

应用领域
Application

高铁	CRH
飞机	The plane
船舶	The ship
中频电炉	Medium frequency
冰箱	Refrigerator
医疗设备	Medical equipment
汽车工业	Automobile industry
豆浆机	Soybeam milk machine
智能马桶	Valtoo
电暖器	Elctric heater
电吹风	Hair dryer
壁炉	Fireplace
干衣机	Clothes dryers
投影仪	Projector
碎纸机	Shredder
电水壶	Electric kettle
塑封机	Sealing machine
烤面包机	Toaster
咖啡机	Coffee machine
煎药壶	Decocting pot
饮水机	Water dispenser
微波炉	Microwave ovens
热水器	Water heater



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亮群电子(常熟)有限公司
LIGHT COUNTRY



亮群股份有限公司



POWER WIRE WOUND CHIP RESISTORS

電力型繞線封裝電阻器



Features

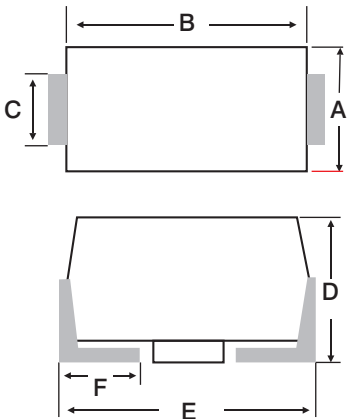
- 1. Flameproof UL94V0 molded package, resistant to heat, humidity & insulation.
- 2. Special design for automatic surface mounting.
- 3. Excellent mechanical strength & electrical stability.
- 4. Reducing assembly costs.

特色

- 1. 不燃性樹脂封裝成型，具高耐溫，耐濕及絕緣特性。
- 2. 特殊設計，專供自動表面黏著作業。
- 3. 高安定性及高信賴性。
- 4. 降低裝配費用。

Dimensions

尺寸



Unit : mm

Rated Wattage	A±0.3	B±0.3	C±0.3	D±0.3	E Max.	F±0.3	Resistance Range(Ω)
2W	4.0	6.7	1.4	3.55	7.9	1.5	0.1~200
3W	5.5	10.5	1.7	5.0	12	2.3	0.1~300
5W	7.3	13.5	1.7	6.8	17	2.5	0.1~680

Note: Too low or too high ohmic values can be supplied only case by case.

ELECTRICAL AND MECHANICAL PERFORMANCE

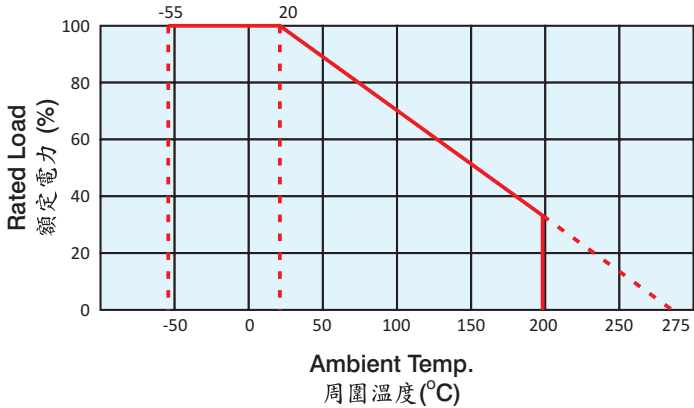
電氣及機械特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
阻值容許誤差 Resistance Tolerance	±5% (J) or ±1% (F)	-
溫度係數 Resistance Temp. Coeff.	±200 ppm / °C	-55°C ~ 200°C
額定負載 Power Rating Load	Surface temp. 275°C Max. 最高表面溫度 275°C, ΔR/R ≤ ±1%	Rated voltage for 30 minutes 額定電壓 / 30分鐘
短時間過負載 Short Time Overload	±1%	5 times of rated wattage for 5 seconds. 5 倍額定功率 / 5秒
耐電壓 Dielectric Withstanding Voltage	No evidence of mechanical damage or insulation breakdown. 無機械性能損壞及絕緣擊穿現象	AC 500V for 1 minutes 施加 AC 500V 電壓 1 分鐘
絕緣電阻 Insulation Resistance	10,000MΩ	DC 500V megger
焊錫性 Solder-ability	Minimum 95% coverage 焊錫面積 ≥ 95%	235±5°C for 2 seconds
浸錫耐熱性 Resistance to Soldering Heat	No evidence of mechanical damage. 無機械性能損壞現象, ΔR/R ≤ ±1%	270±5°C for 10 ±1 seconds

Derating Curve

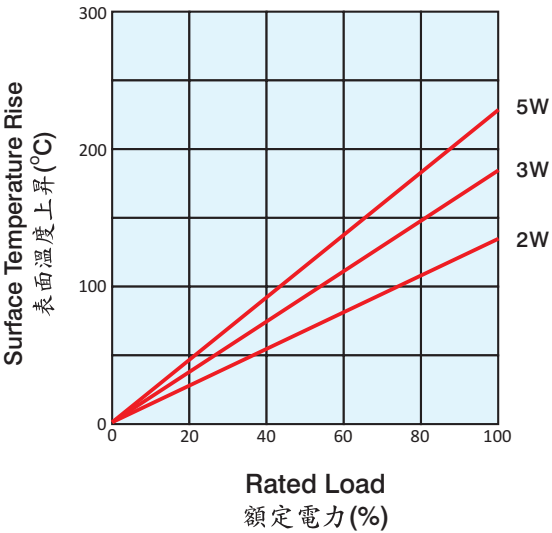
電力輕減曲線

For resistors operated in ambient temperatures above 20°C, power rating must be derated in accordance with the curve below.



