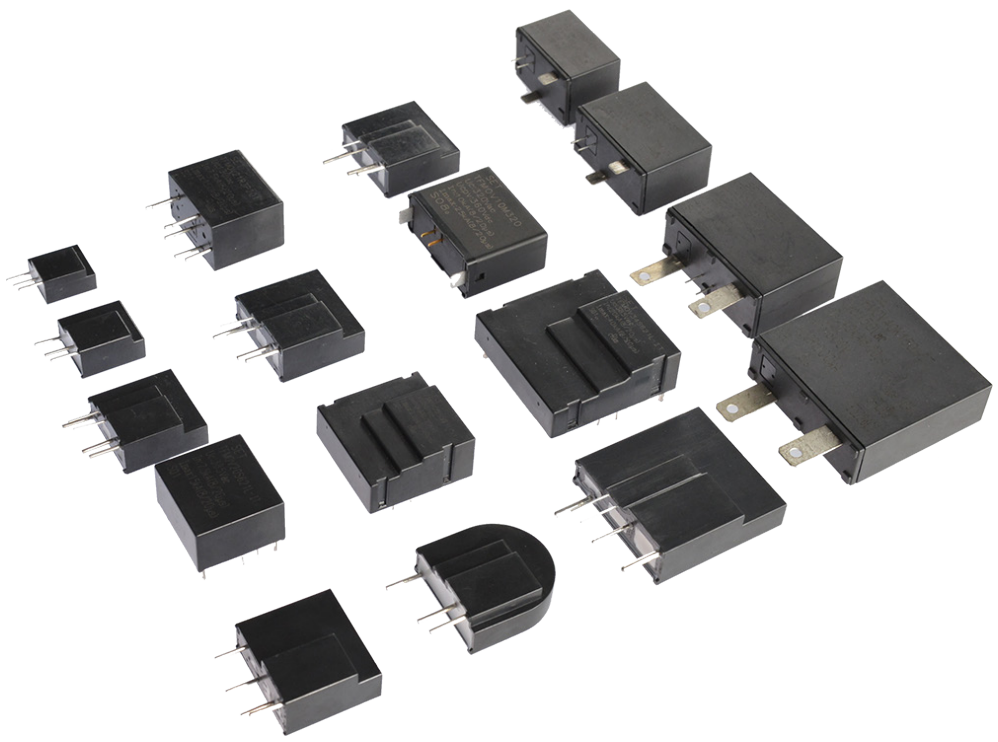
TFMOV

热保护型压敏电阻

Thermal Fuse & MOV

- 过温保护，高可靠性
- 标称放电电流 (I_n): (1 ~ 40) kA
- 遥信和失效指示（可选）
- 密封材料阻燃等级 V0 (UL 94)
- 通过UL / TUV / CQC认证

- Over-temperature Protection, High Reliability
- Nominal Discharge Current (I_n): (1 ~ 40) kA
- Remote Signal Contact for Failure Indication (Optional)
- Epoxy Sealing Material, Flame-retardant to V0 (UL 94)
- Comply with UL/TUV/CQC



SETsafe | SETfuse

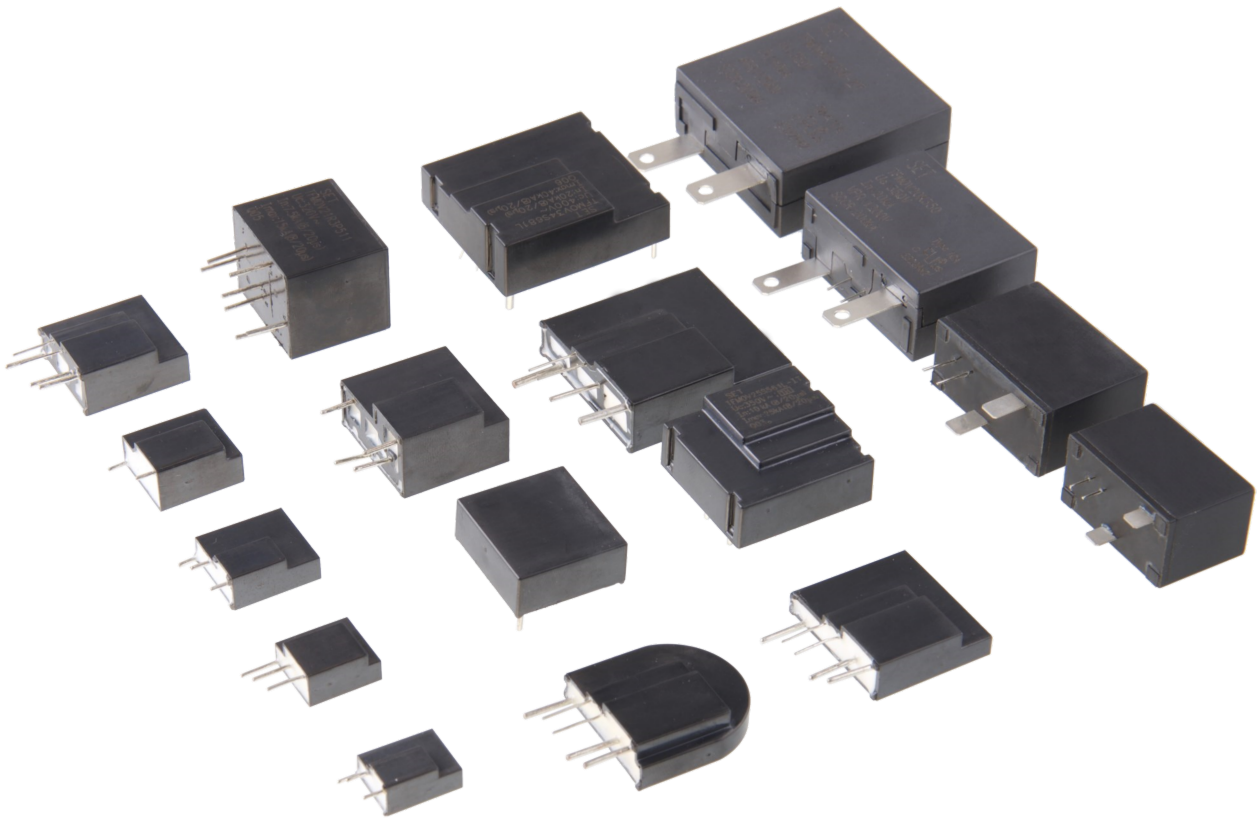
赛尔特

制造电路控制及安全保护元器件 提供电路安全解决方案

Providing a Total Solution for High Standard Safety Circuit Protection

热保护型压敏电阻 TFMOV

Thermal Fuse & MOV



特性 Features

- 高可靠性 High Reliability
- 小体积 Small Size
- 失效指示遥信引脚(可选)

  Remote Signal Contact for Failure Indication (Optional)
- 高通流量 High Energy Capacity
- 密封材料阻燃等级V0

  Sealing Material, Flame-retardant to V0 (UL 94)
- 依据 UL 1449 / IEC 61643-11 设计制造

  Comply with UL 1449 / IEC 61643-11

应用 Applications

- 通信设备 Telecom Equipment
- 组串逆变器 String Inverter in Photovoltaic System
- 交直流电源 AC / DC Power Supply
- 不间断电源 Uninterruptable Power Supply (UPS)
- 电涌保护器 Surge Protective Device (SPD)
- 电表 Electric Meter
- 电源分配单元 Power Distribution Unit (PDU)

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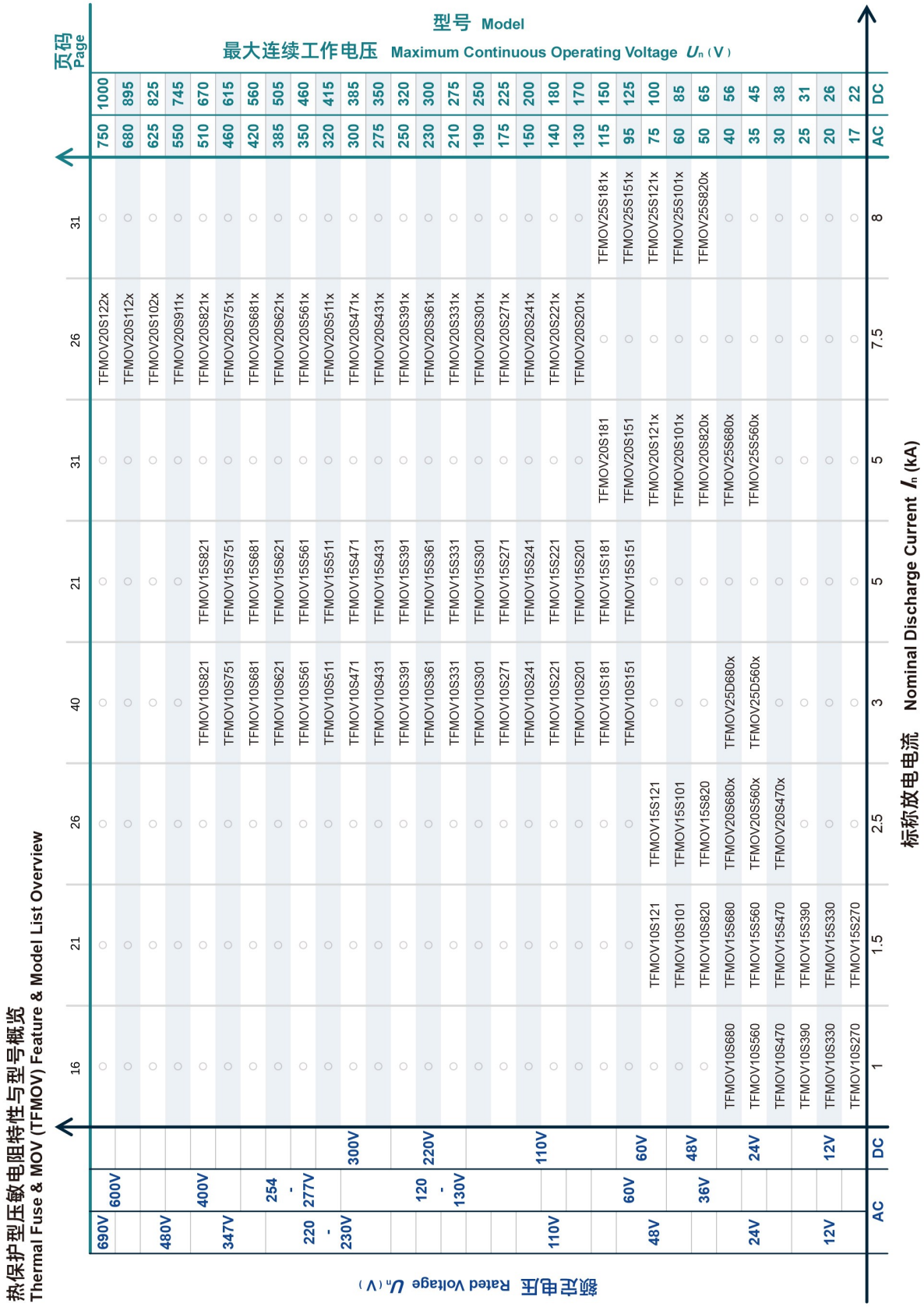
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

热保护型压敏电阻特性与型号概览
Thermal Fuse & MOV (TFMOV) Feature & Model List Overview



TFMOV

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热保护型压敏电阻特性与型号概览
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额定电压 Rated Voltage U_n (V) AC	额定电压 Rated Voltage U_n (V) DC	40	31	53	66	66	53	71	最大连续工作电压 Maximum Continuous Operating Voltage U_n (V) AC	最大连续工作电压 Maximum Continuous Operating Voltage U_n (V) DC	型号 Model 页码 Page
690V	600V	TFMOV25D122x	TFMOV25S122x	○	TFMOV20K122x	○	TFMOV34S122x	○	750	1000	
		TFMOV25D112x	TFMOV25S112x	○	TFMOV20K112x	○	TFMOV34S112x	○	680	895	
480V		TFMOV25D102x	TFMOV25S102x	○	TFMOV20K102x	○	TFMOV34S102x	○	625	825	
	400V	TFMOV25D911x	TFMOV25S911x	○	TFMOV20K911x	TFMOV20K550x	TFMOV34S911x	○	550	745	
347V		TFMOV25D821x	TFMOV25S821x	○	TFMOV20K821x	○	TFMOV34S821x	○	510	670	
		TFMOV25D751x	TFMOV25S751x	○	TFMOV20K751x	TFMOV20K460x	TFMOV34S751x	○	460	615	
		TFMOV25D681x	TFMOV25S681x	○	TFMOV20K681x	○	TFMOV34S681x	○	420	560	
220 - 230V	254 - 277V	TFMOV25D621x	TFMOV25S621x	○	TFMOV20K621x	○	TFMOV34S621x	○	385	505	
		TFMOV25D561x	TFMOV25S561x	○	TFMOV20K561x	TFMOV20K350x	TFMOV34S561x	○	350	460	
		TFMOV25D511x	TFMOV25S511x	○	TFMOV20K511x	○	TFMOV34S511x	○	320	415	
	300V	TFMOV25D471x	TFMOV25S471x	○	TFMOV20K471x	○	TFMOV34S471x	○	300	385	
		TFMOV25D431x	TFMOV25S431x	○	TFMOV20K431x	TFMOV20K300x	TFMOV34S431x	○	275	350	
		TFMOV25D391x	TFMOV25S391x	○	TFMOV20K391x	○	TFMOV34S391x	○	250	320	
	220V	TFMOV25D361x	TFMOV25S361x	○	TFMOV20K361x	○	TFMOV34S361x	○	230	300	
	120 - 130V	TFMOV25D331x	TFMOV25S331x	○	TFMOV20K331x	○	TFMOV34S331x	○	210	275	
		TFMOV25D301x	TFMOV25S301x	○	TFMOV20K301x	○	TFMOV34S301x	○	190	250	
		TFMOV25D271x	TFMOV25S271x	○	TFMOV20K271x	○	TFMOV34S271x	○	175	225	
110V		TFMOV25D241x	TFMOV25S241x	○	TFMOV20K241x	TFMOV20K150x	TFMOV34S241x	○	150	200	
	110V	TFMOV25D221x	TFMOV25S221x	○	TFMOV20K221x	○	TFMOV34S221x	○	140	180	
		TFMOV25D201x	TFMOV25S201x	○	TFMOV20K201x	○	TFMOV34S201x	○	130	170	
		○	○	○	TFMOV20K181x	○	TFMOV34S181x	○	115	150	
48V	60V 60V	○	○	○	TFMOV20K151x	○	TFMOV34S151x	○	95	125	
		○	○	TFMOV34S121x	○	○	○	○	75	100	
	36V 48V	○	○	TFMOV34S101x	○	○	○	TFMOV40K121x	60	85	
		○	○	TFMOV34S820x	○	○	○	TFMOV40K101x	50	65	
		TFMOV34S680x	○	○	○	○	○	TFMOV40K820x	40	56	
24V	24V	TFMOV34S560x	○	○	○	○	○	○	35	45	
		TFMOV34S470x	○	○	○	○	○	○	30	38	
		○	○	○	○	○	○	○	25	31	
12V	12V	○	○	○	○	○	○	○	20	26	
		○	○	○	○	○	○	○	17	22	
AC	DC	10	10 $I_{max} = 2.5I_n$	15	20 $I_{max} = 2.5I_n$	20 $I_{max} = 2.5I_n$	20	30	AC	DC	

标称放电电流 Nominal Discharge Current I_n (kA)

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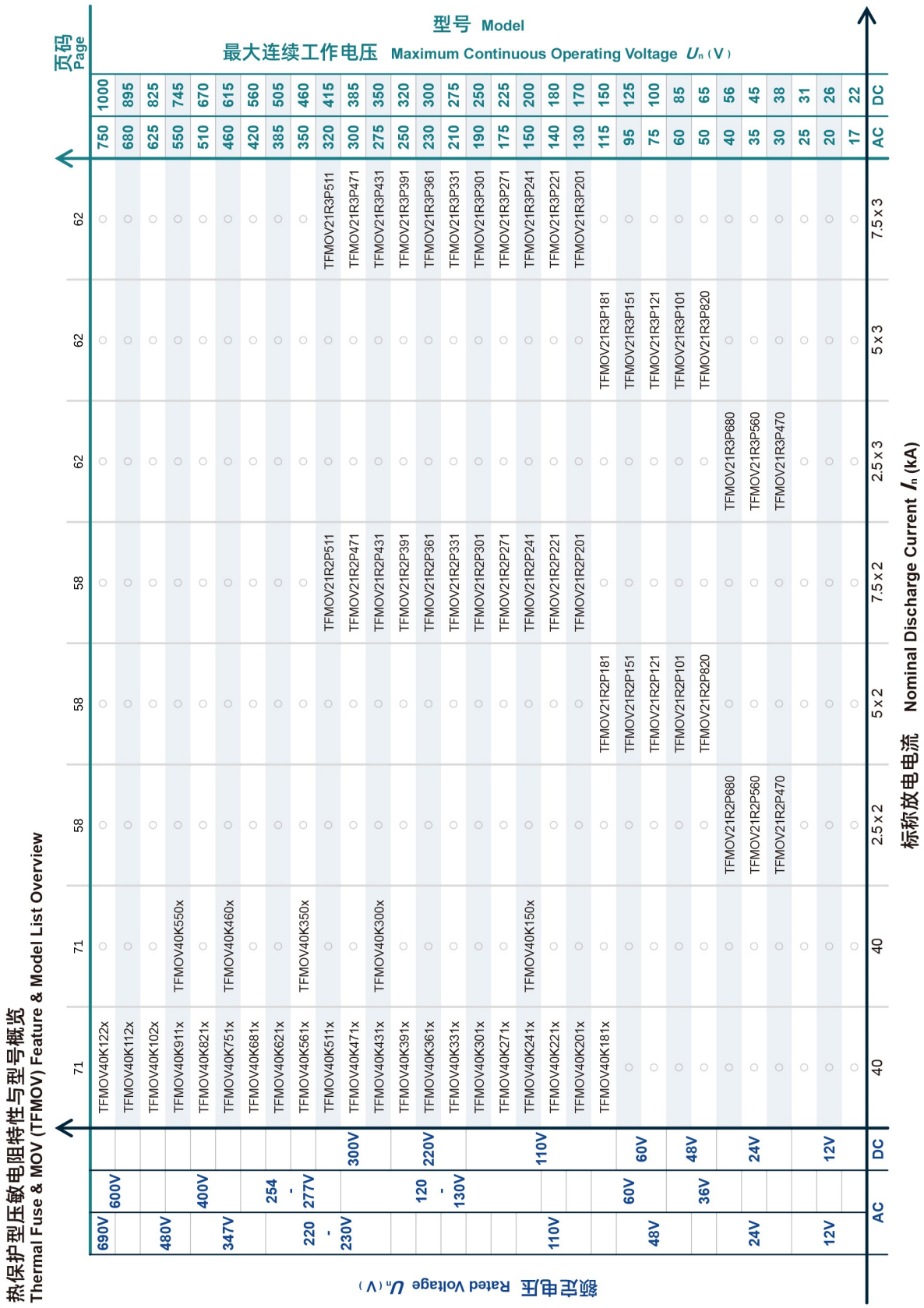
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

热保护型压敏电阻特性与型号概览
Thermal Fuse & MOV (TFMOV) Feature & Model List Overview



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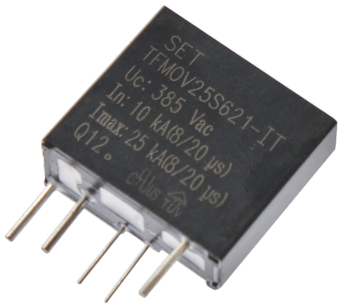
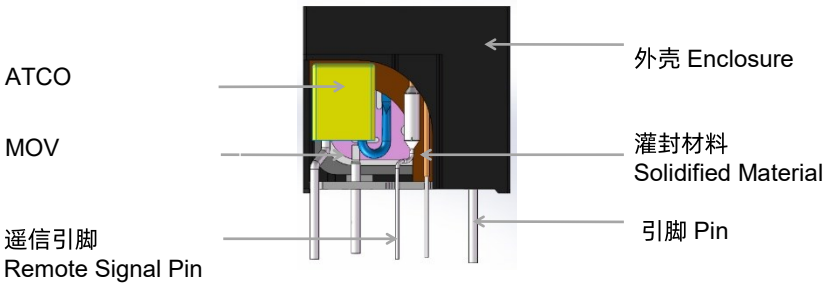
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

产品描述 Description



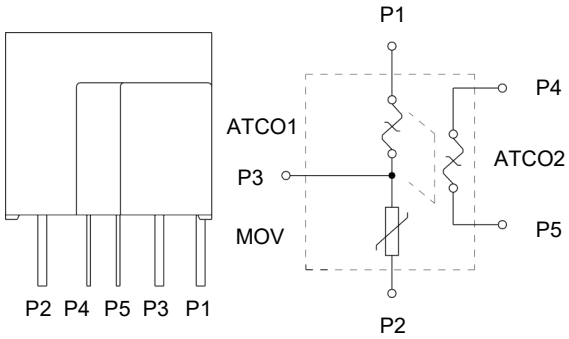


TFMOV(ATCO)

热保护型压敏电阻（TFMOV）是压敏电阻与热保护脱离部件的组合。压敏电阻存在老化特性，热保护型压敏电阻能够在压敏电阻（MOV）劣化或失效时，通过热保护部件的动作将压敏电阻从主回路中脱离。常用于光伏逆变器，通信设备，机房电源等对可靠性和耐候性要求高的场所。

TFMOV is a combination of varistors (MOV) and thermal protection component. Since varistor has the characteristics of aging or degrading; TFMOV can separate the varistor from the main circuitry by opening the thermal protection component when the varistor (MOV) degrades or fails. It is often used in which requires high reliability and weather withstanding, such as photovoltaic inverters, communication equipment, and power supplies in data centers, etc.

电气原理图 Schematics



TFMOV(ATCO)

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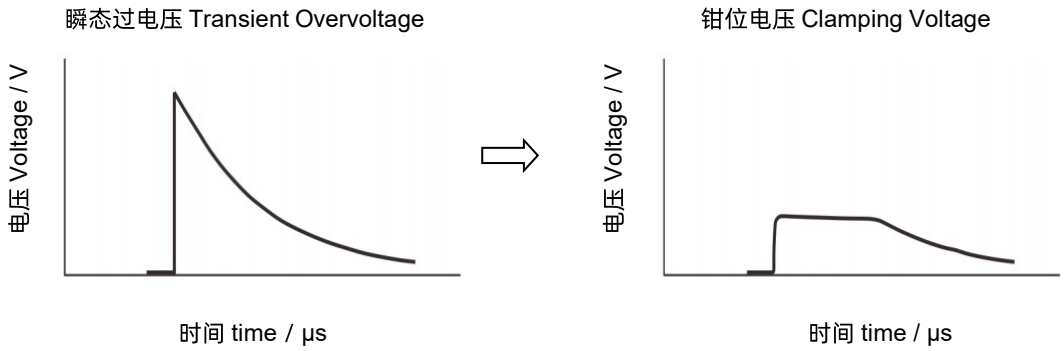
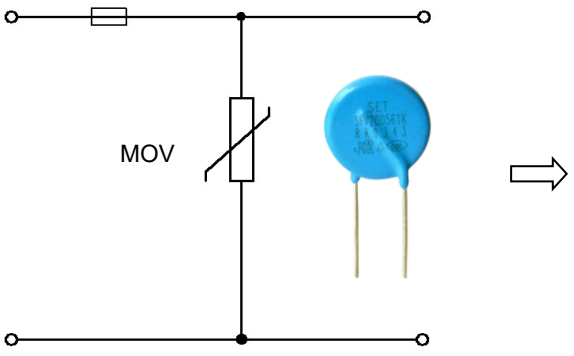
压敏电阻工作原理 MOV Operation Principle



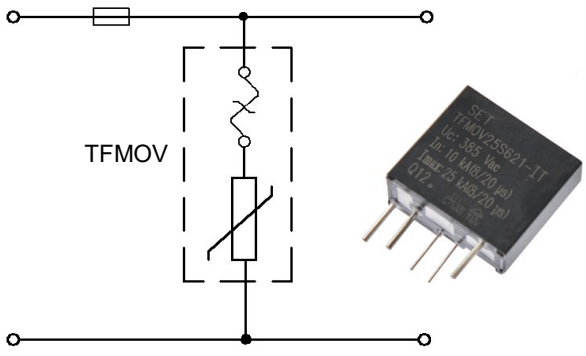
压敏电阻热保护 MOV Thermal Protection

图a为电源常用的电涌保护电路，采用MOV来抑制电涌电压，保护后级电路。由于压敏电阻在劣化或失效时，存在燃烧的风险。在图b高可靠性电涌保护电路中，为了提高电路安全性，采用热保护型压敏电阻TFMOV作为浪涌电压保护元件。热保护型压敏电阻（TFMOV）是压敏电阻与热保护脱离部件的组合。在MOV 温度异常超限时，温度保险丝会先断开，从而使MOV的失效模式呈现开路失效。

Figure a is a surge protection circuit commonly used in power supplies. MOV is used to suppress the surge voltage and protect the subsequent circuit. There is a risk of burning when the varistor degrades or fails. In the high-reliability surge protection circuit of Figure b, in order to improve the safety of the circuit, a thermal protection varistor TFMOV is used as the surge voltage protection element. TFMOV is a combination of varistors (MOV) and thermal protection component. When the temperature of the MOV is abnormally exceeded, the thermal fuse will be opened first, so that the failure mode of the MOV appears to be open-circuit failure.



图a 电涌保护典型电路
Figure a Typical surge protection circuit



图b 电涌保护高可靠性电路
Figure b: High reliability surge protection circuit

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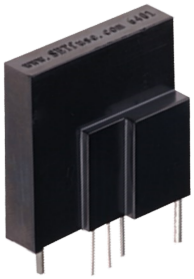
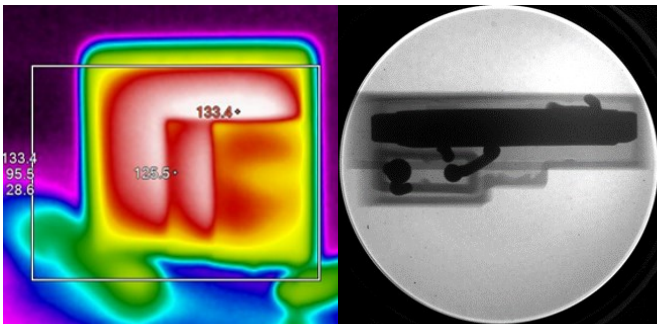
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

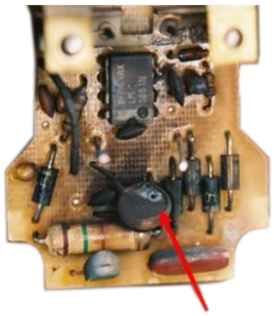
优势 Benefits



安全 Safety

安全隐患 Hidden Danger





压敏电阻穿孔
Hole in Varistor

模拟TFMOV劣化失效
TFMOV Failure Simulation

TFMOV利用温度保险丝受热熔断的特性，在压敏电阻电性能劣化的过程中，当漏电流才达到数十毫安时，温度保险丝断开，形成如上图所示的开路失效，是可接受的安全失效。
During the electrical performance degrading of varistor, the inbuilt ATCO will open the circuit when the leakage current of varistor increases to tens of micro Amperes. As shown in the figure above, this is a safe open circuit failure.

模拟MOV劣化失效
MOV Failure Simulation

众所周知，压敏电阻在使用过程中会出现电性能劣化，绝大多数会呈现压敏电压下降、漏电流增加，因热量累积导致温度剧升，使得压敏电阻出现如上图的热击穿而短路失效，存在安全隐患！
The electrical performance of varistor degrades with operating, mostly the varistor voltage drops, and leakage current increases. The heat accumulation can cause the temperature increase sharply and varistor results in thermal breakdown to short circuit status. It's very dangerous.

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型号说明 Part Numbering System

TFMOV 25 S 621 -IT - 3 - 001

产品类别 Product Category

MOV 尺寸 Size (mm)
25 mm

MOV 形状 Shape
S：正方形 Square
D：圆形 Round
R：长方形 Rectangle
K：两片MOV并联 Kilo

标称压敏电压 Nominal Varistor Voltage

820	621	102
82×10^{0} =82 V	62×10^{1} =620 V	10×10^{2} =1000 V

其他选项 Other Options

引脚数量 Pin No.
2：不带遥信引脚和失效指示
Without Remote Signal Contact or Failure Indication
3：带失效指示
With Failure Indication
4：带遥信引脚
With Remote Signal Contact
5：带遥信和失效指示
With Remote Signal Contact and Failure Indication

遥信 Remote Signal
默认 Default：不带遥信引脚
Without Remote Signal Contact
-IT：带遥信引脚
With Remote Signal Contact

备注 Note：
引脚数量和其他选项仅作为内部唯一规格的识别编码，不作为产品型号一部分.
Pin number and other options are used only as identification codes for internal unique specifications and are not part of the product model

TFMOV

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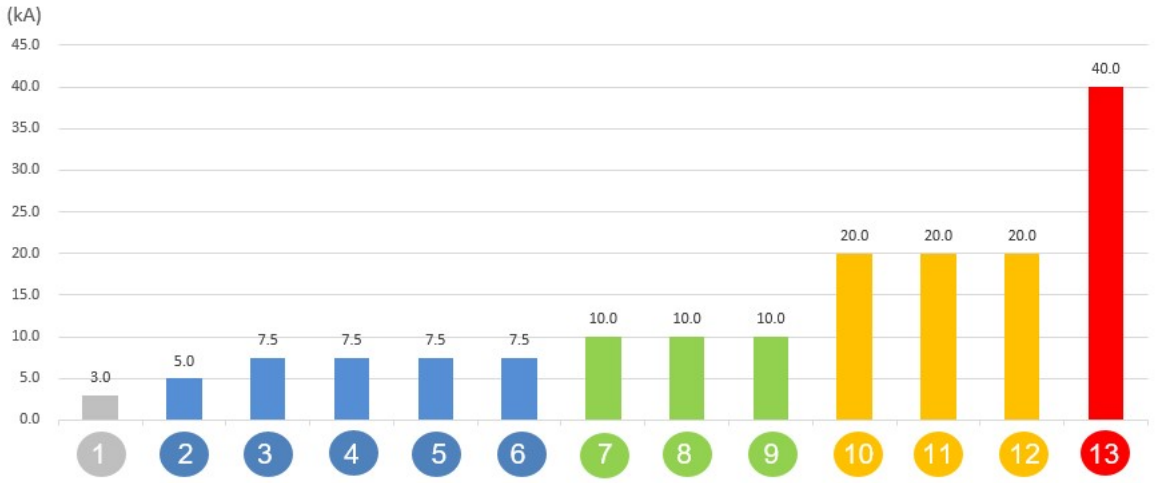
标称放电电流 Nominal Discharge Current



产品代码 Product Code

1 TFMOV10S Series

2 TFMOV15S Series | 3 TFMOV20S Series | 4 TFMOV20SxxxL Series

5 TFMOV21R2P Series | 6 TFMOV21R3P Series

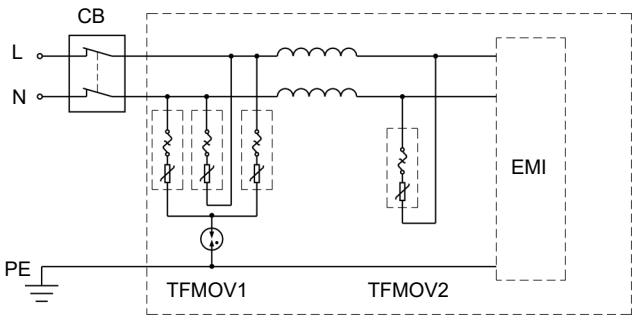
7 TFMOV25S Series | 8 TFMOV25SxxxL Series | 9 TFMOV25D Series

10 TFMOV34S Series | 11 TFMOV34SxxxL Series | 12 TFMOV20K Series

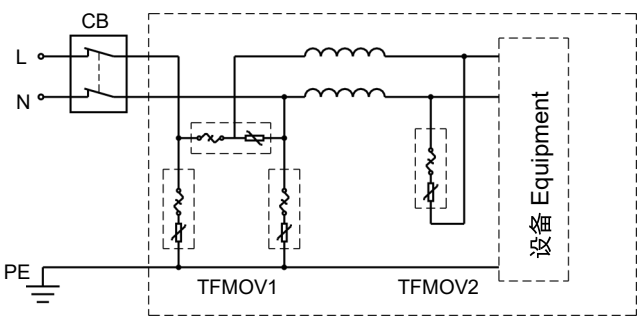
13 TFMOV40K Series

应用示例 Application Options

射频拉远单元（交流型） Remote Radio Unit (AC Type)



防雷插座 Power Strips (Surge Protector)



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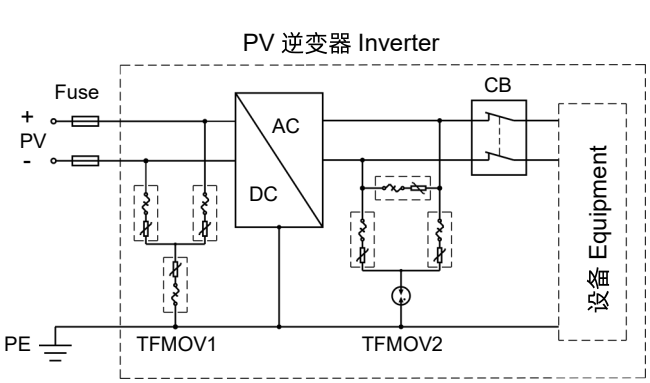
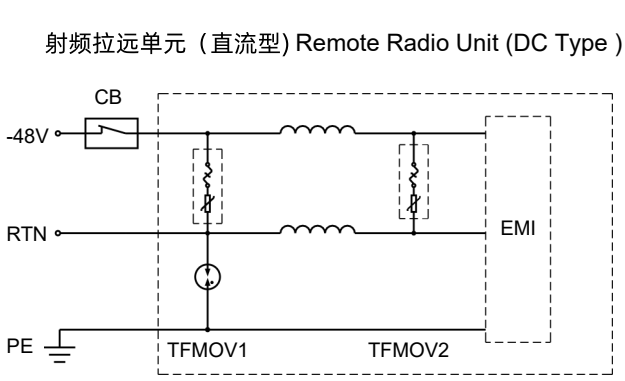
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV





设计 Design

当单一器件的通流容量无法达到设计要求时，通常采用并联的方式满足需求，由于其非线性的电流-电压特性，并联使用过程中应注意以下事项：

1. 需要选用同一厂家，同一型号的压敏电阻进行并联；
2. 需要控制压敏电阻的压敏电压；通常，同一组中间的压敏电压偏差小于1%（最大与最小之间），同时满足下一条；
3. 按平均分配计算的通流容量并留有10%以上的裕量；
4. 设计时需要考虑回路中的浪涌电流均匀分布，如图2。

When a single TFMOV surge capacity can`t meet the requirement of customers, paralleling more TFMOVs is recommended. Due to its nonlinear current-voltage characteristics, please pay attention to below tips:

1. Use the TFMOV from the same manufacturer with same model to parallel.
2. Control the varistor voltage; Typically, the varistor voltage deviation should be less than 1% in the same group (between the Max and Min), and meet the next tip at the same time.
3. Calculate the average surge capacity for each TFMOV and keep a margin at least 10%.
4. Design the layout like Figure.2. to make sure the surge capacity is divided averagely.

