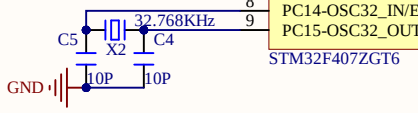
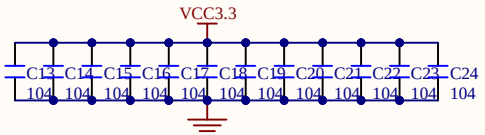
MCU_ABC

U1A

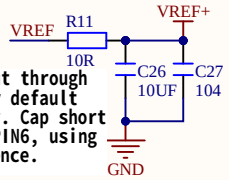
	WK_UP	PA0	34	PA0-WKUP/USART2_CTS/UART4_TX/ETH_MII_CRS/TMR2_CH1_ETR/TMR5_CH1/TMR8_ETR/WKUP/ADC123_IN0/EVENTOUT	
		PA1	35	PA1/USART2_RTS/UART4_RX/ETH_RMII_REF_CLK/ETH_MII_RX_CLK/TMR2_CH2/TMR5_CH2/ADC123_IN1/EVENTOUT	
		PA2	36	PA2/USART2_TX/TMR2_CH3/TMR5_CH3/TMR9_CH1/ETH_MDIO/ADC123_IN2/ETH_MDIO/EVENTOUT	
		PA3	37	PA3/USART2_RX/TMR2_CH4/TMR5_CH4/TMR9_CH2/OTG_HS_ULPI_D0/ETH_MII_COL/ADC123_IN3/DMC_CKE/ EVENTOUT	
	DCMI_HREF	PA4	40	PA4/SPI1_NSS/SPI3_NSS/USART2_CK/DCI_HSYNC/OTG_HS_SOF/I2S3_WS/DAC_OUT/ADC12_IN4/EVENTOUT	BOOT0
		PA5	41	PA5/SPI1_SCK/OTG_HS_ULPI_CK/TMR2_CH1_ETR/TMR8_CH1N/DAC2_OUT2/ADC12_IN5/EVENTOUT	
	DCMI_PCLK	PA6	42	PA6/SPI1_MISO/TMR1_BKIN/TMR3_CH1/TMR8_BKIN/TIM13_CH1/DCI_PIXCLK/ADC12_IN6/EVENTOUT	
		PA7	43	PA7/SPI1_MOSI/TMR1_CH1N/TMR3_CH2/TMR8_CH1N/TMR14_CH1/ETH_MII_RX_DV/ETH_RMII_CRS_DV/ADC12_IN7/EVENTOUT	VSS
	DCMI__XCLK	PA8	100	PA8/TMR1_CH1/USART1_CK/I2C3_SCL/MCO/OTG_FS_SOF/EVENTOUT	VSS
	USART1_TX	PA9	101	PA9/TMR1_CH2/USART1_TX/I2C3_SMBAI/OTG_FS_VBUS/DCI_D0/EVENTOUT	VSS
	USART1_RX	PA10	102	PA10/TMR1_CH3/USART1_RX/OTG_FS_ID/DCI_D1/EVENTOUT	VSS
	USB_D-	PA11	103	PA11/TMR1_CH4/USART1_CTS/CAN1_RX/OTG_FS_DM/EVENTOUT	VSS
	USB_D+	PA12	104	PA12/TMR1_ETR/USART1_RTS/CAN1_TX/OTG_FS_DP/EVENTOUT	VSS
	SWDIO	PA13	105	PA13/JTMS_SWDIO/EVENTOUT	VSS
	SWDCLK	PA14	109	PA14/JTCK_SWCLK/EVENTOUT	VSS
		PA15	110	PA15/JTDI/SPI1_NSS/SPI3_NSS/TMR2_CH1_ETR/I2S3_WS/EVENTOUT	VSS
	T_SCK	PB0	46	PB0/TMR1_CH2N/TMR3_CH3/TMR8_CH2N/OTG_HS_ULPI_D1/ETH_MII_RXD2/ADC12_IN8/EVENTOUT	VDD
	T_PEN	PB1	47	PB1/TMR1_CH3N/TMR3_CH4/TMR8_CH3N/OTG_HS_ULPI_D2/ETH_MII_RXD3/ADC12_IN9/EVENTOUT	VDD
T_MISO	BOOT1	PB2	48	PB2/BOOT1/EVENTOUT	VDD
SPI1_SCK		PB3	133	PB3/JTDO/TRACESWO/TMR2_CH2/SPI1_SCK/SPI3_SCK/I2S3_CK/EVENTOUT	VDD
SPI1_MISO		PB4	134	PB4/NJTRST/TMR3_CH1/SPI1_MISO/SPI3_MISO/I2S3ext_SD/EVENTOUT	VDD
SPI1_MOSI		PB5	135	PB5/TMR3_CH2/SPI1_MOSI/SPI3_MOSI/CAN2_RX/I2C1_SMBAI/OTG_HS_ULPI_D7/ETH_PPS_OUT/DCI_D10/I2S3_SD/EVENTOUT	VDD
	DCMI_D5	PB6	136	PB6/TMR4_CH1/USART1_TX/CAN2_TX/I2C1_SCL/DCI_D5/EVENTOUT	VDD