Surface Temperature Rise

表面溫度上昇曲線



How to order

訂貨方式

It is composed by Type, Rated Wattage, Nominal Resistance and Tolerance.

SMW 2W 10R J
a. b. c. d.

- a. : Type(種類): Power Wire Wound Chip Resistors are called "SMW".
- b. : Rated Wattage(額定電力) : Shown by "W", such as 2W, 3W, 5W
- c. : Nominal Resistance(公稱電阻值) : 10Ω.
- d. : Tolerance(容許誤差): F = ±1% , J = ±5% .

ENVIRONMENTAL CHARACTERISTICS

耐環境特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
溫度週率 Temp. Cycle	ΔR/R ≤ ±1%	-55°C(30 min.) → Room Temp.(3 min.) → +200°C(30 min.) → Room Temp.(3 min.) / (5 cycles)
負載壽命 Load Life	ΔR/R ≤ ±2%	Rated power load 90 minutes ON 30 minutes OFF 70°C 1000 hours
耐濕壽命 Moisture-proof Load Life	ΔR/R ≤ ±2%	Rated power load 90 minutes ON 30 minutes OFF 40°C 95% RH 500 hours

※ 參考規格 Reference Standards
IEC 60115-1
JIS C 5201-1

POWER METAL FILM CHIP RESISTORS

電力型金屬皮膜封裝電阻器



Features

- 1. Flameproof UL94V0 molded package, resistant to heat, humidity & insulation.
- 2. Special design for automatic surface mounting.
- 3. Excellent mechanical strength & electrical stability.
- 4. Reducing assembly costs.

特色

- 1. 不燃性樹脂封裝成型，具高耐溫，耐濕及絕緣特性。
- 2. 特殊設計，專供自動表面黏著作業。
- 3. 高安定性及高信賴性。
- 4. 降低裝配費用。

ELECTRICAL AND MECHANICAL PERFORMANCE

電氣及機械特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
阻值容許誤差 Resistance Tolerance	±5% (J) or ±1% (F)	-
溫度係數 Resistance Temp. Coeff.	±100 ppm / °C	-55°C ~ 200°C
額定負載 Power Rating Load	Surface temp. 275°C Max. 最高表面溫度 275°C, ΔR/R ≤ ±1%	Rated voltage for 30 minutes 額定電壓 / 30分鐘
短時間過負載 Short Time Overload	±0.5%	5 times of rated wattage for 5 seconds. 5 倍額定功率 / 5秒
耐電壓 Dielectric Withstanding Voltage	No evidence of mechanical damage or insulation breakdown. 無機械性能損壞及絕緣擊穿現象	AC 500V for 1 minutes 施加 AC 500V 電壓 1 分鐘
絕緣電阻 Insulation Resistance	10,000MΩ	DC 500V megger
焊錫性 Solder-ability	Minimum 95% coverage 焊錫面積 ≥ 95%	235±5°C for 2 seconds
浸錫耐熱性 Resistance to Soldering Heat	No evidence of mechanical damage. 無機械性能損壞現象, ΔR/R ≤ ±1%	270±5°C for 10 ±1 seconds

ENVIRONMENTAL CHARACTERISTICS

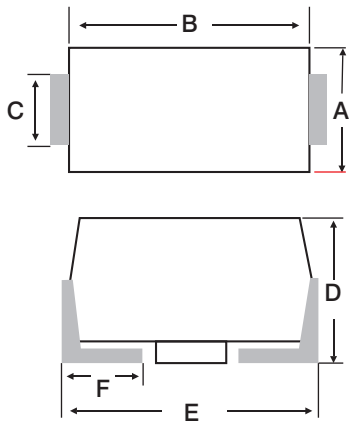
耐環境特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
溫度週率 Temp. Cycle	ΔR/R ≤ ±1%	-55°C (30 min.) → Room Temp. (3 min.) → +200°C (30 min.) → Room Temp. (3 min.) / (5 cycles)
負載壽命 Load Life	ΔR/R ≤ ±1%	Rated power load 90 minutes ON 30 minutes OFF 70°C 1000 hours
耐濕壽命 Moisture-proof Load Life	ΔR/R ≤ ±1%	Rated power load 90 minutes ON 30 minutes OFF 40°C 95% RH 500 hours

※ 參考規格 Reference Standards
IEC 60115-1
JIS C 5201-1

Dimensions

尺寸



Unit : mm

Rated Wattage	A ±0.3	B ±0.3	C ±0.3	D ±0.3	E Max.	F ±0.3	Resistance Range (Ω)	MAX. Working Voltage
2W	4.0	6.7	1.4	3.55	7.9	1.5	10~2M	300V
3W	5.5	10.5	1.7	5.0	12	2.3	10~2M	500V
5W	7.3	13.5	1.7	6.8	17	2.5	10~2M	500V

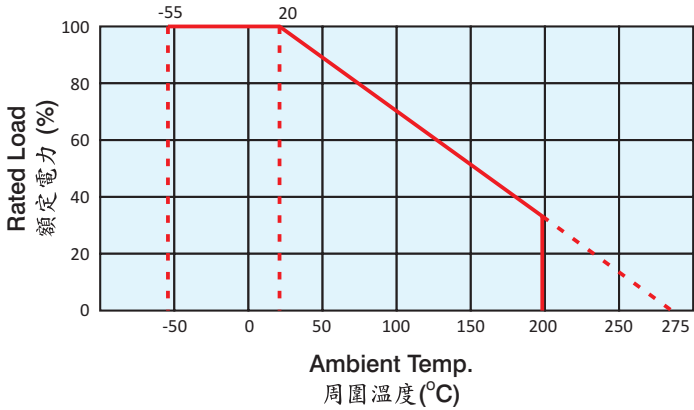
Note: 1. Max. Overload Voltage is 2 times of Max. Working Voltage
2. Too low or too high ohmic values can be supplied only case by case.

