

# DATA SHEET

## METAL FILM RESISTORS

Professional  
MFO Series

$\pm 0.5\%$ ,  $\pm 1\%$ ,  $\pm 2\%$ ,  $\pm 5\%$

0.4W AND 0.6W

RoHS compliant & Halogen Free





**ORDERING INFORMATION**

Part number of the professional t metal film resistor are identified by the series, power rating, tolerance, packing, temperature coefficient, forming and resistance value.

**APPLICATIONS**

- All general purpose applications
- Power applications

**FEATURES**

- AEC-Q200 qualified
- Wide resistance range
- Miniature & high power rating
- High stability
- RoHS compliant & halogen-free

**PART NUMBER**

**MF0**    **204**    **F**    **I**    **F**    **52-**    **100R**  
 (1)    (2)    (3)    (4)    (5)    (6)    (7)

**(1) SERIES**

MF0 Series

**(2) POWER RATING**

204 = 0.4W

207 = 06W

**(3) TOLERANCE**

D = ±0.5%

J = ±5%

F = ±1%

- = for 0R

G = ±2%

**(4) PACKAGING**

R = Reel Pack

B = Bulk

T = Box Pack

**(5) TEMPERATURE COEFFICIENT OF RESISTANCE**

E=±50ppm/°C

- = for 0R

F=±100ppm/°C

**(6) FORMING**

26- = 26mm

52- = 52.4mm

52B = 52.4mm, Φd = 0.45±0.02mm

52C = 52.4mm, Φd= 0.5±0.02mm

52H = 52.4mm, non-painting on soldering spots

M = M-Type Forming

MB = M-form W/flat

MT = MT Type Forming

FT = FT Type Forming

PN = PANAsert

AV = AVIsert

**(7) RESISTANCE VALUE**

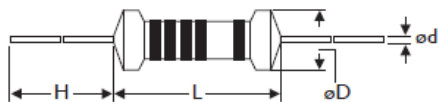
E24 & E96 Series

Example:

100R = 100Ω, 10K = 10,000Ω, 1M = 1,000,000Ω

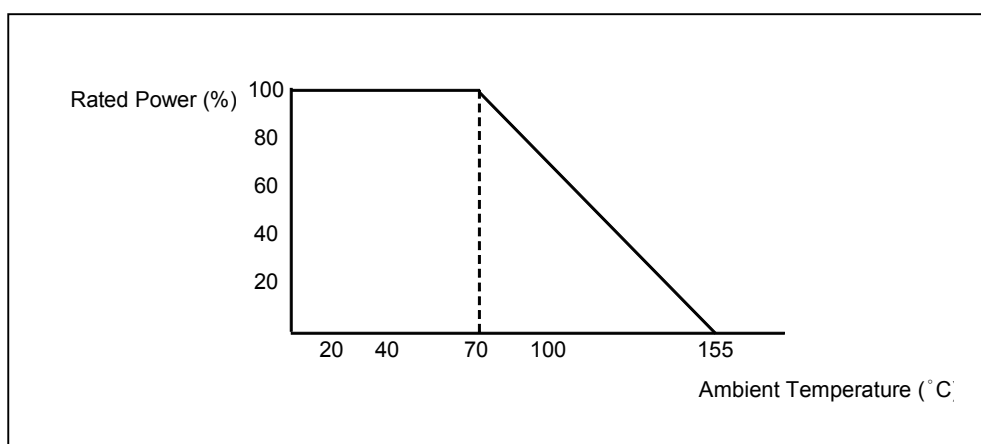
**DIMENSIONS**

Unit: mm



Miniature	L	ψD	H	ψd
MF0204	3.4 ± 0.3	1.9 ± 0.2	28 ± 2.0	0.45 ± 0.05
MF0207	6.3 ± 0.5	2.4 ± 0.2	28 ± 2.0	0.55 ± 0.05

**DERATING CURVE**



**ELECTRICAL CHARACTERISTICS**

CHARACTERISTICS	MF0204	MF0207
Power Rating at 70 °C	0.4W	0.6W
Maximum Working Voltage	250V	350V
Maximum Overload Voltage	500V	700V
Voltage Proof on Insulation	300V	500V
Resistance Range	1Ω ~4M7Ω&0Ω(20m Ω or less) for E24&E96 series value	
Operating Temp. Range	- 55°C to +155°C	
Temperature Coefficient	±50ppm/°C,±100ppm/°C	

Note: For resistance value out of above range is by request.

