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主板上面。

J1

GND	30	31	BOOT0
VBAT	29	32	PG14
PC13	28	33	PG13
PB9	27	34	PG10
PB8	26	35	PD7
PB7	25	36	PD3
PB6	24	37	PD2
PB5	23	38	PC12
PB4	22	39	PC11
PB3	21	40	PC10
PE2	20	41	PA15
PE3	19	42	PA14
PE4	18	43	PA13
PE5	17	44	PA3
PE6	16	45	PA4
PI11	15	46	PA5
PF6	14	47	PA6
PF7	13	48	PA7
PF8	12	49	PC4
PF9	11	50	PC5
RESET	10	51	PA9
PC1	9	52	PA10
PH4	8	53	PA11
PH5	7	54	PA12
PH3	6	55	PB2
PH2	5	56	PB0
PA2	4	57	PB1
PA1	3	58	VCC5
VREF+	2	59	VCC5
GND	1	60	VCC5

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J2

PH13	30	31	GND
PH14	29	32	PI2
PH15	28	33	PI1
PD6	27	34	PI0
PD4	26	35	PG11
PG12	25	36	PI4
PH12	24	37	PI5
PD11	23	38	PI6
PD5	22	39	PI7
PD12	21	40	PI8
PA8	20	41	PI3
PC9	19	42	PA0
PC8	18	43	PE0
PC7	17	44	PE1
PC6	16	45	PD14
PG6	15	46	PD15
PD13	14	47	PD0
PG3	13	48	PD1
PH11	12	49	PE7
PH10	11	50	PE8
PH9	10	51	PE9
PH7	9	52	PE10
PH6	8	53	PE11
PB15	7	54	PE12
PB14	6	55	PE13
PB13	5	56	PE14
PB12	4	57	PE15
PH8	3	58	PD8
PB10	2	59	PD9
PB11	1	60	PD10

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SWD

P1

5	RESET
4	JTMS
3	JTCK
2	VCC3.3
1	GND

SWD

MCU

U1

STM32F429IGT6

	WK_UP	PA0	40
	RMII_REF_CLK	PA1	41
USART2_TX	ETH_MDIO	PA2	42
USART2_RX	PWM_DAC	PA3	47
GBC_LED	STM_DAC	PA4	50
	STM_ADC	PA5	51
	DCMI_PCLK	PA6	52
	RMII_CRS_DV	PA7	53
REMOTE_IN	DCMI_XCLK	PA8	119
	USART1_TX	PA9	120
	USART1_RX	PA10	121
	USB_D-	PA11	122
	USB_D+	PA12	123
	JTMS	PA13	124
	JTCK	PA14	137
DCMI_RESET	JTDI	PA15	138
	LED1	PB0	56
	LED0	PB1	57
	BOOT1	PB2	58
DCMI_SDA	JTDO	PB3	161
DCMI_SCL	JTRST	PB4	162
	LCD_BL	PB5	163
		PB6	164
	DCMI_VSYNC	PB7	165
	DCMI_D6	PB8	167
	DCMI_D7	PB9	168
USART3_TX		PB10	79
USART3_RX	RMII_TX_EN	PB11	80
1WIRE_DQ	IIC_INT	PB12	92
	SPI2_SCK	PB13	93
	SPI2_MISO	PB14	94
	SPI2_MOSI	PB15	95
	FMC_SDNWE	PC0	32
	ETH_MDC	PC1	33
	FMC_SDNE0	PC2	34
	FMC_SDCKE0	PC3	35
	RMII_RXD0	PC4	54
	RMII_RXD1	PC5	55
	DCMI_D0	PC6	115
	DCMI_D1	PC7	116
SDIO_D0	DCMI_D2	PC8	117
SDIO_D1	DCMI_D3	PC9	118
SDIO_D2		PC10	139
SDIO_D3	DCMI_D4	PC11	140
SDIO_SCK		PC12	141
	KEY2	PC13	8
			9
			10
	FMC_D2	PD0	142
	FMC_D3	PD1	143
SDIO_CMD		PD2	144
	DCMI_D5	PD3	145
	FMC_NOE	PD4	146
	FMC_NWE	PD5	147
	FMC_NWAIT	PD6	150
	FMC_NE1	PD7	151
	FMC_D13	PD8	96
	FMC_D14	PD9	97
	FMC_D15	PD10	98
	FMC_A16_CLE	PD11	99
	FMC_A17_ALE	PD12	100
	FMC_A18	PD13	101
	FMC_D0	PD14	104
	FMC_D1	PD15	105
	FMC_NBL0	PE0	169
	FMC_NBL1	PE1	170
	SAI1_MCLKA	PE2	1
	SAI1_SDB	PE3	2
	SAI1_FSA	PE4	3
	SAI1_SCKA	PE5	4
	SAI1_SDA	PE6	5
	FMC_D4	PE7	68
	FMC_D5	PE8	69
	FMC_D6	PE9	70
	FMC_D7	PE10	73
	FMC_D8	PE11	74
	FMC_D9	PE12	75
	FMC_D10	PE13	76
	FMC_D11	PE14	77
	FMC_D12	PE15	78

