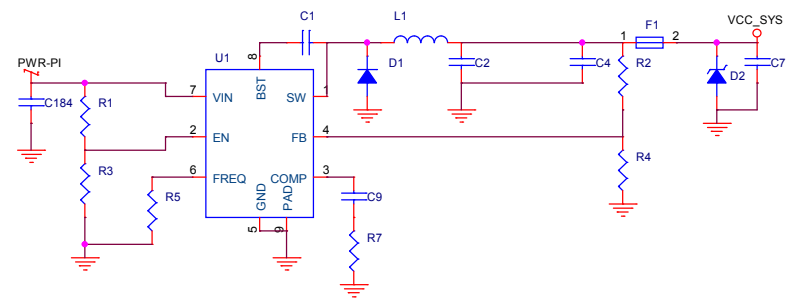
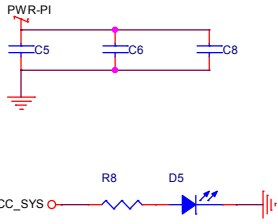


Power Timing

TYPE	VOLT	STEP	PowerName
BUCK1	1.1V		VDD_LOG
BUCK2	1.1V		VDD_ARM
BUCK3	FB=0.8V		VCC_DDR
BUCK4	3.3V		VCC_IO
LDO1	1.8V		VCC_18
LDO2	1.8V		VCC18_eMMC
LDO3	1.0V		VDD_10

IO Domain Voltage	IO Voltage=3.3V	IO Voltage=1.8V
VCCIO_PMU	3.3V	Not Support
VCCIO1	3.3V	Not Support
VCCIO2		1.8V (Default) eMMC
VCCIO3	3.3V (Default)	
VCCIO4	3.3V (Default) WiFi:RTL8723BS	
VCCIO5	3.3V (Default)	
VCCIO6	3.3V (Default)	

# DC12~24V



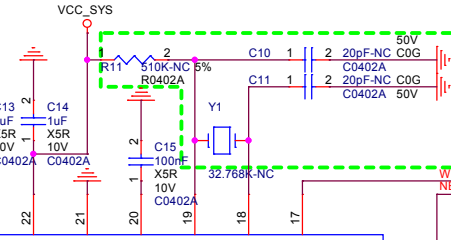
# VCC\_SYS

**不得删除!**  
**不得随意更换型号!**

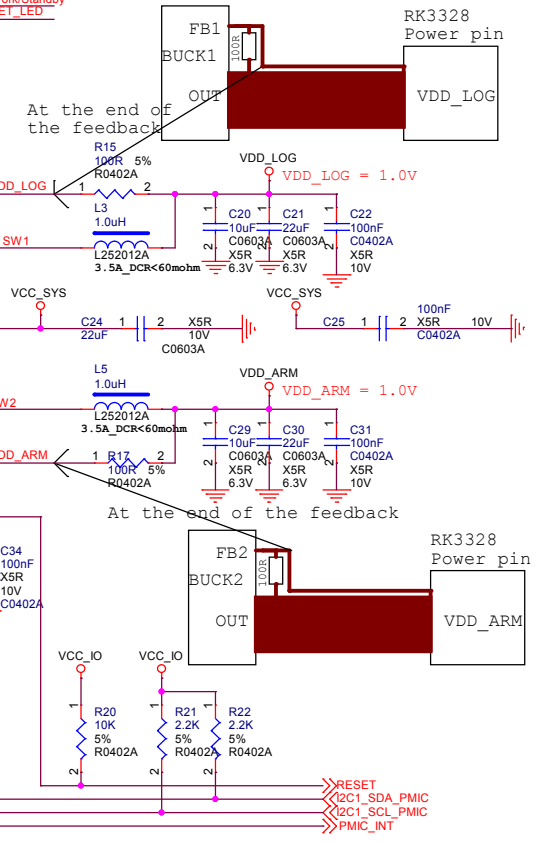
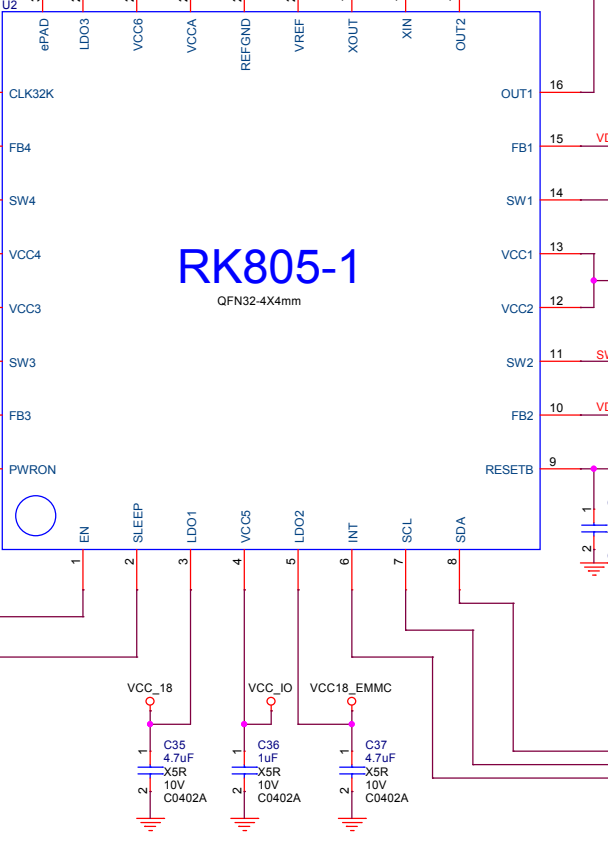
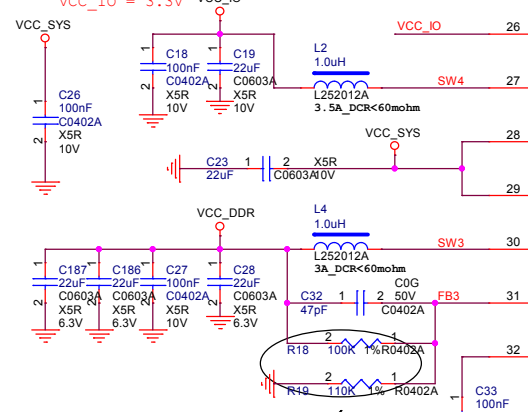
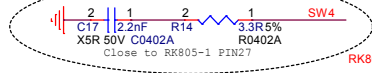
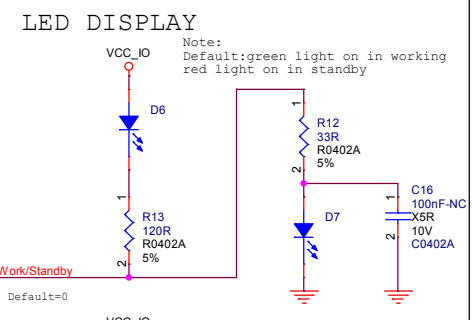
**IF TVS UNMOUNTED,  
ESD OR SURGE SHOULD BE  
DAMAGE THE PMIC!!!**

If using 5V adapter, this device must be mounted. Replacing TVS is not recommended, if must, please choose the same specifications  
Operating Supply Voltage : 5.5V(5.25~6V)  
PeakPulse Current: >10A (tp=8/20us)  
Surge Clamping Voltage: <6.5V

**DO NOT DELETE IT!**



- 1: If WIFI/BT needs 32.768KHz clock, CPU provide 32.768KHz clock by default, and crystal DNP
- 2: If PLL frequency division was modified, causing 32.768KHz clock cannot be output, while WIFI/BT needs 32.768KHz clock, this part of circuit needs be mounted
- 3: If WIFI/BT needs not 32.768KHz clock, this part can DNP. The module needs 32.768KHz nor not, please refer to each WIFI/BT module paging notes



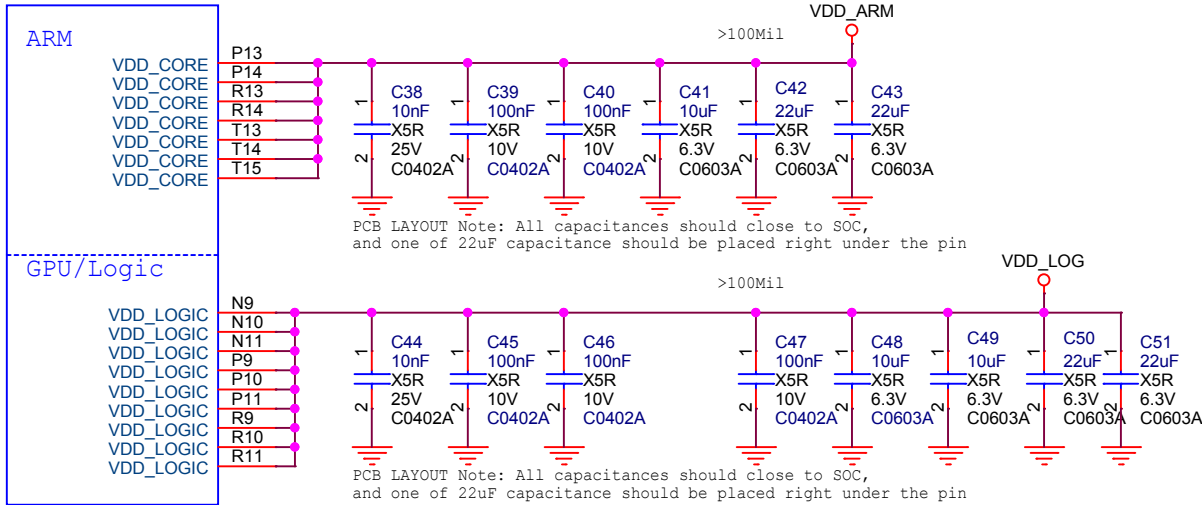
# VCC\_DDR

Default:DDR3=1.5V

	DDR3	DDR3L	DDR4
VCC_DDR	1.527V	1.353V	1.2V
R725	100K 1%	47K 1%	51K 1%
R726	110K 1%	68K 1%	100K 1%

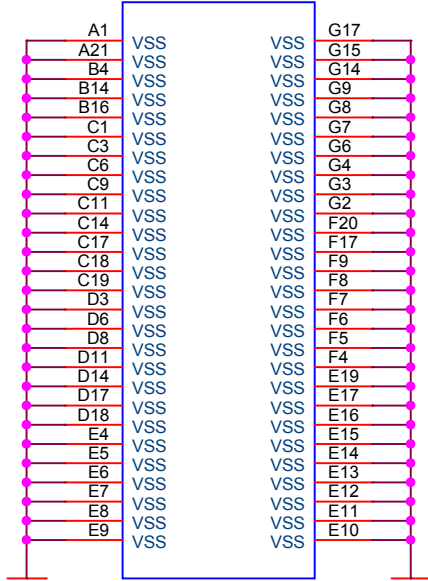
please adjust voltage value according to the actual selected DDR

