

MOTHER BOARD CON

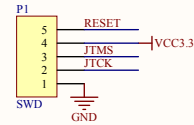
主板接口，由2个2*30P的3710M端子（公）组成，可插在ALIENTEK阿波罗STM32F4/F7主板上上面。

GND	30	31	BOOT0
VBAT	29	32	PG14
PC13	28	33	PG13
PH9	27	34	PG10
DBK	26	35	PG7
PB7	25	36	PG2
PB6	24	37	PD2
PB5	23	38	PD7
PB4	22	39	PC11
PB3	21	40	USART1_TX
PE2	20	41	PA15
PE3	19	42	PA14
PE4	18	43	PA13
PE5	17	44	PA4
PE6	16	45	PA5
PH11	15	46	PA6
PE6	14	47	PA7
PE7	13	48	PA8
PF8	12	49	PC5
PF9	11	50	PA9
RESET	10	51	PA10
PC1	9	52	PA11
PH4	8	53	PA12
PH5	7	54	PA13
PH3	6	55	PA14
PH2	5	56	PA15
PA2	4	57	VCC5
PA1	3	58	VREF+
VREF+	2	59	VCC5
GND	1	60	VCC5

3710M060046G3FT01

PH13	30	31	GND
PH14	29	32	P12
PH15	28	33	P11
PD6	27	34	P10
PD4	26	35	PG11
PG12	25	36	PG14
PH12	24	37	P15
PD11	23	38	P16
PD5	22	39	P18
PD12	21	40	P13
PA8	20	41	P17
PC9	19	42	PE0
PC8	18	43	PE1
PC7	17	44	PD14
PC6	16	45	PD15
PD13	15	46	PD0
PG3	14	47	PD1
PH11	13	48	PE7
PH10	12	49	PE8
PH9	11	50	PE9
PH7	10	51	PE10
PH6	9	52	PE11
PH5	8	53	PE12
PH4	7	54	PE13
PH3	6	55	PE14
PH2	5	56	PE15
PH1	4	57	PD8
PH0	3	58	PD9
PH10	2	59	PD10
PH11	1	60	PD11

3710M060046G3FT01



MCU

WK_UP	PA0	40	U1
RMII_REF_CLK	PA1	41	PA0/WKUP/1TIM2_CH1/TIM2_ETR/TIM5_CH1/TIM8_ETR/U2_CTS/UA_TX/SA2_SD_B/ETH_MII_CRS/ADC123_IN0
USART2_TX	PA2	42	PA1/TIM2_CH2/TIM5_CH2/U2_RTS/UA_RX/QSPI_BK1_I03/SA2_MCK_B/ETH_MII_RX_CLK/ETH_RMII_REF_CLK/LCD_R2/ADC123_IN1
USART2_RX	PA3	47	PA2/TIM2_CH3/TIM5_CH3/TIM9_CH1/U2_TX/SA2_SCK_B/ETH_MDIO/LCD_R1/ADC123_IN2/WKUP2
GBC_LED	PA4	51	PA3/TIM2_CH4/TIM5_CH4/TIM9_CH2/U2_RX/OTG_HS_ULPI_D0/ETH_MII_COL/LCD_B2/LCD_B5/ADC123_IN3
STM_ADC	PA5	52	PA4/TIM2_CH5/TIM5_CH5/TIM9_CH3/U2_CK/SP16_NSS/OTG_HS_SF/DCMI_HSYN/LCD_VSYN/ADC12_IN4/DAC_OUT1
DCMI_PCLK	PA6	52	PA5/TIM2_CH1/TIM2_ETR/TIM8_CH1N/SP11_SCK/I2S2_CK/SP16_SCK/OTG_HS_ULPI_CK/LCD_R4/ADC12_IN5/DAC_OUT2
RMII_CRS_DV	PA7	53	PA6/TIM1_BKIN/TIM3_CH1/TIM8_BKIN/SP11_MISO/SP16_MISO/TIM3_CH1/DCMI_PIXCLK/LCD_G2/ADC12_IN6
REMOTE_IN	PA8	119	PA7/TIM1_CH1N/TIM3_CH2/TIM8_CH1N/SP11_MOSI/I2S1_SD/SP16_MOSI/TIM14_CH1/ETH_MII_RX_DV/ETH_RMII_CRS_DV/FMC_SDNWE/ADC12_IN7
USART1_TX	PA9	120	PA8/MCO1/TIM1_CH1/TIM8_BKIN/I2S2_SCL/U1_CK/OTG_HS_SF/DCMI_R1/U2_RX/LCD_B3/LCD_R6
USART1_RX	PA10	121	PA9/TIM1_CH2/I2S2_SMB/SP12_SCK/I2S2_CK/U1_TX/DCMI_D1/LCD_R5/OTG_HS_VBUS
USB_D+	PA11	122	PA10/TIM1_CH3/U1_RX/LCD_B4/LCD_B1/OTG_HS_ID/DCMI_D1
USB_D-	PA12	123	PA11/TIM1_CH4/SP12_NSS/I2S2_WS/U4_RX/U1_CTS/CAN1_RX/LCD_R4/OTG_HS_DM
JTMS	PA13	124	PA12/TIM1_ETR/SP12_SCK/I2S2_CK/U4_TX/U1_RTS/SA2_FS_B/CAN1_TX/LCD_R5/OTG_HS_DP
JTCK	PA14	137	PA13/TIM5SDIO
DCMI_RESET	PA15	138	PA14/JTCK_SWDCLK

