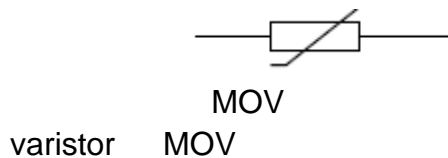
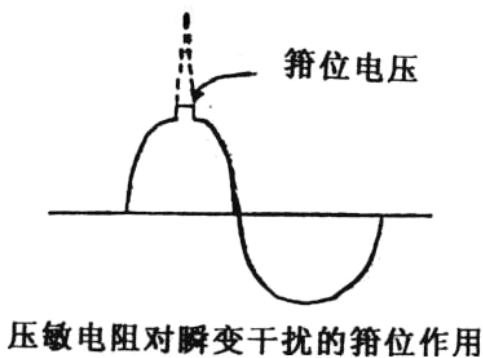
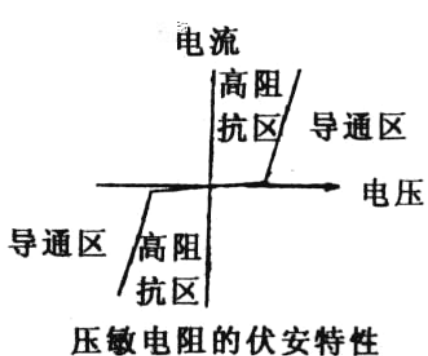