U3N



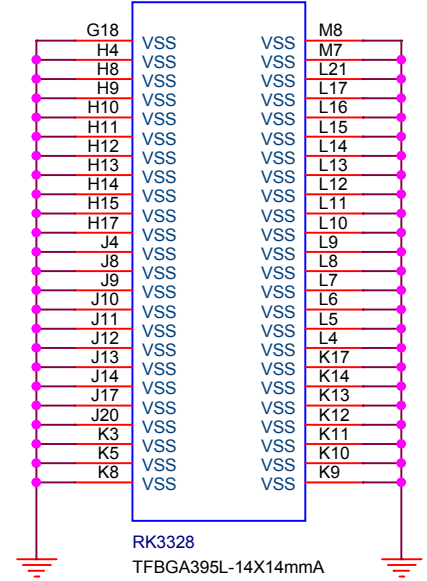
RK3328  
TFBGA395L-14X14mmA

U3O



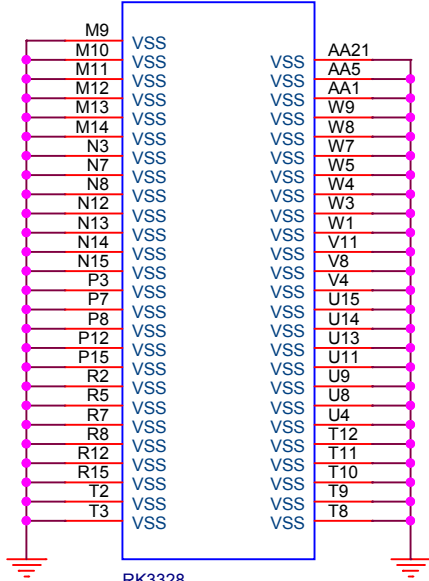
RK3328  
TFBGA395L-14X14mmA

U3P



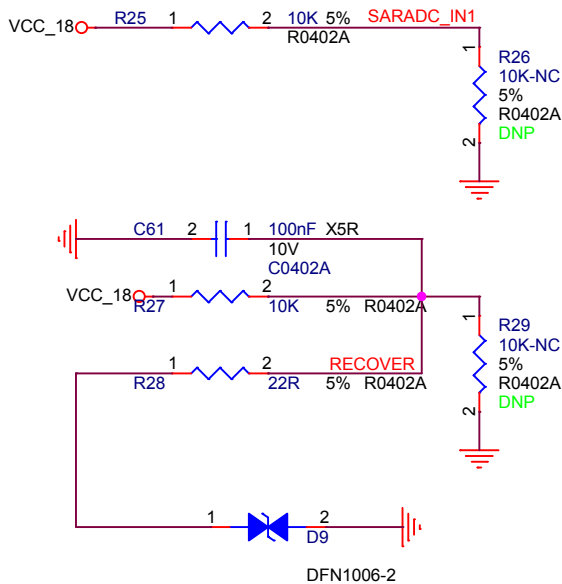
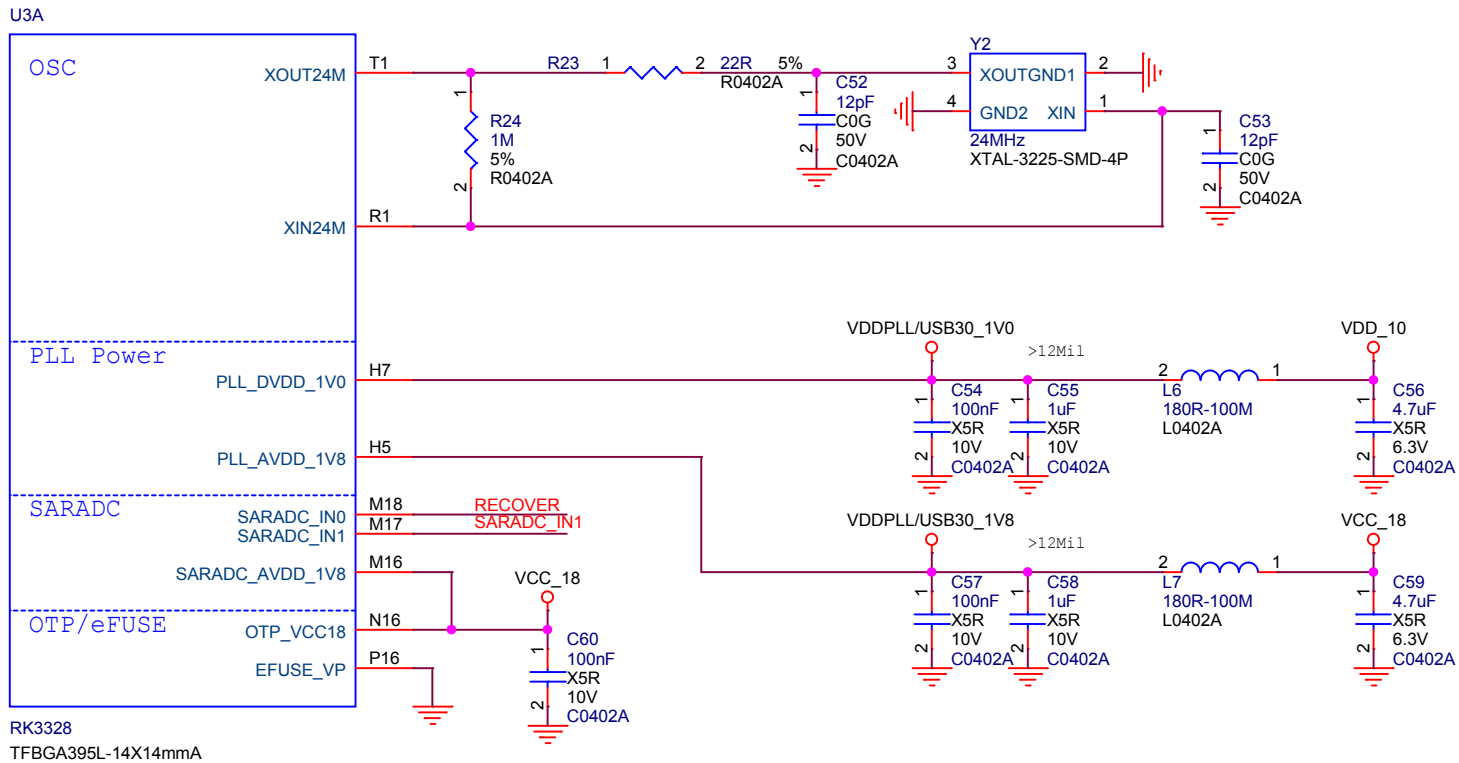
RK3328  
TFBGA395L-14X14mmA

U3Q

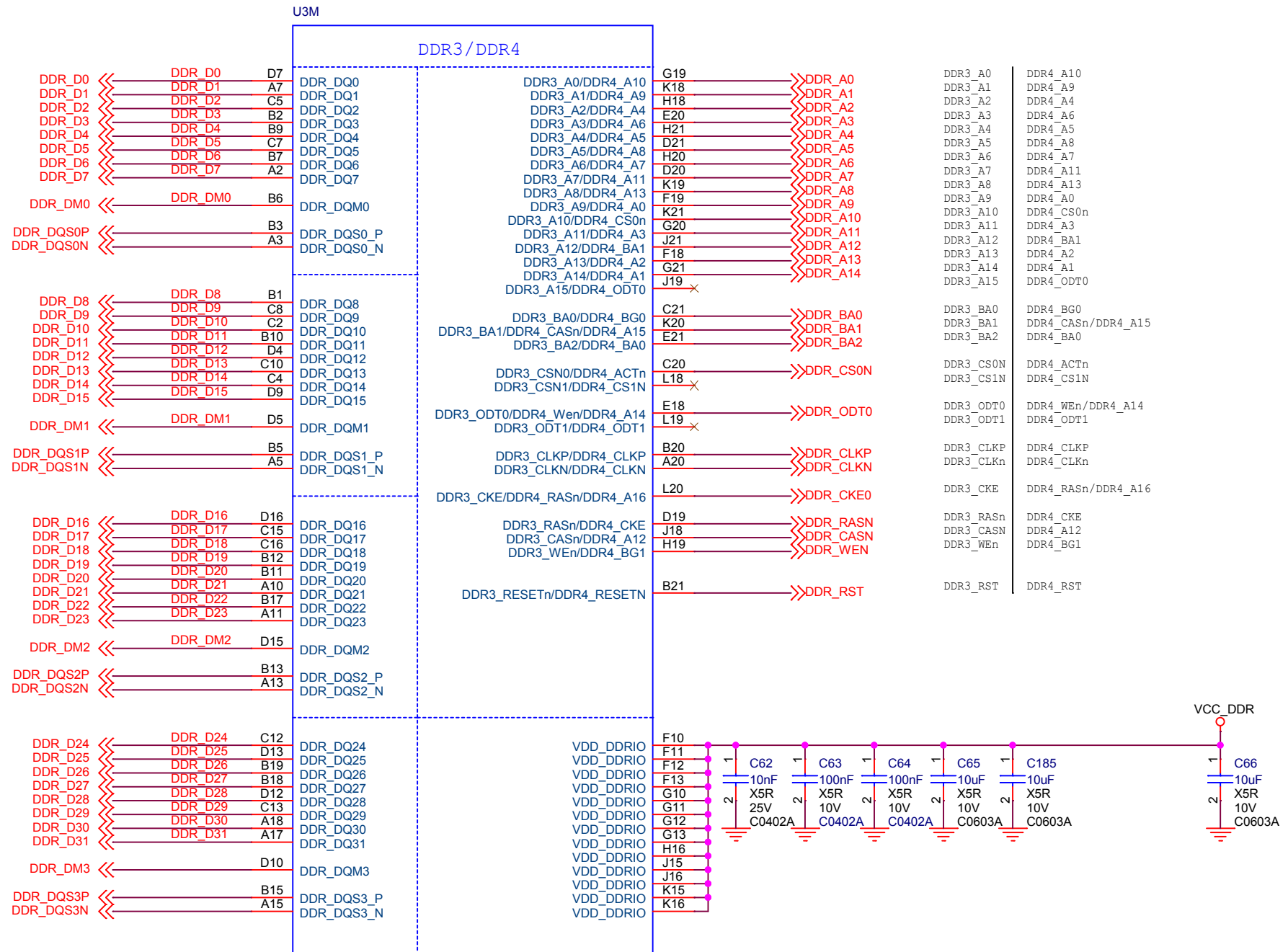


RK3328  
TFBGA395L-14X14mmA

Title		MKS SKIPR		Makerbase FaceBook : <a href="https://www.facebook.com/Makerbase.mks/">https://www.facebook.com/Makerbase.mks/</a> Github : <a href="https://github.com/makerbase-mks">https://github.com/makerbase-mks</a>	
Size	A4	Document Number	04_RK3328 Power	Rev	V1.0_002
Date:	Monday, June 20, 2022		Sheet	4	of 30

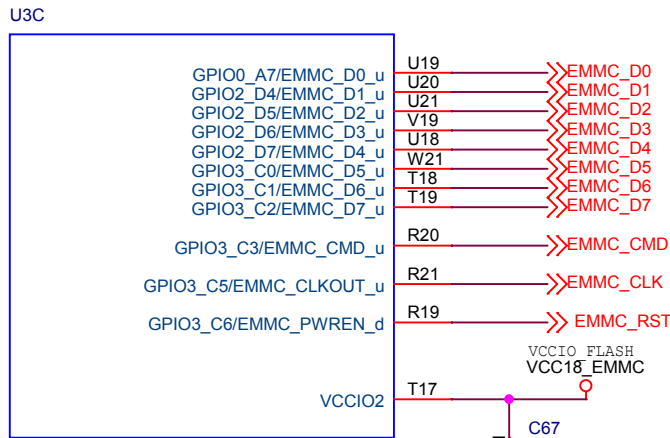


SARADC_IN0	SARADC_IN1	Up Resistance	Down Resistance	
Recover		DNP	10K	
BOM1		110K	10K	
BOM2		100K	20K	
BOM3		100K	33K	
BOM4		36K	18K	
BOM5		51K	36K	
BOM6		51K	51K	
BOM7		36K	51K	
BOM8		18K	36K	
BOM9		33K	100K	
BOM10		20K	100K	
BOM11		10K	110K	
BOM12		10K	DNP	

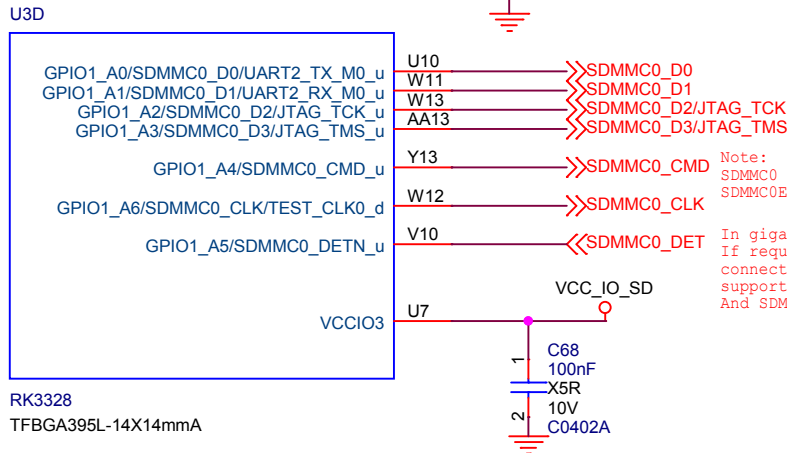


RK3328  
TFBGA395L-14X14mmA

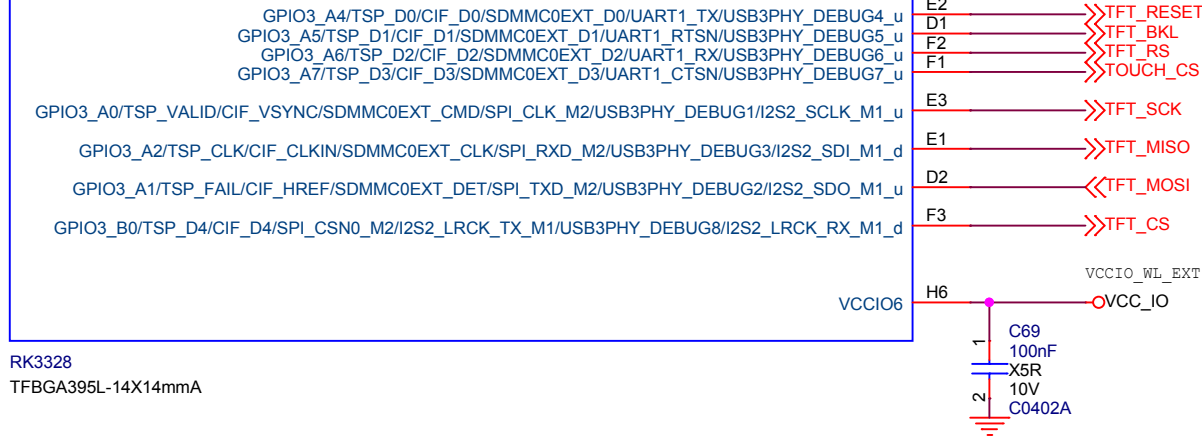
Title		MKS SKIPR		Makerbase FaceBook : <a href="https://www.facebook.com/Makerbase.mks/">https://www.facebook.com/Makerbase.mks/</a> Github : <a href="https://github.com/makerbase-mks">https://github.com/makerbase-mks</a>	
Size	A4	Document Number	06_RK3328 DDR Controler	Rev	V1.0_002
Date:	Monday, June 20, 2022		Sheet	6	of 30



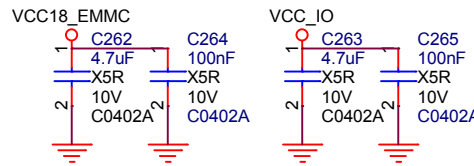
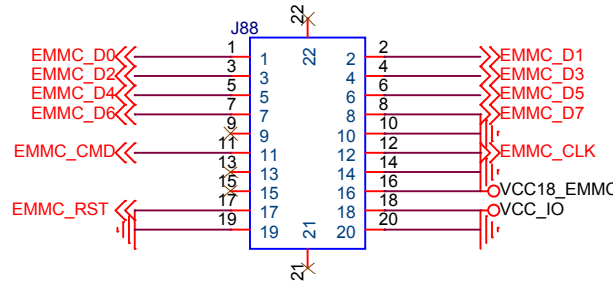
RK3328  
TFBGA395L-14X14mmA



