



功得電子工業股份有限公司
CONQUER ELECTRONICS CO.,LTD.

規格書

Specification For Approval

Spec. No. SFA030-08

品名： **MST(H)**系列 慢速型保險絲

Type： **MST(H)** *Time Lag Radial Lead Micro Fuse Series*

www.conquer.com.tw

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History of Change

REV.	Description	Date	Drawn	Designed	Checked	Approved
1	新增規格書	2010.10.26	邱俊傑	葉志浩	蔡進義	蔡其湖
2	新增PSE安規	2010.11.24	邱俊傑	葉志浩	蔡進義	蔡其湖
3	取消PSE安規	2011.02.21	邱俊傑	葉志浩	蔡進義	蔡其湖
4	1. 新增KC mark安規 2. 修正I2焊接條件(無鉛焊錫使用)	2012.03.13	邱俊傑	葉志浩	蔡進義	蔡其湖
5	1. 新增包裝規範 "(BK), (BK)(3.5), (BK)(7.5)項目" 2. 新增阻值範圍及I2t及It曲線圖	2013.08.14	彭彥鳴	葉志浩	蔡進義	蔡其湖
6	1. 修改第10項PSE貼紙內安規證書號碼 2. 修改第14項第4點: High Breaking -> Breaking	2014.05.31	彭彥鳴	邱俊傑	蔡進義	蔡其湖

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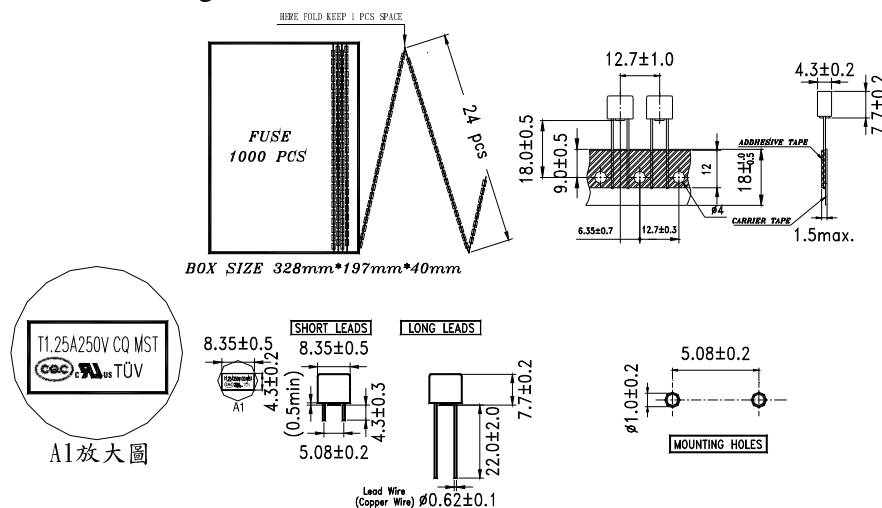
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～ 立式微小型保險絲 ～

Fuses for Instrument, Power and Telephone (Non-indicating)

- 1 **適用範圍**: 本標準適用於保護儀器、電源供應器和電話機用之立式微小型熔斷保險絲。
Available Range: For protecting instruments, power supplies and telephone sets.
- 2 **形狀及尺寸如下圖** 單位: mm
Shape & Size as following illustrations.



Weight: 0.36993g

- 2.1 構造形狀 Structure & Shape : 如上圖 As shown in figure above
- 2.2 額定電壓 Rated Voltage: 250V AC
- 2.3 額定電流 Rated Current: 40mA~10A
- 2.4 上圖印字為示意安培數及安規標誌
Above figure marking is only an example for current rating and safety mark.

3 **材料 Material:**

- 3.1 上蓋: 不透明塑膠套蓋且不可破裂或變形。
Cap: Non-Transparent plastic Cap. No breaking or deformation is allowed.
- 3.2 下座: 不透明塑膠底座且不可破裂或變形。
Base: Non-Transparent plastic base. No breaking or deformation is allowed.
- 3.3 兩端端腳: 須以導電率良好之鍍錫黃銅為材料。
Two copper leads: Made of tin-plated copper wire for good conductivity.

