

## 1. Scope:

1.1 This specification is covered for CUM0805 series only (此電流檢測電阻器規格書只包含 CUM0805 產品):

## 2. Product Features (產品特性)::

2.1 Applications include current sensing, voltage division and pulse applications (應用範圍包括電流感應，分壓及脈衝應用)

2.2 Suitable for high precision current sensing circuit protection application (適用於高精度的電流感應器能應用於產品的保護).

2.3 The resistive material stable and ultra low TCR. Low and Stable TCR  $\leq \pm 50 \text{ppm}/^\circ\text{C}$  (穩定的合金板材料可提供穩定且低的溫度系數。穩定且低的溫度系數可控制於  $\leq \pm 50 \text{ppm}/^\circ\text{C}$ ).

2.4 Specially selected and stabilized materials allow for high temperature derating to  $+170^\circ\text{C}$  (精心挑選並穩定材料允許高溫降額至  $+170^\circ\text{C}$ ).

2.5 Pure tin plating provides compatibility with lead (Pb) free and lead containing soldering processes (產品電極端使用純錫電鍍，適合於無鉛與含鉛的銲接製程).

2.6 Excellent stability ( $|\Delta R/R| \leq \pm 1.0\%$  for 1000 h at  $70^\circ\text{C}$ ) different environmental conditions (在不同的環境下有極佳的穩定度(誤差值  $\leq \pm 1.0\%$ ，當產品處於  $70^\circ\text{C}/1,000$  小時下)).

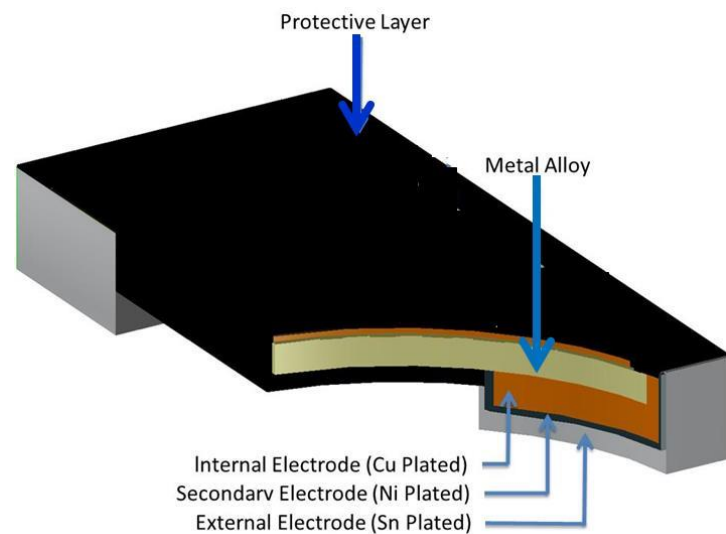
2.7 Compliant to RoHS directive 2011/65/EU and Halogen free (符合 RoHS 指令 2011/65/EU 指令與無鹵的要求).

2.8 Flame retardant type material is used to meet UL94 V-0 requirements (不燃型材料符合 UL94 V-0 的要求).

## 3. Product Constructional (產品結構):

3.1 The resistors are constructed in a high grade material, Internal metal electrodes are added at each end and connected by a resistive paste that is applied to the top surface of the metal alloy (本公司的電流檢測電阻器是以高規格的材料所建構。金屬端電極附著在合金板的末端並且保護層與合金板的上層連接).

3.2 The resistive layer is covered with a protective coat, and two external end terminations are added. Wrap-around terminations have an electroplated nickel barrier and Lead-Tin or pure Tin (lead free) or matte-tin finish, ensuring excellent 'leach' resistance properties and solderability (電阻層以保護層(漆)來包覆並加上兩個電極端。電極端以電鍍鎳為屏障並以純錫(無鉛)或表面無光澤的錫來包覆，來確保極佳銲錫性).



## 4. Product Specifications(產品規格):

Type 類別	# of Terminals 電極端數目	Max. Rating Power 最大額定功率(W)	Max. Rating Current 最大額定電流(A)	Max. Overload Current 最大過負載電流(A)	TCR (ppm/°C)溫度係數	Resistance Range (mΩ)* 電阻值範圍	Operating Temperature 操作溫度
						F (±1%); G (±2%); J (±5%)	
CUM0805	2	1.0	44.72	89.44	≤±100	0.5	-55~+170°C
			31.62	63.24	≤±75	1~2	
			20.00	40.00	≤±50	2.5~10	