RK3328  
TFBGA395L-14X14mmA



RK3328  
TFBGA395L-14X14mmA

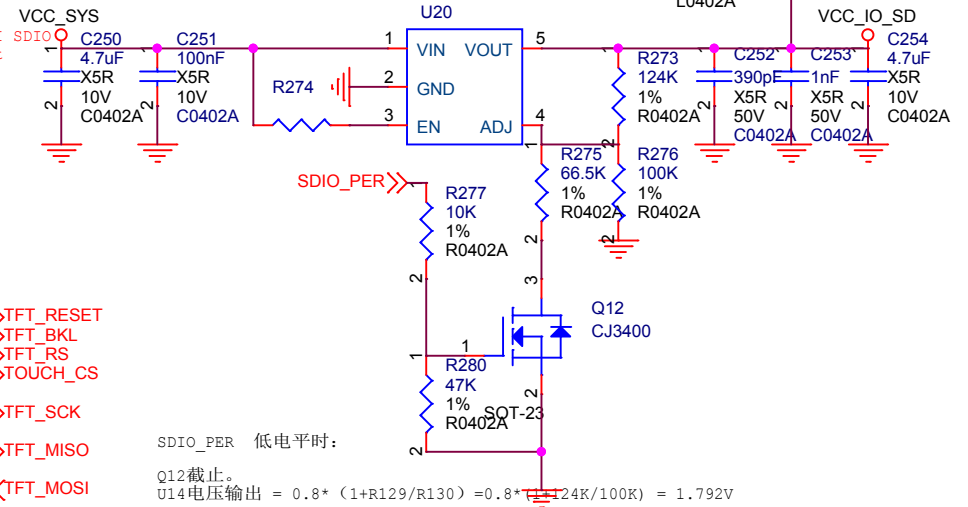


SDMMC0_D0	-----	SD_D0
SDMMC0_D1	-----	SD_D1
SDMMC0_D2/JTAG_TCK	-----	SD_D2
SDMMC0_D3/JTAG_TMS	-----	SD_D3
SDMMC0_CMD	-----	SD_CMD
SDMMC0_CLK	-----	SD_CLK
SDMMC0_DET	-----	SD_DET
VCCIO3	-----	VCC_IO

SDMMC0EXT_D0	-----	WIFI_D0_EXT
SDMMC0EXT_D1	-----	WIFI_D1_EXT
SDMMC0EXT_D2	-----	WIFI_D2_EXT
SDMMC0EXT_D3	-----	WIFI_D3_EXT
SDMMC0EXT_CMD	-----	WIFI_CMD_EXT
SDMMC0EXT_CLK	-----	WIFI_CLK_EXT
GPIO3_A1	-----	WIFI_WAKE_HOST_EXT
VCCIO6	-----	VCCIO_WL_EXT

Note:  
SDMMC0 support SD Boot, Max 150MHz  
SDMMC0EXT does not support SD Boot, Max 100MHz

In gigabit Ethernet requirements:  
If requiring high performance WIFI, WIFI SDIO connects to SDMMC0 port, causing without supporting SD Boot.  
And SDMMC0EXT connects to SD Card



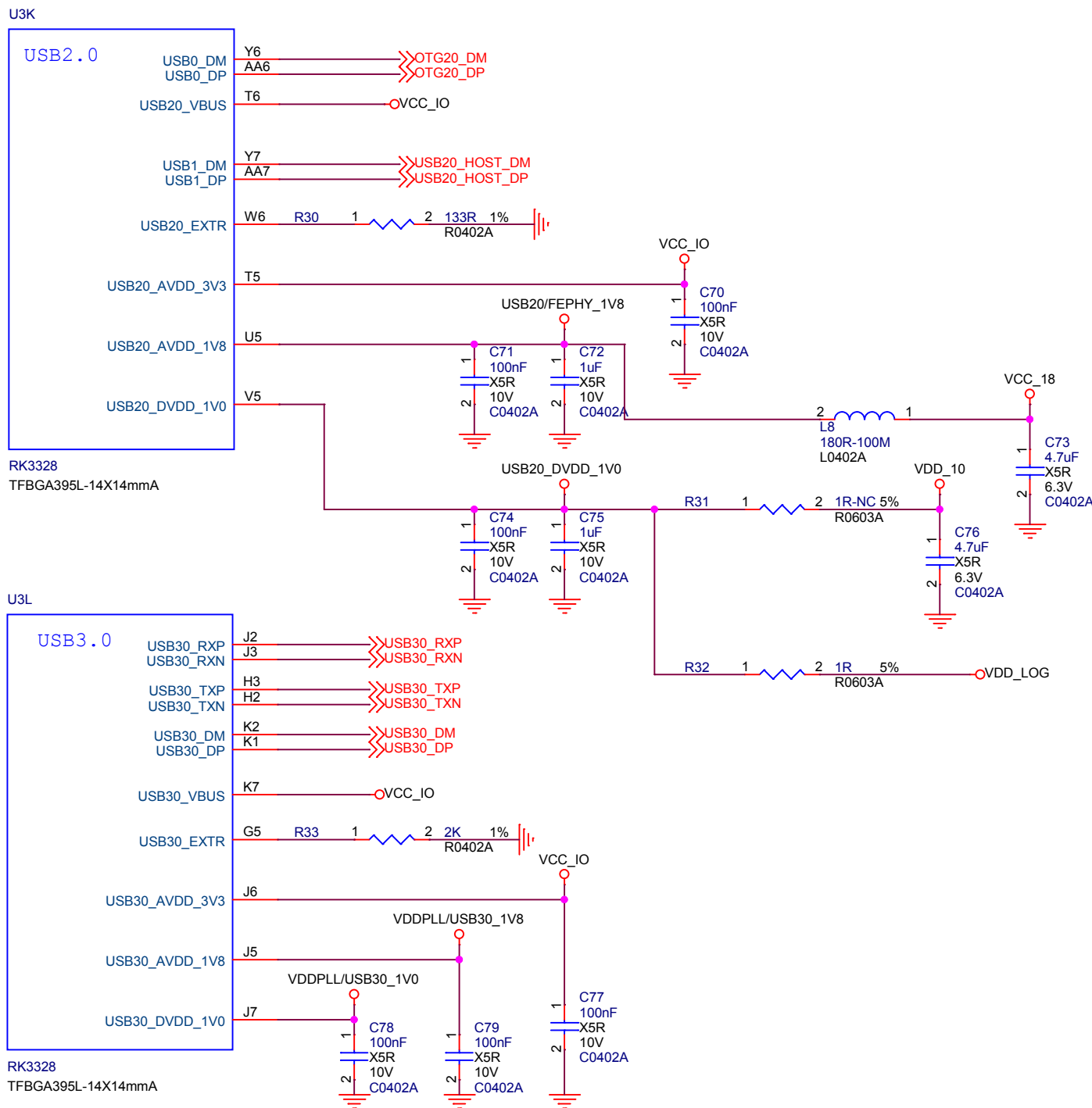
SDIO\_PER 低电平时:

Q12截止。  
U14电压输出 =  $0.8 * (1 + R129/R130) = 0.8 * (1 + 24K/100K) = 1.792V$

SDIO\_PER 高电平时:

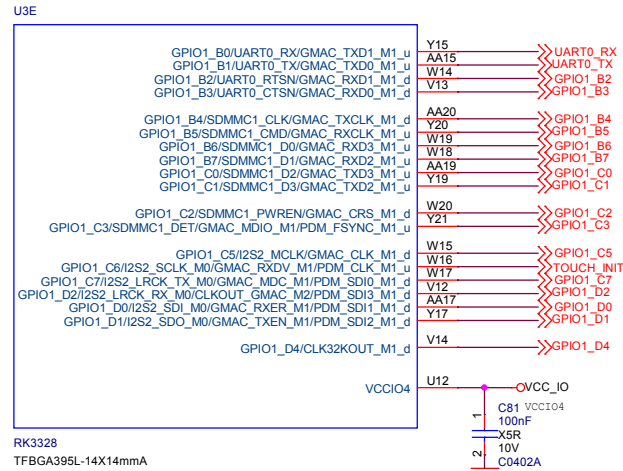
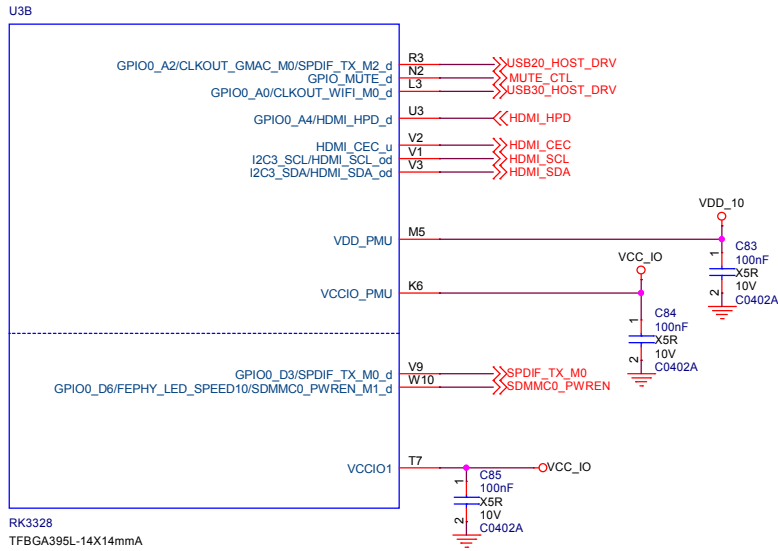
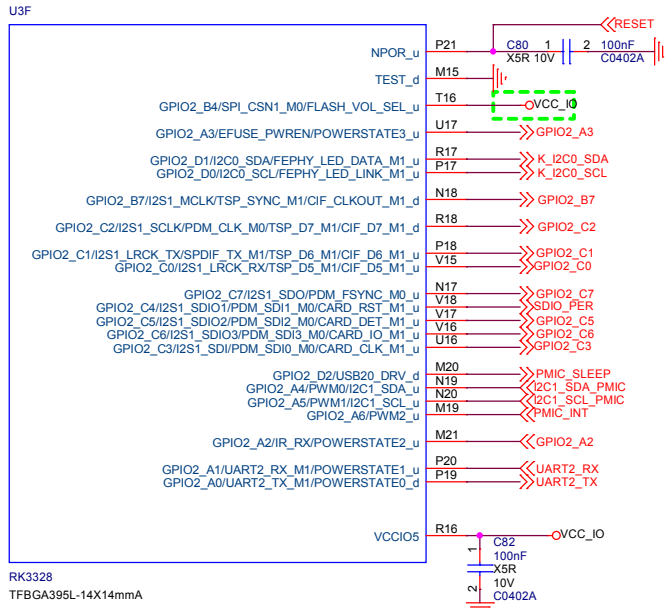
Q12栅极由 SDIO\_PER 电阻分压, Q12导通。  
U20电压输出 =  $0.8 * (1 + R129/(R130 \text{ 并联 } R131)) = 0.8 * (1 + 124K/(100K \text{ 并联 } 66.5K)) = 3.283V$

Title		MKS SKIPR	Makerbase
Size		A4	Document Number
Date		Tuesday, June 21, 2022	07_RK3328 eMMC Controller
Sheet		7	of 30
Rev		V1.0	002



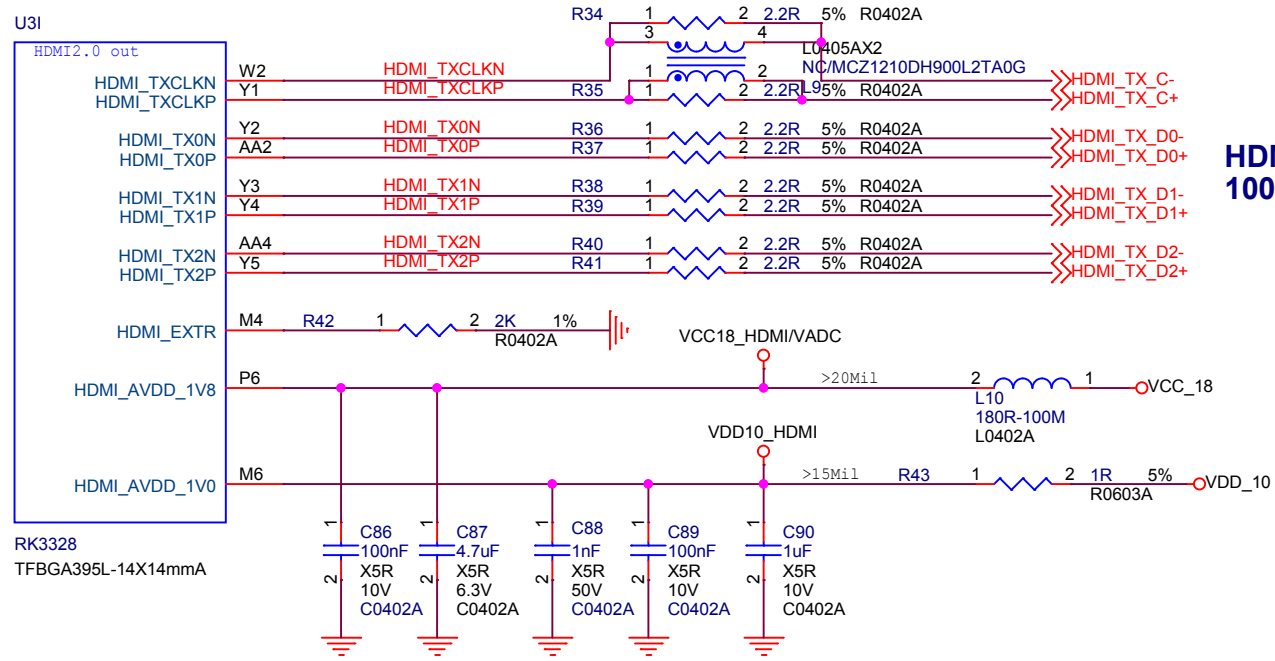
Title		MKS SKIPR		Makerbase	
Size		A4		Document Number	
Date:		Monday, June 20, 2022		08_RK3328 USB2 PHY/USB3 PHY	
Sheet		8		of 30	
Rev		V1.0		002	





