

SPECIFICATION

LGE—01

1. 適用範圍 (APPLICABLE RANGE)

此基準是供應家電、電腦、資訊用之不燃性水泥型繞線電阻器之規格。

THIS SPECIFICATION APPLIES TO NON-INFLAMMABILITY CERMET TYPE WIREWOUND RESISTOR.

2. 額定 (RATING)

2-1 額定電力 (RATING POWER)

額定電力是規定周圍溫度 (參照表一) 以下可連續使用之負載電力的最在大數值。

RATING POWER MEANS THE MAX. POWER VALUE OF CONTINUOUS USAGE UNDER THE SPECIFIED AMBIENT TEMPERATURE. (REFER TO TABLE I)

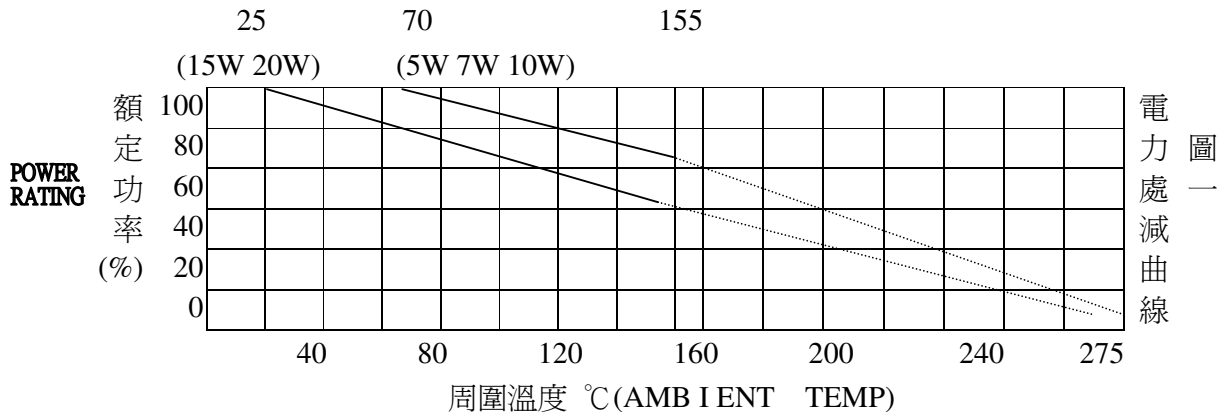
表一

額定電力 (RATING POWER)	W
周圍溫度 (AMBIENT TEMPERATURE)	<input type="checkbox"/> 25°C <input type="checkbox"/> 70°C

且應能適用於其它特性, 又當周圍溫度超越上述溫度時, 依圖一電力處減曲線而定。

IN OTHER APPLICATIONS THAT THE AMBIENT TEMPERATURE MAY HAVE GONE OVER THE SPECIFIED VALUE PLEASE REDUCE THE POWER LOADING ACCORDING TO FIG. I.

FIG. 1 LOADING REDUCTION CURVE



2-2 額定電壓 (RATING VOLTAGE)

額定電壓是在額定電力直流電和交流電相互對應所產生的電壓。

額定電壓 =  $\sqrt{\text{額定電力 (W)} \times \text{電阻值 } (\Omega)}$

依公式求出超越最大連續使用電壓時, 以最大連續使用電壓為額定電壓

RATING VOLTAGE MEANS THE VOLTAGE RESTRICTED BY VARIOUS DIRECT CURRENT OR ALTERNATIVE CURRENT UNDER THE RATING POWER

FORMULA  $E = \sqrt{P \times R}$

E: RATING VOLTAGE (V)

P: RATING POWER (W)

R: NOMINAL RESISTANCE ( $\Omega$ )

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## 2-3 電阻值(REISTANCE)

電阻值是公稱電阻值(指電阻而言), $\Omega$ , $K\Omega$  為單位.

RESISTANCE VALUE MEANS NOMINAL RESISTANCE VALUE (INDICATE ON RESISTOR)

## 2-4 溫度使用範圍(APPLICABLE TEMPERATURE RANGE)

-55°C ~ +155°C

## 3.機械特性(MECHAICAL CHARACTERISTIC)

## 3-1 端子浸錫性(TERMINAL SOLDERABILITY)

將端子前端 7mm 處浸入溶劑中 5-10 秒,並調整錫溫度到  $230\pm 5^\circ\text{C}$ . 然後溶解溶劑,使溶液完全燃燒,再拭去端子上的溶殘渣,再將端子前端 5mm 處浸入溶劑  $3\pm 0.05$  秒,然後拿出使其自然冷卻  $25.4\pm 6.4$  秒後,再將溶劑洗去.經上述步驟後,導線需符合下列情形:

- (a) 端子必須至少 95% 以上焊著,且表面清潔光滑.
- (b) 端子孔不必集中一處,但總面積亦不可超過 10%.