Rate Continuous Working Voltage (RCWV) shall be determined
√ Rated Power X Resistance Value or Max. Working Voltage listed above,
whichever less.

Derating Curve

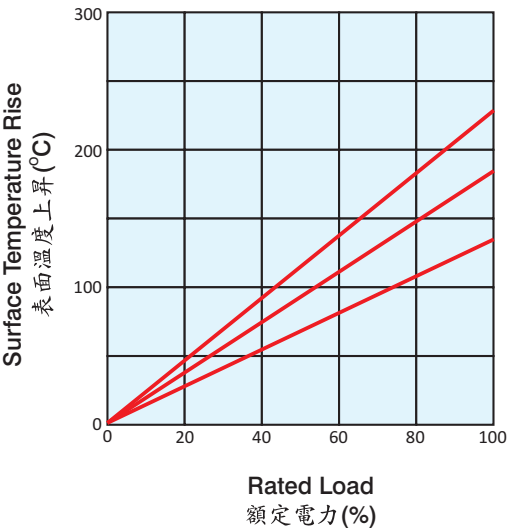
電力輕減曲線

For resistors operated in ambient temperatures above 20°C, power rating must be derated in accordance with the curve below.



Surface Temperature Rise

表面溫度上昇曲線



How to order

訂貨方式

It is composed by Type, Rated Wattage, Nominal Resistance and Tolerance.

SMF 2W 10R J
a. b. c. d.

- a. : Type(種類): Power Metal Film Chip Resistors are called "SMF".
- b. : Rated Wattage(額定電力) : Shown by "W", such as 2W, 3W, 5W
- c. : Nominal Resistance(公稱電阻值) : 10Ω.
- d. : Tolerance(容許誤差): F = ±1% , J = ±5% .



METAL GLAZE HIGH VOLTAGE CHIP RESISTORS, ANTI-SULFURATION

耐硫化金屬釉高壓封裝電阻器



Features

- 1. Flameproof UL94V0 molded package, resistant to sulfuration, heat and humidity.
- 2. Special design for automatic surface mounting.
- 3. Metal-glaze elements provide high stable performance against environmental conditions and overload.
- 4. Ultra high surge withstanding & pulse withstanding performance.
- 5. Excellent mechanical strength & electrical stability.
- 6. Reducing assembly costs.

特色

- 1. 不燃性樹脂封裝成型，具高耐硫化、耐溫、及耐濕特性。
- 2. 特殊設計，專供自動表面黏著作業。
- 3. 使用高穩定性金屬釉作基體，耐溫度及超負載，性能安定。
- 4. 超高耐雷擊及耐脈衝特性。
- 5. 高安定性及信賴性。
- 6. 降低裝配費用。

ELECTRICAL AND MECHANICAL PERFORMANCE

電氣及機械特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
阻值容許誤差 Resistance Tolerance	±5%(J) or ±1%(F)	-
溫度係數 Resistance Temp. Coeff.	±200ppm / °C	-65°C ~ 200°C
額定負載 Power Rating Load	Surface Temp. 275°C Max. 最高表面溫度 275°C △R/R≤±1%	Rated voltage for 30 minutes 額定電壓 / 30 分鐘
短時間過負載 Short Time Overload	±1%	2.5 times of rated voltage for 5 sec. 2.5 倍額定電壓/5 秒
耐電壓 Dielectric Withstanding Voltage	No evidence of mechanical damage or insulation breakdown 無機械性能損壞及絕緣擊穿現象	AC 1000V for 1min. 施加 AC 1000V 電壓 1 分鐘
絕緣電阻 Insulation Resistance	10,000 MΩ	DC 500V megger
耐脈衝 Pulse Loading Capability	△R/R≤±2%	IEC 60065 14.1
焊錫性 Solder-ability	Minimum 95% coverage 焊錫面積≥95%	235°C±5°C for 2seconds
浸錫耐熱性 Resistance to Soldering Heat	No evidence of mechanical damage. 無機械性能損壞現象,△R/R≤±1%	270 ±5°C for 10±1 seconds

ENVIRONMENTAL CHARACTERISTICS

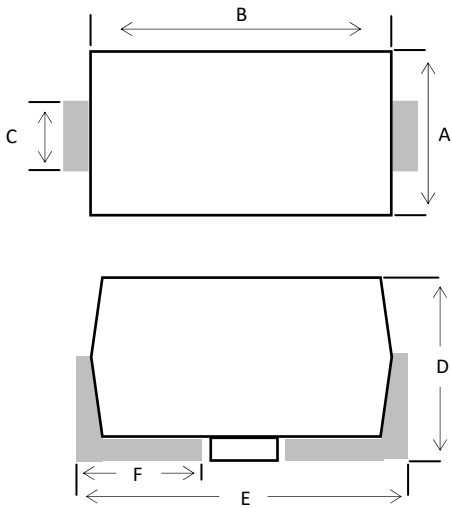
耐環境特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
溫度週率 Temp. Cycle	△R/R≤±2%	-65°C(30mins) → Room Temp.(3mins) → +275°C(30mins) → Room Temp.(3mins) / (5 cycles)
負載壽命 Load Life	△R/R≤±5%	Rated power load 90 minutes ON 30minutes OFF 70°C 1000hours
耐濕壽命 Moisture-proof Load Life	△R/R≤±5%	Rated power load 90 minutes ON 30minutes OFF 40°C 95%RH 1000hours

