

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

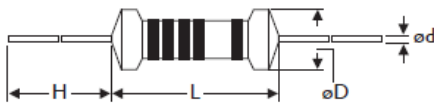
E24 & E96 Series

Example:

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

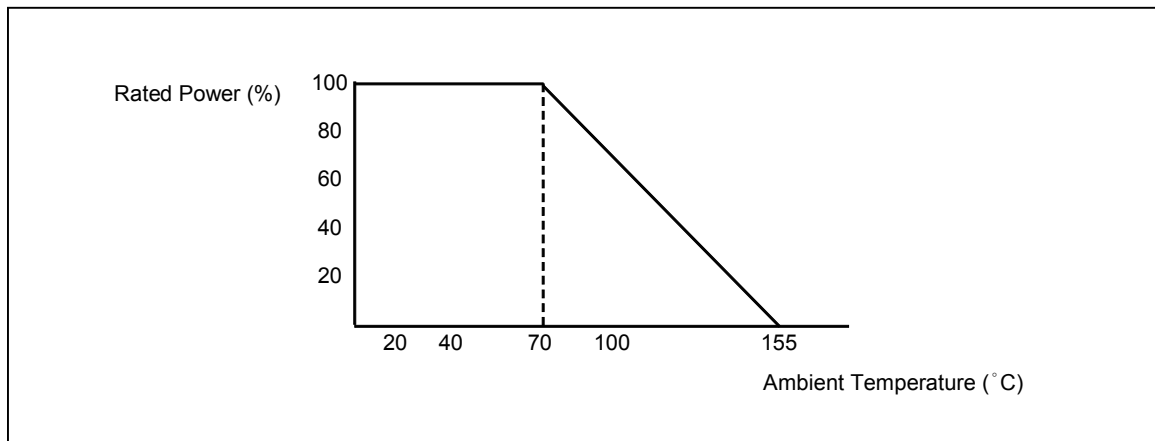
DIMENSIONS

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)	$\pm 0.25\% + 0.05\Omega$
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 $+155^{\circ}\text{C}$	By Type
Insulation Resistance	IEC 60115-1 4.6	In V-Block for 60 sec.	$>1,000\text{M}\Omega$
Solderability	IEC 60115-1 4.17	$245\pm 5^{\circ}\text{C}$ 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	$\geq 2.5\text{Kg}(24.5\text{N})\text{D}$
Periodic-pulse Overload	IEC 60115-1 4.39	4 times RCWV 10,000 cycles (1 Sec. on, 25 Sec.off)	$\pm 1.0\% + 0.05\Omega$
Damp Heat Steady State	IEC 60115-1 4.24	$40\pm 2^{\circ}\text{C}$, 90-95% RH for 56 days, loaded with 0.1 times RCWV	$\pm 1.5\% + 0.05\Omega$
Endurance at 70°C	IEC 60115-1 4.25	$70\pm 2^{\circ}\text{C}$ at RCWV(or U_{max} , whichever less) for 1,000 Hr.(1.5 Hr.on,0.5 Hr. off)	$\pm 1.5\% + 0.05\Omega$
Temperature Cycling	IEC 60115-1 4.19	→ -55°C → Room Temp. → $+155^{\circ}\text{C}$ Room Temp.(5 cycles)	$\pm 0.75\% + 0.05\Omega$
Resistance to Soldering Heat	IEC 60115-1 4.18	$260\pm 3^{\circ}\text{C}$ for 10 ± 1 Sec., immersed to a point $3\pm 0.5\text{mm}$ from the body	$\pm 0.25\% + 0.05\Omega$
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

