



电路保护问题，宝宫帮您解决

We Make Electrical Circuits More Safety and Reliability



电路保护产品与应用

Circuit Protection Products and Applications

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关于宝宫电子

上海宝宫电子科技有限公司是一家汇集众多电路保护器件，为客户提供一站式服务的电路保护企业。公司具有深厚的技术背景，为客户提供电路保护方案设计、技术咨询和免费测试，也为客户提供齐备的电路保护器件，主要产品包括气体放电管(GDT)、瞬态抑制二极管(TVS)、半导体放电管(TSS)、静电抑制器(ESD)、压敏电阻(MOV)、塑封贴片压敏电阻 (PL-MOV)、抗浪涌贴片电阻 (BRW)、和自恢复保险丝(PPTC)等，应用领域包括汽车电子、安防、照明、通讯、IT周边设备、消费电子和工业控制等。

宝宫是一家创新技术型公司，跟随市场不断创新和发展的需要，不断推出创新型产品，如：

高能贴片压敏电阻(CMS)，主要特点是浪涌保护能力高、尺寸小，贴片化，热稳定特性优异，性能领先世界水平，主要应用于照明、通讯电源和汽车电子等保护；

宽输入低残压SPD，输入电压高达400VAC，典型钳位电压1000V，产品的可靠性和保护效果极好；

隔离浪涌保护器(BIS)，是针对非隔离LED驱动的浪涌保护要求而开发的半导体器件，该器件和MOV串联，在满足1000+2U的对地电气绝缘强度的安规要求基础上，可提供对地低残压浪涌保护，有效降低LED灯具共模浪涌损坏的风险；

抗浪涌贴片电阻 (BRW)，完全适合SMT组装，抗浪涌能力强，适用于有小型化、贴片化需求的应用；

高压贴片保险丝(2410BC系列)，可以在250VAC下工作，能够耐受1500A浪涌电流，适合用于高工作电压的过流保护场合；

宝宫也在积极与大学研究所、国际大公司、行业标杆客户以及行业方案商保持紧密接触，保证宝宫始终走在产品技术创新的前沿，不断有新的产品投放市场，以满足客户和市场的发展需求。

近期推出的超低残压保护器件CMSL就是一款超强功能的创新产品，以其体积小、通流大、保护效果好而在快充、低压电器、新能源及汽车电子等领域得到广泛关注。

About Boarden Electronics

Shanghai Boarden Electronics Technology Co., Ltd. is a leading circuit protection solution provider. Our vision is to make electronics safe and reliable with one stop services. With deep technology background, we can provide professional solutions for electronics equipment, consulting and free testing. Boarden Electronics has complete and wide product lines for over voltage and over current protection, including Gas Discharge Tube (GDT), Transient Voltage Suppressor (TVS), Thyristor Surge Suppressors (TSS), Electric-static Protection Device (ESD), Plastic Encapsulated Metal Oxide Varistor (PL-MOV), Surge-proof Fusing Resistor (BRW) and Polymer Positive Temperature Coefficient thermistor (PPTC). These products are widely used in security, lighting, computer, telecommunication, auto electronics, consumers and industrial markets etc.

Boarden Electronics is an innovative and technology-oriented company. We have designed and released new products such as:

Ceramic Micro-Surge Protection Device (CMS) offers robust protection and excellent transient energy absorption in a small form factor. Main applications are surge protection (SPD), lighting and auto electronics.

Wide input voltage, Low Clamping Voltage SPD provides the input voltage up to 400Vac and the typical clamp voltage around 1000V, has excellent reliability and protection.

BIS is a semiconductor device developed for surge protection requirements of non-isolated LED drivers. On the basis of meeting the safety requirements of electrical strength (1000+2U), the BIS can offer L/N-PE surge protection with low residual voltage for class I LED lamps, which can effectively reduce common mode surge damage risk of LED lamps.

Surge-proof SMD Resistor(BRW) performs well on SMT assembling process with powerful surge resistance.

High Voltage Chip Fuse (2410BC Series) can work under 250VAC and has lightning handling capability of 1500A.

Boarden provides a total solution for circuit protection to meet the increasing requirements of the market and keeps releasing new products by cooperation with universities, worldwide companies, leading companies of electronics and solution providers in industrial field.

The newly launched ultra-low clamping voltage protection device, CMSL, is an innovative product with outstanding performance. Its small size, high surge current capability, and excellent protection effectiveness have attracted widespread attention in fast charging, low-voltage electrical appliances, new energy, and automotive electronics applications.

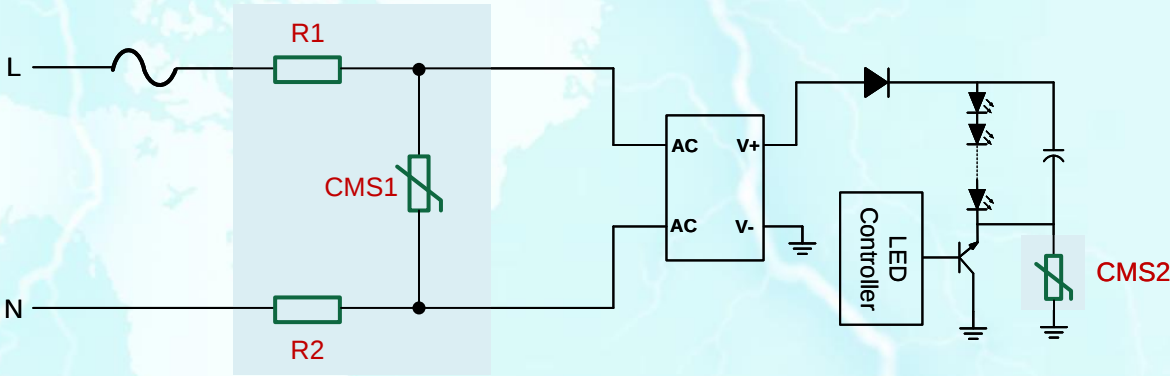
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典型应用 Typical Applications

1 LED照明驱动浪涌保护方案
Surge protection solutions for LED lighting drivers

1.1 小功率线性LED
Low power linear LED

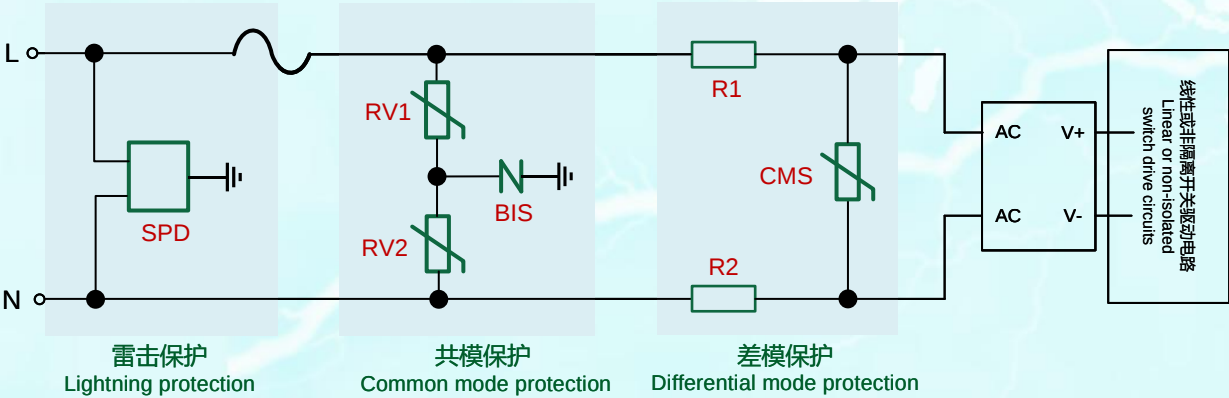


Area	R1	R2	CMS1	CMS2	Note
北美 North America	30~47Ω	-	CMS0806V241P101	-	振铃波 2500V Ring wave 2500V
			CMS0806V271P151	-	
			CMS0604V271P500	CMS0806V750P201	
			CMS0604V271P500	CMS0604V750P151	
欧洲, 澳洲 Europe, Australia	30~47Ω	-	CMS0806V471P500	-	浪涌 1000V, 满足新欧规线性驱动 Surge 1000V, Meeting IEC/EN 61000-3-2:2019 linear driver
	-	-	CMS1206V471P101	-	
	-	-	-	CMS0806V151P700	
印度, India	-	-	-	CMS0604V151P500	浪涌 4000V, 440Vac 2 小时 Surge 4000V, 440Vac 2 hours
	100Ω	100Ω	CMS1206V511P500-G3	-	
	100Ω	100Ω	CMS1206V511P500-G4	-	
中国, 东南亚 China, Southeast Asia	100Ω	-	CMS1206V511P500-H1	-	浪涌 4000V, 400Vac 2 小时 Surge 4000V, 400Vac 2 hours
	30~47Ω	-	CMS1206V511P500	-	
	30~47Ω	-	CMS1206V511P500-E	-	

■ CMS主要型号 CMS Main Part Numbers

P/N	V _M		V _N @1mA	Surge (8/20μs)
	AC (V)	DC (V)	(V)	(A)
CMS0604V750P151	46	60	75 [69-83]	150
CMS0806V151P700	95	125	150 [135-185]	70
CMS0806V750P201	46	60	75 [69-83]	200
CMS0806V271P151	175	225	270[243-297]	150
CMS0806V471P500	300	385	470[423-517]	50
CMS0806V511P500	320	410	510[459-561]	50
CMS1206V471P101	300	385	470[423-517]	100
CMS1206V511P500	320	410	510[459-561]	100
CMS1206V561P500	350	460	560[504-616]	50
CMS1206V511P500-H1	350	450	504-561	100
CMS1206V511P500-G3	380	490	550-580	80
CMS1210V471P401	300	385	470[423-517]	400
CMS1812V511P801	320	410	510[459-561]	800

1.2 户外&工业照明
Outdoor & Industrial Lighting



- SPD: 浪涌保护器, 常用规格: BSP2L10RPT (10kV, CB/TUV/CQC certification)
Surge protective device, commonly used model: BSP2L10RPT (10kV, CB/TUV/CQC certification)
- RV1/RV2: MOV, 10D681 or 10D102
- R1/R2: 保险电阻, 根据实际电路选择阻值和功率
Fusible resistors, select the resistor specification according to the actual circuit
- BIS: 隔离浪涌保护器, 常用规格见下表
Isolated surge protection device, commonly used specifications shown in the table below
- CMS: 贴片压敏电阻, 常用规格见下表
SMD varistor, commonly used specifications shown in the table below

■ CMS主要型号 CMS Main Part Numbers

P/N	V _M		V _N @1mA	Surge (8/20μs)
	AC (V)	DC (V)	(V)	(A)
CMS1210V271P601	175	225	270[243-297]	600
CMS1210V471P201-E	300	385	470[423-517]	300
CMS1210V511P151-E	320	410	510[459-561]	250
CMS1812V271P801	175	225	270[243-297]	800
CMS1812V471P401-E	300	385	470[423-517]	600
CMS1812V511P401	320	410	510[459-561]	600
CMS3025V271P501-B	175	225	270[243-297]	1200
CMS3025V471P501-B	300	385	470[423-517]	1200
CMS3025V511P401-B	320	410	510[459-561]	1200
CMS3025V561P401-B	350	460	560[504-616]	1200
CMS3025V681P401-B	420	560	680[612-748]	1000
CMS4032V271P102-B	175	225	270[243-297]	2000
CMS4032V471P102-B	300	385	470[423-517]	2000
CMS4032V511P801-B	320	410	510[459-561]	2000
CMS4032V561P801-B	350	460	560[504-616]	2000
CMS4032V681P801-B	420	560	680[612-748]	1500

