

Overvoltage Application Guide (过压应用指南)

应用	电路	威胁	解决方案	技术
低、中电压电子 计算机 - 桌面、膝上、笔记本 外围设备 - 扫描仪、打印机、显示器、光驱 外部宽带硬件 - modem、机顶盒 网络硬件 - 交换机、路由器、集线器、转发器 数码相机/摄像头 便携式 - PDA、手机、无线电话、GPS、MP3播放器 视频设备 - HDTV、DVD、VCR、机顶盒 报警系统 - 安全、消防 计量系统 医疗设备 照明驱动器 远程传感器/变换器	高速接口: USB2.0、IEEE1394 infiniband、RF天线线路、千兆Ethernet、DVI	Lightning ESD	PXX00SXMC PGB1	SIDACtor® Devices PulseGuard® Polymer
	中速接口: USB1.1、RS485、Ethernet、视频、10BaseT、100BaseT、T1/E1	ESD, EMI, EFT Lightning	SP05x, SP72x MHS, ML, MLE, MLN SPUSBx PXX00SCMC, PXX02SX SL0902SL1003, SL1011, SL1002,	Diode Array SCR/Rail clamp MLV, TVS/filter SIDACtor® Devices, Gas Plasma Arrestor
	低速接口: 音频、RS232、IEEE1284、按钮、键盘、交换机	Lightning ESD, EMI, EFT	LCE, SA PXXXXSX SL1011, SL0902, SL1003 ML, MLE SP05x	SAD, SIDACtor® Devices, Gas Plasma Arrestor MLV Diode Array
	电源输入: 120/240伏交流, 可达120伏直流	Lightning Switching Transients	CH, MA, ZA, RA, UltraMOV SA, P6KE, 1.5PKE SMBJ, 1KSMBJ, HV	MOV SAD SAD, Gas Plasma Arrestor
航空/军用电子	电源和系统输入	ESD, EMI, EFT Lightning and System Transients	5KP/SLD Hi-Rel MOVs	SAD MOV
电源保护 交流电路保护 电源 消费电子产品 电源表 交流电源支线 交流屏 交流电器控制 TVSS器件 断路器	不间断电源(UPS)	EFT, Lightning	TMOV, UltraMOV™ LA, C-III, ZA, 5KP, 15KP, AK6, AK10	MOV MOV MOV SAD
	电源	EFT, Lightning, Commutative Spikes	UltraMOV, LA, TMOV ZA, HA, CH 5KP, 15KP, AK6, AK10	MOV MOV MOV SAD
	消费电子产品	EFT, Lightning	UltraMOV, LA, ZA, CH, TMOV 1.5KE, 5KP	MOV SAD
	电源表	Lightning	TMOV, UltraMOV, C-III 5KP	MOV SAD
	交流电源支线	EFT, Lightning	UltraMOV, LA, HA, HF34, HG34, TMOV34S	MOV MOV
	交流屏	EFT, Lightning Commutative Spikes	UltraMOV, C-III, TMOV34SHA, HB34, HF34, HG34, DA/DB, 5KP, 15KP, AK6, AK10	MOV MOV MOV SAD
	交流电器控制	EFT, Lightning	TMOV, UltraMOV, LA, CH SMBJ, P6KE, 1.5KE	MOV SAD
TVSS保护模块	Lightning	TMOV, HA, HB34, HF34, HG34, UltraMOV, TMOV34S, H 5KP, 15KP, AK6, AK10 SL1002, SL1011, SL0902, SL1003	MOV MOV SAD Gas Plasma Arrestor	
断路器	EFT, Lightning, Commutative Spikes	UltraMOV, LA, ZA	MOV	

TVS Diode Selection Guide(TVS二级管选择指南)

峰值脉冲 电源范围	中										高			很高		
	SMAJ	P4SMA	P4KE	SA	P6KE	SMBJ	P6SMBJ	1KSMBJ	1.5KE	SMCJ	1.5SMC	SLD	5KP	15KP	AK6	AK10
技术类型	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode	Silicon Avalanche Diode
工作温度(°C)	-55 to +150	-55 to +150	-55 to +175	-55 to +175	-55 to +175	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150
封装类型	DO-214AC	DO-214AC	DO-41	DO-15	DO-15	DO-214AA	DO-214AA	DO-214AA	DO-201	DO-214AB	DO-214AB	axial (轴向)	axial (轴向)	axial (轴向)	axial (轴向)	axial (轴向)
安装方法	SMT	SMT	through-hole(贯穿孔)			SMT	SMT	SMT	through-hole (贯穿孔)	SMT	SMT	through-hole(贯穿孔)				
逆向均衡(工作)电压	5.0-440	5.8-455	5.8-467	5.0-180	5.8-467	5.0-440	6.8-550	5.5-136	5.8-467	5.0-440	5.8-495	16-30	5.0-220	17-280	58-380	58-470
峰值脉冲功率范围(除非另有说明为基于10/100微秒脉冲)	400W	400W	400W	500W	600W	600W	600W	1000W	1500W	1500W	1500W	2200 based on 100µs/150ms pulse	5000W	15000W	NA	NA
峰值脉冲电流(8X20µs)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6000A	10000A
符合RoHS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
无铅	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Overvoltage Application Guide (cont.) (过压应用指南(续))

应用	电路	威胁	解决方案	技术
工业环境 高能系统 机器人 大马达、泵、压缩机 马达驱动 交流配电 大电流继电器	机器人	EFT, Lightning, Commutative Spikes, Inductive Load Switching	UltraMOV, CH, LA, C-III, ZA SMBJ, P6KE, 1.5KE, 5KP, 15KP	MOV SAD
	大马达、泵、压缩机	EFT, Lightning, Commutative Spikes, Inductive Load Switching	UltraMOV, CH, HA, HB34, BA/BB DA/DB, PA, RA	MOV MOV
	马达驱动	EFT, Lightning, Commutative Spikes, Inductive Load Switching	UltraMOV, TMOV, LA, C-III, RA, CH SMBJ, P6KE, 1.5KE, 5KP, 15KP	MOV SAD
	交流配电	EFT, Lightning, Commutative Spikes, Inductive Load Switching	UltraMOV, C-III, HA, HB34, BA/BB, DA/DB 5KP, 15KP, AK6, AK10	MOV SAD
大电流继电器	EFT, Lightning, Commutative Spikes	UltraMOV, C-III, HA, HB34, BA/BB, DA/DB	MOV	
电信/数字通讯 SLIC(用户线路接口电路) 客户精密设备 - 传真机 - 公用电话 - 手机 - xDSL网 - 拨号modem - 机顶盒 - T1/E1/J1 - ISDN 接口设备 - PBX系统 - Internet网 - DSLAN设备 中心办公室设备 - 交换载体 - 本地交换载体 - 移动电话交换机 - 转发器/节点 发动机控制模块 - 多媒体系统 - 本体控制器 - 防锁定制动系统 - 转向感应器 - 照明控制 - 仪器群集 - 气囊模块 - 窗户控制模块 - 雨刷控制 - 锁门模块 - HID前灯	电信: tip/ring(振铃)电路	Lightning ESD	PXXXI, PXXXXUA/C, PXXXXCA2, PXXXXSA/C BxxxxUA/C, BxxxxCA/C SL1002, SL1011, SL0902, SL1003	SIDACtor® Devices BATTRAX® Devices Gas Plasma PulseGuard® Polymer
	高速数据接口: USB2.0、IEEE1394、RF天线电路	Lightning	PXXXXUA/C, PXXXXCA2, PXXXXSA/C PXXXXSA/B/C, PXXXXSA/B/C/MC, PXXXXUA/B/C, PXXXXUA/C, PXXXXUA/C, BXXXXUA/C, BXXXXCA/C, SL1002, SL1011, SL0902, SL1003	SIDACtor® Devices Gas Plasma Arrestor
	中、低速数据接口: USB1.1、Ethernet、RS232	ESD, EMI, EFT	SP05x, SP72x, SPUSBx, ML, MLE, MLN, MHS	Diode Array MLV
	电信接口(二级): tip/ring(振铃)电路	Lightning	T10A/B/C, PXXXXSA/B/C SL1002, SL1011, SL0902, SL1003	SIDACtor® Devices Gas Plasma Arrestor
	输入电源: 120/240伏交流、达120伏直流	Lightning	P6KE, 1.5KE CH, ZA, UltraMOV	SAD MOV
	电信接口(初级): tip/ring(振铃)电路	Lightning	PXXXX/EC/SC/UC/SD SL1002, SL1003, SL1011, SL0902, SL1026, SL1122	SIDACtor® Devices Gas Plasma Arrestor
	电信接口(初级): tip/ring(振铃)电路	Lightning	T10A/B/C, PXXXXUB/C, PXXXXSCMC, PXXXXJUC, PXXXXUA/C, PXXXXSC, PXXXXEC, SL1002, SL1003, SL0902, SL1011, SL1026, SL1022	SIDACtor® Devices Gas Plasma Arrestor
	电源输入: 120/240伏交流、达120伏直流	Lightning	P6KE, 1.5KE CH, ZA, UltraMOV HV	SAD MOV Gas Plasma Arrestor
	高速接口: USB2.0、IEEE1394	ESD	PGB1	PulseGuard® Polymer
	中/低速数据接口: USB1.1、CAN	ESD, EMI	SP05x, SP72x, SPUSBx, ML, MLE, MLN, MHS	Diode Array MLV
电源输入: 可达42伏直流	Load Dump and Inductive Switching	AUML, P6K, P6SMBJ, 5KP 1KSMBJ, SLD CH, ZA	MLV SAD SAD MOV	
氙气大灯开关	N/A	XT	Gas Plasma Switches	

Greentube™ Gas Plasma (improved GDT) Selection Guide(Greentube™ 等离子气体(改进型气体放电管)选择指南)

