

1 适用范围 Scope	2
2 术语 Glossary	2
3 型号说明 Part Number System	2
4 结构尺寸 Structure and Dimension	2
4.1 主要原材料明细 Main Material List	2
4.2 结构图 Structure	3
4.3 电路图 Circuit Diagrams	4
4.4 尺寸 Dimension (mm)	4
5 技术参数 Specifications	5
6 檢驗 Inspection	6
6.1 大气条件 Atmospheric Conditions	6
6.2 常规检验项目 Routine Inspection Items	6
6.3 机械特性 Mechanical Performances	7
6.4 异常过电压限制电流测试 Limited Current Abnormal Overvoltage Test	7
6.5 动作负载试验 Operating Duty Test	8
6.6 电压保护水平测试 Voltage Protection Level Test	8
6.7 热稳定测试 Thermal Stability Test	9
7 推荐焊接条件 Soldering Conditions	10
8 注意事项 Important Note	11
9 标示及包装 Marks and Package	11

1 适用范围 Scope

本承认书适用于型号为 EZ34S 系列的热保护型压敏电阻。

The specification is applicable for EZ34S Series varistors with thermal protection.

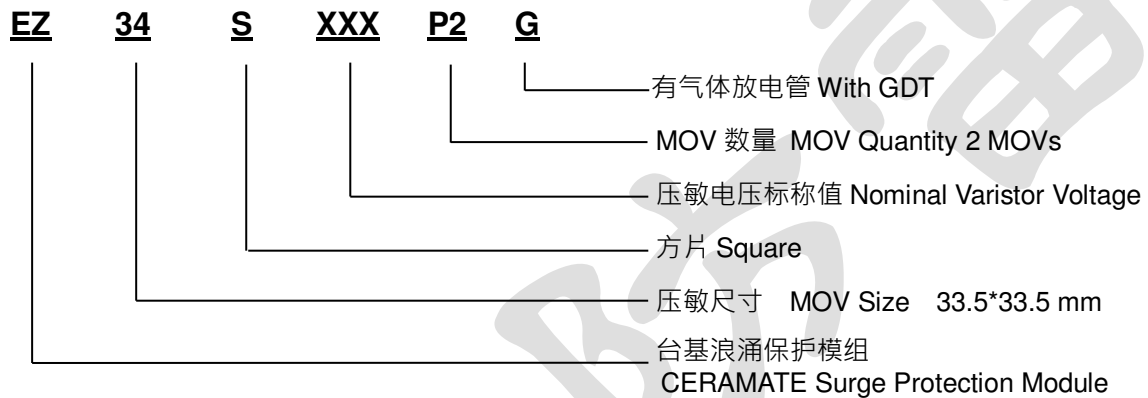
2 术语 Glossary

参考标准 Reference Standards

