

VACTech

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Shenzhen VACTech Electronics Co., Ltd

- 工业避雷器SPD
- 汽车电子应用
- 通讯
- 消费电子
- 电源、仪器、医疗设备

Shenzhen VACTech Electronics Co., Ltd

台灣區總代理

奕旭科技有限公司

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Overvoltage Protection 过压防护

- GDT 陶瓷放电管
- TVS 瞬态抑制二级管
- TSS 半导体放电管
- MOV 压敏电阻
- ESD 静电保护元件

Overcurrent protection 过流防护

- PTC 自恢复热敏电阻
- FUSE 保险管

Switching Spark Tubes 开关管

In the overvoltage and overcurrent protection, lightning protection and other fields to provide leading solution provider.
在雷电防护、过电压过电流、ESD防护领域提供领先方案的供应商。



千年红摄影、设计、印刷: 0755-27912188 13138887988 余先生

Introduction 公司简介

Shenzhen VACTech Electronics Company Limited is a company by a group of more than ten years of ceramic gas discharge tube, semiconductor discharge tube, pressure sensitive resistance development and production experience of scientific and technological personnel founded, in the overvoltage and overcurrent protection, lightning protection and other fields to provide leading solution provider. Is committed to provide customers with a variety of advanced technology, safe and reliable products, solutions and services. Products are mainly of surge protection device (SPD), ceramic gas discharge tube (GDT), semiconductor discharge tube (TSS), transient suppression diode (TVS), pressure-sensitive resistor (Varistors) five categories, covering the power surge protection, communication transmission surge protection, grounding system, terminal device and protection field. The complete solution to enhance the information technology equipment and industrial equipment of all kinds of manageability, availability and security. For customers to create long-term value and potential growth.

VACTech是电路防雷、过压过流保护领域的行业领先者，公司是一家由一批有十年以上陶瓷气体放电管、瞬变抑制管、半导体放电管、压敏电阻开发及生产经验的科技人员创立的。在雷电防护、过电压过电流、ESD防护领域提供领先方案的供应商。致力于向客户提供多种先进技术、安全可靠的产品、解决方案和优质服务。产品主要有陶瓷气体放电管 (GDT)、陶瓷气体开关管 (Switching Spark Gaps)、半导体放电管 (TSS)、瞬变抑制二极管 (TVS)、压敏电阻(MOV)、保险丝 (FUSE) 五大类，涵盖：

- 1、工业避雷器SPD;
- 2、汽车电子应用;
- 3、通讯;
- 4、消费电子;
- 5、电源、仪器、医疗设备。



Main marketing 主要市场

工业避雷器SPD	汽车电子应用HID	Communications Electronics 通讯	Consumer Electronics 消费电子	Power, equipment, medical 电源、仪器、医疗设备

Quality assurance 品质保证

UL certification

Surge arresters from VACTech are recognized to UL 497B and UL 1449

Quality monitoring

100% test, Arresters and spark Tubes are individually tested for correct operation before delivery.

Sampling inspections

In our quality tests, we apply sampling inspections based on the following internationally recognized standards:

GB/T-2828-1-2003-1, ISO2859-1:1999

These quality monitoring processes are applied within the scope of statistical process control (SPC) to the process steps, the type and delivery inspections as well as the reliability inspections. Our delivery inspection (including simulation of the customer's incoming inspection) operates with the test features V_{sdc} and R_{ins} unless otherwise agreed and reaches an acceptable quality level (AQL) of 0.65 at test level II. The average outgoing quality (AOQ) is measured regularly in ppm and evaluated on the basis of these values.

For switching spark tubes, application oriented lifetime tests are carried out.

UL认证

威特科电子气体放电管已经过认证，符合UL497B和UL1449的要求

质量监控

100%测试，发货前，放电管和开关放电器已经过单独的测试，符合正常工作要求。

抽检

测试中，我们采用了基于以下国际标准的抽检：**GB/T-2828-1-2003-1, ISO2859-1:1999**

这些质量监控过程涵盖动态 (SPC) 过程控制、程步骤、和发货检验以及可靠性检验。除非另有规定，否则我们的发货检验 (包括模拟客户进货检验)，采用V_{sdc}和R_{ins}测试。并达到测试级别II的可接受质量水平 (0.65)。平均出货质量以PPM进行测量并以这些数值为基础进行评价。

对于开关放电管，我们采用了应用寿命测试。



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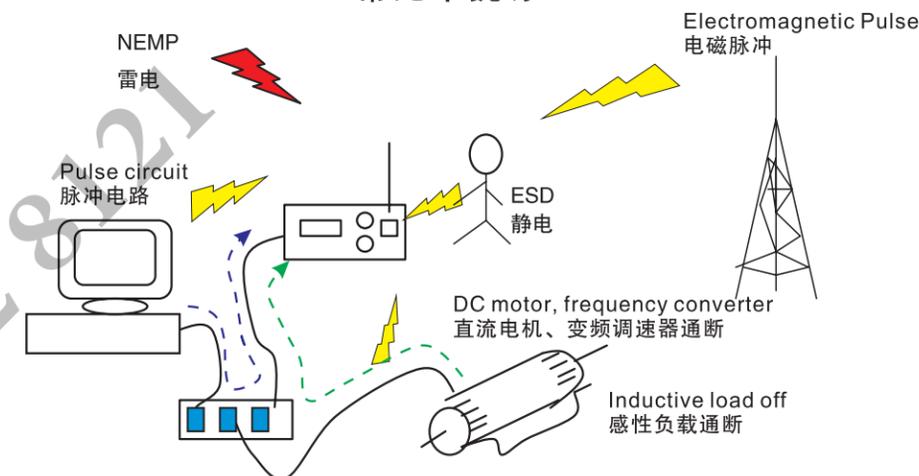
Surge overvoltage, overcurrent knowledge

Over-voltage, over-current and other sources of interference definition: the sudden release of stored energy must produce very short duration power surges. For example mine strike occurred suddenly switches inductive load switching, etc., because Leibo shape, inductive load switching, AC error touching lap, electrostatic discharge (ESD) is a high-frequency pulse current will produce a corresponding moment in the surrounding space in the discharge EMF mutations in all devices around the open-loop circuit and closed circuit device generates induced transients in voltage which will damage the sensitive electronic components around the IC.

Lightning and other transient voltage by monitoring, measurement, analysis, standardization organizations below, specifically describes the transient voltage surge characteristic diagram:

Common sources of interference

常见干扰源



Sources of interference surge overvoltage, overcurrent characteristics

干扰源浪涌过压、过流特性

IEC61000-4-5 and GB17626.5, surge immunity test analog signal definition:

Nature of lightning (thunder indirect means, such as the clouds, lightning between clouds, lightning or adjacent object was) can be induced surge voltages and currents in the outdoor overhead line. In addition, plants or switching stations, the large switch instantaneously, but also in the large power lines induced surge voltages and currents. The common feature of these two energy surge is particularly large (compared with the energy, electrostatic as picojoules grade mJ pulse group of grade-level lightning surge, compared with hundreds of joules, is the energy of the first two interference million times), but the waveform moderate (microseconds, while the group is static and pulsed nanosecond, even nanosecond), low repetition rate. IEC61000-4-5, GB17626.5 by simulating lightning surge test, to establish an objective evaluation criteria for anti-interference ability surge of electrical and electronic equipment.

浪涌过压、过流基础知识

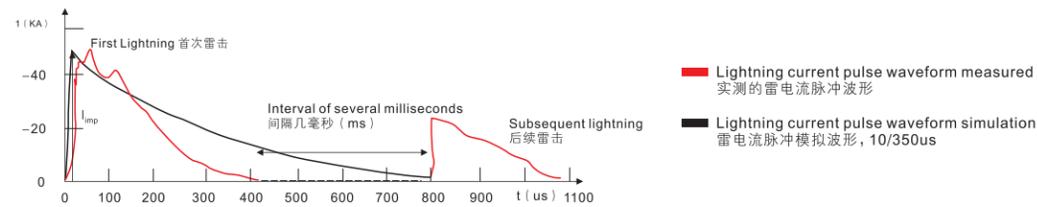
过电压、过电流等干扰源定义: 储存一定能量的突然释放, 产生持续时间极短的电能浪涌。例如发生击雷、突然开关感性负载开关等, 由于雷波形、感性负载开关、交流电的错误触碰搭接、静电放电ESD为一高频脉冲, 电流在泄放时相应会在周围空间产生一个瞬间突变的电磁场, 在周围的所有设备的开环电路与设备的闭环电路中都会产生感应瞬变电压, 此电压就会损坏周围敏感的IC等电子元件。

通过对雷击等瞬变电压的监视、测量、分析, 下面标准化组织, 专门描述了瞬变电压浪涌特性图:

IEC61000-4-5和GB17626.5, 浪涌抗扰度试验的模拟信号定义:

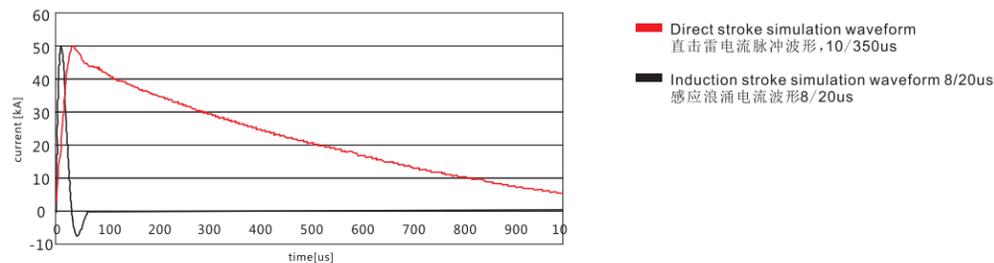
自然界的雷击(指间接雷, 如云层内、云层间的雷击, 或邻近物体遭到的雷击)都可以在户外架空线上感应出浪涌电压和电流。此外, 在电站或开关站中, 大型开关切换瞬间, 也会在供电线路上感应出大的浪涌电压和电流。这两种浪涌的共同特点是能量特别大(用能量作比较, 静电为皮焦耳级, 脉冲群为毫焦耳级, 雷击浪涌则为几百焦耳级, 是前两种干扰能量的百万倍), 但波形较缓(微秒级, 而静电与脉冲群是纳秒级, 甚至亚纳秒级), 重复频率低。IEC61000-4-5、GB17626.5通过模拟雷击浪涌的试验, 为电气和电子设备建立一个客观评价抗浪涌干扰能力的标准。

Lightning simulation waveform 雷电模拟波形



Main discharge in a discharge channel and the subsequent discharge of energy equivalent to the effect of simulated lightning waveform 10/350us. 在一个放电通道内的主放电和后续放电的能量效应与模拟雷电流波形10/350us相似, 在IEC 61024建筑物防雷保护, 以及IEC 61312-1"雷电电磁脉冲防护"中提出和确认。

The difference between direct stroke and induction stroke 直击雷波形与感应雷波形的区别



Common analog waveform 10/700us lightning impulse voltage waveform, 8/20us surge current waveforms. 常用模拟雷击波形10/700us冲击电压波形、8/20us冲击电流波形

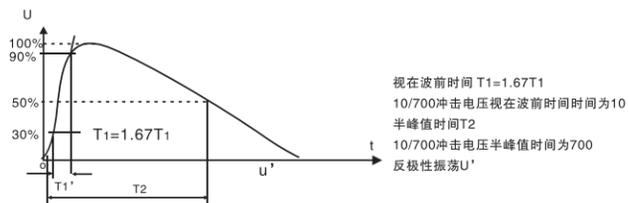


图1 10/700us impulse voltage waveform 冲击电压波

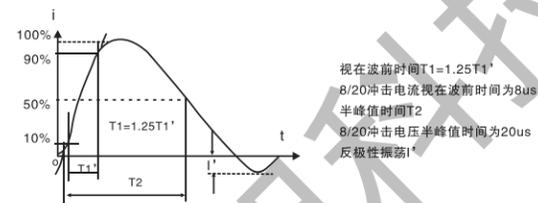
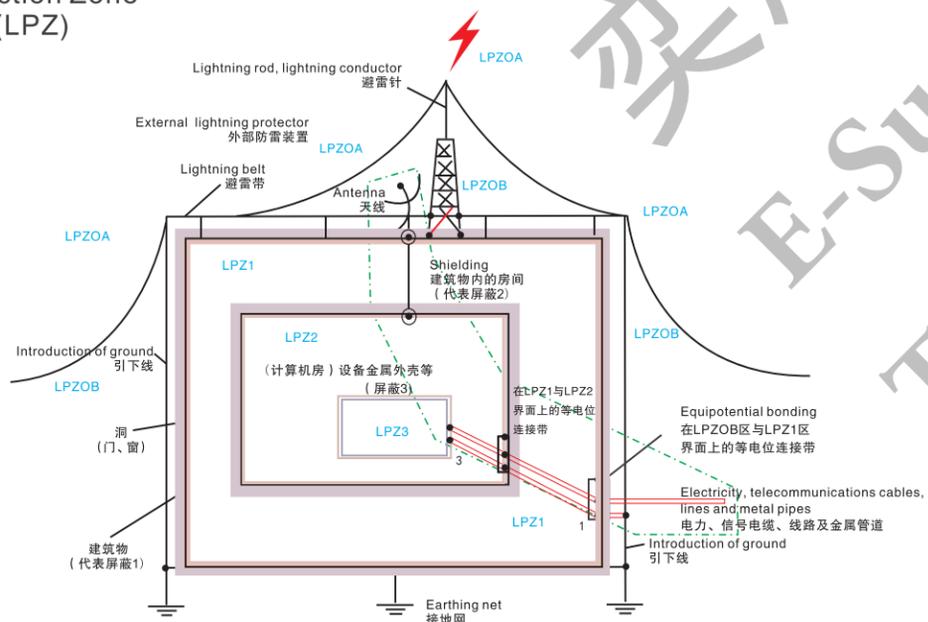


图2 8/20us surge current waveforms 冲击电流波

Lightning Protection Zone 防雷区域的划分(LPZ)



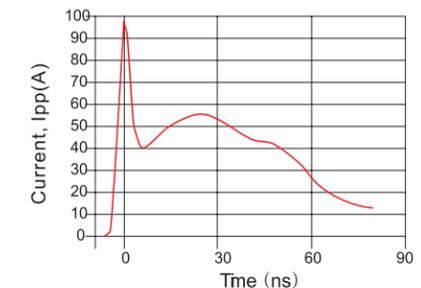
Lightning Protection 雷电保护分级	LPZD区与LPZ1区交界处		LPZ1与LPZ2、LPZ2与LPZ3区交界处				DC power nominal discharge current 直流电源标称放电电流 (KA)
	Class I Nominal discharge current 第一级标称放电电流 *	Class II Nominal discharge current 第二级标称放电电流 *	Class III Nominal discharge current 第三级标称放电电流 *	Class IV Nominal discharge current 第四级标称放电电流 *	Class IV Nominal discharge current 第四级标称放电电流 *		
	10/350μs	8/20μs	8/20μs	8/20μs	8/20μs	8/20μs	8/20μs
A Class/级	≥20	≥80	≥40	≥20	≥10		≥10
B Class/级	≥15	≥60	≥40	≥20			DC distribution system based on line length and the operating voltage, the choice of the nominal discharge current >=10KA SPD 直流配电系统中根据线路长度和工作电压选用标称放电电流 ≥10KA 适配的SPD
C Class/级	≥12.5	≥50	≥20				
D Class/级	≥12.5	≥50	≥10				

Direct contact between communication and power lines 通信线路和电力线错误碰触搭接:



ESD test standard IEC61000-4-2 corresponds to national standards GB/T 17626.2

ESD静电测试标准IEC61000-4-2 对应国内标准是GB/T 17626.2 :



IEC 61000-4-2 Test Levels

Contact Discharge 试验等级		Air Discharge 空气放电	
Level 等级	Test Voltage 接触放电(KV)	Level 等级	Test Voltage 试验电压(KV)
1	2	1	2
2	4	2	4
3	6	3	6
4	8	4	8
X*	Special 特殊	X*	Special 特殊

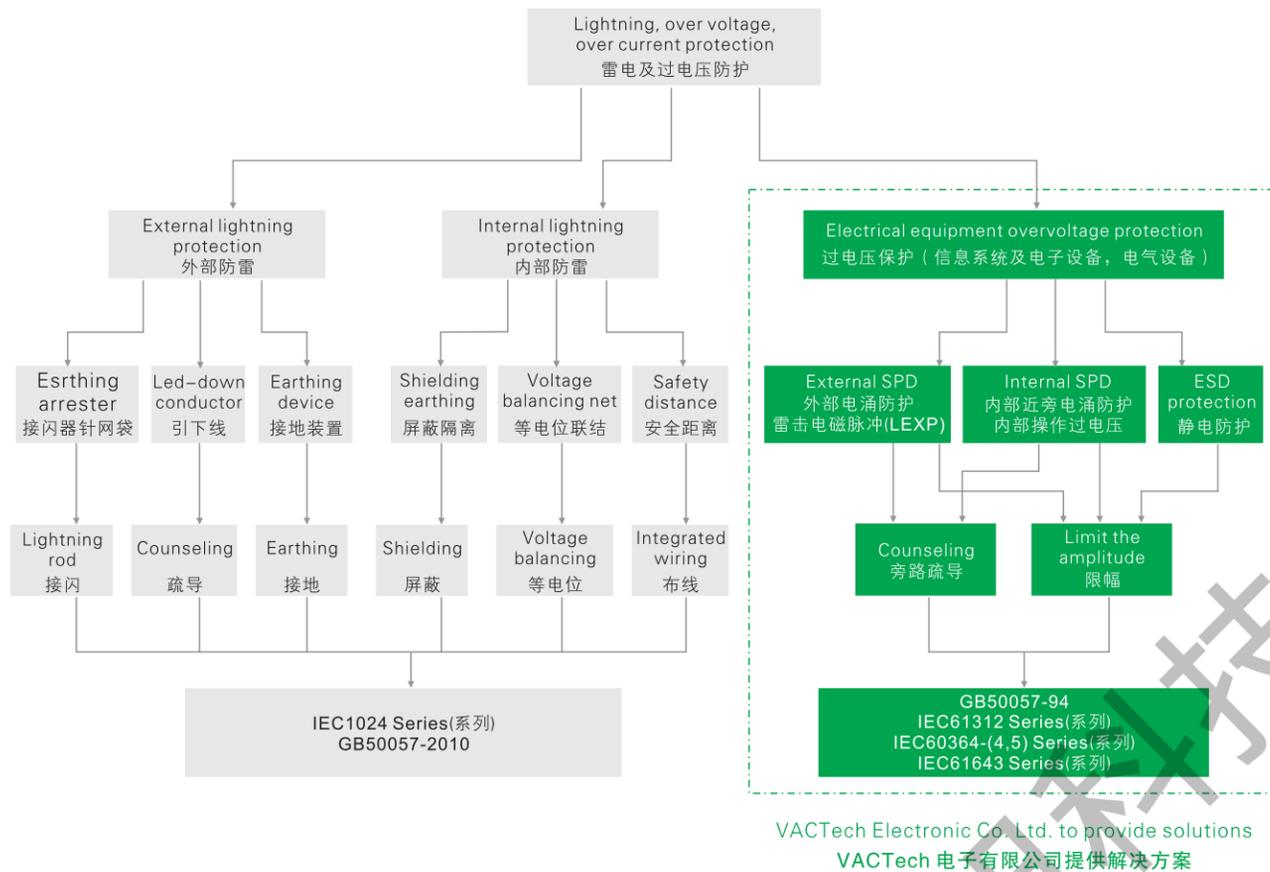
*-"X" is an open level
 * The level has to be special in the dedicated equipment specification
 * If higher voltages than those shown are special test equipment may be needed

- ◆ Contact discharge is the preferred test method - air discharges are not repeatable
模拟设备在受到静电放电时性能是否会下降或者失效, 放电分为直接放电和间接放电两类。
- ◆ Air discharges used where contact discharge cannot be applied
对导电表面采用直接接触放电的方式; 对绝缘表面采用空气放电方式。
- ◆ No implied equivalence in test severity between the test methods
接触放电是首选, 只有在不能接触放电的地方才改用空气放电。

Typical transient voltage characteristic graph 瞬变电压的典型特征图

	Voltage 电压 (kV)	Current 电流	Rise time 上升时间	Pulse time 脉宽
Lightning 雷击	~ 30	250kA	10us	1000us
Inductive load switching 感性负载开关	0.6	500A	50us	500000us
Electromagnetic Pulse 电磁脉冲	1	10A	20ns	1000ns
AC contact 交流电错误碰触	0.22	20A	/	/
ESD 静电放电	15	30A	<1ns	100ns

System Protection Principles 系统防护原理



Why Protection is Needed

Circuit Protection - overvoltage

- 1, The gas discharge tube GDT (switching)
- 2, Semiconductor discharge TSS (switching)
- 3, Transient voltage suppressors TVS (clamping)
- 4, Varistors MOV (clamping)

Circuit Protection - overcurrent

- 5, FUSE (fast-breaking type)
- 6, polymers, ceramics PTC (recoverable type)

雷电、浪涌、过电压过电流的产生和防护解决办法

电路保护—过压

- 1、气体放电管GDT (开关型)
- 2、半导体放电管TSS (开关型)
- 3、瞬态电压抑制器TVS (钳制位型)
- 4、压敏电阻MOV (钳制位型)

电路保护—过流

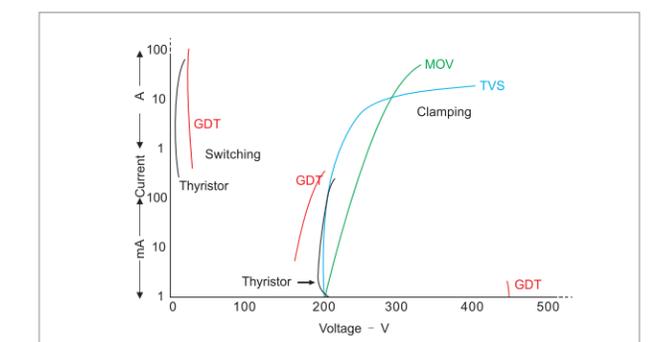
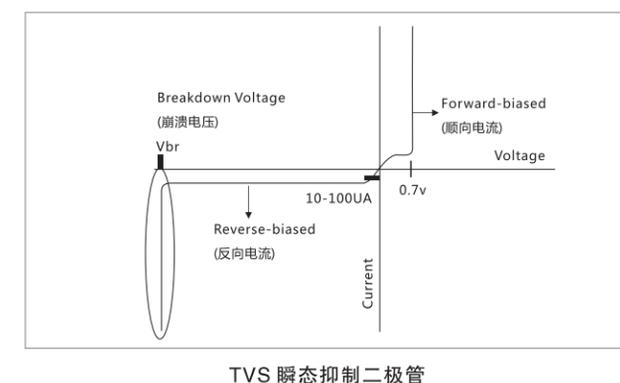
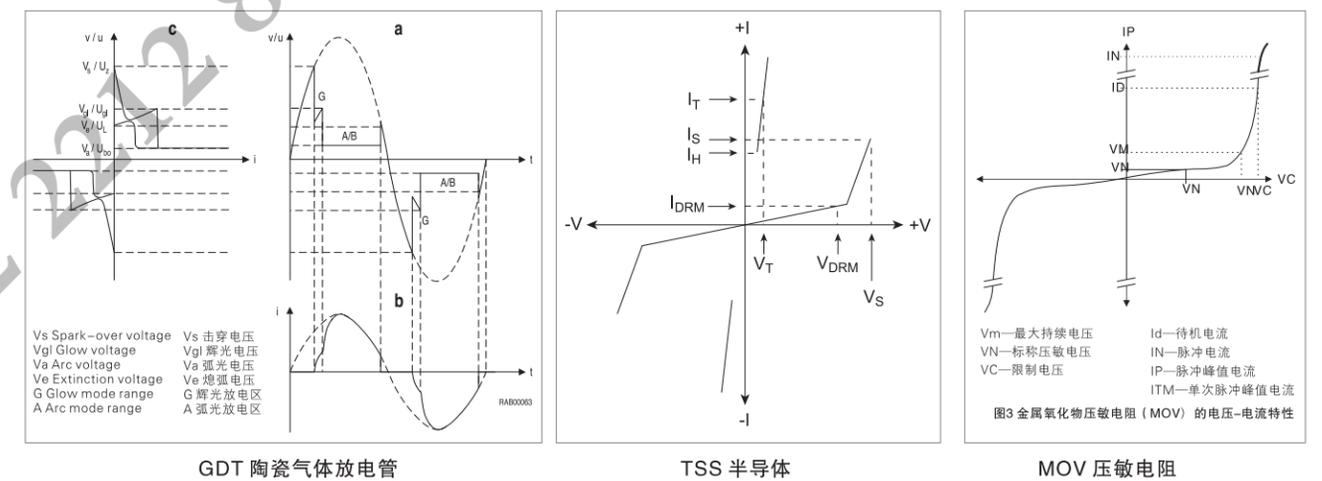
- 5、保险丝FUSE (快断型)
- 6、聚合物、陶瓷PTC (可灰复型)

The main lightning, overvoltage protection devices compare

主要防雷击、过电压防护器件比较

	GDTs 气体放电管 Witching 开关型	TSS 半导体放电管 Switching 开关型	MOV 压敏电阻 Clamp 钳位	TVS 二极管 Clamp 钳位
Protection 保护方式	Gas ionization conductive 气体电离导电	Silicon controlled rectifier 固态四层可控硅结构	Zinc Oxide 氧化锌陶瓷	Avalanche Diode 雪崩二极管
Principle 原理				
DC spark-over voltage range 直流击穿电压范围	70 ~ 6000V	30 ~ 700V	12V ~ 5000V	8V ~ 350V
Residual voltage 残压	Very high 高	Low 较低	High 较高	Very low 低
Response time 响应时间	<1 μs	<1ns	<1 μs	<1ns
Capacitance 电容(1MHz)	1pF	50pF	500pF	50pF
Max discharge current 最大瞬间电流(8/20)	250K A	300A	6500A	50A ~ 15KA
Max Leakage current 最大漏电流	1pA	1 μA	10 μA	20 μA
Nominal discharge current 耐流能力	Very high 大	Low 较低	High 较大	Very low 低
Failure mode 失效方式	Open circuit 开路	Short circuit 短路	Open circuit 开路	Open circuit 开路
Scope of application 适用范围	Primary protection 一级保护用	Secondary protection 主要二级、特殊时	Secondary protection 二级、或电源保护用	End protection ESD protection 二级、三级保护用
Main advantage 主要优点	High dA/dt 瞬间电流最大	用于一级保护导通精确, 快速响应	Cheap 价廉	低电压使用
Main disadvantage 主要缺点	Slow response of the moment 响应时间较慢	Low dA/dt 瞬间电流较小	Capacitance large 电容大, 会老化	Very low dA/dt 瞬间电流最小

Volt-ampere characteristic 伏安特性

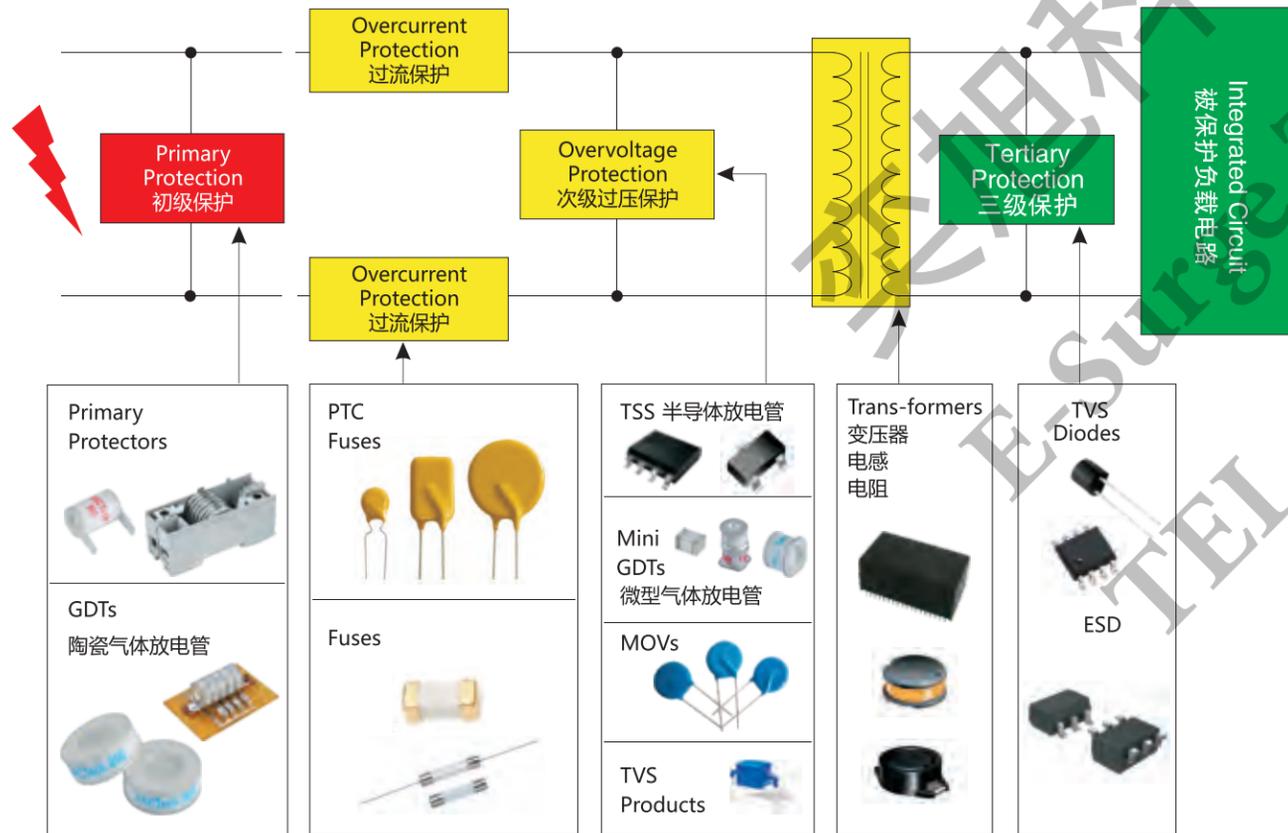
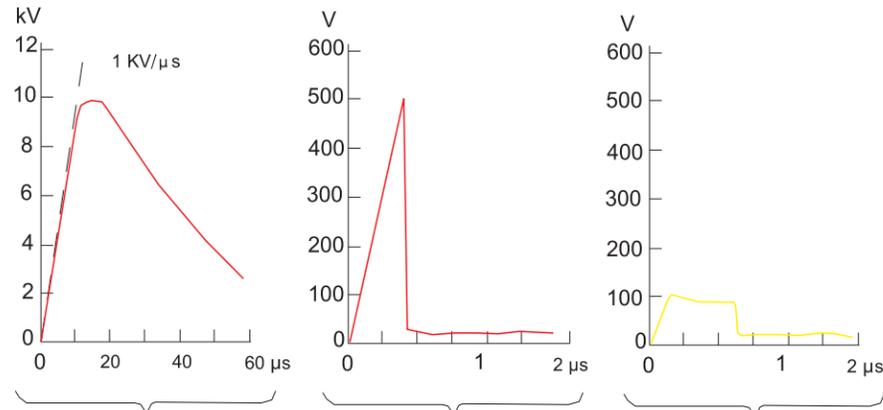


