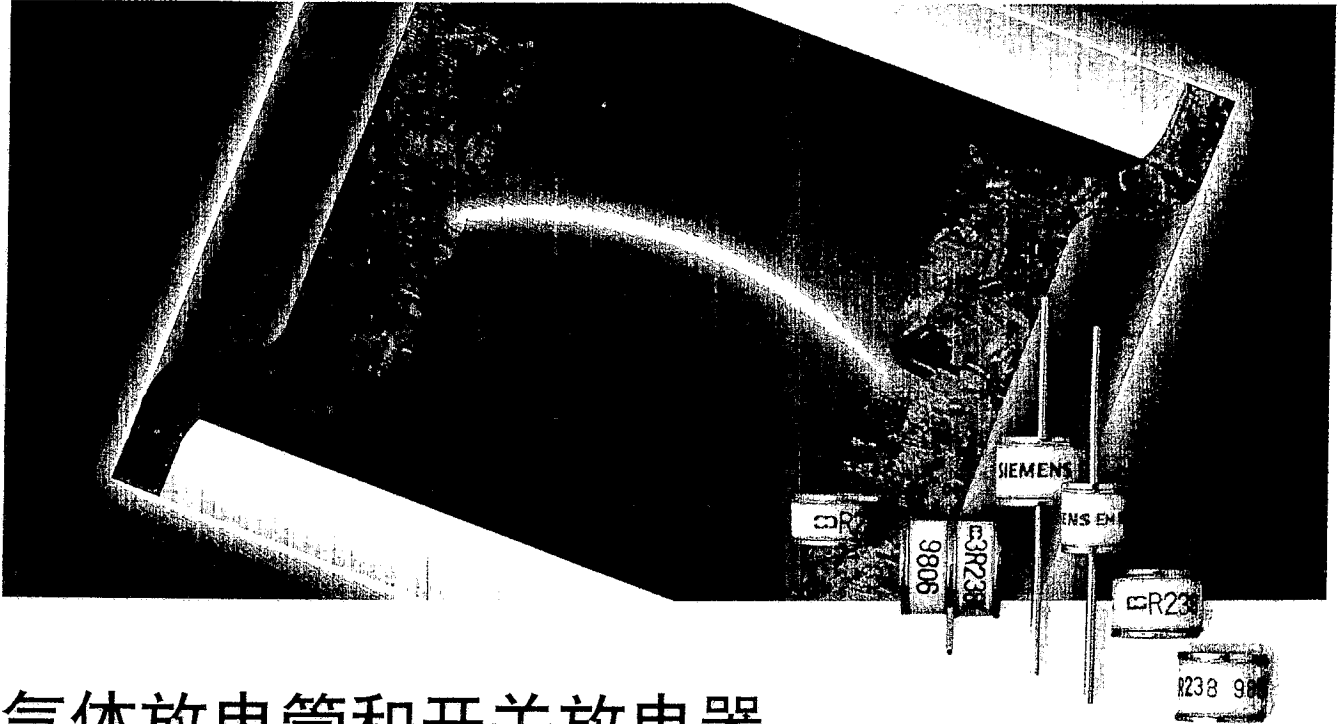


深圳商斯达电子有限公司



气体放电管和开关放电器 Gas-Filled Surge Arresters and Switching Spark Gaps

西门子真空电子元件有限公司
Siemens Vacuum Electronic Components Co., Ltd.

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公司简介

西门子股份公司具有 150 年历史，是电气、电子工程领域的跨国公司。该公司产品范围宽广，涉及发电、电气工程、电讯、医疗等行业。近百年来，西门子股份公司一直与中国密切合作。

西门子股份公司是世界上最大的气体放电管制造商。除德国工厂和新加坡两家工厂外，西门子真空电子元件公司是西门子与国营汉光电工厂组建的第三家生产销售浪涌放电管的厂家，我们是按照西门子质量标准生产产品的，并且通过德国母公司对生产严格监控和管理，确保了我们的产品质量。

