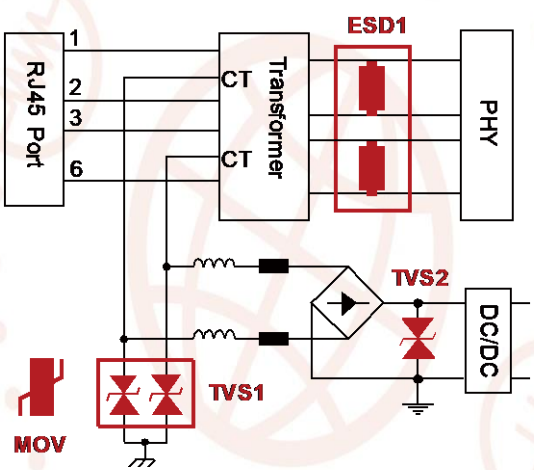
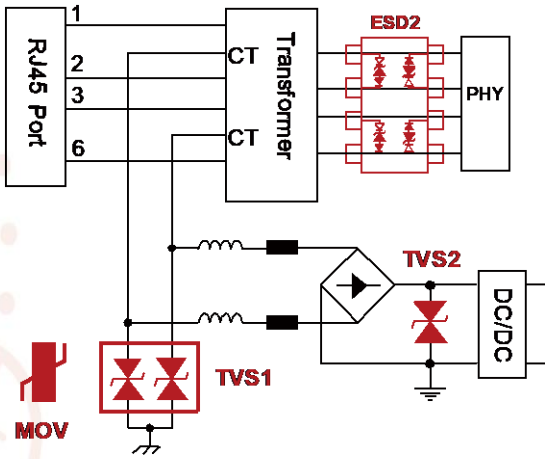
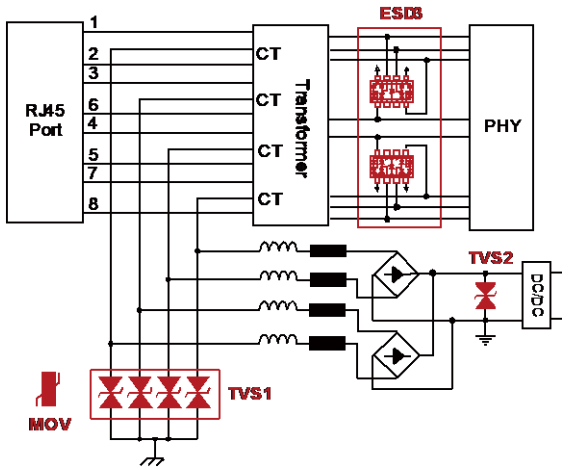
Application Example: Communication Interfaces

- **100M /1000M PoE（Power on Ethernet）Protection**







MOV: 101KD14
ESD1: UDD32C03/05L01

TVS1: 5.0SMDJ58CA
ESD2: UFS08A2.8L04

TVS2: SMCJ58CA / SMDJ58CA
ESD2: UES08A03L05

YAGEO

EPS (Electronic Power Steering): High Stability and Reliability➔ SMCJ30CA-AT,SMAJ26CA-AT,SMDJ28CA-AT,5.0SMDJ24/26A-AT, 5KP24CA-AT,1.5KE30CA-AT