系列名称	触发开关	OMEGA		BETA								ALPHA		DELTA	
		高	标准	高								Ultra		高	
性能及别	高	标准	标准	高	高	高	高	高	高	高	高	高	高	高	高
系列名	XT, LT, VS	SL1024B	SL1024A	SL1011A	SL1011B	SL1021A	SL1021B	SL1002A	SL1003A	SL0902	HV	SL1122A	SL1221	SL1411A	SL1026
技术类型	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)	Gas Plasma (GDT)
温度范围	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150	-40 to +150	-55 to +150	-55 to +150	-55 to +150	-55 to +150
封装类型	2端子	2端子、按钮和轴向引线	3端子、芯线和轴向引线	2端子、按钮和轴向引线	3端子、芯线(无针)和轴向引线	2接线端子、按钮和表面安装	3接线端子、按钮和表面安装	2接线端子、SMT和轴向引线	2端子	3接线端子、SAD/GP混合径向引线	3接线端子、径向引线	2接线端子、按钮和表面安装	3端子		
安装方法	SMT & through-hole (SMT & 贯穿孔)	through-hole or clip mount (贯穿孔或者芯片式)	through-hole (贯穿孔)	through-hole or clip mount (贯穿孔或者芯片式)	through-hole (贯穿孔)	SMT	through-hole or SMT (贯穿孔或者SMT)	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole or SMT (贯穿孔或者SMT)	clip mounted (芯片式)
直流雪崩电压	230-800	90-600	90-600	75-600	75-350	200-600	200-600	90-600	90-450	90-420	2850-3500	90-450	200	184360	275-1,100
交流浪涌额定值	NA	20A	10A*	5A	10A	10A*	20A*	2A	5A	2.5A	NA	5A*	10A*	10A	40A*
峰值脉冲电流(8X20µs)	400A†	20000A	10000A*	5000A	10000A	10000A*	20000A*	5000A	5000A	2500A	3000A	10000A*	10000A*	20000A	5000A*
最大电容值	2pF	1.5pF	1.5pF	1.5pF	1.5pF	1.5pF	1.5pF	1.2pF	1.2pF	1pF	1pF	100-200pF	1.5pF	<1pF	2.5pF
符合RoHS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
无铅	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

* 全部电流均通过中心(接地)接线柱
† 重复开关电流

Overcurrent Selection Guide(过载电流选择指南)

系列名	Bxxxx_											
类型	SA	SC	CA2	AA2	UA	UC	A	B	ME	NE	RE	
技术类型	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Protection Thyristors	Protection Thyristors	Protection Thyristors	Protection Thyristors	Protection Thyristors	
封装类型	DO-214AA	DO-214AA	Mod DO-214AA	Mod TO-220	Mod TO-220	MS-013	MS-013	Mod DO-214AA	Mod DO-214AA	TO-218	TO-263 (D2PAK)	TO-220
安装方法	SMT	SMT	SMT	Through-hole (贯穿孔)	Through-hole (贯穿孔)	SMT	SMT	SMT	SMT	Through-hole (贯穿孔)	SMT	Through-hole (贯穿孔)
均衡(工作)电压(V _{CRM})	58 - 160	58 - 160	58 - 160	58 - 95	58 - 95	58 - 160	58 - 160	58-440	58-440	140-180	140	140
开关电压(V _o)	77 - 200	77 - 200	77 - 200	77 - 130	77 - 130	77 - 200	77 - 200	32 - 600	32 - 600	180 - 260	220	220
峰值脉冲额定值: • 2x10μs	150A	500A	150A	150A	500A	150A	500A	150A	250A	-----	-----	-----
• 10x160μs	90A	200A	90A	90A	200A	90A	200A	90A	150A	-----	-----	-----
• 10x560μs	50A	150A	50A	50A	150A	50A	150A	50A	100A	-----	-----	-----
• 10x1000μs	45A	100A	45A	45A	100A	45A	100A	45A	80A	-----	-----	-----
• 8X20μs	150A	400A	150A	150A	400A	150A	400A	150A	250A	5000A	3000A	3000A
I _{TRM}	20A	50A	20A	20A	50A	20A	20A	20A	30A	400A	400A	400A
符合 RoHS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
无铅	No	No	No	No	No	No	No	No	No	No	No	No

1. 该系列的最高工作电压，部件的电压可以等于或者低于该值。
2. 具体电压的最大分断能力可以小于最高工作电压。
3. 断开时间与其它形式的保护有关。在200%额定电流下，快增器件的典型工作时间在3秒内。
4. 详细验证信息请参阅具体的产品系列。

Battrax® Device Selection Guide(Battrax® 器件选择指南)

系列名	Bxxxx_								
类型	CA	CC	1UA	1UC	4UA	4UC	UA4	UC4	
技术类型	Single	Single	Dual Negative	Dual Negative	Dual Positive/Negative	Dual Positive/Negative	Quad Negative	Quad Negative	
封装类型	Mod DO-214AA	Mod DO-214AA	MS-013	MS-013	MS-013	MS-013	MS-013	MS-013	
安装方法	SMT	SMT	SMT	SMT	SMT	SMT	SMT	SMT	
均衡(工作)电压(V _{CRM})	Programmable (可编程)	Programmable (可编程)	Programmable (可编程)	Programmable (可编程)	Programmable (可编程)	Programmable (可编程)	Programmable (可编程)	Programmable (可编程)	
峰值脉冲额定值: • 2x10μs	150A	500A	150A	500A	150A	500A	150A	500A	
• 10x160μs	90A	200A	90A	200A	90A	200A	90A	200A	
• 10x560μs	50A	150A	50A	150A	50A	150A	50A	150A	
• 10x1000μs	45A	100A	45A	100A	45A	100A	45A	100A	
• 8X20μs	150A	400A	150A	400A	150A	400A	150A	400A	
I _{TRM}	20A	50A	20A	50A	20A	50A	20A	50A	
符合 RoHS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
无铅	No	No	No	No	No	No	No	No	

1. 低静态电容MC版本适用于SA、SC和UC部件
2. 供应RoHS版本的部件，加后缀“L”。详细信息请咨询厂商或者访问 www.panhao.com、www.semcor.com.cn。
3. 器件的工作温度为-40°C至+150°C。
4. 器件的储存温度为-65°C至+150°C。

SIDACTor® Device Selection Guide (SIDACTor® 器件选择指南)

系列名	Pxxx1_							Pxxx2S_		Pxxx_		
类型	SA	SC	CA2	AA2	AC2	UA	UC	A	B	ME	NE	RE
技术类型	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Protection Thyristors	Protection Thyristors	Protection Thyristors	Protection Thyristors	Protection Thyristors
封装类型	DO-214AA	DO-214AA	Mod DO-214AA	Mod TO-220	Mod TO-220	MS-013	MS-013	Mod DO-214AA	Mod DO-214AA	TO-218	TO-263 (D2PAK)	TO-220
安装方法	SMT	SMT	SMT	Through-hole (贯穿孔)	Through-hole (贯穿孔)	SMT	SMT	SMT	SMT	Through-hole (贯穿孔)	SMT	Through-hole (贯穿孔)
均衡(工作)电压(V _{CRM})	58 - 160	58 - 160	58 - 160	58 - 95	58 - 95	58 - 160	58 - 160	58-440	58-440	140-180	140	140
开关电压(V _o)	77 - 200	77 - 200	77 - 200	77 - 130	77 - 130	77 - 200	77 - 200	32 - 600	32 - 600	180 - 260	220	220
峰值脉冲额定值: • 2x10μs	150A	500A	150A	150A	500A	150A	500A	150A	250A	-----	-----	-----
• 10x160μs	90A	200A	90A	90A	200A	90A	200A	90A	150A	-----	-----	-----
• 10x560μs	50A	150A	50A	50A	150A	50A	150A	50A	100A	-----	-----	-----
• 10x1000μs	45A	100A	45A	45A	100A	45A	100A	45A	80A	-----	-----	-----
• 8X20μs	150A	400A	150A	150A	400A	150A	400A	150A	250A	5000A	3000A	3000A
I _{TRM}	20A	50A	20A	20A	50A	20A	20A	20A	30A	400A	400A	400A
符合 RoHS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
无铅	No	No	No	No	No	No	No	No	No	No	No	No

1. 低静态电容MC版本适用于SA、SC和UC部件
2. 供应RoHS版本的部件，加后缀“L”。详细信息请咨询厂商或者访问 www.panhao.com、www.semcor.com.cn。
3. 器件的工作温度为-40°C至+150°C。
4. 器件的储存温度为-65°C至+150°C。
5. V_{TRM} - 测得的跨越单芯片的电压。
6. 对于表中的所有器件 I_{TRM} = 50-150mA

SIDACTor® Device Selection Guide (cont.) (SIDACTor® 器件选择指南(续))

系列名	Pxxx2_			Pxxx3_			Pxxx0_		
类型	AA	AB	AC	AA	AB	AC	SA/EA	SB/EB	SC/EC
技术类型	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors
封装类型	Modified TO-220 (two die)	Modified TO-220 (two die)	Modified TO-220 (two die)	Modified TO-220 (three die)	Modified TO-220 (three die)	Modified TO-220 (three die)	DO-214AA/TO-92	DO-214AA/TO-92	DO-214AA/TO-92
安装类型	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole/SMT (贯穿孔/SMT)	through-hole/SMT (贯穿孔/SMT)	through-hole/SMT (贯穿孔/SMT)
均衡(工作)电压(V _{CRM})	25-275°	25-275°	25-275°	130-420	130-420	130-420	6-320	6-320	6-320
开关电压(V _o)	40-350	40-350	40-350	180-600	180-600	180-600	25-400	25-400	25-400
峰值脉冲额定值: • 2x10μs	150A	250A	500A	150A	250A	500A	150A	250A	500A
• 10x160μs	90A	150A	200A	90A	150A	200A	90A	150A	200A
• 10x560μs	50A	100A	150A	50A	100A	150A	50A	100A	150A
• 10x1000μs	45A	80A	100A	45A	80A	100A	45A	80A	100A
• 8X20μs	150A	250A	400A	150A	250A	400A	150A	25A	400A
I _{TRM}	20A	30A	50A	20A	30A	50A	20A	30A	50A
符合 RoHS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
无铅	No	No	No	No	No	No	No	No	No

