



# 香 港 電 阻 製 造 廠

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## HONG KONG RESISTORS MANUFACTORY

(wholly owned by Hong Kong Resistors Manufactory International Ltd.)

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AN OHSAS 18001:2007 MANUFACTURER

AN ISO 14001 : 2004 MANUFACTURER

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## DATA SHEET

**Name of Product : CARBON FILM FIXED RESISTOR –BULK PACKING**

Sales Executive : \_\_\_\_\_

Date: \_\_\_\_\_

製造 Prepared by	檢驗 Inspected by	審核 Audited by	核准 Authorized by
客戶 customer approval	客戶 customer approval	客戶 customer approval	客戶 customer approval

**Spec. No. CFBP 2015**

**Rev. No.: 2015 May.(1)**

**PRODUCT : CARBON FILM FIXED RESISTOR**

**TYPE : CF 125/25/50/100/200/300**

**1. APPLICABLE SCOPE :**

- 1.1 This specification is for use in CARBON FILM FIXED RESISTORS
- 1.2 Characteristics and specifications are according to those of :  
JIS C 5202
- 1.3 RoHS and REACH compliant product

**2. TYPE**

It is composed of description , rated wattage , nominal resistance , tolerance and packaging.

2.1 Make Up :

C	F	1	0	0	4	7	0	R	J	B	P						
Product Code		Power Rating		Nominal Resistance Value				Tolerance		Packaging		Lead Wire diameter		Lead Wire length			
C	Carbon	Code	Wattage					Code	Tol.	BP	Bulk Packing	Code	Size	Code	Size		
F	Film	125	0.125(1/8W)					G	2%						125: 0.40mm		125: 22mm
		25	0.25(1/4W)					J	5%			043	125: 0.43mm	27	125: 27mm		
		50	0.50(1/2W)										25: 0.40mm		25: 20.5mm		
		100	1.0(1W)									048	25: 0.48mm	26	25: 26mm		
		200	2.0(2W)										50: 0.48mm		50: 26mm		
		300	3.0(3W)									060	50: 0.60mm	25	100: 25mm		
													100: 0.55mm	23	200: 23mm		
												070	100: 0.70mm	33	300: 33mm		
													200: 0.70mm				
												075	200: 0.75mm				
													300: 0.70mm				
												075	300: 0.75mm				

2.2 Explanation :

Part Number

Description

CF 100 470R J BP

Carbon Film Fixed Resistor ,1W ,470Ω, +/-5% tolerance , bulk pack,

Lead Wire diameter: d=0.55mm, Lead Wire length: L=25mm.

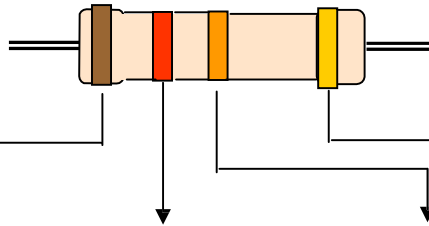
\* Remarks : The power rating of 1/8W is coded as 125

<b>PRODUCT : CARBON FILM FIXED RESISTOR</b>	<b>TYPE : CF 125/25/50/100/200/300</b>
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### 2.3 Color code indication

Fixed resistors of which the nominal resistance value and tolerance are indicated by color codes as per Table 1:

TABLE - 1

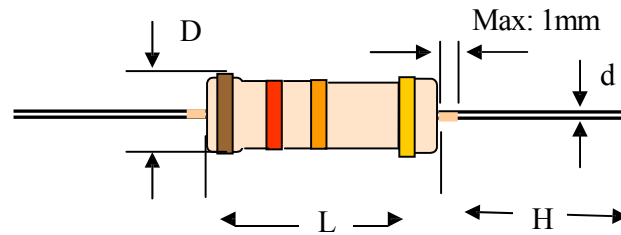


COLOR	1 <sup>ST</sup> DIGIT	2 <sup>ND</sup> DIGIT	MULTIPLIER	TOLERANCE
BLACK	0	0	1	
BROWN	1	1	10	
RED	2	2	100	G(±2%)
ORANGE	3	3	1,000	
YELLOW	4	4	10,000	
GREEN	5	5	100,000	
BLUE	6	6	1000,000	
VIOLET	7	7	10,000,000	
GREY	8	8		
WHITE	9	9		
GOLD			0.1	J (±5%)
SILVER			0.01	