Overvoltage protectors feature very different V/I characteristics
 主要保护器件V/I特性对比图

The main principle of overcurrent protection devices
 主要过流保护器件保护原理

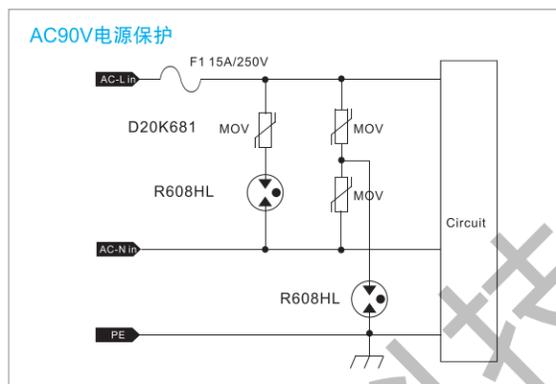
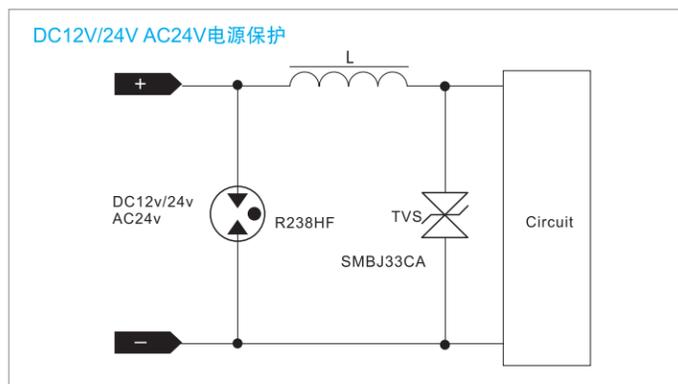
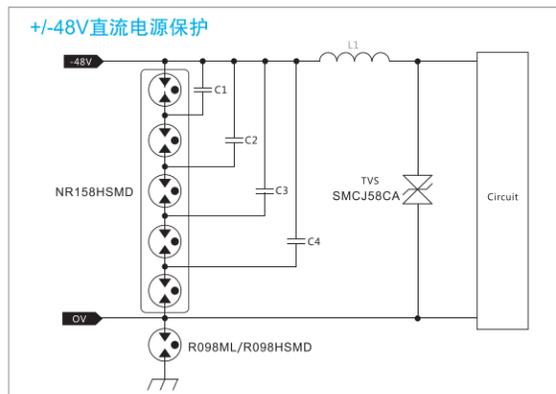
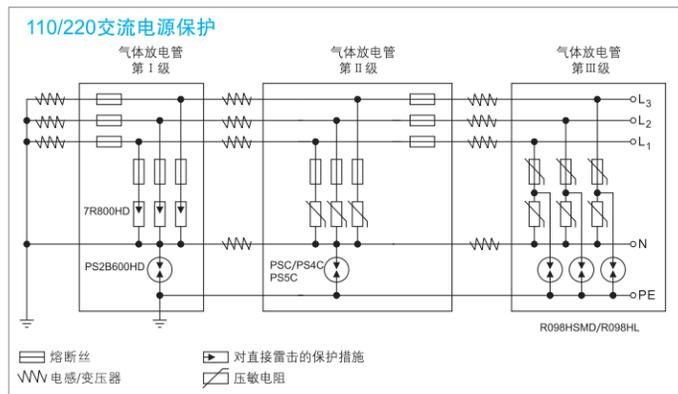
1. Fuse (Fast Acting), breaking the circuit.
 保险丝 (快断型), 断开电路;
2. Ceramics, Polymer PTC Fuses (recoverability type), increased circuit resistance, limiting current amplitude.
 陶瓷、聚合物PTC保险丝 (可恢复型), 增加电路电阻, 限制电流幅度。

Stepped Protection 多级防护原理

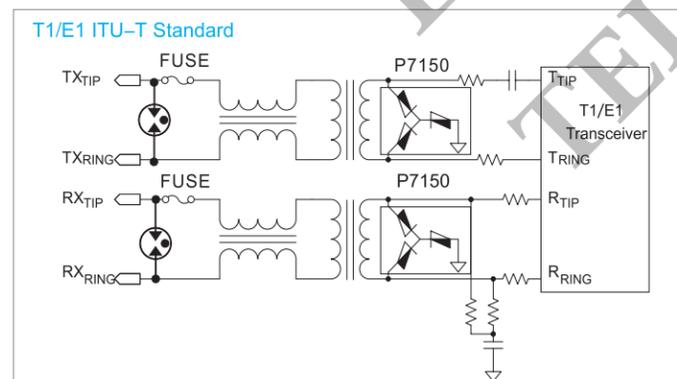
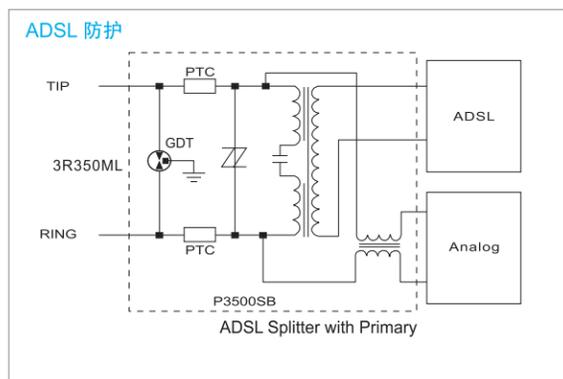
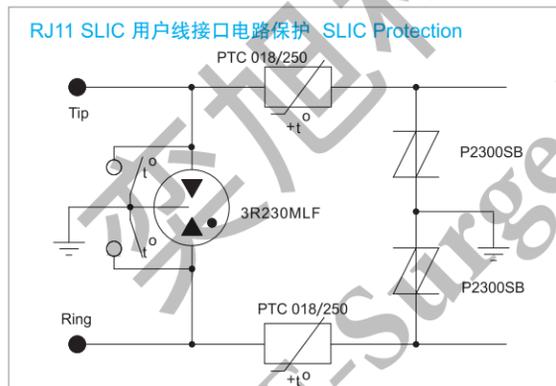
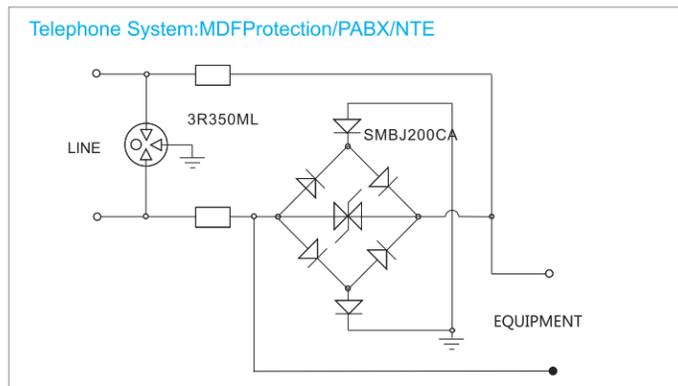


Application应用	Circuit电路	Threat威胁	Solution Series解决方案	Technology技术
SLIC (Subscriber Line Interface Circuit)用户接口电路	Telecom: Tip/Ring Circuits振铃电路	Lightning	PxxxxSA PxxxxSB PxxxxEA PxxxxEB P61089 R350ML 3R420ML	TSS TSS GDT
Customer Premise Equipment 客户端设备 - Fax machine传真机 - Answering machine应答机 - xDSL gateway网关 - Dial-up modem - Set top box - T1/E1/J1 - ISDN	High-Speed Data Interfaces 高速数据接口: USB 2.0, IEEE 1394, RF antenna circuits	ESD静电防护	DA05-4 DA2.8 /PGB1	TVS
	Medium/low-speed Data Interfaces: 中低速数据接口: USB 1.1, Ethernet, RS 232	Lightning雷电	PxxxxSA/C, PxxxxSA/B/C, PxxxxSA/B/CMC R075L R098ML R238ML R350ML 3S420ML	TSS GDT
Telecom/Datacom电信/数字通讯	Telecom Interface 电信接口 (secondary) 二级: Tip/Ring Circuits振铃电路	ESD, EMI电磁干扰, EFT传导干扰	DA05-4 DA2.8 MLV	TVS MLV
Interface Equipment接口设备 - PBX systems专用交换机系统 - Internet gateways网关 - DSLAM equipment接入层设备 Conversion Equipment中继转换设备 - Cellular base station蜂窝基站 - Satellite base station卫星站 - Microwave base station微波基站	Telecom Interface (primary) 电信接口 (初级): Tip/Ring Circuits (振铃) 电路	Lightning	PxxxxEA/B/C PxxxxSA/B/C R098ML R238ML 3X350ML 3S420ML	TSS GDT
Central Office Equipment通信局端设备 - Interexchange carrier交换载体 - Local exchange carrier本地交换机 - Mobile telephone switch移动电话交换机 - Repeater/node转发器/结点 - T1/E1/J1 - xDSL - DSLAM - Railroad Signaling铁路信号系统	Power Inputs电源输入: 120/240 VAC, up to 120 VDC	Lightning	P6KE, 1.5KE D20K275 D20385	TVS MOV
Computers计算机 - desktop, laptop, notebook台式、笔记本等 Peripherals 外围设备 - scanner, printer, monitor, disk drive 扫描、打印机 External Broadband hardware扩展宽带设备 - modem, set top box调制解调器、机顶盒 Network hardware-switch, router, hub, repeater 交换机、路由器、集线器、转发器、延伸器... Handheld portables便携式媒体设备 - Mobile, cordless phone, GPS, MP4 Player, PDA, LCD Display Video equipment视频设备 - HDTV, DVD, VCR, set top box Alarm systems报警系统 - security, fire安全、安防 Metering systems计量系统设备 Medical equipment医疗系统设备 Lighting ballast照明整流器 Remote sensors/transducers工业控制传感器等	High-speed Interfaces高速数据接口: USB 2.0, IEEE 1394, InfiniBand, RF 天馈, 千兆以太网Ethernet, DVI, HDMI	Lightning雷电	PxxxxSA/B/C PxxxxEA/B/C	TSS
	Medium-speed Interfaces 中速数据接口: USB 1.1, RS 485, Ethernet, video, 10 BaseT, 100 BaseT, T1/E1	ESD静电防护	PGB1	TVS
Low/Medium Voltage Electronics中低压电子设备	Low-speed Interfaces 低速数据接口: Aud音频, RS 232, IEEE 1284, push buttons, key pads, switches交换机	ESD, EMI电磁干扰, EFT传导干扰	DA05-4, DA2.8 MLV	TVS MLV
	Power Inputs电源输入: 120/240 VAC, up to 120 VDC	Lightning	D14K220 D14K275 D20K275 D20K385 SA, P6KE, 1.5PKE SMBJ, SMCJ	MOV TVS GDT
Avionics/Military Electronics航空军用电子设备	Power and System Inputs 电源和系统输入	ESD, EMI, EFT Lightning and System Transients	5KP/SLD D14K220 D14K275 D20K275 D20K385 R098HSM R098HL R238HL 3R477HL 3R608HL	TVS MOV GDT
Power Mains Protection 电源保护	Uninterruptible Power Supply (UPS) 不间断电源UPS	EFT, Lightning	D14K220 D14K275 D20K275 D20K385 5KP, 15KP	MOV TVS
	Power Supply 电源	EFT, Lightning, Commutative Spikes 各种脉冲		
	Consumer Electronics 消费电子	EFT, Lightning		
	Power Meter 电表	Lightning	D14K220 D14K275 D20K275 D20K385 R098HL R238HL 3R477HL 3R608HL PSB PS2B PS3B PS4C PS5C PS6C SERIES nR158SMD nR800HSM	MOV GDT
	AC Power Taps 交流电源线路	EFT, Lightning	P6KE, 1.5KE, 5KP, 15KP, AK6, AK10	TVS
SPD 防雷工程	AC Panels 交流配电柜	EFT, Lightning Commutative Spikes		
	AC Appliance Control 交流电器控制系统	EFT, Lightning		
Industrial Environment 工业环境	AC/DC line protection交流直流电路保护 Telecom/Datacom信号线路	Lightning	D34X34, D40X40, D45X45, ... P6KE, P1.5KE, 5KP, 15KP, AK6, AK10 PSB PS2B PS3B PS4C PS5C PS6C SERIES R078HL R098HL R238HL 3R477HL 3R608HL	MOV TVS GDT
	SPD防雷工程	EFT Commutative Spikes	D14K220 D14K275 D20K275 D20K385	MOV
	汽车HID前灯	Commutative Spikes 产生脉冲高压	KG230 KG350 KG400 KG500 KG600 KG800 KGW2500L5	VACT SSG
	High energy systems高能系统	Large Motors, Pumps, 马达、泵 Compressors压缩机 Motor Drives马达驱动 AC Distribution交流配电系统 High Current Relays大电流继电器	EFT, Lightning, Commutative Spikes, Inductive Load Switching	D14K220 D14K275 D20K275 D20K385 SMBJ, P6KE, 1.5KE, 5KP, 15KP

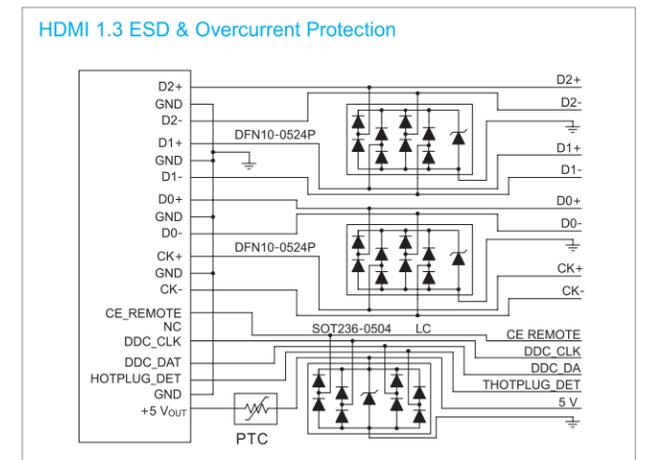
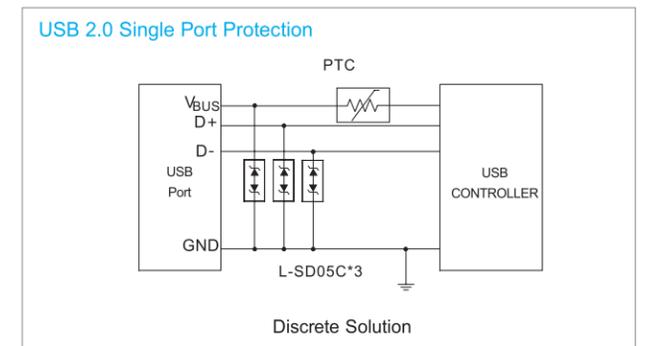
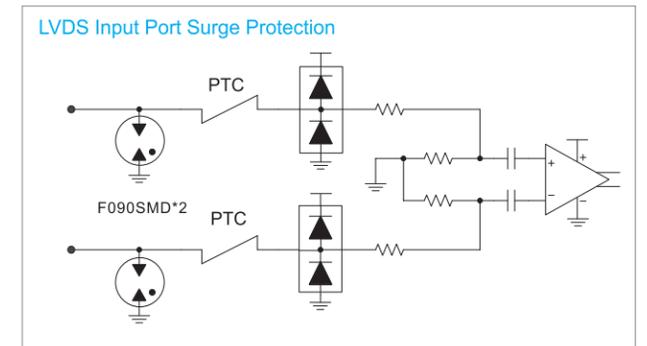
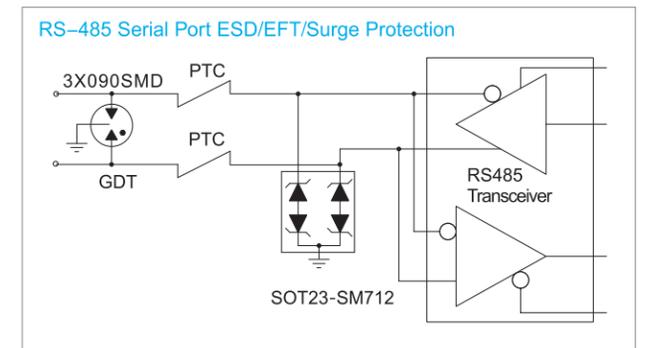
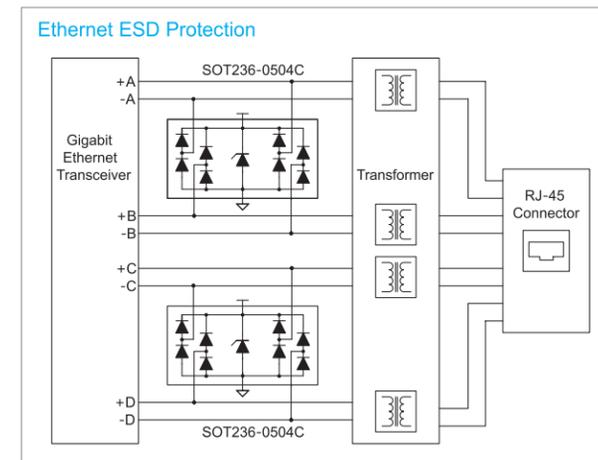
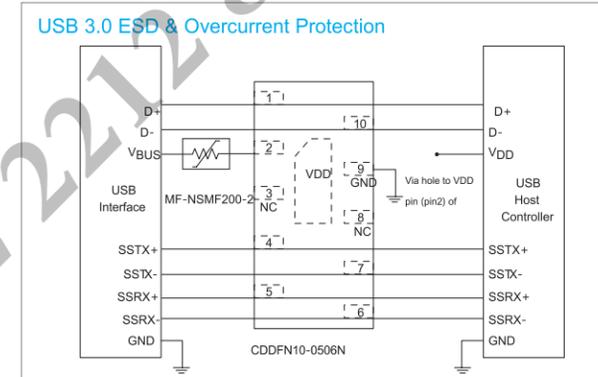
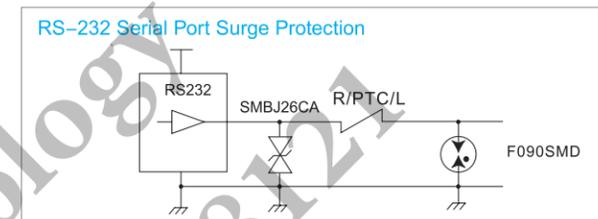
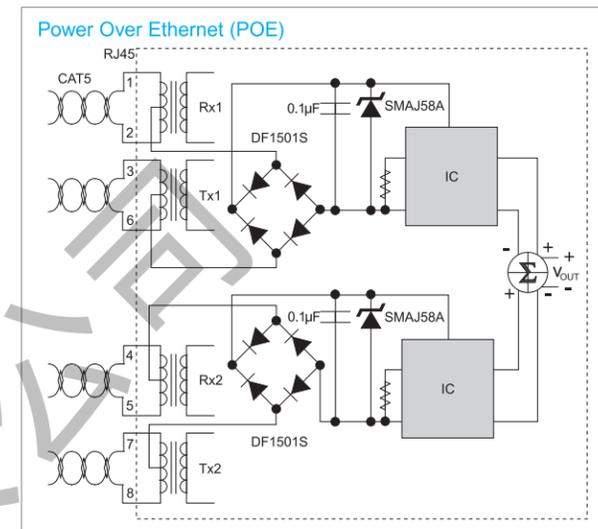
Power supply 电源



Telecommunications Protection 电信设备保护



Data communication 数据通讯电路保护



Series Name	mm (Ø x H)	DC Breakover Voltage Range (NomVBO)	Max AC Surge Rating	Peak Pulse Current (8x20µs)	Peak Pulse Current (10x350µs)	Following current(I) Operating duty test @25Vrms 100Arms	Insulation resistance	Max Capacitance	Operating Temperature Range	Mini Tube 微型管	Axial Lead 轴向引线	Radial Lead 径向引线	Special lead 特殊引线	Lead Free 无铅	RoHS Compliant	Data Sheet Page
	外形尺寸	标称直流击穿电压VBO	耐工频电流@50 Hz, 1 s	冲击放电电流10'8/20 µs	冲击放电电流10'10/350µs	工频续流遮断能力	绝缘电阻 GΩ	电容@1 MHz (pF)		Mounting Options 安装选项						

2 Pole 二极管

Series	mm (Ø x H)	DC Breakover Voltage Range (NomVBO)	Max AC Surge Rating	Peak Pulse Current (8x20µs)	Peak Pulse Current (10x350µs)	Following current(I) Operating duty test @25Vrms 100Arms	Insulation resistance	Max Capacitance	Operating Temperature Range	Mini Tube 微型管	Axial Lead 轴向引线	Radial Lead 径向引线	Special lead 特殊引线	Lead Free 无铅	RoHS Compliant	Data Sheet Page
Z Series	3.0x3.8	90-600	1	2	/	/	> 1	< 1	-40°C to +125°C	●	●		●	●		
X Series	4.5x3.2x2.7	75-600	1	2	/	/	> 1	< 1		●	●			●	●	
F Series	5.0x5.0	75-600	5	5	1	/	> 1	< 1		●	●			●	●	
R...5 Series	5.5x6.0	75-6000	5	5	1	/	> 1	< 1			●			●	●	
R8...M Series	8.0x6.0	75-6000	10	10	2	/	> 1	< 1		●	●			●	●	
R8...H Series	8.0x6.0	75-1200	20	20	5	/	> 1	< 1		●	●			●	●	
PS6C Series	12.0x4.7	75-1600	20	40	8	100A	> 1	< 1		●	●	●	●	●	●	
PS5C Series	16.0x9.0	75-1600	20	40	8	100A	> 1	< 1			●	●	●	●	●	
PS4C Series	18.0x7.0	75-1600	20	60	15	100A	> 1	< 1			●	●	●	●	●	
PSC Series	12.0x18.0	75-1600	20	60	15	100A	> 1	< 1			●	●	●	●	●	
PS3B Series	25x10.0	75-1600	20	120	35	200A	> 1	< 1			●	●	●	●	●	
PS2B Series	30x12.0	75-1600	20	150	60	300A	> 1	< 1			●	●	●	●	●	
PSB Series	30.0x30.0	75-6000	20	200	100	300A	> 1	< 1			●	●	●	●	●	
PS0B Series	30.0x27.0	~800	20	100	35	3kA	> 1	< 1			●	●	●	●	●	
NR...H Series	30.0x30.0	~800	20	150	50	10kA	> 1	< 1			●	●	●	●	●	
nR Series	9.3x16.5	~800	20	20	5	/	> 1	< 1			●			●	●	
VCA Series	6.0x6.0	90-600	5	10	2	/	> 1	< 1			●			●	●	
VCB Series	9.5x8.0	90-600	2.5	5	/	/	> 1	< 1			●			●	●	

3 Pole 三极管

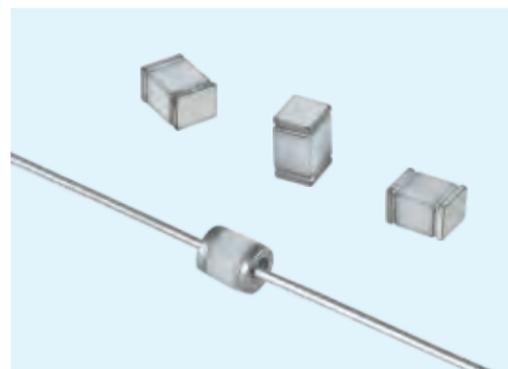
Series	mm (Ø x H)	DC Breakover Voltage Range (NomVBO)	Max AC Surge Rating	Peak Pulse Current (8x20µs)	Peak Pulse Current (10x350µs)	Following current(I) Operating duty test @25Vrms 100Arms	Insulation resistance	Max Capacitance	Operating Temperature Range	Mini Tube 微型管	Axial Lead 轴向引线	Radial Lead 径向引线	Special lead 特殊引线	Lead Free 无铅	RoHS Compliant	Data Sheet Page
3X Series	5x7.6	75-600	2.5	5	/	/	> 1	< 1	-40°C to +125°C	●	●	●	●	●		
3S Series	6x8	75-600	5	10	/	/	> 1	< 1		●	●	●	●	●		
3R...M Series	8x10	75-800	10	10	2	/	> 1	< 1			●	●	●	●		
3R...H Series	8x10	75-800	20	20	5	/	> 1	< 1			●	●	●	●		
3T...H Series	9x45	75-800	20	40	10	/	> 1	< 1			●	●	●	●		

SST开关管

型号	mm (Ø x H)	静态击穿电压 Vs	首次点火电压 Vs	开关次数 (-40~+125°C)	最大开关时间 ns	最大开关频率 Hz	最大负荷电流 kA	绝缘电阻 (100Vdc) MΩ	电容 (1kHz) pF	Mounting Options 安装选项						
										Surface 表面贴装	Axial Lead 轴向引线	Radial Lead 径向引线	Cartridge Clip 磁合	RoHS Compliant	Lead Free 无铅	Mini Tube 微型管
KG Series	8.0x6.0	230-6000		20万次	≤50	200	0.5	≥100	≤2	●	●		●	●		
KGW Series	12x18	230-6000		20万次	≤50	200	5	≥100	≤2		●		●	●		
KGH Series	30x30	230-6000		20万次	≤50	200	50	≥100	≤2		●		●	●		
KGT Series	60x90	~30000		20万次	≤50	200	50	≥100	≤2		●		●	●		

Type 系列型号	Dimensions 外形尺寸	Discharge Current 耐流	
2 Pole 二极管	Z/X...	4.5*3.2*2.7mm	1KA(8/20us)
	F...	5*5mm	5KA(8/20us)
	B...	5.5*4mm	5KA(8/20us)
	R...5	5.5*6mm	5KA(8/20us)
	R...8	8*6mm	5KA(8/20us)
	R...8M	8*6mm	10KA(8/20us)
	R...8H	8*6mm	20KA(8/20us)
	VCA5...	同轴/Coaxial 9.5*8mm 50ohm	10KA(8/20us)
3 Pole 三极管	VCA7...	同轴/Coaxial 9.5*8mm 75ohm	10KA(8/20us)
	3X...	5*7.6mm	5KA(8/20us)
	3S...	6*8mm	5KA(8/20us)
	3R...	8*10mm	5KA(8/20us)
N Pole 多极管	3R...M	8*10mm	10KA(8/20us)
	3R...H	8*10mm	20KA(8/20us)
	NR...	9.3*16mm	5KA(10/350us)
2 Pole Heavy Duty 二极管 大功率	PSB...	30*30mm	100KA(10/350us)
	PS2B...	30*12mm	50KA(10/350us)
	PS2B...H	30*12mm	80KA(10/350us)
	PSC...	12*18mm	40KA/65KA(8/20us)
	PS2C...	20*4mm	40KA(8/20us)
	PS3C...	18*9mm	40KA/65KA(8/20us)
	PS4C...	18*7.5mm	40KA/65KA(8/20us)
	PS5C...	16*8mm	40KA/65KA(8/20us)
	PS6C...	12*6mm	20KA/40KA(8/20us)
	SST开关管	KS...	5.5*6mm
KG...		8*6mm	100000 switching times/开关次数
KGC...		8*6mm	150000 switching times/开关次数
KGW...		12*18mm	20J,1500000 switching times/开关次数
KGH...		30*30mm	40J,1500000 switching times/开关次数
KGT...		3Pole with Trigger 30*66mm	300A,1000000 switching times/开关次数
Wire 引脚形状		D	Special Lead/特殊引线
	L	With straight Lead/有直引线	
	SMD	SMD Electrode/贴片电极	
	O(Ignore)	Without Lead/无引线	
Failsafe 保护卡	FA	Failsafe Top/保护卡在上	FA
	FB	Failsafe Down/保护卡在下	
	FC	Failsafe Beside/保护卡在侧	
	O(Ignore)	Without Failsafe/无保护卡	
Package 包装	B	Box Package/盒装	B
	T	Tape and Reel Package/卷带	
Type No. 型号	3R350MLFAB		

X Series & Z Series X、Z系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The X Series & Z Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

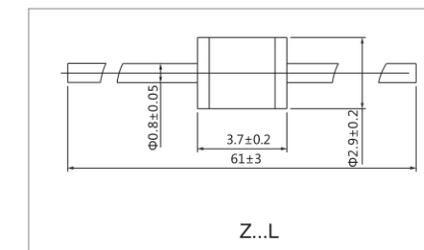
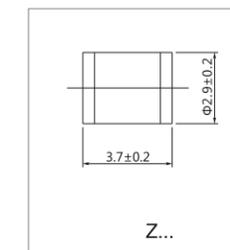
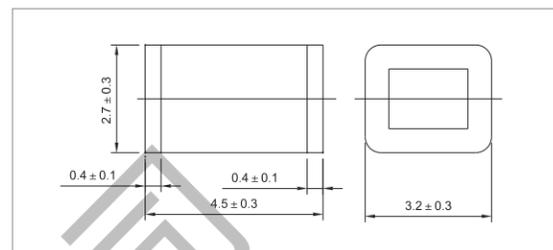
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> • Small size • Very fast response time • Suitable for direct strikes • Stable performance over life • Very low capacitance • High insulation resistance 	<ul style="list-style-type: none"> • Communication lines • LED Lighting • Test equipment • Data lines, power supply • Instrumentation circuits • Medical electronics 	<ul style="list-style-type: none"> UL Recognized: File Number E326248 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> • 小尺寸 • 快速响应时间 • 高稳定性 • 高雷击寿命 • 低电容 • 高绝缘电阻 	<ul style="list-style-type: none"> • 通信线路 • LED照明 • 测试设备 • 数据线、电源 • 仪器 • 医疗电子 	<ul style="list-style-type: none"> UL Recognized: File Number E326248 Meets RoHS

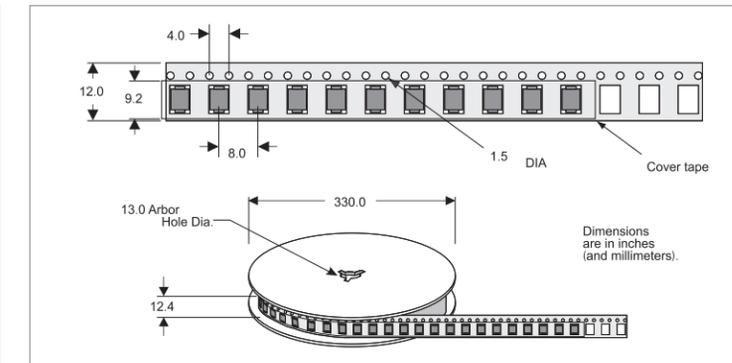
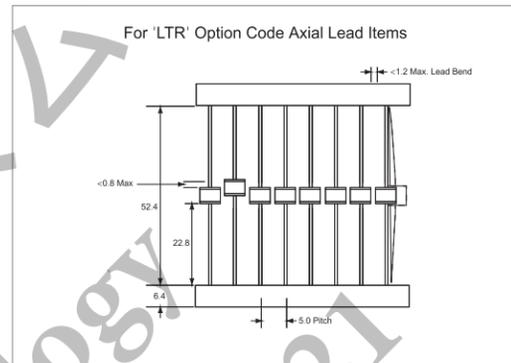
Electrical Characteristics 电气特性

