Data Sheet

Customer:	
Product:	**Carbon Film Leaded Resistor — CFR Series**
Sizes.:	**0318/0623/0932/1145/1550**
Issued Date:	**31-Mar-25**
Edition:	**REV.B3**

RoHS Compliant

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31-Mar-25	31-Mar-25	31-Mar-25	31-Mar-25	
Mandy Chang	*Ben Chang*	*Ben Chang*		

Carbon Film Leaded Resistor



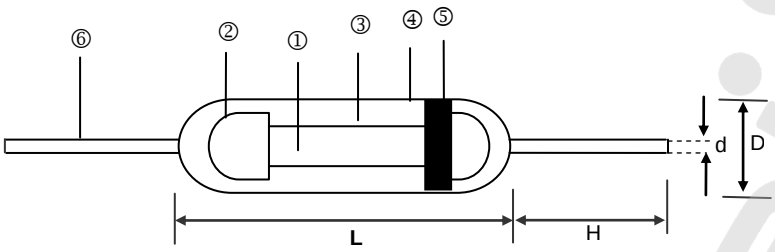
■Features

- The characteristics correspond to the IEC 60115-1 standard specification
- General-purpose lead-type resistors
- Automatic insertion is applicable
- Availability of various types and excellent long time stability
- Wide resistance range from 0.1 Ω to 10 MΩ

■Applications

- Telecommunication
- Medical Equipment

■Construction



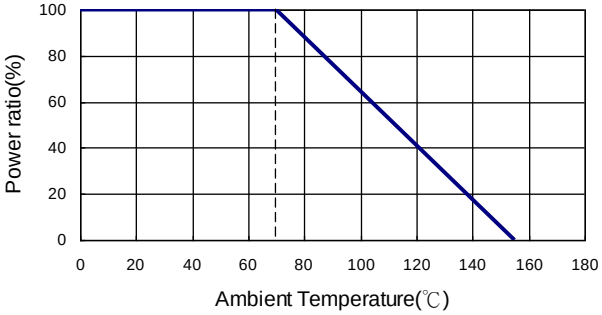
①	Ceramic Rod	④	Non-flame Paint With Sol Vent-proof
②	Tinned Iron Caps	⑤	Color Code
③	Carbon Film	⑥	Lead Wire

■Dimensions

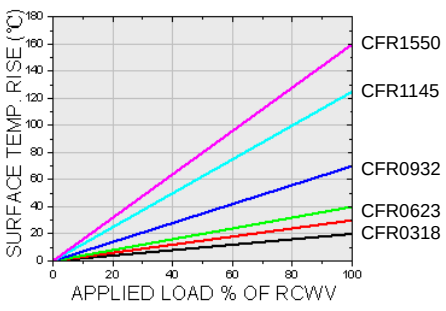
Unit: mm

Type	L	D	H	d	Weight (g) (1000pcs)
CFR0318	3.4±0.5	1.8±0.3	29±3.0	0.41~0.48	92
CFR0623	6.3±0.5	2.3±0.3	28±3.0	0.43~0.58	155
CFR0932	9.0±0.5	3.2±0.5	26±3.0	0.58~0.68	352
CFR1145	11.5±1.0	4.5±0.5	35±3.0	0.68~0.81	775
CFR1550	15.5±1.0	5.0±0.5	32±3.0	0.75~0.81	1042

■Derating Curve



■Hot-Spot Temperature



■Part Numbering

CFR	0318	J	T	-	W	1001	
Product Type	Dimensions (L×D)	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance	Special
	0318: 3.4x1.8 0623: 6.3x2.3 0932: 9.0x3.2 1145: 11.5x4.5 1550: 15.5x5.0	J: ±5%	A: Ammo B: Bulk T: Taping Reel	-:No specified	R: 3W S: 2W T: 1W U: 1/2W V: 1/4W W: 1/8W	R500: 0.5Ω 0010: 1Ω 1000: 100Ω 2201: 2200Ω 1001: 1KΩ 1004: 1MΩ	: Standard MA: MA-type MC: MC-type FA: FA-type FB: FB-type FC: FC-type FD: FD-type