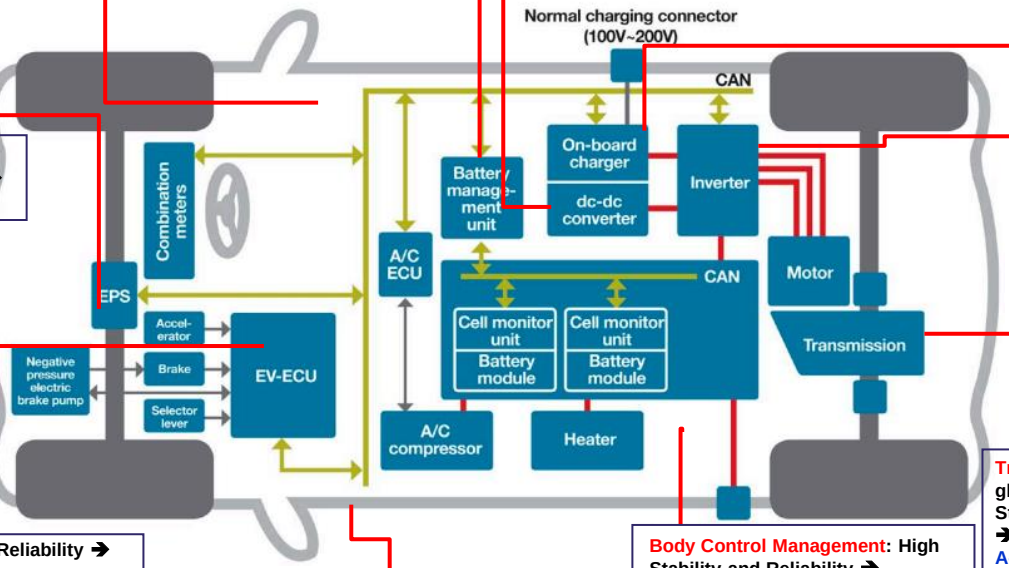
BMS (Battery Management System): High Stability and Reliability ➔ SMBJ24/33/85CA-AT, SMBJ20/51A-AT

Infotainment, Comfort, Climate Control: High Stability and Reliability ➔ 5.0SMDJ18/22/26CA, SMCJ30CA-AT,SMBJ30/36CA-AT, 5KP22A-AT

DC/DC Converter: High Stability and Reliability ➔ P6SMB-AT Series, SMDJ-AT Series

On-Board Chargers : Transient Voltage Suppressor ➔ 1.5SMC-AT Series P6KE-AT Series

ECU (Engine Control Unit): High Stability and Reliability ➔ 5.0SMDJ30CA-AT



Electrical Motor Drives (DC/AC) : High Stability and Reliability ➔ P6SMB-AT Series, 1.5SMC-AT Series

Transmission: For conductive gluing/ adhesive bonding, High Stability and Reliability ➔5.0SMDJ20/30CA,SMBJ24/36CA-AT, SMAJ36A-AT

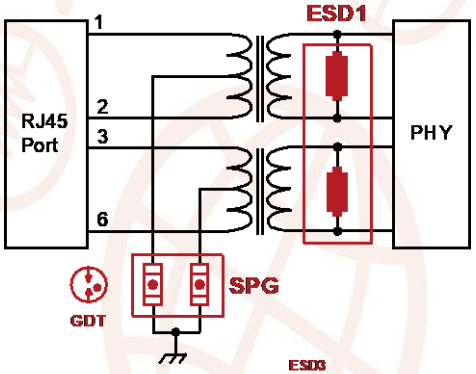
Lighting: High Stability and Reliability ➔ SMBJ24/28/30/33/36CA-AT, SMCJ24/28/30/36CA-AT

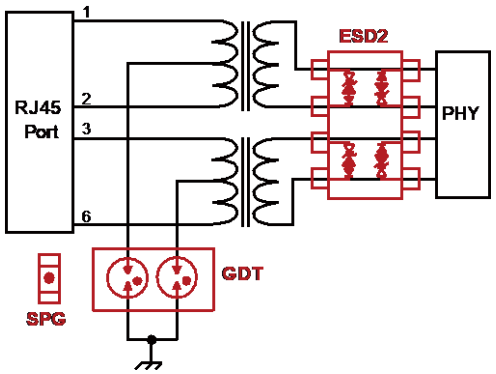
Safety Management: High Stability and Reliability ➔ 1.5KE47CA-AT, SMDJ28CA-AT