UL1449 4th ed (2014), GB/T 18802.1-2011

IEC61643.11:2011, IEC 61051-1:2007, IEC 61051-2:1991

3 型号说明 Part Number System



4 结构尺寸 Structure and Dimension

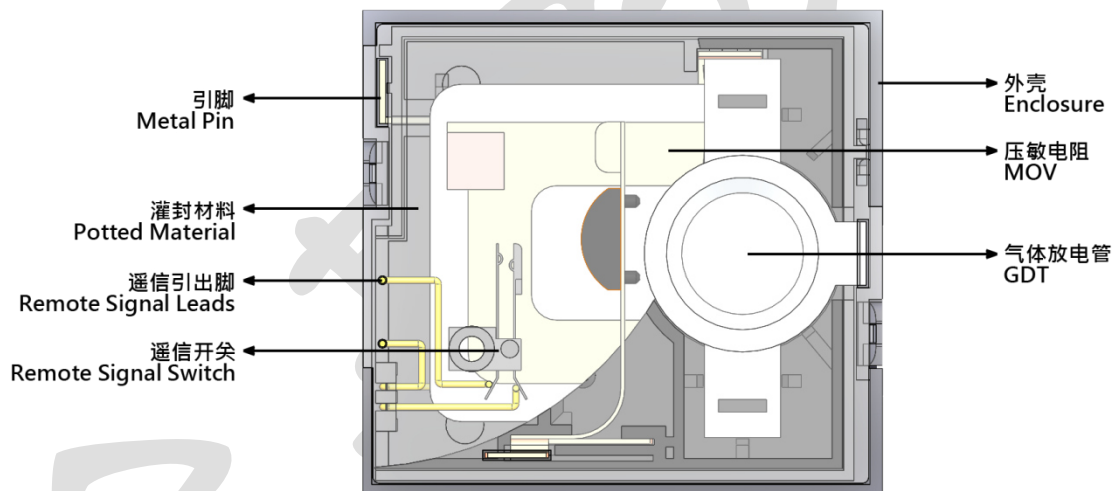
4.1 主要原材料明细 Main Material List

編號 NO	1	2	3	4	5	6
零件名 Part Name	压敏电阻 Metal Oxide Varistor	气体放电管 GDT	热脱扣 Thermal -Disconnecter	外壳 Enclosure	引脚 Pins	灌封材料 Potting Material
材质 Materials	氧化锌 Zinc Oxide	陶瓷管+金属电极 Ceramic tube and Metal Electrodes	易熔合金 Fusible Alloy	聚酰胺 PA66, 玻纤强化 Polyamide,PA66 Glass Reinforced	镀锡铜线 Tinned Copper	硅胶 Silicone Resin

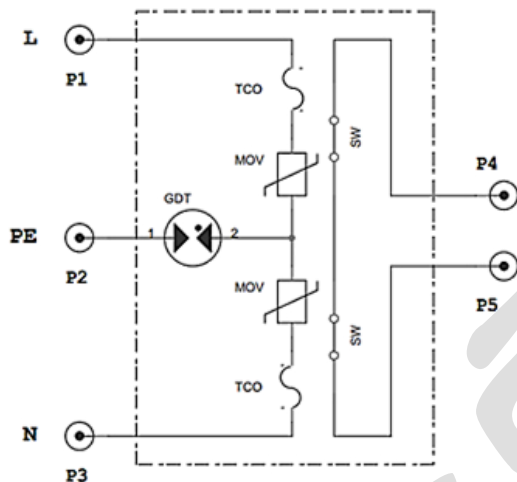
4.2 结构图 Structure

产品结构: EZ34S 系列压敏电阻因具有整合设计的热脱扣元件紧贴压敏电阻(MOV)表面, 所以于压敏电阻异常过热时能够快速响应与脱扣保护。整合设计的结构也比一般分离元件解决方案的电感值更低, 可以改善雷击冲击时的电压保护水平性能。同时针对 PE 接线端串接压敏电阻与气体放电管(GDT)确保高绝缘电阻以消除漏电流且不会产生续流。除此之外, EZ34S 系列具有遥信功能, 于正常状态时经由引脚 P4 与 P5 做闭合信号指示。

