

# DATA SHEET

## METAL FILM RESISTORS

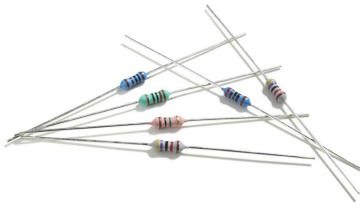
Professional, Flameproof  
FM0 Series

$\pm 1\%$ ,  $\pm 5\%$

0.4W AND 0.6W

RoHS compliant & Halogen Free





**ORDERING INFORMATION**

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

**APPLICATIONS**

- All general purpose applications
- Power applications

**FEATURES**

- Wide resistance range
- Miniature & high power rating
- High stability
- Flameproof coating equivalent to UL-94V-0
- RoHS compliant & halogen-free

**PART NUMBER**

<u>FM0</u>	<u>204</u>	<u>F</u>	<u>T</u>	<u>F</u>	<u>52-</u>	<u>100R</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)

**(1) SERIES**

FM0 Series

**(2) POWER RATING**

204 = 0.4W

207 = 0.6W

**(3) TOLERANCE**

F = ±1%

J = ±5%

**(4) PACKAGING**

R = Reel Pack

B = Bulk

T = Box Pack

**(5) TEMPERATURE COEFFICIENT OF RESISTANCE**

E=±50ppm/°C

- = Based on spec.

F=±100ppm/°C

**(6) FORMING**

26- = 26mm

MT = MT Type Forming

52- = 52.4mm

**(7) RESISTANCE VALUE**

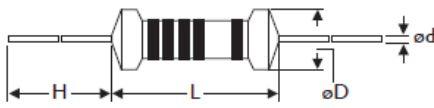
E24 & E96 Series

Example:

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

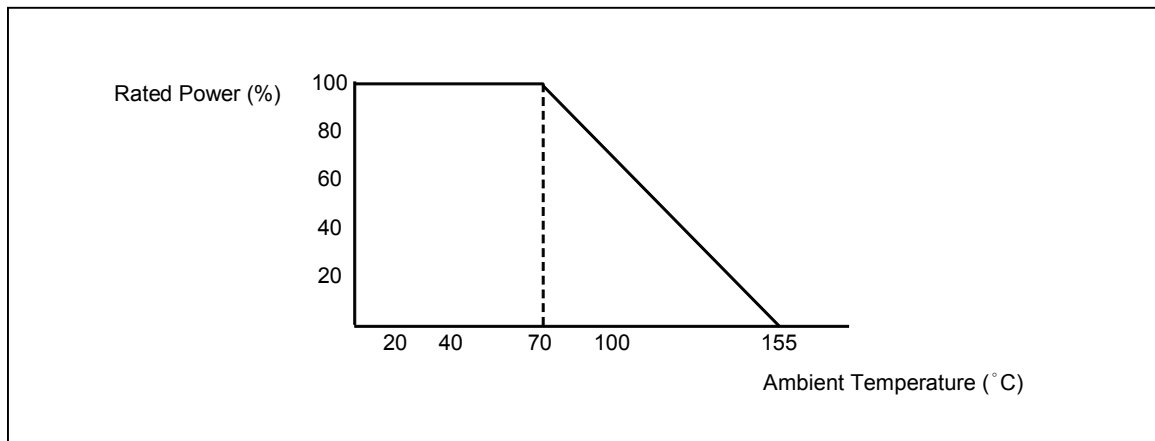
**DIMENSIONS**

Unit: mm



Miniature	L	ψD	H	ψd
FM0204	3.4 ± 0.3	1.9 ± 0.2	28 ± 2.0	0.45 ± 0.05
FM0207	6.3 ± 0.5	2.4 ± 0.2	28 ± 2.0	0.55 ± 0.05

**DERATING CURVE**



**ELECTRICAL CHARACTERISTICS**

CHARACTERISTICS	FM0204	FM0207
Power Rating at 70 °C	0.4W	0.6W
Maximum Working Voltage	200V	300V
Maximum Overload Voltage	400V	600V
Voltage Proof on Insulation	300V	500V
Resistance Range	1Ω ~ 4M7Ω & 0Ω 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 REQUIREMENTS**

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
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.	>1,000MΩ
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)D
Periodic-pulse Overload	IEC 60115-1 4.39	4 times RCWV 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	±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
Accidental Overload Test	IEC 60115-1 4.26	4 times RCWV for 1 Min.	No evidence of flaming or arcing