Title		MKS SKIPR	Makerbase
Size		A3	Document Number
Date:		Monday, June 20, 2022	Sheet 9 of 30
Rev		V1.0	002

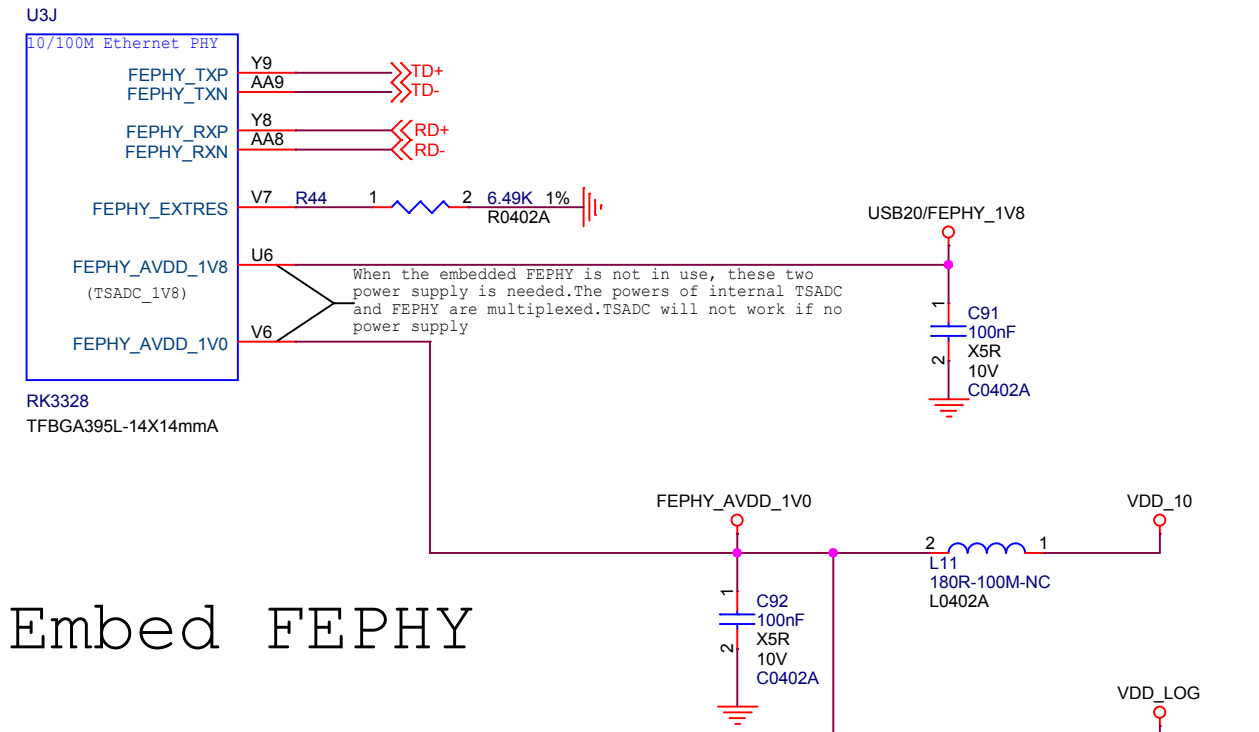
### Close to RK3328



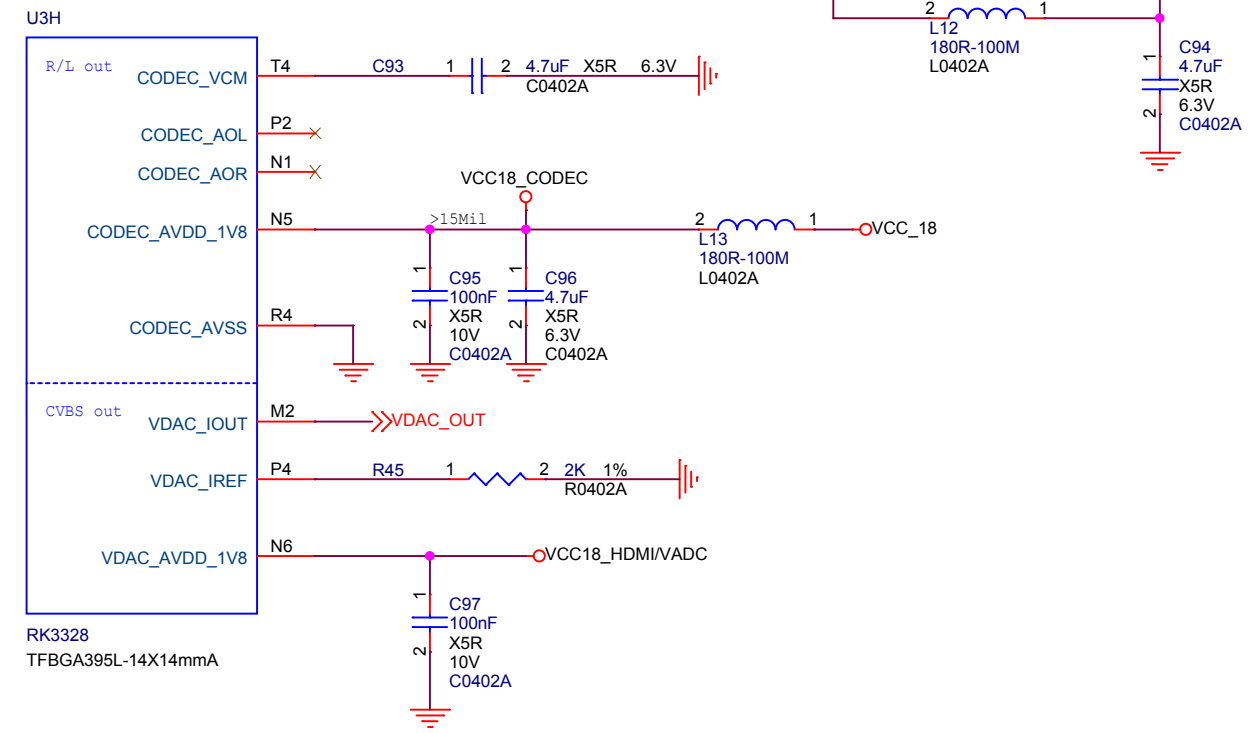
**HDMI TMSD trace  
100 Ohm +-10%**

RK3328  
TFBGA395L-14X14mmA

Title		MKS SKIPR		Makerbase	
Size		A4		Document Number	
Date:		Monday, June 20, 2022		10 RK3328 HDMI PHY	
Date:		Monday, June 20, 2022		Sheet 10 of 30	
Date:		Monday, June 20, 2022		Rev 1.0_002	

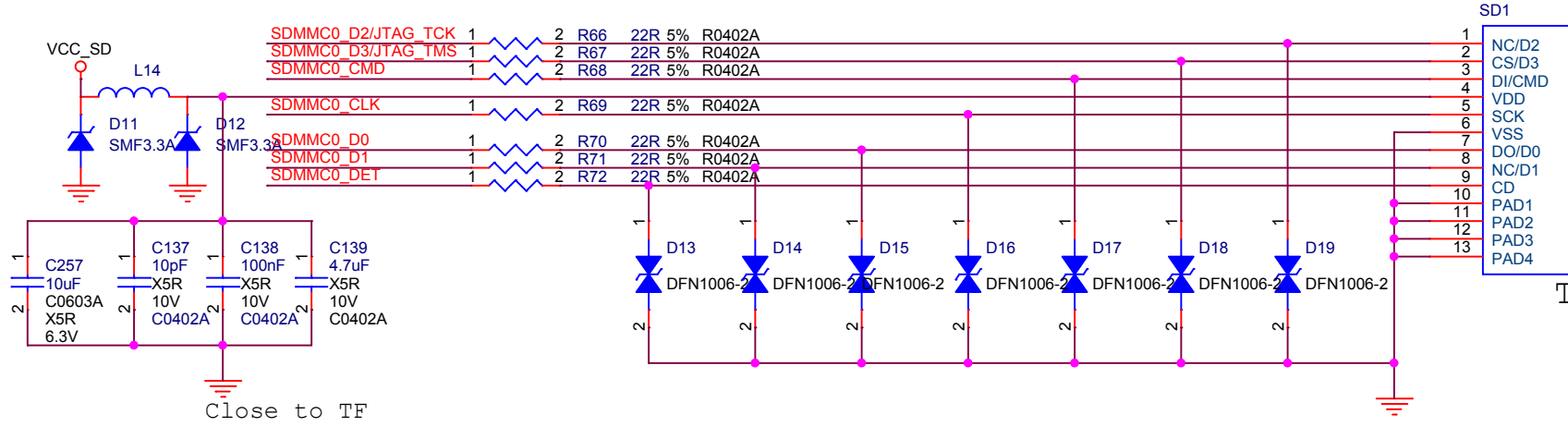
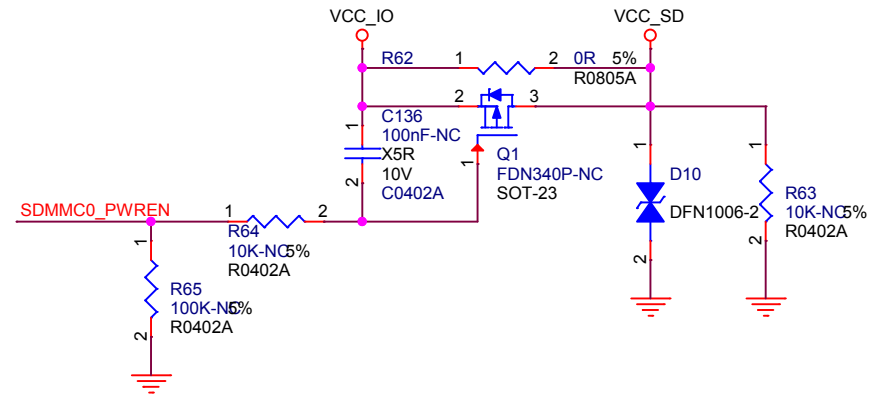