1. 低静态电容MC版本适用于SA、SC和UC部件
2. 供应RoHS版本的部件，加后缀“L”。详细信息请咨询厂商或者访问 www.panhao.com、www.semcor.com.cn。
3. 器件的工作温度为-40°C至+150°C。
4. 器件的储存温度为-65°C至+150°C。
5. V_{TRM} - 测得的跨越单芯片的电压。
6. 对于表中的所有器件 I_{TRM} = 50-150mA

SIDACTor® Device Selection Guide (cont.) (SIDACTor® 器件选择指南(续))

系列名	PxxxxAD	Pxxx0SD	PxxxxU_			Pxxxx_		T10A	T10B	T10C
类型			UA	UB	UC	CA	CB			
技术类型	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors	Silicon Thyristors
封装类型	TO-218	DO-214AA	MS-013	MS-013	MS-013	Mod. DO-214AA	Mod. DO-214AA	DO-15	DO-201	3-Terminal
安装类型	through-hole (贯穿孔)	SMT	SMT	SMT	SMT	SMT	SMT	through-hole (贯穿孔)	through-hole (贯穿孔)	through-hole (贯穿孔)
均衡(工作)电压(V _{CRM})	120-550	6-320	6-420	6-420	6-420	58-275	58-275	58-270	80-270	80-270
开关电压(V _o)	160-700	25-400	25-600	25-600	25-600	77-350	77-350	80-360	120-360	120-360
峰值脉冲额定值: • 2x10μs	-----	1000A	150A	250A	500A	150A	250A	-----	-----	-----
• 10x160μs	-----	400A	90A	150A	200A	90A	150A	-----	-----	-----
• 10x560μs	-----	300A	50A	100A	150A	50A	100A	-----	-----	-----
• 10x1000μs	250A	200A	45A	80A	100A	45A	80A	50A	100A	100A
• 8X20μs	1000A	800A	150A	250A	400A	150A	250A	100A	250A	250A
I _{TRM}	120A	50A	20A	30A	50A	20A	30A	30A	50A	50A
符合 RoHS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
无铅	No	No	No	No	No	No	No	No	No	No

1. 低静态电容MC版本适用于SA、SC和UC部件
2. 供应RoHS版本的部件，加后缀“L”。详细信息请咨询厂商或者访问 www.panhao.com、www.semcor.com.cn。
3. 器件的工作温度为-40°C至+150°C。
4. 器件的储存温度为-65°C至+150°C。
5. 对于表中的所有器件，除了T10A(120-180 mA)、T10B(120-180 mA)和T10C(120-260 mA)，I_{TRM} = 50-150mA

Varistor Selection Guide (压敏电阻选择指南)

系列名	金属氧化物压敏电阻(MOV)															
	径向引线式					已封装					裸片		表面安装		轴向引线	
	ZA	RA	LA	C-III	UltraMOV™ Varistor	TMOV®/ iTMOV® Varistor	PA	HA	HB34, TMOV34S HG34 HF34, DHB34	DA/DB	BA/BB	NA	CA	CH	AUML	MA
技术类型	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	锌氧化物	多层 锌氧化物	锌氧化物
交流工作电压范围	4-460	4-275	130-1000	130-660	130-625	115-750	130-660	130-750	110-750	130-750	130-2800	130-750	130-2800	14-275	.....	9-264
工作直流电压范围	5.5-615	5.5-369	175-1200	.....	170-825	.....	175-850	148-970	148-970	175-970	175-3500	175-970	175-3,500	18-369	18	13-365
峰值电流范围(A)**	50-6500	150-6500	1200-6500	3500-9000	1750-10000	6000-10000	6500	25000 40000	40000	40000	50000 70000	40000	20000 70000	250-500	.....	40-100
峰值能量范围(J)	0.1-52	0.4-160	11-360	40-530	12.5-400	35-480	70-250	160-1050	220-1050	270-1050	450-10000	270-1050	200-10000	1-23	.....	0.06-1.7
温度范围(°C)	-55 - +85	-55 - +125	-55 - +85	-55 - +85	-55 - +85	-55 - +85	-55 - +85	-55 - +85	-55 - +85	-55 - +85	-55 - +85	-55 - +85	-55 - +85	-55 - +125	-55 - +125	-55 - +85
线路保护	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
安装/形状系数	Radial Leaded (径向引线式)	Packaged (封装)	Radial Leaded (径向引线式)				Packaged (封装)	Industrial Packaged (工业封装)		Packaged (封装)	Bare Disc (裸片)		Surface Mount (表面安装)		Axial Leaded (轴向引线)	
MOV - 片尺寸	5, 7, 10, 14, 20mm	8, 16, 22mm	7, 10, 14 20mm	10, 14, 20mm	7, 10, 14 20mm	14, 20mm	20mm	32, 40mm	34mm	40mm	60mm	34mm	32, 40, 60mm	.....	.....	3mm
机构批准	UL, VDE, CECC	UL, CSA	UL, CSA, CECC, & VDE	UL, CSA, CECC, & VDE	UL, CSA, VDE, & CECC	UL, CSA	UL & CSA	UL & CSA	UL & CSA	UL	UL	.....	.....	UL	.....	.....
符合 RoHS	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
无铅	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes	Yes

* 该参数不适用于该技术
** 该参数不适用于短路器器件

ESD Suppressor Selection Guide (静电放电抑制器选择指南)

Littelfuse可以生产三种不同系列的静电放电抑制产品。每项技术都具有可以满足特定电路需求的独特属性
1. 查看左侧一列的电路要求或参数，并将其与表中的Littelfuse产品系列对比。
2. 有关详尽完整的技术信息，请参阅Littelfuse数据表和应用说明。

系列名	PulseGuard® 抑制器		硅保护			贴片式压敏电阻			
	表面安装	连接器阵列	表面安装			表面安装			
	PGB®, PGB1	PGD	SP72X	SP05X	SPUSBx	ML	MLE	MLN	MHS
技术类型	VVM	VVM	Silicon SCR/Diode	TVS Avalanche Diode	USB Port Terminator (w/ESD Suppression and EMI Filter)	MLV ZnO	MLV ZnO	MLV ZnO	MLV ZnO
工作电压	0-24VDC	0-24VDC	0-30VDC	0-5.5VDC	0-5.5VDC	0-120VDC range by type	0-18VDC	0-18VDC	0-42VDC
阵列封装(线数)	SOT23 (2), 0805 (4)	Connector (9, 15, 25, and 37 pins)	DIP, SOIC (6, 14) SOT23 (4)	SC70 (2,4,5), SOT23 (2,4,5), SOT143 (3), TSSOP-8 (4), MSOP-8 (6)	SC70-6 (3)	No	No	0805 (4) 1206 (4)	No
单线封装	0603	No	No	No	No	0402-1210	0402-1206	.....	0402-0603
器件典型电容	0.06pF	<2pF	3-5pF	30pF	47pF	40-6000pF	40-1700pF	45-430pF	3-22pF
漏电流	<1nA	<0.1µA	<20nA	<100nA	<100nA	<25µA	<25µA	<30nA	<1µA
是否额定抗干扰能力符合IEC 61000-4-2级别4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
是否还标称可抗EFT或雷电波	No	No	Yes	TBD	TBD	Yes	Yes	Yes	Yes
双向(任意一级瞬变)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
执行低通滤波	-	-	-	-	Yes	Yes	Yes	Yes	Yes
符合 RoHS	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes
无铅	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes

*PGB系列不符合RoHS，对于无铅或者符合RoHS要求的设计，请使用PGB1系列。

Overcurrent Suppression Products (过流抑制产品)

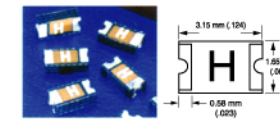
Resettable PTCs (可恢复PTC)

1206L Series

Surface Mount
(表面安装)



I _{hold} (A)	V _{max} (VDC)
0.20	15.0
0.25	15.0
0.35	6.0
0.50	6.0
0.75	6.0
1.10	6.0
1.50	6.0
1.60	6.0

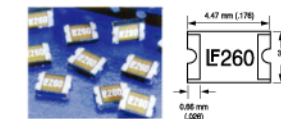


1812L Series

Surface Mount
(表面安装)



I _{hold} (A)	V _{max} (VDC)
0.50	15.0
0.75	13.2
1.10	6.0
1.25	6.0
1.50	6.0
1.60	6.0
2.00	6.0
2.60	6.0



30R Series

Radial Lead
(径向引线)



V _{max}	Ampere Range
30VDC	0.90 - 9.0A



60R Series

Radial Lead
(径向引线)



V _{max}	Ampere Range
60VDC	0.10 - 3.75A



Surface Mount Fuses (表面安装保险丝)

High Current 1206

Very Fast-Acting Thin-Film Fuse
(特快熔断薄膜保险丝)
429 Series



Voltage range:	24V
Ampere range:	7A
Interrupting ratings:	35A @ 24VAC/VDC

*For RoHS compliant and Lead-Free 7A part add "L" suffix (ex. 0429007.xxl)
**Use 433 or 466 series for all designs below 7A.



