

DATASHEET FOR CARBON FILM RESISTORS

■ Products distinguishing on label

CF	3W	300Ω	±5%	TB/B/F/MB/MK
_____	_____	_____	_____	_____
Type	Power	Nominal resistance	Tolerance	Packing style



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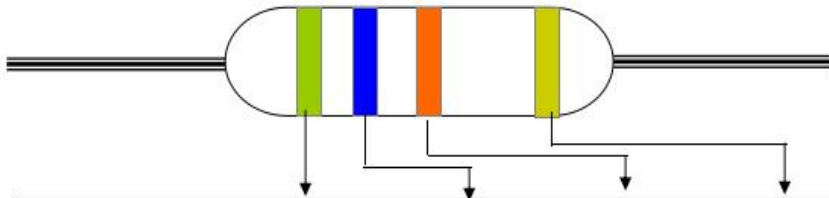
Add: No.16, Xijiao industrial avenue, Shimei community, Dongguan city, Guangdong province, china.

■ Dimensions & parameters

Power	Resistance range	Rated power at 70°C	Max. working voltage	Max. overload voltage	Package	Power	Dimensions(mm)			Lead dia. Φ (mm)	Pulling force for 30s(Kg)	Dimensions schematic diagram
							L	D	H			
1/6W 1/8W	0.1Ω-10MΩ	1/6W	200V	400V	TB/B/F/ MK/MB	1/6W 1/8W 1/4WS	3.2±0.3	1.8±0.3	28±2.0	0.4±0.05	2.5	<p>Unit: mm</p>
1/4W 1/4WS	0.1Ω-10MΩ	1/4W	250V	500V	TB/B/F/ MK/MB	1/4W 1/2WS	6.0±0.5	2.3±0.3	27±2.0	0.43±0.05	2.5	
1/2W 1/2WS	0.1Ω-10MΩ	1/2W	350V	700V	TB/B/F/ MK/MB	1/2W 1WS	9.0±1.0	3.5±0.5	26±2.0	0.56±0.05	2.5	
1W 1WS	0.1Ω-10MΩ	1W	500V	800V	TB/B/F/ MK/MB	1W 2WS	11.0±1.0	4.5±0.5	23.5±2.0	0.65±0.05	3.0	Structure schematic diagram
2W 2WS	0.1Ω-10MΩ	2W	700V	1000V	TB/B/F/ MK/MB	2W 3WS	15.0±1.0	5.0±0.5	26.5±2.0	0.70±0.05	5.0	
3W 3WS	0.1Ω-10MΩ	3W	800V	1200V	TB/B/F/ MK/MB	3W 5WS	17.0±1.0	6.0±0.5	25.5±2.0	0.70±0.05	5.0	
3W 5WS	0.1Ω-10MΩ	5W	850V	1500V	TB/B/F/ MK/MB	5W	24.0±0.8	8.0±1.0	28.0±2.0	0.75±0.05	5.0	

Remarks: S means miniaturized size.

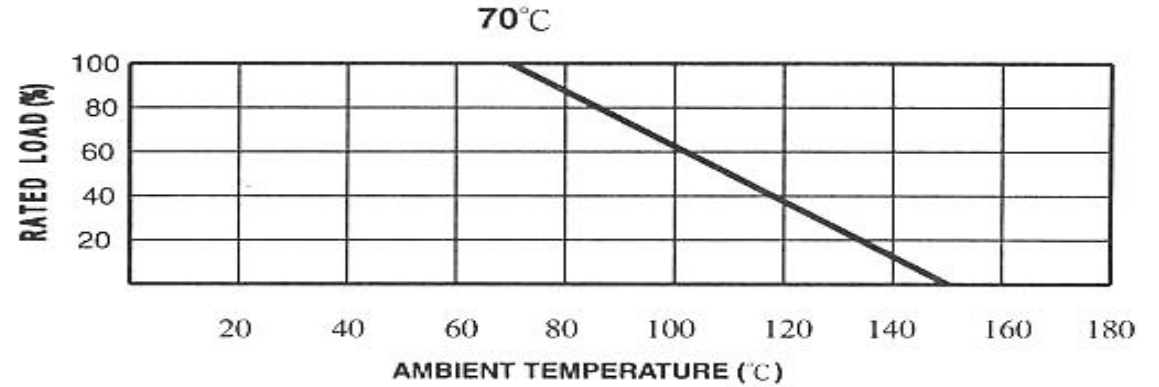
■ Marking



Color	1 st Band	2 nd Band	3 th Band	Tolerance
Black	0	0	10 ⁰	
Brown	1	1	10 ¹	±1% (F)
Red	2	2	10 ²	±2% (G)
Orange	3	3	10 ³	
Yellow	4	4	10 ⁴	
Green	5	5	10 ⁵	±0.5% (D)
Blue	6	6	10 ⁶	±0.25% (C)
Violet	7	7	10 ⁷	±0.1% (B)
Grey	8	8	10 ⁸	±0.05% (A)
White	9	9	10 ⁹	
Gold			10 ⁻¹	±5% (J)
Silver			10 ⁻²	±10% (K)

