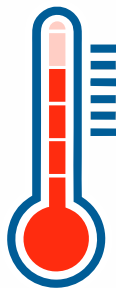


OVER HEATING PROTECTION

All Range Of Resettable Protectors For USB Type-C Connectors & Batteries



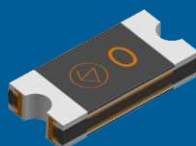
Lower Resistance



Resettable



Smaller Size



过热保护

应用于USB Type-C连接器
和各类电池的全系列
可复位式保护器



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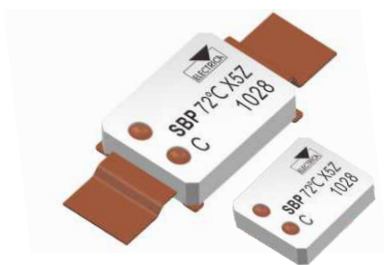
Betterfuse SBP And PPTC (Special LoR) Used In USB Type-C Over Heating Protection

USB Type-C connector have been increasingly widely used in smart phones, Tablet PC ,notebook , power bank, Smart wearable and other devices .Users benefit from its thin shape, up to 100W power transmission, support for forward and reverse plug and other advantages, but the overheat of connector often happened in the use easily leads to smoke or even burn. For example , once there is foreign body such as metal shavings, water stains ,hair and the others in the connector which have narrow needle design often cause Vbus and GND form a micro-short circuit .Therefore,the Type-C overheat protection becomes very necessary, Betterfuse have launched both SBP and PPTC overheating protection solution.

USB Type-C 接口日益广泛应用于智能手机，平板、笔记本电脑，移动电源，智能穿戴等设备，用户得益于其纤薄的外形，高达100w功率电力传输,支持正反插等优点，但是使用过程中也常见接口过热导致冒烟甚至燃烧的风险，常见原因如窄小的针距设计，使接口处一旦有异物如金属屑，水渍，头发等极易引起Vbus和GND形成微短路。因此Type-C的过热保护变得十分必要，贝特推出SBP及PPTC两种过热保护方案。

Model	Device Used in USB-C Cable	Benefits	
 SBP		▶ Accurate temperature protection ▶ Thousands of protection cycles ▶ It can be used with 100W power circuits	温度保护精确 几千次的循环保护使用 可用于100W功率的线路使用
 PPTC		▶ Compact product ▶ Ultra-low resistance ▶ Over temperature, over current dual protection	产品体积小 超低电阻 过热，过流双重保护

Design in Italy over 60 years technology

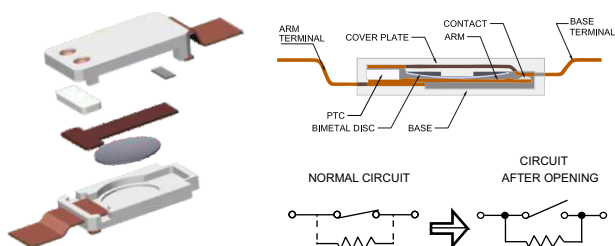


SBP 2020 Coming Soon

Small battery protector (SBP) is a miniature thermal cutoff device with double protection of overtemperature and overcurrent. It is mounted on the surface and has very small size. It is widely used in the protection of various batteries, such as notebook computers, tablet computers, smart phones and other over-temperature protection such as USB Type C cables (e.g. smart phone cables, notebook AC adapters), electronic cigarettes, medical heaters, etc.

SBP是一种微型的热切断装置，具有过温和过流双重保护，采用表面安装，尺寸非常小，广泛应用于笔记本电脑、平板电脑、智能手机等电子产品的电池过热保护，以及Type-C、电子香烟、医用加热器等超温保护。

Design Concept



A Type Universal Protector

The A type universal protector is widely used for motor, frequency conversion board, transformer, battery and other occasions, to prevent the occurrence of over temperature and over current and other dangerous situations; small size, less energy consumption, it can improve the efficiency of the overall system of the motor, energy saving and meet the needs of motor space size optimization.