■Standard Electrical Specifications

Item / Type	Power Rating at 70℃	Operating Temp. Range	Max. Working Voltage	Max. Overload Voltage	Dielectric Withstanding Voltage	Resistance Range ±5% E6	Resistance Range ±5% E24
0318	1/8W	-55 ~ +155℃	150V	300V	300V	0.1Ω – 0.68Ω	1Ω - 10MΩ
0623	1/4W		250V	500V	500V	0.1Ω – 0.68Ω	1Ω - 10MΩ
0932	1/2W		350V	700V	700V	0.1Ω – 0.68Ω	1Ω - 10MΩ
1145	1W		450V	1000V	1000V	0.1Ω – 0.68Ω	1Ω - 10MΩ
1550	2W		500V	1000V	1000V	0.1Ω – 0.68Ω	1Ω - 10MΩ

■High Power Rating Electrical Specifications

Item / Type	Power Rating at 70℃	Operating Temp. Range	Max. Working Voltage	Max. Overload Voltage	Dielectric Withstanding Voltage	Resistance Range ±5% E6	Resistance Range ±5% E24
0318	1/4W	-55 ~ +155℃	200V	400V	400V	0.1Ω – 0.68Ω	1Ω - 10MΩ
0623	1/2W		300V	500V	500V	0.1Ω – 0.68Ω	1Ω - 10MΩ
0932	1W		400V	800V	800V	0.1Ω – 0.68Ω	1Ω - 10MΩ
1145	2W		500V	1000V	1000V	0.1Ω – 0.68Ω	1Ω - 10MΩ
1550	3W		500V	1000V	1000V	0.1Ω – 0.68Ω	1Ω - 10MΩ

Operating Voltage=$\sqrt{(P*R)}$ or Max. operating voltage listed above, whichever is lower.

Overload Voltage=2.5*$\sqrt{(P*R)}$ or Max. overload voltage listed above, whichever is lower

■Resistor body color:

Standard power rating: Light Brown

High power rating 0318 size: Light Brown is available only other sizes: Light Brown or Pink are available.

Please specify which color is acceptable else the light brown is a top priority.

■For resistance value out of above range is by request. Below 10Ω are using alloy film.

■Environmental Characteristics

Item	Requirement	Test Method
Resistance Value	1Ω ~ 10MΩ	**IEC-60115-1 4.5** Measure at a distance of 10mm from the cap end
Short Time Overload	±(0.75%+0.05Ω)	**IEC-60115-1 4.13** 2.5 times RCWV for 5 seconds
Insulation Resistance	＞1000MΩ	**IEC-60115-1 4.6** The measure was executed by V-Block methods
Endurance	±(3%+0.05Ω)	**IEC-60115-1 4.25** 70±2°C, RCWV (or Umax.,whichever less) for 1000 hrs with 1.5 hrs “ON” and 0.5 hrs “OFF”
Damp Heat, Steady State	<100KΩ±3% >101KΩ±5%	**IEC-60115-1 4.24** 40±2°C, 90~95% R.H. for 56 days, loaded with 0.1 times RCWV (or Umax.,whichever less)
Solderability	95% min. Coverage	**IEC-60115-1 4.17** 245±5°C for 3±0.5 seconds
Voltage Proof	By Type	**IEC-60115-1 4.7** In V-Block for 60 seconds
Temperature Coefficient	1145/1550: < 1Ω ±1500ppmm 1Ω~100KΩ ±350ppm 100KΩ~1MΩ -0ppm-500ppm 1MΩ~ 10MΩ -0ppm-1000ppm Other sizes: < 1Ω ±1500ppmm 1Ω~100KΩ +350ppm-500 ppm 100KΩ~1MΩ -0ppm-700ppm 1MΩ~ 10MΩ -0ppm-1500ppm	**IEC-60115-1 4.8** Resistance value at room temperature and room Temperature+100℃
Periodic-Pulse Overload Test	±(1%+0.05Ω)	**IEC-60115-1 4.39** 4 times RCWV (or Umax., whichever less) for 10000 cycles with 1 second “ON” and 25 seconds “OFF”
Solvent Resistance of Marking	No obvious deterioration of coatings and markings	**IEC-60115-1 4.30** IPA for 5±0.5 min. with ultrasonic
Robustness of Terminations	Tensile: ≧2.5 kg(24.5N)	**IEC-60115-1 4.16** Direct Load for 10 seconds In the direction off the terminal leads
Temperature Cycling	±(1%+0.05Ω)	**IEC-60115-1 4.19** -55℃/155℃ with 5 cycles the duration at each temperature 30 min
Resistance to Soldering Heat	±(1%+0.05Ω)	**IEC-60115-1 4.18** The solder iron heated to 260°C ±5℃ and applied to the termination for duration of 10±1 seconds.