DIP THE TERMINAL WITHIN 7mm FROM THE EDGE INTO FLUX

FOR 5 TO 10 SECONDS THEN ADJUSTING THE SOLDERING TEMPERATURE TO  $230\pm 5^\circ\text{C}$ , WIPE THE SOLDERING DREGS AND BURNED FLUX FROM THE MELTED SOLDER, NEXT DIP THE TERMINAL 5mm FROM THE EDGE, DIP TIME  $3\pm 0.5$  SECONDS. THEN PULL IT OUT WITHIN  $25.4\pm 6.4$  SECONDS, COOL IT IN AIR THEN WASH THE FLUX AWAY.

THE LEAD WIRE SHOULD MEET FOLLOWING CONDITIONS AFTER REMOVE THE FLUX.

- (a) TERMINAL SHOULD BE NEW SMOOTH.
- (b) PIN HOLE DOES NOT NEED TO CONCENTRATE IN ONE PLACE, BUT THE TOTAL AREA SHOULD NOT OVER 10%.

## 3-2 端子拉力強度(TERMINAL INTENSITY)

## (a) 加壓(STRESS)

將電阻體的端子固定於一端,直接加重 4.5 公斤以內的重量,異常現象不會發生.

ABNORMAL PHENOMENON WILL NOT OCCUR WITHIN 4.5 KG NET WEIGHT FROM THE DIRECTION OF THE FIXING TERMINAL OF THE RESISTOR.

## (b) 彎曲(BEND)

端子在 60 秒以內能受力 500 克的重量,且彎角在 5 度以內,異常現象不會發生.

BENDING PHENOMENON WILL NOT OCCUR WITHIN 500 g NET WEIGHT FROM RANDOM DIRECTION WITHIN 60 SECONDS THE BENDING ANGLE WILL BE WITHIN 5 DEGREE

## 3-3 振動(VIBRATION)

其周波數範圍 10~55Hz,一分鐘振幅 1.5mm,再向三個方向各振動二小時,合計六小時的操作,其電阻變化率應在  $1\pm 0.05\%$  以下,外觀不得損傷.

VIBRATION FREQUENCY RANGING FROM 10~55Hz, AMPLITUDE 1.5mm, SPAN 1 MINUTE, FROM X. Y. Z. DIRECTIONS, EVERY 2 HOURS, TOTALLY 6 HOURS THE RESISTANCE VALUE VARY  $\pm 1\%$ . NO DEFORM MECHANICALLY.

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4.具不燃性 (NON-INFLAMMABILITY)

4-1 燃燒試驗

將電阻用火燒 15 秒,移開火焰於熱度散失前,大約 10 秒內,然后再燒 15 秒,如此步驟重覆 5 次,循環完成后,其外觀不得損傷

PUT RESISTOR OVER TESTING FLAME FOR 15 SECONDS, THEN REMOVE THEN REMOVE THE FLAHE OR ANOTHER 15 SECONDS, THUS CYCLE 5 TIMES AFTER THE TEST. HEAT SHOULD BE DISMISSED WITHIN 10 SECONDS AFTER COMPLETION OF FULL CYCLE TEST, ON COLOUR CHANGE OR CRACK OR CRACK BREAKAGE.

4-2 超負載試驗(OVERLOADING TEST)

加 120%的額定電力一分鐘,沒有臭味和煙產生.然后再繼續加入超負載電壓,電阻體在 1000V 以內.不會燒毀.

APPLY 120%OF RATING POWER, LASTING 1 MINUTE NO SMELL AND NO SMOKE AFTER THAT CONTINUE TO APPLY OVERLOADING VOLTAGE TO THE RESISTOR, THE RESISTOR WILL NOT BURN ITSELF BEFORE 1,000V.

