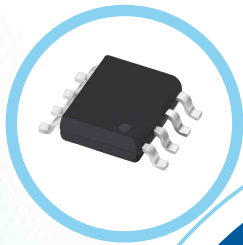




过压保护器件

Over Voltage Protection Components

瞬态电压抑制二极管 (TVS) 静电抑制器 (ESD)



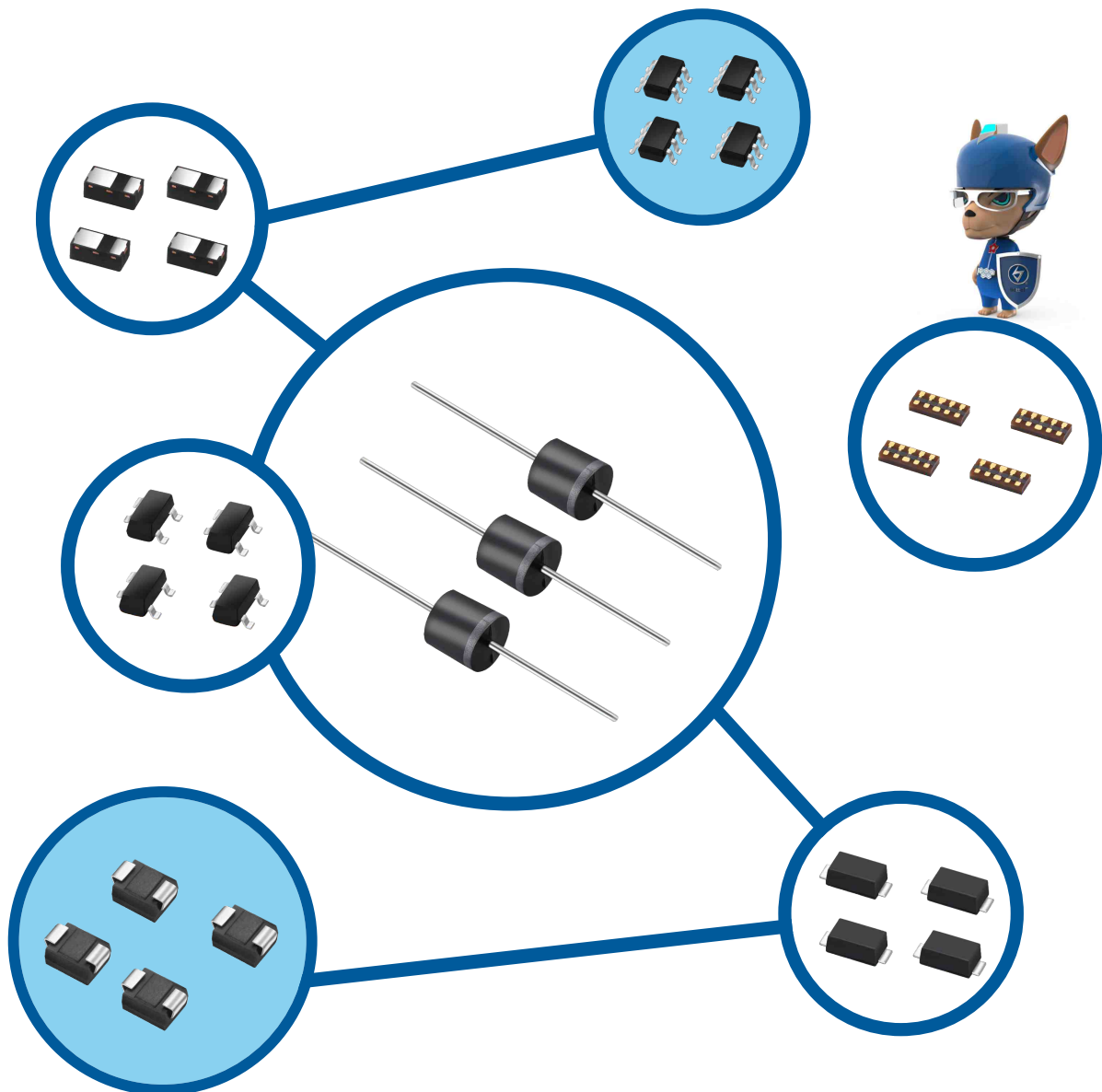
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Summary 概述:

The overvoltage protection device is connected in parallel in the circuit. When the circuit works normally, it is in a high-impedance state and will not affect the normal operation of the circuit. Once it is impacted by transient high energy, it will have a fast respond, changing from high impedance to low impedance, which having excellent surge absorption capability, and at the same time, it can clamp the circuit voltage to a predetermined value, which is effective protection. Other components in the circuit are protected from surge pulse damage. When the abnormal overvoltage disappears, it returns to a high impedance state and the circuit works normally. TVS/ESD has been widely used in Computers, Communication equipment, DC power supplies, Automobiles, and smart homes. Electrical appliances, Smart meter, RS232/422/485, I/O, LAN, ISDN, ADSL, USB port, GPS and other fields.

