

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





APPLICATIONS

- All general purpose applications
- Power applications

FEATURES

- AEC-Q200 qualified
- Wide resistance range
- Miniature & high power rating
- High stability
- 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.

PART NUMBER

<u>MF0</u>	<u>204</u>	<u>F</u>	<u>I</u>	<u>F</u>	<u>52-</u>	<u>100R</u>
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) SERIES

MF0 Series

(2) POWER RATING

204 = 0.4W

207 = 0.6W

(3) TOLERANCE

D = $\pm 0.5\%$

J = $\pm 5\%$

F = $\pm 1\%$

- = for 0R

G = $\pm 2\%$

(4) PACKAGING

R = Reel Pack

B = Bulk

T = Box Pack

(5) TEMPERATURE COEFFICIENT OF RESISTANCE

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

- = for 0R

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

(6) FORMING

26- = 26mm

52- = 52.4mm

52B = 52.4mm, $\Phi d = 0.45 \pm 0.02\text{mm}$

52C = 52.4mm, $\Phi d = 0.5 \pm 0.02\text{mm}$

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

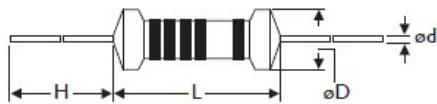
E24 & E96 Series

Example:

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

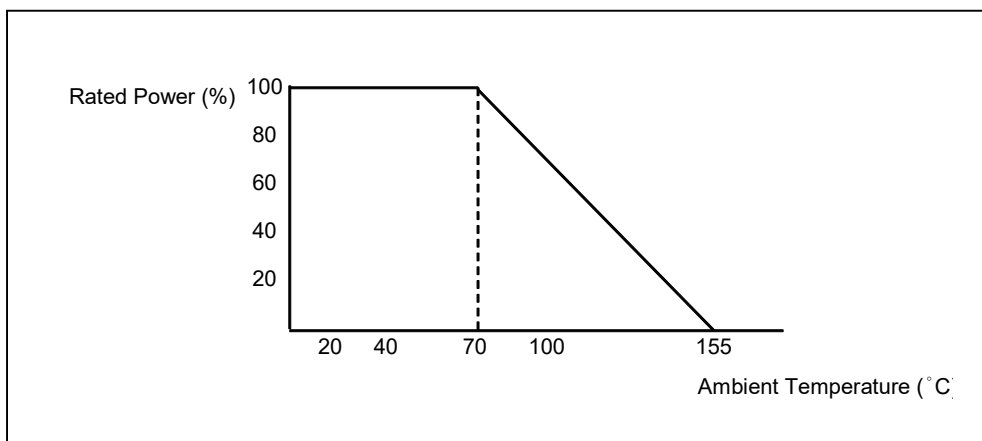
DIMENSIONS

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 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.

ELECTRICAL CHARACTERISTICS FOR 0R

TYPE	MF0204	MF0207
Power Rating at 70 °C	0.4W	0.6W
Maximum Current Rating at 70 °C	1.5A	2.5A
Voltage Proof on Insulation	300V	500V
Resistance Range	0R	
Operating Temp. Range	- 55°C to +155°C	

