

# DATA SHEET

## CARBON FILM RESISTORS

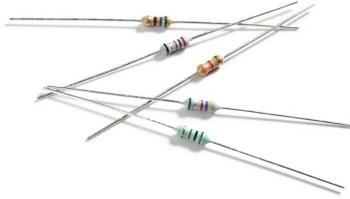
Professional, Flameproof  
FC0 Series

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

0.4W AND 0.6W

RoHS compliant & Halogen Free





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

**PART NUMBER**

FC0    204    J    T    -    52-    100R  
 (1)    (2)    (3)    (4)    (5)    (6)    (7)

**(1) SERIES**

FC0 Series

**(2) POWER RATING**

204 = 0.4W

207 = 0.6W

**(3) TOLERANCE**

G = ±2%

J = ±5%

**(4) PACKAGING**

R = Reel Pack

B = Bulk

T = Box Pack

**(5) TEMPERATURE COEFFICIENT OF RESISTANCE**

- = Based on spec , See page 3 Table 2

**(6) FORMING**

26- = 26mm

FT = FT Type Forming

52- = 52.4mm

PN = PANAsert

M = M-Type Forming

AV = AVIsert

MT = MT Type Forming

**(7) RESISTANCE VALUE**

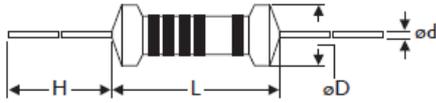
E24 Series

Example:

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

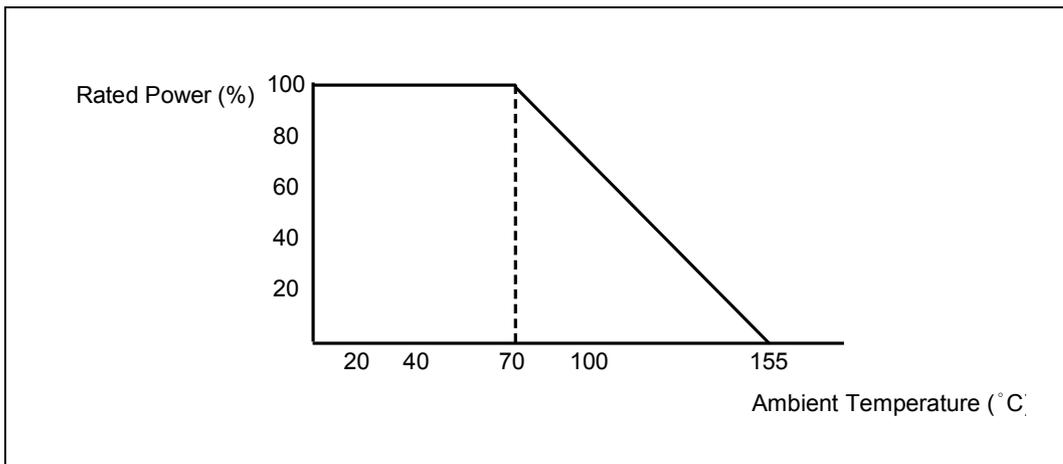
**DIMENSIONS**

Unit: mm



Miniature	L	ψD	H	ψd
FC0204	3.4 ± 0.3	1.9 ± 0.2	28 ± 2.0	0.45 ± 0.05
FC0207	6.3 ± 0.5	2.4 ± 0.2	28 ± 2.0	0.55 ± 0.05

**DERATING CURVE**



**ELECTRICAL CHARACTERISTICS**

**TABLE 1**

CHARACTERISTICS	FC0204	FC0207
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
FC0204 FC0207	-500 ~ +300	-700~0	-1500~0

**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)	±0.75%+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)
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)	±3.0%+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)	±3.0%+0.05Ω
Temperature Cycling	IEC 60115-1 4.19	-55°C → Room Temp. → +155°C → Room Temp.(5 cycles)	±1.0%+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	±1.0%+0.05Ω
Accidental Overload Test	IEC 60115-1 4.26	4 times RCWV(or Umax., whichever less) 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