错误的设计 The Design not Recommended

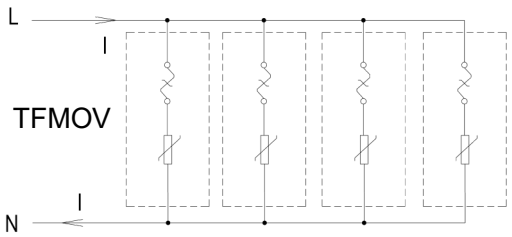


图 Figure.1

推荐的设计 The Design Recommended

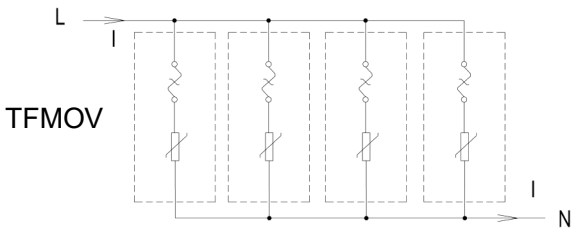


图 Figure.2

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认证信息 Agency Information

认证信息 Agency Information		标准 Standards	档案号 File NO.	类别 Category
	UL	UL 1449 4th Edition	E322662	VZCA2
	CUL	CSA C22.2 NO.8, CSA ECN 516	E322662	VZCA8
	TUV	EN 61643-11	详见具体型号	
	CQC	GB 4943.1-2011, GB 8898-2011; GB/T 10193-1997, GB/T 10194-1997	详见具体型号	

专利 Patents

名称 Name	区域 Region	专利类别 Category	专利号 Patent NO.
设有合金型温度保险丝的压敏电阻 Varistor with In-built Alloy-Type Thermal Fuse	中国 China	发明专利 Patent for Invention	ZL 200510044661.5
一种具有过流过压过温保护功能的电源插座模块 A Protection Pluggable Module with Over Current、Over Voltage、and Over Temperature Protection Function	中国 China	实用新型 Utility Model	ZL 201020244488.X
一种带有双重保护功能的压敏电阻器 A Varistor with Double Protection Function	中国 China	实用新型 Utility Model	ZL 201020255481.8
防雷插座用的防雷模块 Surge Protection Module Applicable for Power Strip	中国 China	实用新型 Utility Model	ZL 201120107173.5
一种防雷插座用的防雷模块 A Surge Protection Module Applicable for Power Strip	中国 China	发明专利 Patent for Invention	ZL 201110092261.7
新型的热保护压敏电阻及浪涌保护器 A New Type of Varistor and Surge Protective Device with Thermal Protection	中国 China	实用新型 Utility Model	ZL 201420306127.1
一种浪涌保护器 A Surge Protective Device	中国 China	实用新型 Utility Model	ZL 201420415059.2
一种热保护压敏电阻及其组合元件 A Varistor and Thermal Protection Component Combination	中国 China	实用新型 Utility Model	ZL 201520376567.9
具合金型温度保险丝的压敏电阻 合金型温度ヒューズ付のバリスタ	日本 Japan	实用新型 Utility Model	3142835
设有合金型温度保险丝的压敏电阻 Varistor with an Alloy-Type Temperature Fuse	澳大利亚 Australia	实用新型 Utility Model	2007100456
具合金型溫度保險絲的壓敏電阻 Varistor with an Alloy-Type Temperature Fuse	台湾 Taiwan	实用新型 Utility Model	M 300855
设有合金型温度保险丝的压敏电阻 Varistor with an Alloy-type Temperature Fuse	加拿大 Canada	发明专利 Patent for Invention	2588819
设有合金型温度保险丝的压敏电阻 Metal Oxide Varistor with Built-in Alloy-Type Temperature Fuse	美国 USA	发明专利 Patent for Invention	US 8780521
设有合金型温度保险丝的压敏电阻-带外壳 Varistor with In-built Alloy Type Thermal Fuse (with Housing)	美国 USA	发明专利 Patent for Invention	US 9355763

TFMOV

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术语 Glossary

项目 Item	定义 Description
V_N	**标称压敏电压 Nominal Varistor Voltage** 在特定持续时间的脉冲电流下侧得压敏电阻两端的电压。 Voltage, at specified d.c. current used as a reference point in the component characteristic.
8/20 μs	**8/20 冲击电流 Current Impulse** 视在波前时间为8μs，半峰值时间为20μs的冲击电流。 Current impulse with a nominal virtual front time of 8 μs and a nominal time to half-value of 20 μs. — (IEC 61643-11)
1.2/50 μs	**1.2/50 冲击电压 Voltage Impulse** 视在波前时间为1.2μs，半峰值时间为50μs 的冲击电压。 Voltage impulse with a nominal virtual front time of 1.2 μs and a nominal time to half-value of 50 μs. — (IEC 61643-11)
U_c	**最大持续工作电压 Maximum Continuous Operating Voltage** 可连续地施加在SPD上的最大交流电压有效值。 Maximum r.m.s. voltage, which may be continuously applied to the SPD's mode of protection. — (IEC 61643-11)
I_n	**标称放电电流 Nominal Discharge Current** 流过SPD具有 8/20 波形电流的峰值 Crest value of the current through the SPD having a current waveshape of 8/20. — (IEC 61643-11)
I_{imp}	**I 类试验的冲击电流 Impulse Discharge Current for Class I Test** I_{imp}由三个参数来定义：电流峰值 I_{peak} 、电荷量 Q 和比能量 W/R Crest value of a discharge current through the SPD with specified charge transfer Q and specified energy W/R in the specified time. — (IEC 61643-11)
I_{max}	**最大放电电流 Max. Discharge Current** 具有 8/20 波形和制造厂声称幅值的流过SPD电流的峰值。I_{max} 等于或大于 I_n 。 Crest value of a current through the SPD having an 8/20 waveshape and magnitude according to the manufacturers specification. I_{max} is equal to or greater than I_n. — (IEC 61643-11)
V_C	**钳位电压 Clamping Voltage** 在标准大气压环境下，压敏电阻中流过 8/20 等级电流脉冲时，压敏电阻两端呈现的电压峰值。 Peak voltage developed across the varistor terminations under standard atmospheric conditions, when passing an 8/20 class current pulse.
C_V	**电容量 Capacitance** 特定频率和电压下压敏电阻两端测得的电容量。 Capacitance across the MOV measured at a specified frequency and voltage.

TFMOV

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术语 Glossary

项目 Item	定义 Description
Modes of protection	**保护模式 Modes of protection** 在端子间包含保护元器件的电流路径，例如相对相、相对地、相对中线、中线对地。 An intended current path, between terminals that contains protective components, e.g. line-to-line, line-to-earth, line-to-neutral, neutral-to-earth. — (IEC 61643-11)
TCO	**热熔断体 Thermal-Link** 装有温感元件的不可复位器件，当它暴露在高于设定温度达到一定时间就会将电路断开。 A non-resettable device incorporating a THERMAL ELEMENT which will open a circuit once only when exposed for a sufficient length of time to a temperature in excess of that for which it has been designed.
ATCO	**合金热熔断体 Alloy Thermal-Link** 温感元件由合金材料制作的热熔断体。 Alloy Type Thermal-Link, Alloy is the thermal element.

TFMOV

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热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

注意
ATTENTION

使用方法 Usage

1. 交流频率在47 Hz和63 Hz之间。
   Frequency range is from 47 Hz to 63 Hz a.c.
2. 持续施加在热保护型压敏电阻上的电压不应超过其最大连续工作电压U_c。
   The voltage applied continuously to the TFMOV can not exceed its maximum continuous operating voltage U_c.
3. 气压在80 kPa 到106 kPa，对应海拔为+2000 m至- 500 m。
   When atmosphere press is from 80 kPa to 106 kPa, the related altitude shall be from +2000 m to -500 m.
4. 通电情况下请勿直接触碰本体或引脚，防止触电。
   Do not touch the product body or pins directly when power is on, to avoid electric shock.
5. 请不要用酮类、酯类、苯类、卤代烃等极性溶剂清洗本产品，以免破坏产品的封装层。
   Do not clean the TFMOV with strong polar solvent such as ketone, esters, benzene, halogenated hydrocarbon, to avoid damaging the encapsulating layer.
6. 应用本产品的设备必须有可靠的接地线与大地相连。
   It should have a reliable grounding when using these products.

更换 Replacement

基于安全原因，热保护型压敏电阻是不可修复的产品，替换时应使用同类别同型号的产品。
TFMOV is a non-repairable product. For safety sake, please use equivalent TFMOV for replacement.

存贮 Storage

热保护型压敏电阻的贮存应避免高温、高湿、日光直射和腐蚀性气体的场合，避免影响引脚可焊性，产品购入后请于1年内使用完。
Do not store TFMOV at high temperature, high humidity or corrosive gas environment. To avoid reducing the solderability of the pins, please use them up within 1 year after receiving the goods.

安装位置 Installation Position

勿将热保护型压敏电阻安装在可能经常出现剧烈振动的地方。
Do not install the TFMOV on a place that may often suffer severe continuous vibration.

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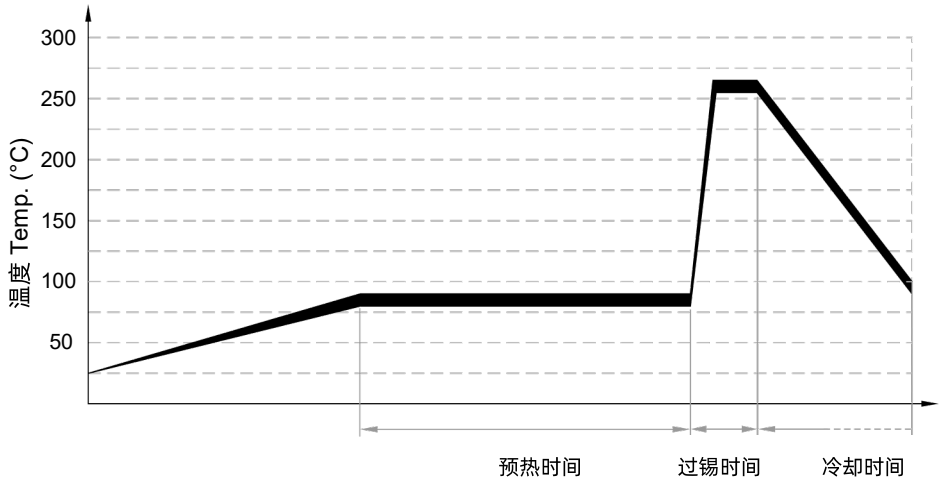
机械应力 Mechanical Stress

装配时应避免出现如敲击等作业方式，避免造成产品出现机械损伤。
Do not take violent action such as knocking when assembling to avoid mechanical damage.

波峰焊参数（参考）Wave Soldering Parameters (For Reference Only)



项目 Items	温度 Temp. (°C)	时间 Time (s)
预热 Preheating	80 to 90	60 to150
过锡 Dwelling	250 to 260	2 to 4

推荐的手工焊参数 Recommended Hand-Soldering Parameters

项目 Item	条件 Condition
烙铁头温度 Iron Temperature	350 °C (Max.)
焊接时间 Soldering Time	4 seconds (Max.)
焊接点距产品底部的距离 Distance between Soldering Point and the Bottom of Product	2 mm (Min.)

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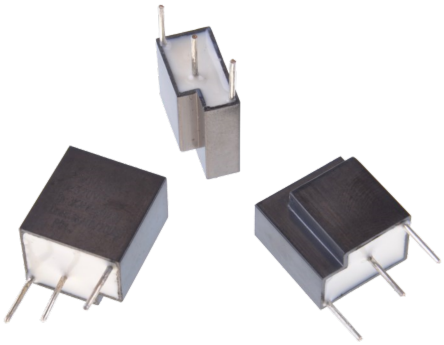
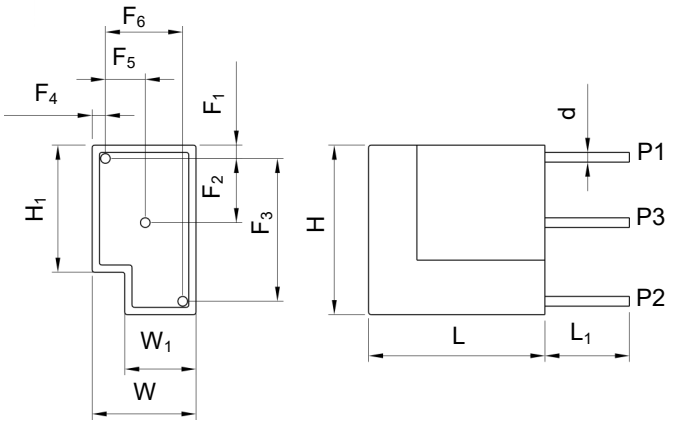
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV10S 系列 Series





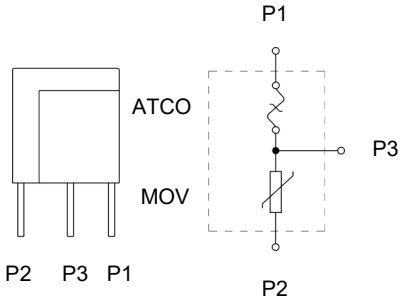
备注 Note:
引脚 P3可选 Pin P3 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	W (±1.0)	W_1 (±1.0)	H (±1.0)	H_1 (±0.5)	d (-0.05,+0.10)
270 - 560	15.0	7.0	7.6	4.9	14.0	10.5	0.80
680 - 151	15.0	7.0	8.6	5.9	14.0	10.5	0.80
181 - 271	15.0	7.0	9.6	6.9	14.0	10.5	0.80
301 - 471	15.0	7.0	10.6	7.9	14.0	10.5	0.80
511 - 621	15.0	7.0	11.6	8.9	14.0	10.5	0.80
681 - 821	15.0	7.0	12.6	9.9	14.0	10.5	0.80
标称压敏电压 Nominal Varistor Voltage	F_1 (±0.5)	F_2 (±0.5)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)	
270 - 560	1.1	5.3	11.8	1.1	3.3	5.4	
680 - 151	1.1	5.3	11.8	1.1	3.3	6.4	
181 - 271	1.1	5.3	11.8	1.1	3.3	7.4	
301 - 471	1.1	5.3	11.8	1.1	3.3	8.4	
511 - 621	1.1	5.3	11.8	1.1	3.3	9.4	
681 - 821	1.1	5.3	11.8	1.1	3.3	10.4	

安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449 4th	E322662
TÜVRheinland	EN 61643-11	J 50249886
cec	GB 4943.1-2011 GB 8898-2011	CQC15001125793
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691 E214712
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV10S270	17	22	24	31	53	10	1	2	4.6	1	10	7400	VY-2 系列 Series U_r: 690 VAC I_r: 5 A
TFMOV10S330	20	26	30	36	65	10	1	2	4.6	1	12	6100	
TFMOV10S390	25	31	35	43	77	10	1	2	4.6	1	13	5100	
TFMOV10S470	30	38	42	52	93	10	1	2	4.3	1	17	4300	
TFMOV10S560	35	45	50	62	110	10	1	2	3.8	1	20	3600	
TFMOV10S680	40	56	61	75	135	10	1	2	3.8	1	24	2900	
TFMOV10S820	50	65	74	90	135	50	1.5	3	3.2	1.5	27	2400	
TFMOV10S101	60	85	90	110	165	50	1.5	3	3.2	1.5	33	2000	
TFMOV10S121	75	100	108	132	200	50	1.5	3	3.2	1.5	40	1700	
TFMOV10S151	95	125	135	165	250	50	3	6	3.2	3	53	1300	
TFMOV10S181	115	150	162	198	300	50	3	6	2.3	3	60	1100	
TFMOV10S201	130	170	185	225	340	50	3	6	2.3	3	70	1000	
TFMOV10S221	140	180	198	242	360	50	3	6	2.3	3	78	900	
TFMOV10S241	150	200	216	264	395	50	3	6	2.3	3	84	830	
TFMOV10S271	175	225	243	297	455	50	3	6	2.3	3	99	740	
TFMOV10S301	190	250	270	330	500	50	3	6	2.3	3	108	670	
TFMOV10S331	210	275	297	363	550	50	3	6	2.3	3	115	610	
TFMOV10S361	230	300	324	396	595	50	3	6	2.3	3	130	560	
TFMOV10S391	250	320	351	429	650	50	3	6	2.3	3	140	510	
TFMOV10S431	275	350	387	473	710	50	3	6	2.3	3	155	460	
TFMOV10S471	300	385	423	517	775	50	3	6	2.3	3	175	430	
TFMOV10S511	320	415	459	561	845	50	3	6	2.3	3	180	390	
TFMOV10S561	350	460	504	616	925	50	3	6	2.3	3	185	360	
TFMOV10S621	385	505	558	682	1025	50	3	6	2.3	3	190	320	
TFMOV10S681	420	560	612	748	1120	50	3	6	2.3	3	200	290	
TFMOV10S751	460	615	675	825	1240	50	3	6	2.3	3	210	270	
TFMOV10S821	510	670	738	902	1355	50	3	6	2.3	3	220	260	

备注 Note：

a：$R_{cl} = \frac{V_C}{V_N}$ ，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.

The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

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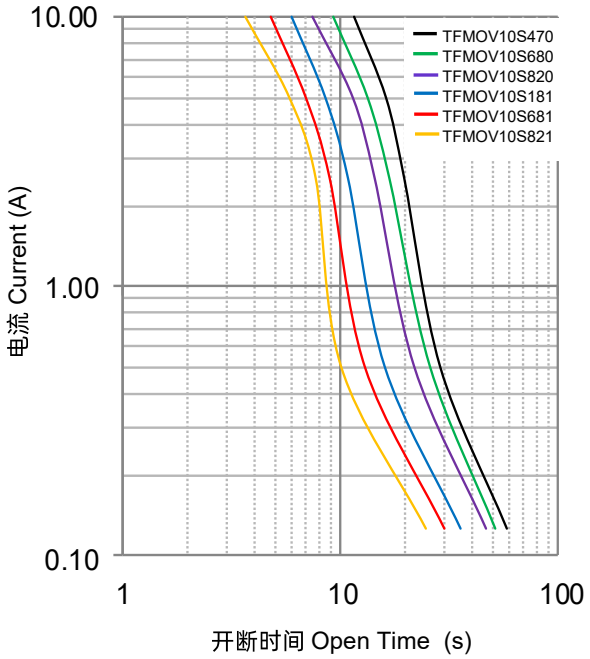
性能曲线 Performance Curve

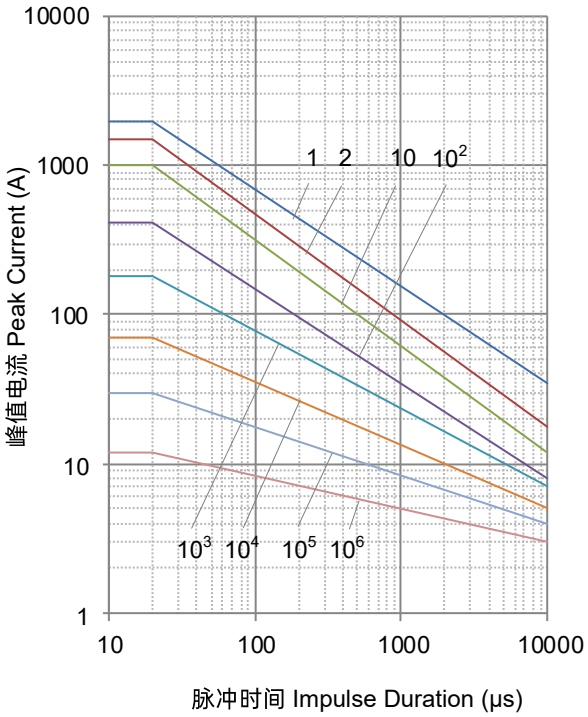
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



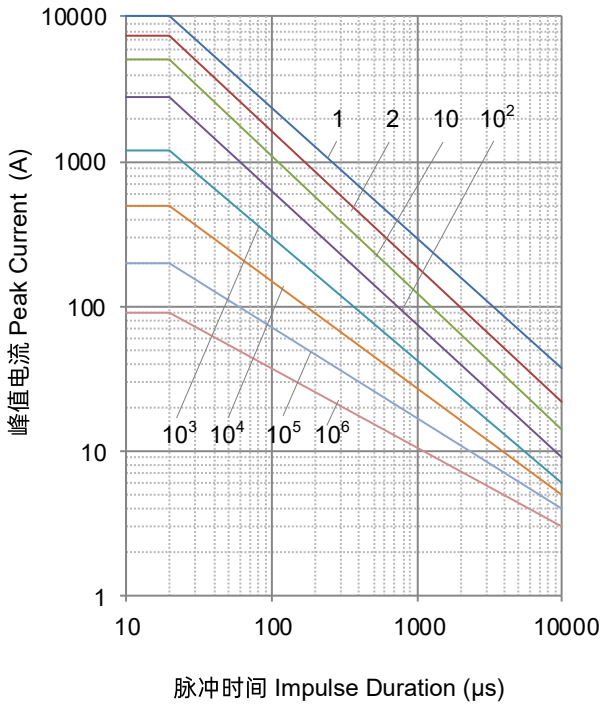
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV10S270 to TFMOV10S680



TFMOV10S820 to TFMOV10S821



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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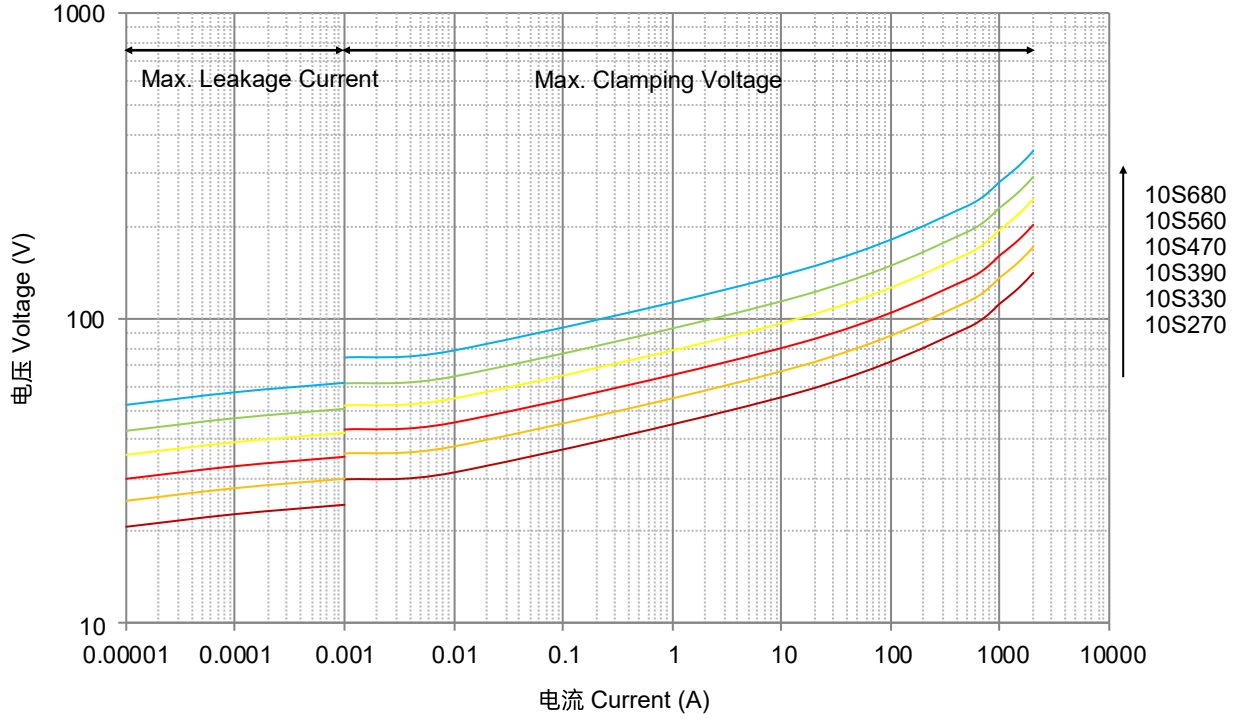
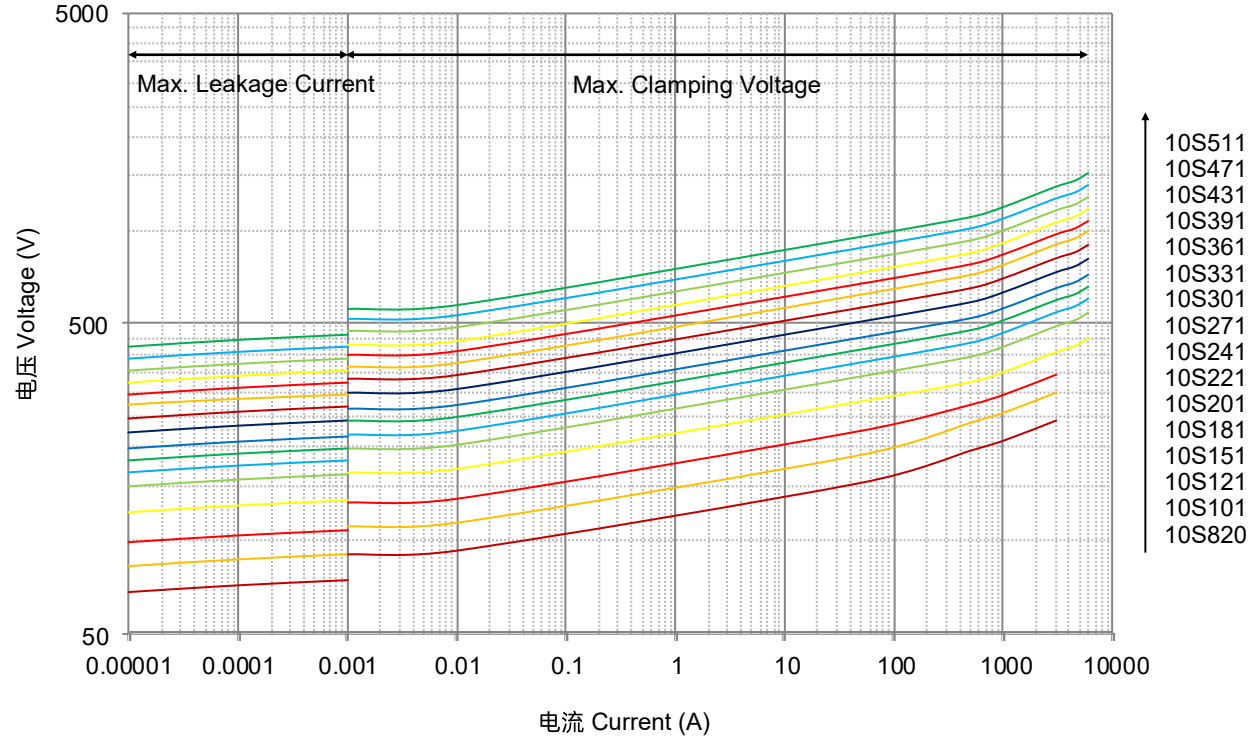
伏安特性曲线 Voltage-Current Characteristic Curves





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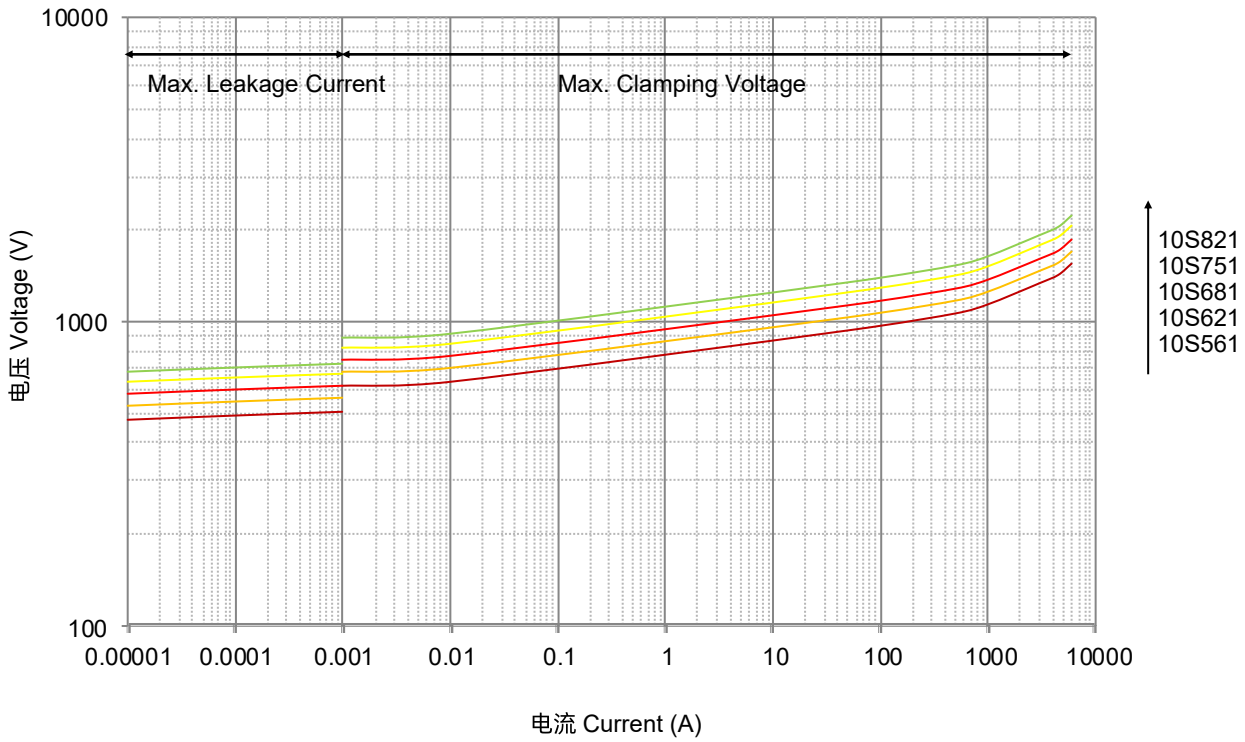
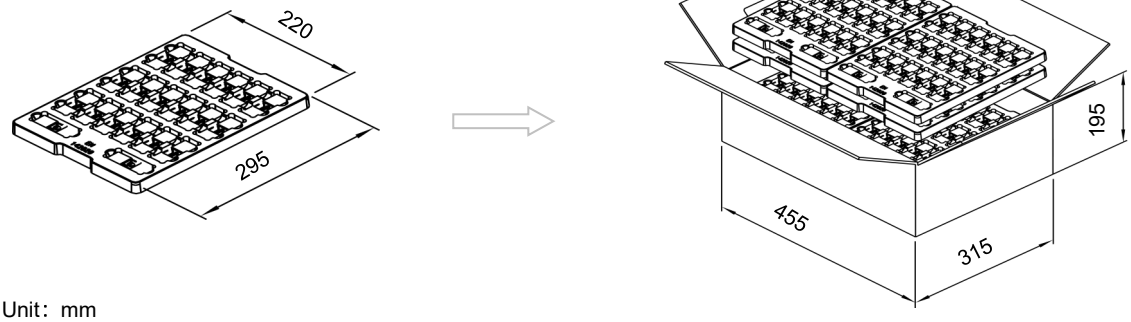


包装信息 Packaging Information



单位 Unit：mm

有特殊包装需求请联系我们

Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	270 - 151	80	2400
	181 - 271	80	1920
	301 - 821	80	1600

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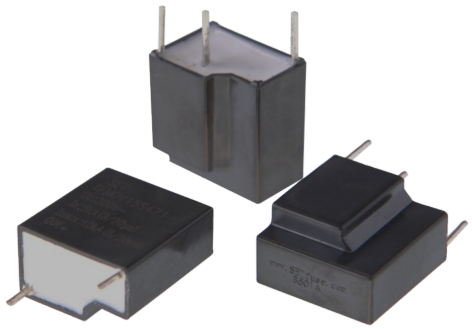
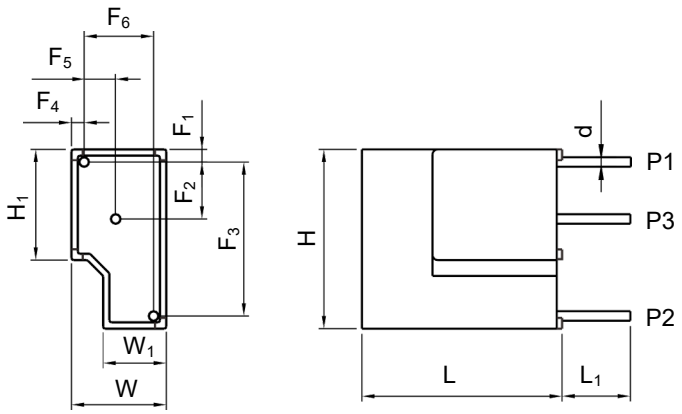
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV15S 系列 Series





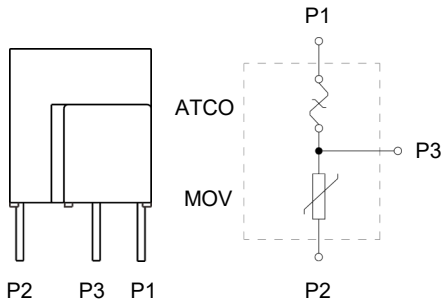
备注 Note:
引脚 P3可选 Pin P3 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	W (±1.0)	W_1 (±1.0)	H (±1.0)	H_1 (±0.5)	d (-0.05,+0.10)
270 - 121	18.5	7.0	8.0	5.0	17.0	10.5	0.90
151 - 271	18.5	7.0	9.0	6.0	17.0	10.5	0.90
301 - 471	18.5	7.0	10.2	7.2	17.0	10.5	0.90
511 - 621	18.5	7.0	11.4	8.4	17.0	10.5	0.90
681 - 821	18.5	7.0	12.6	9.6	17.0	10.5	0.90
标称压敏电压 Nominal Varistor Voltage	F_1 (±0.5)	F_2 (±0.5)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)	
180 - 121	1.2	5.4	14.6	1.2	3.0	5.6	
151 - 271	1.2	5.4	14.6	1.2	3.0	6.6	
301 - 471	1.2	5.4	14.6	1.2	3.0	7.8	
511 - 621	1.2	5.4	14.6	1.2	3.0	9.0	
681 - 821	1.2	5.4	14.6	1.2	3.0	10.2	

安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
TÜVRheinland	EN 61643-11	J 50285666
CQC	GB 4943.1-2011 GB 8898-2011	CQC15001125792
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691 E214712
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV15S270	17	22	24	31	53	15	1.5	3	4.6	1.5	16	10500	VS 系列 Series U_r: 690 VAC I_r: 10 A
TFMOV15S330	20	26	30	36	65	15	1.5	3	4.6	1.5	19	9300	
TFMOV15S390	25	31	35	43	77	15	1.5	3	4.6	1.5	21	7000	
TFMOV15S470	30	38	42	52	93	15	1.5	3	4.3	1.5	27	6000	
TFMOV15S560	35	45	50	62	110	15	1.5	3	3.8	1.5	32	5300	
TFMOV15S680	40	56	61	75	135	15	1.5	3	3.8	1.5	41	4700	
TFMOV15S820	50	65	74	90	135	75	2.5	5	3.2	2.5	43	4000	
TFMOV15S101	60	85	90	110	165	75	2.5	5	3.2	2.5	53	3200	
TFMOV15S121	75	100	108	132	200	75	2.5	5	3.2	2.5	64	2700	
TFMOV15S151	95	125	135	165	250	75	5	10	3.2	5	85	2200	
TFMOV15S181	115	150	162	198	300	75	5	10	2.3	5	96	1800	
TFMOV15S201	130	170	185	225	340	75	5	10	2.3	5	102	1600	
TFMOV15S221	140	180	198	242	360	75	5	10	2.3	5	125	1450	
TFMOV15S241	150	200	216	264	395	75	5	10	2.3	5	134	1350	
TFMOV15S271	175	225	243	297	455	75	5	10	2.3	5	158	1200	
TFMOV15S301	190	250	270	330	500	75	5	10	2.3	5	173	1050	
TFMOV15S331	210	275	297	363	550	75	5	10	2.3	5	185	1000	
TFMOV15S361	230	300	324	396	595	75	5	10	2.3	5	208	900	
TFMOV15S391	250	320	351	429	650	75	5	10	2.3	5	224	800	
TFMOV15S431	275	350	387	473	710	75	5	10	2.3	5	248	750	
TFMOV15S471	300	385	423	517	775	75	5	10	2.3	5	280	680	
TFMOV15S511	320	415	459	561	845	75	5	10	2.3	5	300	630	
TFMOV15S561	350	460	504	616	925	75	5	10	2.3	5	310	580	
TFMOV15S621	385	505	558	682	1025	75	5	10	2.3	5	310	530	
TFMOV15S681	420	560	612	748	1120	75	5	10	2.3	5	320	500	
TFMOV15S751	460	615	675	825	1240	75	5	10	2.3	5	335	430	
TFMOV15S821	510	670	738	902	1355	75	5	10	2.3	5	350	400	

备注 Note：

a：$R_{cl} = \frac{V_C}{V_N}$，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.
The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

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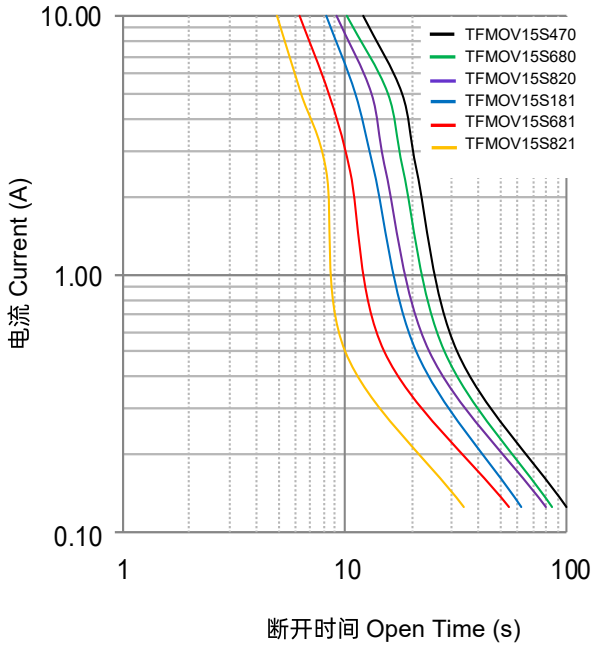
性能曲线 Performance Curve

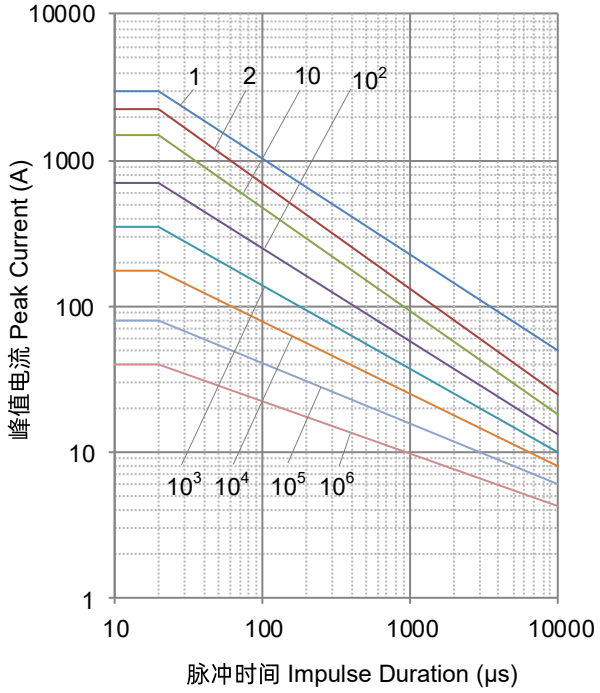
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