RCWV(Rated continuous working voltage)= √(P*R) or Max. Operating voltage whichever is lower

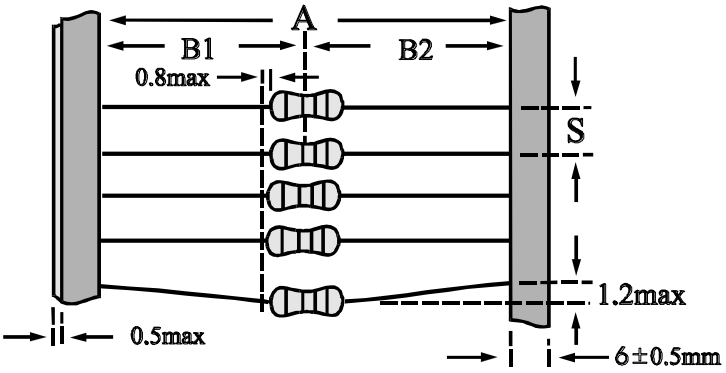
■Storage Temperature:25±10°C; Humidity < 80%RH

■Shelf life: 1 years Max

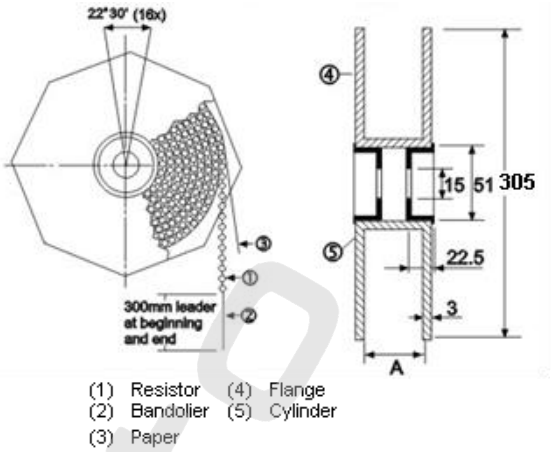
■Taping/Packing Specifications

1. Standard Type (Reel & Ammo)

Packing Methods



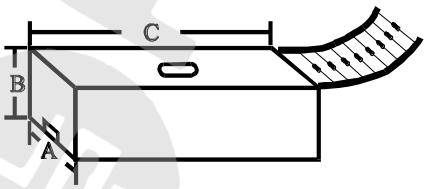
Reel Packing



Unit: mm

Packaging / Type	Packing Methods			Reel Packing	
	A	B1-B2 Max	S	Across Flange (A)	Qty
0318	52+1/-0	1.2	5±0.3	72	5,000
	26+0.5/-0	1.0		-	
0623	52+1/-0	1.2	5±0.3	72	5,000
	26+0.5/-0	1.0		-	
0932	52+1/-0	1.2	5±0.3	72	2,500
1145	73+1/-0	1.5	5±0.3	95	2,000
	52+1/-0				
1550	73+1/-0	1.5	10±0.8	95	1,000
	52+1/-0				

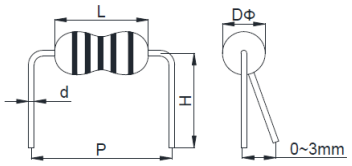
Ammo Packing



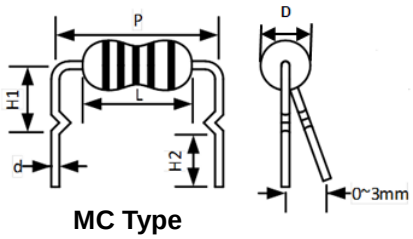
Unit: mm

Packaging / Type	Packing Methods			Ammo Packing			
	A	B1-B2 Max	S	A	B	C	Qty
0318	52+1/-0	1.2	5±0.3	79±2	73±3	257±5	5,000
	26+0.5/-0	1.0		52±2	74±3	252±5	
0623	52+1/-0	1.2	5±0.3	79±2	100±3	257±5	5,000
	26+0.5/-0	1.0		52±2	109±3	252±5	
0932	52+1/-0	1.2	5±0.3	79±2	58±3	257±5	1,000
1145	73+1/-0	1.5	5±0.3	103±2	82±3	262±5	1,000
	52+1/-0			81±2	85±3	256±5	
1550	73+1/-0	1.5	10±0.8	103±2	96±3	265±5	1,000
	52+1/-0			82±2	108±3	258±5	

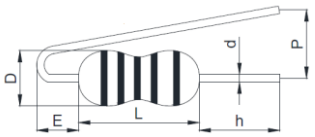
2. Special Type (Bulk)