	DCMI_VSYNC	PB7	137	PB7/TMR4_CH2/USART1_RX/SMC_NL/I2C1_SDA/DCI_VSYNC/EVENTOUT	VDD
	IIC_SCL	PB8	139	PB8/TMR4_CH3/TMR10_CH1/CAN1_RX/SDIO_D4/ETH_MII_TXD3/I2C1_SCL/DCI_D6/EVENTOUT	VDD
	IIC_SDA	PB9	140	PB9/TMR4_CH4/TMR11_CH1/CAN1_TX/SDIO_D5/SPI2_NSS/I2C1_SDA/DCI_D7/I2S2_WS/EVENTOUT	VDD
		PB10	69	PB10/SPI2_SCK/TMR2_CH3/USART3_TX/I2C2_SCL/OTG_HS_ULPI_D3/ETH_MII_RX_ER/I2S2_CK/EVENTOUT	VDD
		PB11	70	PB11/TMR2_CH4/USART3_RX/I2C2_SDA/OTG_HS_ULPI_D4/ETH_MII_TX_EN/ETH_RMII_TX_EN/EVENTOUT	VDD
		PB12	73	PB12/SPI2_NSS/TMR1_BKIN/USART3_CK/CAN2_RX/I2C2_SMBA/OTG_HS_ULPI_D5/OTG_HS_ID/ETH_MII_TXD0/ETH_RMII_TXD0/I2S2_WS/EVENTOUT	
		PB13	74	PB13/SPI2_SCK/TMR1_CH1N/USART3_CTS/CAN2_TX/OTG_HS_ULPI_D6/OTG_HS_VBUS/ETH_MII_TXD1/ETH_RMII_TXD1/I2S2_CK/EVENTOUT	
	F_CS	PB14	75	PB14/SPI2_MISO/TMR1_CH2N/TMR8_CH2N/TMR12_CH1/USART3_RTS/OTG_HS_DM/I2S2ext_SD/EVENTOUT	
	LCD_BL	PB15	76	PB15/SPI2_MOSI/TMR1_CH3N/TMR8_CH3N/TMR12_CH2/OTG_HS_DP/I2S2_SD/RTC_REFIN/EVENTOUT	
					PH0-OSC_IN/EVENTOUT
					PH1-OSC_OUT/EVENTOUT
		PC0	26	PC0/OTG_HS_ULPI_STP/ADC123_IN10/EVENTOUT	
		PC1	27	PC1/ETH_MDC/ADC123_IN11/EVENTOUT	NRST
		PC2	28	PC2/SPI2_MISO/OTG_HS_ULPI_DIR/ETH_MII_TXD2/I2S2ext_SD/ADC123_IN12/EVENTOUT	
		PC3	29	PC3/SPI2_MOSI/OTG_HS_ULPI_NXT/ETH_MII_TX_CLK/I2S2_SD/ADC123_IN13/EVENTOUT	VBAT
		PC4	44	PC4/ETH_MII_RX_D0/ETH_RMII_RX_D0/ADC12_IN14/EVENTOUT	
		PC5	45	PC5/ETH_MII_RX_D1/ETH_RMII_RX_D1/ADC12_IN15/EVENTOUT	Vref+
	DCMI_D0	PC6	96	PC6/TMR3_CH1/TMR8_CH1/USART6_TX/SDIO_D6/DCI_D0/I2S2_MCK/EVENTOUT	
	DCMI_D1	PC7	97	PC7/TMR3_CH2/TMR8_CH2/USART6_RX/SDIO_D7/DCI_D1/I2S3_MCK/EVENTOUT	Vcap_1
SDIO_D0	DCMI_D2	PC8	98	PC8/TMR3_CH3/TMR8_CH3/USART6_CK/SDIO_D0/DCI_D2/EVENTOUT	
SDIO_D1	DCMI_D3	PC9	99	PC9/TMR3_CH4/TMR8_CH4/I2C3_SDA/SDIO_D1/DCI_D3/MCO2/I2S_CKIN/EVENTOUT	Vcap_2
SDIO_D2		PC10	111	PC10/SPI3_SCK/USART3_TX/UART4_TX/SDIO_D2/DCI_D8/I2S3_CK/EVENTOUT	
SDIO_D3	DCMI_D4	PC11	112	PC11/SPI3_MISO/USART3_RX/UART4_RX/SDIO_D3/DCI_D4/I2S3ext_SD/EVENTOUT	VDDA
SDIO_SCK		PC12	113	PC12/SPI3_MOSI/USART3_CK/UART5_TX/SDIO_CK/DCI_D9/I2S3_SD/EVENTOUT	
	T_CS	PC13	7	PC13/RTC_OUT/RTC_TAMP1/RTC_TS/EVENTOUT	VSSA
			8	PC14-OSC32_IN/EVENTOUT	
			9	PC15-OSC32_OUT/EVENTOUT	PDR_ON