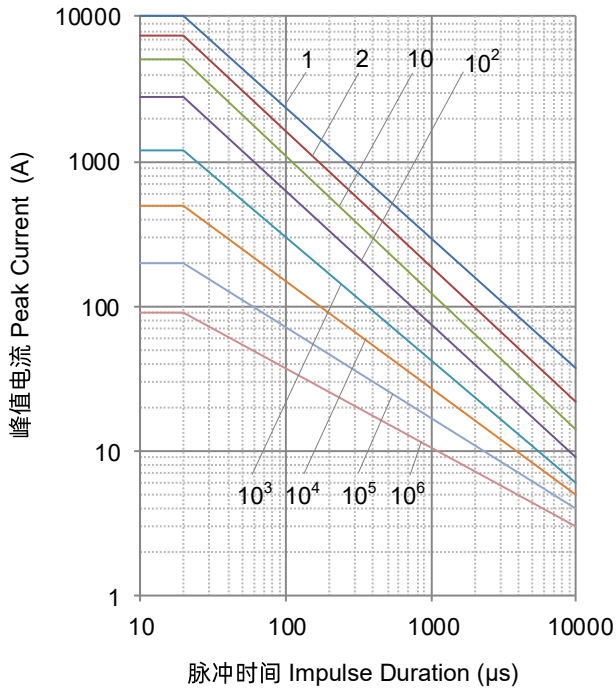
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV15S270 to TFMOV15S680



TFMOV15S820 to TFMOV15S821



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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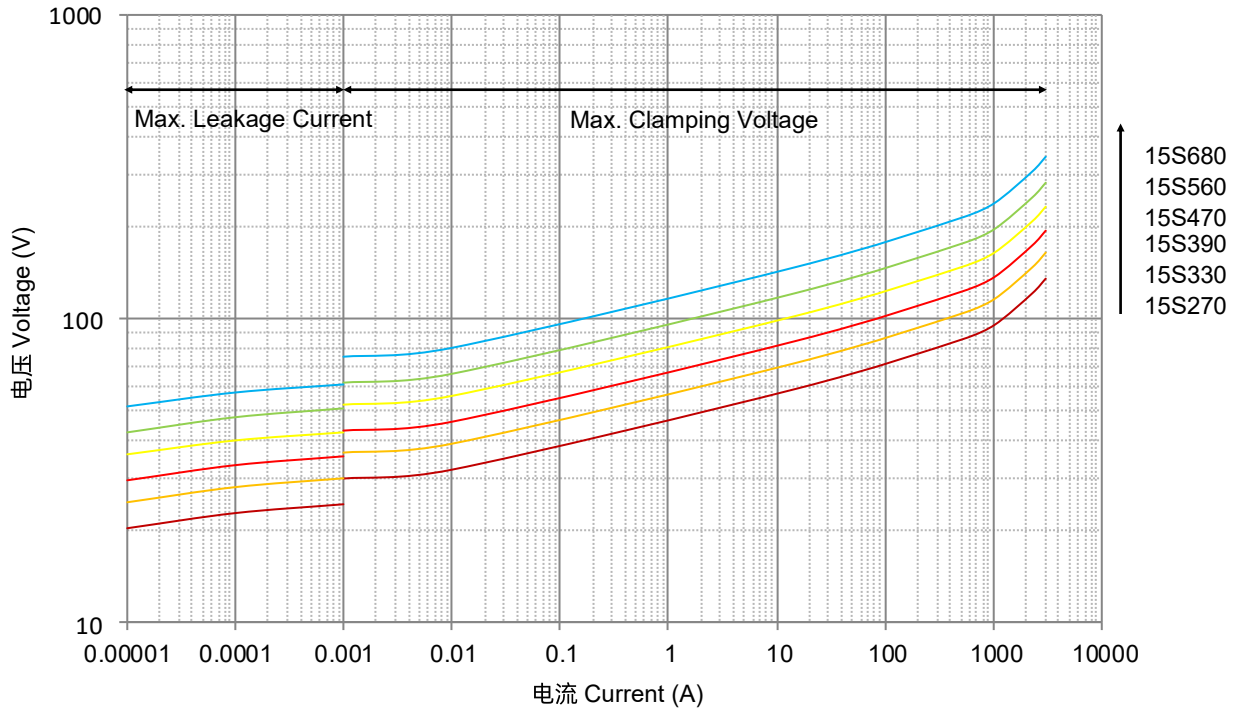
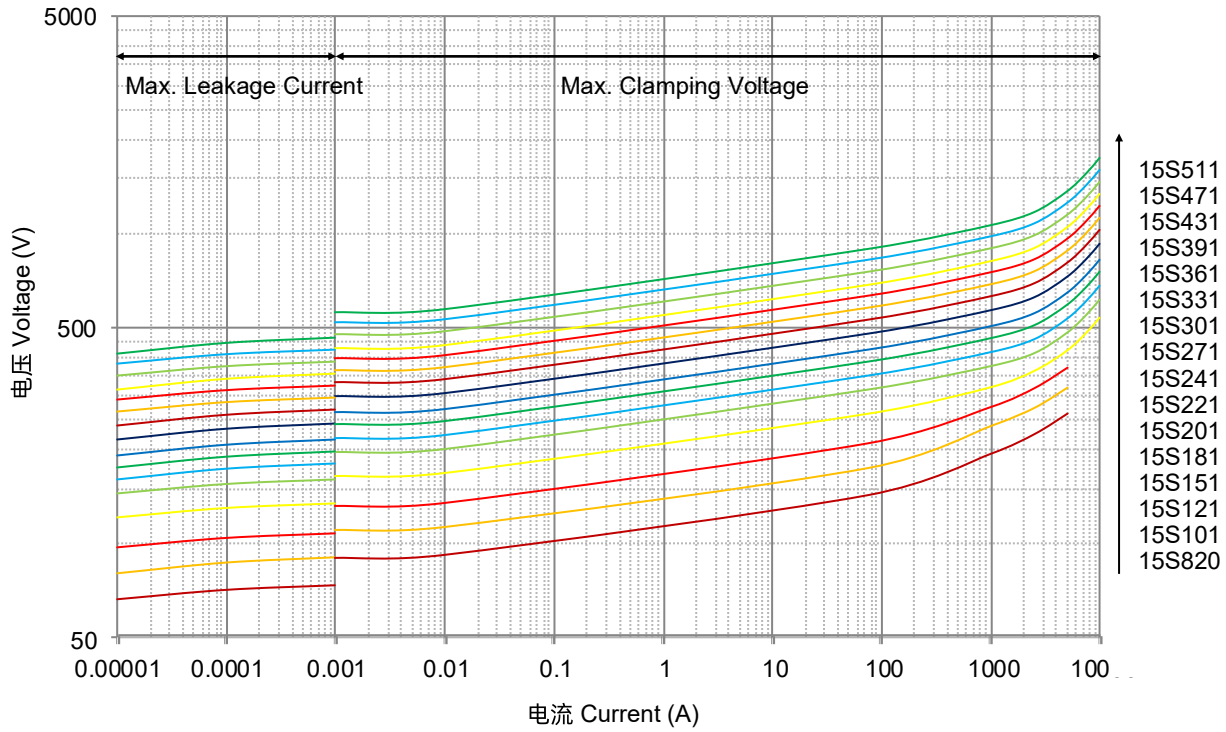
性能曲线 Performance Curve





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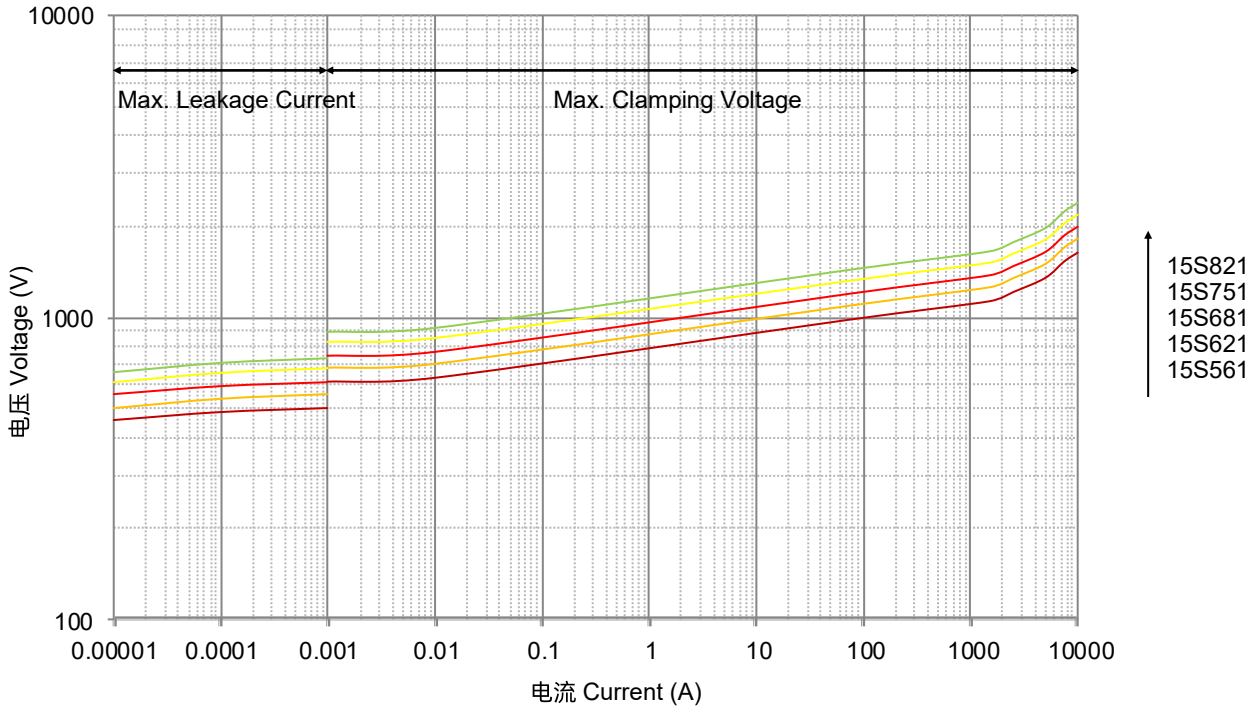
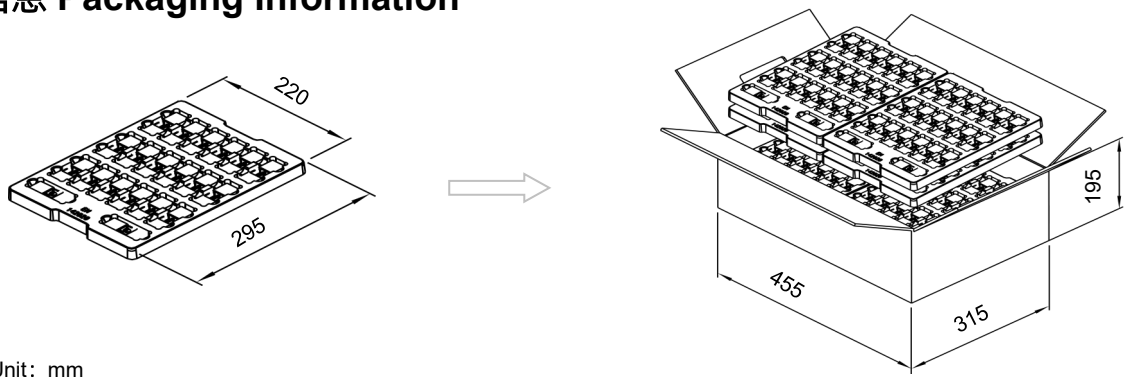


包装信息 Packaging Information



单位 Unit：mm

有特殊包装需求请联系我们 Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	270 - 621	60	1200
	681 - 821	60	960

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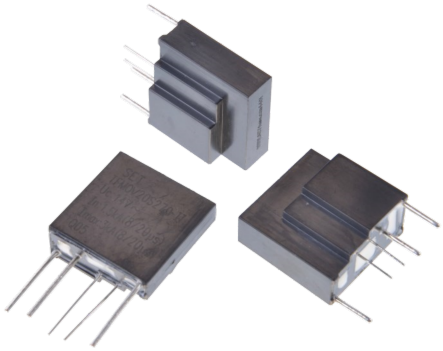
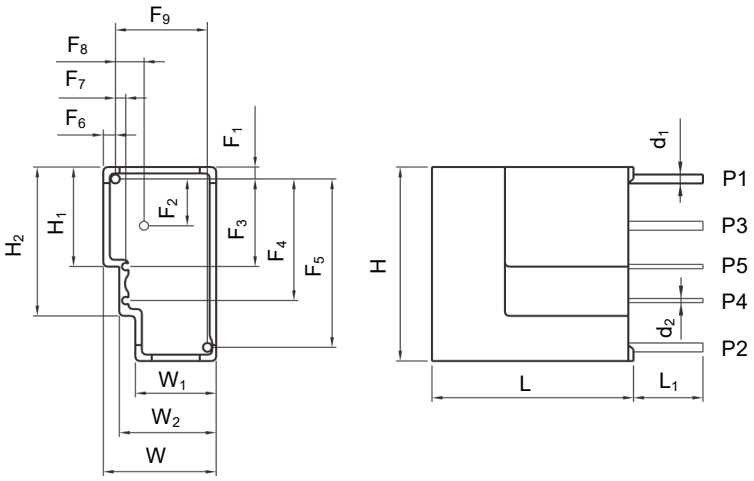
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV20S 系列 Series





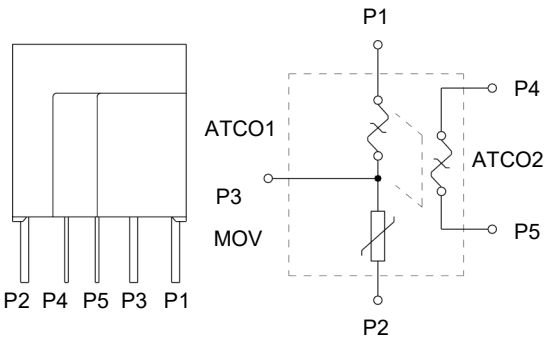
备注 Note:
引脚 P3 / P4 / P5 可选 Pin P3 / P4 / P5 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	W (±1.0)	W_1 (±1.0)	W_2 (±1.0)	H (±1.0)	H_1 (±0.5)	H_2 (±0.5)	F_1 (±0.5)	F_2 (±0.5)
270 - 121	23.2	8.0	9.1	5.4	7.8	22.8	11.7	17.5	1.4	5.5
151 - 271	23.2	8.0	9.5	5.8	7.7	22.8	11.7	17.5	1.4	5.5
301 - 471	23.2	8.0	11.0	7.3	9.2	22.8	11.7	17.5	1.4	5.5
511 - 681	23.2	8.0	12.0	8.3	10.2	22.8	11.7	17.5	1.4	5.5
751 - 821	23.2	8.0	13.0	9.3	11.2	22.8	11.7	17.5	1.4	5.5
911 - 122	23.2	8.0	15.5	11.8	13.7	22.8	11.7	17.5	1.4	5.5
标称压敏电压 Nominal Varistor Voltage	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)	F_7 (±0.5)	F_8 (±0.5)	F_9 (±0.5)	d_1 (-0.05,+0.15)	d_2 (±0.05)	
180 - 121	10.3	14.3	19.8	1.4	1.2	3.3	6.7	1.05	0.50	
151 - 271	10.3	14.3	19.8	1.4	1.2	3.3	7.1	1.05	0.50	
301 - 471	10.3	14.3	19.8	1.4	1.2	3.3	8.6	1.05	0.50	
511 - 681	10.3	14.3	19.8	1.4	1.2	3.3	9.6	1.05	0.50	
751 - 821	10.3	14.3	19.8	1.4	1.2	3.3	10.6	1.05	0.50	
911 - 122	10.3	14.3	19.8	1.4	1.2	3.3	13.1	1.05	0.50	

安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
TÜVRheinland	EN 61643-11	J 50210179
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691 E214712
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV20S270x	17	22	24	31	53	25	1.5	3	4.6	1.5	23	15600	VT 系列 Series U_r: 690 VAC I_r: 15 A/16 A
TFMOV20S330x	20	26	30	36	65	25	1.5	3	4.6	1.5	29	13800	
TFMOV20S390x	25	31	35	43	77	25	1.5	3	4.6	1.5	33.5	10200	
TFMOV20S470x	30	38	42	52	93	25	2.5	5	4.3	2.5	41	8880	
TFMOV20S560x	35	45	50	62	110	25	2.5	5	3.8	2.5	49	7800	
TFMOV20S680x	40	56	61	75	135	25	2.5	5	3.8	2.5	59	7000	
TFMOV20S820x	50	65	74	90	135	125	5	10	3.2	5	67	5880	
TFMOV20S101x	60	85	90	110	165	125	5	10	3.2	5	84	4800	
TFMOV20S121x	75	100	108	132	200	125	5	10	3.2	5	102	4000	
TFMOV20S151x	95	125	135	165	250	125	5	10	3.2	5	127	3200	
TFMOV20S181x	115	150	162	198	300	125	5	10	3.2	5	156	2650	
TFMOV20S201x	130	170	185	225	340	125	7.5	15	2.3	7.5	170	2400	
TFMOV20S221x	140	180	198	242	360	125	7.5	15	2.3	7.5	185	2160	
TFMOV20S241x	150	200	216	264	395	125	7.5	15	2.3	7.5	200	2000	
TFMOV20S271x	175	225	243	297	455	125	7.5	15	2.3	7.5	230	1800	
TFMOV20S301x	190	250	270	330	500	125	7.5	15	2.3	7.5	250	1560	
TFMOV20S331x	210	275	297	363	550	125	7.5	15	2.3	7.5	270	1440	
TFMOV20S361x	230	300	324	396	595	125	7.5	15	2.3	7.5	305	1320	
TFMOV20S391x	250	320	351	429	650	125	7.5	15	2.3	7.5	330	1200	
TFMOV20S431x	275	350	387	473	710	125	7.5	15	2.3	7.5	365	1160	
TFMOV20S471x	300	385	423	517	775	125	7.5	15	2.3	7.5	420	1020	
TFMOV20S511x	320	415	459	561	845	125	7.5	15	2.3	7.5	430	935	
TFMOV20S561x	350	460	504	616	925	125	7.5	15	2.3	7.5	455	850	
TFMOV20S621x	385	505	558	682	1025	125	7.5	15	2.3	7.5	465	780	
TFMOV20S681x	420	560	612	748	1120	125	7.5	15	2.3	7.5	480	720	
TFMOV20S751x	460	615	675	825	1240	125	7.5	15	2.3	7.5	500	635	
TFMOV20S821x	510	670	738	902	1355	125	7.5	15	2.3	7.5	520	600	
TFMOV20S911x	550	745	819	1001	1500	125	7.5	15	2.3	7.5	550	525	
TFMOV20S102x	625	825	900	1100	1650	125	7.5	15	2.3	7.5	610	480	
TFMOV20S112x	680	895	990	1210	1815	125	7.5	15	2.3	7.5	675	430	
TFMOV20S122x	750	1000	1080	1320	1980	125	7.5	15	2.3	7.5	740	380	

TFMOV

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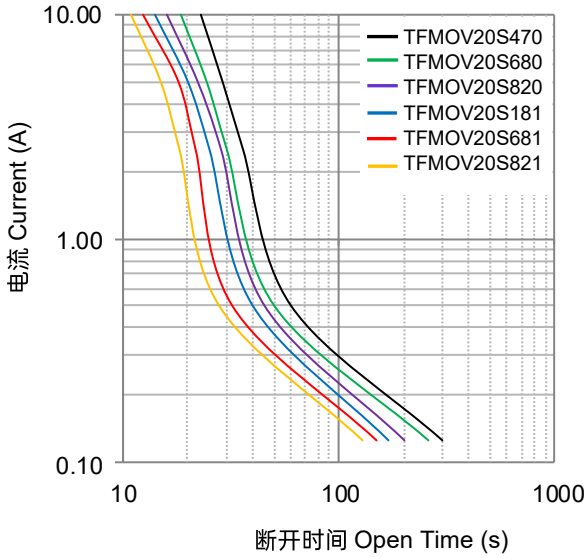
备注 Note：

a： $R_{cl}=\frac{V_C}{V_N}$ ，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl}=\frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.
The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

性能曲线 Performance Curve

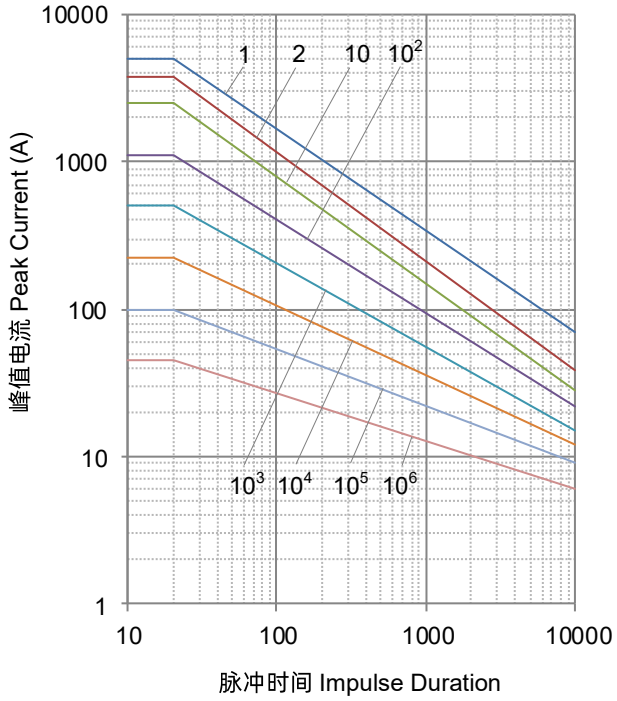
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV20S270 to TFMOV20S680



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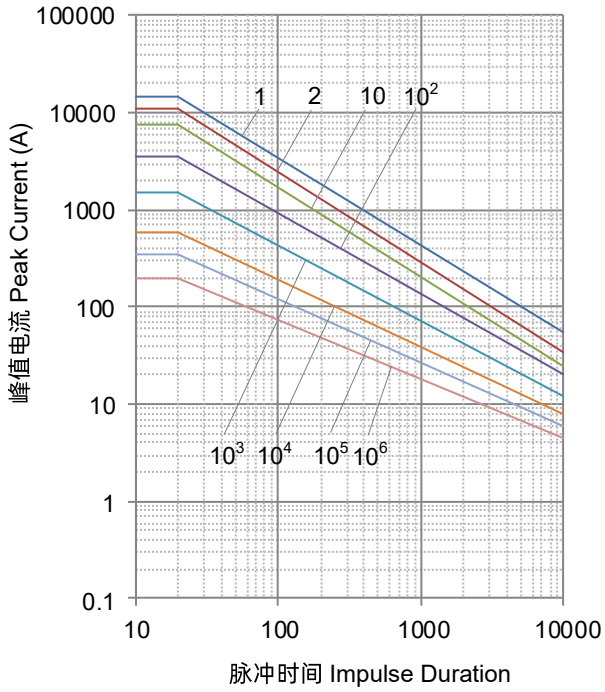

备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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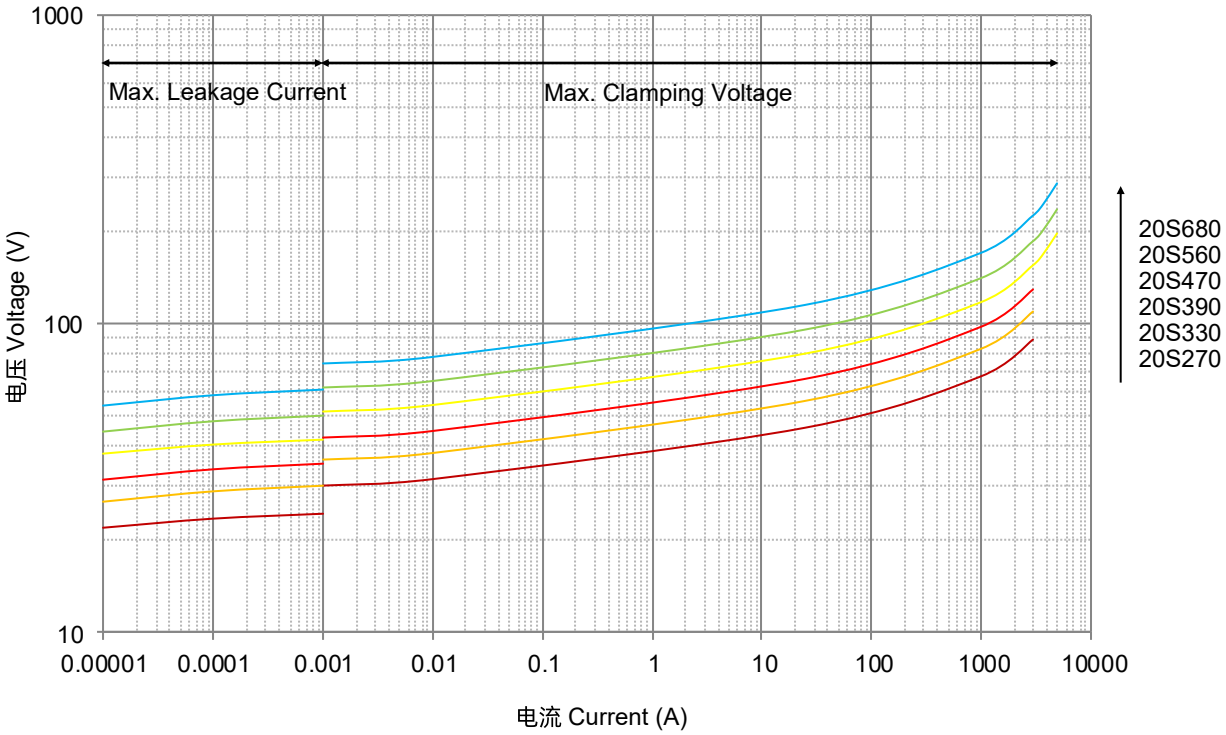
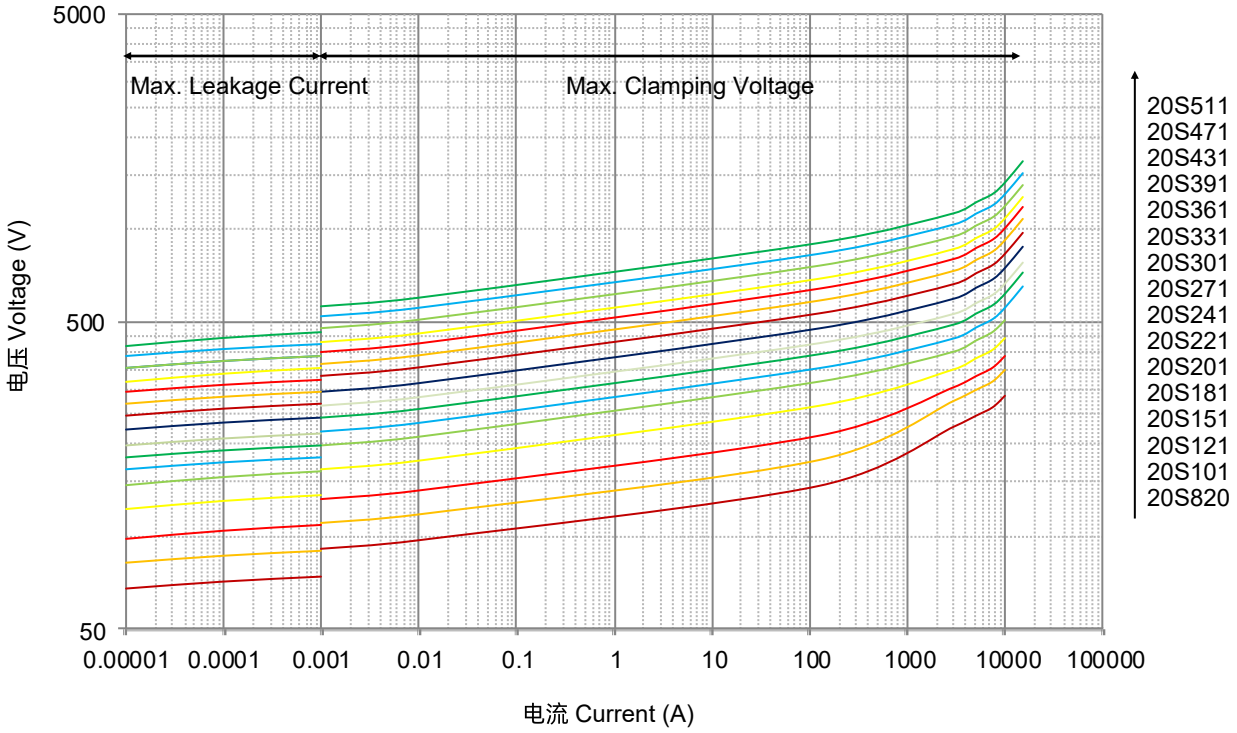
伏安特性曲线 Voltage-Current Characteristic Curves





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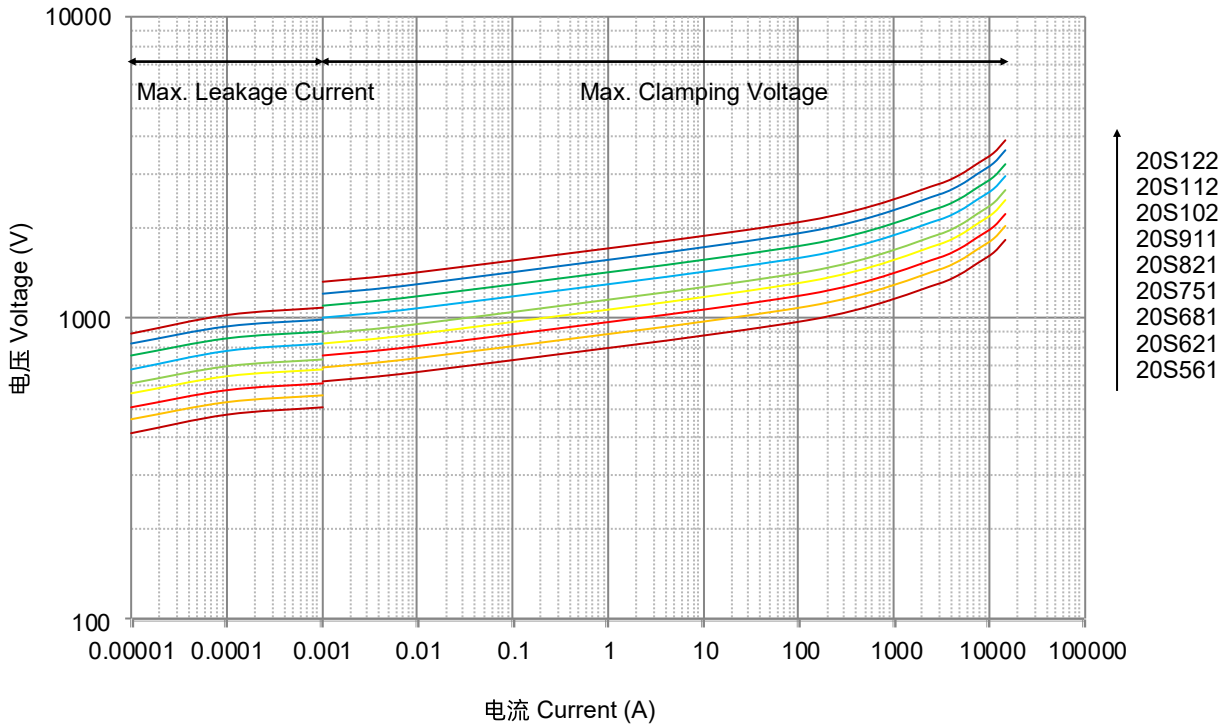
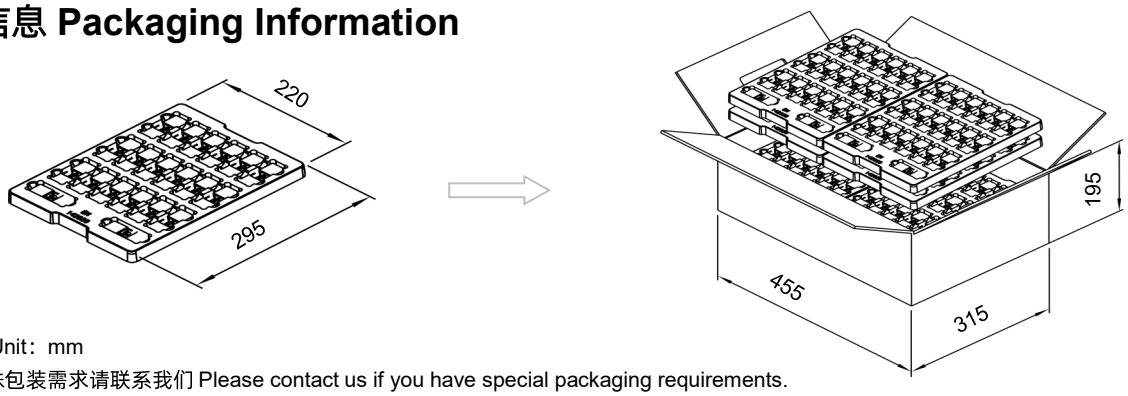


包装信息 Packaging Information



单位 Unit：mm

有特殊包装需求请联系我们 Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	270 - 271	40	960
	301 - 681	40	800
	751 - 122	40	640

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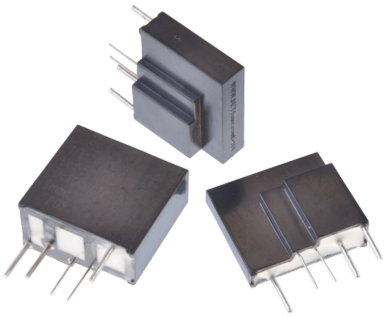
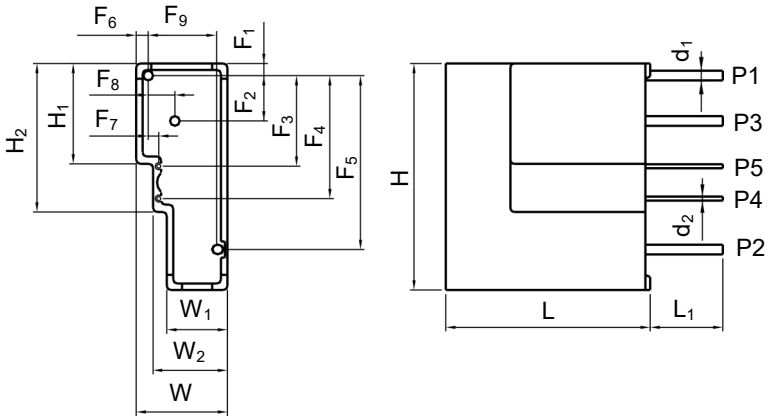
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV25S 系列 Series





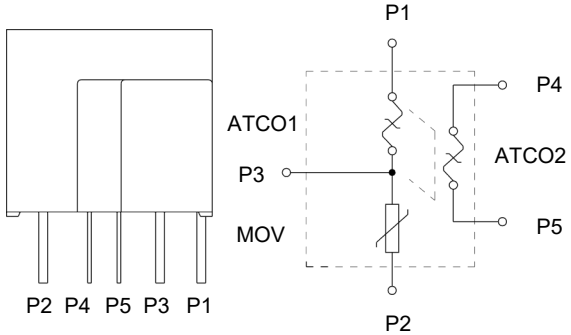
备注 Note:
引脚 P3 / P4 / P5 可选 Pin P3 / P4 / P5 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	W (±1.0)	W_1 (±1.0)	W_2 (±1.0)	H (±1.0)	H_1 (±0.5)	H_2 (±0.5)	F_1 (±0.5)	F_2 (±0.5)
270 - 121	25.3	9.0	9.4	5.6	7.5	28.0	12.4	18.4	1.5	5.6
151 - 271	25.3	9.0	9.8	6.0	7.7	28.0	12.4	18.4	1.5	5.6
301 - 471	25.3	9.0	11.3	7.5	9.2	28.0	12.4	18.4	1.5	5.6
511 - 681	25.3	9.0	12.3	8.5	10.2	28.0	12.4	18.4	1.5	5.6
751 - 821	25.3	9.0	13.3	9.5	11.2	28.0	12.4	18.4	1.5	5.6
911 - 122	25.3	9.0	15.8	12.0	13.7	28.0	12.4	18.4	1.5	5.6
标称压敏电压 Nominal Varistor Voltage	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)	F_7 (±0.5)	F_8 (±0.5)	F_9 (±0.5)	d_1 (-0.05,+0.15)	d_2 (±0.05)	
270 - 121	11.2	15.2	21.5	1.5	1.3	3.3	6.9	1.20	0.50	
151 - 271	11.2	15.2	21.5	1.5	1.3	3.3	7.3	1.20	0.50	
301 - 471	11.2	15.2	21.5	1.5	1.3	3.3	8.8	1.20	0.50	
511 - 681	11.2	15.2	21.5	1.5	1.3	3.3	9.8	1.20	0.50	
751 - 821	11.2	15.2	21.5	1.5	1.3	3.3	10.8	1.20	0.50	
911 - 122	11.2	15.2	21.5	1.5	1.3	3.3	13.3	1.20	0.50	

