G4
I2C2_SDA	PH5 / A2	PH5/I2C2_SDA/SPI5_NSS/SAI4_SD_B
HDMI_INT	PH6 / V11	PH6/TIM12_CH1/I2C2_SMBA/SPI5_SCK/ETH1_MII_RGMII_RXD2/MDIOS_MDIO/DCMI_D8
KEY1	PH7 / W2	PH7/I2C3_SCL/SPI5_MISO/ETH1_GMII_MII_RGMII_RXD3/MDIOS_MDC/DCMI_D9
DCMI_HSYNC	PH8 / D6	PH8/TIM5_ETR/I2C3_SDA/DCMI_HSYNC/LCD_R2
DCMI_D0	PH9 / E6	PH9/TIM12_CH2/I2C3_SMBA/DCMI_D0/LCD_R3
DCMI_D1	PH10 / B1	PH10/TIM5_CH1/I2C4_SMBA/I2C1_SMBA/DCMI_D1/LCD_R4
DCMI_D2	PH11 / B3	PH11/TIM5_CH2/I2C4_SCL/I2C1_SCL/DCMI_D2/LCD_R5
DCMI_D3	PH12 / F5	PH12/HDP2/TIM5_CH3/I2C4_SDA/I2C1_SDA/DCMI_D3/LCD_R6
CAN1_TX	PH13 / D3	PH13/TIM8_CH1N/UART4_TX/FDCAN1_TX/LCD_D2
DCMI_D4	PH14 / C2	PH14/TIM8_CH2N/UART4_RX/FDCAN1_RX/DCMI_D4/LCD_G3
CT_RST	PH15 / C1	PH15/TIM8_CH3N/DCMI_D11/LCD_G4
LED0	PI0 / D1	PI0/TIM5_CH4/SPI2_NSS_WS/DCMI_D13/LCD_G5
CT_INT	PI1 / E2	PI1/TIM8_BKIN2/SPI2_SCK_CK/DCMI_D8/LCD_G6
DSI_INT	PI2 / E1	PI2/TIM8_CH4/SPI2_MISO/I2S2_SDI/DCMI_D9/LCD_G7
RTC_INT	PI3 / E3	PI3/TIM8_ETR/SPI2_MOSI/I2S2_SDO/DCMI_D10
DCMI_D5	PI4 / J6	PI4/TIM8_BKIN/SAI2_MCLK_A/DCMI_D5/LCD_B4
SAI2_SCKA	PI5 / F2	PI5/TIM8_CH1/SAI2_SCK_A/DCMI_VSYNC/LCD_B5
SAI2_SDA	PI6 / G5	PI6/TIM8_CH2/SAI2_SD_A/DCMI_D6/LCD_B6
SAI2_FSA	PI7 / F1	PI7/TIM8_CH3/SAI2_FS_A/DCMI_D7/LCD_B7
GBC_LED	PI8 / N1	PI8/RTC_OUT2_LSCO/TAMP_IN2/TAMP_OUT3/WKUP4
CAN1_RX	PI9 / J5	PI9/HDP1/UART4_RX/FDCAN1_RX/LCD_VSYNC
ETH_NRST	PI10 / W1	PI10/HDP0/USART3_CTS_NSS/ETH1_GMII_MII_RX_ER/LCD_HSYNC
HOST_WAKEUP_BT	PI11 / T3	PI11/MCO1/I2S_CKIN/LCD_G6/WKUP5
LCD_HSYNC	PI12 / H2	PI12/HDP0/LCD_HSYNC
LCD_VSYNC	PI13 / H1	PI13/HDP1/LCD_VSYNC
LCD_CLK	PI14 / D2	PI14/LCD_CLK
LCD_R0	PI15 / F3	PI15/LCD_G2/LCD_R0