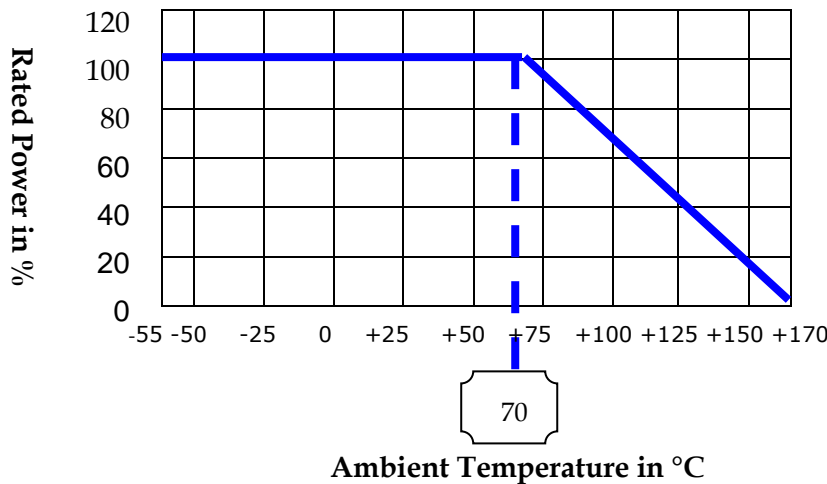
Remark 備註:

- a. "\*" Special tolerance and range of resistance are under requested ("\*" 如需特殊的公差和阻值請與我們聯絡).

## 5. Power Derating Curve(功率減額曲線):

5.1 The Operating Temperature Range: -55°C ~+170°C.(溫度範圍: -55°C ~+170°C).

5.2 For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with the curve below(當電阻工作在溫度超過 70°C 時，額定功率必須減額，減額曲線依據下圖)：



## 6. Rating Current(額定電流):

6.1 The following equation may be used to determine the DC (Direct Current) or AC (Alternating Current) (RMS, root mean square value) of normal rated power. However, if the result value exceeds the highest current of regulated standards (paragraph 5), the highest normal rated power is to be used (以下的公式也許被用於確定 DC (直流電)或AC (交流電)電流(RMS, 均方根值) 的正常額定功率。無論如何，如果結果超出被調控的最高標準電流(參考第五章節)時，最高的正常額定功率將被使用).

Remark:

- I: Rating Current.
- P: Rating Power.
- R: Resistance.

$$I = \sqrt{P/R}$$

## 7. Ordering Information(訂購訊息):

Model (Size)	種類(尺寸)	Power Rating (Watts) 額定功率(瓦特)	Packing* 包裝	Tolerance** 公差	Resistance*** 電阻值
CUM	0805****	<ul style="list-style-type: none"> <li>C: 0.75W</li> <li>1: 1.0W</li> </ul>	<ul style="list-style-type: none"> <li>5: 5,000pcs</li> </ul>	<ul style="list-style-type: none"> <li>F=±1.0%</li> <li>G=±2.0%</li> <li>J=±5.0%</li> </ul>	e.g.: R005: 5mΩ R020: 20mΩ

Remark 備註:

a. "\*" The packing quantity per reel are listed below ("\*":每個膠盤可裝的產品數量):

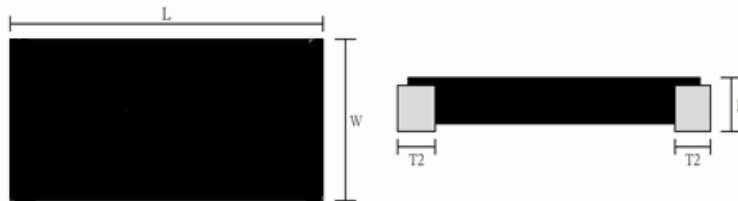
Model (種類)	Tape Width (寬度)	Diameter (直徑)	Piece/reel (標準(每個膠盤))
CUM0805	8 mm/embossed plastic	178 mm/7"	5,000 pieces (5,000 顆)

b. "\*\*\*" Special tolerance and range of resistance are under requested ("\*\*\*"如需特殊的公差和阻值請與我們聯絡).

c. "\*\*\*\*" Normal product order information has 3 digits. (e.g. 5mΩ is R005). ("\*\*\*\*" 正常的產品是三碼).

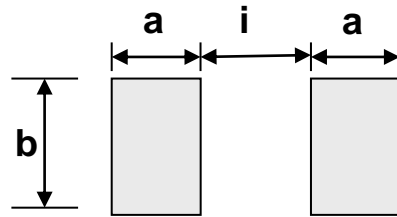
d. "\*\*\*\*\*" Without product marking for the CUM0805 series (CUM0805 產品不印字碼).