安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
TÜVRheinland	EN 61643-11	J 50210179
CQC	GB 4943.1-2011 GB 8898-2011	CQC18001188616
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳）Max. Energy (Joule)	静态电容量（参考）Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691 E214712
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV25S270x	17	22	24	31	53	35	3	6	4.6	3	33	30000	VT 系列 Series U_r:690 VAC I_r:15 A / 16 A
TFMOV25S330x	20	26	30	36	65	35	4	8	4.6	4	42	24500	
TFMOV25S390x	25	31	35	43	77	35	4	8	4.6	4	49	21000	
TFMOV25S470x	30	38	42	52	93	35	4	8	4.3	4	60	17250	
TFMOV25S560x	35	45	50	62	110	35	5	10	3.8	5	72	14500	
TFMOV25S680x	40	56	61	75	135	35	5	10	3.8	5	85	9500	
TFMOV25S820x	50	65	74	90	135	175	8	16	3.2	8	98	8800	
TFMOV25S101x	60	85	90	110	165	175	8	16	3.2	8	122	7200	
TFMOV25S121x	75	100	108	132	200	175	8	16	3.2	8	146	6000	
TFMOV25S151x	95	125	135	165	250	175	8	16	3.2	8	185	4400	
TFMOV25S181x	115	150	162	198	300	175	8	16	2.3	8	218	3650	
TFMOV25S201x	130	170	185	225	340	175	10	25	2.3	10	252	3300	
TFMOV25S221x	140	180	198	242	360	175	10	25	2.3	10	280	3000	
TFMOV25S241x	150	200	216	264	395	175	10	25	2.3	10	302	2800	
TFMOV25S271x	175	225	243	297	455	175	10	25	2.3	10	340	2450	
TFMOV25S301x	190	250	270	330	500	175	10	25	2.3	10	375	2200	
TFMOV25S331x	210	275	297	363	550	175	10	25	2.3	10	410	2050	
TFMOV25S361x	230	300	324	396	595	175	10	25	2.3	10	465	1850	
TFMOV25S391x	250	320	351	429	650	175	10	25	2.3	10	520	1700	
TFMOV25S431x	275	350	387	473	710	175	10	25	2.3	10	575	1600	
TFMOV25S471x	300	385	423	517	775	175	10	25	2.3	10	630	1450	
TFMOV25S511x	320	415	459	561	845	175	10	25	2.3	10	665	1300	
TFMOV25S561x	350	460	504	616	925	175	10	25	2.3	10	720	1200	
TFMOV25S621x	385	505	558	682	1025	175	10	25	2.3	10	790	1100	
TFMOV25S681x	420	560	612	748	1120	175	10	25	2.3	10	790	1000	
TFMOV25S751x	460	615	675	825	1240	175	10	25	2.3	10	825	900	
TFMOV25S821x	510	670	738	902	1355	175	10	25	2.3	10	840	800	
TFMOV25S911x	550	745	819	1001	1500	175	10	25	2.3	10	900	700	
TFMOV25S102x	625	825	900	1100	1650	175	10	25	2.3	10	950	660	
TFMOV25S112x	680	895	990	1210	1815	175	10	25	2.3	10	1040	615	
TFMOV25S122x	750	1000	1080	1320	1980	175	10	25	2.3	10	1170	555	

TFMOV

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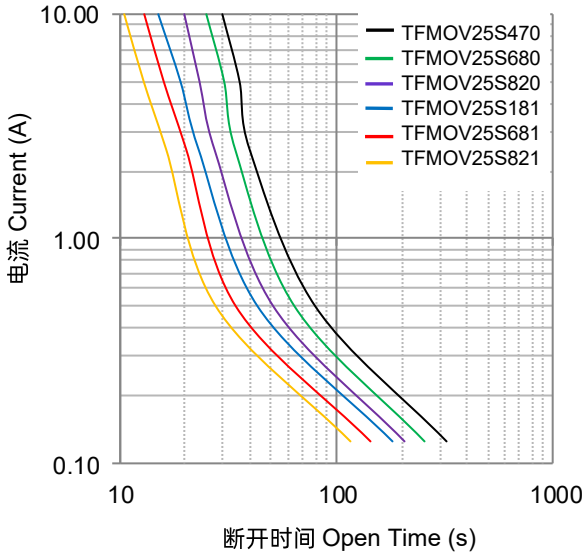
备注 Note：

a： $R_{cl}=\frac{V_C}{V_N}$ ，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl}=\frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.
The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

性能曲线 Performance Curve

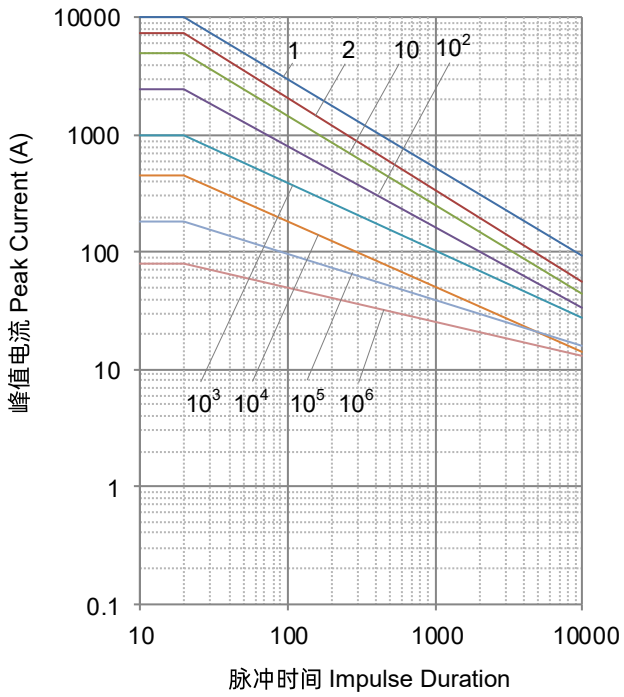
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



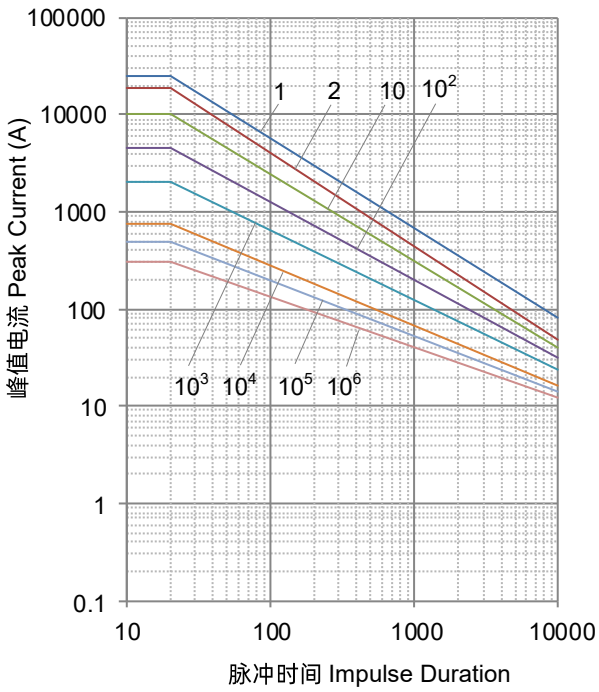
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV25S270 to TFMOV25S680



TFMOV25S820 to TFMOV25S122



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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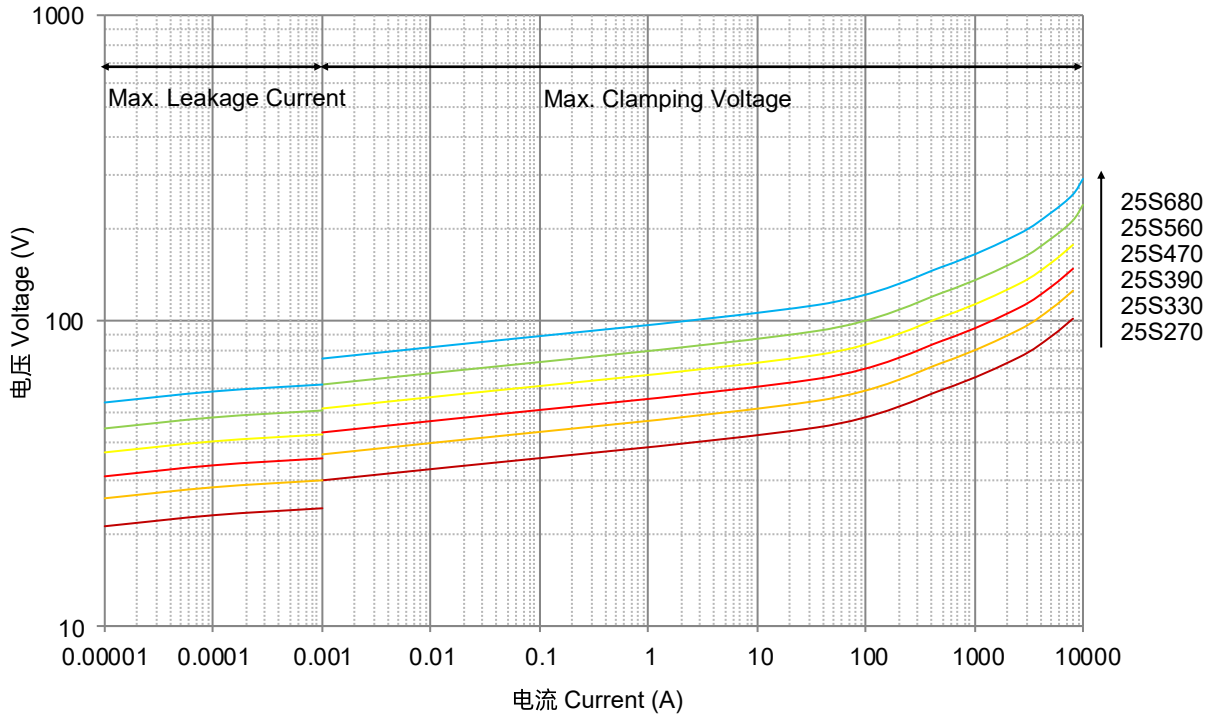
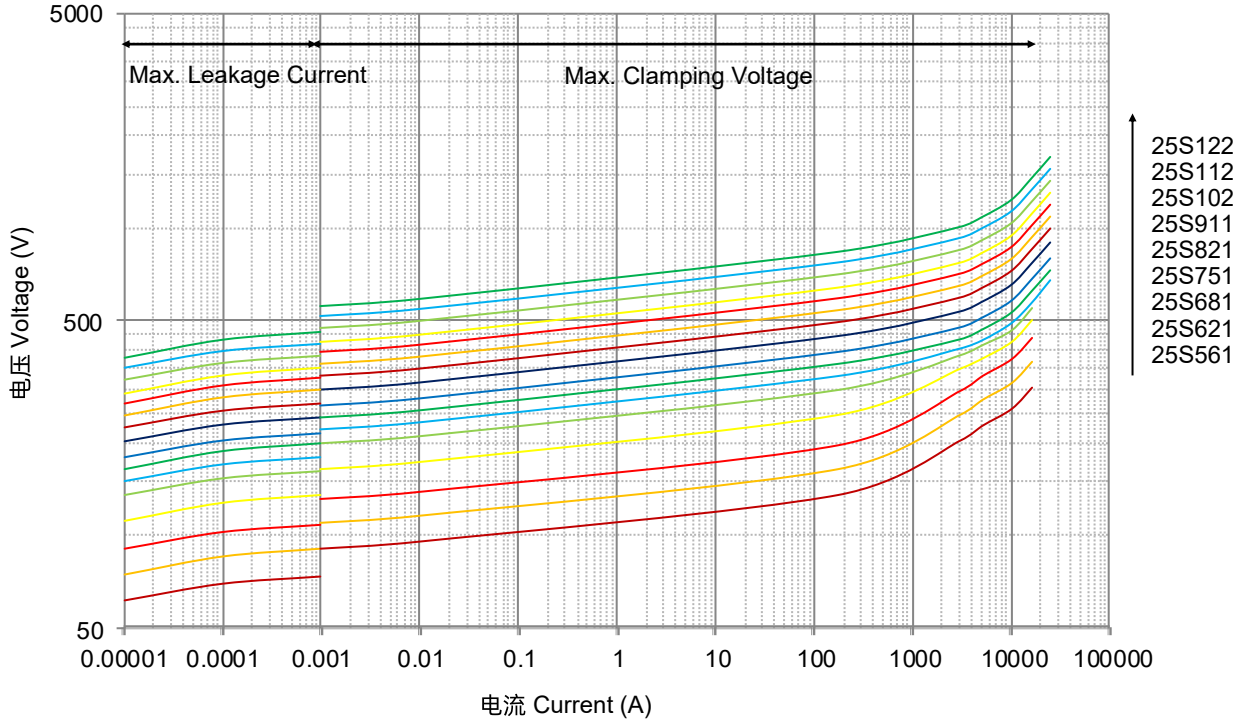
伏安特性曲线 Voltage-Current Characteristic Curves





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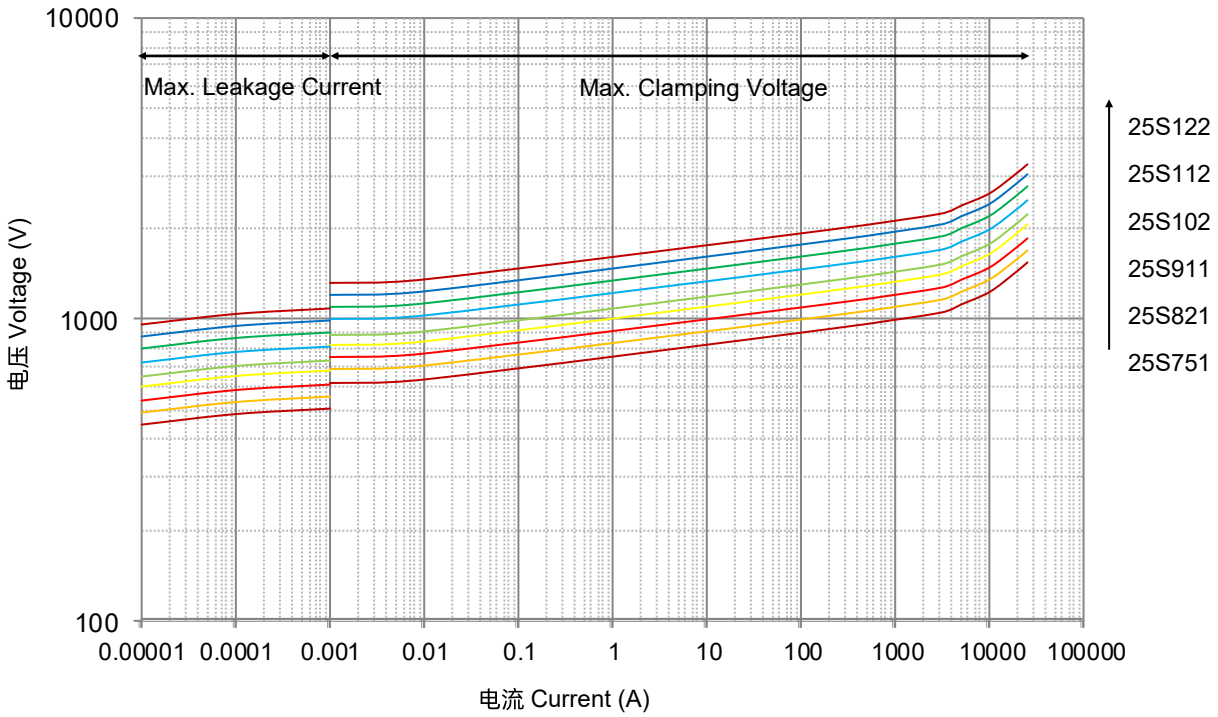
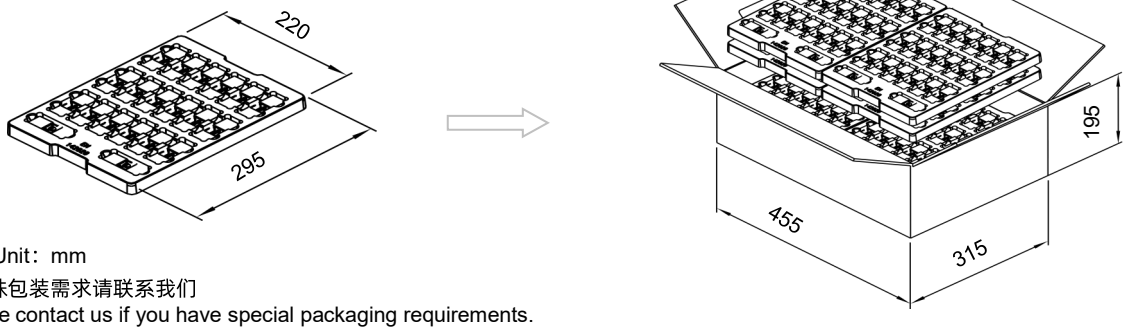


包装信息 Packaging Information



单位 Unit：mm
有特殊包装需求请联系我们
Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	270 - 271	40	800
	301 - 821	40	640
	911 - 122	40	480

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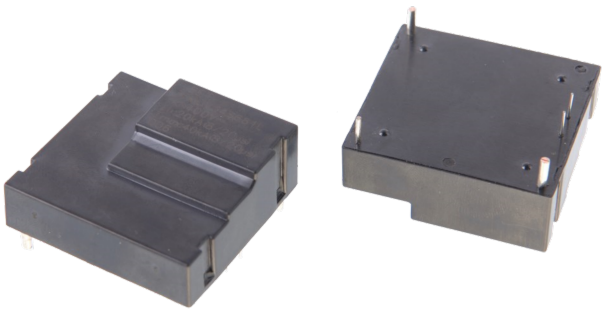
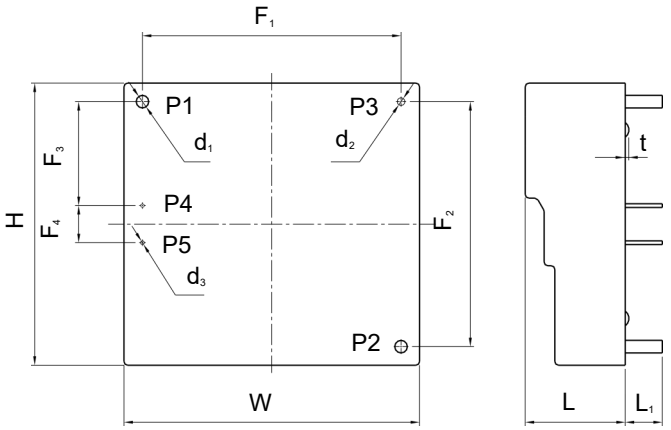
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV34SxxxL 系列 Series





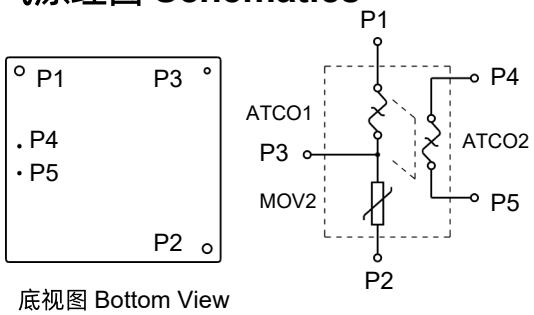
备注 Note:
引脚 P3 / P4 / P5 可选 Pin P3 / P4 / P5 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	H (±1.0)	W (±1.0)	d_1 (-0.05,+0.20)	d_2 (-0.05,+0.15)	d_3 (±0.05)	F_1 (±0.5)	F_2 (±0.5)	F_3 (±0.5)	F_4 (±0.5)	t (±0.1)
470 - 151	11.5	5.0	38.0	40.0	1.70	1.05	0.50	34.9	33.0	14.0	5.0	0.5
181 - 561	13.0	5.0	38.0	40.0	1.70	1.05	0.50	34.9	33.0	14.0	5.0	0.5
621 - 681	13.5	5.0	38.0	40.0	1.70	1.05	0.50	34.9	33.0	14.0	5.0	0.5

安规认证 Agency Approvals

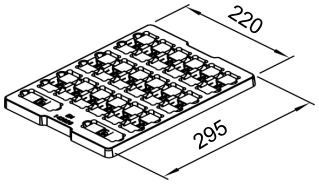
机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics

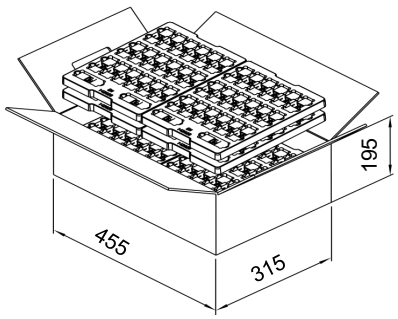


底视图 Bottom View

包装信息Packaging Information



12 托 Trays



单位 Unit：mm
有特殊包装需求请联系我们
Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	470 - 681	12	240

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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV34S470Lx	30	38	42	52	93	60	10	20	4.3	10	96	35000	VQ 系列 Series U_r: 690 VAC I_r: 25 A
TFMOV34S560Lx	35	45	50	62	110	60	10	20	3.8	10	115	29500	
TFMOV34S680Lx	40	56	61	75	135	60	10	20	3.8	10	136	24200	
TFMOV34S820Lx	50	65	74	90	135	300	15	30	3.2	15	156	17950	
TFMOV34S101Lx	60	85	90	110	165	300	15	30	3.2	15	195	15000	
TFMOV34S121Lx	75	100	108	132	200	300	15	30	3.2	15	235	12200	
TFMOV34S151Lx	95	125	135	165	250	300	20	40	3.2	20	296	10000	
TFMOV34S181Lx	115	150	162	198	300	300	20	40	2.3	20	350	8250	
TFMOV34S201Lx	130	170	185	225	340	300	20	40	2.3	20	400	6750	
TFMOV34S221Lx	140	180	198	242	360	300	20	40	2.3	20	450	6400	
TFMOV34S241Lx	150	200	216	264	395	300	20	40	2.3	20	480	5650	
TFMOV34S271Lx	175	225	243	297	455	300	20	40	2.3	20	540	5100	
TFMOV34S301Lx	190	250	270	330	500	300	20	40	2.3	20	600	4510	
TFMOV34S331Lx	210	275	297	363	550	300	20	40	2.3	20	656	4150	
TFMOV34S361Lx	230	300	324	396	595	300	20	40	2.3	20	745	3750	
TFMOV34S391Lx	250	320	351	429	650	300	20	40	2.3	20	830	3500	
TFMOV34S431Lx	275	350	387	473	710	300	20	40	2.3	20	920	2950	
TFMOV34S471Lx	300	385	423	517	775	300	20	40	2.3	20	1000	2880	
TFMOV34S511Lx	320	415	459	561	845	300	20	40	2.3	20	1060	2650	
TFMOV34S561Lx	350	460	504	616	925	300	20	40	2.3	20	1150	2450	
TFMOV34S621Lx	385	505	558	682	1025	300	20	40	2.3	20	1250	2200	
TFMOV34S681Lx	420	560	612	748	1120	300	20	40	2.3	20	1250	2000	

备注 Note：

a： $R_{cl} = \frac{V_C}{V_N}$ ， $U_p \geq V_C$， V_C：钳位电压 (@ I_n)， V_N：压敏电压， U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.

The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

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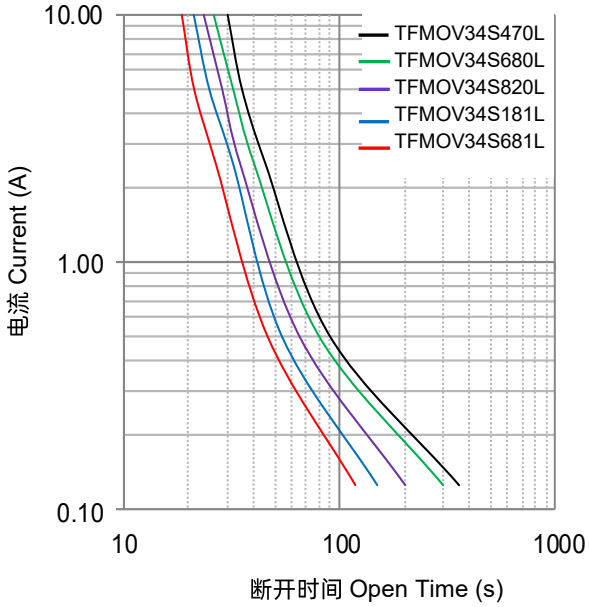
性能曲线 Performance Curve

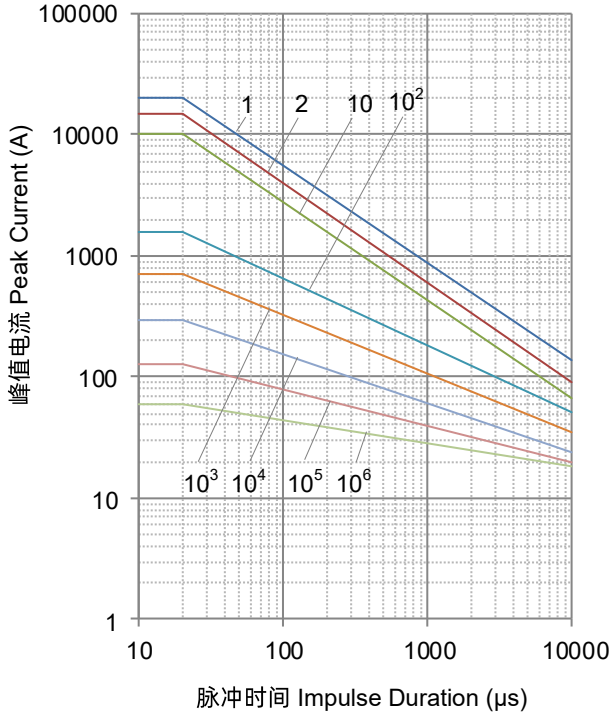
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



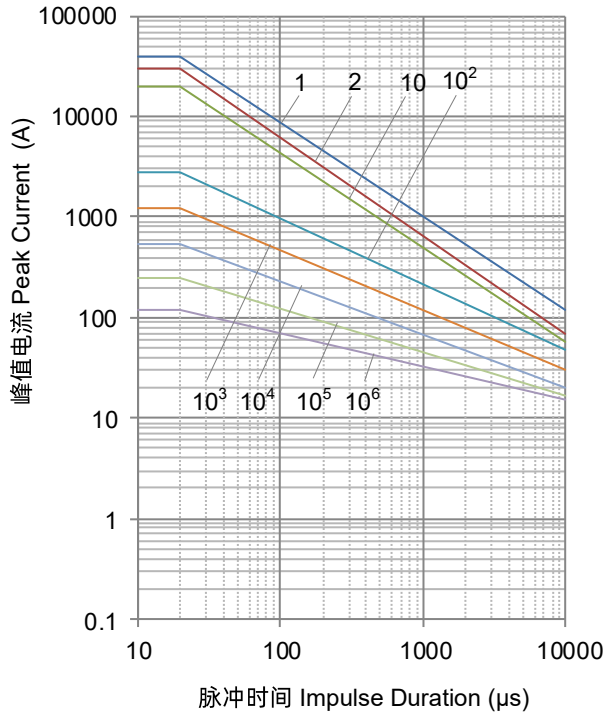
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV34S470L to TFMOV34S680L



TFMOV34S820L to TFMOV34S681L



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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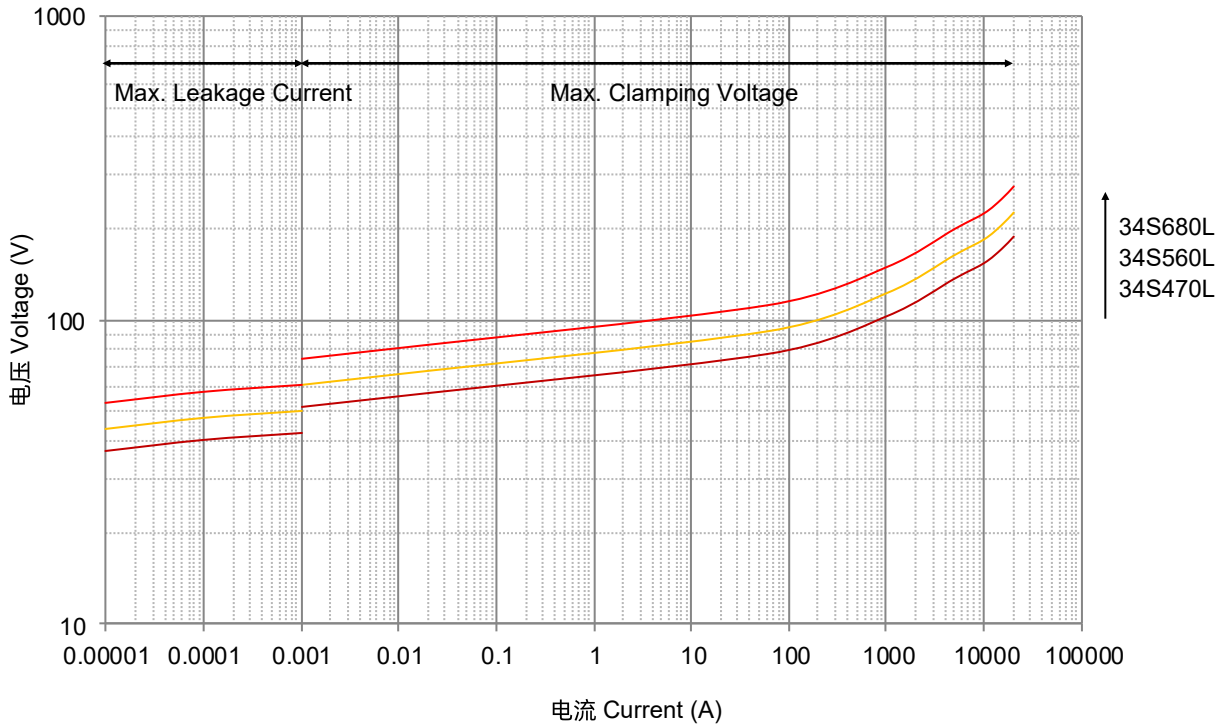
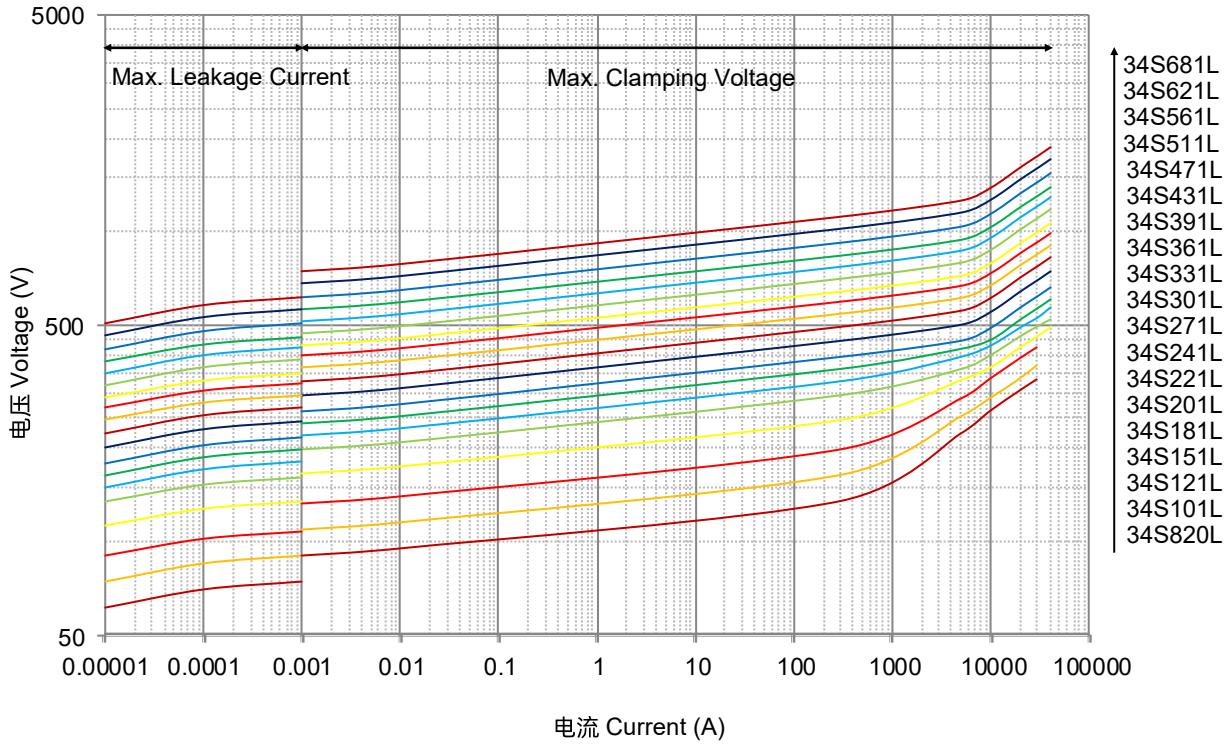
伏安特性曲线 Voltage-Current Characteristic Curves





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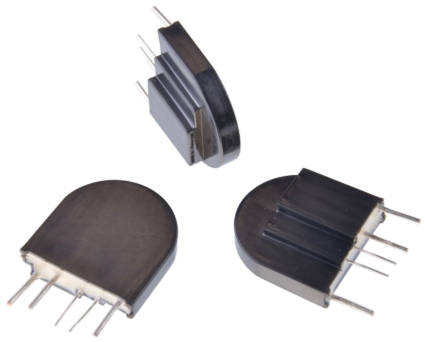
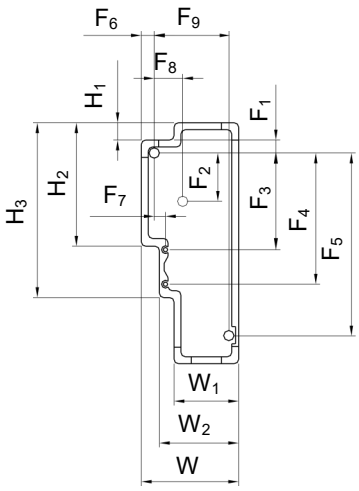
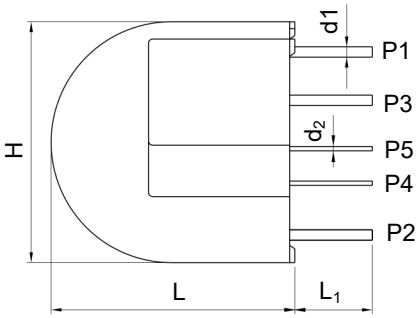
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV25D 系列 Series







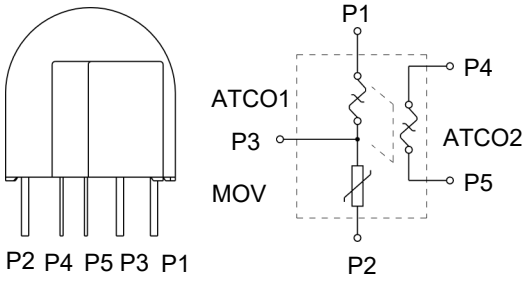
备注 Note:
引脚 P3 / P4 / P5 可选 Pin P3 / P4 / P5 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	W (±1.0)	W_1 (±1.0)	W_2 (±0.5)	H (±1.0)	H_1 (±0.5)	H_2 (±0.5)	H_3 (±1.0)	d_1 (-0.05,+0.15)
270 - 121	28.3	9.0	9.4	5.6	7.3	27.9	2.0	14.3	20.3	1.20
151 - 271	28.3	9.0	9.8	6.0	7.6	27.9	2.0	14.3	20.3	1.20
301 - 471	28.3	9.0	11.3	7.5	9.2	27.9	2.0	14.3	20.3	1.20
511 - 681	28.3	9.0	12.3	8.5	10.2	27.9	2.0	14.3	20.3	1.20
751 - 821	28.3	9.0	13.3	9.5	11.2	27.9	2.0	14.3	20.3	1.20
911 - 122	28.3	9.0	15.8	12.0	13.7	27.9	2.0	14.3	20.3	1.20
标称压敏电压 Nominal Varistor Voltage	d_2 (±0.05)	F_1 (±0.5)	F_2 (±0.5)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)	F_7 (±0.5)	F_8 (±0.5)	F_9 (±0.5)
270 - 121	0.50	1.5	5.6	11.2	15.2	21.2	1.5	1.3	3.3	6.9
151 - 271	0.50	1.5	5.6	11.2	15.2	21.2	1.5	1.3	3.3	7.3
301 - 471	0.50	1.5	5.6	11.2	15.2	21.2	1.5	1.3	3.3	8.8
511 - 681	0.50	1.5	5.6	11.2	15.2	21.2	1.5	1.3	3.3	9.8
751 - 821	0.50	1.5	5.6	11.2	15.2	21.2	1.5	1.3	3.3	10.8
911 - 122	0.50	1.5	5.6	11.2	15.2	21.2	1.5	1.3	3.3	13.3

