PRODUCT : METAL FILM FIXED RESISTOR	**TYPE : MF –12.5/25/50/100/200/300**

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

2. TYPE

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

2.1 Explanation of part numbers :

1	2	3	4	5	6	7	8	9	10	11	12	13	14
M	**F**	**1**	**2**	**.5**		**5**	**K**	**1**	**1**	**J**	**B**	**P**	

Product Code	
M	Metal
F	Film

Power Rating	
Code	**Wattage**
12.5	0.125(1/8W)
25	0.25(1/4W)
50	0.50(1/2W)
100	1.0(1W)
200	2.0(2W)
300	3.0(3W)

Body Size	
S	Small Size

Nominal Resistance Value

Resistance Tolerance	
Code	**Tol.**
B	0.1%
C	0.25%
D	0.5%
F	1%
G	2%
J	5%
K	10%

Suffix for Packaging & Special Product	
BP	Bulk Pack
TB	Tape in Box
TR	Tape in Reel
FP	Flame Proof

TB / TR	
2	**26**
5	**52**

2.2 Example of expression :

Miniature type (small size) and Flame Proof type are also available.

Part Number	Description
MF 12.5 5K11 J BP	Metal Film Fixed Resistor , 1/8W , 5.11KΩ, +/-5% tolerance , bulk pack.

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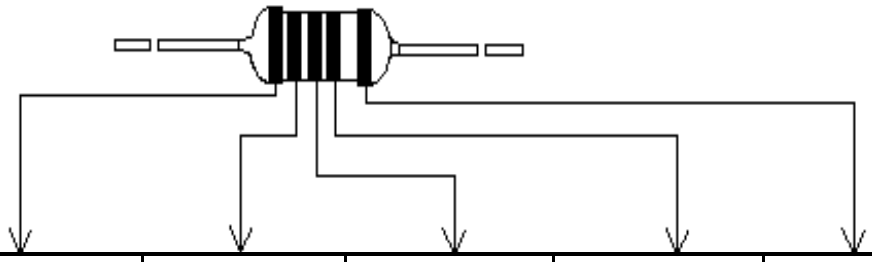
2.3 Color code indication for nominal resistance value and tolerance

Fixed resistors of which the nominal resistance value and tolerance are indicated by color codes following the standard as below:

TABLE - 1



COLOR	1ST DIGIT	2ND DIGIT	3RD DIGIT	MULTIPLIER	TOLERANCE
BLACK	0	0	0	1	
BROWN	1	1	1	10	F(±1%)
RED	2	2	2	100	G(±2%)
ORANGE	3	3	3	1,000	
YELLOW	4	4	4	10,000	
GREEN	5	5	5	100,000	D(±0.5%)
BLUE	6	6	6	1000,000	C(±0.25%)
VIOLET	7	7	7	10,000,00	B(±0.10%)
GREY	8	8	8		
WHITE	9	9	9		
GOLD				0.1	J (±5%)
SILVER				0.01	K (±10%)

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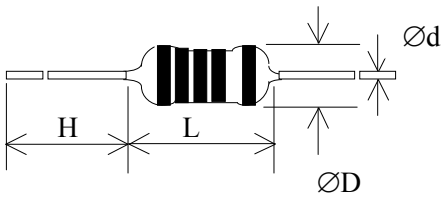
3. DIMENSIONS :

TABLE - 2



Unit : mm

TYPE	BODY		LEAD WIRE	
	L	D	H	d
MF-12.5(MF -25S)	3.5±0.5	1.7±0.5	28±1	0.45±0.05
MF-25(MF -50S)	6.5±0.5	2.3±0.5	27±1	0.52±0.05
MF-50(MF -100S)	9.0±0.5	3.0±0.5	26±1	0.60±0.05
MF-100(MF -200S)	11.0±1	4.0±0.5	26(30)±1	0.60±0.05
MF-200(MF -300S)	15.0±1	5.0±0.5	24(35)±1	0.78±0.05
MF-300	17.0±1	6.0±0.5	24(35)±1	0.78±0.05