NO.	Part Name 部品名稱	Volume 數量
A	Plastic Cap – Black 塑膠套蓋 - 黑色	1
B	Plastic base - Black 方形底座 - 黑色	1
C	Fuse Element 可熔體	1
D	Two copper leads 兩端端腳	2

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4 電氣特性 Electrical Characteristics:

4.1 負載容量: 通過額定電流值 150 % (亦即 $1.5 \times I_n A$) , 能繼續通電至少 1 小時無任何熔化現象。

Loading Capacity: Loading 150% Rated Current (i.e. $1.5 \times I_n A$) for flowing, and it's available to let current keep on flowing at least 1 hour without any melting. (Can keep 1 Hour minimum)

4.2 壓降測量: 以額定電流, 通過保險絲, 其兩端壓降值不得超過最大值, 可參考 IEC60127-3 Sheet 4。

Voltage drop: Loading 100% of rated current.(ie $1.0 \times I_n$), the voltage drops across the fuse-links shall not exceed the maximum values given on the relevant standard sheet (IEC 60127-3 sheet 4)

4.3 過載熔斷: 請參照下表。Melting due to overloading: Details as follows Table.

※最大熔斷時限 Operating Characteristics

安培數 Rating	150% Rating	210% Rating	275% Rating		400% Rating		1000% Rating	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
40mA~5A	60min	2min	400ms	10sec	150ms	3sec	20ms	150ms
6.3A~10A	60min	2min	400ms	10sec	150ms	3sec	15ms	150ms

5 機械特性 Mechanical Properties:

5.1 拉力測試 Tensile Test : 上蓋與下座組合之拉力至少 3 kg。

For the tensile test, the force applied shall be 3 kg at least between cover and base.

5.2 推力測試 Thrust Test : 施力為 2 牛頓, 附腳不發生鬆動現象。

For the thrust test, the force applied shall be 2 N, the lead wire.

5.3 彎折強度 Bending Test : 附腳經過兩次反向之彎折後(彎折90度再折回原位謂之一次彎折) 不發生損壞。

No damage are to be visualized after two bends of opposite directions (bending through an angle of 90° and back is defined as one bend) of lead.

6 突波實驗 Pulse Test:

為適應電感或電容性電路所產之暫態電流, 本品於10倍額定電流熔斷時間最少為 (※註1)
In order to stand transient current caused by inductive or capacitive, the fuses are designed to have minimum clearing time of (※Remark1) at 1000% rated current.

※註1(Remark1): 40mA~5A 20ms
6.3A~10A 15ms

7 耐久實驗 Endurance(On-Off Test):

7.1 於額定電流 ($1.0 \times I_n$) , 1 小時ON, 15 分鐘OFF, 共100次。

Loading 100% rated current ($1.0 \times I_n$), 1 hour ON, 15 minutes OFF. Keep 100 cycles.

7.2 接著以1.5倍之額定電流($1.5 \times I_n$) 通過1小時。

Followed by 1 Hour at 1.5 times the rated current ($1.5 \times I_n$).

7.3 再以4-2之方式量測壓降值, 所測得之壓降值不可比原值增加10%以上。

The voltage drop across the fuse-link after the test shall not have increased by more than 10% of the original value measured before the test.



8 高溫環境試驗 Derating Test:

本品置於70℃之高溫中，能以額定電流 (1.0 x In)通過1小時。

In an air circulating oven at 70℃, the fuses can load 100% rated current for 1 hour and they shall not operate.