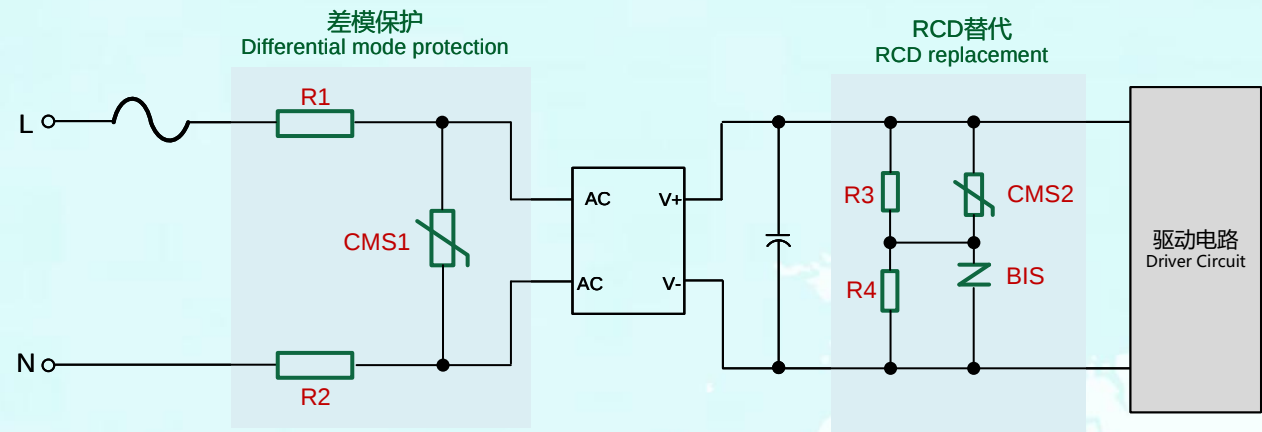
■ BIS主要型号 BIS Main Part Numbers

Part Number	Insulation Voltage (V _I)	Surge Starting Voltage (V _S)	Surge Capacity ¹⁾	Package
	Min (V)	Max (V)	V	
BIS-DS602-S ²⁾	1600	2200	6000	SMB
BIS-BR602-LM	1200	1700	6000	DO-27
BIS-CS103 ²⁾	1600	2200	10000+20%	SMC

Note 1: 浪涌波形 Surge Waveform 1.2/50us & 8/20us, Ri=12ohm
Note 2: 对于 BIS-DS602-S 和 BIS-CS103, 由于此二型号应用时为两个产品串联, 故 V_I 和 V_S 参数为两个产品串联之和
For BIS-DS602-S and BIS-CS103, the parameters V_I and V_S are the total values of two components, for these two components should be used by pairs in series during installation.

2 小功率电源浪涌保护贴片化升级方案

SMD upgrading solutions for surge protection in low power drivers



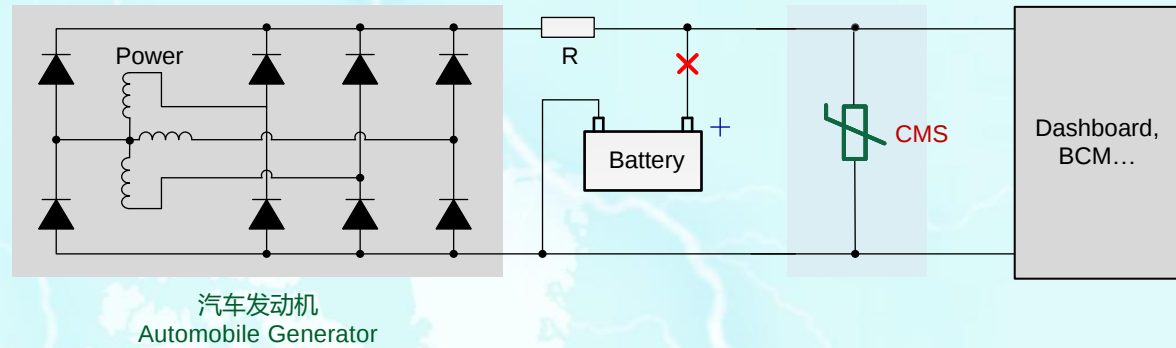
- R1/R2: 保险电阻，根据实际电路选择阻值和功率
Fusible resistors, select the resistor specification according to the actual circuit
- R3/R4: 分压电阻，根据CMS2和BIS电压大小选型
Voltage division resistor, Selection according to CMS2 and BIS voltage magnitude
- CMS: 贴片压敏电阻，常用规格见下表
SMD varistor, commonly used specifications shown in the table below
- BIS: 隔离浪涌保护器，常用规格见下表
Isolated surge protection device, commonly used specifications shown in the table below

主要型号 Main Part Numbers

Class	P/N	V _M		V _N @1mA	Surge (8/20μs)
		AC (V)	DC (V)	(V)	(A)
CMS1	CMS0806V511P500	320	410	510[459-561]	50
	CMS1206V511P500	320	410	510[459-561]	100
	CMS1210V511P151-E	320	410	510[459-561]	250
CMS2	CMS0806V391P500	250	320	390[351-429]	50
	CMS1206V391P101	250	320	390[351-429]	100
	CMS1210V391P201	250	320	390[351-429]	200
BIS	BIS131P201B	75	100	130[120-160]	200
	BIS311P201B	185	250	310[290-350]	200

3 汽车抛负载保护方案

Surge protection solutions for automobile load-dump



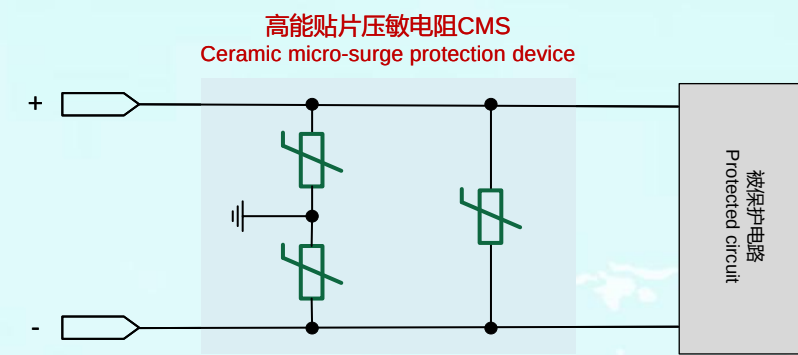
主要型号 Main Part Numbers

Applications	CMS	V _M (DC)	V _N @1mA	Surge (8/20μs)	Size (mm)
		(V)	(V)	(A)	
12V System	CMS1206V240P501	18	24[22-28]	500	3.2×1.6
	CMS1206V270P401	22	27[24-30]	400	3.2×1.6
	CMS1812V240P202	18	24[22-28]	2000	4.5×3.2
	CMS2220V240P302	18	24[22-28]	3000	5.6×5.0
24V System	CMS1206V420P501	30	42[37-46]	500	3.2×1.6
	CMS1210V420P102	30	42[37-46]	1000	3.2×2.5
	CMS1812V420P202	30	42[37-46]	2000	4.5×3.2
	CMS2220V420P302	30	42[37-46]	3000	5.6×5.0

4

DC电源端口浪涌保护方案

Surge protection solutions for DC power ports



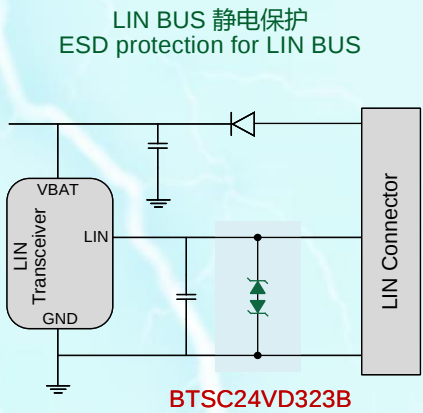
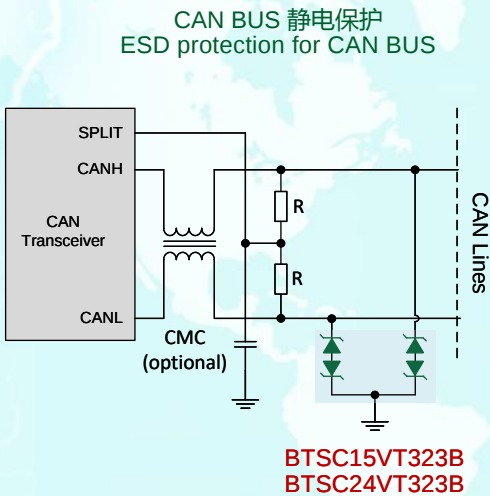
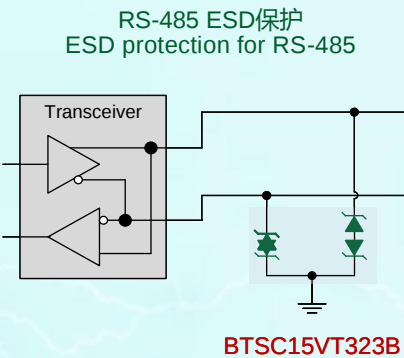
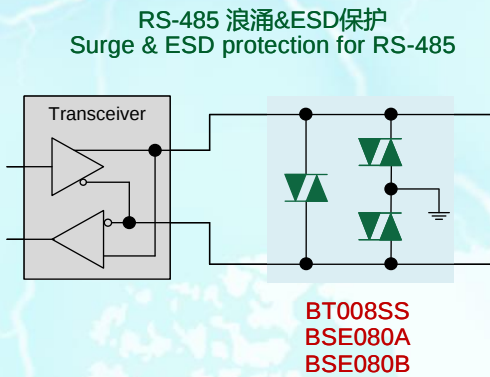
主要型号 Main Part Numbers

Applications	CMS	V _M (DC)	V _N @1mA	Surge (8/20μs)	Size (mm)
		(V)	(V)	(A)	
12V	CMS0603V240P101	18	24[22-28]	100	1.6×0.8
	CMS0806V240P401	18	24[22-28]	400	2.0×1.6
	CMS1206V240P501	18	24[22-28]	500	3.2×1.6
	CMS1210V240P102	18	24[22-28]	1000	3.2×2.5
	CMS1812V240P202	18	24[22-28]	2000	4.5×3.2
	CMS2220V240P302	18	24[22-28]	3000	5.6×5.0
24V	CMS0603V420P101	30	42[37-46]	100	1.6×0.8
	CMS0806V420P401	30	42[37-46]	400	2.0×1.6
	CMS1206V420P501	30	42[37-46]	500	3.2×1.6
	CMS1210V420P102	30	42[37-46]	1000	3.2×2.5
	CMS1812V420P202	30	42[37-46]	2000	4.5×3.2
	CMS2220V420P302	30	42[37-46]	3000	5.6×5.0
48V	CMS0806V750P301	60	75[69-83]	300	2.0×1.6
	CMS1206V750P501	60	75[69-83]	500	3.2×1.6
	CMS1210V750P801	60	75[69-83]	800	3.2×2.5
	CMS1210V750P122	60	75[69-83]	1200	3.2×2.5
	CMS1812V750P202	60	75[69-83]	2000	4.5×3.2
	CMS2220V750P502	60	75[69-83]	5000	5.6×5.0