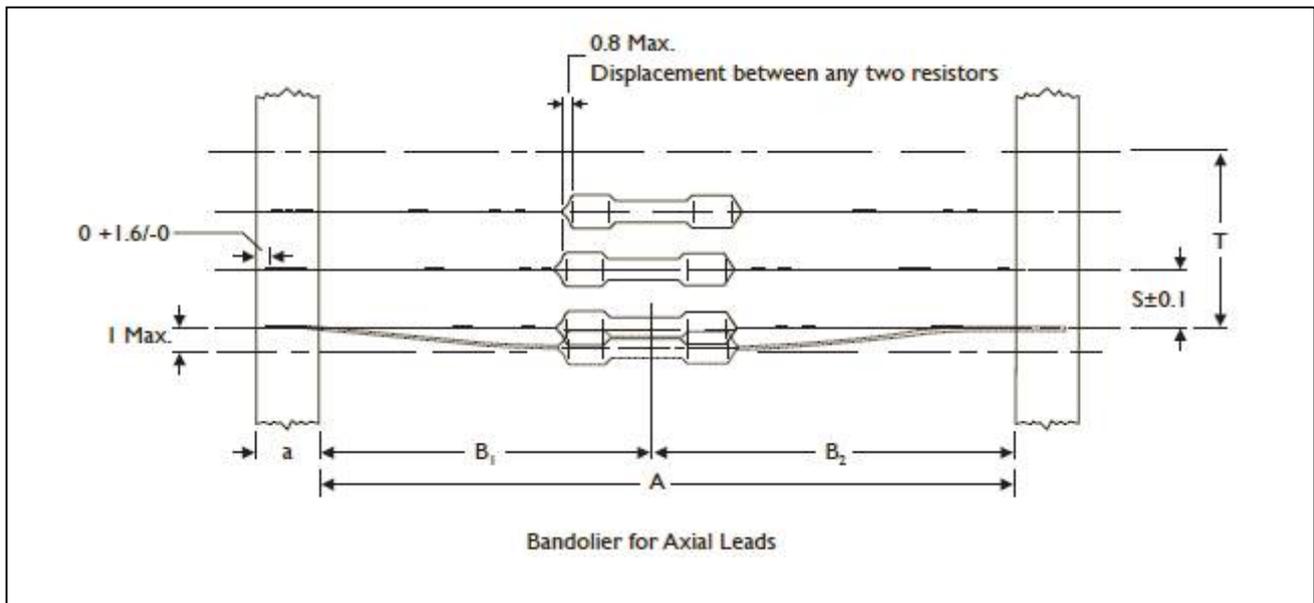
Where

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

P=Rated power (W)

R=Resistance value ( $\Omega$ )