STM32F407ZGT6



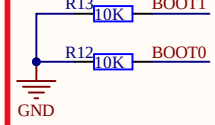


VREF



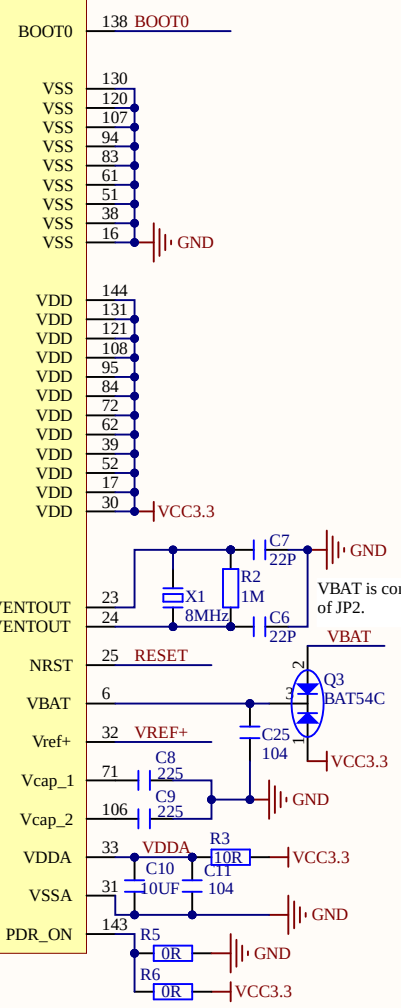
VREF is led out through PIN6 of JP1 by default using a jumper. Cap short JP1 PIN4 and PIN6, using 3.3V as reference.

BOOT



BOOT0 and BOOT1 are both defaulted to use resistors connected to GND, starting from user code.

BOOT0 is also connected to KEY0. Pressing KEY0 can pull BOOT0 high, facilitating entry into BootLoader mode!



R6, soldered by default.
R5, not soldered.

Title: M144Z-M4.PrjPCB	
Author: ALIENTEK	Size: A2
Date: 2024/5/15	File: CORE_ABC.SchDoc
Revision: V1.0	Version: *