LED1	PB0	56	PB0/TIM1_CH2N/TIM3_CH3/TIM8_CH2N/DFSDM_CKOUT/U4_CTS/LCD_R3/OTG_HS_ULPI_D1/ETH_MII_RXD2/LCD_I1/ADC12_IN8
LED0	PB1	57	PB1/TIM1_CH3N/TIM3_CH4/TIM8_CH3N/DFSDM_D1/LCD_R6/OTG_HS_ULPI_D2/ETH_MII_RXD3/LCD_G0/ADC12_IN9
QSPI_BK1_CLK	PB2	58	PB2/SAI1_SD_ASPB_MOSI/I2S3_SD/QSPI_CLK/DFSDM_CKIN1
DCMI_SDA	PB3	161	PB3/TIM10/TIM2_CH2/SP11_SCK/I2S1_CK/SP11_SCK/I2S3_CK/SP16_SCK/SDMMC2_D2/CAN3_RX/U7_RX
DCMI_SCL	PB4	162	PB4/NTRST/TIM3_CH1/SP11_MISO/SP16_MISO/SP12_NSS/I2S2_WS/SP16_MISO/SDMMC2_D3/CAN3_TX/U7_TX
LCD_BL	PB5	163	PB5/U5_RX/TIM3_CH2/I2C1_SMB/SAI1_MOSI/I2S1_SD/SP16_MOSI/I2S3_SD/SP16_MISO/CAN2_RX/OTG_HS_ULPI_D7/ETH_PPS_OUT/FMC_SDCKE1/DCMI_D10/LCD_G7
QSPI_BK1_NCS	PB6	164	PB6/U5_TX/TIM4_CH1/ADMI_CEC/I2C1_SCL/DFSDM_D7/U3_TX/QSPI_BK1_NCS/I2C4_SCL/FMC_SDNIE1/DCMI_D5
DCMI_VSYN	PB7	165	PB7/TIM4_CH2/I2C1_SDA/DFSDM_CKIN/U5_RX/I2C4_SDA/FMC_NLDCMI_VSYN
DCMI_D6	PB8	167	PB8/I2C4_SCL/TIM4_CH3/TIM10_CH1/I2C1_SCL/DFSDM_CKIN/U5_RX/CAN1_RX/ETH_MII_TXD3/SDMMC12_D4/DCMI_D6/LCD_B6
DCMI_D7	PB9	168	PB9/I2C4_SDA/TIM4_CH4/TIM11_CH1/I2C1_SDA/SP12_NSS/I2S2_WS/DFSDM_D7/U5_TX/CAN1_TX/SDMMC12_D5/I2C4_SMB/DCMI_D7/LCD_B7
USART3_TX	PB10	79	PB10/TIM2_CH3/I2C1_SCL/SP12_SCK/I2S2_CK/DFSDM_D7/U3_TX/QSPI_BK1_NCS/OTG_HS_ULPI_D3/ETH_MII_RX_ER/LCD_G4
USART3_RX	PB11	80	PB11/TIM2_CH4/I2C2_SDA/DFSDM_CKIN/U3_RX/OTG_HS_ULPI_D4/ETH_MII_TX_EN/ETH_RMII_TX_EN/LCD_G5
IIC_INT	PB12	92	PB12/TIM1_BKIN/I2C2_SMB/SAI2_NSS/I2S2_WS/DFSDM_D1/U3_CK/U5_RX/CAN2_RX/OTG_HS_ULPI_D5/ETH_MII_TXD0/ETH_RMII_TXD0/OTG_HS_ID
SP12_SCK	PB13	93	PB13/TIM1_CH1N/SP12_SCK/I2S2_CK/DFSDM_CKIN/U3_CTS/U5_TX/CAN2_TX/OTG_HS_ULPI_D6/ETH_MII_TXD1/ETH_RMII_TXD1/OTG_HS_VBUS
SP2_MISO	PB14	94	PB14/TIM1_CH2N/TIM8_CH2N/U1_TX/SP12_MISO/DFSDM_D2/U3_RTS/U4_RTS/SDMMC2_D0/TIM12_CH1/OTG_HS_DM
SP2_MOSI	PB15	95	PB15/RTC_REFIN/TIM1_CH3N/TIM8_CH3N/U1_RX/SP12_MOSI/I2S2_WS/DFSDM_CKIN/U4_CTS/SDMMC2_D1/TIM12_CH2/OTG_HS_DP

