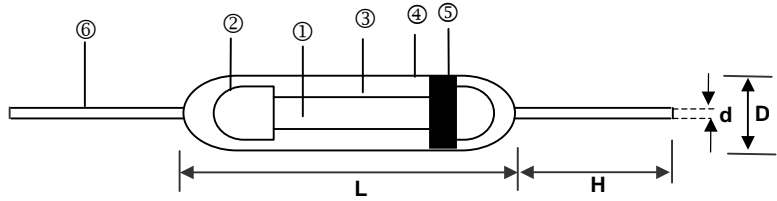


Carbon Film Ledged Resistor – CFR Series

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

Features

- The most economic industrial investment
- Standard tolerance: $\pm 5\%$ (available $\pm 2\%$)
- Excellent long term stability
- Termination: Standard solder-plated copper lead

Applications

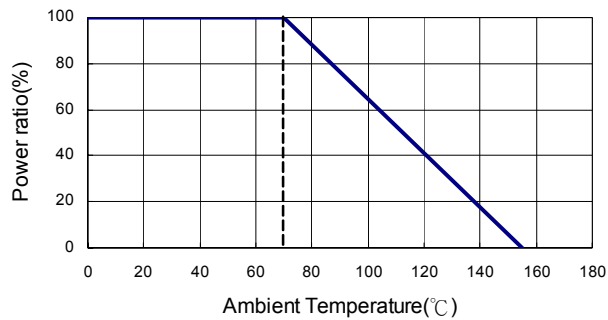
- Automotive
- Telecommunication
- Medical Equipment

Dimensions

Unit: mm

Type	L	D	H	d	Weight (g) (1000pcs)
CFR0318	3.3+0.4/-0.2	1.8 \pm 0.3	29 \pm 2.0	0.41~0.48	92
CFR0623	6.3 \pm 0.5	2.3 \pm 0.3	28 \pm 2.0	0.43~0.58	155
CFR0932	9.0 \pm 0.5	3.2 \pm 0.5	26 \pm 2.0	0.58~0.68	352
CFR1145	11.5 \pm 1.0	4.5 \pm 0.5	35 \pm 2.0	0.68~0.81	775
CFR1550	15.5 \pm 1.0	5.0 \pm 0.5	32 \pm 2.0	0.75~0.81	1042

Derating Curve



Part Numbering

CFR	0318	J	T	-	W	1001	MA
Product Type	Dimensions (LxD)	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance	Special
	0318: 3.3x1.8 0623: 6.3x2.3 0932: 9.0x3.2 1145: 11.5x4.5 1550: 15.5x5.0	G: $\pm 2\%$ J: $\pm 5\%$	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: 0.5 Ω 0010: 1 Ω 1000: 100 Ω 2201: 2200 Ω 1001: 1K Ω 1004: 1M Ω	: Standard MA: MA-type MB: MB-type MC: MC-type FA: FA-type FB: FB-type FC: FC-type

Standard Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Working Voltage	Max. Overload Voltage	Dielectric Withstanding Voltage	Resistance Range	
						±2%	±5%
0318	1/8W	-55 ~ +155°C	150V	300V	300V	—	0.1Ω - 22MΩ
0623	1/4W		250V	500V	500V	1Ω - 10MΩ	
0932	1/2W		350V	700V	700V	1Ω - 10MΩ	
1145	1W		450V	1000V	1000V	—	0.1Ω - 10MΩ
1550	2W		500V	1000V	1000V	1Ω - 10MΩ	

High Power Rating Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Working Voltage	Max. Overload Voltage	Dielectric Withstanding Voltage	Resistance Range	
						±2%	±5%
0318	1/4W	-55 ~ +155°C	200V	400V	400V	—	1Ω - 10MΩ
0623	1/2W		300V	500V	500V	—	0.1Ω - 22MΩ
0932	1W		400V	800V	800V	1Ω - 10MΩ	
1145	2W		500V	1000V	1000V	—	0.1Ω - 10MΩ
1550	3W		500V	1000V	1000V	1Ω - 10MΩ	

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.

