



# 香港電阻製造廠

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## HONG KONG RESISTORS MANUFACTORY

(wholly owned by Hong Kong Resistors Intl. Ltd.)

AN ISO 9001:2008 CERTIFIED MANUFACTURER

AN OHSAS 18001 : 2007 MANUFACTURER

AN ISO 14001 : 2004 MANUFACTURER

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## DATA SHEET

**Name of Product :** METAL 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. MFBP2014

Rev. No.: 2014 Mar.(3)

**PRODUCT : METAL FILM FIXED RESISTOR**

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

## 1. APPLICABLE SCOPE :

1.1 This specification is for use in METAL FILM FIXED RESISTORS

1.2 Characteristics and specifications are according to those of :

MIL-STD-105

MIL-STD-202

JIS C 5202

GB 5731-85

IEC 115-2-1-1982

QC 400101

1.3 RoHS and REACH compliant product

## 2. PART NUMBER

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

2.1 Make Up :

M	F	1	0	0	4	7	0	R	F	B	P								
Product Code		Power Rating		Nominal Resistance Value				Tolerance		Packaging		Lead Wire diameter		Lead Wire length					
M	Metal	Code	Wattage					Code	Tol.	BP	Bulk Packing	Code	Size	Code	Size				
F	Film	125	0.125(1/8W)					F	1%				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				
												075	100: 0.70mm	33	300: 33mm				
													200: 0.70mm						
												075	200: 0.75mm						
													300: 0.75mm						

2.2 Explanation :

Part Number

MF100 470R F BP

Description

Metal Film Fixed Resistor , 1W , 470Ω , +/-1% , bulk packing.

Lead Wire diameter: d=0.60mm, Lead Wire length: L=25mm.

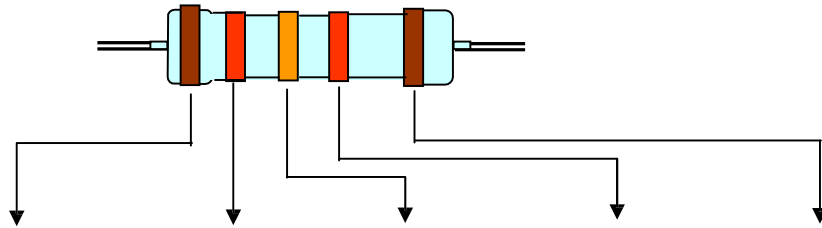
\* Remarks : The power rating of 1/8W is coded as 125

<b>PRODUCT : METAL FILM FIXED RESISTOR</b>	<b>TYPE : MF 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	3 <sup>RD</sup> DIGIT	MULTIPLIER	TOLERANCE
BLACK	0	0	0	1	
BROWN	1	1	1	10	F(±1%)
RED	2	2	2	100	
ORANGE	3	3	3	1,000	
YELLOW	4	4	4	10,000	
GREEN	5	5	5	100,000	
BLUE	6	6	6	1000,000	
VIOLET	7	7	7	10,000,00	
GREY	8	8	8		
WHITE	9	9	9		
GOLD				0.1	J(±5%)
SILVER				0.01	

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### 3. DIMENSIONS :

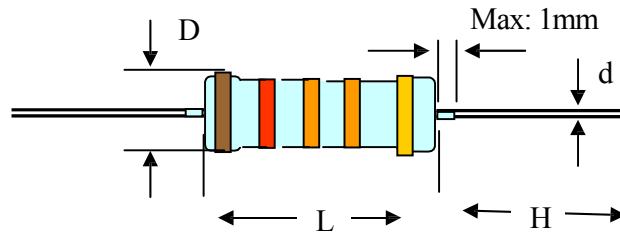


TABLE - 2

Unit : mm

TYPE	BODY		LEAD WIRE	
	L	D	H	d
MF125	3.5±0.5	1.7±0.5	22 (27)±1	0.40 (0.43) ±0.05
MF25	6.0±1.0	2.3±0.5	20.5 (26±)1	0.40 (0.48) ±0.05
MF50	9.0±1.0	3.0±0.5	26±1	0.48 (0.60) ±0.05
MF100	11.0±1.5	4.0±0.5	25 ±1	0.55 (0.70) ±0.05
MF200	15.0±1.5	5.0±0.5	23 ±1	0.70 (0.75) ±0.05
MF300	17.0±1.5	6.0±0.5	33 ±1	0.70 (0.75) ±0.05