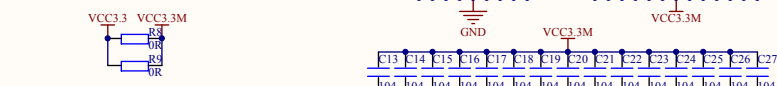
FMC_SDNWE	PC0	32	PC0/DFSDM_CKIN0/DFSDM_D4/SA2_FS_B/OTG_HS_ULPI_STP/FMC_SDNWE/LCD_R5/ADC123_IN10
ETH_MDC	PC1	33	PC1/DFSDM_CKIN4/DFSDM_D0/SP12_MOSI/I2S2_SD/SAI1_SD_A/ETH_MDC/ADC123_IN11/RTC_TAMP3/WKUP3
FMC_SDNIE	PC2	34	PC2/DFSDM_CKIN1/DFSDM_CKOUT/SP12_MISO/OTG_HS_ULPI_DIR/ETH_MII_TXD2/FMC_SDNIE0/ADC123_IN12
FMC_SDCKE0	PC3	35	PC3/DFSDM_D1/SP12_MOSI/I2S2_SD/OTG_HS_ULPI_NXT/ETH_MII_TX_CLK/FMC_SDCKE0/ADC123_IN13
RMII_RXD0	PC4	34	PC4/DFSDM_CKIN2/I2S1_MCK/SPDIFRX_IN2/ETH_MII_RXD0/ETH_RMII_RXD0/FMC_SDNIE0/ADC12_IN14
RMII_RXD1	PC5	55	PC5/DFSDM_D2/SPDIFRX_IN3/ETH_MII_RXD1/ETH_RMII_RXD1/FMC_SDCKE0/ADC12_IN15
DCMI_D0	PC6	115	PC6/DFSDM_CKIN3/TIM3_CH1/TIM8_CH1/I2S2_MCK/U6_TX/FMC_NWAI/SDMMC12_D6/DCMI_D0/LCD_HSYN
DCMI_D1	PC7	116	PC7/DFSDM_CKIN3/TIM3_CH2/TIM8_CH2/I2S3_MCK/U6_RX/FMC_NEI/SDMMC12_D7/DCMI_D1/LCD_G6
DCMI_D2	PC8	117	PC8/TIM3_CH3/TIM8_CH3/U5_RTS/U6_CK/FMC_NE2/FMC_NCE/SDMMC1_D0/DCMI_D2
SDIO_D0	PC9	118	PC9/MCO2/TIM3_CH4/TIM8_CH4/I2S3_SDA/I2S3_CKIN/U5_CTS/QSPI_BK1_I00/SDMMC1_D1/DCMI_D3/LCD_G3/LCD_B2
SDIO_D1	PC10	119	PC10/DFSDM_CKIN5/SP16_SCK/I2S3_CK/U3_TX/U4_TX/QSPI_BK1_I01/SDMMC1_D2/DCMI_D8/LCD_R2
SDIO_D2	PC11	140	PC11/DFSDM_D2/SP16_MISO/U3_RX/U4_RX/QSPI_BK2_NCS/SDMMC1_D3/DCMI_D4
SDIO_D3	PC12	141	PC12/SP16_MOSI/I2S3_CK/U3_CK/U5_TX/SDMMC1_CK/DCMI_D9
SDIO_SCK	PC13	8	PC13/RTC_TAMP1/RTC_TAMP2/RTC_TAMP3/RTC_TAMP4
KEY2	PC13	8	PC14/OSC32_OUT
KEY1	PC13	9	PC15/OSC32_OUT