STM32MP157DAA1   LFBGA448

PW_ON

VDD

EMMC

GND

C55 8PF   C0201A   05PF

R38 10R   1%

C53 100nF   C0201A X7R10% 25V

C54 8PF   C0201A 05PF

R39 10K   R0201   1%

X2 3.3V 24M 20PPM
1 EN   VCC 4
2 GND   OUT 3

R41 1K   R0201   1%

GND

Title: BIGTREETECH_HCB_V1.0

深圳市必趣科技有限公司

BIGTREE TECH

Design
Bron Bai

Size: A4

Document Number: 08_MP157_SOC_C_PG/PH/PI

Rev: V1.0

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U2D

Signal	Pin	Ball	Function
LCD_R1	PJ0	J2	PJ0/LCD_R7/LCD_R1
LCD_R2	PJ1	L6	PJ1/LCD_R2
LCD_R3	PJ2	K4	PJ2/DSI_TE/LCD_R3
LCD_R4	PJ3	J1	PJ3/LCD_R4
LCD_R5	PJ4	K2	PJ4/LCD_R5
LCD_R6	PJ5	K1	PJ5/HDP2/LCD_R6
LCD_R7	PJ6	L5	PJ6/HDP3/TIM8_CH2/LCD_R7
LCD_G0	PJ7	L4	PJ7/TIM8_CH2N/LCD_G0
LCD_G1	PJ8	H6	PJ8/TIM1_CH3N/TIM8_CH1/UART8_TX/LCD_G1
LCD_G2	PJ9	L2	PJ9/TIM1_CH3/TIM8_CH1N/UART8_RX
LCD_G3	PJ10	J3	PJ10/TIM1_CH2N/TIM8_CH2/SPI5_MOSI/LCD_G3
LCD_G4	PJ11	K6	PJ11/TIM1_CH2/TIM8_CH2N/SPI5_MISO/LCD_G4
LCD_B0	PJ12	B8	PJ12/LCD_G3/LCD_B0
LCD_B1	PJ13	A7	PJ13/LCD_G4/LCD_B1
LCD_B2	PJ14	B7	PJ14/LCD_B2
LCD_B3	PJ15	C7	PJ15/LCD_B3
LCD_G5	PK0	D8	PK0/TIM1_CH1N/TIM8_CH3/SPI5_SCK/LCD_G5
LCD_G6	PK1	E7	PK1/TIM1_CH1/HDP4/TIM8_CH3N/SPI5_NSS/LCD_G6
LCD_G7	PK2	E8	PK2/TIM1_BKIN/HDP5/TIM8_BKIN/LCD_G7
LCD_B4	PK3	B6	PK3/LCD_B4
LCD_B5	PK4	A6	PK4/LCD_B5
LCD_B6	PK5	C6	PK5/HDP6_LCD_B6
LCD_B7	PK6	A5	PK6/HDP7/LCD_B7
LCD_DE	PK7	B5	PK7/LCD_DE
SPI1_SCK	PZ0	G2	PZ0/I2C6_I2C2_SCL/SPI1_SCK/I2S1_CK/USART1_CK/SPI6_SCK
SPI1_MISO	PZ1	H5	PZ1/I2C6_I2C2_I2C4_SDA/SPI1_SPI6_MISO/I2S1_SDI/USART1_RX
SPI1_MOSI	PZ2	K5	PZ2/I2C6_I2C2_SCL/I2C5_I2C4_SMBA/SPI1_SPI6_MOSI/I2S1_SDO/USART1_TX
SPI1_NSS	PZ3	F4	PZ3/I2C6_I2C2_I2C5_I2C4_SDA/SPI1_SPI6_NSS/I2S1_WS/USART1_CTS_NSS
I2C4_SCL	PZ4	G1	PZ4/I2C6_I2C2_I2C5_I2C4_SCL
I2C4_SDA	PZ5	H4	PZ5/I2C6_I2C2_I2C5_I2C4_SDA/USART1_RTS_DE
I2C6_SCL	PZ6	G3	PZ6/I2C6_I2C2_SCL/USART1_CK/I2S1_MCK/I2C4_SMBA/USART1_RX
I2C6_SDA	PZ7	H3	PZ7/I2C6_I2C2_SDA/USART1_TX

STM32MP175DAA1   LFBGA448

U2E

OTG_VBUS
USB1_N
USB1_P
USB2_N
USB2_P

V15 OTG_VBUS
AB15 USB_DM1
AA15 USB_DP1
AA14 USB_DM2
AB14 USB_DP2
AA17 USB_RREF

GND R46 3K
R0402 1%

BOOT0
BOOT1
BOOT2

N3 BOOT0
N4 BOOT1
P4 BOOT2

JTMS
JTCK
JTDI
JTDO
NJTRST

E17 JTMS-SWDIO
D17 JTCK-SWCLK
D16 JTDI
E16 JTDO-TRACESWO
E15 NJTRST

DSI_D0_P
DSI_D0_N
DSI_D1_P
DSI_D1_N
DSI_CK_P
DSI_CK_N

B15 DSI_D0_P
A15 DSI_D0_N
B17 DSI_D1_P
A17 DSI_D1_N
B16 DSI_CK_P
A16 DSI_CK_N

ANA0
ANA1

R4 ANA0
T5 ANA1

PW_ON
RESET
PWR_LP

V1 PWR_ON
R2 NRST
U1 PWR_LP

TP1 1

VDD

V2 PDR_ON
U2 PDR_ON_CORE

RESET R51 0R
R0201 1%
R1 NRST_CORE

GND R52 0R
R0402 1%
AA12 BYPASS_REG1V8

STM32MP173D/AA1
LFBGA448

PW_ON
VCC3V3

R44 10K
1%
R020?