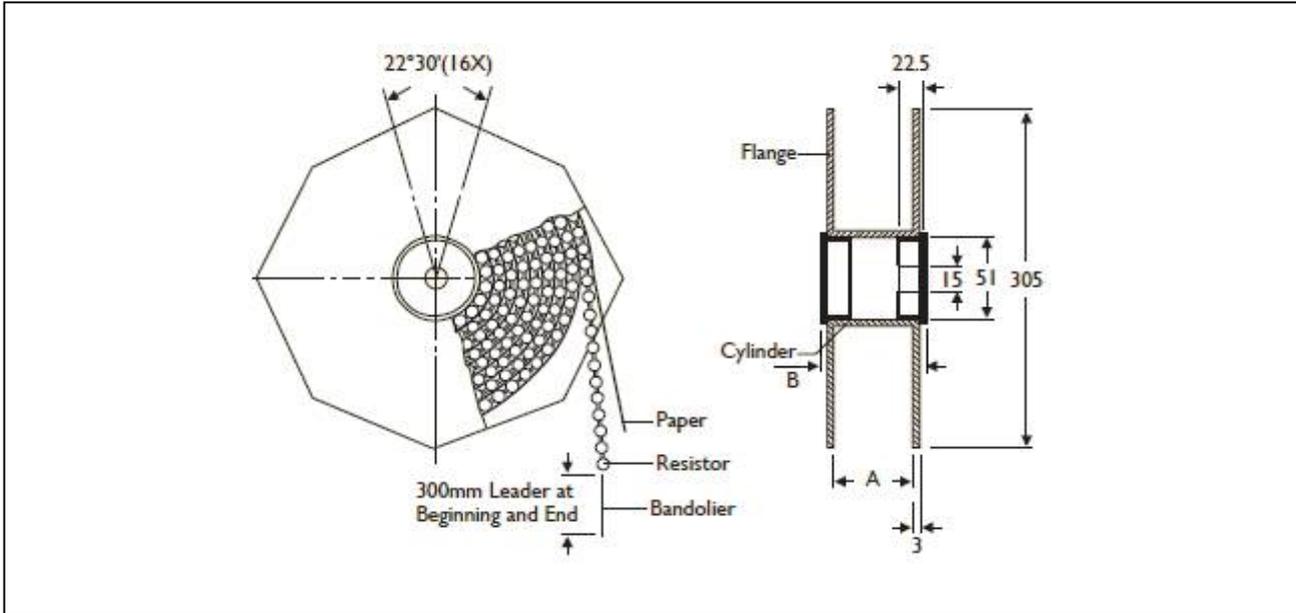
**AXIAL / REEL TAPE SPECIFICATION**



Unit: mm

Miniature	a	A	B1-B2 (Max.)	S (spacing)	T (max. deviation of spacing)
FC0204	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		
FC0207	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**

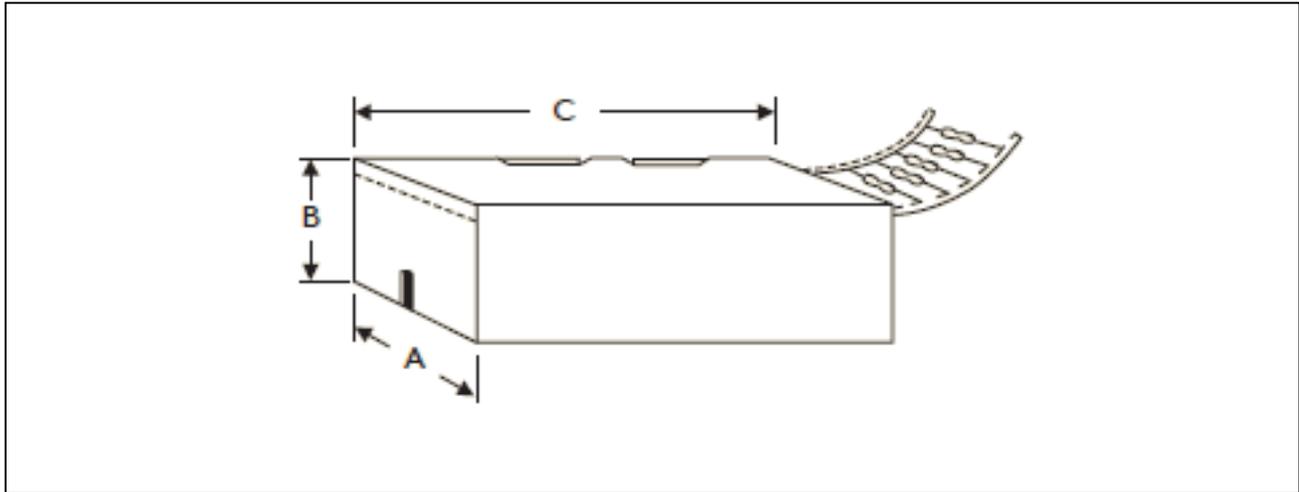


TYPE

Unit: mm/piece

Miniature	Across Flange(A)	B	Quantity Per Reel
FC0204	66.5	75.5	5,000
FC0207	66.5	75.5	5,000

