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1. 適用範圍 Specification

1-1 本承認書僅適用本公司之各種 無引腳碳膜電阻器成品規格產品。

The specification is only suitable for Carbon Film Fixed Resistors MECF-MELF Resistors(leadless size) manufactured by SHI MENG ELECTRONIC CO., LTO.

1-2 參考標準 Applicable specification

本承認書參考《JIS C5201-2011》和《GB/T 5729-2003/IEC 60115-1:2001》

The specification Applicable specification《JIS C5201-2011》and《GB/T 5729-2003/IEC 60115-1:2001》

2. 特性 Feature

2-1 特殊的皮膜技術 Special film technology.

2-2 具有出色的穩定性 Excellent overall stability.

2-3 使用高含鋁量瓷棒 High grade ceramic body Al_2O_3 .

2-4 功率範圍可達 2W以上 High power rating up to 2 Watts.

2-5 符合無鉛(Pb)和含鉛焊接工藝要求 Compatible with lead(Pb)-free and lead containing soldering processes.

2-6 可用于自動表面貼裝(SMD)裝配系統;它們適用於通過波峰焊、回流焊進行自動焊接 The resistors are suitable for processing on automatic SMD assembly systems.

2-7 符合AEC-Q200 標準 AEC-Q200 Compliance

3. 應用 Applications

3-1 通訊器材 Telecommunication.

3-2 汽車工業 Automotive.(non-safety parts)

3-3 測試量測設備 Measurement/Testing Equipment.

3-4 工業產品 Industrial.

4. 品名 Part Number

依據其種類，分別注明額定功率、容許差、公稱電阻值和形狀。

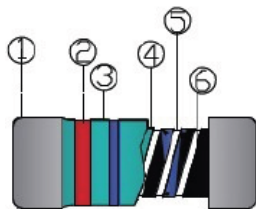
According the Resistors type, To mark the Rated power, Tolerance, Resistance value, and forming type.

例(e.g) : MECF 0207 1/2W J($\pm 5\%$) 100 Ω

種類 封裝 額定功率 容許差 阻值

Type Size Rated power Tolerance Resistance

5. 結構圖 Construction



① : 鍍銅錫鐵帽 Steel Termination cap

② : 色碼 Color Code Rings

③ : 環氧樹脂絕塗料 Insulation Coating

④ : 碳素皮膜 Carbon Film Resistive Layer

⑤ : 切溝線 Trimming Line

⑥ : 高含氧化鋁瓷棒 Alumina Ceramic Rod



6. 術語 Glossary

6-1 種類 Type

以大寫英文字母“MECF ” 表示為無引線型碳膜無腳電阻器。

Carbon Film Fixed Resistors MECF-MELF Resistors (leadless Size) are marked with“MECF ”。

6-2 標稱阻值 Rated resistance

Unit: Ω 、K Ω (103 Ω)等

6-3 電阻值容許差 Resistance tolerance:

J($\pm 5\%$)、G($\pm 2\%$)

6-4 額定功率：在 70℃環境溫度下進行耐久性試驗，而且阻值變化不超過該試驗的允許值時所允許的最大功率

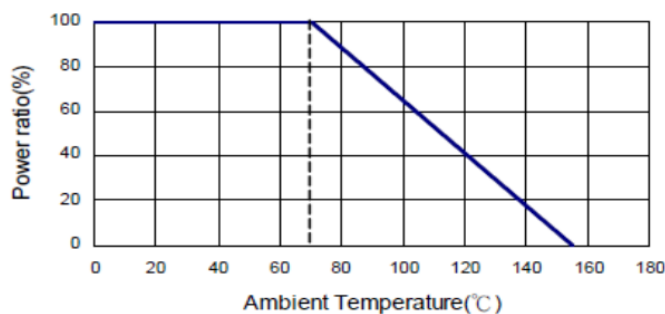
Rated power : At 70 °C ambient temperature durability test, and the change in resistance does not exceed the value of the test allows the maximum power allowed

6-4-1 以“W ” 代表額定電功率，如加一英文字母“S ” 表示小型化，例 1WS，即表示額定功率為 1W 之小型化

The“W ” is the rated power, such as adding a letter "S" means that small, for example 1WS,that means a power rating of 1W the small Size

6-4-2 額定功率系適應在周圍溫度 70℃可以連續負載的最大功率,但周圍溫度如超過 70℃時之額定電力則依圖的降功率曲線實施。

Rated power is maximum power which can be continuously loaded at specified ambient temperature 70℃, however when the ambient temperature exceeds 70℃,rated power should be determined form the derating curve