R45 10KNC
1%
R020?

VD2 RB521S-30
DIO_SOD523
200mA

PWR_ONRST

RESET

C67 100nF
C0201A
X7R 10%
25V

GND

VCC3V3 R47 1K
R0402 1%
LED1 RED
LED0603
GND

GND

U2F
STM32MP175DAA1

VDD_CORE

VDD_CORE
VDDCORE30 H9
VDDCORE H11
VDDCORE27 H13
VDDCORE28 H15
VDDCORE38 J8
VDDCORE31 J10
VDDCORE33 J12
VDDCORE35 J14
VDDCORE49 K9
VDDCORE41 K11
VDDCORE43 K13
VDDCORE45 K15
VDDCORE57 L8
VDDCORE50 L10
VDDCORE52 L12
VDDCORE54 L14
VDDCORE60 M11
VDDCORE62 M13
VDDCORE64 M15
VDDCORE69 N12
VDDCORE71 N14
VDDCORE78 P13
VDDCORE80 P15
VDDCORE133 R14
VDDCORE132 T15

U14 VDD94 VDD
T13 VDD131
M9 VDD
N8 VDD73
N10 VDD67
P9 VDD85
P11 VDD76
R10 VDD86
R12 VDD87
U12 VDD92

E18 VDDQ_DDR88 VDD_DDR
F17 VDDQ_DDR
G16 VDDQ_DDR123
H17 VDDQ_DDR134
J16 VDDQ_DDR124
K17 VDDQ_DDR46
L16 VDDQ_DDR125
M17 VDDQ_DDR65
N16 VDDQ_DDR126
P17 VDDQ_DDR81
R16 VDDQ_DDR127
T17 VDDQ_DDR135
U16 VDDQ_DDR96
V17 VDDQ_DDR100
W18 VDDQ_DDR105
Y19 VDDQ_DDR112

AB13 VDD3V3_USBHS VDD_USB
AB16 VDD3V3_USBFS

A18 VDD1V2_DSI_PHY VDD_USB
B18 VDD1V2_DSI_REG

VBAT M4
VDD_OTP U9

R42 10R
VDDA R5
VREF+ P6
VREF- N6
VSSA R6
VSSA139 T6
VSSA140 U6

VDD_ANA N5
VDD_PLL M6
VDD_PLL2 D18
VDD_DSI A14

VDDA1V1_REG AB17
VDDA1V8_REG AB12
VDDA1V8_DSI B14

VBAT
VDD

BAT54C-7-F VD1
SOT-23
C56 100nF

VDD_CORE
C59 100nF
C60 1UF

VDDA_1V8
C62 1UF C63 100nF
C64 1UF C65 1UF C66 100nF

P5 VSS_ANA
M5 VSS_PLL
D19 VSS_PLL2
C14 VSS_DSI
C15 VSS_DSI12
C16 VSS_DSI13
C17 VSS_DSI14
C18 VSS_DSI15
Y13 VSS_USBHS108
Y14 VSS_USBHS109
Y15 VSS_USBHS110
AA13 VSS_USBHS3
AA16