1.
1.1
1.1.1



2-3

1.8-2

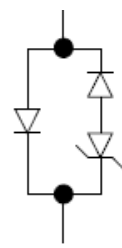


TVS

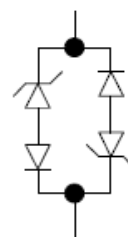
switching ESD



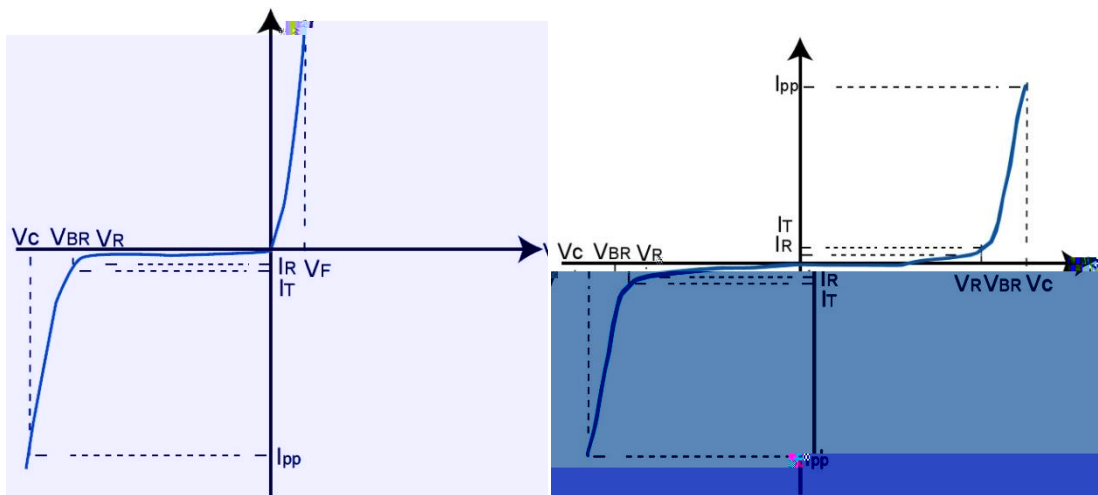
TVS



TVS



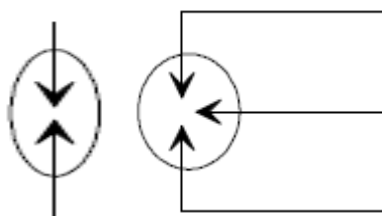
lighting



TVS

TVS

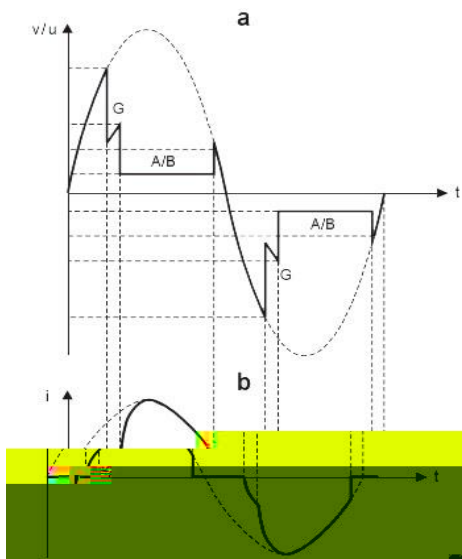
1.1.2

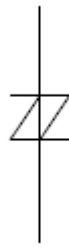


GDT

KA

min UDC $1.25 \cdot 1.15 U_p$ 1.25 1.15

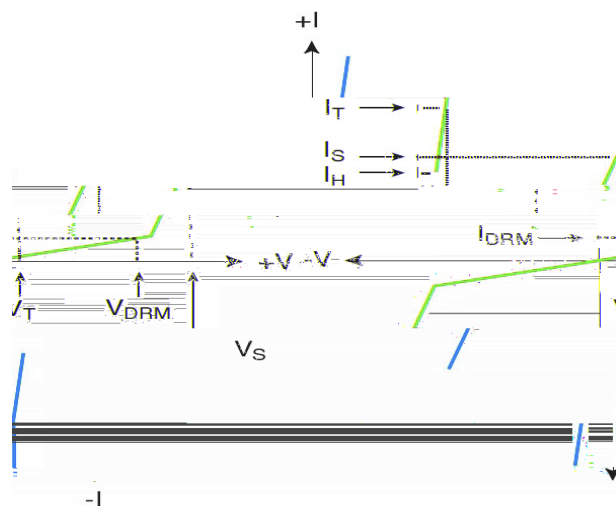




TSS

ns
TVS

TSS



1.2

PTC



PPTC