## 8. Physical Dimensions(產品尺寸):



Type 型別	Maximum Power Rating (Watts) 最大額定功率(瓦特)	Resistance Range (mΩ) (電阻值範圍)	Dimensions - millimeters 尺寸-公釐			
			L	W	H	T2
CUM0805	1.0	0.5	2.05±0.25	1.30±0.30	0.60±0.20	0.75±0.20
		1			0.55±0.20	0.40±0.20
		1.5			0.45±0.20	
		2			0.35±0.20	
		2.5			0.45±0.20	
		3~8			0.35±0.20	
		9~10			0.37±0.20	

9. Recommended Land Pattern (建議印刷電路板上鉅墊的尺寸):



Type 型別	Maximum Power Rating (Watts) 最大額定功率(瓦特)	Resistance Range (mΩ) (電阻值範圍)	Dimensions - millimeters 尺寸-公釐		
			a	b	i
CUM0805	1.0	0.5	1.35	1.80	0.30
		1~10	1.00	1.80	1.00

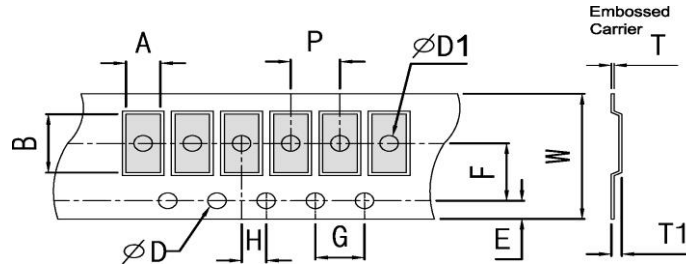
10. Product Reliability Performance(產品可靠度特性):

Test Items	Conditions of Test	Test Limits
Temperature Coefficient Ratio (T.C.R.)	$\text{T.C.R. (ppm/}^\circ\text{C)} = \frac{(R2-R1)}{R1 (T2-T1)} \times 10^6$ <ul style="list-style-type: none"> <li>R1: resistance at room temperature (T1)</li> <li>R2: resistance at 150°C (T2)</li> </ul>	AS spec
Temperature Cycling	-55°C to +150°C, 1,000cycles, 15min at each extreme	$\Delta R/R1 \leq \pm 0.5\%$
Short Time Overload	<ul style="list-style-type: none"> <li>Number of rated power: 4 times</li> <li>Rating power duration: 5secs</li> </ul>	$\Delta R/R1 \leq \pm 1.0\%$
Resistance to Solder Heat	260±5°C Solder, 10±1secs dwell	$\Delta R/R1 \leq \pm 0.5\%$
High Temperature Exposure	1,000hrs at + 170 °C	$\Delta R/R1 \leq \pm 1.0\%$
Load at Rated Power	1,000hrs@70 °C, 1.5hrs "ON", 0.5hrs "OFF"	$\Delta R/R1 \leq \pm 1.0\%$
Bias Humidity	+85°C, 85%RH, 10% Bias, 1,000hrs	$\Delta R/R1 \leq \pm 0.5\%$
Solderability	245±5°C for 2±0.5secs	>95% coverage

Remark:  $\Delta R$  = (resistance after stress - resistance before stress); R1 means resistance before stress.

## 11. Packaging:

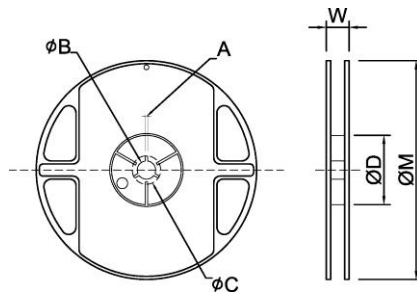
### 11.1 Embossed Dimensions:



Unit: mm

Item	W	P	E	F	$\phi D$	$\phi D1$	G	H	A	B	T1	T
0805	8.0±0.30	4.0±0.10	1.75±0.10	3.5±0.10	1.50 <sup>+0.1</sup> <sub>-0</sub>	1.0±0.10	4.0±0.10	2.0±0.10	1.70±0.10	2.45±0.10	0.90±0.25	0.20±0.05
0805	8.0±0.30	4.0±0.10	1.75±0.10	3.5±0.10	1.50 <sup>+0.1</sup> <sub>-0</sub>	1.0±0.10	4.0±0.10	2.0±0.10	1.70±0.10	2.45±0.10	0.55±0.25	0.20±0.05

### 11.2 Reel Dimensions:



Unit: mm

Reel Type / Tape	A	$\phi B$	$\phi C$	$\phi D$	W	$\phi M$
7" reel for 8 mm embossed (for 0805)	2.0±0.5	13.2±0.5	17.7±0.5	60.0±0.5	12.0±0.5	178±1.0

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