4. SPECIFICATIONS

TABLE - 3

DESCRIPTION 內容	MF-12.5	MF-25 (MF-25S)	MF-50 (MF-50S)	MF-100 (MF-100S)	MF-200 (MF-200S)	MF-300 (MF-300S)
STANDARD RESISTANCE VALUE RANGE 標准阻值范圍	10Ω -1MΩ	10Ω -1MΩ	10Ω -1MΩ	10Ω -1MΩ	10Ω -1MΩ	10Ω -1MΩ
POWER RATING AT 70℃ 額定功率(70℃)	1/8W	1/4W	1/2W	1W	2W	3W
MAX WORKING VOLTAGE 最高使用電壓	200V	250V	350V	500V	500V	500V
MAX OVERLOAD VOLTAGE 最高過負荷電壓	400V	500V	700V	1,000V	1,000V	1,000V
OPERATING TEMPERATURE RANGE 使用溫度范圍	-55℃~+135℃	-55℃~+135℃	-55℃~+135℃	-55℃~+155℃	-55℃~+155℃	-55℃~+155℃
TEMPERATURE COEFFICIENT 溫度特性	±50PPM ±100PPM	±50PPM ±100PPM	±50PPM ±100PPM	±50PPM ±100PPM	±50PPM ±100PPM	±50PPM ±100PPM
TEMPERATURE CYCLING 溫度循環	±(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 絕緣電阻	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 耐濕負荷壽命	±(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 短時間過負荷	±(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 焊錫性	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED
VIBRATION 耐震性	±(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 負載壽命	±(2%R+0.05Ω)	±(2%R+0.05Ω)	±(2%R+0.05Ω)	±(2%R+0.05Ω)	±(2%R+0.05Ω)	±(2%R+0.05Ω)

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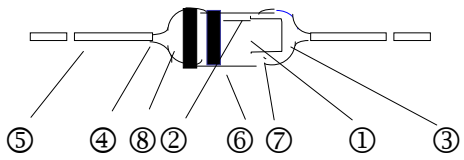
5. STRUCTURE DIAGRAM



(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
1Ω≦R<10Ω	0.3	0.3
10Ω≦R<100Ω	0.3	1
100Ω≦R<1KΩ	1	3
1KΩ≦R<10KΩ	3	10
10KΩ≦R<100KΩ	10	30
100KΩ≦R<1MΩ	30	50
1MΩ≦R	50	100

6. CHARACTERISTICS

TABLE – 5

DC RESISTANCE VALUE	TEST METHOD MIL-STD-202 ITEM 303	VOLTAGE AS TABLE -4. TEMPERATURE 25 ±2℃. 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 ±(0.5%R+0.05 Ω).
TERMINAL STRENGTH	TEST METHOD MIL-STD-202 ITEM 211	TENSILE STRENGTH : 1K 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℃ 10±1SEC. AFTER TESTING, LEAVE FOR 3 HOURS. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN ±(0.5%R+0.05 Ω).
TEMPERATURE CYCLE	TEST METHOD MIL-STD-202 ITEM 107	LOW SIDE TEMPERATURE : -55℃±3℃ 30MIN. ROOM TEMPERATURE : 10-15MIN. HIGH SIDE TEMPERATURE :+125℃±3℃ 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 ±(0.5%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 ±(0.5%R+0.05 Ω).
LOAD LIFE	TEST METHOD MIL-STD-202 ITEM 108	70°±2℃. 1000 HOURS RATED VOLTAGE (1.5 HOURS ON, 0.5 HOUR OFF). THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN ±(2%R+0.05 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 ±(1.5%R+0.05 Ω).

NOTE : RESISTORS SHALL BE EXAMINED FOR EVIDENCE OF NO MECHANICAL DAMAGE , ARCING AND BREAKDOWN AFTER THE TEST.

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7. LOT NO. (Coding System)