过压保护器件是并联于电路中的，当电路正常工作时，它处于高阻态，不会影响线路正常工作。一旦受到瞬态高能量的冲击时，就会快速的动作，由高阻抗变为低阻抗，从而具有极好的浪涌吸收能力，同时也能使电路电压钳位在一个预定值，有效的保护电路中其它元器件免受浪涌脉冲的损坏，当异常过压消失，其恢复至高阻态，电路恢复正常工作，TVS/ESD目前已广泛应用于计算机系统、通讯设备、直流电源、汽车、智能家用电器、仪器仪表、RS232/422/485、I/O、LAN、ISDN、ADSL、USB port、GPS等各个领域。



Features特性:

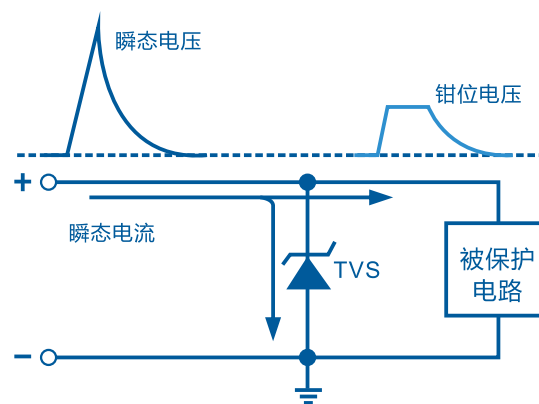
1. The internal chip of TVS is made of semiconductor silicon material, which is manufactured by semiconductor technology and has high reliability.
2. TVS has a fast response time, picosecond level.
3. TVS has high voltage accuracy, $\pm 5\%$ tolerance.
4. TVS packages are diversified. SMD packages include SOD123, SMA (DO-214AC), SMB (DO-214AA), SMC (DO-214AB), DO-218AB, etc., and DIP packages include DO-41, DO-15, DO-201, P-600, etc., the transient pulse power of TVS can reach 200W-30000W which test in 10/1000 μ s waveform.
5. The operating voltage range is 5V~440V.

- 1、TVS 内部芯片为半导体硅材料，采用半导体工艺制造，具有较高的可靠性。
- 2、TVS具有较快的响应时间，皮秒级别。
- 3、TVS 电压精度高， $\pm 5\%$ 的公差。
- 4、TVS封装多样化，贴片封装有SOD123、SMA (DO-214AC)、SMB(DO-214AA)、SMC(DO-214AB)、DO-218AB 等，插件封装有DO-41、DO-15、DO-201、P-600 等，TVS在10/1000 μ s波形下瞬态脉冲功率可达200W-30000W。
- 5、工作电压范围5V~440V。

Application应用:

Home appliances;Electronic instruments; smart meter,PC, Communication equipment;RS232,485 and CAN communication ports;I/O ports; IC circuit protection; Audio and video input; AC and DC power supply; Motor, relay noise suppression and other fields.

家用电器、电子仪器、仪表、精密设备、计算机系统、通讯设备、RS232、485及 CAN等通讯端口、I/O端口、IC电路保护、音视频输入、交直流电源、电机、继电器噪声的抑制等各个领域。



TVS电路保护原理简图



DC Power DC电源



Security 安防



Smart meter 智能电表



Industrial Control 工业控制

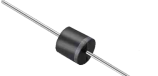


Communication 通信

瞬态电压抑制二极管 (TVS)

ROHS

Product introduction 产品介绍:

产品系列 Series	外观图片 Image	峰值脉冲功率 Peak Pulse Power 10/1000μs (W)	封装 Package	极性 Polar	反向截止电压 V _{RWM(V)}
SMAJ		400	SMA(DO-214AC)	单向、双向	5.0~440.0
P4SMA				单向、双向	5.8~376.0
P4KE			DO-41	单向、双向	5.8~342.0
SMBJ		600	SMB(DO-214AA)	单向、双向	5.0~440.0
P6SMB				单向、双向	5.8~376.0
P6KE			DO-15	单向、双向	5.8~342.0
SMCJ		1500	SMC(DO-214AB)	单向、双向	5.0~440.0
1.5KE			DO-201	单向、双向	5.8~376.0
SMDJ		3000	SMC (DO-214AB)	单向、双向	5.0~220.0
3KP			P600	单向、双向	5.0~220.0
5.0SMDJ		5000	SMC (DO-214AB)	单向、双向	11.0~170.0
5KP			P600	单向、双向	5.0~250.0
15KPA		15000	P600	单向、双向	17.0~280.0
20KPA		20000	P600	单向、双向	20.0~300.0
30KPA		30000	P600	单向、双向	28.0~400.0

