

DATA SHEET

METAL FILM RESISTORS

Professional, Flameproof
FM0 Series

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

0.4W AND 0.6W

RoHS compliant & Halogen Free



YAGEO

Product specification – April 1, 2024 V.2





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

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.

PART NUMBER

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

(1) SERIES

FM0 Series

(2) POWER RATING

204 = 0.4W

207 = 0.6W

(3) TOLERANCE

F = $\pm 1\%$

- = Based on spec.

J = $\pm 5\%$

(4) PACKAGING

R = Reel Pack

B = Bulk

T = Box Pack

(5) TEMPERATURE COEFFICIENT OF RESISTANCE

E = $\pm 50\text{ppm}/^\circ\text{C}$

- = Based on spec.

F = $\pm 100\text{ppm}/^\circ\text{C}$

(6) FORMING

26- = 26mm

MT = MT Type Forming

52- = 52.4mm

Note: 26mm and 52.4mm represent dimension A of the axial type, please refer to the category of AXIAL/REEL TAPE SPECIFICATION for the detail.

(7) RESISTANCE VALUE

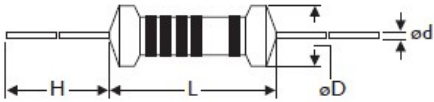
E24 & E96 Series

Example:

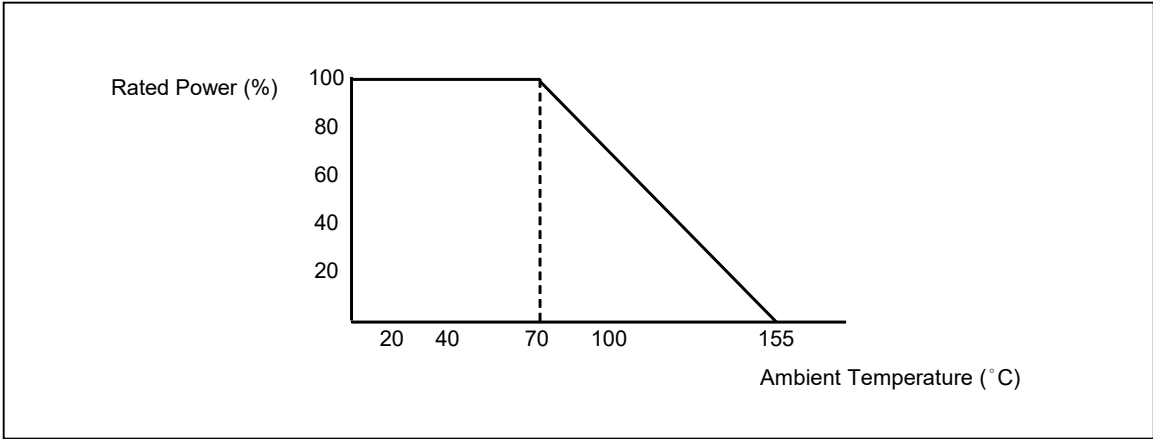
100R = 100 Ω , 10K = 10,000 Ω , 1M = 1,000,000 Ω

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°C	By Type
Insulation Resistance	IEC 60115-1 4.6	In V-Block for 60 sec.	>1,000M Ω
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 Umax., 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°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:

