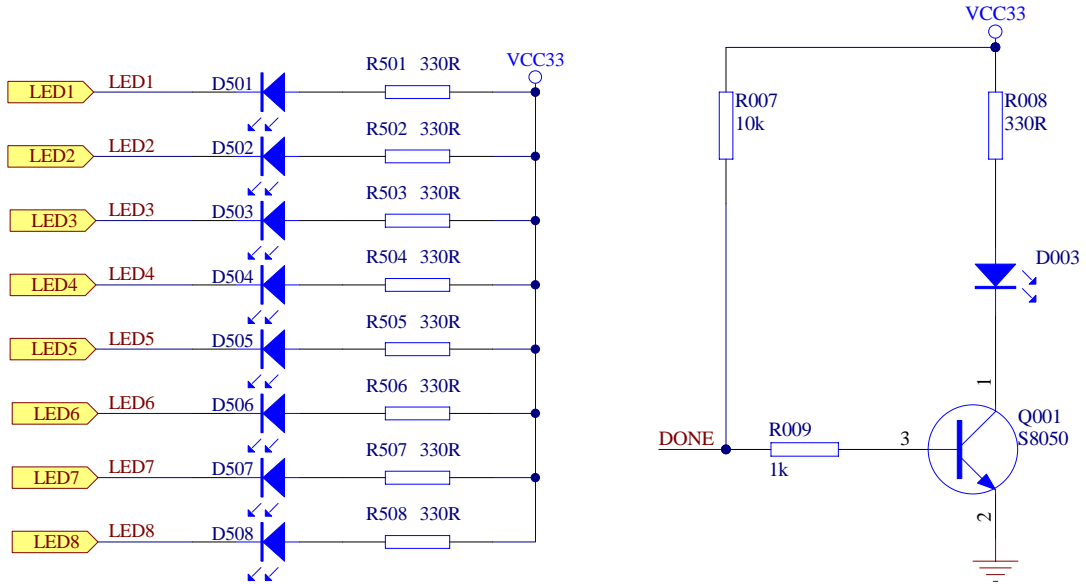


LatticeXP2-17 DEMO 板说明书

1. 九个发光二极管 (LED)

用于辅助调试，可以通过设置LED的点亮状态，直观显示运行结果。

- 电路连接



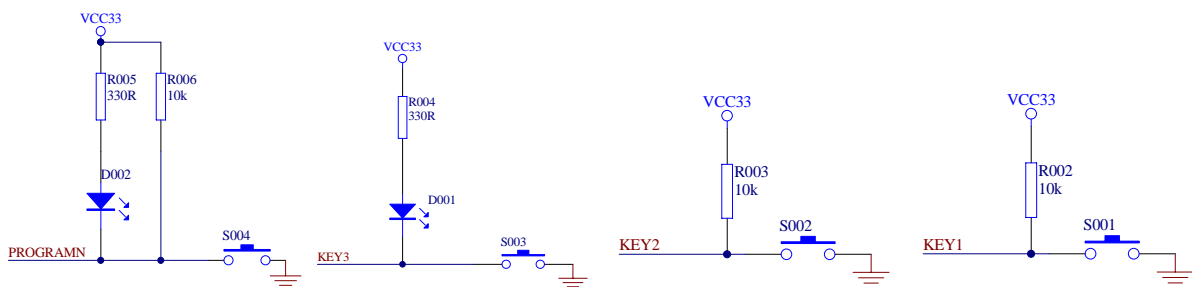
- 管脚映射

器件	信号名称	LXP2-17对应管脚
D501	LED1	PIN105
D502	LED2	PIN110
D503	LED3	PIN112
D504	LED4	PIN114
D505	LED5	PIN116
D506	LED6	PIN120
D507	LED7	PIN122
D508	LED8	PIN124
D003	DONE	PIN10

2. 按键输入

四个轻触按键可用于触发信号输入，并可配合软件将其定义为复位信号等功能，以便于调试。

- 电路连接



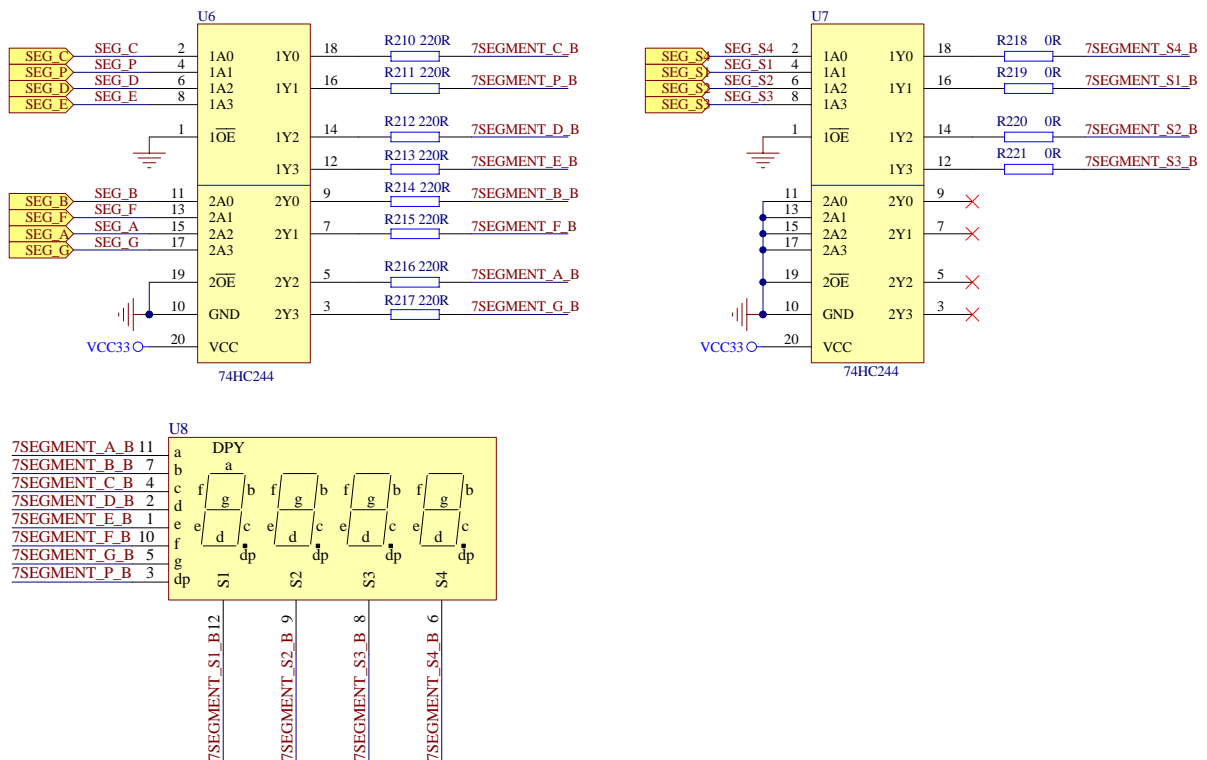
● 管脚映射

器件	信号名称	LXP2-17对应管脚
S001	KEY1	PIN157
S002	KEY2	PIN158
S003	KEY3	PIN159
S004	PROGRAMN	PIN8