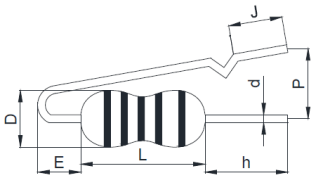
MA Type



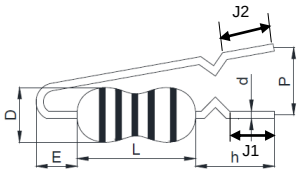
MC Type



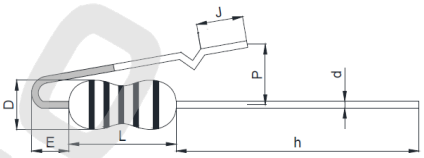
FA Type



FB Type



FC Type

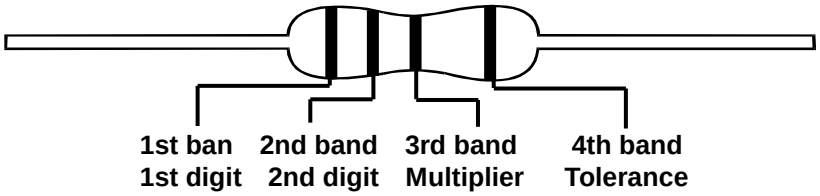


FD Type

Unit: mm

Codes	Type	P	H /H1/h	H2/G	J/J1/J2	D	L	d	E
0318	MA	5±1	8.0±1	-	-	1.8±0.3	3.4±0.5	0.45±0.03	-
0623	MA	10±1	10.0±1	-	-	2.3±0.3	6.3±0.5	0.55±0.03	-
	FD	5~15	27.0±2	-	12±2	2.3±0.3	6.3±0.5	0.55±0.03	3±1
0932	MA	12.5±1	10.0±1	-	-	3.2±0.5	9.0±0.5	0.65±0.03	-
	MC	12.5±1	6.5±2	3.5±2	-	3.2±0.5	9.0±0.5	0.65±0.03	-
	FA	5~15	5.0±2	-	-	3.2±0.5	9.0±0.5	0.65±0.03	3±1
	FB	5~15	4.0±2	-	3±2	3.2±0.5	9.0±0.5	0.65±0.03	3±1
	FC	5~15	10.0±3	-	4±2	3.2±0.5	9.0±0.5	0.65±0.03	3±1
1145	MA	15±1	12.5±1	-	-	4.5±0.5	11.5±1.0	0.78±0.03	-
	MC	15±1	9.5±2	4.5±2	-	4.5±0.5	11.5±1.0	0.78±0.03	-
	FA	5~15	5.0±2	-	-	4.5±0.5	11.5±1.0	0.78±0.03	3±1
	FB	5~15	4.0±2	-	3±2	4.5±0.5	11.5±1.0	0.78±0.03	3±1
	FC	5~15	10.0±3	-	4±2	4.5±0.5	11.5±1.0	0.78±0.03	3±1
1550	MA	20±1	15.0±1	-	-	5.0±0.5	15.5±1.0	0.78±0.03	-
	MC	20±1	13.5±2	3.5±2	-	5.0±0.5	15.5±1.0	0.78±0.03	-
	FA	5~15	5.0±2	-	-	5.0±0.5	15.5±1.0	0.78±0.03	3±1
	FB	5~15	4.0±2	-	3±2	5.0±0.5	15.5±1.0	0.78±0.03	3±1
	FC	5~15	10.0±3	-	4±2	5.0±0.5	15.5±1.0	0.78±0.03	3±1

■Marking & Resistance Tolerance



±5%	E-24	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.7	3.0	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2	6.8	7.5	8.2	9.1
	E6	1.0				1.5				2.2				3.3				4.7				6.8			

Cold	Digit	Multiplier	Tolerance	
Without	-	-	-	-
Silver	-	10^{-2}	-	-
Gold	-	10^{-1}	±5.0%	J
Black	0	10^{0}	-	-
Brown	1	10^{1}	-	-
Red	2	10^{2}	-	-
Orange	3	10^{3}	-	-
Yellow	4	10^{4}	-	-
Green	5	10^{5}	-	-
Blue	6	10^{6}	-	-
Violet	7	10^{7}	-	-
Grey	8	10^{8}	-	-
White	9	10^{9}	-	-

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version B3	Mar 31,2025		-Modify Reel Packing specifications for 0318/0623. -Add Shelf life.