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

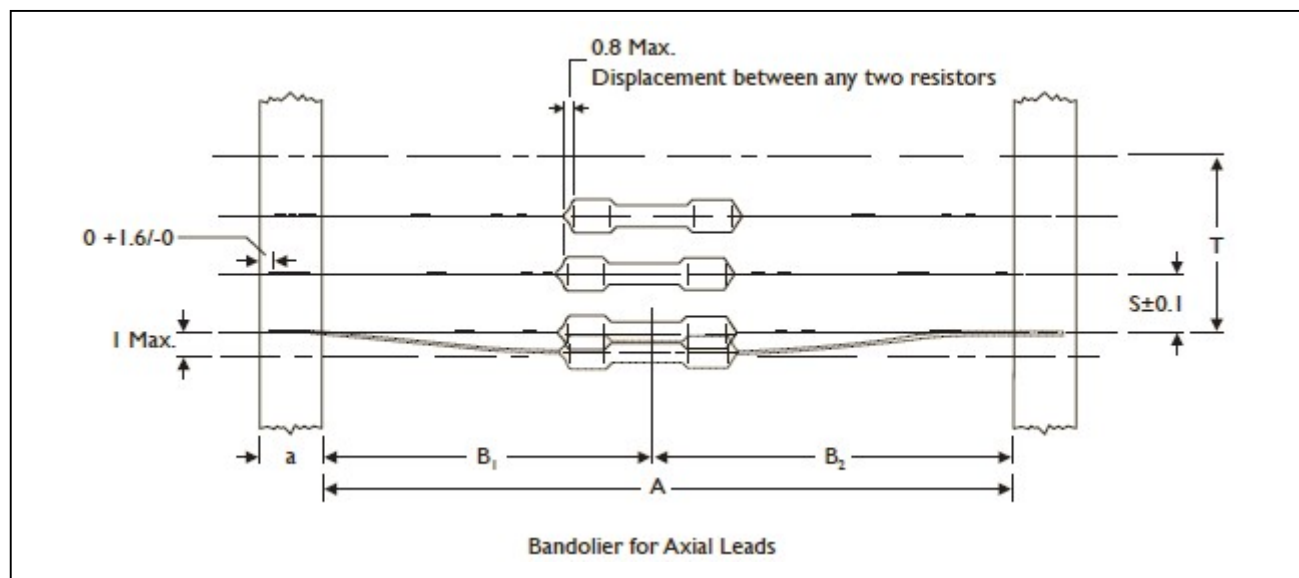
or max. working voltage whichever is less

Where

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

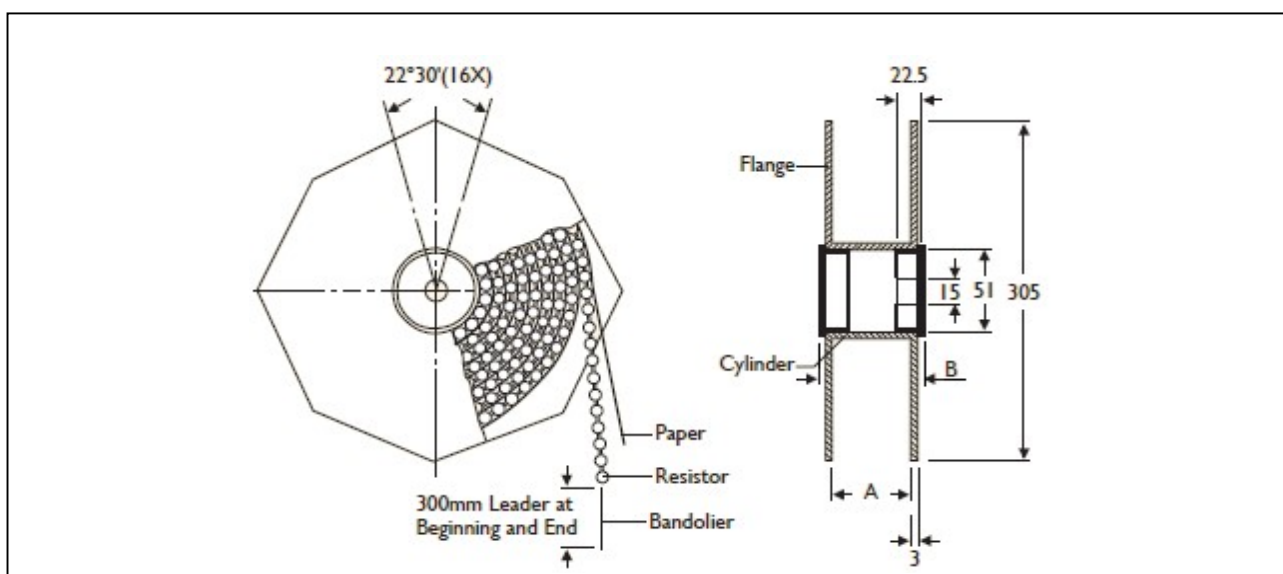
P=Rated power (W)