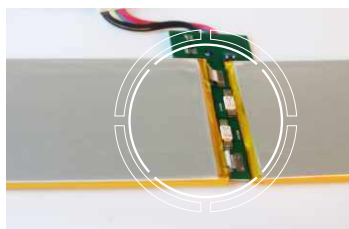
A型保护器是小型过温过流双重保护器，具有跳脱温度和过载跳闸时间精准，外壳绝缘等特性。应用于电动单车电池，摩托车电池，电动工具电池，无人机电池，便携式电子设备电池及马达的等过温，过流保护。

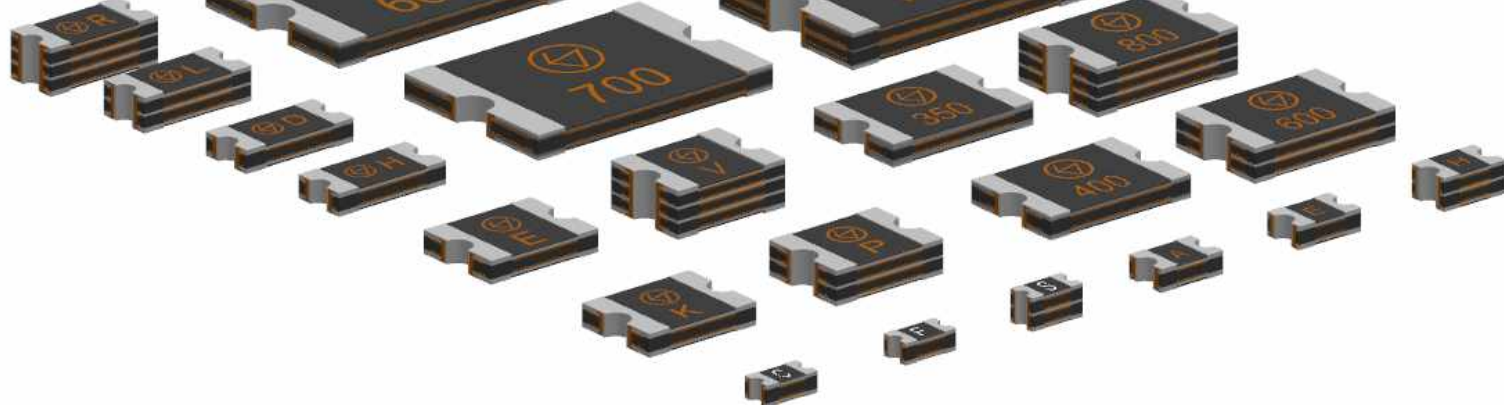


General Characteristics

Normally-close circuit	Single pole
Standard temperature range	70°C to 160°C (5°C step)
Tolerance on Open Temperature	±5
Differential	20°C minimum
Maximum contact rating	15A/250VAC, 10000 Cycles
Standard tab terminals	2.8 x 0.3 mm
Wire leads	Optional
E-board adapter	Optional
Compressor plug-on & combo solutions	Optional
Approvals	VDE 40044000 (EN60730-1 & 2-2)
	VDE 40044001 (EN60730-1 & 2-4)
	UL E51822
	IEC 60079-15:2010
	CQC

Application

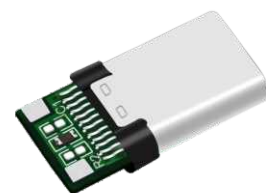




General Situation

PPTC product is a kind of electric transient current protection components, widely used in telecommunications, consumer electronic products, computers, multimedia, batteries, industrial automotive industry and other fields of electric transient current protection. PPTC products in series in the circuit, unusually large current of the circuit when it happens, the heat generated by the PPTC products will increase sharply, the internal resistance of short time limit circuit current at the minimum level, avoid damage to other components of the protection circuit and the danger happening, protection effect is close to a one-time melting off the fuse, but another since the recovery characteristics, PPTC when abnormal circuit troubleshooting, PPTC products of resistance in a short period of time will return to the initial level, circuit back to normal.

