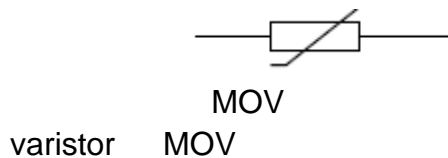
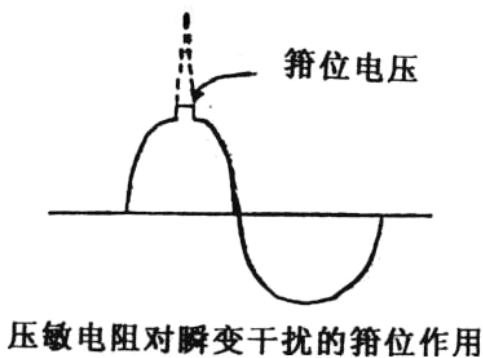
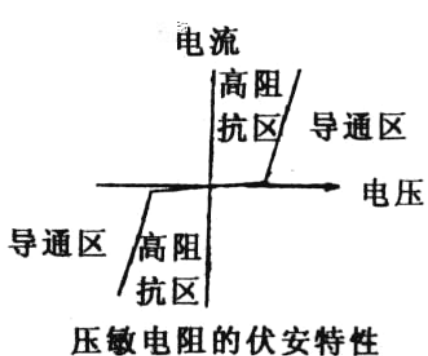