PPTC

	6V	16V	30V	60V	72V	250V	600V		
	0603	0805	1206	1210	2018	2920			

75mA 14A

Fuse

TVS

I^2T

I^2T
 I^2T

U I^2T

	U
100 000	20%
10 000	30%
1 000	40%

I^2T

1.3



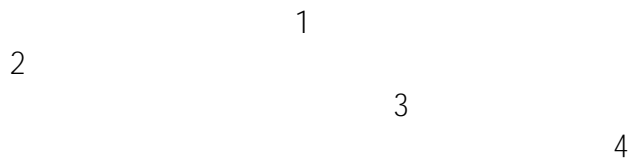
TVS

TVS

TVS

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

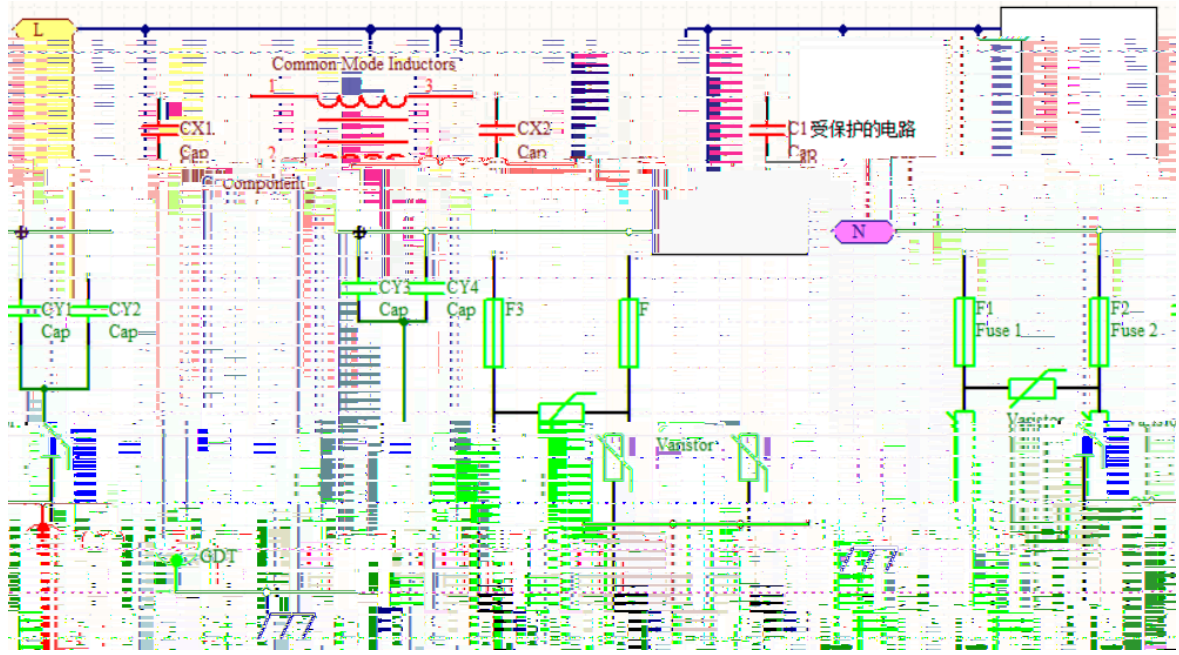
U1
U2
I1
T1=8us
T2=20us



2.
2.1



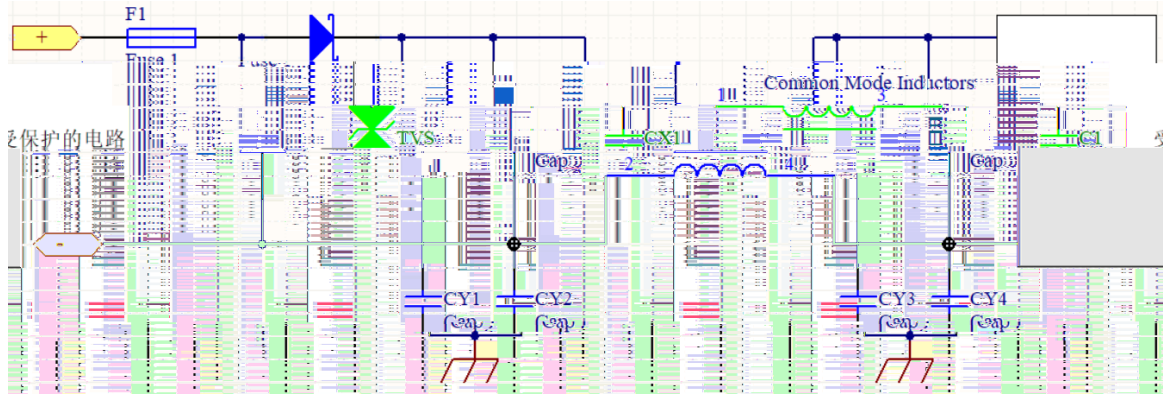
	MOV	GDT
AC 110V	14D271K	2R300L
AC 220V	14D561K 14D511K	2R600L



2.2

1.