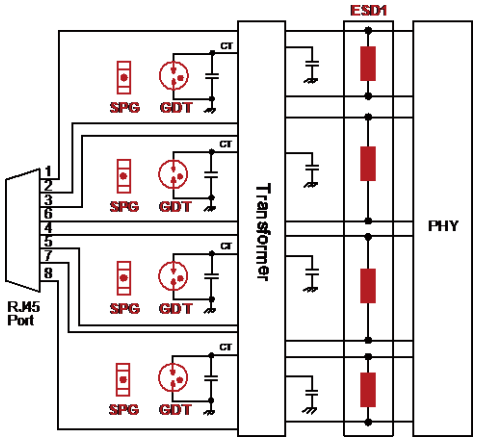
Body Control Management: High Stability and Reliability ➔ 1.5KE30CA-AT,SMCJ30CA-AT, SMBJ28CA-AT,

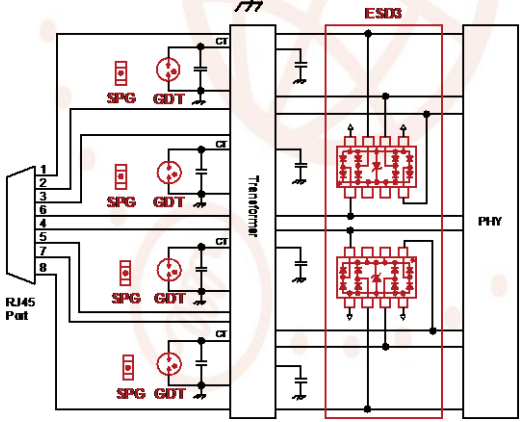
Application Example: Communication Interfaces

- **100M/1000M RJ45 Port (Ethernet) Protection**









GDT: 2RL075L/M-5, 2RM075L/M-8, 4532-075/091-LF

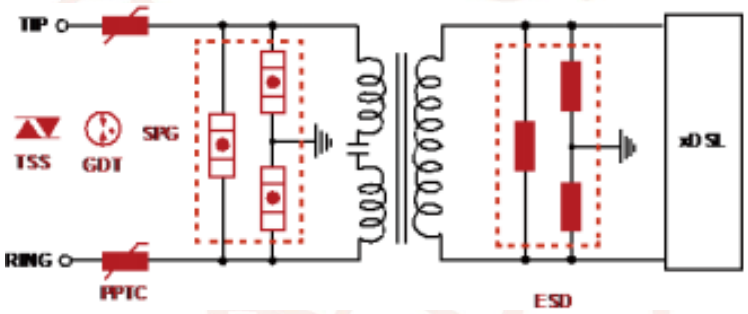
SPG: BK13000702/BK1300702-M/BK23000702/BK23000702-M/BK33000702/BK33000702-M

ESD1: UDD32C03/05L01 **ESD2:** UFS08A2.8L04 **ESD3:** UES08A03L05

Reference test standards: IEC61000-4-2, GB/T 17626.2, IEC61000-4-5, GB/T17626.5

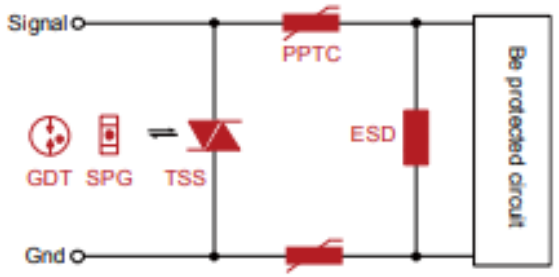
Application Example: Communication Interfaces Protection

- **RJ11 Port Surge Protection**



PPTC： BK250/BK600
SPG： BK12001502/BK12001502-M
GDT： 2RL350L/M-5, 2RM350L/M-8
TSS： P3100SC
ESD: UDD32CXXL01
Test standard: IEC61000-4-2，GB/T 17626.2，
IEC61000-4-5，GB/T17626.5

