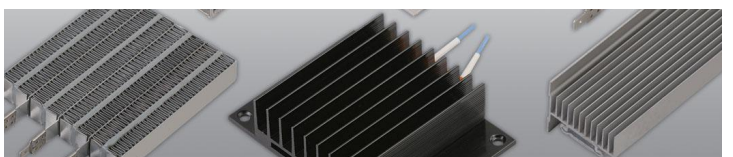
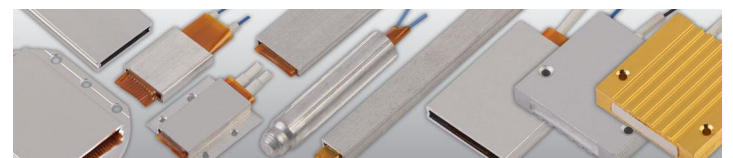




# PTC Heater Elements





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# MZF SERIES

## PTC HEATING ELEMENTS

### RoHS

A PTC thermistor is a thermally sensitive semiconductor resistor.

Its resistance value rises sharply with increasing temperature after a defined temperature (Curie temperature) has been exceeded.

This feature makes them ideal for use in countless applications of modern electrical and electronic engineering, for example as resettable fuses against current overload or as short-circuit protection in motors.

You find special motor starter PTC thermistors in the compressors of refrigerators for instance.

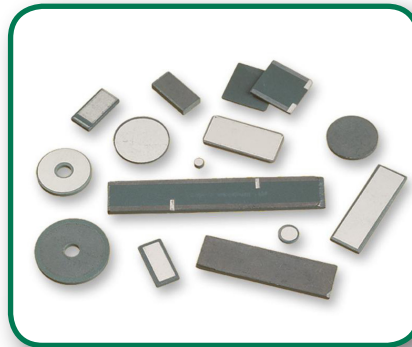
Thermal protection of motors and transformers is another example of the versatility of PTC thermistors.

The applications extend to measurement and control engineering, to household and automotive electronics, plus data systems and telecommunications of course.

PTC thermistors are also suitable as self-regulating heating elements, in auxiliary heating, nozzle heating and carburetor preheating in automobiles, as well as in many domestic appliances such as door locks for washing machines, or glue guns and hair curlers.

Due to the PTC thermistor is the more energy saving and safe component, it is widely used in many household electrical appliances, electric power facilities and electronic products.

In general, application using PTC thermistor can be categorized according to three unique characteristics; resistance-temperature (R-T), current-time (I/T) and current-voltage (I/V) characteristic.



### FEATURES AND APPLICATIONS

#### **PTC ceramic thermistor is functional in stabilizing, adjusting and controlling temperatures**

Loaded by alternating or direct current, the temperature of PTC soars up with low resistance value. However, when it exceeds curie point, the resistance value arises suddenly and the current would drop to a certain value. Thus temperature is stabilized. For PTC thermistor, additional temperature-control devices are not necessary any more. Besides, different curie temperatures are realizable by adjusting the formula of PTC.

#### **Inflammable & Reliable**

Compared with fuse, PTC components would not turn red nor on fire when heated. When the ambient temperature overpasses the limit, its power would drop to equilibrium value so as to avoid burning.





# MZF SERIES

## PTC HEATING ELEMENTS

### RoHS

#### Long life length

As oxide ceramic in nature, PTC neither oxidize upon high temperature as nichrome wire, nor as fragile as infrared lamps. It is kind of components with long life length

#### Wide Range of Voltage

PTC components could work normally under either low voltage (3-36V) or high voltage (110-380V).

- The low voltage PTC component could be applied in all type of low pressure heaters, low temperature compensation, vehicle heaters ect..
- The high voltage PTC is suitable for all electric devices such as shoes drying machine, glue gun, electric cooker, mosquito dispeller, venous transfusion heater, roller, vending machine, air curtain, hand warmer, etc.

### SPECIFICATIONS

MODEL N°	Length* Width (mm)	Note	MODEL N°	Length* Width (mm)	Note
1	15*10		16	31*11	#
2	16*11		17	32*10	#
3	20*15		18	32*12	#
4	24*10	#	19	35*6	#
5	24*15	#	20	35*10	#
6	24*20	#	21	35*13	#
7	25*8	#	22	35*15	#
8	30*5	#	23	36*6	#
9	30*6		24	36*8	#
10	30*8	#	25	45*10	
11	30*10	#			
12	30*12	#			
13	30*13	#			
14	30*15	#			
15	31*7	#			

#### Notice:

1. "#".....Metallization: Aluminum (Al) or Silver (Ag)
2. Curie temperature range: TC120 °C ~ 300 °C , Surface temperature can be selected between: 130°C ~ 320°C
3. Rate voltage: 12V, 24V, 48V, 110V, 120V, 220V, 240V, 380V
4. The thickness of ptc elements can adjusted into 1.5mm~2.4mm according to customers' requirements.