6-5 額定電壓：用標稱阻值和額定功率乘積的平方根計算出來的直流電壓或交流電壓有效值。由於電阻器的尺寸和結構上的原因，在超過一定的高阻值時不允許施加額定電壓，而是應施加最高使用電壓。

Rated voltage: The nominal resistance and power rating calculated by the square root of the product of DC voltage or AC rms voltage .As the resistor size and structural reasons, the high resistance when more than a certain rated voltage is not allowed, but the maximum operating voltage should be applied.

$$U : \text{電壓} \quad I : \text{電流} \quad I = \frac{U}{R}$$

$$P : \text{功率} \quad R : \text{阻值} \quad U = \sqrt{P \times R}$$

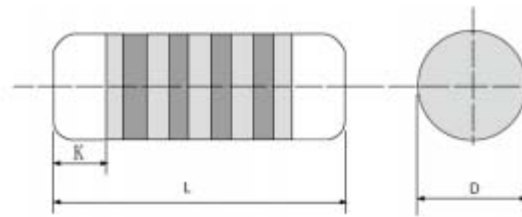
6-6 最高使用電壓：可以連續施加在電阻值兩個引出端上的最大直流或交流電壓有效值，當電阻的額定電壓計算出來大於最高使用電壓時，只能對電阻施加最高使用電壓。

Max continuous working voltage: resistance can be continuously applied to the two terminals on the largest DC voltage or AC rms voltage, when the resistance is greater than the maximum rated voltage is calculated using the voltage, use only the highest voltage applied to the resistance

6-7 電阻溫度係數 (TCR)：兩個規定溫度之間的阻值相對變化除以產生這個變化的溫度之差，主要用來衡量電阻值隨溫度變化而變化的特性

Temperature coefficient of resistance (TCR): the resistance between the two provisions relative changes in temperature produces this change by dividing the temperature difference is mainly used to measure the resistance changes with temperature characteristics

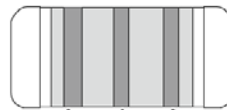
7. 尺寸 Dimension



Unit : mm

TYPE \ Size	Dimensions (mm)		
	L	D	K min
0102	2.2 ± 0.20	1.1 ± 0.10	0.45
0204	3.5 ± 0.20	1.4 ± 0.15	0.7
0207	5.9 ± 0.20	2.2 ± 0.20	0.8
0309	8.5 ± 0.30	3.0 ± 0.30	1.4

8. 色碼標示 Explanation of color



Color	1ND and	2NDband	MULTIPLIER
Black	0	0	1×
Brawn	1	1	10×
Red	2	2	100×
Orange	3	3	1000×
Yellow	4	4	10000×
Green	5	5	
Blue	6	6	
Violet	7	7	
Gray	8	8	
White	9	9	
Gold			0.1×
Silver			0.01×

9. 標準品技術規格 Standard Electrical Specifications

Item Type	額定功率 at 70°C	工作溫度範圍 (°C)	最大額定 工作電壓	最大短時間 過負載電壓	電阻值範圍
					±2%、±5%
0102	1/8W	-55~155	150V	300V	8.2Ω~470KΩ
0204	1/4W	-55~155	200V	400V	1Ω~1MΩ
0204SS	2/5W	-55~155	200V	400V	1Ω~1MΩ
0207	1/2W	-55~155	300V	600V	1Ω~10MΩ
0207SS	1W	-55~155	300V	600V	1Ω~10MΩ
0309	1W	-55~155	350V	700V	1Ω~10MΩ
0309SS	2W	-55~155	350V	700V	1Ω~10MΩ

