1. INTRODUCTION

There are some similarities between Resistors and Fuses in material and structure. Fusible Resistors contain both functions, as being resistor in normal condition and changed into fuse while abnormal current comes in protect machines and equipment. Since two functions performed by one resistor, the cost therefore saved. **SYNTON** fusible resistor series are produced with precision technique to get exact fusing time.

2. FEATURES

- It is suitable for protecting circuit boards.
- Small in size.
- Noncombustible insulating coat.
- Low temperature coefficient.
- Uniform in fusing time.
- Too low or too high ohmic value can be supplied only case by case.

3. EXPLANATIONS OF ORDERING CODE

DESCRIPTION : FKN 1W 5% 10Ω

SYNTON CODE : FKN 100 J 100 T

SERIES	POWER	TOLERANCE	RESISTANCE	PACKAGE
FUSIBLE RESISTOR (FKN TYPE)	050 : 1/2W 100 : 1W 200 : 2W 300 : 3W 500 : 5W 700 : 7W 100 S : 1W small Size 200 B : 2W big Size (Please see detail of Figure1)	J : ±5% G : ±2% F : ±1%	VALUE E24 Series 3 Digits : 2R2 : 2.2Ω 100 : 10Ω 101 : 100Ω E96 Series 4 Digits : 2R20 : 2.2Ω 10R0 : 10Ω 1000 : 100Ω (Please see detail of Figure7,8)	T=Tape Box S=Tape 26mm TR=Tape Reel B=Bulk M / MK / MB= Forming horizontal type F / FK / FKK= Forming vertical type (Please see detail of Figure4&5,6)

4. ELECTRICAL CHARACTERISTICS

TYPE	FKN-50	FKN-100S	FKN-100	FKN-200SS	FKN-200S	FKN-200	FKN-300S	FKN-300	FKN-500	FKN-500B	FKN-700	FKN-1000
Power Rating at 70℃	1/2W	1W	1W	2W	2W	2W	3W	3W	5W	5W	7W	10W
Operating Temp. Range	—55℃～+155℃											
Maximum Working Volt.	250V	250V	300V	250V	300V	300V	300V	300V	300V	300V	300V	300V
Maximum Overload Volt.	350V	350V	450V	350V	450V	450V	450V	450V	450V	450V	450V	450V
Dielectric withstanding Volt.	300V	300V	400V	300V	400V	400V	400V	400V	400V	400V	400V	400V
Value Range	STANDARD 1Ω~100Ω SPECIAL 0.1Ω~0.9Ω											
Temp. Coefficient	±300PPM /℃ , special low to ±25PPM high to ±1500PPM											

Figure 1

5. POWER RATING

(1)Power Derating : The rated power at the temperature in excess of 70℃ shall be derated in accordance with figure2