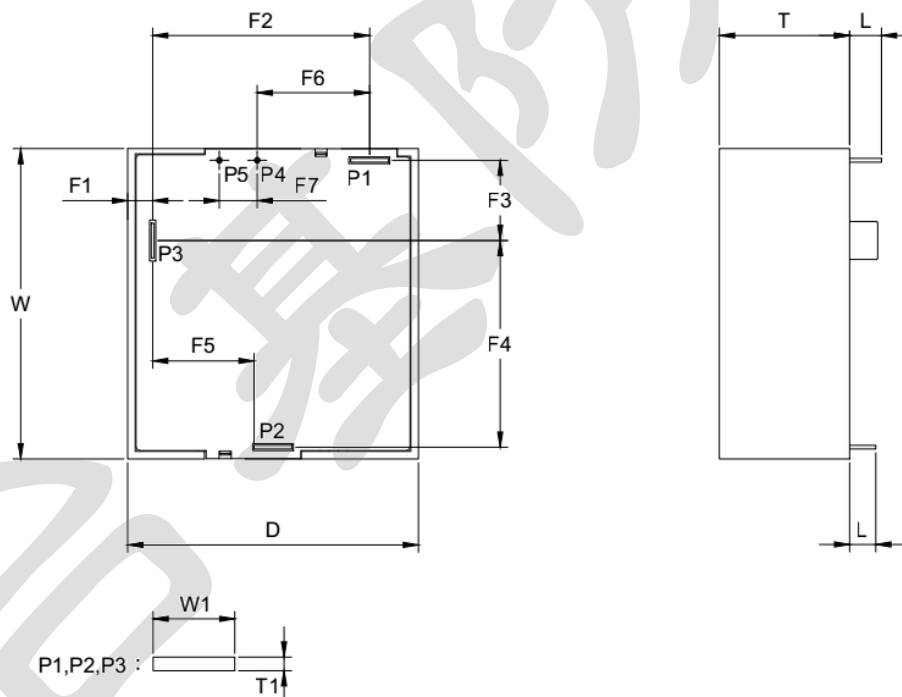
Product Structure: The EZ34S Series varistors offer quick thermal response due to the close proximity of the integrated thermal element to the MOV body. The integrated configuration also offers lower inductance than most discrete solutions resulting in improved voltage protection level performance to surge impulse. And with combination of varistor and GDT for the PE connection ensures high insulation resistance that eliminates leakage current and no following current. Additionally with the remote signaling function and packed by high flame resistant black enclosure, the normally closed signal indication is brought out by the leads P4 and P5.



4.3 电路图 Circuit Diagrams



4.4 尺寸 Dimension (mm)



Unit: mm

W	D	T	L	W1	T1	P4/P5
41.0±0.5	38.0±0.5	22.2±0.5	3.5±0.5	5.0±0.2	0.5±0.2	Φ0.5
F1	F2	F3	F4	F5	F6	F7
3.5±0.5	28.9±0.5	10.5±0.5	27±0.5	13.5±0.5	15.0±0.5	5.0±0.5

5 技术参数 Specifications

技术术语 Glossary of Terms		技术参数 Specifications	参照标准 Referencem Standards
工作温度 Operation Temp. Range		-40°C~+85°C	IEC 61051
储存温度 Storage Temp. Range		-40°C~+125°C	IEC 61051
压敏电压 Varistor Voltage (Vn)		* V	IEC 61051
最大连续工作电压 Maximum Continuous Operating Voltage		AC: * V/DC: * V	IEC 61051
实测限制电压 Measured Limited Voltage (MLV)		* V	UL 1449
标称放电电流 Nominal Discharge Current (In, 8/20μs)		* kA	IEC 61643.11
绝缘电压 (引脚与外壳间) Dielectric Voltage(Between Leads and Enclosure)		≥2500V, 1minute	IEC 61051
引脚拉力试验 Lead Pull Test		22.62N	IEC 60068-2-21
引脚弯折试验 Lead Bending Test		180°, 4 次 times	IEC 60068-2-21
暂时过电压特性 Temporary Overvoltage (TOV)— Characteristic	用户装置内的低压系统故障 LV-system faults in consumer installation	Vrms/5sec. —耐受模式 Withstand Mode	IEC 61643.11
	配电系统的低压系统故障和缺零 LV-system faults in distribution system and loss neutral	Vrms/10A/120min —可接受的安全失效模式 Safe Failure Mode Acceptable	IEC 61643.11

PART NUMBER	Maximum Continuous Operating Voltage		Varistor Voltage		Measured Limited Voltage MLV _{P1-P3}	Surge Current 8/20us	
	Uc		Vn			In	I max
	AC (V)	DC (V)	Min. (V)	Max. (V)	@In (V)		
34S470P2G	30	38	42	52	220	10	20
34S680P2G	40	56	61	75			
34S820P2G	50	65	74	90	330	20	40
34S101P2G	60	85	90	110			
34S121P2G	75	100	108	132			
34S241P2G	150	200	216	264			
34S431P2G	275	350	387	473			
34S511P2G	320	415	459	561			
34S621P2G	385	505	558	682			
34S751P2G	460	615	675	825			
				1800			