SlimLine™ Lead-Free 1206

Very Fast-Acting Thin-Film Fuse
(特快熔断薄膜保险丝)
466 Series



Voltage range:	24-125V
Ampere range:	0.125 - 5.0A
Interrupting ratings:	0.125 - .375A 50A @ 125VAC/VDC

	0.5 - 2A	50A @ 63VAC/VDC
	2.5 - 3A	50A @ 32VAC/VDC
	4 - 5A	35A @ 24VAC/VDC



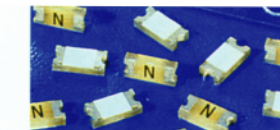
SlimLine™ 1206

Very Fast-Acting Thin-Film Fuse
(特快熔断薄膜保险丝)
433 Series



Voltage range:	24 - 125V
Ampere range:	0.125 - 5.0A
Interrupting ratings:	0.125 - .375A 50A @ 125VAC/VDC

	0.5 - 2A	50A @ 63VAC/VDC
	2.5 - 3A	50A @ 32VAC/VDC
	4 - 5A	35A @ 24VAC/VDC



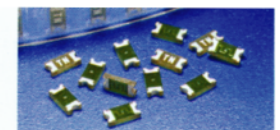
SlimLine™ Lead-Free 1206

Slo-Blo® Thin-Film Fuse
(Slo-Blo® 薄膜保险丝)
468 Series



Voltage range:	32-63V
Ampere range:	1.0 - 3.0A
Interrupting ratings:	1.0-1.5A 50A@63VAC/VDC

	2.0A	50A@63VAC/VDC
	3.0A	50A@32VAC/VDC



1206

Slo-Blo® Thin-Film Fuse
(Slo-Blo® 薄膜保险丝)
430 Series



Voltage range:	32 - 63V
Ampere range:	0.5 - 3.0A
Interrupting ratings:	0.5 - 1.5A 50A@63VAC/VDC

	2.0A	35A@63VAC/VDC
	3.0A	50A@32VAC/VDC

*For new designs use the 468 series



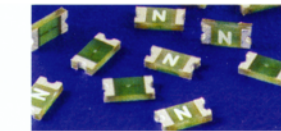
SlimLine™ Lead-Free 0603

Very Fast-Acting Thin-Film Fuse
(特快熔断薄膜保险丝)
467 Series



Voltage range:	32V
Ampere range:	0.25 - 5.0A
Interrupting ratings:	0.25 - 1A 50A @ 32VAC/VDC

	1.25 - 5A	35A @ 32VAC/VDC
	1.25 - 5A	35A @ 32VAC/VDC



SlimLine™ 0603

Very Fast-Acting Thin-Film Fuse
(特快熔断薄膜保险丝)
434 Series



Voltage range:	32V
Ampere range:	0.25 - 5.0A
Interrupting ratings:	0.25 - 1A 50A @ 32VAC/VDC

	1.25 - 5A	35A @ 32VAC/VDC
	1.25 - 5A	35A @ 32VAC/VDC



SlimLine™ Lead-Free 0402


Very Fast-Acting Thin-Film Fuse
(特快熔断薄膜保险丝)
435 Series



Voltage range:	32V
Ampere range:	0.25 - 2.0A
Interrupting ratings:	35A @ 32 VDC



Surface Mount Fuses (表面安装保险丝)

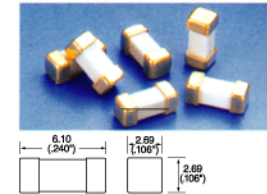
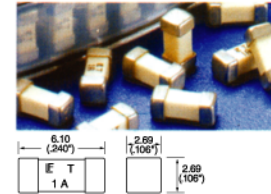
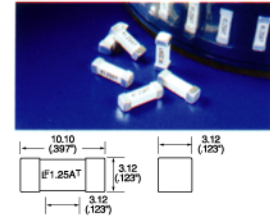
Add "L" suffix when ordering  compliant 452 series

TeleLink®
Surge Tolerant Miniature Fuse
(耐浪涌微型保险丝)
461 Series

NANO²
Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
452/454 Series

NANO²
Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
449 Series

Voltage range:	600V	125V	125V
Ampere range:	0.5 – 2.0A	0.375 – 5A	0.375 – 5A
Interrupting ratings:	60A @ 600 VAC*	50A @ 125VAC/VDC	TBD



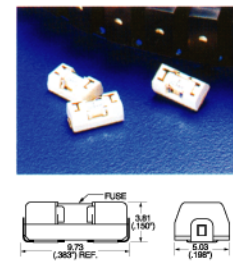
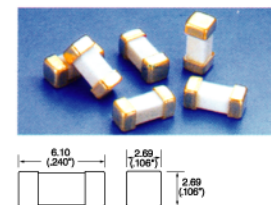
Add "L" suffix when ordering  compliant 451 series

NANO²
Very Fast-Acting Type Fuse
(特快熔断薄膜保险丝)
451/453 Series

NANO²
Very Fast-Acting Type Fuse
(特快熔断薄膜保险丝)
448 Series

SMF Omni-Blok®
Fuse Block
(保险丝管座)
154 Series

Voltage range:	65 – 125V	65 – 125V	Mounting Type:	Molded Base
Ampere range:	0.062 – 15.0A	0.062 – 15.0A	Fuse Type:	NANO ² Fuse
Interrupting ratings:	0.062 – 8A	50A @ 125VAC/VDC		See NANO ² Fuse for electrical characteristics.



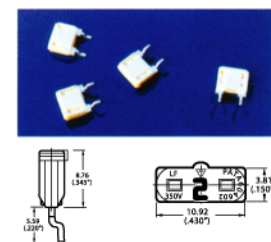
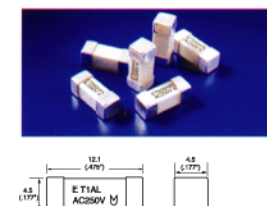
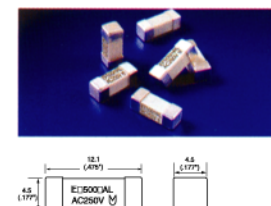
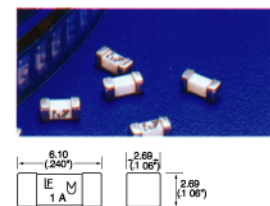
NANO² UMF
Fast-Acting Type Fuse
(快熔型保险丝)
455 Series

NANO² 250V UMF
Fast-Acting Fuse
(快熔型保险丝)
464 Series

NANO² 250V UMF
Time Lag Fuse
(延时保险丝)
465 Series

EBF – 350V
Fast Acting Type Fuse
(快熔型保险丝)
446/447 Series

Voltage range:	125V	250V	250V	350V
Ampere range:	0.40 – 1.6A	0.50 – 6.3A	1.0 – 6.3A	2 – 10A
Interrupting ratings:	50A @ 125VAC/VDC	100A @ 250VAC	100A @ 250VAC	100A @ 350VAC 50A @ 125VDC 450A @ 60VDC



Surface Mount Fuses (表面安装保险丝)

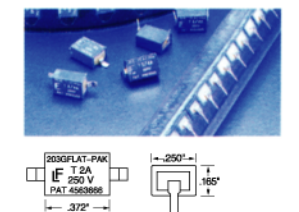
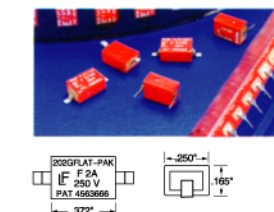
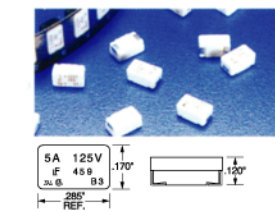
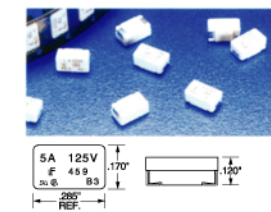
PICO® SMF
Very Fast-Acting Type Fuse
(特快熔断保险丝)
459 Series

PICO® SMF
Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
460 Series


FLAT-PAK®
Fast-Acting Type Fuse
(快熔型保险丝)
202 Series

FLAT-PAK®
Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
203 Series

Voltage range:	125V	125V	250V	250V
Ampere range:	0.062 – 5.0A	0.5 – 5.0A	0.062 – 5.0A	0.25 – 5.0A
Interrupting ratings:	50A @ 125VAC, 300A @ 125VDC	50A @ 125VAC/VDC	50A @ 250VAC	50A @ 250VAC



Axial Leaded Fuses (轴向引线保险丝)

Add "L" suffix when ordering  compliant PICO® II products

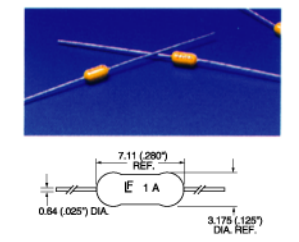
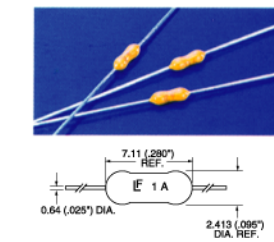
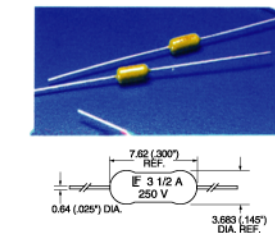
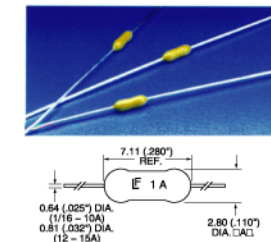
PICO® II
Very Fast-Acting Type Fuse
(特快熔断保险丝)
251/253 Series

PICO® II 250V
Very Fast-Acting Type Fuse
(特快熔断保险丝)
263 Series

PICO® II
Time Lag Type Fuse
(延时保险丝)
471 Series

PICO® II
Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
473 Series

Voltage range:	32 – 125V	250V	125V	125V
Ampere range:	0.062 – 15A	0.062 – 5.0A	0.5 – 5.0A	0.375 – 7.0A
Interrupting ratings:	300A @ Rated VDC 50A @ Rated VAC	50A @ 250VAC	50A @ 125VAC/VDC	50A @ 125VAC/VDC



