

1. 产品特性及应用范围 / Description, Features and Applications

本产品适用于各类电子设备电路初、次级电路板的过流保护, 广泛应用于固态照明、电池充电、消费电子、电子镇流器、LED AC/DC 电源供应、网络通信、医疗仪器及工业控制器等领域。

Descriptions:

2410T series Fast-Acting square Surface Mount fuses are ceramic tube/end cap constructions, RoHS compliant, Halogen Free and lead(Pb) exempts of the requirements of RoHS Directive(2002/95/EC), with U.S. (UL/CSA) safety agency approvals. Provide board level primary and secondary circuit protection in a wide variety of applications. With excellent inrush current withstanding capability, excellent reliability for thermal and mechanic shock, also have a high reliability and stable solder ability, end caps are available in gold/silver/nickel plated.

Features:

- Fast-Acting (Fast-Acting)
- Wide range of current rating available
- Low temperature de-rating
- Tape and Reel for automatic placement
- Small size(6.1mm*2.5mm)
- Wide operating temperature range
- RoHS compliant
- Conflict free metals

Applications:

- LED lighting
- LCD backlight inverter
- PC server
- Wireless base station
- Digital camera
- Notebook PC
- Portable Devices
- Cooling fan system
- White goods
- Industrial equipment
- Battery devices
- Power supply
- Storage system
- Game console
- Medical equipment
- LCD/PDP devices
- Networking devices
- Telecom system
- Office equipment
- Automotive devices

2. 安规认证标准及编号 / Standards and Agency Approvals

2.1 执行标准: 遵循 UL 248- 14。

Standards : In accordance with UL 248- 14.

2.2 认证范围 Certification:

安规标准 Agency	认证范围 Ampere Range	证书编号 Agency File Number
	50mA ~ 40A	E358595
	50mA ~ 40A	E358595

2.3 目录编号 Catalogue No. , ● 已认证 Approved / ○ 认证中 Pending

目录编号 Catalog No.	额定电流 Ampere Rating	额定电压 Voltage Rating	分断能力 Breaking Capacity	冷阻值 Nominal Cold Resistance (Ohms)	熔化热能 I ² TMelting Integral(A ² .S)	安规认证 Agency Approvals	
							
1	160mA	125VAC/DC	50A@300VAC 50A@250VAC 200A@125VAC	2.308	0.056	●	●
2	200mA			1.655	0.060	●	●
3	250mA			1.456	0.063	●	●
4	300mA			0.855	0.190	●	●
5	315mA			0.656	0.200	●	●
6	375mA			0.605	0.328	●	●
7	400mA			0.580	0.335	●	●
8	500mA			0.302	0.471	●	●
9	600mA			0.268	0.771	●	●
10	630mA			0.259	0.982	●	●
11	700mA			0.233	2.102	●	●
12	750mA			0.227	2.230	●	●
13	800mA			0.205	2.375	●	●
14	1A			0.129	3.685	●	●
15	1.25A			0.095	3.755	●	●
16	1.5A			0.089	6.751	●	●
17	1.6A			0.078	6.800	●	●
18	2A			0.039	12.140	●	●
19	2.5A			0.036	16.005	●	●
20	3A			0.028	21.550	●	●
21	3.15A			0.027	25.740	●	●
22	3.5A			0.026	30.041	●	●
23	4A			0.020	43.201	●	●
24	5A			0.015	55.240	●	●
25	6A			0.013	75.205	●	●
26	6.3A			0.011	93.540	●	●
27	7A			0.010	97.110	●	●
28	8A			0.0080	108.700	●	●
29	10A			0.0072	118.320	●	●
30	12A			0.0050	140.050	●	●
31	15A			0.0035	210.630	●	●
32	16A	72VDC	500A@72VDC	0.0030	215.210	●	●
33	20A	72VDC	500A@72VDC	0.0028	358.020	●	●
34	25A	72VDC	500A@72VDC	0.00159	465.150	●	●
35	30A	72VDC	500A@72VDC	0.00148	980.610	●	●
36	40A	63VDC	500A@63VDC	0.00123	1040.720	●	●

- *: These catalog no. cold resistance and I2t value are pending due to fuse elements shall be customized;
- DC Cold Resistance are measured at <10% of rated current in ambient temperature of 25℃;
- Typical Pre-arching I2t are calculated at 10*In Current or 8ms;
- Min Interrupting Rating: 1.35*In.