5

总线保护方案

Surge protection solutions for BUS



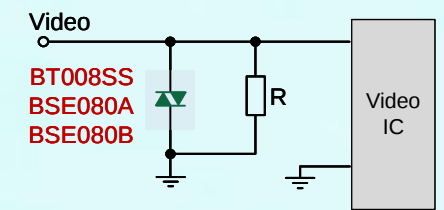
主要型号 Main Part Numbers

P/N	V _{RWM}	C _j	ESD (air and contact)	Surge		Package
	(V)	(pF)	(kV)	8/20μs (A)	10/700μs (V)	
BT008SS	6	50	30		2000	SOD-123
BSE080A	6	25	30		4000	SMA
BSE080B	6	50	30		6000	SMB
BTSC15VT323B	15	15	30	11		SOT-23
BTSC24VT323B	24	11	30	5		SOT-23
BTSC24VD323B	24	50	30	5		SOD-323

6 安防、通讯设备接口浪涌保护方案

Surge protection solutions for security and communication equipment interfaces

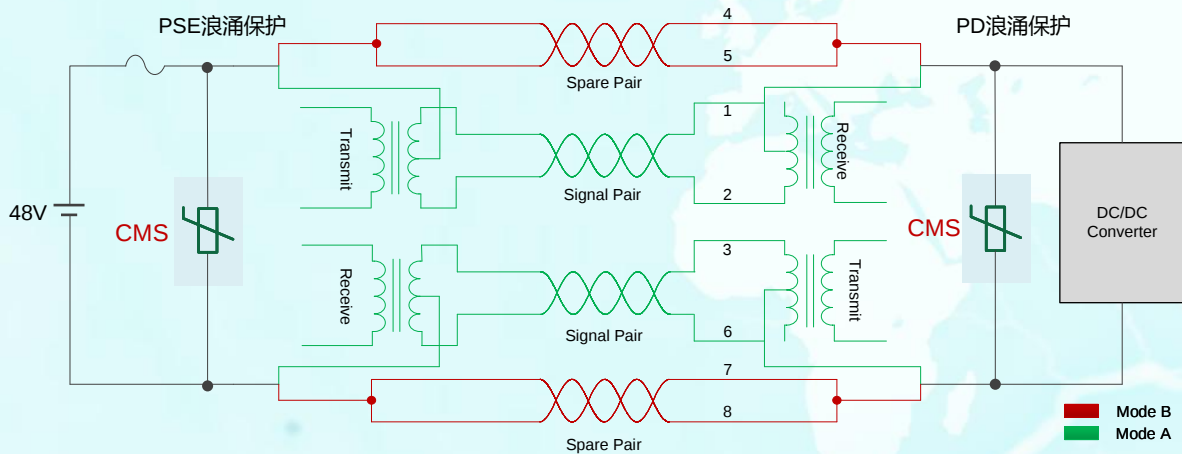
视频接口浪涌&ESD保护
Surge & ESD protection for Video port



主要型号 Main Part Numbers

P/N	V_{RWM}	C_j	ESD Air and Contact	Surge 10/700 μ s	Package
	(V)	(pF)			
BT008SS	6	50	30	2000	SOD-123
BSE080A	6	25	30	4000	SMA
BSE080B	6	50	30	6000	SMB

PoE保护方案
Surge protection for PoE

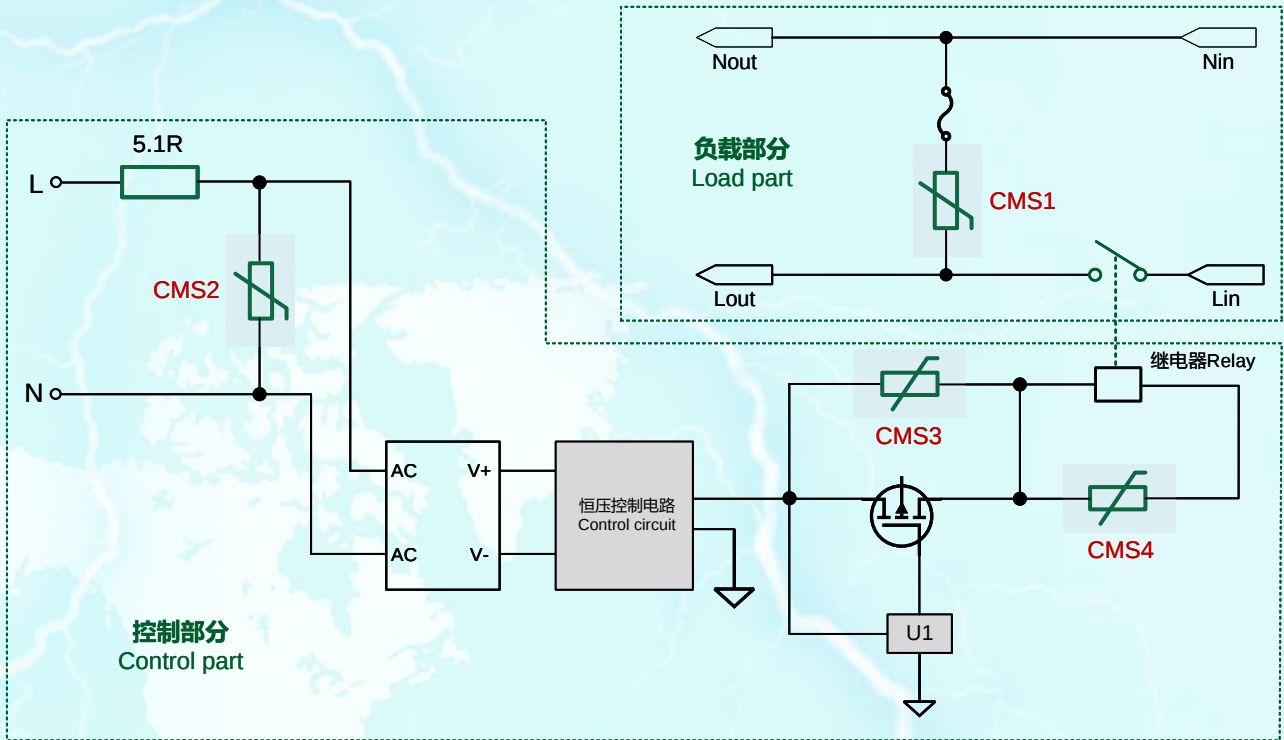


主要型号 Main Part Numbers

CMS	V_M (DC)	V_N @1mA	Surge		Size (mm)
	(V)	(V)	8/20 μ s (A)	10/700 μ s (V)	
CMS1206V750P501	60	75[69-83]	500	2000	3.2×1.6
CMS1210V750P801	60	75[69-83]	800	4000	3.2×2.5
CMS1210V750P122	60	75[69-83]	1200	6000	3.2×2.5
CMS1812V750P202	60	75[69-83]	2000	8000	4.5×3.2
CMS1812V820P302	65	82[73-91]	3000	10000	5.6×5.0
CMS1812V820P401	65	82[73-91]	400	2000	5.6×5.0
CMS1812V820P601	65	82[73-91]	600	4000	5.6×5.0
CMS2220V820P502	65	82[73-91]	5000	12000	6.0×5.3

7 智能家居典型保护方案

Typical protection solutions for smart home devices



主要型号 Main Part Numbers

CMS	P/N	V_M		V_N @1mA	Surge (8/20 μ s)
		AC (V)	DC (V)	(V)	(A)
CMS1	CMS1210V471P201-E	300	385	470[423-517]	300
	CMS1210V511P151-E	320	410	510[459-561]	300
	CMS1812V471P401-E	300	385	470[423-517]	800
	CMS1812V511P401	320	410	510[459-561]	600
CMS2	CMS1206V471P101	300	385	470[423-517]	100
	CMS1206V511P500	320	410	510[459-561]	100
CMS3	CMS1206V240P251	12.7	18	24[22-28]	250
	CMS1206V420P201	21.3	30	42[37-46]	200
	CMS1206V750P151	46	60	75[69-83]	150
CMS4	CMS0603V140P101	6.4	9	14[12-16]	100
	CMS0603V240P101	12.7	18	24[22-28]	100
	CMS1206V140P251	6.4	9	14[12-16]	250
	CMS1206V240P251	12.7	18	24[22-28]	250

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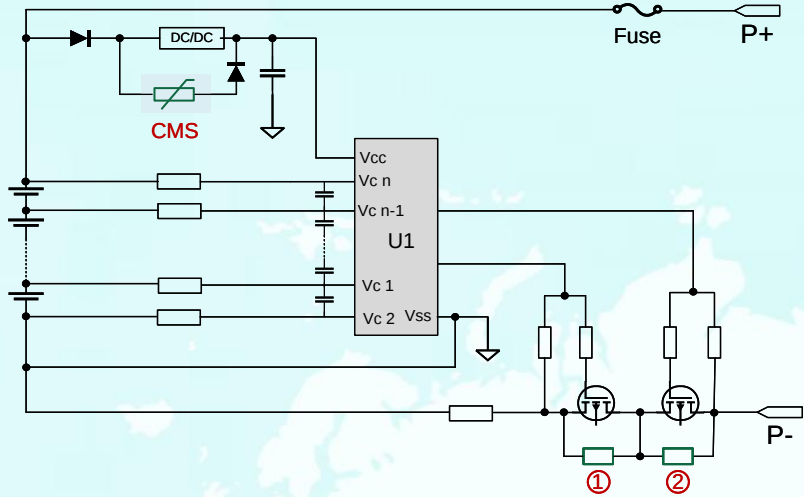
BMS全电路保护方案

Total solutions for circuit protection of BMS

■

优点 Advantage

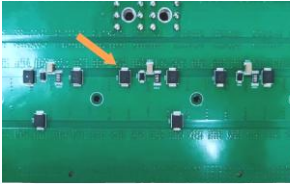
- 尺寸小，节省布线空间
Small size saving layout space
- 浪涌能力高，能耐受更大的浪涌冲击
High surge capacity, able to withstand larger surge wave
- 钳位电压低，保护效果更好
Low clamp voltage for better protection
- 高温性能好，在125℃电性能不降额
Good high-temperature performance, no degradation of electrical properties at 125°C
- 一颗CMS最多替代6颗SMD的TVS
One CMS replaces up to 6 SMD TVSs



■

方案1: TVS对TVS的替代方案 Replacement of TVS to TVS solution

- 对主流TVS方案PIN-PIN替代，不用变更PCB布线
TVS Pin-Pin replacement, no changing of layout
- 更具性价比
More cost-effective



■

方案2: CMS对TVS的替代 Replacement of CMS to TVS

- 浪涌能力高，能耐受更大的浪涌冲击
High surge capacity, able to withstand larger surge wave
- 钳位电压低，保护效果更好
Low clamp voltage for better protection
- 高温性能好，在125℃电性能不降额
Good high-temperature performance, no degradation of electrical properties at 125°C



■

方案3: 一颗CMS替代多颗大功率TVS的方案 Replacement of one CMS to multiple power TVS

- 一颗CMS最多替代6颗SMD的TVS
One CMS replaces up to 6 SMD TVSs
- 大大减少布线空间和提升贴片效率
Significantly reduce layout space and improve assembly efficiency
- 温度稳定性更好，可工作在125度
High temperature stability at 125°C
- 解决TVS多颗并联“肩膀”问题，提高浪涌可靠性
Improve the reliability comparing with multiples TVS because of random voltage range



■

方案4: 低残压的CMSL方案 Low clamping voltage CMSL solution

- 更低的残压，更好的保护效果
Low clamping voltage of CMSL for better protection
- 更容易匹配MOS管，降低BMS方案成本
Better to protect surge wave sensitive MOS, saving cost of BMS
- 更小的布线空间
Saving layout space