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

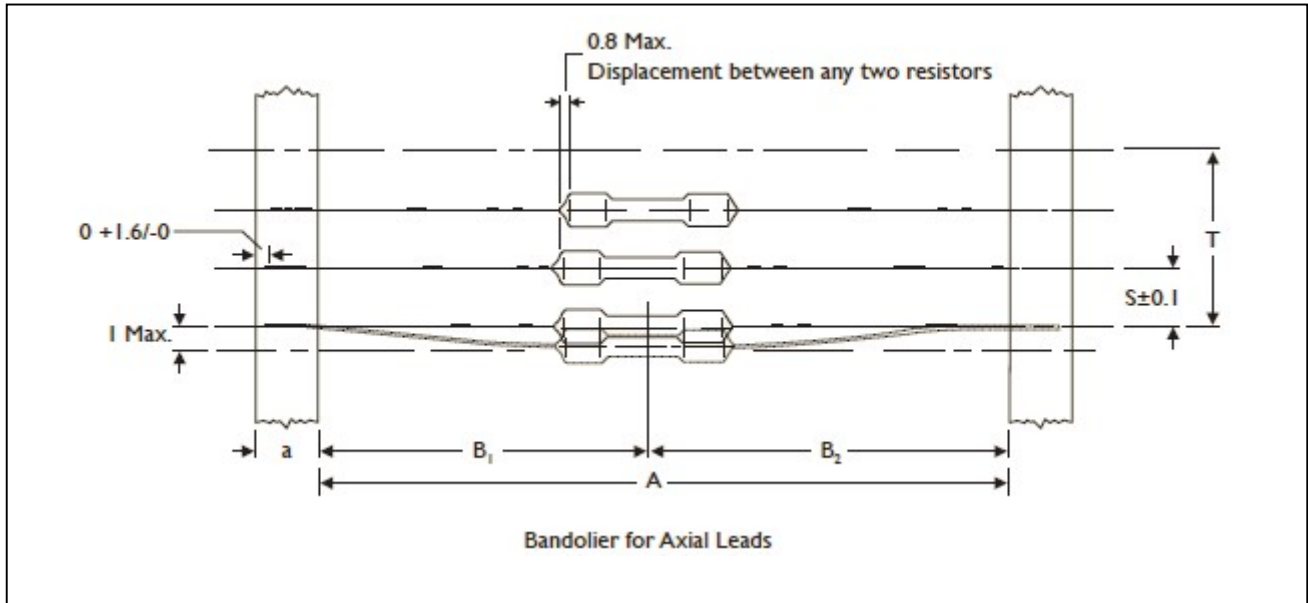
Where

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

P=Rated power (W)

R=Resistance value (Ω)