Add "P" suffix when ordering  compliant and  parts

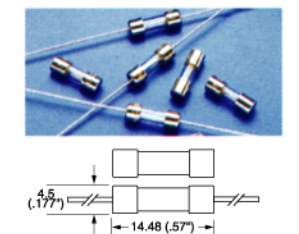
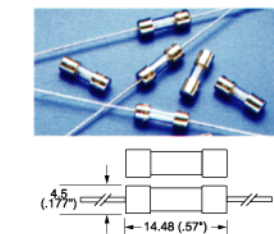
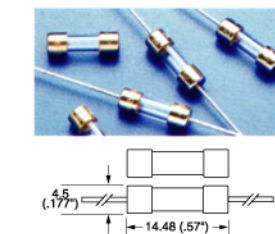
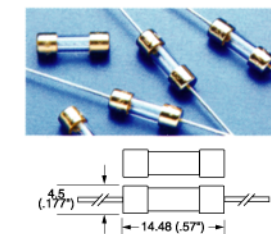
2AG
Fast-Acting Type Fuse
(快熔型保险丝)
224/225/224P/225P Series

2AG Special 350V
Fast-Acting Type Fuse
(快熔型保险丝)
220 007/220 007P Series

2AG
Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
229/230/229P/230P Series

2AG
Surge Withstand Type Fuse
(耐浪涌保险丝)
229/230/229P/230P Series
(Select Ratings)

Voltage range:	125 – 250V	350V	125 – 250V	125 – 250V	
Ampere range:	0.10 – 10.0A	3.0A	0.25 – 7.0A	0.250 – 1.25A	
Interrupting ratings:	0.1 – 3.5A 4 – 10A 0.1 – 1A 1.5 – 3.5A	10000A @ 125VAC 500A @ 125VAC 35A @ 250VAC 100A @ 250VAC	100A @ 350VAC	0.25 – 3.5A 4 – 7A 0.25 – 1A 1.25 – 3.5A	10000A @ 125VAC 400A @ 125VAC 35A @ 250VAC 100A @ 250VAC



Axial Leaded and Cartridge Fuses (轴向引线和保险丝管)

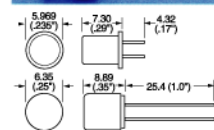
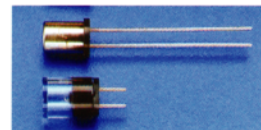
Add "P" suffix when ordering compliant and 3AG parts

MICRO™

Very Fast-Acting Type Fuse
(特快熔断保险丝)
272/273/274/278/279 Series

Voltage range:	125V
Ampere range:	0.002 – 5.0A
Interrupting ratings:	10000A @ 125VAC/VDC

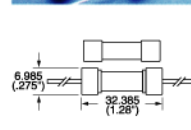
*Ratings above 0.031A are RoHS compliant and Lead-Free



3AG

Fast-Acting Type Fuse
(快熔型保险丝)
312/318/312P/318P Series

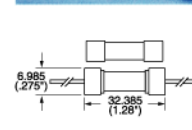
Voltage range:	32 – 250V
Ampere range:	0.031 – 35.0A
Interrupting ratings:	10000A @ 125VAC 35A @ 250VAC



3AG

Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
313/315/313P/315P Series

Voltage range:	32 – 250V
Ampere range:	0.01 – 30.0A
Interrupting ratings:	0.01 – 8A 10000A @ 125VAC 0.1 – 1A 35A @ 250VAC

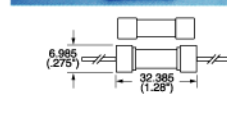


Add "P" suffix when ordering compliant and parts

3AB

Fast-Acting Type Fuse
(快熔型保险丝)
314/324/314P/324P Series

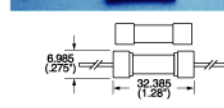
Voltage range:	250V
Ampere range:	0.125 – 30.0A
Interrupting ratings:	0.125 – 20A 10000A @ 125VAC 25 – 30A 400A @ 125VAC 0.125 – .75A 35A @ 250VAC 1 – 3A 100A @ 250VAC



3AB

Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
326/325/326P/325P Series

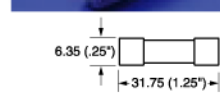
Voltage range:	125 – 250V
Ampere range:	0.010 – 30A
Interrupting ratings:	0.010 – 3.2A 10000A @ 125VAC 100A @ 250VAC 4 – 20A 10000A @ 125VAC 400A @ 250VAC 25 – 30A 400A @ 125VAC



3AB

Special Very Fast-Acting Type Fuse
(特种特快熔断保险丝)
322/322P Series

Voltage range:	65 – 250V
Ampere range:	1 – 30A
Interrupting ratings:	1 – 10A 10000A @ 125VAC 100A @ 250VAC 12 – 30A 200A @ 65VAC

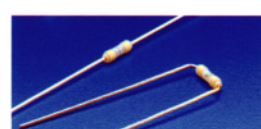


High Reliability (高可靠性)

PICO®

Very Fast-Acting Type Fuse
(特快熔断保险丝)
265/266/267 Series

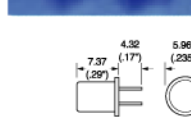
Voltage range:	32 – 125V
Ampere range:	0.062 – 15.0A
Interrupting ratings:	300A @ rated VDC 50A @ rated VAC



MICRO™

Very Fast-Acting Type Fuse
(特快熔断保险丝)
262/268/269 Series

Voltage range:	125V
Ampere range:	0.002 – 5.0A
Interrupting ratings:	10000A @ 125VAC/VDC



Axial Leaded and Cartridge Fuses (轴向引线和保险丝管)

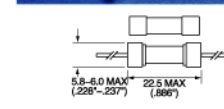
Add "P" suffix when ordering compliant and parts

5 x 20mm

IEC Fast-Acting Type Fuse
(IEC快熔断保险丝)
217 Series

Voltage range:	250V
Ampere range:	0.032 – 15A
Interrupting ratings:	35A or 10 times rated current; whichever is greater to a max of 100A@250VAC

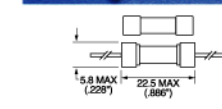
*125 – 15A series pictured



5 x 20mm

IEC Slo-Blo® Type Fuse
(IEC Slo-Blo® 保险丝)
213 Series

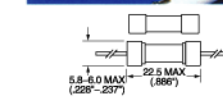
Voltage range:	250V
Ampere range:	0.200 – 6.3A
Interrupting ratings:	35A or 10 times rated current; whichever is greater



5 x 20mm

IEC Fast-Acting Type Fuse
(IEC快熔断保险丝)
216 Series

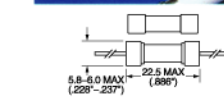
Voltage range:	250VAC
Ampere range:	0.050 – 10A
Interrupting ratings:	1500A



5 x 20mm

IEC Slo-Blo® Type Fuse
(IEC Slo-Blo® 保险丝)
215 Series

Voltage range:	250VAC
Ampere range:	0.200 – 12A
Interrupting ratings:	1500A



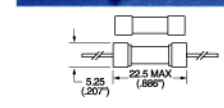
Add "P" suffix when ordering compliant and parts

5 x 20mm

Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
218 Series

Voltage range:	250VAC
Ampere range:	0.32 – 15.0A
Interrupting ratings:	35A or 10 times rated current; whichever is greater to a max of 100A @ 250VAC

*125 – 15A series pictured

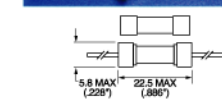


5 x 20mm

IEC Slo-Blo® Type Fuse
(IEC Slo-Blo® 保险丝)
219XA Series

Voltage range:	250VAC
Ampere range:	0.125 – 6.3A
Interrupting ratings:	150A @ 250VAC

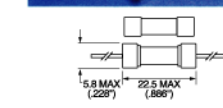
*High I²t rating



5 x 20mm

METI Medium-Acting
(METI中熔型)
232 Series

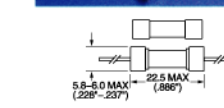
Voltage range:	125/250VAC
Ampere range:	1 – 10A
Interrupting ratings:	6.3 – 10.0A 10000A @ 125VAC 300A @ 125VAC 1.0 – 10.0A 100A @ 250VAC



5 x 20mm

UL/CSA Fast-Acting Type Fuse
(UL/CSA快熔断保险丝)
235 Series

Voltage range:	125 – 250VAC
Ampere range:	0.10 – 6A
Interrupting ratings:	0.100 – 1.0A 35A @ 250VAC 1.25 – 3.0A 100A @ 250VAC 0.100 – 6.0A 10000A @ 125VAC

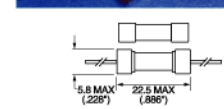


Add "P" suffix when ordering compliant and parts

5 x 20mm

UL/CSA Medium-Acting Type Fuse
(UL/CSA中熔型保险丝)
233/234 Series

Voltage range:	125 – 250VAC
Ampere range:	1 – 10A
Interrupting ratings:	1A – 6.3A 10000A @ 125VAC 1A 35A @ 250VAC 1.25A – 3.5A 100A @ 250VAC 4 – 10A 200A @ 250VAC



5 x 20mm

UL/CSA Slo-Blo® Type Fuse
(UL/CSA Slo-Blo® 保险丝)
239 Series

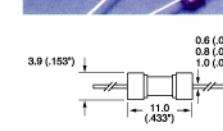
Voltage range:	125 – 250VAC
Ampere range:	0.20 – 7A
Interrupting ratings:	0.20 – 7A 10000A @ 125VAC 0.20 – 1A 35A @ 250VAC 1.25 – 3.15A 100A @ 250VAC