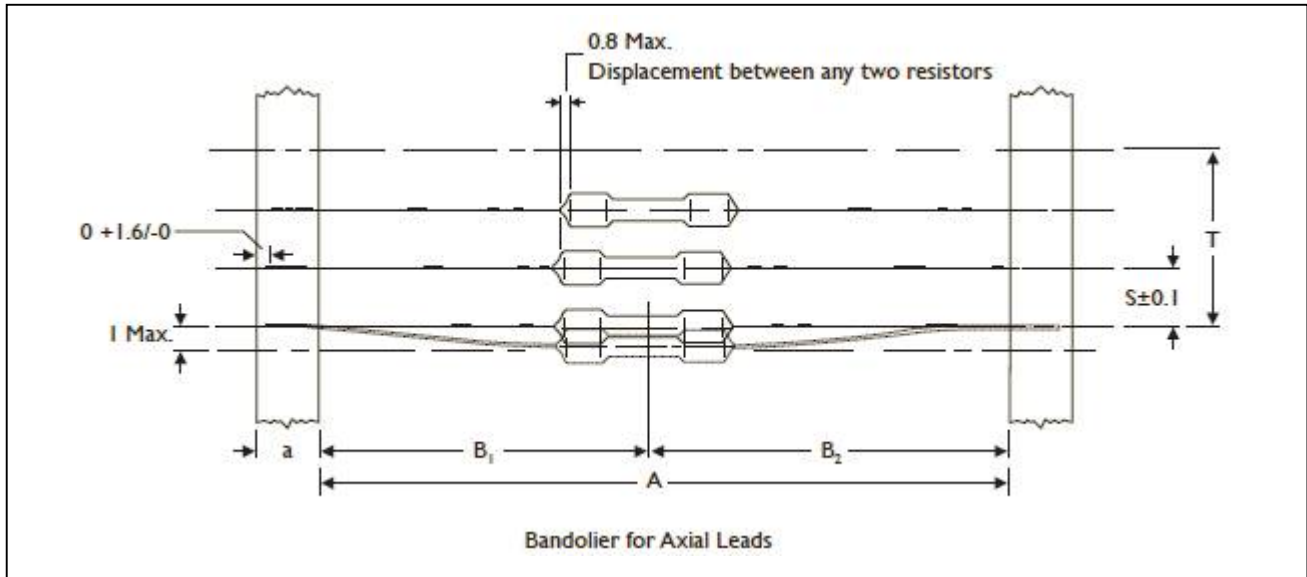
Where

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

P=Rated power (W)

R=Resistance value (Ω)