FMC_D2	PD0	142	PD0/DFSDM_CKIN6/DFSDM_D7/U4_RX/CAN1_RX/FMC_D2
FMC_D3	PD1	143	PD1/DFSDM_CKIN7/DFSDM_D6/U4_TX/CAN1_TX/FMC_D3
FMC_D4	PD2	144	PD2/TIM3_ETR/U5_RX/SDMMC1_CMD/DCMI_D11
FMC_NOE	PD4	146	PD3/DFSDM_CKOUT/DFSDM_D0/SP12_SCK/I2S2_CK/U2_CTS/FMC_CLK/DCMI_D5/LCD_G7
FMC_NWE	PD5	147	PD4/DFSDM_CKIN0/U2_RTS/FMC_NOE
FMC_NWAI	PD6	150	P5/U2_TX/FMC_NWE
FMC_NBI	PD7	151	PD6/DFSDM_CKIN4/DFSDM_D1/SP16_MOSI/I2S3_SD/SAI1_SD_A/U2_RX/SDMMC2_CK/FMC_NWAI/DCMI_D10/LCD_B03/QSPI_BK2_I01/SA2_MCK_B/ETH_MII_COL/FMC_SDNIE0/LCD_R1
FMC_D14	PD9	97	PD7/DFSDM_CKIN1/DFSDM_D4/SP11_MOSI/I2S1_SD/U2_CK/SDMMC2_CMD/SPDIFRX_IN0/FMC_NE1
FMC_D15	PD10	98	PD8/DFSDM_CKIN3/U3_TX/SPDIFRX_IN11/FMC_D13
FMC_D16	PD10	98	PD9/DFSDM_D3/U3_RX/FMC_D14
FMC_D17	PD10	98	PD10/DFSDM_CKOUT/U3_CK/FMC_D15/LCD_B3
FMC_D18	PD11	99	PD11/I2C4_SMB/SAI1_CTS/QSPI_BK1_I00/SA2_SF_A/FMC_CLE
FMC_D19	PD12	100	PD12/TIM4_CH1/LPTIM1_IN1/I2C4_SCL/U3_RTS/QSPI_BK1_I01/SA2_FS_A/FMC_A17/FMC_ALE
FMC_D20	PD13	101	PD13/TIM4_CH2/LPTIM1_OUT/I2C4_SDA/QSPI_BK1_I03/SA2_SCK_A/FMC_A18
FMC_D21	PD14	104	PD14/TIM4_CH3/U8_CTS/FMC_D0
FMC_D22	PD15	105	PD15/TIM4_CH4/U8_RTS/FMC_D1