1.  
1.1  
1.1.1



2-3

1.8-2

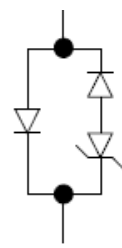


TVS

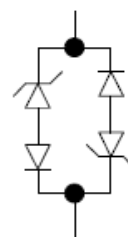
switching ESD



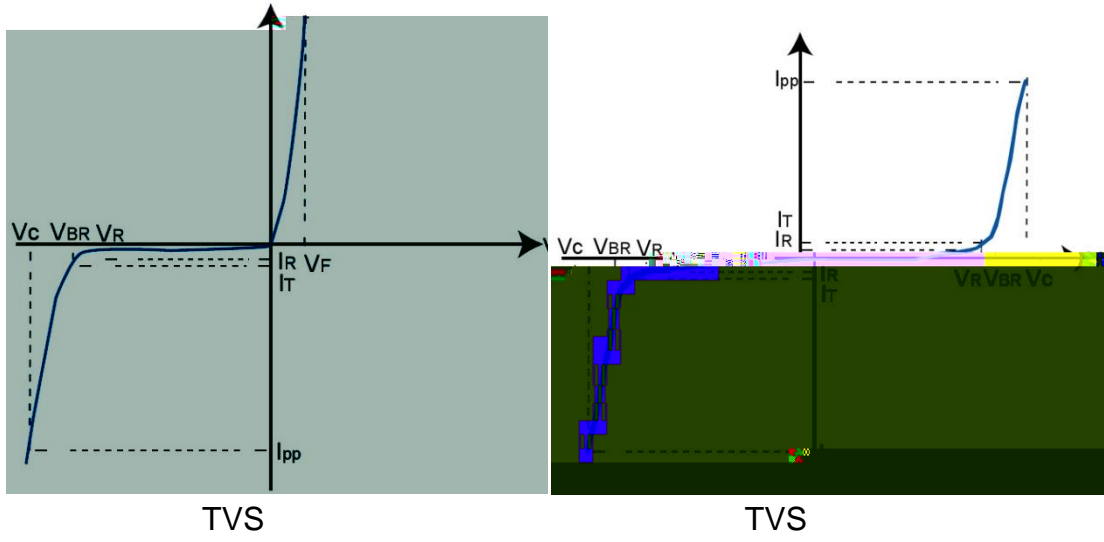
TVS



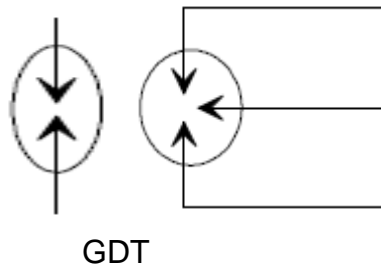
TVS



lighting

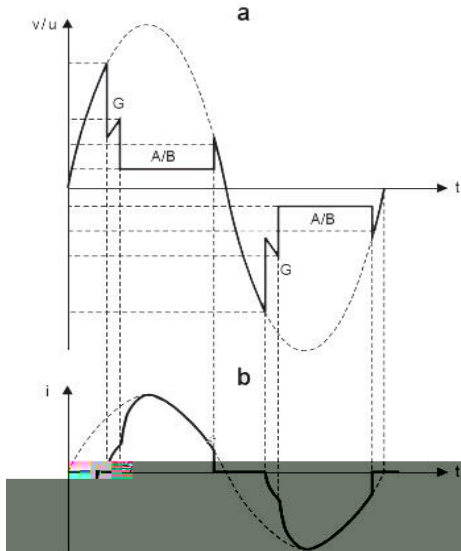


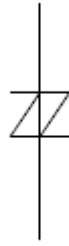
1.1.2



KA

min UDC 1.25\*1.15Up 1.25 1.15

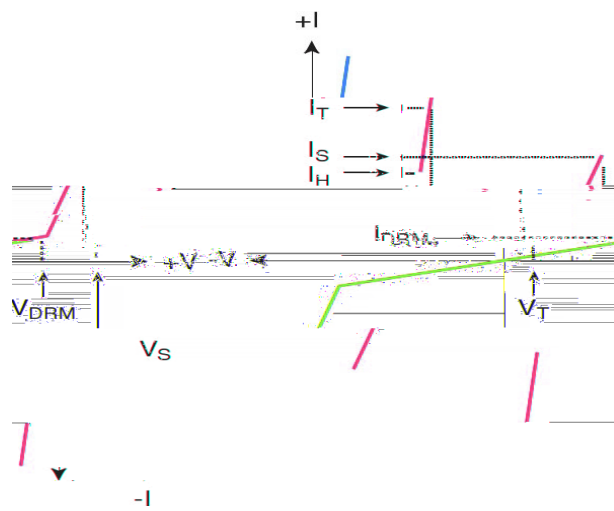




TSS

ns  
TVS

TSS



1.2

PTC



PPTC

PPTC	6V	16V	30V	60V	72V	250V	600V	75mA	14A
	0603	0805	1206	1210	2018	2920			

Fuse