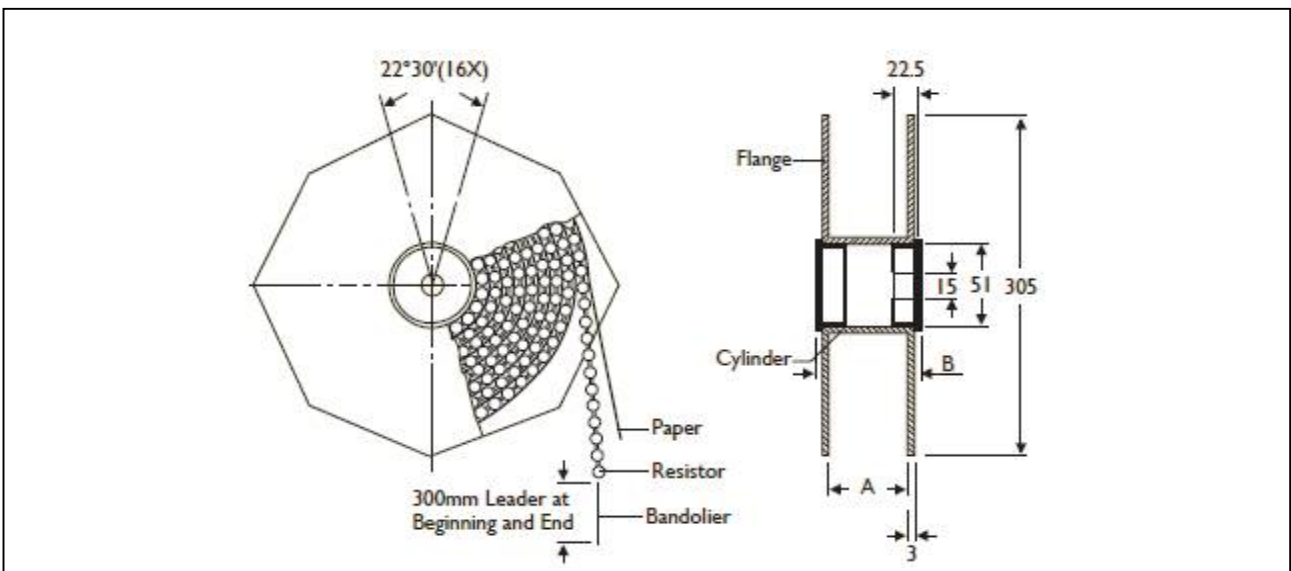
AXIAL / REEL TAPE SPECIFICATION



Unit: mm

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

TAPE ON REEL PACKING

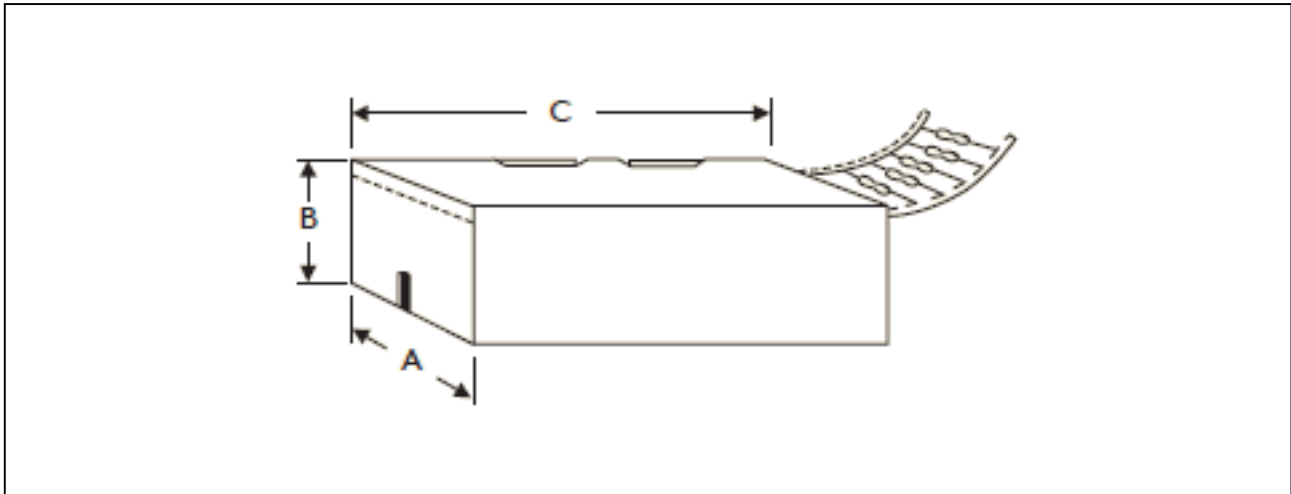


TYPE

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

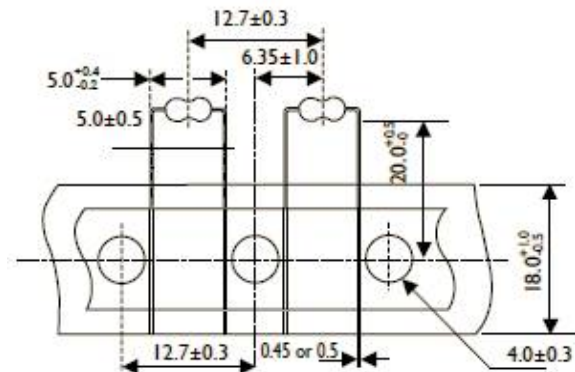
BULK PACKING

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

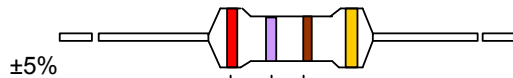
MT TYPE (Taping Pack)

Rated Watts: 0.4W

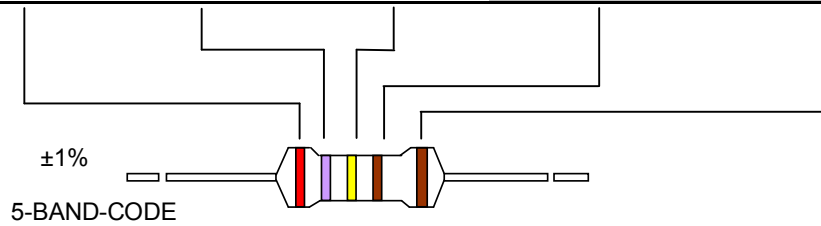


MARKING

4-BAND-CODE



	1st BAND	2nd BAND	3rd BAND	MULTIPLIER	TOLERANCE
BLACK	0	0	0	1Ω	
BROWN	1	1	1	10Ω	± 1% (F)
RED	2	2	2	100Ω	
ORANGE	3	3	3	1KΩ	
YELLOW	4	4	4	10KΩ	
GREEN	5	5	5	100K	
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	



5-BAND-CODE

REVISION HISTORY

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

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