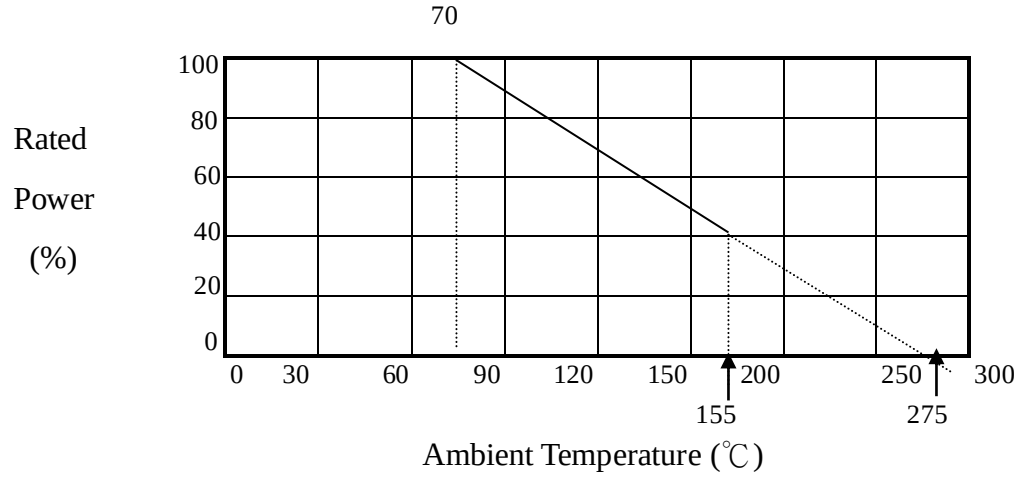


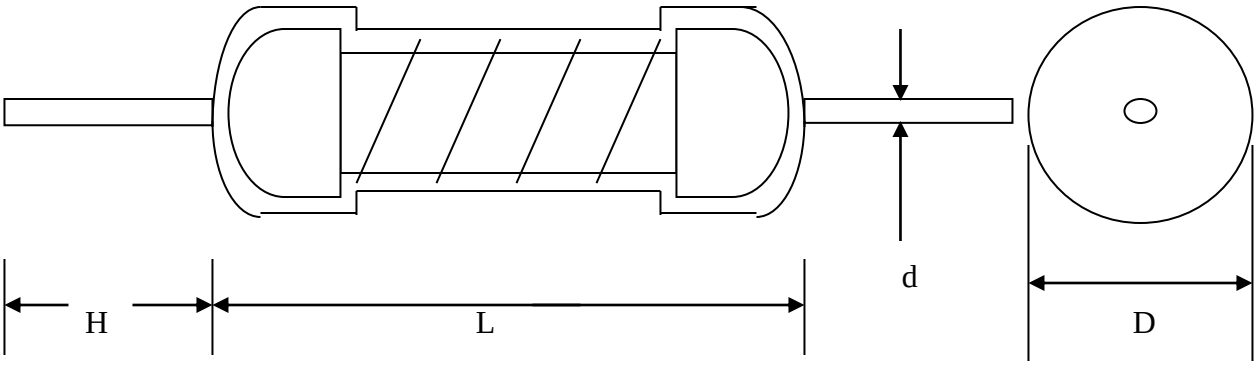
Figure2

(2)Rated Voltage : The DC or AC(rms) continuous working voltage corresponding to the rated power is determined by the following formula:

$$E = \sqrt{R \times P}$$

Where E : Continuous rated DC or AC (rms) working voltage (v)
P : Rated power (w)
R : Resistance value (Ω)

6. DIMENSIONS



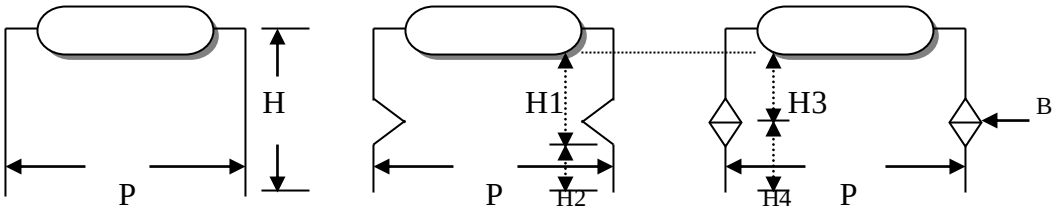
Unit:m/m

TYPE	L	D	H	d
FKN-50	9.0 ± 1.5	3.2 ± 1.0	25 ± 3	0.5 ± 0.1
FKN-100S				
FKN-200SS				
FKN-100	11 ± 1.5	4.5 ± 1.0	35 ± 3	0.65 ± 0.1
FKN-200S				
FKN-200	15 ± 1.5	5.0 ± 1.0	35 ± 3	0.7 ± 0.1
FKN-300S				
FKN-300	17 ± 1.5	6.0 ± 1.0	35 ± 3	0.7 ± 0.1
FKN-500				
FKN-500B	24 ± 1.5	8.0 ± 1.5	35 ± 3	0.7 ± 0.1
FKN-700	41 ± 2.0	8.0 ± 1.5	35 ± 3	0.7 ± 0.1
FKN-1000	52 ± 3.0	8.0 ± 1.5	35 ± 3	0.7 ± 0.1

Figure3

(1) FORMING PACKING

M / MK / MB= Forming horizontal type



M TYPE **MK TYPE** **MB TYPE**

Unit : m/m

TYPE	POWER	Forming Type	P ± 1	H ±2.5	H1 ± 1	H2 ± 1	H3 ± 1	H4 ± 1
FKN-50 FKN-100S FKN-200SS	1/2W 1W 2W	M	12.5~	10~	—	—	—	—
		MK.MB		—	8~	3~	8~	5~
FKN-100 FKN-200S	1W 2W	M	15~	10~	—	—	—	—
		MK.MB		—	8~	3~	8~	5~
FKN-200 FKN-300S	2W 3W	M	20~	10~	—	—	—	—
		MK MB		—	8~	3~	8~	5~
FKN-300 FKN-500	3W 5W	M	25~	10~	—	—	—	—
		MK MB		—	6~	3~	8~	5~