TVS

$I^2T$	$I^2T$	$I^2T$	U	$I^2T$
100 000			20%	
10 000			30%	
1 000			40%	

1.3

#



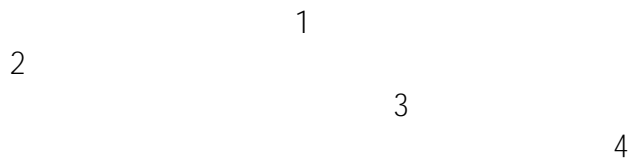
TVS

TVS

TVS

$$L > (U1 - U2) * (T2 - T1) / (I1 / 2)$$

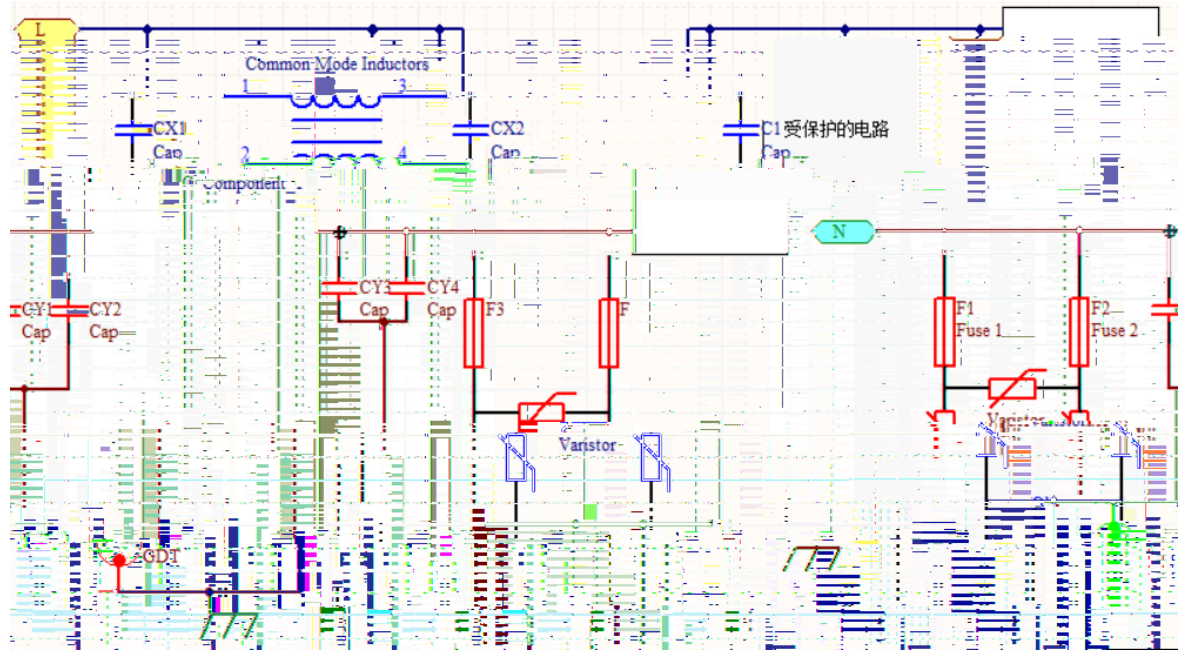
U1  
U2  
I1  
T1=8us  
T2=20us



2.  
2.1

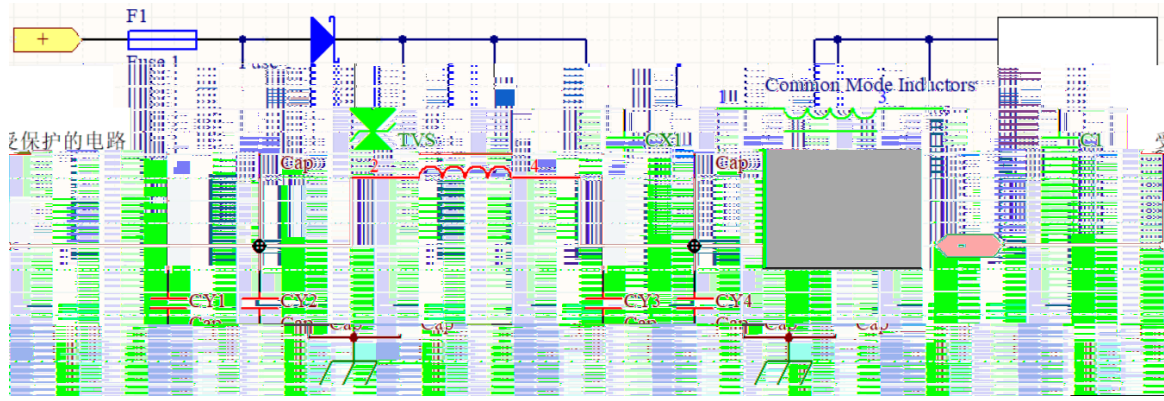


	MOV	GDT
AC 110V	14D271K	2R300L
AC 220V	14D561K    14D511K	2R600L



2.2

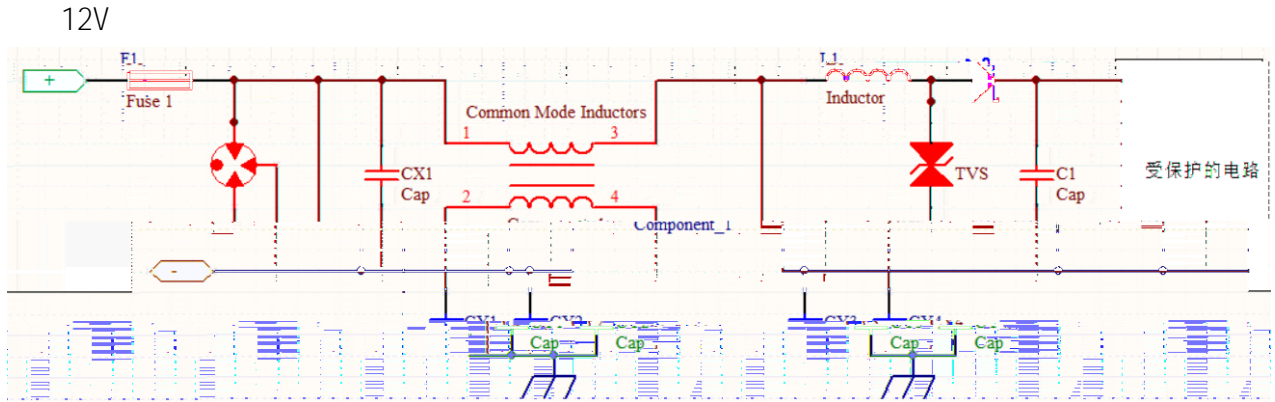
1. 500-2KV



F1 EFT PPTC  
TVS TVS TVS  
TVS

	TVS	
5V	SMBJ6.0A/CA	TVS TVS
12V	SMBJ15A/CA	
15V	SMCJ18A/CA	