※參考規格 Reference Standards

Dimensions

尺寸



Unit : mm

Rated Wattage	A ± 0.3	B ± 0.3	C ± 0.3	D ± 0.3	E max.	F ± 0.3	Resistance Range(Ω)	Max. Working Voltage	
								DC	RMS
1WL	4.0	6.7	1.4	3.55	7.9	1.5	100K~10M	1600V	1150V
2WL	5.5	10.5	1.7	5.0	12	2.3	100K~10M	3500V	2500V
3WL	7.3	13.5	1.7	6.8	17	2.5	100K~10M	5000V	3500V

Note : Too low or too high ohmic values can be supplied only case by case.

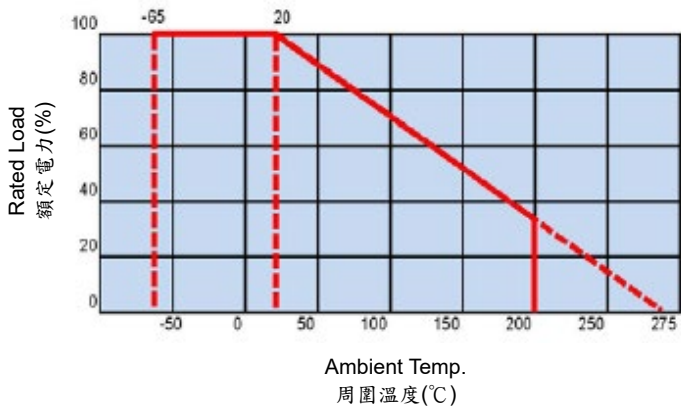
Rated Continuous Working Voltage (RCWV) shall be determined from

RCWV = $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$ or Max. Permissible Voltage listed above, whichever less.

Derating Curve

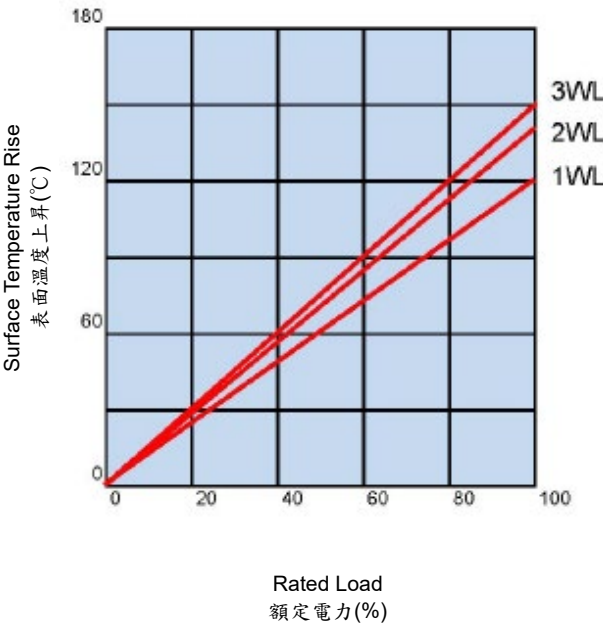
電力輕減曲線

For resistors operated in ambient temperatures above 20°C, power rating must be derated in accordance with the curve below.