■

主要型号 Main Part Numbers

Category	Battery strings	P/N or Size (mil)	V _M (DC)	V _N @1mA	Surge
			(V)	(V)	8/20μs (A)
CMS	10	1206/1210/1812/2220	38	50[46-54]	200~3000
	16	1206/1210/1812/2220	65	82[73-91]	150~3000
	24	1206/1210/1812/2220	100	120[108-132]	150~3000

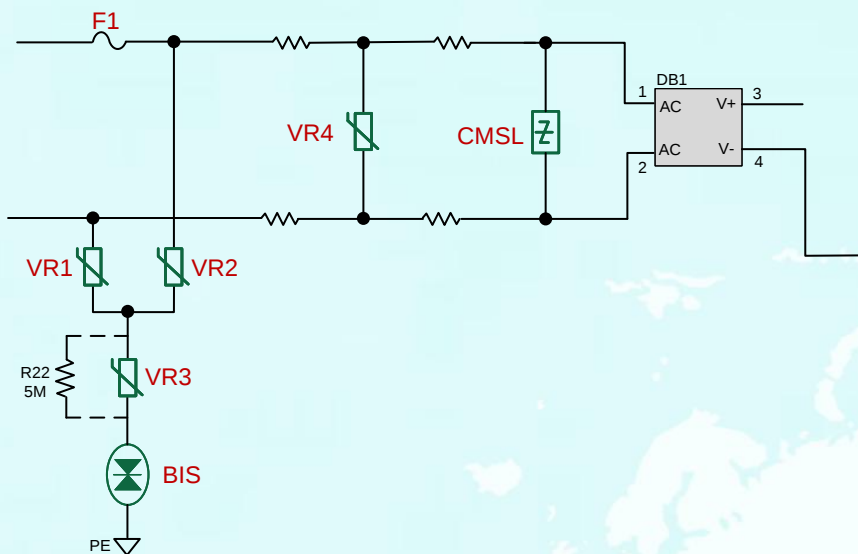
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主要型号 Main Part Numbers

Category		P/N or Size (mil)	V _R	V _N @1mA	Surge
			(V)	(V)	10/1000μs (A)
① ②	TVS	1.5SMCJ64CA	64	71.1-78.60	14.6
		3SMDJ64CA	64	71.1-78.60	29.1
		1.5SMCJ85CA	85	94.4-104.0	11.0
		1.5SMCJ100CA	100	111-123	9.3
	CMS+BIS	CMS0806V520P501&BIS300P201B	64	73.8-92.2	19.5
		CMS1206V520P102&BIS300P201B	64	73.8-92.2	30.1
		CMS0806V820P501&BIS300P201B	100	100-126	16.8
		CMS0806V750P501&BIS300P201B	85	94.5-117.5	19.4
	CMSL	CMSLAV640P501	64	73.8-92.2	19.5
		CMSLAV101P501	100	94.5-117.5	19.1
	CMS	CMS1210V750P122	60	69-83	171
		CMS1812V750P302	60	69-83	429
		CMS2220V680P502	56	61-75	714
		CMS2220V680P802	56	61-75	1143
		CMS2220V820P502	65	73-91	714

9 低残压保护器件CMSL应用

Low Residual Voltage Protection Device Applications



方案特征与优势

Features and Benefits

- CMSL系列为贴片模式，自动化生产效率高
CMSL series, SMT type, automation of assembly and high producing efficiency
- 体积小，占用空间小
Small size and small footprint
- 漏电流低，不容易劣化
Low leakage current, no deterioration
- 耐受工频电压高，不容易起火
Withstand high frequency voltage, no fire
- 残压低，对电路保护效果好
Low residual voltage, good protection for circuits

主要型号

Main Part Numbers

Category	P/N	Parameters
CMSL	CMSLAV641P500	640V, 50A
	CMSLDV401P751	400V, 750A
	CMSLDV551P102	550V, 1000A
	CMSLEV541P202	540V, 2000A
F1	2410BC250-500G	5A, 250VAC
VR1, VR2, VR3	CMS3025V681P401-B	680V, 1200A
VR4	CMS4032V511P801-B	510V, 2000A
BIS	BIS-DS602-S	800V, 500A

▶ 产品选型速查

Quick Selection of Products

1 高能贴片压敏电阻CMS

CMS (ceramic micro-surge) protection device

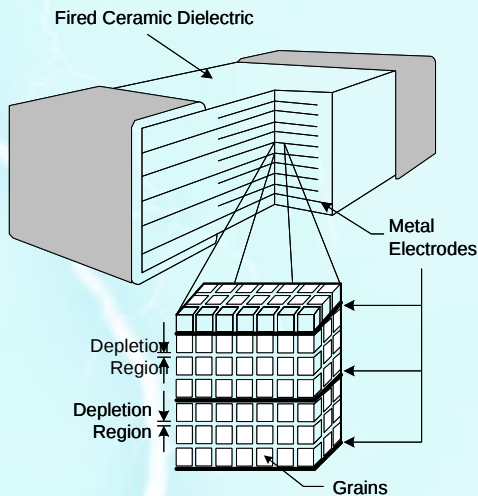
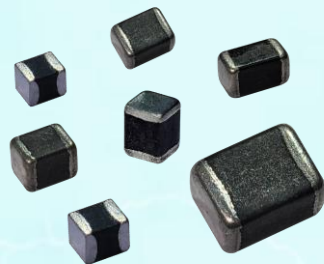
CMS是一种基于多层工艺的贴片高能浪涌保护器，具有尺寸小、浪涌吸收能力强、低保护电压效果好以及高温性能稳定等特点，特别适合于空间尺寸受限和工作环境严酷(如高温，高湿等)的应用场景。宝宫CMS型号齐全（压敏电压14V~560V，浪涌电流高达5kA），满足绝大部分DC和AC电源端口浪涌保护的需求。

CMS (Ceramic micro-surge protection device) is manufactured by multi-layer technology which presents excellent transient energy absorption, low clamping voltage and high temperature stability in a small SMD package, particularly suitable for applications with limited space size and tough working environment (e.g. high temperature, high humidity, etc.). Boarden's CMS family are widely available (varistor voltage:14~560V, surge current up to 5kA) to meet the needs of most DC and AC power port surge protection

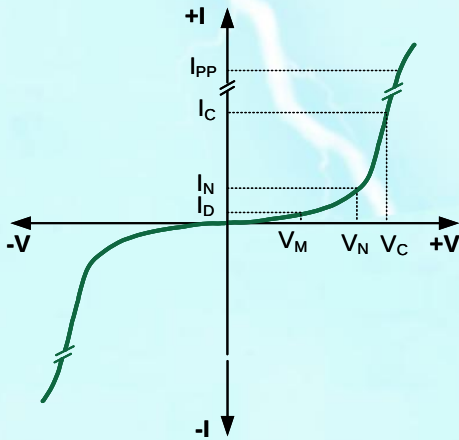
产品特点

Features

- 小型化、贴片化 Small size, SMD type
- 保护电压低 Low clamping voltage
- 环境125℃不降额 No temperature derating up to 125℃ ambient
- 雷击防护能量强 High surge handling capability
- 雷击重复冲击寿命长 Long life under repetitive surges
- 高温性能稳定 Reliability under high temperature
- 失效不起火 Failure without fire, better than UL94 V-0
- 安规证书 Certificates: TUV,UL



叠层内部结构
Multilayer Internal Construction



缩略词	参数说明	
V_M	Peak Off-state Voltage	不动作电压
I_D	Leakage Current @ V_N	漏电流
V_N	Spark Over Voltage	击穿电压
I_N	1mA Test Current	1mA 测试电流
V_C	Clamping Voltage	钳位电压
I_C	Test surge Current	测试浪涌电流
I_{PP}	Peak Current	峰值电流

■ 高压产品规格 High voltage product specifications

Part Number	Maximum Continuous Voltage		Nominal Varistor Voltage @1mA	Max. Clamping Voltage @8/20μs		Energy @10/1000μs	Peak Pulse Current @8/20μs
	AC (V)	DC (V)	V _N (V)	V _C (V)	I _C (A)	E _T (J)	I _{PP} (A)
CMS0604V151P500	95	125	150[135-185]	250	1.0	0.30	50
CMS0604V241P500	150	200	240[216-264]	360	1.0	0.30	50
CMS0604V271P500	175	225	270[243-297]	410	1.0	0.30	50
CMS0806V151P700	95	125	150[135-185]	250	5.0	0.80	70
CMS0806V241P101	150	200	240[216-264]	360	5.0	0.50	100
CMS0806V271P151	175	225	270[243-297]	410	5.0	0.50	150
CMS0806V301P101	195	250	300[270-330]	450	5.0	0.50	100
CMS0806V331P500	210	270	330[297-363]	500	5.0	0.50	50
CMS0806V361P500	230	300	360[324-396]	540	5.0	0.50	50
CMS0806V391P500	250	320	390[351-429]	590	5.0	0.50	50
CMS0806V431P500	275	350	430[387-473]	650	5.0	0.50	50
CMS0806V471P500	300	385	470[423-517]	710	5.0	0.50	50
CMS0806V511P500	320	410	510[459-561]	840	5.0	0.50	50
CMS1206V241P201	150	200	240[216-264]	360	5.0	1.0	200
CMS1206V271P201	175	225	270[243-297]	410	5.0	1.0	200
CMS1206V301P201	195	250	300[270-330]	450	5.0	1.0	200
CMS1206V331P151	210	270	330[297-363]	500	5.0	1.0	150
CMS1206V361P151	230	300	360[324-396]	540	5.0	1.0	150
CMS1206V391P101	250	320	390[351-429]	590	5.0	1.0	100
CMS1206V431P101	275	350	430[387-473]	650	5.0	1.0	100
CMS1206V471P101	300	385	470[423-517]	710	5.0	1.0	100
CMS1206V511P500	320	410	510[459-561]	840	5.0	1.0	100
CMS1206V561P500	350	460	560 [504-616]	950	5.0	1.0	50
CMS1206V471P101-J	300	385	470[423-517]	710	5.0	0.5	70
CMS1206V511P500-J	320	410	510[459-561]	840	5.0	0.5	70
CMS1206V511P500-H1	320	410	530[500-561]	840	5.0	1.0	100
CMS1206V511P500-G1	350	460	590[560-620]	1020	5.0	0.8	100
CMS1210V241P601	150	200	240[216-264]	360	5.0	2.2	600
CMS1210V271P601	175	225	270[243-297]	410	5.0	2.2	600
CMS1210V301P401	195	250	300[270-330]	450	5.0	2.0	400
CMS1210V331P301	210	270	330[297-363]	500	5.0	2.0	300
CMS1210V361P301	230	300	360[324-396]	540	5.0	2.0	300