3. 数码管显示

通过两片 74HC244 驱动 4 位共阳极数码管显示。

● 电路连接



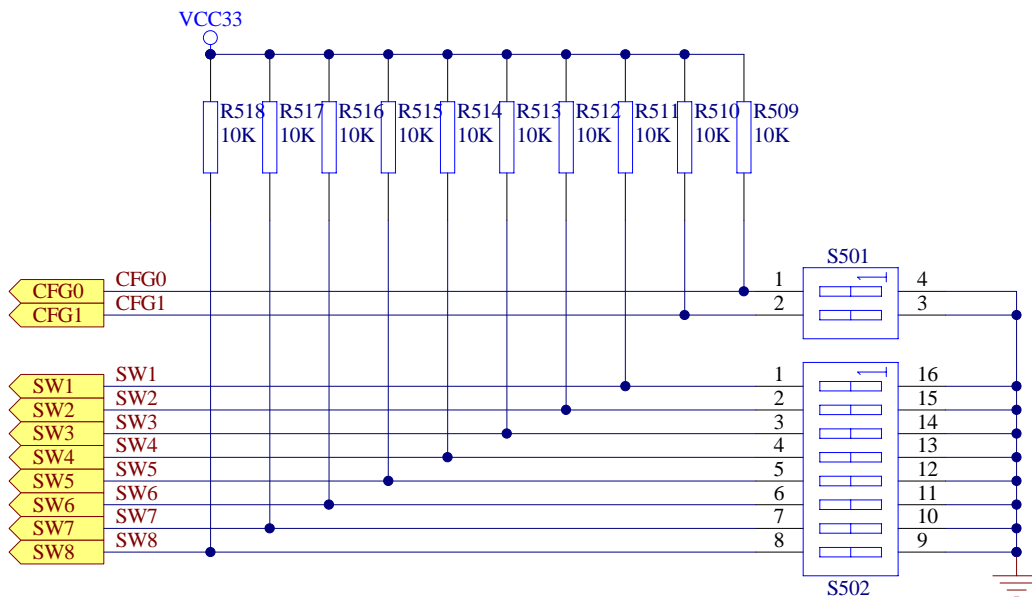
● 管脚映射

器件	信号名称	LXP2-17对应管脚
U6-1A0	SEG C	PIN149
U6-1A1	SEG P	PIN148
U6-1A2	SEG D	PIN147
U6-1A3	SEG E	PIN146
U6-2A0	SEG B	PIN150
U6-2A1	SEG F	PIN151
U6-2A2	SEG A	PIN155
U6-2A3	SEG G	PIN156
U7-1A0	SEG S4	PIN145
U7-1A1	SEG S1	PIN144
U7-1A2	SEG S2	PIN142
U7-1A3	SEG S3	PIN140

4. 拨码开关

拨码开关在简单的逻辑调试时，可用作状态输入，减少额外的硬件连接。

- 电路连接



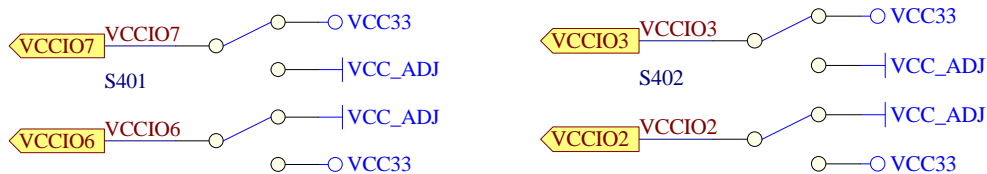
- 管脚映射

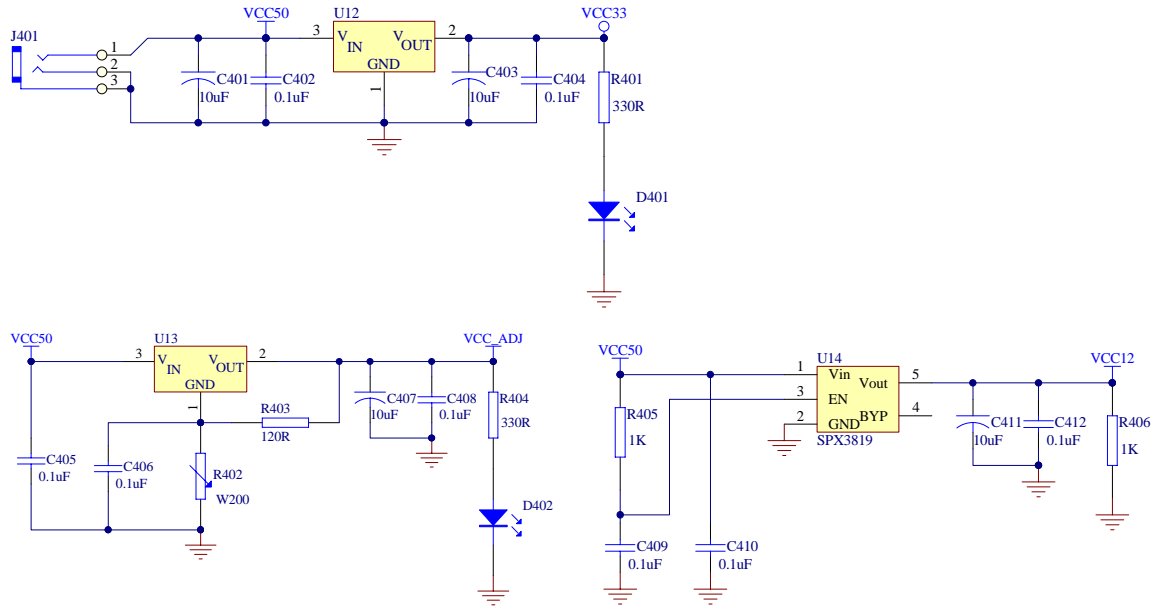
器件	信号名称	LXP2-17对应管脚
S501-1	CFG0	PIN29
S501-2	CFG1	PIN9
S502 1	SW1	PIN125
S502 2	SW2	PIN123
S502 3	SW3	PIN121
S502 4	SW4	PIN118
S502 5	SW5	PIN115
S502 6	SW6	PIN113
S502 7	SW7	PIN111
S502 8	SW8	PIN106

5. 电源方案

通过设定选择开关，可为 LXP2-17 的 4 组 I/O 分别选择供电电压。评估板提供了 3.3V 和 Vadj 可选。通过调节可调电阻 R402，可以将 Vadj 设定为 1.25V 至 3.3V 之间的任意电压。