3.6 x 10mm

Fast-Acting Type Fuse
(快熔型保险丝)
672 Series

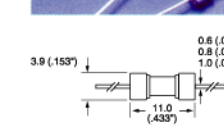
Voltage range:	250V
Ampere range:	0.100-10.0A
Interrupting ratings:	50A @ 250VAC



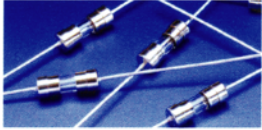
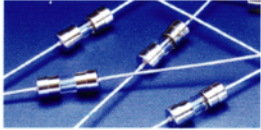


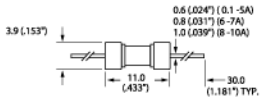
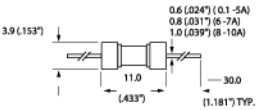
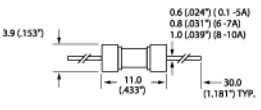
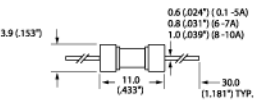
3.6 x 10mm

Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)
673 Series

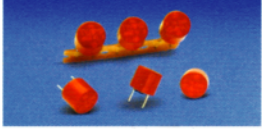

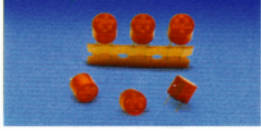

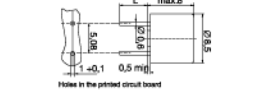
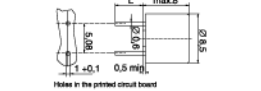
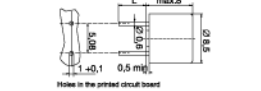
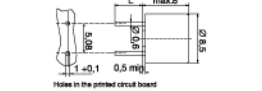
Voltage range:	250V
Ampere range:	0.100 – 10.0A
Interrupting ratings:	50A @ 250VAC

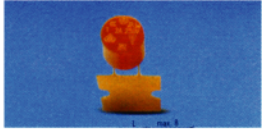
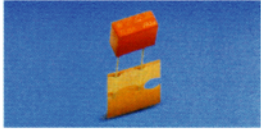
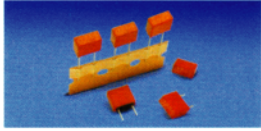
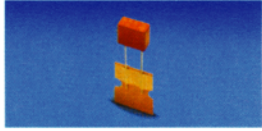

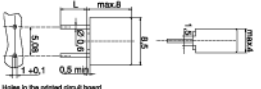
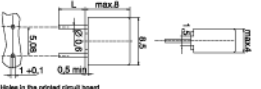



Axial Leaded and Cartridge Fuses (轴向引线保险丝管)





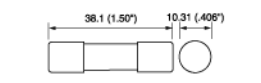
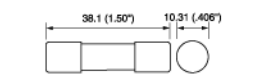
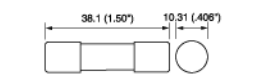
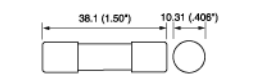
3.6 x 10mm Fast-Acting Type Fuse (快熔断型保险丝) 674 Series UL, CE	3.6 x 10mm Slo-Blo® Type Fuse (Slo-Blo® 保险丝) 675 Series UL, CE	3.6 x 10mm Fast-Acting Type Fuse (快熔断型保险丝) 676 Series UL, CE, RoHS, Pb	3.6 x 10mm Slo-Blo® Type Fuse (Slo-Blo® 保险丝) 677 Series UL, CE, RoHS, Pb
Voltage range: 250V	250V	250V	250VAC
Ampere range: 0.100 – 8.0A	0.100 – 5.0A	0.050 – 6.30A	0.250 – 6.30A
Interrupting ratings: 50A @ 250VAC	50A @ 250VAC	35A or 10 times rated current; whichever is greater @ 250VAC	35A or 10 times rated current; whichever is greater @ 250VAC
			
			





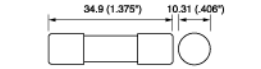
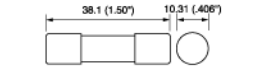
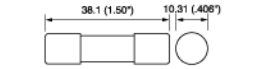
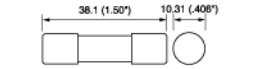
Subminiature Cartridge Fuses (超小型管状保险丝)

TR5® IEC Fast-Acting Type Fuse (快熔断型保险丝) 370 Series UL, CE, RoHS, Pb	TR5® IEC Time Lag Type Fuse (IEC延时型保险丝) 372 Series UL, CE, RoHS, Pb	TR5® UL Fast-Acting Type Fuse (UL快熔断型保险丝) 373 Series UL, CE, RoHS, Pb	TR5® UL Time Lag Type Fuse (UL延时型保险丝) 374 Series UL, CE, RoHS, Pb
Voltage range: 250VAC	250VAC	250VAC	250VAC
Ampere range: 0.040 - 6.30A	0.040 - 6.30A	0.050 - 10.0A	0.050 - 10.0A
Interrupting ratings: 0.040 - 3.15A 4.0A 5.0 - 6.3A	35A @ 250VAC 40A @ 250VAC 50A @ 250VAC	35A @ 250VAC 40A @ 250VAC 50 @ 250VAC	35A @ 250VAC 40A @ 250VAC 50 @ 250VAC
			
			




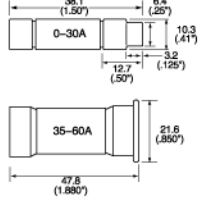
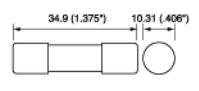
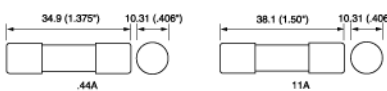
TR5® IEC Time Lag Type Fuse (IEC延时型保险丝) 382 Series UL, CE, RoHS, Pb	TE5® IEC Time Lag Type Fuse (IEC延时型保险丝) 392 Series UL, CE, RoHS, Pb	TE5® UL Fast-Acting Type Fuse (UL快熔断型保险丝) 395 Series UL, CE, RoHS, Pb	TE5® UL Time Lag Type Fuse (UL延时型保险丝) 396 Series UL, CE, RoHS, Pb
Voltage range: 250VAC	250VAC	125VAC	125VAC
Ampere range: 1.0 - 6.30A	0.800 - 6.3A	0.050 - 6.3A	0.050 - 6.30A
Interrupting ratings: 100A @ 250VAC Breaking capacity at UR: 50A @ 320VAC	25A @ 250VAC 3.15A 4.0A 5.0A 6.3A	25A @ 250VAC 32A @ 250VAC 40A @ 250VAC 50A @ 250VAC 63A @ 250VAC	100A @ 125VAC
			
			

Cartridge Fuses – Midget and Class CC/CD (管状保险丝 – 微型及CC/CD类)

AC Fast-Acting Type Fuse (快熔断型保险丝) KLK Series (F60C) UL, CE, QPL	AC/DC Fast-Acting Type Fuse (快熔断型保险丝) KLKD Series UL, CE, QPL	250 Volt Slo-Blo® Type Fuse (Slo-Blo® 保险丝) FLM Series (F09B) UL, CE, QPL	500 Volt Slo-Blo® Type Fuse (Slo-Blo® 保险丝) FLQ Series UL, CE
Voltage range: 600V	600V	250V	500V
Ampere range: 0.10 – 30A	0.10 – 30A	0.10 – 30A	0.10 – 30A
Interrupting ratings: 100000A @ 600VAC (capable of 200000A)	10000A @ 600VDC 100000A @ 600VAC (capable of 200000A)	10000A @ 250VAC	10000A @ 500VAC
			
			

13/8" Long Fast-Acting Type Fuse (快熔断型保险丝) BLS Series UL, CE	Slo-Blo® Pin Indicating Type Fuse (带针指示型保险丝) FLA Series UL	Laminated Fast-Acting Type Fuse (快熔断型保险丝) BLF Series UL, CE	Fiber Body Fast-Acting Type Fuse (快熔断型保险丝) BLN Series (F09A) UL, CE, QPL
Voltage range: 250 – 600V	125VAC	125 – 250V	250V
Ampere range: 0.20 – 10A	0.10 – 30A	0.50 – 30A	1.0 – 30A
Interrupting ratings: 10000A @ rated VAC	10000A @ rated VAC *12-30A are dual tube	10000A @ rated VAC	10000A @ 250VAC
			
			

Cartridge Fuses – Midget and Class CC/CD (管状保险丝 – 微型及CC/CD类)

Class CC/CD Fast-Acting & Time Delay Type Fuses (快熔断 & 延时类保险丝) CCMR/KLDR/KLKR Series UL, CE	KLQ Increased Time-Delay (增强延时型) KLQ Series UL, CE	FLU Multimeter Protection (万用表保护) FLU Series UL, CE
Voltage range: 600VAC, 250 – 300VDC	600VAC	1000VAC/VDC
Ampere range: 0.10 – 60A	1.0 – 6.0A	1A, 15A
Interrupting ratings: AC: 200000A DC: 20000A	10000A @ rated VAC	1A 10kA@1000VAC/VDC 15A 20kA@1000VAC/VDC, *1A=OFLU.440, 15A=OFLU.011.
		