FMC_NBL0	PE0	169	PE0/TIM4_ETR/LPTIM1_ETR/U8_RX/SA2_MCK_A/FMC_NBL0/DCMI_D2
FMC_NBL1	PE1	170	PE1/LPTIM1_IN2/U8_TX/FMC_NBL1/DCMI_D3
SAI1_MCLKA	PE2	1	PE2/SP14_SCK/SAI1_MCLK_A/QSPI_BK1_I02/ETH_MII_TXD3/FMC_A23
SAI1_SDB	PE3	2	PE3/SAI1_SD_B/FMC_A19
SAI1_SFA	PE4	3	PE4/DFSDM_D3/SP14_NSS/SAI1_FS_A/FMC_A20/DCMI_D4/LCD_B0
SAI1_SCKA	PE5	4	PE5/DFSDM_CKIN3/TIM9_CH1/SP14_MISO/SAI1_SCK_A/FMC_A21/DCMI_D6/LCD_G0
SAI1_SDA	PE6	5	PE6/TIM1_BKIN/TIM9_CH2/SP14_MOSI/SAI1_SD_A/SA2_MCK_B/FMC_A22/DCMI_D7/LCD_G1
FMC_D4	PE7	68	PE7/DFSDM_D2/TIM1_ETR/U7_RX/QSPI_BK2_I00/FMC_D5
FMC_D5	PE8	69	PE8/DFSDM_CKIN2/TIM1_CH1N/U7_TX/QSPI_BK2_I01/FMC_D5
FMC_D6	PE9	70	PE9/DFSDM_CKOUT/TIM1_CH1/U7_RTS/QSPI_BK2_I02/FMC_D6
FMC_D7	PE10	73	PE10/DFSDM_D1/TIM1_CH2N/U7_QSPI_BK2_I03/FMC_D7
FMC_D8	PE11	74	PE11/DFSDM_CKIN4/TIM1_CH2/SP14_NSS/SAI1_SD_B/FMC_D8/LCD_G3
FMC_D9	PE12	75	PE12/DFSDM_CKIN1/TIM1_CH3N/SP14_SCK/SAI2_SCK_B/FMC_D9/LCD_G2
FMC_D10	PE13	76	PE13/DFSDM_CKIN5/TIM1_CH3/SP14_MISO/SAI2_FS_B/FMC_D10/LCD_DE
FMC_D11	PE14	77	PE14/TIM1_CH4/SP14_MOSI/SA2_MCK_B/FMC_D11/LCD_CLK
FMC_D12	PE15	78	PE15/TIM1_BKIN/FMC_D12/LCD_R7

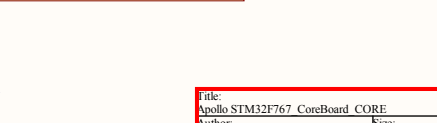
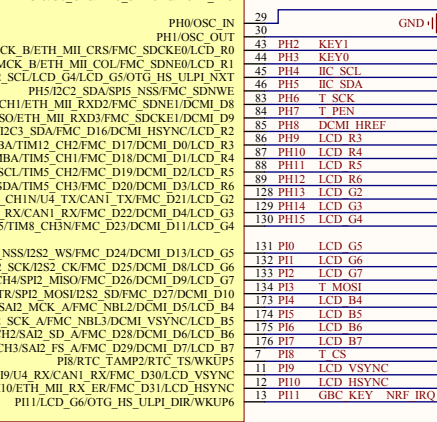
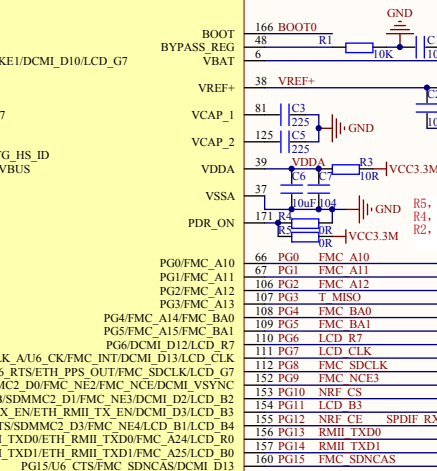