- 电路连接



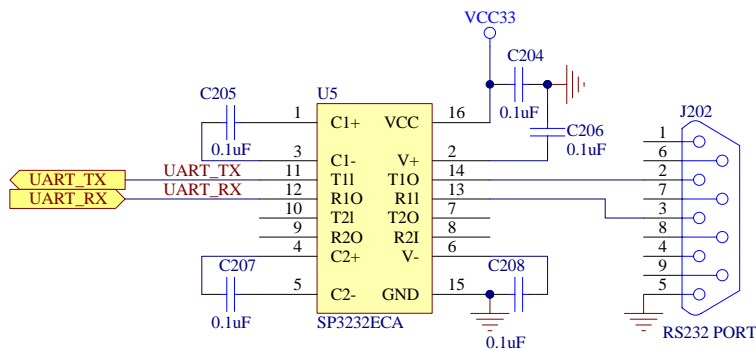


● 管脚映射

功能选择	LXP-17E对应管脚	信号名称	功能描述
VCCI02	PIN141	VCC33	I/O BANK2工作电压为3.3V
	PIN152	VCC ADJ	I/O BANK2工作电压为V _{adj}
VCCI03	PIN107	VCC33	I/O BANK3工作电压为3.3V
	PIN117	VCC ADJ	I/O BANK3工作电压为V _{adj}
VCCI06	PIN38	VCC33	I/O BANK6工作电压为3.3V
	PIN50	VCC ADJ	I/O BANK6工作电压为V _{adj}
VCCI07	PIN5	VCC33	I/O BANK7工作电压为3.3V
	PIN16	VCC ADJ	I/O BANK7工作电压为V _{adj}

6. RS-232 串口

● 电路连接

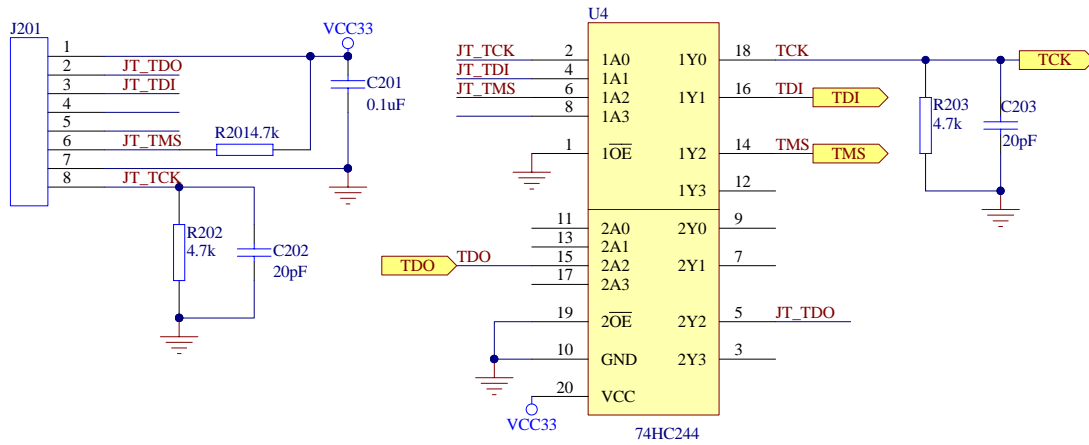


● 管脚映射

器件	信号名称	LXP2-17对应管脚
SP3232	UART-RX	PIN154
SP3232	UART-TX	PIN153

7. JTAG 接口

- 电路连接

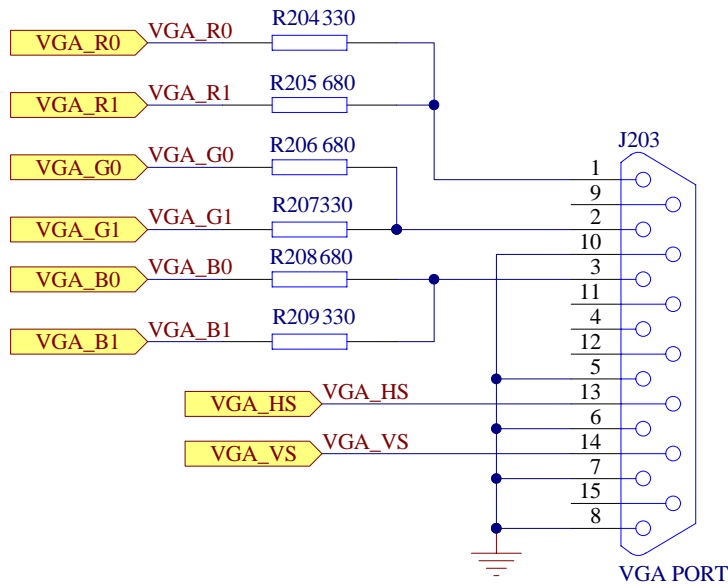


- 管脚映射

器件	信号名称	LXP2-17对应管脚
J201-1	VCC33	
J201-2	JT TDO	PIN129
J201-3	JT TDI	PIN128
J201-4		
J201-5		
J201-6	JT TMS	PIN126
J201-7	GND	
J201-8	JT TCK	PIN127