6 檢驗 Inspection

6.1 大气条件 Atmospheric Conditions

温度 Temperature : 15 °C - 35 °C

相对湿度 Relative Humidity : 45%-75%

大气压力 Air pressure: 86 kPa to 106 kPa

6.2 常规检验项目 Routine Inspection Items

序号 No.	项目 Items	试验要求 Test Requirement	参考标准 Reference Standards	抽样频率和 接受标准 AQL
1	外观 Appearance	壳体无穿孔,飞边;引脚镀层良好,无氧化发黑等情况。 The case without perforation,flash, the pin coating is good and no oxidative blackening.	ISO 2768-1 GB/T 1804	G-II AQL=1.0
2	尺寸 Dimension	用游标卡尺测量引脚外露长度,尺寸范围 参照 4.4。 Use vernier caliper to measure the pin out Length; size range reference 4.4.	ISO 2768-1 GB/T 1804	S-2 AQL=0.65
3	压敏电压 Varistor Voltage	1 mA 的直流电流通过压敏电阻时测压敏电阻两端的电压,需满足在电压范围内。 The Voltage shall be to meet the specified value when it across the varistor measured at 1 mA of DC current.	IEC 61051	G-II AQL=0.25
4	漏电流 Leakage Current	在 25 °C温度下,施加 0.75 倍压敏电压时,测通过压敏电阻的电流。 Measure the current passing through the varistor at 0.75Un, and at a temperature of 25 °C.	IEC 61051	G-II AQL=0.25
5	介电耐压 Dielectric Voltage	在引脚和外壳间施加工频电压≥2500 V,1 分钟。 Subject the voltage no less than 2500 V, last for 1 minute between leads and enclosure.	IEC 61051	S-2 AQL=1.0
6	异常过电压 限制电流测试 Limited Current Abnormal Overvoltage Test	参见第 6 章节《检验》第 6.4 条 Reference 6.4 of the chapter 6 《Inspection》	UL 1449	3 PCS/Lot AC=0
7	动作负载试验 Operating Duty Test	参见第 6 章节《检验》第 6.5 条 Reference 6.5 of the chapter 6 《Inspection》	IEC 61643-11 GB/T 18802.1	3 PCS/Lot AC=0
8	电压保护水平测试 Voltage Protection Level Test	参见第 6 章节《检验》第 6.6 条 Reference 6.6 of the chapter 6 《Inspection》	IEC 61643-11 GB/T 18802.1	3 PCS/Lot AC=0
9	热稳定测试 Thermal Stability Test	参见第 6 章节《检验》第 6.7 条 Reference 6.7 of the chapter 6 《Inspection》	IEC 61643-11 GB/T 18802.1	3 PCS/Lot AC=0

6.3 机械特性 Mechanical Performances

序号 No.	项目 Items	试验方法 Test methods/conditions	参考标准 Reference Standards	抽样频率和 接受标准 AQL
1	拉力 Pull	将待测试产品安装于测试架上,将线分别与 22.62N 的法码挂钩绑牢,受力时间 1 分钟,轻放法码。 Install the product on the test shelf and tie line respectively with 22.62N weight for 1 minute. Then release the weights slightly.	ISO 2768-1 GB/T 1804	3 pcs/Lot,AC=0 封口树脂與线不損傷、脫落。 The sealed resin shouldn't fall off and the lead wires shouldn't be damaged.
2	推力 Puch	将待测试产品壳体套入推力试验仪上孔内,将推力夹具套入线,距离外壳口部 2mm 处旋紧,施加 5.66N 的压力,受力时间 1 分钟。 Fixed the product case in the hole of the thrust test instrument. Cover the lead wire with the thrust fixture and firmly seated at 2mm from the case.the Product should be under 5.66N Pressure for 1 minute.	ISO 2768-1 GB/T 1804	3 pcs/Lot,AC=0 封口树脂與线不損傷、脫落。 The sealed resin shouldn't fall off and the lead wires shouldn't be damaged.