正点原子

MCU_DEFG

U1B

FSMC_D2	PD0	114	PD0/SMC_D2/CAN1_RX/EVENTOUT	PF0/SMC_A0/DMC_A10/I2C2_SDA/EVENTOUT	10	PF0	FSMC_A0
FSMC_D3	PD1	115	PD1/SMC_D3/CAN1_TX/EVENTOUT	PF1/SMC_A1/DMC_A0/I2C2_SCL/EVENTOUT	11	PF1	FSMC_A1
SDIO_CMD	PD2	116	PD2/TMR3_ETR/UART5_RX/SDIO_CMD/DCI_D11/EVENTOUT	PF2/SMC_A2/DMC_A1/I2C2_SMBAI/EVENTOUT	12	PF2	FSMC_A2
	PD3	117	PD3/SMC_CLK/USART2_CTS/EVENTOUT	PF3/SMC_A3/DMC_A2/ADC3_IN9/EVENTOUT	13	PF3	FSMC_A3
FSMC_NOE	PD4	118	PD4/SMC_NOE/USART2_RTS/EVENTOUT	PF4/SMC_A4/DMC_A3/ADC3_IN14/EVENTOUT	14	PF4	FSMC_A4
FSMC_NWE	PD5	119	PD5/SMC_NWE/USART2_TX/EVENTOUT	PF5/SMC_A5/ADC3_IN15/EVENTOUT	15	PF5	FSMC_A5
DCMI__SCL	PD6	122	PD6/SMC_NWAIT/USART2_RX/EVENTOUT	PF6/TMR10_CH1/SMC_NIORD/DMC_A4/ADC3_IN4/EVENTOUT	18	PF6	
DCMI__SDA	PD7	123	PD7/SMC_NE1/SMC_NCE2/USART2_CK/EVENTOUT	PF7/TMR11_CH1/SMC_NREG/DMC_A5/ADC3_IN5/EVENTOUT	19	PF7	
FSMC_D13	PD8	77	PD8/SMC_D13/USART3_TX/EVENTOUT	PF8/TMR13_CH1/SMC_NIOWR/DMC_A6/ADC3_IN6/EVENTOUT	20	PF8	
FSMC_D14	PD9	78	PD9/SMC_D14/USART3_RX/EVENTOUT	PF9/TMR14_CH1/ADC3_IN7/SMC_CD/DMC_A7/EVENTOUT	21	PF9	LED0
FSMC_D15	PD10	79	PD10/SMC_D15/USART3_CK/DMC_DQ10/EVENTOUT	PF10/SMC_INTR/DMC_A8/ADC3_IN8/EVENTOUT	22	PF10	LED1
FSMC_A16	PD11	80	PD11/SMC_A16/SMC_CLE/USART3_CTS/EVENTOUT	PF11/DCI_D12/DMC_UDQM/EVENTOUT	49	PF11	T_MOSI
FSMC_A17	PD12	81	PD12/SMC_A17/SMC_ALE/TIM4_CH1/USART3_RTS/EVENTOUT	PF12/SMC_A6/EVENTOUT	50	PF12	FSMC_A6
FSMC_A18	PD13	82	PD13/SMC_A18/TMR4_CH2/DMC_DQ12/EVENTOUT	PF13/SMC_A7/EVENTOUT	53	PF13	FSMC_A7
FSMC_D0	PD14	85	PD14/SMC_D0/TMR4_CH3/DMC_DQ13/EVENTOUT	PF14/SMC_A8/EVENTOUT	54	PF14	FSMC_A8
FSMC_D1	PD15	86	PD15/SMC_D1/TMR4_CH4/DMC_DQ14/EVENTOUT	PF15/SMC_A9/EVENTOUT	55	PF15	FSMC_A9
FSMC_NBL0	PE0	141	PE0/TMR4_ETR/SMC_NBL0/DCI_D2/EVENTOUT	PG0/SMC_A10/EVENTOUT	56	PG0	FSMC_A10
FSMC_NBL1	PE1	142	PE1/SMC_NBL1/DCI_D3/EVENTOUT	PG1/SMC_A11/DMC_CK/EVENTOUT	57	PG1	FSMC_A11
	PE2	1	PE2/TRACECK/SMC_A23/ETH_MII_TXD3/EVENTOUT	PG2/SMC_A12/DMC_DQ15/EVENTOUT	87	PG2	FSMC_A12
	PE3	2	PE3/TRACED0/SMC_A19/EVENTOUT	PG3/SMC_A13/DMC_DQ0/EVENTOUT	88	PG3	FSMC_A13
KEY0	PE4	3	PE4/TRACED1/SMC_A20/DCI_D4/EVENTOUT	PG4/SMC_A14/DMC_DQ1/EVENTOUT	89	PG4	FSMC_A14
DCMI_D6	PE5	4	PE5/TRACED2/SMC_A21/TIM9_CH1/DCI_D6/EVENTOUT	PG5/SMC_A15/DMC_DQ2/EVENTOUT	90	PG5	FSMC_A15
DCMI_D7	PE6	5	PE6/TRACED3/SMC_A22/TIM9_CH2/DCI_D7/EVENTOUT	PG6/SMC_INT2/DMC_DQ3/EVENTOUT	91	PG6	
FSMC_D4	PE7	58	PE7/SMC_D4/TMR1_ETR/EVENTOUT	PG7/SMC_INT3/USART6_CK/EVENTOUT	92	PG7	
FSMC_D5	PE8	59	PE8/SMC_D5/TMR1_CH1N/EVENTOUT	PG8/USART6_RTS/ETH_PPS_OUT/DMC_DQ4/EVENTOUT	93	PG8	
FSMC_D6	PE9	60	PE9/SMC_D6/TMR1_CH1/EVENTOUT	PG9/SMC_NE2/SMC_NCE3/USART6_RX/EVENTOUT	124	PG9	DCMI_PWDN
FSMC_D7	PE10	63	PE10/SMC_D7/TMR1_CH2N/EVENTOUT	PG10/SMC_NCE4_1/SMC_NE3/EVENTOUT	125	PG10	FSMC_NE3
FSMC_D8	PE11	64	PE11/SMC_D8/TMR1_CH2/EVENTOUT	PG11/SMC_NCE4_2/ETH_MII_TX_EN/ETH_RMII_TX_EN/EVENTOUT	126	PG11	
FSMC_D9	PE12	65	PE12/SMC_D9/TMR1_CH3N/EVENTOUT	PG12/SMC_NE4/USART6_RTS/EVENTOUT	127	PG12	FSMC_NE4
FSMC_D10	PE13	66	PE13/SMC_D10/TMR1_CH3/EVENTOUT	PG13/SMC_A24/USART6_CTS/ETH_MII_TXD0/ETH_RMII_TXD0/EVENTOUT	128	PG13	
FSMC_D11	PE14	67	PE14/SMC_D11/TMR1_CH4/EVENTOUT	PG14/SMC_A25/USART6_TX/ETH_MII_TXD1/ETH_RMII_TXD1/EVENTOUT	129	PG14	
FSMC_D12	PE15	68	PE15/SMC_D12/TMR1_BKIN/EVENTOUT	PG15/DMC_LDQM/USART6_CTS/DCI_D13/EVENTOUT	132	PG15	DCMI_RESET