3. 产品标示 / Product Marking

保险丝上需有下列标示 / The fuses shall have the following markings

示例 Example:

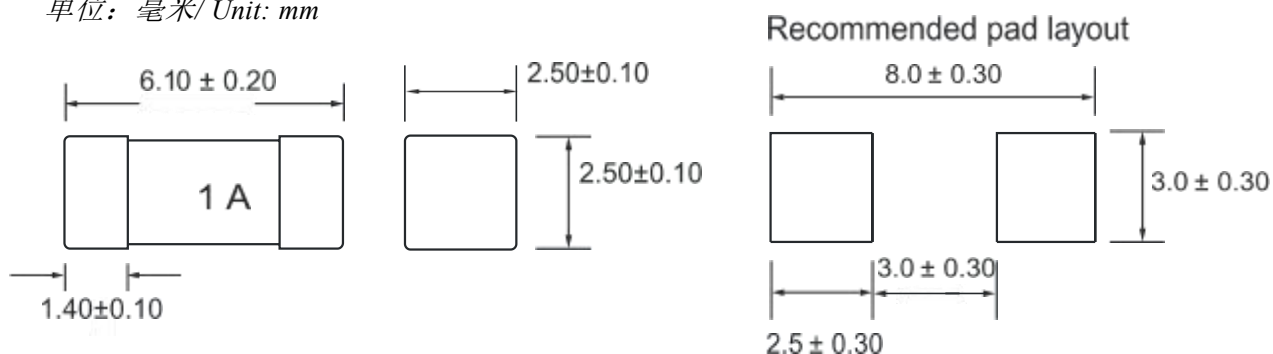
1A: 额定电流/Rated Current (A): A 或 or mA

注意/Note:

注: 对于标示的大小和位置没有规定/Note: Size and position of the markings shall not be provided.

4. 结构及尺寸 / Dimensions and Structure

单位: 毫米/ Unit: mm



5. 材料明细 / Material Details

编 号 NO.	零 件 名 称 Part Name	材 质 Material
○1	端帽 End caps	黄铜镀金 Au Plated Brass Cap
○2	主体 Body	陶瓷管 Non-Transparent Square Ceramic Tube
○3	熔丝 Fuse element	合金 Cu-Ag Alloy wire

6. 产品特性 / Product Characteristics

编号 NO.	项 目 Item	内 容 Content	参 考 标 准 Reference standards
1	产品标识	Brand, Ampere Rating	marking standards

	Product Marking		
2	工作温度 Operating Temperature	-55°C to 125°C	IEC60068-2- 1/2
3	可焊性 Solderability	T=240°C ± 5°C , t=3sec ± 0.5sec, Coverage ≥ 95%	MIL-STD-202, Method 208
4	耐焊接热 Resistance to Soldering Heat	10 sec at 260°C	MIL-STD-202, Method 210, Test condition B
5	绝缘阻抗 Insulation Resistance (after Opening)	10,000 ohms minimum	MIL-STD-202, Method 302, Test Condition A
6	热冲击 Thermal Shock	5 cycles, -65°C / +125°C, 15 minutes at each extreme	MIL-STD-202, Method 107, Test Condition B
7	机械冲击 Mechanical Shock	100G's peak for 6 milliseconds, 3cycles	MIL-STD-202, Method 213, Test I
8	振动试验 Vibration	0.03" amplitude, 10-55 Hz in 1 min. 2hrs each XYZ=6hrs	MIL-STD-202, Method 201
9	耐湿性 Moisture Resistance	10 cycles	MIL-STD-202, Method 106
10	盐雾试验 Salt Spray	5% salt solution, 48hrs	MIL-STD-202, Method 101, Test Condition B

7. 电气特性 / Electrical Characteristics

7.1 实验条件: Test Condition

所有测试环境温度均为 25±5°C。

All electrical test is to be conducted with the ambient air at a temperature of 25±5°C.