Part No.	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	Surge Life (@100A 10/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Max Impulse Discharge Current (1 Application) (10x350μs)	Follow current (If)
Z070L/SMD X070	60	75	90	400	650	10 ⁹ Ω (at 50V)	1.0pF	~ 15V	2A	/	+150 -150 shots	10 shots (@2kA)
Z090L/SMD X090	72	90	108	400	650	10 ⁹ Ω (at 50V)	1.0pF					
Z150L/SMD X150	120	150	180	600	700	1.0pF						
Z230L/SMD X230	184	230	276	600	700	1.0pF						
Z300L/SMD X300	240	300	360	600	700	1.0pF						
Z350L/SMD X350	280	350	420	600	800	1.0pF						
Z470L/SMD X470	376	470	564	800	900	1.0pF						
Z600L/SMD X600	480	600	720	900	1100	1.0pF	~ 24V					

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



F Series & R...5/L Series F、R...5/L系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The F Series & R...5/L Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

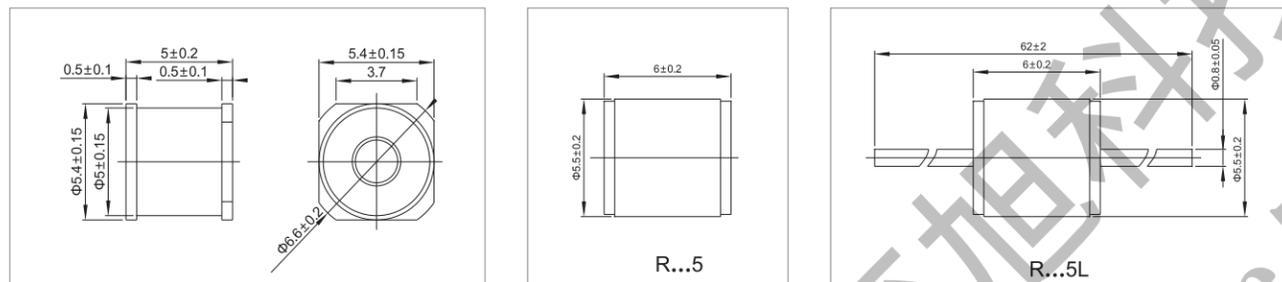
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> • Small size • Very fast response time • Suitable for direct strikes • Stable performance over life • Very low capacitance • High insulation resistance 	<ul style="list-style-type: none"> • Communication lines • LED Lighting • Test equipment • Data lines, power supply • Instrumentation circuits • Medical electronics 	<ul style="list-style-type: none"> UL Recognized: File Number E326248 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> • 小尺寸 • 快速响应时间 • 高稳定性 • 高雷击寿命 • 低电容 • 高绝缘电阻 	<ul style="list-style-type: none"> • 通信线路 • LED照明 • 测试设备 • 数据线、电源 • 仪器 • 医疗电子 	<ul style="list-style-type: none"> UL Recognized: File Number E326248 Meets RoHS

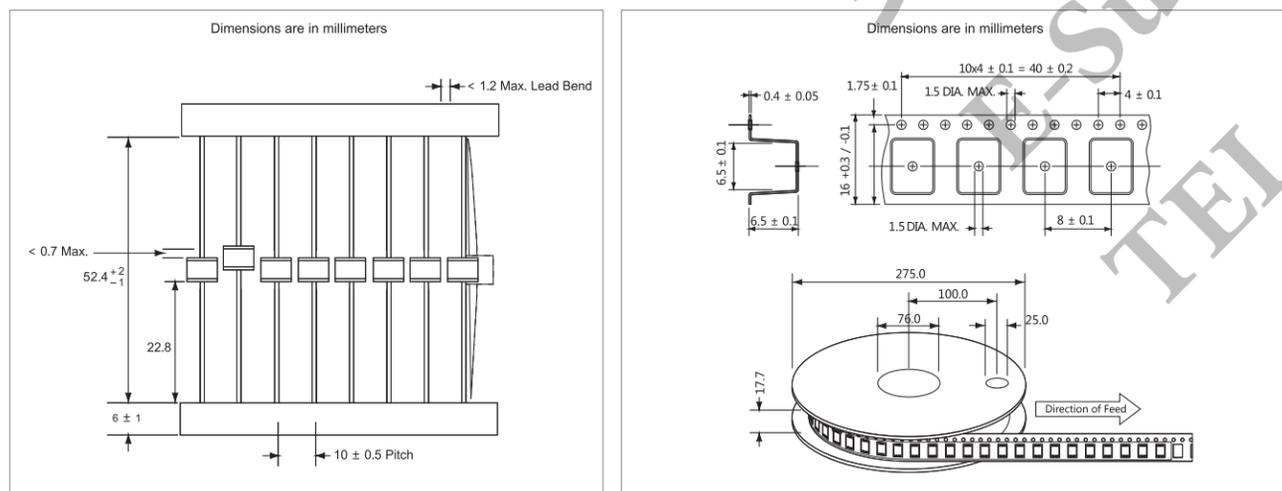
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs			脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	工频放电电流 @ 50 Hz, 200ms	长波冲击	冲击放电电流 10'8/20μs	冲击放电电流 10'10/350μs	Hi工频续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)										
B075/L F075L/SMD R075/L	60	75	90	400	650	10° Ω (at 50V)	1.0pF	~ 15V					
B090/L F090L/SMD R095/L	72	90	108	400	650	10° Ω (at 50V)	1.0pF						
B150/L F150L/SMD R155/L	120	150	180	600	700	10° Ω (at 100V)	1.0pF	5A	30A	+150 -150 shots	10 shots (@5kA)	2kA	/
B230/L F230L/SMD R235/L	184	230	276	600	700		1.0pF						
B300/L F300L/SMD R305/L	240	300	360	600	700		1.0pF						
B350/L F350L/SMD R355/L	280	350	420	600	800		1.0pF						
B420/L F470L/SMD R475/L	376	470	564	800	900		1.0pF						
F600L/SMD R605/L	480	600	720	900	1100	1.0pF							
R805/L	640	800	960	1100	1300	1.0pF							
R1005/L	800	1000	1200	1500	1600	1.0pF					10 shots (@2.5kA)	1kA	
R1605/L	1280	1600	1920	2000	2500	1.0pF							
R2505/L	2000	2500	3000	3500	3800	1.0pF							
R3505/L	2800	3500	4200	5000	5500	1.0pF							
R4505/L	3600	4500	5400	6000	6500	1.0pF							
R5505/L	4400	5500	6600	7000	7500	1.0pF							
R6005/L	4800	6000	7200	7500	8000	1.0pF							

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



R...8/L/SMD Series R...8/L/SMD系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The R...8/L/SMD Series (75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

FEATURES

- Small size
- Very fast response time
- Suitable for direct strikes
- Stable performance over life
- Very low capacitance
- High insulation resistance

APPLICATIONS

- Communication lines
- LED Lighting
- Test equipment
- Data lines, power supply
- Instrumentation circuits
- Medical electronics

APPROVALS

- UL Recognized: File Number E326248
- Meets RoHS

特点

- 小尺寸
- 快速响应时间
- 高稳定性
- 高雷击寿命
- 低电容
- 高绝缘电阻

应用

- 通信线路
- LED照明
- 测试设备
- 数据线、电源
- 仪器
- 医疗电子

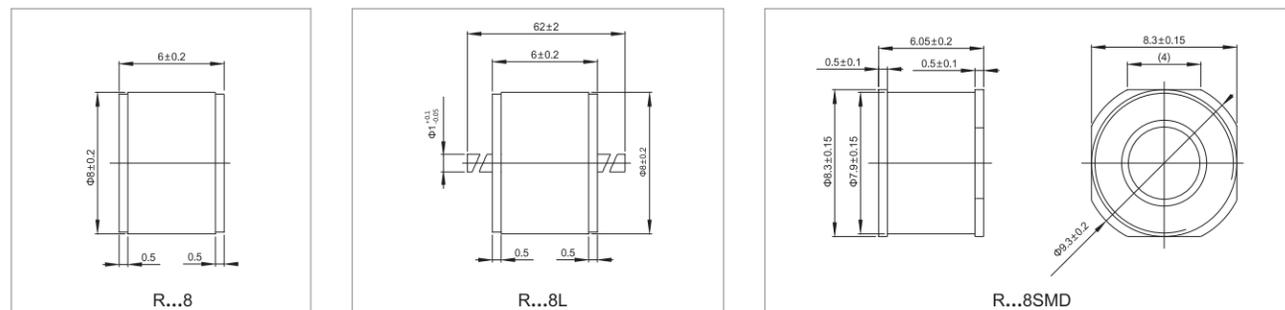
认证

- UL Recognized: File Number E326248
- Meets RoHS

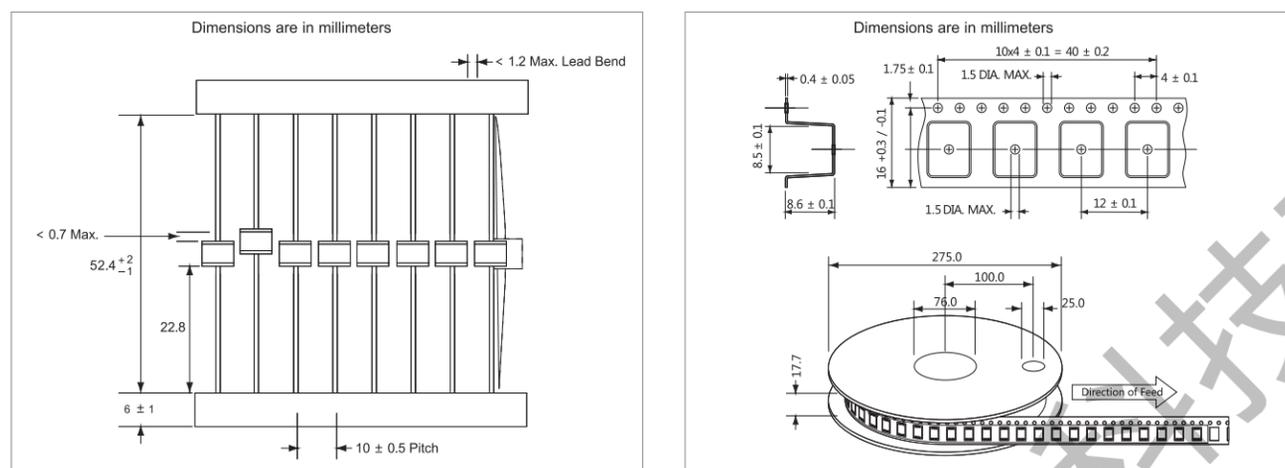
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs			脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	工频放电电流 @ 50 Hz, 200ms	长波冲击	冲击放电电流 10'8/20μs	冲击放电电流 10'10/350μs	Hi工频续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)										
R078/L/SMD	60	75	90	400	650	10° Ω (at 50V)	1.5pF	~ 15V	5A	60A	+150 -150 shots	10 shots (@5kA)	/
R098/L/SMD	72	90	108	400	650	10° Ω (at 50V)	1.5pF						
R158/L/SMD	120	150	180	600	700	1.5pF							
R238/L/SMD	184	230	276	600	700	1.5pF							
R308/L/SMD	240	300	360	600	700	1.5pF							
R358/L/SMD	280	350	420	600	800	1.5pF	~ 24V	5A	60A	+150 -150 shots	10 shots (@5kA)	/	
R478/L/SMD	376	470	564	800	900	1.5pF							
R608/L/SMD	480	600	720	900	1100	1.5pF							
R808/L/SMD	640	800	960	1100	1300	1.5pF							
R1008/L/SMD	800	1000	1200	1500	1600	1.5pF							
R1608/L/SMD	1280	1600	1920	2000	2500	1.5pF	~ 60V	5A	60A	+150 -150 shots	10 shots (@5kA)	/	
R2508/L/SMD	2000	2500	3000	3500	3800	1.5pF							
R3508/L/SMD	2800	3500	4200	5000	5500	1.5pF							
R4508/L/SMD	3600	4500	5400	6000	6500	1.5pF							
R5508/L/SMD	4400	5500	6600	7000	7500	1.5pF							
R6008/L/SMD	4800	6000	7200	7500	8000	1.5pF							

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



R...8M/ML/SMD Series R...8M/ML/SMD系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The R...8M/ML/SMD Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

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FEATURES

- Small size
- Very fast response time
- Suitable for direct strikes
- Stable performance over life
- Very low capacitance
- High insulation resistance

APPLICATIONS

- Communication lines
- LED Lighting
- Test equipment
- Data lines, power supply
- Instrumentation circuits
- Medical electronics

APPROVALS

UL Recognized: File Number E326248

Meets RoHS

特点

- 小尺寸
- 快速响应时间
- 高稳定性
- 高雷击寿命
- 低电容
- 高绝缘电阻

应用

- 通信线路
- LED照明
- 测试设备
- 数据线、电源
- 仪器
- 医疗电子

认证

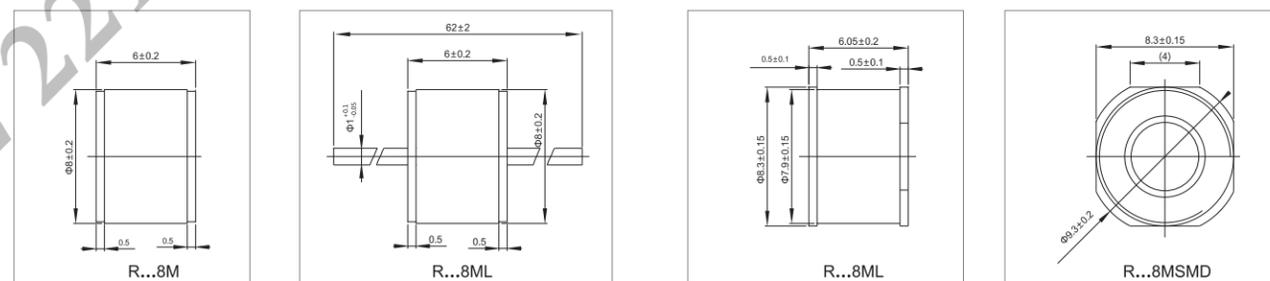
UL Recognized: File Number E326248

Meets RoHS

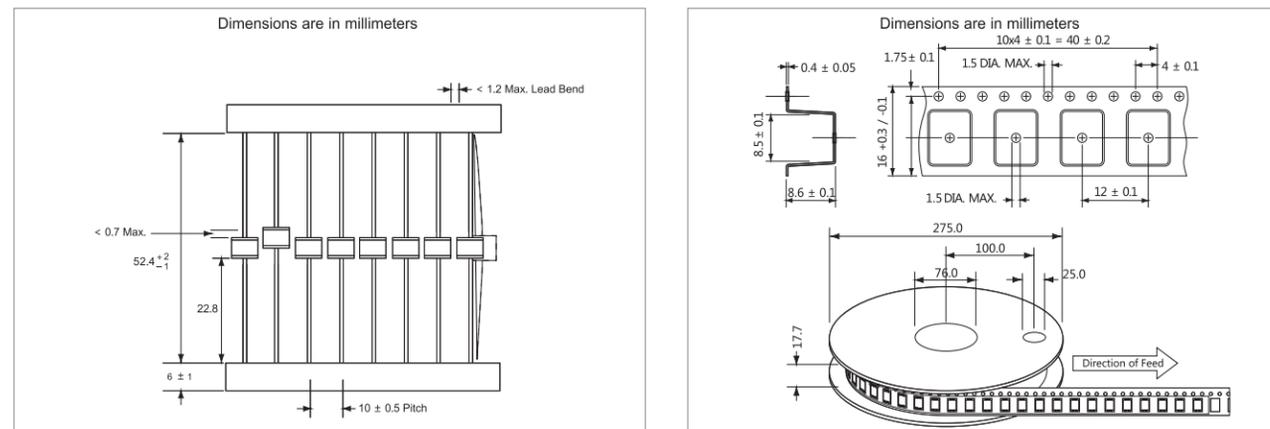
Electrical Characteristics 电气特性

Part No.	标称直流 击穿电压 Vs	脉冲击穿 电压 Vss	脉冲击穿 电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电压 @ 50 Hz, 1s	工频放电电压 @ 50 Hz, 200ms	长波冲击 浪涌电压 @100A/1000μs	冲击放电 电流 10'8/20μs Nominal Impulse Discharge Current (8/20μs)	冲击放电 电流 10'10/350μs Max Impulse Discharge Current (1 Application) (10x350μs)	工频 续流遮断 能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	Surge Life (@100A/1000μs)			Follow current (If)
R078M/ML/SMD	60	75	90	400	650	10 ⁸ Ω (at 50V)	1.5pF	~ 15V				
R098M/ML/SMD	72	90	108	400	650	10 ⁸ Ω (at 50V)	1.5pF					
R158M/ML/SMD	120	150	180	600	700		1.5pF					
R238M/ML/SMD	184	230	276	600	700		1.5pF					
R308M/ML/SMD	240	300	360	600	700		1.5pF					
R358M/ML/SMD	280	350	420	600	800		1.5pF					
R478M/ML/SMD	376	470	564	800	900		1.5pF	~ 24V	10A	100A	+150 -150 shots	10 shots (@10kA)
R608M/ML/SMD	480	600	720	900	1100		1.5pF					
R808M/ML/SMD	640	800	960	1100	1300	10 ⁸ Ω (at 100V)	1.5pF					
R1008M/ML/SMD	800	1000	1200	1500	1600		1.5pF					
R1608M/ML/SMD	1280	1600	1920	2000	2500		1.5pF					
R2508M/ML/SMD	2000	2500	3000	3500	3800		1.5pF					
R3508M/ML/SMD	2800	3500	4200	5000	5500		1.5pF					
R4508M/ML/SMD	3600	4500	5400	6000	6500		1.5pF	~ 60V				
R5508M/ML/SMD	4400	5500	6600	7000	7500		1.5pF					
R6008M/ML/SMD	4800	6000	7200	7500	8000		1.5pF					

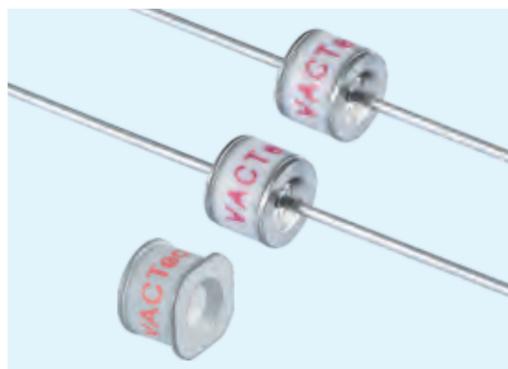
Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



R...8H/HL/HSMD Series R...8H/HL/HSMD系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The R...8H/HL/HSMD Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

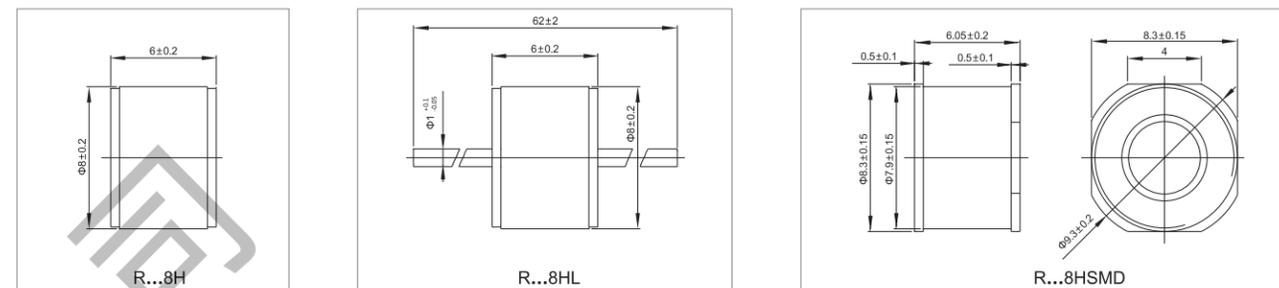
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> • Small size • Very fast response time • Suitable for direct strikes • Stable performance over life • Very low capacitance • High insulation resistance 	<ul style="list-style-type: none"> • Communication lines • LED Lighting • Test equipment • Data lines, power supply • Instrumentation circuits • Medical electronics 	<ul style="list-style-type: none"> UL Recognized: File Number E326248 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> • 小尺寸 • 快速响应时间 • 高稳定性 • 高雷击寿命 • 低电容 • 高绝缘电阻 	<ul style="list-style-type: none"> • 通信线路 • LED照明 • 测试设备 • 数据线、电源 • 仪器 • 医疗电子 	<ul style="list-style-type: none"> UL Recognized: File Number E326248 Meets RoHS

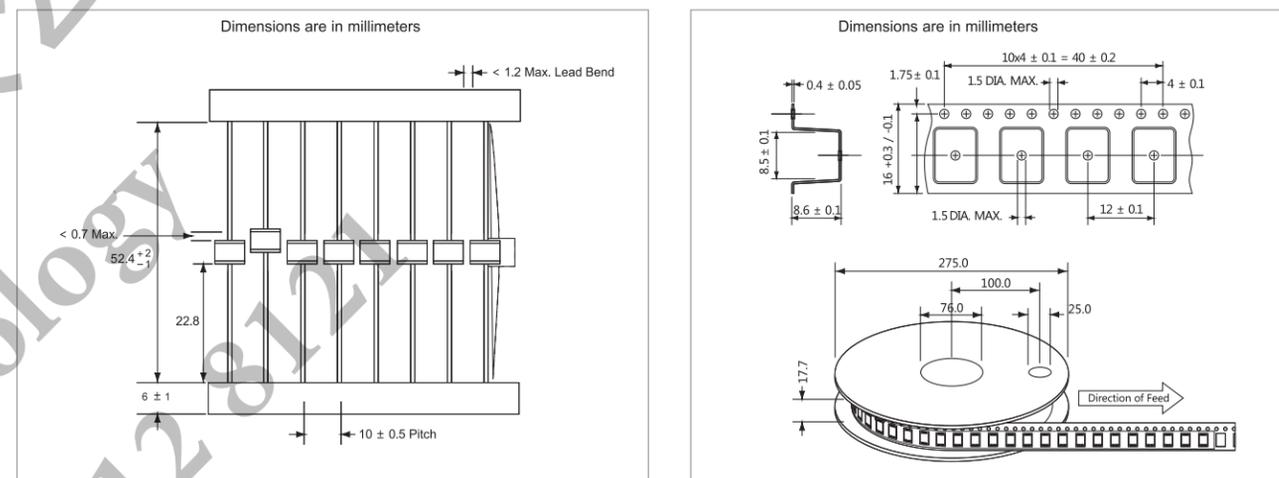
Electrical Characteristics 电气特性

Part No.	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	Surge Life (@100A 10/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Max Impulse Discharge Current (1 Application) (10x350μs)	Follow current (If)
R078H/HL/HSMD	60	75	90	400	650	10 ⁹ Ω (at 50V)	~ 15V	100A	+150 -150 shots	10 shots (@20kA)	4kA	
R098H/HL/HSMD	72	90	108	400	650							
R158H/HL/HSMD	120	150	180	600	700							
R238H/HL/HSMD	184	230	276	600	700							
R308H/HL/HSMD	240	300	360	600	700							
R358H/HL/HSMD	280	350	420	600	800							
R478H/HL/HSMD	376	470	564	800	900							
R608H/HL/HSMD	480	600	720	900	1100							
R808H/HL/HSMD	640	800	960	1100	1300							
R1008H/HL/HSMD	800	1000	1200	1500	1600							
R1608H/HL/HSMD	1280	1600	1920	2000	2500	10 ⁹ Ω (at 100V)	~ 24V	20A		2kA		
R2508H/HL/HSMD	2000	2500	3000	3500	3800							
R3508H/HL/HSMD	2800	3500	4200	5000	5500							
R4508H/HL/HSMD	3600	4500	5400	6000	6500							
R5508H/HL/HSMD	4400	5500	6600	7000	7500							
R6008H/HL/HSMD	4800	6000	7200	7500	8000							

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



PS6C Series PS6C系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The PS6C Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> • Very fast response time • Suitable for direct strikes • Stable performance over life • Very low capacitance • High insulation resistance 	<ul style="list-style-type: none"> • AC Power Lines • Class II (class C) - Requirements 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 UL 1449 Recognized: File Number E360318 Meets RoHS

特点

- 快速响应时间
- 高稳定性
- 高雷击寿命
- 低电容
- 高绝缘电阻

应用

- 电力线
- Class II, C级

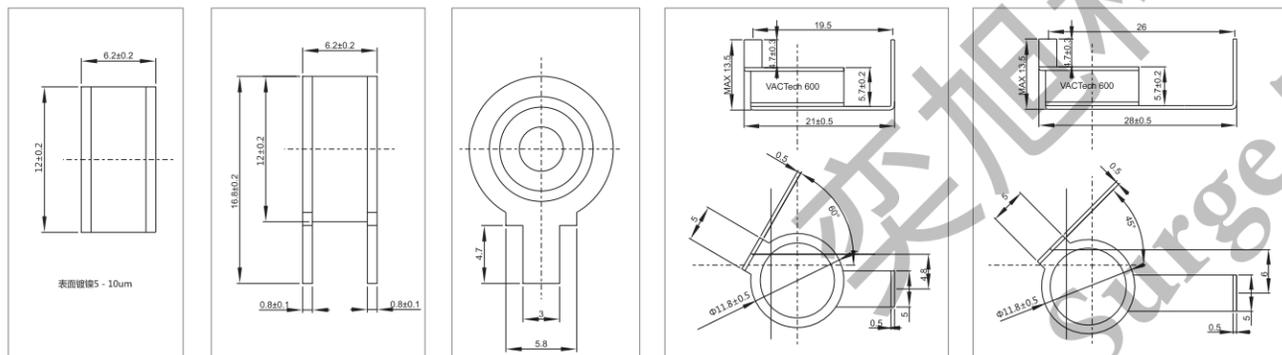
认证

- UL 497B Recognized: File Number E326248
- UL 1449 Recognized: File Number E360318
- Meets RoHS

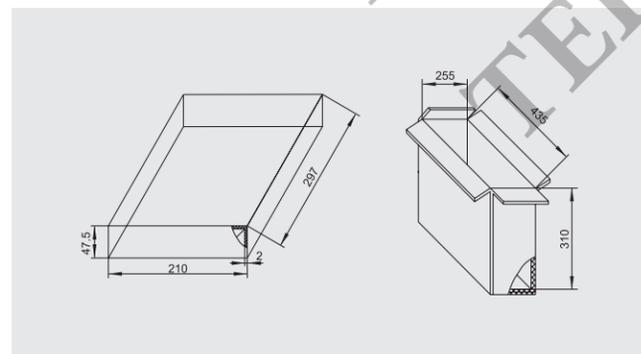
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs			脉冲冲击电压 Vss	脉冲冲击电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200v, 0.2s, 1shot, 50Hz)	长波冲击	冲击放电电流 10'8/20μs	冲击放电电流 10'10/350μs	工频续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	TOV behaviour up to 1.2 kV rms 300 A -200ms	Surge Life (@100A 10/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Max Impulse Discharge Current (1 Application) (10x350μs)	Follow current (If)		
PS6C075D	60	75	90	500	700	10 ⁹ Ω (at 50V)	2.0pF	~ 15V	20A	100A	/	+150 -150 shots	10 shots (@20kA) 2 shots (@40kA)	5kA	100A
PS6C090D	72	90	108	500	700										
PS6C150D	120	150	180	600	700										
PS6C230D	184	230	276	600	800										
PS6C300D	240	300	360	600	800										
PS6C350D	280	350	420	800	1100										
PS6C470D	376	470	564	900	1300										
PS6C600D	480	600	720	1100	1500										
PS6C800D	640	800	960	1300	1600	10 ⁹ Ω (at 100V)	~ 24V								

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



PS5C Series PS5C系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The PS5C Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而形成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

FEATURES

- Very fast response time
- Suitable for direct strikes
- Stable performance over life
- Very low capacitance
- High insulation resistance

APPLICATIONS

- AC Power Lines
- Class II (class C) - Requirements

APPROVALS

- UL 1449 Recognized: File Number E360318
- Meets RoHS

特点

- 快速响应时间
- 高稳定性
- 高雷击寿命
- 低电容
- 高绝缘电阻

应用

- 电力线
- Class II, C级

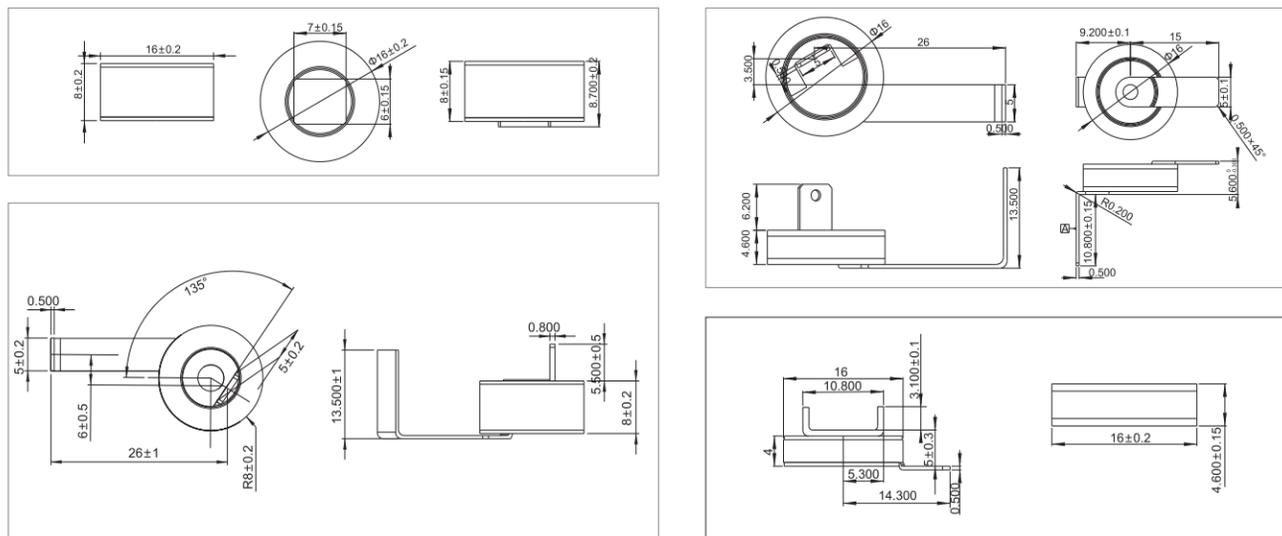
认证

- UL 1449 Recognized: File Number E360318
- Meets RoHS

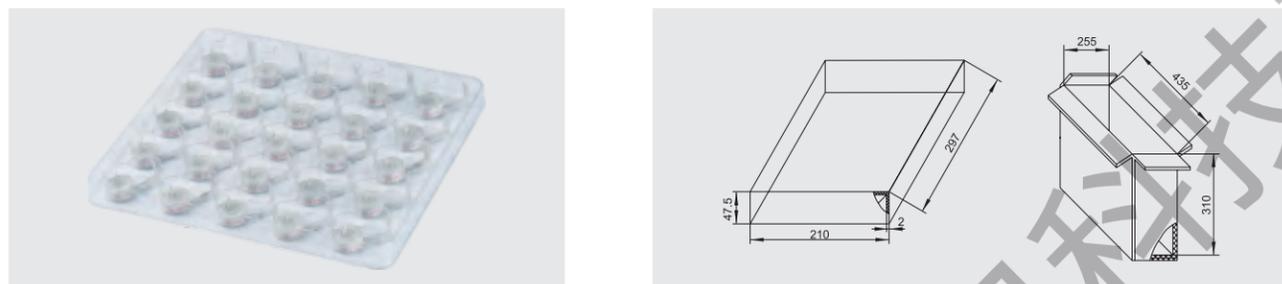
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs			脉冲冲击电压 Vss	脉冲冲击电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200v, 0.2s, 1shot, 50Hz)	长波冲击	冲击放电电流 10'8/20μs	冲击放电电流 10'10/350μs	工频续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	TOV behaviour up to 1.2 kV rms 300 A -200ms	Surge Life (@100A 10/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Max Impulse Discharge Current (1 Application) (10x350μs)	Follow current (If)		
PS5C075D	60	75	90	500	700	10 ⁹ Ω (at 50V)	2.0pF	~ 15V	20A	100A	300A	+150 -150 shots	10 shots (@40kA) 2 shots (@80kA)	10kA	100A
PS5C090D	72	90	108	500	700										
PS5C150D	120	150	180	600	700										
PS5C230D	184	230	276	600	800										
PS5C300D	240	300	360	600	800										
PS5C350D	280	350	420	800	1100										
PS5C470D	376	470	564	900	1300										
PS5C600D	480	600	720	1100	1500										
PS5C800D	640	800	960	1300	1600	10 ⁹ Ω (at 100V)	~ 24V								