公司的经营范围：生产、销售通信设备及各种终端产品过电压保护用的气体放电管。年生产能力 5,000 万只。

西门子真空电子元件有限公司具有先进的技术和管理水平。开发、生产的气体放电管满足 ITU 建议及 GB9043 和 YD/T694 标准，产品受到广大客户的欢迎，公司的宗旨 - 永远为客户提供高品质产品和最佳的服务。

Company Introduction

Siemens AG is a multinational corporation with 150 years history in the field of electrical and electronic engineering. It offers a wide range of products for power generation, electrical engineering, telecommunication, medical care, etc. Siemens AG has been closely cooperating with China for the last 100 years.

Siemens AG is the largest producer of gas-filled surge arresters in the world. Besides the two factories in Germany and Singapore, Siemens Vacuum Electronic Components Co., Ltd., a Joint Venture between Siemens AG and Hanguang Electron Device Factory, was founded in China for the production and sale of surge arresters. Our products are manufactured in accordance with the quality standard of Siemens. This is guaranteed through strict monitoring and control of the production by our parent company in Germany. The business scope of SVEC is the manufacture and sale of gas-filled arresters for overvoltage protection of communications equipment. The annual production capacity is 50 million arresters.

Siemens Vacuum Electronic Components Co., Ltd. is using advanced technology and modern management for product development, production and testing. SVEC surge arresters meet the recommendations of ITU and the standards of GB9043 and YD/T694. They have been widely accepted by the market. The aim of our company is to offer high quality products and best service to all our customers.

型号规格及外形尺寸

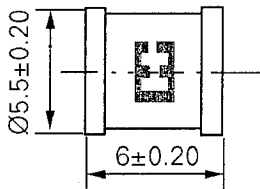
Types and Dimensions

二极管

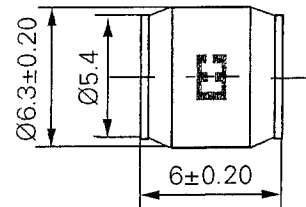
2-Electrode Arresters

R5, R6 型

R5, R6 Series



R235 型



R236 型

性能参数表 Specification

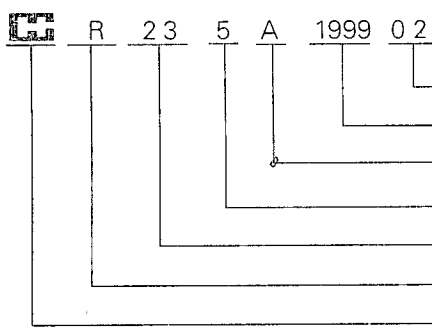
型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (V)	耐工频电流 (安) AC Discharge Current (A)	耐冲击电流 (安) 10/1000 μs Impulse Discharge Current (A)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (pF)
R235	190 ~ 260	≤ 700	5	100	≥ 10 ⁹	≤ 3
R236	190 ~ 260	≤ 700	5	100	≥ 10 ⁹	≤ 3

二电极放电管标志说明:

Notes of arrester with two electrodes:

注: "A" 为引线管。

Note: "A" type with lead wires.



- 月份 Month
- 生产年度 Year of production
- 引线管 Arrester with lead
- 放电管的外径标称尺寸(个位) Rated diameter of arrester
- 标称直流击穿电压(百位, 十位) Rated DC spark-over voltage
- 放电管 Surge arrester
- 商标 Trademark

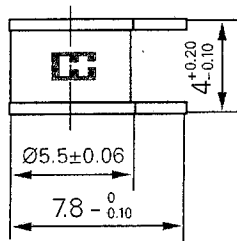
型号规格及外形尺寸

Types and Dimensions

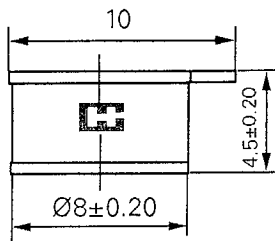
二极管

2-Electrode Arresters

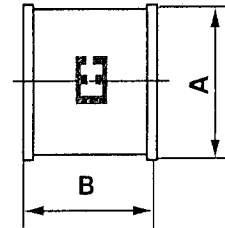
R7 型, 特型
R7 Series



R235L



R238K



型号 Type	尺寸 Dimensions	
	A	B
R237B	$\varnothing 7^{+0.1}_{-0.1}$	4 ± 0.1
R237F	$\varnothing 7^{+0.1}_{-0.1}$	4.4 ± 0.15
R237S	$\varnothing 7 \pm 0.2$	6 ± 0.2