8. VGA 接口

- 电路连接

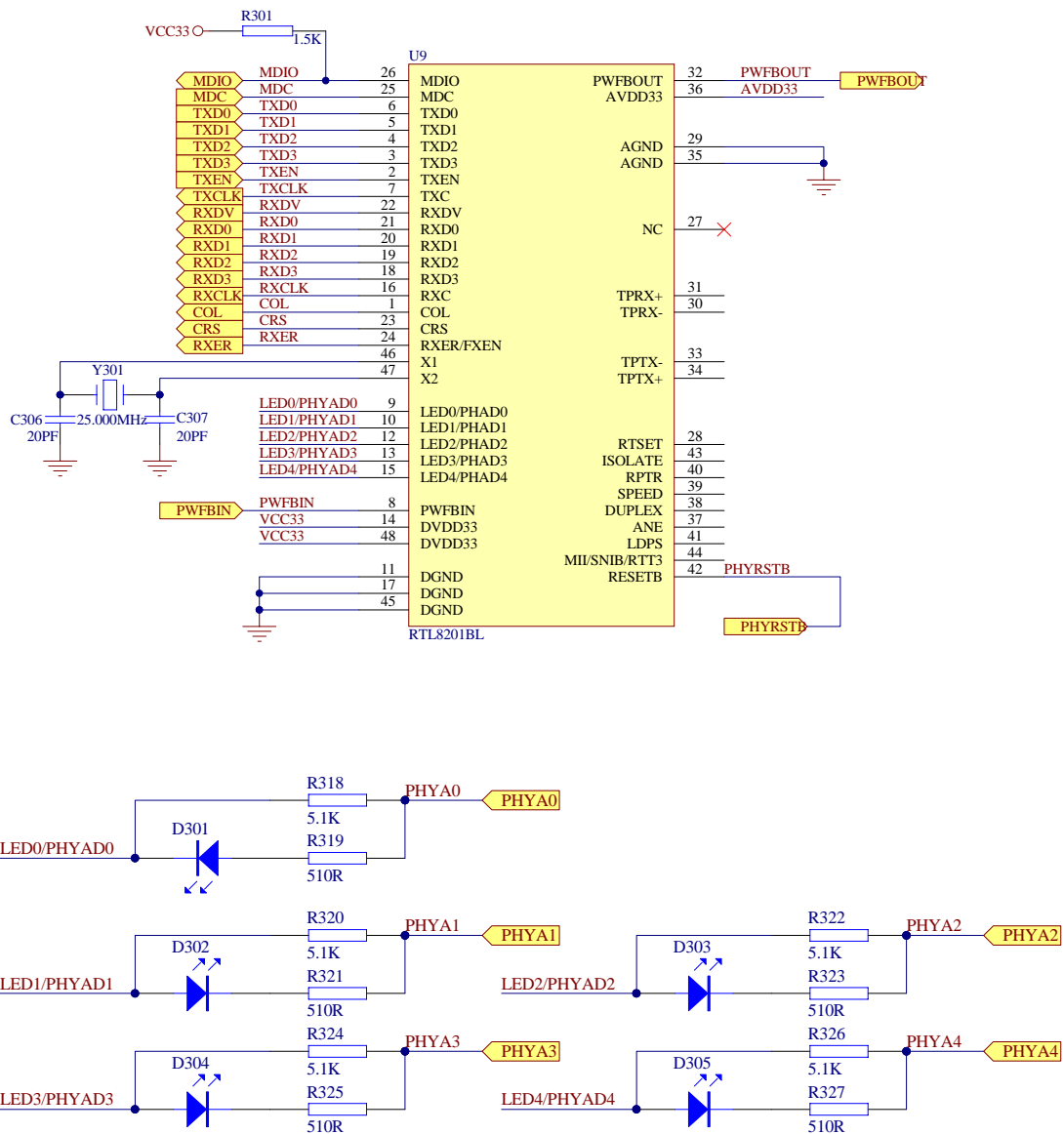


● 管脚映射

器件	信号名称	LXP2-17对应管脚
J203-1	VGA R0	PIN188
	VGA R1	PIN189
J203-2	VGA G0	PIN192
	VGA G1	PIN193
J203-3	VGA B0	PIN194
	VGA B1	PIN195
J203-13	VGA HS	PIN186
J203-14	VGA VS	PIN187

9. 以太网接口

● 电路连接



● 管脚映射

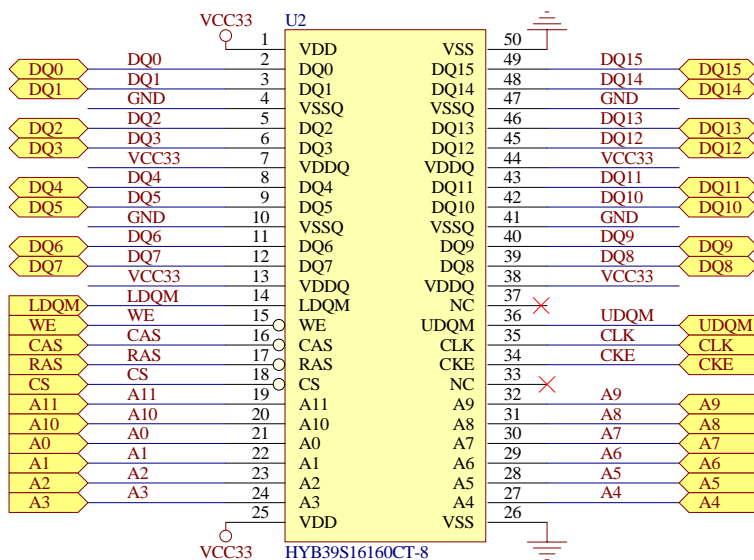
器件	信号名称	LXP2-17对应管脚
U9 26	MDIO	PIN160
U9 25	MDC	PIN163
U9 6	TXD0	PIN178
U9 5	TXD1	PIN179
U9 4	TXD2	PIN180
U9 3	TXD3	PIN183
U9 2	TXEN	PIN184
U9 7	TXCLK	PIN177
U9 22	RXDV	PIN169
U9 21	RXD0	PIN170
U9 20	RXD1	PIN173
U9 19	RXD2	PIN174
U9 18	RXD3	PIN175
U9 16	RXCLK	PIN176
U9 1	COL	PIN185
U9 23	CRS	PIN168
U9 24	RXER	PIN167
U9 42	PHYRSTB	PIN164
	PHYA0	PIN196
	PHYA1	PIN198
	PHYA2	PIN202
	PHYA3	PIN206
	PHYA4	PIN208

在使用中，Pin167 RXER 管脚为输入脚。在约束时，需要将其设为 Pull-down 模式。PHYA4-PHYA0 默认设为 “00001”。

10. 16Mbit SDRAM

16Mbit 同步动态随机存储器，与系统总线速度同步，避免了不必要的等待周期，减少了数据传输延迟。

● 电路连接



● 管脚映射

器件	信号名称	LXP2-17E对应管脚
U2 21	A0	PIN76
U2 22	A1	PIN77
U2 23	A2	PIN78
U2 24	A3	PIN81
U2 27	A4	PIN82
U2 28	A5	PIN83
U2 29	A6	PIN84
U2 30	A7	PIN85
U2 31	A8	PIN86
U2 32	A9	PIN87
U2 20	A10	PIN75
U2 19	A11	PIN74

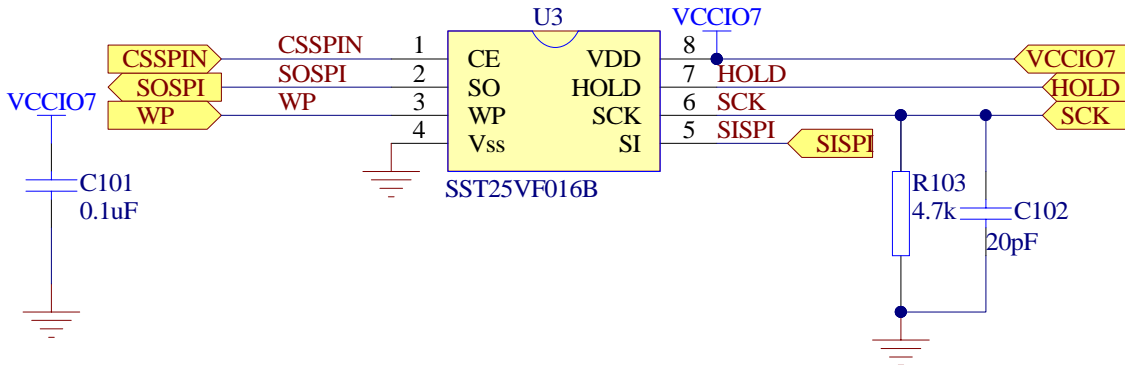
器件	信号名称	LXP2-17E对应管脚
U2 2	DQ0	PIN66
U2 3	DQ1	PIN65
U2 5	DQ2	PIN64
U2 6	DQ3	PIN63
U2 8	DQ4	PIN60
U2 9	DQ5	PIN59
U2 11	DQ6	PIN56
U2 12	DQ7	PIN55
U2 39	DQ8	PIN104
U2 40	DQ9	PIN103
U2 42	DQ10	PIN102
U2 43	DQ11	PIN101
U2 45	DQ12	PIN98
U2 46	DQ13	PIN97
U2 48	DQ14	PIN94
U2 49	DQ15	PIN93
U2 14	LDQM	PIN67
U2 15	WE	PIN68
U2 16	CAS	PIN69
U2 17	RAS	PIN72
U2 18	CS	PIN73
U2 34	CKE	PIN88
U2 35	CLK	PIN91
U2 36	UDQM	PIN92