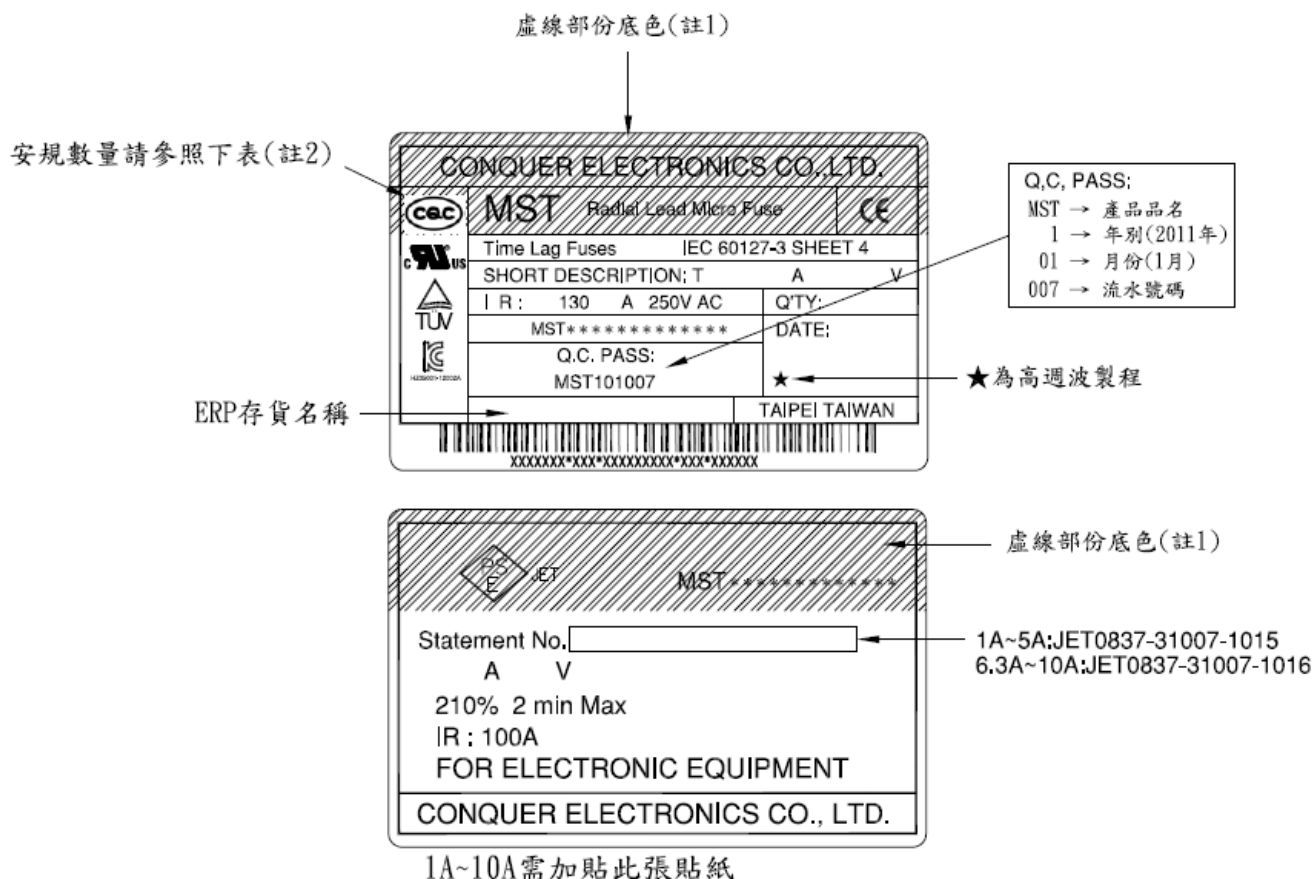
9 遮斷能力 Breaking Capacity(Interrupting rating):

130 amperes at 250V AC.

10 包裝 Packing :

1000 PCS/盒 內盒印明下列標示:料號、額定(電壓、電流、遮斷能力)及安規名稱。

1000 pcs in an inner box. The following items indicated on the box. Mark: Catalog number; ratings (voltage, current, interrupting capacity), and safety mark.



註1

虛線部份底色: 1A — 淡紫色 2.5A — 淡綠色
2A — 淡藍色 3.15A — 淡黃色

註2

適用規格	安規
40mA~400mA	
500mA~6.3A	
8A~10A	

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11 其他 Other:

11.1 除非另有指定，上述機械、電器特性，係於常溫，標準狀況下測試之。

Unless otherwise, specified, all tests to be performed at 25±5°C and 35-75% RH.

11.2 於標準狀況下儲放一年，本品乃確保上述機械與電氣之特性。

After one year's storage under normal condition, this item is guaranteed to meet the requirements mentioned above.

12 建議生產參數(無鉛焊錫使用)：

Recommended Process Parameters(for the action to Lead-free solder alloy)：

12.1 波峰參數 Wave Parameter	預熱溫度 Preheat temperature 最低溫度：100度 Temperature Minimum：100°C 最高溫度：150度 Temperature Maximum：150°C	錫槽溫度 Solder Pot Temperature 260度 Maximum 260°C Maximum 焊接時間 2~5 seconds Solder Dwell Time: 2~5 seconds
12.2 建議手持烙鐵焊接參數 Recommended Hand-Solder Parameters	烙鐵溫度：350°C +/-5°C Solder Iron Temperature：350°C +/-5°C 加熱時間：5 seconds max. Heating Time：5 seconds max.	