- **BNC Port Protection**

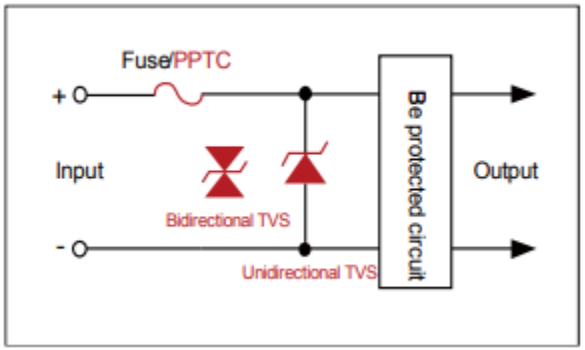


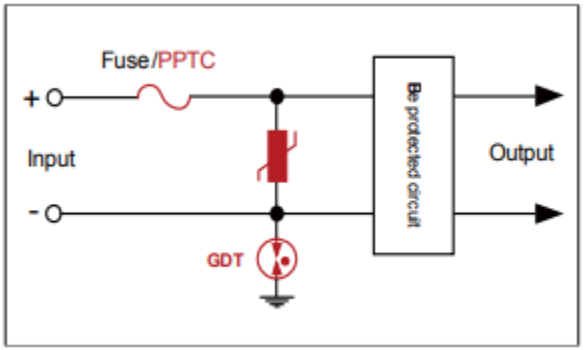
Two stage surge protection

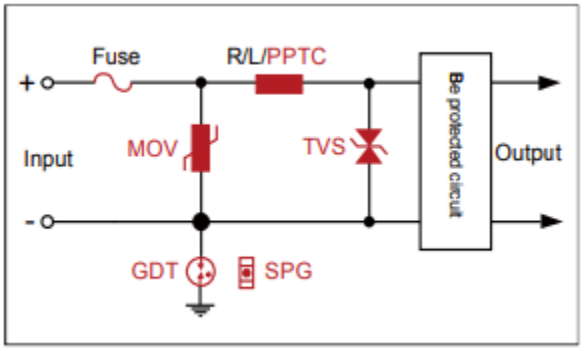
PPTC: SMD 1812
TSS: P0080SX（X: A/B/C）
ESD: UDD32C05L01
Reference test standards:
IEC61000-4-2, GB/T 17626.2,
IEC61000-4-5, GB/T17626.5

Application: Power

- **DC Power（5V～48V）:**
  SMD1812series，BK60series(DIP)

