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1. 適用範圍 Specification

1-1 本承認書僅適用本公司生產之各種 MEMG 金屬玻璃釉無腳電阻器產品。

The specification is only suitable for MEMG—MELF resistors manufactured by SHI MENG ELECTRONIC CO., LTO.

1-2 參考標準 Applicable specification

本承認書參考《JIS C5201-2011》、《GB/T5729-2003/IEC60115-1:2001》、《AEC-Q200》標準。

The specification Applicable specification《JIS C5201-2011》、《GB/T 5729-2003/IEC60115-1:2001》、《AEC-Q200》。

2. 特征及应用 Features and Applications

■ 特征 Features

- Excellent overall stability
- Tight tolerance down to $\pm 1\%$
- Extremely low TCR down to $\pm 200\text{ppm}/^\circ\text{C}$
- AEC-Q200 Compliance
- SMD enabled structure

■ 应用 Applications

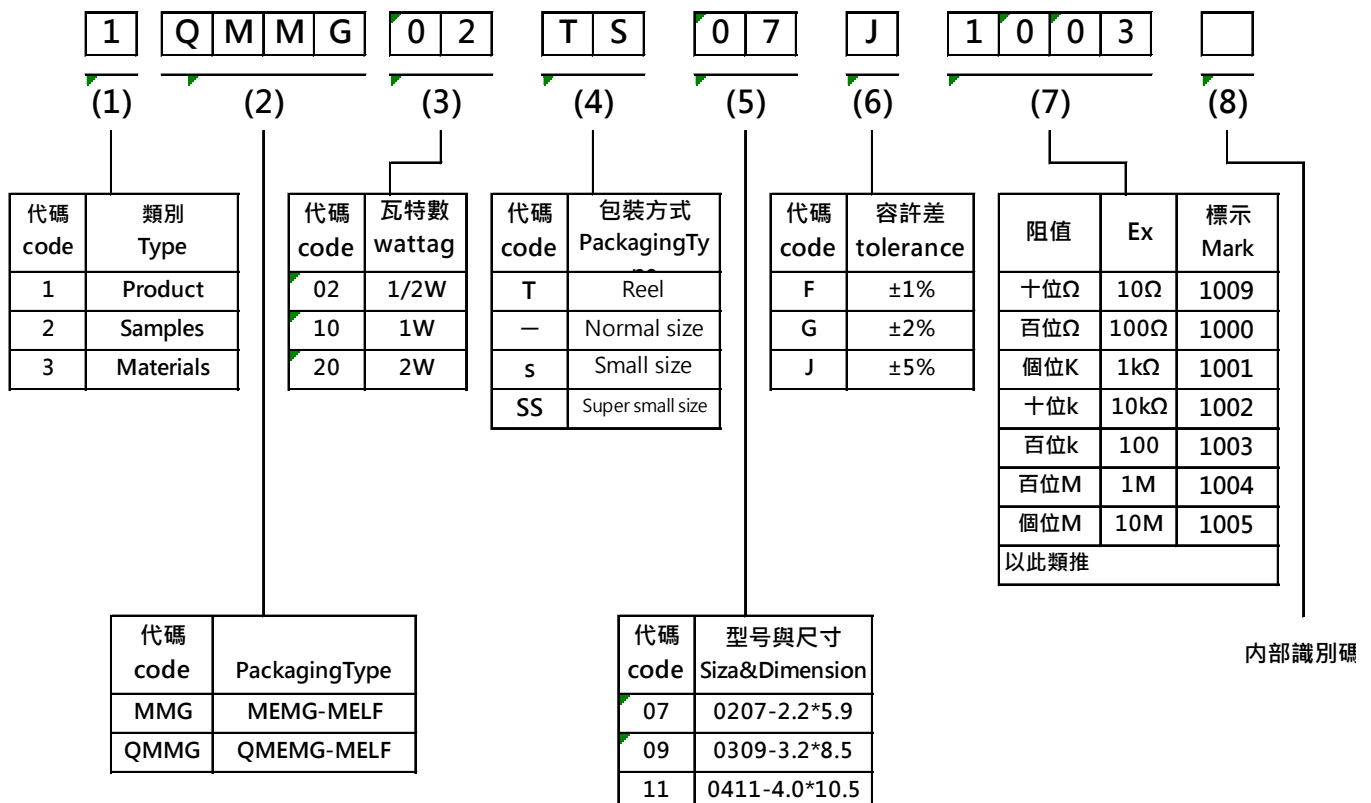
- Automotive(non-safety parts)
- Power Supply
- Medical equipment
- Industrial
- Measurement / Testing Equipment