13 標記/安規認證 Mark/ Safety certification:

Mark Approvals	UL	CEC	TÜV	CCC	Nominal Resistance Cold Ohms	Nominal Melting I ² t A ² Sec
40 mA	**		**		9.0048~16.723	0.0158
50 mA	**		**		6.2300~11.570	0.0225
63 mA	**		**		3.7837~7.0269	0.0446
80 mA	**		**		2.5809~4.7931	0.0634
100 mA	**		**		1.6844~3.1282	0.1080
125 mA	**		**		1.1336~2.1052	0.1223
160 mA	**		**		0.8721~1.6195	0.2444
200 mA	**		**		0.5768~1.0712	0.3060
250 mA	**		**		0.4410~0.8190	0.6019
315 mA	**		**		0.2660~0.4940	0.8216
400 mA	**		**		0.1890~0.3510	1.4832
500 mA	**	**	**	*	0.1365~0.2535	2.7000
630 mA	**	**	**	*	0.0925~0.1719	3.1792
800 mA	**	**	**	*	0.0635~0.1179	5.7600
1 A	**	**	**	*	0.0525~0.0975	8.730
1.25 A	**	**	**	*	0.0385~0.0715	14.766
1.6 A	**	**	**	*	0.0298~0.0553	23.040
2 A	**	**	**	*	0.0221~0.0411	36.000

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Mark Approvals	UL	CQC	TÜV	CCC	Nominal Resistance Cold Ohms	Nominal Melting I^2t A2 Sec
2.5 A	**	**	**	*	0.0169~0.0313	56.250
3.15 A	**	**	**	*	0.0132~0.0244	93.768
4 A	**	**	**	*	0.0095~0.0177	158.40
5 A	**	**	**	*	0.0070~0.0130	202.50
6.3 A	**	**	**	*	0.0052~0.0096	310.77
8 A	**	**	**		0.0040~0.0074	368.64
10 A	**	**	**		0.0024~0.0044	288.00

*: 有安規認證 Have safety certify

** : 有安規認證及保險絲上蓋有安規印字標記 Have safety certify and safety mark on the cover

備註: PSE安規標示(IR:100A) 僅印於內盒貼紙

PSE Mark (IR:100A) is on the Label of in the box.

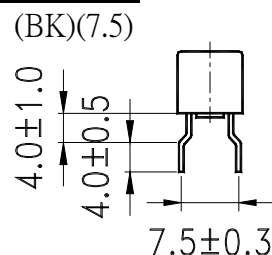
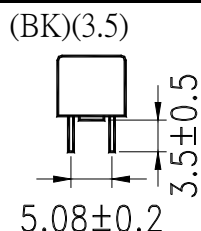
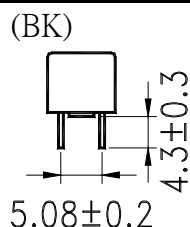
14 系列品名列表 series model list :