**TEST AND REQUIRMENTS**

TEST	TEST METHOD	PROCEDURE	APPRAISE
Short Time Overload	IEC 60115-1 4.13	2.5 times RCWV for 5 sec.(Not more than maximum overload voltage)	±0.25%+0.05Ω for MF0207 type ±1.0 % +0.05Ω for MF0204 type
Voltage Proof on Insulation	IEC 60115-1 4.7	In V-Block for 60 sec. test voltage as above table	No Breakdown
Temperature Coefficient	IEC 60115-1 4.8	Between -55°C to +155°C	By Type
Insulation Resistance	IEC 60115-1 4.6	In V-Block for 60 sec.	>10,000MΩ
Solderability	IEC 60115-1 4.17	245±5°C for 3±0.5 Sec.	95% Min. coverage
Solvent Resistance of Marking	IEC 60115-1 4.30	IPA for 5±0.5 Min. with ultrasonic	No deterioration of coatings and markings
Robustness of Terminations	IEC 60115-1 4.16	Direct load for 10 Sec. in the direction of the terminal leads	≥2.5Kg(24.5N)
Periodic-pulse Overload	IEC 60115-1 4.39	4 times RCWV(or Umax., whichever less) 10,000 cycles (1 Sec. on, 25 Sec.off)	±1.0%+0.05Ω
Damp Heat Steady State	IEC 60115-1 4.24	40±2°C,90-95% RH for 56 days, loaded with 0.1 times RCWV(or Umax., whichever less)	±1.5%+0.05Ω
Endurance at 70°C	IEC 60115-1 4.25	70±2°C at RCWV(or Umax., whichever less) for 1,000 Hr.(1.5 Hr.on,0.5 Hr. off)	±1.5%+0.05Ω
Temperature Cycling	IEC 60115-1 4.19	-55°C → Room Temp. → +155°C → Room Temp.(5 cycles)	±0.75%+0.05Ω
Resistance to Soldering Heat	IEC 60115-1 4.18	260±3°C for 10±1 Sec., immersed to a point 3±0.5mm from the body	±0.25%+0.05Ω

Note:.

**RCWV (Rated Continuous Working Voltage ):**

The DC or AC (rms) continuous working voltage corresponding to the rated power is determined by the following formula:

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

or max. working voltage whichever is less

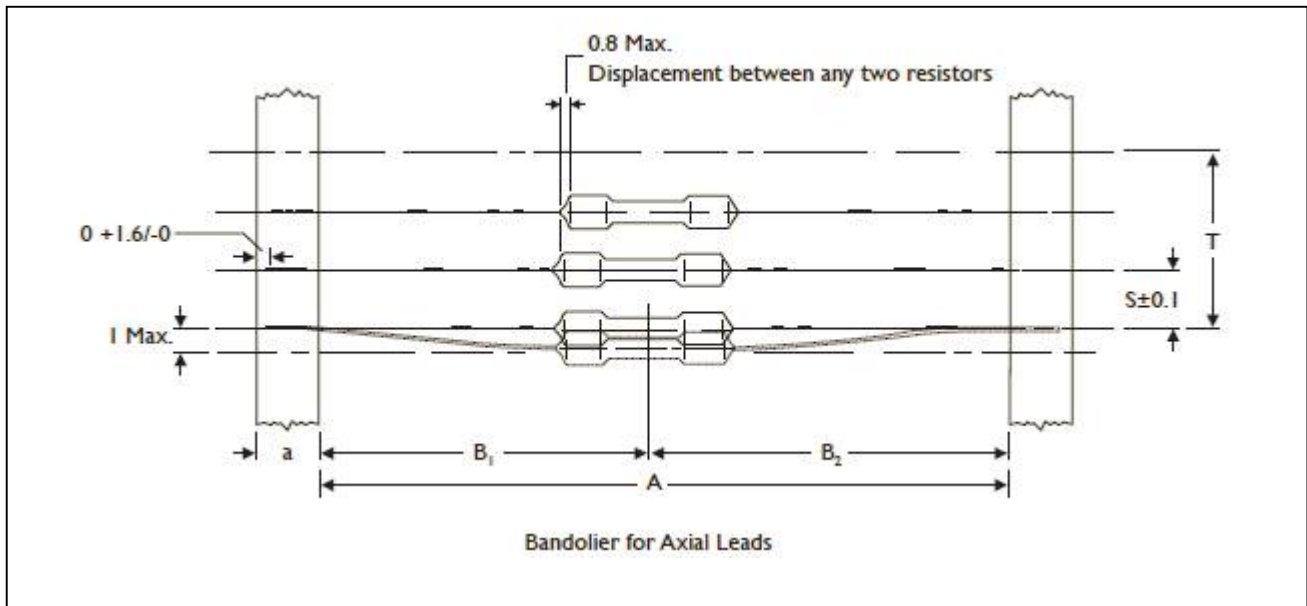
Where

V=Continuous rated DC or AC (rms) working voltage (V)

P=Rated power (W)

R=Resistance value (Ω)

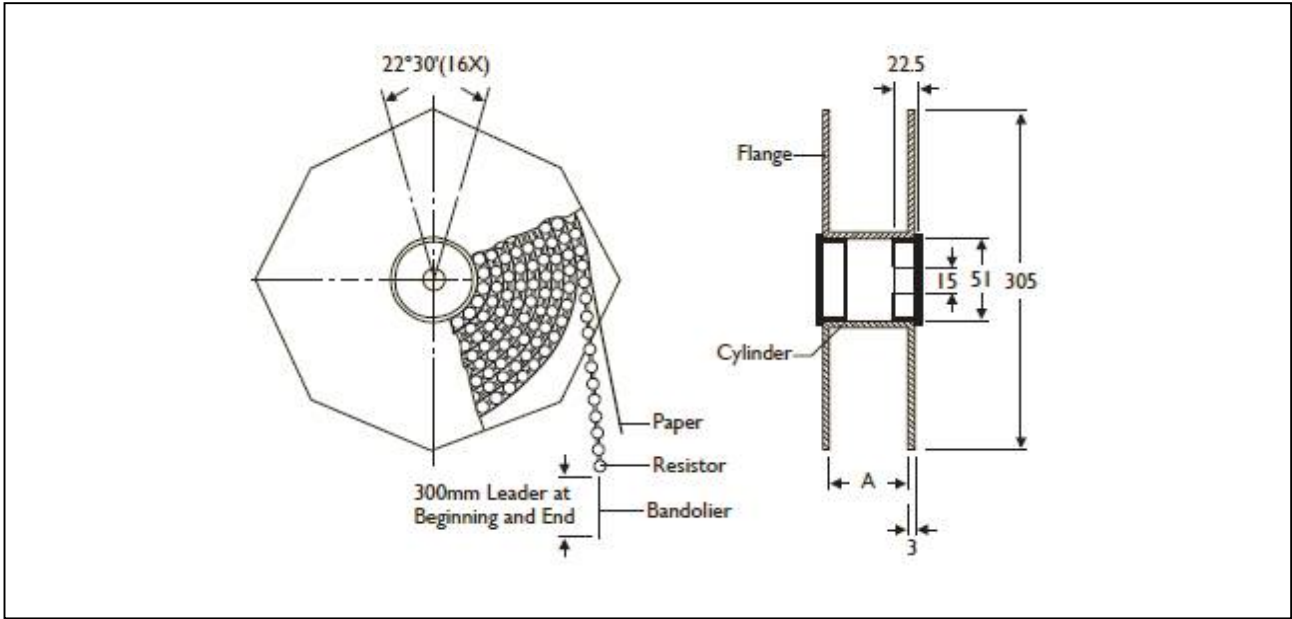
**AXIAL / REEL TAPE SPECIFICATION**



Unit: mm

Miniature	a	A	B1-B2 (Max.)	S (spacing)	T (max. deviation of spacing)
MF0204	6 ± 0.5	52.4 ± 1.5	1.2	5	1 mm per 10 spacing, 0.5 mm per 5 spacing
		26.0 ± 1.5	1		
MF0207	6 ± 0.5	52.4 ± 1.5	1.2	5	
		26.0 ± 1.5	1		