性能参数表 Specification

型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (V)	耐工频电流 (安) AC Discharge Current (A)	耐冲击电流 (安) 10/1000 μ s Impulse Discharge Current (A)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (pF)
R235L	190 ~ 260	≤ 700	5	100	$\geq 10^9$	≤ 3
R238K	190 ~ 260	≤ 700	5	100	$\geq 10^9$	≤ 3
R237B	190 ~ 260	≤ 700	5	100	$\geq 10^9$	≤ 3
R237F	190 ~ 260	≤ 700	5	100	$\geq 10^9$	≤ 3
R237S	190 ~ 260	≤ 700	5	100	$\geq 10^9$	≤ 3

型号规格及外形尺寸

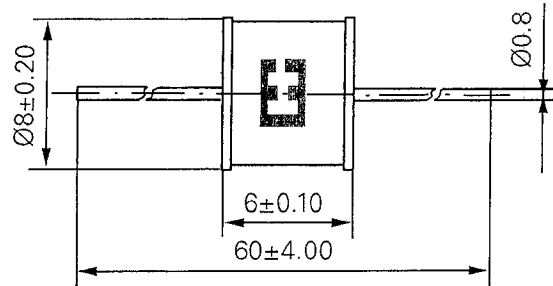
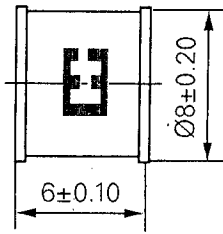
Types and Dimensions

二极管

2-Electrode Arresters

R8 型

R8 Series



性能参数表 Specification

型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (V)	耐工频电流 (安) AC Discharge Current (A)	耐冲击电流 (安) 10/1000µs Impulse Discharge Current (A)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (pF)
R238 (A)	190 ~ 260	≤ 700	5	100	≥ 10 ⁹	≤ 3
R098 (A)	68 ~ 112	≤ 700	5	100	≥ 10 ⁹	≤ 3
R158 (A)	113 ~ 187	≤ 700	5	100	≥ 10 ⁹	≤ 3
R358 (A)	280 ~ 420	≤ 800	5	100	≥ 10 ⁹	≤ 3
R478 (A)	376 ~ 564	≤ 900	5	100	≥ 10 ⁹	≤ 3

注：A 为引线管。

Note: A types are with leads.

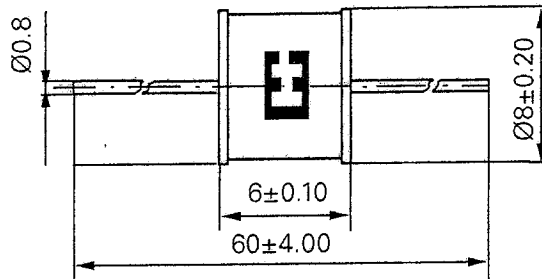
型号规格及外形尺寸

Types and Dimensions

二极管

2-Electrode Arresters

R8 (T, A)型
R8 (T, A) Series



性能参数表 Specification

型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (V)	耐工频电流 (安) AC Discharge Current (A)	耐冲击电流 (安) 10/1000μs Impulse Discharge Current (A)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (pF)
R098T(A)	68 ~ 112	≤ 700	5	100	≥ 10 ⁹	≤ 3
R158T(A)	113 ~ 187	≤ 700	5	100	≥ 10 ⁹	≤ 3
R238T(A)	173 ~ 287	≤ 700	5	100	≥ 10 ⁹	≤ 3
R358T(A)	280 ~ 420	≤ 800	5	100	≥ 10 ⁹	≤ 3
R478T(A)	376 ~ 584	≤ 900	5	100	≥ 10 ⁹	≤ 3

注: A 为引线管。

Note: A types are with leads.