LFBGA448

VDD_CORE
C68 10UF C69 1UF C70 1UF C71 1UF C72 1UF C73 1UF C74 1UF C75 1UF
C0402 10V 10% X5R
GND

VDD_CORE
C76 1UF C77 1UF C78 1UF C79 1UF C80 1UF C81 1UF C82 1UF
GND

VDD
C83 10UF C84 1UF C85 1UF C86 1UF C87 1UF C88 1UF C89 1UF C90 1UF
GND

VDD_DDR
C93 10UF C94 1UF C95 1UF C96 1UF C97 1UF C98 1UF C99 1UF C100 1UF C101 1UF
GND

C61 1UF
GND

C57 100nF
GND

VDDA_1V8 VDD
R48 100K
AO3401A Q1
SOT23
R49 10K
C91 100nF
Q2 AO3400
SOT23
R50 1K
C92 1UF
VDD_USB
GND

深圳市必趣科技有限公司
BIGTREE TECH

Title
BIGTREETECH_HCB_V1.0

Design
Bron Bai

Size A4
Document Number
11_MP157_SOC_F_VDD&VSS

Rev V1.0

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U2G

Pin	Left Signal		Right Signal	Pin
E21	DDR_DQ0	DDR_CLKP	DDR_CLK_P	N20
F21	DDR_DQ1	DDR_CLKN	DDR_CLK_N	N21
H21	DDR_DQ2			
E20	DDR_DQ3	DDR_A0	DDR_A0	K19
J21	DDR_DQ4	DDR_A1	DDR_A1	M18
H20	DDR_DQ5	DDR_A2	DDR_A2	J18
H22	DDR_DQ6	DDR_A3	DDR_A3	J19
G19	DDR_DQ7	DDR_A4	DDR_A4	T18
G22	DDR_DQS0P	DDR_A5	DDR_A5	H19
G21	DDR_DQS0N	DDR_A6	DDR_A6	U19
G20	DDR_DQM0	DDR_A7	DDR_A7	F18
		DDR_A8	DDR_A8	U18
N22	DDR_DQ8	DDR_A9	DDR_A9	H18
R21	DDR_DQ9	DDR_A10	DDR_A10	N18
P21	DDR_DQ10	DDR_A11	DDR_A11	P19
T20	DDR_DQ11	DDR_A12	DDR_A12	N19
V20	DDR_DQ12	DDR_A13	DDR_A13	G18
R20	DDR_DQ13	DDR_A14	DDR_A14	P18
U21	DDR_DQ14	DDR_A15	DDR_A15	M19
V21	DDR_DQ15			
T22	DDR_DQS1P	DDR_BA0	DDR_BA0	K20
R22	DDR_DQS1N	DDR_BA1	DDR_BA1	R18
T21	DDR_DQM1	DDR_BA2	DDR_BA2	K18
		DDR_RASN	DDR_RASN	M20
B21	DDR_DQ16	DDR_CASN	DDR_CASN	M22
D21	DDR_DQ17	DDR_CSN	DDR_CSN	L18
D22	DDR_DQ18	DDR_CKE	DDR_CKE	R19
B20	DDR_DQ19	DDR_WEN	DDR_WEN	M21
A20	DDR_DQ20	DDR_ODT	DDR_ODT	L21
E22	DDR_DQ21			
D20	DDR_DQ22	DDR_RESETN	DDR_RESETN	F19
A21	DDR_DQ23			
C21	DDR_DQS2P	DDR_VREF		AB19
B22	DDR_DQS2N			
C22	DDR_DQM2			
V22	DDR_DQ24	DDR_ZQ		K22
W20	DDR_DQ25			
AB21	DDR_DQ26	DDR_ATO		AA19
AB20	DDR_DQ27	DDR_DTO0		L22
AA21	DDR_DQ28	DDR_DTO1		K21
AA20	DDR_DQ29			
W22	DDR_DQ30			
W21	DDR_DQ31			
Y21	DDR_DQS3P			
Y22	DDR_DQS3N			
AA22	DDR_DQM3			

STM32MP157D/AA1   LFBGA448

C58
104
GND

VREF_DDR

R43 240R
1%
R0402
GND

VCC3V3

R1 10K
R0402 1%

U1 KLM8G1GETF-B041

Pin	Signal		Signal	Pin
A3	DATA0	VCC14		E6
A4	DATA1	VCC13		F5
A5	DATA2	VCC12		J10
B2	DATA3	VCC		K9
B3	DATA4	VCCQ11		C6
B4	DATA5	VCCQ10		M4
B5	DATA6	VCCQ9		N4
B6	DATA7	VCCQ8		P3
		VCCQ		P5
M5	CMD	VSSQ7		C4
M6	CLK	VSSQ6		N2
		VSSQ5		N5
C2	VDDI	VSSQ4		P4
K5	RST	VSSQ		P6
		VSS3		E7
		VSS2		G5
		VSS1		H10
		VSS		K8