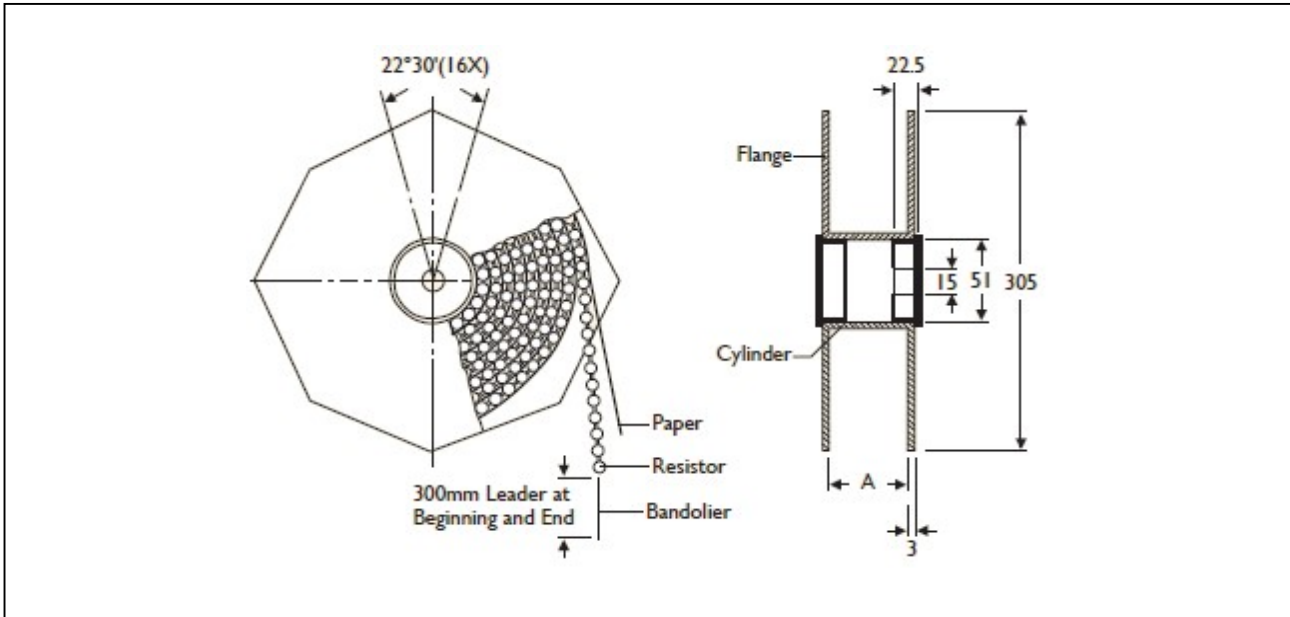
AXIAL / REEL TAPE SPECIFICATION



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	0.5 mm per 5 spacing
		26.0 ± 1.5	1		
MF0207	6 ± 0.5	52.4 ± 1.5	1.2	5	0.5 mm per 5 spacing
		26.0 ± 1.5	1		

TAPE ON REEL PACKING

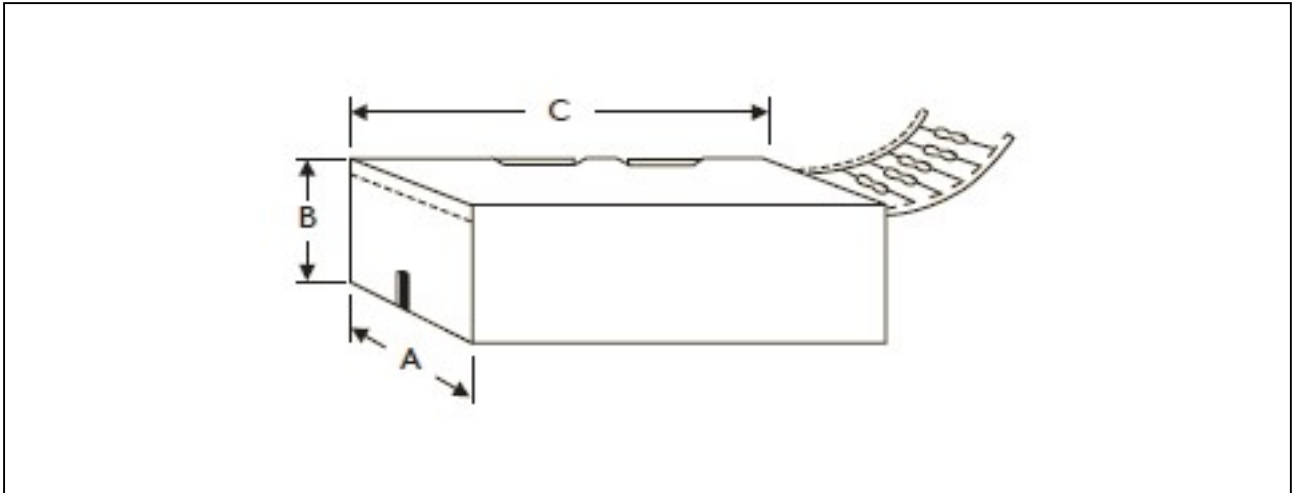


TYPE

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



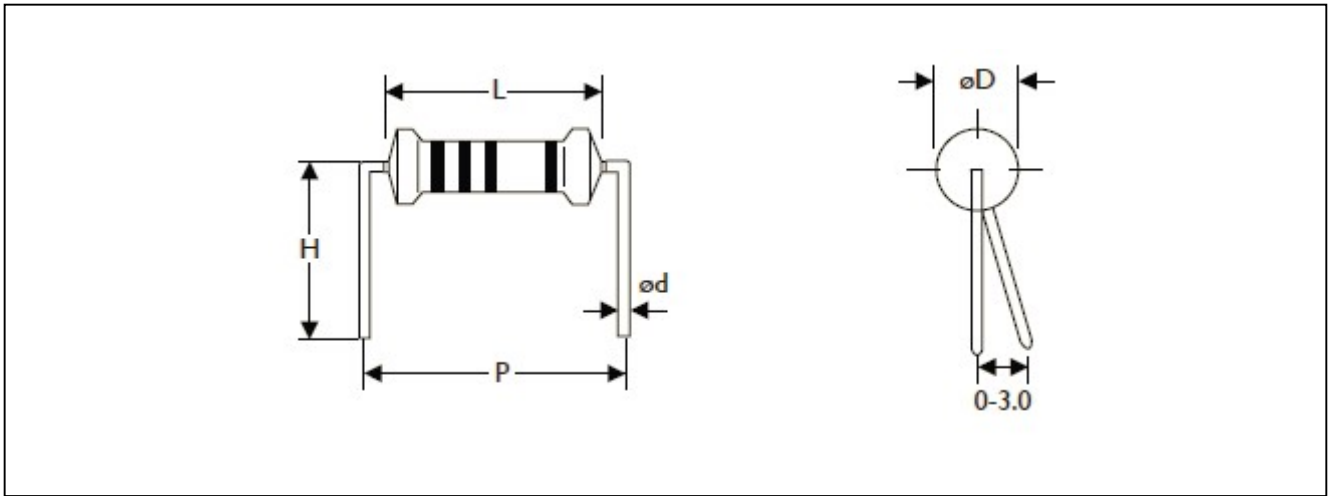
TYPE	DIMENSIONS			Quantity Per Box
	A	B	C	
MF0204	48	102	255	5,000
MF0204	81	70	260	5,000
MF0207	48	102	255	5,000
MF0207	81	104	260	5,000