6.4 异常过电压限制电流测试 Limited Current Abnormal Overvoltage Test

测试方法：依 UL 1449 版中的图 44.2 所示,测试电压依 UL1449 4th 中的表 44.1 所示。将测试样品端短路,调节可变电阻,使测试电流分别为 0.125A,0.5A,2.5A,5A 和 10A 进行测试,测试时间为 7 小时,直至温度或电流达到平衡,或产品内部热脱扣断开电源。

Test Method: See the figure 44.2 in UL 1449 4th edition. The voltages in Table 44.1 shall be applied during the test. The power supply is to be incorporated with a series variable resistor that can be adjusted to obtain the short-circuit current: 0.125A,0.5A,2.5A,5A and 10A for testing. The samples are to be energized for 7 hours, or until current to, or temperatures within the SPD attain equilibrium, or until the SPD becomes disconnected from the ac supply.

判定标准:测试过程中产品不允许发出火焰,纱布起火和引燃外壳;测试后 5 分钟内内部的热脱扣装置接上电源在规定电压下测试的漏电流要求小于 0.5mA。

Pass Criteria: During the test, there shall be no emission of flame, flaming of the gauze or ignition of the enclosure; within five minutes the in-built thermal-disconnector is connected to the ac supply, the SPD is applied with a specified voltage, and the leakage current must be less than 0.5mA.

6.5 动作负载试验 Operating Duty Test

测试方法：将防雷器接入测试端,冲击 2 次 In (正、负极各 1 次) 测试限制电压,若是回路中有 GDT 时再施加 1.2/50us 冲击电压 6kV/10 次 (正、负极各 5 次) 测试限制电压,再施加 15 次 In 冲击,分成 3 组,每组 5 次冲击。每次冲击应与电源频率同步。从 0°角开始,同步角应以 30°±5°的间隔逐级增加。两次冲击之间的间隔时间为 50s~60s,两组之间的间隔时间为 30min~35min。两组冲击之间试品无需施加电压。在施加每组冲击之后,需继续加电至少一分钟来检查复燃。在最后一组冲击和继续加电一分种后,SPD 保持加电,或在少于 30 秒内加电到 U_c ,保持 15 分钟来检查稳定性。30 分钟后重复进行测试限制电压的程序。

Test Method: Terminal wires of the SPD shall be subjected to one sequence of positive polarity and one sequence of negative polarity to determine the measured limiting voltage. If there is a GDT component in the circuit, 10 times of 1.2/50us, 6kV voltage impulse are applied to the SPD, five of positive and five of negative polarity to determine the measured limiting voltage. And then three groups of five impulses of 8/20 current impulses with positive polarity shall be applied. Starting from 0° the synchronization angle shall be increased in steps of 30° with a tolerance of ± 5° for each synchronization angle. The interval between the impulses is 50 s ~ 60 s, the interval between the groups is 30 min~35 min. It is not required that the test sample is energized between the groups. The SPD shall be energized at U_c . After the application of each group of impulses, the SPD shall remain energized without interruption for at least 1 min to check for reignition. After the last group of impulses and the 1 min period the SPD either remains applied or is reapplied within less than 30 s to U_c for another 15 min to check for stability. 30 minutes later, the SPD shall be subjected to sequences to determine the measured limiting voltage repeatedly.

判定标准：产品在测试中不能有可见可闻的损坏,测试前后限制电压的变化率<10%。

Pass Criteria: During and following the surge test, there shall not have visible or smelt (or both) damage, and the rate of the clamping voltage's variation shall be less than 10%.

6.6 电压保护水平测试 Voltage Protection Level Test

测试方法：将防雷器接入测试端,冲击 2 次 In (正、负极性各 1 次) 测试限制电压;若是回路中有 GDT 时,应依次施加峰值约为 0.1; 0.2; 0.5; 1.0 In 的 8/20us 冲击电流 (正、负极性各 1 次) 测试限制电压。In 测试后再施加 2 次 I_{max} 冲击 (正、负极性各 1 次) 测试限制电压,若是回路中有 GDT 时,接着再施加 1.2/50us 冲击电压 6kV/10 次 (正、负极各 5 次) 测试限制电压,每次冲击的间隔时间应足以使试品冷却到环境温度。

Test Method: Terminal wires of the SPD shall be subjected to one sequence of positive polarity and one sequence of negative polarity to determine the measured limiting voltage; If there is a GDT component in the circuit, 8/20 current impulses with a sequence of crest values of approximately 0,1; 0,2; 0,5; 1,0 times In shall be applied to determine the measured limiting voltage. After In test, 2 times impulse of I_{max} (one time of positive and one of negative polarity) are applied to determine the measured limiting voltage. If there is a GDT component in the circuit, 10 times of 1.2/50us, 6kV voltage impulse are applied to the SPD, five of positive and five of negative polarity to determine the measured limiting voltage. After each impulse, the rest time should be let samples cooled to the ambient temperature.