PA0/WK_UP/TIM2_CH1/TIM2_ETR/TIM5_CH1/TIM8_ETR/U2_CTS/U4_TX/ETH_MII_CRS/ADC123_IN0
PA1/TIM2_CH2/TIM5_CH2/U2_RTS/U4_RX/ETH_MII_RX_CLK/ETH_RMII_REF_CLK/ADC123_IN1
PA2/TIM2_CH3/TIM5_CH3/TIM9_CH1/U2_TX/ETH_MDIO/ADC123_IN2
PA3/TIM2_CH4/TIM5_CH4/TIM9_CH2/U2_RX/OTG_HS_ULPI_D0/ETH_MII_COL/LCD_B5/ADC123_IN3
PA4/SPI1_NSS/SPI3_NSS/I2S3_WS/U2_CK/OTG_HS_SOF/DCMI_HSYNC/LCD_VSYNC/ADC12_IN4/DAC_OUT1
PA5/TIM2_CH1/TIM2_ETR/TIM8_CH1N/SPI1_SCK/OTG_HS_ULPI_CK/ADC12_IN5/DAC_OUT2
PA6/TIM1_BKIN/TIM3_CH1/TIM8_BKIN/SPI1_MISO/TIM13_CH1/DCMI_PIXCLK/LCD_G2/ADC12_IN6
PA7/TIM1_CH1N/TIM3_CH2/TIM8_CH1N/SPI1_MOSI/TIM14_CH1/ETH_MII_RX_DV/ETH_RMII_CRS_DV/ADC12_IN7
PA8/MCO1/TIM1_CH1/I2C3_SCL/U1_CK/OTG_FS_SOF/LCD_R6
PA9/TIM1_CH2/I2C3_SMBA/U1_TX/DCMI_D0/OTG_FS_VBUS
PA10/TIM1_CH3/U1_RX/OTG_FS_ID/DCMI_D1
PA11/TIM1_CH4/U1_CTS/CAN1_RX/LCD_R4/OTG_FS_DM
PA12/TIM1_ETR/U1_RTS/CAN1_TX/LCD_R5/OTG_FS_DP
PA13/JTMS/SWDIO
PA14/JTCK/SWDCLK
PA15/JTDI/TIM2_CH1/TIM2_ETR/SPI1_NSS/SPI3_NSS/I2S3_WS
PB0/TIM1_CH2N/TIM3_CH3/TIM8_CH2N/LCD_R3/OTG_HS_ULPI_D1/ETH_MII_RXD2/ADC12_IN8
PB1/TIM1_CH3N/TIM3_CH4/TIM8_CH3N/LCD_R6/OTG_HS_ULPI_D2/ETH_MII_RXD3/ADC12_IN9
PB2/BOOT1
PB3/JTDO/TIM2_CH2/SPI1_SCK/SPI3_SCK/I2S3_CK
PB4/NJTRST/TIM3_CH1/SPI1_MISO/SPI3_MISO/I2S3ext_SD
PB5/TIM3_CH2/I2C1_SMBA/SPI1_MOSI/SPI3_MOSI/I2S3_SD/CAN2_RX/OTG_HS_ULPI_D7/ETH_PPS_OUT/FMC_SDCKE1/DCMI_D10
PB6/TIM4_CH1/I2C1_SCL/U1_TX/CAN2_TX/FMC_SDNE1/DCMI_D5
PB7/TIM4_CH2/I2C1_SDA/U1_RX/FMC_NL/DCMI_VSYNC
PB8/TIM4_CH3/TIM10_CH1/I2C1_SCL/CAN1_RX/ETH_MII_TXD3/SDIO_D4/DCMI_D6/LCD_B6
PB9/TIM4_CH4/TIM11_CH1/I2C1_SDA/SPI2_NSS/I2S2_WS/CAN1_TX/SDIO_D5/DCMI_D7/LCD_B7
PB10/TIM2_CH3/I2C2_SCL/SPI2_SCK/I2S2_CK/U3_TX/OTG_HS_ULPI_D3/ETH_MII_RX_ER/LCD_G4
PB11/TIM2_CH4/I2C2_SDA/U3_RX/OTG_HS_ULPI_D4/ETH_MII_TX_EN/ETH_RMII_TX_EN/LCD_G5
PB12/TIM1_BKIN/I2C2_SMBA/SPI2_NSS/I2S2_WS/U3_CK/CAN2_RX/OTG_HS_ULPI_D5/ETH_MII_TXD0/ETH_RMII_TXD0/OTG_HS_ID
PB13/TIM1_CH1N/SPI2_SCK/I2S2_CK/U3_CTS/CAN2_TX/OTG_HS_ULPI_D6/ETH_MII_TXD1/ETH_RMII_TXD1/OTG_HS_VBUS
PB14/TIM1_CH2N/TIM8_CH2N/SPI2_MISO/I2S2ext_SD/U3_RTS/TIM12_CH1/OTG_HS_DM