■ 高压产品规格 High voltage product specifications

Part Number	Maximum Continuous Voltage		Nominal Varistor Voltage @1mA	Max. Clamping Voltage @8/20μs		Energy @10/1000μs	Peak Pulse Current @8/20μs
	AC (V)	DC (V)	V _N (V)	V _C (V)	I _C (A)	E _T (J)	I _{PP} (A)
CMS1210V391P201	250	320	390[351-429]	590	5.0	2.0	200
CMS1210V431P201	275	350	430[387-473]	650	5.0	2.0	200
CMS1210V471P201	300	385	470[423-517]	710	5.0	2.0	200
CMS1210V471P201-E	300	385	470[423-517]	710	5.0	2.5	300
CMS1210V471P401	300	385	470[423-517]	710	5.0	2.7	400
CMS1210V511P151	320	410	510[459-561]	840	5.0	2.0	150
CMS1210V511P151-E	320	410	510[459-561]	840	5.0	2.5	250
CMS1210V511P401	320	410	510[459-561]	840	5.0	2.0	400
CMS1210V561P101	350	460	560[504-616]	950	5.0	2.0	100
CMS1812V241P801	150	200	240[216-264]	360	5.0	4.5	800
CMS1812V271P801	175	225	270[243-297]	410	5.0	4.5	800
CMS1812V301P601	195	250	300[270-330]	450	5.0	4.5	600
CMS1812V331P501	210	270	330[297-363]	500	5.0	4.5	500
CMS1812V361P501	230	300	360[324-396]	540	5.0	4.5	500
CMS1812V391P401	250	320	390[351-429]	590	5.0	4.5	400
CMS1812V431P401	275	350	430[387-473]	650	5.0	4.5	400
CMS1812V471P401	300	385	470[423-517]	710	5.0	4.5	400
CMS1812V471P401-E	300	385	470[423-517]	710	5.0	5.5	600
CMS1812V471P801	300	385	470[423-517]	710	5.0	6.5	800
CMS1812V511P251	320	410	510[459-561]	840	5.0	4.5	250
CMS1812V511P401	320	410	510[459-561]	840	5.0	4.5	400
CMS1812V561P251	350	460	560[504-616]	950	5.0	4.5	250
CMS2220V241P152	150	200	240[216-264]	395	10.0	7.0	1500
CMS2220V271P152	175	225	270[243-297]	455	10.0	7.5	1500
CMS2220V301P122	195	250	300[270-330]	495	10.0	7.5	1200
CMS2220V331P102	210	270	330[297-363]	500	5.0	7.0	1000
CMS2220V361P102	230	300	360[324-396]	595	10.0	7.0	1000
CMS2220V391P801	250	320	390[351-429]	650	10.0	7.0	800
CMS2220V431P801	275	350	430[387-473]	710	10.0	7.5	800
CMS2220V471P801	300	385	470[423-517]	775	10.0	8.0	800
CMS2220V511P401	320	410	510[459-561]	840	5.0	7.0	400
CMS2220V561P401	350	460	560[504-616]	950	5.0	7.0	400

■ 低压产品规格 Low voltage product specifications

0603 Type

Part Number	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20μs		Energy @10/1000μs	Peak Pulse Current @8/20μs
	DC (V)	AC (V)		V _C (V)	I _C (A)		
CMS0603V120P300	5.5	4.0	12 [10-14]	23	1.0	0.1	30
CMS0603V140P101	9	6.4	14 [11-16]	30	1.0	0.1	100
CMS0603V240P101	18	12.7	24 [22-28]	45	1.0	0.1	100
CMS0603V420P101	30	21.3	42 [37-46]	70	1.0	0.1	100
CMS0603V500P800	38	30.0	50 [46-54]	80	1.0	0.08	80
CMS0603V600P600	48	34.1	60 [54-67]	110	1.0	0.08	60
CMS0603V680P300	56	40.0	68 [61-75]	125	1.0	0.05	30
CMS0603V750P300	60	46.0	75 [69-83]	130	1.0	0.05	30
CMS0603V820P300	65	50.0	82 [73-91]	135	1.0	0.05	30
CMS0603V101P200	85	60.0	100 [90-110]	165	1.0	0.03	20

0806 Type

Part Number	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20μs		Energy @10/1000μs	Peak Pulse Current @8/20μs
	DC (V)	AC (V)		V _C (V)	I _C (A)		
CMS0806V140P401	5.5	6.4	14 [11-16]	30	5.0	0.5	400
CMS0806V240P401	18	12.7	24 [22-28]	45	5.0	0.5	400
CMS0806V420P401	30	21.3	42 [37-46]	70	5.0	0.5	400
CMS0806V500P401	38	30.0	50 [46-54]	80	5.0	0.7	400
CMS0806V600P301	48	34.1	60 [54-67]	110	5.0	0.7	300
CMS0806V680P301	56	40.0	68 [61-75]	125	5.0	0.7	300
CMS0806V750P301	60	46.0	75 [69-83]	130	5.0	0.7	300
CMS0806V820P301	65	50.0	82 [73-91]	135	5.0	0.7	300
CMS0806V101P201	85	60.0	100 [90-110]	165	5.0	0.7	200
CMS0806V121P201	100	75.0	120 [108-132]	200	5.0	0.7	200
CMS0806V151P151	125	95.0	150 [135-165]	260	5.0	0.5	150
CMS0806V181P101	150	115	180 [162-198]	325	5.0	0.5	100

0805 Type

Part Number	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20μs		Energy @10/1000μs	Peak Pulse Current @8/20μs
	DC (V)	AC (V)		V _C (V)	I _C (A)		
CMS0805V120P600	5.5	4	12 [10-14]	23	5.0	0.2	60
CMS0805V120P121	5.5	4	12 [10-14]	23	5.0	0.3	120
CMS0805V120P151	5.5	4	12 [10-14]	23	5.0	0.4	150
CMS0805V140P600	9.0	6.4	14 [11-16]	30	5.0	0.2	60
CMS0805V140P121	9.0	6.4	14 [11-16]	30	5.0	0.3	120
CMS0805V140P151	9.0	6.4	14 [11-16]	30	5.0	0.4	150
CMS0805V180P600	14	10	18 [16-22]	35	5.0	0.2	60
CMS0805V180P121	14	10	18 [16-22]	35	5.0	0.3	120
CMS0805V180P151	14	10	18 [16-22]	35	5.0	0.4	150
CMS0805V240P600	18	12.7	24 [22-28]	45	5.0	0.2	60
CMS0805V240P121	18	12.7	24 [22-28]	45	5.0	0.3	120
CMS0805V240P151	18	12.7	24 [22-28]	45	5.0	0.4	150
CMS0805V300P600	22	15.6	30 [26-34]	50	5.0	0.2	60
CMS0805V300P121	22	15.6	30 [26-34]	50	5.0	0.3	120
CMS0805V330P600	26	18.4	33 [31-38]	60	5.0	0.2	60
CMS0805V330P121	26	18.4	33 [31-38]	60	5.0	0.3	120
CMS0805V420P600	30	21.3	42 [37-46]	70	5.0	0.2	60
CMS0805V420P121	30	21.3	42 [37-46]	70	5.0	0.3	120

1206 Type

Part Number	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20μs		Energy @10/1000μs	Peak Pulse Current @8/20μs
	DC (V)	AC (V)	V _N (V)	V _C (V)	I _C (A)	E _T (J)	I _{PP} (A)
CMS1206V120P251	5.5	4.0	12 [10-14]	23	5.0	0.5	250
CMS1206V140P251	9	6.4	14 [12-16]	30	5.0	0.5	250
CMS1206V140P501	9	6.4	14 [12-16]	30	5.0	0.5	500
CMS1206V240P251	18	12.7	24 [22-28]	45	5.0	0.3	250
CMS1206V240P501	18	12.7	24 [22-28]	45	5.0	0.5	500
CMS1206V420P201	30	21.3	42 [37-46]	70	5.0	0.4	200
CMS1206V420P501	30	21.3	42 [37-46]	70	5.0	0.8	500
CMS1206V500P201	38	30.0	50 [46-54]	80	5.0	0.4	200
CMS1206V500P501	38	30.0	50 [46-54]	80	5.0	1	500
CMS1206V600P151	48	34.1	60 [54-67]	110	5.0	0.4	150
CMS1206V600P501	48	34.1	60 [54-67]	110	5.0	1.2	500
CMS1206V680P151	56	40.0	68 [61-75]	125	5.0	0.4	150
CMS1206V680P501	56	40.0	68 [61-75]	125	5.0	1.2	500
CMS1206V750P151	60	46.0	75 [69-83]	130	5.0	0.4	150
CMS1206V750P501	60	46.0	75 [69-83]	130	5.0	1.2	500
CMS1206V820P151	65	50.0	82 [73-91]	135	5.0	0.6	150
CMS1206V820P501	65	50.0	82 [73-91]	135	5.0	1.2	500
CMS1206V101P151	85	60.0	100 [90-110]	165	5.0	0.6	150
CMS1206V101P401	85	60.0	100 [90-110]	165	5.0	1.2	400
CMS1206V121P151	100	75.0	120 [108-132]	200	5.0	0.6	150
CMS1206V121P401	100	75.0	120 [108-132]	200	5.0	1.2	400

1210 Type

Part Number	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20μs		Energy @10/1000μs	Peak Pulse Current @8/20μs
	DC (V)	AC (V)	V _N (V)	V _C (V)	I _C (A)	E _T (J)	I _{PP} (A)
CMS1210V120P401	5.5	4.0	12 [10-14]	23	5.0	0.5	400
CMS1210V140P401	9	6.4	14 [12-16]	30	5.0	0.5	400
CMS1210V240P401	18	12.7	24 [22-28]	45	5.0	0.5	400
CMS1210V240P102	18	12.7	24 [22-28]	45	5.0	1.5	1000
CMS1210V420P301	30	21.3	42 [37-46]	70	5.0	0.5	300
CMS1210V420P102	30	21.3	42 [37-46]	70	5.0	2	1000
CMS1210V500P301	38	30.0	50 [46-54]	80	5.0	0.8	300
CMS1210V500P102	38	30.0	50 [46-54]	80	5.0	2.5	1000
CMS1210V600P301	48	34.1	60 [54-67]	110	5.0	0.8	300
CMS1210V600P102	48	34.1	60 [54-67]	110	5.0	3	1000
CMS1210V680P301	56	40.0	68 [61-75]	125	5.0	1	300
CMS1210V680P122	56	40.0	68 [61-75]	125	5.0	4	1200
CMS1210V750P301	60	46.0	75 [69-83]	130	5.0	1	300
CMS1210V750P801	60	46.0	75 [69-83]	130	5.0	4	800
CMS1210V750P122	60	46.0	75 [69-83]	130	5.0	4	1200
CMS1210V820P301	65	50.0	82 [73-91]	135	5.0	1.6	300
CMS1210V820P122	65	50.0	82 [73-91]	135	5.0	4	1200
CMS1210V101P201	85	60.0	100 [90-110]	165	5.0	0.7	200
CMS1210V101P401	85	60.0	100 [90-110]	165	5.0	1.6	400
CMS1210V101P152	85	60.0	100 [90-110]	165	5.0	5	1500
CMS1210V121P201	100	75.0	120 [108-132]	200	5.0	1	200
CMS1210V121P102	100	75.0	120 [108-132]	200	5.0	5	1000

1812 Type

Part Number	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20μs		Energy @10/1000μs	Peak Pulse Current @8/20μs
	DC (V)	AC (V)	V _N (V)	V _C (V)	I _C (A)	E _T (J)	I _{PP} (A)
CMS1812V120P801	5.5	4.0	12 [10-14]	23	5.0	1	800
CMS1812V140P801	9	6.4	14 [12-16]	30	5.0	0.5	800
CMS1812V240P801	18	12.7	24 [22-28]	45	5.0	0.5	800
CMS1812V240P202	18	12.7	24 [22-28]	45	5.0	1.3	2000
CMS1812V420P801	30	21.3	42 [37-46]	70	5.0	0.7	800
CMS1812V420P202	30	21.3	42 [37-46]	70	5.0	2	2000
CMS1812V500P801	38	30.0	50 [46-54]	80	5.0	1	800
CMS1812V500P202	38	30.0	50 [46-54]	80	5.0	2.5	2000
CMS1812V600P601	48	34.1	60 [54-67]	110	5.0	1.1	600
CMS1812V600P202	48	34.1	60 [54-67]	110	5.0	3	2000
CMS1812V680P601	56	40.0	68 [61-75]	125	5.0	1.1	600
CMS1812V680P202	56	40.0	68 [61-75]	125	5.0	3.5	2000
CMS1812V750P601	60	46.0	75 [69-83]	130	5.0	1.1	600
CMS1812V750P202	60	46.0	75 [69-83]	130	5.0	3	2000
CMS1812V820P601	65	50.0	82 [73-91]	135	5.0	1.5	600
CMS1812V820P302	65	50.0	82 [73-91]	135	5.0	7.5	3000
CMS1812V101P501	85	60.0	100 [90-110]	165	5.0	2	500
CMS1812V101P152	85	60.0	100 [90-110]	165	5.0	7	1500
CMS1812V121P501	100	75.0	120 [108-132]	200	5.0	2	500
CMS1812V121P152	100	75.0	120 [108-132]	200	5.0	7	1500
CMS1812V151P801	125	95.0	150 [135-165]	260	5.0	0.5	800
CMS1812V181P501	150	115	180 [162-198]	325	5.0	0.5	500