型号规格及外形尺寸

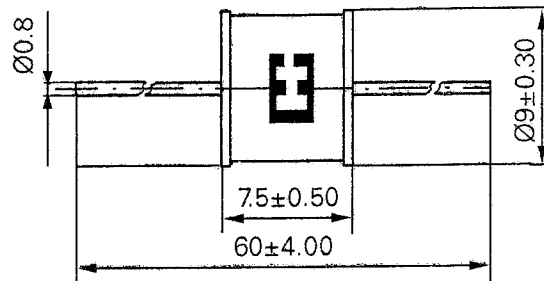
Types and Dimensions

二极管

2-Electrode Arresters

R21、R22、R23、R24、R25 型

R21, R22, R23, R24 and R25 series



性能参数表 Specification

型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (V)	耐工频电流 (安) AC Discharge Current (A)	耐冲击电流 (安) 10/1000 μ s Impulse Discharge Current (A)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (pF)
R21	68 ~ 112	≤ 700	5	100	$\geq 10^9$	≤ 3
R22	113 ~ 187	≤ 700	5	100	$\geq 10^9$	≤ 3
R23	173 ~ 287	≤ 700	5	100	$\geq 10^9$	≤ 3
R24	280 ~ 420	≤ 800	5	100	$\geq 10^9$	≤ 3
R25	376 ~ 564	≤ 900	5	100	$\geq 10^9$	≤ 3

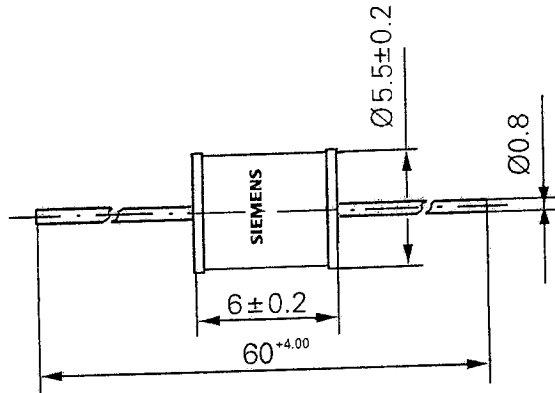
型号规格及外形尺寸

Types and Dimensions

二极管

2-Electrode Arresters

EM 型
EM series



性能参数表 Specification

型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (V)	耐工频电流 (安) AC Discharge Current (A)	耐冲击电流 (安) 8/20 μ s Impulse Discharge Current (KA)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (pF)
EM230X	184 ~ 276	≤ 700	2.5	2.5	$\geq 10^9$	≤ 1.5
EM300X	270 ~ 345	≤ 850	2.5	2.5	$\geq 10^9$	≤ 1.5
EM350X	280 ~ 420	≤ 850	2.5	2.5	$\geq 10^9$	≤ 1.5
EM400X	320 ~ 480	≤ 900	2.5	2.5	$\geq 10^9$	≤ 1.5

说明: 本表所列产品为出口产品
Note: These types are for export.

型号规格及外形尺寸

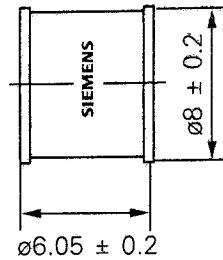
Types and Dimensions

二极管

2-Electrode Arresters

EC(N)型

EC (N) Series



性能参数表 Specification

型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (V)	耐工频电流 (安) AC Discharge Current (A)	耐冲击电流 (安) 8/20 μ s Impulse Discharge Current (KA)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (pF)
EC90N	72 ~ 108	≤ 600	5	5	$\geq 10^{10}$	≤ 1.5
EC230N	196 ~ 264	≤ 700	5	5	$\geq 10^{10}$	≤ 1.5
EC350N	297 ~ 402	≤ 800	5	5	$\geq 10^{10}$	≤ 1.5

说明: 本表所列产品为出口产品

Note: These types are for export.