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## 4. SPECIFICATIONS

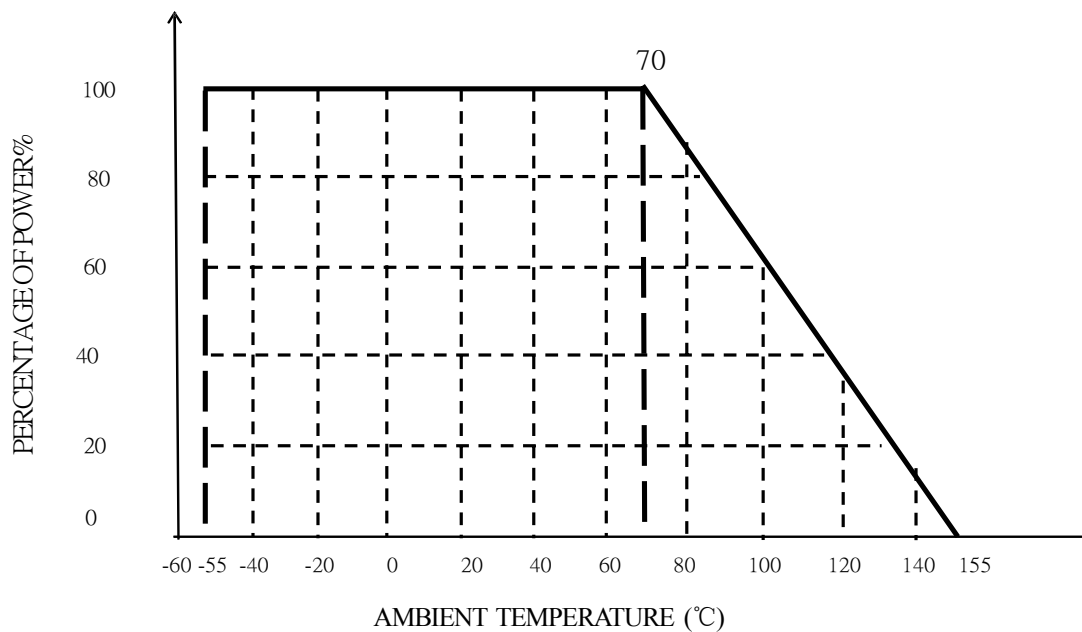
TABLE - 3

DESCRIPTION	MF-125	MF-25	MF-50	MF-100	MF-200	MF-300
STANDARD RESISTANCE VALUE RANGE	10Ω - 1MΩ	10Ω - 1MΩ	10Ω - 1MΩ	10Ω - 1MΩ	10Ω - 1MΩ	10Ω - 1MΩ
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	±100PPM	±100PPM	±100PPM	±100PPM	±100PPM	±100PPM
TEMPERATURE CYCLING	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)
INSULATION RESISTANCE	MIN.1,000 MΩ	MIN.1,000 MΩ	MIN.1,000 MΩ	MIN.1,000 MΩ	MIN.1,000 MΩ	MIN.1,000 MΩ
HUMIDITY	±(1.5%R+0.05Ω)	±(1.5%R+0.05Ω)	±(1.5%R+0.05Ω)	±(1.5%R+0.05Ω)	±(1.5%R+0.05Ω)	±(1.5%R+0.05Ω)
SHORT-TIME OVERLOAD	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)
SOLDERABILITY	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED
VIBRATION	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)	±(0.5%R+0.05Ω)
LOAD LIFE	±(2%R+0.05Ω)	±(2%R+0.05Ω)	±(2%R+0.05Ω)	±(2%R+0.05Ω)	±(2%R+0.05Ω)	±(2%R+0.05Ω)

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

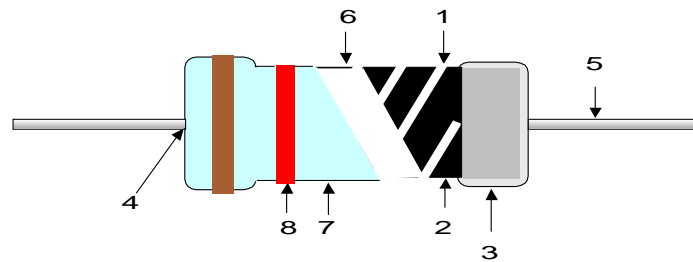
\* The overload voltage is calculated based on the resistance value following the formula of  $V= 2.5 \cdot \sqrt{P \cdot R}$  or to its maximum extent as indicated above

