

# DATA SHEET

## CARBON FILM RESISTORS

Professional  
CF0 series

$\pm 2\%$ ,  $\pm 5\%$

0.4W AND 0.6W

RoHS compliant & Halogen Free



**YAGEO**

Product specification – April 3, 2024 V.2





## APPLICATIONS

- All general purpose applications
- Power applications

## FEATURES

- AEC-Q200 qualified
- Wide resistance range
- Miniature & high power rating
- High stability
- PPAP ready (CF0207)
- RoHS compliant & halogen-free

## ORDERING INFORMATION

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

## PART NUMBER

<b>CF0</b>	<b>204</b>	<b>J</b>	<b>T</b>	<b>-</b>	<b>52-</b>	<b>100R</b>
(1)	(2)	(3)	(4)	(5)	(6)	(7)

### (1) SERIES

CF0 Series

### (2) POWER RATING

204 = 0.4W

207 = 0.6W

### (3) TOLERANCE

G =  $\pm 2\%$

J =  $\pm 5\%$

### (4) PACKAGING

R = Reel Pack

B = Bulk

T = Box Pack

### (5) TEMPERATURE COEFFICIENT OF RESISTANCE

- = Based on spec , please refer to page 3 table 2 .

### (6) FORMING

26- = 26mm

52- = 52.4mm

M = M-Type Forming

MT = MT Type Forming

FT = FT Type Forming

PN = PANAsert

AV = AVIsert

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

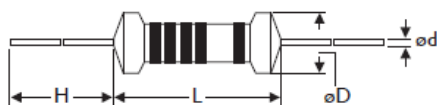
E24 Series

Example:

100R = 100 $\Omega$ , 10K = 10,000 $\Omega$ , 1M = 1,000,000 $\Omega$

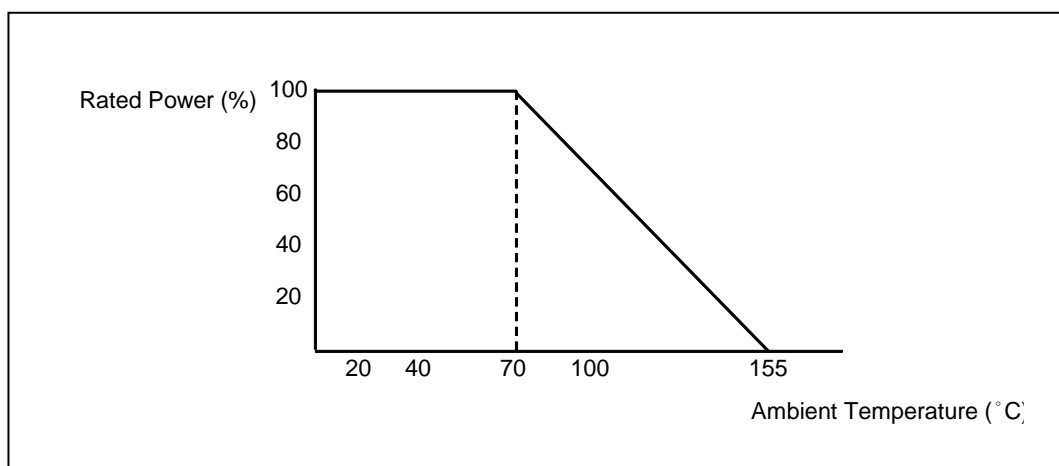
## DIMENSIONS

Unit: mm



Miniature	L	ψD	H	ψd
CF0204	$3.4 \pm 0.3$	$1.9 \pm 0.2$	$28 \pm 2.0$	$0.45 \pm 0.05$
CF0207	$6.3 \pm 0.5$	$2.4 \pm 0.2$	$28 \pm 2.0$	$0.55 \pm 0.05$

## DERATING CURVE



## ELECTRICAL CHARACTERISTICS

**TABLE 1**

CHARACTERISTICS	CF0204	CF0207
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 ~10M for E24 series value	
Operating Temp. Range	- 55°C to +155°C	
Temperature Coefficient	See table 2	

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

**TABLE 2 TEMPERATURE COEFFICIENT**

TYPE	Temp. Coefficient ppm/°C		
	Under 100KΩ	100K ~ 1MΩ	1M ~ 10MΩ
CF0204 CF0207	- 500 ~+350	-700~0	-1500~0