**TAPE ON BOX PACKING**



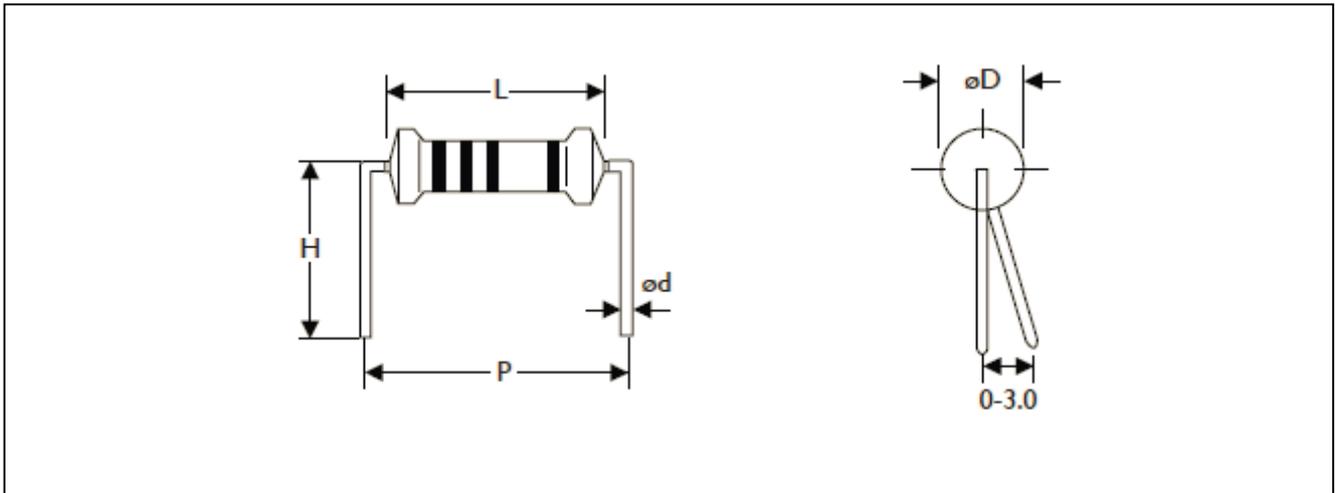
TYPE	DIMENSIONS			Unit: mm/piece
	A	B	C	Quantity Per Box
Miniature				
FC0204	48	102	255	5,000
FC0204	81	70	260	5,000
FC0207	48	102	255	5,000
FC0207	81	104	260	5,000

**BULK PACKING**

Miniature	Piece/Per Inner Box	Bag/Per Inner Box	Piece Per Bag
FC0204	10,000	10	1,000
FC0207	10,000	10	1,000

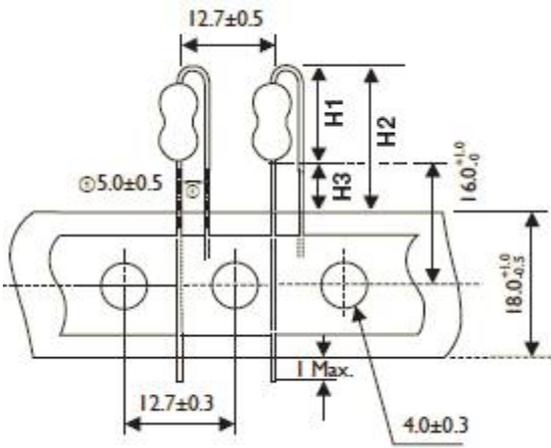
**FORMING**

**M TYPE**



TYPE	DIMENSIONS					Unit: mm
	L	ψD	ψd	P	H	
<b>Miniature</b>						
FC0204	3.4 ± 0.3	1.9 ± 0.2	0.45 ± 0.05	6.0 ± 1	10.0 ± 1	
FC0207	6.3 ± 0.5	2.4 ± 0.2	0.55 ± 0.05	10.0 ± 1	10.0 ± 1	