Surface Temperature Rise

表面溫度上昇曲線

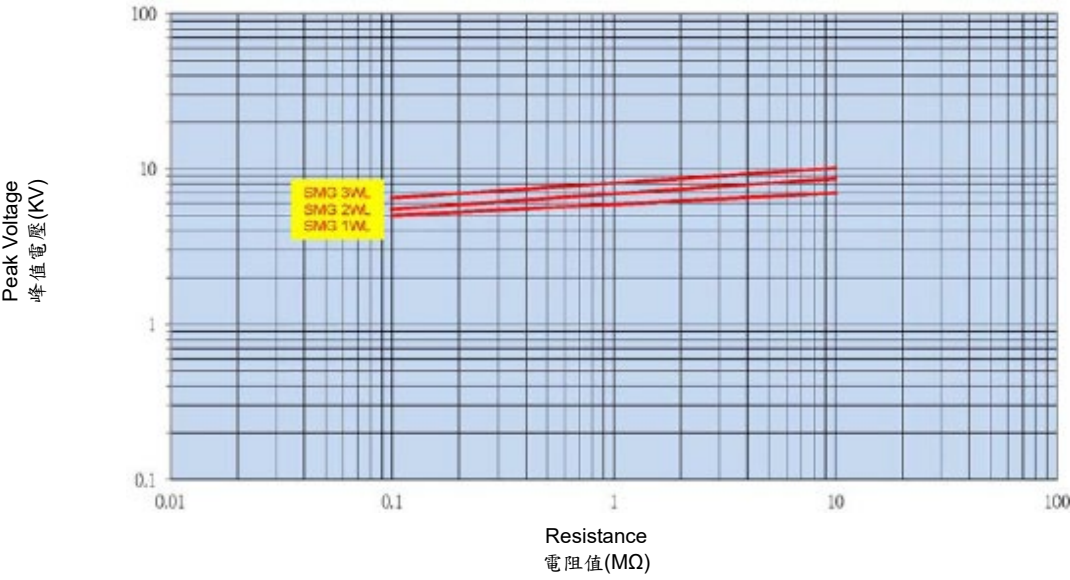


Lightning Surge

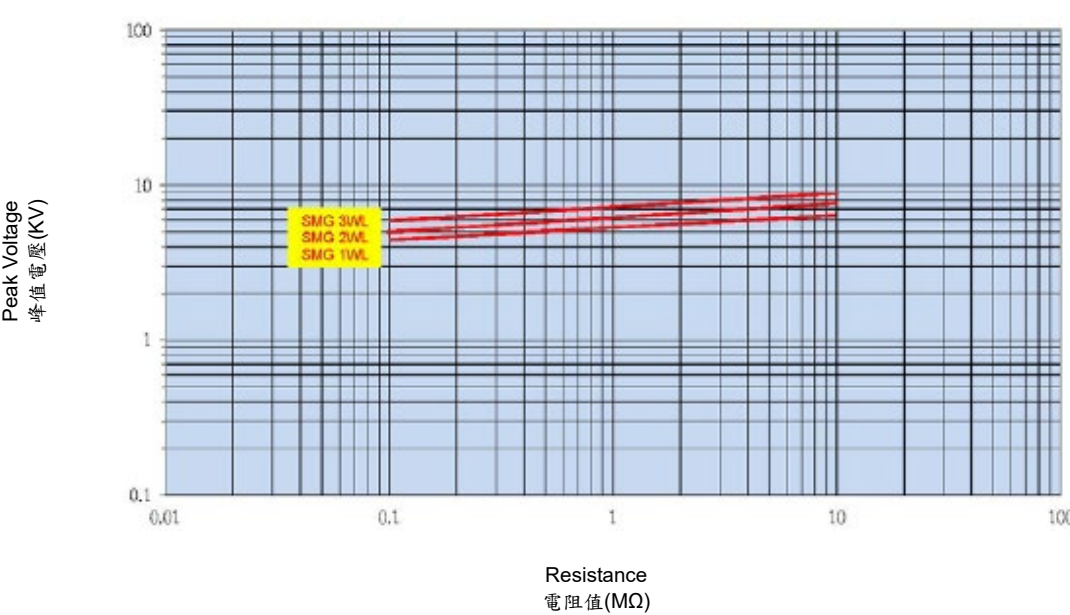
雷擊特性曲線

The resistors are designed to withstand 1.2/50 μ s pulse & 10/700 μ s according to ICE61000-4-5 , 30 pulse per voltage, 30 seconds between each pulse. The resistance value change rate between pre-and-post test shall be within $\pm 5\%$