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

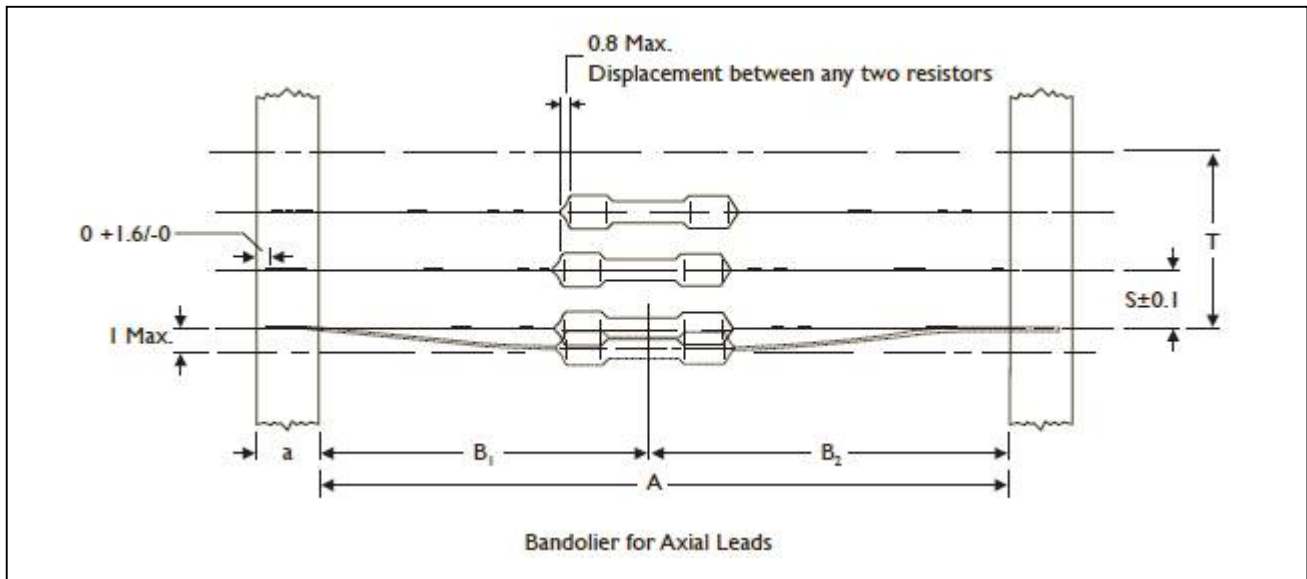
Where

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

P=Rated power (W)

R=Resistance value (Ω)

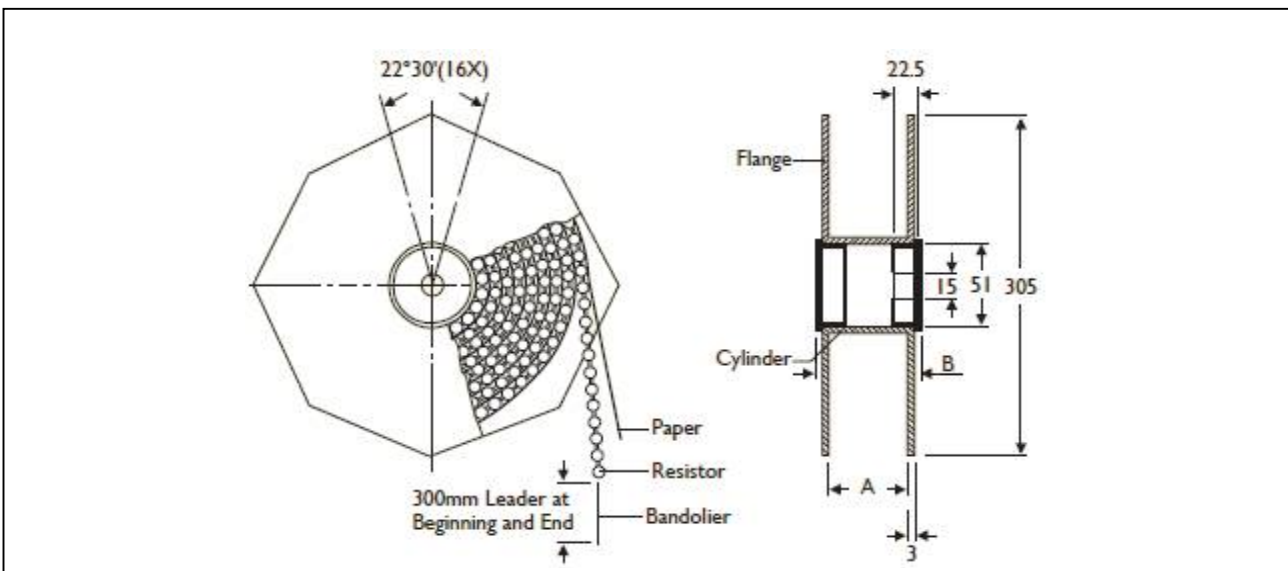
**AXIAL / REEL TAPE SPECIFICATION**



Unit: mm

Miniature	a	A	B1-B2 (Max.)	S (spacing)	T (max. deviation of spacing)
FM0204	$6 \pm 0.5$	$52.4 \pm 1.5$	1.2	5	1 mm per 10 spacing, 0.5 mm per 5 spacing
		$26.0 \pm 1.5$	1.0		
FM0207	$6 \pm 0.5$	$52.4 \pm 1.5$	1.2	5	1 mm per 10 spacing, 0.5 mm per 5 spacing
		$26.0 \pm 1.5$	1.0		