BGA153__EMMC

VCC3V3

VCC3V3

SDMMC2_D0
SDMMC2_D1
SDMMC2_D2
SDMMC2_D3
SDMMC2_D4
SDMMC2_D5
SDMMC2_D6
SDMMC2_D7

VCC3V3

R90 10K R91 10K
R0402 1%   R0402 1%

SDMMC2_CMD
SDMMC2_CK

VCC3V3

R4   0RNC
R0402 1%

RESET   RESET   R5   0R
R0402 1%

R6 10K
R0402 1%

C5 1UF   C6 100nF
C0402   C0402
10V 10%   X7R 10%
X5R   25V

GND   GND

VCC3V3

GND

VCC3V3

C10 100nF	C9 100nF	C8 100nF	C7 100nF	C3 100nF	C1 100nF	C2 10UF	C4 10UF
C0402	C0402	C0402	C0402	C0402	C0402	C0402	C0402
X7R 10%	X7R 10%	X7R 10%	X7R 10%	X7R 10%	X7R 10%	10 10%	10 10%
25V	25V	25V	25V	25V	25V	X5R	X5R

GND

Title   **BIGTREETECH_HCB_V1.0**   Design
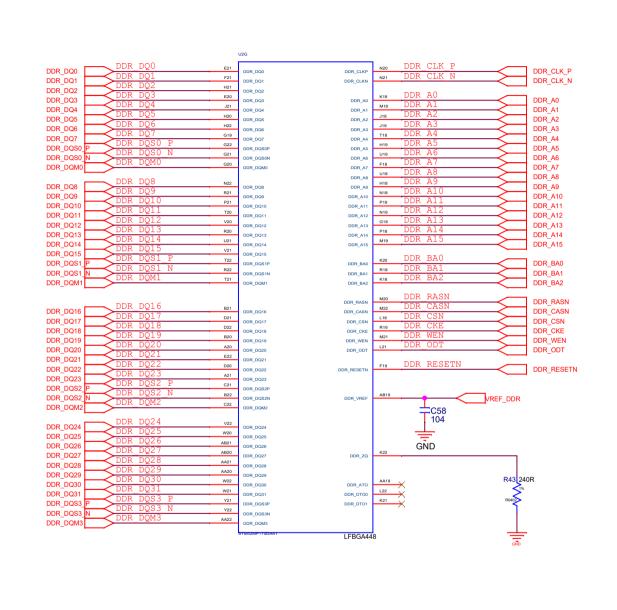
Bron Bai

Size A4   Document Number   13_EMMC   Rev V1.0

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VDDH

R53 4.7K 1% R0201
R54 4.7K 1% R0201
ETH_RXD2 ETH_RXD3

ETH_RXD0
ETH_RXD1

R57 4.7K 1% R0201
R58 4.7K 1% R0201
R59 4.7K 1% R0201
R0201
4.7K R55
VDDH

ETH_RX_CLK ETH_RX_DV

R60 4.7K 1% R0201
R61 4.7K 1% R0201
GND GND

VDDH VDDH VDDH
R63 4.7K 1% R0201
R64 4.7K 1% R0201
R65 4.7K 1% R0201

ETH_MDIO ETH_MDC ETH_MDINT

VDDH VDDH VDDH
R71 4.7K 1% R0201
R73 4.7K 1% R0201
R75 4.7K 1% R0201

ENET_YELLOW LED_100 LED_1000

C115 8PF 50V C0G 0.5PF GND
C116 8PF 50V C0G 0.5PF GND
X3
NX3225GA-25MHZ-STD-CRA-1
OSC_SMD-2016
RGMII_25M_IN
RGMII_25M_OUT

VDDH
C102 22uF C0603 X5R 20% 10V
C103 100nF C0402 X7R 10% 25V
C108 100nF C0402 X7R 10% 25V
GND

VCC3V3
L1 PZ1608U121-2R0TF 1A L0603
AVDD33
C104 22uF C0603 X5R 20% 10V
C105 100nF C0402 X7R 10% 25V
C106 22uF C0603 X5R 20% 10V
C107 100nF C0402 X7R 10% 25V
GND GND

DVDDL
L2 PZ1608U121-2R0TF 1A L0603
AVDDL DVDDL
C109 100nF C0402 X7R 10% 25V
C110 100nF C0402 X7R 10% 25V
C111 100nF C0402 X7R 10% 25V
C112 22uF C0603 X5R 20% 10V
C113 22uF C0603 X5R 20% 10V
C114 100nF C0402 X7R 10% 25V
GND GND

U6 YT8511C/H

Pin	Signal
29	RXD0
28	RXD1
26	RXD2
25	RXD3
31	RX_CLK
30	RX_DV
34	TXD0
35	TXD1
36	TXD2
37	TXD3
32	TX_EN
33	GTX_CLK
39	MDIO
40	MDC
20	INT
23	CLK_25M
5	XTAL_IN
4	XTAL_OUT
1	RESET_N