# Embed FEPHY



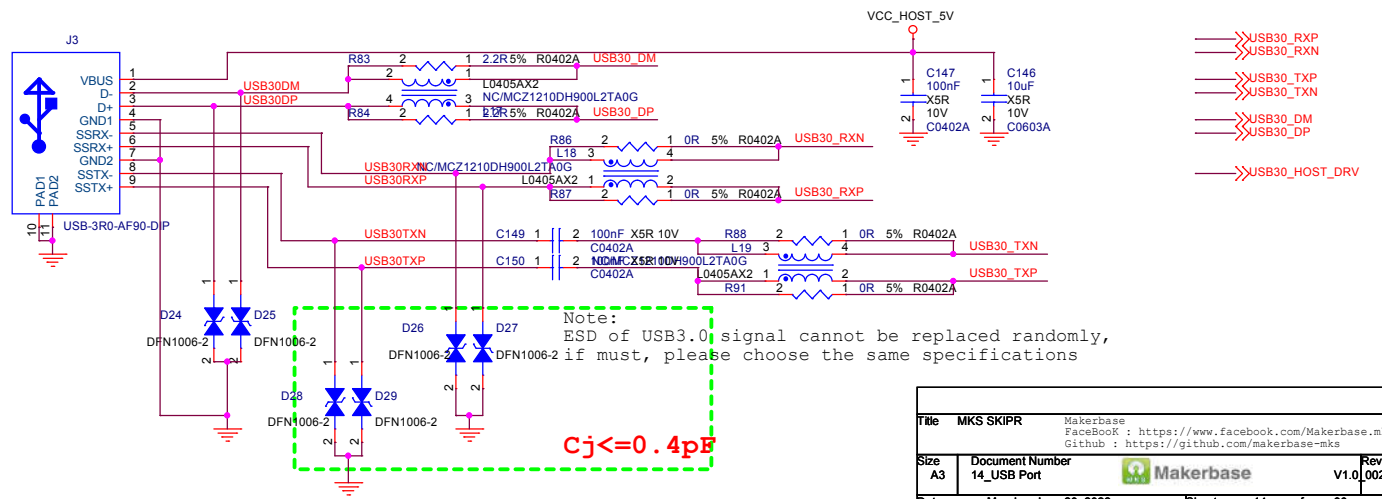
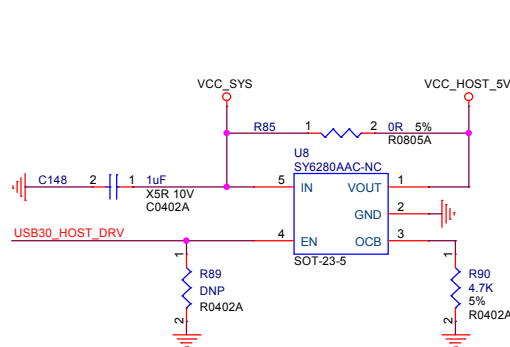
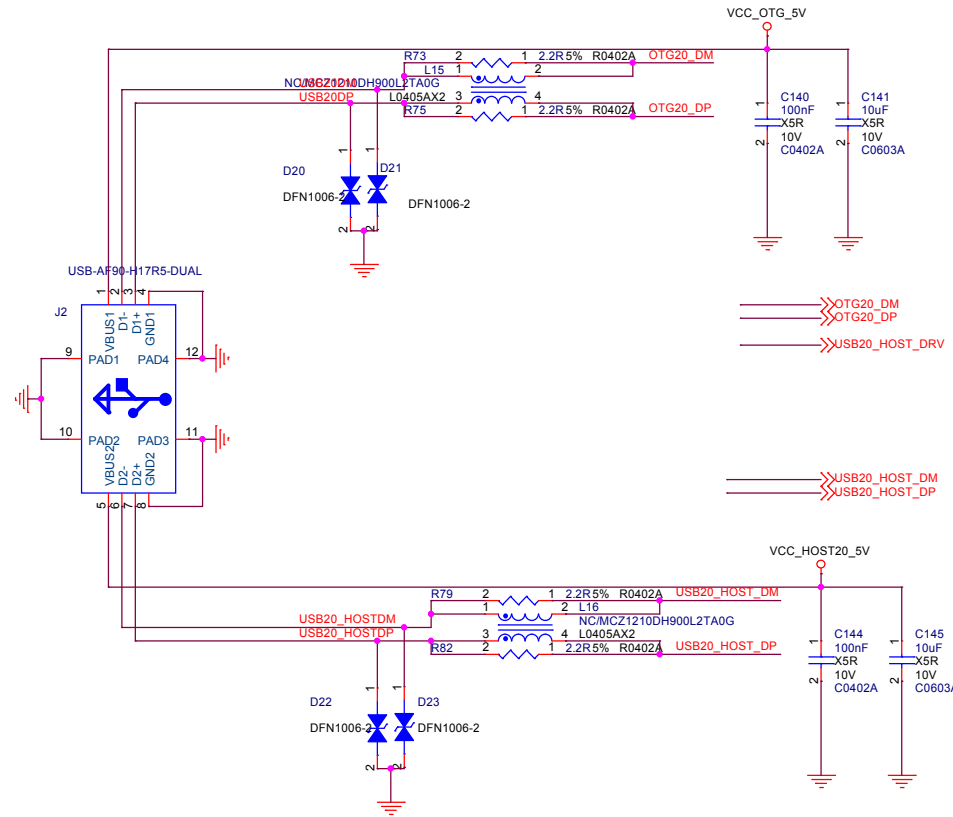
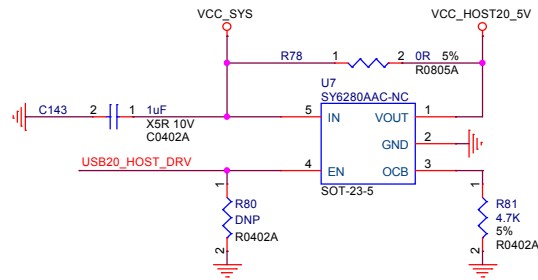
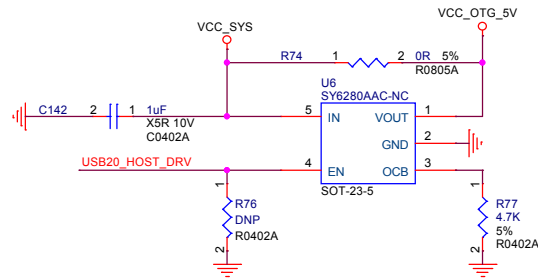
Title		MKS SKIPR		Makerbase	
Size		A4		Document Number	
Date:		Monday, June 20, 2022		11 RK3328 FEPHY/AV	
Sheet		11		of 30	
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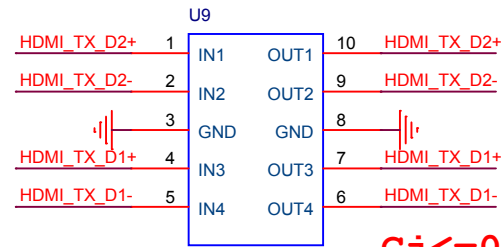
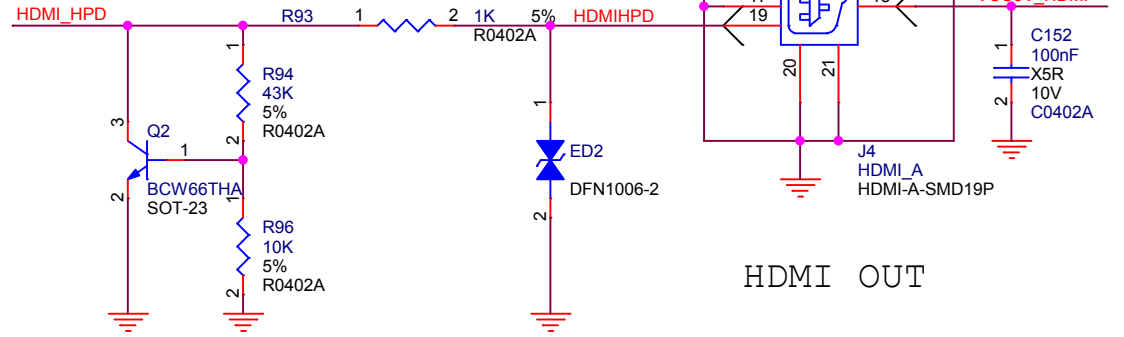
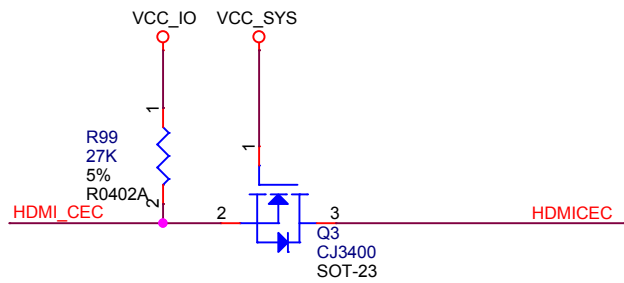
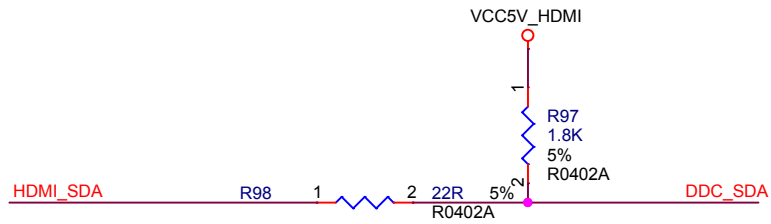
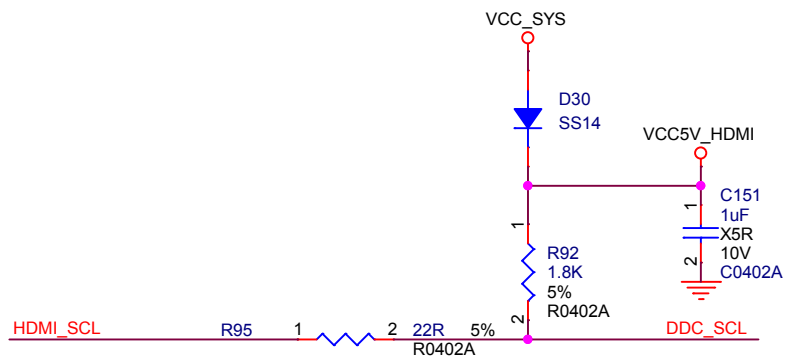




Close to TF

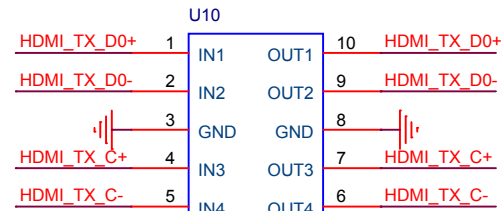
TF Card





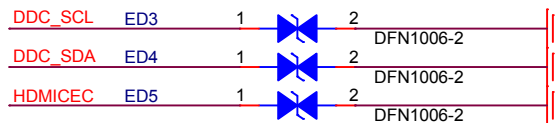
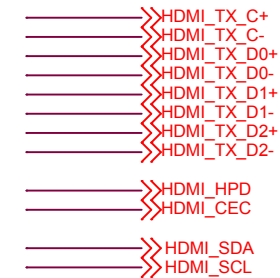
DFN2510-10

**Cj <= 0.4 pF**

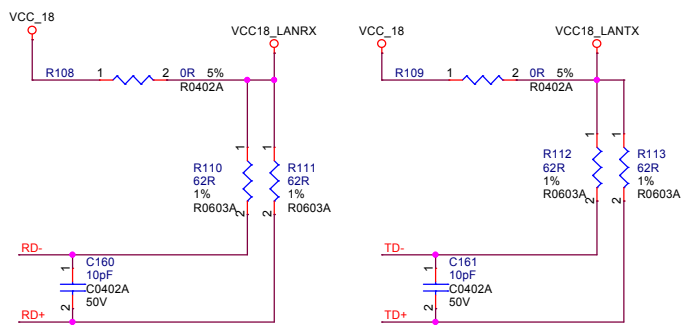
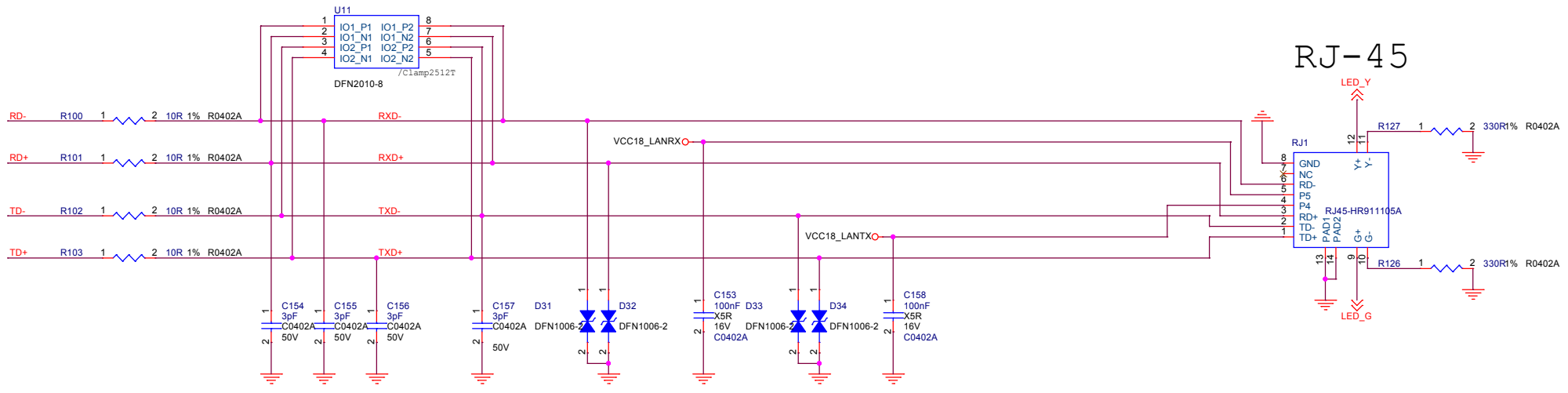


DFN2510-10

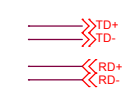
**Cj <= 0.4 pF**



Title		MKS SKIPR		Makerbase	
FaceBook		https://www.facebook.com/Makerbase.mks/			
Github		https://github.com/makerbase-mks			
Size	A4	Document Number	15_HDMI OUT Port	Rev	V1.0_002
Date:	Friday, July 22, 2022	Sheet	15	of	30