型号规格及外形尺寸

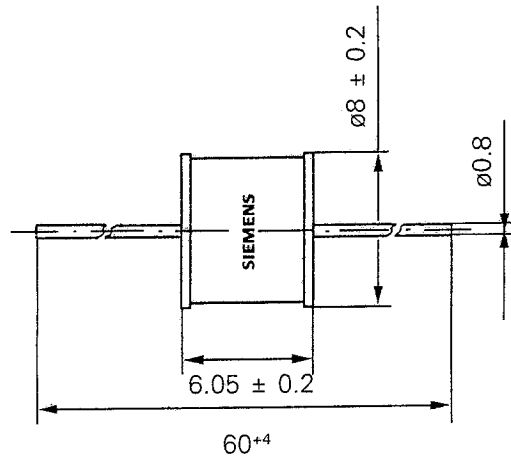
Types and Dimensions

二极管

2-Electrode Arresters

EC 型

EC Series



性能参数表 Specification

型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (V)	耐工频电流 (安) AC Discharge Current (A)	耐冲击电流 (安) 8/20 μ s Impulse Discharge Current (KA)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (pF)
EC90	72 ~ 108	≤ 600	5	5	$\geq 10^{10}$	≤ 1.5
EC150	128 ~ 172	≤ 650	5	5	$\geq 10^{10}$	≤ 1.5
EC230X	196 ~ 264	≤ 700	5	5	$\geq 10^{10}$	≤ 1.5
EC230XCA	180 ~ 300	≤ 700	5	5	$\geq 10^{10}$	≤ 1.5
EC350X	297 ~ 402	≤ 800	5	5	$\geq 10^{10}$	≤ 1.5
EC600X	540 ~ 720	≤ 1200	5	5	$\geq 10^{10}$	≤ 1.5

说明: 本表所列产品为出口产品

Note: These types are for export.

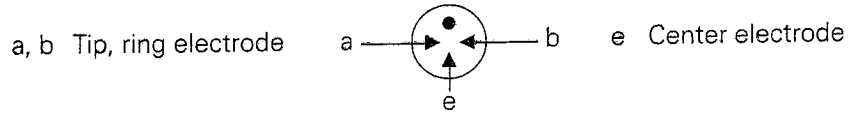
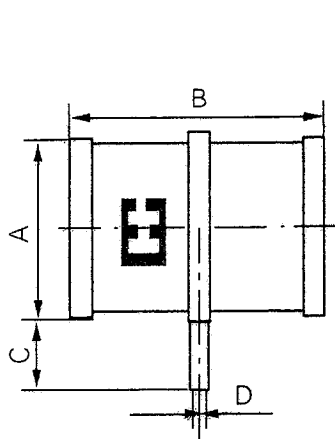
型号规格及外形尺寸