ETH_RXD0 ETH_RXD1 ETH_RXD2 ETH_RXD3
ETH_RX_CLK ETH_RX_DV
ETH_TXD0 ETH_TXD1 ETH_TXD2 ETH_TXD3
ETH_TX_EN
ETH_GTX_CLK
ETH_MDIO ETH_MDC ETH_MDINT
ETH_CLK125 R69 10R R0201 1%
ETH_CLK R70 10R R0201 1%
RGMII_25M_IN
RGMII_25M_OUT
ETH_NRST R72 0R R0201 1%
VDDH R74 10K R0201 1%
C117 1UF C0201A 6.3V 10% X5R
GND

VDDH_REG 8 VDDH
RBIAS 7 R56 2K4 R0402 1% GND
VDD33 3 VCC3V3
AVDD33 14 AVDD33
VDDIO 27 VDDH
DVDDL 38
AVDDL 6 AVDDL
AVDDL2 11
AVDDL1 17
DVDDL
LX 2 L3 4.7uH 125mΩ IND_303015 1A4 TP2
E-PAD 41 GND

TXP0 9 RJ45_D1_P
TXN0 10 RJ45_D1_N
TXP1 12 RJ45_D2_P
TXN1 13 RJ45_D2_N
TXP2 15 RJ45_D3_P
TXN2 16 RJ45_D3_N
TXP3 18 RJ45_D4_P
TXN3 19 RJ45_D4_N
LED_ACT 21 ENET_YELLOW
LED_10_100 24 LED_100
LED_1000 22 LED_1000

VCC3V3 Q3
ENET_GREEN_GBIT
R62 10K R0201 1% GND
LED_1000 R66 1K R0201 1%
R67 1K R0201 1% LED_100
GND R68 10K R0201 1% VCC3V3
ENET_GREEN ENET_GREEN
BC857BS

Pin	Signal
PA1	ETH_RX_CLK
PA2	ETH_MDIO
PA7	ETH_RX_DV
PB0	ETH_RXD2
PB1	ETH_RXD3
PB11	ETH_TX_EN
PC1	ETH_MDC
PC2	ETH_TXD2
PC4	ETH_RXD0
PC5	ETH_RXD1
PE2	ETH_TXD3
PG0	ETH_MDINT
PI10	ETH_NRST
PG4	ETH_GTX_CLK
PG5	ETH_CLK125
PG8	ETH_CLK
PG13	ETH_TXD0
PG14	ETH_TXD1

YT8511de
100M和1000M指示灯低电平有效
而底板是高电平有效
故在此对这2个信号进行反向。

DDR3x2

U4 — NT5CC256M16EP-EKI BGA96

U5 — NT5CC256M16EP-EKI BGA96

Left bus (U4):
DDR_A0, DDR_A1, DDR_A2, DDR_A3, DDR_A4, DDR_A5, DDR_A6, DDR_A7, DDR_A8, DDR_A9, DDR_A10, DDR_A11, DDR_A12, DDR_A13, DDR_A14
DDR_BA0, DDR_BA1, DDR_BA2
DDR_CSN, DDR_RASN, DDR_CASN, DDR_WEN, DDR_ODT
DDR_CLK_P, DDR_CLK_N, DDR_CKE, DDR_RESETN

DQ signals (U4):
DDR_DQ5, DDR_DQ2, DDR_DQ6, DDR_DQ4, DDR_DQ1, DDR_DQ7, DDR_DQ0, DDR_DQ3, DDR_DQ9, DDR_DQ15, DDR_DQ8, DDR_DQ11, DDR_DQ10, DDR_DQ12, DDR_DQ13, DDR_DQ14
DDR_DQS0_P, DDR_DQS0_N, DDR_DQS1_P, DDR_DQS1_N, DDR_DQM0, DDR_DQM1
VREF_DDR, ZQ1, DDR_A15

DQ signals (U5):
DDR_DQ23, DDR_DQ17, DDR_DQ20, DDR_DQ18, DDR_DQ22, DDR_DQ21, DDR_DQ16, DDR_DQ19, DDR_DQ25, DDR_DQ31, DDR_DQ24, DDR_DQ30, DDR_DQ27, DDR_DQ29, DDR_DQ28
DDR_DQS2_P, DDR_DQS2_N, DDR_DQS3_P, DDR_DQS3_N, DDR_DQM2, DDR_DQM3
VREF_DDR, ZQ2, DDR_A15