其中 A11 管脚同时也是 Bank select 脚。

11. 16Mbit SPI FLASH

16Mbit 闪存存储器，在不加电的情况下能长期保持存储的信息，有很高的存取速度，且易于擦除和重写。

● 电路连接



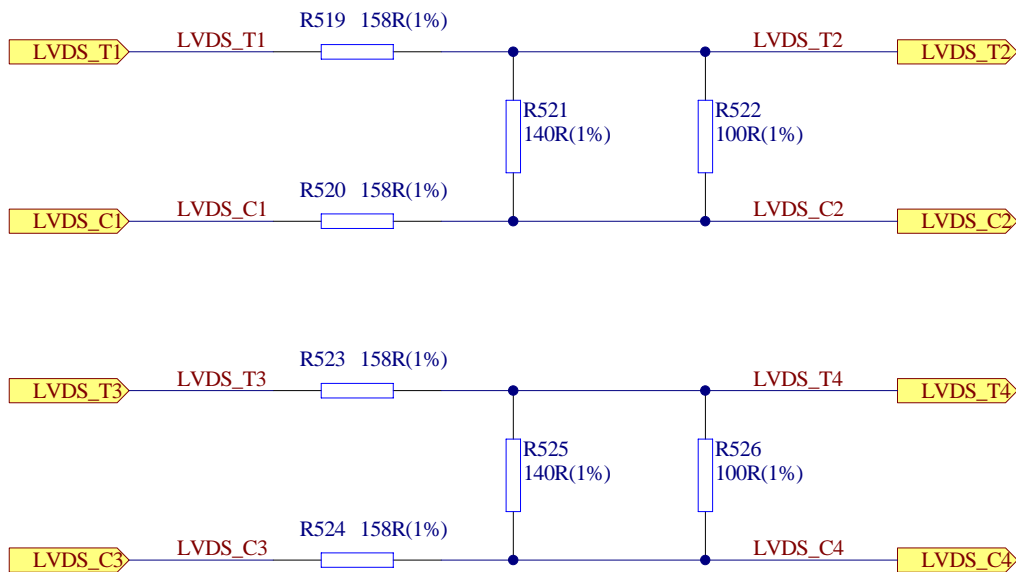
● 管脚映射

器件	信号名称	LXP2-17对应管脚
U3 1	CSSPIN	PIN13
U3 2	SOSPI	PIN19
U3 3	WP	PIN12
U3 5	SISPI	PIN20
U3 6	SCK	PIN17
U3 7	HOLD	PIN23

12. LVDS

两路低压差分信号输出 (LVDS)，使得信号能在差分 PCB 线对上以几百 Mbps 的速率传输，其低压幅和低电流驱动输出实现了低噪声和低功耗。

● 电路连接



● 管脚映射

信号名称	LXP2-17对应管脚
LVDS T1	PIN30
LVDS C1	PIN32
LVDS T2	PIN34
LVDS C2	PIN35
LVDS T3	PIN41
LVDS C3	PIN43
LVDS T4	PIN45
LVDS C4	PIN44

附图:

图一：主控芯片部分

图二：电源部分

图三：存储器部分

图四：外围接口与显示部分

图五：LVDS 及拨码开关部分

图六：以太网部分

A

B

C

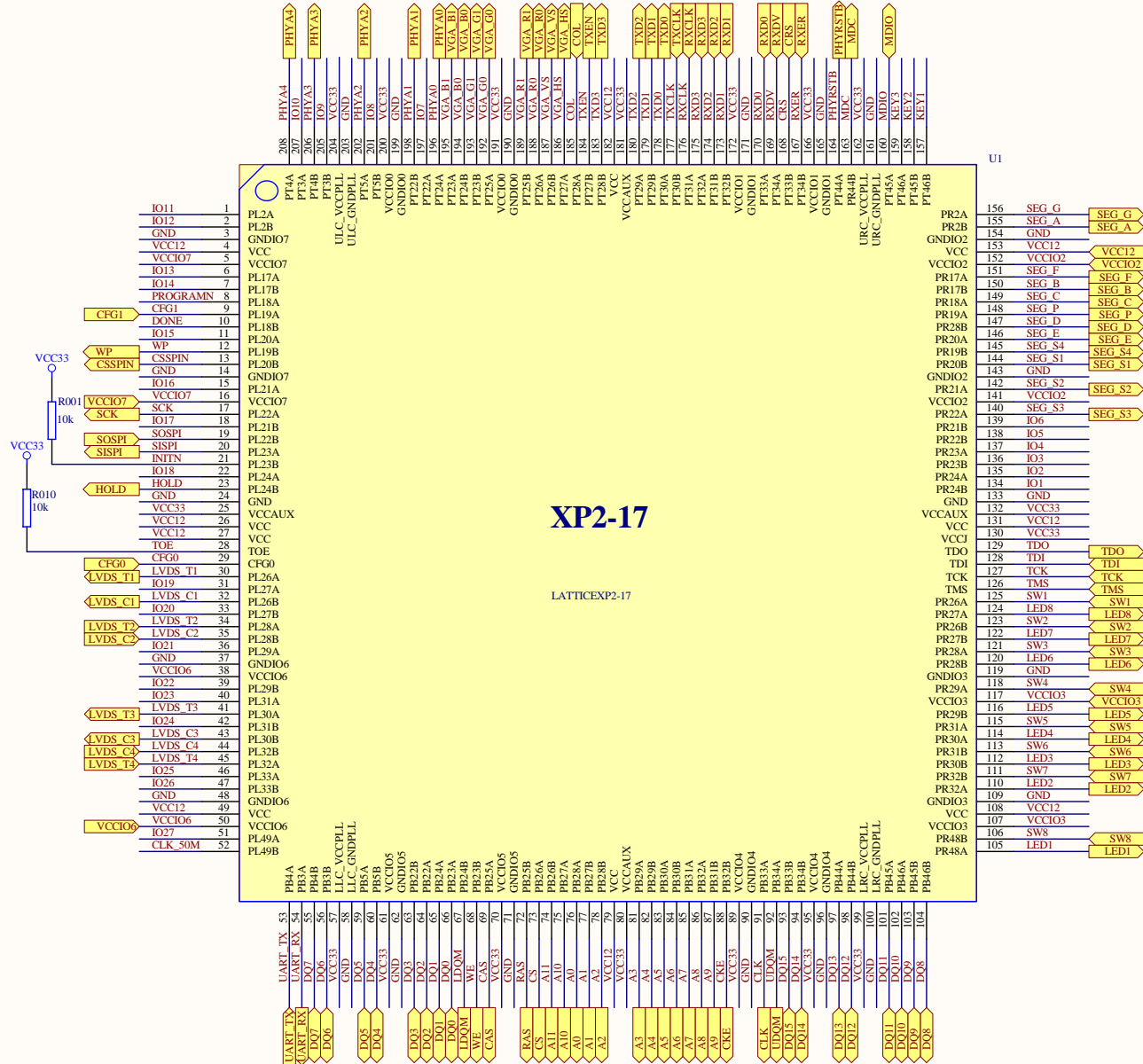
D

A

B

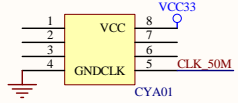
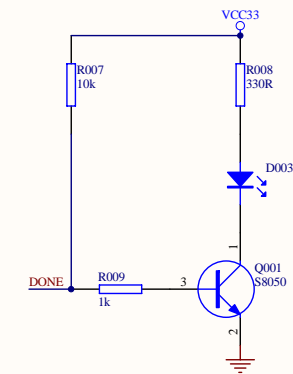
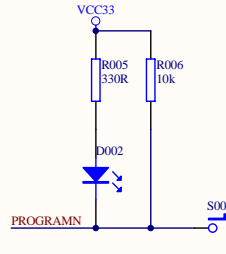
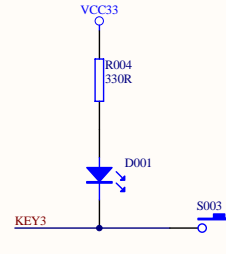
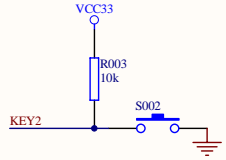
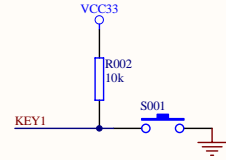
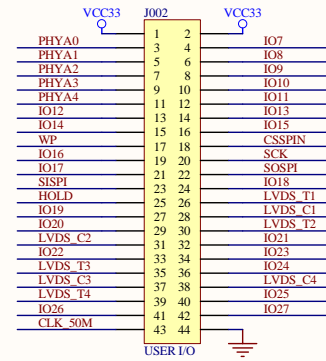
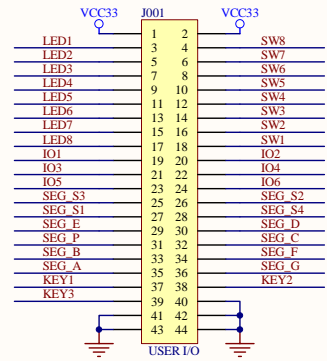
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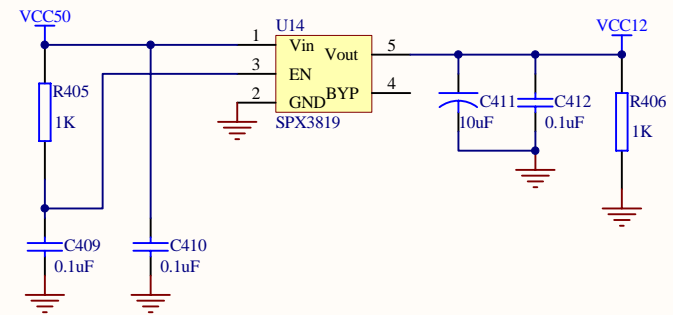
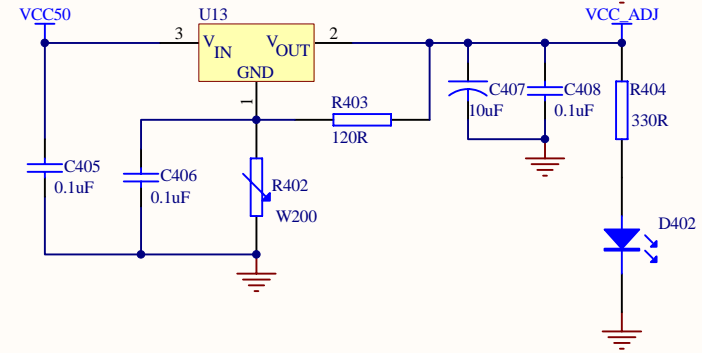
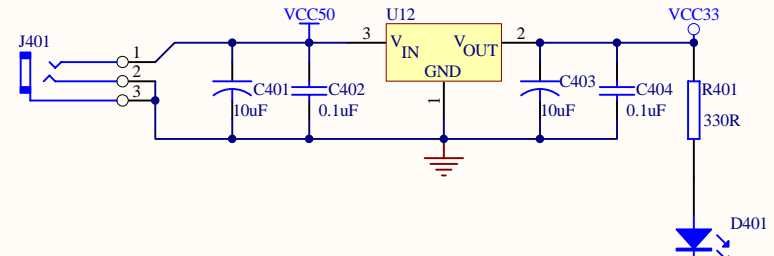
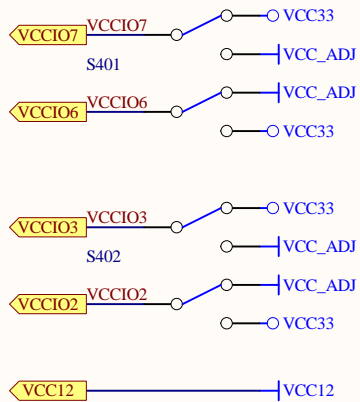
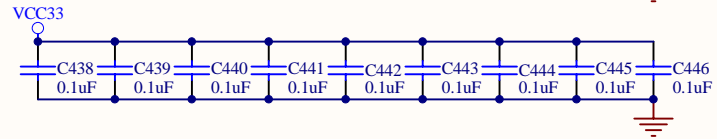
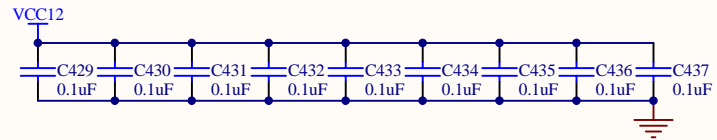
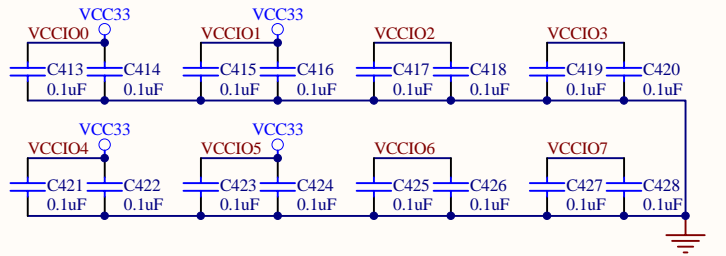