2220 Type

Part Number	Maximum Continuous Voltage		Varistor Voltage @1mA	Max. Clamping Voltage @8/20μs		Energy @10/1000μs	Peak Pulse Current @8/20μs
	DC (V)	AC (V)	V _N (V)	V _C (V)	I _C (A)	E _T (J)	I _{PP} (A)
CMS2220V120P122	5.5	4.0	12 [10-14]	23	5.0	1.5	1200
CMS2220V140P122	9	6.4	14 [12-16]	30	10.0	1.5	1200
CMS2220V240P122	18	12.7	24 [22-28]	45	10.0	1.5	1200
CMS2220V240P302	18	12.7	24 [22-28]	45	10.0	4	3000
CMS2220V420P122	30	21.3	42 [37-46]	70	10.0	2.6	1200
CMS2220V420P302	30	21.3	42 [37-46]	70	10.0	7	3000
CMS2220V500P122	38	30.0	50 [46-54]	80	10.0	2.6	1200
CMS2220V500P302	38	30.0	50 [46-54]	80	10.0	8	3000
CMS2220V500P502	38	30.0	50 [46-54]	80	10.0	10	5000
CMS2220V500P802	38	30.0	50 [46-54]	80	10.0	6	8000
CMS2220V600P901	48	34.1	60 [54-67]	110	10.0	3	900
CMS2220V600P302	48	34.1	60 [54-67]	110	10.0	10	3000
CMS2220V680P901	56	40.0	68 [61-75]	125	10.0	3	900
CMS2220V680P502	56	40.0	68 [61-75]	125	10.0	17	5000
CMS2220V750P901	60	46.0	75 [69-83]	130	10.0	2.7	900
CMS2220V750P502	60	46.0	75 [69-83]	130	10.0	5	5000
CMS2220V820P901	65	50.0	82 [73-91]	135	10.0	3	900
CMS2220V820P302	65	50.0	82 [73-91]	135	10.0	10	3000
CMS2220V820P502	65	50.0	82 [73-91]	135	10.0	18	5000
CMS2220V101P801	85	60.0	100 [90-110]	165	10.0	4	800
CMS2220V101P452	85	60.0	100 [90-110]	165	10.0	21	4500
CMS2220V121P801	100	75.0	120 [108-132]	200	10.0	4	800
CMS2220V121P402	100	75.0	120 [108-132]	200	10.0	21	4000
CMS2220V151P202	125	95.0	150 [135-165]	260	5.0	12	2000
CMS2220V181P152	150	115	180 [162-198]	325	5.0	12	1500

2 塑封贴片压敏电阻

Plastic chip varistor

塑封贴片压敏电阻是一种贴片的压敏电阻保护器件，具有高能量吸收能力、高工作温度（125℃）和快速响应，钳位电压低等特点。该器件在一些空间要求较高的应用场合可替代传统的插件压敏电阻，可满足自动化SMT安装要求。

Plastic encapsulated surface mount varistor is a type of surface mount varistor protection device, characterized by high energy absorption capacity, high operating temperature (125 ° C), fast response, and low clamping voltage. This device can replace traditional plug-in varistors in some space demanding applications and meet the requirements of automated SMT installation.



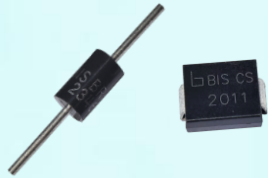
产品规格 Product specifications

Part Number	Maximum Continuous Voltage		Nominal Varistor Voltage @1mA	Maximum Clamping Voltage @8/20μs		Maximum Peak Pulse Current 8/20μs (A)		Maximum Energy 10/1000μs	Rated Power
	AC (V)	DC (V)	V _{1mA} (V)	V _C (V)	I _P (A)	1 Time	2 Times	W (J)	P (W)
CMS3025V241P501-B	150	200	240[216-264]	395	10	1200	1000	7.5	0.20
CMS4032V241P102-B	150	200	240[216-264]	395	25	2000	1500	16.2	0.32
CMS3025V271P501-B	175	225	270[243-297]	455	10	1200	1000	8.0	0.20
CMS4032V271P102-B	175	225	270[243-297]	455	25	2000	1500	18.5	0.32
CMS3025V301P501-B	195	250	300[270-330]	500	10	1200	1000	8.6	0.20
CMS4032V301P102-B	195	250	300[270-330]	500	25	2000	1500	20.4	0.32
CMS3025V331P501-B	210	270	330[297-336]	545	10	1200	1000	9.5	0.20
CMS4032V331P102-B	210	270	330[297-336]	545	25	2000	1500	22.3	0.32
CMS3025V361P501-B	230	300	360[324-396]	595	10	1200	1000	11.0	0.20
CMS4032V361P102-B	230	300	360[324-396]	595	25	2000	1500	24.5	0.32
CMS3025V391P501-B	250	320	390[351-429]	650	10	1200	1000	12.0	0.20
CMS4032V391P102-B	250	320	390[351-429]	650	25	2000	1500	26.5	0.32
CMS3025V431P501-B	275	350	430[387-473]	710	10	1200	1000	13.5	0.20
CMS4032V431P102-B	275	350	430[387-473]	710	25	2000	1500	29.0	0.32
CMS3025V471P501-B	300	385	470[423-517]	775	10	1200	1000	15.0	0.20
CMS4032V471P102-B	300	385	470[423-517]	775	25	2000	1500	30.0	0.32
CMS3025V511P401-B	320	418	510[459-561]	842	10	1200	1000	16.0	0.20
CMS4032V511P801-B	320	418	510[459-561]	842	25	2000	1500	32.0	0.32
CMS3025V561P401-B	350	460	560[504-616]	920	10	1200	1000	16.5	0.20
CMS4032V561P801-B	350	460	560[504-616]	920	25	2000	1500	32.0	0.32
CMS3025V621P401-B	385	505	620[558-682]	1025	10	1200	1000	17.0	0.20
CMS4032V621P801-B	385	505	620[558-682]	1025	25	2000	1500	32.0	0.32
CMS3025V681P401-B	420	560	680[612-748]	1120	10	1200	1000	18.0	0.20
CMS4032V681P801-B	420	560	680[612-748]	1120	25	2000	1500	32.0	0.32

3 隔离浪涌保护器BIS

Isolated Surge Protector (BIS)

BIS是针对非隔离LED驱动的浪涌保护要求而开发的半导体器件，该器件和MOV串联，可显著增加工作电压和降低残压。其典型应用：对于I类灯具，在满足1000+2U的对地电气绝缘强度的安规要求基础上，能有效降低对地浪涌保护的钳位电压，从而有效降低LED灯具共模浪涌损坏的风险。该器件兼具高工作电压和低保护电压特性，特别适合应用在供电电压波动大、脉冲干扰大等的恶劣环境下的电子产品保护，如户外、工业照明及印度照明等，是宝宫电子为该应用特别开发的新型过压保护器件。

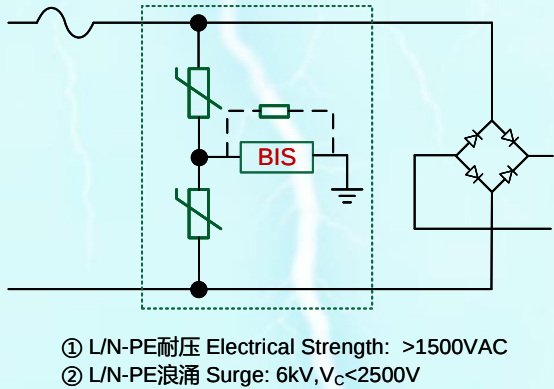


BIS is a semiconductor device developed for surge protection requirements of non-isolated LED drivers. The device series with MOVs can significantly increase the trip voltage and reduce the residual voltage of L-N surge protection. The typical applications: On the basis of meeting the safety requirements of electrical insulation strength (1000+2U), the BIS can offer L/N-PE surge protection with low residual voltage for class I LED lamps, which can effectively reduce common mode surge damage risk of LED lamps.This product is a new type of overvoltage protection device developed by Boarden Electronics and targets for this application.

产品特点 Features

- 提供共模浪涌保护，满足对地电气绝缘强度的要求
Offering L/N-PE surge protection, and meeting the Safety requirements of electrical insulation strength
- 产品一致性高
High consistency between products
- 响应速度快，保护电压低
Fast response time, low protection voltage
- 雷击重复冲击寿命长
long life under repetitive surges
- 封装 Package SMB, SMC, DO-27
- 安规证书 Certificates: TUV,UL

典型应用 Typical application



产品规格 Product specifications

Part Number	Insulation Voltage (V)	Surge Starting Voltage (V _s)	Surge Capacity ¹⁾	Package
	Min (V)	Max (V)	V	
BIS-DS602-S ²⁾	1600	2200	6000	SMB
BIS-BR602-LM	1200	1700	6000	DO-27
BIS-CS103 ²⁾	1600	2200	10000	SMC

Note 1: 浪涌波形 Surge Waveform 1.2/50us & 8/20us, Ri=12ohm
Note 2: 对于 BIS-DS602-S 和 BIS-CS103，由于此二型号应用时为两个产品串联，故 VI 和 Vs 参数为两个产品串联之和
For BIS-DS602-S and BIS-CS103, the parameters VI and Vs are the total values of two components, for these two components should be used by pairs in series during installation.

4

宽输入低残压浪涌保护器SPD

Wide input voltage, low clamping voltage SPD

户外/工业照明使用环境复杂，雷击/浪涌损坏风险高，需要SPD的保护来提高产品的寿命和可靠性。然而，普通的SPD只能满足部分LED的防雷要求。为了开发出满足绝大多数LED（包括线性驱动LED）防雷要求的SPD，宝宫电子定制关键元器件，精心设计防雷保护方案，经过大量测试，开发出一系列小型化、低保护电压的新型SPD。

Due to complicate power supply environment and high risk of lightning/surge damage, the ordinary SPD protection needs to improve performance ensure the life and reliability of outdoor/industrial lighting products. In order to develop the SPD that meets lightning protection for most of LED, including linear driver LED, Boarden electronic customized key components, carefully designed lightning protection solutions, and have developed a series of new SPD with low protection voltage, small size and easy installation.