24V	SMDJ28A/CA	
36V	SMDJ43A/CA	
48V	5.0SMDJ58A/CA	

2. 2KV

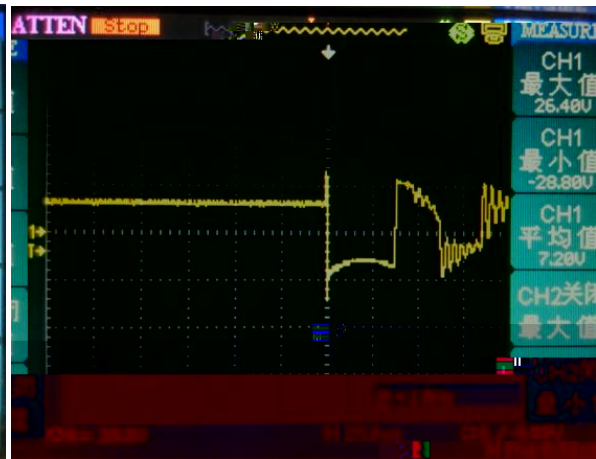


EFT  
L1 ( F TVS ) TVS

	GDT	TVS
DC 5V	3R090L	SMBJ6.5CA
DC 12V	3R090L	SMCJ15CA



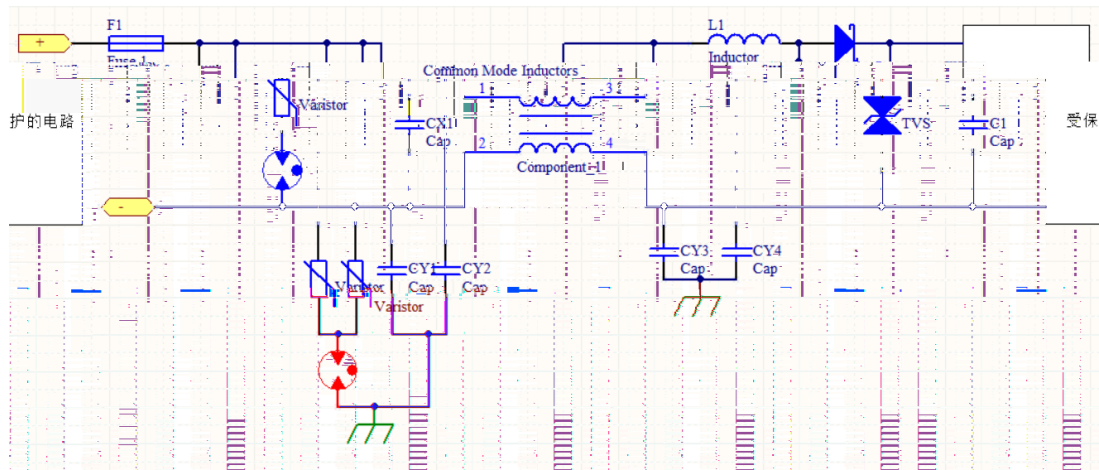
DC12V ± 6KV



+6KV

-6KV

12V



EFT

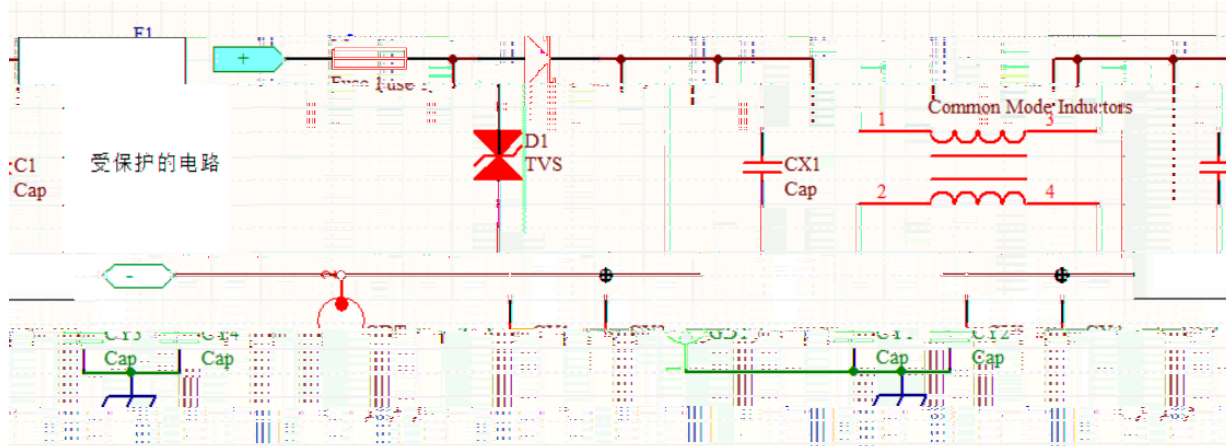
TVS

TVS

L1

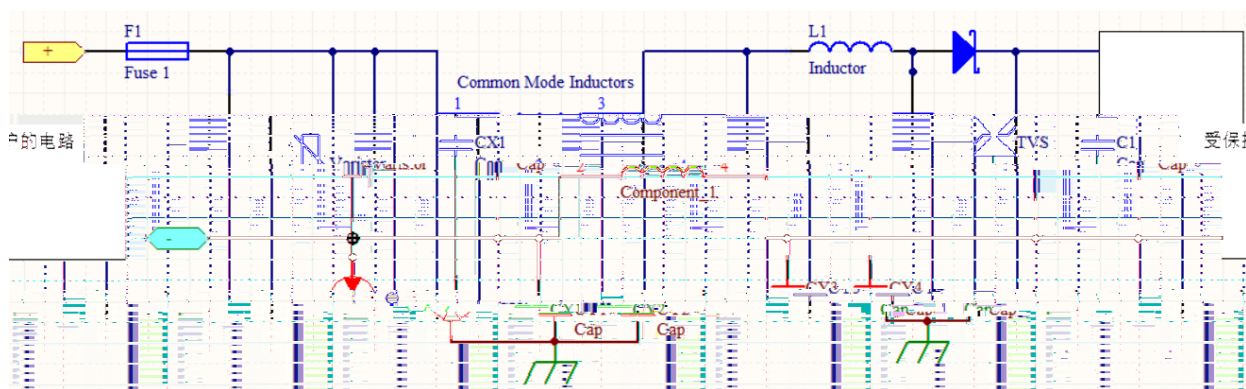
F

	MOV	GDT	TVS
DC 15V	20D820K	2R090L	SMCJ18CA
DC 18V	20D820K	2R090L	SMCJ24CA
DC 24V	20D820K	2R090L	SMDJ28CA
DC 36V	20D820K	2R090L	SMDJ43CA
DC 48V	20D820K	2R090L	5.0SMDJ58CA