例: MST A 250V (H) 5

1 2 3 4 5

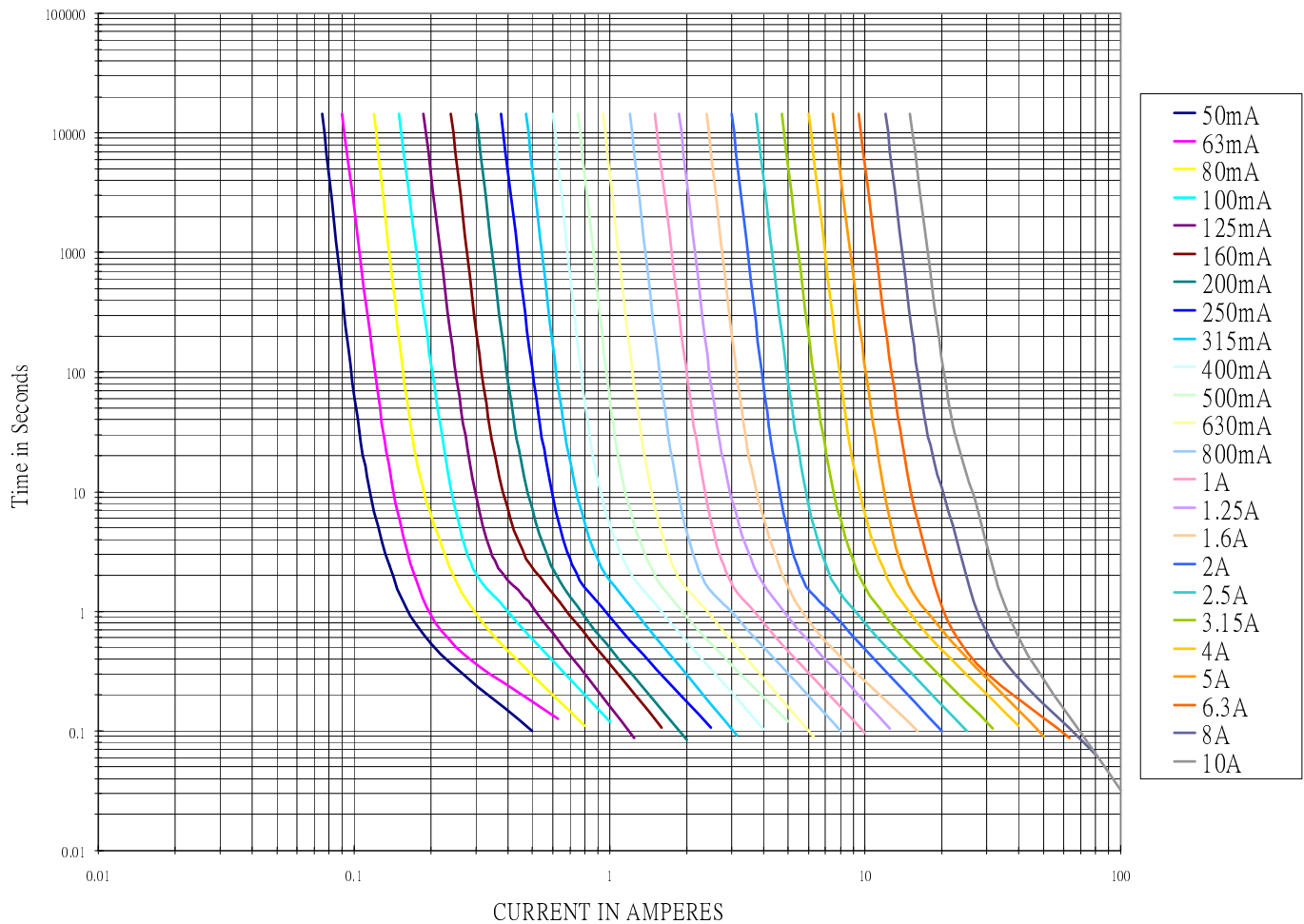
- 1 系列品名 Series Model : MST
- 2 安培數 Ampere Rating : 40mA~10A
- 3 伏特數 Voltage : 250V
- 4 Breaking 130A 250V AC : (H)
- 5 包裝規範 Packaging Code:

包裝規範 Packaging Code	說明
	1000 pcs:打帶(長腳) 1000 pcs on Taped(Long Lead)
(BK)	1000 pcs:散裝(短腳) 1000 pcs in Bulk(Short Lead)
(BK)(3.5)	1000 pcs:散裝(短腳) 1000 pcs in Bulk(Short Lead)
(BK)(7.5)	1000 pcs:散裝(短腳) 1000 pcs in Bulk(Short Lead)