Types and Dimensions

三极管

3-Electrode Arresters

三级管
3-Electrode Arresters

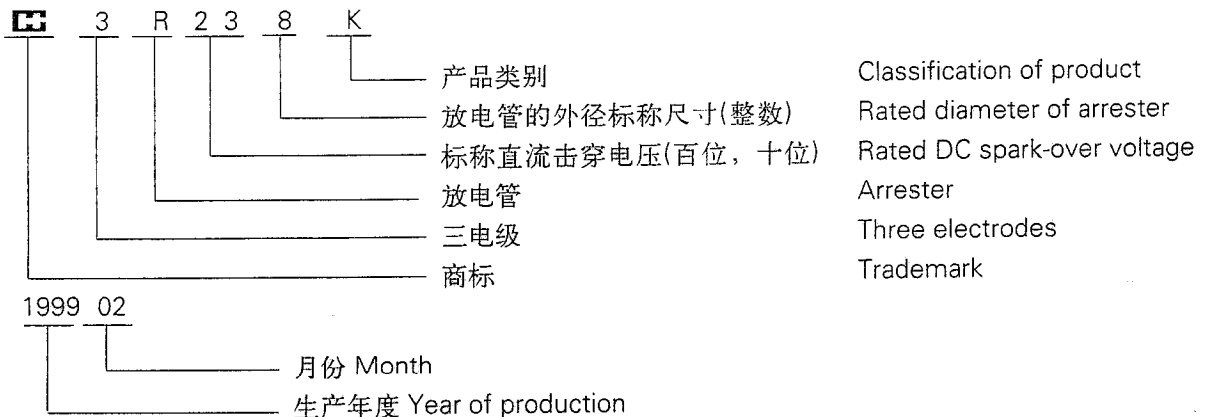


型号 Type	尺寸 Dimension	A	B	C	D
3R238K		$\phi 8.5 \pm 0.3$	8.7 ± 0.3	$4.5_{-0.5}^0$	0.5
3R237K		$\phi 7.6_{-0.2}^0$	$11.4_{-0.15}^{+0.2}$	$3_{-0.5}^0$	$\phi 1$
3R238T		$\phi 7.8_{-0.3}^{+0.2}$	$11.3_{-0.2}^{+0.3}$	8 ± 0.6	$\phi 1$

性能参数表 Specification

型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (V)	耐工频电流 (安) AC Discharge Current (A)	耐冲击电流 (安) 10/1000 μ s Impulse Discharge Current (A)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (pF)
3R238K	190 ~ 260	≤ 700	5	100	$\geq 10^9$	≤ 3
3R237K	190 ~ 260	≤ 700	5	100	$\geq 10^9$	≤ 3
3R238T	190 ~ 260	≤ 700	5	100	$\geq 10^9$	≤ 3

三电极放电管标志说明: Part number system



型号规格及外形尺寸

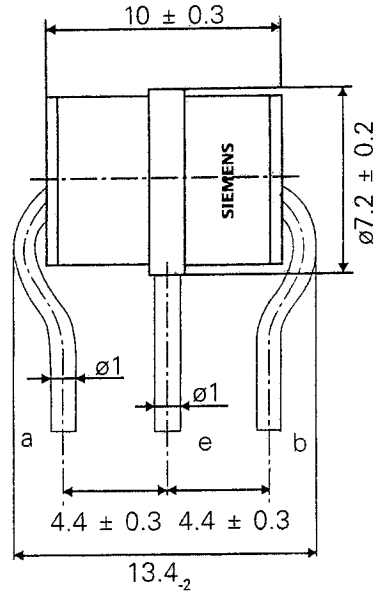
Types and Dimensions

三极管

3-Electrode Arresters

ET230X 三极管

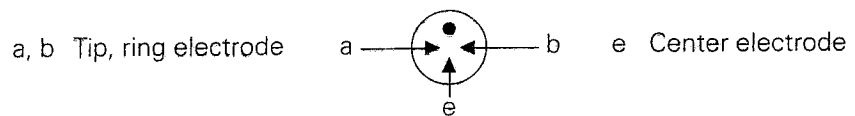
ET230X 3-Electrodes arrester



性能参数表 Specification

型号 Type	直流击穿电压 (伏) DC Sparkover Voltage (a-e, b-e) (V)	冲击击穿电压 (伏) Impulse Spark- over Voltage (a-e, b-e) (V)	耐工频电流 (安) AC Discharge Current (a-e, b-e) (A)	耐冲击电流 (安) 8/20 μ s Impulse Discharge Current (a-e, b-e) (KA)	绝缘电阻 (欧) Insulation Resistance (Ω)	极间电容 (微微法) Capacitance (a-e, b-e) (pF)
ET230X	184 - 276	≤ 700	5	5	$\geq 10^9$	≤ 1.5

注： 本表所列产品为出口产品
Note: This type is for export.