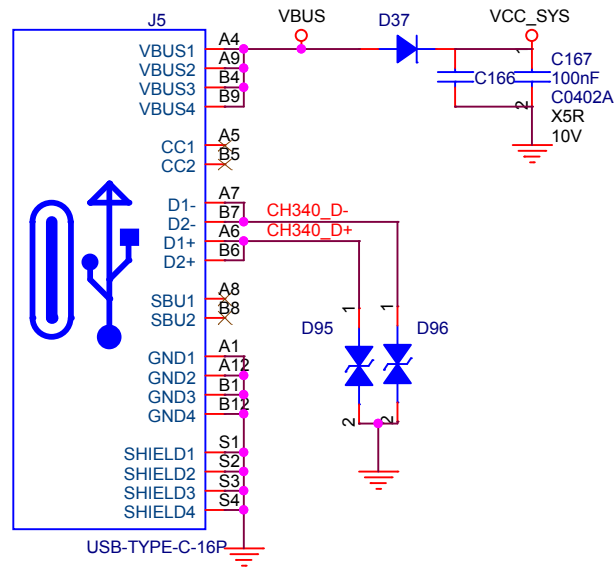
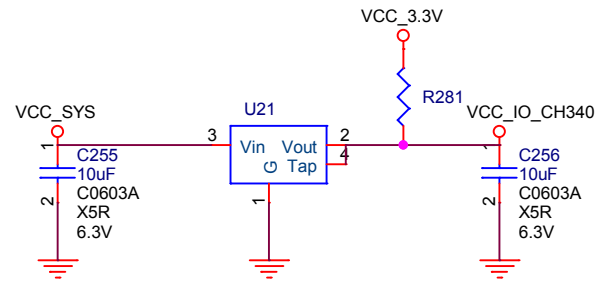
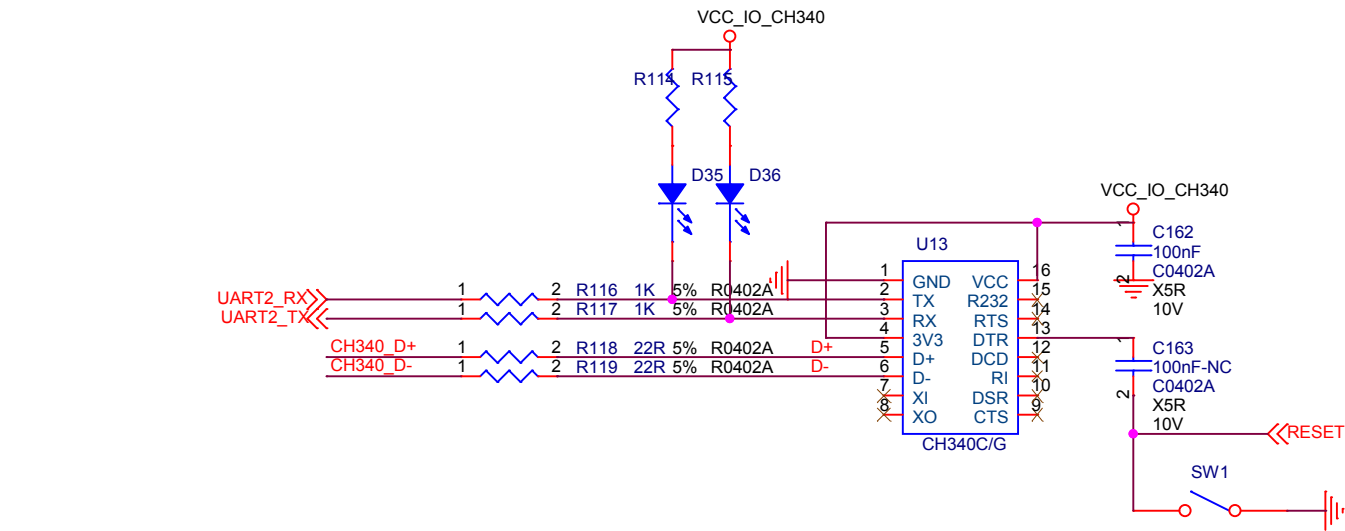



K\_I2C0\_SCL <<—> LED\_G  
 K\_I2C0\_SDA <<—> LED\_Y

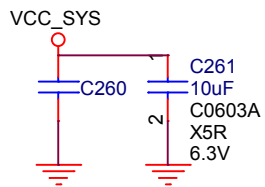
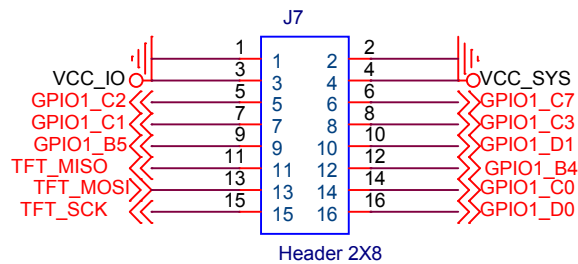
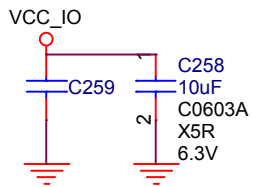
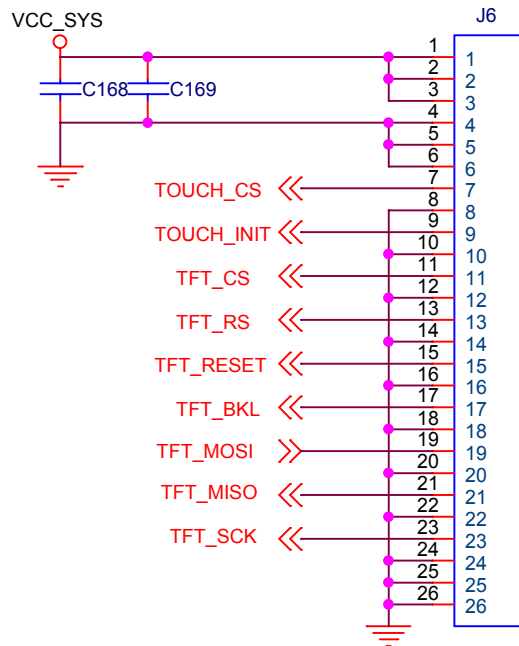


# RJ-45





Title		MKS SKIPR	Makerbase
FaceBook		<a href="https://www.facebook.com/Makerbase.mks/">https://www.facebook.com/Makerbase.mks/</a>	
Github		<a href="https://github.com/makerbase-mks">https://github.com/makerbase-mks</a>	
Size	Document Number	 <b>Makerbase</b>	Rev
A4	17_Debug UART2 CH340		V1.0_002
Date:	Monday, June 20, 2022	Sheet	17 of 30



Title			
MKS SKIPR	Makerbase	FaceBook : <a href="https://www.facebook.com/Makerbase.mks/">https://www.facebook.com/Makerbase.mks/</a> Github : <a href="https://github.com/makerbase-mks">https://github.com/makerbase-mks</a>	
Size	Document Number	 <b>Makerbase</b>	Rev
A	18_TS35/12C/UART/IO		V1.0 002
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RK3328

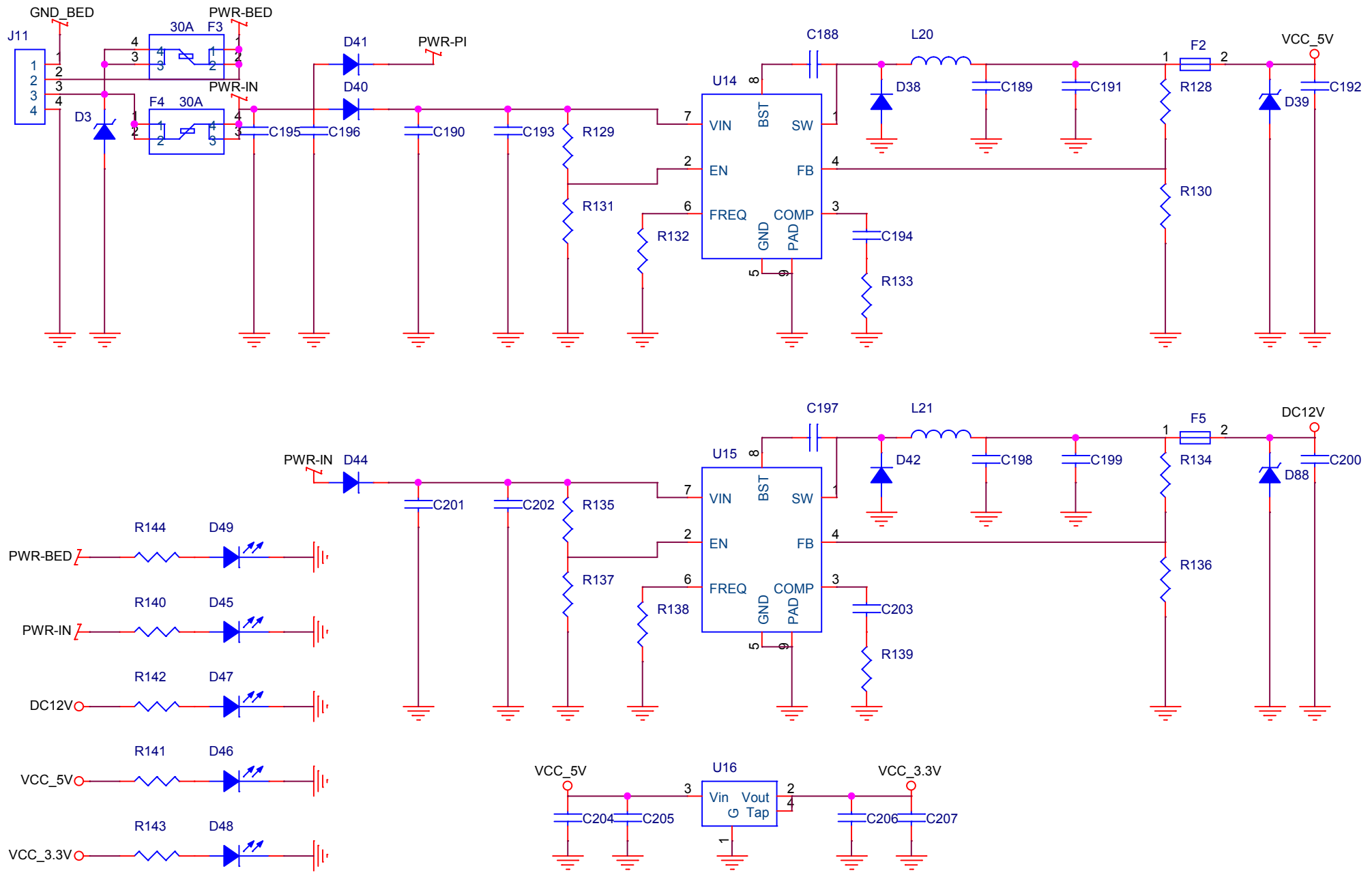
UART


MCU

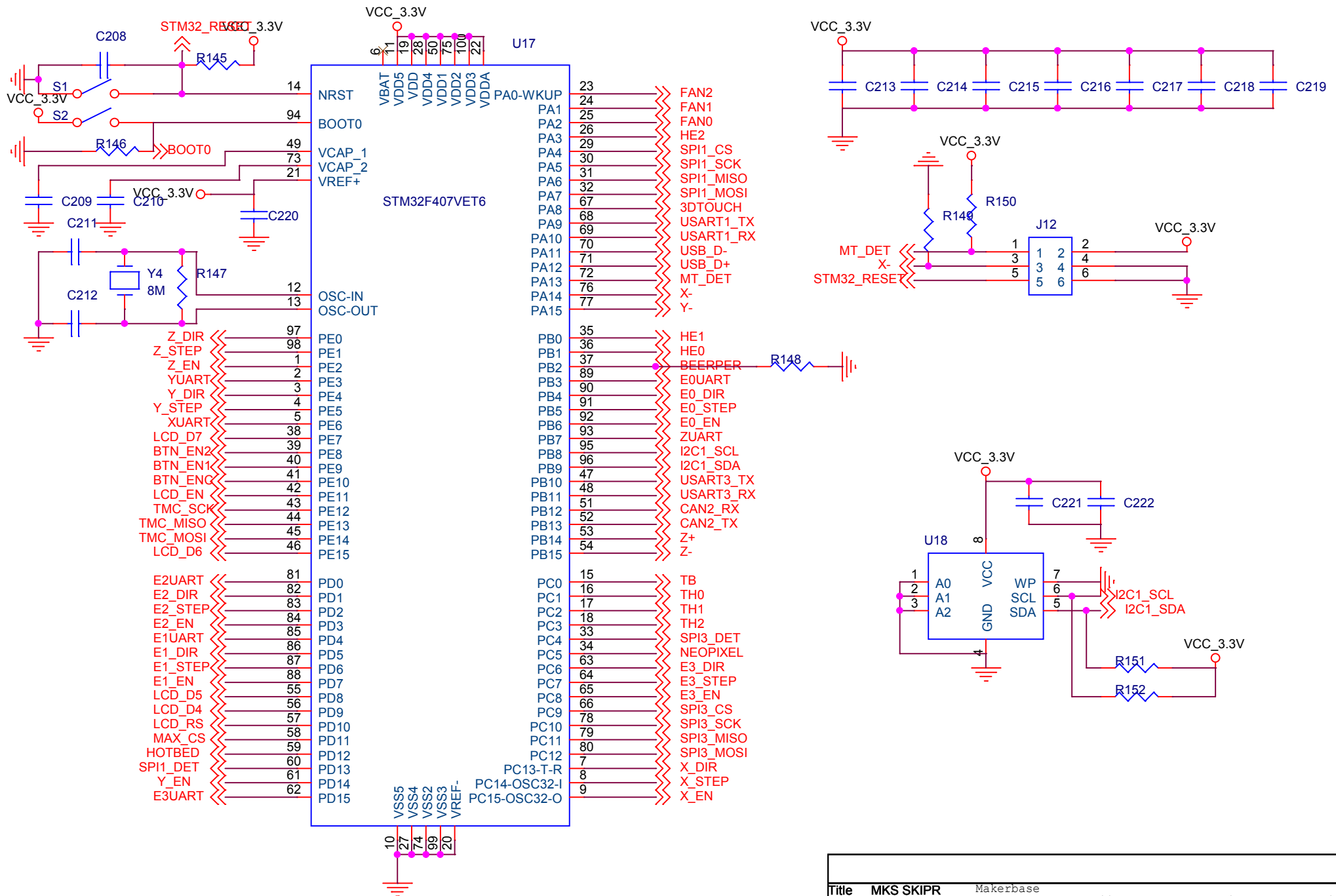
0-6 Steppers  
4 Heaters  
4 NTC+SPI TEMP  
TF CARD  
Type-USB  
CAN2  
3D TOUCH/Neopixel  
LCD-EXP1/2  
X, Y, Z-, Z+, MT-DET  
3 PWM FANS