安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
TÜVRheinland	EN 61643-11	J 50210179
CQC	GB 4943.1-2011 GB 8898-2011	CQC21001284843
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV25D270x	17	22	24	31	53	30	1.5	3	4.6	1.5	30	26500	VT 系列 Series U_r:690 VAC I_r:15 A / 16 A
TFMOV25D330x	20	26	30	36	65	30	1.5	3	4.6	1.5	35	18000	
TFMOV25D390x	25	31	35	43	77	30	1.5	3	4.6	1.5	40	13500	
TFMOV25D470x	30	38	42	52	93	30	3	6	4.3	3	50	11500	
TFMOV25D560x	35	45	50	62	110	30	3	6	3.8	3	60	10500	
TFMOV25D680x	40	56	61	75	135	30	3	6	3.8	3	70	9050	
TFMOV25D820x	50	65	74	90	135	150	5	10	3.2	5	80	7700	
TFMOV25D101x	60	85	90	110	165	150	5	10	3.2	5	100	6300	
TFMOV25D121x	75	100	108	132	200	150	5	10	3.2	5	120	5200	
TFMOV25D151x	95	125	135	165	250	150	5	10	3.2	5	160	4300	
TFMOV25D181x	115	150	162	198	300	150	5	10	2.3	5	175	3500	
TFMOV25D201x	130	170	185	225	340	150	10	20	2.3	10	190	3200	
TFMOV25D221x	140	180	198	242	360	150	10	20	2.3	10	200	2900	
TFMOV25D241x	150	200	216	264	395	150	10	20	2.3	10	220	2650	
TFMOV25D271x	175	225	243	297	455	150	10	20	2.3	10	255	2400	
TFMOV25D301x	190	250	270	330	500	150	10	20	2.3	10	275	2100	
TFMOV25D331x	210	275	297	363	550	150	10	20	2.3	10	300	1900	
TFMOV25D361x	230	300	324	396	595	150	10	20	2.3	10	330	1750	
TFMOV25D391x	250	320	351	429	650	150	10	20	2.3	10	360	1600	
TFMOV25D431x	275	350	387	473	710	150	10	20	2.3	10	380	1500	
TFMOV25D471x	300	385	423	517	775	150	10	20	2.3	10	400	1400	
TFMOV25D511x	320	415	459	561	845	150	10	20	2.3	10	420	1250	
TFMOV25D561x	350	460	504	616	925	150	10	20	2.3	10	440	1150	
TFMOV25D621x	385	505	558	682	1025	150	10	20	2.3	10	450	1050	
TFMOV25D681x	420	560	612	748	1120	150	10	20	2.3	10	460	950	
TFMOV25D751x	460	615	675	825	1240	150	10	20	2.3	10	510	850	
TFMOV25D821x	510	670	738	902	1355	150	10	20	2.3	10	520	830	
TFMOV25D911x	550	745	819	1001	1500	150	10	20	2.3	10	620	730	
TFMOV25D102x	625	825	900	1100	1650	150	10	20	2.3	10	690	660	
TFMOV25D112x	680	895	990	1210	1815	150	10	20	2.3	10	760	600	
TFMOV25D122x	750	1000	1080	1320	1980	150	10	20	2.3	10	820	530	

TFMOV

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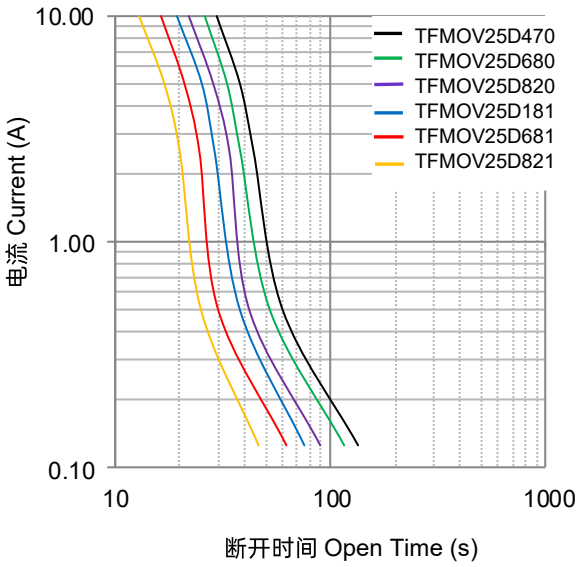
性能曲线 Performance Curve

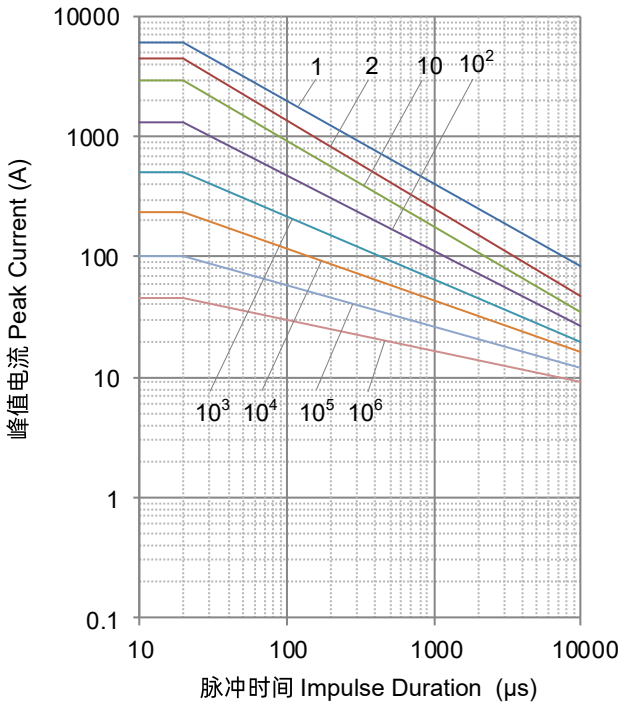
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



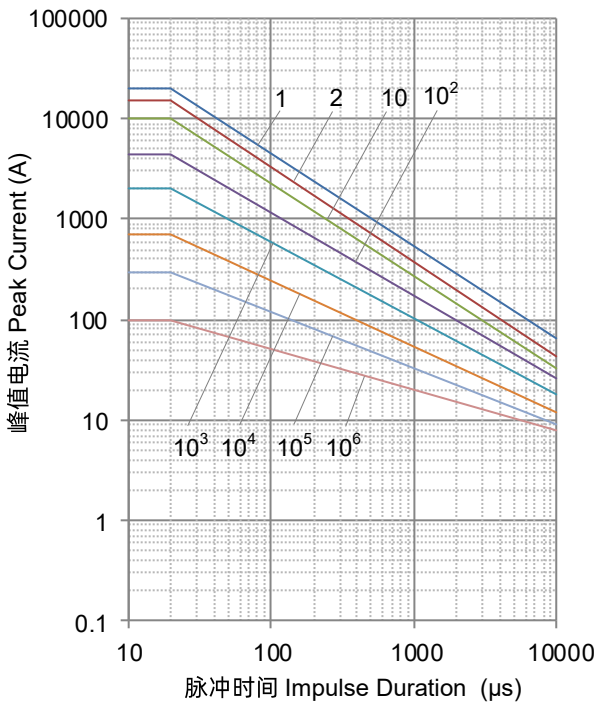
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV25D270 to TFMOV25D680



TFMOV25D820 to TFMOV25D122



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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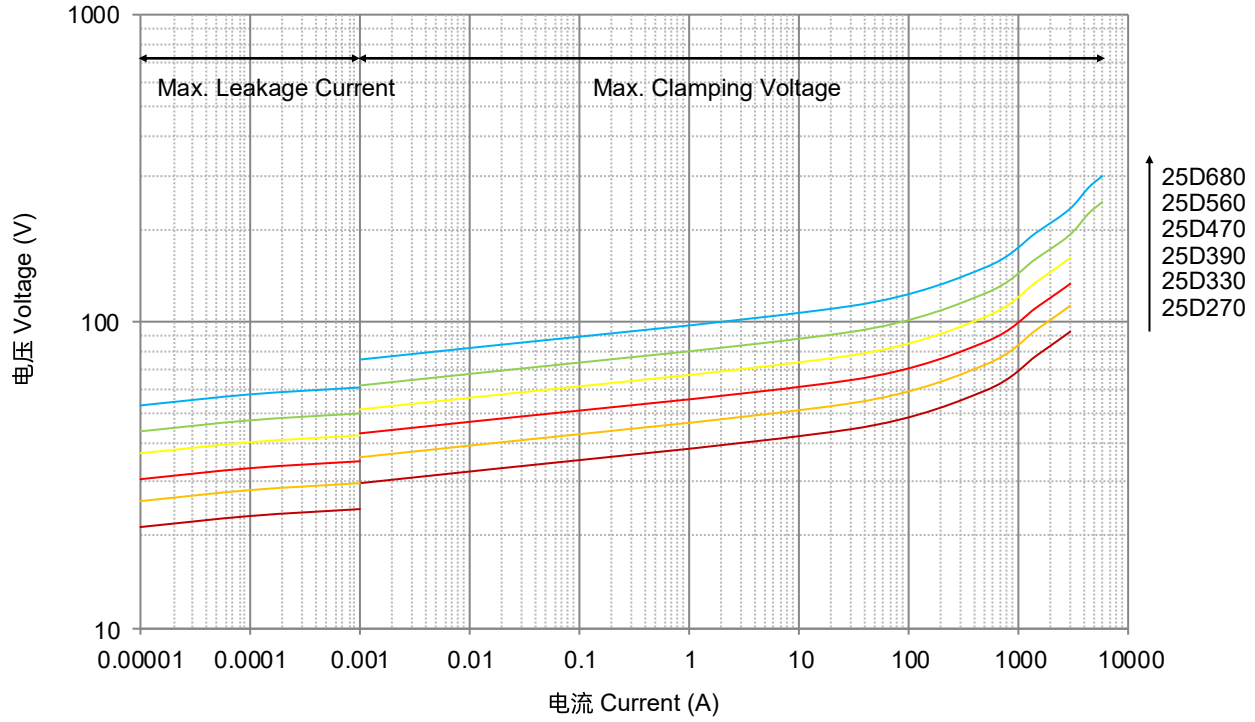
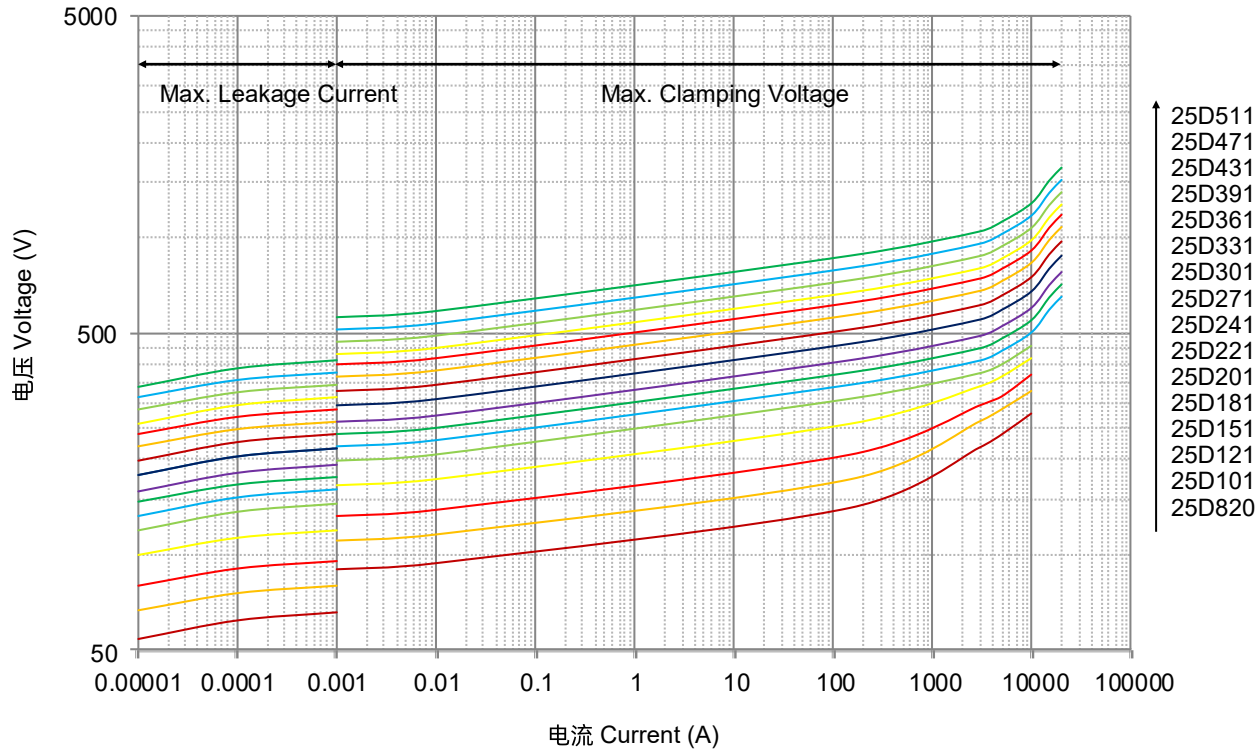
伏安特性曲线 Voltage-Current Characteristic Curves





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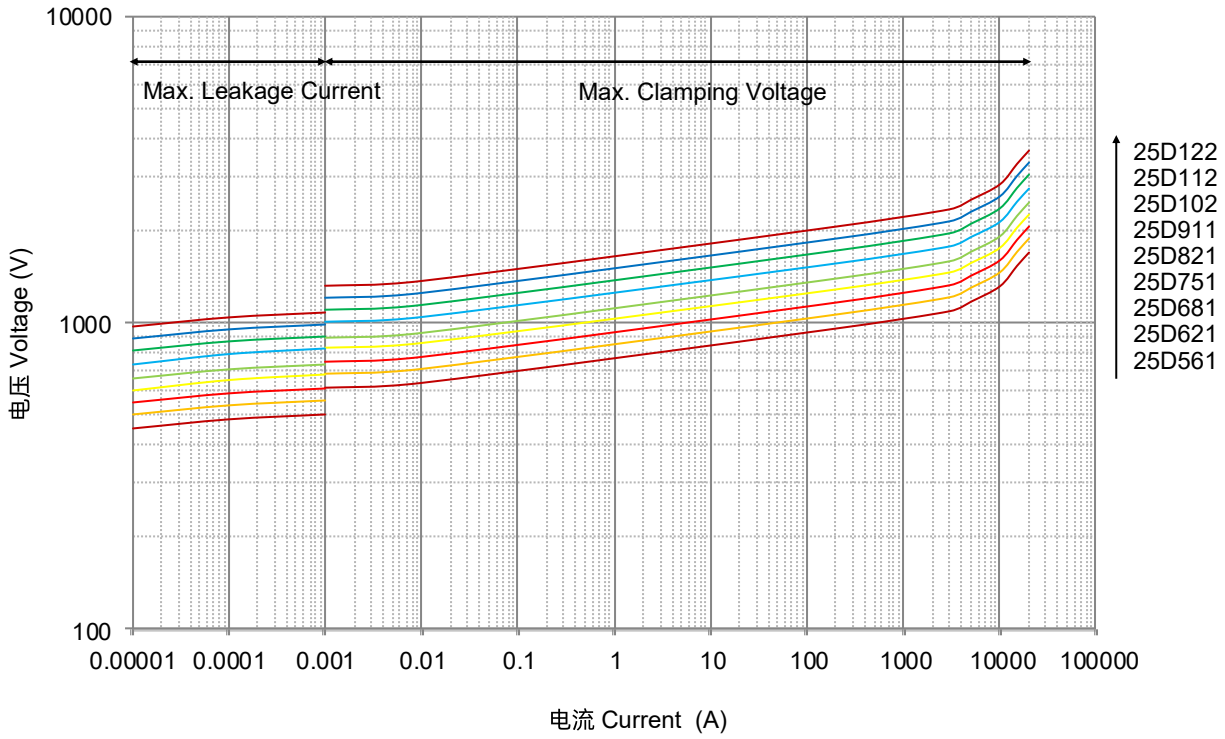
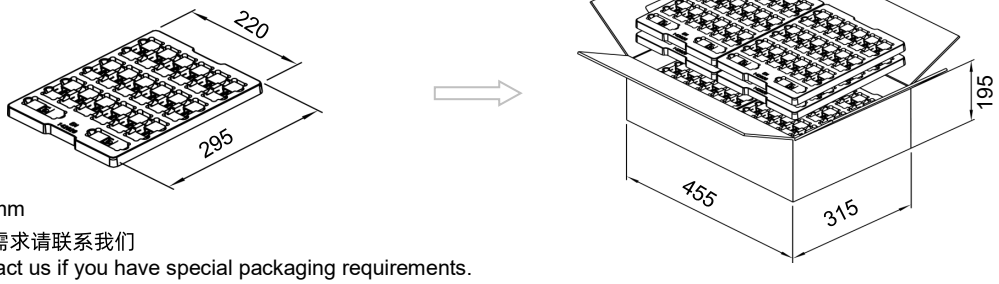


包装信息 Packaging Information



单位 Unit：mm

有特殊包装需求请联系我们

Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	270 - 271	40	800
	301 - 821	40	640
	911 - 122	40	480

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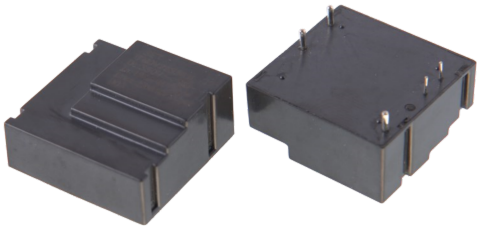
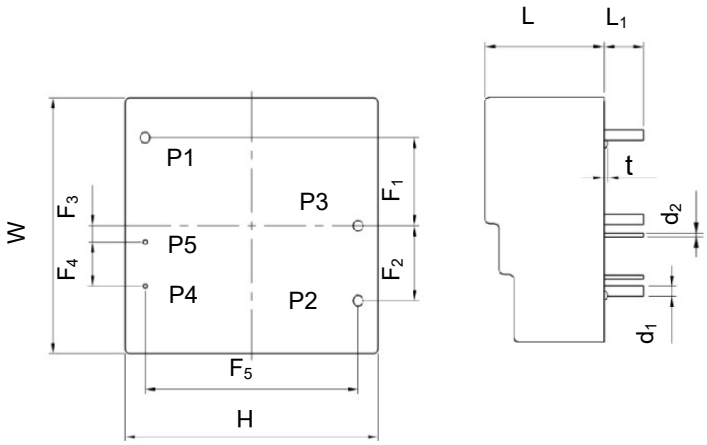




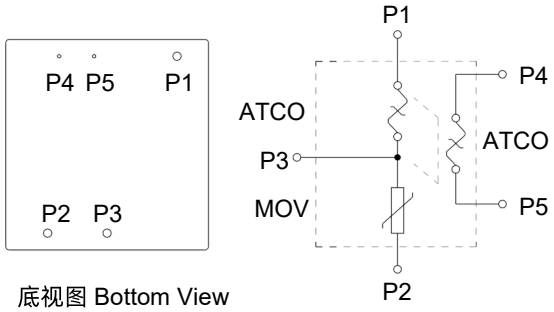
备注 Note:
引脚 P3 / P4 / P5 可选 Pin P3 / P4 / P5 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	W (±1.0)	H (±1.0)	d_1 (-0.05,+0.15)	d_2 (±0.05)	F_1 (±0.5)	F_2 (±0.5)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	t (±0.1)
470 - 681	13.5	4.5	29.0	30.0	1.20	0.54	10.0	8.5	1.9	5.0	25.2	0.4

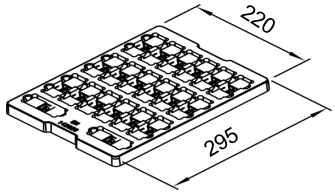
安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
环境 Environment	RoHS & REACH	符合 Compliant

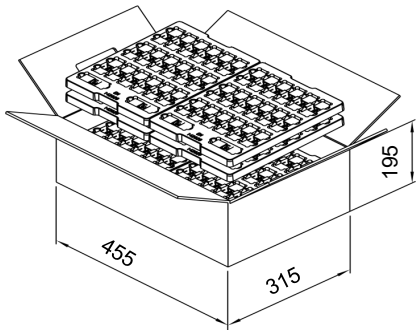
电气原理图 Schematics



包装信息 Packaging Information



36 托 Trays



单位 Unit：mm
有特殊包装需求请联系我们
Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	470 - 681	36	576

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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV25S470Lx	30	38	42	52	93	35	4	8	4.3	4	60	17250	VT 系列 Series U_r:690 VAC I_r:15 A / 16 A
TFMOV25S560Lx	35	45	50	62	110	35	5	10	3.8	5	72	14500	
TFMOV25S680Lx	40	56	61	75	135	35	5	10	3.8	5	85	9500	
TFMOV25S820Lx	50	65	74	90	135	175	8	16	3.2	8	98	8800	
TFMOV25S101Lx	60	85	90	110	165	175	8	16	3.2	8	122	7200	
TFMOV25S121Lx	75	100	108	132	200	175	8	16	3.2	8	146	6000	
TFMOV25S151Lx	95	125	135	165	250	175	8	16	3.2	8	185	4400	
TFMOV25S181Lx	115	150	162	198	300	175	8	16	2.3	8	218	3650	
TFMOV25S201Lx	130	170	185	225	340	175	10	25	2.3	10	252	3300	
TFMOV25S221Lx	140	180	198	242	360	175	10	25	2.3	10	280	3000	
TFMOV25S241Lx	150	200	216	264	395	175	10	25	2.3	10	302	2800	
TFMOV25S271Lx	175	225	243	297	455	175	10	25	2.3	10	340	2450	
TFMOV25S301Lx	190	250	270	330	500	175	10	25	2.3	10	375	2200	
TFMOV25S331Lx	210	275	297	363	550	175	10	25	2.3	10	410	2050	
TFMOV25S361Lx	230	300	324	396	595	175	10	25	2.3	10	465	1850	
TFMOV25S391Lx	250	320	351	429	650	175	10	25	2.3	10	520	1700	
TFMOV25S431Lx	275	350	387	473	710	175	10	25	2.3	10	575	1600	
TFMOV25S471Lx	300	385	423	517	775	175	10	25	2.3	10	630	1450	
TFMOV25S511Lx	320	415	459	561	845	175	10	25	2.3	10	665	1300	
TFMOV25S561Lx	350	460	504	616	925	175	10	25	2.3	10	720	1200	
TFMOV25S621Lx	385	505	558	682	1025	175	10	25	2.3	10	790	1100	
TFMOV25S681Lx	420	560	612	748	1120	175	10	25	2.3	10	790	1000	

备注 Note：

a： $R_{cl} = \frac{V_C}{V_N}$ ，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.
The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

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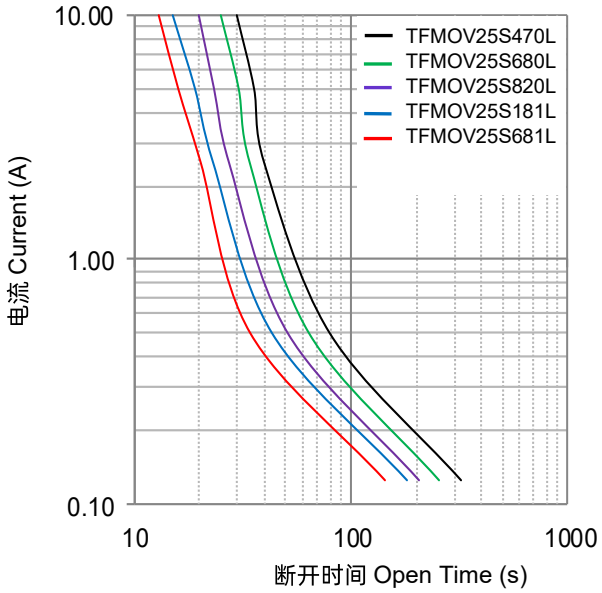
性能曲线 Performance Curve

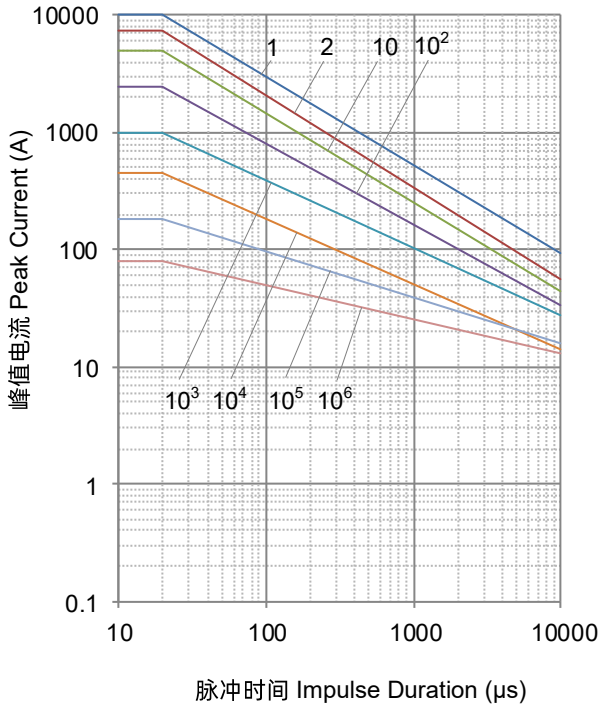
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



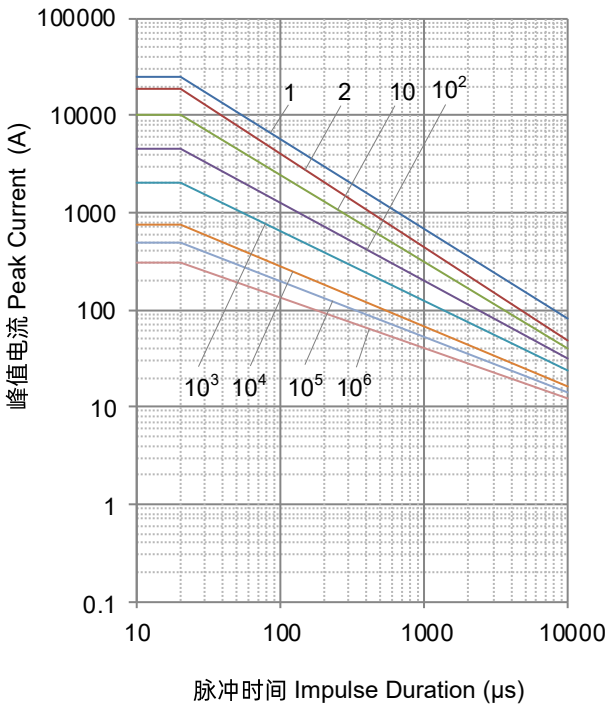
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV25S470L to TFMOV25S680L



TFMOV25S820L to TFMOV25S681L



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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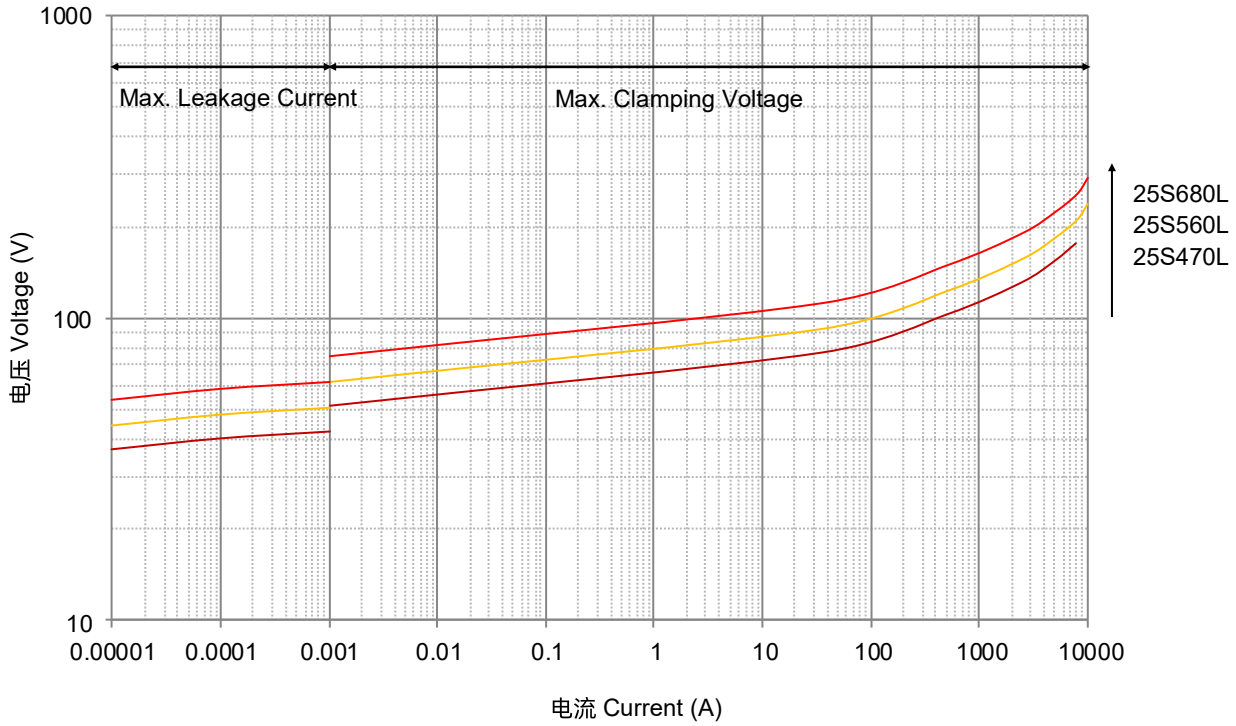
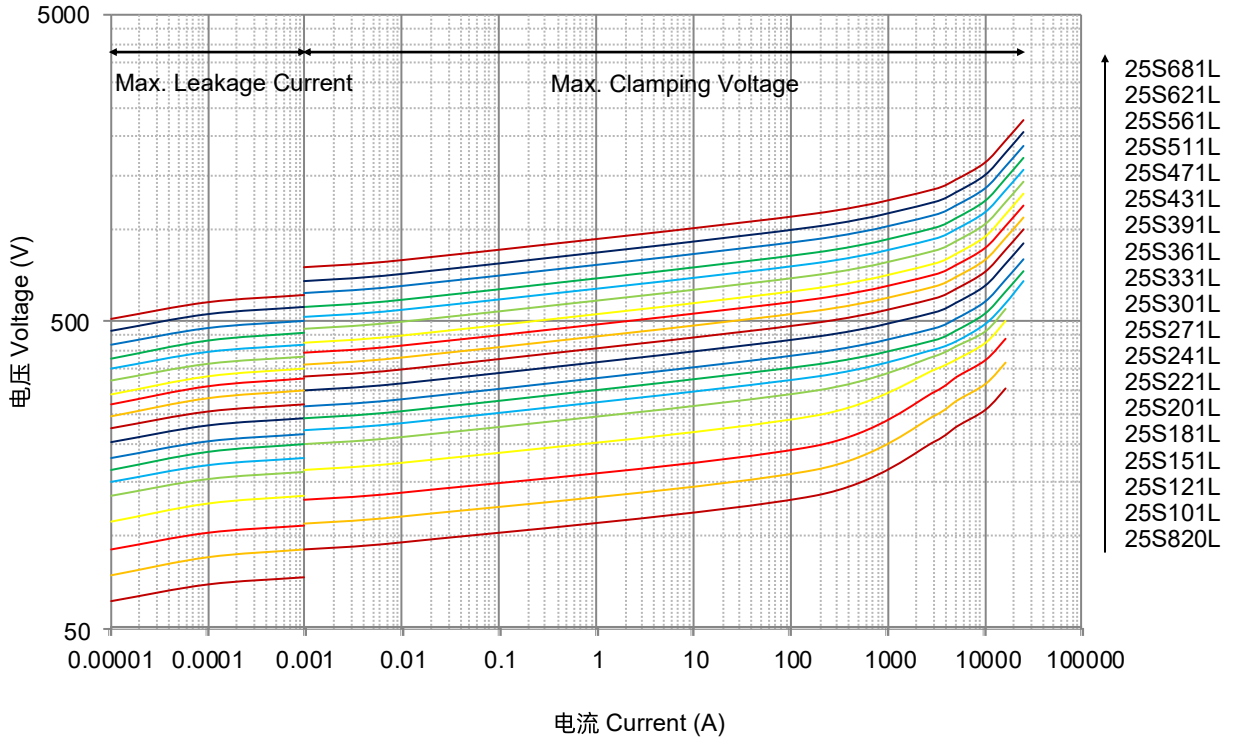
伏安特性曲线 Voltage-Current Characteristic Curves





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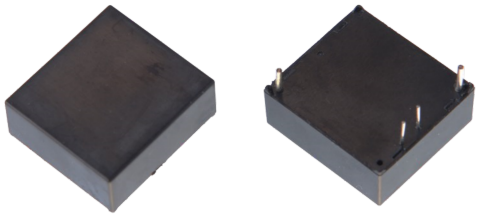
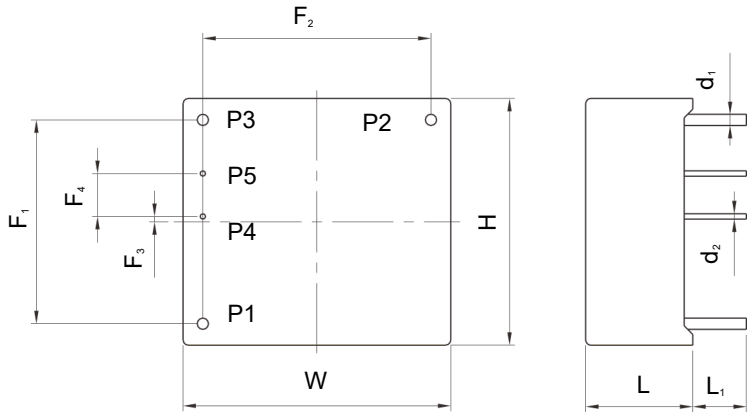
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV20SxxxL 系列 Series





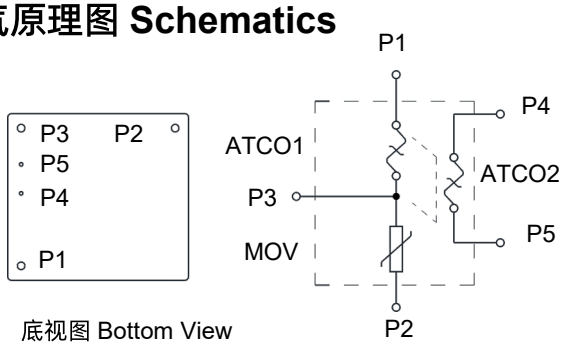
备注 Note:
引脚 P3 / P4 / P5 可选 Pin P3 / P4 / P5 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±0.5)	W (±1.0)	H (±1.0)	F_1 (±0.5)	F_2 (±0.5)	F_3 (±0.5)	F_4 (±0.5)	d_1 (-0.05,+0.15)	d_2 (±0.05)
470 -181	10.0	5.0	25.0	23.0	19.0	21.3	0.5	4.0	1.05	0.54
201 - 561	12.7	5.0	25.0	23.0	19.0	21.3	0.5	4.0	1.05	0.54
621 - 681	13.8	5.0	25.0	23.0	19.0	21.3	0.5	4.0	1.05	0.54

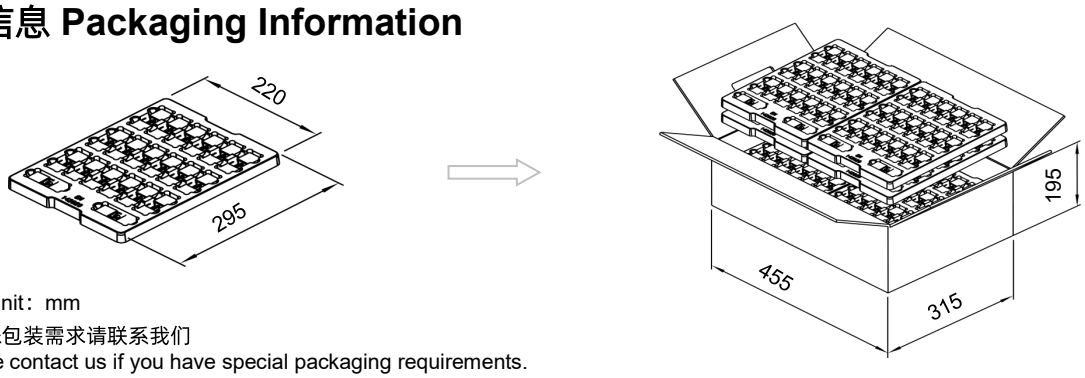
安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



包装信息 Packaging Information



单位 Unit：mm
有特殊包装需求请联系我们
Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	470 - 681	40	640

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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV20S470Lx	30	38	42	52	93	25	2.5	5	4.3	2.5	41	8880	VT 系列 Series U_r:690 VAC I_r:15 A /16 A
TFMOV20S560Lx	35	45	50	62	110	25	2.5	5	3.8	2.5	49	7800	
TFMOV20S680Lx	40	56	61	75	135	25	2.5	5	3.8	2.5	59	7000	
TFMOV20S820Lx	50	65	74	90	135	125	5	10	3.2	5	67	5880	
TFMOV20S101Lx	60	85	90	110	165	125	5	10	3.2	5	84	4800	
TFMOV20S121Lx	75	100	108	132	200	125	5	10	3.2	5	102	4000	
TFMOV20S151Lx	95	125	135	165	250	125	5	10	3.2	5	127	3200	
TFMOV20S181Lx	115	150	162	198	300	125	5	10	3.2	5	156	2650	
TFMOV20S201Lx	130	170	185	225	340	125	7.5	15	2.3	7.5	170	2400	
TFMOV20S221Lx	140	180	198	242	360	125	7.5	15	2.3	7.5	185	2160	
TFMOV20S241Lx	150	200	216	264	395	125	7.5	15	2.3	7.5	200	2000	
TFMOV20S271Lx	175	225	243	297	455	125	7.5	15	2.3	7.5	230	1800	
TFMOV20S301Lx	190	250	270	330	500	125	7.5	15	2.3	7.5	250	1560	
TFMOV20S331Lx	210	275	297	363	550	125	7.5	15	2.3	7.5	270	1440	
TFMOV20S361Lx	230	300	324	396	595	125	7.5	15	2.3	7.5	305	1320	
TFMOV20S391Lx	250	320	351	429	650	125	7.5	15	2.3	7.5	330	1200	
TFMOV20S431Lx	275	350	387	473	710	125	7.5	15	2.3	7.5	365	1160	
TFMOV20S471Lx	300	385	423	517	775	125	7.5	15	2.3	7.5	420	1020	
TFMOV20S511Lx	320	415	459	561	845	125	7.5	15	2.3	7.5	430	935	
TFMOV20S561Lx	350	460	504	616	925	125	7.5	15	2.3	7.5	455	850	
TFMOV20S621Lx	385	505	558	682	1025	125	7.5	15	2.3	7.5	465	780	
TFMOV20S681Lx	420	560	612	748	1120	125	7.5	15	2.3	7.5	480	720	