**TAPE ON REEL PACKING**

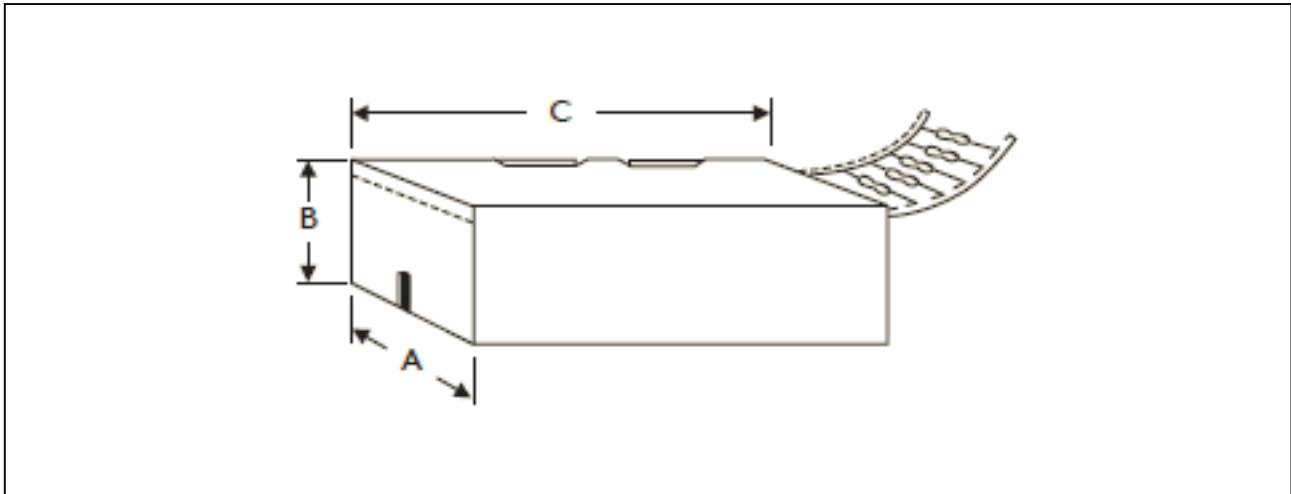


TYPE

Unit: mm/piece

Miniature	Across Flange(A)	B	Quantity Per Reel
FM0204	66.5	75.5	5,000
FM0207	66.5	75.5	5,000

**TAPE ON BOX PACKING**



TYPE	DIMENSIONS			Unit: mm/piece
Miniature	A	B	C	Quantity Per Box
FM0204	48	102	255	5,000
FM0204	81	70	260	5,000
FM0207	48	102	255	5,000
FM0207	81	104	260	5,000

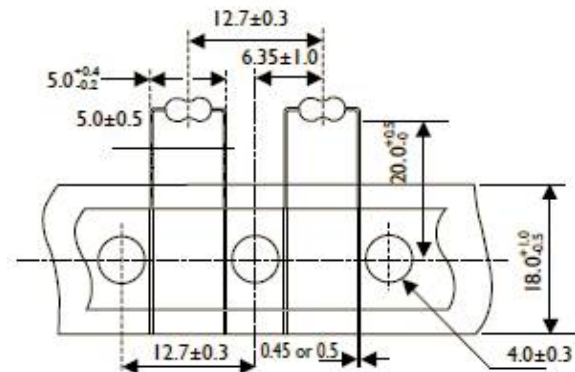
**BULK PACKING**

Miniature	Piece/Per Inner Box	Bag/Per Inner Box	Piece Per Bag
FM0204	10,000	10	1,000
FM0207	10,000	10	1,000

**FORMING**

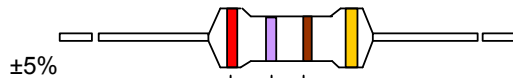
**MT TYPE (Taping Pack)**

Rated Watts: 0.4W

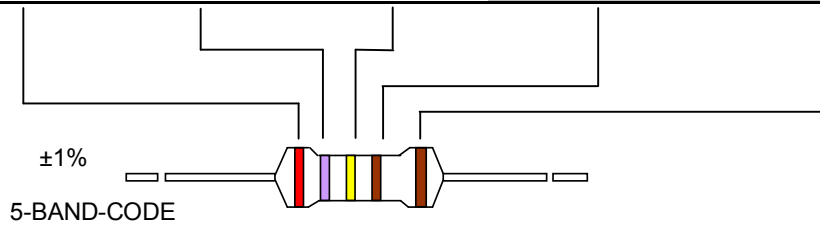


**MARKING**

4-BAND-CODE



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



5-BAND-CODE

**REVISION HISTORY**

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

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