7.2 分断能力 Interrupting Rating:

保险丝承受分断能力: 50A@250Vac , 200A@125Vac.

Breaking Capacity: 50A@250Vac , 200A@125Vac.

7.3 熔断时限 / Operating Characteristics

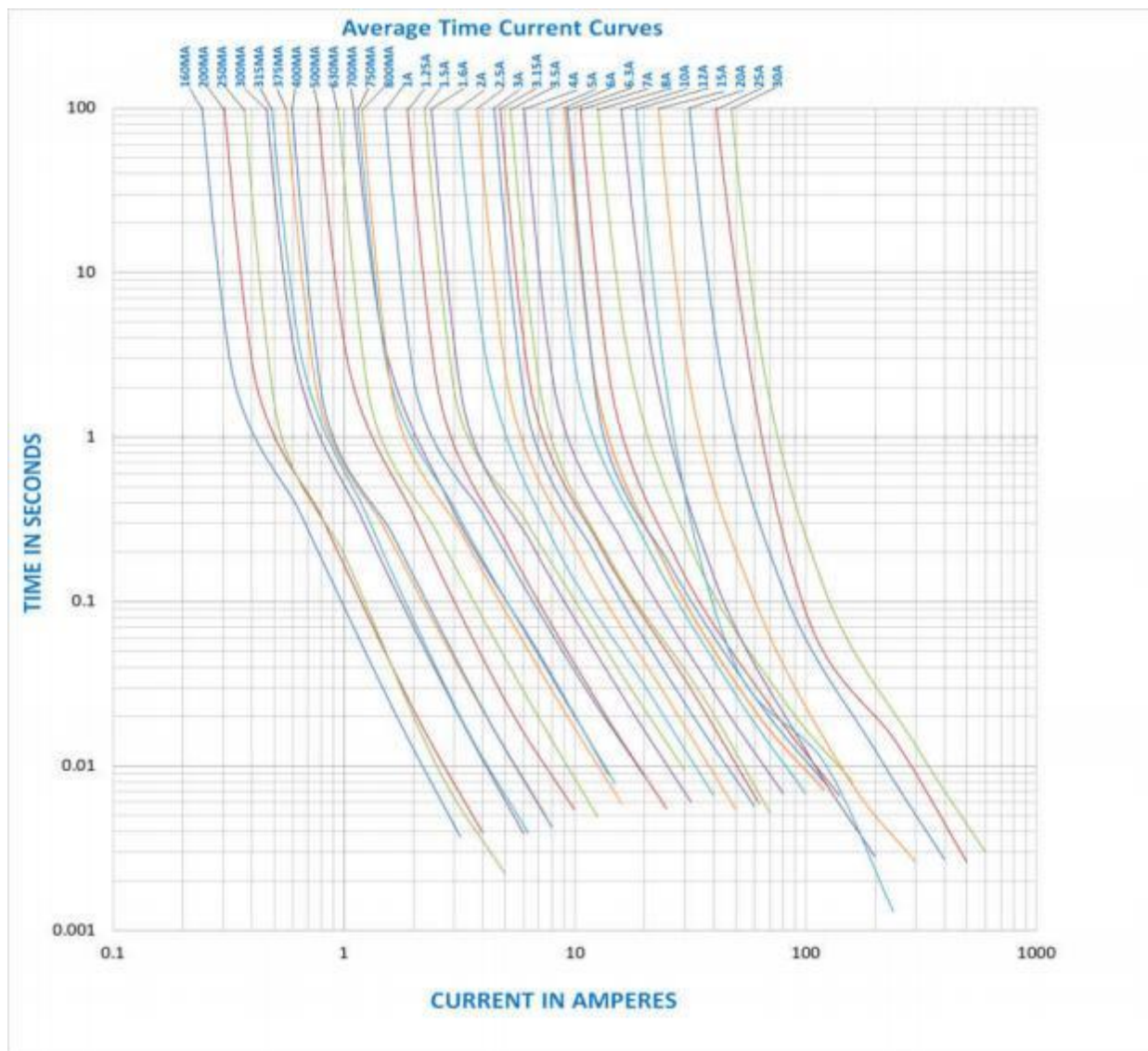
额定电流 Rated Current	额定电流的% % of Ampere Rating(In)	熔断时间 Blowing Time
160mA-40A	100% * In	大于 4 小时(4 hours Min)
500mA-40A	200% * In	小于 120 秒 (120 sec Max)