3. 訂貨方式 How To Order

2-1 訂貨方式 How To Order

如: MEMG 金屬玻璃釉無腳電阻器 0207 1/2WS $\pm 1\%$ 100K Ω

Example: MEMG---MELF 0207 1/2WS $\pm 1\%$ 100K Ω



4. 術語 Glossary

產品類型依種類、功率、型式、特性、標稱電阻及電阻值容許差等排列構成。

The manufactured type constituted by kind、power、characteristic、rated resistance and resistance tolerance.

4-1-1 名稱 Code:

以大寫英文字母“MEMG”表示為金屬玻璃釉無腳電阻器。

MEMG-MELF Resistors are marked with “MEMF”。

4-1-2 標稱阻值 Rated resistance

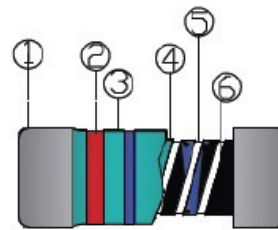
Unit: Ω 、 $K\Omega(10^3\Omega)$ 、 $M\Omega(10^6\Omega)$ 等。

4-1-3 電阻值容許差 Resistance tolerance:

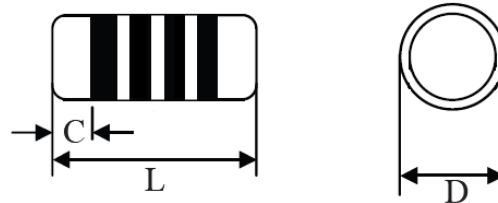
F($\pm 1\%$)、G($\pm 2\%$)、J($\pm 5\%$) and K($\pm 10\%$)。

5. 構造 Construction

- ① : 鍍錫鐵帽 Tin-plated steel caps
- ② : 色碼標示 Marking
- ③ : 絕緣樹脂 Insulating resin
- ④ : 金屬玻璃釉膜 metal glaze thick film
- ⑤ : 切割槽紋 Trimming line
- ⑥ : 瓷棒 ceramic base



6. 尺寸 Dimension



TYPE	Dimensions (mm)		
	L	ΦD Max	C Min
0207	5.9 ± 0.2	2.40	0.80
0309	8.5 ± 0.3	3.30	1.40

7. 色碼標示 Explanation of color

底漆: 灰色 Coating color : Grey

適用於 $\pm 1\%$

四色環標示

Marking: 4 Color code



顏色 COLOR	第一位數 1ND BAND	第二位數 2ND BAND	第三位數 3ND BAND	乘数 MULTIPLIER
黑 BLACK	0	0	0	1×
棕 BRAWN	1	1	1	10×
紅 RED	2	2	2	100×
橙 ORANGE	3	3	3	1000×
黃 YELLOW	4	4	4	10000×
綠 GREEN	5	5	5	—
藍 BLUE	6	6	6	—
紫 VIOIET	7	7	7	—
灰 GRAY	8	8	8	—
白 WHITE	9	9	9	—
金 GOLD				0.1×
銀 SILVER				0.01×