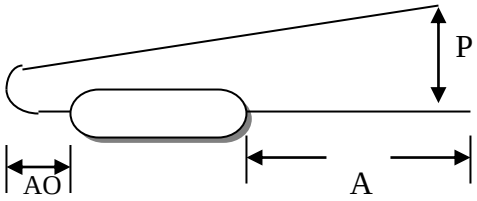
Remark : 1. B = 1.15 ~ ,

2. ***ALTERNATE MARKING METHOD ALSO AVAILABLE ON REQUEST.***

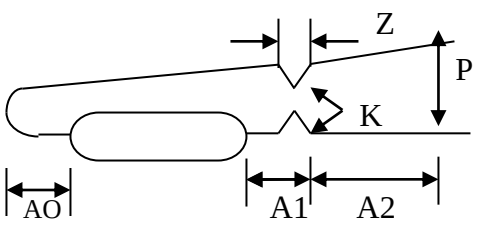
Figure4

(2) FORMING PACKING

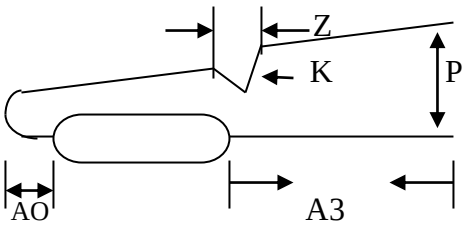
F / FK / FKK=Forming vertical type



F TYPE



FKK TYPE



FK TYPE

Unot : m/m

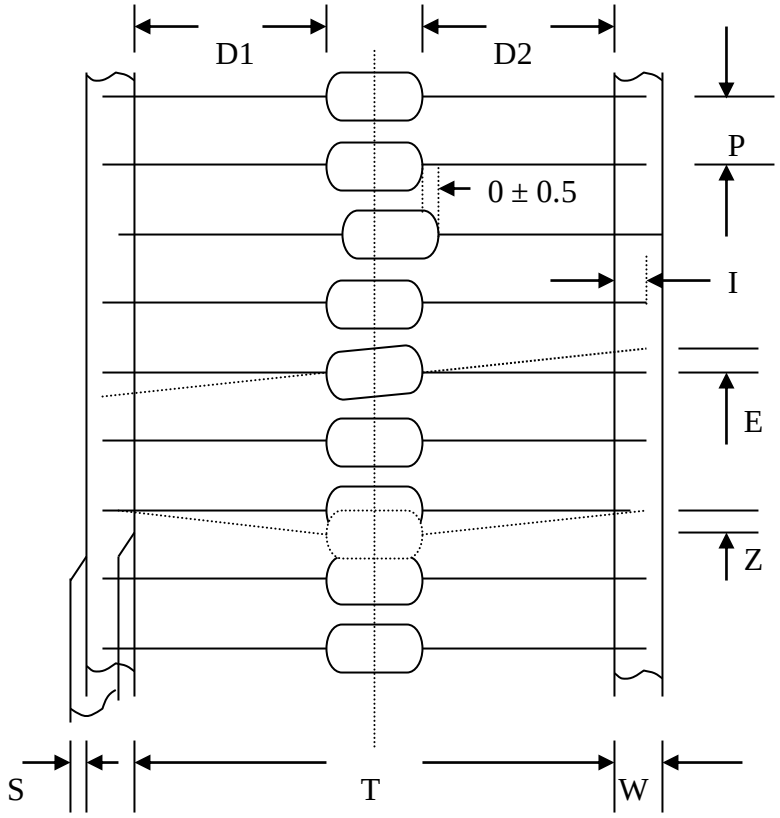
TYPE	POWER	Forming Type	P ± 1	A ± 1	A1 ± 1	A2 ± 1	A3 ± 1	A0 Max
FKN-50 FKN-100S FKN-200SS	1/2W 1W 2W	F	5~10	5~	—	—		4.0
		FK	5~10				25±3	4.0
		FK FKK	5~10		4	3	5~	4.0
FKN-100 FKN-200S	1W 2W	F	5~10	5~	—	—	—	4.0
		FK FKK	5~10	—	4	3	5~	4.0
FKN-200 FKN-300S	2W 3W	F	5~10	5~	—	—	—	4.0
		FK FKK	5~10	—	4	3	5~	4.0
FKN-300 FKN-500	3W 5W	F	5~10	5~	—	—	—	4.0
		FK FKK	5~10	5~	4	3	5~	4.0