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 26.0 ± 1.5	1.2 1.0	5	1 mm per 10 spacing, 0.5 mm per 5 spacing
FM0207	6 ± 0.5	52.4 ± 1.5 26.0 ± 1.5	1.2 1.0	5	

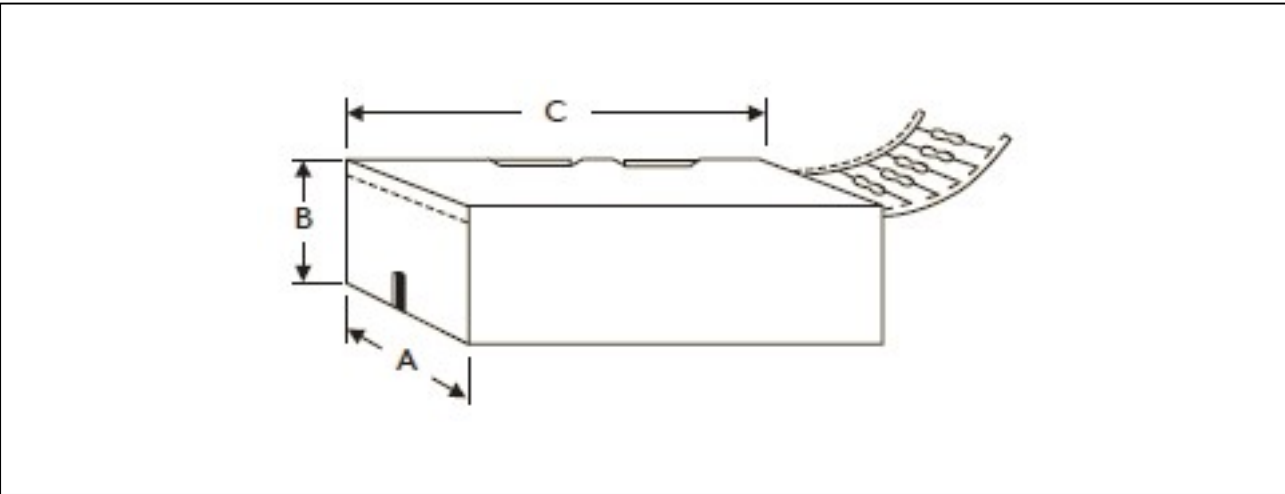
TAPE ON REEL PACKING

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



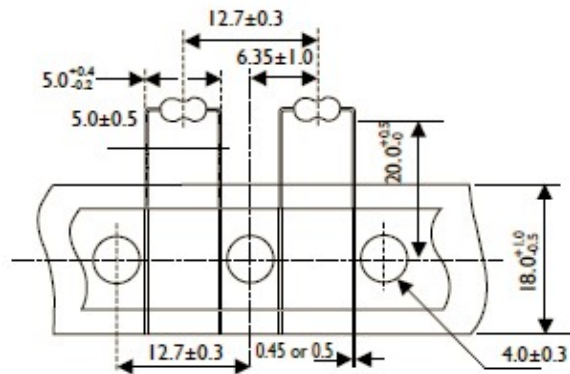
TYPE	DIMENSIONS			Unit: mm/piece
Miniature	A	B	C	Quantity Per Box
FM0204	48	102	255	5,000
FM0204	81	70	260	5,000
FM0207	48	102	255	5,000
FM0207	81	104	260	5,000

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



REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 2	Apr.1, 2024	-	- Added forming code description for part number
Version 1	Aug. 31, 2023	-	- Revised LEGAL DISCLAIMER
Version 0	Aug. 2, 2021	-	- First issue of this specification

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