# MZFR SERIES

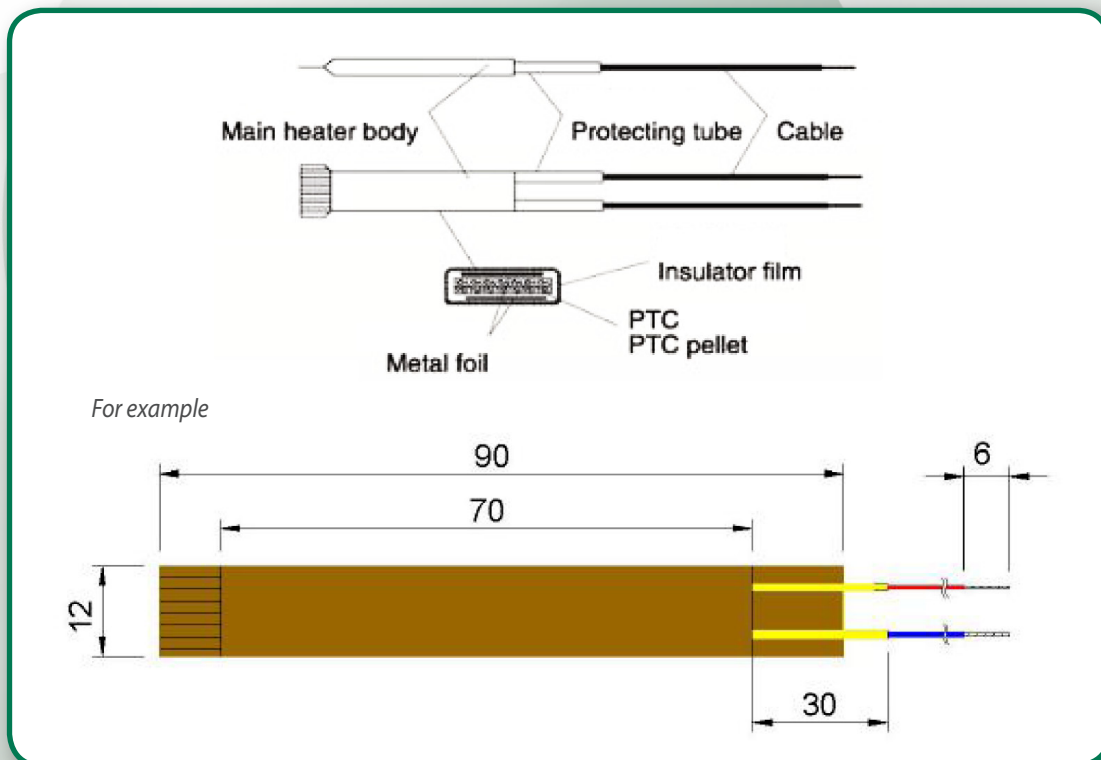
## PTC HEATER WITH INSULATING FILM

RoHS



PTC heater with insulating film is new-type PTC heaters, is consisted of one or more PTC element(s) combined with two aluminum / stainless steel plates as electrodes and packed in insulating film. It is specially designed for applications in the field of rapid heating, such as electrical hair-curlers due to its high surface temperature (up to 295°C) and the high with-standing voltage (higher than 450V) comparing with other standard product in the market. 110V and 220V operating voltage is optional.

### CONFIGURATION



# MZFR SERIES

## PTC HEATER WITH INSULATING FILM

### RoHS

#### FEATURES AND APPLICATIONS

PTC heater which have the good characteristics, such as: temperature raising rapidly, safety and reliability and no burning. It is the smart and the electricity saved heat. It is mainly applied for hair curler (crimper), wax melting heater, humidifier, water boiler, liquid warmer, coffee warmer, polymer press-coating heater, hot glue gun, chocolate extruder.

##### Applications

- Temperature rising rapidly
- Safety and reliability
- Self-regulating heating
  - Electric heaters, food waste dryers
  - Hot-melt adhesive gun
  - Hair crimper and straightener, temperature invariable cup, dryer
  - Vaporizer, Heater for Mosquito Dispeller etc.