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产品特点 Features

- 定制元器件 Customized Components
- 宽输入电压 Wide Input Voltage (up to 100~400VAC)
- 典型钳位电压 Typical Clamping Voltage 1000V
- 最高工作温度 Maximum Operating Ambient Temperature 100°C
- 小尺寸，易安装 Small Size, Easy Installing
- 防护等级 IP67
- 测试标准 Test Standard: IEC61643-11:2011, EN61643-11:2011, GB/T18802.1-2011
- 安规证书 Certificates: CB, TUV,CQC,CE
- 推荐应用: 防爆灯、工矿灯、路灯等 Applications: Explosion-proof lamp, mine lamp, street lamp, etc

■

产品规格 Product specifications

Part Number	Maximum Continuous Operating Voltage	Open Circuit Voltage (1.2/50μs & 8/20μs)	Voltage Protection Rating (V)		Connection Mode	Wire Number	safety Certification
			L-N	L/N-PE			
	U _C (V _{AC})	U _{OC} (kV)	U _P (V)				
BSP2L10RPT	320	10	1300	2000	Parallel	3	CB, CQC TUV, CE
BSP2L10RPT-1	320	10	1300	-	Parallel	2 (L, N)	
BSP2L10RST	320	10	1300	2000	Series	5	
BSP2L10RPT-M	320	10	1300	2000	Parallel	3	
BSP2D10RST	320	10	1300	2000	Series	3	
BSP2D10RST-M1	320	10	1300	-	Series	2	

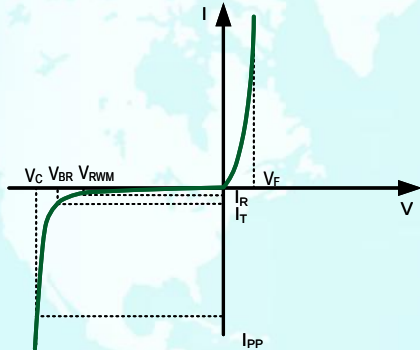
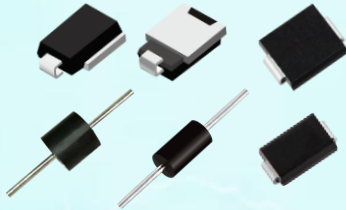
5

瞬态抑制二极管TVS

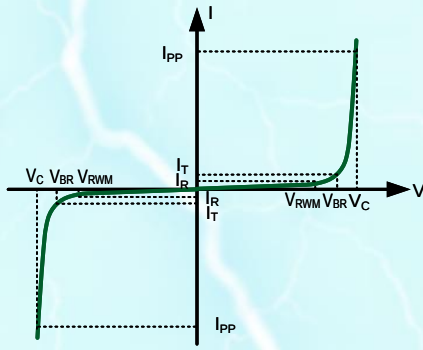
Transient voltage suppression diodes (TVS)

瞬态抑制二极管（TVS）是一类半导体工艺的突波吸收器，当过压情况发生的时候，TVS迅速发生雪崩击穿，从很高的电阻变成短路状态，把多余的能量旁路泄放，从而保护了负载不受过压的损坏。宝宫电子的TVS系列包括普通大功率管、低电容小功率管子等全系列产品，大功率管子涵盖从5V~550V电压范围，功率从200W到8000W主要用在电源保护、通讯保护和静电保护等场合。

Transient Voltage Suppressors (TVS) are semiconductor devices designed to provide protection against over voltage transients. When over voltage events occur, the TVS activates from an very high impedance status to a very low impedance status by operating in the avalanche mode and uses a large junction area to absorb large transient currents in a fast response time, protecting voltage sensitive electronics equipment from damaging. Boarden supplies unipolar and bipolar TVS devices with axial and SMD packages, with maximum working voltage 5V to 550V, maximum power dissipation from 200W-8000W.



单向TVS伏安特性曲线
Uni-Directional TVS I-V Curve



双向TVS伏安特性曲线
Bi-Directional TVS I-V Curve

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产品规格 Product specifications

Structure	Series	Package	Power (W)	V _{RWM} (V)	I _R (μA)	V _{BR} (V)	V _C (V)	I _{PP} (A)
Axial	SA	DO-15	500	5.0~180	1~600	6.4~200	9.2~289	1.7~55.4
	P4KE	DO-41	400	5.0~376	1~1000	6.45~418	10.5~602	0.68~39
	P6KE	DO-15	600	5.8~376	1~1000	6.45~418	10.5~602	1.0~58.1
	1.5KE	DO-201	1500	5.8~376	1~1000	6.45~418	10.5~602	2.5~144.8
	3KP	P600	3000	5.0~220	2~5000	6.4~244	9.2~371.1	8.1~326.1
	5KP	P600	5000	5.0~220	2~5000	6.4~244	9.2~371.1	13.7~554.3
SMD	SMF	SOD-123F	200	5.0~170	1~400	6.4~189	9.2~275	0.6~21.7
	SMAJ	SMA	400	5.0~440	1~800	6.4~492	9.2~713	0.6~43.5
	SMBJ	SMB	600	5.0~440	1~800	6.4~492	9.2~713	0.9~65.3
	1.5SMCJ	SMC	1500	5.8~495	1~800	6.45~522.5	10.5~760	2.0~144.8
	3SMCJ	SMC	3000	5.0~220	1~800	6.4~244	9.2~355	8.5~326.1
	5SMDJ	SMC	5000	5.0~220	1~800	6.4~244	9.2~355	14.1~543.5
	SM8S	DO218-AB	8000	11.1~47.8	150~250	12.3~52.8	86~388	10~15

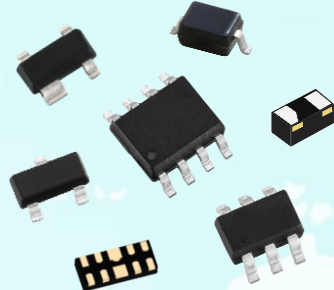
6

静电保护元件ESD

Electric-static protection device (ESD)

ESD 是为保护电压敏感元件免受ESD损坏而设计的。出色的箝位能力、低漏电和快速响应时间为暴露在ESD下的设计提供最佳保护。该系列是专门为保护连接到数据和传输线上的敏感元件免受ESD（静电放电）和EFT（电快速瞬变）引起的过电压影响而设计。

ESD are designed to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. This series has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), and EFT (electrical fast transients).



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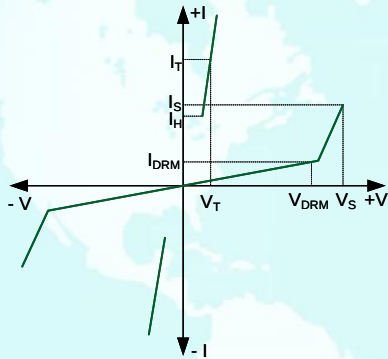
固体放电管TSS

Thyristor surge suppressor (TSS)

固体放电管TSS是专门为通讯过电压防护而设计，用于防护常见的雷击、电力线搭接和感应引起的过电压破坏。TSS的工作原理类似其他的过压器件：正常工作的时候呈现高阻状态，然后当过电压情况来临时，TSS会在极短的时间里变成极低阻值状态，把过电压引起的电流吸收泄放掉，从而保护了局级和用户级设备安全，典型应用包括配线架 (MDF)，交换机 (PBX)，xDSL，路由器和电话机等。TSS主要特点是电容低，电压保护准确，耐冲击电流大，安全可靠等。



TSS is specifically designed for communication overvoltage protection, used to protect against common lightning strikes, power line overlaps, and induced overvoltage damage. The working principle of TSS is similar to other overvoltage devices: it presents a high resistance state during normal operation, and then when an overvoltage situation occurs, TSS will quickly become an extremely low resistance state, absorbing and discharging the current caused by the overvoltage, thereby protecting the safety of local and user level equipment. Typical applications include MDF, PBX, xDSL, routers, and telephones. The main features of TSS are low capacitance, accurate voltage protection, high resistance to impulse current, and safety and reliability.



缩略词	参数说明	
V _{DRM}	Peak Off-state Voltage	不动作电压
I _{DRM}	Leakage Current @V _{DRM}	漏电流
V _S	Switching Voltage	转折电压
I _S	Switching Current	转折电流
V _T	On-state Voltage	通态电压
I _H	Holding Current	维持电流
C	Off-state Capacitance	静态电容

产品规格

Product specifications

Part Number	V _{DRM} (V)	I _{DRM} (μA)	V _S (V)	I _S (mA)	V _T (V)	I _H (mA)	C (pF)
BT008SS	6	10	25	800	4	50	50
BSE080A	6	10	25	800	4	50	25
BSE080B	6	10	25	800	4	50	50
P0080XY	6	10	25	800	4	50	100
P0300XY	25	5	40	800	4	50	110
P0640XY	58	5	77	800	4	150	50
P0720XY	65	5	88	800	4	150	50
P1100XY	90	2	130	800	4	150	40
P1300XY	120	2	160	800	4	150	40
P1500XY	140	2	180	800	4	150	30
P1800XY	180	2	220	800	4	150	30
P2300XY	200	2	260	800	4	150	30
P2600XY	220	2	300	800	4	150	30
P3100XY	275	1	350	800	4	150	30
P3500XY	320	1	400	800	4	150	30
P4200XY	400	1	520	800	4	100	40

X: 代表封装形式 X=S(SMA/SMB); E(TO-92); L(DO-15)
Y: 代表能量等级(IPP @10/1000μs) Y=A(50A); B(80A); C(100A)

产品规格

Product specifications

Package	Lines	Direction	V _{RWM} (V)	I _R (μA)	V _{BR} (V)	V _C @1A (V)	C @1MHz (pF)	Power (W)
0402	1	Uni / Bi	5.0	1.0	6.0	8~15	0.3~17	46~100
DFN1006	1	Uni / Bi	3.3~12	1.0~2.5	4.8~13.3	7.0~23.7	0.5~90	100~200
SOD923	1	Uni / Bi	3.3~12	1.0~2.5	4.8~13.5	8.4~23.7	0.5~80	100~150
SOD523	1	Uni / Bi	3.3~15	1.0	5.0~16.5	8.4~22	0.5~105	100~250
SOD323	1	Uni / Bi	3.3~36	1.0~40	4.0~40	5.15~60	0.4~500	350~500
SOT23	2	Uni / Bi	3.3~36	1.0~20	4.0~40	5.15~60	0.8~400	300~350
SOT143	2	Uni	5.0	1.0~5.0	6.0	9.8~15.5	0.9~3.0	125~500
SOT23-6	4	Uni	5.0	1.0	6.0	12~15.5	0.8~3.5	150~500
DFN2510	4	Uni	5.0	1.0	6.0	15.5	0.3	150
DFN4120	6	Uni	5.0	1.0	6.0	25	0.4	100
SOP-8	4	Bi	2.8	1.0	3.0	8.5	3.0	400

参数说明

Parameters description

缩略词	参数说明	
V _{RWM}	Reverse Stand-Off Voltage - Working Peak Reverse Voltage	反向截止电压
I _R	Reverse Leakage Current - Current measured at V _{RWM}	反向漏电流
V _{BR}	Breakdown Voltage - Maximum current that flows though the TVS at a specified test current	击穿电压
V _C	Clamping Voltage - Peak voltage measured across the suppressor at a specified I _{PP}	钳位电压
I _{PP}	Peak Pulse Current - Maximum Reverse Peak Pulse Current	脉冲峰值电流

8 陶瓷气体放电管 GDT

Ceramic gas discharge tube (GDT)

宝宫电子的气体放电管系列产品包括普通气体放电管（GDT）、气体开关管（SSG）以及同轴气体放电管，其中的GDT包括普通GDT、低脉冲GDT、大功率GDT、小尺寸贴片GDT。气体放电管的工作原理类似一开关型器件，使用中并联在被保护设备线与线或线与地端。当外来浪涌电压未达其动作电压时，放电管呈高阻状态，而一旦浪涌电压达到其动作电压时，放电管内部放电间隙立即发生电击穿现象，此时放电管相当于一良导体，浪涌电压在50ns时间内即被迅速短路至接近零电压，浪涌电流被迅速导入大地，从而对设备起到保护作用。当浪涌电压消失时，放电管则立即熄灭并恢复为高阻状态，静待下一次的动作。



Boarden gas discharge tube series products include ordinary gas discharge tube (GDT), gas switch tube (SSG) and coaxial gas discharge tube, which includes ordinary GDT, low pulse GDT, high power GDT, small size SMD GDT. Gas discharge tube working principle is similar to a switch-type devices, the use of parallel in the protected equipment line and line or line and GND. When the external surge voltage does not reach its action voltage, the GDT is a high resistance state, and once the surge voltage reaches its action voltage, the internal discharge gap of GDT immediately electrical breakdown phenomenon. The GDT is equivalent to a good conductor at this time and the surge voltage is quickly short-circuited to close to zero voltage in 50ns, thereby protecting the equipment. When the surge voltage disappears, the GDT is immediately extinguished and return to a high resistance state, waiting for the next action.