**TAPE ON REEL PACKING**

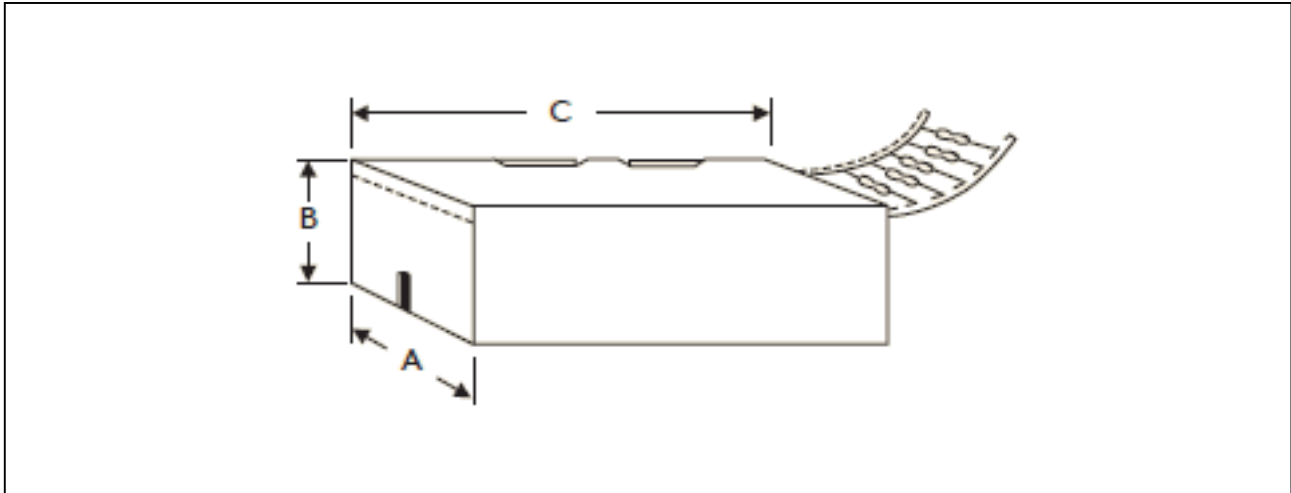


TYPE

Unit: mm/piece

Miniature	Across Flange(A)	B	Quantity Per Reel
MF0204	66.5	75.5	5,000
MF0207	66.5	75.5	5,000

**TAPE ON BOX PACKING**



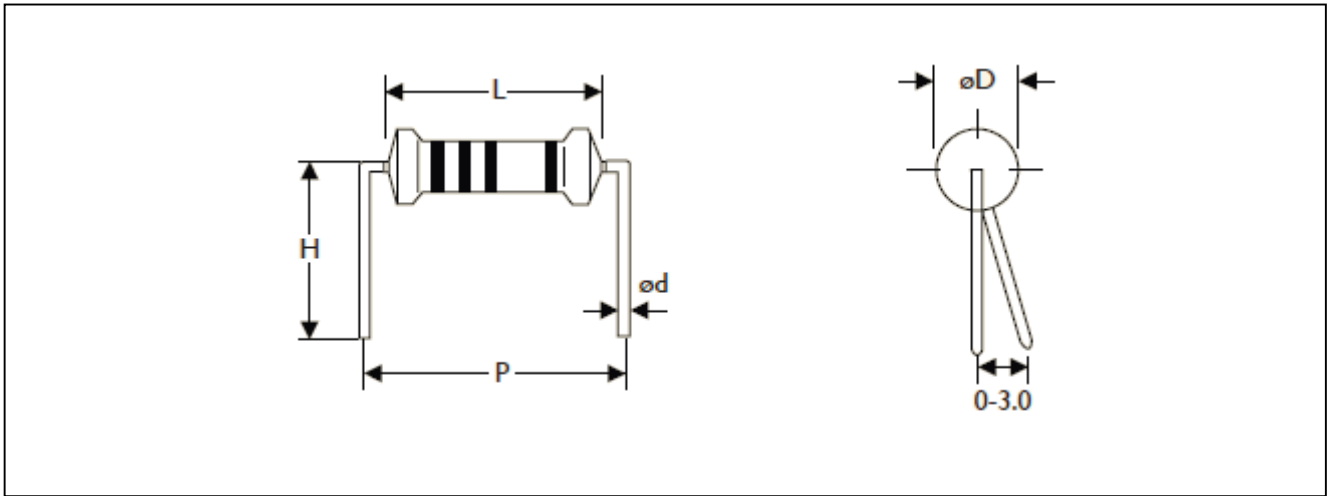
TYPE	DIMENSIONS			Unit: mm/piece
Miniature	A	B	C	Quantity Per Box
MF0204	48	102	255	5,000
MF0204	81	70	260	5,000
MF0207	48	102	255	5,000
MF0207	81	104	260	5,000