EFT

- TVS
- TVS
- SM8S  
90V
- 5KP
- 15KP
- 2

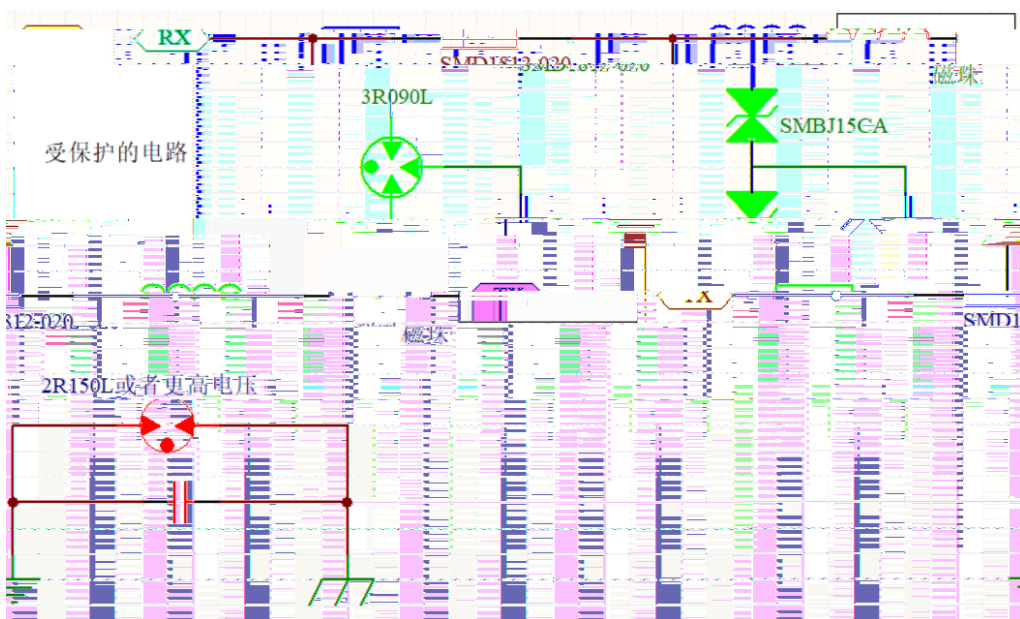


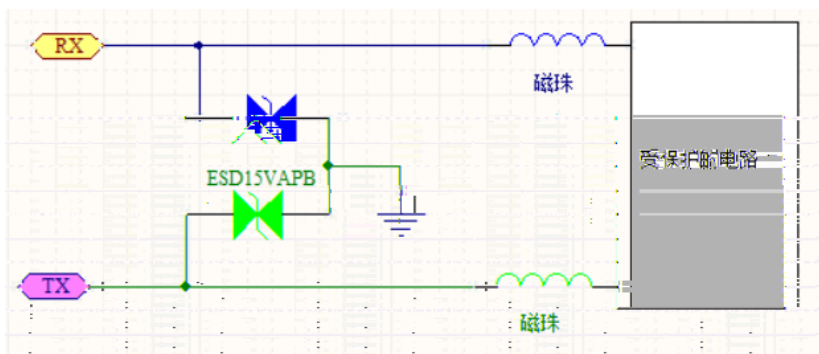
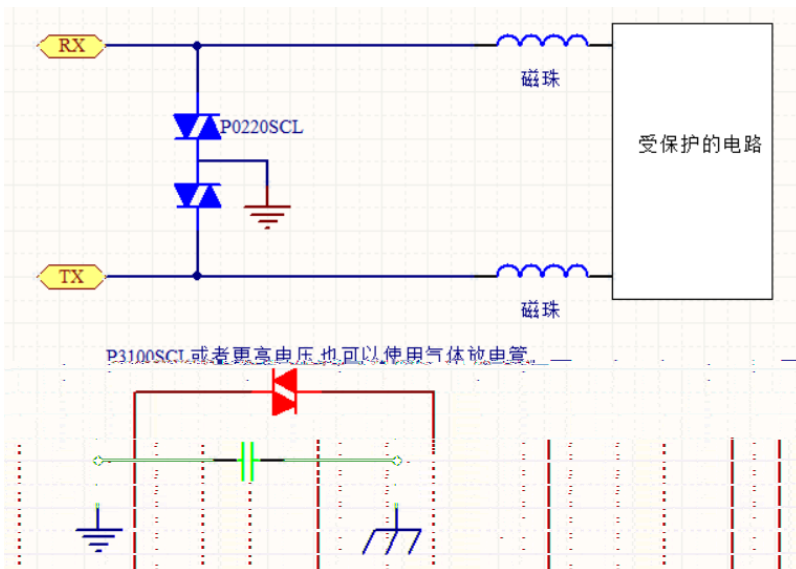
EFT

3.