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

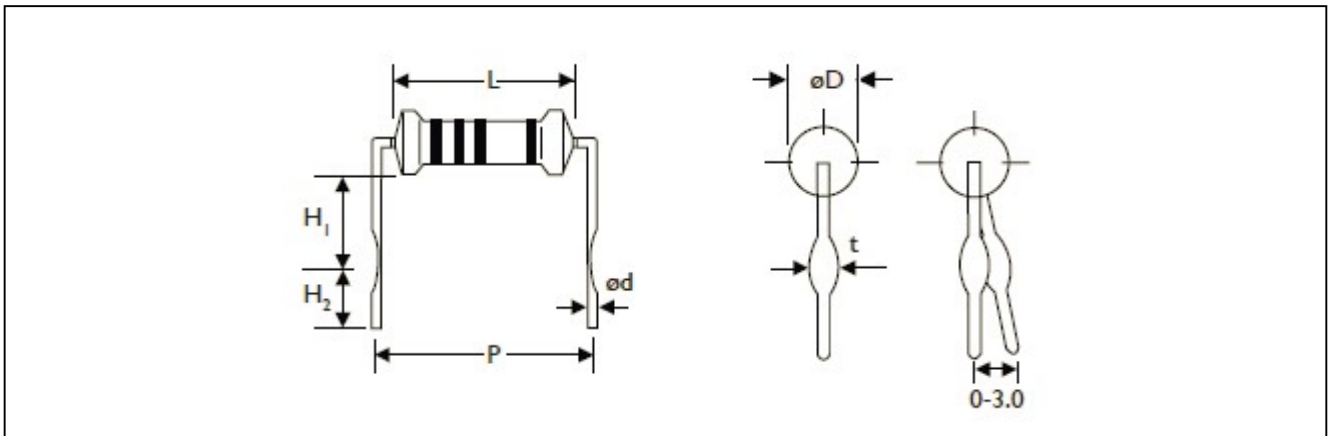
FORMING

M TYPE



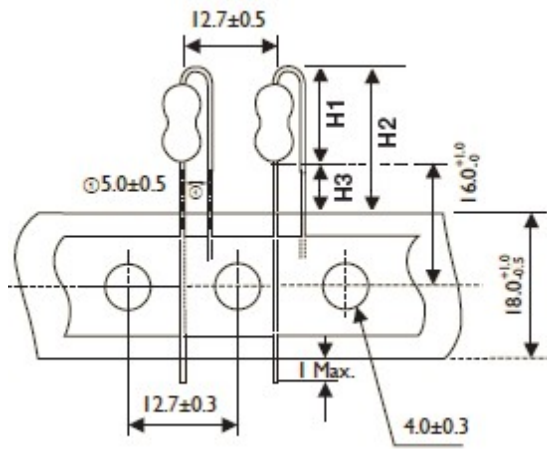
TYPE	DIMENSIONS					Unit: mm
Miniature	L	ψD	ψd	P	H	
MF0204	3.4 ± 0.3	1.9 ± 0.2	0.45 ± 0.05	6.0 ± 1	10.0 ± 1	
MF0207	6.3 ± 0.5	2.4 ± 0.2	0.55 ± 0.05	10.0 ± 1	10.0 ± 1	