10. 性能 Performance

測試項目 Item	規格值 Specifications	測試方法 Test methods
電阻溫度係數 T.C.R	±250PPM/°C, 1Ω~9.1Ω	-55°C~+125°C, 25°C is the reference temperature.
	-700 PPM/°C, 10Ω~10MΩ	
短時間過負載試驗 Short time Overload	±(1.0%+0.05Ω)	RCWV×2.5 or Max. Overload voltage for 5 seconds.
耐濕負載試驗 Damp Heat with Load	±(5.0%+0.05Ω)	40±2°C, 90~95% R.H. RCWV or Max. Operating voltage for 1,000hrs. with 1.5hrs. ON and 0.5hrs. OFF.
壽命負載試驗 Endurance	±(3.0%+0.05Ω)	70±2°C, RCWV or Max. Operating voltage for 1,000hrs. with 1.5hrs. ON and 0.5hrs. OFF.
高低溫度循環試驗 Temperature cycle	±(1.0%+0.05Ω)	-55°C(30min.) > Room Temp. (3min.) > +125°C(30min.) > Room Temp. (3min.) / (5 cycle).
彎曲端子強度試驗 Bending Strength	±(0.5%+0.05Ω)	Bending once for 5 seconds with 2mm.
焊錫性 Solder ability	95% min. Coverage	245±5°C for 3 seconds.
焊錫耐熱性試驗 Resistance To Soldering Heat	±(1.0%+0.05Ω)	260±5°C for 10 seconds
絕緣耐壓試驗 Voltage Proof	No breakdown or flashover	0204:AC 300V, 0207、0309:AC 500V for 1 minute.
絕緣電阻試驗 Insulation Resistance	>1,000MΩ	DC 500V Megger.

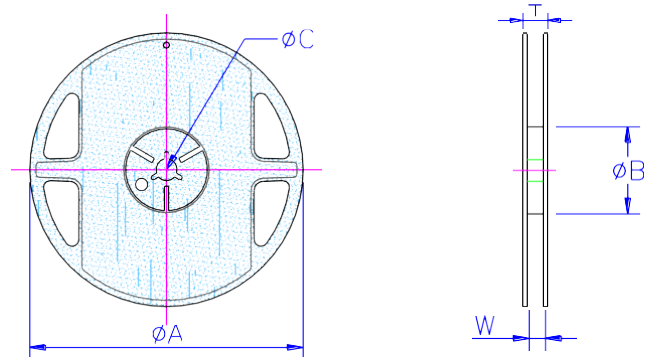
* RCWV (Rated Continuous Working Voltage)

* 短時間過負荷電壓=(電阻額定功率×公稱電阻值)開根號×2.5 倍或法定最高短時間過負荷電壓。

* 工作電壓 RCWV =(電阻額定功率×公稱電阻值)開根號或法定最高使用電壓。

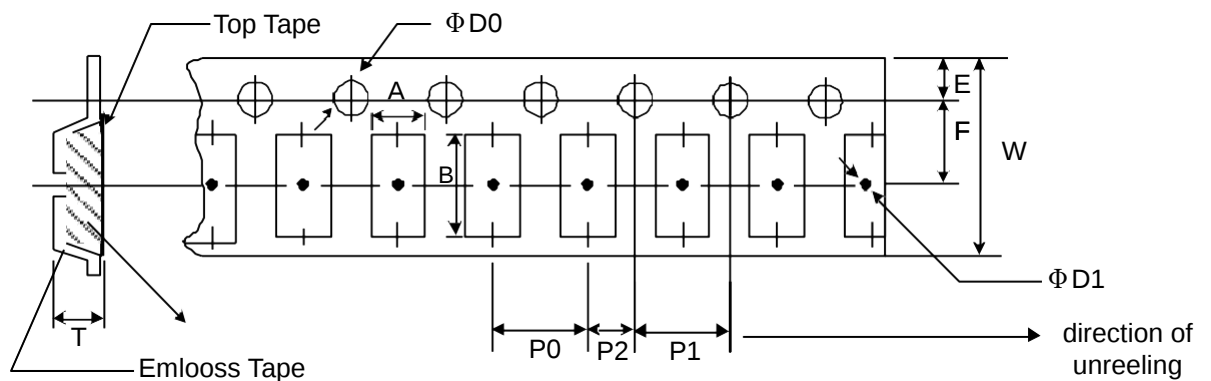
* 測試標準參考/Reference Standards: IEC 60115-1 ; JIS-C 5201-1

11. 包裝方式 Tape packing in every box



Packaging Quantity & Reel Specifications

Type	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	W (mm)	T (mm)	Emboss Plastic Tape (EA)
0102	7 inch	178.5±1.5	60.0+1.0	13.0±0.5	9.0±0.5	12.5±0.5	3,000
0204	7 inch	178.5±1.5	60.0+1.0	13.0±0.5	9.0±0.5	12.5±0.5	3,000
0207	7 inch	178.5±1.5	60.0+1.0	13.0±0.5	13.0±0.5	15.5±0.5	2,000
0309	13 inch	330±1.5	100.0+1.0	13.0±0.5	17.0±0.5	19.0±0.5	2,500