<b>PRODUCT :</b> CARBON FILM FIXED RESISTOR	<b>TYPE :</b> CF 125/25/50/100/200/300
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### 3. DIMENSIONS :

TABLE - 2



Unit : mm

TYPE	BODY		LEAD WIRE	
	L	D	H	d
CF125	3.5 ± 0.5	1.7 ± 0.5	22 (27) ±1	0.40 (0.43) ±0.05
CF25	6.0 ± 1.0	2.3 ± 0.5	20.5 (26) ±1	0.40 (0.48) ±0.05
CF50	9.0 ± 1.0	3.0 ± 0.5	26 ±1	0.48 (0.60) ±0.05
CF100	11.0 ± 1.5	4.0 ± 0.5	25 ±1	0.55 (0.70) ±0.05
CF200	15.0 ± 1.5	5.0 ± 0.5	23 ±1	0.70 (0.75) ±0.05
CF300	17.0 ± 1.5	6.0 ± 0.5	33 ±1	0.70 (0.75) ±0.05

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## 4. SPECIFICATIONS

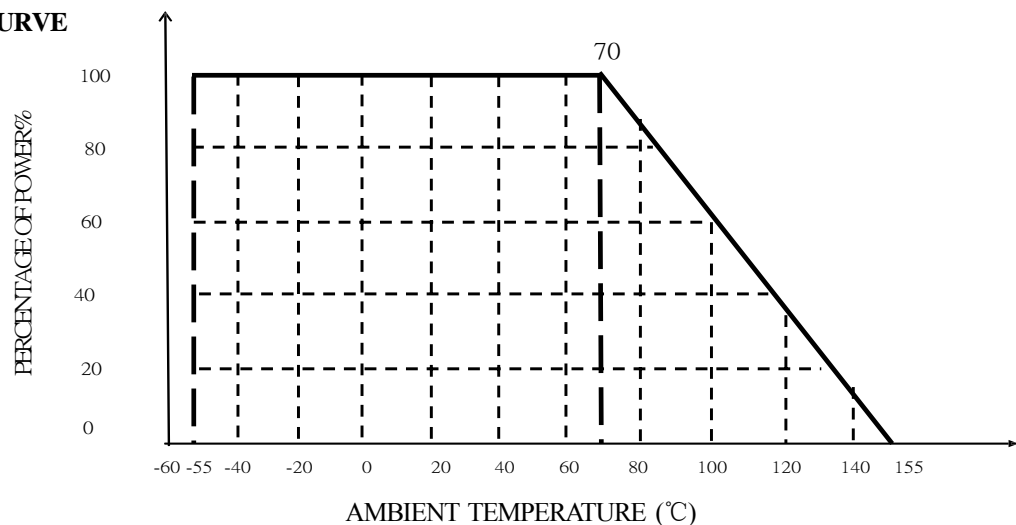
TABLE - 3

DESCRIPTION	CF125	CF25	CF50	CF100	CF200	CF300	
STANDARD RESISTANCE VALUE RANGE	1Ω-4.7MΩ	1Ω-4.7MΩ	1Ω-4.7MΩ	1Ω-4.7MΩ	1Ω-4.7MΩ	1Ω-4.7MΩ	
POWER RATING AT 70°C	1/8W	1/4W	1/2W	1W	2W	3W	
* MAX WORKING VOLTAGE	200V	250V	350V	500V	500V	500V	
* MAX OVERLOAD VOLTAGE	400V	500V	700V	1,000V	1,000V	1,000V	
OPERATING TEMPERATURE RANGE	-55°C~+135°C	-55°C~+135°C	-55°C~+135°C	-55°C~+155°C	-55°C~+155°C	-55°C~+155°C	
TEMPERATURE COEFFICIENT	≤ 10Ω 10Ω- 220KΩ 230KΩ- 1MΩ OVER 1MΩ	±300PPM 0~ -500PPM 0~ -1,000PPM 0~ -1,500PPM	±300PPM 0~ -500PPM 0~ -1,000PPM 0~ -1,500PPM	±300PPM 0~ -500PPM 0~ -700PPM 0~ -1,000PPM	±300PPM 0~ -400PPM 0~ -600PPM 0~ -1,000PPM	±300PPM 0~ -400PPM 0~ -600PPM 0~ -1,000PPM	±300PPM 0~ -400PPM 0~ -600PPM 0~ -1,000PPM
TEMPERATURE CYCLING	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	
VOLTAGE COEFFICIENT	MAX.50PPM/V	MAX.50PPM/V	MAX.50PPM/V	MAX.50PPM/V	MAX.50PPM/V	MAX.50PPM/V	
INSULATION RESISTANCE	MIN.1,000MΩ	MIN.1,000MΩ	MIN.1,000MΩ	MIN.1,000MΩ	MIN.1,000MΩ	MIN.1,000MΩ	
HUMIDITY	±3%	±3%	±3%	±3%	±3%	±3%	
SHORT-TIME OVERLOAD	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	
SOLDERABILITY	MIN.95% COVERED	MIN.95% COVERED	MIN.95% COVERED	MIN.95% COVERED	MIN.95% COVERED	MIN.95% COVERED	
VIBRATION	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	±(1R%+0.05Ω)	
LOAD LIFE	MAX.±5%	MAX.±5%	MAX.±5%	MAX.±5%	MAX.±5%	MAX.±5%	