**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)	$\pm 0.75\% + 0.05\Omega$
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.	$> 1,000M\Omega$
Solderability	IEC 60115-1 4.17	245 $\pm$ 5°C for 3 $\pm$ 0.5 Sec.	95% Min. coverage
Solvent Resistance of Marking	IEC 60115-1 4.30	IPA for 5 $\pm$ 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	$\geq 2.5Kg(24.5N)$
Periodic-pulse Overload	IEC 60115-1 4.39	4 times RCWV(or Umax., whichever less) 10,000 cycles (1 Sec. on, 25 Sec.off)	$\pm 1.0\% + 0.05\Omega$
Damp Heat Steady State	IEC 60115-1 4.24	40 $\pm$ 2°C, 90-95% RH for 56 days, loaded with 0.1 times RCWV(or Umax., whichever less)	$\pm 3.0\% + 0.05\Omega$
Endurance at 70°C	IEC 60115-1 4.25	70 $\pm$ 2°C at RCWV(or Umax., whichever less) for 1,000 Hr.(1.5 Hr.on, 0.5 Hr. off)	$\pm 3.0\% + 0.05\Omega$
Temperature Cycling	IEC 60115-1 4.19	-55°C → Room Temp. → +155°C → Room Temp.(5 cycles)	$\pm 1.0\% + 0.05\Omega$
Resistance to Soldering Heat	IEC 60115-1 4.18	260 $\pm$ 3°C for 10 $\pm$ 1 Sec., immersed to a point 3 $\pm$ 0.5mm from the body	$\pm 1.0\% + 0.05\Omega$

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

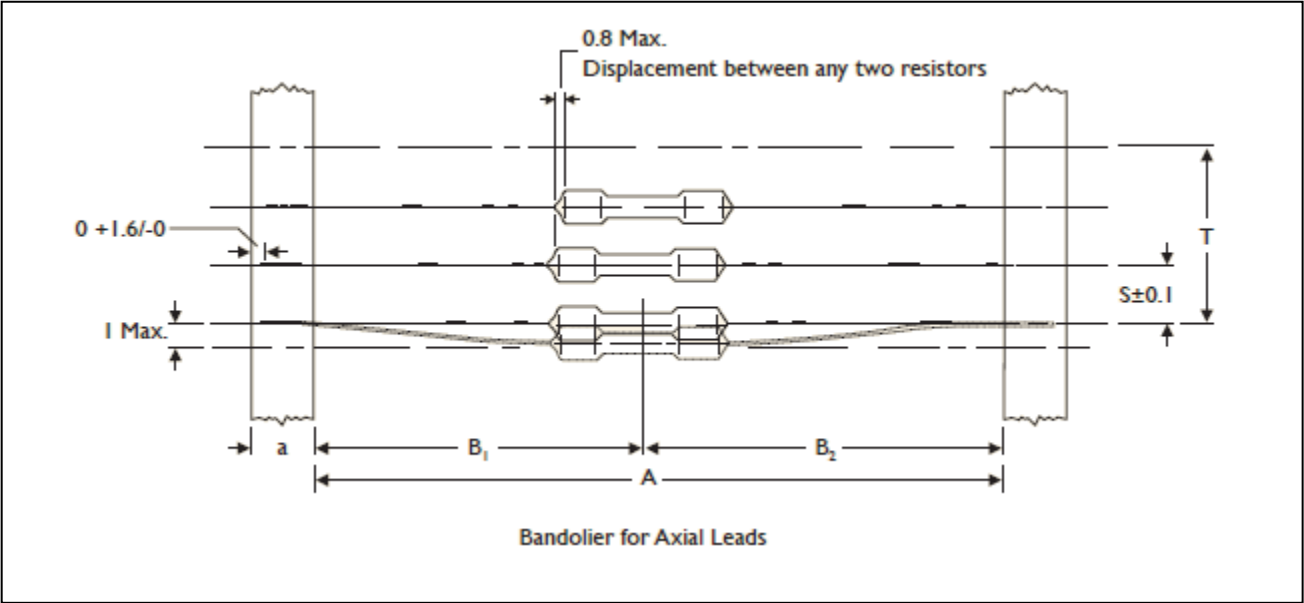
Where

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

P=Rated power (W)

R=Resistance value ( $\Omega$ )