500-2KV



F1 EFT PPTC

TVS

TVS

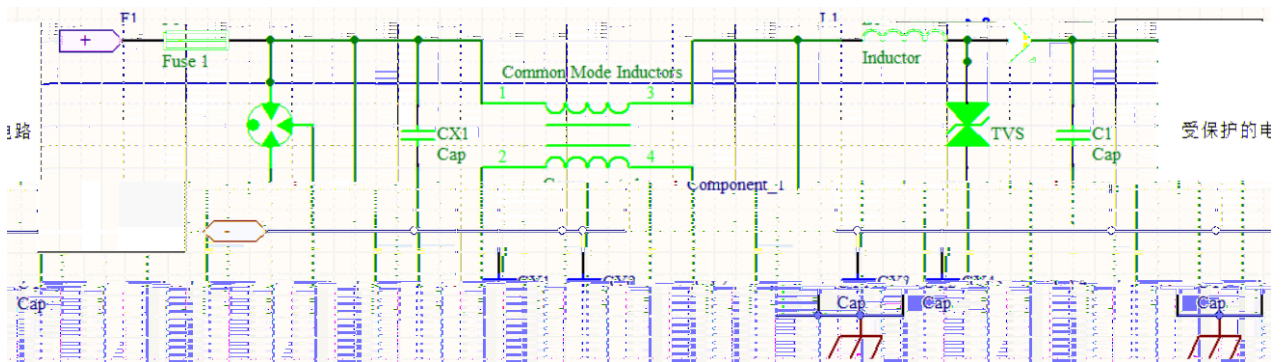
TVS

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

2.

2KV

12V

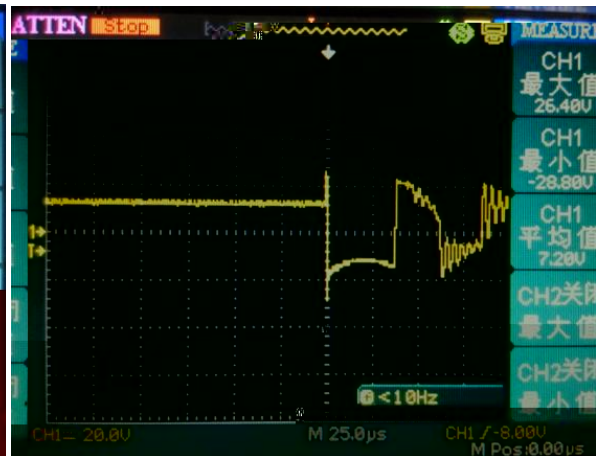
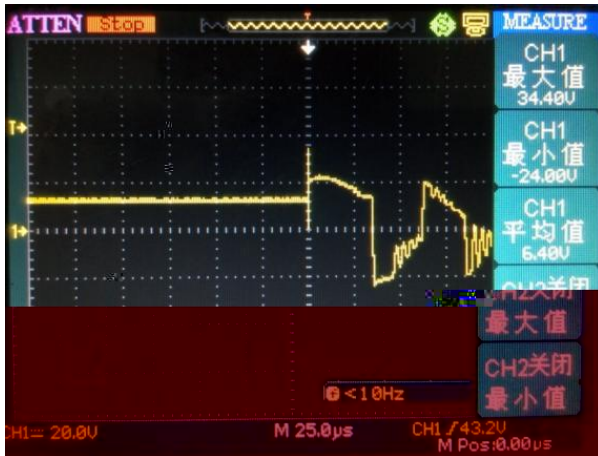


EFT

L1 (F TVS) TVS

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

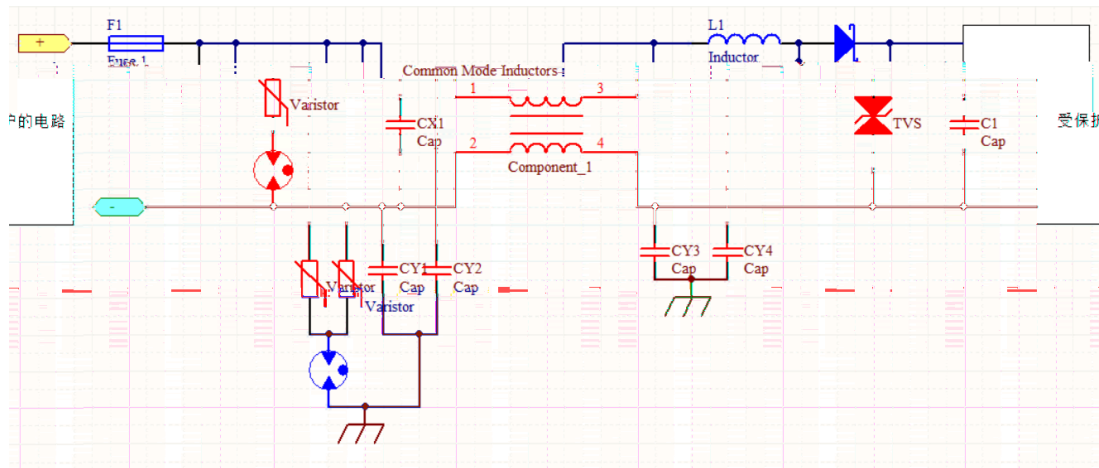
DC12V ± 6KV



+6KV

-6KV

12V



EFT

()