STM32F767G16



R8/R9是为了维修方便而增加的2个电阻，大家实际设计电路板时候，可以不加这两个电阻。VCC3_3M直接连3_3V即可。

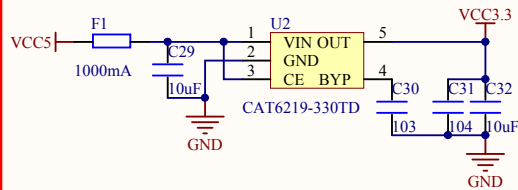
NRST	31	RESET
PF0/I2C2_SDA/FMC_A0	16	PF0 FMC A0
PF1/I2C2_SCL/FMC_A1	17	PF1 FMC A1
PF2/I2C2_SMB/AFMC_A2	18	PF2 FMC A2
PF3/FMC_A3/ADC3_IN4	19	PF3 FMC A3
PF4/FMC_A4/ADC3_IN4	20	PF4 FMC A4
PF5/FMC_A5/ADC3_IN5	21	PF5 FMC A5
PF6/FMC_A6/ADC3_IN6	22	PF6 FMC A6
PF7/TIM11_CH1/SP15_NSS/SAI1_SD_B/U7_RX/QSPI_BK1_I03/ADC3_IN4	24	PF7 QSPI BK1 I03
PF8/TIM11_CH1/SP15_NSS/SAI1_SCL_B/U7_TX/QSPI_BK1_I02/ADC3_IN5	25	PF8 QSPI BK1 I02
PF9/TIM13_CH1/SP15_MISO/SAI1_SCK_B/U7_RTS/QSPI_BK1_I00/ADC3_IN6	26	PF9 QSPI BK1 I00
PF10/TIM14_CH1/SP15_MOSI/SAI1_FS_B/U7_CTS/QSPI_BK1_I01/ADC3_IN7	27	PF10 QSPI BK1 I01
PF11/QSPI_CLK/DCMI_D11/LCD_DE/ADC3_IN8	28	PF10 LCD DE
PF12/QSPI_CLK/DCMI_D11/LCD_DE/ADC3_IN8	29	PF11 FMC SDNRAS
PF13/SP15_MOSI/SAI2_SD_B/FMC_SDNRAS/DCMI_D12	30	PF12 FMC A6
PF14/DFSDM_D6/I2C4_SMB/AFMC_A7	31	PF13 FMC A7
PF15/DFSDM_CKIN6/I2C4_SCL/FMC_A8	32	PF14 FMC A8
PF16/I2C4_SDA/FMC_A9	33	PF15 FMC A9



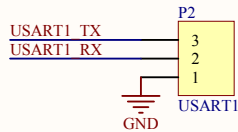
Title: Apollo STM32F767 CoreBoard CORE	
Author: ATOM@ALIENTEK	Size: SheetSize
Date: 2016/9/20	File: STM32F767 CORE.SchDoc
Revision: V1.6	Version:

ALIENTEK

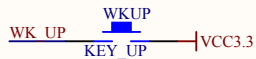
LDO



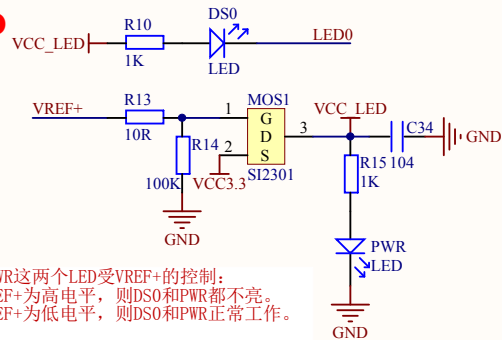
USART1



KEY



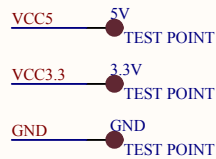
LED



DS0和PWR这两个LED受VREF+的控制：
如果VREF+为高电平，则DS0和PWR都不亮。
如果VREF+为低电平，则DS0和PWR正常工作。

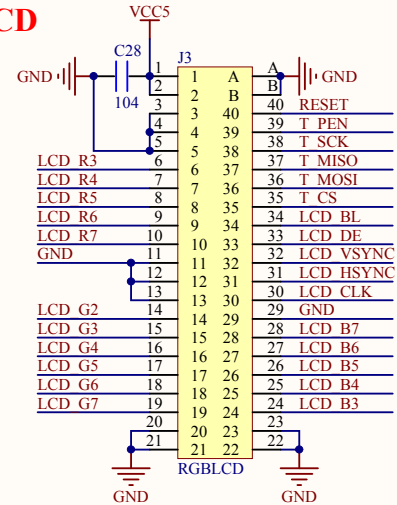
注意：通过主板上的P5可以控制VREF+。

TEST POINT

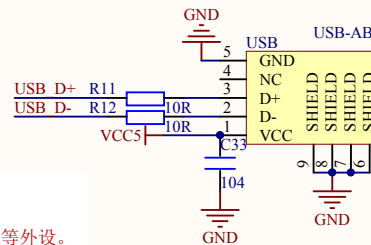


这是三个电源电压测试点。可用来测试核心板的电源是否正常。也可以用来给核心板供电：焊接GND和5V，然后接外部5V电压即可。

RGB LCD



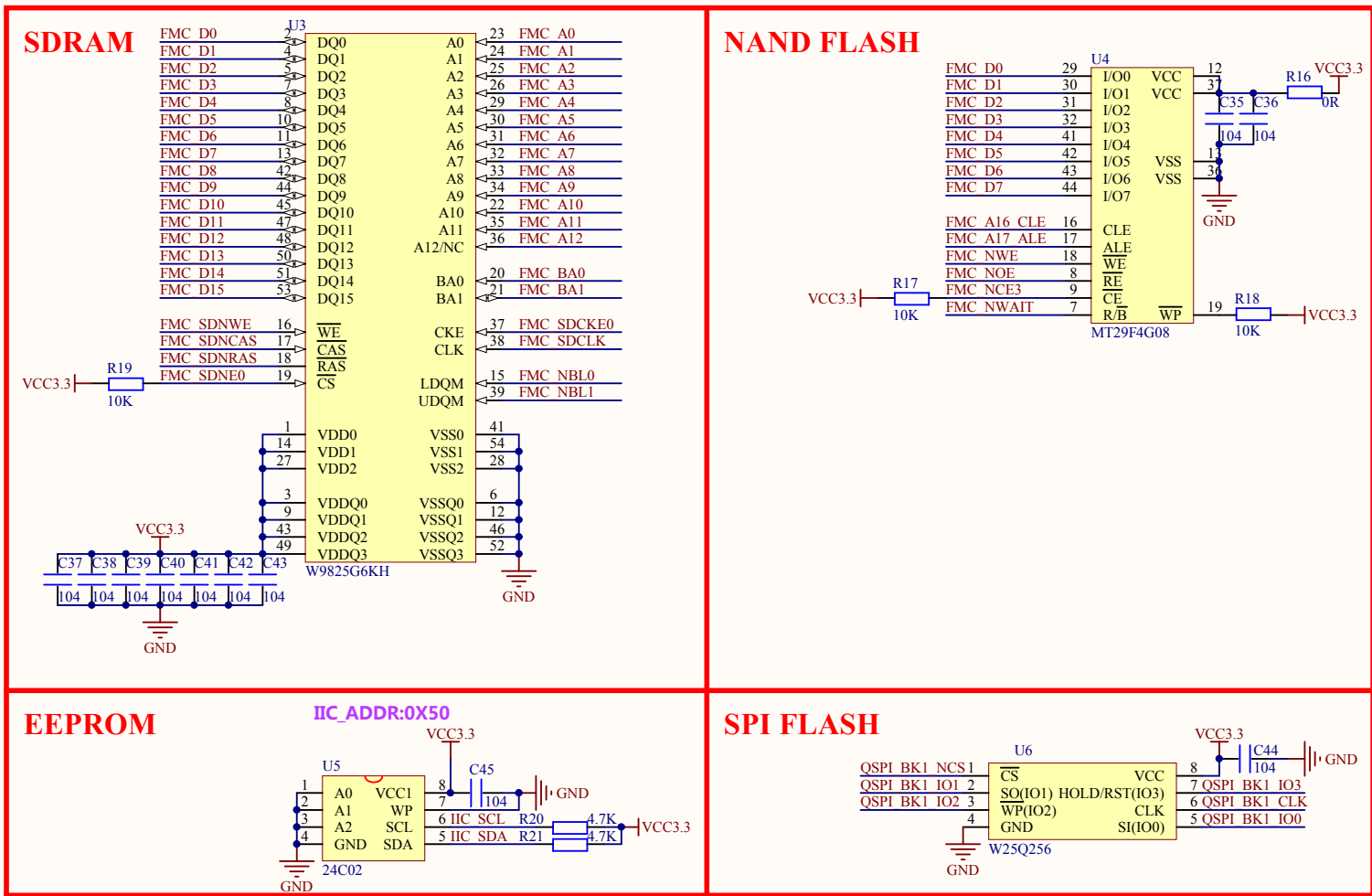
MicroUSB



此MicroUSB接口有如下功能：
1，单独使用核心板时，可给核心板供电。
2，可以做USB Slave接口，连接电脑，同时也可以供电。
3，可以做USB Host接口（需MicroUSB转OTG线），接U盘等外设。

Title:	Apollo STM32F767 CoreBoard LCD&POWER
Author:	ATOM@ALIENTEK
Date:	2016/9/20
Revision:	V1.6
Size:	SheetSize
File:	STM32F767 LCD&POWER.SchDoc
Version:	Version

ALIENTEK



65.00mm

ALIENTEK

STM32F103 Core Board V1.6

TXD RXD GND

RST

WKUP

DS0 R10

PWR

USB

45.00mm