■ Rated power derating curve

FIG.1 DERATING CURVE



$$V = \sqrt{P \times R}$$

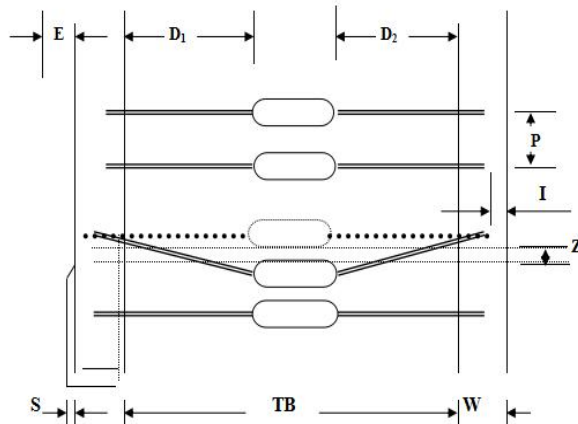
P=Rating power

V=Rated voltage

R=Nonimal resistance

Dimensions for taping package(TB)

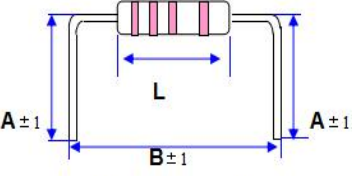
units: mm



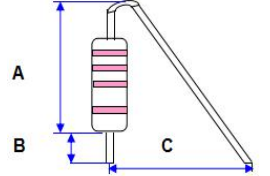
Power	Type	TB	P±0.5	W±0.5	(D1-D2) MAX	E MAX.	Z MAX.	S MAX	(l) MAX
1/6W 1/8W	T52	52±1.5	5	6	0.8	0	1.2	0.8	3.2
1/4W 1/2WS	T26	26±1.5	5	6	0.8	0	1.2	0.8	3.2
	T52	52±1.5	5	6	0.8	0	1.2	0.8	3.2
1/2W 1WS	T52	52±1.5	5	6	0.8	0	1.2	0.8	3.2
1W 2WS	T52	52±1.5	5	6	0.8	0	1.4	0.8	3.2
	T63	63±1.5	5	6	0.8	0	1.4	0.8	3.2
2W 3WS	T63	63±1.5	5	6	0.8	0	1.4	0.8	3.2
	T73	73±1.5	5	6	0.8	0	1.4	0.8	3.2
3W 5WS	T73	73±1.5	10	6	0.8	0	1.4	0.8	3.2
5W	T73	73±1.5	10	6	0.8	0	1.4	0.8	3.2

Forming dimensions

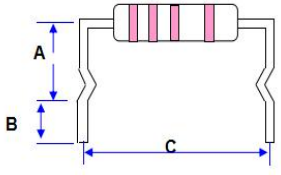
M-type

Power	Dimensions(mm)			Schematic diagram
	L	B±1.0	A±1.0	
1/6W 1/8W	3.3±0.5	6	6	 <p>DIMENSIONS: A × B × A</p>
1/4W 1/2WS	6.0±0.5	10	10	
1/2W 1WS	9.0±0.5	13	10	
1W 2WS	11.0±0.5	15	13	
2W 3WS	15.0±1.0	20	15	
3W 5WS	17.0±1.0	23	15	
5W	24.0±1.0	33	15	A & B sizes can customized by customers.