## 5. POWER DERATING CURVE



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**6. STRUCTURAL DIAGRAM**



- |                        |   |
|------------------------|---|
| (1) CORE               | CERAMIC ROD                             |
| (2) RESISTANCE FILM    | METAL 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

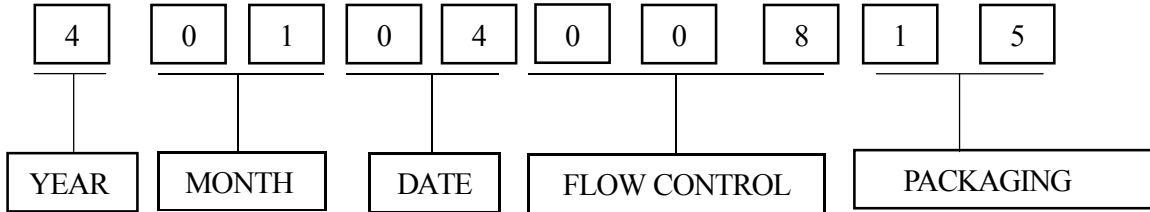
TABLE – 5

DC RESISTANCE VALUE	TEST METHOD MIL-STD-202 ITEM 303	VOLTAGE AS TABLE -4. TEMPERATURE 25 $\pm$ 2°C. AQL 0.25%.
VOLTAGE WITHSTAND	TEST METHOD MIL-STD-202 ITEM 301	V-BLOCK METHOD. VOLTAGE AS TABLE -3 $\times$ 1.42, 1 MIN. AQL 1%.
SHORT TIME OVERLOAD	TEST METHOD JIS C 5202 ITEM 5.5	RATED VOLTAGE $\times$ 2.5 TIMES OR MAX.WORKINGVOLTAGE $\times$ 2 TIMES. ABOVE TEST 5 SEC. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(0.5\%R+0.05 \Omega)$ .
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 $\pm(0.5\%R+0.05 \Omega)$ .
SOLDERABILITY OF TERMINAL	TEST METHOD MIL-STD-202 ITEM 210	260 $\pm$ 5°C 10 $\pm$ 1SEC. AFTER TESTING, LEAVE FOR 3 HOURS. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(0.5\%R+0.05 \Omega)$ .
TEMPERATURE CYCLE	TEST METHOD MIL-STD-202 ITEM 107	LOW SIDE TEMPERATURE : -55°C $\pm$ 3°C 30MIN. ROOM TEMPERATURE : 10-15MIN. HIGH SIDE TEMPERATURE : +125°C $\pm$ 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 $\pm(0.5\%R+0.05 \Omega)$ .
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 $\pm(0.5\%R+0.05 \Omega)$ .
LOAD LIFE	TEST METHOD MIL-STD-202 ITEM 108	70 $\pm$ 2°C. 1000 HOURS RATED VOLTAGE (1.5 HOURS ON, 0.5 HOUR OFF). THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(2\%R+0.05 \Omega)$ .
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 $\pm(1.5\%R+0.05 \Omega)$ .

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



**9. PACKING DATA**

TABLE – 6

TYPE	PER BAG	PER BOX	PER CARTON	INNER BOX			EXPORT CARTON		
				L	W	H	L	W	H
MF125	1,000PCS	10,000PCS	100,000PCS	/	/	/	305mm	198mm	180mm
MF25	1,000PCS	10,000PCS	100,000PCS	/	/	/	310mm	295mm	245mm
MF50	500PCS	5,000PCS	50,000PCS	/	/	/	280mm	280mm	260mm
MF100	500PCS	4,000PCS	40,000PCS	/	/	/	310mm	295mm	245mm
MF200	250PCS	2,000PCS	20,000PCS	/	/	/	280mm	280mm	260mm
MF300	100PCS	1,000PCS	10,000PCS	/	/	/	280mm	280mm	260mm