PB15/RTC_REFIN/TIM1_CH3N/TIM8_CH3N/SPI2_MOSI/I2S2_SD/TIM12_CH2/OTG_HS_DP
PC0/OTG_HS_ULPI_STP/FMC_SDNWE/ADC123_IN10
PC1/ETH_MDC/ADC123_IN11
PC2/SPI2_MISO/I2S2ext_SD/OTG_HS_ULPI_DIR/ETH_MII_TXD2/FMC_SDNE0/ADC123_IN12
PC3/SPI2_MOSI/I2S2_SD/OTG_HS_ULPI_NXT/ETH_MII_TX_CLK/FMC_SDCKE0/ADC123_IN13
PC4/ETH_MII_RXD0/ETH_RMII_RXD0/ADC12_IN14
PC5/ETH_MII_RXD1/ETH_RMII_RXD1/ADC12_IN15
PC6/TIM3_CH1/TIM8_CH1/I2S2_MCK/U6_TX/SDIO_D6/DCMI_D0/LCD_HSYNC
PC7/TIM3_CH2/TIM8_CH2/I2S3_MCK/U6_RX/SDIO_D7/DCMI_D1/LCD_G6
PC8/TIM3_CH3/TIM8_CH3/U6_CK/SDIO_D0/DCMI_D2
PC9/MCO2/TIM3_CH4/TIM8_CH4/I2C3_SDA/I2S_CKIN/SDIO_D1/DCMI_D3
PC10/SPI3_SCK/I2S3_CK/U3_TX/U4_TX/SDIO_D2/DCMI_D8/LCD_R2
PC11/I2S3ext_SD/SPI3_MISO/U3_RX/U4_RX/SDIO_D3/DCMI_D4
PC12/SPI3_MOSI/I2S3_SD/U3_CK/U5_TX/SDIO_CK/DCMI_D9
PC13/TAMP_1
PC14/OSC32_IN
PC15/OSC32_OUT
PD0/CAN1_RX/FMC_D2
PD1/CAN1_TX/FMC_D3
PD2/TIM3_ETR/U5_RX/SDIO_CMD/DCMI_D11
PD3/SPI2_SCK/I2S2_CK/U2_CTS/FMC_CLK/DCMI_D5/LCD_G7
PD4/U2_RTS/FMC_NOE
PD5/U2_TX/FMC_NWE
PD6/SPI3_MOSI/I2S3_SD/SAI1_SD_A/U2_RX/FMC_NWAIT/DCMI_D10/LCD_B2
PD7/U2_CK/FMC_NE1/FMC_NCE2
PD8/U3_TX/FMC_D13
PD9/U3_RX/FMC_D14
PD10/U3_CK/FMC_D15/LCD_B3
PD11/U3_CTS/FMC_A16
PD12/TIM4_CH1/U3_RTS/FMC_A17
PD13/TIM4_CH2/FMC_A18
PD14/TIM4_CH3/FMC_D0
PD15/TIM4_CH4/FMC_D1
PE0/TIM4_ETR/U8_RX/FMC_NBL0/DCMI_D2
PE1/U8_TX/FMC_NBL1/DCMI_D3
PE2/SPI4_SCK/SAI1_MCLK_A/ETH_MII_TXD3/FMC_A23
PE3/SAI1_SD_B/FMC_A19
PE4/SPI4_NSS/SAI1_FS_A/FMC_A20/DCMI_D4/LCD_B0
PE5/TIM9_CH1/SPI4_MISO/SAI1_SCK_A/FMC_A21/DCMI_D6/LCD_G0
PE6/TIM9_CH2/SPI4_MOSI/SAI1_SD_A/FMC_A22/DCMI_D7/LCD_G1
PE7/TIM1_ETR/U7_RX/FMC_D4
PE8/TIM1_CH1N/U7_TX/FMC_D5
PE9/TIM1_CH1/FMC_D6
PE10/TIM1_CH2N/FMC_D7
PE11/TIM1_CH2/SPI4_NSS/FMC_D8/LCD_G3
PE12/TIM1_CH3N/SPI4_SCK/FMC_D9/LCD_B4
PE13/TIM1_CH3/SPI4_MISO/FMC_D10/LCD_DE
PE14/TIM1_CH4/SPI4_MOSI/FMC_D11/LCD_CLK
PE15/TIM1_BKIN/FMC_D12/LCD_R7
NRST
PF0/I2C2_SDA/FMC_A0
PF1/I2C2_SCL/FMC_A1
PF2/I2C2_SMBA/FMC_A2
PF3/FMC_A3/ADC3_IN9
PF4/FMC_A4/ADC3_IN14
PF5/FMC_A5/ADC3_IN15
PF6/TIM10_CH1/SPI5_NSS/SAI1_SD_B/U7_RX/FMC_NIORD/ADC3_IN4