PPTC产品是一种电路过流保护元件，广泛应用于电信、消费类电子产品，电脑、多媒体、电池、工业汽车业等领域的电路过流保护。PPTC产品串联使用于电路中，当异常电路的大电流发生时，产生的热量使PPTC产品的内阻短时间内会急剧增大，限制电路中电流在极小水平，从而保护电路中其它元器件避免损坏及危险发生，保护效果接近一次性熔断保险丝，但PPTC具有自恢复特性，当异常电路故障排除后，PPTC产品的内阻在短时间内会恢复到初始水平，电路恢复正常。

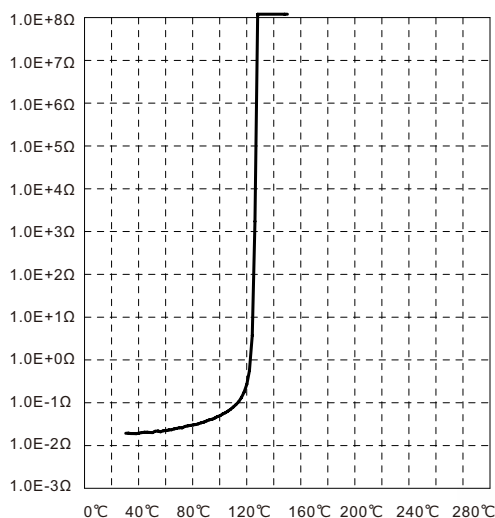


Operating Principle

PPTC products core layer for composite conductive polymer materials, mainly composed of crystalline polymer, composite conductive fillers, other additives and become, the composite material has the positive temperature coefficient of resistance, PTC effect, its resistance increases with the rise of temperature, in a certain temperature near the switch jumped sharply, material by good conductor is a poor conductor and insulator, switch characteristics.

PPTC产品芯层为复合导电高分子材料，主要由结晶性高分子聚合物、导电填料、其它助剂复合而成，该复合材料具有“电阻正温度系数，PTC”效应，其电阻随温度的升高而增大，在某特定温度值附近发生开关性的急剧跃升，材料由良导体变为不良导体甚至绝缘体，具有开关特性。

Typical R/T Curve For PPTC



Part Numbering System

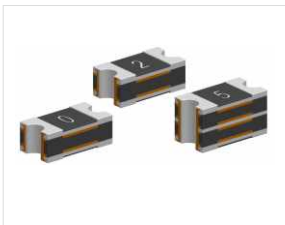
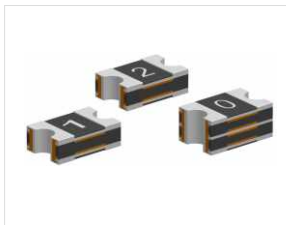
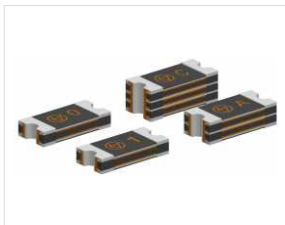
BN	N	0050	7	D	000
Serial NO.	Size	I _H	V _{MAX}	Packing	Supplementary Code
BN: Normal Series	A: 0402	0050: 0.05A	0: 6V	A: 1500	
BL: LoR Series	F: 0603	0500: 0.5A	1: 8V	B: 2000	
	P: 0805	1200: 2.0A	2: 9V	C: 3000	
	N: 1206		3: 12V	D: 3500	
	U: 1210		4: 13.2V	E: 4000	
	T: 1505		5: 16V	F: 5000	
	M: 1812		6: 24V		
	L: 2920		7: 30V		
			8: 33V		
			9: 60V		

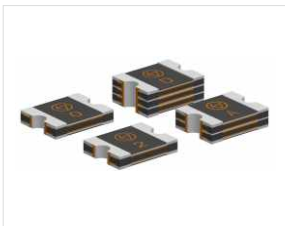
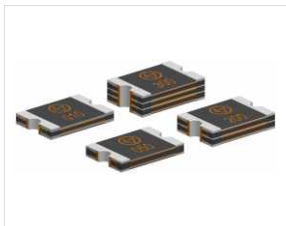


Scan It For Cross Table

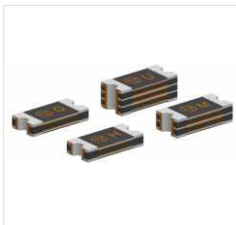
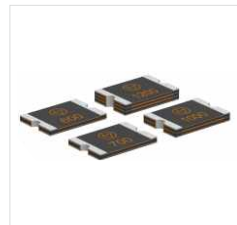
扫码获取
PPTC产品对比资料