		

Hazardous Area Fuses(危险区用保险丝)

Barrier Network

242 Series

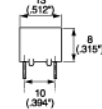
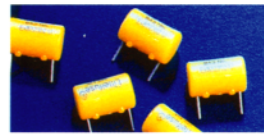
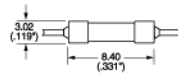
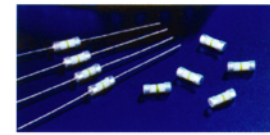


Safe-T-Plus

259 Series



Voltage range:	250V	250V
Ampere range:	0.050 – 0.25A	0.062 – 1A
Interrupting ratings:	4000A @ 250VAC/VDC	50A @ 125VAC 300A @ 125VDC



ATO®

Fast-Acting Type Fuse
(快熔断保险丝)

257 Series



MINI®

Fast-Acting Type Fuse
(快熔断保险丝)

297 Series



MINI® 42V

Fast-Acting Type Fuse
(快熔断保险丝)

997 Series



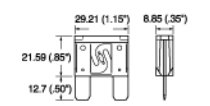
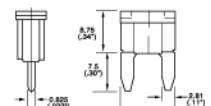
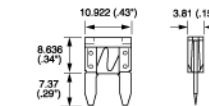
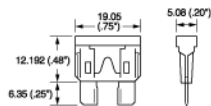
MAXI®

Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)

299 Series



Voltage range:	32VDC	32VDC	58VDC	32VDC
Ampere range:	1.0 – 40A	2.0 – 30A	2.0 – 30A	20 – 80A
Interrupting ratings:	1000A @ 32VDC	1000A @ 32VDC	1000A @ 58VDC	1000A @ 32VDC



Blade Terminal and Special Purpose Fuses(插片式接线端子 and 特种保险丝)

MAXI® 42V

Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)

999 Series



MEGA®

Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)

298 Series



MIDI®

Fast-Acting High Current Fuse
(快熔断高电流保险丝)

498 Series



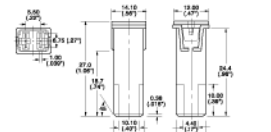
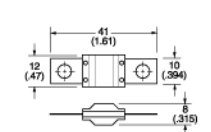
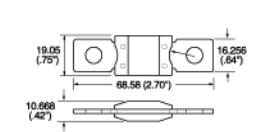
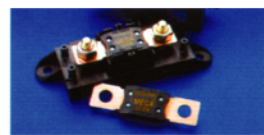
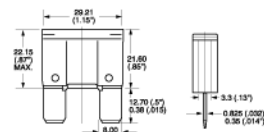
JCASE® 42V

Slo-Blo® Cartridge Fuse
(Slo-Blo® 管状保险丝)

995 Series



Voltage range:	58VDC	32VDC	32VDC	58VDC
Ampere range:	20 – 80A	40 – 500A	30 – 200A	20 – 60A
Interrupting ratings:	1000A @ 58VDC	2000A @ 32VDC	2000A @ 32VDC	1000A @ 58VDC



Blade Terminal and Special Purpose Fuses(插片式接线端子 and 特种保险丝)

Cable Pro®

Protector
(线缆保护器)

496 Series



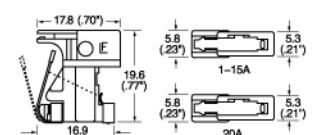
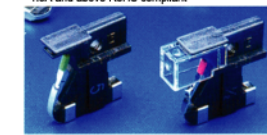
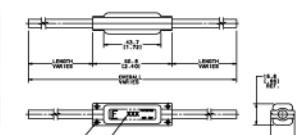
481

Alarm Indicating Fuse
(报警提示型保险丝)

481 Series



Voltage range:	32VDC	125VAC/VDC	125VAC/VDC
Ampere range:	60 – 200A	0.18 – 20A	0.18 – 20A
Interrupting ratings:	2000A @ 32VDC	450A @ 60VDC 300A @ 125VAC (up to 20A)	300A @ 125VDC (up to 15A) 200A @ 125VDC (up to 20A)



Fuseholders(保险丝盒)

482

Alarm Indicating
(报警提示)

482 Series



International Shock-Safe

(国际电击安全保护)

345 Series



Flip-Top Shock-Safe

(拉盖式电击安全保护)

346/286 Series



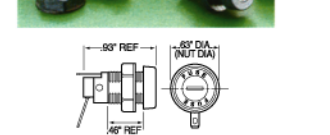
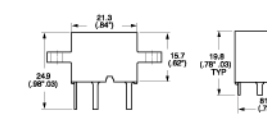
Shock-Safe

(电击安全保护)

245 Series



Mounting Type:	PCB and Panel	Panel Mount	Panel Mount	Panel Mount
Fuse Type:	481 Alarm Indicating • Single pole and gangable versions available (1-15A) • 20A version is single pole only	3AG, 5x20mm, 2AG	3AG, 5x20mm, 2AG	2AG



Blade Terminal and Special Purpose Fuses(插片式接线端子 and 特种保险丝)

MAXI® 42V

Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)

999 Series



MEGA®

Slo-Blo® Type Fuse
(Slo-Blo® 保险丝)

298 Series



MIDI®

Fast-Acting High Current Fuse
(快熔断高电流保险丝)

498 Series



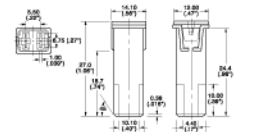
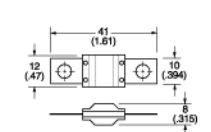
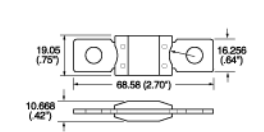
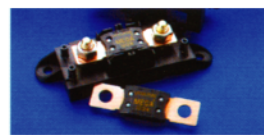
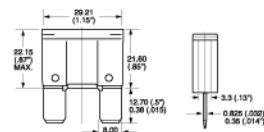
JCASE® 42V

Slo-Blo® Cartridge Fuse
(Slo-Blo® 管状保险丝)

995 Series



Voltage range:	58VDC	32VDC	32VDC	58VDC
Ampere range:	20 – 80A	40 – 500A	30 – 200A	20 – 60A
Interrupting ratings:	1000A @ 58VDC	2000A @ 32VDC	2000A @ 32VDC	1000A @ 58VDC



Shock-Safe

(电击安全保护)

345 Series



Shock-Safe

(电击安全保护)

571 Series



Low Profile

(半高底座)

348 Series



Blown Fuse

Indicating Type
(指示类型)

344 Series



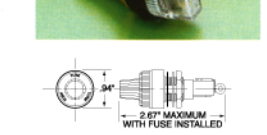
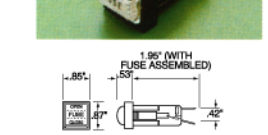
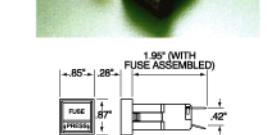
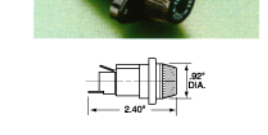
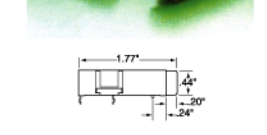
Blown Fuse

Indicating Type
(指示类型)

344 Series



Mounting Type:	PC Board Mount	Panel Mount	Snap Mount	Snap Mount	Panel Mount
Fuse Type:	3AG, 5x20mm, Midget	Midget	3AG	3AG	3AG



Overvoltage Suppression Products(过压抑制产品)

PulseGuard® Polymeric ESD Suppressors(聚合物静电放电抑制器)

	PGD Series 	PGB Series	PGB1 Series 	0603	SOT23	0805
Operating Voltage:	0-24VDC	0-24VDC	0-24VDC	1-line protection (单线保护)	2-line protection (双线保护)	4-line protection (四线保护)
Peak Current:	45A@15kV	45A@15kV	45A@15kV			
Typ. Capacitance (C ₀):	<2pF@1MHz	0.06pF@1MHz	0.06pF@1MHz			
Leakage Current:	<0.1µA@5VDC	<1.0nA	<1.0nA			
Offstate Resistance:	10MΩ	10MΩ	10MΩ			
Clamping:	100V,TYPICAL@15KV	150V,TYPICAL@8KV	150V,TYPICAL@8KV			
Trigger Voltage:	1000V	1000V	500V			
Package Type:	Connector Array	0603, SOT23, 0805	0603, SOT23, 0805			

Multilayer Varistors(贴片式压敏电阻)

	MHS Series 	ML Series 	MLE Series 	MLN Series 	AUML Series
Operating Voltage:	0 - 42 VDC	2.5-107 VAC 3.5-120 VDC	0-18 VDC	0-18 VDC	18 VDC
Peak Current:	N/A	4-500A	20A	30A	N/A
Leakage Current:	<1µA	<25µA	<25µA	<30nA	N/A
Peak Energy:	N/A	0.02-2.5J	0.5J	0.05-0.1J	N/A
Lines Protected:	1	1	1	4	1
Capacitance (C ₀):	3, 12pF	40-6000pF	40-1700pF	45-430pF	
Package Size	0402, 0603	0402-1210	0402-1206	0805, 1206	1206-2220

Diode Arrays(二极管阵列)

	SPO5x Series TVS Avalanche Diode (TVS雪崩二极管)	SP72x Series SCR/Diode Array (SCR/二极管阵列)	SPUSBx Series Upstream USB Port Terminator with ESD suppression and EMI Filtering (带静电放电抑制和电磁干扰 过滤的上游USB端口端子)
Maximum Operating Voltage:	5.5 VDC	1-30VDC	5.5 VDC
Leakage Current:	<100nA	<20nA	<100nA
Lines Protected:	2,3,4,5,6	4,6,14	3
Capacitance (C ₀):	30pF	3-5pF	47pF
Package Size	SC70, SOT23, SOT143, TSSOP-8, MSOP-8	DIP, SOIC, SOT23	SC70-6

Protection Thyristors(半导体)