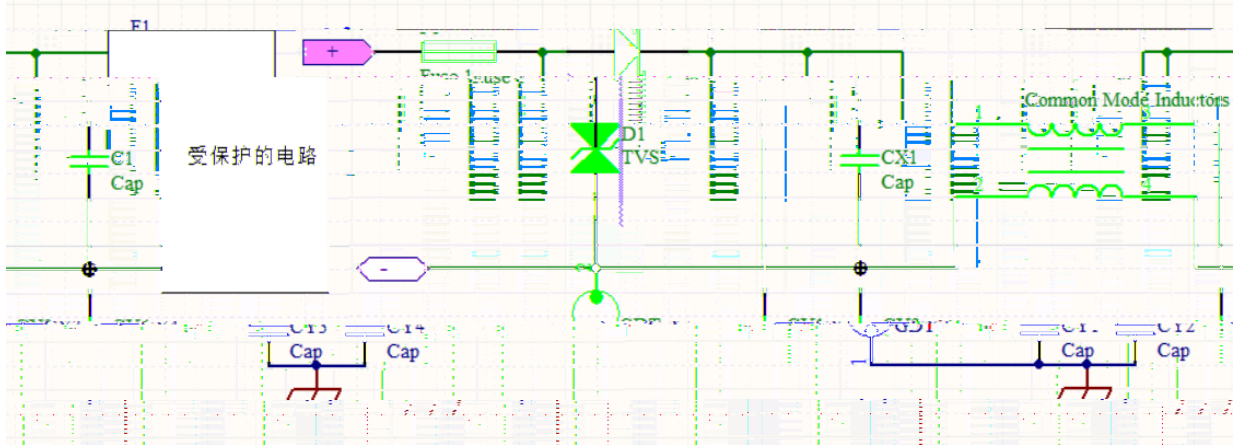
TVS

TVS

L1

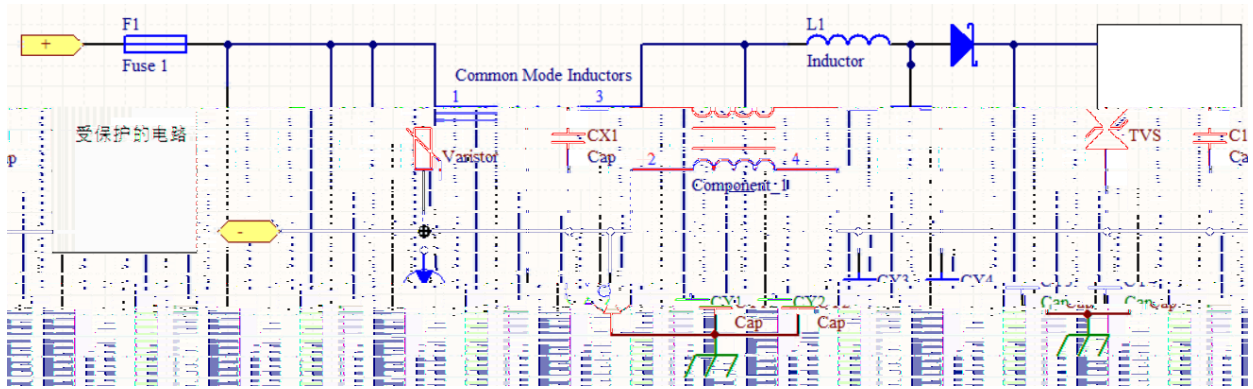
F

	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



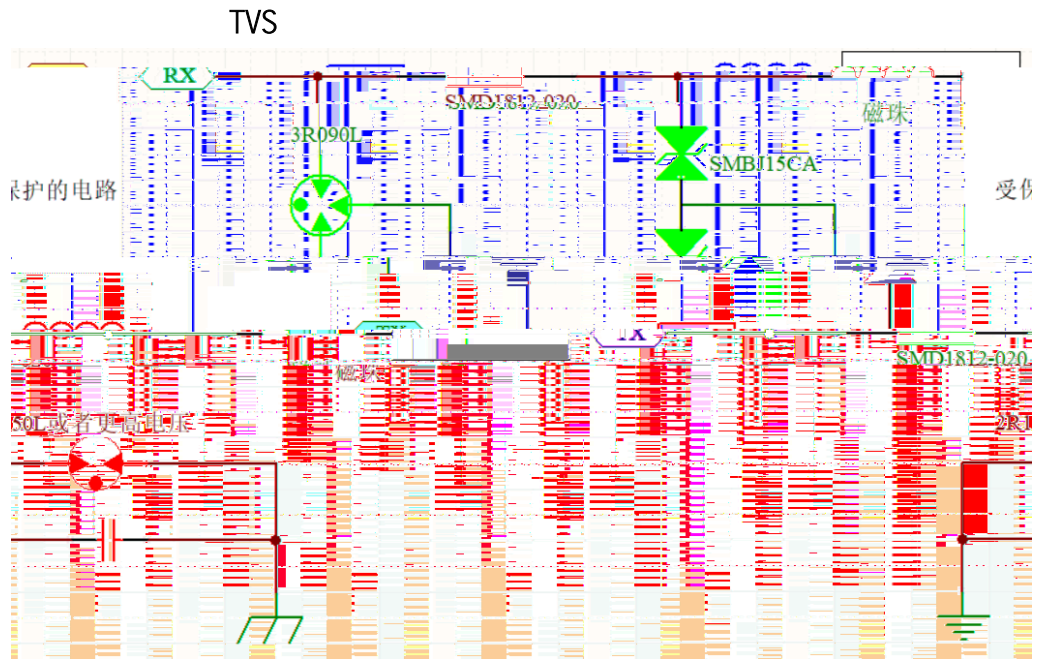
EFT

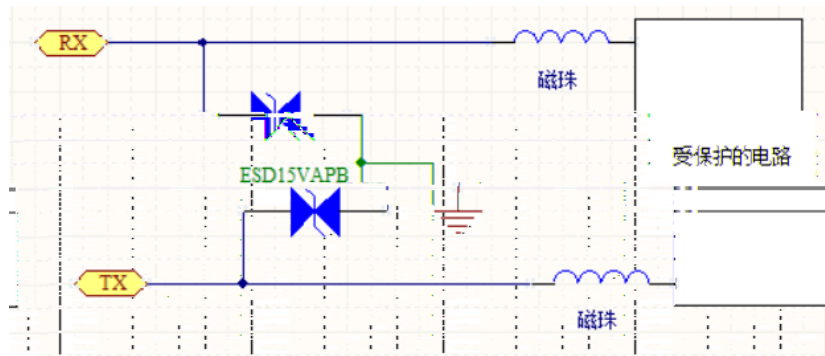
