

FUSIBLE RESISTOR

FRN (THIN FILM TYPE)

RFB (ANTI-BURST TYPE)

FKN (WIRE WOUND TYPE)

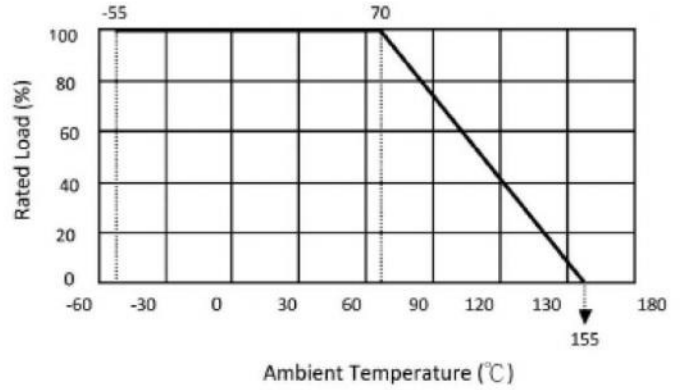
RFA (RATED CURRENT TYPE)

FRN

DERATING CURVE

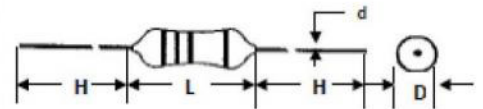
FEATURES

- Ideal circuit opening controller, disconnecting units from overload rating specified.
- Flame retardant coating.
- Body coating is in gray or green, with 4 or 5 color bands or stamping.
- Too low or too high ohmic value can only be supplied case by case.



RATING & DIMENSIONS

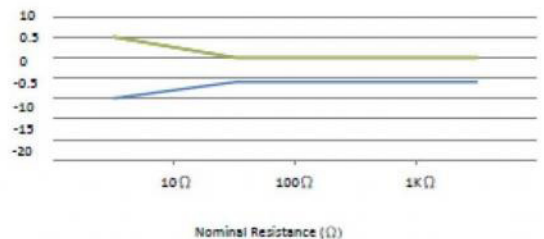
TYPE	RATED POWER	L MAX.	D MAX.	H ±3	d ±0.1	RESISTANCE RANGE
FRN-12	1/8W	3.8	2.1	25	0.43 ± 0.05	1 Ω ~ 10K Ω
FRN-25	1/4W	6.8	2.5	25	0.54	
FRN-33S	1/3W	6.8	2.5	25	0.54	
FRN-50S	1/2W	6.8	2.5	25	0.54	
FRN-50	1/2W	9.5	3.7	25	0.58	
FRN-100S	1W	9.5	3.7	25	0.58	
FRN-100	1W	12	5.0	35	0.75	
FRN-200S	2W	12	5.0	35	0.75	
FRN-200	2W	16	5.5	35	0.75	
FRN-300S	3W	16	5.5	35	0.75	
FRN-300	3W	17.5	7	35	0.75	



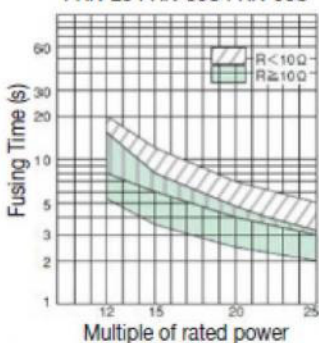
FUSING CHARACTERISTICS

RESISTANCE RANGE	MAGNIFICATION OF POWER RATING	FUSING TIME
0.1 Ω ~ 0.2 Ω	RATED POWER X 64	60 Sec MAX
0.22 Ω ~ 1 Ω	RATED POWER X 32	
1.1 Ω ~ 2 Ω (1.1 Ω ~ 100 Ω FOR 1/8W)	RATED POWER X 25	
2.1 Ω ~ 10K Ω (101 Ω ~ 10K Ω FOR 1/8W)	RATED POWER X 16	