Remark : 1. Z = 3 ±1. K = 2 ±0.5,

2. ***ALTERNATE MARKING METHOD ALSO AVAILABLE ON REQUEST.***

Figure5

(3) TAPE PACKING (T-TYPE)



Unit:m/m

TYPE	SIZE	T	P ±0.5	W ±0.5	D1—D2 Max.	E Max.	Z Max.	S Max.	I Min.
FKN-50 FKN-100S FKN-200SS	T-52	52±2.0	5	6	1.2	1	1.2	1	3
FKN-100 FKN-200S	T-52	52±2.0	5	6	1.2	1	1.2	1	3
	T-63	63±2.0	5	6	1.4	1	1.2	1	3
	T-74	74±2.0	5	6	1.4	1	1.2	1	3
FKN-200 FKN-300S	T-52	52±2.0	10	6	1.2	1	1.2	1	3
	T-63	63±2.0	10	6	1.4	1	1.2	1	3
	T-74	74±2.0	10	6	1.4	1	1.2	1	3
FKN-300 FKN-500	T-63	63±2.0	10	6	1.4	1	1.2	1	3
	T-74	74±2.0	10	6	1.4	1	1.2	1	3

Figure6

7. CHARACTERISTICS

(1) Resistance Temperature Characteristic

Test Method : -30℃ ~ 150℃

Acceptance Standard : ±300ppm/℃

(2) Temperature Cycling

Test Method : -30℃ ~ 85℃ for 5 Cycles

Acceptance Standard : ± (1%+0.1Ω)

(3) Short-Time Overload

Test Method : 2.5 times of rated wattage for 5 sec.

Acceptance Standard : ± (2%+0.1Ω)

(4) Resistance to Soldering Heat

Test Method : 270℃ for 3 sec.

Acceptance Standard : ± (1%+0.1Ω)

(5) Insulation Resistance

Test Method : 500V megger

Acceptance Standard : 1,000MΩ MIN.

(6) Load Life

Test Method : 70℃ on-off cycle 1,000 hours.

Acceptance Standard : ± (5%+0.1Ω)

(7) Moisture Load life

Test Method : 40℃ 95% RH on-off cycle 1,000 hours.

Acceptance Standard : ± (5%+0.1Ω)

(8) Fusing Characteristics.

RESISTANCE RANGE	MAGNIFICATION OF POWER RATING	FUSING TIME
0.1Ω ~ 100Ω	RATED POWER X (16 ~ 64)	(xx) Sec Max.

*Too low or too high ohmic values can be supplied only case by case.