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



PS4C Series PS4C系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The PS4C Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

FEATURES

- Very fast response time
- Suitable for direct strikes
- Stable performance over life
- Very low capacitance
- High insulation resistance

APPLICATIONS

- AC Power Lines
- Class II (class C) - Requirements

APPROVALS

- UL 497B Recognized: File Number E326248
- UL 1449 Recognized: File Number E360318
- Meets RoHS

特点

- 快速响应时间
- 高稳定性
- 高雷击寿命
- 低电容
- 高绝缘电阻

应用

- 电力线
- Class II, C级

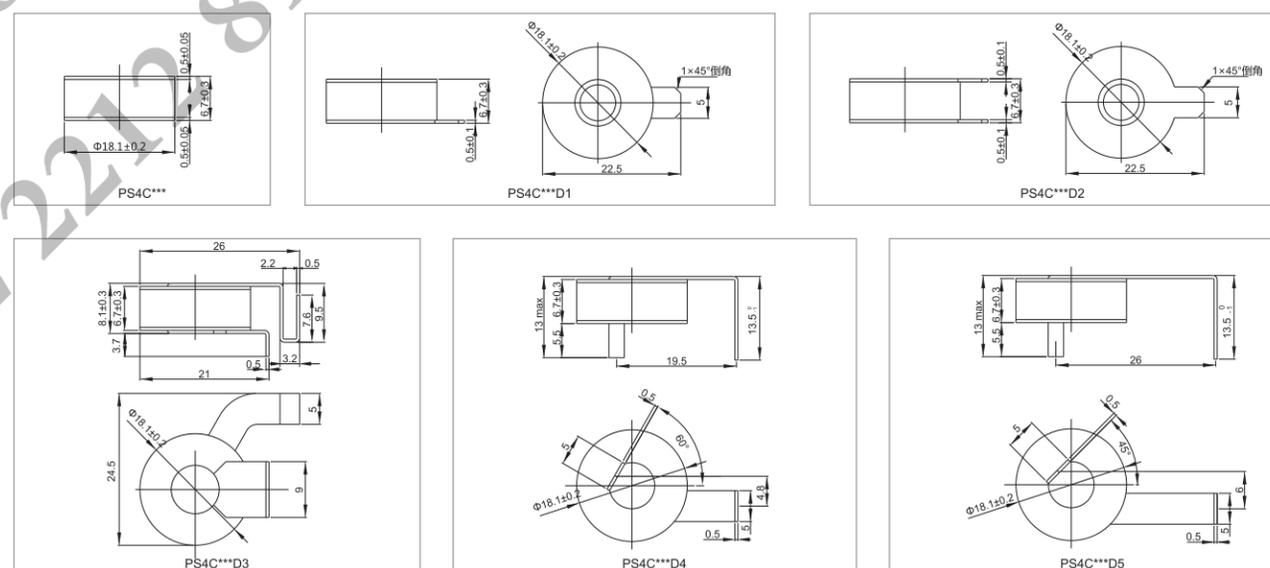
认证

- UL 497B Recognized: File Number E326248
- UL 1449 Recognized: File Number E360318
- Meets RoHS

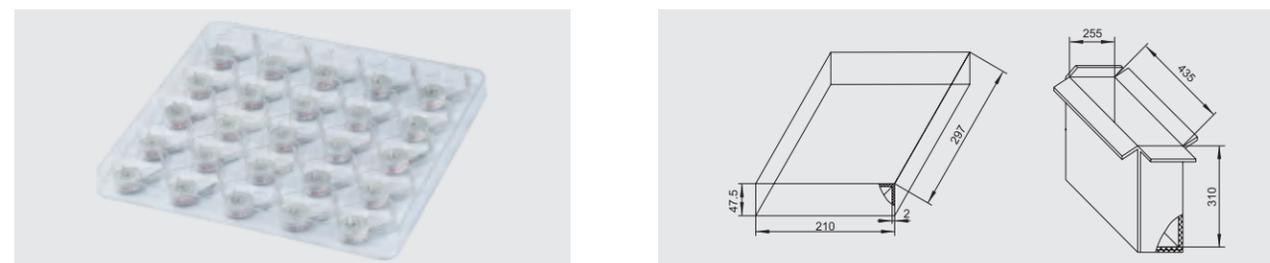
Electrical Characteristics 电气特性

Part No.	标称直流 击穿电压 Vs	脉冲击穿 电压 Vss	脉冲击穿 电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1 s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200v, 0.2s,1shot,50Hz)	长波冲击	冲击放电 电流 10'8/20μs	冲击放电 电流 10'10/350μs	工频 续流遮断 能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	TOV behaviourup to 1.2 kV rms300 A ~200ms	Surge Life (@100A 10'/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Max Impulse Discharge Current (1 Application) (10x350μs)	Follow current (If)
PS4C075D	60	75	90	500	700	10° Ω (at 50V)	~ 15V						
PS4C090D	72	90	108	500	700								
PS4C150D	120	150	180	600	700								
PS4C230D	184	230	276	600	800								
PS4C300D	240	300	360	600	800								
PS4C350D	280	350	420	800	1100	10° Ω (at 100V)	~ 24V						
PS4C470D	376	470	564	900	1300								
PS4C600D	480	600	720	1100	1500								
PS4C800D	640	800	960	1300	1600								

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



PSC Series PSC系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The PSC Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

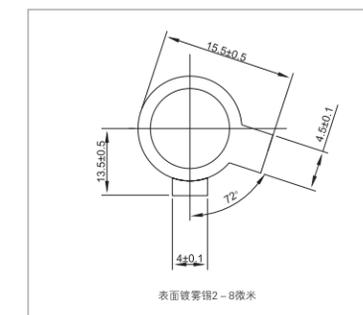
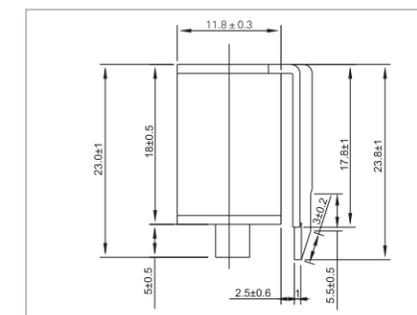
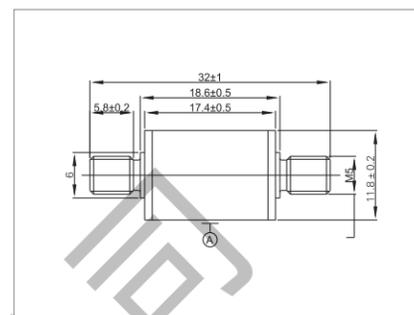
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> Very fast response time Suitable for direct strikes Stable performance over life Very low capacitance High insulation resistance 	<ul style="list-style-type: none"> AC Power Lines Class II (class C) - Requirements 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 UL 1449 Recognized: File Number E360318 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> 快速响应时间 高稳定性 高雷击寿命 低电容 高绝缘电阻 	<ul style="list-style-type: none"> 电力线 Class II, C级 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 UL 1449 Recognized: File Number E360318 Meets RoHS

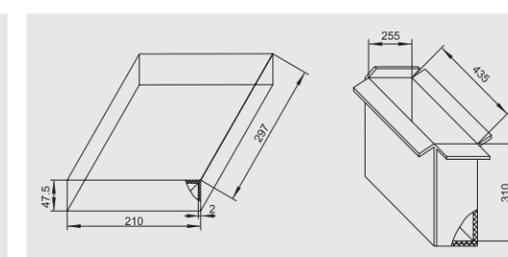
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs	脉冲击穿电压 Vss	脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200V, 0.2s, 1shot, 50Hz)	长波冲击 Surge Life (@100A 10/1000μs)	冲击放电电流 10'8/20μs	冲击放电电流 10'10/350μs	工频续流遮断能力	
PSC075D/L	60	75	90	500	700	~ 15V	20A	100A	300A	+150 -150 shots	10 shots (@40kA)	10kA	100A	
PSC090D/L	72	90	108	500	700									
PSC150D/L	120	150	180	600	700									
PSC230D/L	184	230	276	600	800									
PSC300D/L	240	300	360	600	800									
PSC350D/L	280	350	420	800	1100	~ 24V	20A	100A	300A	+150 -150 shots	10 shots (@40kA)	10kA	100A	
PSC470D/L	376	470	564	900	1300									
PSC600D/L	480	600	720	1100	1500									
PSC800D/L	640	800	960	1300	1600									

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



PS3B Series PS3B系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The PS3B Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

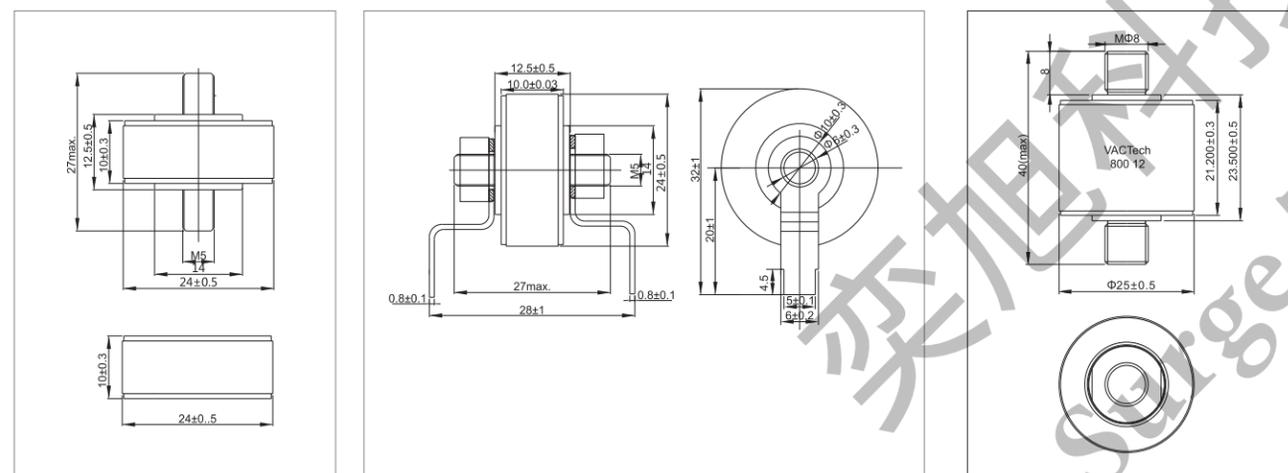
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> Very fast response time Suitable for direct strikes Stable performance over life Very low capacitance High insulation resistance 	<ul style="list-style-type: none"> AC Power Lines Class II (class C) - Requirements 	<ul style="list-style-type: none"> UL 1449 Recognized: File Number E360318 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> 快速响应时间 高稳定性 高雷击寿命 低电容 高绝缘电阻 	<ul style="list-style-type: none"> 电力线 Class II, C级 	<ul style="list-style-type: none"> UL 1449 Recognized: File Number E360318 Meets RoHS

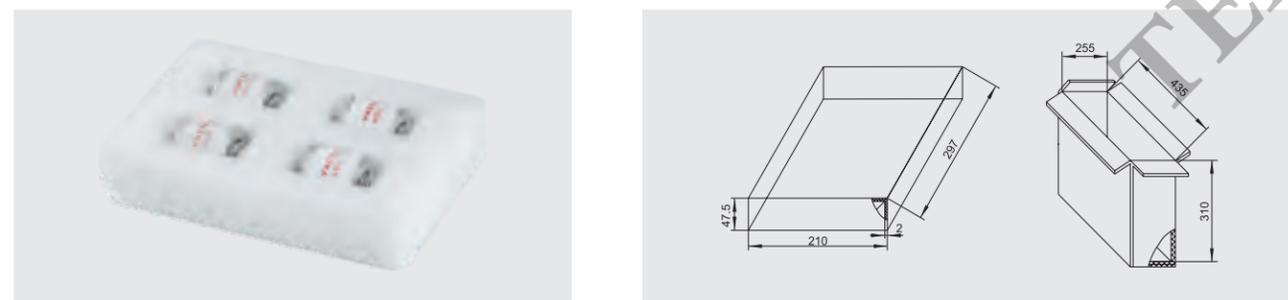
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs			脉冲击穿电压 Vss	脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200v, 0.2s, 1shot, 50Hz)	长波冲击	冲击放电电流 10'8/20µs	冲击放电电流 10'10/350µs	If 工频续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/µs)	Impulse Breakdown in Volts (@1kV/µs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)										
PS3B075D	60	75	90	500	700	10 ⁹ Ω (at 50V)	2.0pF	~ 15V	20A	100A	300A	+150 -150 shots	10 shots (@120kA) 2 shots (@150kA)	35kA	100A
PS3B090D	72	90	108	500	700										
PS3B150D	120	150	180	600	700	10 ⁹ Ω (at 100V)	2.0pF	~ 25V	20A	100A	300A	+150 -150 shots	10 shots (@120kA) 2 shots (@150kA)	35kA	100A
PS3B230D	184	230	276	600	800										
PS3B300D	240	300	360	600	800										
PS3B350D	280	350	420	800	1100										
PS3B470D	376	470	564	900	1300										
PS3B600D	480	600	720	1100	1500										
PS3B800D	640	800	960	1300	1600										

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



PS2B...H Series PS2B...H系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The PS2B...H Series (75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

FEATURES

- Very fast response time
- Suitable for direct strikes
- Stable performance over life
- Very low capacitance
- High insulation resistance

APPLICATIONS

- AC Power Lines
- Class II (class C) - Requirements

APPROVALS

- UL 497B Recognized: File Number E326248
- UL 1449 Recognized: File Number E360318
- Meets RoHS

特点

- 快速响应时间
- 高稳定性
- 高雷击寿命
- 低电容
- 高绝缘电阻

应用

- 电力线
- Class II, C级

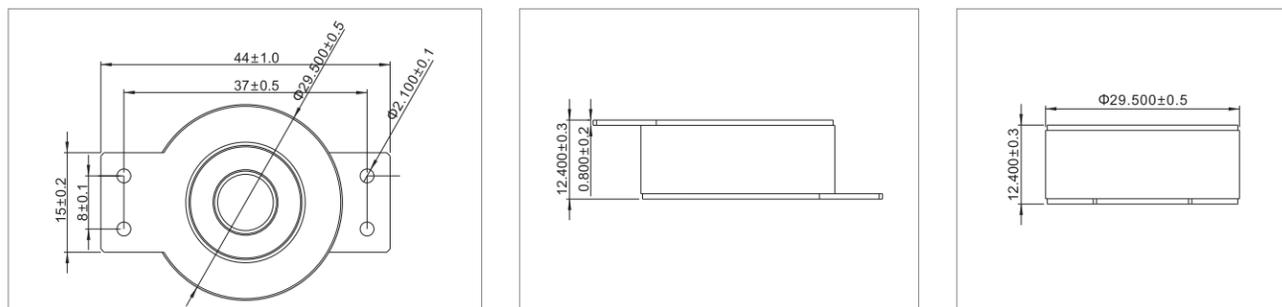
认证

- UL 497B Recognized: File Number E326248
- UL 1449 Recognized: File Number E360318
- Meets RoHS

Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs			脉冲击穿电压 Vss	脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200v, 0.2s, 1shot, 50Hz)	长波冲击	冲击放电电流 10'8/20µs	冲击放电电流 10'10/350µs	If 工频续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/µs)	Impulse Breakdown in Volts (@1kV/µs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)										
PS2B075HD	60	75	90	500	700	10 ⁹ Ω (at 50V)	2.0pF	~ 15V	20A	100A	300A	+150 -150 shots	10 shots (@120kA) 2 shots (@200kA)	60kA	100A
PS2B090HD	72	90	108	500	700										
PS2B150HD	120	150	180	600	700	10 ⁹ Ω (at 100V)	2.0pF	~ 24V	20A	100A	300A	+150 -150 shots	10 shots (@120kA) 2 shots (@200kA)	60kA	100A
PS2B230HD	184	230	276	600	800										
PS2B300HD	240	300	360	600	800										
PS2B350HD	280	350	420	800	1100										
PS2B470HD	376	470	564	900	1300										
PS2B600HD	480	600	720	1100	1500										
PS2B800HD	640	800	960	1300	1600										

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



PSB Series PSB系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The PSB Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

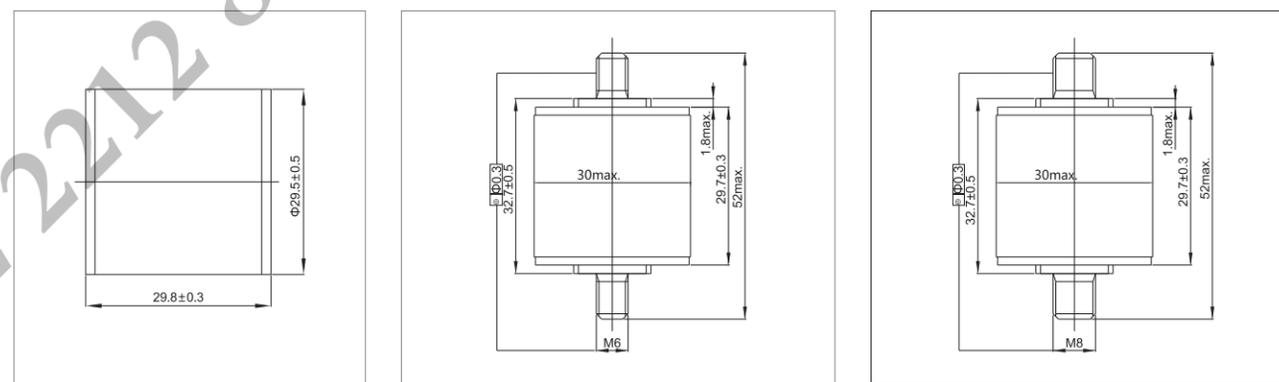
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> Very fast response time Suitable for direct strikes Stable performance over life Very low capacitance High insulation resistance 	<ul style="list-style-type: none"> AC Power Lines Class II (class C) - Requirements 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 UL 1449 Recognized: File Number E360318 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> 快速响应时间 高稳定性 高雷击寿命 低电容 高绝缘电阻 	<ul style="list-style-type: none"> 电力线 Class II, C级 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 UL 1449 Recognized: File Number E360318 Meets RoHS

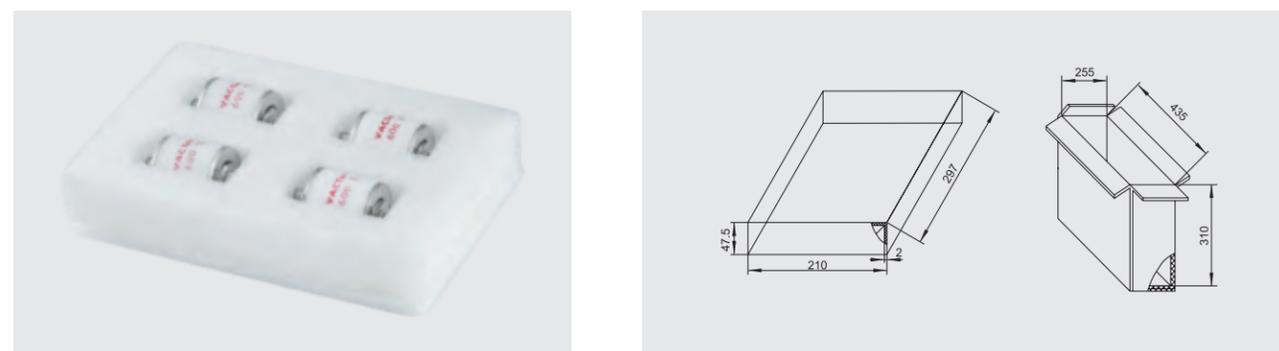
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs	脉冲击穿电压 Vss	脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1 s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200v, 0.2s, 1shot, 50Hz)	长波冲击	冲击放电电流 10'8/20μs	冲击放电电流 10'10/350μs	精工频率续流遮断能力
Part No.	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	TOV behaviour up to 1.2 kV rms 300 A -200ms	Surge Life (@100A 10/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Max Impulse Discharge Current (1 Application) (10x350μs)	Follow current (If)
PSB075L	60 75 90	500	700	10 ⁹ Ω (at 50V)	2.0pF	~ 15V	20A	100A	300A	+150 -150 shots	10 shots (@200kA)	100kA	100A
PSB090L	72 90 108	500	700	10 ⁹ Ω (at 100V)		~ 24V							
PSB150L	120 150 180	600	700										
PSB230L	184 230 276	600	800										
PSB300L	240 300 360	600	800										
PSB350L	280 350 420	800	1100										
PSB470L	376 470 564	900	1300										
PSB600L	480 600 720	1100	1500										
PSB800L	640 800 960	1300	1600										

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



PS0B Series PS0B系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The PS0B Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

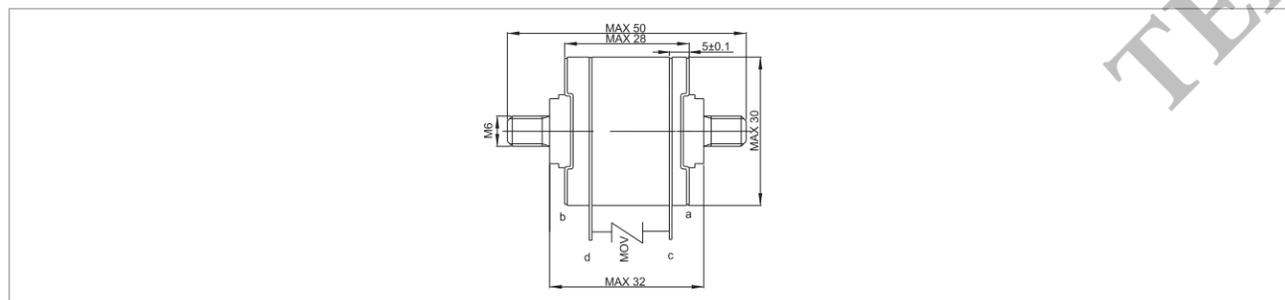
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> Very fast response time Suitable for direct strikes Stable performance over life Very low capacitance High insulation resistance 	<ul style="list-style-type: none"> Overvoltage protection against direct lightning strike Power supply Class I/II Phase-Neutral protection 	<ul style="list-style-type: none"> UL 1449 Recognized: File Number E360318 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> 快速响应时间 高稳定性 高雷击寿命 低电容 高绝缘电阻 	<ul style="list-style-type: none"> 直击雷防护 第一/二级电源火零防护 	<ul style="list-style-type: none"> UL 1449 Recognized: File Number E360318 Meets RoHS

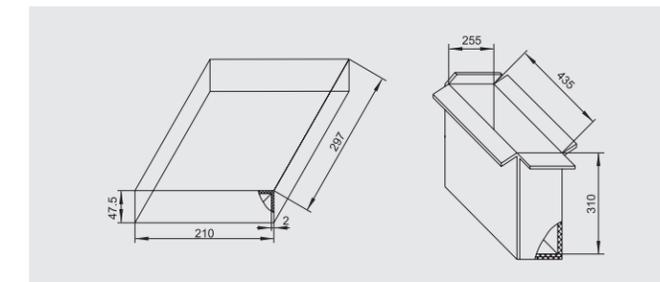
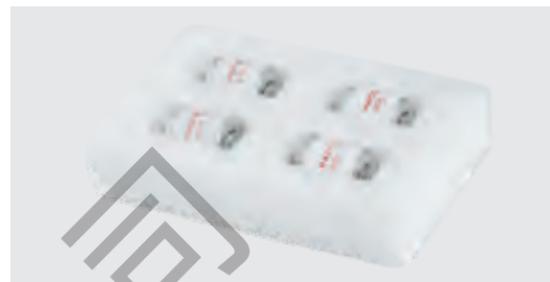
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs	脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	交流放电电流 (TOV at 1200v, 0.2s, 1shot, 50Hz)	长波冲击 @100A 10/1000μs	冲击放电电流 10'8/20μs	冲击放电电流 10'10/350μs	工频续流遮断能力			
PS0B800L6	600	800	/	1300	1500	10 ⁹ Ω (at 100V)	/	~ 125V	20A	100A	/	10 shots (@100kA)	35kA	3kA
PS0B800L8	600	800	/	1300	1500							10 shots (@150kA)		

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



NR Series NR系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The NR Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

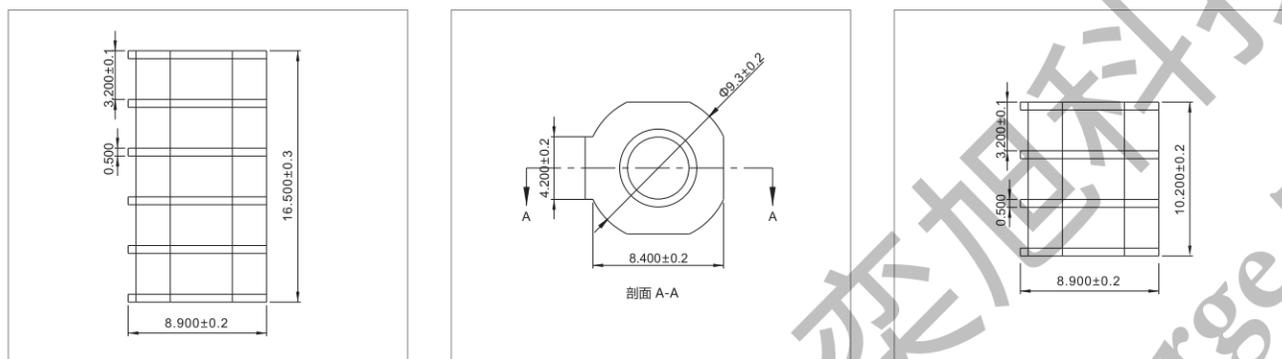
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> Very fast response time Suitable for direct strikes Stable performance over life Very low capacitance High insulation resistance 	<ul style="list-style-type: none"> Communication lines(MDF) CATV equipment Test equipment Power supplies Instrumentation circuits Medical electronics 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> 快速响应时间 高稳定性 高雷击寿命 低电容 高绝缘电阻 	<ul style="list-style-type: none"> 通信线路(MDF) CATV设备 测试设备 电源 仪器 医疗电子 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 Meets RoHS

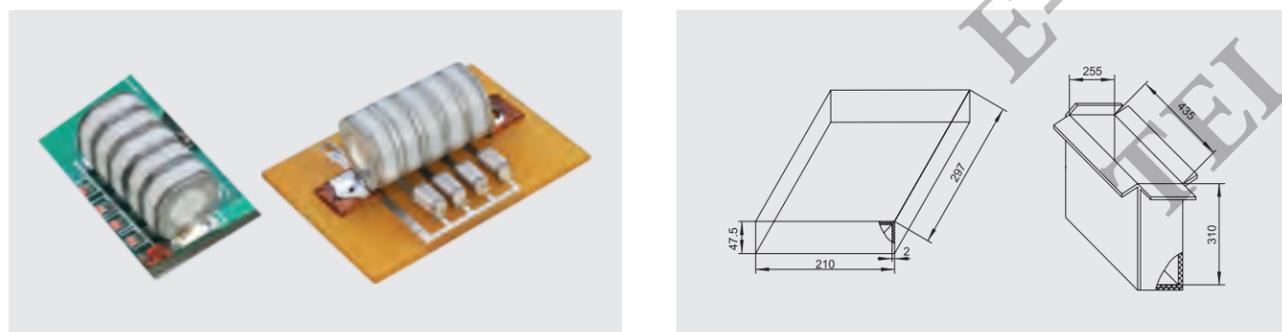
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs			脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200V, 0.2s, 1shot, 50Hz)	长波冲击	冲击放电电流 10'8/20µs	冲击放电电流 10'10/350µs	精工频率续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/µs)	Impulse Breakdown in Volts (@1kV/µs)											
3R158H SMD	300	400	/	1300	1500	10 ⁹ Ω (at 100V)	/	~ 125V	/	/	+150 -150 shots	10 shots (@20kA)	4kA	/
5R158H SMD	500	600	/	1500	1600									
6R158H SMD	600	800	/	1600	1800									
7R158H SMD	800	1000	/	1800	2000									

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



NR...H Series NR...H 系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The NR...H Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a minimum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

FEATURES

- Very fast response time
- Suitable for direct strikes
- Stable performance over life
- Very low capacitance
- High insulation resistance

APPLICATIONS

- Overvoltage protection against direct lightning strike
- Power supply Class I/II Phase-Neutral protection

APPROVALS

UL 497B Recognized: File Number E326248
Meets RoHS

特点

- 快速响应时间
- 高稳定性
- 高雷击寿命
- 低电容
- 高绝缘电阻

应用

- 直击雷防护
- 第一/二级电源火零防护

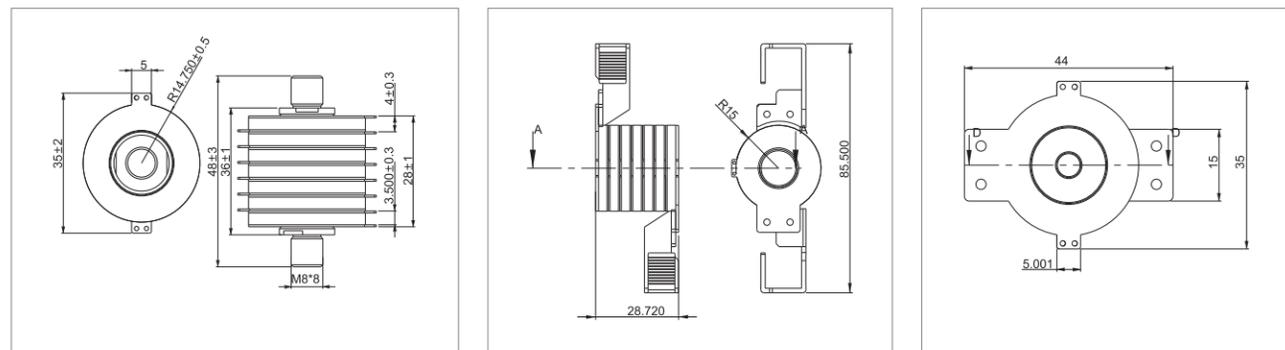
认证

UL 497B Recognized: File Number E326248
Meets RoHS

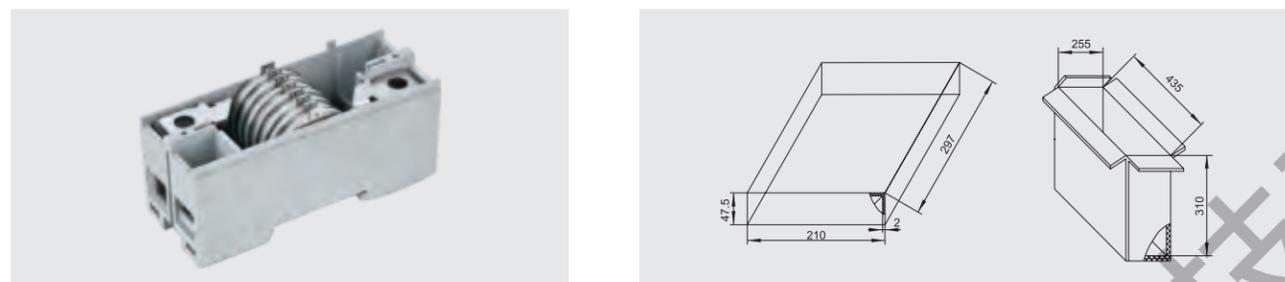
Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs			脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200V, 0.2s, 1shot, 50Hz)	长波冲击	冲击放电电流 10'8/20µs	冲击放电电流 10'10/350µs	精工频率续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/µs)	Impulse Breakdown in Volts (@1kV/µs)											
7R800HL	600	800	/	1300	1500	10 ⁹ Ω (at 100V)	~ 125V	/	/	/	+150 -150 shots	10 shots (@100kA)	50kA	10kA
7R800HD	600	800	/	1300	1500									