STM32F407ZGT6

SRAM

U2

FSMC_A0	PF0	1	A0	I/O15	38	PD10	FSMC_D15
FSMC_A1	PF1	2	A1	I/O14	37	PD9	FSMC_D14
FSMC_A2	PF2	3	A2	I/O13	36	PD8	FSMC_D13
FSMC_A3	PF3	4	A3	I/O12	35	PE15	FSMC_D12
FSMC_A4	PF4	5	A4	I/O11	32	PE14	FSMC_D11
FSMC_A18	PD13	18	A5	I/O10	31	PE13	FSMC_D10
FSMC_A17	PD12	19	A6	I/O9	30	PE12	FSMC_D9
FSMC_A16	PD11	20	A7	I/O8	29	PE11	FSMC_D8
FSMC_A13	PG3	21	A8	I/O7	16	PE10	FSMC_D7
FSMC_A14	PG4	22	A9	I/O6	15	PE9	FSMC_D6
FSMC_A15	PG5	23	A10	I/O5	14	PE8	FSMC_D5
FSMC_A5	PF5	24	A11	I/O4	13	PE7	FSMC_D4
FSMC_A7	PF13	25	A12	I/O3	10	PD1	FSMC_D3
FSMC_A8	PF14	26	A13	I/O2	9	PD0	FSMC_D2
FSMC_A9	PF15	27	A14	I/O1	8	PD15	FSMC_D1
FSMC_A10	PG0	42	A15	I/O0	7	PD14	FSMC_D0
FSMC_A11	PG1	43	A16				
FSMC_A6	PF12	44	A17				
FSMC_A12	PG2	28	A18/NC	UB	40	PE1	FSMC_NBL1
				LB	39	PE0	FSMC_NBL0
			VDD	OE	41	PD4	FSMC_NOE
			VDD	WE	17	PD5	FSMC_NWE
			GND	CE	6	PG10	FSMC_NE3
			GND				