適用於 $\pm 5\%$

三色環標示

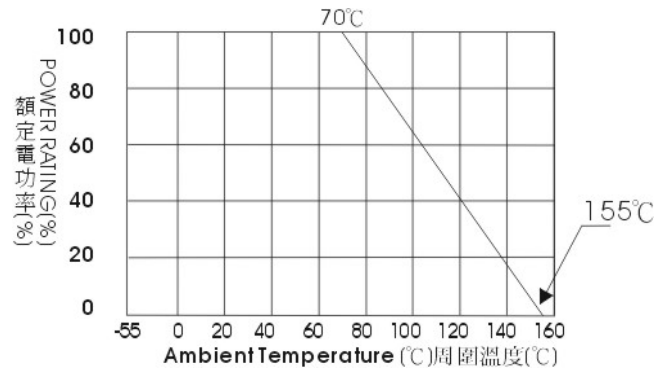
Marking: 3 Color code



8. 負載減輕曲線 Power Derating Curve

額定功率系適應在周圍溫度 70°C 可以連續負載的最大功率(如表),但周圍溫度如超過 70°C 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°C, however when the ambient temperature exceeds 70°C, rated power should be determined from the derating curve



9. 電氣特性 Characteristics

■ 標準品特性 Standard Characteristics

Item Type	Rated power at 70°C 額定功率 at 70°C	Operating temp range 使用溫度 範圍(°C)	Max continuous working voltage 最高工作 電壓	Max Pulse voltage 最高脈衝 電壓	Max overload voltage 最高過負荷 電壓	Range of resistance value 阻值範圍
						±1.0%、±5.0%
0207	1/2W	-55~155	500V	6,000V	1,000V	100KΩ~20MΩ
0309	1W	-55~155	700V	8,000V	1,000V	100KΩ~20MΩ

■ 高功率品特性 High Power Rating Characteristics

Item Type	Rated power at 70°C 額定功率 at 70°C	Operating temp range 使用溫度 範圍(°C)	Max continuous working voltage 最高工作 電壓	Max Pulse voltage 最高脈衝 電壓	Max overload voltage 最高過負荷 電壓	Range of resistance value 阻值範圍
						±1.0%、±5.0%
0207	1W	-55~155	500V	6,000V	1,000V	100KΩ~20MΩ
0309 (0411)	2W	-55~155	700V	8,000V	1,000V	100KΩ~20MΩ

10. 性能 Performance

測試項目 Item	測試要求 Requirement	測試步驟 Test Method
電阻溫度係數試驗 Temperature Coefficient	± 200 PPM/ $^{\circ}\text{C}$	IEC-60115 -14.8, -55 $^{\circ}\text{C}$ ~ +125 $^{\circ}\text{C}$, 25 $^{\circ}\text{C}$ is the reference temperature.
短時間過附載試驗 Short Time Overload	$\pm (1.0\% + 0.05\Omega)$	IEC-60115 -14.13 RCWV $\times 2.5$ or Max. Overload voltage for 5 seconds.
耐濕負載試驗 Damp Heat With Load	$\pm (5.0\% + 0.05\Omega)$	IEC-60115 -14.24, 40 ± 2 1,000 hrs. $^{\circ}\text{C}$, 90~95% R.H. (with 1.5 hrs. ON and 0.5 hrs. OFF RCWV or Max. Operating). voltage for
壽命負載試驗 Endurance	$\pm (5.0\% + 0.05\Omega)$	MIL-STD-202 Method 108 70 $\pm 2^{\circ}\text{C}$, RCWV or Max. Operating voltage for 1,000 hrs. (with 1.5 hrs. ON and 0.5 hrs. OFF).
脈沖試驗 Pulse Withstanding Voltage	$\pm (20\% + 0.05\Omega)$	50 Discharges form 1 nF capacitor charged to pulse voltage. 2.5 Sec. ON 2.5 Sec. OFF 50 cycles。 pulse voltage 0207, $\leq 1\text{M}\Omega$ 4KV, $> 1\text{M}\Omega$ 7KV; 0309, $\leq 1\text{M}\Omega$ 5KV, $> 1\text{M}\Omega$ 8KV
偏高濕度(雙 85 測試) Biased Humidity	$> 100\text{K}$: ($\pm 2.0\% + 0.05\Omega$)	MIL-STD-202 Method 108 1,000 hrs. 85 $^{\circ}\text{C}$ /85%RH 10% RCWV. Max=100V
高低溫度循環試驗 Temperature Cycle	$\pm (1.5\% + 0.05\Omega)$	JESD22 Method JA-104 -55 $^{\circ}\text{C}$ (30min.)>Room Temp.(3min.)> +125. $^{\circ}\text{C}$ (30 min.)> Room Temp.(3min.)/(5cycle).
靜電放電 ESD	$\pm (1.0\% + 0.05\Omega)$	AEC-Q200-002 Human body, 0207、0309: 4KV
彎曲端子強度試驗 Bending Strength	$\pm (0.5\% + 0.05\Omega)$	AEC-Q200-005 Bending once for 60 seconds with 2mm
端子強度 Terminal Strength	No broken	AEC-Q200-006 Force of 1.8kg for seconds
焊錫性試驗 Solder ability	95% min. Coverage	IEC-61115-14.17 245 $\pm 5^{\circ}\text{C}$ for 3 seconds.
焊錫耐熱性試驗 Resistance to Soldering Heat	$\pm (1.0\% + 0.05\Omega)$	MIL-STD-202 Method 210 260 $\pm 5^{\circ}\text{C}$ for 10 seconds.
絕緣耐压試驗 Voltage Proof	No breakdown or flash-over	IEC-60115-1 4.7 AC 500V for 1 minute
絕緣電阻試驗 Insulation Resistance	$> 1,000\text{M}\Omega$	IEC-60115-1 4.6 DC 500V Megger.

