Approval Sheet

for

Moulded Wirewound Resistors Flame-Proof & Failsafe Type

FKM series

±5% & ±10%

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Rev.	Description	Issue Date	Drawn	Approved
00	issue new spec.	May 30, 2012	Feng Ye	Ken Hsu

Description	Moulded Wirewound Resistors, Flame-Proof & Failsafe Type		
Series	FKM	Rev.	00

1. PRODUCT:

MOULDED WIREWOUND RESISTORS - Flame Proof & Failsafe Type
Wound on fibre glass core and capped in an special process, suit all requirements for automatic insertion due to moulded case.
The accurate fusing characteristic of series FKM reliably protects circuits from overload.
The 5th colour band is blue to represent failsafe version.

2. PART NUMBER:

Part number of the moulded wirewound resistor is identified by the name, power, tolerance, packing, temperature coefficient, special type and resistance value.

Example：

FKM	**-75**	**J**	**T**	**-**	**73-**	**100R**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Series Name	Power Rating	Resistance Tolerance	Packing Style	Temperature Coefficient of Resistance	Special Type	Resistance Value

(1) Style: FKM SERIES

(2) Power Rating : -75=0.75W、150=1.5W

(3) Tolerance: J=±5% K=±10%

(4) Packaging Type**:** T＝Tape on Box Packing

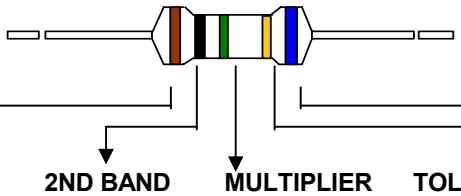
(5) Temperature Coefficient ：”-“=Base on spec.

(6) Special Type： 52-=52.4mm
73-=73mm

(7) Resistance Value：E12 & E24 Series

Example：1R、10R、100R、1K……

3. MARKING:



COLOR	1ST BAND	2ND BAND	MULTIPLIER	TOLERANCE
BLACK	0	0	1Ω	
BROWN	1	1	10Ω	
RED	2	2	100Ω	
ORANGE	3	3	1KΩ	
YELLOW	4	4		
GREEN	5	5		
BLUE	6	6		FKM Series
VIOLET	7	7		
GREY	8	8		
WHITE	9	9		
GOLD			0.1Ω	± 5 % (J)
SILVER			0.01Ω	± 10 % (K)

4. ELECTRICAL CHARACTERISTICS

TABLE I Ultra Miniature Style

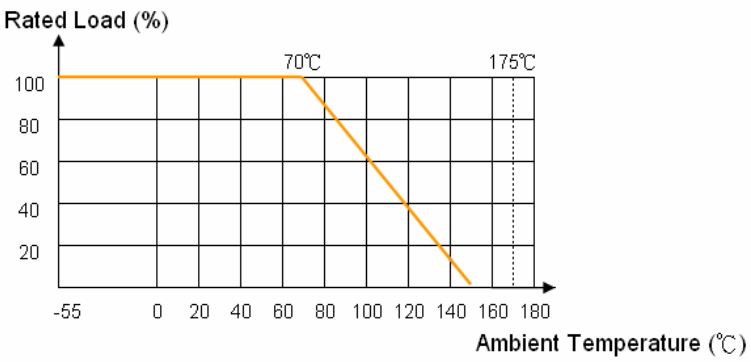
STYLE	FKM-75	FKM150
Power Rating at 70 ℃	0.75W	1.5W
Power Rating at 50 ℃	1W	
Power Rating at 25 ℃		2W
Max. Cont. Work. Voltage	$\sqrt{P70 \times R}$	
Voltage Proof on Insulation (1min.)	700Vrms	1000Vrms
Thermal resistancev (℃/W)	<140	<80
Resistance Range	0.1~1KΩ	
Operating Temp. Range	- 55 ℃ to + 175 ℃	
Temperature Coefficient	-400~+1000 ppm /℃, see next table	

∗ Below or over this resistance on request.

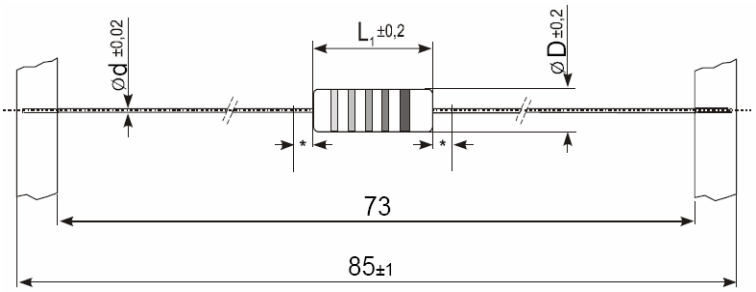
TABLE II Temperature Coefficient

Type	Resistance Value	Temperature Coefficient ppm /℃
FKM -75	0R1	±1000
	0R11~0R18	±600
	0R2~0R68	±300
	0R75~1K	±150
FKM150	0R1	±1800
	0R11~0R16	±1000
	0R18~0R68	±800
	0R75~1K	±400

5. DERATING CURVE



6. DIMENSIONS



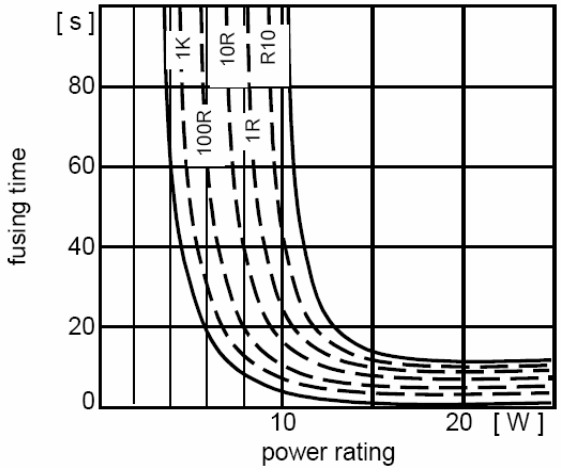
* 3mm, reduced solderability in this area.