PF7/TIM11_CH1/SPI5_SCK/SAI1_MCLK_B/U7_TX/FMC_NREG/ADC3_IN5
PF8/TIM13_CH1/SPI5_MISO/SAI1_SCK_B/FMC_NIOWR/ADC3_IN6
PF9/TIM14_CH1/SPI5_MOSI/SAI1_FS_B/FMC_CD/ADC3_IN7
PF10/FMC_INTR/DCMI_D11/LCD_DE/ADC3_IN8
PF11/SPI5_MOSI/FMC_SDNRAS/DCMI_D12
PF12/FMC_A6
PF13/FMC_A7
PF14/FMC_A8
PF15/FMC_A9
BOOT0
BYPASS_REG
VBAT
VREF+
VCAP_1
VCAP_2
VDDA
VSSA
PDR_ON
PG0/FMC_A10
PG1/FMC_A11
PG2/FMC_A12
PG3/FMC_A13
PG4/FMC_A14/FMC_BA0
PG5/FMC_A15/FMC_BA1
PG6/FMC_INT2/DCMI_D12/LCD_R7
PG7/U6_CK/FMC_INT3/DCMI_D13/LCD_CLK
PG8/SPI6_NSS/U6_RTS/ETH_PPS_OUT/FMC_SDCLK
PG9/U6_RX/FMC_NE2/FMC_NCE3
PG10/LCD_G3/FMC_NE3/FMC_NCE4_1/DCMI_D2/LCD_B2
PG11/ETH_MII_TX_EN/ETH_RMII_TX_EN/FMC_NCE4_2/DCMI_D3/LCD_B3
PG12/SPI6_MISO/U6_RTS/FMC_NE4/LCD_B1/LCD_B4
PG13/SPI6_SCK/U6_CTS/ETH_MII_TXD0/ETH_RMII_TXD0/FMC_A24
PG14/SPI6_MOSI/U6_TX/ETH_MII_TXD1/ETH_RMII_TXD1/FMC_A25
PG15/U6_CTS/FMC_SDNCAS/DCMI_D13
PH0/OSC_IN
PH1/OSC_OUT
PH2/ETH_MII_CRS/FMC_SDCKE0/LCD_R0
PH3/ETH_MII_COL/FMC_SDNE0/LCD_R1
PH4/I2C2_SCL/OTG_HS_ULPI_NXT
PH5/I2C2_SDA/SPI5_NSS/FMC_SDNWE
PH6/I2C2_SMBA/SPI5_SCK/TIM12_CH1/ETH_MII_RXD2/FMC_SDNE1/DCMI_D8
PH7/I2C3_SCL/SPI5_MISO/ETH_MII_RXD3/FMC_SDCKE1/DCMI_D9
PH8/I2C3_SDA/FMC_D16/DCMI_HSYNC/LCD_R2
PH9/I2C3_SMBA/TIM12_CH2/FMC_D17/DCMI_D0/LCD_R3
PH10/TIM5_CH1/FMC_D18/DCMI_D1/LCD_R4
PH11/TIM5_CH2/FMC_D19/DCMI_D2/LCD_R5
PH12/TIM5_CH3/FMC_D20/DCMI_D3/LCD_R6
PH13/TIM8_CH1N/CAN1_TX/FMC_D21/LCD_G2
PH14/TIM8_CH2N/FMC_D22/DCMI_D4/LCD_G3
PH15/TIM8_CH3N/FMC_D23/DCMI_D11/LCD_G4
PI0/TIM5_CH4/SPI2_NSS/I2S2_WS/FMC_D24/DCMI_D13/LCD_G5
PI1/SPI2_SCK/I2S2_CK/FMC_D25/DCMI_D8/LCD_G6
PI2/TIM8_CH4/SPI2_MISO/I2S2ext_SD/FMC_D26/DCMI_D9/LCD_G7
PI3/TIM8_ETR/SPI2_MOSI/I2S2_SD/FMC_D27/DCMI_D10
PI4/TIM8_BKIN/FMC_NBL2/DCMI_D5/LCD_B4
PI5/TIM8_CH1/FMC_NBL3/DCMI_VSYNC/LCD_B5
PI6/TIM8_CH2/FMC_D28/DCMI_D6/LCD_B6
PI7/TIM8_CH3/FMC_D29/DCMI_D7/LCD_B7
PI8/TAMP_2
PI9/CAN1_RX/FMC_D30/LCD_VSYNC
PI10/ETH_MII_RX_ER/FMC_D31/LCD_HSYNC
PI11/OTG_HS_ULPI_DIR
VSS VSS VSS VSS VSS VSS VSS VSS VSS VSS
VDD VDD VDD VDD VDD VDD VDD VDD VDD VDD VDD