5.電氣特性(ELECTRICAL CHARACTERISTIC )

5-1 溫度系數(參照表 5-1)TEMPERATURE RESISTANCE (PLEASE REFER TO TABLE 5-1)將電阻置入每一試驗溫度下約 30 分鐘測定之,然后使用下列公式計算溫度系數.各階段試驗的溫度系數應在± 400PPM 以內.

$$\text{溫度系數} = \frac{R-RO}{RO} \times \frac{1}{T-TO} \times 10^6 \text{ (PPM/}^\circ\text{C)}$$

R: 試驗后Ω值 T:試驗溫度(°C)

RO: 試驗前Ω值 TO :室溫(°C)

KEEP THE RESISTOR IN THE EVERY STAGE TEMPERATURE AROUND 30 TO 40 MIN BY USING THE FORMULA BELOW

AND ALSO THE TEMP RESISTANCE COEFFICIENT WILL BE CALCULATED.

\*TEMPERATURE RESISTANCE COEFFICIENT

$$=(R-RO/RO) \times (1/T-TO) \times 10^6 \text{ (PPM/}^\circ\text{C)}$$

RO:RESISTANCE (Ω)IN BASE TEMP (2 ND STAGE).

R: RESISTANCE IN EVERY TESTING TEMP. STAGE.

TO: BASE TEMP. (2 ND STAGE)

T: TESTING TEMP. (°C)

THE TEMP COEFFCIENT SHOULD BE WITHIN ±400PPM IN ALL STAGES

表 5-1 (Table5-I)

單位°C

第 1 階段 1st	第 2 階段 2nd	第 3 階段 3rd	第 4 階段 4th	第 5 階段 5th
-30±2	25±2	65±2	105±2	180±2

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<p>5-2 短時間超負載(TRANSIENT OVERLOAD)</p> <p>加 2.5 倍的額定電力(W)於電阻器 5 秒鐘,不生火焰或燒焦等現象.回復常溫 30 分鐘后,其阻值變化率應在 <math>2\% \pm 0.05 \Omega</math> 以內.</p> <p>APPLY VOLTAGE 10 TIMES OVER RATING POWER FOR 5 SECONDS,NO CHANGE IN MECHANICAL APPEARANCE, THEN PUT IN ROOM CONDITION FOR 30 MIN.THE VARIANCE OF VALUE SHOULD BE WITHIN(<math>2\% + 0.05 \Omega</math>)</p>	
<p>5-3 耐溫性(正常狀態)(TEMPERATURE SENSITIVITY(NORMAL STATE))</p> <p>將電阻器放入溫度 <math>40 \pm 2^\circ\text{C}</math> 及濕度 90~95%之恆溫恆濕槽中,其端子加正極,金屬板加負極,以直流電 100V 加壓 1000 小時后,其阻值變化率應在 <math>5\% \pm 0.05 \Omega</math> 以內</p> <p>PUT RESISTOR IN THE STATE OF TEMP <math>40 \pm 2^\circ\text{C}</math> CONSTANT ,RELATIVE HUMIDITY 90~95% CONSTANT ,CONNECT RESISTOR AS ANODE ,CONNECT METAL PLATE AS CATHODE, APPLY 100V DC FOR 1,000 HOURS, THE VARIANCE OF VALUE SHOULD BE WITHIN <math>3\% \pm 0.05 \Omega</math> .</p>	
<p>5-4 耐久性(額定負載)(DURABILITY(RATING LOAD))</p> <p>溫度 <math>70 \pm 3^\circ\text{C}</math> (15W 以上,須 <math>25 \pm 3^\circ\text{C}</math>)的恆溫槽中,加額定電壓 1.5 小時,切斷 0.5 小時,如此連續循環 1000 小時后,再置於室溫下 1 小時,其阻值變化率應在 <math>3\% \pm 0.05</math> 以內,其外觀不得損傷.</p> <p>UNDER CONSTANT TEMP <math>70 \pm 3^\circ\text{C}</math> .(IN CASE OVER 15W,<math>25 \pm 3^\circ\text{C}</math>),APPLYING RATING VOLTAGE FOR 1.5 HOURS,THEN DISCONNECTING FOR 0.5 HOUR, RECYCLING FOR 1.000 HOURS , PUT RESISTOR IN ROOM CONDITION AND ZERO LOADING FOR 1 HOUR THE VARIANCE OF VALUE SHALL BE WITHIN <math>3\% \pm 0.05 \Omega</math> NO PROMINENT CHANGES IN APPEARANCE.</p>	
<p>5-5 耐濕性 DURABILITY (HUMIDITY)</p> <p>在溫度 <math>40 \pm 2^\circ\text{C}</math> 及濕度 90~95%之恆溫恆濕槽中,加額定的直流電壓 1.5 小時,切斷 0.5 小時,如此連續循環 1000 小時后,再置於室溫下約置 1 小時,其阻值變化率應在 <math>3\% \pm 0.05 \Omega</math> 以內,其外觀不得損傷</p> <p>CONSTANT TEMP <math>40 \pm 2^\circ\text{C}</math> .,RELATIVE HUMIDITY 90~ 95%, APPLYING OF RATING VOLTAGE DC FOR 1.5 HOUR, DISCONNECT FOR 0.5 HOUR, CYCLING FOR 1.000 HOURS THEN RETURNED TO ROOM CONDITION AND ZERO LOADING FOR 1 HOUR THE VARIANCE OF VALUE SHOULD BE WITHIN <math>3\% \pm 0.05 \Omega</math> NO PROMINENT CHANGES IN APPEARANCE.</p>	
<p>5-6 熱衝擊 (THERMAL SHOCK )</p> <p>在室溫加額定電力 30 分鐘,於 8~12 秒內,放入溫度 <math>-30 \pm 5^\circ\text{C}</math> 的空氣中 15 分鐘以上,然后再置於室溫中 1 小時,其變化率應在 <math>2\% \pm 5^\circ\text{C} \Omega</math> 以內,其外觀不得損傷</p> <p>APPLY RATING POWER IN ROOM TEMP .FOR 30 MIN .BRING RESISTOR IMMEDIATELY IN 8~12 SECONDS TO THE AIR OF <math>-30 \pm 5^\circ\text{C}</math> OR OVER 15 MIN .THEN RETURN TO ROOM TEMP .AND KEEP IT FOR 1 HOUR .THE VARIANCE OF VALUE SHOULD BE WITHIN <math>2\% \pm 0.05 \Omega</math> .NO PROMINENT CHANGES IN APPEARANCE.</p>	
<p>5-7 絕緣電阻(ISULATION RESISTANCE)</p> <p>以電阻金屬板與端子合為兩極,以 DC500V 測之,應在 10000MEGC <math>\Omega</math> 以上.</p> <p>PUT RESISTOR ON FLAT METAL PLATE , CONNECTING BETWEEN ONE OF TERMINAL AND THE PLATE,THST UNDER 500V DC ,THE VALUE SHALL OVER 10,000 MEG <math>\Omega</math> .</p>	