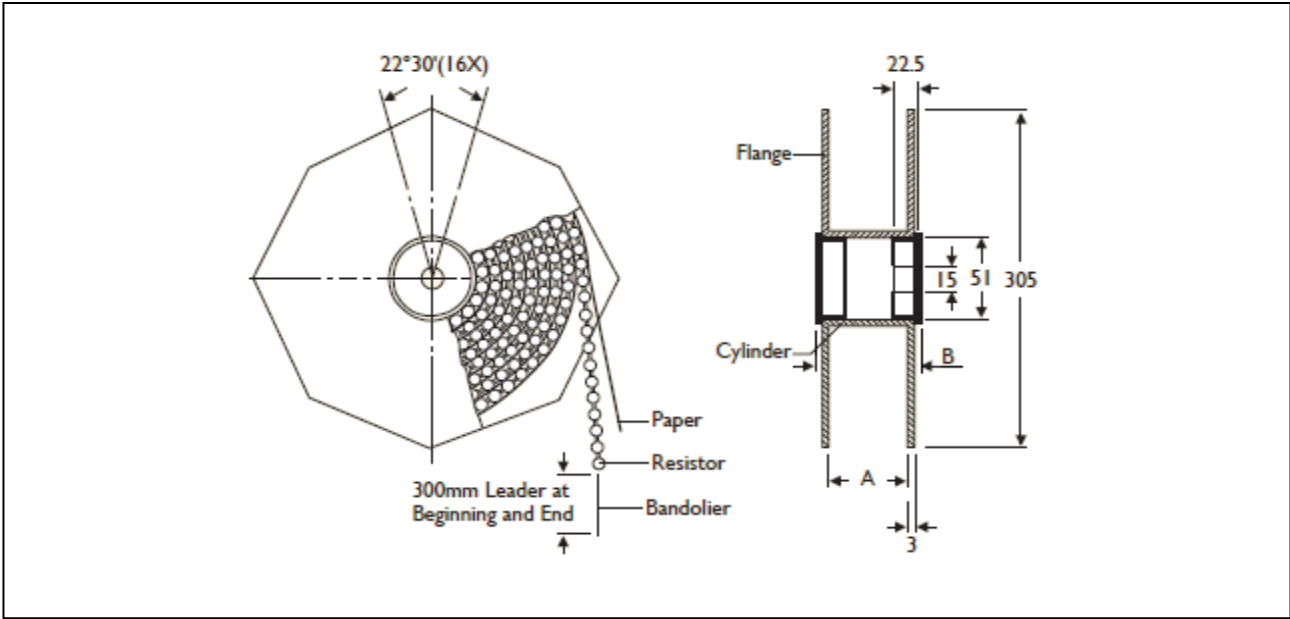
AXIAL / REEL TAPE SPECIFICATION



Unit: mm

Miniature	a	A	B1-B2 (Max.)	S (spacing)	T (max. deviation of spacing)
CF0204	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		
CF0207	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		