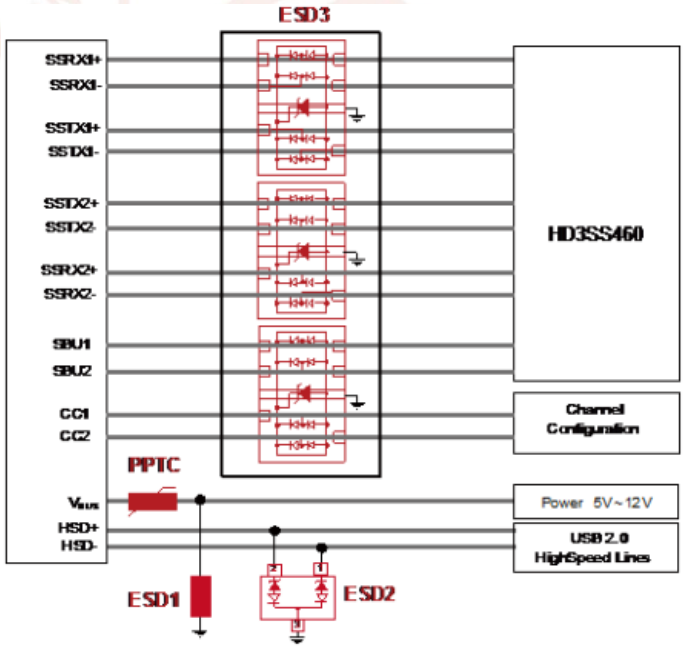






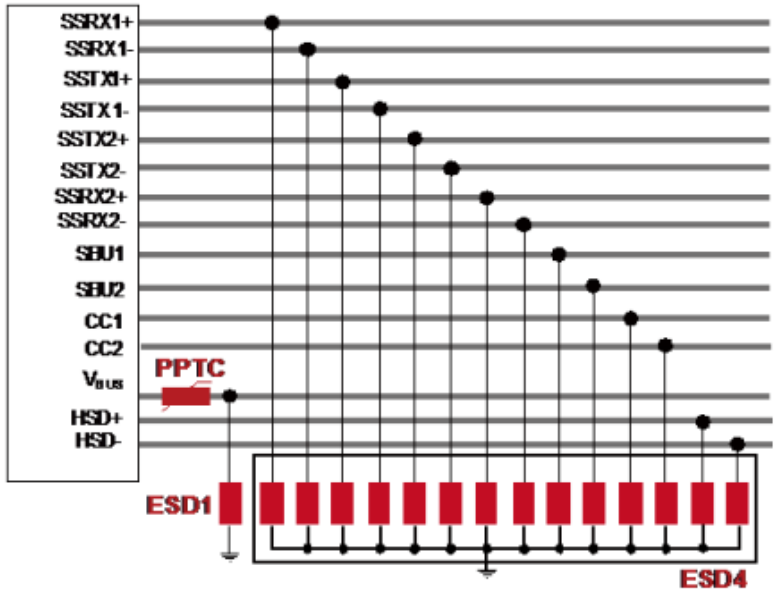
Application: Communication Interfaces

- **USB Type-C ESD Protection**



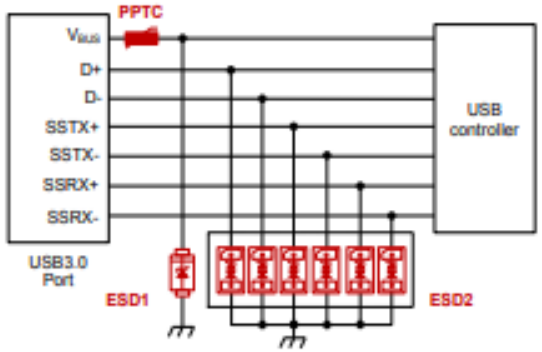
PPTC: SMD1812BxxxTF/x
ESD1: SDD32CXXL01 / SFD52A05/07L01
ESD2: UBT23A05L02
ESD3: UBQ10A05L04HI/UBQ10A03L04/UBQ10A05L04-LV/ UAD20A05L04-R0.4
ESD4: UAQ02C05L01-R0.5/UAD8C05L01