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



VCA Series/VCB Series VCA/VCB系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The VCA Series/VCB Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

FEATURES

- Very fast response time
- Suitable for direct strikes
- Stable performance over life
- Very low capacitance
- High insulation resistance

APPLICATIONS

- Communication lines(MDF)
- CATV equipment
- Test equipment
- Power supplies
- Instrumentation circuits
- Medical electronics

APPROVALS

UL 497B Recognized: File Number E326248
Meets RoHS

特点

- 快速响应时间
- 高稳定性
- 高雷击寿命
- 低电容
- 高绝缘电阻

应用

- 通信线路(MDF)
- CATV设备
- 测试设备
- 电源
- 仪器
- 医疗电子

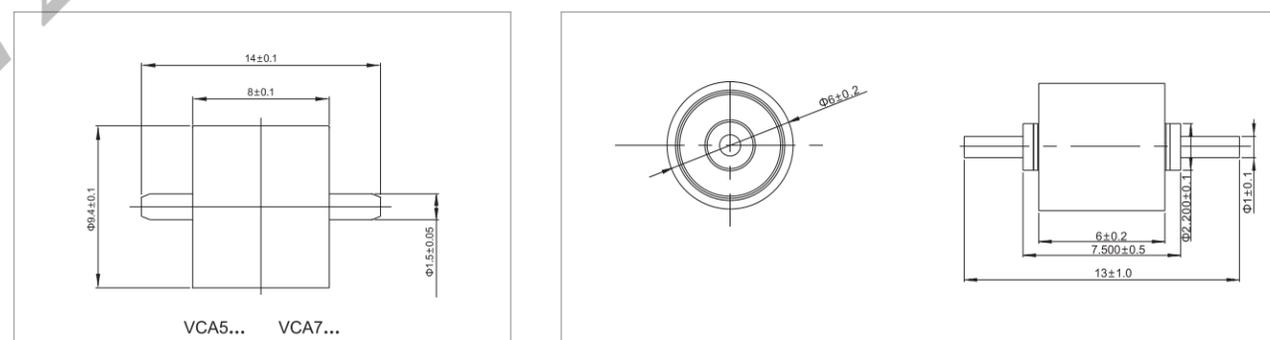
认证

UL 497B Recognized: File Number E326248
Meets RoHS

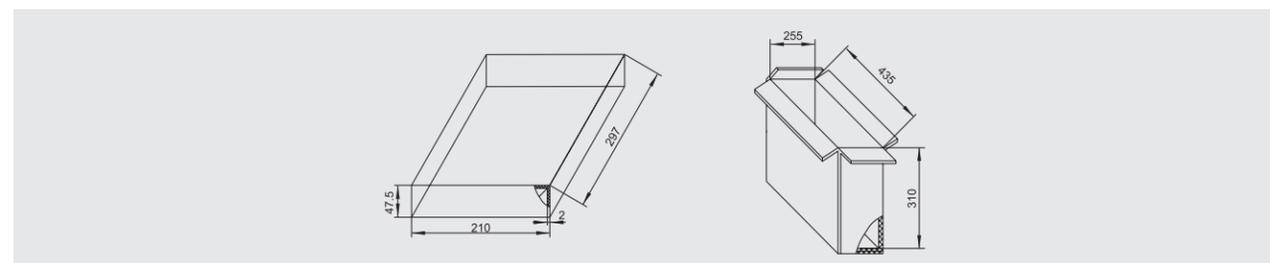
Electrical Characteristics 电气特性

Part No.	标称直流 击穿电压 Vs	脉冲击穿 电压 Vss	脉冲击穿 电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1 s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200v, 0.2s, 1shot, 50Hz)	长波冲击 Surge Life (@100A 10/1000μs)	冲击放电 电流 10'8/20μs	冲击放电 电流 10'10/350μs	工频 续流遮断 能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	behaviour up to 1.2 kV rms300 A -200ms		Nominal Impulse Discharge Current (8/20μs)	Max Impulse Discharge Current (1 Application) (10x350μs)	Follow current (If)
VCA090 VCB090	72	90	108	500	700	10° Ω (at 50V)	~ 15V						
VCA150 VCB150	120	150	180	600	700								
VCA230 VCB230	184	230	276	600	800								
VCA300 VCB300	240	300	360	600	800	1.5pF	10A	50A	/	+150 -150 shots	10 shots (@10kA)	4kA	/
VCA350 VCB350	280	350	420	800	1100	10° Ω (at 100V)	~ 24V						
VCA470 VCB470	376	470	564	900	1300								
VCA600 VCB600	480	600	720	1100	1500								

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



3X Series/3S Series 3X/3S系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The 3X Series/3S Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

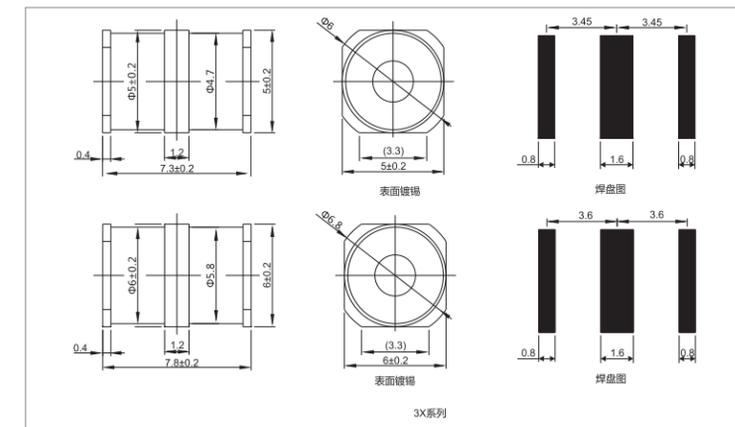
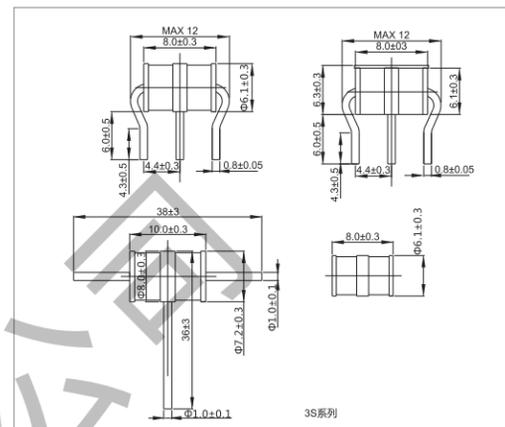
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> Very fast response time Suitable for direct strikes Stable performance over life Very low capacitance High insulation resistance 	<ul style="list-style-type: none"> Communication lines(MDF) CATV equipment Test equipment Power supplies Instrumentation circuits Medical electronics 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> 快速响应时间 高稳定性 高雷击寿命 低电容 高绝缘电阻 	<ul style="list-style-type: none"> 通信线路(MDF) CATV设备 测试设备 电源 仪器 医疗电子 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 Meets RoHS

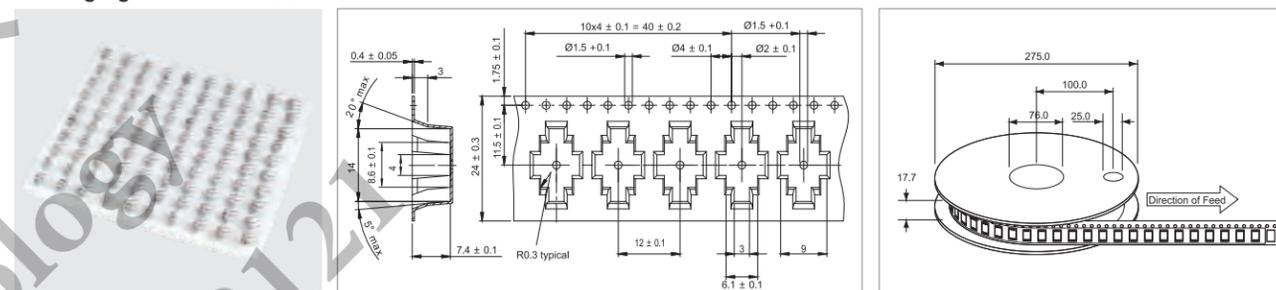
Electrical Characteristics 电气特性

Part No.	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	交流放电电流 (TOV at 1200V, 0.2s, 1shot, 50Hz)	长波冲击 @100A 10/1000μs	冲击放电电流 10*8/20μs	冲击放电电流 10*10/350μs	工频连续流遮断能力
3X075/L/SMD 3S075/L/SMD	72 90 108	500	700	10 ⁹ Ω (at 50V)	1.5pF	~ 15V	2.5A	30A	/	+150 -150 shots	10 shots (@10kA)	2kA	
3X090/L/SMD 3S090/L/SMD	120 150 180	600	700	10 ⁹ Ω (at 100V)		~ 24V							
3X150/L/SMD 3S150/L/SMD	184 230 276	600	800										
3X230/L/SMD 3S230/L/SMD	240 300 360	600	800										
3X300/L/SMD 3S300/L/SMD	280 350 420	800	1100										
3X350/L/SMD 3S350/L/SMD	376 470 564	900	1300										
3X470/L/SMD 3S470/L/SMD	480 600 720	1100	1500										
3X600/L/SMD 3S600/L/SMD	640 800 960	1300	1500										

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



3R...M Series/3R...H Series 3R...M/3R...H系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The 3R...M Series/3R...H Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬时过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬时过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬时过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

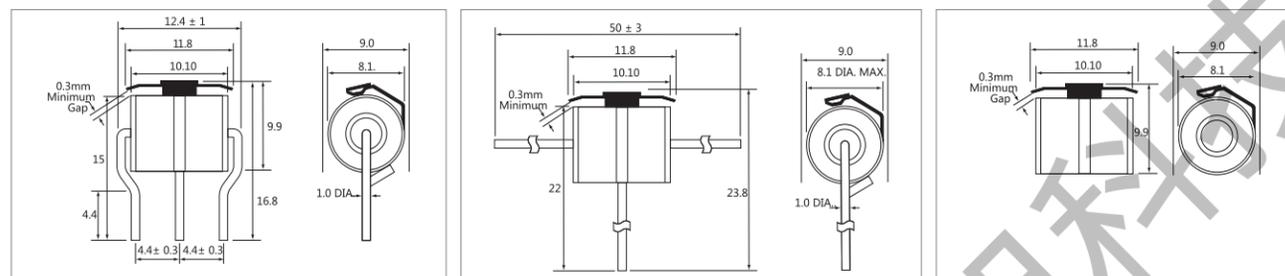
FEATURES	APPLICATIONS	APPROVALS
<ul style="list-style-type: none"> Very fast response time Suitable for direct strikes Stable performance over life Very low capacitance High insulation resistance 	<ul style="list-style-type: none"> Communication lines(MDF) CATV equipment Test equipment Power supplies Instrumentation circuits Medical electronics 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 Meets RoHS

特点	应用	认证
<ul style="list-style-type: none"> 快速响应时间 高稳定性 高雷击寿命 低电容 高绝缘电阻 	<ul style="list-style-type: none"> 通信线路(MDF) CATV设备 测试设备 电源 仪器 医疗电子 	<ul style="list-style-type: none"> UL 497B Recognized: File Number E326248 Meets RoHS

Electrical Characteristics 电气特性

Part No.	标称直流击穿电压 Vs			脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1 s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200v, 0.2s, 1shot, 50Hz)	长波冲击	冲击放电电流 10'8/20μs	冲击放电电流 10'10/350μs	工频频续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	TOV behaviour up to 1.2 kV rms300 A -200ms	Surge Life (@100A 10/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Max Impulse Discharge Current (1 Application) (10x350μs)	Follow current (If)	
3R075M/L 3R075H/L	60	75	90	500	700	10° Ω (at 50V)	~ 15V	10A	100A	/	+150 -150 shots	10 shots (@10kA)	4kA	/
3R090M/L 3R090H/L	72	90	108	500	700									
3R150M/L 3R150H/L	120	150	180	600	700									
3R230M/L 3R230H/L	184	230	276	600	800									
3R300M/L 3R300H/L	240	300	360	600	800									
3R350M/L 3R350H/L	280	350	420	800	1100									
3R470M/L 3R470H/L	376	470	564	900	1300									
3R600M/L 3R600H/L	480	600	720	1100	1500									
3R800M/L 3R800H/L	640	800	960	1300	1600									

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸



3T Series/3L Series 3T /3L系列



Description 描述

VACTech GDT's are designed for a high degree of surge protection at a low cost. It operate on the gas physical principle of the highly effective arc discharge. The 3T Series/3L Series(75-3600V) is used for protecting equipment for which higher voltage limits and holdover voltages are necessary. Comgaps function as switches which dissipate a mini-mum amount of energy and therefore handle currents that far surpass other types of transient voltage protection.

VACTech气体放电管是在放电间隙内充入适当的气体介质，配以高活性的电子发射材料及放电引燃机构，通过钎焊而制成的一种特殊的金属陶瓷结构的气体放电器件，它主要用于瞬态过电压保护。作为保护元件接入线路中时，对线路的正常工作几乎没有任何不利的影响，当有害的瞬态过电压窜入时，放电管首先被击穿放电，其阻抗迅速下降，几乎呈短路状态，此时，放电管将有害的电流通过地线泄给大地，同时将电压限制在放电管的弧光上（约24V左右），消除了有害的瞬态过电压和过电流，从而保护了线路及元件。当过电压消失后，放电管又迅速恢复到高阻抗状态，线路继续正常工作。

FEATURES

- Very fast response time
- Suitable for direct strikes
- Stable performance over life
- Very low capacitance
- High insulation resistance

APPLICATIONS

- Communication lines(MDF)
- CATV equipment
- Test equipment
- Power supplies
- Instrumentation circuits
- Medical electronics

APPROVALS

UL 497B Recognized: File Number E326248
Meets RoHS

特点

- 快速响应时间
- 高稳定性
- 高雷击寿命
- 低电容
- 高绝缘电阻

应用

- 通信线路(MDF)
- CATV设备
- 测试设备
- 电源
- 仪器
- 医疗电子

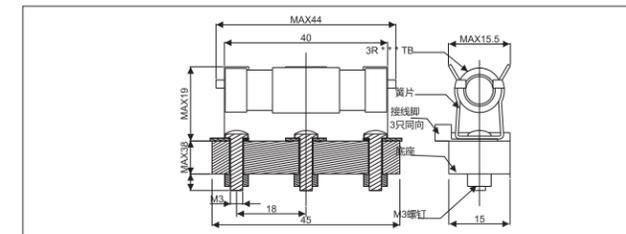
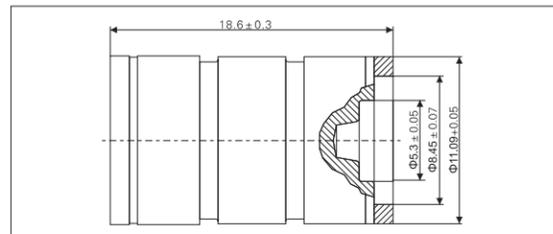
认证

UL 497B Recognized: File Number E326248
Meets RoHS

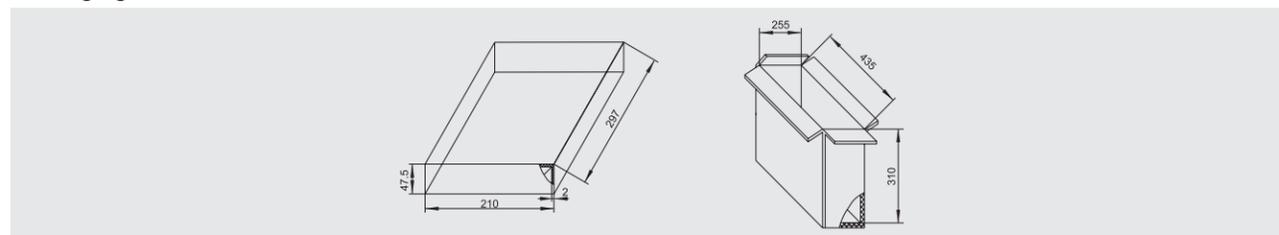
Electrical Characteristics 电气特性

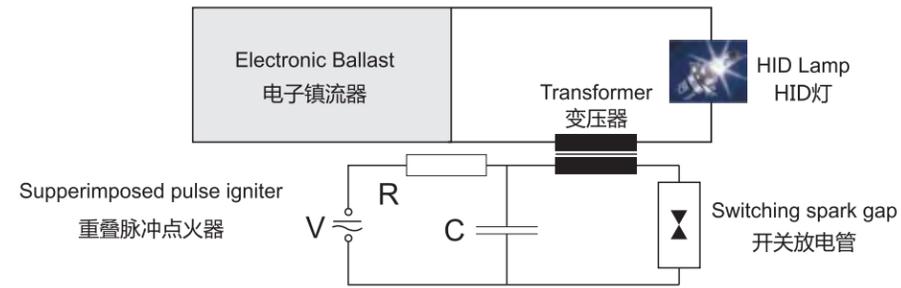
Part No.	标称直流击穿电压 Vs			脉冲击穿电压 Vss	绝缘电阻 GΩ	电容 (@1MHz 0V) 最大	弧光电压 @1Amp 最小	工频放电电流 @ 50 Hz, 1 s	工频放电电流 @ 50 Hz, 200ms	交流放电电流 (TOV at 1200v, 0.2s, 1shot, 50Hz)	长波冲击	冲击放电电流 10'8/20μs	冲击放电电流 10'10/350μs	工频频续流遮断能力
	DC Breakdown Voltage Range (@100V/s)	Impulse Breakdown in Volts (@100V/μs)	Impulse Breakdown in Volts (@1kV/μs)	Insulation Resistance (MIN)	Capacitance (@1MHz 0V Bias) (MAX)	Arc Voltage (on state voltage) @1Amp Min	Nominal AC Discharge Current (10x1s @50Hz)	AC Discharge Current (9 Cycles @50Hz)	TOV behaviour up to 1.2 kV rms300 A -200ms	Surge Life (@100A 10/1000μs)	Nominal Impulse Discharge Current (8/20μs)	Max Impulse Discharge Current (1 Application) (10x350μs)	Follow current (If)	
3T075 3L075	60	75	90	500	700	10° Ω (at 50V)	~ 15V	20A	100A	/	+150 -150 shots	10 shots (@10kA)	4kA	/
3T090 3L090	72	90	108	500	700									
3T150 3L150	120	150	180	600	700									
3T230 3L230	184	230	276	600	800									
3T300 3L300	240	300	360	600	800									
3T350 3L350	280	350	420	800	1100									
3T470 3L470	376	470	564	900	1300									
3T600 3L600	480	600	720	1100	1500									
3T800 3L800	640	800	960	1300	1600									

Device Dimensions 设备外形尺寸



Packaging Dimensions 包装尺寸

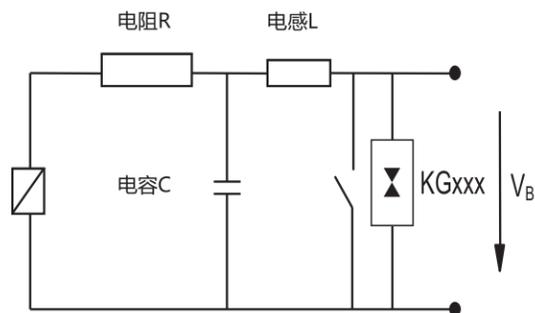




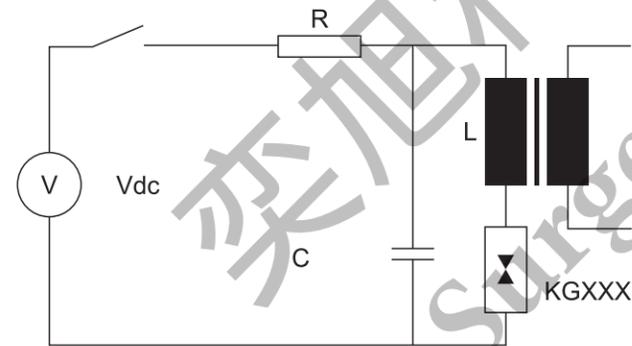
Characteristic data 典型数据

Switching time	开关时间	< 50ms
Switching current, peak value (depending on the type)	开关电流、峰值 (取决于型号)	< 100A
Energy per discharge (depending on the type)	每次放电能量 (取决于型号)	< 200mJ
Service life (switchings)	寿命 (开关)	10 ⁵ ...10 ⁶
Arc voltage	弧光电压	10...50V
Work Temperature	工作温度	-40-125°C

1) Breakdown voltage test circuit
 击穿电压测试电路



2) Life test circuit:
 寿命测试电路



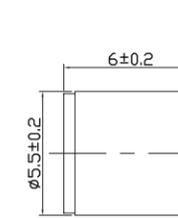
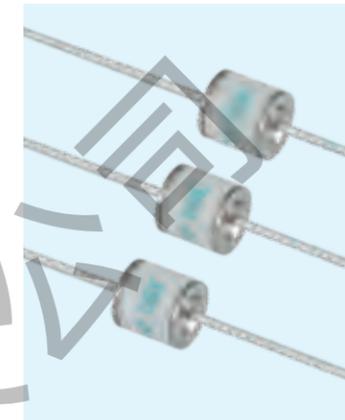
VACTech switch discharge characteristics:

- > Long Switching Life
- > Stable breakdown voltage
- > Low Loss
- > Fast response
- > Less darkness effect
- > To adapt to the temperature -40°C~125°C
- > According to TS16949 quality process

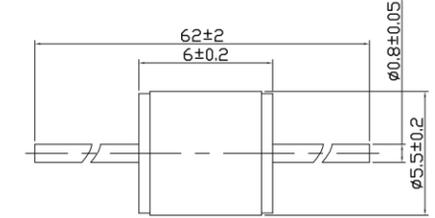
VACTech开关放电管特点:

- > 开关寿命长
- > 电压稳定
- > 低损耗
- > 导通时间快
- > 严格控制光敏效应
- > 适应温度-40°C ~ 125
- > 按TS16949质量流程生产

KS Series KS 系列



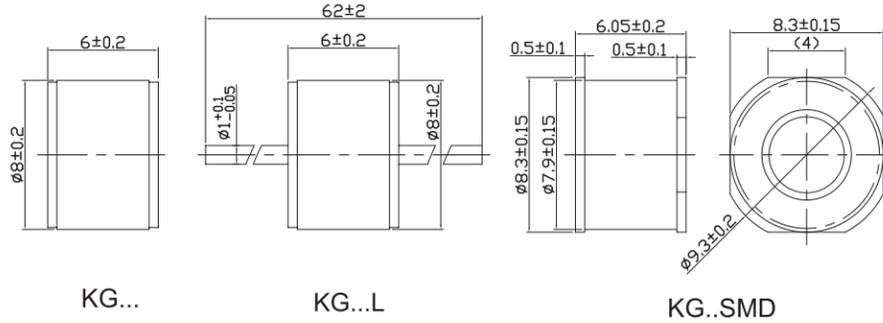
KS...



KS...L

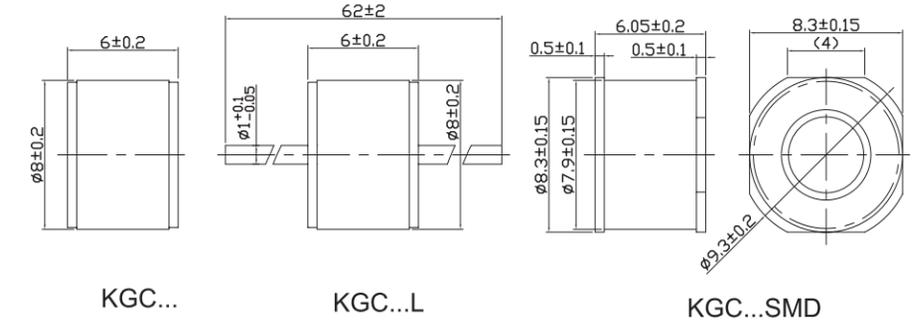
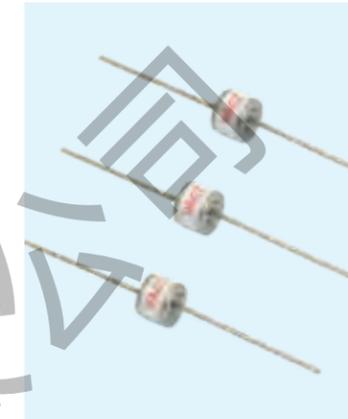
Type 型号	KS230	KS470	
Ordering code 订货号	KS5.5X6-230	KS5.5X6-470	
	KS230L	KS470L	
	KS5.5X6-230L	KS5.5X6-470L	
Nom. breakdown voltage ¹⁾ 标称击穿电压 ¹⁾	230	470	V
Initial values 初始值			
Max. breakdown voltage after 24 hours in darkness 24小时暗存后最大击穿电压	270	540	V
Following breakdown voltage 后续击穿电压	190...260	400...526	V
Breakdown voltage after life test 寿试后击穿电压值			
Max. breakdown voltage after 24 hours in darkness 24小时暗存后最大击穿电压	280	560	V
Following breakdown voltage 后续击穿电压	185...275	380...540	V
Life test Circuit ²⁾ 寿试电路 ²⁾			
Supply voltage V 供给电压	230	600	V
Resistance R 电阻	15	15	kΩ
Capcitance C 电容	220	220	nF
Indactance L 电感	32	32	μH
Service life / Times 开关寿命/次	100000	100000	
Weight 重量	1.5	1.5	g
Marking: Red, Positive 印记: 红色, 正向	VACTech 230	VACTech 470	

KG Series KG 系列



Type 型号	KG230	KG350	KG400	KG470	KG600	KG800	KG1000	
Ordering code 订货号	KG8X6-230	KG8X6-350	KG8X6-400	KG8X6-470	KG8X6-600	KG8X6-800	KG8X6-1000	
	KG230L	KG350L	KG400L	KG470L	KG600L	KG800L	KG1000L	
	KG8X6-230L	KG8X6-350L	KG8X6-400L	KG8X6-470L	KG8X6-600L	KG8X6-800L	KG8X6-1000L	
	KG230SMD	KG350SMD	KG400SMD	KG470SMD	KG600SMD	KG800SMD	KG1000SMD	
	KG8X6-230SMD	KG8X6-350SMD	KG8X6-400SMD	KG8X6-470SMD	KG8X6-600SMD	KG8X6-800SMD	KG8X6-1000SMD	
Nom. breakdown voltage ¹⁾ 标称击穿电压 ¹⁾	230	350	400	470	600	800	1000	V
Initial values 初始值								
Max. breakdown voltage after 24 hours in darkness 24小时暗存后最大击穿电压	270	400	460	530	720	950	1150	V
后续击穿电压 Following breakdown voltage	190...260	320...380	350...430	423...517	520...640	710...890	900...1130	V
Breakdown voltage after life test 寿试后击穿电压值								
Max. breakdown voltage after 24 hours in darkness 24小时暗存后最大击穿电压	290	420	500	550	750	1000	1400	V
后续击穿电压 Following breakdown voltage	180...280	290...390	340...460	410...530	510...690	680...920	850...1150	V
Life test Circuit ²⁾ 寿试电路 ²⁾								
Supply voltage 供给电压 V	300	450	500	550	750	1000	1400	V
Resistance 电阻 R	15	15	10	13	13	56	110	kΩ
Capcitance 电容 C	220	470	680	470	470	100	68	nF
Indactance 电感 L	0.5	0.5	0.5	0.1	0.1	0.5	0.5	μH
Service life / Times 开关寿命/次	100000	100000	100000	100000	100000	100000	100000	
Weight 重量	1.5	1.5	1.5	1.5	1.5	1.5	1.5	g
Marking: Red, Positive 印记: 蓝色, 负向	▼ KG 230	▼ KG 350	▼ KG 400	▼ KG 470	▼ KG 600	▼ KG 800	▼ KG 1000	

KGC Series KGC 系列



Type 型号	KGC230	KGC350	KGC400	KGC450	KGC470	KGC600	KGC800	
Ordering code 订货号	KGC8X6-230	KGC8X6-350	KGC8X6-400	KGC8X6-450	KGC8X6-470	KGC8X6-600	KGC8X6-800	
	KGC230L	KGC350L	KGC400L	KGC450L	KGC470L	KGC600L	KGC800L	
	KGC8X6-230L	KGC8X6-350L	KGC8X6-400L	KGC8X6-450L	KGC8X6-470L	KGC8X6-600L	KGC8X6-800L	
	KGC230SMD	KGC350SMD	KGC400SMD	KGC450SMD	KGC470SMD	KGC600SMD	KGC800SMD	
	KGC8X6-230SMD	KGC8X6-350SMD	KGC8X6-400SMD	KGC8X6-450SMD	KGC8X6-470SMD	KGC8X6-600SMD	KGC8X6-800SMD	
Nom. breakdown voltage ¹⁾ 标称击穿电压 ¹⁾	230	350	400	450	470	600	800	V
Initial values 初始值								
Max. breakdown voltage after 24 hours in darkness 24小时暗存后最大击穿电压	270	400	460	520	550	720	950	V
后续击穿电压 Following breakdown voltage	196...265	298...403	340...460	383...518	400...541	510...690	680...920	V
Breakdown voltage after life test 寿试后击穿电压值								
Max. breakdown voltage after 24 hours in darkness 24小时暗存后最大击穿电压	290	420	500	540	560	750	1000	V
后续击穿电压 Following breakdown voltage	180...280	290...410	330...470	370...530	390...550	500...700	670...930	V
Life test Circuit ²⁾ 寿试电路 ²⁾								
Supply voltage 供给电压 V	300	450	500	550	550	750	1000	V
Resistance 电阻 R	15	15	10	13	13	13	15	kΩ
Capcitance 电容 C	220	470	680	470	470	470	100	nF
Indactance 电感 L	0.5	0.5	0.5	0.5	0.5	0.5	0.5	μH
Service life / Times 开关寿命/次	150000	150000	150000	150000	150000	150000	150000	
Weight 重量	1.5	1.5	1.5	1.5	1.5	1.5	1.5	g
Marking: Red, Positive 印记: 红色, 正向	VACTech KGC230	VACTech KGC350	VACTech KGC400	VACTech KGC450	VACTech KGC470	VACTech KGC600	VACTech KGC800	