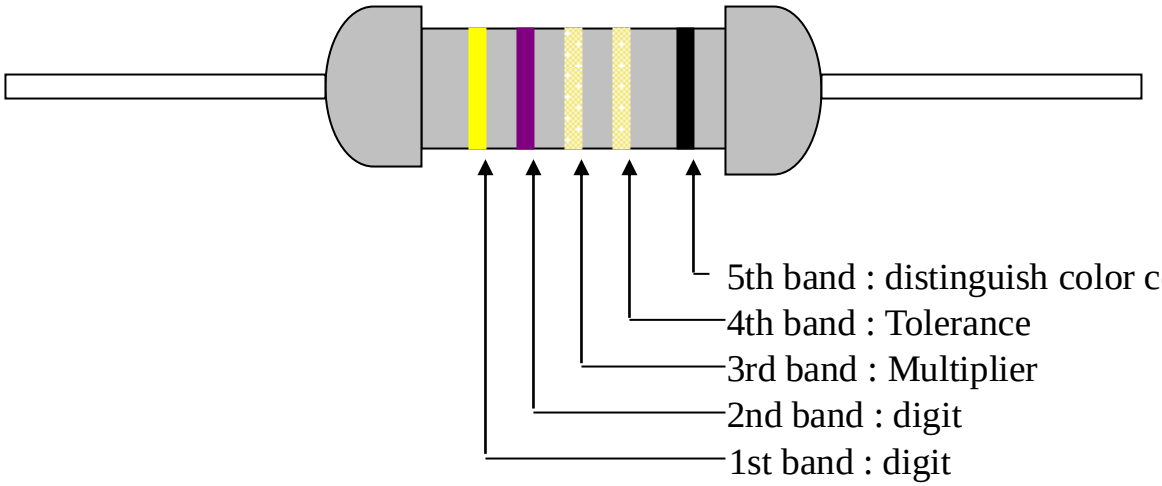
(9) Soldering Recommendation

Test Method : The Standard Length of epoxy on the terminal of our product is less than 1.5mm. Also, the Standard Welding Point must be over than 1.6mm from Resistor body.

8. COLOR CODING

8.1 J (±5%)

**** Fusible wire wound type distinguish color code (WHITE)**



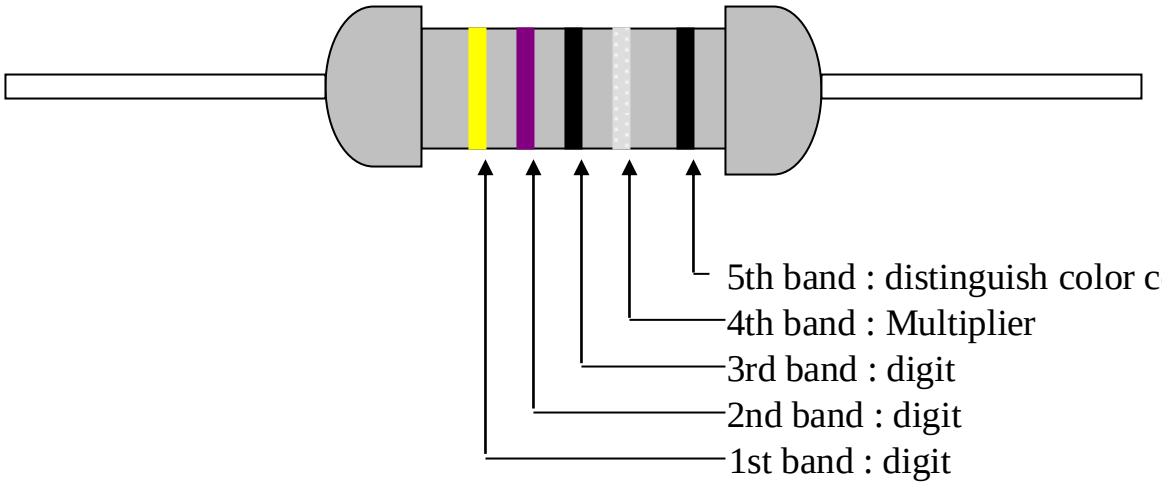
Color	1st, 2nd (Significant Figure)		3rd (Multiplier)	4th (Tolerance)	**(WHITE)**
Black	0	0	10^0	—	**Fusible wire wound type distinguish color code**
Brown	1	1	10^1	—	
Red	2	2	10^2	—	
Orange	3	3	10^3	—	
Yellow	4	4	10^4	—	
Green	5	5	10^5	—	
Blue	6	6	10^6	—	
Violet	7	7	10^7	—	
Gray	8	8	10^8	—	
White	9	9	10^9	—	
Gold	—	—	10^{-1}	J (±5%)	
Silver	—	—	10^{-2}	—	
Plain	**—**	**—**	**10^{-3}**	**—**	

Figure7

8.2 F (±1%) & G (±2%)

**** Fusible wire wound type distinguish color code (WHITE)**

**** Does not indicate the color code of tolerance**



Color	1st, 2nd, 3rd (Significant Figure)			4th (Multiplier)	(WHITE)
Black	0	0	0	10^0	Fusible wire wound type distinguish color code
Brown	1	1	1	10^1	
Red	2	2	2	10^2	
Orange	3	3	3	10^3	
Yellow	4	4	4	10^4	
Green	5	5	5	10^5	
Blue	6	6	6	10^6	
Violet	7	7	7	10^7	
Gray	8	8	8	10^8	
White	9	9	9	10^9	
Gold	—	—	—	10^{-1}	
Silver	—	—	—	10^{-2}	
Plain	**—**	**—**	**—**	**10^{-3}**	

Figure8