160mA-400mA

 $210\% \cdot I_n$

小于 120 秒 (120 sec Max)

7.4 平均时间电流曲线图 / Average Time Current Curves

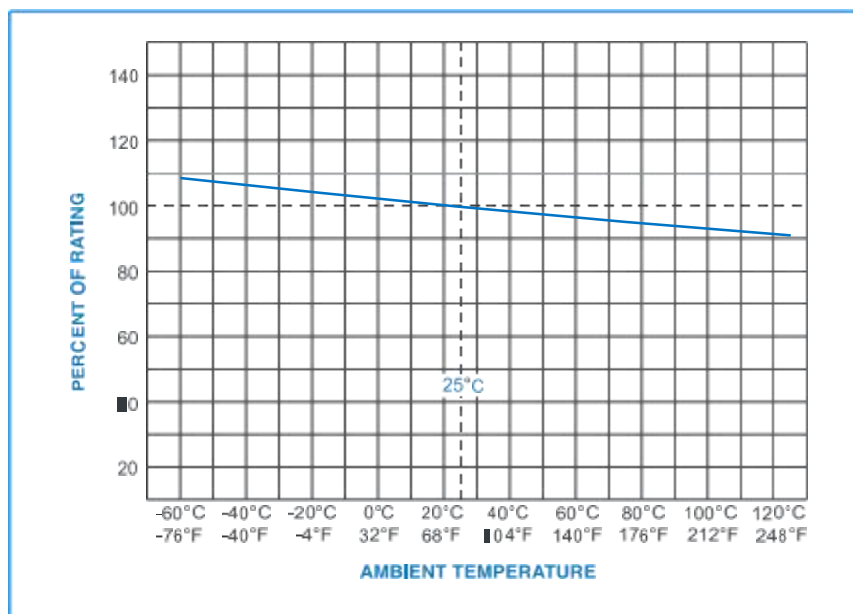


8. 环境特性 / Environmental Characteristic

若操作环境温度超出 $25 \pm 5^\circ\text{C}$ 范围, 在选用保险丝规格时, 需考虑操作环境温度对保险丝的影响, 请参照如下: 温度- 电流曲线图。

When choosing the fuse's specification, if the operating environmental temperature beyond the scope from $20 \sim 30^\circ\text{C}$, engineer should consider the environmental temperature's affection to fuses.

Please refer: Temperature Rerating Curve:



9. 建议焊接参数 / Recommended Soldering Parameters

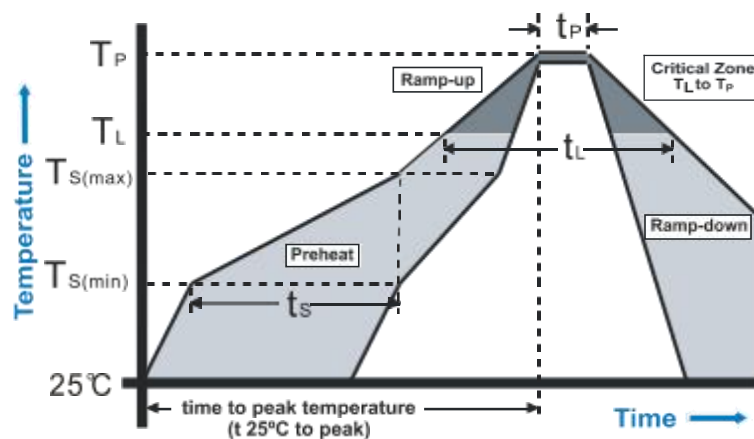
A. 波峰/回流焊参数 / Wave /Reflow Soldering Parameters:

锡膏工艺 / Solder paste process.