KGW XXX L3

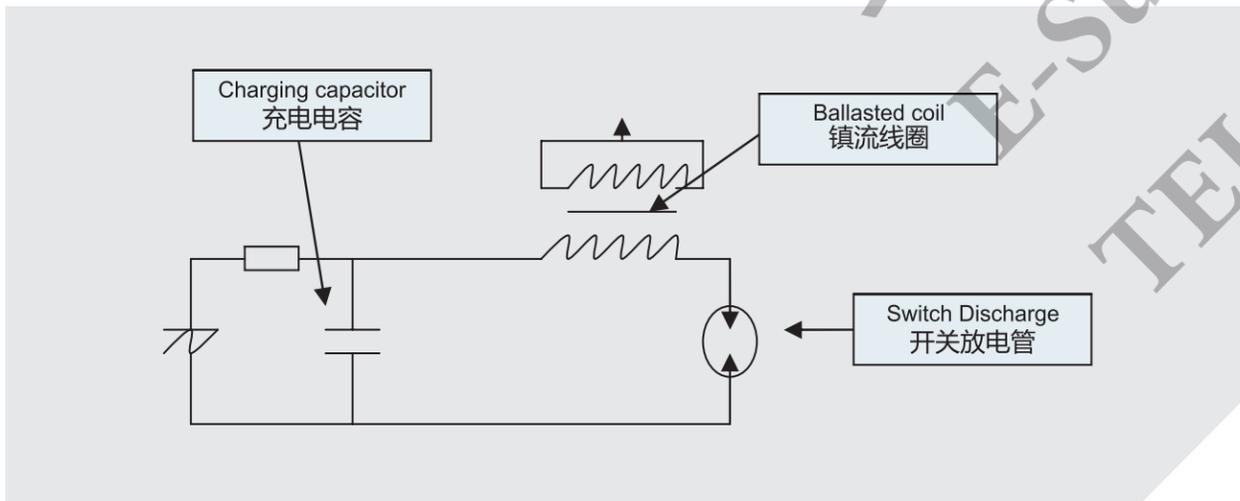


KGH XXX L8

KGW Series Typical Application Description KGW系列典型应用介绍

- >>>> KGW series of high-energy ignition switching spark tubes is specifically designed for the high-energy ignition system, and the use of metal - ceramic seal structure, the working conditions -45°C-120°C, energy up to 40J, switching frequency up to 150K times. According to customer requirements, can provide 500V-5000V high-energy switching spark tubes. Has been widely used in petroleum chemical industry, gas works, coal, chemicals.
- >>>> KGW系列高能点火放电管是专门为高能点火装置而设计的，采用金属—陶瓷封接结构，可在-45°C—120°C工作，能级水平能达到40J，开关次数可达15万次。可根据客户要求，可提供500V-5000V的高能放电管。已经广泛应用于石油化工、天然气工程、煤炭化工。

KGW Typical Circuit KGW典型电路:



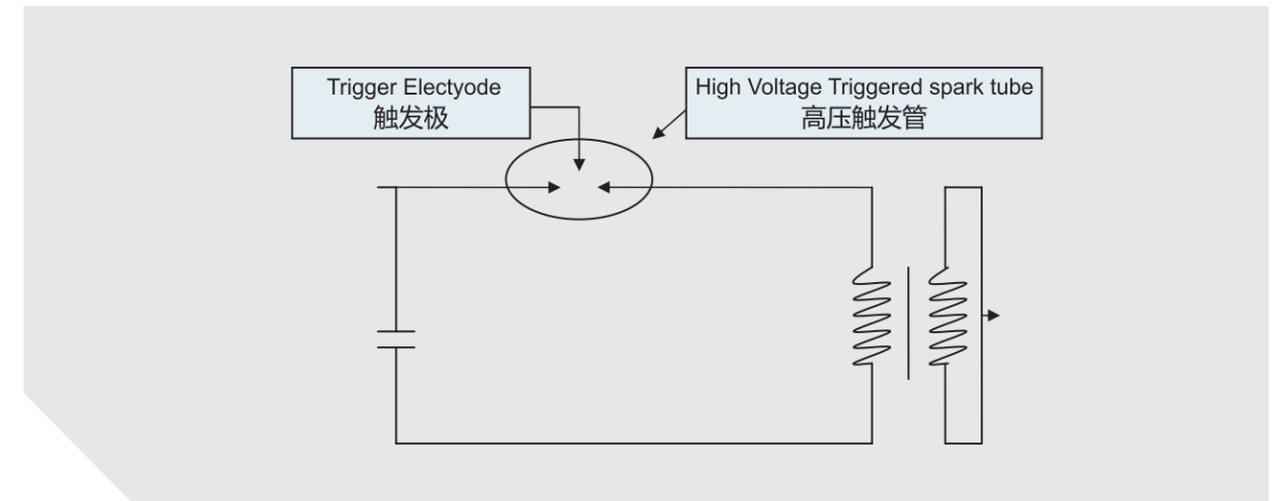
KGT Series Typical Application Description KGT系列典型应用介绍



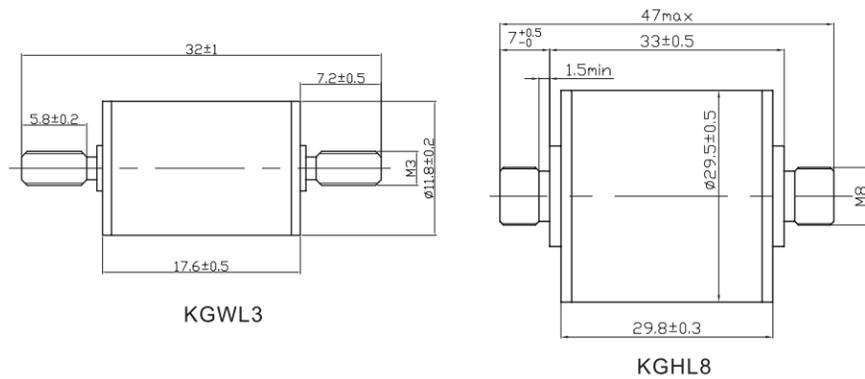
>>>> KGT Series High Voltage Triggered spark tube is the cold cathode gas discharge device, with no heating power supply, there is no warm-up time required, the application owns simple circuit, small and sturdy, easy installation, wide operating temperature and wide voltage range, the advantages of fast pulse rise time, . Apply to trigger low frequency ignition jitter less demanding occasions. Can be used for lasers, high-voltage high-current pulse switch circuit, pry bar protection, medical care extracorporeal shock wave lithotripsy. The main work space add the rated DC voltage or pulse voltage, when the gap is triggered by the trigger voltage increases above the rated voltage of the trigger, trigger gap generated lectron, discharge plasma in the main gap under the action of the electric field generated fan stream, streamer process. When the streamer spread at great speed to the opposite electrode, the formation of the main gap breakdown, the main gap into a conductive state similar to short-circuit. Energy storage devices by triggering the formation of steep pipe discharges the forefront of high-current pulses. After discharge, the main space restored to its original insulating state until the arrival of the second trigger pulse to repeat the above mentioned process.

>>>> KGT系列高压触发放电管触发管是冷阴极气体放电器件，具有不用加热电源、没有预热时间、应用线路简单、体积小且坚固、安装方便、工作温度和电压范围宽、脉冲上升时间快等优点。适用于触发频率低，点火抖动要求不高的场合。可用于激光器、高压大电流脉冲开关电路、撬棒保护、医疗体外震波碎石机。工作时主间隙上加额定的直流电压或脉冲电压，当触发间隙所加的触发电压高于额定的触发电压时，触发间隙产生放电，放电等离子体在主间隙电场的作用下产生繁流、流光过程。当流光以极快的速度传播到对面电极后，形成主间隙的击穿，主间隙变成近似短路的导电状态。储能元件通过触发管放电形成陡前沿的大电流脉冲。放电后，主间隙恢复到原来的绝缘状态，直到第二次触发脉冲到来再重复前述过程。

KGT Typical Circuit KGT典型电路:

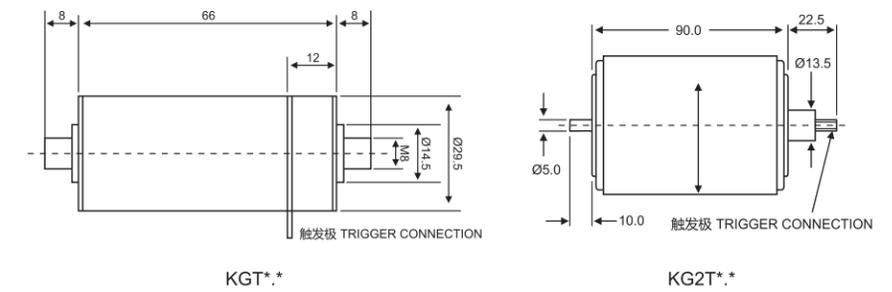
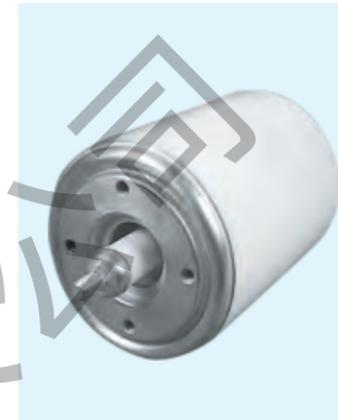


KGW Series KGW 系列



Type 型号	KGW1.2L3	KGW2.0L3	KGW2.5L3	KGW3.0L3	KGW5.0L3	
Ordering code 订货号	KGW12*18-1200	KGW12*18-2000	KGW12*18-2500	KGW12*18-3000	KGW12*18-5000	
	KGH1.2L8	KGH2.0L8	KGH2.5L8	KGH3.0L8	KGH5.0L8	
	KGH30*30-1200L8	KGH30*30-2000L8	KGH30*30-2500L8	KGH30*30-3000L8	KGH30*30-5000L8	
Nom. breakdown voltage ¹⁾ 标称击穿电压 ¹⁾	1200	2000	2500	3000	5000	V
Initial values 初始值						
Max. breakdown voltage after 24 hours in darkness 24小时暗存后最大击穿电压	1400	2300	2850	3400	5600	V
Following breakdown voltage 后续击穿电压	1200...1300	2000...2200	2500...2750	3000...3300	5000...5500	V
Breakdown voltage after life test 寿试后击穿电压值						
Max. breakdown voltage after 24 hours in darkness 24小时暗存后最大击穿电压	1500	2400	2950	3500	5700	V
Following breakdown voltage 后续击穿电压	1150...1400	1950...2300	2450...2850	2950...3400	4950...5600	V
Life test Circuit ²⁾ 寿试电路 ²⁾						
Supply voltage 供给电压 V	1600	2500	3500	4500	6000	V
Resistance 电阻 R	2	2	15	10	10	kΩ
Capcitanace 电容 C	10	10	10	10	10	nF
Indactance 电感 L	0.5	0.5	0.5	0.5	0.5	μH
Weight 重量	20/100	20/100	20/100	20/100	20/100	g
Marking: Red, Positive 印记: 红色, 正向	VACTech 1.2	VACTech 2.0	VACTech 2.5	VACTech 3.0	VACTech 5.0	

KGTT Series KGTT 系列



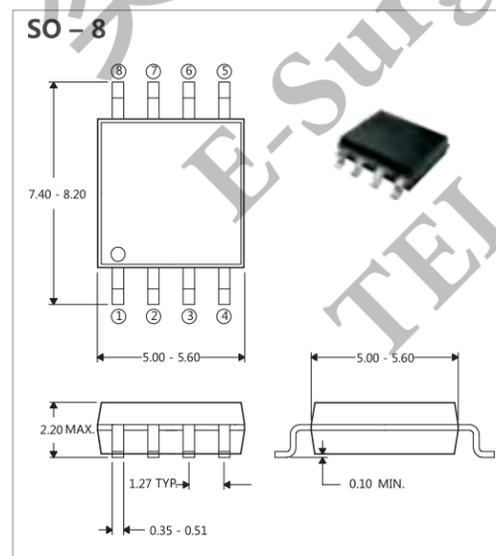
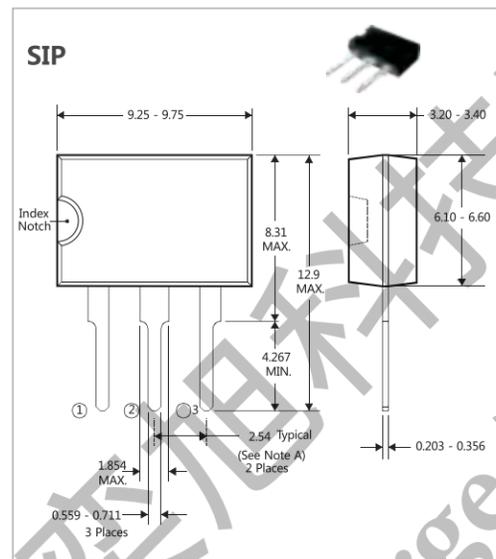
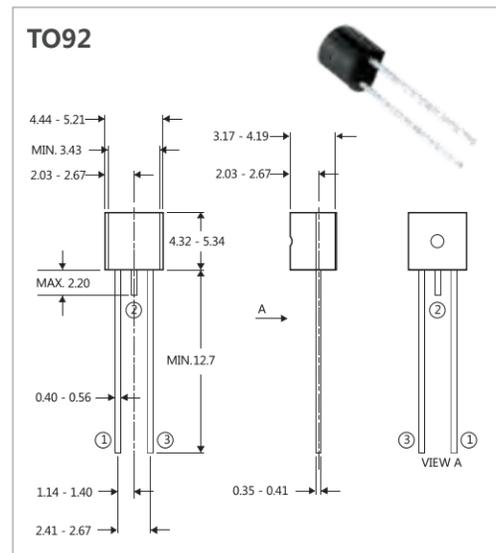
Type 型号	KGTT18.0	KGTT26.0	KGTT35.0	
Ordering code 订货号	KGTT30*66-18000	KGTT30*66-25000	KGTT30*66-35000	
	KGTT18.0	KGTT26.0	KGTT35.0	
	T.B.D	T.B.D	T.B.D	
Min. hold off voltage ¹⁾ 最小自击穿电压 ¹⁾	18	26	35	V
Initial values 初始值				
Min. Trigger Voltage 最小触发电压	9	12	15	kV
Operating Voltage Range 可触发的电压范围	7.2...14.4	10.4...20.8	14...28	kV
Break-down Current 导通电流	400 (2us)	400 (2us)	400 (2us)	A
Breakdown voltage after life test 寿试后击穿电压值				
Min. Trigger Voltage 最小触发电压	11	14	18	kV
Operating Voltage Range 可触发的电压范围	9...12.6	1.3...18.2	17.5...24.5	kV
Weight 重量	185	185	185	g
Marking: Red, Positive 印记: 红色, 正向	VACTech 18.0	VACTech 26.0	VACTech 35.0	

Fixed voltage Tyristor Series
 固定电压半导体放电管系列:

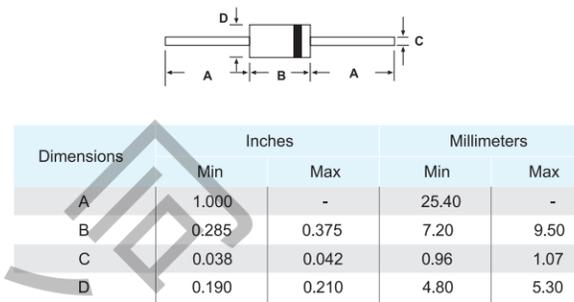
Type	Standoff Voltage VDRM(V)	Protection Voltage V(BO)(V)	VT(V)	IH(A)	C(PF)	Package		
P0080EA/B/C	6	25	5	50	40	TO-92		
P0300EA/B/C	25	40			40			
P0640EA/B/C	58	77			50			
P0720EA/B/C	65	88			50			
P0800EA/B/C	75	98			50			
P1100EA/B/C	90	130			40			
P1300EA/B/C	120	160			40			
P1500EA/B/C	140	180			30			
P1800EA/B/C	160	220			30			
P2300EA/B/C	190	260			30			
P2600EA/B/C	220	300			30			
P3100EA/B/C	275	350			30			
P3500EA/B/C	320	400			30			
P0080SA/B/C	6	25			5		50	DO-214AA (SMB)
P0300SA/B/C	25	40						
P0640SA/B/C	58	77	50					
P0720SA/B/C	65	88	50					
P0800SA/B/C	75	98	50					
P1100SA/B/C	90	100	40					
P1300SA/B/C	120	160	40					
P1500SA/B/C	140	180	30					
P1800SA/B/C	160	220	30					
P2300SA/B/C	290	260	30					
P2600SA/B/C	220	300	30					
P3100SA/B/C	275	350	30					
P3500SA/B/C	320	400	30					
P3010	6	8	5	30		SO8		
P3021	18	28						
P7260	240	280						
P58S	58	72	5	30	DIP3			
P200S	190	240						
P7180	180	220						
P7260	240	280	5	60	DO15			
P23B	190	240						
P31B	190	240						
TPA200	190	220	5	40				

Voltage-programmable Tyristor Series
 可编程电压半导体放电管系列:

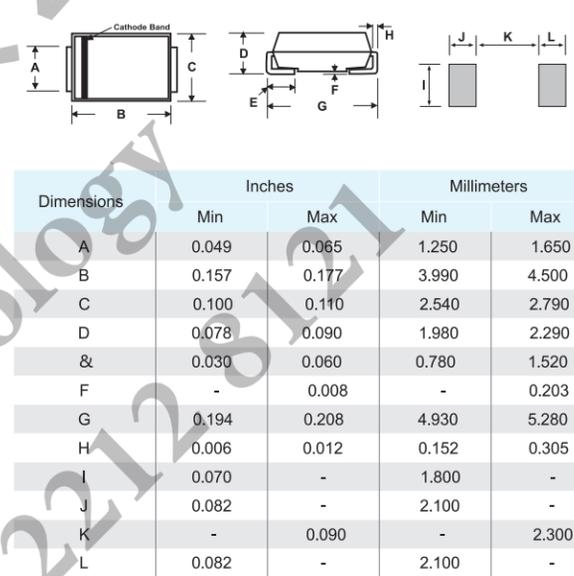
Type	Standoff Voltage VDRM(V)	Protection Voltage V(BO)(V)	VT(V)	IH(A)	C(PF)	Package
P61089	Programmable 20 to 85V		5	150	40	SO8



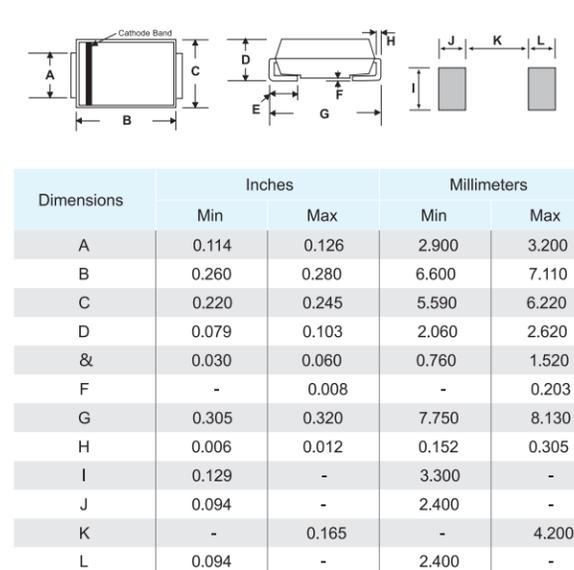
Dimensions DO-201/DO-27



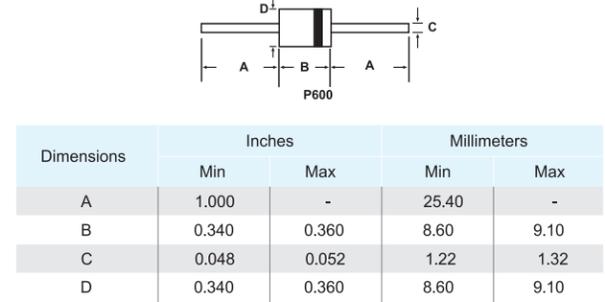
Dimensions DO-214AC (SMA)



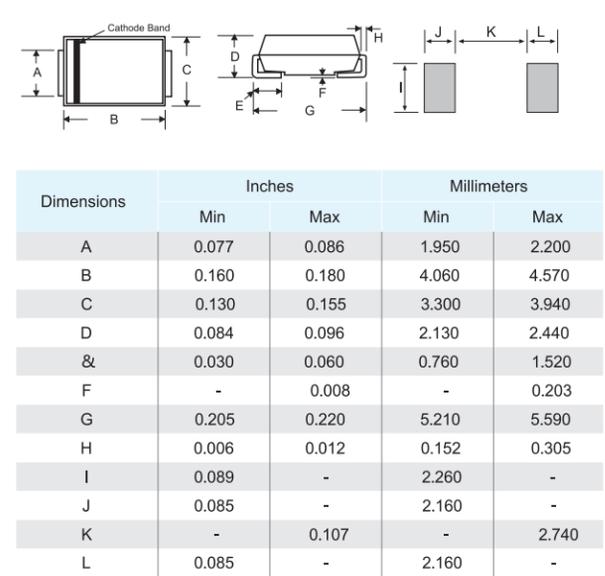
Dimensions DO-214AB (SMC J-Bend)



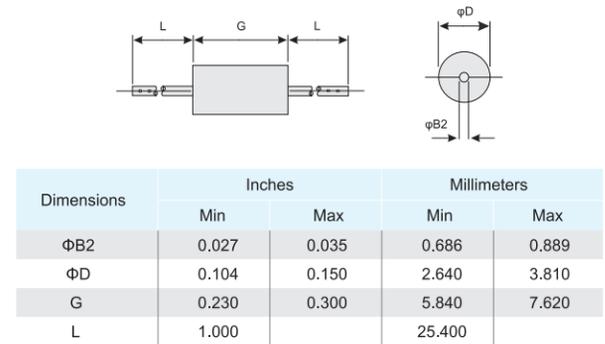
Dimensions P600



Dimensions DO-214AA (SMB J-Bend)



G Package DO-15X Axial Lead



GLASS PASSOVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR
 VOLTAGE - 6.8 to 550 Volts
 600 Watt Peak Power/ 5.0 Watt Steady State



P6KE PART NUMBER		REVERSE STAND-OFF VOLTAGE V _{RWM} (V)	BREAKDOWN VOLTAGE V _{BR} (V) MIN.@I _T	BREAKDOWN VOLTAGE V _{BR} (V) MAX.@I _T	TEST CURRENT I _T (mA)	MAXIMUM CLAMPING VOLTAGE @I _{pp} V _c (V)	PEAK PULSE CURRENT I _{pp} (A)	REVERSE LEAKAGE @V _{RWM} I _R (μA)
UNI-POLAR	BI-POLAR							
P6KE6.8A	P6KE6.8CA	5.80	6.45	7.14	10	10.5	58.1	1000
P6KE7.5A	P6KE7.5CA	6.40	7.13	7.88	10	11.3	54.0	500
P6KE8.2A	P6KE8.2CA	7.02	7.79	8.61	10	12.1	50.4	200
P6KE9.1A	P6KE9.1CA	7.78	8.65	9.55	1	13.4	45.5	50
P6KE10A	P6KE10CA	8.55	9.50	10.50	1	14.5	42.1	10
P6KE11A	P6KE11CA	9.40	10.50	11.60	1	15.6	39.1	5
P6KE12A	P6KE12CA	10.20	11.40	12.60	1	16.7	36.5	5
P6KE13A	P6KE13CA	11.10	12.40	13.70	1	18.2	33.5	5
P6KE15A	P6KE15CA	12.80	14.30	15.80	1	21.2	28.8	5
P6KE16A	P6KE16CA	13.60	15.20	16.80	1	22.5	27.1	5
P6KE18A	P6KE18CA	15.30	17.10	18.90	1	25.2	24.2	5
P6KE20A	P6KE20CA	17.10	19.00	21.00	1	27.7	22.0	5
P6KE22A	P6KE22CA	18.80	20.90	23.10	1	30.6	19.9	5
P6KE24A	P6KE24CA	20.50	22.80	25.20	1	33.2	18.4	5
P6KE27A	P6KE27CA	23.10	25.70	28.40	1	37.5	16.3	5
P6KE30A	P6KE30CA	25.60	28.50	31.50	1	41.4	14.7	5
P6KE33A	P6KE33CA	28.20	31.40	34.70	1	45.7	13.3	5
P6KE36A	P6KE36CA	30.80	34.20	37.80	1	49.9	12.2	5
P6KE39A	P6KE39CA	33.30	37.10	41.00	1	53.9	11.3	5
P6KE43A	P6KE43CA	36.80	40.90	45.20	1	59.3	10.3	5
P6KE47A	P6KE47CA	40.20	44.70	49.40	1	64.8	9.4	5
P6KE51A	P6KE51CA	43.60	48.50	53.60	1	70.1	8.7	5
P6KE56A	P6KE56CA	47.80	53.20	58.80	1	77.0	7.9	5
P6KE62A	P6KE62CA	53.00	58.90	65.10	1	85.0	7.2	5
P6KE68A	P6KE68CA	58.10	64.60	71.40	1	92.0	6.6	5
P6KE75A	P6KE75CA	64.10	71.30	78.80	1	103.0	5.9	5
P6KE82A	P6KE82CA	70.10	77.90	86.10	1	113.0	5.4	5
P6KE91A	P6KE91CA	77.80	86.50	95.50	1	125.0	4.9	5
P6KE100A	P6KE100CA	85.50	95.00	105.00	1	137.0	4.5	5
P6KE110A	P6KE110CA	94.00	105.00	116.00	1	152.0	4.0	5
P6KE120A	P6KE120CA	102.00	114.00	126.00	1	165.0	3.7	5
P6KE130A	P6KE130CA	111.00	124.00	137.00	1	179.0	3.4	5
P6KE150A	P6KE150CA	128.00	143.00	158.00	1	207.0	2.9	5
P6KE160A	P6KE160CA	136.00	152.00	168.00	1	219.0	2.8	5
P6KE170A	P6KE170CA	145.00	162.00	179.00	1	234.0	2.6	5
P6KE180A	P6KE180CA	154.00	171.00	189.00	1	246.0	2.5	5
P6KE200A	P6KE200CA	171.00	190.00	210.00	1	274.0	2.2	5
P6KE220A	P6KE220CA	185.00	209.00	231.00	1	328.0	1.9	5
P6KE250A	P6KE250CA	214.00	237.00	263.00	1	344.0	1.8	5
P6KE300A	P6KE300CA	256.00	285.00	315.00	1	414.0	1.5	5
P6KE350A	P6KE350CA	300.00	332.00	368.00	1	482.0	1.3	5
P6KE400A	P6KE400CA	342.00	380.00	420.00	1	548.0	1.1	5
P6KE440A	P6KE440CA	376.00	418.00	462.00	1	602.0	1.0	5
P6KE480A	P6KE480CA	408.00	456.00	504.00	1	658.0	0.9	5
P6KE510A	P6KE510CA	434.00	485.00	535.00	1	698.0	0.9	5
P6KE530A	P6KE530CA	450.00	503.50	556.50	1	725.0	0.8	5
P6KE540A	P6KE540CA	459.00	513.00	567.00	1	740.0	0.8	5
P6KE550A	P6KE550CA	467.00	522.50	577.50	1	760.0	0.8	5

• For bidirectional type having Vrwm of 10 volts and less, the IR limit is double. • For parts without A, the VBR is + 10%

GLASS PASSOVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR
 VOLTAGE - 6.8 to 550 Volts
 1500 Watt Peak Power/ 6.5 Watt Steady State



1.5KE PART NUMBER		REVERSE STAND-OFF VOLTAGE V _{RWM} (V)	BREAKDOWN VOLTAGE V _{BR} (V) MIN.@I _T	BREAKDOWN VOLTAGE V _{BR} (V) MAX.@I _T	TEST CURRENT I _T (mA)	MAXIMUM CLAMPING VOLTAGE @I _{pp} V _c (V)	PEAK PULSE CURRENT I _{pp} (A)	REVERSE LEAKAGE @V _{RWM} I _R (μA)
UNI-POLAR	BI-POLAR							
1.5KE6.8A	1.5KE6.8CA	5.80	6.45	7.14	10	10.5	144.8	1000
1.5KE7.5A	1.5KE7.5CA	6.40	7.13	7.88	10	11.3	134.5	500
1.5KE8.2A	1.5KE8.2CA	7.02	7.79	8.61	10	12.1	125.6	200
1.5KE9.1A	1.5KE9.1CA	7.78	8.65	9.50	1	13.4	113.4	50
1.5KE10A	1.5KE10CA	8.55	9.50	10.50	1	14.5	104.8	10
1.5KE11A	1.5KE11CA	9.40	10.50	11.60	1	15.6	97.4	5
1.5KE12A	1.5KE12CA	10.20	11.40	12.60	1	16.7	91.0	5
1.5KE13A	1.5KE13CA	11.10	12.40	13.70	1	18.2	83.5	5
1.5KE15A	1.5KE15CA	12.80	14.30	15.80	1	21.2	71.7	5
1.5KE16A	1.5KE16CA	13.60	15.20	16.80	1	22.5	67.6	5
1.5KE18A	1.5KE18CA	15.30	17.10	18.90	1	25.2	60.3	5
1.5KE20A	1.5KE20CA	17.10	19.00	21.00	1	27.7	54.9	5
1.5KE22A	1.5KE22CA	18.80	20.90	23.10	1	30.6	49.7	5
1.5KE24A	1.5KE24CA	20.50	22.80	25.20	1	33.2	45.8	5
1.5KE27A	1.5KE27CA	23.10	25.70	28.40	1	37.5	40.5	5
1.5KE30A	1.5KE30CA	25.60	28.50	31.50	1	41.4	36.7	5
1.5KE33A	1.5KE33CA	28.20	31.40	34.70	1	45.7	33.3	5
1.5KE36A	1.5KE36CA	30.80	34.20	37.80	1	49.9	30.5	5
1.5KE39A	1.5KE39CA	33.30	37.10	41.00	1	53.9	28.2	5
1.5KE43A	1.5KE43CA	36.80	40.90	45.20	1	59.3	25.6	5
1.5KE47A	1.5KE47CA	40.20	44.70	49.40	1	64.8	23.5	5
1.5KE51A	1.5KE51CA	43.60	48.50	53.60	1	70.1	21.7	5
1.5KE56A	1.5KE56CA	47.80	53.20	58.80	1	77.0	19.7	5
1.5KE62A	1.5KE62CA	53.00	58.90	65.10	1	85.0	17.9	5
1.5KE68A	1.5KE68CA	58.10	64.60	71.40	1	92.0	16.5	5
1.5KE75A	1.5KE75CA	64.10	71.30	78.80	1	103.0	14.8	5
1.5KE82A	1.5KE82CA	70.10	77.90	86.10	1	113.0	13.5	5
1.5KE91A	1.5KE91CA	77.80	86.50	95.50	1	125.0	12.2	5
1.5KE100A	1.5KE100CA	85.50	95.00	105.00	1	137.0	11.1	5
1.5KE110A	1.5KE110CA	94.00	105.00	116.00	1	152.0	10.0	5
1.5KE120A	1.5KE120CA	102.00	114.00	126.00	1	165.0	9.2	5
1.5KE130A	1.5KE130CA	111.00	124.00	137.00	1	179.0	8.5	5
1.5KE150A	1.5KE150CA	128.00	143.00	158.00	1	207.0	7.3	5
1.5KE160A	1.5KE160CA	136.00	152.00	168.00	1	219.0	6.9	5
1.5KE170A	1.5KE170CA	145.00	162.00	179.00	1	234.0	6.5	5
1.5KE180A	1.5KE180CA	154.00	171.00	189.00	1	246.0	6.2	5
1.5KE200A	1.5KE200CA	171.00	190.00	210.00	1	274.0	5.5	5
1.5KE220A	1.5KE220CA	185.00	209.00	231.00	1	328.0	4.6	5
1.5KE250A	1.5KE250CA	214.00	237.00	263.00	1	344.0	4.4	5
1.5KE300A	1.5KE300CA	256.00	285.00	315.00	1	414.0	3.7	5
1.5KE350A	1.5KE350CA	300.00	332.00	368.00	1	482.0	3.2	5
1.5KE400A	1.5KE400CA	342.00	380.00	420.00	1	548.0	2.8	5
1.5KE440A	1.5KE440CA	376.00	418.00	462.00	1	602.0	2.5	5
1.5KE480A	1.5KE480CA	408.00	456.00	504.00	1	658.0	2.3	5
1.5KE510A	1.5KE510CA	434.00	485.00	535.00	1	698.0	2.1	5
1.5KE530A	1.5KE530CA	450.00	503.50	556.50	1	725.0	2.1	5
1.5KE540A	1.5KE540CA	459.00	513.00	567.00	1	740.0	2.0	5
1.5KE550A	1.5KE550CA	467.00	522.50	577.50	1	760.0	2.0	5