**BULK PACKING**

Miniature	Piece/Per Inner Box	Bag/Per Inner Box	Piece Per Bag
MF0204	10,000	10	1,000
MF0207	10,000	10	1,000

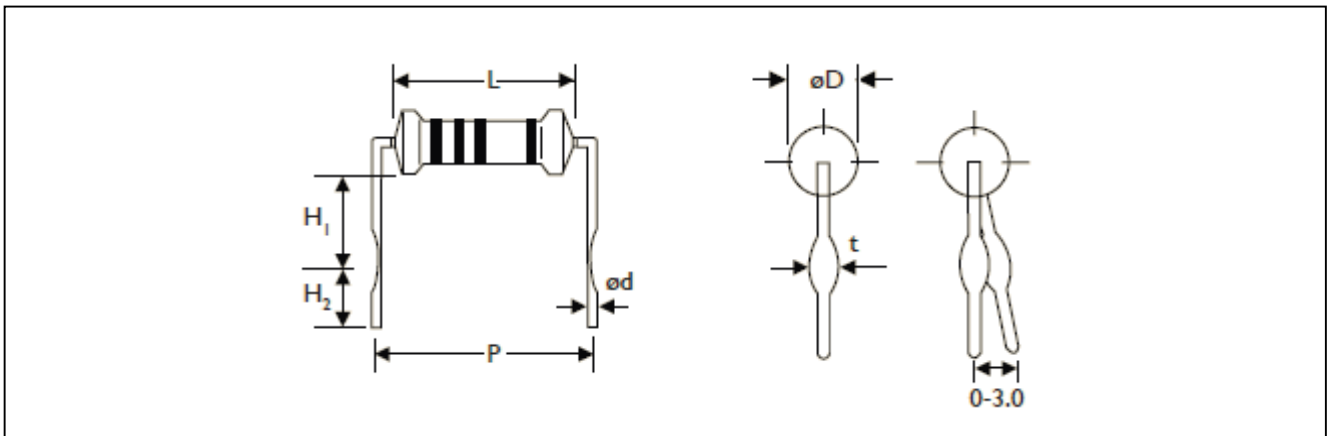
**FORMING**

**M TYPE**



TYPE	DIMENSIONS					Unit: mm
Miniature	L	ψD	ψd	P	H	
MF0204	3.4 ± 0.3	1.9 ± 0.2	0.45 ± 0.05	6.0 ± 1	10.0 ± 1	
MF0207	6.3 ± 0.5	2.4 ± 0.2	0.55 ± 0.05	10.0 ± 1	10.0 ± 1	

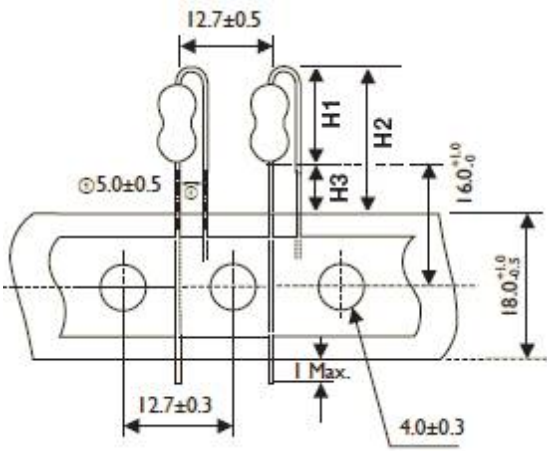
**MB TYPE**



TYPE	DIMENSIONS							Unit: mm
Miniature	L	ψD	ψd	P	H1	H2	t	
MF0207	6.3 ± 0.5	2.4 ± 0.2	0.55 ± 0.05	10.0 ± 1	6.0 ± 1	5.0 ± 1	1.2 ± 0.2	