* The curves are average value, for reference only *

Time Current Characteristic Curve



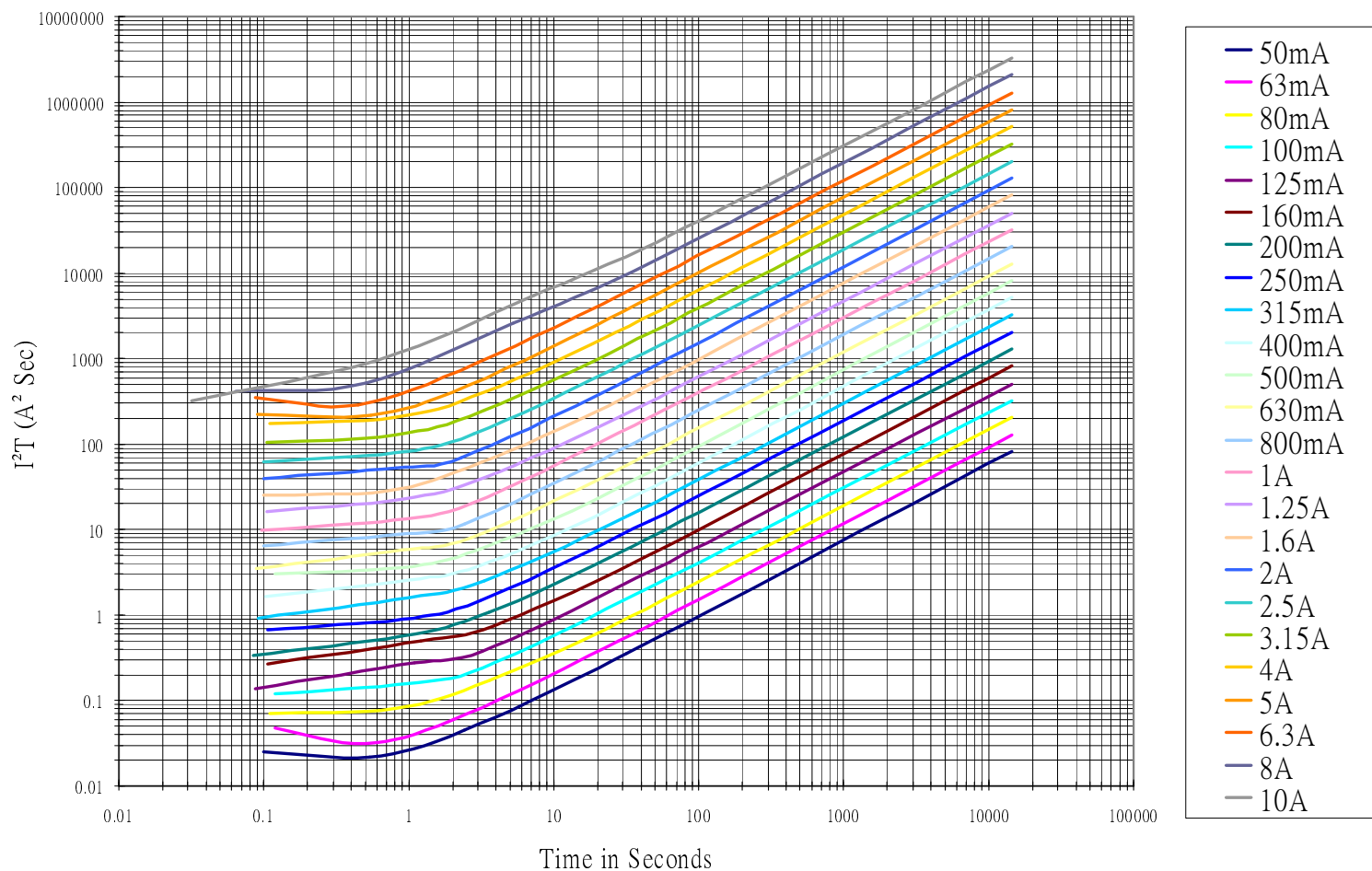
MODEL	ENGINEER	DEPT.	APPROVE
MST Series IT	Steven Peng	Angus Hsiao	Arthur Tsai



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* The curves are average value, for reference only *

Average Melting I^2t Curves



MODEL	ENGINEER	DEPT.	APPROVE
MST Series	Steven Peng	Angus Hsiao	Arthur Tsai

Product Characteristics & Reliability Tests

Test item	Test Description & Reference
Humidity unload test	MIL-STD-202G , Method 103B , Test Condition A Heat ($40\pm0.5^{\circ}\text{C}$) & High Humidity ($95\pm1\%$ RH), 240 hours , $\Delta R < 15\%$
Thermal shock test	MIL-STD-202G, Method 107g , Test Condition B Temperature setup : $25^{\circ}\text{C} \sim -65^{\circ}\text{C} \sim 25^{\circ}\text{C} \sim 125^{\circ}\text{C}$ Time setup : -65°C (30min) $\sim 25^{\circ}\text{C}$ (5min) $\sim 125^{\circ}\text{C}$ (30min) $\sim 25^{\circ}\text{C}$ (5min) 5 cycles , $\Delta R < 15\%$
Vibration test	MIL-STD-202G , Method 201A Frequency setup : $10 \sim 55 \sim 10\text{ Hz}$ Time setup : 1 Minutes/cycle (X-Y-Z,120 Cycles) 6hrs, $\Delta R < 15\%$
Salt spray Test	MIL-STD-202G , Method 101E , Test Condition A Salt spray concentration : $5 \pm 1\%$ Test liquid temperature : $35 \pm 0.5^{\circ}\text{C}$ 96hrs, $\Delta R < 15\%$
Solderability test	Reference IEC 60068-2-20 Temperature setup : $250 \pm 3^{\circ}\text{C}$, $3 \pm 0.3\text{ sec}$ After test terminal electrode wetting area must be greater than 95%
Resistance to Solder Heat Test	Reference IEC 60068-2-20 Temperature setup : $260 \pm 3^{\circ}\text{C}$, $10 \pm 1\text{ sec}$ $\Delta R < 15\%$