STYLE	DIMENSIONS (mm)			
	L ± 0.2	ϕ D ± 0.2	ϕ d ± 0.2	Tape Step
FKM-75	9.9	3.6	0.8	5
FKM150	14.3	5.7	1.0*	10

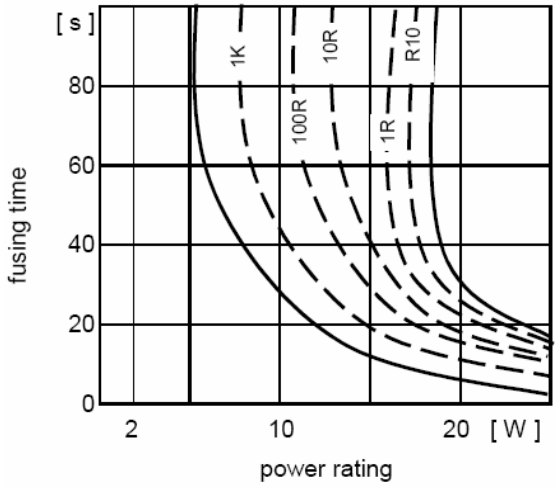
*Special lead diameter 0.8mm available.

7. Fusing Time

FKM-75 Series



FKM150 Series



8. ENVIRONMENTAL CHARACTERISTICS

(1) Short Time Overload

At 2.5 times of the rated voltage or max. overload voltage for 5 seconds, whichever is less; the resistor should be free from defects after the resistor is released from load for about 30 minutes

Rated Voltage = $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$

The change of the resistance value should be within ± 2.0%

(2) Voltage Proof

The resistor shall be clamped in the trough of a 90° metal V Block. Apply the insulation voltage specified in the “Table I “ between the terminals connected together with the block for about 60 seconds.
The resistor shall be able to withstand without breakdown or flashover.

(3) Temperature Coefficient Test

Test of resistors above room temperature 100°C ± 2°C (Testing Temperature 115°C to 130°C) at the constant temperature silicon plate for over 5 minutes. Then measure the resistance value.
The Temperature Coefficient is calculated by the following equation and its value should be within the range of requested.

$$\text{Resistor Temperature Coefficient} = \frac{R - R_0}{R_0} \times \frac{1}{t - t_0} \times 10^6$$

R = Resistance value under the testing temperature
R_0 = Resistance value at the room temperature
t = The testing temperature
t_o = Room temperature

(4) Insulation Resistance

Apply "measuring voltage" between protective coating and termination for 1 min.,then measure. The measuring voltage shall be either 100V±15V d.c. for resistors with an insulation voltage lower than 500V or 500V±50V d.c. for resistors with an insulatin voltage equal to or greater than 500V.
The test resistance should be high than 10,000M ohm.

(5) Solderability

Immerse the specimen into the solder pot at 235 ± 5 °C for 3 ± 0.5 seconds.
At least 95% solder coverage on the termination.

(6) Solvent Resistance of Marking

The specimen into the appropriate solvent of IPA condition of ultrasonic machine for 5± 0.5 minutes.
The specimen is no deterioration of coatings and color code

(7) Robustness of Terminations

Direct Load – Resistors shall be held by one terminal and the load shall be gradually applied in the direction of the longitudinal axis of the resistor unit the applied load reached the requirement.
The load shall be held for 10 seconds. The load of weight shall be ≧ 40N

(8) Damp Heat Steady State

Place the specimen in a test chamber at 40 ± 2 °C and 90 ~ 95 % relative humidity. Apply the 0.1 times rated voltage to the specimen at the 1.5 hours on and 0.5 hour off cycle. The total length of test is 56 days.
The change of the resistance value shall be within ± 2.0 %

(9) Endurance at 70 °C

Placed in the constant temperature chamber of 70 ± 3 °C the resistor shall be connected to the lead wire at the point of 25mm. Length with each terminal, the resistors shall be arranged not much effected mutually by the temperature of the resistors and the excessive ventilation shall not be performed, for 90 minutes on and 30 minutes off under this condition the rated D.C. voltage is applied continuously for 1000+48/-0 hours then left at no-load for 1hour, measured at this time the resistance value。
The change of the resistance value shall be within ± 1.5% (FKM-75 type)
The change of the resistance value shall be within ± 1.5% (FKM150 type)
There shall be no remarkable change in the appearance and the color code shall be legible after the test..

(10) Resistance to Soldering Heat

The terminal lead shall be dipped into the solder pot at 260 ± 3 °C for 10 ± 1.0 seconds up to 2.5 ~ 3.5 mm.

The change of the resistance value shall be within ± 0.2%

9. PACKAGING

Type	Packaging	Pieces	Pack.-Code
FKM-75	Taped/Ammopack	1000	T
FKM150	Taped/Ammopack	1000	T

10. Plant Address

A. China Dongguan Plant
7-1, Gaoli Road, Gaoli Industrial Zone
Tangxia Zhen, Dongguan, Guangdong, China
(廣東省東莞市塘廈鎮高麗工業區高麗路 7-1 號)
Tel. 86-769-8772 0275
Fax. 86-769-8772 0275 #4333

B. China Mudu Plant
No.158, Fengjiang Road,
Mudu New District, Suzhou, Kiangsu, China
(江蘇省蘇州木瀆新區楓江路 158 號)
Tel. 86-512-6651 8889
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