

Version:  
July 27, 2017



**(SMF)**  
**Power Metal Film**  
**Chip Resistors**

**Token Electronics Industry Co., Ltd.**

**Taiwan:** No.137, Sec. 1, Zhongxing Rd., Wugu District,  
New Taipei City, Taiwan, R.O.C. 24872  
**Tel:** +886 2981 0109 **Fax:** +886 2988 7487

**China:** 12F, Zhong Xing Industry Bld., Chuang Ye Road,  
Nan Shan District, Shen Zhen City,  
Guang Dong, China 518054  
**Tel:** +86 755 26055363; **Fax:** +86 755 26055365

**Web:** [www.token.com.tw](http://www.token.com.tw)

**mailto:** [rfq@token.com.tw](mailto:rfq@token.com.tw)



**▶ Product Introduction**

**Token advanced power metal film sputtering technology meets stability and high-precision requirements.**

**Features :**

- Automatic surface mount special design. Lower assembly costs.
- Excellent electrical stability and mechanical strength.
- Flameproof UL94V0 Resin molded package.
- Heat resistant, moisture resistant, insulated.

**Applications :**

- Consumer electronics, computers.
- Telecommunications, control equipment and so on.

In the metal layer to achieve a homogenous crystalline structure, Token Electronics' surface mount power type metal film package resistor (SMF) benefits from the key advantages of today's sputtering technology for the tight control of metal film thickness.

By photolithography, the same length and width of the resistive element can be controlled by the same precision and accuracy as the thickness of the sputtered metal film layer.

Surface Mounted Power Metal Film Resistors (SMF) have good accuracy tolerances, good stability and low TCR characteristics. In addition, due to the low voltage coefficient, the resistor has low noise characteristics and high linearity. Thus, in important circuits, (SMF) power chip resistors are commonly used in active filters or bridge circuits.

Token (SMF) power-type metal film molded resistors provide three power, 2W, 3W, and 5W. Resistance range of  $10\Omega \sim 2M\Omega$ , and the maximum working voltage up to 500V. The tolerance accuracy has two options  $\pm 1\%$  (F), and  $\pm 5\%$  (J) with temperature coefficient of  $\pm 100\text{ppm}/^\circ\text{C}$ .

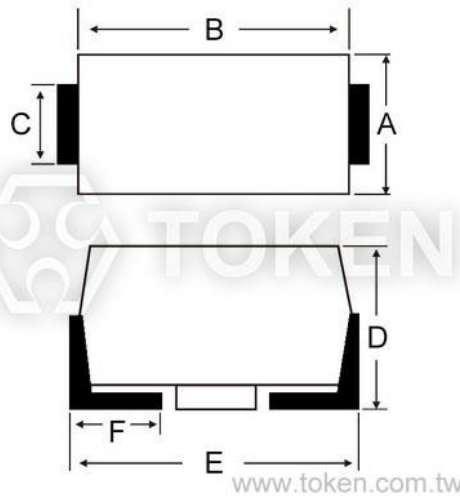
(SMF) series are available in tapes, RoHS compliant and 100% lead free. For conventional parameters, specifications outside the parameters, or technical requirements, please contact Token. Detailed specifications, both mechanical and electrical, please contact us with your specific needs, or link to Token official website "[Chip Resistors](#)" to get more information.



## ► Construction & Dimensions

### Construction & Dimensions (Unit: mm) (SMF)

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 (V)
2W	4.0	6.7	1.4	3.55	7.9	1.5	10 ~ 2M	300
3W	5.5	10.5	1.7	5.0	12	2.3	10 ~ 2M	500
5W	7.3	13.5	1.7	6.8	17	2.5	10 ~ 2M	500



Surface Mounted Power Metal Film Resistor Dimensions (SMF)

**Note:**

- Rated Continuous Working Voltage (RCWV) =  $\sqrt{P \times R}$ , or Max. Operating Voltage listed in above table whichever is lower.
- Resistance or specifications outside the parameters can be on request.