\* The working is calculated based on the resistance value following the formula of  $V=\sqrt{P \cdot R}$  or to its maximum extent as indicated above

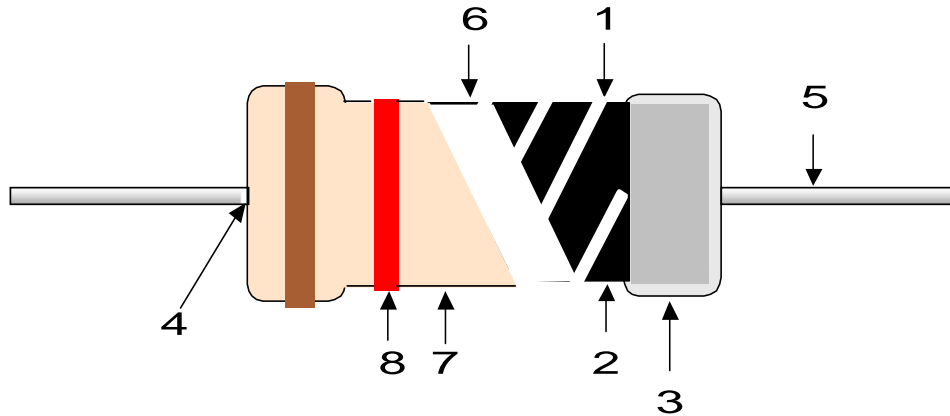
\* The overload voltage is calculated based on the resistance value following the formula of  $V= 2.5 \cdot \sqrt{P \cdot R}$  or to its maximum extent as indicated above

## 5. POWER DERATING CURVE



<b>PRODUCT : CARBON FILM FIXED RESISTOR</b>	<b>TYPE : CF 125/25/50/100/200/300</b>
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**6. STRUCTURAL DIAGRAM**



- |                        |   |
|------------------------|---|
| (1) CORE               | CERAMIC ROD                             |
| (2) RESISTANCE FILM    | CARBON FILM                             |
| (3) TERMINAL           | TINNED IRON CAP                         |
| (4) CONNECTION         | ELECTRIC WELDING                        |
| (5) LEAD WIRE          | SOLDERED OR TINNED ANNEALED COPPER WIRE |
| (6) UNDERCOAT          | ELECTRIC INSULATION VARNISH             |
| (7) FINISHING PAINTING | ELECTRIC INSULATION PAINT               |
| (8) INDICATION         | COLOR CODE INK                          |

TABLE - 4

RATED RESISTANCE VALUE	MAX. TESTING VOLTAGE	
	0.125W / 0.25W	0.5W / 1W / 2W / 3W
$0.1\Omega \leq R < 10\Omega$	0.3	0.3
$10\Omega \leq R < 100\Omega$	0.3	1
$100\Omega \leq R < 1K\Omega$	1	3
$1K\Omega \leq R < 10K\Omega$	3	10
$10K\Omega \leq R < 100K\Omega$	10	30
$100K\Omega \leq R < 1M\Omega$	30	50
$1M\Omega \leq R$	50	100