31 RESET

16	PF0	FMC_A0	
17	PF1	FMC_A1	
18	PF2	FMC_A2	
19	PF3	FMC_A3	
20	PF4	FMC_A4	
21	PF5	FMC_A5	
24	PF6	F_CS	
25	PF7	SPI5_SCK	
26	PF8	SPI5_MISO	
27	PF9	SPI5_MOSI	
28	PF10	LCD_DE	
59	PF11	FMC_SDNRAS	
60	PF12	FMC_A6	
63	PF13	FMC_A7	
64	PF14	FMC_A8	
65	PF15	FMC_A9	

166 BOOT0
48 R1 10K
6
38 VREF+
81 C2 225
125 C4 225
39 VDDA
37
171 R4 10uF 104
R5 0R
0R
66 PG0 FMC_A10
67 PG1 FMC_A11
106 PG2 FMC_A12
107 PG3 T_MISO
108 PG4 FMC_BA0
109 PG5 FMC_BA1
110 PG6 LCD_R7
111 PG7 LCD_CLK
112 PG8 FMC_SDCLK
152 PG9 FMC_NCE3
153 PG10 NRF_CS
154 PG11 LCD_B3
155 PG12 NRF_CE SPDIF_RX
156 PG13 RMII_TXD0
157 PG14 RMII_TXD1
160 PG15 FMC_SDNCAS
29
30
43 PH2 KEY1
44 PH3 KEY0
45 PH4 IIC_SCL
46 PH5 IIC_SDA
83 PH6 T_SCK
84 PH7 T_PEN
85 PH8 DCMI_HREF
86 PH9 LCD_R3
87 PH10 LCD_R4
88 PH11 LCD_R5
89 PH12 LCD_R6
128 PH13 LCD_G2
129 PH14 LCD_G3
130 PH15 LCD_G4
131 PI0 LCD_G5
132 PI1 LCD_G6
133 PI2 LCD_G7
134 PI3 T_MOSI
173 PI4 LCD_B4
174 PI5 LCD_B5
175 PI6 LCD_B6
176 PI7 LCD_B7
7 PI8 T_CS
11 PI9 LCD_VSYNC
12 PI10 LCD_HSYNC
13 PI11 GBC_KEY NRF_IRQ