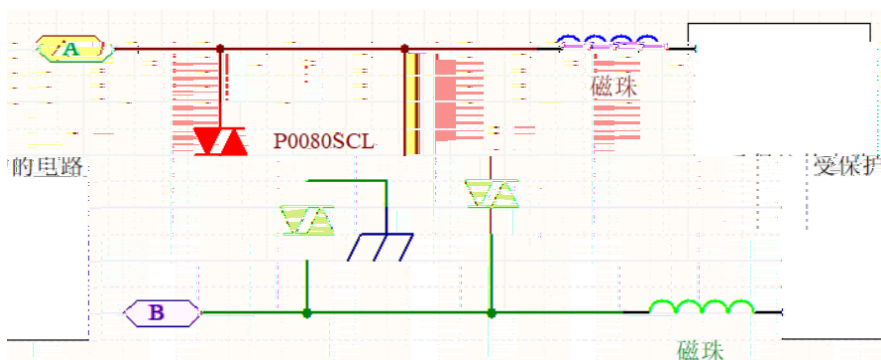
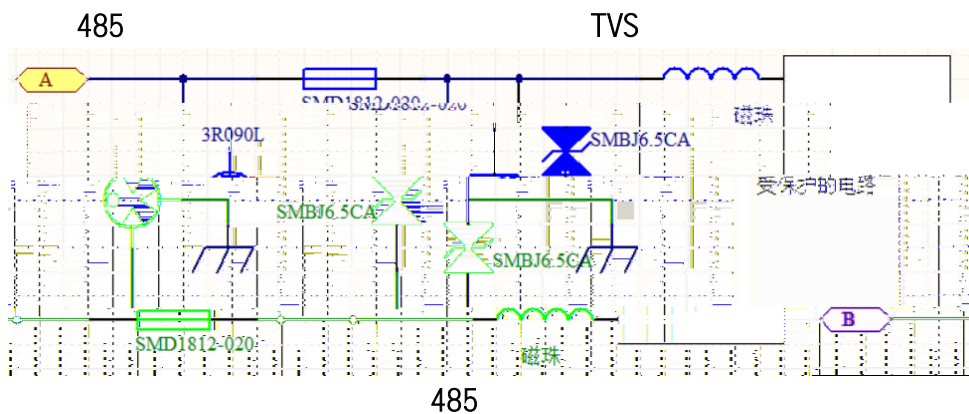
3.1 RS232

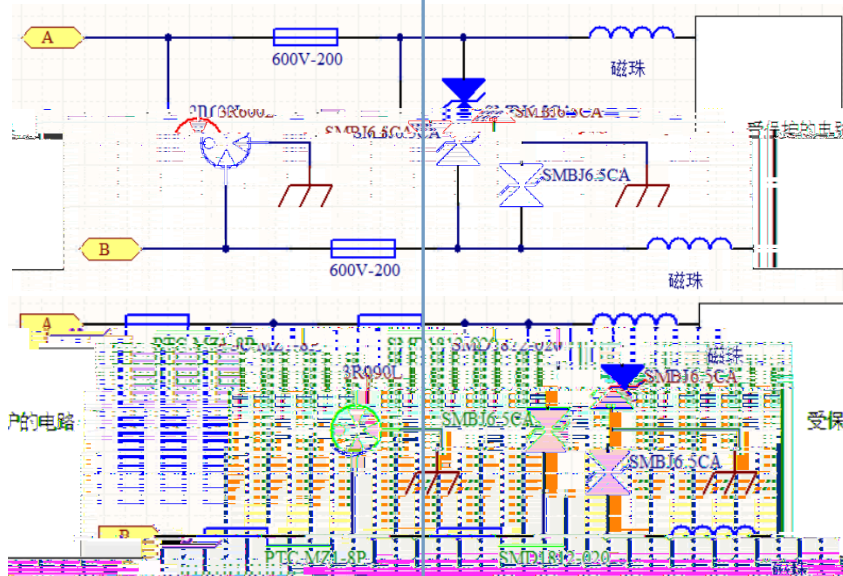
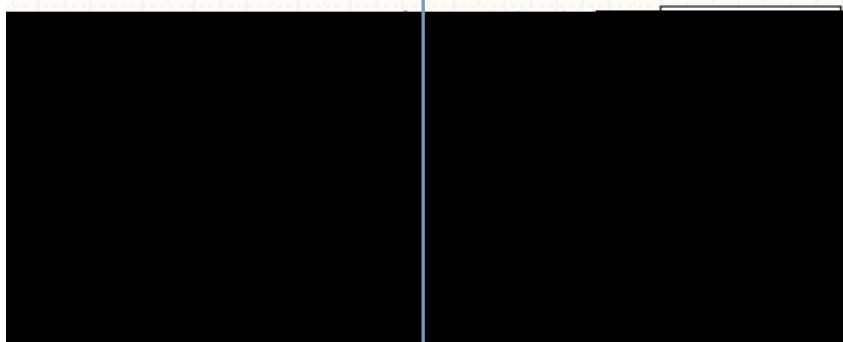
TVS