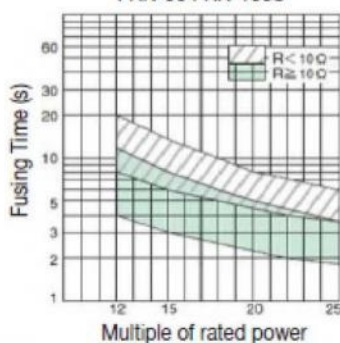
OVERLOAD CURVE SHORT TIME OVERLOAD



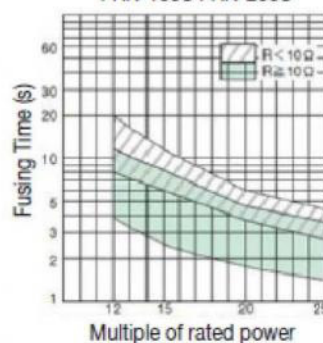
FRN-25 FRN-33S FRN-50S



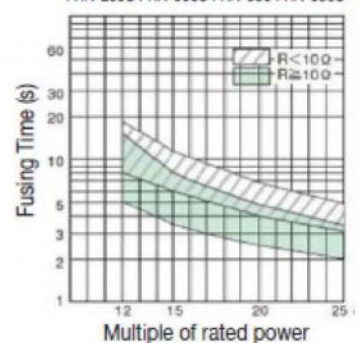
FRN-50 FRN-100S



FRN-100S FRN-200S



FRN-200S FRN-300S FRN-300 FRN-500S



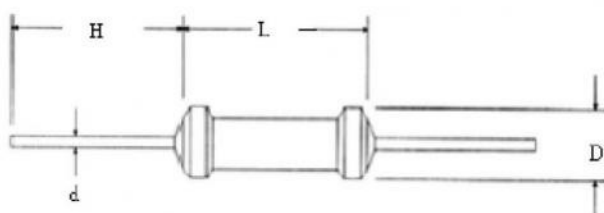
FUSIBLE RESISTOR

FKN

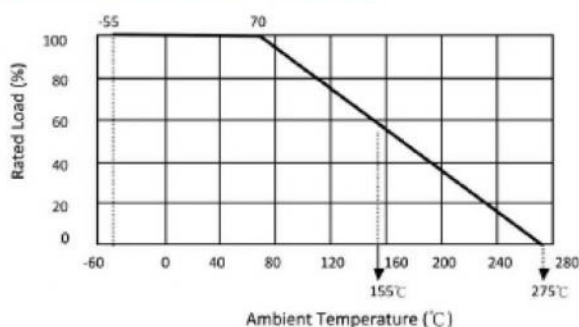
FEATURES

- It is suitable for protecting circuit boards.
- Uniform in fusing time.
- Noncombustible insulation coating.
- Low temperature coefficient.

RATING & DIMENSIONS



DERATING CURVE



TYPE	RATED POWER	DIMENSIONS (mm)				RESISTANCE RANGE
		L±2.5	D±1.5	H±3	d±0.1	
FKN-50	1/2W	9.0	3.2	25	0.58	0.1~100Ω
FKN-100S	1W	9.0	3.2	25	0.58	
FKN-100	1W	11	4.5	35	0.75	
FKN-200S	2W	11	4.5	35	0.75	
FKN-200	2W	15	5.0	35	0.75	
FKN-300S	3W	15	5.0	35	0.75	
FKN-300	3W	17	6.0	35	0.75	
FKN-400	4W	17	6.0	35	0.75	
FKN-500	5W	17	6.0	35	0.75	
FKN-500B	5W	24	8.0	35	0.75	
FKN-600	6W	24	8.0	35	0.75	
FKN-700S	7W	24	8.0	35	0.75	
FKN-700	7W	39	8.0	35	0.75	
FKN-800	8W	39	8.0	35	0.75	
FKN-1000	10W	52	8.0	35	0.75	

CHARACTERISTICS

TEST	LIMITS
TEMPERATURE COEFFICIENT	±300PPM/°C ; SPECIAL : LOW TO ±25PPM, HIGH TO ±1, 500PPM
INSULATION RESISTANCE	500V MEG 1,000MΩ MIN.
LOAD LIFE	±5%+0.1Ω
SHORT-TIME OVERLOAD	±2%+0.1Ω
DIELECTRIC WITHSTANDING VOLTAGE	1/2W, 1W : 350V, 2W-10W : 400V
MOISTURE RESISTANCE	±5%+0.1Ω
TEMPERATURE CYCLING	±1%+0.1Ω
SOLDERING HEAT	±1%+0.1Ω
INCOMBUSIBILITY	1~16 TIMES, E=√PXR 5 MIN.

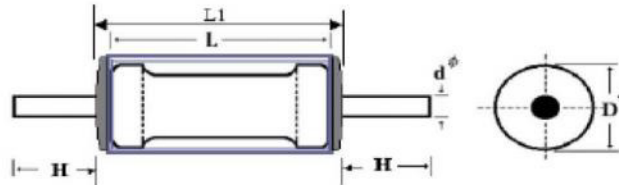
FUSIBLE RESISTOR

RFB

FEATURE

The ANTI-BURST Type wire wound of film-type fusible resistors can provide reliable and environmentally safe fusing behavior. It's also reliable in performance and endurance for surge voltage.

DIMENSIONS



Unit : mm

TYPE	RATED POWER	L±0.5	L1±1.0	D±0.5	H±3	d±0.1
RFB-25	1/4W	7	7.6	3.6	28	0.6
RFB-50	1/2W	9.5	11.0	4.3	28	0.6
RFB-100	1W	9.5	11.0	4.3	28	0.6
RFB-200	2W	11.5	13.0	5.5	35	0.8

RATING

TYPE	RFB-25	RFB-50	RFB-100	RFB-200
RESISTANCE RANGE	0.1~100Ω		0.1~100Ω	0.1~100Ω
MAXIMUM OPERATIONAL VOLTAGE	100V		100V	100V
MAXIMUM OVERLOAD VOLTAGE	150V		150V	150V
DIELECTRIC WITHSTANDING VOLTAGE	2,000V			
RATED AMBIENT TEMPERATURE	70 °C			
OPERATING TEMPERATURE RANGE	-55°C ~ +155°C			
RESISTANCE TOLERANCE	J (±5%)			