Environmental Characteristics

Item	Requirement	Test Method
Short Time Overload	±(0.75%+0.05Ω)	RCWV*2.5 or Max. overload voltage for 5 seconds
Insulation Resistance	> 1000MΩ	Apply 100V _{DC} for 1 minute
Endurance	±(3%+0.05Ω)	70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	≤ 100KΩ±3% ≥ 100KΩ±5%	40±2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Solderability	90% min. coverage	245±5°C for 3 seconds
Dielectric Withstanding Voltage	By Type	Apply Max. overload voltage for 1 minute
Temperature Coefficient	< 100KΩ +350ppm~-500ppm 100KΩ~1MΩ -0ppm~-700ppm > 1 MΩ -0ppm~-1500ppm	Resistance value at room temperature and room temperature+100°C
Pulse Overload	±(1%+0.05Ω)	4 times RCWV for 10000 cycles with 1 second "ON" and 25 seconds "OFF"
Resistance To Solvent	No deterioration of coatings and markings	Trichroethane for 1 min. with ultrasonic
Terminal Strength	Tensile: ≥ 2.5 kg	Direct Load for 10 seconds In the direction off the terminal leads

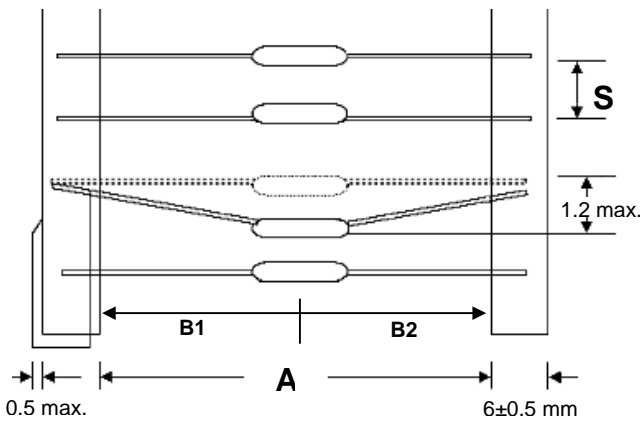
Reference Standards: MIL-STD-202, JIS-C 5201-1

Storage Temperature: 25±3°C; Humidity < 80%RH

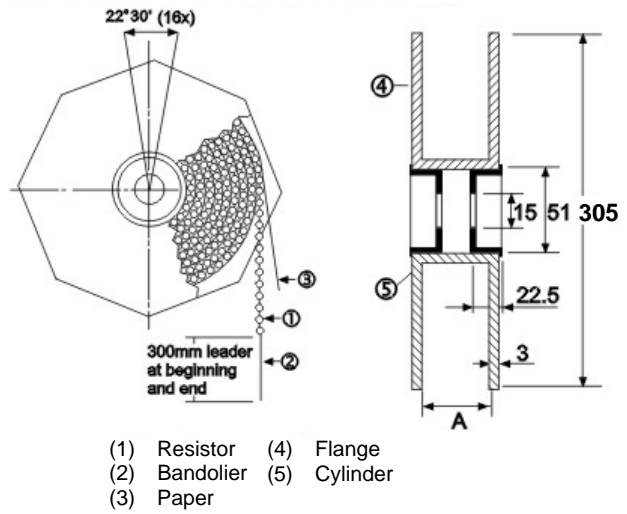
■ Taping/Packing Specifications (For MFR / MOF / CFR)

1. Standard Type (Reel & Ammo)

Packing Methods



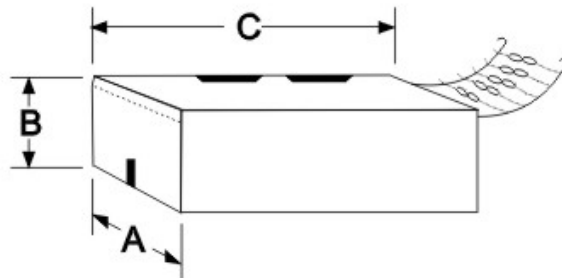
Reel Packing



Unit: mm

Type	Packing Methods			Reel Packing			
	A	B1-B2	S	Across Flange (A)	MFR Qty	CFR Qty	MOF Qty
0318	52+1/-0	1.2	5	72	5,000	5,000	-
0623	52+1/-0	1.2	5	72	5,000	5,000	5,000
0932	52+1/-0	1.2	5	72	2,500	2,500	2,500
1145	52+1/-0	1.5	5	95	2,000	2,000	2,000
1550	52+1/-0	1.5	10	95	1,000	1,000	1,000
1765	73+1/-0	1.5	10	95	-	-	1,000
2485	88+1/-0	1.5	10	110	-	-	500