GND
D1 VBAT
R1 10K
C1 104
VCC3.3M
BAT54C
R2 10R
VDDA
C3
C5 225
104
R3 10R
VCC3.3M
C6
C7
GND
R5，默认焊接
R4，不焊接
R2，不焊接
Y2
GND HOT
HOT GND
C10 22pF
25Mhz
C11 22pF
GND
VCC3.3
R6 10K
RST
RESET
KEY_M
C12 104
GND
BOOT0 R7 100K
BOOT1 R8 100K
GND

Y1 32.768KHz
C8 6pF
C9 6pF
GND

VCC3.3 VCC3.3M
R9 0R
R10 0R

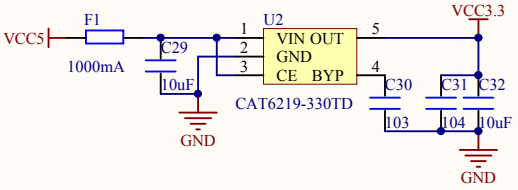
158 48 35 26 13 102 90 71 61 22 14
172 159 149 136 127 114 103 91 82 72 62 49 36 25 15
GND
VCC3.3M
C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27
104 104 104 104 104 104 104 104 104 104 104 104 104 104 104
GND

R9/R10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直接连接3.3V即可。

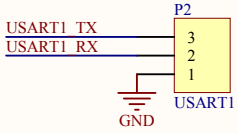
Title: Apollo STM32F429_CoreBoard_CORE	
Author: ATOM@ALIENTEK	Size: SheetSize
Date: 2016/7/10	File: STM32F429_CORE.SchDoc
Revision: V1.6	Version: Version

ALIENTEK

LDO

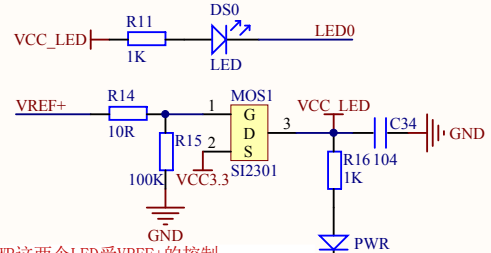


USART1



KEY

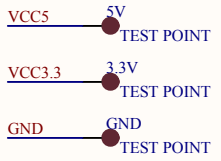
LED



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。

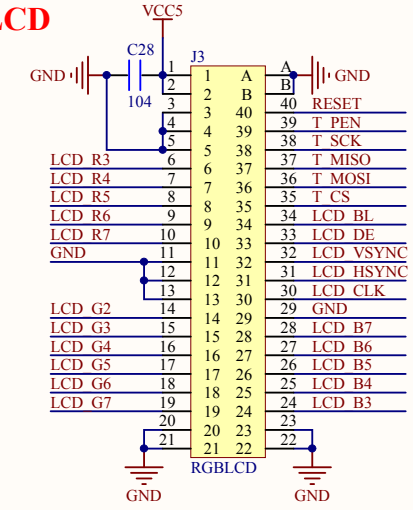
注意：通过主板上的P5可以控制VREF+。

TEST POINT

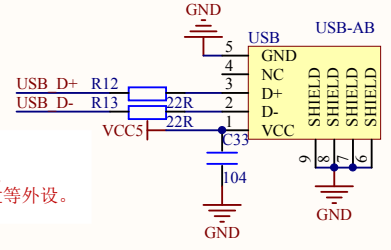


这是三个电源电压测试点。可用来测试核心板的电源是否正常。也可以用来给核心板供电：焊接GND和5V，然后接外部5V电压即可。

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 STM32F429_CoreBoard_LCD&POWER	
Author: ATOM@ALIENTEK	Size: SheetSize
Date: 2016/7/10	File: STM32F429_LCD&POWER.SchDoc
Revision: V1.6	Version: Version