1.2/50 μ s Lightning Surge



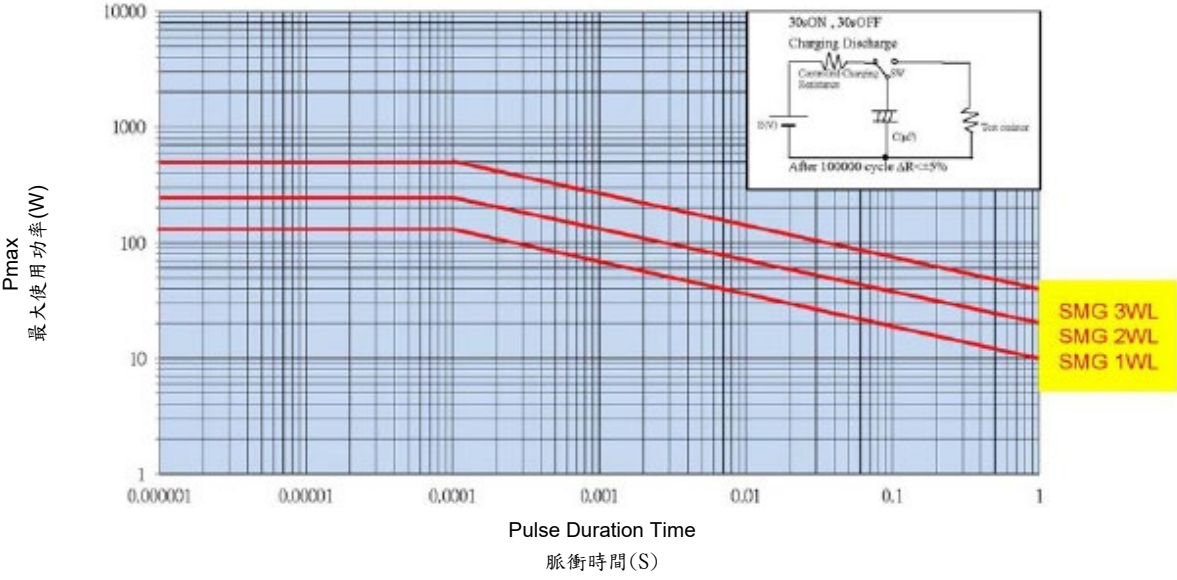
10/700 μ s Lightning Surge



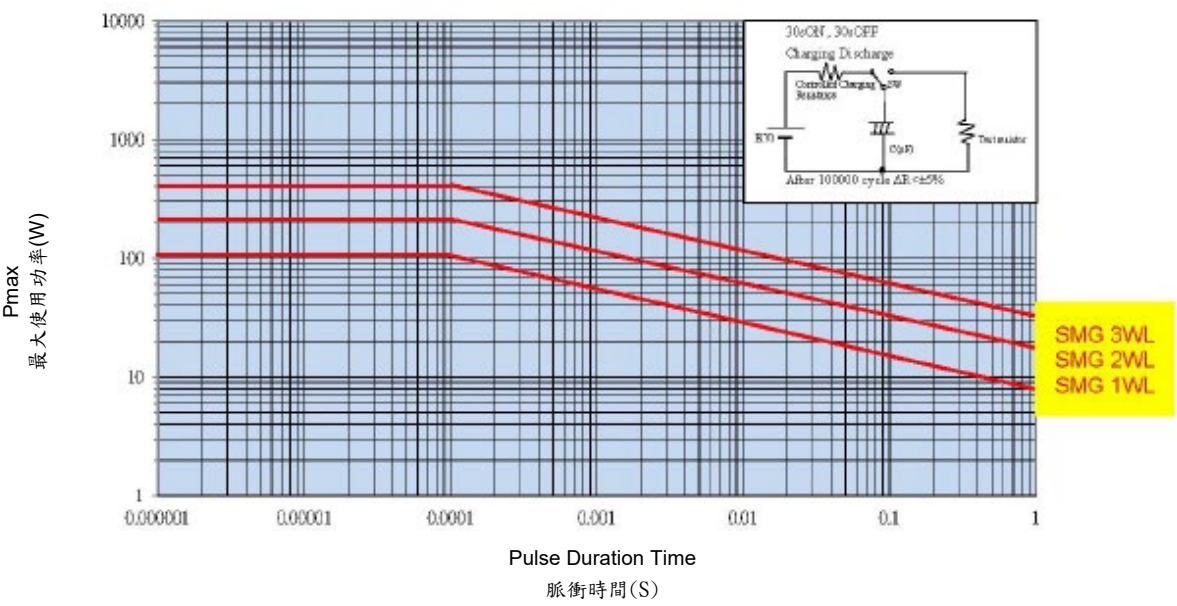
Pulse Characteristics

脈衝特性曲線

Single Pulse



Continuous Pulse



How to order

(訂貨方式)

It is composed by Type, Rated Wattage, Nominal Resistance and Tolerance.

SMG **2WL** **1M** **J**
a. b. c. d.

- a. : Type (種類) : Metal Glaze High Voltage Chip Resistors are called "SMG".
- b. : Rated Wattage (額定電力) : Shown by "W", such as 1WL, 2WL, 3WL.
- c. : Nominal Resistance (公稱電阻值) : 1M Ω .
- d. : Tolerance (容許誤差) : F= $\pm 1\%$, J= $\pm 5\%$.

METAL FILM MELF RESISTORS

金屬皮膜晶圓電阻器



Features

- 1. SMD enabled structure with excellent solder-ability.
- 2. Conformal multi-layer coating against Humidity.
- 3. 5% is 3-bands coded ; 2% and under are 4-bands coded.

特色

- 1. SMD適用結構,具優良焊接性能。
- 2. 多層塗裝方式,具高耐濕功能。
- 3. 5% 為3條色碼;2%以下為4條色碼。

ELECTRICAL AND MECHANICAL PERFORMANCE

電氣及機械特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
阻值容許誤差 Resistance Tolerance	±5% (J)、±2% (G)、±1% (F)	-
溫度係數 Resistance Temp. Coeff.	±25 ppm / °C, ±50 ppm / °C, ±100 ppm / °C	-55°C ~ 125°C
額定負載 Power Rating Load	Surface temp. 125°C Max. 最高表面溫度 125°C, ΔR/R ≤ ±0.5%	Rated voltage for 30 minutes 額定電壓 / 30分鐘
短時間過負載 Short Time Overload	±0.5%	2.5 times of rated voltage for 5 seconds. 2.5 倍額定電壓 / 5秒
耐電壓 Dielectric Withstanding Voltage	No evidence of mechanical damage or insulation breakdown. 無機械性能損壞及絕緣擊穿現象	MM16/MM204 : 200V AC MM207/MM52 : 500V AC
絕緣電阻 Insulation Resistance	10,000MΩ	DC100V or 500V megger
焊錫性 Solder-ability	Minimum 95% coverage 焊錫面積 ≥ 95%	230±5°C for 5 seconds
浸錫耐熱性 Resistance to Soldering Heat	No evidence of mechanical damage. 無機械性能損壞現象, ΔR/R ≤ ±1%	260±5°C for 10 ±1 seconds

ENVIRONMENTAL CHARACTERISTICS

耐環境特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
溫度週率 Temp. Cycle	ΔR/R ≤ ±0.5%	-65°C (30 min.) → Room Temp.(3 min.) → +125°C (30 min.) → Room Temp.(3 min.) / (5 cycles)
負載壽命 Load Life	ΔR/R ≤ ±1.5%	Rated power load 90 minutes ON 30 minutes OFF 70°C 1000 hours
耐濕壽命 Moisture-proof Load Life	ΔR/R ≤ ±1.5%	Rated power load 90 minutes ON 30 minutes OFF 40°C 93% RH 56 days