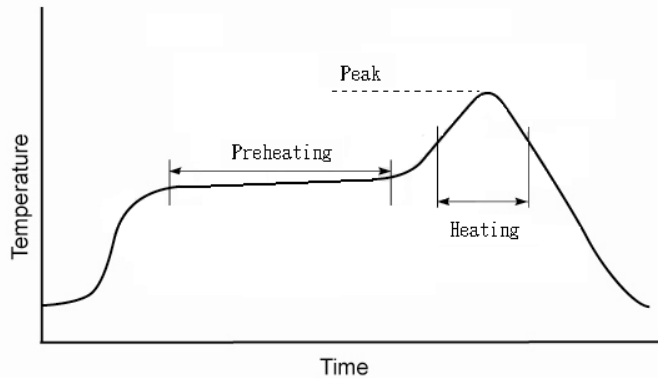


Emboss Plastic Tape Specifications

Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P0 (mm)	P1 (mm)	P2 (mm)	ΦD0 (mm)	T (mm)
0102	1.30±0.10	2.40±0.10	8.0±0.10	1.75±0.10	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10	1.50±0.10
0204	1.55±0.10	3.65±0.10	8.0±0.10	1.75±0.10	3.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10	1.45±0.10
0207	2.40±0.10	6.30±0.10	12.0±0.10	1.75±0.10	5.50±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10	2.50±0.10
0309	3.30±0.10	9.00±0.10	16.0±0.30	1.75±0.10	7.50±0.05	4.00±0.10	8.00±0.10	2.00±0.05	1.50+0.10	3.30±0.10

12. 建議 Suggestion

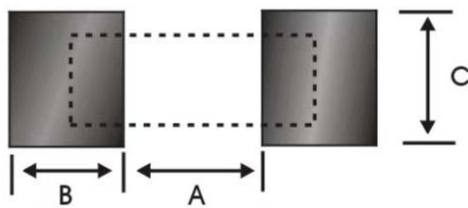
12.1 無鉛迴流焊條件 Reflow soldering (lead-free)



條件 Status	最高溫度 Temperature MAX	Time MAX
預熱 Preheating	180°C	120 sec
加熱Heating	220°C	60 sec
峰值 Peak	260°C	10 sec

12.2 焊盤設計Pad design

■ Recommend Land Pattern



TYPE	A(mm)	B(mm)	C(mm)
0102	1.0	0.8	1.5
0204	1.6	2.0	2.2
0207	3.2	3.0	3.5
0309	5.6	4.0	4.0

13. 訂貨方式 How To Order

12-1 訂貨方式 How To Order

如: MECF 碳膜無腳電阻器 0207 1WS ±1% 100Ω

Example: MECF---MELF 0207 1WS ±5% 100Ω

1	M C F	1 0	T S	0 7	J	0 1 0 1	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
代碼 code	類別 Type	代碼 code	瓦特數 wattage	代碼 code	包裝方式 PackagingType	代碼 code	容許差 tolerance
1	Product	08	1/8W	T	Reel	G	±2%
2	Samples	04	1/4W	—	Normal size	J	±5%
3	Materials	02	1/2W	s	Small size		
		10	1W	SS	Super small size		
		20	2W				
		30	3W				
		3/5W>1/2W>1/4W					
代碼 code	產品類別 Product Type					阻值 Resistance	Ex
MCF	MECF-MELF					低阻兩位 小數Ω	0.15Ω
						個位Ω	1Ω
						十位Ω	10Ω
						百位Ω	100Ω
						個位K	1kΩ
						十位k	10kΩ
						百位k	100kΩ
						個位M	1M
						十位M	10M
						以此類推	
代碼 code	型號與尺寸 Model and Size						
02	0102-1.1*2.2						
04	0204-1.4*3.5						
07	0207-2.2*5.9						
09	0309-3.0*8.5						

14. 注意事項 Caution

14.1 Storage and usage method

14.2 Humidity gives damage to cap solderability, therefore, please keep environment.

Temperature : +5°C~+40°C

Humidity : 55%~75%RH

Storage limited : 24 months

14.3 Please follow the instruction to keep the material when it is unpacked.

14.4 When ambient temperature exceeds a rated ambient temperature, the resistance shall be applied on the derating curve by derating the load power.

14.5 Please avoid join many resistors in series or parallel when apply high voltage or high electric current.

14.6 Molding products by using regin might bring out resistance value change. Please keep away from Molding.

14.7 This products meet the RoHS Compliant.