Resistors:
R24 240R, R16 240R, R23 10K, R89 10K
ZQ1, ZQ2, DDR_CKE, DDR_RESETN
VREF_DDR

Capacitors:
C37 100nF, C38 100nF, C42 100nF, C43 100nF

DDR_CLK_P — R37 100R — DDR_CLK_N

VTT_DDR, VDD_DDR, GND

Series termination resistors (left, U4):
R9 56R, R10 56R, R11 56R, R12 56R, R13 56R, R15 56R, R17 56R, R18 56R, R19 56R, R20 56R, R21 56R, R22 56R
DDR_A0 ... DDR_A11

Decoupling caps (left top): C33 100nF, C34 100nF, C35 100nF, C36 100nF, C39 100nF, C40 100nF, C41 100nF, C12 100nF
Decoupling caps (left bottom): C11 100nF, C12 100nF, C13 100nF, C14 100nF, C15 100nF, C16 100nF, C17 100nF, C18 100nF, C19 100nF, C20 100nF, C21 100nF, C137 100nF

Series termination resistors (right, U5):
R25 56R, R26 56R, R27 56R, R28 56R, R29 56R, R30 56R, R31 56R, R32 56R, R33 56R, R34 56R, R35 56R, R36 56R
DDR_A0 ... DDR_A11

Decoupling caps (right top): C44 100nF, C45 100nF, C46 100nF, C47 100nF, C48 100nF, C49 100nF, C50 100nF
Decoupling caps (right bottom): C22 100nF, C23 100nF, C24 100nF, C25 100nF, C26 100nF, C27 100nF, C28 100nF, C29 100nF, C30 100nF, C31 100nF, C32 100nF, C138 100nF, C139 100nF, C140 100nF, C141 100nF

JP1

WIFI
- BOOT2
- BOOT1
- BOOT0
- LCD_BL
- LCD_DE
- LCD_VSYNC
- LCD_HSYNC
- LCD_CLK
- T_MISO
- SDMMC3_D1
- SDMMC3_D3
- SDMMC3_D2
- SDMMC3_CK
- SDMMC3_CMD
- SDMMC3_D0

SD
- SDMMC1_CKIN
- SDMMC1_CDIR
- SDMMC1_D0DIR
- SDMMC1_D123DIR
- uSD_DETECT
- SDMMC1_CMD
- SDMMC1_CK
- SDMMC1_D0
- SDMMC1_D1
- SDMMC1_D3
- SDMMC1_D2

JTAG
- NJTRST
- JTCK
- JTDO
- JTDI
- JTMS

CAMERA
- DCMI_PWDN
- DCMI_D5
- DCMI_D3
- DCMI_D2
- DCMI_D1
- DCMI_D4
- DCMI_HSYNC
- DCMI_RESET
- DCMI_D0
- DCMI_D7
- DCMI_D6
- DCMI_PIXCLK
- I2C5_SDA
- DCMI_VSYNC
- I2C5_SCL

Left pins:
PD13, PK7, PI13, PI12, PI14, PE15, PF4, PD7, PF5, PG15, PF1, PF0, AP_INT / PE4, I2S_WS / PB9, 1WIRE_DQ / PF2, BEEP / PC7, PD10, PD2, PC12, PC8, PC9, PC11, PC10, PE11, PI4, PH12, PH11, PH10, PH14, PH8, PE1, PH9, PE6, PB8, PA6, PA12, PB7, PA11

GND

Right pins:
PI1, PH4, PI0, PH5, PH15, PK6, PK5, PK4, PK3, PJ15, PJ14, PJ13, PJ12, PK2, PK1, PK0, PJ11, PJ10, PJ9, PJ8, PJ7, PJ6, PJ5, PJ4, PJ3, PJ2, PJ1, PJ0, PI5, PI2, PA15, PC6, PD14, PD15, PD0, PD1, PD6, PD5, PD4