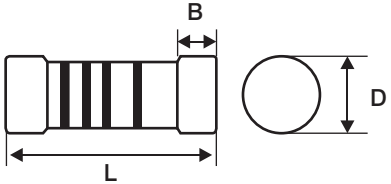
※ 參考規格 Reference Standards

IEC 60115-8

JIS C 5201-8

Dimensions

尺寸



Unit : mm

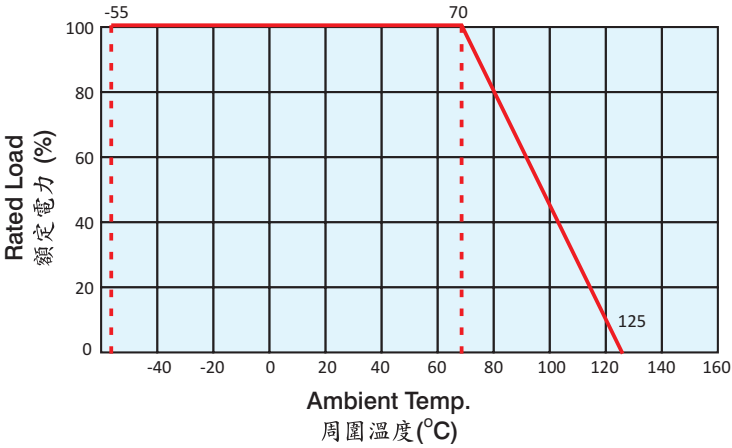
Type	Dimension(mm)			Resistance Range(Ω)	Max. Working Voltage	Max. Overload Voltage
	L	D	B			
MM16(1/6W)	3.52±0.08	1.35±0.1	0.6 Min.	0.51 ~ 10M	200V	400V
MM204(1/4W)	3.52±0.08	1.35±0.1	0.6 Min.	0.51 ~ 10M	200V	400V
MM207(1/3W)	5.90±0.2	2.20±0.1	1.0 Min.	0.51 ~ 10M	300V	500V
MM52(1/2W)	5.90±0.2	2.20±0.1	1.0 Min.	0.51 ~ 10M	300V	500V

Rate Continuous Working Voltage (RCWV) shall be determined
√ Rated Power X Resistance Value or Max. Working Voltage listed above,
whichever less.

Derating Curve

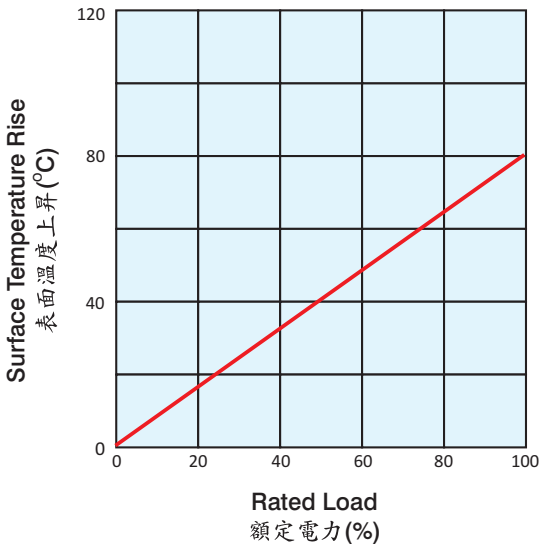
電力輕減曲線

For resistors operated in ambient temperatures above 70°C,
power rating must be derated in accordance with the curve
below.



Surface Temperature Rise

表面溫度上昇曲線



How to order

訂貨方式

It is composed by Type, Tolerance, Temperature Coefficient, Nominal Resistance and Package. e.g.

MM16 F 50ppm 10K TR3
a. b. c. d. e.

- a. : Type(種類): Metal Film Melf Resistors are called "MM16".
- b. : Tolerance(容許誤差): F : ±1% , G : ±2% , J : ±5%
- c. : Temperature Coefficient (溫度係數): ±25ppm/°C, ±50ppm/°C, ±100ppm/°C .
- d. : Nominal Resistance (公稱電阻值): 10K
- e. : Package (包裝方式): TR3 = 3Kpcs/reel

WIRE WOUND RESISTORS, FLAMEPROOF

不燃性繞線電阻器



Features

- 1. Super heat dissipation ; small linear temperature coefficient.
- 2. Instant overload capability ; low noise figure and low annual shift on resistance values.
- 3. Flameproof, light weight, price is lower than enamel types.
- 4. Winding wires are much more durable than enamel types which are produced in high temperature.

特色

- 1. 散熱性佳，溫度係數小且呈線性變化。
- 2. 耐短時間超負載；低雜音，阻值經年無變化。
- 3. 不燃性、重量輕，價格比琺瑯電阻便宜。
- 4. 不似琺瑯電阻高溫燒成，此種電阻持久而不損壞。

ELECTRICAL AND MECHANICAL PERFORMANCE

電氣及機械特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
阻值容許誤差 Resistance Tolerance	±5% (J) or ±1% (F)	-
溫度係數 Resistance Temp. Coeff.	±300 ppm / °C	-55°C ~ 200°C
額定負載 Power Rating Load	Surface temp. 275°C Max. 最高表面溫度 275°C, ΔR/R ≤ ±2%	Rated voltage for 30 minutes 額定電壓 / 30分鐘
短時間過負載 Short Time Overload	±2%	10 times of rated wattage for 5 seconds. 10 倍額定功率 / 5秒
耐電壓 Dielectric Withstanding Voltage	No evidence of mechanical damage or insulation breakdown. 無機械性能損壞及絕緣擊穿現象	Applying suitable voltage listed on Dimensions for one minute. 施加規定電壓 1 分鐘
絕緣電阻 Insulation Resistance	1,000MΩ	DC100V or 500V megger
端子強度 Terminal Strength	No evidence of mechanical damage. 無機械性能損壞現象	< 1W : 1 kg > 2W : 2.5 kg
焊錫性 Solder-ability	Minimum 95% coverage 焊錫面積 ≥ 95%	235±5°C for 2 seconds
浸錫耐熱性 Resistance to Soldering Heat	No evidence of mechanical damage. 無機械性能損壞現象, ΔR/R ≤ ±1%	270±5°C for 10 ±1 seconds 350±10°C for 3.5 ±0.5 seconds