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**5-8 耐電壓(VOLTAGE DURABILITY)**

如 5-7 項二端加入 AC1000V 約 1 分鐘,其外觀不得損傷

PUT RESISTOR IN THE SAME STATE WITH ITEM 5-7, APPLYING AC SIN WAVE 1,000V FOR 1 MIN .IN BETWEEN TERMINAL AND PLATE. NO DAMAGE OCCURS.

**5-9 焊錫耐熱性(SOLDERING TEMP DURABILITY)**

將端子前端 5.0±0.8mm 處浸入如圖的是時間與溫度后,置於常溫下 24 小時,其阻值變化率應在 2%±0.05Ω 以內,其外觀不得損傷.

DIP THE TERMINAL OF THE RESISTOR 5.0±0.8mm FROM THE EDGE ACCORDING TO THE CONITIONS STATED IN TABLE I,THE PUT IN NORMAL TEMP FOR 24 HOURS ,THE VARIANCE OF VALUE SHOULD BE WITHIN 2%+0.05Ω NO PROMINENT CHANGES IN APPEARANCE.

( 附圖)

條件 (CONDITION)	項目 (ITEM)	焊錫溫度 SOLDERING TEMP.°C	浸入時間 DIP TIME SECONDS
	自動焊錫 (AUTO SOLDERING)	260±5°C	10±1 秒(SEC )
	人工焊錫 (MANUAL SOLDERING)	350±10°C	3±1 秒(SEC)

**5-10 額定負載(RATING LOAD)**

加額定電力 30 分鐘,並在無負載狀態下 2 小時以后,其阻值變化率應在 2%±0.05Ω 以內,

APPLY RATING POWER TO RESISTOR FOR 30 MIN THE VARIANCE OF RESISTOR

VALUE ,AFTER 2 HOURS IN ZERO LOAD CONSITION ,SHOULD BE WITHIN ±2%0.05Ω OHM

**5-11 耐熱性(TEMPERATURE DURABILITY)**

電阻置於 275°C 的恆溫槽中 2 小時以后,其外觀不得損傷

PUT RESISTOR IN 275°C CONSTANTLY FOR 2 HOURS .NO PROMINENT CHANGES IN APPEARANCE .