POWER  
DC12~24 -> DC5V  
DC5V -> DC3.3V

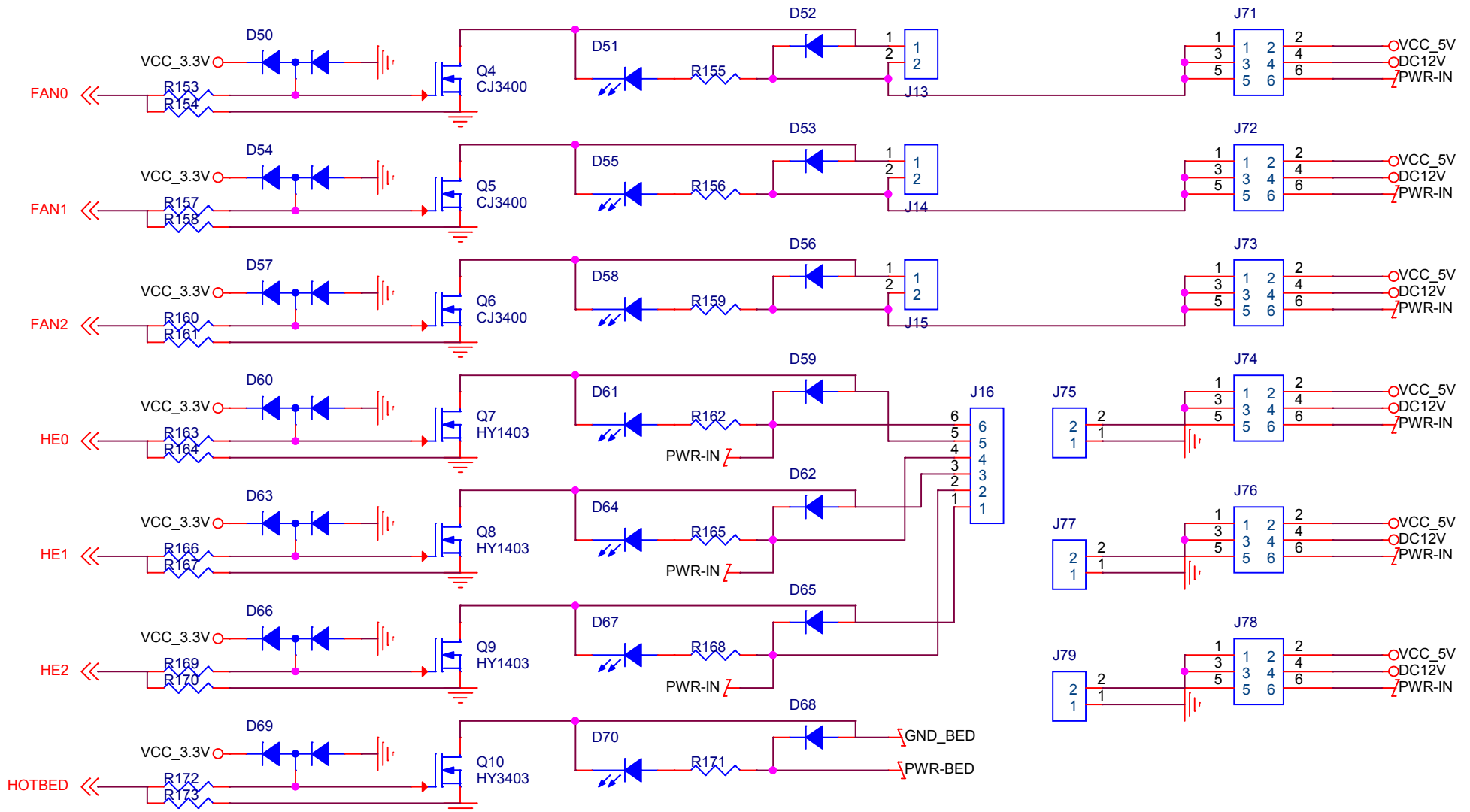
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FaceBook				: <a href="https://www.facebook.com/Makerbase.mks/">https://www.facebook.com/Makerbase.mks/</a>			
Github				: <a href="https://github.com/makerbase-mks">https://github.com/makerbase-mks</a>			
Size	Document Number	Makerbase		Rev			
A	19_MCU_Block Diagram			V1.0	002		
Date:	Monday, June 20, 2022	Sheet	19	of	30		



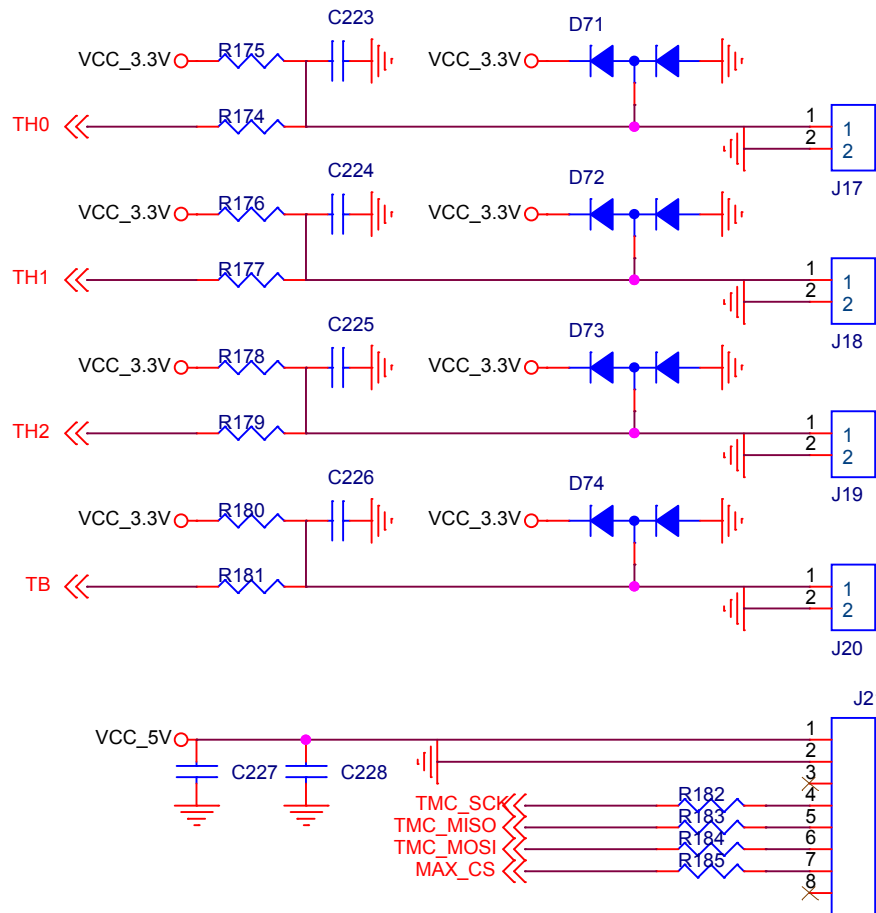
Title		MKS SKIPR		Makerbase FaceBook : <a href="https://www.facebook.com/Makerbase.mks/">https://www.facebook.com/Makerbase.mks/</a> Github : <a href="https://github.com/makerbase-mks">https://github.com/makerbase-mks</a>	
Size	Document Number			Rev	
A	20_POWER			V1.0.002	
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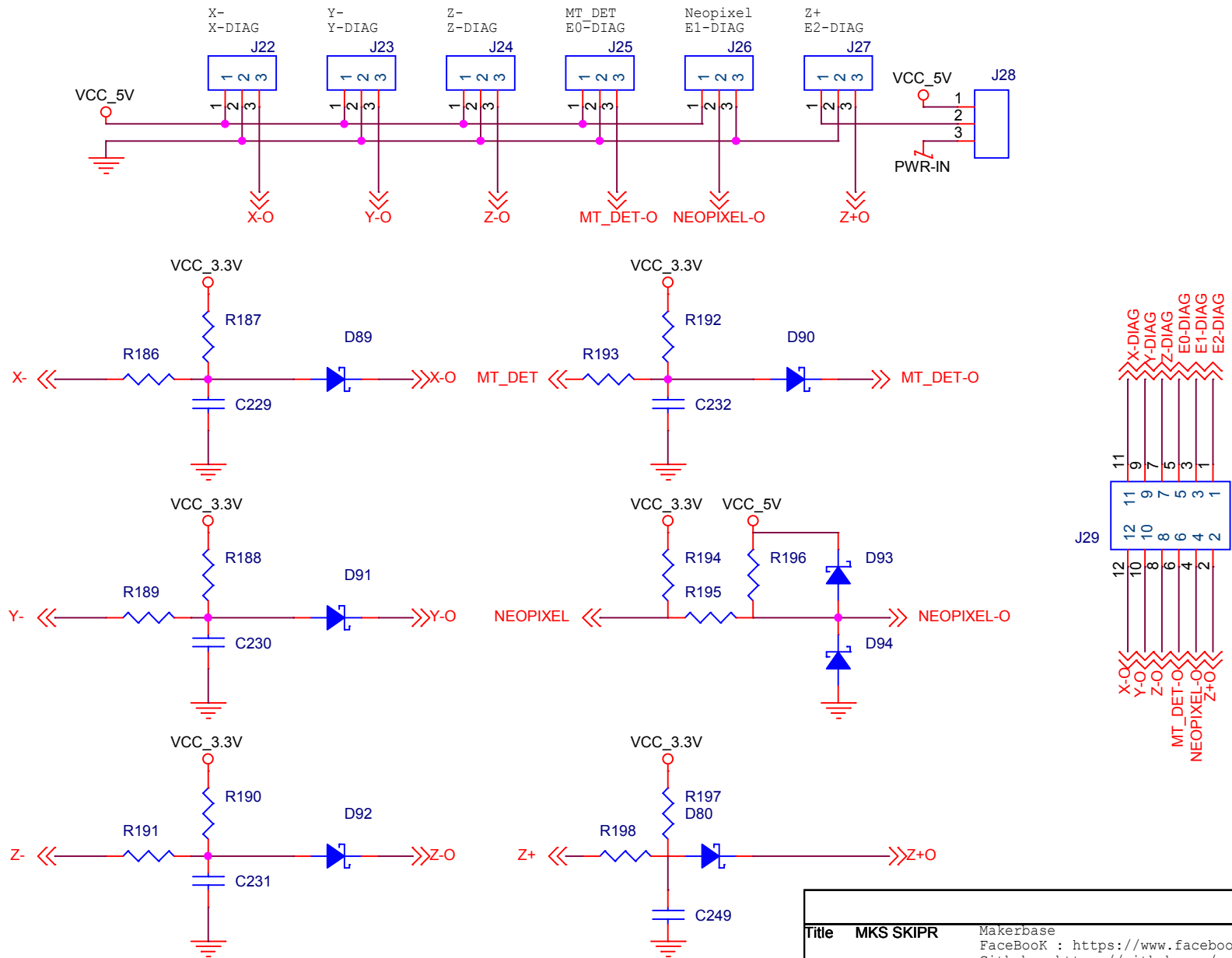
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Size	Document Number		Rev		
A	22_MOSFET			V1.0	002
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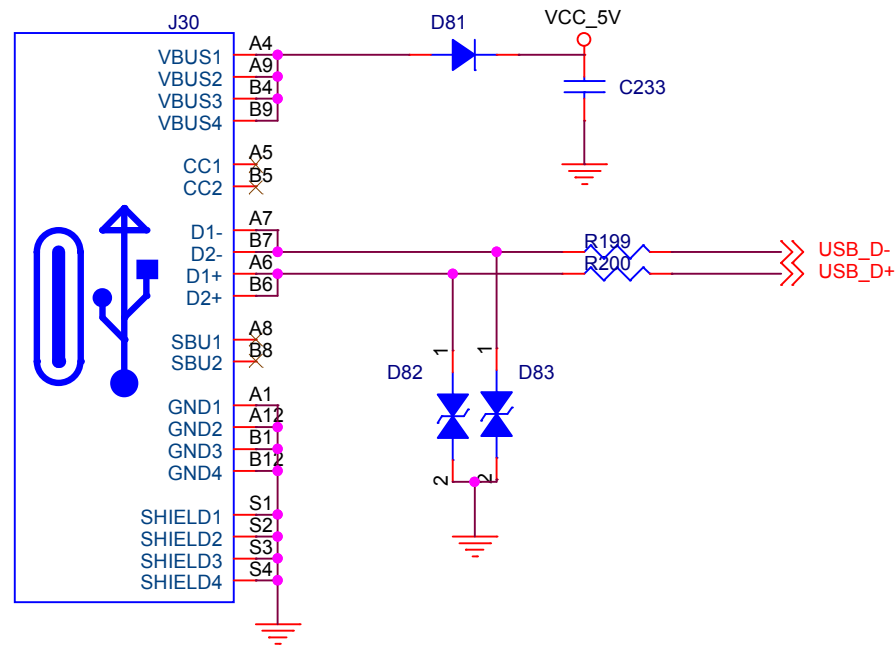