CHARACTERISTICS

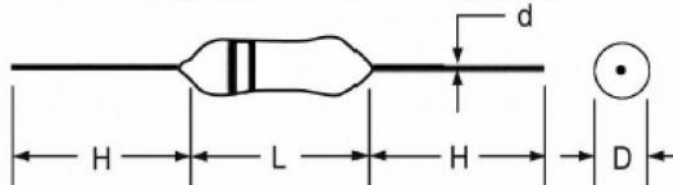
TEST	LIMITS	TEST METHOD
TEMPERATURE COEFFICIENT	≤ 1 Ω : ±500ppm/°C > 1 Ω : ±300ppm/°C	JIS C 5201 1 measured at room temperature and room temperature+100 °C
SHORT-TIME OVERLOAD	resistance change within ±(1%+0.05Ω)	JIS C 5201 1 (4.13) (rated voltage × 2, 5 s)
ENDURANCE (UNDER DAMP AND LOAD)	resistance change within ±(5%+0.1Ω)	JIS C 5201 1 (4.24) 40°C ± 2 °C 90%–95% RH, 1,000 hours 1.5 hours on/0.5 hours off cycle.
RESISTANCE TO SOLDERING HEAT	resistance change within ±(1%+0.05Ω)	JIS C-5201-1 (4.18) soldering at temperature 350°C ± 10°C with immersion time for 3.5 s ± 0.5 s
SOLDERABILITY	95% (min) coverage	JIS C-5201-1 (4.17) 1) temp. of soldering at 245°C ± 5°C 2) duration of immersion 3 s ± 0.5 s 3) preparation not applicable
TEMPERATURE CYCLING	resistance change within ±(1%+0.05Ω)	JIS C-5201-1 (4.19) 1) Test temp. -25°C ~ +85°C 2) number of 5 cycles
INSULATION RESISTANCE	more than 1,000MΩ	JIS C 5201 1 (4.6.1) test voltage DC : 500V
FLAMEPROOF	No evidence of flaming or arcing	JIS C 5201 1 (4.23.4) AC voltage of 16 times the power rating for 1min.
BENDING STRENGTH	±(1%+0.05Ω)	JIS C 5201 1 (4.16) 360° Round-trip ; 3 cycles

FUSIBLE RESISTOR

FRA

FEATURES

- The rated current fusible resistor combines time delay characteristics with proven reliability.
- Big electric current.
- High stability.



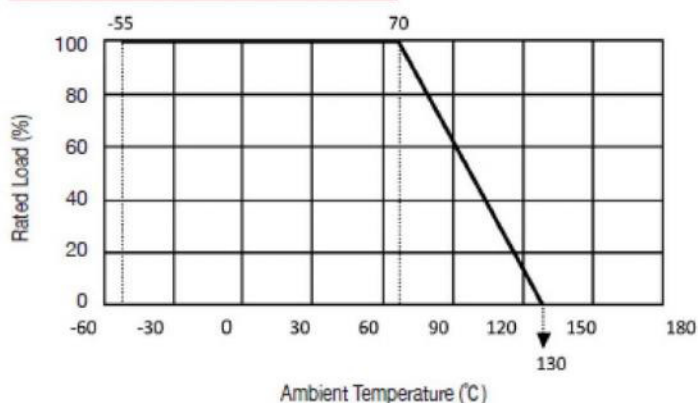
RATING & DIMENSIONS

TYPE	AMPERE RANGE	DIMENSIONS (mm)				OPERATING TEMP. RANGE	DIELECTRIC WITHSTANDING VOLTAGE
		L	D	H	d		
FRA -25	0.1A, 0.25A, 0.375A, 0.5A, 0.75A, 1 A, 1.5A, 2A, 2.25A, 2.5A, 3A	6.0±0.5	2.4±0.3	28±2	0.6±0.1	-55°C ~ +130°C	100V
FRA -50	4A, 5A, 7A	9.0±0.5	3.0±0.5	30±3	0.6±0.1		

FUSING CHARACTERISTICS

PERCENTAGE OF AMPERE RATING	FUSING TIME
100%	4 Hours Min.
200%	1~60 Sec.
300%	0.2~3 Sec.
800%	0.02~0.2 Sec.

DERATING CURVE



CHARACTERISTICS

TEST	LIMITS
LOAD LIFE UNDER HIGH TEMPERATURE	Rated current at 50% ; 70°C for 1,000 hours
HUMIDITY RESISTANCE	MIL-STD-202, Method 106, Heat (65°C at 90%~98%)
VIBRATION	MIL-STD-202, Method 213, Condition 1.
THERMAL SHOCK	MIL-STD-202, Method 107, Test Condition B. (-25°C ~ +85°C)
INSULATION RESISTANCE	MIL-STD-202, Method 302 (≥10KΩ at 500V)
RESISTANCE TO SOLDERING HEAT	MIL-STD-202, Method 210, Test Condition C. (10s at 260°C)
SOLDERABILITY	MIL-STD-202, Method 208.. (5s at 245°C)>95%
LEAD PULL FORCE	MIL-STD-202, Method 211, Test Condition A.
SALT MIST SPRAY	Method 101, Condition B.