GND

Right side:
- CT_INT
- I2C2_SCL
- LED0
- I2C2_SDA
- CT_RST

RGB_LCD
- LCD_B7
- LCD_B6
- LCD_B5
- LCD_B4
- LCD_B3
- LCD_B2
- LCD_B1
- LCD_B0

RGB_LCD
- LCD_G7
- LCD_G6
- LCD_G5
- LCD_G4
- LCD_G3
- LCD_G2
- LCD_G1
- LCD_G0

RGB_LCD
- LCD_R7
- LCD_R6
- LCD_R5
- LCD_R4
- LCD_R3
- LCD_R2
- LCD_R1
- LCD_R0

- DSI_INT
- DSI_RESET
- DSI_TE

MIPI_DSI
- DSI_D0_N
- DSI_D0_P
- DSI_CK_N
- DSI_CK_P
- DSI_D1_N
- DSI_D1_P

NANDFLASH
- NAND_D0
- NAND_D1
- NAND_D2
- NAND_D3
- NAND_NWAIT
- NAND_NWE
- NAND_NOE

3710F_2*50

VBAT

JP2

VCC5

NANDFLASH

Print

3710F_2*50

Left labels	Pin	Pin	Center labels	Right labels
SAI2_FSB	PE13	1	100		
SAI2_MCLKB	PE14	2	99		
SAI2_SDA	PI6	3	98		
SAI2_SCKB	PE12	4	97		RJ45_D1_P
SAI2_SCKA	PI5	5	96		RJ45_D1_N
SAI2_MCLKA	PE0	6	95		RJ45_D2_P
SAI2_FSA	PI7	7	94		RJ45_D2_N
SAI2_SDB	PF11	8	93		
I2C4_SCL	PZ4	9	92		RJ45_D3_P
I2C4_SDA	PZ5	10	91		RJ45_D3_N
I2C6_SDA	PZ7 (AUDIO_INT)	11	90		RJ45_D4_P
I2C6_SCL	PZ6	12	89		RJ45_D4_N
		13	88		
		14	87		
GBC_LED	PI8	15	86		ENET_GREEN
GBC_KEY	PC13	16	85		ENET_YELLOW
KEY1	PH7	17	84	PI3	ENET_GREEN_GBIT
LED1	PF3	18	83	PI11	RTC_INT
KEY0	PG3	19	82	PG12	HOST_WAKEUP_BT
INT	PA0	20	81	PB5	SPDIF_RX
ANA0		21	80	PA13	SPDIF_TX
ANA1		22	79	PA14	BT_WAKEUP_HOST
ADC118_DAC1	PA4	23	78		6D_INT
ADC119_DAC2	PA5	24	77		
		25	76	PZ3	SPI1_NSS
QSPI_BK2_IO1	PH3	26	75	PZ2	SPI1_MOSI
QSPI_BK2_IO0	PH2	27	74	PZ1	SPI1_MISO
QSPI_BK2_IO2	PG10	28	73	PZ0	SPI1_SCK
QSPI_BK2_IO3	PG7	29	72	PF10 BT_REG_EN	QSPI_CLK
QSPI_BK2_NCS	PC0	30	71	PG1	WIFI_WKUP_HOST
I2S_SDO	PC3	31	70	PF7 QSPI_BK1_IO2	UART7_TX
I2S_CK	PB10	32	69	PF8 QSPI_BK1_IO0	UART7_RTS
HDMI_CEC	PB6 (QSPI_BK1_NCS)	33	68	PF9 QSPI_BK1_IO1	UART7_CTS
HDMI_RESET	PA3	34	67	PF6 QSPI_BK1_IO3	UART7_RX
HDMI_INT	PH6	35	66	PD9	USART3_RX
CAN_FD_STBY	PF12	36	65	PD8	USART3_TX
USB_INT	PG2	37	64	PB12	USART5_RX
I2C1_SDA	PF15	38	63	PB13	USART5_TX
I2C1_SCL	PF14	39	62	PH13	CAN1_TX
WIFI_REG_EN	PF13	40	61	PI9	CAN1_RX
PWR_ONRST		41	60	PB2	UART4_RX
RESET		42	59	PG11	UART4_TX
		43	58		
NAND_CLE	PD11	44	57		OTG_VBUS
NAND_D4	PE7	45	56		OTG_ID
NAND_D5	PE8	46	55	PA10	USB2_N
NAND_D6	PE9	47	54		USB2_P
NAND_ALE	PD12	48	53		USB1_N
NAND_D7	PE10	49	52		USB1_P
NAND_NCE	PG9	50	51		

PA1	ETH_RX_CLK
PA2	ETH_MDIO
PA7	ETH_RX_DV
PB0	ETH_RXD2
PB1	ETH_RXD3
PB11	ETH_TX_EN
PC1	ETH_MDC
PC2	ETH_TXD2
PC4	ETH_RXD0
PC5	ETH_RXD1
PE2	ETH_TXD3
PG0	ETH_MDINT
PI10	ETH_NRST
PG4	ETH_GTX_CLK
PG5	ETH_CLK125
PG8	ETH_CLK
PG13	ETH_TXD0
PG14	ETH_TXD1