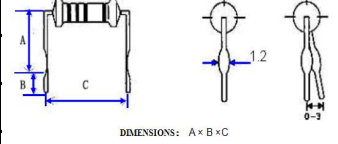
F-type

Power	Dimensions(mm)			Schematic diagram
	A	B±1.0	C±1.0	
1/4W 1/2WS	9.0±0.5	5	10	 <p>DIMENSIONS: A × B × C</p>
1/2W 1WS	13.0±0.5	5	12	
1W 2WS	16.0±1.0	5	15	
2W 3WS	20.0±1.0	5	17	
3W 5WS	24.0±1.0	5	20	

MK-type

Power	Dimensions(mm)			Schematic diagram
	A±1.0	B±1.0	C±1.0	
1/2W 1WS	10	5	15	 <p>DIMENSIONS: A × B × C</p>
1W 2WS	10	5	15	
2W 3WS	10	5	20	
3W 5WS	10	5	23	
5W	13	5	27	
A . B . C sizes can customized by customers.				

MB-type

Power	Dimensions(mm)			Schematic diagram
	A±1.0	B±1.0	C±1.0	
1/2W 1WS	10	5	15	 <p>DIMENSIONS: A × B × C</p>
1W 2WS	10	5	15	
2W 3WS	10	5	20	
3W 5WS	10	5	23	
5W	13	5	27	
A . B . C sizes can customized by customers.				

Packing

1). Label specification

1. Type & power
2. Resistance value & tolerance
3. Quantity
4. LOT No.
5. Order No.
6. Part No.

Notes: Label content can customised by requests.

2). Inner box packing quantity

Power / Quantit	1/8W 1/6W 1/4WS	1/4W 1/2WS	1/2W 1WS	1W 2WS	2W 3WS	3W 5WS	5W
T26	5	5	N/A	N/A	N/A	N/A	N/A
T52	5	5	2.5	1	N/A	N/A	N/A
T63	N/A	N/A	N/A	1	1	0.5	0.25
T73	N/A	N/A	N/A	1	1	0.5	0.25
B	20	10	5	4	3	2	1
F	20	10	5	4	3	2	1
M	20	10	5	4	3	2	1
MB	N/A	N/A	N/A	4	3	2	1
MK	N/A	N/A	N/A	4	3	2	1

■ Testing & performance

Test Item	Test method	Performance (acceptance for quality)
Temperature coefficient	$\text{PPM/}^\circ\text{C} = \frac{R - R_0}{R_0} * \frac{10^6}{T - T_0}$ <p>R = Measured resistance (Ω) at T Ro = Measured resistance (Ω) at To T = Measured test temperature(°C) To = Measured base temperature(°C)</p>	1. Rx < 100KΩ PPM/°C < +350~500 PPM/°C 2. 100KΩ > Rx < 1MΩ PPM/°C < 0 ~ -700PPM/°C 3. Rx > 1MΩ PPM/°C < 0 ~ -1500PPM/°C
Short time overload	Apply 2.5 times rated voltage to the resistor for 5 seconds.	≤ ±(1%R + 0.05ohm) Shall be no mechanical breakage
Voltage endurance	Put the resistor into V-shape groove, bearing 1.42 times rated voltage for 1 minute.	No breakdown or flashover
Terminal(lead) strength	Pull 3.5Kg forces to the terminal pins in direction of axis for 30s.	Shall be no mechanical breakage
Soldering resistance	Immerse the terminal pins into tin stove for the temperature at 350°C±10°C, retain 3±0.05mm of distance to the resistor body for 5± 0.5s, leave for 1 hour after finished the test it	≤ ± (1%R + 0.5ohm) Shall be no mechanical breakage
Load life test	Power on for 1 hour and then power off for 0.5 hour as a cycle, cycled 1000 hours at 70°C.	≤ ±(5%R + 0.05ohm) Shall be no mechanical breakage
Solderability	Immerse the terminal pins into solder stove of the temperature at 260°C±5°C for 5± 0.5s	≥95% covered
Humidity load test	In a chamber for the temperature at 40°C± 2°C, HR 90-95%, power on for 1.5 hours and then power off for 0.5 hour as a cycle, cycled 1000 hours, test it after one hour up to finished the cycle test at ambient temperature.	≤± (5% R+ 0.1ohm) Shall be no mechanical breakage
Endurance of ultimate temperature	≤±(5%R+0.1Ω)	Duration for 1000 hours at 125°C

■ Features

1. Stable performance, widely resistance, small size, high operating temperature and high ultimate voltage.
2. Highly adaptive pulse load, good high frequency performance.
3. Tolerance:±2%,±5%(1% is available by requests).

■ Storage conditions

1. Resistor should be stored in the condition of dry and ventilated environment, not be directly shined by sunlight.
2. Resistors should be stored in no acid,alkali and sulfide corrosion and so on environment.
- 3.Product storage time may not exceed two years.