■ 产品规格 Product specifications

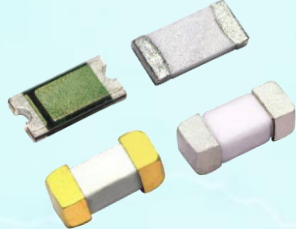
Structure	Dimensions	Series	V _s @100V/s	V _{SS} @1kV/s	V _s Range	I _{PP} @8/20μs ±5 times	C _j @1MHz	R @100V DC
Standard SMD	1206	B2G2	75~600V	600~1400V	20%	0.5kA	<1pF	>1GΩ
	1812	B3G3	75~600V	600~1400V	20%	1kA	<1pF	>1GΩ
SMD / TH	Φ5.0×4.4	B2G5	75~3600V	600~1400V	20%	2.5 kA	<1pF	>1GΩ
	Φ6.0×4.2	B2G6	75~3600V	600~1400V	20%	5 kA	<1pF	>1GΩ
	Φ8.0×6.0	B2G8	75~3600V	600~1400V	20%	5 kA	<1pF	>1GΩ
	Φ5.0×7.6	B3G5	75~3600V	600~1400V	20%	5 kA	<1pF	>1GΩ
	Φ6.0×8.0	B3G6	75~3600V	600~1400V	20%	10kA	<1pF	>1GΩ
	Φ7.5×11.5	B3G7	75~600V	600~1400V	20%	20kA	<1pF	>1GΩ
	Φ8.0×10.0	B3G8	75~600V	600~1400V	20%	20kA	<1pF	>1GΩ
	Φ11.8×17.8	B2G12	75~600V	600~1400V	20%	20kA	<2pF	>1GΩ
	Φ12.0×6.5	B2G12	75~600V	600~1400V	20%	40kA	<2pF	>1GΩ
	Φ20.2×5.2	B2G20	75~600V	600~1400V	20%	40-80kA	<2pF	>1GΩ
	Φ29.5×7.5	B2G30	75~600V	450~1200V	20%	120kA	<2pF	>1GΩ

■ 参数说明 Parameters description

缩略词			参数说明	
V _s	DC Spark Over Voltage		直流击穿电压	
V _{ss}	Impulse Spark Over Voltage		脉冲击穿电压	
I _{pp}	Impulse Discharge Current		冲击耐受电流	
C	Capacitance		极间电容	
R	Insulation Resistance		绝缘电阻	

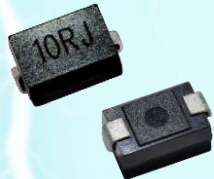
9 贴片保险丝

Chip fuse

Package	Rated Voltage	Rated Current	Breaking Capacity	
	(V)	(A)	(A)	
0603	DC 32	1~8	50	
	DC 63	0.25~1.5	50	
1206	DC 32	0.25~30	50~150	
	DC 72	1~5	50	
2410	AC 125	0.25~15	50	
	AC 250	0.5~5	100	
4010	AC 250	0.5~2	50	

10 塑封贴片电阻

Plastic chip resistor

Parameter	Value	
Nominal Power Rating	0.5W~2W	
Resistance Range	Wire-wound: 0.5Ω~ 150	
	Metal film: 0.1 ~ 5M	
Tolerances	±1%, ±5%	
Fusing Characteristic	<60s	
Surge Capacity	1500V	
Temperature Range	-55°C ~ 150°C	

11 防雷保险电阻

Surge-proof fusing resistor

Size	Package	Resistance Range	Power	Surge Capacity	
				1.2/50 & 8/20μs	
0207	axial lead	0.5 Ω~150 Ω	0.5W, 1W	1000V	
	leadless				
0309	axial lead		1W, 2W	1500V	
	leadless				
0411	axial lead		2W, 3W	2000V	
	leadless				

12 贴片功率NTC

SMD Power NTC

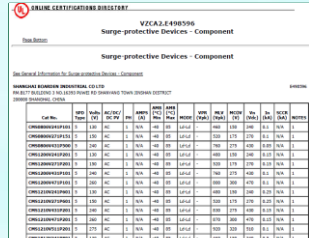
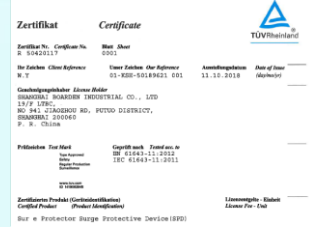
Size	Rated zero Power Resistance R@25℃	Maximum Steady-state currentI@25℃	B Value	
2822	1.5Ω~20Ω	0.5A~5.0A	2500/2600/2800	
4524	1.5Ω~20Ω	3A~7A	2600/2800/3000/3200	

13 贴片Y电容

SMD Y capacitor

Size	Safety Level	Capacitance Range	Material	Withstand voltage	
2822	Y1X1	10pF~2200pF	SL, Y5P, Y5U, Y5V	500VAC	
4524	Y1X1	100pF~4700pF	SL, Y5P, Y5U, Y5V	500VAC	

产品认证 Product Certifications

CMS UL E498596 	CMS TUV B 002653 0001 Rev.01 	CMS CQC 21001318502 	SPD CB HU-003430 
SPD TUV R 50420117 	SPD CQC CQC19123220244 	GDT UL E316360 	BIS TUV R 50442482 

质量体系认证 Quality System Certification

16949体系认证 	环境管理体系认证 	职业健康安全管理体系认证 
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社会责任管理体系认证 质量管理体系认证

CERTIFICATE OF REGISTRATION 	质量管理体系认证证书 
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专利 Patents

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部分专利 Partial patents

专利名称	专利类型	授权公告号
一种适合叠层陶瓷产品表面绝缘处理的制作方法	发明专利	CN111524669B
一种高介电常数 NP0 型介质陶瓷	发明专利	CN110483034B
一种用于电源保护的防浪涌电路	发明专利	CN111864708A
一种基于堆叠技术的电路保护元件	发明专利	CN114172115A
一种单段线性照明驱动的浪涌保护电路	实用新型	CN216491146U
一种电阻多次循环测试工装	实用新型	CN216792353U
一种分料装置	实用新型	CN216988588U
一种可调速的铅珠倒角机	实用新型	CN216731242U
一种层叠机的去静电结构	实用新型	CN211702511U
一种提高混合均匀度的砂磨机	实用新型	CN212189384U
一种无线充电器用陶瓷电容	实用新型	CN210443426U
一种提高流延质量的陶瓷电容流延机	实用新型	CN211221188U
脱泡真空储藏罐	实用新型	CN210762313U
一种有效提高银浆涂封效率及精度的电容器封端机	实用新型	CN210443443U
一种可推拉置物板的排胶炉	实用新型	CN210773420U
一种便于上下料的陶瓷电容用切割机	实用新型	CN211221465U
一种便于清理切割碎料的电容切割机	实用新型	CN210443442U
一种用于陶瓷电容的配料的滚筒尼龙球磨机	实用新型	CN210753003U
一种用于陶瓷电容的配料的滚筒尼龙球磨机	实用新型	CN210753003U
一种提高吸盘工作效率的电容叠层机	实用新型	CN210443441U
一种带有加强结构的多层片式陶瓷电容器	实用新型	CN210443437U
一种提高工件成品质量的罩式炉	实用新型	CN210773392U
陶瓷铺膜机的进料盒拆装结构	实用新型	CN211221285U
一种片式多层陶瓷电容预切割装置	实用新型	CN211221464U
一种用于陶瓷电容的撕膜机。	实用新型	CN210443439U
滚筒尼龙球磨机的吸尘装置	实用新型	CN210753002U
一种高密封性的真空包装机	实用新型	CN210761497U
一种用于陶瓷电容的陶瓷膜的脱模装置	实用新型	CN211221292U
一种用于 MLCC 精确定位的薄膜丝网印刷机	实用新型	CN211195301U

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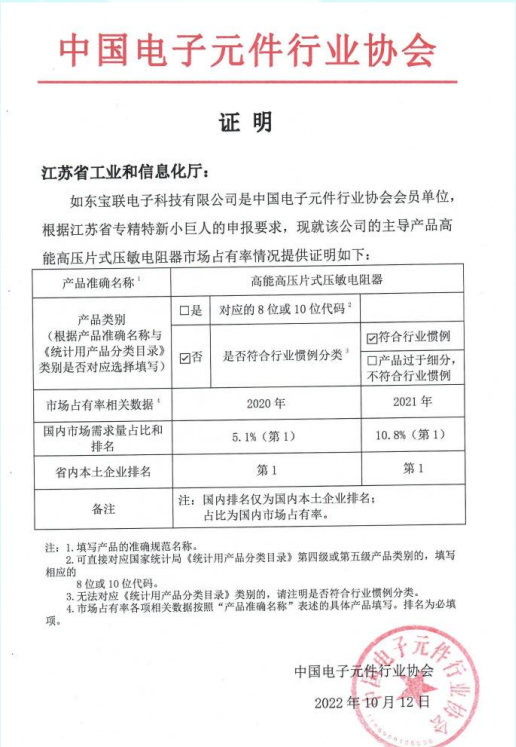
行业资质 Industry Qualifications



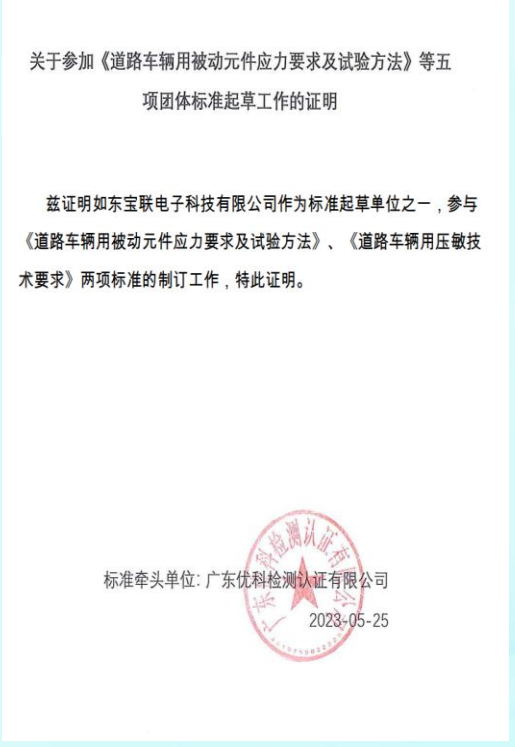
压敏标准委员会理事单位



高新技术企业证书



中国电子元件行业协会证明



行业标准参与与指定证明

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 **阳光照明**

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 **三雄极光 Pak**

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 **TOSPO**
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 **FSL** 用心照亮世界
佛山照明

 **KLITE**
凯耀照明

 **LEDVANCE**
朗德万斯

 **OPPLE**
欧普照明

 **Lifud**
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汽车电子

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 **SMTC**
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 **Schneider Electric**
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