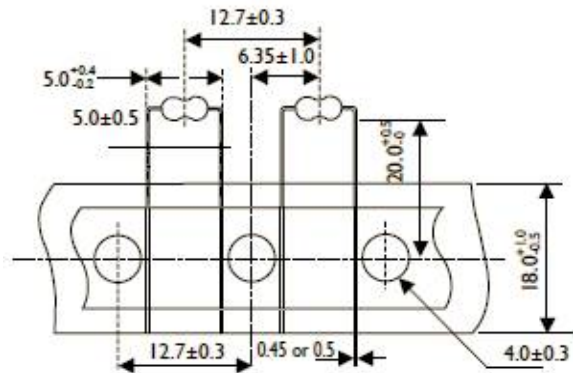
**FT TYPE (Taping Pack)**



TYPE	DIMENSIONS			Unit: mm
<b>Miniature</b>	<b>H1 Max.</b>	<b>H2 Max.</b>	<b>H3 Max.</b>	
MF0207	10	18.5	8.5	

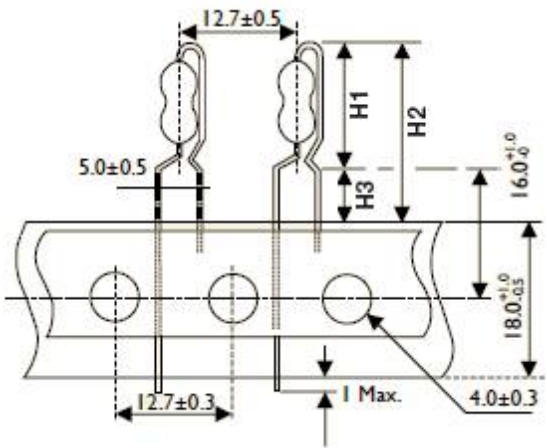
**MT TYPE (Taping Pack)**

Rated Watts : 0.4W

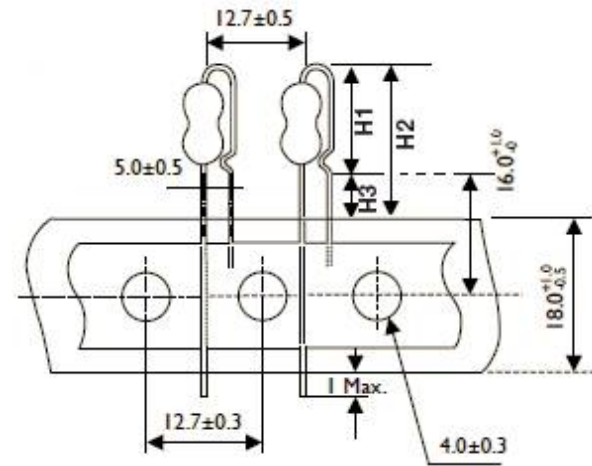


**AV TYPE (Taping Pack)**

**PN TYPE (Taping Pack)**



TYPE	DIMENSIONS			Unit: mm
<b>Miniature</b>	<b>H1 Max.</b>	<b>H2 Max.</b>	<b>H3 Max.</b>	
MF0207	13	21.5	8.5	



TYPE	DIMENSIONS			Unit: mm
<b>Miniature</b>	<b>H1 Max.</b>	<b>H2 Max.</b>	<b>H3 Max.</b>	
MF0207	11.5	20	8.5	

**MARKING**



COLOR	1st BAND	2nd BAND	3rd BAND	MULTIPLIER	TOLERANCE
BLACK	0	0	0	1Ω	
BROWN	1	1	1	10Ω	± 1% ( F )
RED	2	2	2	100Ω	± 2% ( G )
ORANGE	3	3	3	1KΩ	
YELLOW	4	4	4	10KΩ	
GREEN	5	5	5	100K	± 0.5 % ( D )
BLUE	6	6	6	1MΩ	
VIOLET	7	7	7	10MΩ	
GREY	8	8	8	0.001Ω	
WHITE	9	9	9	0.0001Ω	
GOLD				0.1Ω	± 5 % ( J )
SILVER				0.01Ω	



**REVISION HISTORY**

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 0	Aug.2, 2021	-	- First issue of this specification

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