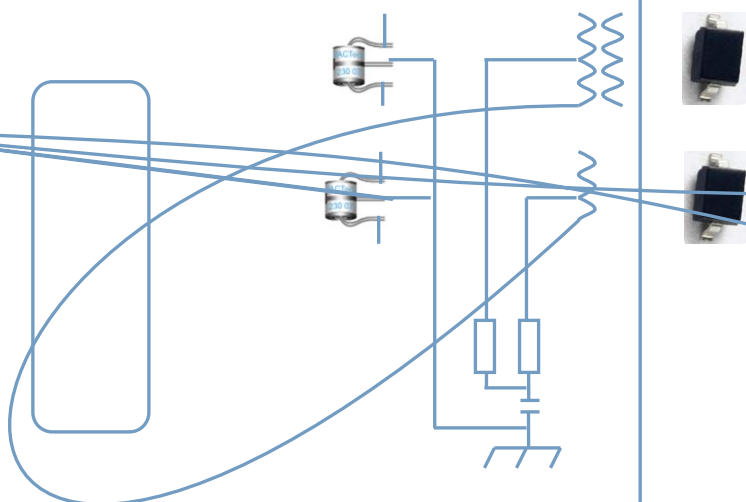


### 3.2 RS485

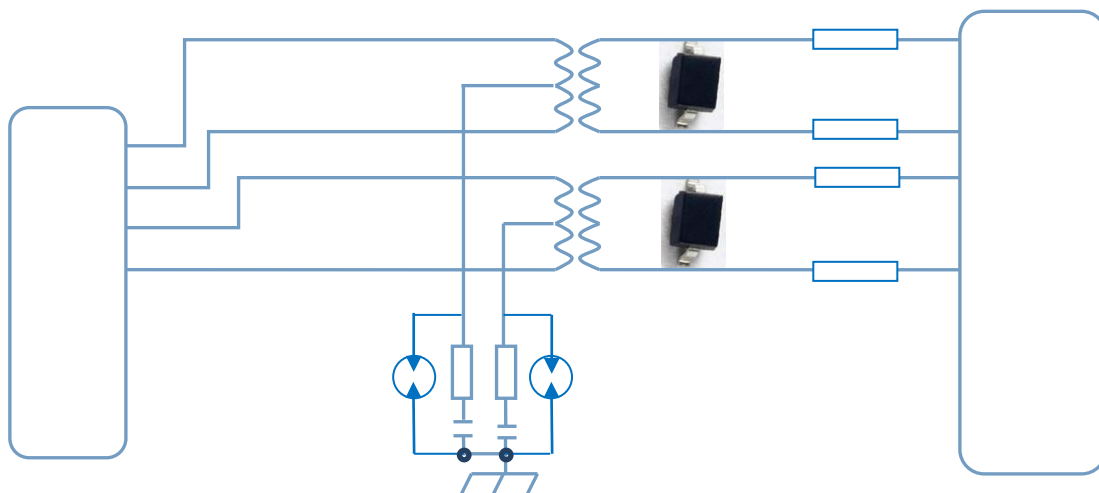




3.3

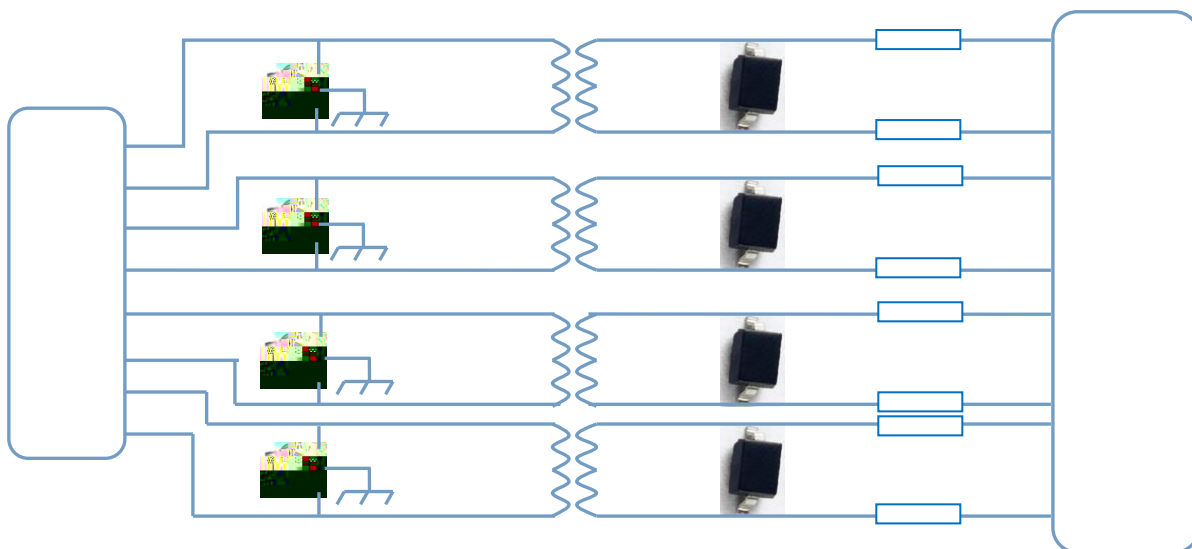


	ESD	R1	2	3	4
3R090L	ESDLC3V3D3B		2		



	ESD	R1	2	3	4
2R090L SMD1812-091 P2300SCL	ESDLC3V3D3B ESDSLUVU2. 8-4		2		

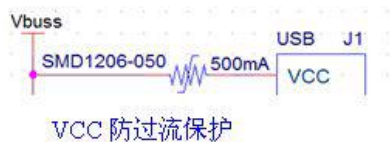
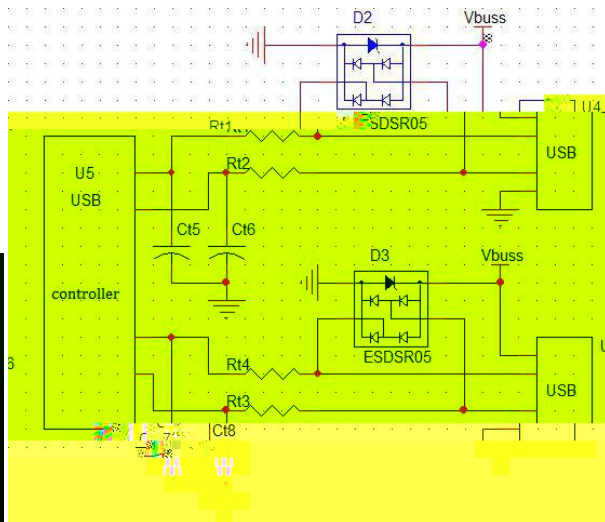
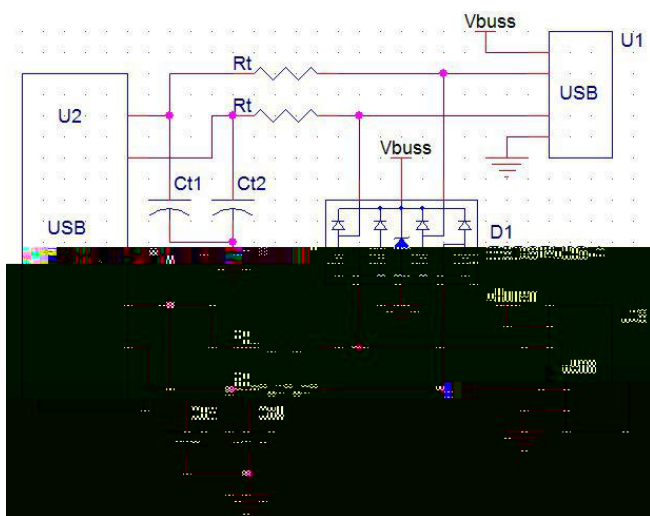
3.4



	ESD	R1	8
3R090L	ESDLC3V3D3B ESDSLUVU2. 8-4		2

## 4 ESD

### 4.1 USB2.0



ESDSRV05-4 ESDSR05

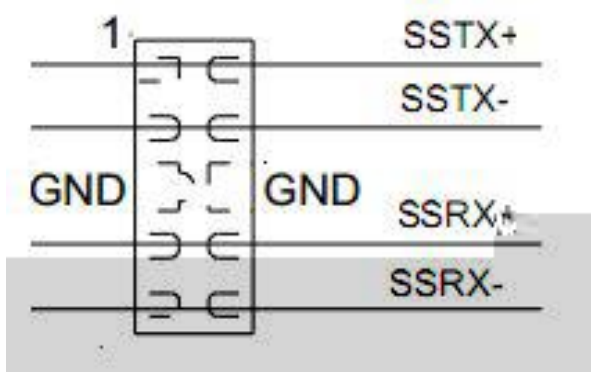
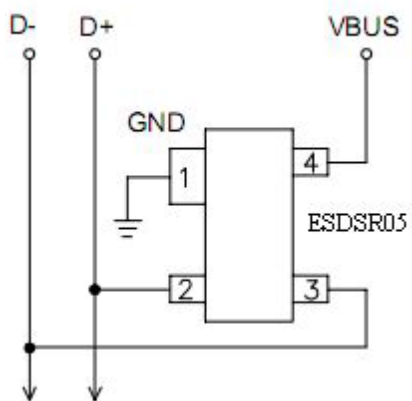
## 4.2 USB3.0 ESD