备注 Note：

a： $R_{cl} = \frac{V_C}{V_N}$ ，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.
The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

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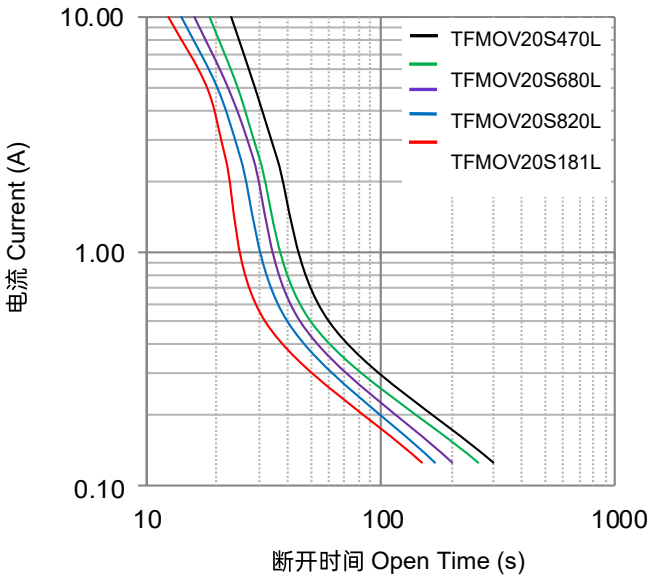
性能曲线 Performance Curve

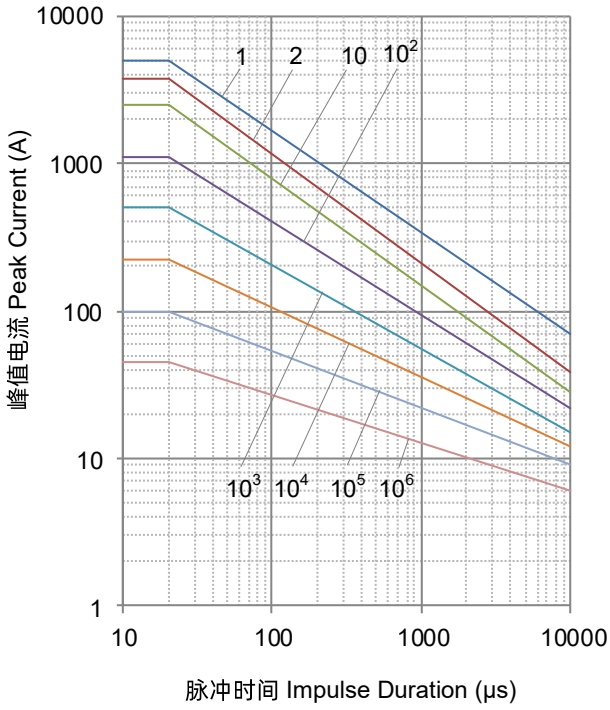
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



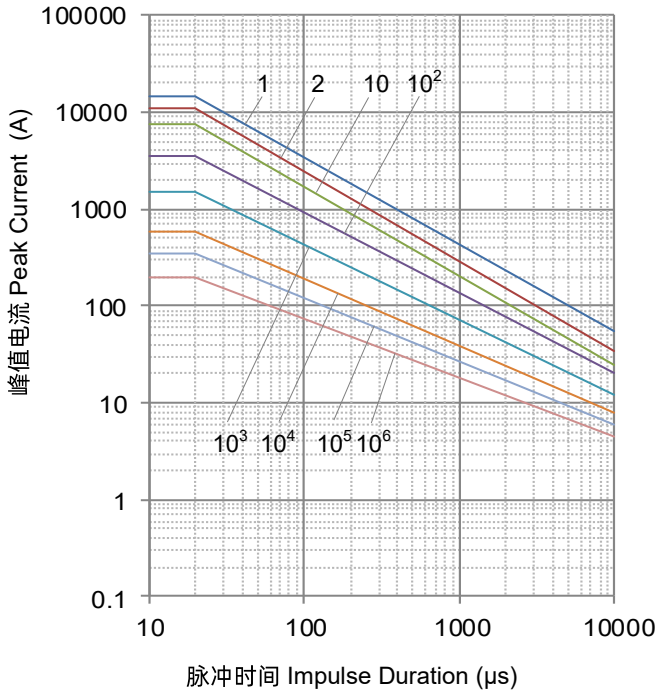
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV20S470L to TFMOV20S680L



TFMOV20S820L to TFMOV20S681L



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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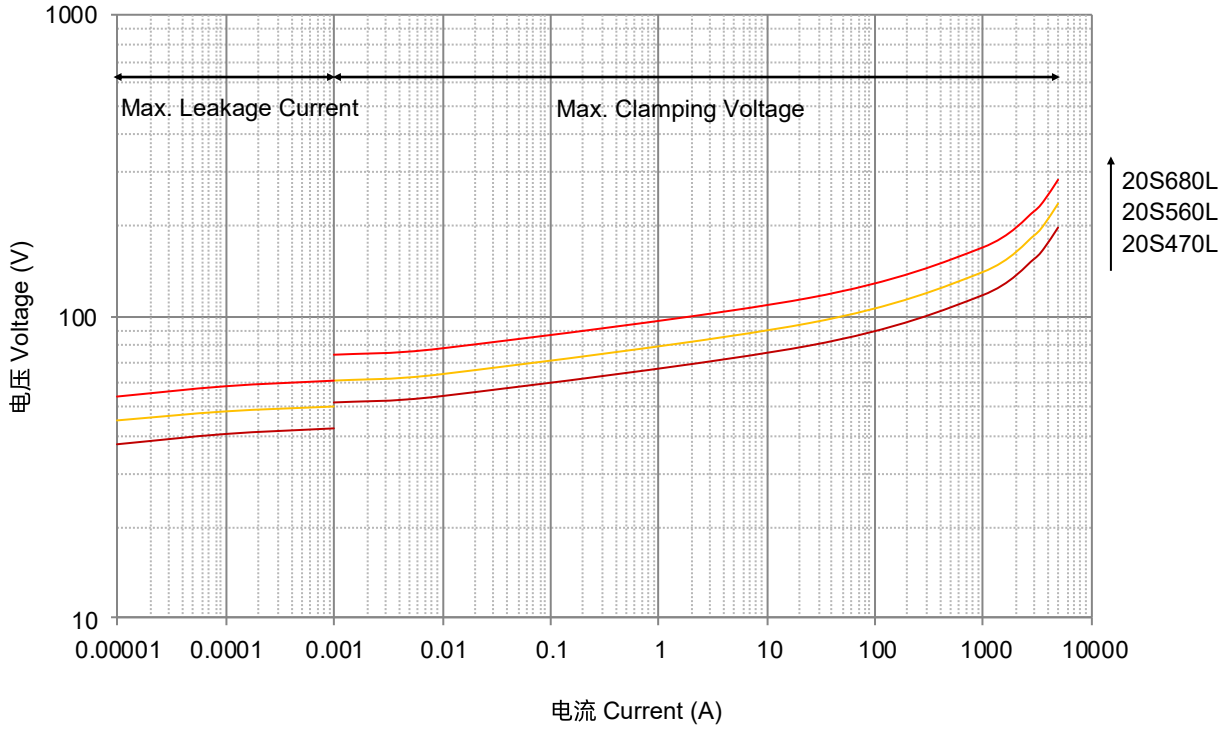
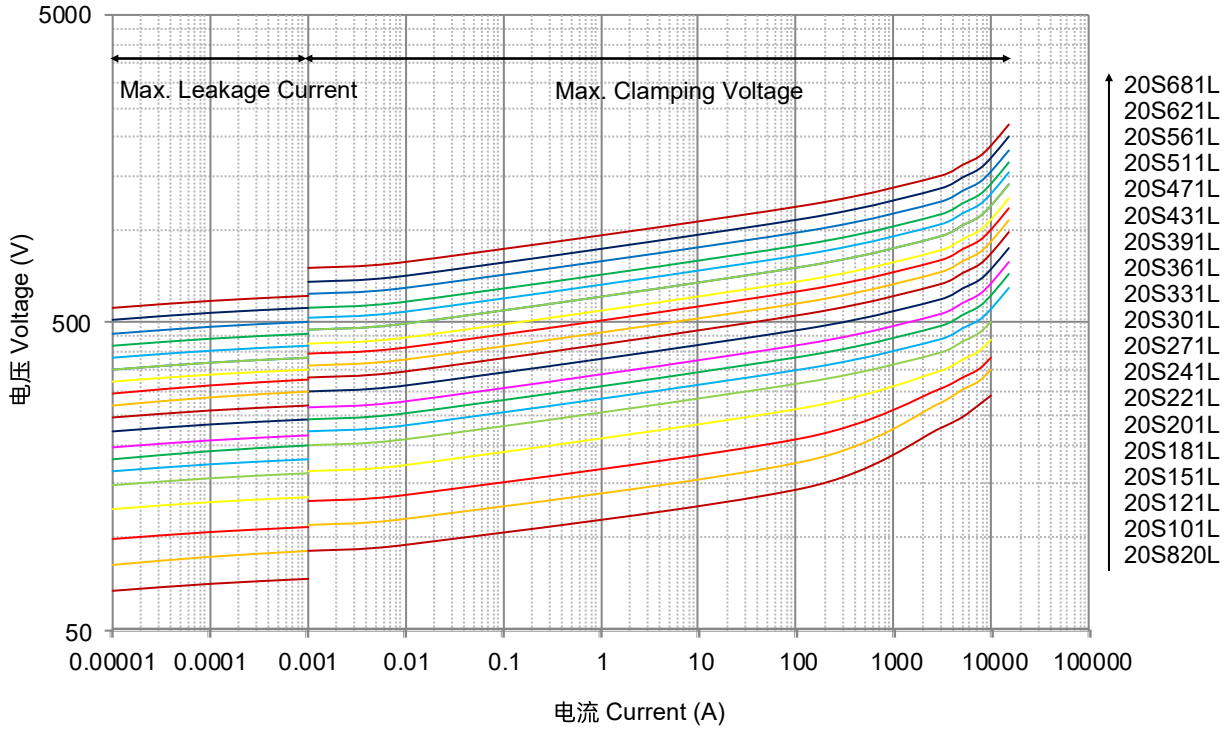
伏安特性曲线 Voltage-Current Characteristic Curves





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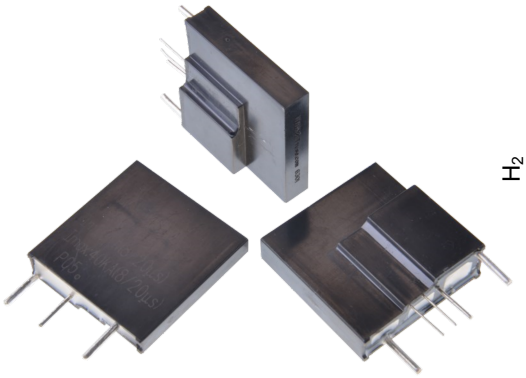
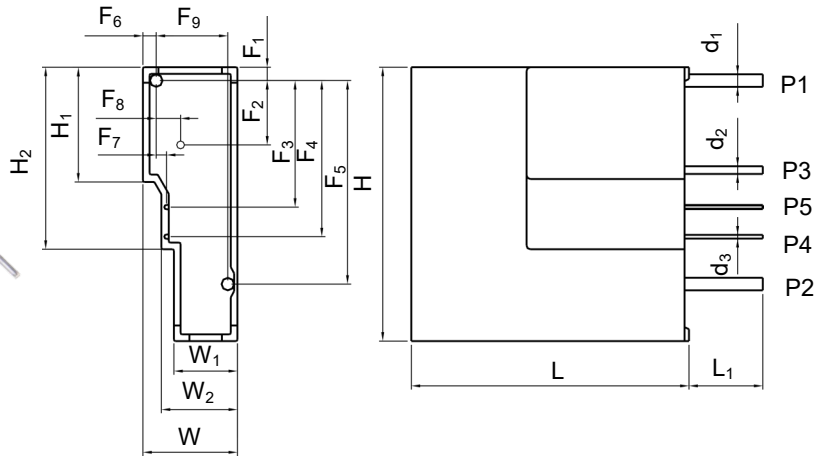




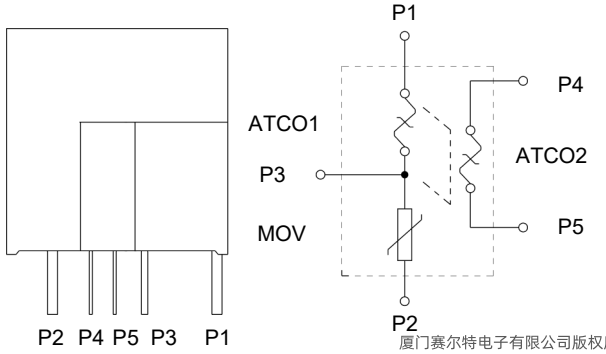
备注 Note:
引脚 P3 / P4 / P5 可选 Pin P3 / P4 / P5 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	W (±1.0)	W_1 (±1.0)	W_2 (±1.0)	H (±1.0)	H_1 (±0.5)	H_2 (±0.5)	d_1 (-0.05,+0.20)	d_2 (-0.05,+0.15)
470 - 121	37.6	10.0	10.0	5.8	7.5	37.0	15.5	24.6	1.70	1.05
151 - 271	37.6	10.0	10.5	6.3	8.0	37.0	15.5	24.6	1.70	1.05
301 - 471	37.6	10.0	12.0	7.8	9.5	37.0	15.5	24.6	1.70	1.05
511 - 681	37.6	10.0	12.8	8.6	10.3	37.0	15.5	24.6	1.70	1.05
751 - 821	37.6	10.0	14.0	9.8	11.5	37.0	15.5	24.6	1.70	1.05
911 - 122	37.6	10.0	16.5	12.3	14.0	37.0	15.5	24.6	1.70	1.05
标称压敏电压 Nominal Varistor Voltage	d_3 (±0.05)	F_1 (±0.5)	F_2 (±0.5)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)	F_7 (±0.5)	F_8 (±0.5)	F_9 (±0.5)
470 - 121	0.50	1.8	12.1	17.1	21.1	27.5	1.8	1.5	3.3	6.9
151 - 271	0.50	1.8	12.1	17.1	21.1	27.5	1.8	1.5	3.3	7.4
301 - 471	0.50	1.8	12.1	17.1	21.1	27.5	1.8	1.5	3.3	8.9
511 - 681	0.50	1.8	12.1	17.1	21.1	27.5	1.8	1.5	3.3	9.7
751 - 821	0.50	1.8	12.1	17.1	21.1	27.5	1.8	1.5	3.3	10.9
911 - 122	0.50	1.8	8.7	17.1	21.1	27.5	1.8	1.5	3.3	13.4

安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
TÜVRheinland	EN 61643-11	J 50226017
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691 E214712
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV34S470x	30	38	42	52	93	60	10	20	4.3	10	96	35000	VQ 系列 Series U_r:690 VAC I_r:25 A
TFMOV34S560x	35	45	50	62	110	60	10	20	3.8	10	115	29500	
TFMOV34S680x	40	56	61	75	135	60	10	20	3.8	10	136	24200	
TFMOV34S820x	50	65	74	90	135	300	15	30	3.2	15	156	17950	
TFMOV34S101x	60	85	90	110	165	300	15	30	3.2	15	195	15000	
TFMOV34S121x	75	100	108	132	200	300	15	30	3.2	15	235	12200	
TFMOV34S151x	95	125	135	165	250	300	20	40	3.2	20	296	10000	
TFMOV34S181x	115	150	162	198	300	300	20	40	2.3	20	350	8250	
TFMOV34S201x	130	170	185	225	340	300	20	40	2.3	20	400	6750	
TFMOV34S221x	140	180	198	242	360	300	20	40	2.3	20	450	6400	
TFMOV34S241x	150	200	216	264	395	300	20	40	2.3	20	480	5650	
TFMOV34S271x	175	225	243	297	455	300	20	40	2.3	20	540	5100	
TFMOV34S301x	190	250	270	330	500	300	20	40	2.3	20	600	4510	
TFMOV34S331x	210	275	297	363	550	300	20	40	2.3	20	656	4150	
TFMOV34S361x	230	300	324	396	595	300	20	40	2.3	20	745	3750	
TFMOV34S391x	250	320	351	429	650	300	20	40	2.3	20	830	3500	
TFMOV34S431x	275	350	387	473	710	300	20	40	2.3	20	920	2950	
TFMOV34S471x	300	385	423	517	775	300	20	40	2.3	20	1000	2880	
TFMOV34S511x	320	415	459	561	845	300	20	40	2.3	20	1060	2650	
TFMOV34S561x	350	460	504	616	925	300	20	40	2.3	20	1150	2450	
TFMOV34S621x	385	505	558	682	1025	300	20	40	2.3	20	1250	2200	
TFMOV34S681x	420	560	612	748	1120	300	20	40	2.3	20	1250	2000	
TFMOV34S751x	460	615	675	825	1240	300	20	40	2.3	20	1280	1820	
TFMOV34S821x	510	670	738	902	1355	300	20	40	2.3	20	1300	1800	
TFMOV34S911x	550	745	819	1001	1500	300	20	40	2.3	20	1475	1500	
TFMOV34S102x	625	825	900	1100	1650	300	20	40	2.3	20	1550	1350	
TFMOV34S112x	680	895	990	1210	1815	300	20	40	2.3	20	1750	1230	
TFMOV34S122x	750	1000	1080	1320	1980	300	20	40	2.3	20	2000	1135	

TFMOV

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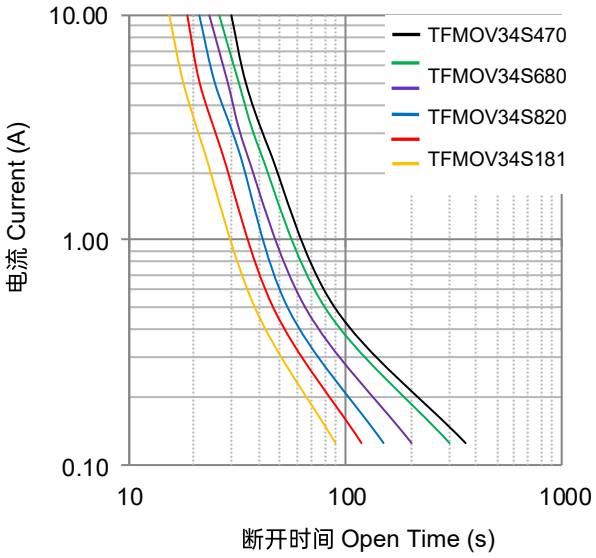
备注 Note：

a： $R_{cl} = \frac{V_C}{V_N}$ ，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.
The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

性能曲线 Performance Curve

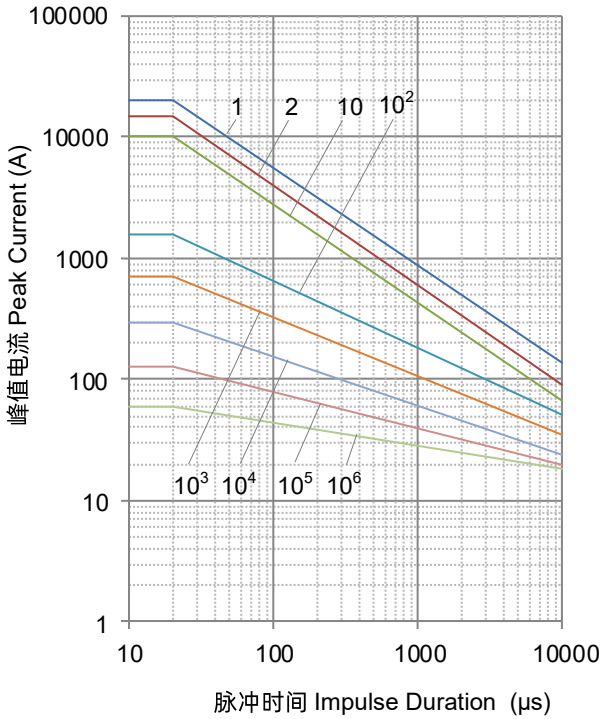
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



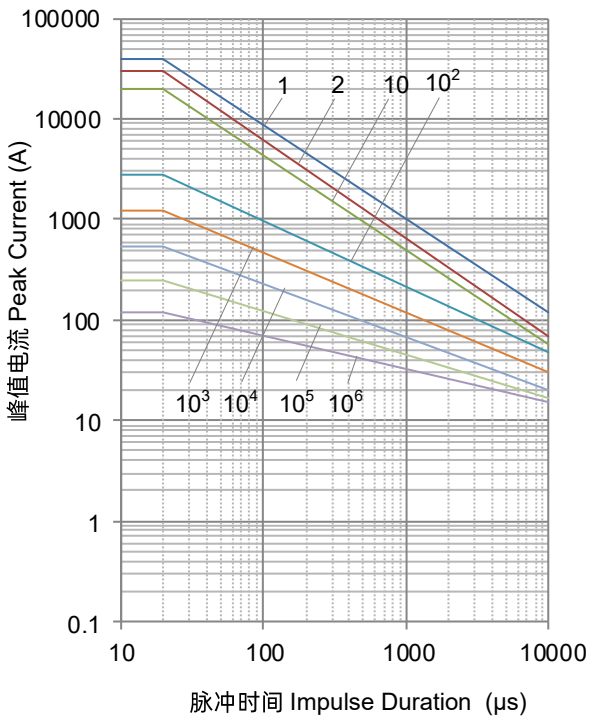
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV34S470 to TFMOV34S680



TFMOV34S820 to TFMOV34S122



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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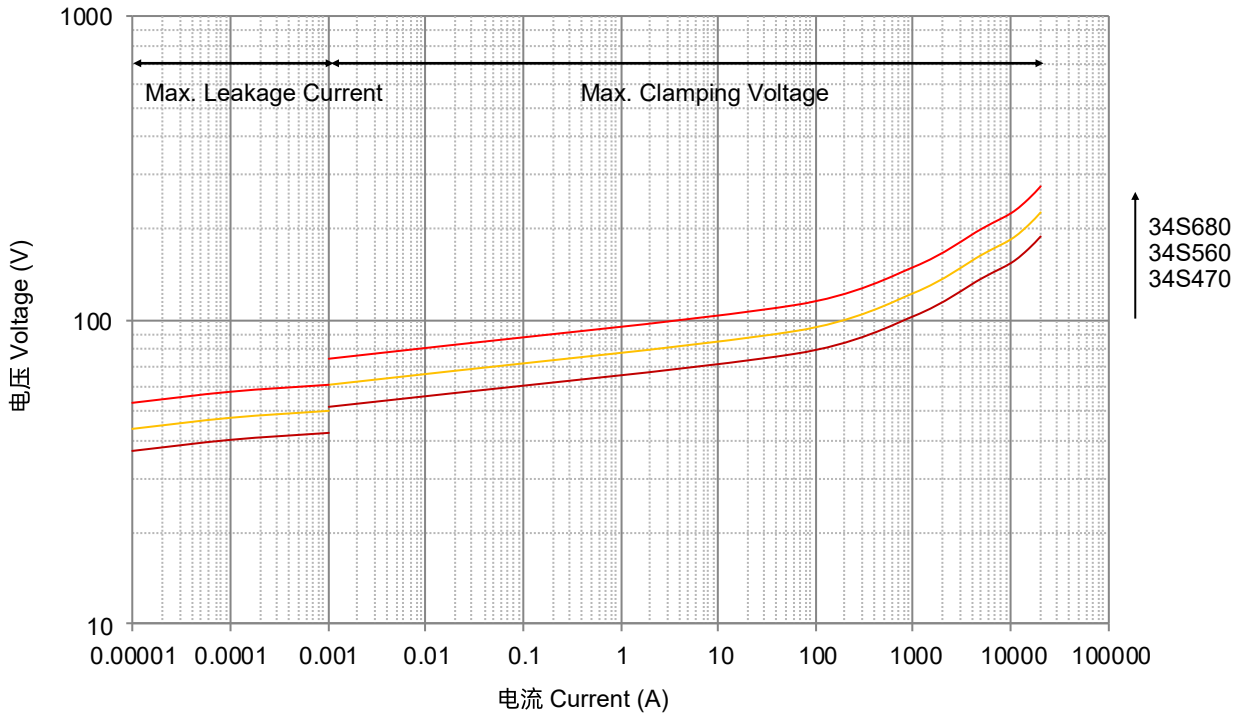
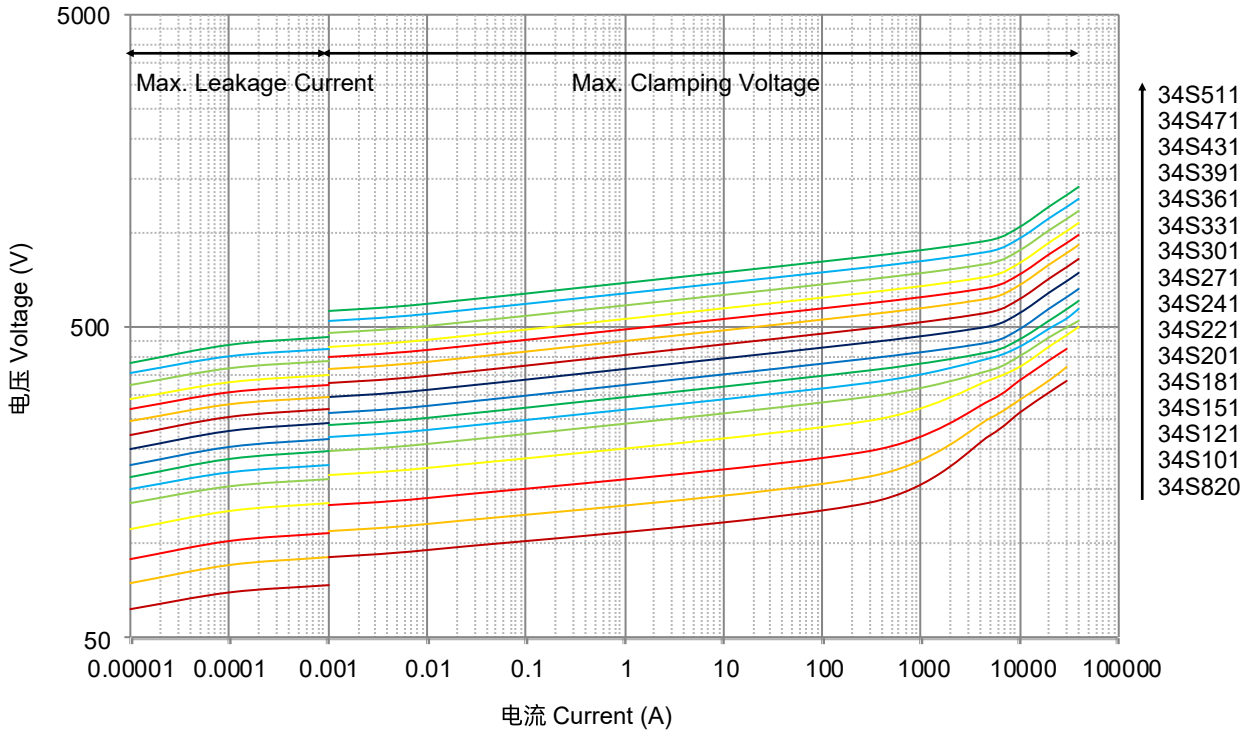
伏安特性曲线 Voltage-Current Characteristic Curves





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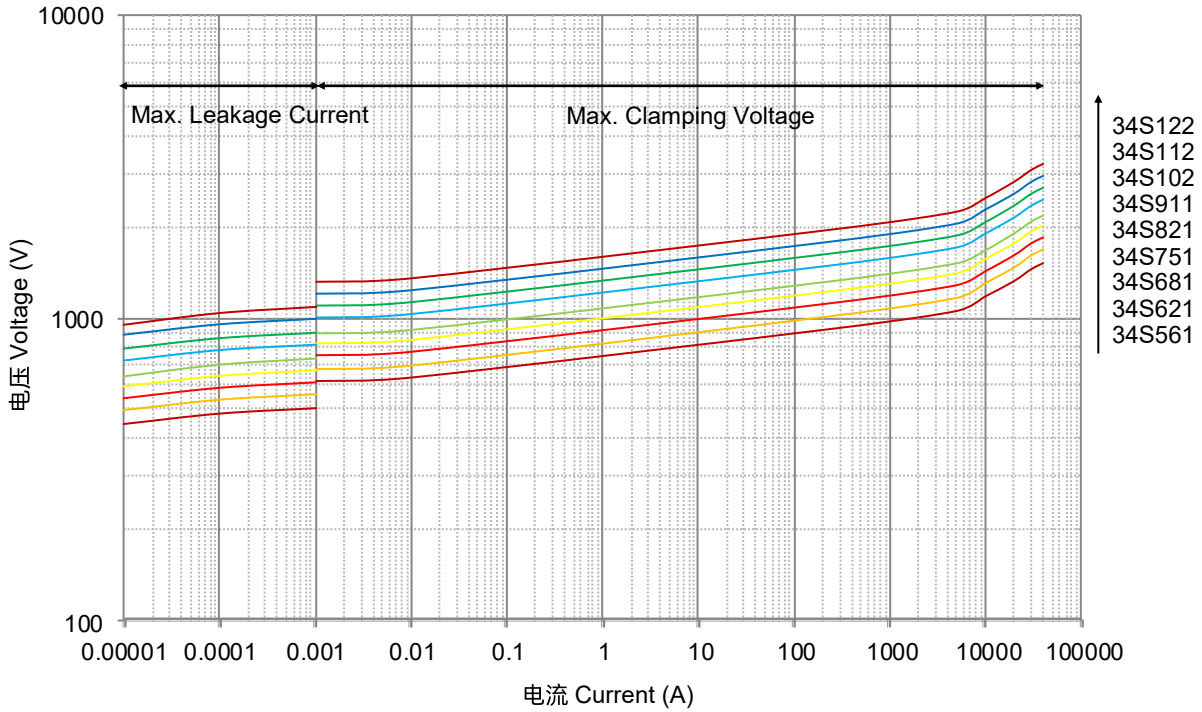
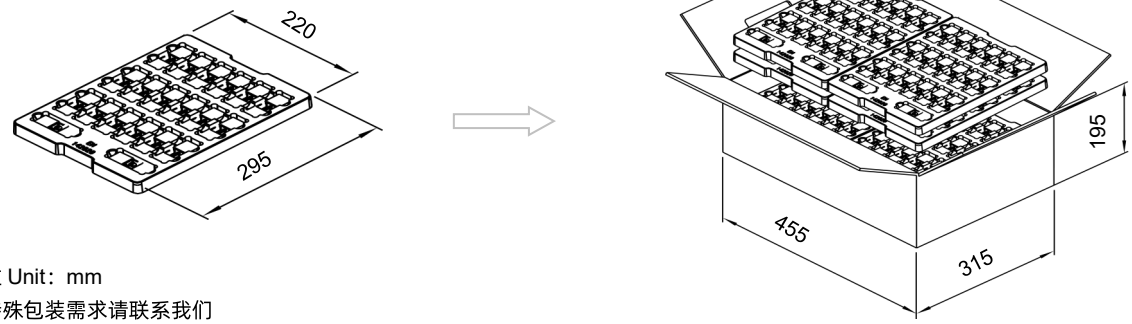


包装信息 Packaging Information



单位 Unit：mm
有特殊包装需求请联系我们
Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	470 - 121	20	400
	151 - 681	20	320
	751 - 122	20	240

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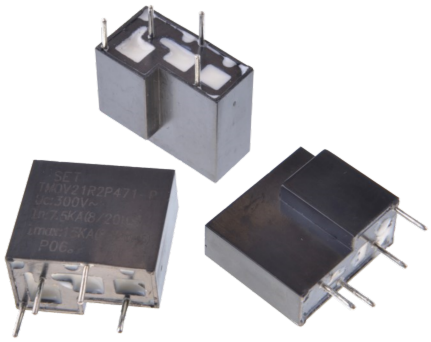
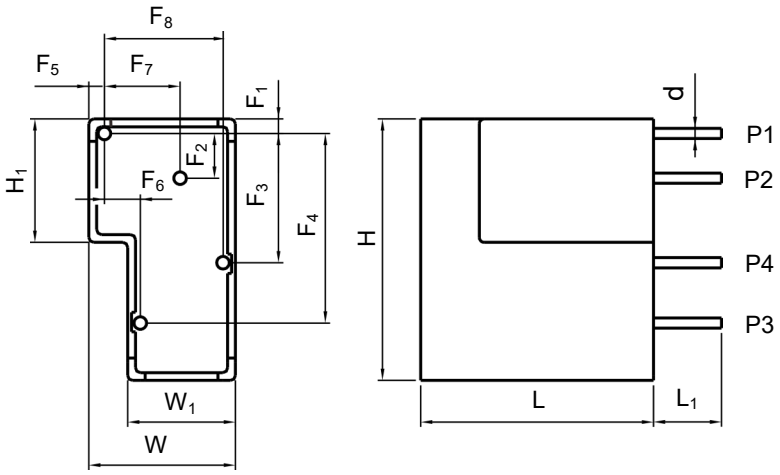
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV21R2P 系列 Series





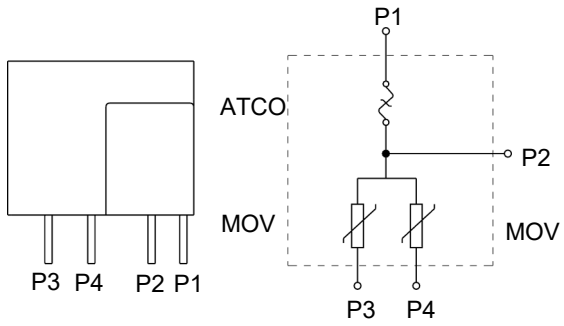
备注 Note: 单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	W (±1.0)	W_1 (±1.0)	H (±1.0)	H_1 (±0.5)	d (-0.05,+0.15)	F_1 (±0.5)
470 - 271	24.0	7.0	13.3	9.3	26.9	12.7	1.05	1.5
301 - 511	24.0	7.0	15.1	11.1	26.9	12.7	1.05	1.5
标称压敏电压 Nominal Varistor Voltage	F_2 (±0.5)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)	F_7 (±0.5)	F_8 (±0.5)	
470 - 271	4.6	13.3	19.5	1.6	4.5	6.7	9.6	
301 - 511	4.6	13.3	19.5	1.6	3.7	7.8	12.6	

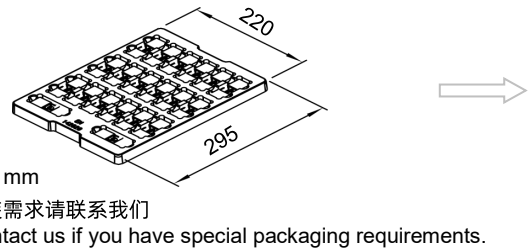
安规认证 Agency Approvals

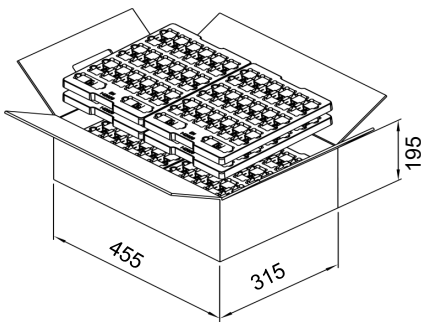
机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
CQC	GB 4943.1-2011 GB 8898-2011	CQC15001125795
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



包装信息 Packaging Information





单位 Unit：mm

有特殊包装需求请联系我们

Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	470 - 271	40	800
	301 - 511	40	640

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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV21R2P470	30	38	42	52	93	25	2.5×2	5×2	4.3	2.5	41×2	8880×2	VT 系列 Series U_r:690 VAC I_r:15 A / 16 A
TFMOV21R2P560	35	45	50	62	110	25	2.5×2	5×2	3.8	2.5	49×2	7800×2	
TFMOV21R2P680	40	56	61	75	135	25	2.5×2	5×2	3.8	2.5	59×2	7000×2	
TFMOV21R2P820	50	65	74	90	135	115	5×2	10×2	3.2	5	67×2	5880×2	
TFMOV21R2P101	60	85	90	110	165	115	5×2	10×2	3.2	5	84×2	4800×2	
TFMOV21R2P121	75	100	108	132	200	115	5×2	10×2	3.2	5	102×2	4000×2	
TFMOV21R2P151	95	125	135	165	250	115	5×2	10×2	3.2	5	127×2	3200×2	
TFMOV21R2P181	115	150	162	198	300	115	5×2	10×2	2.3	5	156×2	2650×2	
TFMOV21R2P201	130	170	185	225	340	115	7.5×2	15×2	2.3	7.5	170×2	2400×2	
TFMOV21R2P221	140	180	198	242	360	115	7.5×2	15×2	2.3	7.5	185×2	2160×2	
TFMOV21R2P241	150	200	216	264	395	115	7.5×2	15×2	2.3	7.5	200×2	2000×2	
TFMOV21R2P271	175	225	243	297	455	115	7.5×2	15×2	2.3	7.5	230×2	1800×2	
TFMOV21R2P301	190	250	270	330	500	115	7.5×2	15×2	2.3	7.5	250×2	1560×2	
TFMOV21R2P331	210	275	297	363	550	115	7.5×2	15×2	2.3	7.5	270×2	1440×2	
TFMOV21R2P361	230	300	324	396	595	115	7.5×2	15×2	2.3	7.5	305×2	1320×2	
TFMOV21R2P391	250	320	351	429	650	115	7.5×2	15×2	2.3	7.5	330×2	1200×2	
TFMOV21R2P431	275	350	387	473	710	115	7.5×2	15×2	2.3	7.5	365×2	1160×2	
TFMOV21R2P471	300	385	423	517	775	115	7.5×2	15×2	2.3	7.5	420×2	1020×2	
TFMOV21R2P511	320	415	459	561	845	115	7.5×2	15×2	2.3	7.5	430×2	935×2	

备注 Note：

a： $R_{cl} = \frac{V_C}{V_N}$，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.