开关放电器

Switching Spark Gaps

概述

开关气体放电器击穿期间电流上升速度非常陡峭，因为开关时间在50纳秒以下，并且峰值电流异常高，所有利用此效应能产生几个微秒宽的陡前沿电压或电流脉冲。

开关放电器的结构与图2a所示的二极浪涌放电管相似。

开关放电器以其速度快、损耗低及容性能量储存电压控制放电而被广泛的采用。图8表示具有充电电阻器、点火电容器、开关放电器及点火变压器的典型点火电路。

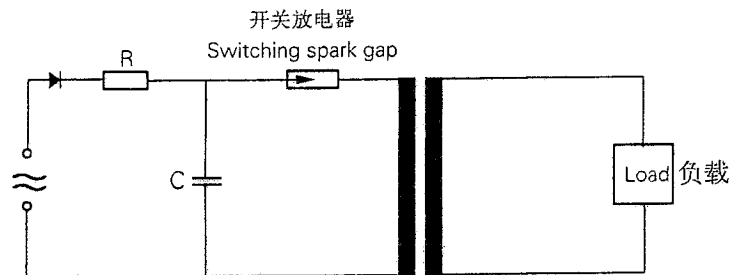


图8 典型点火线路

Figure 8 Typical ignition circuit

典型用途

采用CAS02X做为开关器件的电气气体点火装置。开关放电器产生点火变压器电流脉冲，其产生气体火焰点火所需的一般为12kV的高压脉冲。

高压气体放电灯是由短高电压脉冲点火。使用开关放电器很容易产生此类可超过几千伏的电压脉冲。

General

Gas-filled switching spark gaps are characterized by a very steep current rise during breakdown. Making use of this effect, steep voltage or current pulses of a few microseconds duration can be generated because of the switching time below 50 nanoseconds and the exceptionally high peak current.

The construction of a spark gap is similar to that of a surge arrester with two electrodes shown in figure 2a.

Switching spark gaps are preferred for a fast, low-loss and voltage-controlled discharge of capacitively stored energy. A typical ignition circuit with charging resistor, ignition capacitor, switching spark gap and ignition transformer is shown below in figure 8.

Typical application

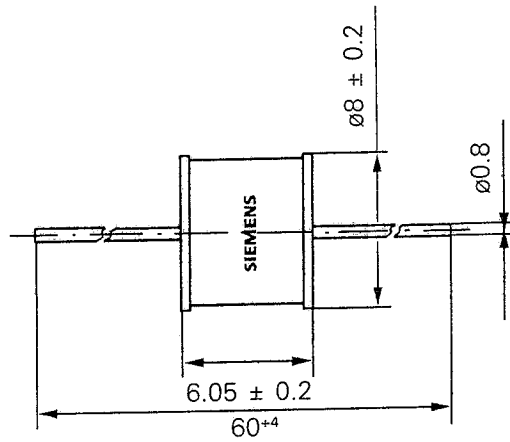
Electrical gas ignition devices, using CAS02X as Switching device. The switching spark gap generates the current pulse for the ignition transformer, which creates the high voltage pulse of typically 12 kV required for the ignition of the gas flame.

High pressure gas discharge lamps are to be ignited by short high voltage pulses. Such voltage pulses which must exceed several kV with hot lamps are easily generated by using switching spark gaps.

型号规格及外形尺寸

Type and Dimensions

CAS02X



直流击穿电压	190-255V	DC spark-over voltage	190-255V
最大开关电流	100A	Max. switching current	100A
最小开关电流	5A	Min. switching current	5A
直流状态下每秒最大点火次数	5	Max. ignition frequency per second at DC	5
最长连续工作时间	30s	Max. turn-on time	30s
最短恢复时间(经过最长连续工作时间后)	20s	Min. recovery time (at max. turn-on time)	20s
最大电荷传输总量	200As	Max. total charge transfer	200As
绝缘电阻	>100MΩ	Insulation resistance	>100MΩ
电容	2pF	Capacitance	2pF
重量	1.5g	Weight	1.5g
工作与储藏温度	-40 °C...+125 °C	Operation and storage temperature	-40 °C...+125 °C

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