判定标准：电压和电流波形图及目测检测试品应没有击穿或闪络的现象;试验过程中不应发生可见损害;不应对人体或设备产生爆炸或其他危险;试验后试品限制电压值小于或等于 U_p 。

Pass Criteria: Voltage and current records and visual inspection shall show no indication of puncture or flashover. No visible damage shall occur during the test. Values for measured limiting voltage after the test shall be below or equal to U_p .

6.7 热稳定测试 Thermal Stability Test

测试方法 :电源电压应足够高使 SPD 有电流流过。对于该试验,电流调整到一个恒定值。试验电流的误差为 $\pm 10\%$ 。对于第一个试品,试验从 2mA 的有效值开始;或者如果试品在 U_c 下的泄漏电流已经超过 2mA 有效值,从 U_c 开始。然后,试验电流以 2mA 或先前调节的试验电流 5%的步幅(两者取较大值)增加。对于另外两个试品,起始点应从 2mA 变到第一个样品脱扣时的电流值的前 5 步的电流值。

每一步保持到达到热平衡状态(即 10 min 内温度变化小于 2 K)。连续监测 SPD 最热点的表面温度(仅对易触及的 SPD)和流过 SPD 的电流。

Test Method: The voltage shall be high enough to allow a current to flow through the SPD. For this test, the current is set to a constant value. The tolerance for the test current is $\pm 10\%$. The test is started at a value of 2 mA r.m.s. For the first sample, or at U_c , if the leakage current at U_c does already exceed 2 mA r.m.s. This value of current is then increased in steps of either 2 mA or 5 % of the previously adjusted test current, whichever is greater. For the other two samples the starting point shall be changed from 2 mA to a current corresponding to 5 steps below the current value at which the first sample disconnected. Each step is maintained until thermal equilibrium is reached (i.e. variation of temperature at the hottest spot less than 2 K within 10 min). The outer surface temperature on the hottest spot of the housing of the SPD (for accessible SPDs only) and the current through the SPD are monitored continuously.

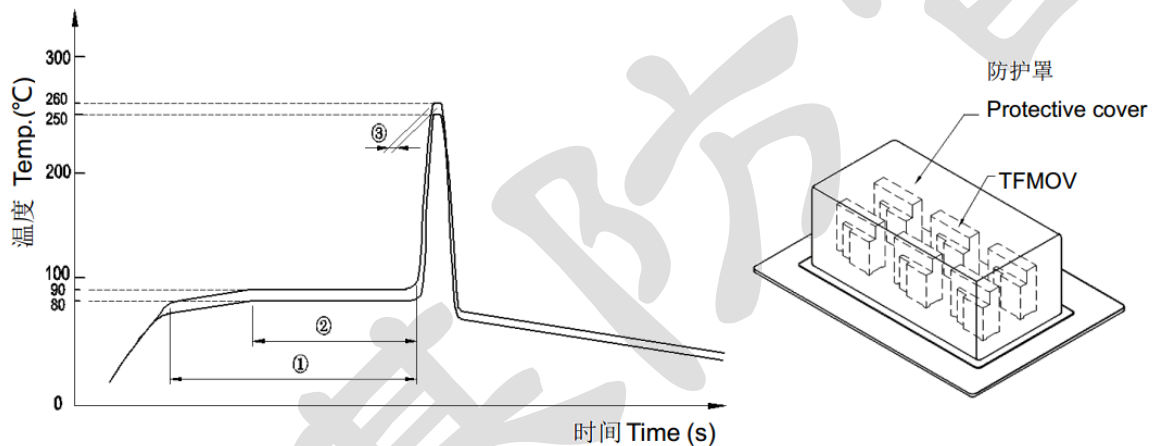
判定标准 :如果脱离器动作,SPD 应有明显的、有效和永久断开的迹象。为了验证该要求,应采用等于 U_c 的工频电压施加 1 min,流过的电流不应超过 0.5mA(有效值)。户内型 SPD 试验时表面温升应小于 120 K 在脱离器动作 5 min 后,表面温升不应超过周围环境温度 80 K。在试验过程中,应没有固体材料喷溅。