The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

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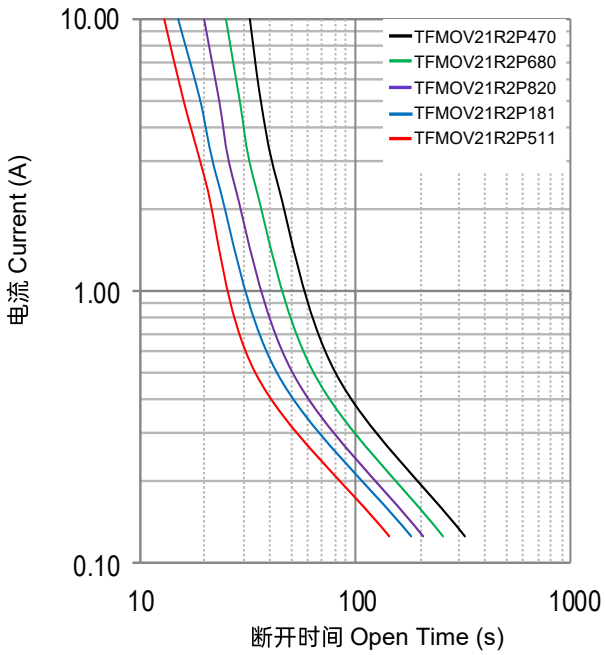
性能曲线 Performance Curve

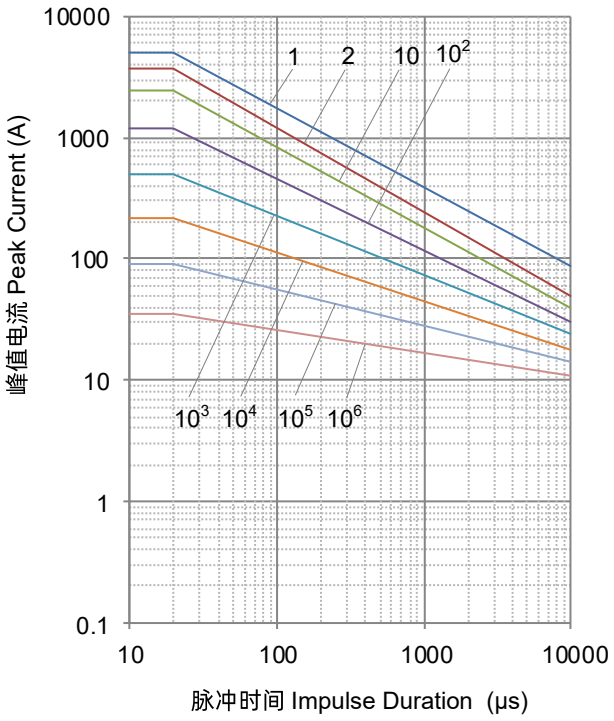
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



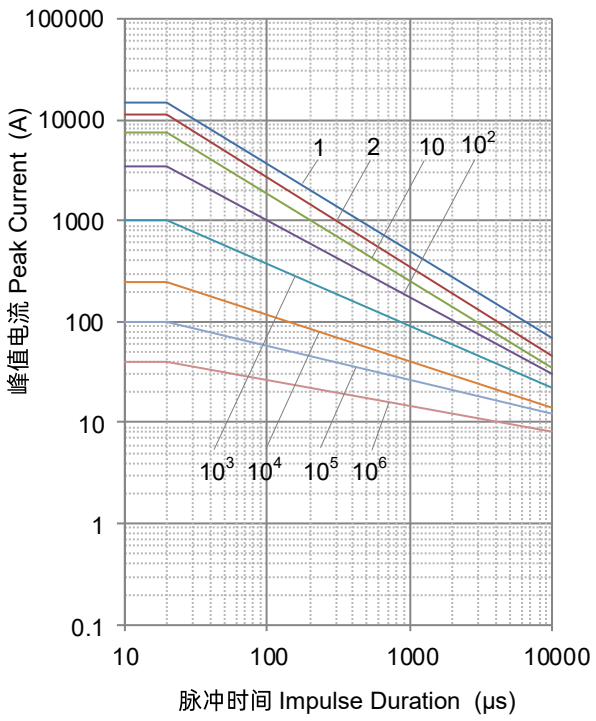
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV21R2P470 to TFMOV21R2P680



TFMOV21R2P820 to TFMOV21R2P511



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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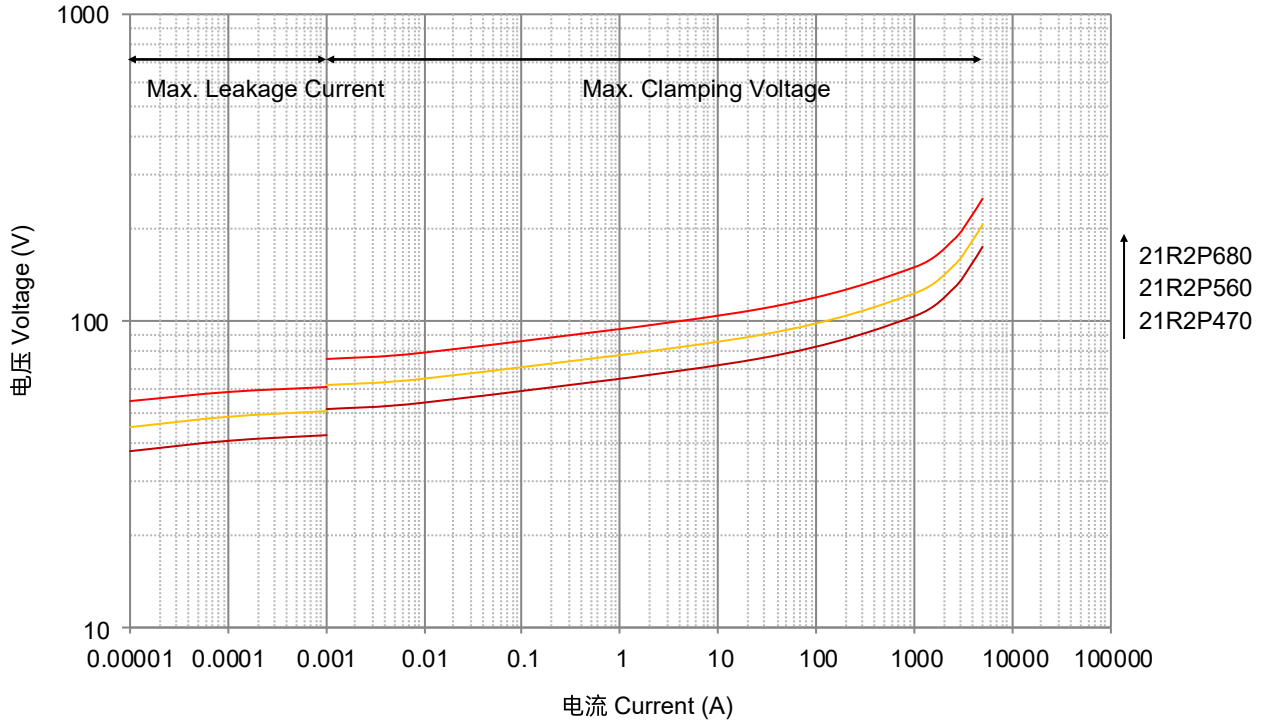
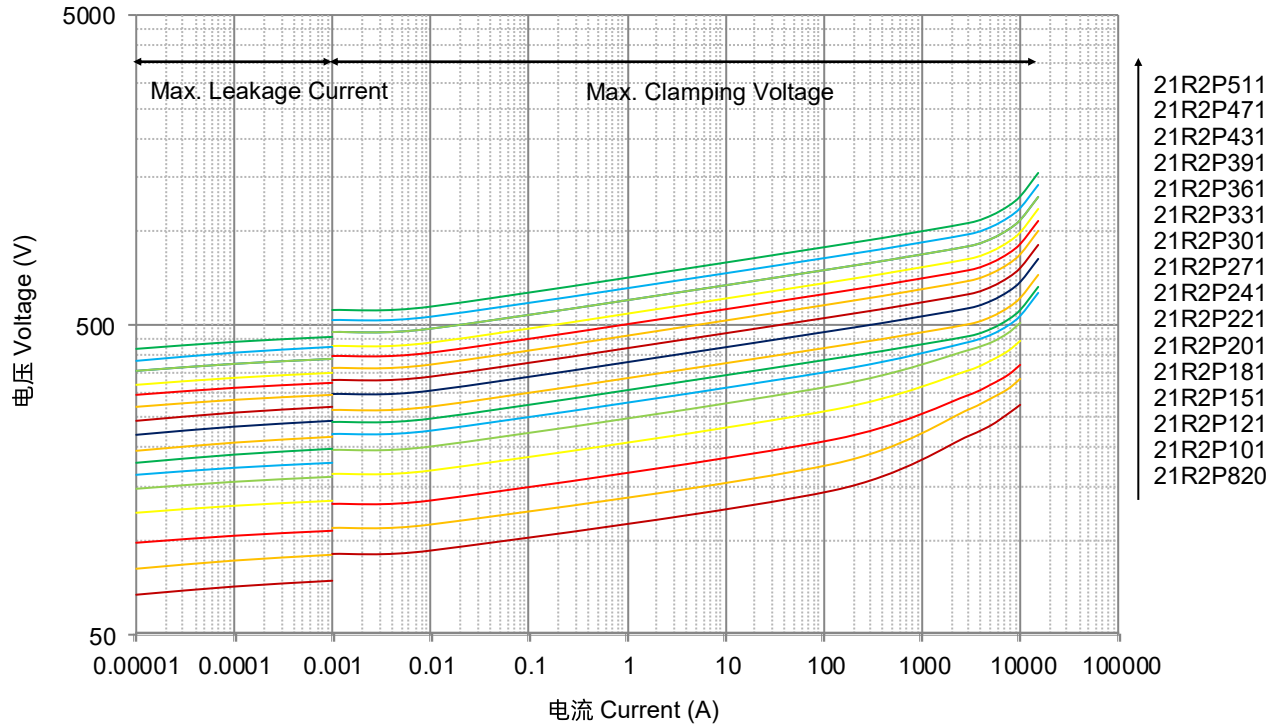
伏安特性曲线 Voltage-Current Characteristic Curves





TFMOV

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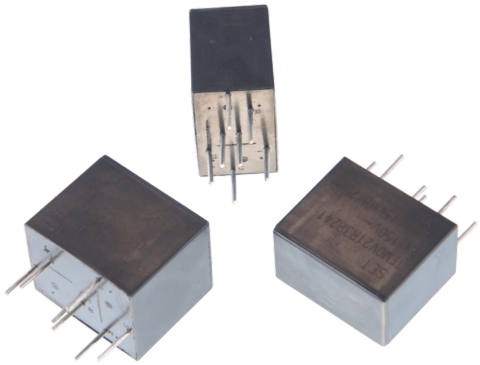
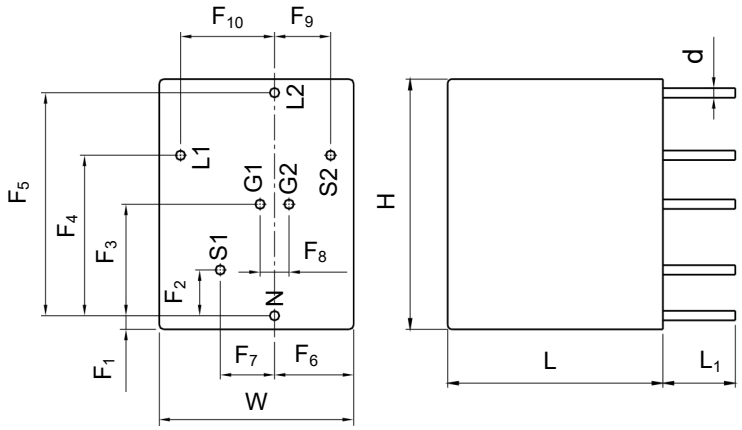
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV21R3P 系列 Series





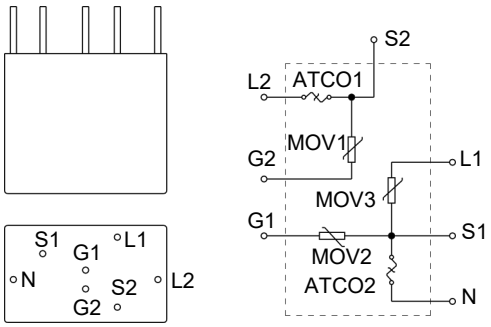
备注 Note: 单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±1.0)	W (±1.0)	H (±1.0)	d (-0.05,+0.15)	F_1 (±0.5)	F_2 (±0.5)	F_3 (±0.5)
270 - 241	23.8	8.0	16.5	27.6	1.05	1.5	5.0	12.3
271 - 511	23.8	8.0	21.5	27.6	1.05	1.5	5.0	12.3
标称压敏电压 Nominal Varistor Voltage	**F_4 (±0.5)**	**F_5 (±0.5)**	**F_6 (±0.5)**	**F_7 (±0.5)**	**F_8 (±0.5)**	**F_9 (±0.5)**	**F_{10} (±0.5)**	
270 - 241	17.7	24.6	7.3	4.4	3.2	4.7	7.2	
271 - 511	17.7	24.6	8.8	6.0	3.2	6.2	10.4	

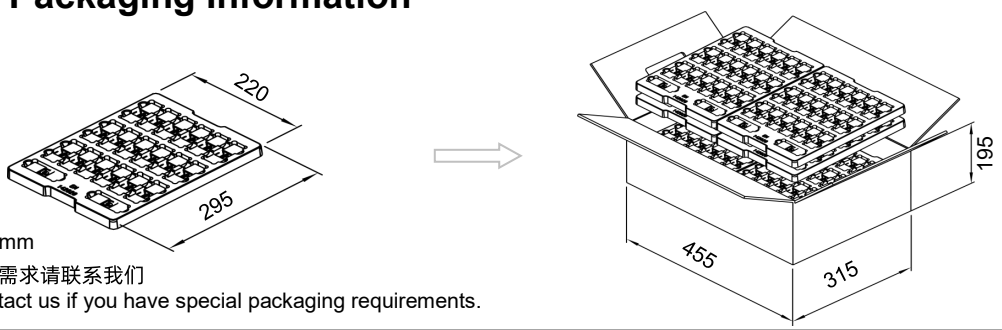
安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
CQC	GB 4943.1-2011 GB 8898-2011	CQC15001125794
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



包装信息 Packaging Information



单位 Unit：mm

有特殊包装需求请联系我们

Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	托 Tray	箱 Carton
尺寸 Dimensions (mm)	N/A	295 × 220	455 × 315 × 195
数量 Quantity (PCS)	470 - 511	25	300

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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	温度保险丝 Thermal Fuse
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	UL 60691
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	
TFMOV21R3P470	30	38	42	52	93	25	2.5×3	5×3	4.3	2.5	41×3	8880×3	VT 系列 Series U_r:690 VAC I_r:15 A/ 16 A
TFMOV21R3P560	35	45	50	62	110	25	2.5×3	5×3	3.8	2.5	49×3	7800×3	
TFMOV21R3P680	40	56	61	75	135	25	2.5×3	5×3	3.8	2.5	59×3	7000×3	
TFMOV21R3P820	50	65	74	90	135	115	5×3	10×3	3.2	5	67×3	5880×3	
TFMOV21R3P101	60	85	90	110	165	115	5×3	10×3	3.2	5	84×3	4800×3	
TFMOV21R3P121	75	100	108	132	200	115	5×3	10×3	3.2	5	102×3	4000×3	
TFMOV21R3P151	95	125	135	165	250	115	5×3	10×3	3.2	5	127×3	3200×3	
TFMOV21R3P181	115	150	162	198	300	115	5×3	10×3	2.3	5	156×3	2650×3	
TFMOV21R3P201*	**130**	**170**	**185**	**225**	**340**	**115**	**7.5×3**	**15×3**	**2.3**	**7.5**	**170×3**	**2400×3**	
TFMOV21R3P221	140	180	198	242	360	115	7.5×3	15×3	2.3	7.5	185×3	2160×3	
TFMOV21R3P241	150	200	216	264	395	115	7.5×3	15×3	2.3	7.5	200×3	2000×3	
TFMOV21R3P271	175	225	243	297	455	115	7.5×3	15×3	2.3	7.5	230×3	1800×3	
TFMOV21R3P301	190	250	270	330	500	115	7.5×3	15×3	2.3	7.5	250×3	1560×3	
TFMOV21R3P331	210	275	297	363	550	115	7.5×3	15×3	2.3	7.5	270×3	1440×3	
TFMOV21R3P361	230	300	324	396	595	115	7.5×3	15×3	2.3	7.5	305×3	1320×3	
TFMOV21R3P391	250	320	351	429	650	115	7.5×3	15×3	2.3	7.5	330×3	1200×3	
TFMOV21R3P431	275	350	387	473	710	115	7.5×3	15×3	2.3	7.5	365×3	1160×3	
TFMOV21R3P471	300	385	423	517	775	115	7.5×3	15×3	2.3	7.5	420×3	1020×3	
TFMOV21R3P511	320	415	459	561	845	115	7.5×3	15×3	2.3	7.5	430×3	935×3	

备注 Note：

a：$R_{cl} = \frac{V_C}{V_N}$ ，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4 条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.

The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

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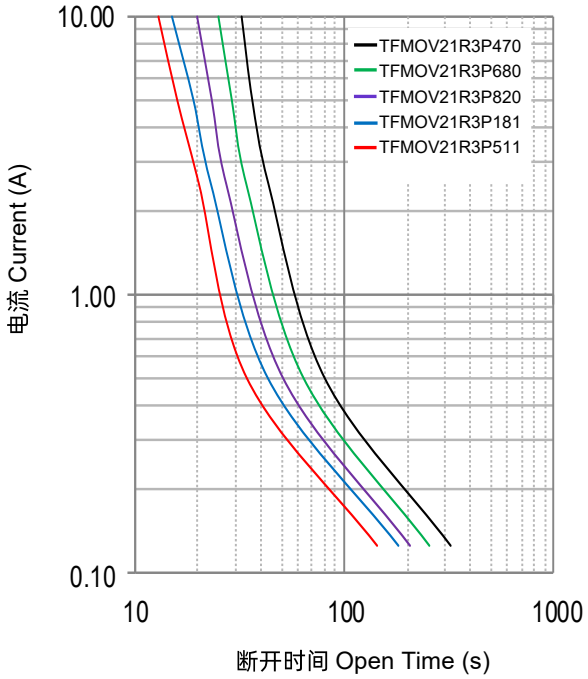
性能曲线 Performance Curve

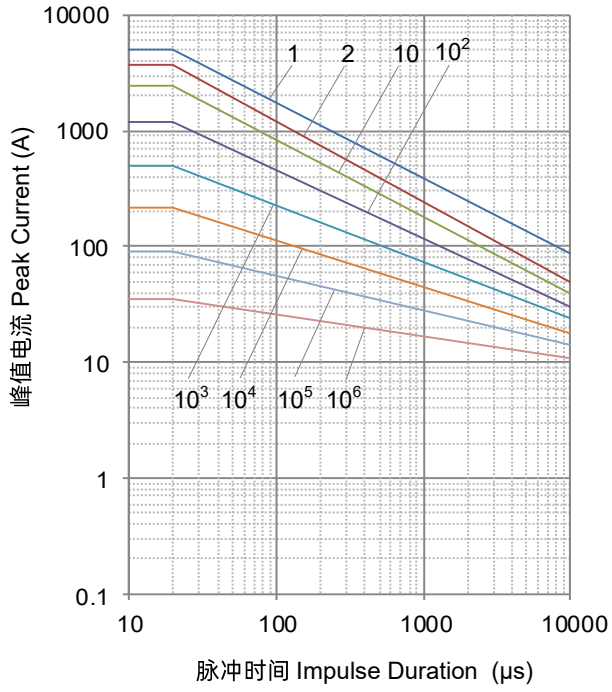
受限电流测试曲线 (UL 1449 4th 44.4章) Limited Current Test Curve (UL 1449 4th clause 44.4)



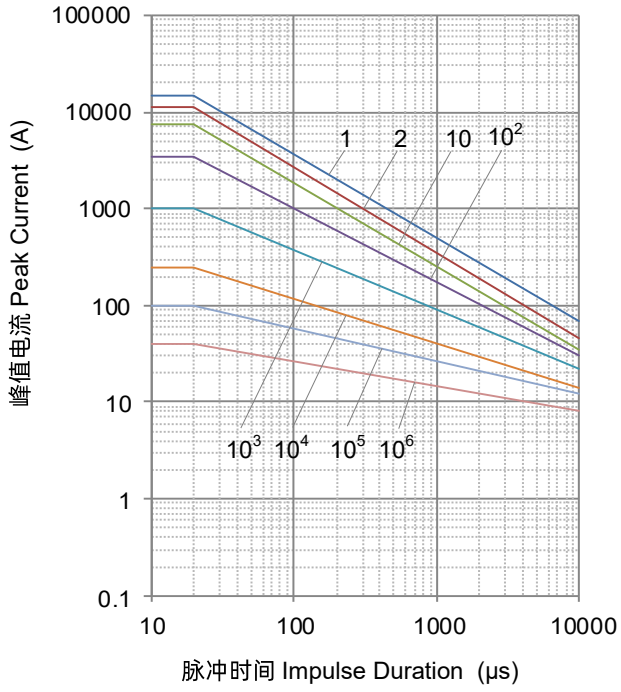
备注：受限电流测试曲线仅供参考 Note: The limited current test curve is for reference only.

冲击电流降额曲线 Max. Peak Current Derating Curve

TFMOV21R3P470 to TFMOV21R3P680



TFMOV21R3P820 to TFMOV21R3P511



备注 Note：1, 2, 10, 10^2, 10^3, 10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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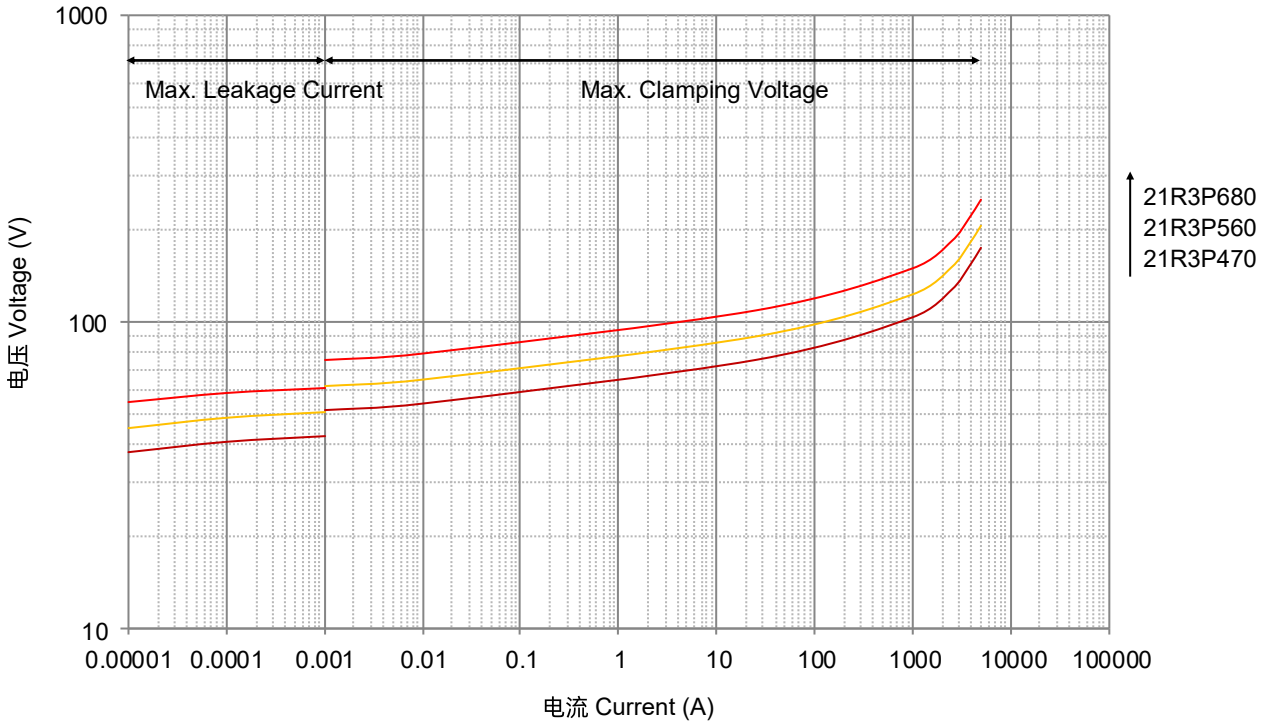
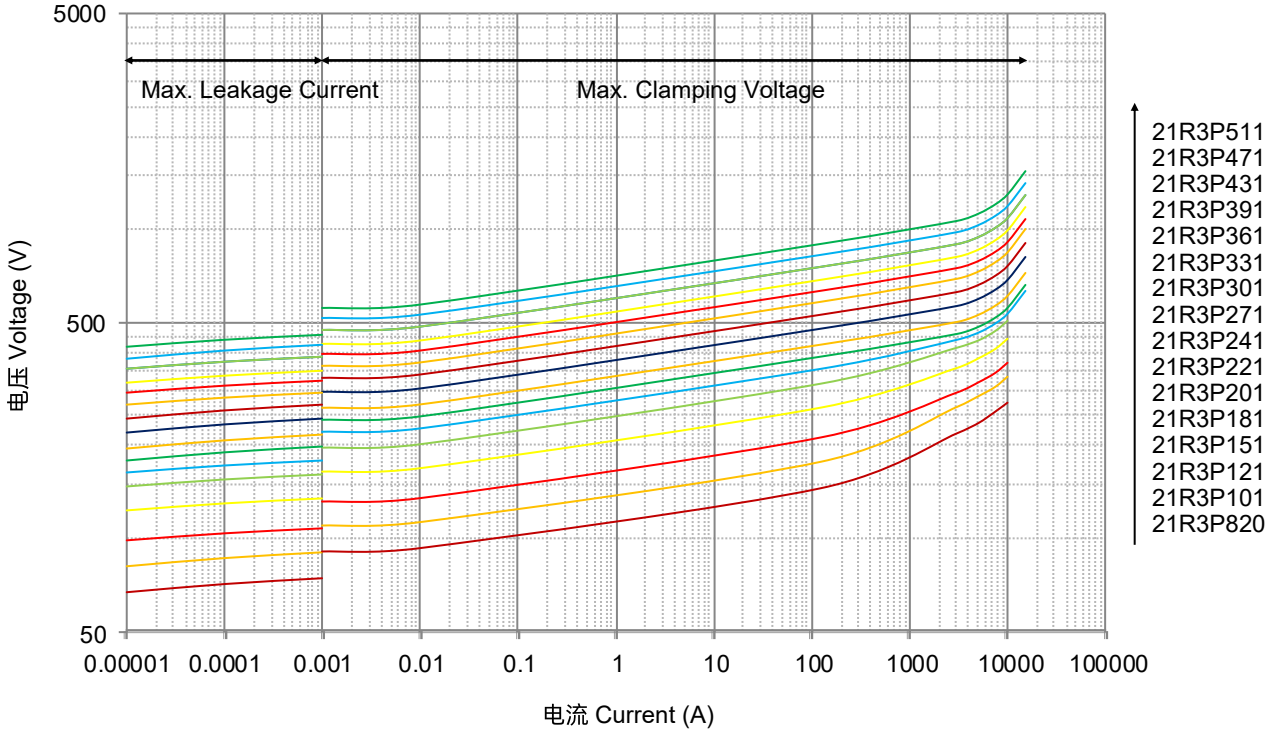
伏安特性曲线 Voltage-Current Characteristic Curves





TFMOV

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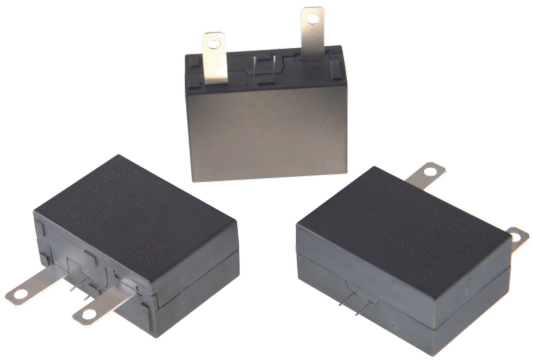
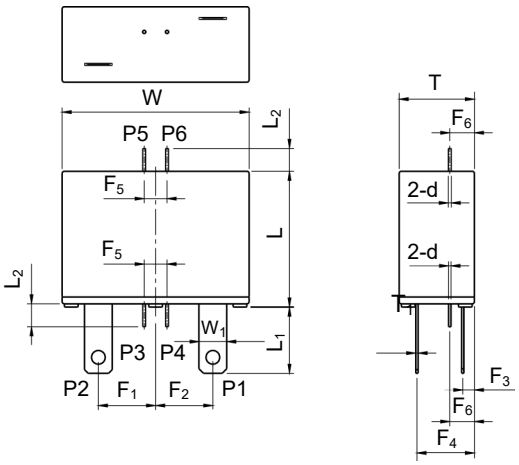
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV20K 系列 Series





备注 Note:
引脚 P3 & P4 or P5 & P6 可选 Pin P3 & P4 or P5 & P6 is Optional
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±0.5)	L_2 (±1.0)	W (±1.0)	W_1 (±0.2)	T (±1.0)	T_1 (±0.2)
820-201	29.7	14.5	5.0	41.0	6.0	12.4	0.5
221-471	29.7	14.5	5.0	41.0	6.0	14.0	0.5
511-621	29.7	14.5	5.0	41.0	6.0	16.5	0.5
681-821	29.7	14.5	5.0	41.0	6.0	18.5	0.5
911-122	29.7	14.5	5.0	41.0	6.0	22.4	0.5
标称压敏电压 Nominal Varistor Voltage	d (±0.05)	F_1 (±0.3)	F_2 (±0.3)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)
820-201	0.50	12.5	12.5	2.3	10.2	5.0	5.5
221-471	0.50	12.5	12.5	2.3	11.0	5.0	5.5
511-621	0.50	12.5	12.5	2.3	12.2	5.0	5.5
681-821	0.50	12.5	12.5	2.3	13.5	5.0	5.5
911-122	0.50	12.5	12.5	2.3	20.0	5.0	5.5

型号 Model	L (±1.0)	L_1 (±0.5)	L_2 (±1.0)	W (±1.0)	W_1 (±0.2)	T (±1.0)	T_1 (±0.2)
TFMOV20K150x	29.7	14.5	5.0	41.0	6.0	14.0	0.5
TFMOV20K300x	29.7	14.5	5.0	41.0	6.0	14.0	0.5
TFMOV20K350x	29.7	14.5	5.0	41.0	6.0	16.5	0.5
TFMOV20K460x	29.7	14.5	5.0	41.0	6.0	18.5	0.5
TFMOV20K550x	29.7	14.5	5.0	41.0	6.0	18.5	0.5
型号 Model	d (±0.05)	F_1 (±0.3)	F_2 (±0.3)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)
TFMOV20K150x	0.50	12.5	12.5	2.3	11.0	5.0	5.5
TFMOV20K300x	0.50	12.5	12.5	2.3	11.0	5.0	5.5
TFMOV20K350x	0.50	12.5	12.5	2.3	12.2	5.0	5.5
TFMOV20K460x	0.50	12.5	12.5	2.3	13.5	5.0	5.5
TFMOV20K550x	0.50	12.5	12.5	2.3	13.5	5.0	5.5

TFMOV

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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳） Max. Energy (Joule)	静态电容量（参考） Typical Capacitance (Reference)	UL SPD 类别 Type
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	UL 1449
TFMOV20K820x*	50	65	74	90	135	150	15	30	3.2	15	196	17600	Type 4CA
TFMOV20K101x*	60	85	90	110	165	150	15	30	3.2	15	244	14400	Type 4CA
TFMOV20K121x*	75	100	108	132	200	150	15	30	3.2	15	292	12000	Type 4CA
TFMOV20K151x*	95	125	135	165	250	150	15	30	3.2	15	370	8800	Type 4CA
TFMOV20K181x*	115	150	162	198	300	150	15	30	2.3	15	436	7300	Type 4CA
TFMOV20K201x*	130	170	185	225	340	150	20	50	2.3	20	504	6600	Type 4CA
TFMOV20K221x*	140	180	198	242	360	150	20	50	2.3	20	560	6000	Type 4CA
TFMOV20K241x*	150	200	216	264	395	150	20	50	2.3	20	604	5600	Type 4CA
TFMOV20K271x*	175	225	243	297	455	150	20	50	2.3	20	680	4900	Type 4CA
TFMOV20K301x*	190	250	270	330	500	150	20	50	2.3	20	750	4400	Type 4CA
TFMOV20K331x*	210	275	297	363	550	150	20	50	2.3	20	820	4100	Type 4CA
TFMOV20K361x*	230	300	324	396	595	150	20	50	2.3	20	930	3700	Type 4CA
TFMOV20K391x*	250	320	351	429	650	150	20	50	2.3	20	1040	3400	Type 4CA
TFMOV20K431x*	275	350	387	473	710	150	20	50	2.3	20	1150	3200	Type 4CA
TFMOV20K471x*	300	385	423	517	775	150	20	50	2.3	20	1260	2900	Type 4CA
TFMOV20K511x*	320	415	459	561	845	150	20	50	2.3	20	1330	2600	Type 4CA
TFMOV20K561x*	350	460	504	616	925	150	20	50	2.3	20	1440	2400	Type 4CA
TFMOV20K621x*	385	505	558	682	1025	150	20	50	2.3	20	1580	2200	Type 4CA
TFMOV20K681x*	420	560	612	748	1120	150	20	50	2.3	20	1580	2000	Type 4CA
TFMOV20K751x*	460	615	675	825	1240	150	20	50	2.3	20	1650	1800	Type 4CA
TFMOV20K821x*	510	670	738	902	1355	150	20	50	2.3	20	1680	1600	Type 4CA
TFMOV20K911x*	550	745	819	1001	1500	150	20	50	2.3	20	1800	1400	Type 4CA
TFMOV20K102x*	625	825	900	1100	1650	150	20	50	2.3	20	1900	1320	Type 4CA
TFMOV20K112x*	680	895	990	1210	1815	150	20	50	2.3	20	2080	1230	Type 4CA
TFMOV20K122x*	750	1000	1080	1320	1980	150	20	50	2.3	20	2340	1100	Type 4CA

备注 Note：

a：$R_{cl} = \frac{V_C}{V_N}$，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (U_p) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值(kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.
The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

***:遥信引脚方向可选，缺省是表示有一个方向朝下的引脚P3&P4，有-IT时表示有一个方向朝上的引脚P5&P6。**

*: Optional direction of the Remote Signal, Default: with one downward Remote Signal P3 & P4, -IT: with one upward Remote Signal P5 & P6.