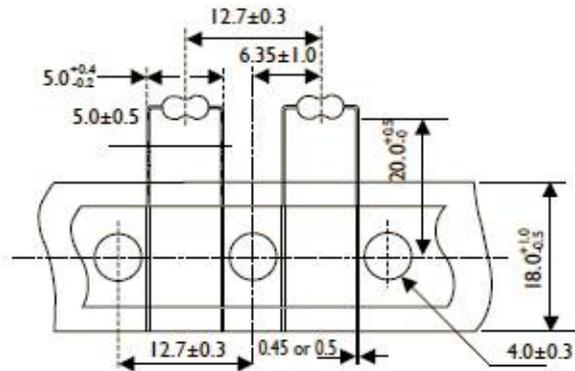
**FT TYPE (Taping Pack)**



TYPE	DIMENSIONS			Unit: mm
<b>Miniature</b>	<b>H1 Max.</b>	<b>H2 Max.</b>	<b>H3 Max.</b>	
FC0207	10	18.5	8.5	

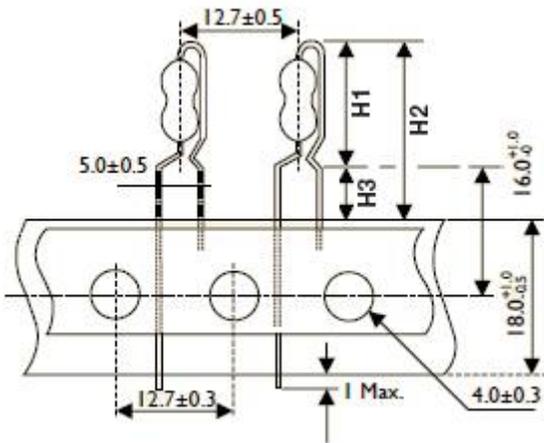
**MT TYPE (Taping Pack)**

Rated Watts : 0.4W

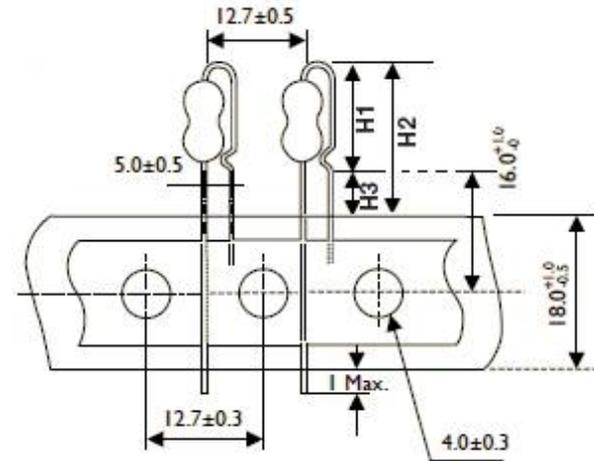


**AV TYPE (Taping Pack)**

**PN TYPE (Taping Pack)**

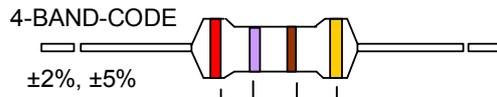


TYPE	DIMENSIONS			Unit: mm
<b>Miniature</b>	<b>H1 Max.</b>	<b>H2 Max.</b>	<b>H3 Max.</b>	
FC0207	13	21.5	8.5	



TYPE	DIMENSIONS			Unit: mm
<b>Miniature</b>	<b>H1 Max.</b>	<b>H2 Max.</b>	<b>H3 Max.</b>	
FC0207	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	
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 0	Aug.2, 2021	-	- First issue of this specification

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