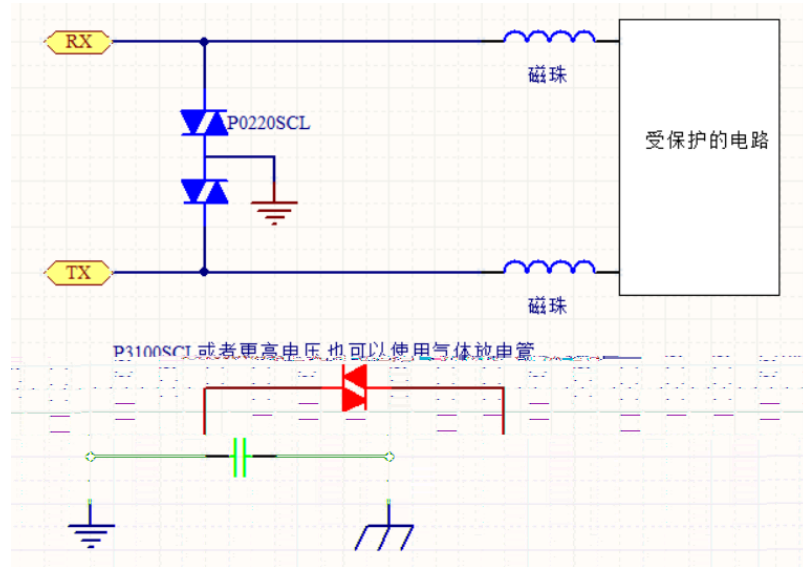
TVS	TVS	SM8S	5KP	15KP
		90V		2



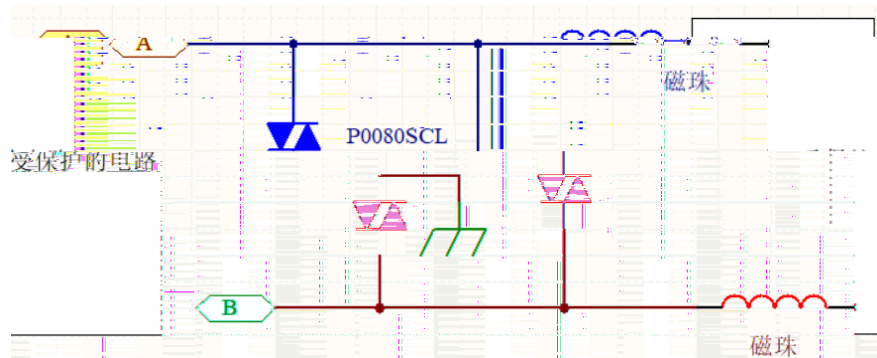
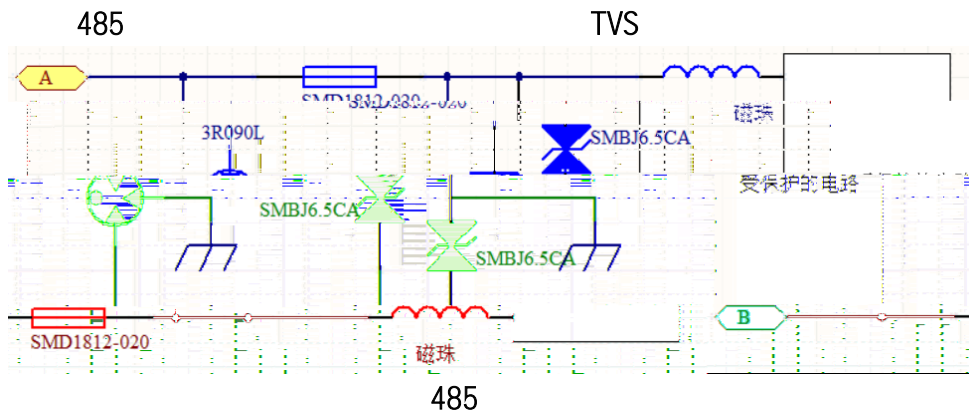
EFT

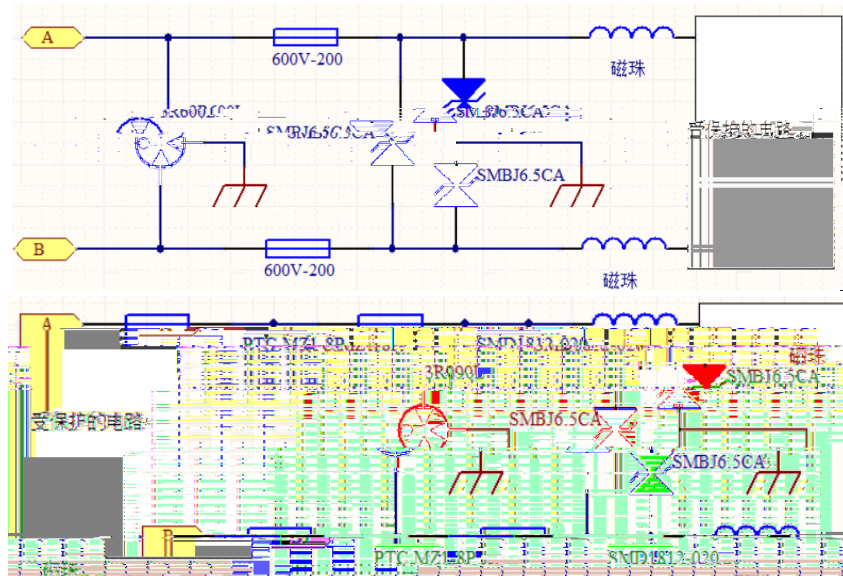
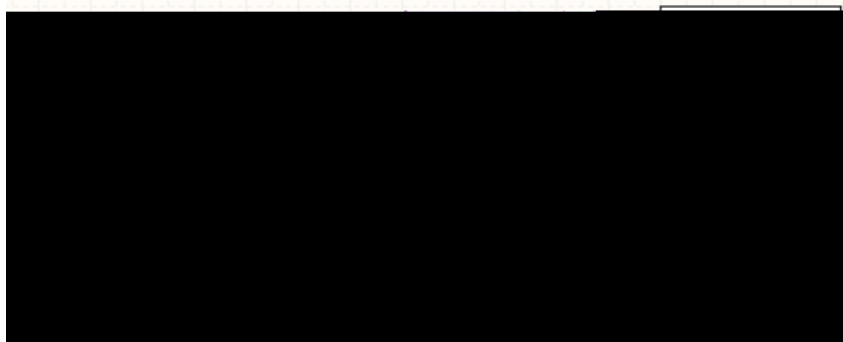
3. 3.1 RS232