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A	23_THM			V1.0 002	
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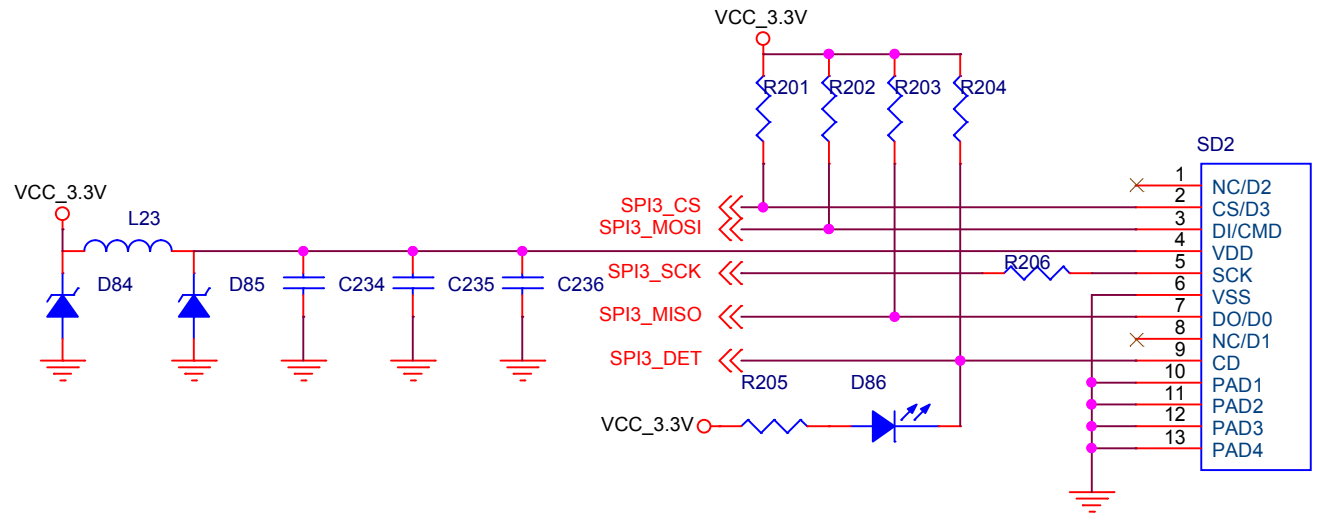


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Size	Document Number		Rev		
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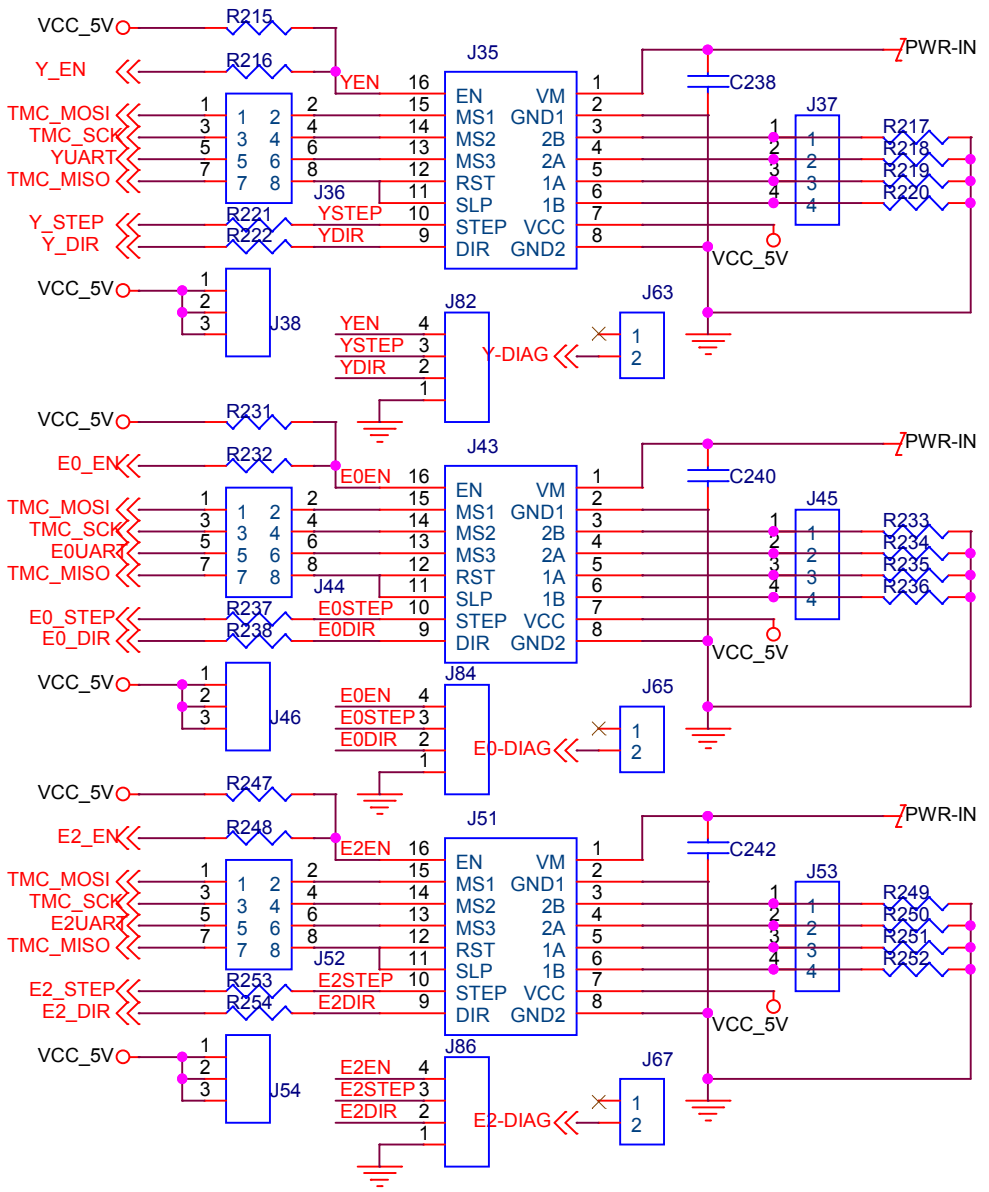
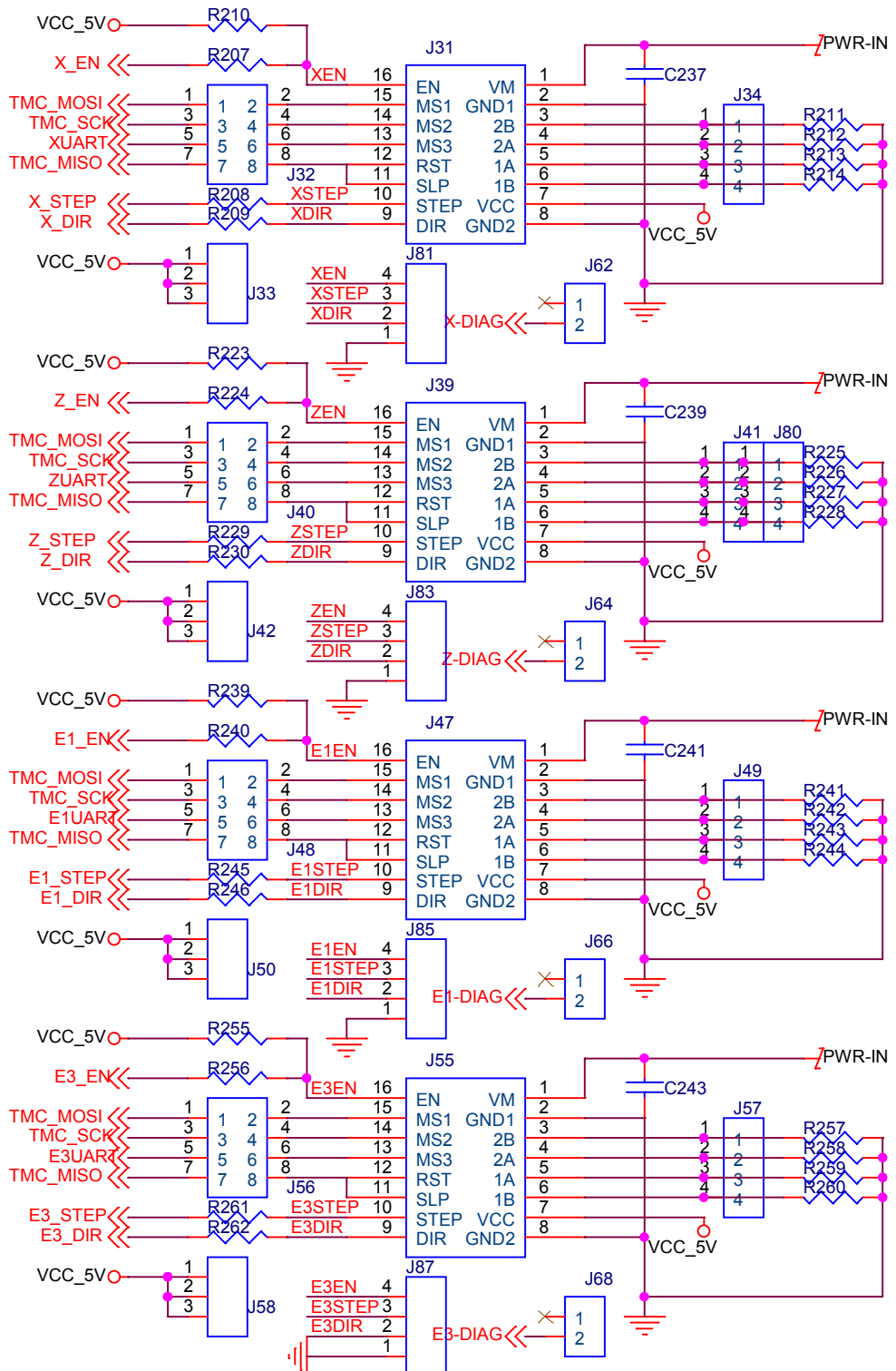





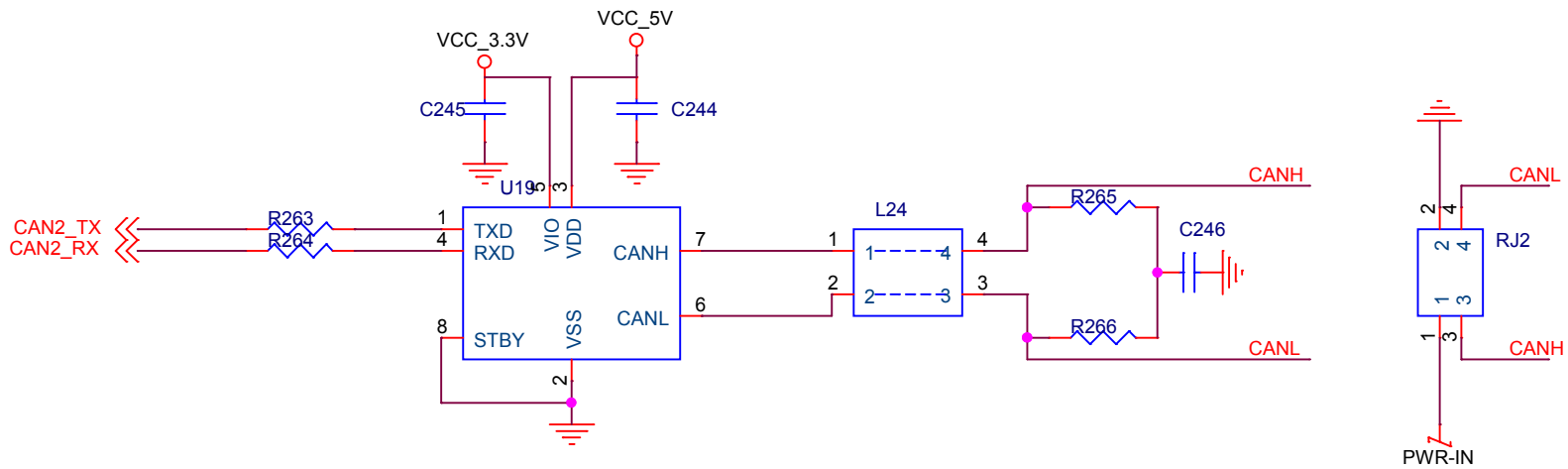
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A	25_USB		Date:	Monday, June 20, 2022	Sheet



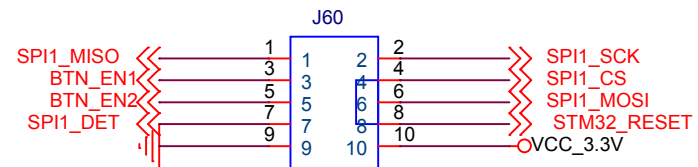
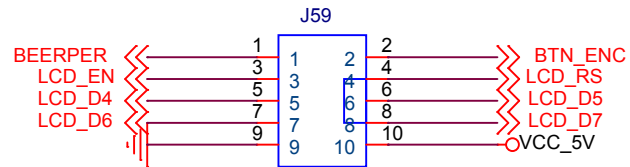
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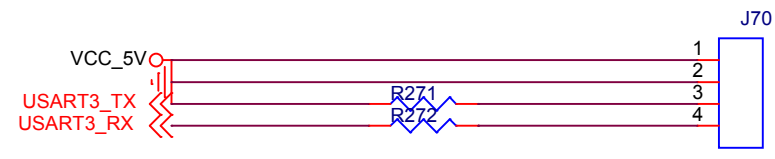
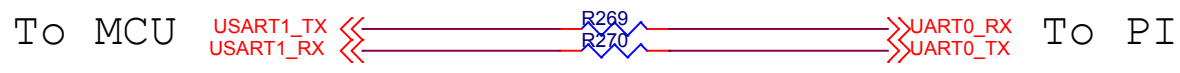
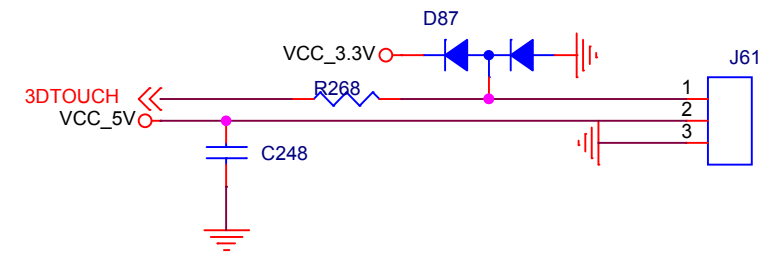
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