##### Advantages

- No excess temperature protection required
- Available for all voltage ranges
- Prepared for clamping with plane-parallel contact surface
- No glowing parts
- Various geometries possible
- Wide choice of surf. temperature (40 to 320°C)
- Long Service life



# MZFR SERIES

## PTC HEATER WITH INSULATING FILM

### RoHS

#### SPECIFICATIONS

MODEL N°	Length (mm)	Width (mm)	Thickness (mm)	MODEL N°	Length (mm)	Width (mm)	Thickness (mm)
1	15	10	2.8 ~ 3.6	24	48	15	2.8 ~ 3.6
2	16	11	2.8 ~ 3.6	25	48	7	2.8 ~ 3.6
3	18	5	2.8 ~ 3.6	26	48	30	2.8 ~ 3.6
4	18	15	2.8 ~ 3.6	27	48	45	2.8 ~ 3.6
5	24	7	2.8 ~ 3.6	28	50	27	2.8 ~ 3.6
6	24	10	2.8 ~ 3.6	29	60	8	2.8 ~ 3.6
7	24	15	2.8 ~ 3.6	30	60	10	2.8 ~ 3.6
8	30	10	2.8 ~ 3.6	31	60	12	2.8 ~ 3.6
9	30	18	2.8 ~ 3.6	32	60	13	2.8 ~ 3.6
10	30	24	2.8 ~ 3.6	33	60	15	2.8 ~ 3.6
11	31	11	2.8 ~ 3.6	34	60	18	2.8 ~ 3.6
12	32	10	2.8 ~ 3.6	35	64	8	2.8 ~ 3.6
13	35	6	2.8 ~ 3.6	36	64	10	2.8 ~ 3.6
14	35	8	2.8 ~ 3.6	37	64	12	2.8 ~ 3.6
15	35	10	2.8 ~ 3.6	38	64	13	2.8 ~ 3.6
16	35	13	2.8 ~ 3.6	39	64	15	2.8 ~ 3.6
17	35	15	2.8 ~ 3.6	40	70	6	2.8 ~ 3.6
18	38	35	2.8 ~ 3.6	41	70	10	2.8 ~ 3.6
19	40	14.5	2.8 ~ 3.6	42	70	12	2.8 ~ 3.6
20	42	15	2.8 ~ 3.6	43	72	15	2.8 ~ 3.6
21	46	13	2.8 ~ 3.6	44	95	15	2.8 ~ 3.6
22	48	5.5	2.8 ~ 3.6				
23	48	10	2.8 ~ 3.6				

#### Notice:

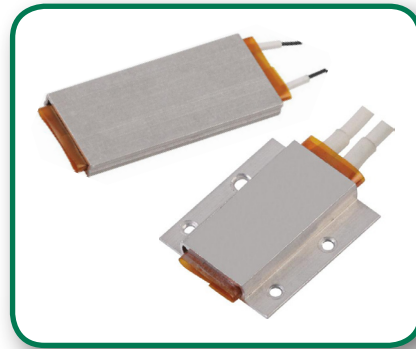
1. Operating voltage: 12V / 24V / 110V / 240V  
Insulating voltage: 3750V/1sec  
100% withstanding voltage check
2. Surface temperature range: 110°C ~ 295°C, the temperature tolerance  $< \pm 10^{\circ}\text{C}$
3. The lead wire, fiber glass sleeve, insulating film can be customized according to customers' requirements.