	Through-hole SIDACTor® Devices (贯穿孔SIDACTor® 器件)	Through-hole SIDACTor® Devices (贯穿孔SIDACTor® 器件)	SIDACTor® HighSpeed Communication Protector (SIDACTor®高速通 讯保护器)	SIDACTor® Fixed Voltage SLIC Protectors (固定电压SLIC保护器)
	T10A, T10B Series 	T10 C Series 	Pxxx2Sx, PxxxxCA, P0220Sx Series 	Pxxx1Sx, Pxxx1CA2, Pxxx1Ux Series
Maximum Operating Voltage:	32-243	70-240	15-275	58-160
Form Factor:	T10A=DO-15, T10B=DO-201	3 pin 'gas tube'	DO-214AA	DO-214AA, Mod DO-214AA, Mod MS-013
Capacitance(C ₀):	T10A: <100pF T10B: <200pF	<200pF	10-150pF	

	Surface Mount SIDACTor® Devices (表面安装SIDACTor® 器件)	Surface Mount Multiport SIDACTor® Devices (表面安装SIDACTor® 器件)	Through-Hole SIDACTor® Devices (贯穿孔SIDACTor® 器件)	Through-Hole SIDACTor® Devices (贯穿孔SIDACTor® 器件)	Asymmetrical Multiport SIDACTor® Devices (非对称多端口 SIDACTor®器件)
	PxxxxSx, Pxxx2CA, PxxxxSC MC, PxxxxSA MC Series 	Pxxx3Ux, Pxxx4Ux, Pxxx6Ux Series 	Pxxx0AA61, Pxxx2A, Pxxx2AC MC, Pxxx3A, Pxxx3AC MC Series 	PxxxxEx, PxxxEx MC Series 	AxxxxUx6 Series
Maximum Operating Voltage:	6-320	6-420	25-420	6-320	170-400
Form Factor	DO-214AA	Mod MS-013	Mod TO-220	TO-92	Mod MS-013
Capacitance(C ₀):	15-220pF	10-250pF	10-250pF	15-260pF	10-70pF

	LCAS Asymmetrical Discrete SIDACTor® Devices (LCAS非对称分散式 SIDACTor®器件)	Battrax® SLIC Protectors (Battrax®用户线路 接口电路保护器)	CATV and HFC SIDACTor® Device (CATV和HFC SIDACTor®器件)	CATV Line Amplifier/ Power Inserter SIDACTor® Device (有线电视电源插入 器和线路放大器 SIDACTor®器件)
	Pxx00Sx Series 	Bxxx0C_, Bxx1Ux, B3xxx4Ux, B1xxx1Ux4 Series 	Pxxx00AD, Pxxx0NE, Pxxx0RE Series 	PxxxxME Series
Maximum Operating Voltage:	100-230	200	120-550	140-180
Form Factor	DO-214AA		TO-263, TO-220	TO-218
Capacitance(C ₀):	20-110pF	50-200pF	150-260pF	750pF

TVS Diodes(TVS二极管)

	Through-hole TVS Diode (贯穿孔TVS二极管)	Surface Mount TVS Diode (表面安装TVS二极管)	High-Power TVS Diode (大功率TVS二极管)
	SA, P6KE, 1.5KE, 5KP, 15KP, P4KE, LCE, SLD Series 	SMBJ, P6SMBJ, 1K5SMBJ, SMAJ, P4SMA, SMCJ, 1.5SMC Series 	AK6, AK10 Series
Maximum Operating Voltage:	5-467	5-550	58-470
Peak Pulse Current:	0.52-544A	0.5-163A	6000A - 10000A
Form Factor:	Axial leaded	DO-214 AA, DO-214 AB, DO-214AC	Axial leaded
Peak Pulse Power:	400W to 15,000W	400W to 1500W	5000W +

Gas Plasma Arresters (improved GDTs)(气体放电管<增强型GDT>)

	Greentube™ Alpha Ultra Performance Hybrid (Greentube™ Alpha 超高性能混合器件)	Greentube™ Beta High Performance (Greentube™ Beta 高性能器件)	Greentube™ Mini Beta High Performance (Greentube™ Mini Beta 高性能)	Greentube™ Omega Range (Greentube™ Omega 范围)	Delta Range (Delta 范围)
	SL1122A Series 	SL1011A, SL1011B, SL1021A, SL1021B Series 	SL1002A, SL1003A Series 	SL1024B, SL1024A Series 	SL1026 Series
Peak Pulse Current:	10000A	5000A-10000A	5000A	10000A	40000A
Form Factor:	3 terminal radial	2 terminal axial & button, 3 terminal radial	2 terminal SMT, 3 terminal radial	2 terminal axial & button, 3 terminal radial	3 terminal clip-mounted, 3 terminal radial
Nom. DC Breakover Voltage:	90-450	75-600	90-600	90-600	275-1100
Capacitance(C ₀):	100-200pF	≤1pF	1.2pF	≤1pF	2.5pF

Gas Plasma Arresters (improved GDTs)(气体放电管<增强型GDT>)

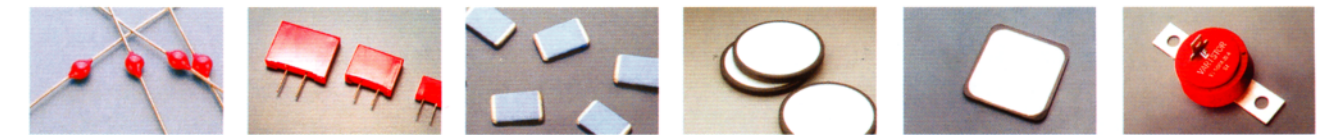
	Greentube™ Mini Beta High Performance (Greentube™ Mini Beta 高性能)	Greentube™ Delta High Performance (Greentube™ Delta 高性能)	Beta High Performance GDT (Beta 高性能GDT)
	SL0902 Series 	SL1411 Series 	HV Series
Peak Pulse Current:	2500A	10000A	3000A
Form Factor:	2 terminal SMT and axial lead through-hole	2 terminal SMT and axial lead through-hole	2 terminal through-hole
Nom. DC Breakover Voltage:	90-420V	184-360V	2850-3500V
Capacitance(C ₀):	1.0pF	<1pF	

Industrial Varistor Products(工业用压敏电阻产品)

	TMOV® /iTMOV® Varistor Series (压敏电阻系列)	UltraMOV™ Varistor Series (压敏电阻系列)	C-III Series	LA Series	ZA Series
Operating Voltage:	115-750 VAC	130-625 VAC 170-825 VDC	130-660 VAC	130-1000 VAC 175-1200 VDC	4-460 VAC 5.5-615 VDC
Peak Current:	6000-10000A	1750-10000A	3500-9000A	1200-6500A	50-6500A
Peak Energy:	35-480J	12.5-400J	40-530J	11-360J	0.1-52J
Mount/ Form Factor:	Radial Leaded	Radial Leaded	Radial Leaded	Radial Leaded	Radial Leaded
Disc Size:	14, 20mm	7, 10, 14, 20mm	10, 14, 20mm	7, 10, 14, 20mm	5, 7, 10, 14, 20mm
Indicating:	iTMOV Varistor Only	N/A	N/A	N/A	N/A



	MA Series 	RA Series 	CH Series 	CA Series 	NA Series 	PA Series
Operating Voltage:	9-264 VAC 13-365 VDC	4-275 VAC 5.5-369 VDC	14-275 VAC 18-369 VDC	250-2800 VAC 330-3500 VDC	250-750 VAC 330-970 VDC	130-660 VAC 175-850 VDC
Peak Current:	40-100A	150-6500A	250-500A	20000-70000A	40000A	6500A
Peak Energy:	0.06-1.7J	0.4-160J	1-23J	330-10000J	370-1050J	70-250J
Mount/ Form Factor:	Axial Leaded	Packaged	Surface Mount	Bare Disc	Bare Disc	Packaged
Disc Size:	3mm	8, 6, 22mm	N/A	32, 40, 60mm	34mm	20mm



	TMOV34S® Varistor Series (压敏电阻系列)	HB34, HF34, HG34 Series	DHB34 Series	HA Series	DA/DB Series	BB/BA Series
Operating Voltage:	115-750 VAC 150-970 VDC	110-750 VAC 148-970 VDC	110-750 VAC 148-970 VDC	110-750 VAC 148-970 VDC	130-750 VAC 175-970 VDC	130-2800 VAC 175-3500 VDC
Peak Current:	40000A	40000A	40000A	25000-40000A	40000A	50000-70000A
Peak Energy:	235-1050J	220-1050J	220-1050J	170-1050J	270-1050J	450-10000J
Mount/ Form Factor:	Packaged	Packaged	Packaged	Packaged	Industrial Packaged	Packaged
Disc Size:	34mm	34mm	34mm	32, 40mm	40mm	60mm





PH 汎浩有限公司

臺北總公司

臺灣省臺北市內湖區瑞光路192號8樓之2
郵編: 11491
電話: +886-2-2799 6010
傳真: +886-2-2799 6035
<http://www.panhao.com>
E-mail: pur@panhao.com

北京辦事處

北京市海澱區大柳樹15號
富海中心5號樓1604室
郵編: 100081
電話: +86-10-6214 0376
傳真: +86-10-6214 0377
E-mail: beijing@semcor.com.cn

青島公司

山東省青島市高科園株洲路192號
郵編: 266101
電話: +86-532-8870 1773
傳真: +86-532-8870 1478
<http://www.semcor.com.cn>
E-mail: info@semcor.com.cn

蘇州辦事處

江蘇省蘇州市新區獅山路58號
匯豪國際西幢655室
郵編: 215011
電話: +86-512-6807 0775
傳真: +86-512-6807 0776
E-mail: suzhou@semcor.com.cn



汎浩有限公司
Pan Hao Co.,Ltd.



- Resettable PTCs
- Fuses
- PulseGuard® Polymeric ESD Suppressors
- Metal Oxide Varistors
- TVS Diodes and Diode Arrays
- Teccor® SIDACTor® Protection Thyristors
- Greentube™ Gas Plasma Arresters (Improved GDTs)
- Teccor® Switching Thyristors



電子應用電路保護
與
解決方案選擇指南