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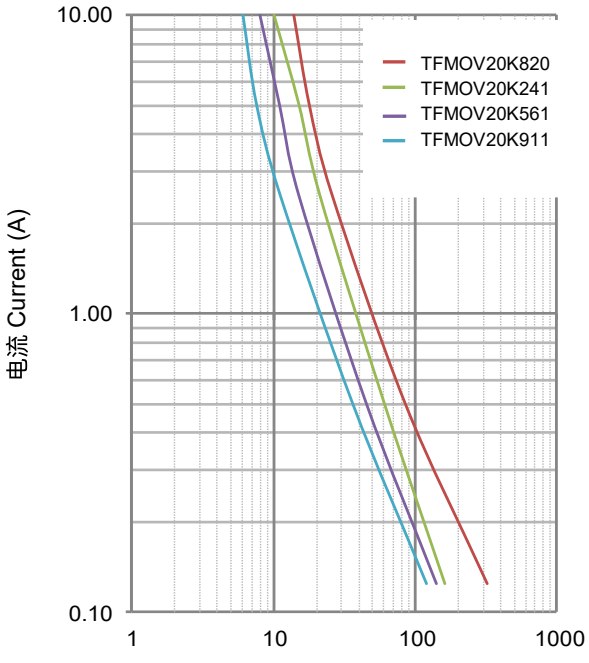
型号 Model	标称系统电压 Nominal System Voltage	最大连续工作电压 Max. Continuous Operating Voltage	标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	电压保护水平 Voltage Protection Rating	额定短路电流 SCCR	UL SPD 类别 Type
	U_n	U_C	I_n	I_{max}	VPR (@6 kV/3 kA)		
	(VAC)	(VAC)	(kA)		(V)	(kA)	UL 1449
TFMOV20K150x	120	150	20	50	600	200	Type 1CA
TFMOV20K300x	220	300	20	50	900	200	Type 1CA
TFMOV20K350x	277	350	20	50	1200	200	Type 1CA
TFMOV20K460x	347	460	20	50	1500	200	Type 1CA
TFMOV20K550x	480	550	20	50	1500	200	Type 1CA

性能曲线 Performance Curve

受限电流测试曲线 (UL 1449 4th 44.4章)
Limited Current Test Curve (UL 1449 4th clause 44.4)

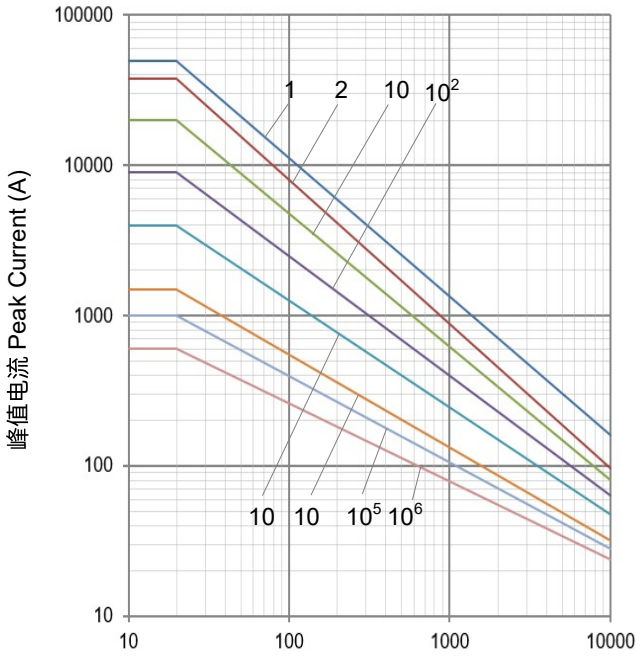


备注：受限电流测试曲线仅供参考

Note: The limited current test curve is for reference only.

冲击电流降额曲线
Max. Peak Current Derating Curve

TFMOV20K201x to TFMOV20K122x



备注 Note:

1, 2, 10, 10^2, 10^3,10^4, 10^5, 10^6 代表重复次数 Stand for number of repetitions.

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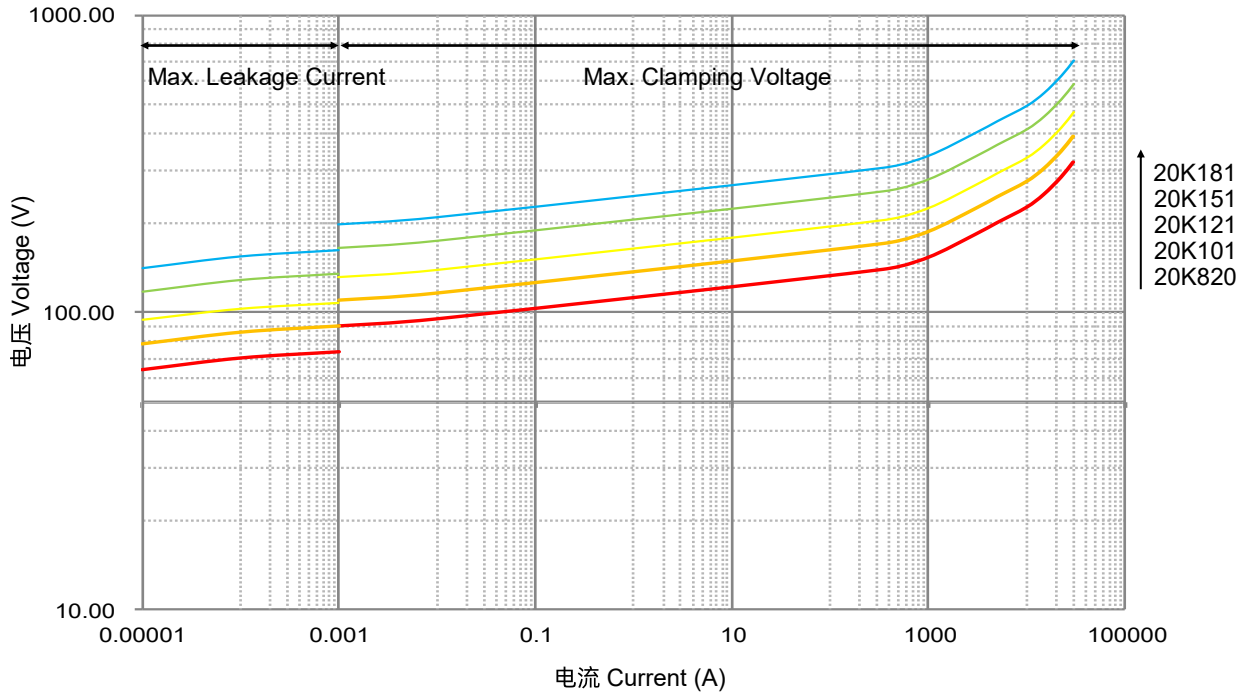
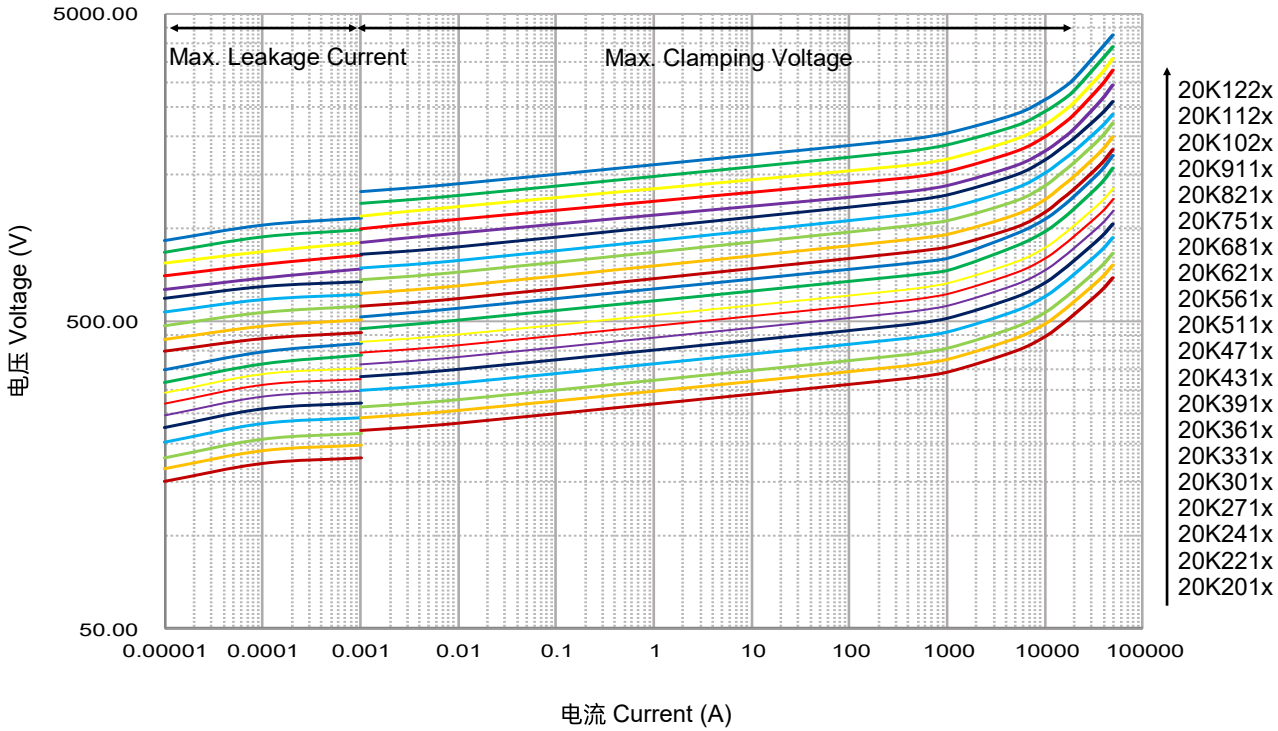
伏安特性曲线 Voltage-Current Characteristic Curves





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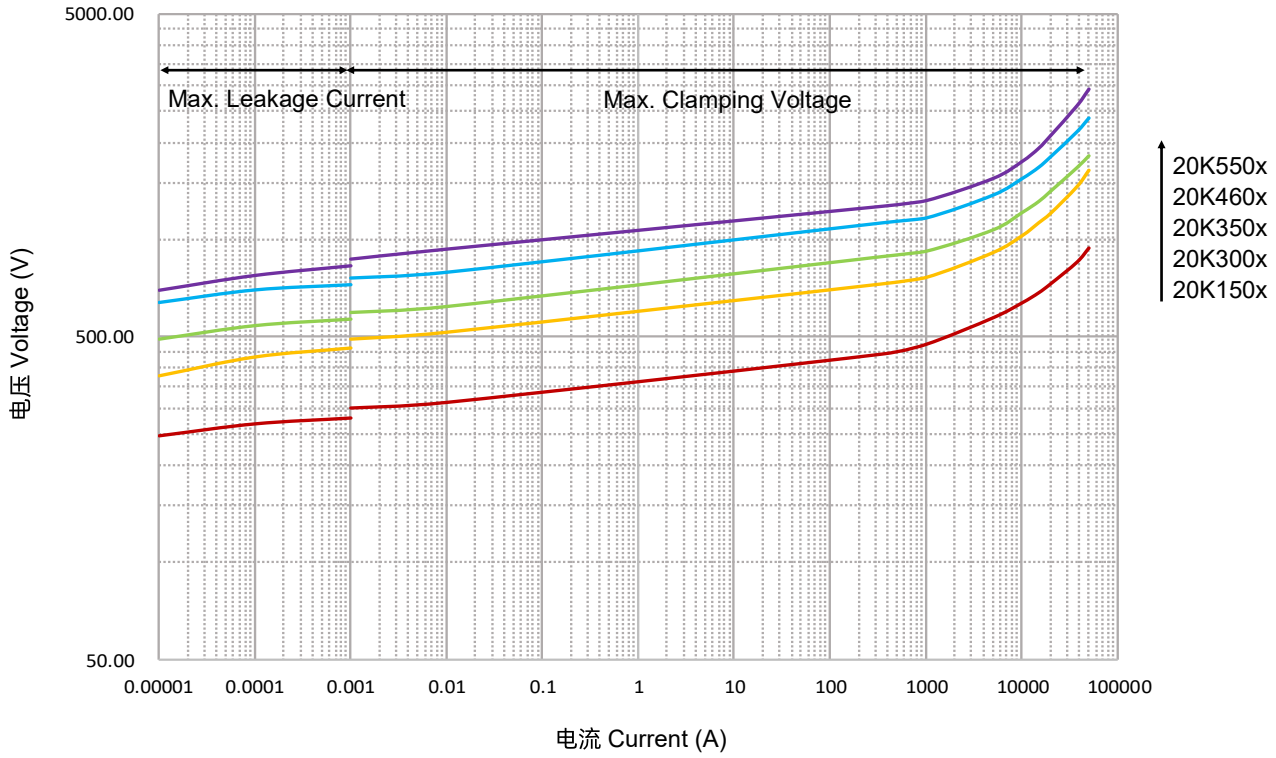
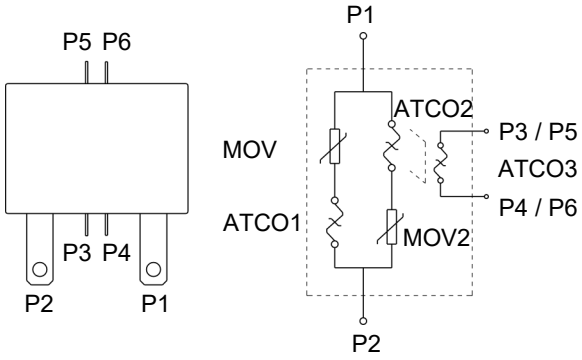


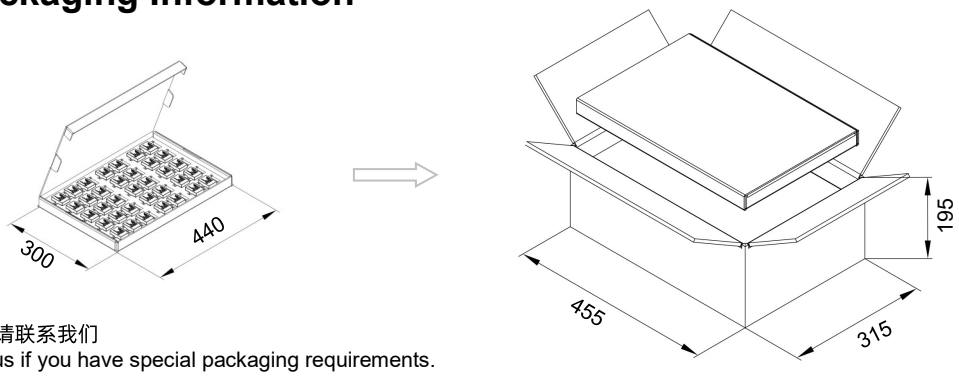
安规认证 Agency Approvals

机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



包装信息Packaging Information



单位 Unit：mm

有特殊包装需求请联系我们

Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	盒 Box	箱 Carton
尺寸 Dimensions (mm)	N/A	440 × 300	455 × 315 × 195
数量 Quantity (PCS)	820 - 201	60	240
	221 - 821	60	180
	911 - 122	30	120

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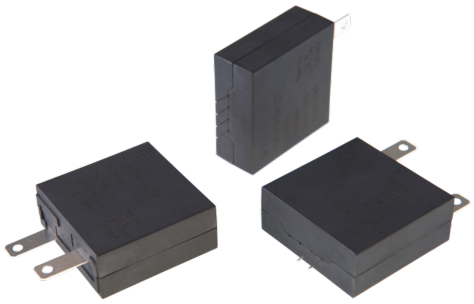
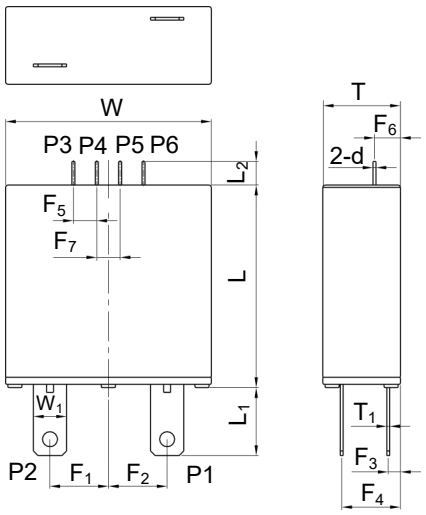
热保护型压敏电阻 TFMOV
Thermal Fuse & MOV

TFMOV40K 系列 Series





备注 Note:
引脚 Pin P3 & P4 / P5 & P6 is optional 可选.
单位 Unit: mm

标称压敏电压 Nominal Varistor Voltage	L (±1.0)	L_1 (±0.5)	L_2 (±1.0)	W (±1.0)	W_1 (±0.2)	T (±1.0)	T_1 (±0.2)
820 - 201	42.7	14.5	5.0	44.0	7.1	12.6	0.6
221 - 471	42.7	14.5	5.0	44.0	7.1	14.6	0.6
511 - 621	42.7	14.5	5.0	44.0	7.1	16.5	0.6
681 - 821	42.7	14.5	5.0	44.0	7.1	18.5	0.6
911 - 122	42.7	14.5	5.0	44.0	7.1	23.0	0.6
标称压敏电压 Nominal Varistor Voltage	d (±0.05)	F_1 (±0.3)	F_2 (±0.3)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)
820 - 201	0.50	12.5	12.5	2.3	10.2	5.0	5.5
221 - 471	0.50	12.5	12.5	2.3	11.0	5.0	5.5
511 - 621	0.50	12.5	12.5	2.3	12.2	5.0	5.5
681 - 821	0.50	12.5	12.5	2.3	13.5	5.0	5.5
911 - 122	0.50	12.5	12.5	2.3	20.5	5.0	5.5

型号 Model	L (±1.0)	L_1 (±0.5)	L_2 (±1.0)	W (±1.0)	W_1 (±0.2)	T (±1.0)	T_1 (±0.2)
TFMOV40K150x	42.7	14.5	5.0	44.0	7.1	14.6	0.6
TFMOV40K300x	42.7	14.5	5.0	44.0	7.1	14.6	0.6
TFMOV40K350x	42.7	14.5	5.0	44.0	7.1	16.5	0.6
TFMOV40K460x	42.7	14.5	5.0	44.0	7.1	18.5	0.6
TFMOV40K550x	42.7	14.5	5.0	44.0	7.1	18.5	0.6
型号 Model	d (±0.05)	F_1 (±0.3)	F_2 (±0.3)	F_3 (±0.5)	F_4 (±0.5)	F_5 (±0.5)	F_6 (±0.5)
TFMOV40K150x	0.50	12.5	12.5	2.3	11.0	5.0	5.5
TFMOV40K300x	0.50	12.5	12.5	2.3	11.0	5.0	5.5
TFMOV40K350x	0.50	12.5	12.5	2.3	12.2	5.0	5.5
TFMOV40K460x	0.50	12.5	12.5	2.3	13.5	5.0	5.5
TFMOV40K550x	0.50	12.5	12.5	2.3	13.5	5.0	5.5

TFMOV

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技术参数 Specifications

型号 Model	最大连续工作电压 Max. Continuous Operating Voltage		压敏电压 Varistor Voltage @1 mA DC		钳位电压 Clamping Voltage (Max.)		标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	限压比 Voltage Clamping Ratio[a]		最大能量（焦耳）Max. Energy (Joule)	静态电容量（参考）Typical Capacitance (Reference)	UL SPD 类别 Type
	U_c		Min.	Max.	V_C	I_P	I_n	I_{max}	R_{cl}	I_n	10/1000 μs	@1 kHz	
	(VAC)	(VDC)	(V)		(V)	(A)	(kA)			(kA)	(J)	(pF)	UL 1449
TFMOV40K820x*	50	65	74	90	135	150	30	60	3.2	30	312	37900	Type 4CA
TFMOV40K101x*	60	85	90	110	165	150	30	60	3.2	30	390	30000	Type 4CA
TFMOV40K121x*	75	100	108	132	200	150	30	60	3.2	30	470	24400	Type 4CA
TFMOV40K151x*	95	125	135	165	250	150	30	60	3.2	30	592	20000	Type 4CA
TFMOV40K181x*	115	150	162	198	300	150	30	60	2.3	30	700	16500	Type 4CA
TFMOV40K201x*	130	170	185	225	340	150	40	100	2.3	40	800	13500	Type 4CA
TFMOV40K221x*	140	180	198	242	360	150	40	100	2.3	40	900	12800	Type 4CA
TFMOV40K241x*	150	200	216	264	395	150	40	100	2.3	40	960	11300	Type 4CA
TFMOV40K271x*	175	225	243	297	455	150	40	100	2.3	40	1080	10200	Type 4CA
TFMOV40K301x*	190	250	270	330	500	150	40	100	2.3	40	1200	9020	Type 4CA
TFMOV40K331x*	210	275	297	363	550	150	40	100	2.3	40	1312	8300	Type 4CA
TFMOV40K361x*	230	300	324	396	595	150	40	100	2.3	40	1490	7500	Type 4CA
TFMOV40K391x*	250	320	351	429	650	150	40	100	2.3	40	1660	7000	Type 4CA
TFMOV40K431x*	275	350	387	473	710	150	40	100	2.3	40	1840	5900	Type 4CA
TFMOV40K471x*	300	385	423	517	775	150	40	100	2.3	40	2000	5760	Type 4CA
TFMOV40K511x*	320	415	459	561	845	150	40	100	2.3	40	2120	5300	Type 4CA
TFMOV40K561x*	350	460	504	616	925	150	40	100	2.3	40	2300	4900	Type 4CA
TFMOV40K621x*	385	505	558	682	1025	150	40	100	2.3	40	2500	4400	Type 4CA
TFMOV40K681x*	420	560	612	748	1120	150	40	80	2.3	40	2500	4000	Type 4CA
TFMOV40K751x*	460	615	675	825	1240	150	40	80	2.3	40	2560	3640	Type 4CA
TFMOV40K821x*	510	670	738	902	1355	150	40	80	2.3	40	2600	3600	Type 4CA
TFMOV40K911x*	550	745	819	1001	1500	150	40	80	2.3	40	2950	3000	Type 4CA
TFMOV40K102x*	625	825	900	1100	1650	150	40	80	2.3	40	3100	2700	Type 4CA
TFMOV40K112x*	680	895	990	1210	1815	150	40	80	2.3	40	3500	2460	Type 4CA
TFMOV40K122x*	750	1000	1080	1320	1980	150	40	80	2.3	40	4000	2270	Type 4CA

备注 Note：

a：$R_{cl} = \frac{V_C}{V_N}$，$U_p \geq V_C$，V_C：钳位电压 (@ I_n)，V_N：压敏电压，U_p：电压保护水平；电压保护水平 (Up) 根据计算结果按 IEC 61643-11:2011 6.4条款优选值选定；电压保护水平优选值 (kV)：0.08，0.09，0.10，0.12，0.15，0.22，0.33，0.4，0.5，0.6，0.7，0.8，0.9，1.0，1.2，1.5，1.8，2.0，2.5，3.0，4.0，5.0，6.0，8.0，10。

a: $R_{cl} = \frac{V_C}{V_N}$, $U_p \geq V_C$, V_C: Clamping Voltage (@ I_n), V_N: Varistor Voltage, U_p: Voltage Protection Level.
The Value of Voltage Protection Level (U_p) is determined according to IEC 61643-11:2011 clause 6.4.Preferred values of voltage protection level (kV): 0.08, 0.09, 0.10, 0.12, 0.15, 0.22, 0.33, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.

*：遥信可选，-IT表示有一个遥信信号P3 & P4, -2IT表示有2个遥信信号P3 & P4 和 P5 & P6。

*: Optional Remote Signal Function, -IT with One Remote Signal P3 & P4, -2IT with Two Remote Signal P3 & P4 and P5 & P6.

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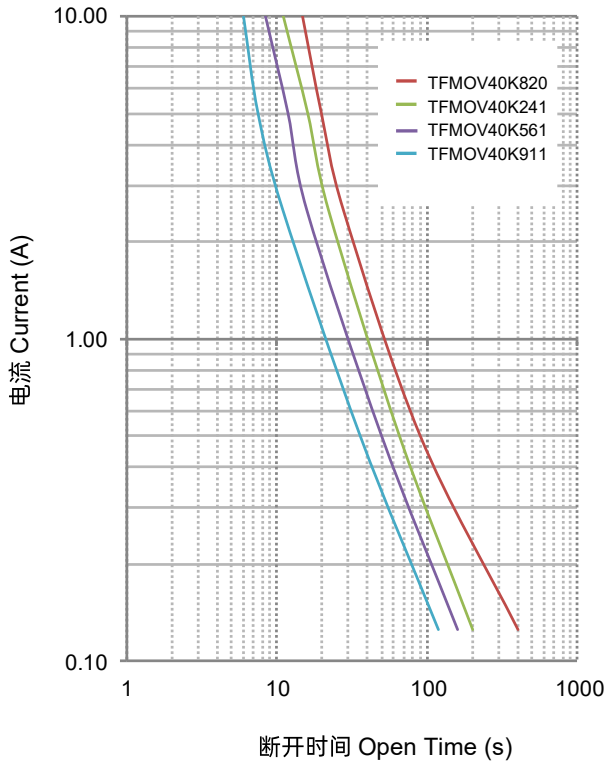
型号 Model	标称系统电压 Nominal System Voltage	最大连续工作电压 Max. Continuous Operating Voltage	标称放电电流 Nominal Discharge Current (8/20 μs)	最大放电电流 Max. Discharge Current (8/20 μs)	电压保护水平 Voltage Protection Rating	额定短路电流 SCCR	UL SPD 类别 Type
	U_n	U_C	I_n	I_{max}	VPR (@6 kV/3 kA)		
	(VAC)	(VAC)	(kA)		(V)	(kA)	UL 1449
TFMOV40K150x	120	150	40	100	600	200	Type 1CA
TFMOV40K300x	220	300	40	100	900	200	Type 1CA
TFMOV40K350x	277	350	40	100	1200	200	Type 1CA
TFMOV40K460x	347	460	40	80	1500	150	Type 1CA
TFMOV40K550x	480	550	40	80	1500	150	Type 1CA

性能曲线 Performance Curve

受限电流测试曲线 (UL 1449 4th 44.4章)
Limited Current Test Curve (UL 1449 4th clause 44.4)

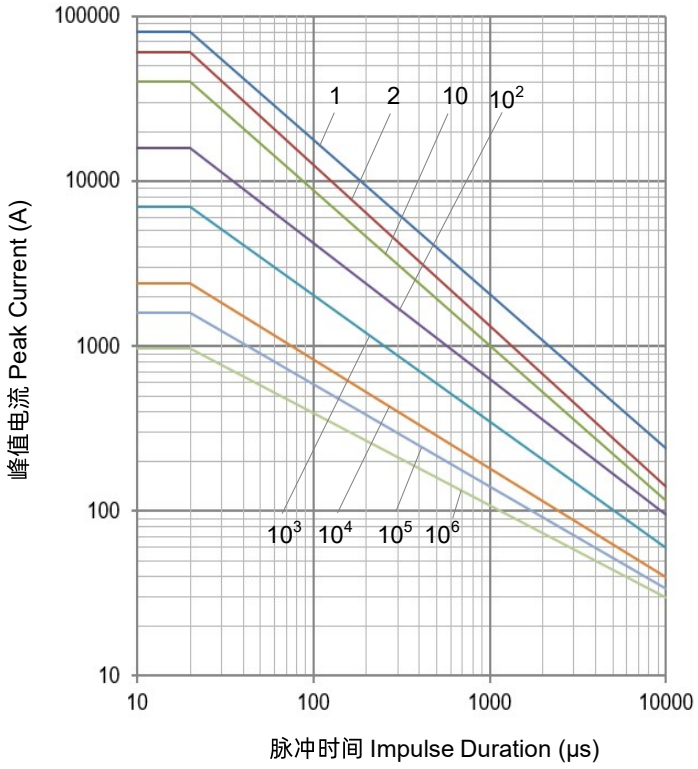


备注：受限电流测试曲线仅供参考

Note: The limited current test curve is for reference only.

冲击电流降额曲线
Max. Peak Current Derating Curve

TFMOV40K201x to TFMOV40K122x



备注 Note:

1, 2, 10, 10^2, 10^3,10^4, 10^5, 10^6 代表重复次数

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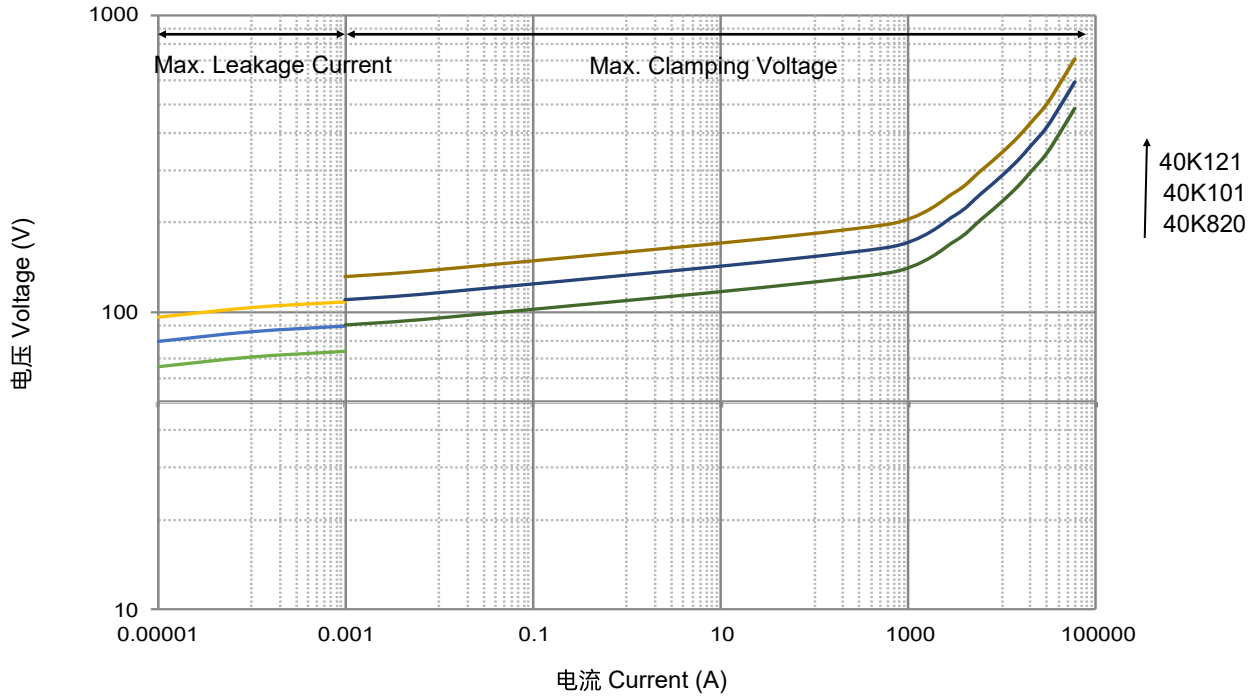
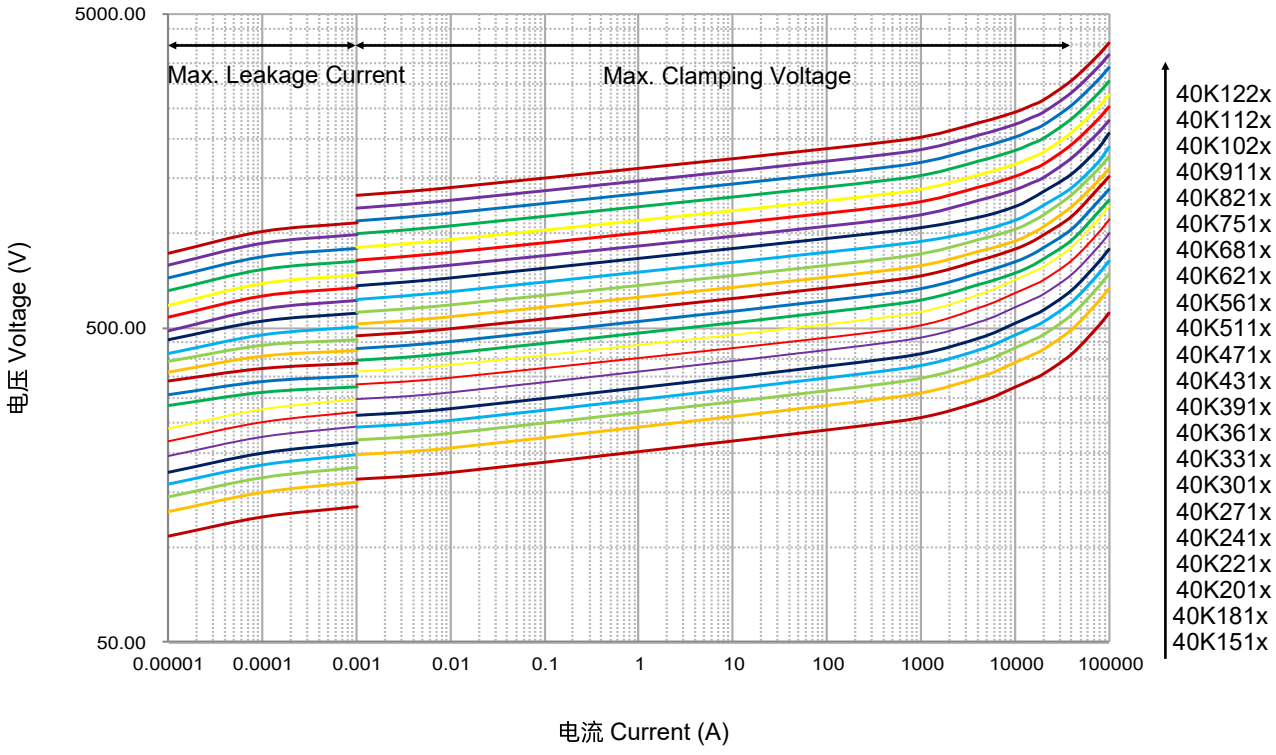
伏安特性曲线 Voltage-Current Characteristic Curves





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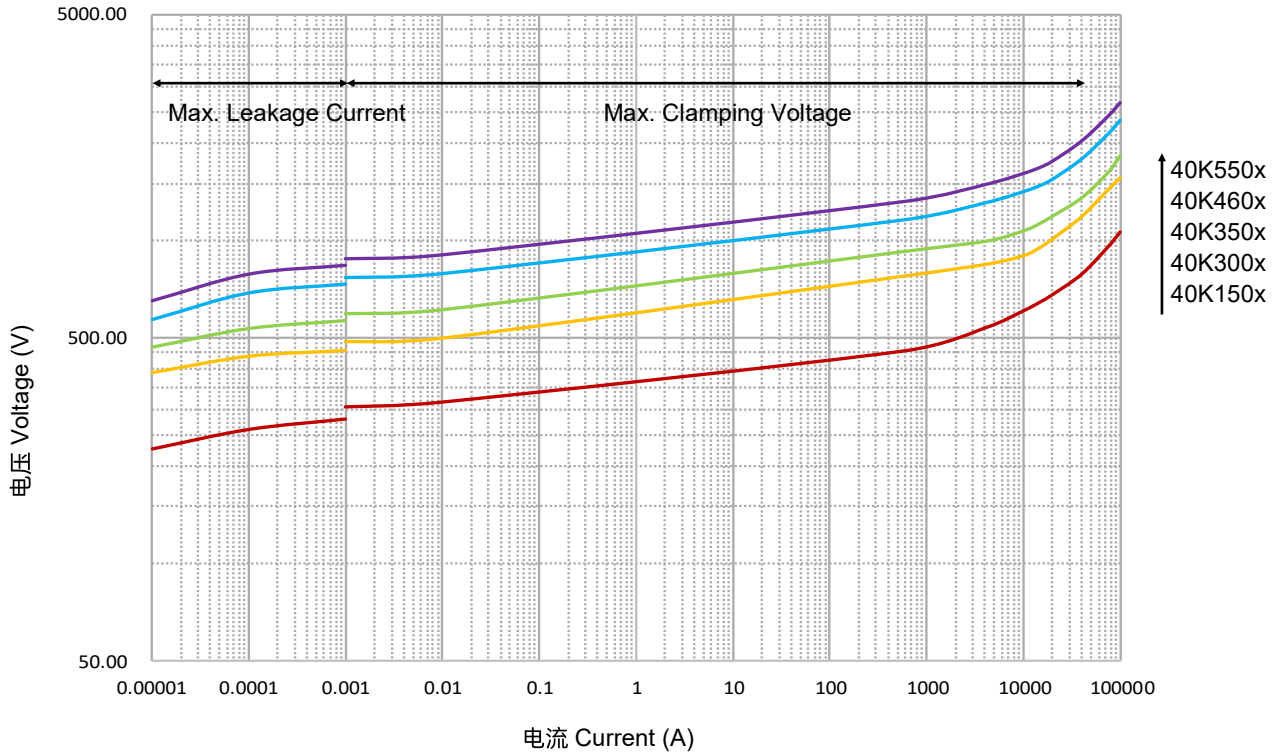
热保护型压敏电阻 TFMOV
TFMOV40K 系列 Series

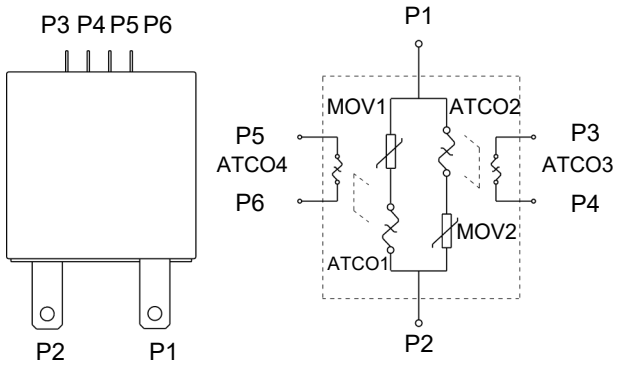


TFMOV

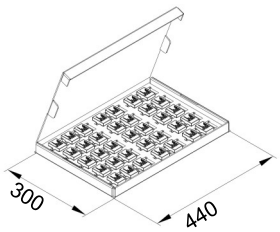
安规认证 Agency Approvals

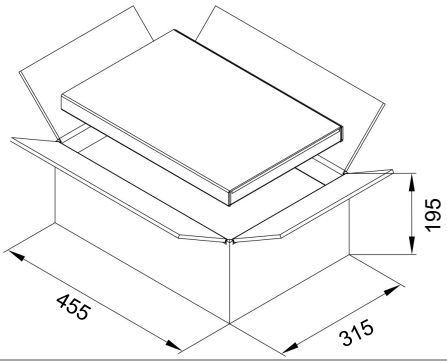
机构 Agency	标准 Standards	档案号 No.
c UL us	UL1449	E322662
环境 Environment	RoHS & REACH	符合 Compliant

电气原理图 Schematics



包装信息 Packaging Information





单位 Unit：mm

有特殊包装需求请联系我们

Please contact us if you have special packaging requirements.

项目 Item	标称压敏电压 Nominal Varistor Voltage	盒 Box	箱 Carton
尺寸 Dimensions (mm)	N/A	440 × 300	455 × 315 × 195
数量 Quantity (PCS)	820 - 201	50	200
	221 - 821	50	150
	911 - 122	25	100

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