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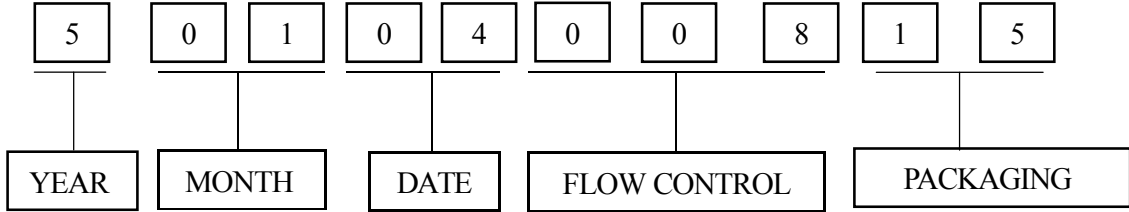
## 7. CHARACTERISTICS

TABLE – 5

DC RESISTANCE VALUE	TEST METHOD MIL-STD-202 ITEM 303	VOLTAGE AS TABLE -4. TEMPERATURE 25 ±2°C. AQL 0.25%.
VOLTAGE WITHSTAND	TEST METHOD MIL-STD-202 ITEM 301	V-BLOCK METHOD. VOLTAGE AS TABLE -3 ×1.42, 1 MIN. AQL 1%.
SHORT TIME OVERLOAD	TEST METHOD JIS C 5202 ITEM 5.5	RATED VOLTAGE × 2.5 TIMES OR MAX.WORKINGVOLTAGE × 2 TIMES. ABOVE TEST 5 SEC. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN ±(1%R+0.05 Ω).
TERMINAL STRENGTH	TEST METHOD MIL-STD-202 ITEM 211	TENSILE STRENGTH : 1KG TENSIONAL STRENGTH : 180°, 2 CYCLES. BENDING STRENGTH : 0.5KG 2 TIMES. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN ±(0.5%R+0.05 Ω).
SOLDERABILITY OF TERMINAL	TEST METHOD MIL-STD-202 ITEM 210	260±5°C 10±1SEC. AFTER TESTING, LEAVE FOR 3 HOURS. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN ±(1%R+0.05 Ω).
TEMPERATURE CYCLE	TEST METHOD MIL-STD-202 ITEM 107	LOW SIDE TEMPERATURE : -55°C±3°C 30MIN. ROOM TEMPERATURE : 10-15MIN. HIGH SIDE TEMPERATURE : +125°C±3°C 30MIN. ROOM TEMPERATURE : 10-15MIN. ABOVE TEST 5 CYCLES AFTER LAST CYCLE, LEAVE FOR 1-3 HOURS. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN ±(1%R+0.05 Ω).
VIBRATION WITHSTAND	TEST METHOD MIL-STD-202 ITEM 204	X, Y, Z-EACH DIRECTION 2 HOURS. AMPLITUDE 0.75MM. RANGE : 10HZ ~ 500HZ. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN ±(1%R+0.05 Ω).
LOAD LIFE	TEST METHOD MIL-STD-202 ITEM 108	70±2°C. 1000 HOURS RATED VOLTAGE (1.5 HOURS ON, 0.5 HOUR OFF). THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN ±(5%R+0.1 Ω).
RESISTANCE TEMPERATURE COEFFICIENT	TEST METHOD MIL-STD-202 ITEM 304	THE RESISTANCE VALUE CHANGE RATE SHALL BE AS TABLE – 3.
LOAD LIFE IN HUMIDITY	TEST METHOD MIL-STD-202 ITEM 103	THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN ±(5%R+0.1 Ω).

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**8. LOT NO. (Coding System)**



**9. PACKING DATA**

TYPE	PER PACKET	PER BOX	PER CARTON	INNER BOX			EXPORT CARTON		
				L	W	H	L	W	H
CF125	1,000PCS	10,000PCS	100,000PCS	/	/	/	305mm	198mm	180mm
CF25	1,000PCS	10,000PCS	100,000PCS	220mm	138mm	57mm	310mm	295mm	245mm
CF50	500PCS	5,000PCS	50,000PCS	/	/	/	280mm	280mm	260mm
CF100	500PCS	4,000PCS	40,000PCS	/	/	/	310mm	295mm	245mm
CF200	250PCS	2,000PCS	20,000PCS	/	/	/	280mm	280mm	260mm
CF300	100PCS	1,000PCS	10,000PCS	/	/	/	280mm	280mm	260mm

