

Version:
March 1, 2017

DIRECT

Electronics Tech.

(FKU, FRU) Thermal Cut-offs Resistors

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► Product Introduction**Ultimate Protection Thermal Cut-offs For High Power Applications.****Features :**

- Miniature size
- Radial leaded form
- Accurate fusing temperature
- Various temperature settings
- Current Rating: Up to 10Amp
- Products with Pb-free Terminations and RoHS compliant
- Economical by combining both function of a thermal fuse and a pulse resistor

Applications :

- Motors - fans, copiers, washing machines, air conditioners, compressors.
- Electronics - TVs, tape recorders, stereos, video recorders, fluorescent lamps, transformers, surge suppressors, computers, telecommunication equipment.
- Appliances - electric blankets, space heaters, stoves, irons, hair dryers, cookers, toaster ovens, clothes dryers, toasters, mixers, microwave ovens, crock pots.

Fast-acting protection device for high-power applications combines thermal fuse element and resistor on a single substrate.

Direct offers FKU (Wire wound Resistor + Thermal Cut-offs) and FRU (Metal Oxide Film Resistor + Thermal Cut-offs) two Series, both are a new concept in thermal fuse technology and are designed to protect against over-heating in electrical products.

The two active components, a thermal cutoff is a fusible alloy and a resistor is a voltage divider, both are surrounded by ceramic cement with special resin. Under normal operating temperatures the fusible alloy joins the two lead wires within the body of the cutoff and the power resistor acts as a normal function resistor. When the preset temperature of the cutoff is reached, the fusible alloy melts and with the aid of the special resin, complete cutoff is ensured.

By combining a thermal fuse element and resistor on a single substrate, Direct has created a fast-acting ultimate protection device for high power applications up to 10A/250V.

Resistance range of FKU Wire wound Type Thermal Cut-offs is 1Ω~100Ω and FRU Metal Oxide Film Type Thermal Cut-offs is 110Ω~10KΩ. Both standard precision tolerances are J (±5%).

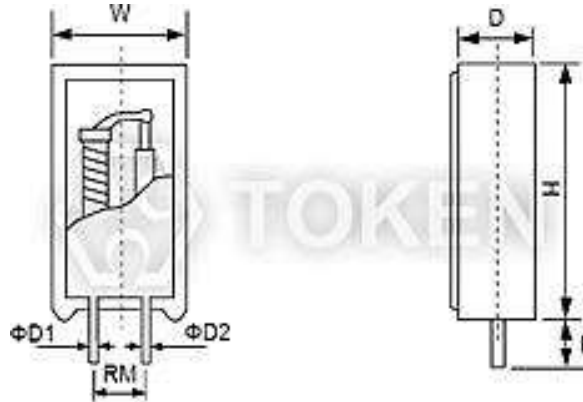
Our custom solutions are designed to address your need for technical and economic success in a timely manner. Contact us with your specific needs. Or link to Direct official website "[General Purpose Resistors](http://www.direct-token.com)" for more information.



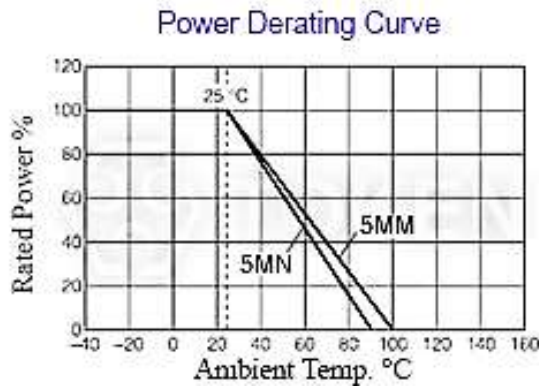
► **General Specifications**

General Specifications (FKU, FRU)