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	

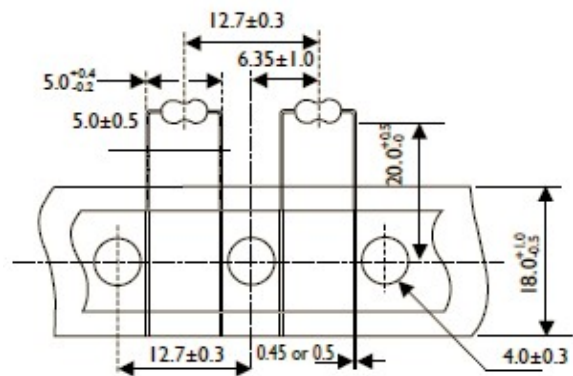
FT TYPE (Taping Pack)



TYPE	DIMENSIONS			Unit: mm
Miniature	H1 Max.	H2 Max.	H3 Max.	
MF0207	10	18.5	8.5	

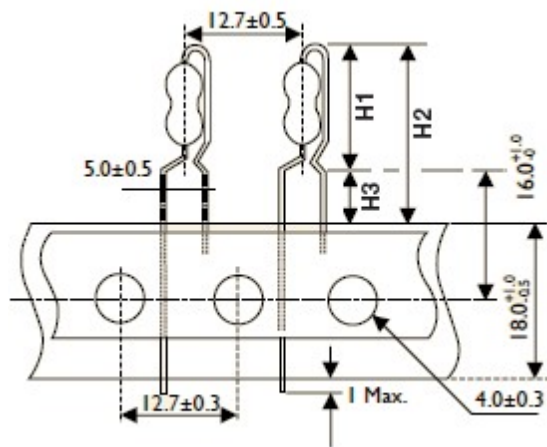
MT TYPE (Taping Pack)

Rated Watts : 0.4W

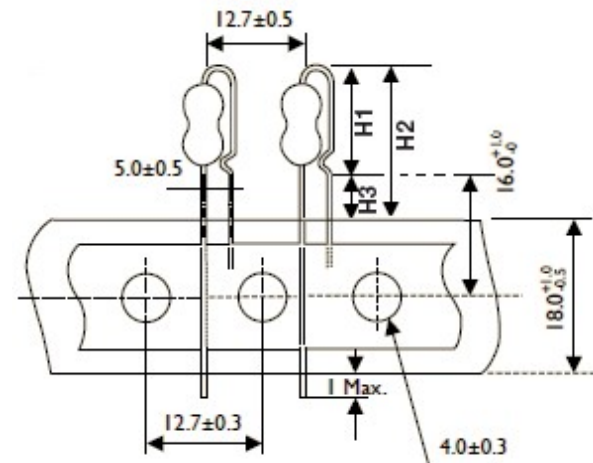


AV TYPE (Taping Pack)

PN TYPE (Taping Pack)



TYPE	DIMENSIONS			Unit: mm
Miniature	H1 Max.	H2 Max.	H3 Max.	
MF0207	13	21.5	8.5	

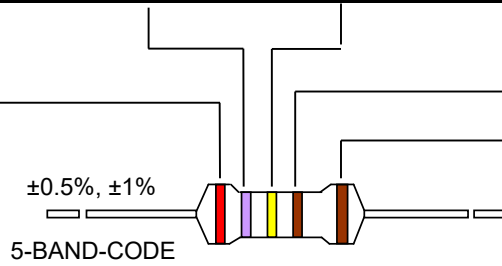


TYPE	DIMENSIONS			Unit: mm
Miniature	H1 Max.	H2 Max.	H3 Max.	
MF0207	11.5	20	8.5	

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
Version 1	Mar.1, 2022		-1. Updated power rating on second page -2. Independent electrical characteristics of 0R

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