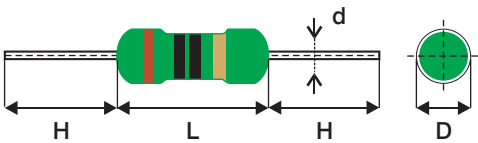
ENVIRONMENTAL CHARACTERISTICS

耐環境特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
溫度週率 Temp. Cycle	ΔR/R ≤ ±1%	-55°C (30 min.) → Room Temp.(3 min.) → +200°C (30 min.) → Room Temp.(3 min.) / (5 cycles)
負載壽命 Load Life	ΔR/R ≤ ±3%	Rated power load 90 minutes ON 30 minutes OFF 70°C 1000 hours
耐濕壽命 Moisture-proof Load Life	ΔR/R ≤ ±3%	Rated power load 90 minutes ON 30 minutes OFF 40°C 95% RH 1000 hours
不燃性 Nonflammability	not flamed	16 times of rated wattage for 5 min.

Dimensions

尺寸



Unit : mm

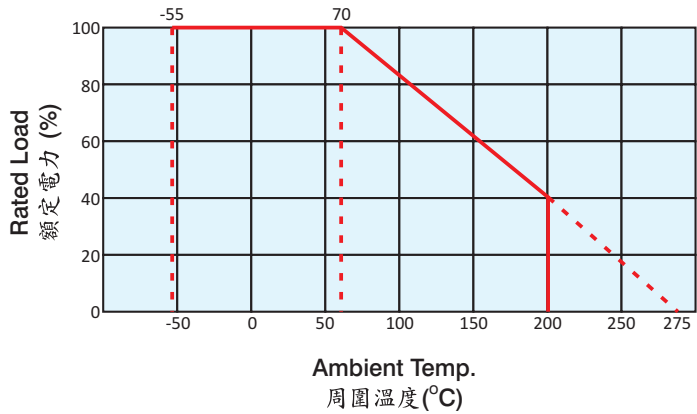
Rated Wattage	D±1	L±1	H±3	d±0.1	Resistance Range(Ω)	Dielectric Withstanding Voltage
1/4W	2.6±0.5	6.8	28	0.6	0.1~200	250V
1/2W	3.0	9	28	0.65	0.1~300	350V
1W	4	9	28	0.65	0.1~500	350V
2W	5.0	11	28	0.8	0.1~1K	500V
3W	5.5	13	38	0.8	0.1~1K	500V
3WL	5.5	15	38	0.8	0.1~1.2K	500V
5W	6.5	19	38	0.8	0.1~1.2K	500V
6W	8.5	24	38	0.8	0.1~1.5K	500V
7W	8.5	32	33	0.8	0.1~1.5K	500V
8W	8.5	41	38	0.8	0.1~2.2K	800V
10W	8.5	53	38	0.8	0.1~3.3K	1000V

Note: Too low or too high ohmic values can be supplied only case by case.

Derating Curve

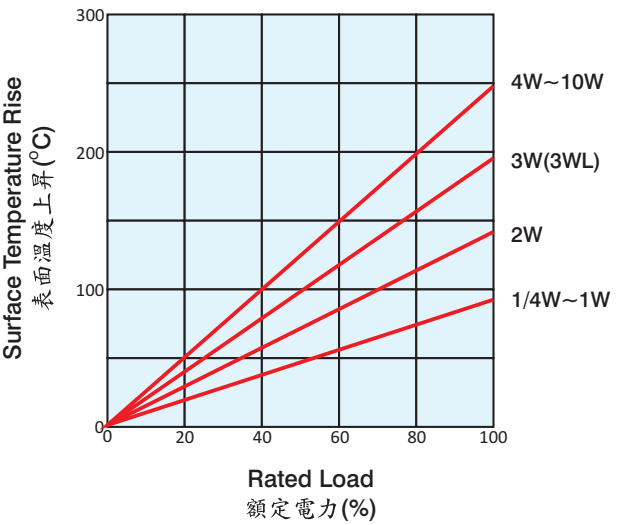
電力輕減曲線

For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with the curve below.



Surface Temperature Rise

表面溫度上昇曲線



How to order

訂貨方式

It is composed by Type, Rated Wattage, Nominal Resistance, Tolerance and Package. e.g.

KNP 1W 10R J T/B
a. b. c. d. e.

- a. : Type(種類): Wire Wound Resistors, Flameproof are called "KNP".
- b. : Rated Wattage(額定電力) : Shown by "W" such as 1/4W, 1/2W, 1W, 2W, 3W, 3WL, 5W, 6W, 7W, 8W, 10W
- c. : Nominal Resistance(公稱電阻值) : 10Ω.
- d. : Tolerance(容許誤差): F = ±1% , J = ±5% .
- e. : Package (包裝方式):
T/R=tape & reel (捲裝); T/B=tape in box(帶裝); Nil= Bulk(散裝).