• For bidirectional type having Vrwm of 10 volts and less, the IR limit is double. • For parts without A, the VBR is + 10%

GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR

VOLTAGE . 5.0 TO 180 Volts

3000Watts Peak Pulse Power

3KP PART NUMBER		REVERSE STAND-OFF VOLTAGE V_{RWM}	BREAKDOWN VOLTAGE $V_{BR}(V)$ MIN. @ I_T	BREAKDOWN VOLTAGE $V_{BR}(V)$ MAX. @ I_T	TEST CURRENT I_T (mA)	MAXIMUM CLAMPING VOLTAGE @ I_{pp} $V_c(V)$	PEAK PULSE CURRENT I_{pp} (A)	REVERSE LEAKAGE @ V_{RWM} $I_R(\mu A)$
UNI-POLAR	BI-POLAR							
3KP5.0A	3KP5.0CA	5.0	6.40	7.00	50	9.2	326.1	5000
3KP6.0A	3KP6.0CA	6.0	6.67	7.37	50	10.3	291.3	5000
3KP6.5A	3KP6.5CA	6.5	7.22	7.98	50	11.2	267.9	2000
3KP7.0A	3KP7.0CA	7.0	7.78	8.60	50	12.0	250.0	1000
3KP7.5A	3KP7.5CA	7.5	8.33	9.21	5	12.9	232.6	250
3KP8.0A	3KP8.0CA	8.0	8.89	9.83	5	13.6	220.6	150
3KP8.5A	3KP8.5CA	8.5	9.44	10.40	5	14.4	208.3	50
3KP9.0A	3KP9.0CA	9.0	10.00	11.10	5	15.4	194.8	20
3KP10A	3KP10CA	10.0	11.10	12.30	5	17.0	176.5	15
3KP11A	3KP11CA	11.0	12.20	13.50	5	18.2	164.8	10
3KP12A	3KP12CA	12.0	13.30	14.70	5	19.9	150.8	10
3KP13A	3KP13CA	13.0	14.40	15.90	5	21.5	139.5	10
3KP14A	3KP14CA	14.0	15.60	17.20	5	23.2	129.3	10
3KP15A	3KP15CA	15.0	16.70	18.50	5	24.4	123.0	10
3KP16A	3KP16CA	16.0	17.80	19.70	5	26.0	115.4	10
3KP17A	3KP17CA	17.0	18.90	20.90	5	27.6	108.7	10
3KP18A	3KP18CA	18.0	20.00	22.10	5	29.2	102.7	10
3KP20A	3KP20CA	20.0	22.20	24.50	5	32.4	92.6	10
3KP22A	3KP22CA	22.0	24.40	26.90	5	35.5	84.5	10
3KP24A	3KP24CA	24.0	26.70	29.50	5	38.9	77.1	10
3KP26A	3KP26CA	26.0	28.90	31.90	5	42.1	71.3	10
3KP28A	3KP28CA	28.0	31.10	34.40	5	45.4	66.1	10
3KP30A	3KP30CA	30.0	33.30	36.80	5	48.4	62.0	10
3KP33A	3KP33CA	33.0	36.70	40.60	5	53.3	56.3	10
3KP36A	3KP36CA	36.0	40.00	44.20	5	58.1	51.6	10
3KP40A	3KP40CA	40.0	44.40	49.10	5	64.5	46.5	10
3KP43A	3KP43CA	43.0	47.80	52.80	5	69.4	43.2	10
3KP45A	3KP45CA	45.0	50.00	55.30	5	72.7	41.3	10
3KP48A	3KP48CA	48.0	53.30	58.90	5	77.4	38.8	10
3KP51A	3KP51CA	51.0	56.70	62.70	5	82.4	36.4	10
3KP54A	3KP54CA	54.0	60.00	66.30	5	87.1	34.4	10
3KP58A	3KP58CA	58.0	64.40	71.20	5	93.6	32.1	10
3KP60A	3KP60CA	60.0	66.70	73.70	5	96.8	31.0	10
3KP64A	3KP64CA	64.0	71.10	78.60	5	103.0	29.1	10
3KP70A	3KP70CA	70.0	77.80	86.00	5	113.0	26.5	10
3KP75A	3KP75CA	75.0	83.30	92.10	5	121.0	24.8	10
3KP78A	3KP78CA	78.0	86.70	95.80	5	126.0	23.8	10
3KP85A	3KP85CA	85.0	94.40	104.00	5	137.0	21.9	10
3KP90A	3KP90CA	90.0	100.00	111.00	5	146.0	20.5	10
3KP100A	3KP100CA	100.0	111.00	123.00	5	162.0	18.5	10
3KP110A	3KP110CA	110.0	122.00	135.00	5	177.0	16.9	10
3KP120A	3KP120CA	120.0	133.00	147.00	5	193.0	15.5	10
3KP130A	3KP130CA	130.0	144.00	159.00	5	209.0	14.4	10
3KP150A	3KP150CA	150.0	167.00	185.00	5	243.0	12.3	10
3KP160A	3KP160CA	160.0	178.00	197.00	5	259.0	11.6	10
3KP170A	3KP170CA	170.0	189.00	209.00	5	275.0	10.9	10
3KP180A	3KP180CA	180.0	200.00	233.00	5	289.0	10.4	10

• For bidirectional type having V_{RWM} of 10 volts and less, the IR limit is double. • For parts without A, the VBR is + 10%

GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR

STAND-OFF VOLTAGE - 5.0 TO 220 Volts

5000 Watt Peak Pulse Power

5KP PART NUMBER		REVERSE STAND-OFF VOLTAGE $V_{RWM}(V)$	BREAKDOWN VOLTAGE $V_{BR}(V)$ MIN. @ I_T	BREAKDOWN VOLTAGE $V_{BR}(V)$ MAX. @ I_T	TEST CURRENT I_T (mA)	MAXIMUM CLAMPING VOLTAGE @ I_{pp} $V_c(V)$	PEAK PULSE CURRENT I_{pp} (A)	REVERSE LEAKAGE @ V_{RWM} $I_R(\mu A)$
UNI-POLAR	BI-POLAR							
5KP5.0A	5KP5.0CA	5.0	6.40	7.00	50	9.2	544.0	5000
5KP6.0A	5KP6.0CA	6.0	6.67	7.37	50	10.3	486.0	5000
5KP6.5A	5KP6.5CA	6.5	7.22	7.98	50	11.2	447.0	2000
5KP7.0A	5KP7.0CA	7.0	7.78	8.60	50	12.0	417.0	1000
5KP7.5A	5KP7.5CA	7.5	8.33	9.21	5	12.9	388.0	250
5KP8.0A	5KP8.0CA	8.0	8.89	9.83	5	13.6	368.0	150
5KP8.5A	5KP8.5CA	8.5	9.44	10.40	5	14.4	348.0	50
5KP9.0A	5KP9.0CA	9.0	10.00	11.10	5	15.4	325.0	20
5KP10A	5KP10CA	10.0	11.10	12.30	5	17.0	295.0	15
5KP11A	5KP11CA	11.0	12.20	13.50	5	18.2	275.0	10
5KP12A	5KP12CA	12.0	13.30	14.70	5	19.9	252.0	10
5KP13A	5KP13CA	13.0	14.40	15.90	5	21.5	233.0	10
5KP14A	5KP14CA	14.0	15.60	17.20	5	23.2	216.0	10
5KP15A	5KP15CA	15.0	16.70	18.50	5	24.4	205.0	10
5KP16A	5KP16CA	16.0	17.80	19.70	5	26.0	193.0	10
5KP17A	5KP17CA	17.0	18.90	20.90	5	27.6	181.0	10
5KP18A	5KP18CA	18.0	20.00	22.10	5	29.2	172.0	10
5KP20A	5KP20CA	20.0	22.20	24.50	5	32.4	154.0	10
5KP22A	5KP22CA	22.0	24.00	26.90	5	35.5	141.0	10
5KP24A	5KP24CA	24.0	26.70	29.50	5	38.9	129.0	10
5KP26A	5KP26CA	26.0	28.90	31.90	5	42.1	119.0	10
5KP28A	5KP28CA	28.0	31.10	34.40	5	45.4	110.0	10
5KP30A	5KP30CA	30.0	33.30	36.80	5	48.4	103.0	10
5KP33A	5KP33CA	33.0	36.70	40.60	5	53.3	93.9	10
5KP36A	5KP36CA	36.0	40.00	44.20	5	58.1	86.1	10
5KP40A	5KP40CA	40.0	44.40	49.10	5	64.5	77.6	10
5KP43A	5KP43CA	43.0	47.80	52.80	5	69.4	72.1	10
5KP45A	5KP45CA	45.0	50.00	55.30	5	72.7	68.8	10
5KP48A	5KP48CA	48.0	53.30	58.90	5	77.4	64.7	10
5KP51A	5KP51CA	51.0	56.70	62.70	5	82.4	60.7	10
5KP54A	5KP54CA	54.0	60.00	66.30	5	87.1	57.5	10
5KP58A	5KP58CA	58.0	64.40	71.20	5	93.6	53.5	10
5KP60A	5KP60CA	60.0	66.70	73.70	5	96.8	51.7	10
5KP64A	5KP64CA	64.0	71.10	78.60	5	103.0	48.6	10
5KP70A	5KP70CA	70.0	77.80	86.00	5	113.0	44.3	10
5KP75A	5KP75CA	75.0	83.30	92.10	5	121.0	41.4	10
5KP78A	5KP78CA	78.0	86.70	95.80	5	126.0	39.7	10
5KP85A	5KP85CA	85.0	94.40	104.00	5	137.0	36.5	10
5KP90A	5KP90CA	90.0	100.00	111.00	5	146.0	34.3	10
5KP100A	5KP100CA	100.0	110.00	123.00	5	162.0	30.9	10
5KP110A	5KP110CA	110.0	122.00	135.00	5	177.0	28.3	10
5KP120A	5KP120CA	120.0	133.00	147.00	5	193.0	26.0	10
5KP130A	5KP130CA	130.0	144.00	159.00	5	209.0	24.0	10
5KP150A	5KP150CA	150.0	167.00	185.00	5	243.0	20.6	10
5KP160A	5KP160CA	160.0	178.00	197.00	5	259.0	19.3	10
5KP170A	5KP170CA	170.0	189.00	209.00	5	275.0	18.2	10
5KP180A	5KP180CA	180.0	200.00	221.00	5	292.0	17.6	10
5KP190A	5KP190CA	190.0	211.00	233.00	5	310.0	9.7	10
5KP200A	5KP200CA	200.0	222.00	246.00	5	329.2	9.1	10
5KP210A	5KP210CA	210.0	233.00	258.00	5	349.5	8.6	10
5KP220A	5KP220CA	220.0	244.00	270.00	5	371.1	8.1	10

• For bidirectional type having V_{RWM} of 10 volts and less, the IR limit is double. • For parts without A, the VBR is + 10%

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

STAND-OFF VOLTAGE . 5.0 TO 440 Volts

400 Watt Peak Pulse Power



SMAJ PART NUMBER		DEVICE MARKING CODE		REVERSE STAND-OFF VOLTAGE V _{RWM} (V)	BREAKDOWN VOLTAGE V _{BR} (V) MIN.@I _T	BREAKDOWN VOLTAGE V _{BR} (V) MAX.@I _T	TEST CURRENT I _T (mA)	MAXIMUM CLAMPING VOLTAGE @I _{pp} V _c (V)	PEAK PULSE CURRENT I _{pp} (A)	REVERSE LEAKAGE @ V _{RWM} I _R (uA)
UNI-POLAR	BI-POLAR	UNI	BI							
SMAJ5.0A	SMAJ5.0CA	AE	WE	5.0	6.40	7.00	10	9.2	43.5	800
SMAJ6.0A	SMAJ6.0CA	AG	WG	6.0	6.67	7.37	10	10.3	38.8	800
SMAJ6.5A	SMAJ6.5CA	AK	WK	6.5	7.22	7.98	10	11.2	35.7	500
SMAJ7.0A	SMAJ7.0CA	AM	WM	7.0	7.78	8.60	10	12.0	33.3	200
SMAJ7.5A	SMAJ7.5CA	AP	WP	7.5	8.33	9.21	1	12.9	31.0	100
SMAJ8.0A	SMAJ8.0CA	AR	WR	8.0	8.89	9.83	1	13.6	29.4	50
SMAJ8.5A	SMAJ8.5CA	AT	WT	8.5	9.44	10.40	1	14.4	27.8	20
SMAJ9.0A	SMAJ9.0CA	AV	WV	9.0	10.00	11.10	1	15.4	26.0	10
SMAJ10A	SMAJ10CA	AX	WX	10.0	11.10	12.30	1	17.0	23.5	5
SMAJ11A	SMAJ11CA	AZ	WZ	11.0	12.20	13.50	1	18.2	22.0	5
SMAJ12A	SMAJ12CA	BE	XE	12.0	13.30	14.70	1	19.9	20.1	5
SMAJ13A	SMAJ13CA	BG	XG	13.0	14.40	15.90	1	21.5	18.6	5
SMAJ14A	SMAJ14CA	BK	XK	14.0	15.60	17.20	1	23.2	17.2	5
SMAJ15A	SMAJ15CA	BM	XM	15.0	16.70	18.50	1	24.4	16.4	5
SMAJ16A	SMAJ16CA	BP	XP	16.0	17.80	19.70	1	26.0	15.4	5
SMAJ17A	SMAJ17CA	BR	XR	17.0	18.90	20.90	1	27.6	14.5	5
SMAJ18A	SMAJ18CA	BT	XT	18.0	20.00	22.10	1	29.2	13.7	5
SMAJ20A	SMAJ20CA	BV	XV	20.0	22.20	24.50	1	32.4	12.3	5
SMAJ22A	SMAJ22CA	BX	XY	22.0	24.40	26.90	1	35.5	11.3	5
SMAJ24A	SMAJ24CA	BZ	XZ	24.0	26.70	29.50	1	38.9	10.3	5
SMAJ26A	SMAJ26CA	CE	YE	26.0	28.90	31.90	1	42.1	9.5	5
SMAJ28A	SMAJ28CA	CG	YG	28.0	31.10	34.40	1	45.4	8.8	5
SMAJ30A	SMAJ30CA	CK	YK	30.0	33.30	36.80	1	48.4	8.3	5
SMAJ33A	SMAJ33CA	CM	YM	33.0	36.70	40.60	1	53.3	7.5	5
SMAJ36A	SMAJ36CA	CP	YP	36.0	40.00	44.20	1	58.1	6.9	5
SMAJ40A	SMAJ40CA	CR	YR	40.0	44.40	49.10	1	64.5	6.2	5
SMAJ43A	SMAJ43CA	CT	YT	43.0	47.80	52.80	1	69.4	5.8	5
SMAJ45A	SMAJ45CA	CV	YV	45.0	50.00	55.30	1	72.7	5.5	5
SMAJ48A	SMAJ48CA	CX	YX	48.0	53.30	58.90	1	77.4	5.2	5
SMAJ51A	SMAJ51CA	CZ	YZ	51.0	56.70	62.70	1	82.4	4.9	5
SMAJ54A	SMAJ54CA	RE	ZE	54.0	60.00	66.30	1	87.1	4.6	5
SMAJ58A	SMAJ58CA	RG	ZG	58.0	64.40	71.20	1	93.6	4.3	5
SMAJ60A	SMAJ60CA	RK	ZK	60.0	66.70	73.70	1	96.8	4.1	5
SMAJ64A	SMAJ64CA	RM	ZM	64.0	71.10	78.60	1	103.0	3.9	5
SMAJ70A	SMAJ70CA	RP	ZP	70.0	77.80	86.00	1	113.0	3.5	5
SMAJ75A	SMAJ75CA	RR	ZR	75.0	83.30	92.10	1	121.0	3.3	5
SMAJ78A	SMAJ78CA	RT	ZT	78.0	86.70	95.80	1	126.0	3.2	5
SMAJ85A	SMAJ85CA	RV	ZV	85.0	94.40	104.00	1	137.0	2.9	5
SMAJ90A	SMAJ90CA	RX	ZX	90.0	100.00	111.00	1	146.0	2.7	5
SMAJ100A	SMAJ100CA	RZ	ZZ	100.0	111.00	123.00	1	162.0	2.5	5
SMAJ110A	SMAJ110CA	SE	VE	110.0	122.00	135.00	1	177.0	2.3	5
SMAJ120A	SMAJ120CA	SG	VG	120.0	133.00	147.00	1	193.0	2.1	5
SMAJ130A	SMAJ130CA	SK	VK	130.0	144.00	159.00	1	209.0	1.9	5
SMAJ150A	SMAJ150CA	SM	VM	150.0	167.00	185.00	1	243.0	1.6	5
SMAJ160A	SMAJ160CA	SP	VP	160.0	178.00	197.00	1	259.0	1.5	5
SMAJ170A	SMAJ170CA	SR	VR	170.0	189.00	209.00	1	275.0	1.5	5
SMAJ180A	SMAJ180CA	ST	VT	180.0	201.00	222.00	1	292.0	1.4	5
SMAJ200A	SMAJ200CA	SV	VV	200.0	224.00	247.00	1	324.0	1.2	5
SMAJ220A	SMAJ220CA	SX	VX	220.0	246.00	272.00	1	356.0	1.1	5
SMAJ250A	SMAJ250CA	SZ	VZ	250.0	279.00	309.00	1	405.0	1.0	5
SMAJ300A	SMAJ300CA	TE	UE	300.0	335.00	371.00	1	486.0	0.8	5
SMAJ350A	SMAJ350CA	TG	UG	350.0	391.00	432.00	1	567.0	0.7	5
SMAJ400A	SMAJ400CA	TK	UK	400.0	447.00	494.00	1	648.0	0.6	5
SMAJ440A	SMAJ440CA	TM	UM	440.0	492.00	543.00	1	713.0	0.6	5

• For bidirectional type having Vrwm of 10 volts and less, the IR limit is double. • For parts without A, the VBR is + 10%

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

STAND-OFF VOLTAGE - 5.0 TO 170 Volts

600 Watt Peak Pulse Power



SMBJ PART NUMBER		DEVICE MARKING CODE		REVERSE STAND-OFF VOLTAGE V _{RWM} (V)	BREAKDOWN VOLTAGE V _{BR} (V) MIN.@I _T	BREAKDOWN VOLTAGE V _{BR} (V) MAX.@I _T	TEST CURRENT I _T (mA)	MAXIMUM CLAMPING VOLTAGE @I _{pp} V _c (V)	PEAK PULSE CURRENT I _{pp} (A)	REVERSE LEAKAGE @ V _{RWM} I _R (uA)
UNI-POLAR	BI-POLAR	UNI	BI							
SMBJ5.0A	SMBJ5.0CA	KE	AE	5.0	6.40	7.00	10	9.2	65.3	800
SMBJ6.0A	SMBJ6.0CA	KG	AG	6.0	6.67	7.37	10	10.3	58.3	800
SMBJ6.5A	SMBJ6.5CA	KK	AK	6.5	7.22	7.98	10	11.2	53.6	500
SMBJ7.0A	SMBJ7.0CA	KM	AM	7.0	7.78	8.60	10	12.0	50.0	200
SMBJ7.5A	SMBJ7.5CA	KP	AP	7.5	8.33	9.21	1	12.9	46.6	100
SMBJ8.0A	SMBJ8.0CA	KR	AR	8.0	8.89	9.83	1	13.6	44.2	50
SMBJ8.5A	SMBJ8.5CA	KT	AT	8.5	9.44	10.40	1	14.4	41.7	20
SMBJ9.0A	SMBJ9.0CA	KV	AV	9.0	10.00	11.10	1	15.4	39.0	10
SMBJ10A	SMBJ10CA	KX	AX	10.0	11.10	12.30	1	17.0	35.3	5
SMBJ11A	SMBJ11CA	KZ	AZ	11.0	12.20	13.50	1	18.2	33.0	5
SMBJ12A	SMBJ12CA	LE	BE	12.0	13.30	14.70	1	19.9	30.2	5
SMBJ13A	SMBJ13CA	LG	BG	13.0	14.40	15.90	1	21.5	28.0	5
SMBJ14A	SMBJ14CA	LK	BK	14.0	15.60	17.20	1	23.2	25.9	5
SMBJ15A	SMBJ15CA	LM	BM	15.0	16.70	18.50	1	24.4	24.6	5
SMBJ16A	SMBJ16CA	LP	BP	16.0	17.80	19.70	1	26.0	23.1	5
SMBJ17A	SMBJ17CA	LR	BR	17.0	18.90	20.90	1	27.6	21.8	5
SMBJ18A	SMBJ18CA	LT	BT	18.0	20.00	22.10	1	29.2	20.6	5
SMBJ20A	SMBJ20CA	LV	BV	20.0	22.20	24.50	1	32.4	18.6	5
SMBJ22A	SMBJ22CA	LX	BX	22.0	24.40	26.90	1	35.5	16.9	5
SMBJ24A	SMBJ24CA	LZ	BZ	24.0	26.70	29.50	1	38.9	15.5	5
SMBJ26A	SMBJ26CA	ME	CE	26.0	28.90	31.90	1	42.1	14.3	5
SMBJ28A	SMBJ28CA	MG	CG	28.0	31.10	34.40	1	45.4	13.3	5
SMBJ30A	SMBJ30CA	MK	CK	30.0	33.30	36.80	1	48.4	12.4	5
SMBJ33A	SMBJ33CA	MM	CM	33.0	36.70	40.60	1	53.3	11.3	5
SMBJ36A	SMBJ36CA	MP	CP	36.0	40.00	44.20	1	58.1	10.4	5
SMBJ40A	SMBJ40CA	MR	CR	40.0	44.40	49.10	1	64.5	9.3	5
SMBJ43A	SMBJ43CA	MT	CT	43.0	47.80	52.80	1	69.4	8.7	5
SMBJ45A	SMBJ45CA	MV	CV	45.0	50.00	55.30	1	72.7	8.3	5
SMBJ48A	SMBJ48CA	MX	CX	48.0	53.30	58.90	1	77.4	7.8	5
SMBJ51A	SMBJ51CA	MZ	CZ	51.0	56.70	62.70	1	82.4	7.3	5
SMBJ54A	SMBJ54CA	NE	DE	54.0	60.00	66.30	1	87.1	6.9	5
SMBJ58A	SMBJ58CA	NG	DG	58.0	64.40	71.20	1	93.6	6.5	5
SMBJ60A	SMBJ60CA	NK	DK	60.0	66.70	73.70	1	96.8	6.2	5
SMBJ64A	SMBJ64CA	NM	DM	64.0	71.10	78.60	1	103.0	5.9	5
SMBJ70A	SMBJ70CA	NP	DP	70.0	77.80	86.00	1	113.0	5.3	5
SMBJ75A	SMBJ75CA	NR	DR	75.0	83.30	92.10	1	121.0	5.0	5
SMBJ78A	SMBJ78CA	NT	DT	78.0	86.70	95.80	1	126.0	4.8	5
SMBJ85A	SMBJ85CA	NV	DV	85.0	94.40	104.00	1	137.0	4.4	5
SMBJ90A	SMBJ90CA	NX	DX	90.0	100.00	111.00	1	146.0	4.1	5
SMBJ100A	SMBJ100CA	NZ	DZ	100.0	111.00	123.00	1	162.0	3.7	5
SMBJ110A	SMBJ110CA	PE	EE	110.0	122.00	135.00	1	177.0	3.4	5
SMBJ120A	SMBJ120CA	PG	EG	120.0	133.00	147.00	1	193.0	3.1	5
SMBJ130A	SMBJ130CA	PK	EK	130.0	144.00	159.00	1	209.0	2.9	5
SMBJ150A	SMBJ150CA	PM	EM	150.0	167.00	185.00	1	243.0	2.5	5
SMBJ160A	SMBJ160CA	PP	EP	160.0	178.00	197.00	1	259.0	2.3	5
SMBJ170A	SMBJ170CA	PR	ER	170.0	189.00	209.00	1	275.0	2.2	5

• For bidirectional type having Vrwm of 10 volts and less, the IR limit is double. • For parts without A, the VBR is + 10%



SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR
STAND-OFF VOLTAGE - 5.0 TO 440 Volts
1500 Watt Peak Pulse Power

SMCJ PART NUMBER		DEVICE MARKING CODE		REVERSE STAND-OFF VOLTAGE V _{RWM} (V)	BREAKDOWN VOLTAGE V _{BR} (V) MIN.@I _T	BREAKDOWN VOLTAGE V _{BR} (V) MAX.@I _T	TEST CURRENT I _T (mA)	MAXIMUM CLAMPING VOLTAGE @I _{pp} Vc(V)	PEAK PULSE CURRENT I _{pp} (A)	REVERSE LEAKAGE @V _{RWM} I _R (uA)
UNI- POLAR	BI-POLAR	UNI	BI							
SMCJ5.0A	SMCJ5.0CA	GDE	BDE	5.0	6.40	7.00	10	9.2	163.0	800
SMCJ6.0A	SMCJ6.0CA	GDG	BDG	6.0	6.67	7.37	10	10.3	145.7	800
SMCJ6.5A	SMCJ6.5CA	GDK	BDK	6.5	7.22	7.98	10	11.2	134.0	500
SMCJ7.0A	SMCJ7.0CA	GDM	BDM	7.0	7.78	8.60	10	12.0	125.0	200
SMCJ7.5A	SMCJ7.5CA	GDP	BDP	7.5	8.33	9.21	1	12.9	116.3	100
SMCJ8.0A	SMCJ8.0CA	GDR	BDR	8.0	8.89	9.83	1	13.6	110.3	50
SMCJ8.5A	SMCJ8.5CA	GDT	BDT	8.5	9.44	10.40	1	14.4	104.2	20
SMCJ9.0A	SMCJ9.0CA	GDV	BDV	9.0	10.00	11.10	1	15.4	97.4	10
SMCJ10A	SMCJ10CA	GDX	BDX	10.0	11.10	12.30	1	17.0	88.3	5
SMCJ11A	SMCJ11CA	GDZ	BDZ	11.0	12.20	13.50	1	18.2	82.5	5
SMCJ12A	SMCJ12CA	GEE	BEE	12.0	13.30	14.70	1	19.9	75.4	5
SMCJ13A	SMCJ13CA	GEG	BEG	13.0	14.40	15.90	1	21.5	69.8	5
SMCJ14A	SMCJ14CA	GEK	BEK	14.0	15.60	17.20	1	23.2	64.7	5
SMCJ15A	SMCJ15CA	GEM	BEM	15.0	16.70	18.50	1	24.4	61.5	5
SMCJ16A	SMCJ16CA	GEP	BEP	16.0	17.80	19.70	1	26.0	57.7	5
SMCJ17A	SMCJ17CA	GER	BER	17.0	18.90	20.90	1	27.6	54.4	5
SMCJ18A	SMCJ18CA	GET	BET	18.0	20.00	22.10	1	29.2	51.4	5
SMCJ20A	SMCJ20CA	GEV	BEV	20.0	22.20	24.50	1	32.4	46.3	5
SMCJ22A	SMCJ22CA	GEX	BEX	22.0	24.40	26.90	1	35.5	42.3	5
SMCJ24A	SMCJ24CA	GEZ	BEZ	24.0	26.70	29.50	1	38.9	38.6	5
SMCJ26A	SMCJ26CA	GFE	BFE	26.0	28.90	31.90	1	42.1	35.7	5
SMCJ28A	SMCJ28CA	GFG	BFG	28.0	31.10	34.40	1	45.4	33.1	5
SMCJ30A	SMCJ30CA	GFK	BFK	30.0	33.30	36.80	1	48.4	31.0	5
SMCJ33A	SMCJ33CA	GFM	BFM	33.0	36.70	40.60	1	53.3	28.2	5
SMCJ36A	SMCJ36CA	GFP	BFP	36.0	40.00	44.20	1	58.1	25.9	5
SMCJ40A	SMCJ40CA	GFR	BFR	40.0	44.40	49.10	1	64.5	23.3	5
SMCJ43A	SMCJ43CA	GFT	BFT	43.0	47.80	52.80	1	69.4	21.7	5
SMCJ45A	SMCJ45CA	GFV	BFV	45.0	50.00	55.30	1	72.7	20.6	5
SMCJ48A	SMCJ48CA	GFX	BFX	48.0	53.30	58.90	1	77.4	19.4	5
SMCJ51A	SMCJ51CA	GFZ	BFZ	51.0	56.70	62.70	1	82.4	18.2	5
SMCJ54A	SMCJ54CA	GGE	BGE	54.0	60.00	66.30	1	87.1	17.3	5
SMCJ58A	SMCJ58CA	GGG	BGG	58.0	64.40	71.20	1	93.6	16.1	5
SMCJ60A	SMCJ60CA	GGK	BGK	60.0	66.70	73.70	1	96.8	15.5	5
SMCJ64A	SMCJ64CA	GGM	BGM	64.0	71.10	78.60	1	103.0	14.6	5
SMCJ70A	SMCJ70CA	GGP	BGP	70.0	77.80	86.00	1	113.0	13.3	5
SMCJ75A	SMCJ75CA	GGR	BGR	75.0	83.30	92.10	1	121.0	12.4	5
SMCJ78A	SMCJ78CA	GGT	BGT	78.0	86.70	95.80	1	126.0	11.9	5
SMCJ85A	SMCJ85CA	GGV	BGV	85.0	94.40	104.00	1	137.0	11.0	5
SMCJ90A	SMCJ90CA	GGX	BGX	90.0	100.00	111.00	1	146.0	10.3	5
SMCJ100A	SMCJ100CA	GGZ	BGZ	100.0	111.00	123.00	1	162.0	9.3	5
SMCJ110A	SMCJ110CA	GHE	BHE	110.0	122.00	135.00	1	177.0	8.5	5
SMCJ120A	SMCJ120CA	GHG	BHG	120.0	133.00	147.00	1	193.0	7.8	5
SMCJ130A	SMCJ130CA	GHK	BHK	130.0	144.00	159.00	1	209.0	7.2	5
SMCJ150A	SMCJ150CA	GHM	BHM	150.0	167.00	185.00	1	243.0	6.2	5
SMCJ160A	SMCJ160CA	GHP	BHP	160.0	178.00	197.00	1	259.0	5.8	5
SMCJ170A	SMCJ170CA	GHR	BHR	170.0	189.00	209.00	1	275.0	5.5	5
SMCJ180A	SMCJ180CA	GHT	BHT	180.0	201.00	222.00	1	292.0	5.1	5
SMCJ200A	SMCJ200CA	GHV	BHV	200.0	224.00	247.00	1	324.0	4.6	5
SMCJ220A	SMCJ220CA	GHX	BHX	220.0	246.00	272.00	1	356.0	4.2	5
SMCJ250A	SMCJ250CA	GHZ	BHZ	250.0	279.00	309.00	1	405.0	3.7	5
SMCJ300A	SMCJ300CA	GJE	BJE	300.0	335.00	371.00	1	486.0	3.1	5
SMCJ350A	SMCJ350CA	GJG	BJG	350.0	391.00	432.00	1	567.0	2.6	5
SMCJ400A	SMCJ400CA	GJK	BJK	400.0	447.00	494.00	1	648.0	2.3	5
SMCJ440A	SMCJ440CA	GJM	BJM	440.0	492.00	543.00	1	713.0	2.1	5