ESD1065P

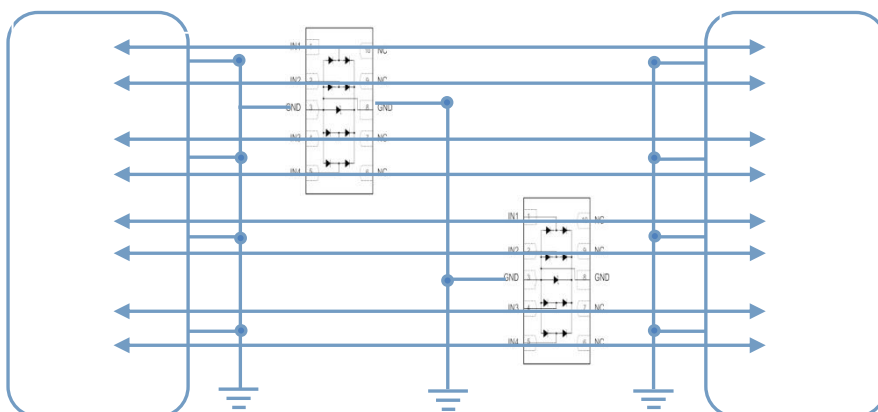
ESDSR05

ESD0524P





### 4.3 HDMI ESD

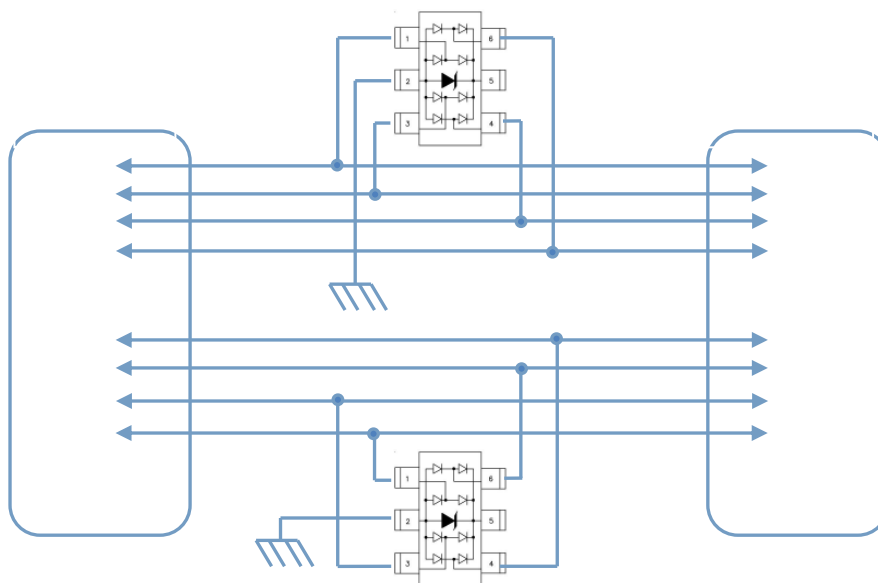


ESD0524P

ESDUCL5V0D8B

ESDUCL5V0D9B

### 4.4 VGA ESD



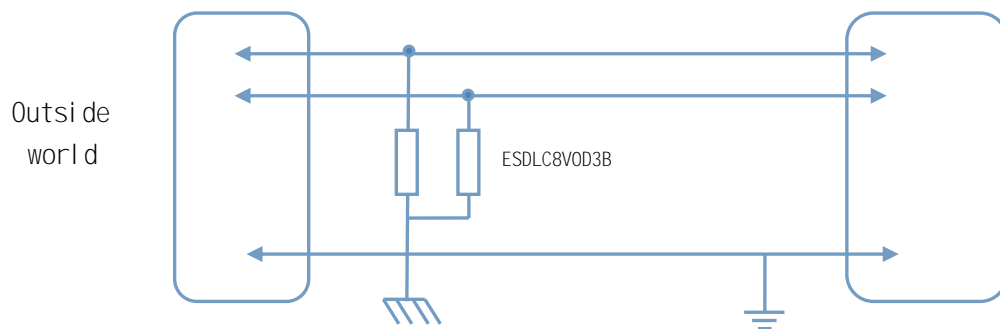
ESDSRVLC05-4 ESD0524P

ESDUCL5V0D8B

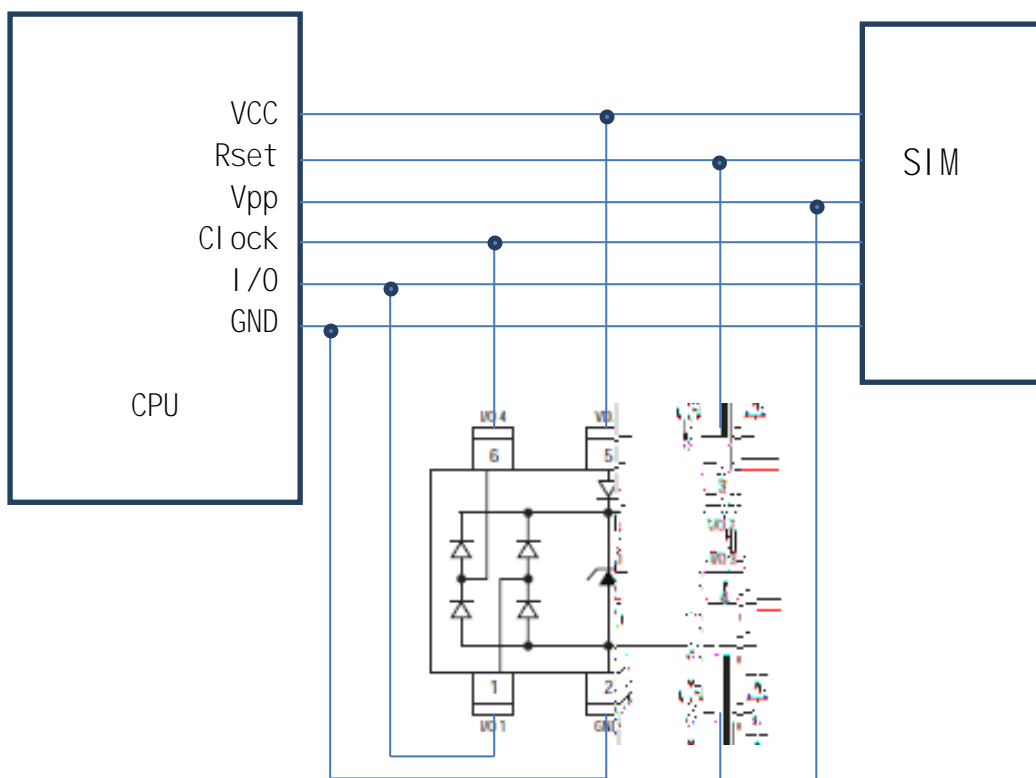
ESDUCL5V0D9B



### 4.5 ESD



### 4.6 SIM ESD



ESDSRV05-4