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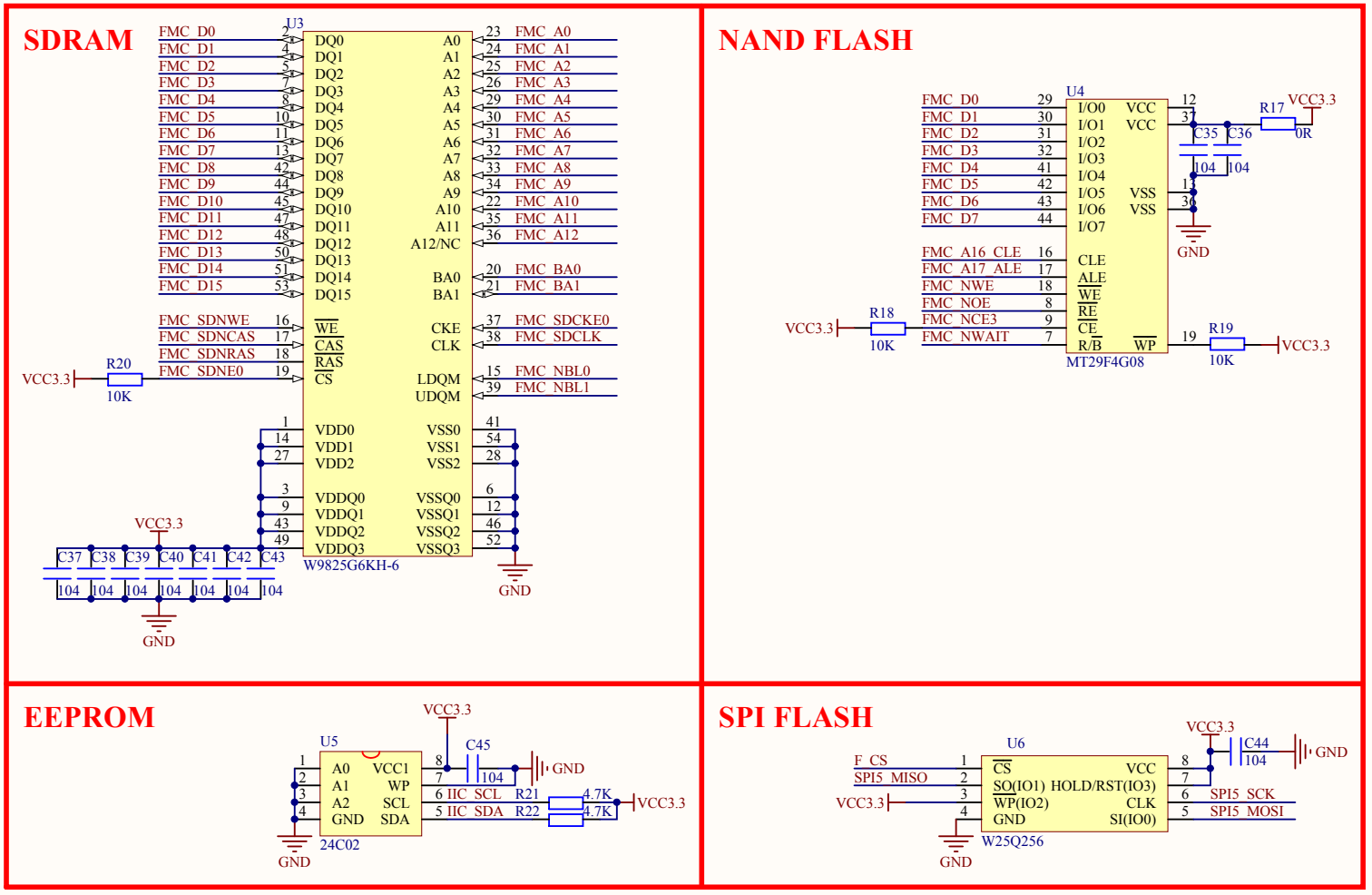
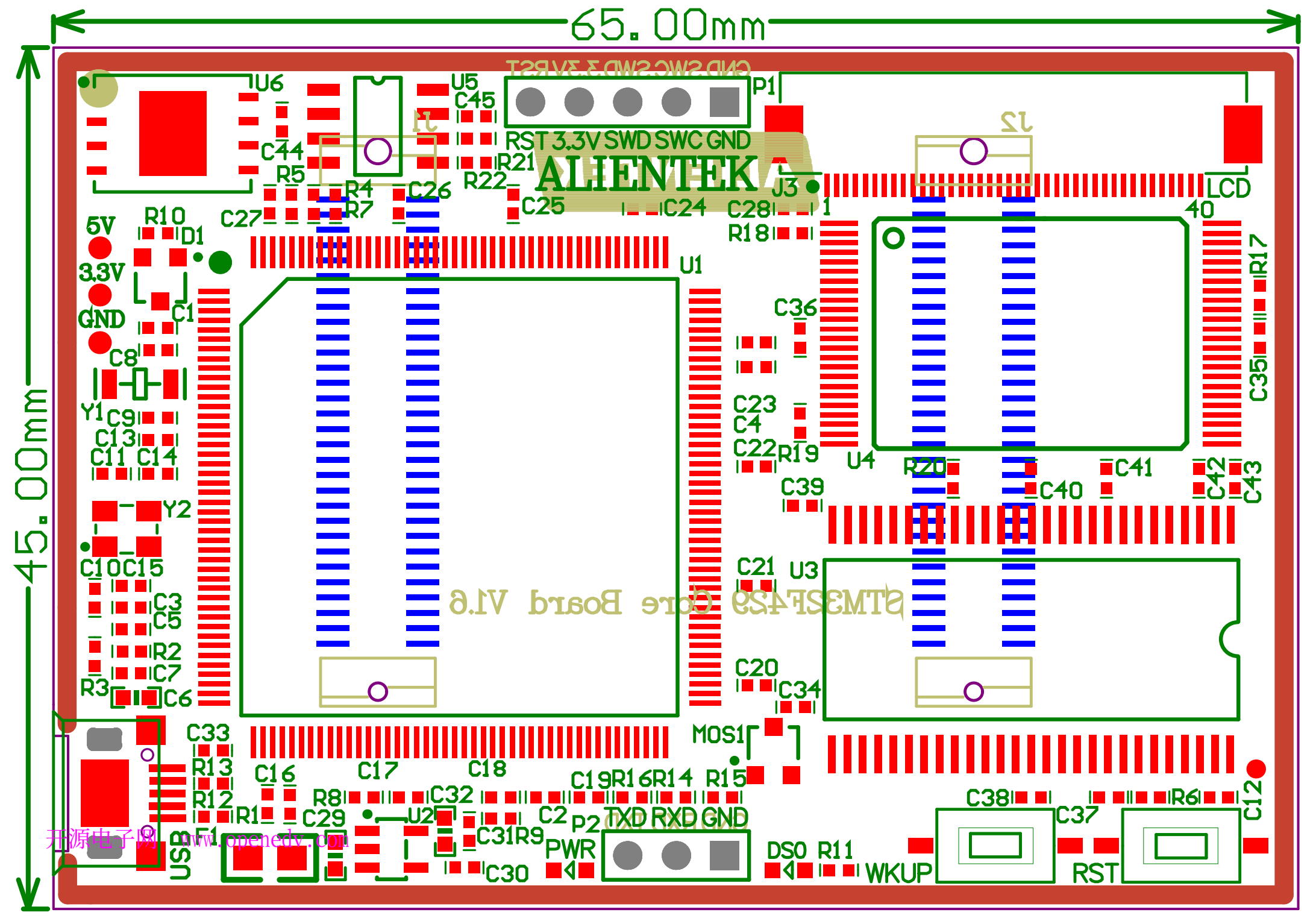


Title: Apollo STM32F429_CoreBoard_MEMORY	
Author: ATOM@ALIENTEK	Size: SheetSize
Date: 2016/7/10	File: STM32F429_MEMORY.SchDoc
Revision: V1.6	Version: Version

ALIENTEK


65.00mm
45.00mm
ALIENTEK
RST 3.3V SWD SWC GND
P1
J3
LCD
5V
3.3V
GND
U1
U2
U3
U4
U5
U6
P2
TXD RXD GND
PWR
MOS1
DS0
WKUP
RST
USB
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