Pass Criteria: If a disconnecter operates, there shall be clear evidence of effective and permanent disconnection by the device. To check this, a power frequency voltage equal to U_c shall be applied for 1 min without current flow in excess of 0.5 mA r.m.s. In addition for indoor SPDs the surface temperature rise shall not exceed 120 K during the test. 5 min after disconnection of all non-linear components under test the surface temperature rise shall not exceed 80 K. During the test, there shall be no expulsion of solid material.

7 推荐焊接条件 Soldering Conditions

7.1 本产品可满足波峰焊, 注意产品引脚超出 PCB 焊盘长度不要大于 3 mm, 预热温度控制于 90 °C 以内, 波峰温度小于 260°C, 过锡时间 ≤ 4 s, 进行焊接时建议 : 增加防护罩减少产品吸热、产品过波峰后加降温设施使温度快速降至室温。推荐按下面焊接曲线图设置 :

The product is available for wave soldering, the length of exposed pins should be less than 3 mm and do keep the preheat temperature below 90°C. soldering temperature should be less than 260°C, tinning time should be less than 4 s, During wave soldering, a protective cover can be applied to protect the product from the heat, or after wave soldering cooling equipment is recommended to rapidly reduce the product to room temperature. Recommend as following graph.



7.2 如采用烙铁焊接, 请注意烙铁温度与焊接时间, 推荐焊接条件为 :

If you use iron to weld, please pay attention to the iron temperature and soldering time :

项目 Item	条件 Condition
烙铁头温度 Iron Temperature	350 °C (Max.)
焊接时间 Soldering Time	4 s (Max.)
焊锡点位置离产品底部 Space Between Soldering Point and the Bottom of Product	2 mm (Min.)

8 注意事项 Important Note

8.1 该产品为内置低熔点合金型脱扣装置的压敏电阻,当使用波峰焊或手工焊接工艺时,生产前应该做充分前期工艺验证,预防内部低温合金受热冲击损伤。

The MOV contains a low melting point alloy type thermal-link inside. When waving soldering or hand soldering applied, the earlier stage process verification should be carried to avoid the thermal-link damaged by thermal shock.

8.2 装配时不要用丙酮等溶剂清洗本产品,以免破坏本产品的封装层。

When assembly, please don't use acetone and other solvents to clean products, so as not to destroy enclosure.

8.3 装配时应避免出现如敲击等作业方式,避免造成本产品出现机械损伤。

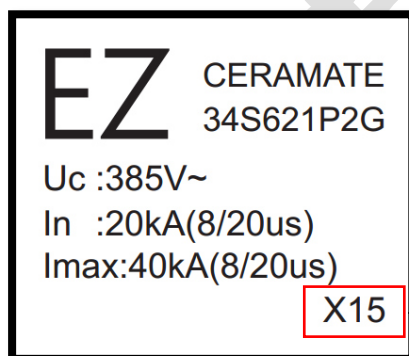
When assembly, please avoid knocking and such practices, so as not to make mechanical damage on products.

8.4 产品应用系统中出现的暂态过电压应小于 U_T ,否则需进行其他设计以避免暂态过电压下的失效。

The temporary overvoltage value in product application system should be less than U_T , if not some other designs are needed to avoid failure which caused by the temporary overvoltage.

9 标示 Marks

9.1 本体标示 Product Marking:



→ Date code

9.2 标签 Label Marking:

- 产品编号 ID NO
- 品名规格 Part NO
- 品种 Model
- 批号 Lot
- 数量 Quantity
- 生产周期 Date Code