XM8A51216V33A

VCC3.3 R7 2R VS1 C2 10UF VS2 C1 10UF GND VCC3.3 R1 10K R8 2R VS2

LCD

JP5

32	PG12	FSMC_NE4
31	PF12	FSMC_A6
30	PD5	FSMC_NWE
29	PD4	FSMC_NOE
28		RESET
27	PD14	FSMC_D0
26	PD15	FSMC_D1
25	PD0	FSMC_D2
24	PD1	FSMC_D3
23	PE7	FSMC_D4
22	PE8	FSMC_D5
21	PE9	FSMC_D6
20	PE10	FSMC_D7
19	PE11	FSMC_D8
18	PE12	FSMC_D9
17	PE13	FSMC_D10
16	PE14	FSMC_D11
15	PE15	FSMC_D12
14	PD8	FSMC_D13
13	PD9	FSMC_D14
12	PD10	FSMC_D15
11	PB15	LCD_BL
10		VCC3.3
9		
8		GND
7		
6	PB2	T_MISO
5	PF11	T_MOSI
4	PB1	T_PEN
3	PC13	T_CS
2	PB0	T_SCK
1		

VCC5 VCC3.3 C28 104 C29 104 GND GND VCC5

IO

VCC3.3 VCC5 GND RESET PA1 PC3 PA3 PA5 PC4 PB0 PB2 PF8 PF6 PB13 PD11 PD13 PE11 PE12 PE14 PE8 PD15 PD14 PD9 PF4 PF2 PF0 PB15 VREF PA2 PC2 PA4 PA7 PC5 PB1 PF11 PF7 PB12 PF5 PD12 PF13 PE10 PE13 PE9 PE7 PE15 PD8 PD10 PF3 PF1 PF12 JP1

VCC5 GND VBAT PG14 PG12 PE3 PE5 PC0 PE1 PB7 PG9 PD4 PD1 PA15 PB11 PB5 PA6 PA11 PG7 PC9 PA8 PD2 PC10 PD7 PC7 PB4 PG13 PG11 PE2 PE6 PC1 PE0 PG10 PD5 PD3 PD0 PB10 PB3 PB6 PA12 PG8 PG6 PC8 PC12 PC11 PG15 PD6 PC6 JP2

OLED&CAMERA

VCC3.3 C3 104 GND JP4

PB7	DCMI_VSYNC
PD6	DCMI__SCL
PA4	DCMI_HREF
PD7	DCMI__SDA
PG15	DCMI_RESET
PC6	DCMI_D0
PC7	DCMI_D1
PC8	DCMI_D2
PC9	DCMI_D3
PC11	DCMI_D4
PB6	DCMI_D5
PE5	DCMI_D6
PE6	DCMI_D7
PA6	DCMI_PCLK
PA8	DCMI__XCLK
PG9	DCMI_PWDN

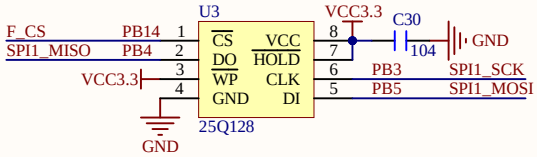
SWD

VCC3.3 SWDIO SWDCLK GND JP6

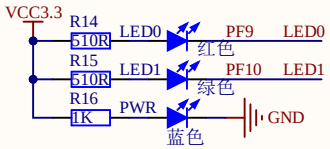
Title: M144Z-M4.PrjPCB			
Author: ALIENTEK		Size: A2	
Date: 2024/5/15		File: CORE_DEFG.SchDoc	
Revision: V1.0		Version: *	

正点原子

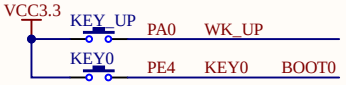
FLASH



LED



KEY

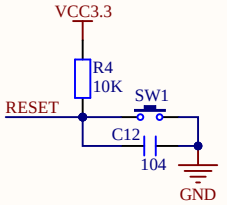


BOOT0 and KEY0 (PE4) share the KEY0 button.