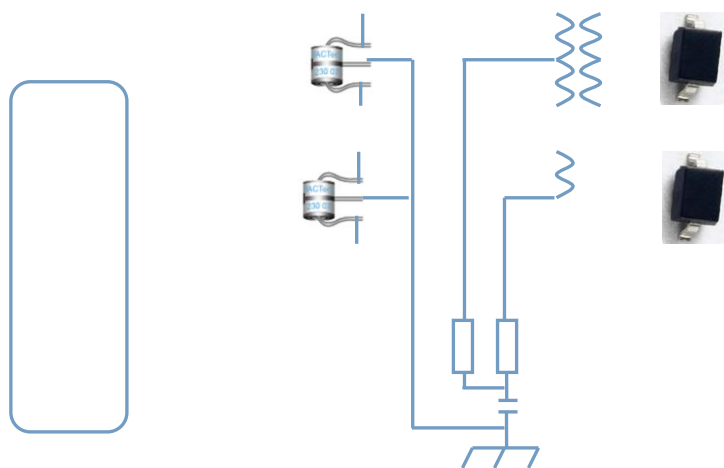


3.2 RS485



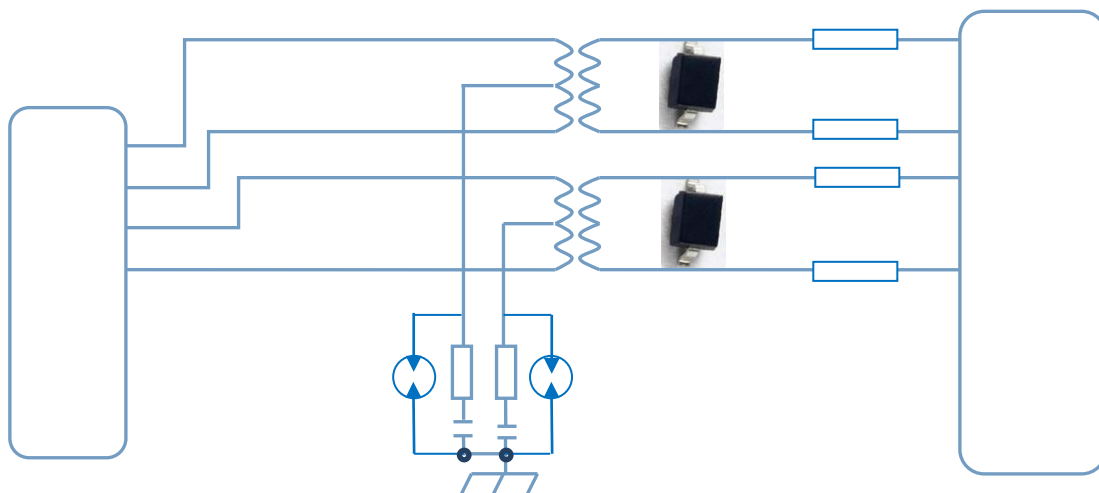


3.3



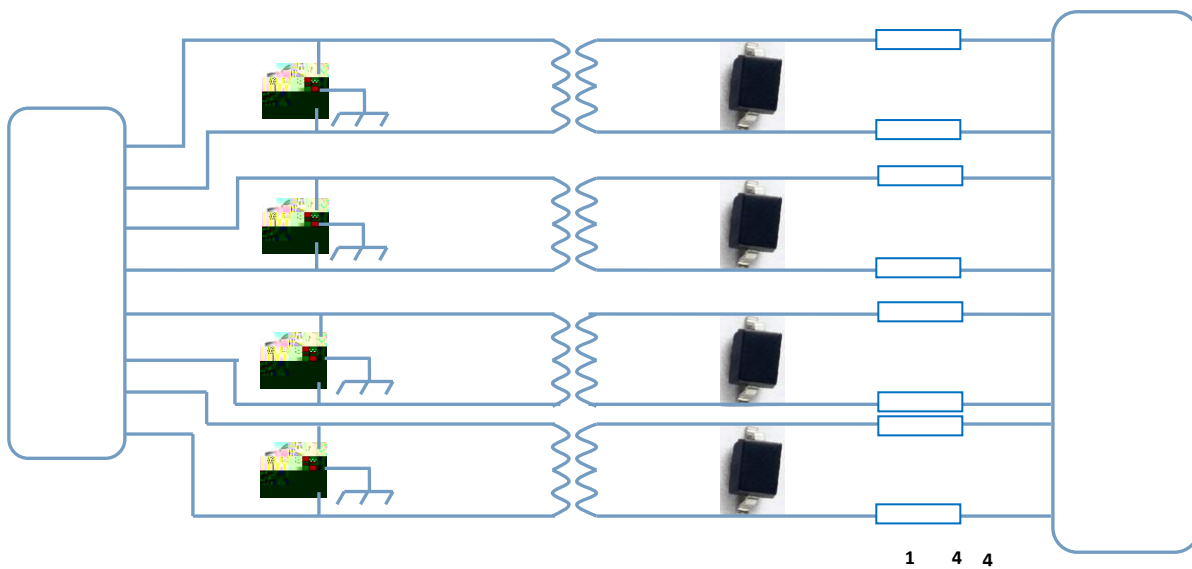
	ESD	R1	2	3	4
3R090L	ESDLC3V3D3B		2		

ESDSLUVU2. 8-4



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

3.4

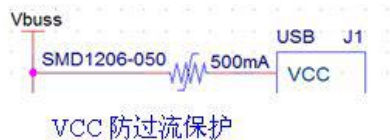
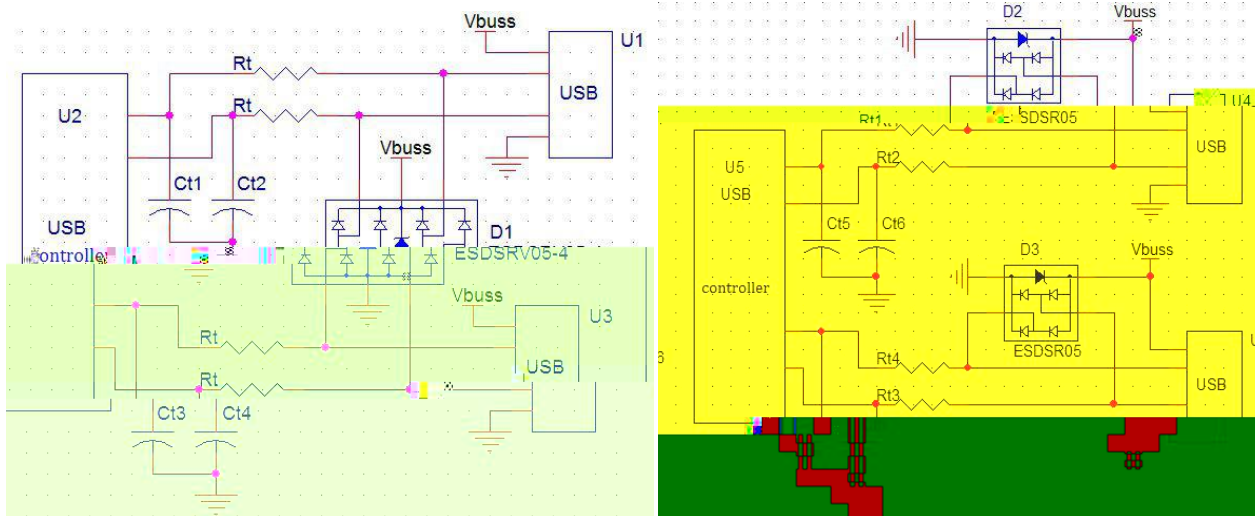


1 4 4

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

4 ESD

4.1 USB2.0



ESDSRV05-4 ESDSR05

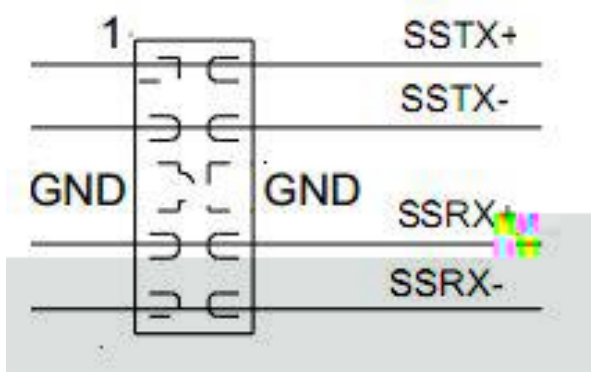
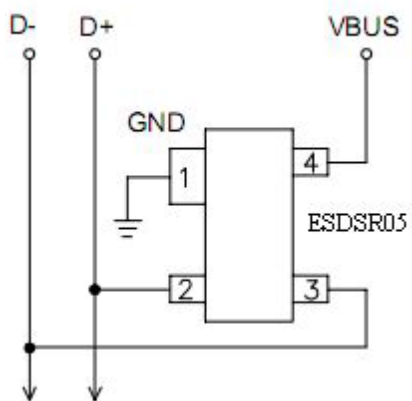
4.2 USB3.0 ESD