锡炉温度 / Solder Pot Temperature: 260°C Max;

焊接时间 / Solder Dwell Time: 5 seconds max

Reflow Condition	Pb-Free assembly
Average ramp-up rate (Ts(max) to Tp)	5°C /second max.
Temperature Min (Ts(min))	150°C
Preheat Temperature Max (Ts(max))	200°C
Time (Min to Max) (ts)	60- 120 seconds
Reflow Temperature (TL)	220°C
Time Max (tL)	60 seconds
Peak Temperature(Tp)	260°C max
Ramp-down Rate	5°C/second max
Time 25°C to peak Temperature (Tp)	8 minutes max



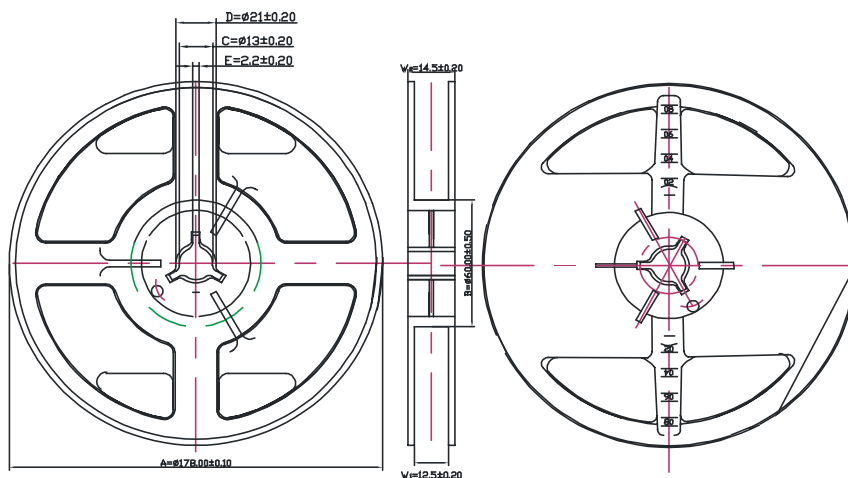
B. 手工焊参数 / Hand-Solder Parameters:

烙铁温度 / Solder Iron Temperature: 300±5°C

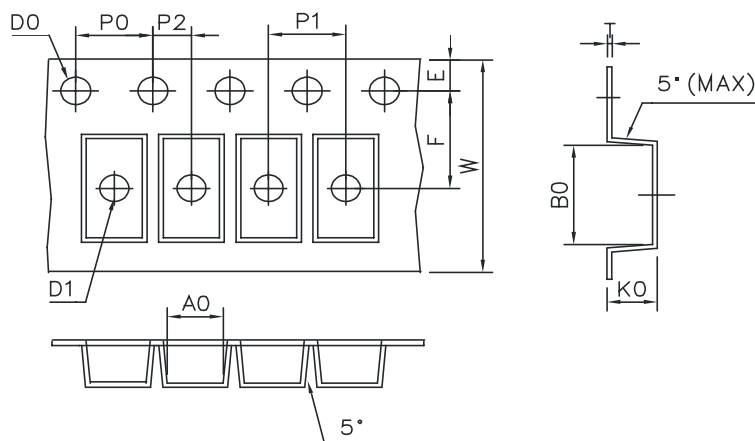
焊接时间 / Heating Time: 1~2 s Max

10. 包装 / Packaging

1000 个每卷/ 1,000 pcs in 7 inches dia. reel, 12mm wide tape, EIA Standard 481



Item	A	B	C	D	E	W1	W2
Spec.(mm)	178±0.10	60±0.50	13±0.20	21±0.20	2.2±0.20	12.5±0.20	14.5±0.20



Item	A ₀	B ₀	D ₀	D ₁	E	F
Spec.(mm)	2.70±0.10	6.40±0.10	1.50±0.10	1.50±0.25	1.75±0.10	5.50±0.10
Item	K ₀	P ₀	P ₁	P ₂	W	t
Spec.(mm)	2.70±0.10	4.00±0.10	4.00±0.10	2.00±0.10	12.00±0.15	0.25±0.05

11. 其他 / Others

附件 I: 安规证书 / Appendix I: Safety approval certificates