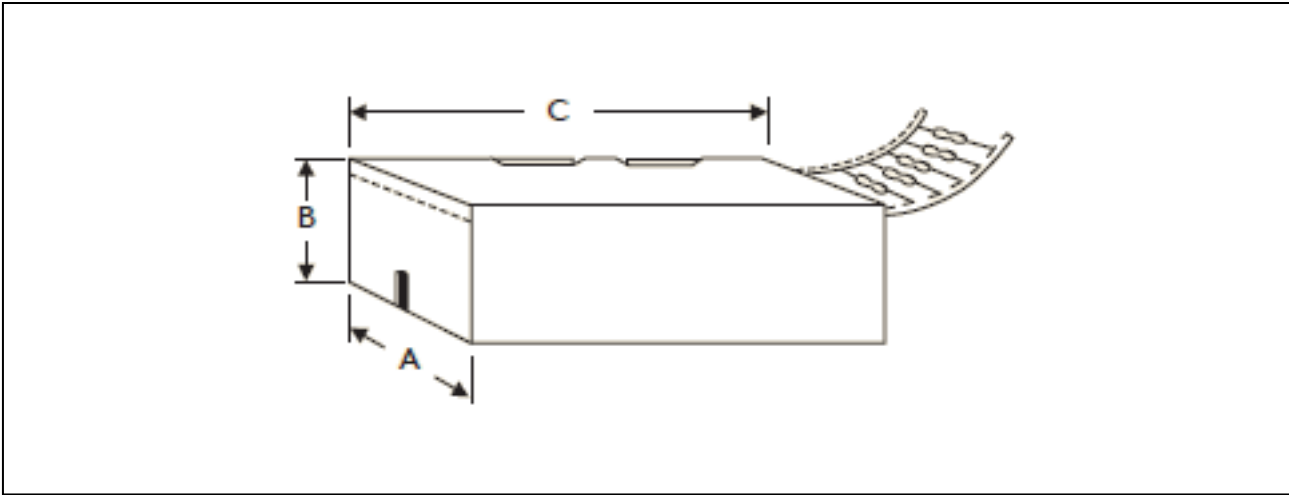
TAPE ON REEL PACKING



TYPE Unit: mm/piece

Miniature	Across Flange(A)	B	Quantity Per Reel
CF0204	66.5	75.5	5,000
CF0207	66.5	75.5	5,000

TAPE ON BOX PACKING



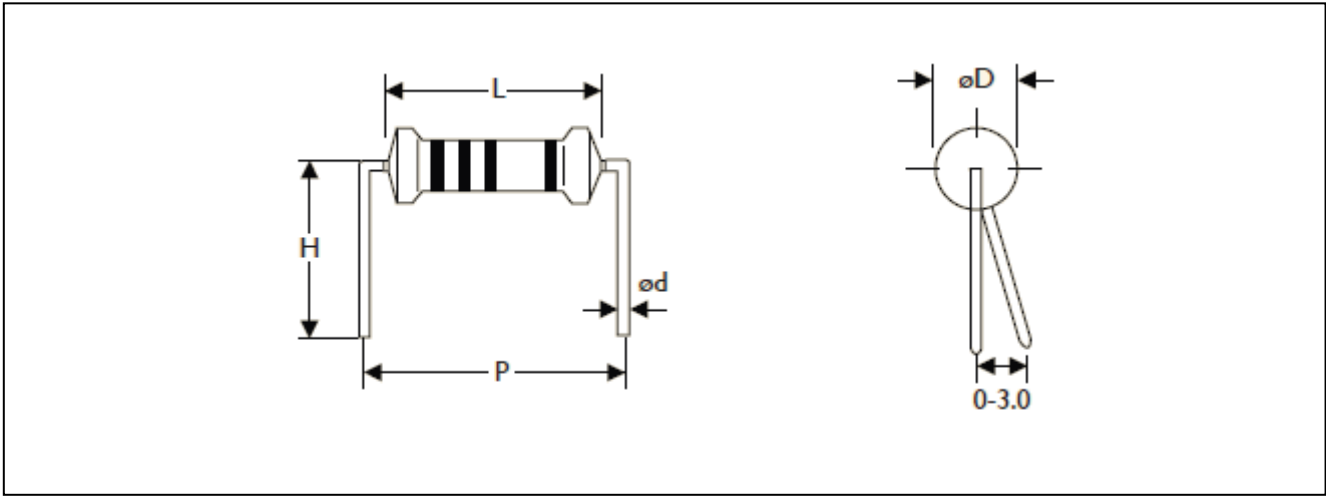
TYPE	DIMENSIONS			Unit: mm/piece
Miniature	A	B	C	Quantity Per Box
CF0204	48	102	255	5,000
CF0204	81	70	260	5,000
CF0207	48	102	255	5,000
CF0207	81	104	260	5,000

BULK PACKING

Miniature	Piece/Per Inner Box	Bag/Per Inner Box	Piece Per Bag
CF0204	10,000	10	1,000
CF0207	10,000	10	1,000

FORMING

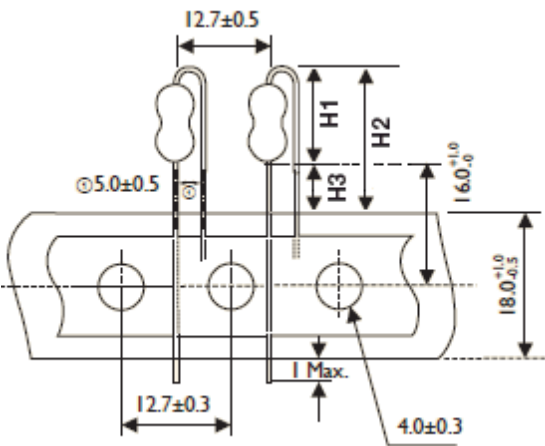
M TYPE



TYPE	DIMENSIONS					Unit: mm
Miniature	L	ψD	ψd	P	H	
CF0204	3.4 ± 0.3	1.9 ± 0.2	0.45 ± 0.05	6.0 ± 1	10.0 ± 1	
CF0207	6.3 ± 0.5	2.4 ± 0.2	0.55 ± 0.05	10.0 ± 1	10.0 ± 1	