XP2-17

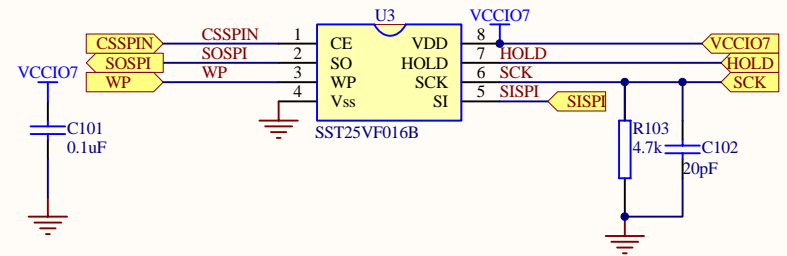
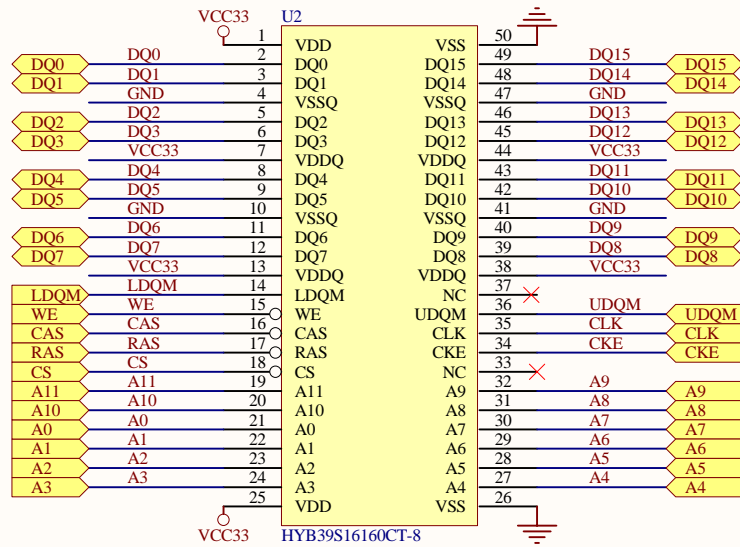
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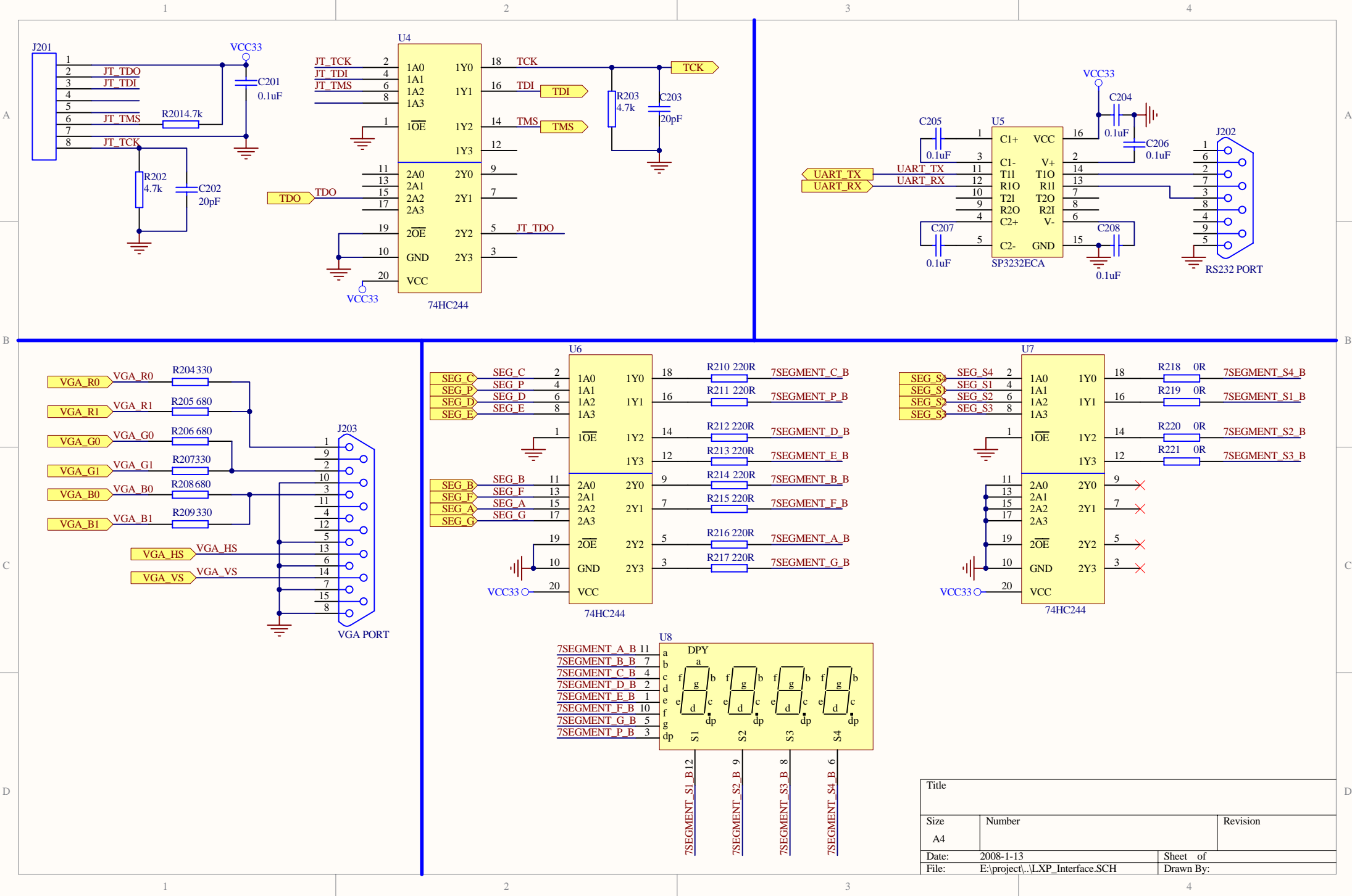
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1