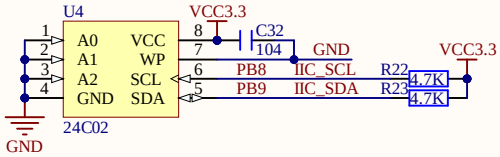
Pressing KEY0 can pull BOOT0 high, facilitating entry into BootLoader mode!

BOOT0 only functions during the power-up phase! It does not affect the normal use of PE4 after power-up.

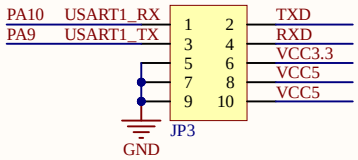
RESET



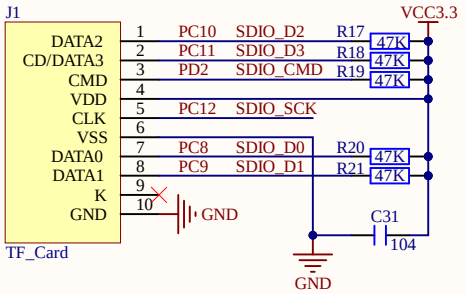
EEPROM



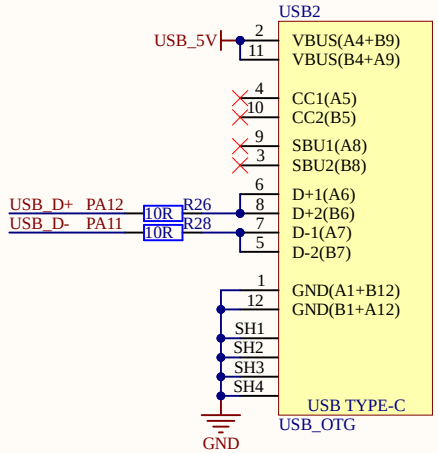
USB_UART & VOUT



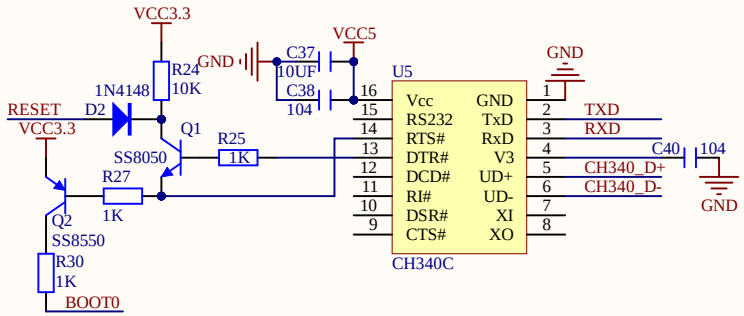
TF CARD

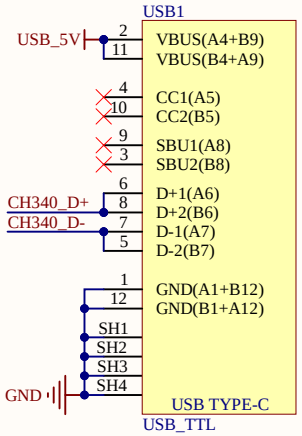


USB OTG

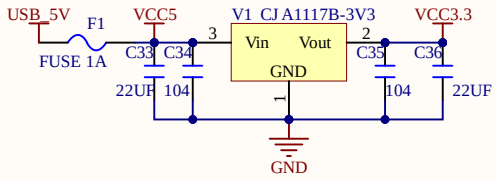


USB UART & USB POWER



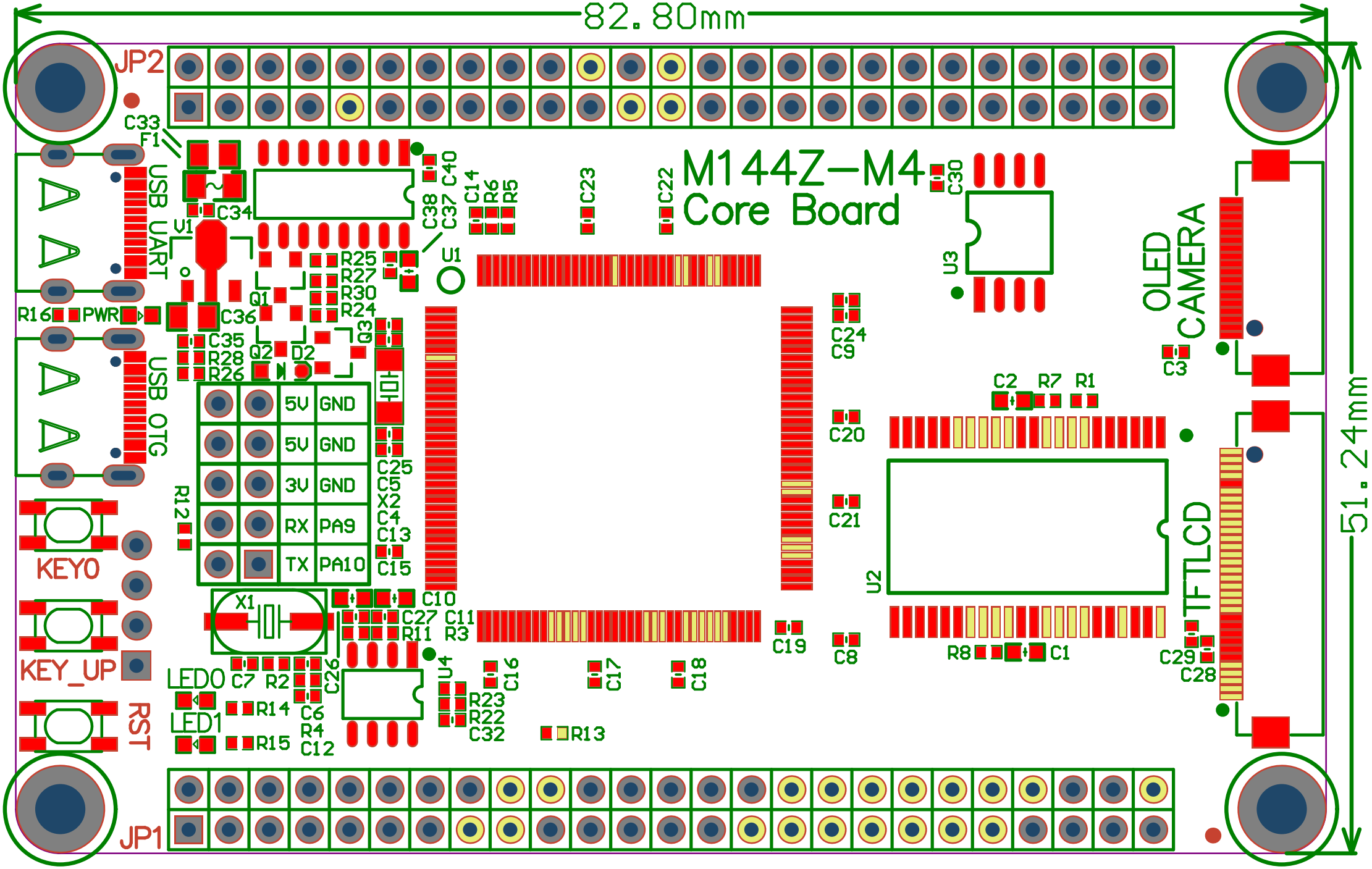


LDO



Title: M144Z-M4.PrjPCB	
Author: ALIENTEK	Size: A4
Date: 2024/5/15	File: DEVICE.SchDoc
Revision: V1.0	Version:

正点原子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51.24mm
M144Z-M4
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JP2
JP1
USB UART
USB OTG
OLED
CAMERA
TFTLCD
KEY0
KEY_UP
RST
LED0
LED1
PWR
5V
GND
3V
RX
PA9
TX
PA10
C33
F1
C34
C40
C38
C37
C14
R6
R5
C23
C22
C30
U1
U3
R25
R27
R30
R24
Q1
Q3
Q2
D2
R16
C36
C35
R28
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C24
C9
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C2
R7
R1
C20
C21
C25
C5
X2
C4
C13
C15
R12
X1
C10
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R3
C19
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C12
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C16
C17
C18
R23
R22
C32
R13
R14
R15