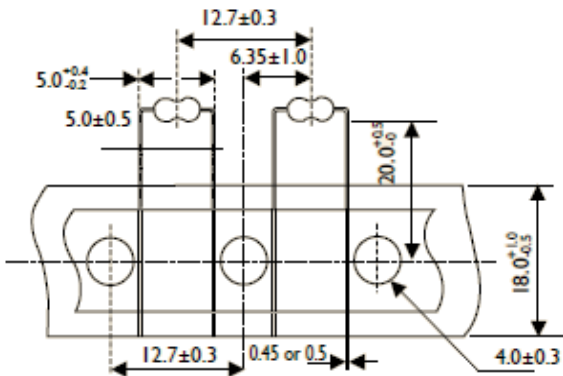
FT TYPE ( Taping Pack )



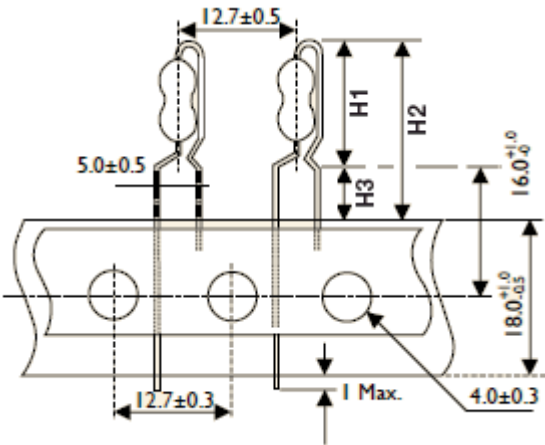
TYPE	DIMENSIONS			Unit: mm
Miniature	H1 Max.	H2 Max.	H3 Max.	
CF0207	10	18.5	8.5	

MT TYPE ( Taping Pack )

Rated Watts : 0.4W

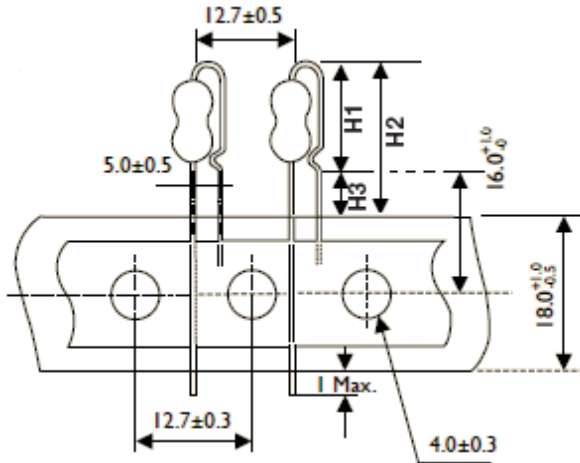


PN TYPE ( Taping Pack )



TYPE	DIMENSIONS			Unit: mm
Miniature	H1 Max.	H2 Max.	H3 Max.	
CF0207	13	21.5	8.5	

AV TYPE ( Taping Pack )

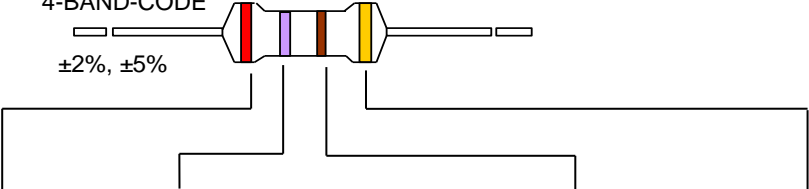


TYPE	DIMENSIONS			Unit: mm
Miniature	H1 Max.	H2 Max.	H3 Max.	
CF0207	11.5	20	8.5	

MARKING

4-BAND-CODE

±2%, ±5%



COLOR	1st BAND	2nd BAND	3rd BAND	MULTIPLIER	TOLERANCE
BLACK	0	0	0	1Ω	
BROWN	1	1	1	10Ω	
RED	2	2	2	100Ω	± 2% ( G )
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	

REVISION HISTORY

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

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