2

3

4

A

A

B

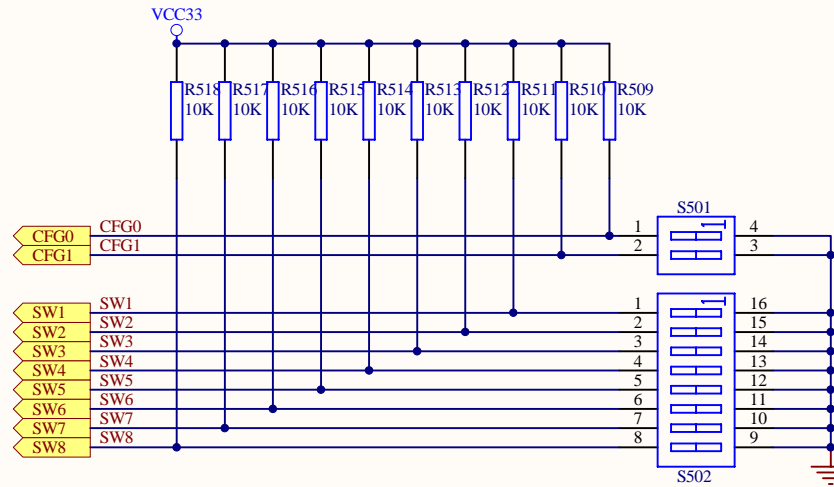
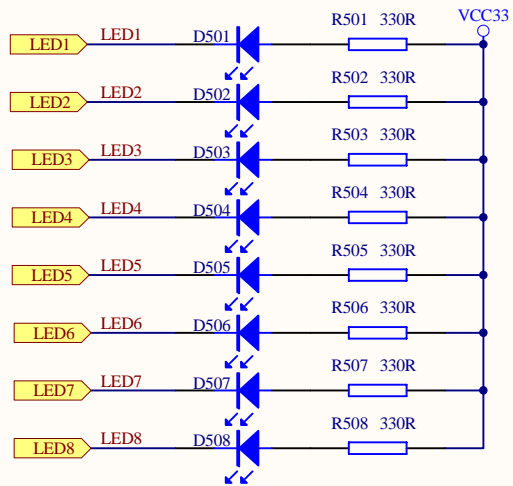
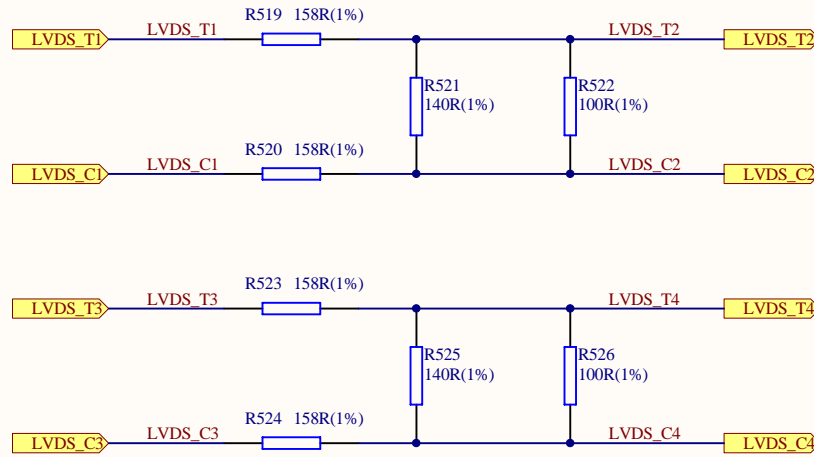
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D



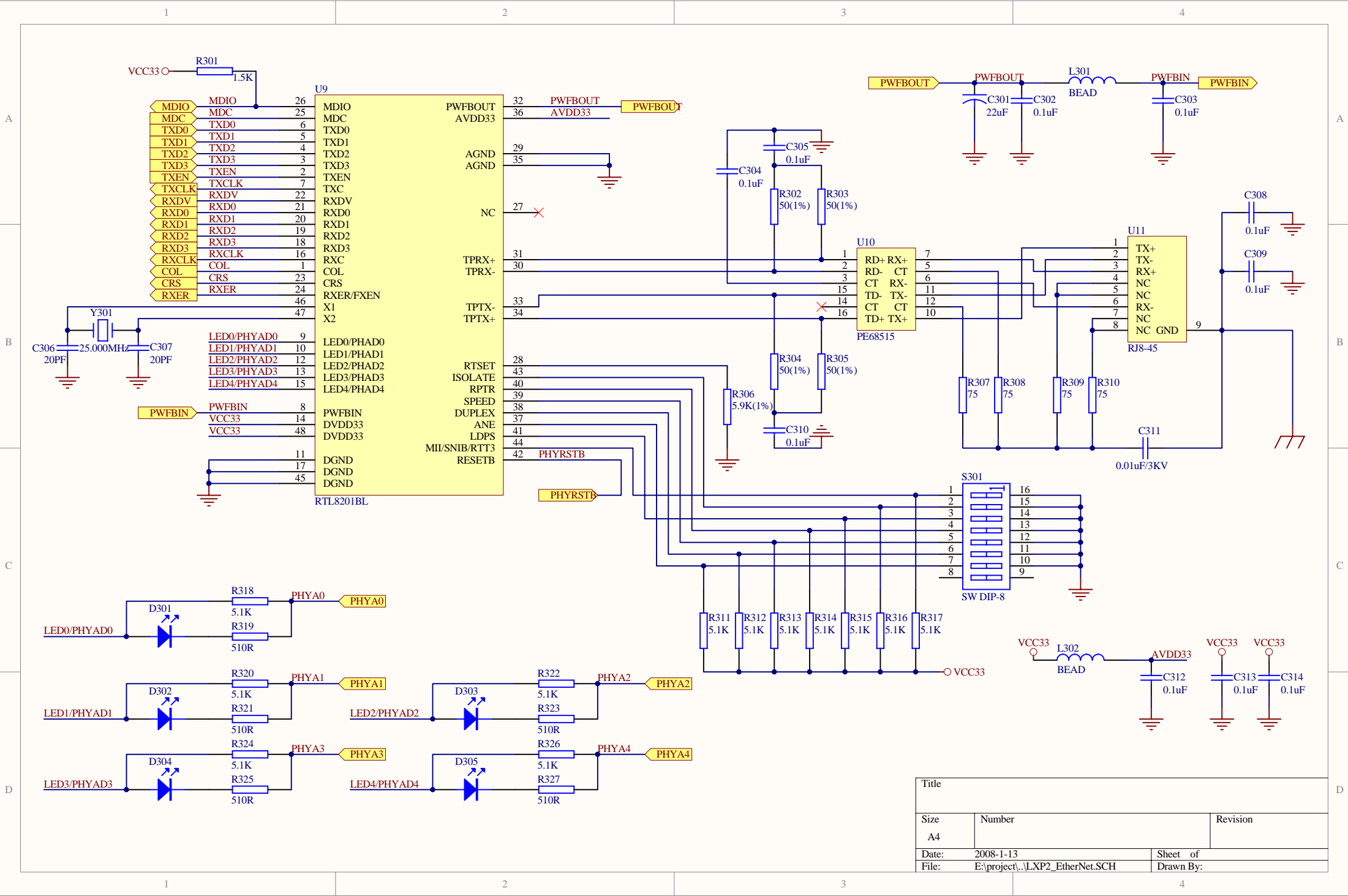
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