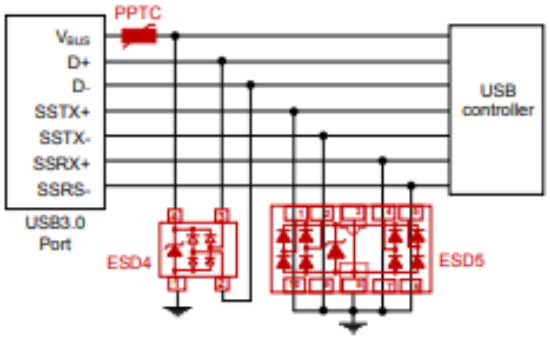
Test standard: IEC61000-4-2，GB/T17626.2

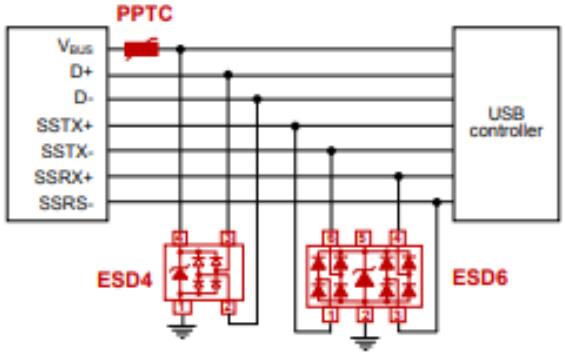


Application: Communication Interfaces Protection

- **USB3.0 Port ESD Protection**

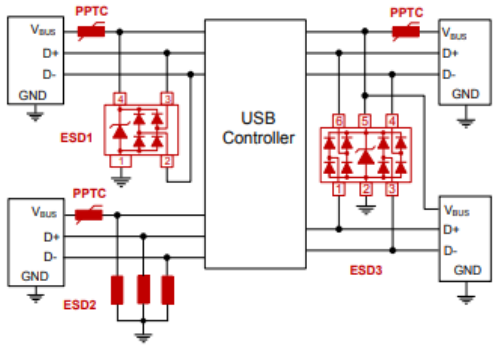






PPTC: SMD1812BxxxTF/x
ESD1: SDD32CXXL01/SDD32AXXL01/SHD8C4.5L01/ SBD52C05L01/SDD52C05L01/SFD52A05/07L01
ESD2: UAQ02C05L01-R0.5/UDD32C05L01/ UAD8C05L01/UAD52A05L01
ESD4: UET14A05L03-BK/UDT14A05L03
ESD5: UBQ10A05L04HI/UBQ10A03L04/ UBQ10A05L04-LV/ UAD20A05L04-R0.4
ESD6: UDT26A05L05-LC1
Test standard : IEC61000-4-2, GB/T17626.2

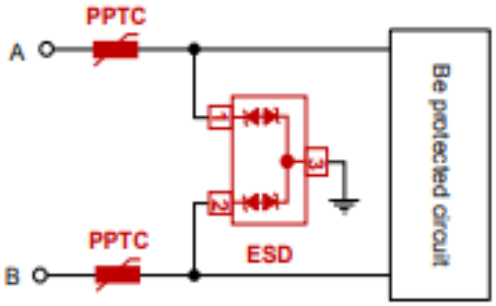
- **USB2.0 Port ESD Protection**



Device selection:
ESD1: UET14A05L03-BK
ESD2: UDD32C03/05L01 / UAD8C05L01
ESD3: UDT26A05L05-LC1, UCT26A05L05-HP1
PPTC: SMD1812 BXXXTF
Reference test standards:
IEC61000-4-5, GB/T17626.5, ISO10605, GB/T 19951

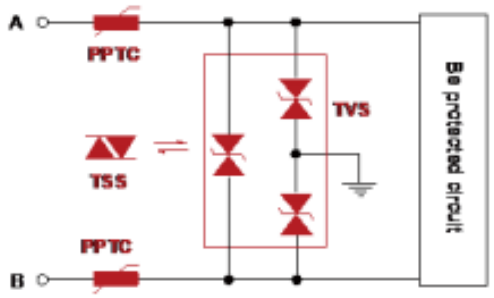
Application: Communication Interfaces Protection

- **RS485 Port Protection**



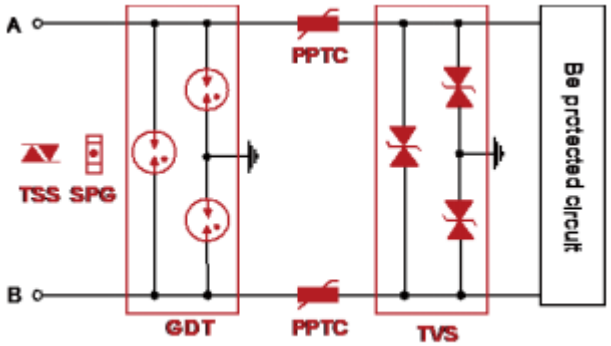
ESD protection

PPTC: SMD1812B010TF/ BK250-110
ESD: SDT23C712L02
Reference test standards:
IEC61000-4-2,GB/T17626.2



Low surge protection

PPTC: BK250-110
TVS: SMBJ6.5CA
TSS: P0080SB
Reference test standards:
IEC61000-4-2,GB/T17626.2
IEC61000-4-5,GB/T17626.5