• For bidirectional type having V_{rw} of 10 volts and less, the I_R limit is double. • For parts without A, the V_{BR} is + 10%

ESD Sires products ESD系列产品



序号	型号	功率 (W)	工作电压(V)	击穿电压(V)	钳位电压	电容(PF)	产品特性	封装	封装图
1	ESDFBP05	60	5	6	9.8	30	单路, 单向	DFN1006	
2	ESDFBP07	60	7	8.5	17.5	25	单路, 单向	DFN1006	
3	UM3311P	90	3.3	3.5	5.5	6	单路, 双向	DFN1006	
4	ESDA33CP	100	3.3	4	7	10	单路, 双向	DFN1006	
5	ESDA05CP	100	5	6	9.8	10	单路, 双向	DFN1006	
6	ESDA08CP	100	8	8.5	17.5	7	单路, 双向	DFN1006	
7	ULC0501P	50	5	6	9.8	0.5	单路, 单向	DFN1006	
8	ESDA33T3	20	3.3	4.5	8.5	9	双路, 单向	DFN1006T3	
9	ESDA05T3	20	5	6	9.8	8	双路, 单向	DFN1006T3	
10	ESDA12T3	20	12	13.3	17	6	双路, 单向	DFN1006T3	
12	ESD903V3C	150	3.3	5.1	13.3	20	单路, 双向	SOD-923	
13	ESD905C	150	5	5.6	17.5	11	单路, 双向	SOD-923	
14	ESD9D12C	150	12	13.3	17.5	9	单路, 双向	SOD-923	
11	ESDA33CT	100	3.3	4	7	10	单路, 双向	SOD-523	
15	ESDA05CT	100	5	6	9.8	10	单路, 双向	SOD-523	
16	ESDA08CT	100	8	8.5	17.5	7	单路, 双向	SOD-523	
17	ESDA05CW	100	5	6	12	10	单路, 双向	SOD-323	
18	SDA0501CW	100	5	6	12	30	单路, 双向	SOD-323	
19	UM3311W	500	3.3	3.5	7.5	75	单路, 双向	SOD-323	
20	SD03C	320	3.3	4	7	450	单路, 双向	SOD-323	
21	SD05C	320	5	6	9.8	200	单路, 双向	SOD-323	
22	SD08C	320	8	8.5	13.4	100	单路, 双向	SOD-323	
23	SD12C	320	12	13.3	19	75	单路, 双向	SOD-323	
24	SD15C	320	15	16.7	24	68	单路, 双向	SOD-323	
25	SD18C	320	18	20	29	57	单路, 双向	SOD-323	
26	SD24C	320	24	26.7	43	50	单路, 双向	SOD-323	
27	SD36C	320	36	40	60	40	单路, 双向	SOD-323	
28	ESD9D3V3	60	3	5	10	40	单路, 单向	SOD-923	
29	ESD9D5V	60	5	6.2	10	25	单路, 单向	SOD-923	
30	ESD9D7V	60	7	7.5	10	25	单路, 单向	SOD-923	
31	SDA3.3T1	200	3.3	4	6.5	200	单路, 单向	SOD-523	
32	SDA05T1	200	5	6	9	110	单路, 单向	SOD-523	
33	ESD526V	200	6	7.5	10.5	30	单路, 单向	SOD-523	
34	ESD527V	200	7	8	12	25	单路, 单向	SOD-523	
35	SDA08T1	200	8	8.5	13	70	单路, 单向	SOD-523	
36	SDA12T1	200	12	13.3	15	60	单路, 单向	SOD-523	
37	SDA15T1	200	15	16.6	20	50	单路, 单向	SOD-523	
38	SDA24T1	200	24	26.7	30	25	单路, 单向	SOD-523	
39	SD03	500	3.3	4	6.5	500	单路, 单向	SOD-323	
40	SD05	500	5	6	9.8	350	单路, 单向	SOD-323	
41	SD12	500	12	13.3	19	150	单路, 单向	SOD-323	
42	SD15	500	15	16.7	24	100	单路, 单向	SOD-323	
43	SD24	500	24	26.7	43	90	单路, 单向	SOD-323	
44	SD36	500	36	40	60	75	单路, 单向	SOD-323	
45	LC03I	350	3.3	4	5.15	0.4	单路, 单向	SOD-323	
46	LC05I	350	5	6	9.8	0.4	单路, 单向	SOD-323	
47	LC08I	350	8	8.5	13.4	0.4	单路, 单向	SOD-323	
48	LC12I	350	12	13.3	19	0.4	单路, 单向	SOD-323	
49	LC15I	350	15	16.7	24	0.4	单路, 单向	SOD-323	
50	LC24I	350	24	26.7	43	0.4	单路, 单向	SOD-323	
51	LC03CI	350	3	4	5.15	0.4	单路, 双向	SOD-323	
52	LC05CI	350	5	6	9.8	0.4	单路, 双向	SOD-323	
53	LC08CI	350	8	8.5	13.4	0.4	单路, 双向	SOD-323	
54	LC12CI	350	12	13.3	19	0.4	单路, 双向	SOD-323	
55	LC15CI	350	15	16.7	24	0.4	单路, 双向	SOD-323	
56	LC24CI	350	24	26.7	43	0.4	单路, 双向	SOD-323	
57	LC3301CW	350	3	4	待定	3	单路, 双向	SOD-323	
58	LC0501CW	350	5	6	待定	3	单路, 双向	SOD-323	
59	LC0801CW	350	8	8.5	待定	3	单路, 双向	SOD-323	
60	LC1201CW	350	12	13.3	待定	3	单路, 双向	SOD-323	
61	LC1501CW	350							

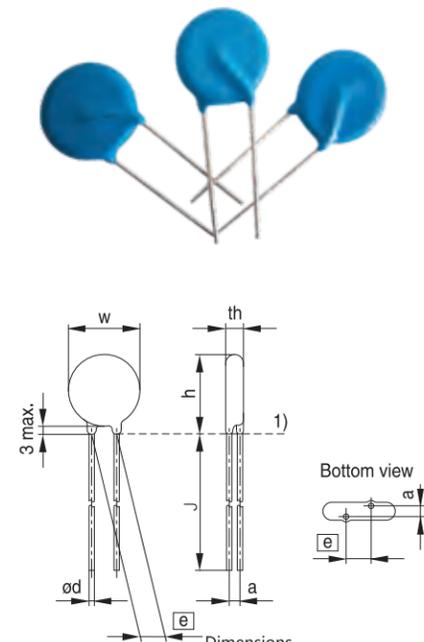
ESD Sires products ESD系列产品



序号	型号	功率 (W)	工作电压(V)	击穿电压(V)	钳位电压	电容(PF)	产品特性	封装	内部结构
95	SM712	400	7, 12	7.5/13.3	10/20	55	双路, 双向	SOT-23	
96	SDA0502C	100	5	6	9.8	30	双路, 双向	SOT-23	
97	SMC33	350	3.3	4	7	220	双路, 双向	SOT-23	
98	SMC05	350	5	6	9.8	150	双路, 双向	SOT-23	
99	SMC08	350	8	8.5	13.4	75	双路, 双向	SOT-23	
100	SMC12	350	12	13.3	19	65	双路, 双向	SOT-23	
101	SMC15	350	15	16.7	24	60	双路, 双向	SOT-23	
102	SMC18	350	18	20	29	55	双路, 双向	SOT-23	
103	SMC24	350	24	26.7	43	40	双路, 双向	SOT-23	
104	SMC36	350	36	40	60	15	双路, 双向	SOT-23	
105	SDA33W5	100	3.3	4.5	7	40	四路单向	SOT-353	
106	SDA05W5	100	5	6	9.8	30	四路单向	SOT-353	
107	SDA12W5	100	12	13.3	13.4	25	四路单向	SOT-353	
108	ULC0504T5	100	5	6	9.8	1	四路, 单向	SOT-553	
109	YSDA0504T6	100	5	6	9.8	30		SOT-563	
110	SQV05C	100	5	6.5	9.8	20	四路, 双向	SOT-25	
111	ESDA3.3CW-4	100	3.3	4.5	7.5	13	四路, 双向	SOT-353	
112	ESDA5.0CW-4	100	5	6.5	9.8	10	四路, 双向	SOT-353	
113	ESDA0505T6	100	5	6	9.8	10	五路, 双向	SOT-563	
114	ESDA0905T6	100	9	10.8	16.6	7	五路, 双向	SOT-563	
115	ESDA12JT6	100	12				两路, 双向	SOT-563	
116	ULC0502A	50	5	6	14	0.9	超低电容	SOT-563	
117	SMS05	350	5	6	9.8	200	四路, 单向	SOT-26	
118	SMS12	350	12	13.3	19	90	四路, 单向	SOT-26	
119	SMS15	350	15	16.7	24	70	四路, 单向	SOT-26	
120	SMS24	350	24	26.7	38	50	四路, 单向	SOT-26	
121	SDA05CW	100	5	6	9.8	50	五路, 单向	SOT-363	
122	YSDA0505T6	100	5	6	9.8	30	五路, 单向	SOT-563	
123	SMS05C	350	5	6	9.8	200	四路, 单向	SOT-26	
124	SMS12C	350	12	13.3	19	90	四路, 单向	SOT-26	
125	SMS15C	350	15	16.7	24	70	四路, 单向	SOT-26	
126	SMS24C	350	24	26.7	38	50	四路, 单向	SOT-26	
127	LC0904F	150	5	6	15	2	超低电容	SOT-363	
128	ULC0504T6	100	5	6	9.8	0.7	超低电容	SOT-563	
129	SRV05-4	350	5	6	12.5	3	超低电容	SOT-26	
130	SR05-04A	300	5	6	9.8	1	超低电容	SOT-26	
131	ULC0504D	200	5	6.5	9.8	0.7	超低电容	SOT-26	
132	SM8LC03	800	3.3	4.5	7	15	四路, 14正向, 23反向	SOP-8	
133	SM8LC05	800	5	6	10	15	四路, 14正向, 23反向	SOP-8	
134	SM8LC12	800	12	13.3	19	15	四路, 14正向, 23反向	SOP-8	
135	SM8LC15	800	15	16.7	25	15	四路, 14正向, 23反向	SOP-8	
136	SM8LC24	800	24	26.7	40	15	四路, 14正向, 23反向	SOP-8	
137	SM8LC36	800	36	40	53	15	四路, 14正向, 23反向	SOP-8	
138	LCDA05	500	5	6	9.8	5	四路, 13正向, 24反向	SOP-8	
139	LCDA12	500	12	13.3	19	5	四路, 13正向, 24反向	SOP-8	
140	LCDA15	500	15	16.7	24	5	四路, 13正向, 24反向	SOP-8	
141	LCDA24	500	24	26.7	43	5	四路, 13正向, 24反向	SOP-8	
142	SMDA33C	500	3.3	4	6.5	450	四路, 双向	SOP-8	
143	SMDA05C	500	5	6	9.8	300	四路, 双向	SOP-8	
144	SMDA12C	500	12	13.3	19	100	四路, 双向	SOP-8	
145	SMDA15C	500	15	16.7	24	80	四路, 双向	SOP-8	
146	SMDA24C	500	24	26.7	43	50	四路, 双向	SOP-8	
147	LCDA05C-4	500	5	6	9.8	5	四路, 双向	SOP-8	
148	LCDA12C-4	500	12	13.3	19	5	四路, 双向	SOP-8	
149	LCDA15C-4	500	15	16.7	24	5	四路, 双向	SOP-8	
150	LCDA24C-4	500	24	26.7	43	5	四路, 双向	SOP-8	
151	SMDA05C-7	300	5	6	9.8	350	4路, 双向	SOP-8	
152	SMDA12C-7	300	12	13.3	19	120	4路, 双向	SOP-8	
153	SMDA15C-7	300	15	16.7	24	75	4路, 双向	SOP-8	
154	SMDA24C-7	300	24	26.7	43	50	4路, 双向	SOP-8	
155	SLVU2.8	400	2.8	3	7	3	单路, 单向	SOT-23	
156	SLVU2.8-4	400	2.8	3	8.5	2	四路, 双向	SOP-8	
157	SLVU2.8-8	600	2.8	3	8.5	7	四路, 双向	SOP-8	
158	SRDA3.3-4	500	3.3	4	6.5	5	超低电容	SOP-08	
159	SRDA05-4	500	5	6	9.8	5	超低电容	SOP-08	
160	SRDA12-4	500	12	13.3	19	5	超低电容	SOP-08	
161	SRDA15-4	500	15	16.7	24	5	超低电容	SOP-08	
162	LC03-6	2000	6	6.8	15	25	超低电容	SOP-8	
163	SMDA05C-8	300	5	6	9.8	350	7路, 双向	SO-14	
164	SMDA12C-8	300	12	13.3	19	120	7路, 双向	SO-14	
165	SMDA15C-8	300	15	16.7	24	75	7路, 双向	SO-14	
166	SMDA24C-8	300	24	26.7	43	50	7路, 双向	SO-14	
167	LCDA05C-8	500	5	6	9.8	5	8路, 双向	SO-16	
168	LCDA12C-8	500	12	13.3	19	5	8路, 双向	so-16	
169	LCDA15C-8	500	15	16.7	24	5	8路, 双向	so-16	
170	LCDA24C-8	500	24	26.7	43	5	8路, 双向	SO-16	
171	SR05	500	5	6	9.8	3	超低电容	SOT-143	
172	SR05-02A	300	5	6	9.8	1.2	超低电容	SOT-143	
173	SR70	24	70	85	1.5	3	超低电容	SOT-143	
174	ULC0568M	200	5	6	9.8	1	超低电容	MSOP-08	
175	ULC0544M	125	5	6	15	0.5	超低电容	MSOP-10	
176	ULC0524P	150	5	6	15	0.8	超低电容	DFN1510	
177	ULC0503NL	100	5	6.5	16.5	0.5	超低电容	DFN1510	
178	ULC33CP8	100	3	4	7.5	1	超低电容	DFN2010	
179	YSULC0568K	100	5	6	9.8	1	超低电容	DFN4120P10	
180	SDA33CP10	200	3.3	4	7.5	4.5	4路, 双向	SLP2510P8	
181	SDA05CP10	200	5	6	9.8	4.5	4路, 双向	SLP2510P8	
182	SDA08CP10	200	8	8	14	3.5	4路, 双向	SLP2510P8	
183	EM2374K	260	5	6	8.5		可编程	DFN1714	
184	EM2376K	260	5	6	8.5		可编程	DFN2514	
185	EM2378K	260	5	6	8.5		可编程	DFN3314	
186	EM6401M	260	5	6	34		可编程	DFN3014	

VMOV 插件压敏电阻系列:

压敏电压 (V)	额定电压 (V)		限制电压 (V)		最大能量 (J/2MS)				
	Acrms	DC	5	7月20日	5	7	10	14	20
20K18	11	14	40	36	0.4	0.9	2.2	4.3	12
20K22	14	18	48	43	0.5	1.1	2.6	5.3	14
27	17	22	60	53	0.7	1.3	3.2	6.5	17
33	20	26	73	65	0.8	1.6	4	7.9	21
39	25	31	86	77	0.9	1.9	4.7	9.4	25
47	30	38	104	93	1.1	2.3	5.6	11	30
56	35	45	123	110	1.3	2.7	6.7	13	26
68	40	56	150	135	1.6	3.3	8.2	16	44
82	50	65	145	135	2.5	5	10	20	40
100	60	85	175	165	3	6	12	25	50
120	75	100	210	200	3.5	7	14.5	30	60
150	95	125	260	250	4.5	9	18	37.5	75
180	115	150	312	300	5.4	10.8	21	45	90
200	130	170	355	340	6	12.5	25	50	100
20	140	180	380	360	6.5	13.5	27.5	55	110
240	150	200	415	395	7.5	15	30	660	120
270	175	225	475	455	8	17	35	70	135
300	195	250	525	505	8.8	18	39	78	150
330	210	270	570	545	9.5	20	42	80	160
360	230	300	620	595	11	23	45	90	180
390	250	320	675	650	12	25	50	100	195
430	275	350	745	710	13.5	27.5	55	110	215
470	300	385	810	775	15	30	60	125	250
510	320	410	--	845	--	32	67	136	273
560	350	450	--	930	--	35	73	149	298
620	385	505	--	1205	--	--	67	138	273
680	420	560	--	1120	--	--	67	136	273
750	460	615	--	1240	--	--	70	150	300
820	510	670	--	1355	--	--	80	165	325
910	550	745	--	1500	--	--	90	180	360
1000	625	825	--	1650	--	--	100	200	400
1100	680	895	--	1815	--	--	110	220	440
1800	1000	1465	--	2970	--	--	183	360	720



规格	Dmax	d (±0.02)	W (±1.0)	Tmax
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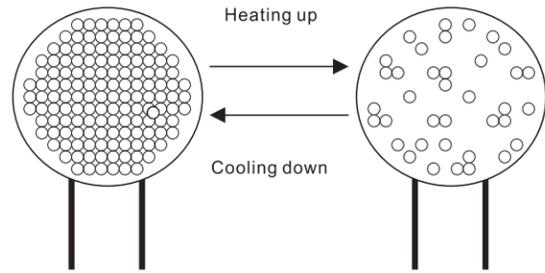
• Features 特性

- * Highageingcoefficient
a系数高
- * Superiorwithstandingvoltageoxidation-resistance.
耐电压强度记抗氧化性高

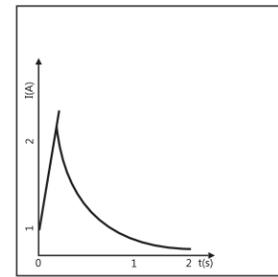


Normal Operating Condition

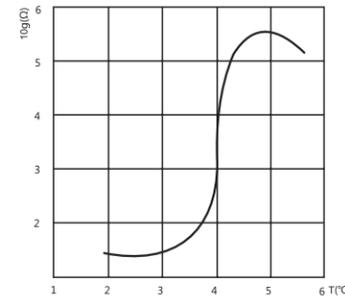
Tripped State



• Characteristics 特性曲线



Current-Time Curve
 电流-时间曲线



Resistance-Temperature Curve.
 电阻-温度曲线

• Theparameteroftelecommunicationfacilities 应用于通讯设备保护产品的技术参数

Part No. 型号	Nominal Resistance 标称阻值 25 °C (Ω)	Non-operating Current 不动作电流 (mA)	Responding Time 响应时间						Breakdown Voltage 耐电压 (VAC)	Current(time) 耐电流 (次数)		Dimensions 外形尺寸 (Max)
			3A	2A	1A	0.75A	0.5A	0.35A		Power Frequency current 工作电流	Shock Current 冲击电流	
			0.5A	0.5A	0.5A	0.15A	0.15A	0.15A				
MZ21-8R0RM	8	150	0.4	0.8	3	10	25	70	250	20	10	Φ9×3.5
MZ21-120RM	12	110	0.3	0.45	1.5	5	15	20	250	20	10	Φ9×3.5
MZ21-180RM	18	110	0.2	0.35	1.2	5	15	20	250	20	10	Φ8×3.5
MZ21-400RM	40	50	0.1	0.2	0.6	1	3	20	360	20	10	Φ7.5×5
MZ21-500RM	50	50	0.1	0.3	0.6	1	3	20	420	20	10	Φ7.5×5
MZ21-820RM	82	50	0.1	0.3	0.6	1	3	20	420	20	10	Φ7.5×5
MZ21-101RM	100	50	0.15	0.25	0.6	1	2	3	420	20	10	Φ9.0×4.5
MZ22-8R0RM	8	150	0.4	0.8	3	10	25	70	250	20	10	10×9.6×5
MZ22-120RM	12	80	0.2	0.3	1.5	5	20	50	250	20	30	10×9.6×5
MZ22-180RM	18	110	0.2	0.35	1.2	5	15	20	250	20	30	10×9.6×5
MZ22-220RM	22	110	0.2	0.35	1.2	5	15	20	250	20	30	10×9.6×5
MZ22-270RM	27	90	0.1	0.2	0.5	0.8	2	4	420	20	30	10×9.6×5
MZ22-500RM	50	50	0.2	0.3	0.6	1	3	20	420	20	30	10×9.6×5
MZ23-8R0RM	8	150	0.4	0.8	3	10	25	70	250	20	30	Φ(7-9)×(1.6-2.5)
MZ23-120RM	12	130	0.3	0.5	2.5	7	20	50	250	20	30	Φ(7-9)×(1.6-2.5)
MZ23-180RM	18	110	0.2	0.35	1.2	5	15	20	250	20	30	Φ(6-9)×(1.6-2.5)
MZ23-220RM	22	110	0.2	0.35	1.2	5	15	20	250	20	30	Φ(6-8)×(1.6-2.5)
MZ23-270RM	27	90	0.1	0.2	0.5	0.8	2	4	250	20	30	Φ(6-8)×(1.6-2.5)

* 注: MZ21 MZ22 系列冲击电流试验参数: 10/1000 μs、1KV、25A;
 MZ23 系列冲击电流试验参数: 10/310 μs、1.5KV、37.5A。

SMD PTC 自恢复热敏电阻



SMD系列PTC自恢复保险丝额定工作电压为6~60V、额定维持电流为0.10A~3.0A。是一种体积小、可靠性高、安装方便、可自动回复而多次使用的新一代过流保护器件。可广泛用于计算机接口、鼠标、键盘、微型电机、变压器、CPU、火警及安全保护系统、卫星电视接收系统及其它一些测试、测量设备中。

Part Number	Ihold@25°C(A)	Itrip@25°C(A)	Vmax(Vdc)	Imax(A)	PdMax(w)	Current(A)	Time(Sec)	Rmin(Ω)	Rmax(Ω)
VSMD010	0.1	0.3	30	100	0.8	0.5	1.5	0.75	15
VSMD014	0.14	0.34	33	100	0.8	1.5	0.15	0.65	6
VSMD020	0.2	0.4	30	100	0.8	0.8	0.02	0.35	5
VSMD030	0.3	0.6	30	100	0.8	0.8	0.1	0.25	3
VSMD050	0.5	1	15	100	0.8	0.8	0.15	0.15	1
VSMD075	0.75	1.5	13.2	100	0.8	0.8	0.2	0.09	0.45
VSMD110	1.1	2.2	8	100	0.8	0.8	0.3	0.05	0.25
VSMD110-16V	1.1	2.2	16	100	0.8	0.8	0.3	0.05	0.25
Vsmd125	1.25	2.5	16	100	0.8	0.8	0.4	0.05	0.14
VSMD150	1.5	3	8	100	0.8	0.8	0.5	0.04	0.16
VSMD150-16V	1.5	3	16	100	0.8	0.8	0.5	0.04	0.16
Vsmd160	1.6	2.8	8	100	0.8	0.8	1	0.03	0.13
VSMD200	2	4	8	100	0.8	8	2	0.02	0.1
VSMD260	2.6	5	8	100	0.8	8	2.5	0.015	0.05
VSMD300	3	5	8	100	0.8	8	4	0.012	0.04
VSMD350	3	6	6	100	2	10	0.008	0.008	0.03

SMD Fuse 贴片保险丝



Part Number	额定电流 AmpereRating	额定电压 VoltageRating	标尺 Making	熔化热能 I2T Melting Integral(A2.S)
12V1150V	1.5A	125V	1.5	0.028
12V1125V	1.25A	125V	J	0.022
12V1100V	1A	125V	1	0.0062
12V0750V	750mA	125V	0.75	0.0053
12V0500V	500mA	125V	0.5	0.002
12V0375V	375mA	125V	E	0.0011
12V0250V	250mA	125V	0.25	0.0035

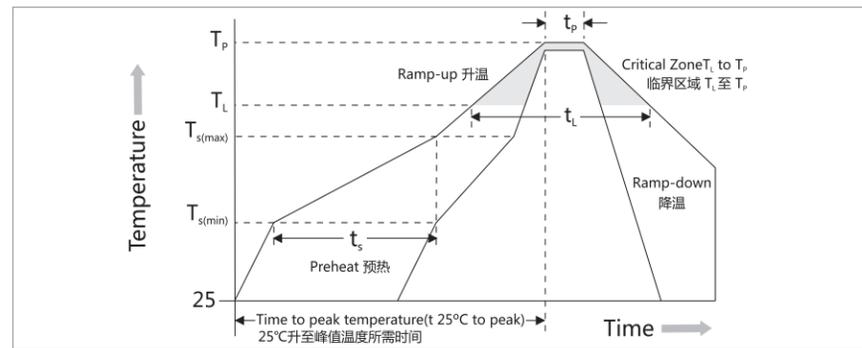
Axial Fuse 轴向型保险丝



Part Number	额定电流 AmpereRating	额定电压 VoltageRating	最大电压降 VoltageRating	(MV) Max Voltage Drop	熔化热能 I2T Melting Integral(A2.S)
5T1100A	1A	250V	350	1.2	
5T1125A	1.25A	250V	300	2.5	
5T1160A	1.6A	250V	190	3.6	
5T1200A	2A	250V	180	7.6	
5T1250A	2.5A	250V	140	13	
5T1315A	3.15A	250V	100	25	
5T1400A	4A	250V	100	40	
5T1500A	5A	250V	100	67	
5N1630A	6.3A	250V	100	110	

Soldering Parameters - Reflow Soldering (Surface Mount Devices)

Reflow Condition		Pb - Free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 - 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_r)	60 - 150 seconds
Peak Temperature (T_p)		260 \pm 5 °C
Time within 5°C of actual peak Temperature (t_p)		10 - 30 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		260°C



Reliability inspections 可靠性检验

- > The following tests are carried out on the basis of the international standards IEC60068:
 - Temperature cycling tests: Arresters – 40 °C ... + 90 °C Switching spark gaps – 40 °C ... + 125 °C
 - Humidity tests (relative humidity = 93%)
 - Vibration tests (f = 10 to 500 Hz)
 - Torsional strength tests of the lead wires
 - Inspection of mechanical dimensions
 - Continuous shock tests (a = 400 ms⁻²)
 - Tension/bending tests of the lead wires
 - Solderability tests

The frequency and stress parameters used in these tests depend on the component types.

The product and dispatch packaging is monitored to IEC 24180 (strain, vibration and impact tests) as well as by means of transport tests performed under practical conditions.

- > 以下测试，我们采用了国际标准IEC60068:

- 温度循环测试：放电管：-40°C...+90°C 开关放电管：-40°C...+125°C
- 湿度测试（相对湿度=93%）
- 振动测试（f=10to500HZ）
- 引线扭转强度测试
- 机械尺寸检测
- 连续冲击测试（a=400ms）
- 引线拉力/弯曲测试
- 可焊性测试

这些测试中使用的频率和应力参数取决于元件的型号。

产品和包装符合IEC 24180要求（应力、振动和冲击测试），同时通过实际条件下的运输测试进行监控。

Electrical stress 电气应力

In the most international specifications, the failure modes for surge arresters are determined. Other failure modes are as follows:

Nominal discharge current and nominal alternating discharge current

Failure criteria:

- Total failure Short circuit
- Failures due to variations: $V_{sdc} < 0.7 \times V_{sdcN}$ $V_{sdc} > 1.3 \times V_{sdcN}$
- Permissible failure rate: < 5%

Single-discharge current and alternating discharge current

Failure criteria:

- Total failure Short circuit
- Failures due to variations: $V_{sdc} < 0.5 \times V_{sdcN}$ $V_{sdc} > 1.5 \times V_{sdcN}$
- Permissible failure rate: $\leq 5\%$

大多数国际规范都确定了气体放电管的故障模式。其他故障模式如下：

- > 标称放电电流和标称耐工频电流

失效标准：

- 完全失效 短路
- 变量失效 直流击穿电压<0.7×标称直流击穿电压 直流击穿电压 > 1.3×标称直流击穿电压
- 允许失效率 $\leq 5\%$

- > 单次放电电流和耐工频电流

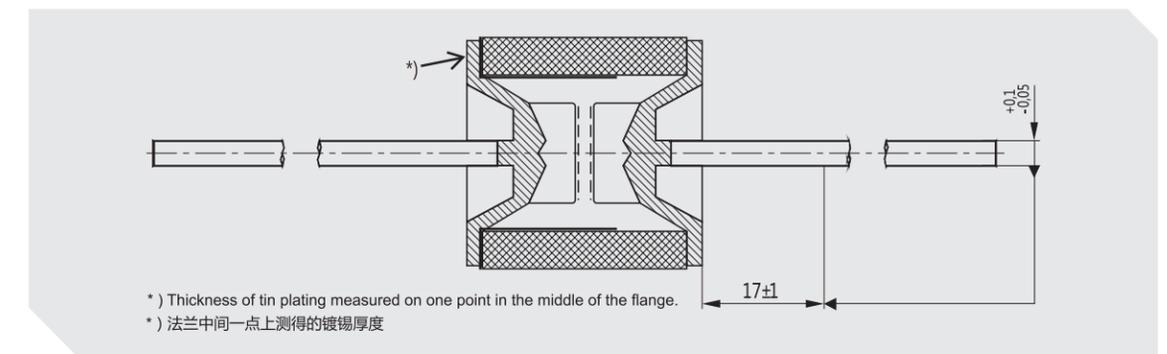
故障标准：

- 完全失效 短路
- 变量失效 直流击穿电压<0.5×标称直流击穿电压 直流击穿电压 > 1.5×标称直流击穿电压
- 允许失效率 $\leq 5\%$

Layer thickness test of plating surfaces 镀层厚度测试

The plating layers of the gas discharge tubes and switching spark tubes are monitored during the manufacturing process at the measuring point shown in Fig.

生产过程中对放电管和开关放电器的电镀层进行监控，测量点见图



Climatic framework conditions 天气条件

The diverse requirements profiles for gas discharge tubes and switching spark tubes are used to derive various temperature ranges for operation and storage. Due to their predominant use in telecom applications GDTs have to comply with ITU-T, K.12, unless otherwise specified. For switching spark tubes, the standard of automotive industry normally can be applied.

气体放电管和开关放电管的众多要求都用于确定工作和储存温度范围。由于这些产品主要用于电信领域，放电管必须符合ITU-T K.12的要求，除非另有规定。对于开关放电管汽车行业的标准一般都是可适用的。