## ► Electrical Spec.

### Electrical And Mechanical Performance (SMF)

Characteristics	Standards	Test Methods
Resistance Tolerance	$\pm 5\%$ (J) or $\pm 1\%$ (F)	-
TCR	$\pm 100\text{ppm}/^\circ\text{C}$	$-55^\circ\text{C} \sim 200^\circ\text{C}$
Power Rating Load	Surface temp. $275^\circ\text{C}$ Max.	Rated voltage for 30 minutes
Short Time Overload	$\pm(1\% + 0.05\Omega)$	5 times rated power with applied voltage not to exceed 2 times maximum continuous operating voltage for 5 seconds.
Dielectric Withstanding Voltage	No evidence of mechanical damage or insulation breakdown.	AC 500V for 1 minutes
Insulation Resistance	10,000M $\Omega$	DC 500V megger
Solder-ability	Minimum 95% coverage	$235 \pm 5^\circ\text{C}$ for 2 seconds
Resistance to Soldering Heat	No evidence of mechanical damage. $\pm(1\% + 0.05\Omega)$	$270 \pm 5^\circ\text{C}$ for $10 \pm 1$ seconds

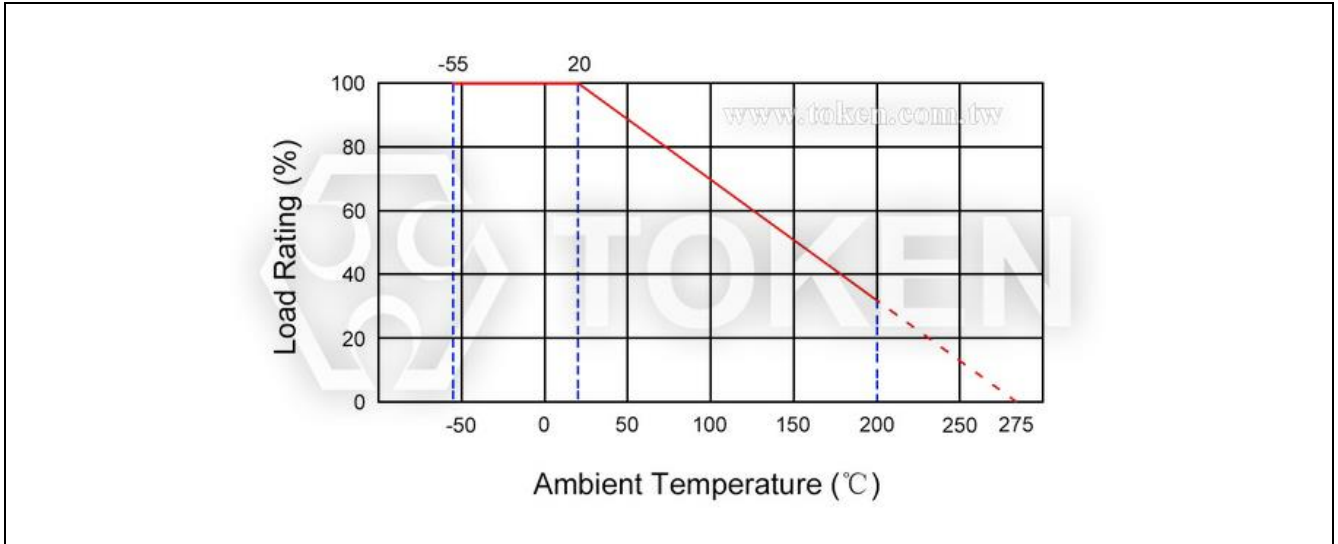
### Environmental Characteristics (SMF)

Characteristics	Standards	Test Methods
Temp. Cycle	$\pm(1\% + 0.05\Omega)$	$-55^\circ\text{C}$ (30min.) $\rightarrow$ Room Temp. (3min.) $\rightarrow$ $+200^\circ\text{C}$ (30min.) $\rightarrow$ Room Temp. (3min.)/(5cycles)
Load Life	$\pm(1\% + 0.05\Omega)$	Rated power load 90 minutes ON 30 minutes OFF $70^\circ\text{C}$ 1000 hours
Moisture-proof Load Life	$\pm(1\% + 0.05\Omega)$	Rated power load 90 minutes ON 30 minutes OFF $40^\circ\text{C}$ 95% RH 500 hours

## Graph

### Derating Curve (SMF)

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



### Surface Temperature Rise (SMF)



## ▶ Order Codes

### Order Codes (SMF)

SMF	2W	10Ω		J	
Part Number	Rated Wattage (W)	Resistance (Ω)		Tolerance (%)	
SMF	2W	10	10Ω	F	±1.00%
	3W	1K1	1.1KΩ	J	±5.00%
	5W	110K	110KΩ		
		1M1	1.1MΩ		