Type	Dimension (Unit: mm)						
	W ± 1	D ± 1	H ± 1.5	RM+2/-1	h	D1(R terminal)	D2(F terminal)
FKU/FRU-5M	13	9	25	5	4.5±1	0.8±0.1	2A:0.6 ±0.1 10A:1.0 ±0.1
FKU/FRU-7M	13	9	38	5			
FKU/FRU-10M	16	12	35	7.5			



Thermal Cut-offs (FKU/FRU) Dimensions



(FKU/FRU) Power Derating Curve

Electrical Performance

Electrical Performance (FKU, FRU)

Fusing Temperature Protector				Rated Power at 25°C (W)			Resistance Range (Ω)		Tolerance (%)	
MARK	Fusing Temperature(°C)	Standard Current(A)	Standard Voltage(V)	5M	7M	10M	FKU	FRU	FKU	FRU
A	109+1/-3	10	250	1.2	1.4	2.0	1~100	110~10K	J(±5) K(±10)	J(±5)
B	129±4			1.6	2.0	2.5				
C	152±4			1.6	2.0	2.5				
D	188+3/-1			2.0	2.4	3.5				
E	226+1/-3			2.0	2.4	3.5				
F	95+3/-0	2		0.8	1.2					
G	110±4			1.2	1.4					
H	126±4			1.4	1.6					
N	130±4			1.6	2.0					
M	145±4			2.1	2.4					

Order Codes

Order Codes (FKU, FRU)

FRU		-	5M	A	10R	K	P				
Part Number			Rated Power (W)	Thermal Cut-offs		Resistance Value (Ω)		Resistance Tolerance (%)		Package	
FRU	Metal Oxide type Thermal Cut-offs			5M	A	109+1/-3°C	1R	1Ω	J	±5%	P
			7M	B	129±4°C	10R	10Ω	K	±10%		
			10M	C	152±4°C	100R	100RΩ				
FKU	Wire wound type Thermal Cut-offs			D	188+3/-1°C	1K	1000Ω				
				E	226+1/-3°C						
				F	95+3/-0°C						
				G	110±4°C						
				H	126±4°C						
				N	130±4°C						
				M	145±4°C						



► General Information

General Purpose Resistors with Customized Service

Direct Electronics is expanding business to include a broad range of General Purpose Resistor products designed for high volume applications. This expanded range of commercial resistor presents a more comprehensive product offering for Customer Experience Management (CEM) and other high volume customers that require quality products at competitive pricing.

Backed by the same customer service, technical support and quality assurance that Direct has always provided, these new commercial products enable you the opportunity to source a wider range of resistors from a trusted supplier.

General Use

When an ambient temperature exceeds a rated ambient temperature, resistor shall be applied on the derating curve by derating the load power. General purpose resistor under overloads is not combustion resistant and is likely to emit, flame, gas, smoke, red heat, etc. Flame retardant resistor generally emits smoke and red heat in a certain power and over but do not emit fire or flame.

When resistors are shielded or coated with resin etc., stress from the storage heat and the resins are applied. So, performance and reliability should be checked well before use.

When a voltage higher than rated is applied in a short time (single pulse, repeated pulses, surge, etc.), it does not necessarily ensure safety that an effective wattage is not higher than a rated wattage. Then consult with us with your specified pulse wave shape. Resistors shall be used in a condition causing no dew condensation.

Keep temperature from rising by choosing resistor with a higher rated capacity; do not use a component having the exact load value required. For considerations of safety in extended period applications, the rating should be more than four times higher than the actual wattage involved, but never use resistors at less than 25% of its rated power.

In applications where resistors are subject to intermittent current surges and spikes, be sure in advance that the components selected are capable of withstanding brief durations of increased load.

Do not exceed the recommended rated load. Resistor must use within the rated voltage range to prevent the shortening of service life and/or failure of the wound resistance elements.

Minimum load: Resistor must be utilized at 1/10 or more of the rated voltage to prevent poor conductance due to oxidation build-up. For basic particulars for cautions, refer to EIAJ Technical Report RCR-2121 "Guidance for care note on fixed-resistors".