* RCWV (Rated Continuous Working Voltage)

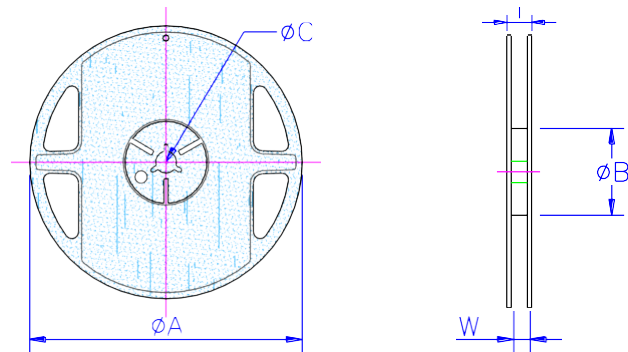
* 工作電壓 RCWV =(電阻額定功率 $\times$ 公稱電阻值)開根號或法定最高使用電壓。

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

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

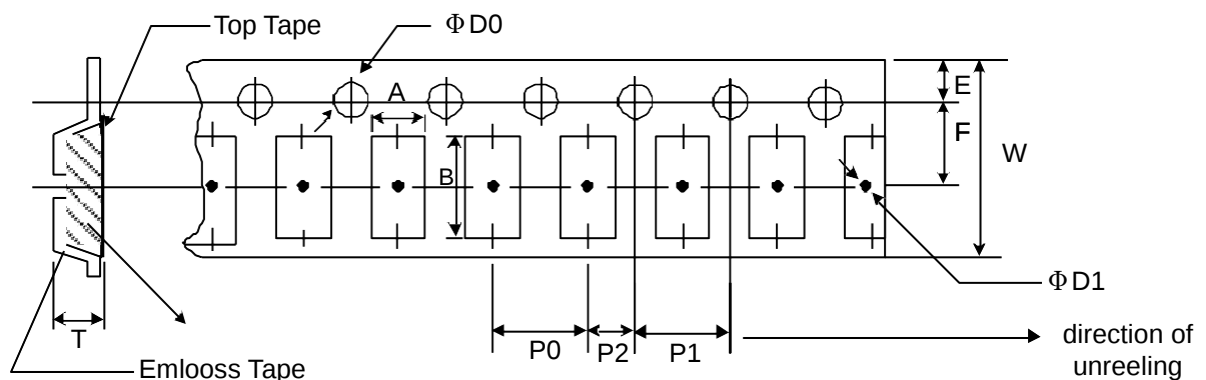
* 儲存環境條件/ Storage Temperature: 25 $\pm 3^{\circ}\text{C}$; Humidity < 80% RH.