Series Name	BNF Series	BNP Series	BNN Series
Photos			
Chip Size	0603	0805	1206
Holding Current(I_H)	0.04A - 0.5A	0.05A - 1.1A	0.05A - 2.0A
Max Coltage(V_{MAX})	6V - 24V	6V-24V	6V-60V
Max Fault Current(I_{MAX})	20A/40A	100A	100A
Operating Temperature Range	-40°C - 85°C	-40°C - 85°C	-40°C - 85°C
Agency Approval	UL,TUV	UL,TUV	UL,TUV
RoHS Compliant	Yes	Yes	Yes
Lead-Free	Yes	Yes	Yes

Series Name	BNU Series	BNM Series	BNL Series
Photos			
Chip Size	1210	1812	2920
Holding Current(I_H)	0.05A - 2.0A	0.1A - 3.0A	0.3A - 5.0A
Max Coltage(V_{MAX})	6V - 60V	8V - 60V	6V - 60V
Max Fault Current(I_{MAX})	100A	100A	100A
Operating Temperature Range	-40°C - 85°C	-40°C - 85°C	-40°C - 85°C
Agency Approval	UL,TUV	UL,TUV	UL,TUV
RoHS Compliant	Yes	Yes	Yes
Lead-Free	Yes	Yes	Yes

Series Name	<u>BLA Series</u>	<u>BLF Series</u>	<u>BLP Series</u>	<u>BLN Series</u>
Photos				
Chip Size	0402	0603	0805	1206
Holding Current(I_H)	0.1A - 0.5A	0.35A - 3.0A	0.75A - 4.0A	1.5A - 7.5A
Max Coltage(V_{MAX})	6V	6V/9V	6V/12V	6V/12V
Max Fault Current(I_{MAX})	50A	50A	50A	50A
Operating Temperature Range	-40°C - 85°C	-40°C - 85°C	-40°C - 85°C	-40°C - 85°C
Agency Approval	Pending	UL,TUV	UL,TUV	UL,TUV
RoHS Compliant	Yes	Yes	Yes	Yes
Lead-Free	Yes	Yes	Yes	Yes

Series Name	<u>BLU Series</u>	<u>BLT Series</u>	<u>BLM Series</u>	<u>BLL Series</u>
Photos				
Chip Size	1210	1505	1812	2920
Holding Current(I_H)	1.5A - 8.0A	2.6A - 8.0A	2.6A - 9.0A	5.0A - 12.0A
Max Coltage(V_{MAX})	6V/12V	6V/12V	6V/12V	16V/24V
Max Fault Current(I_{MAX})	50A	50A	50A	50A
Operating Temperature Range	-40°C - 85°C	-40°C - 85°C	-40°C - 85°C	-40°C - 85°C
Agency Approval	UL,TUV	Pending	UL,TUV	UL,TUV
RoHS Compliant	Yes	Yes	Yes	Yes
Lead-Free	Yes	Yes	Yes	Yes



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ISO 14001 认证企业
QC 080000 认证企业
IATF 16949 认证体系

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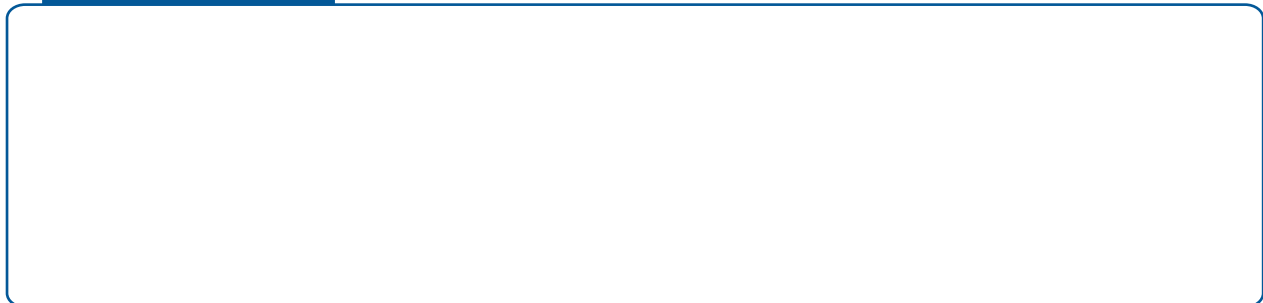
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