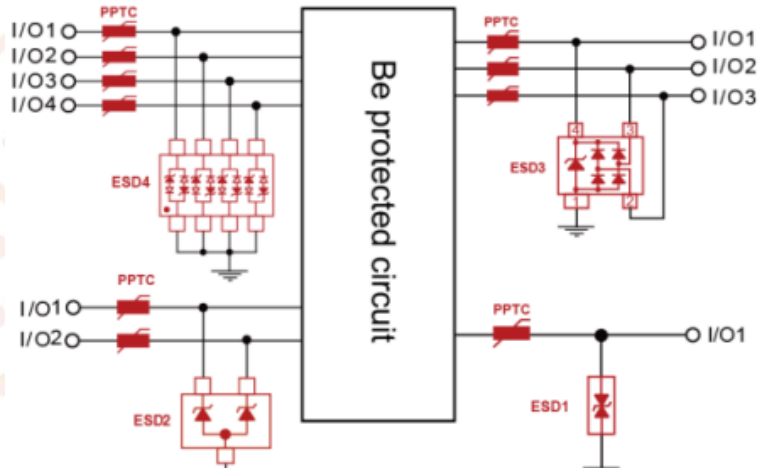


Two stage protect solution for high surge

PPTC: SMD1812B010TF/ BK250-110
GDT: 2RM090M-5
SPG: BK13001502/BK1301502-M
TVS: SMAJ5.0CA
Reference test standards:
IEC61000-4-2,GB/T17626.2
IEC61000-4-5,GB/T17626.5

Application: Communication Interfaces Protection

- **I/O Port ESD Protection**



Device selection:

PPTC: SMD0603, SMD0805, SMD1206, SMD1210, SMD1812

ESD1: SBD52C05L01, SJD12A(C)XXL01, SED52C05L01

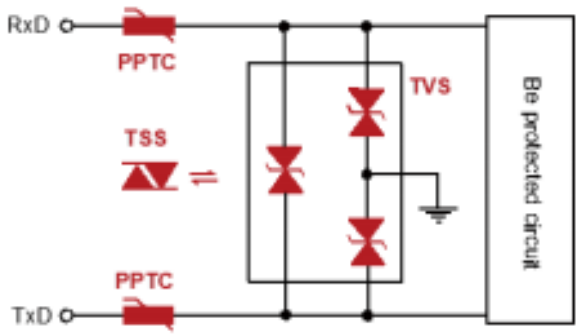
ESD2: SDT23C05L02/SDT23C12L02/SDT23C15L02/SDT23C24L02
SET23A03L02/SET23A05L02/SET23A12L02/
SET23A15L02/SET23A24L02/SET23A36L02

ESD3: UDT14A05L03

ESD4: LES08C05L04/LES08C12L04/LES08C15L04/LES08C24L04

Reference test standards: IEC61000-4-2, GB/T17626.2

- **RS232 Port ESD Protection**



PPTC: SMD1812B010TF, BK250-110-SZ

TVS: SMBJ6.5CA, SMBJ12CA

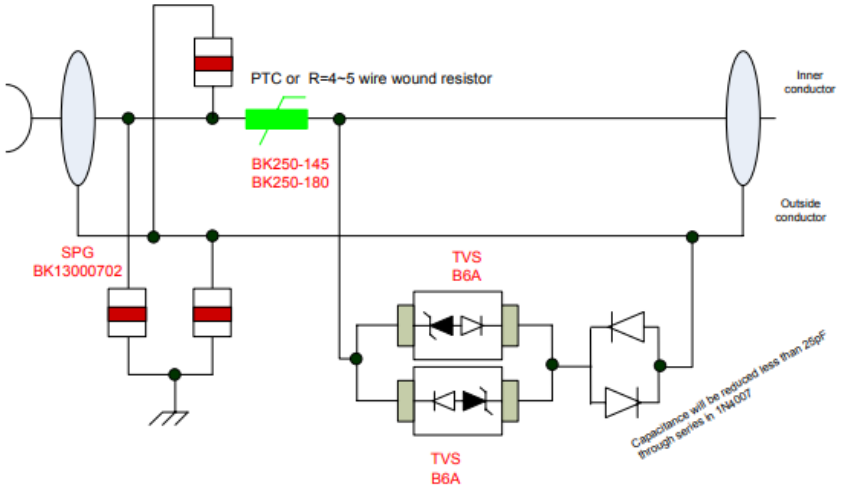
TSS: P008SA/B/C, B6SA

Reference test standards

IEC61000-4-2, GB/T17626.2

Application: Communication Interfaces Protection

- **Coax Signal Line Protection Circuit**



Note:
The solution will comply with both 1.2/50uS and 10/700uS 6KV test, clamp the surge voltage below 15V.

- **SLIC PROTECTION CIRCUIT**