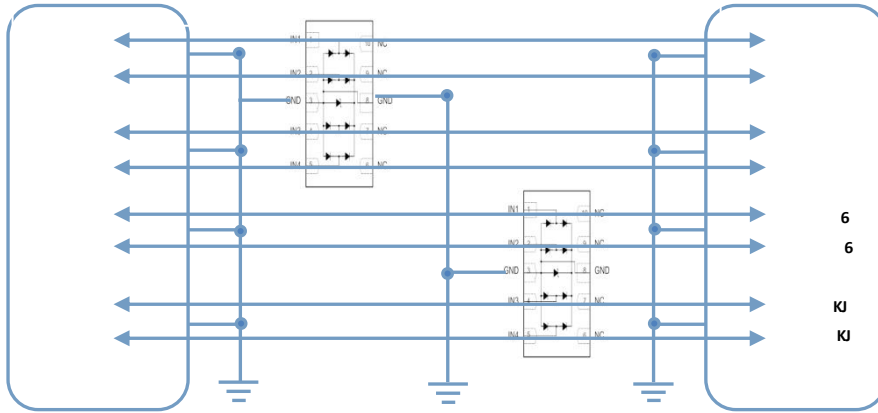
ESD1065P

ESDSR05

ESD0524P



4.3 HDMI ESD

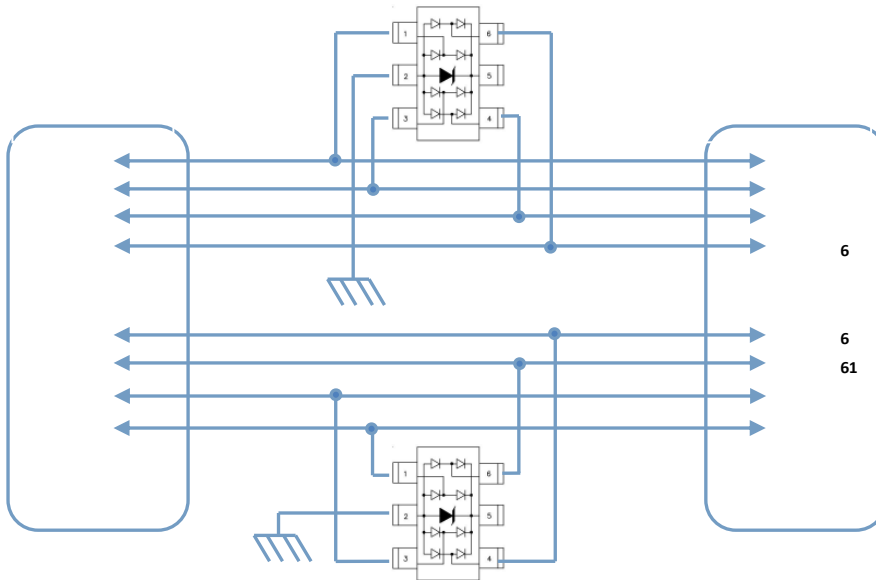


ESD0524P

ESDUCL5V0D8B

ESDUCL5V0D9B

4.4 VGA ESD

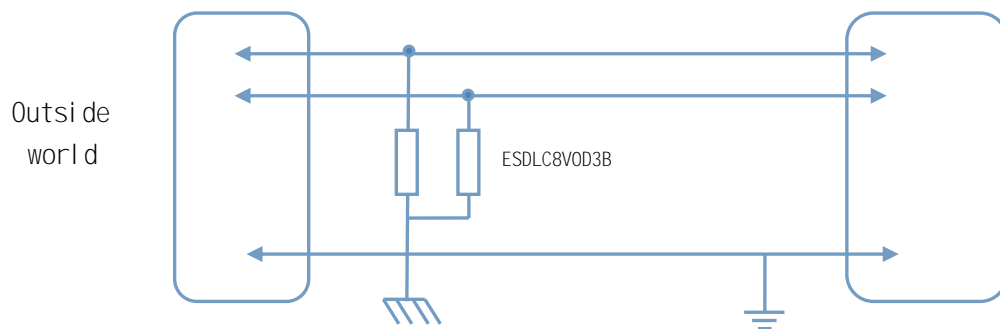


ESDSRVLC05-4 ESD0524P

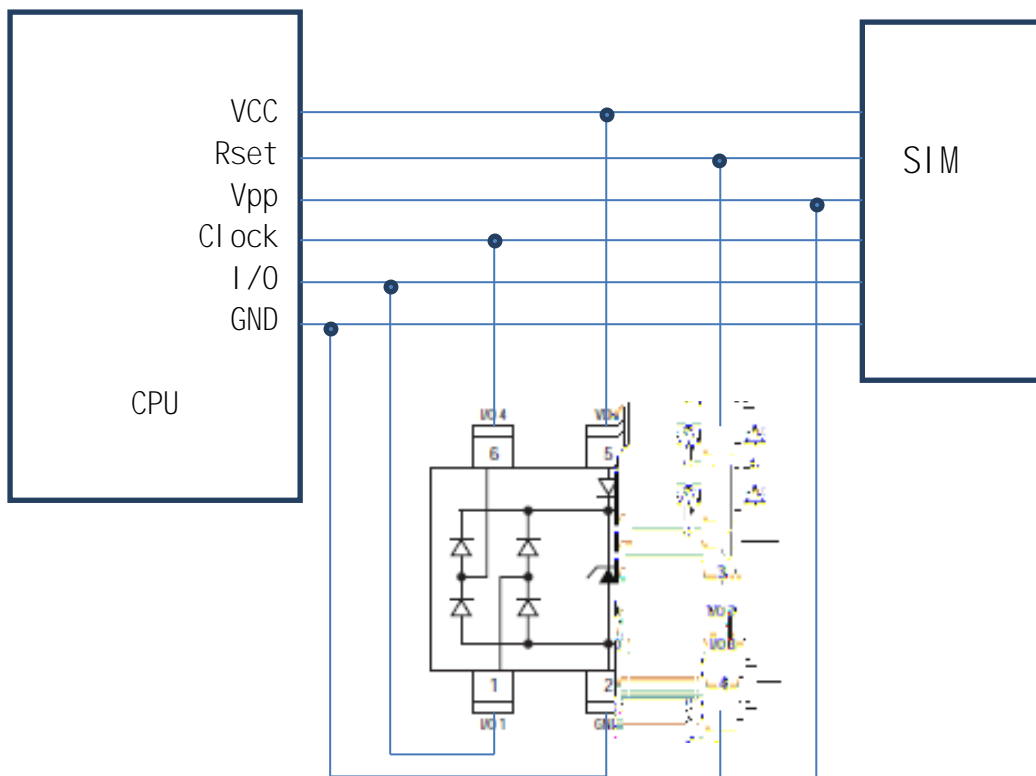
ESDUCL5V0D8B

ESDUCL5V0D9B

4.5 ESD



4.6 SIM ESD



ESDSRV05-4