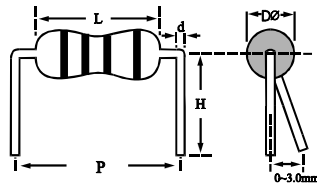
Ammo Packing



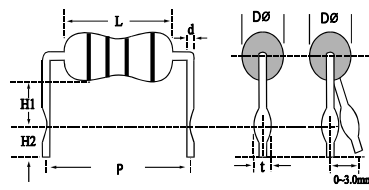
Unit: mm

Type	Packing Methods			Ammo Packing					
	A	B1-B2	S	A	B	C	MFR Qty	CFR Qty	MOF Qty
0318	26+1/-0	1.0	5	80	75	264	5,000	5,000	-
0623	26+1/-0	1.0	5	80	105	264	5,000	5,000	5,000
0932	52+1/-0	1.2	5	80	46	264	1,000	1,000	1,000
1145	73+1/-0	1.5	5	103	82	265	1,000	1,000	1,000
1550	73+1/-0	1.5	10	103	96	265	1,000	1,000	1,000
1765	73+1/-0	1.5	10	105	75	270	-	-	500
2485	88+1/-0	1.5	10	115	75	270	-	-	250

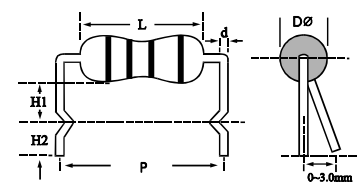
2. Special Type (Bulk)



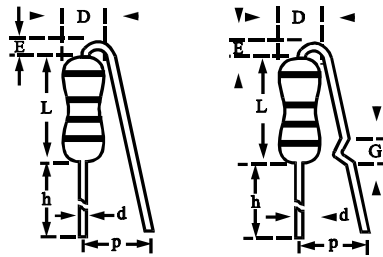
MA Type



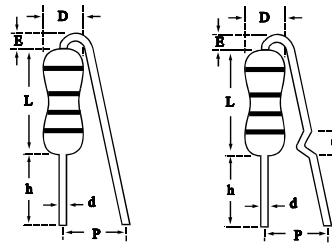
MB Type



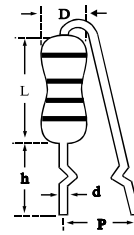
MC Type



FA Type



FB Type



FC Type

Unit: mm

Product Type	Type	P	H /H1/h	H2/G	t	D	L	d	E
0318	MA	5.00±1	5.00±1	-	-	1.8±0.3	3.30±0.4	0.45±0.03	-
0623	MA	10.0±1	10.0±1	-	-	2.3±0.3	6.30±0.5	0.55±0.03	-
	FA	10.0±1	28.0±2	2.00±0.5	-	2.3±0.3	6.30±0.5	0.55±0.03	2.00±0.5
	FB	10.0±1	8.00±1	2.00±0.5	-	2.3±0.3	6.30±0.5	0.55±0.03	2.00±0.5
0932	MA	12.5±1	10.0±1	-	-	3.2±0.5	9.00±0.5	0.65±0.03	-
	FC	6.00±1	10.0±1	-	-	3.2±0.5	9.00±0.5	0.65±0.03	-
1145	MA	15.0±1	12.5±1	-	-	4.5±0.5	11.5±1.0	0.78±0.03	-
	MB	15.0±1	6.00±1	5.00±1.0	1.4±0.2	4.5±0.5	11.5±1.0	0.78±0.03	-
	MC	15.0±1	6.00±1	5.00±1.0	-	4.5±0.5	11.5±1.0	0.78±0.03	-
	FC	6.00±1	10.0±1	-	-	4.5±0.5	11.5±1.0	0.78±0.03	-
1550	MA	20.0±1	15.0±1	-	-	5.0±0.5	15.5±1.0	0.78±0.03	-
	MB	20.0±1	10.0±1	5.00±1.0	1.4±0.2	5.0±0.5	15.5±1.0	0.78±0.03	-
	MC	20.0±1	10.0±1	5.00±1.0	-	5.0±0.5	15.5±1.0	0.78±0.03	-
	FC	6.00±1	10.0±1	-	-	5.0±0.5	15.5±1.0	0.78±0.03	-