静电抑制器 (ESD)

ROHS

Features特性:

1. ESD is a clamping type of over voltage protection device, which be used for electrostatic protection and some lower surge protection.
2. Operating voltage 2.8V-36V.
3. Low capacitance, up to 0.3pF minimum.
4. Diversified packages, including QFN-0201, SOD-882, DFN1006-3L, SOT-523, SOD-523, QFN-10, SOD-323, SOT-23, SOT-143, SOT-363, SOT23-6L, SOIC-8 etc.

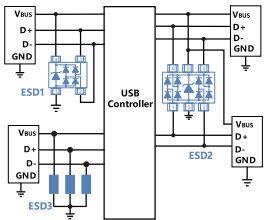
- 1、ESD 是一种钳位型过压保护器件，用于静电防护及一些较低浪涌的防护；
- 2、工作电压2.8V-36V。
- 3、电容低，最小可至0.05pF。
- 4、封装多样化，有 QFN-0201、SOD-882、DFN1006-3L、SOT-523、SOD-523、QFN-10、SOD-323、SOT-23、SOT-143、SOT-363、SOT23-6L、SOIC-8等。

Application应用:

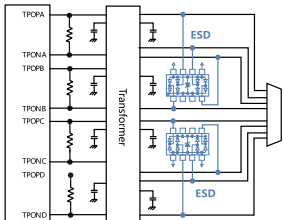
ESD is widely used in communications, security, industrial, automotive, consumer products, smart wearable devices and other electronic products such as communication lines and I/O ports for electrostatic protection.

ESD 广泛应用于通信、安防、工业、汽车、消费类产品、智能穿戴设备等电子产品的通信线及 I/O 口 等静电保护。

Protect the case保护案例:



USB 2.0保护



以太网 (RJ45) 接口保护



Mobile phone 手机



PC电脑



UAV无人机

Product introduction 产品介绍:

PESD (高分子聚合物ESD)

型号 Part NO.	外观图片 Image	保护线路数 Protection Lines	极性 Polar	截止电压 $V_{RWM}(V)$	结电容 C_j TYP (pF)	封装 Package
0402ESD-P		1	双向	5/12/24	0.05	0402
0603ESD-P		1	双向	5/12/24	0.05	0603
2510ESD-4P		4	单向	5	0.1	2510



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静电抑制器 (ESD)

ROHS

Product introduction 产品介绍:

(半导体ESD)

型号 Part NO.	外观图片 Image	内部结构 Structure	保护线路数 Protection Lines	极性 Polar	封装 Package	结电容 C_j TYP (pF)	截止电压 $V_{RWM}(V)$
BAA05Q10U			4	单向	DFN2510	0.6	5
SLVU2.8-4			4	单向	SOIC-8	1.6	2.8
BT712			2	双向	SOT23	45/75	7&12
BDCXXD32U			1	双向	SOD323	1~1.2	3. 3/5/8/12/15/18/24/30
BDCXXD32S			1	双向	SOD323	35~450	3. 3/5/8/12/15/18/24/36
BDAXXD32S			1	单向	SOD323	60~450	3. 3/5/8/12/15/18/24/36
BAC05D52U			1	双向	SOD523	3	5
BDA05T26U			5	单向	SOT23-6L	0.4	5
BBA05T36U			5	单向	SOT363	2	5
BAA05T56U			5	单向	SOT563	0.7	5
BDA05T23U			2	单向	SOT23	1	5
BDA05T14U			3	单向	SOT-143	0.4/0.9	5
BAC05D8U			1	双向	DFN1006	0.4	5
BAC05D8L			1	双向	DFN1006	10	5
BBC05D8L			1	双向	DFN1006	15	5
BAC05Q02U			1	双向	DFN0603	0.35	5
BAC05Q02L			1	双向	DFN0603	15	5
BBC03Q02L			1	双向	DFN0603	30	3.3
BTA12D22S			1	单向	DFN2020-3	1300	12
BTA24D22S			1	单向	DFN2020-3	410	24

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