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)
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

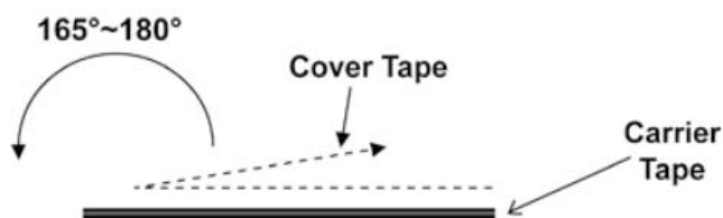


Emboss Plastic Tape Specifications

Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P0 (mm)	P1 (mm)	P2 (mm)	ΦD0 (mm)	T (mm)
0207	2.40±0.10	6.15±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±0.30
0309	3.30±0.10	9.00±0.10	16.0±0.10	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±0.50

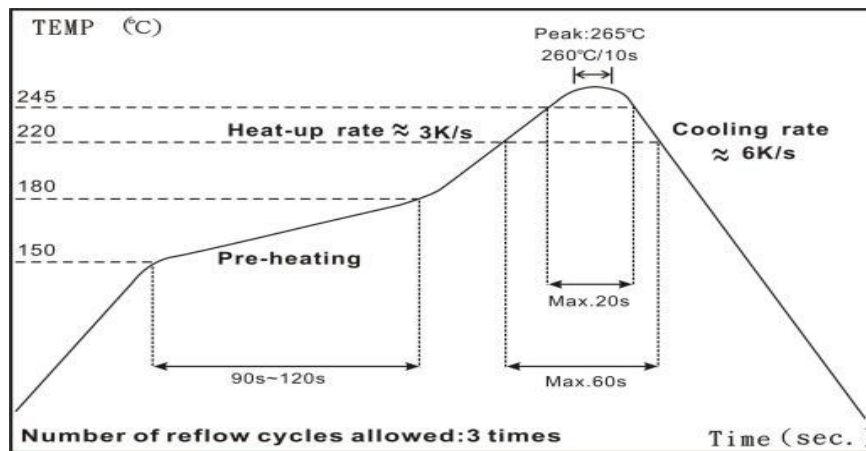
上蓋帶剝離規格 COVER TAPE PEELING SPECIFICATION

- 0207 、 0309 : 50±10gf



12. 建議 Suggestion

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



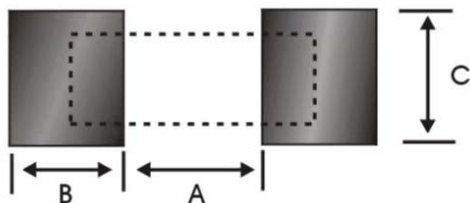
IR Reflow Soldering

回流焊

- (1) Time of IR reflow soldering at maximum temperature point 260°C: 10s
回流焊在最高溫度點時間 (260°C) :10 秒
- (2) Time of soldering iron at maximum temperature point 410°C: 5s
烙鐵在最高溫度點時間 (410°C) :5 秒

12.2 焊盤設計 Pad design

Recommend Land Pattern



TYPE	A(mm)	B(mm)	C(mm)
0207	3.2	3.0	3.5
0309	5.6	4.0	4.0

13. 注意事項 Caution

- 13.1 Storage and usage method
- 13.2 Humidity gives damage to cap solderability, therefore, please keep environment.
Temperature : +5°C~+40°C
Humidity : 55%~75%RH
Storage limited : 24 months
- 13.3 Please follow the instruction to keep the material when it is unpacked.
- 13.4 When ambient temperature exceeds a rated ambient temperature, the resistance shall be applied on the derating curve by derating the load power.
- 13.5 Please avoid join many resistors in series or parallel when apply high voltage or high electric current.
- 13.6 Molding products by using resin might bring out resistance value change. Please keep away from Molding.
- 13.7 This products meet the RoHS Compliant.