# MZRC SERIES

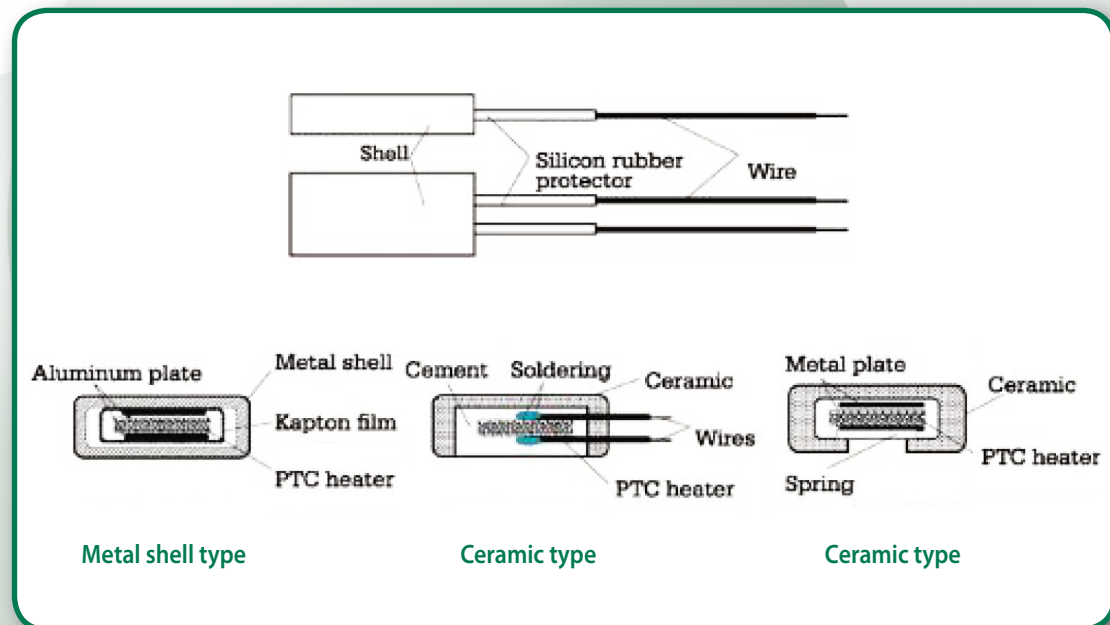
## PTC HEATER WITH SHELL

### RoHS



PTC heater with shell consists of one or more PTC stone(s) combined with two aluminum or stainless steel plates as electrodes and packed in insulating film and then embeds in a specially designed aluminum shell. It is designed for the self-regulated heating in a small space such as inner space of electrical equipment. No temp, thermostat is required. This type of PTC heaters is characterized as high efficiency, high reliability, safety and conveniently operation.

### CONFIGURATION





# MZRC SERIES

## PTC HEATER WITH SHELL

### RoHS

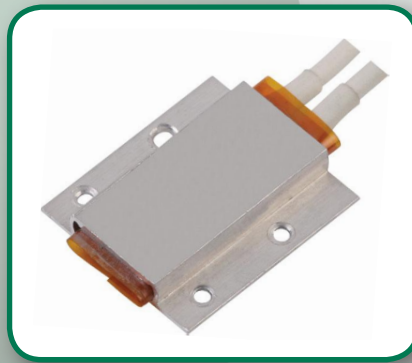
#### FEATURES AND APPLICATIONS

PTC heater with shell has a simple structure and is very easy to fit but with many advantages such as constant temperature, safety, long last time. PTC heater is very appropriate under 260 °C. Main appliances: hair curler (crimper), wax melting heater, humidifier, water boiler, coffee warmer, hot glue gun, chocolate extruder.

For detailed uses of PTC, air heater, hair curler, drink warmer, water heater, etc.

#### USING TIPS

1. After switching on, the heating power is large, and then decrease, finally it stays in a steady state. The stable power is relative with the using condition. For the same PTC heater, the power may differ a few times because the different using condition. The larger stable power depends on the faster heat dissipation, and the higher power depends on the higher PTC surface temperature.
2. The change of operating voltage influences the surface temperature rather weekly. When the operating voltage increases 2 times or decreases in 1/2, the PTC surface temperature goes up and down 8°C nearly. The surface temperature of PTC can be controlled by itself, control circuit and protecting circuit may be omitted in most appliances.
3. Our PTC products are reliable, long service life, but if they are assembled improperly, the end products may be loose and unstable in power and temperature.
4. Several PTC heaters should be used in parallel, not in series.



# MZRC SERIES

## PTC HEATER WITH SHELL

### RoHS

#### SPECIFICATIONS

MODEL N°	Length (mm)	Width (mm)	Thickness (mm)	MODEL N°	Length (mm)	Width (mm)	Thickness (mm)
1	25	20	5.3	16	40	35	6.2
2	30	20	5.3	17	50	35	6.2
3	40	20	5.3	18	60	35	6.2
4	50	20	5.3	19	70	35	6.2
5	60	20	5.3	20	80	35	6.2
6	80	20	5.3	21	50	43	7.2
7	30	25	7.5	22	60	43	7.2
8	40	25	7.5	23	70	43	7.2
9	50	25	7.5	24	80	43	7.2
10	60	25	7.5	25	70	63	7.2
11	80	25	7.5	26	72	63	7.2
12	40	30	6.2	27	80	63	7.2
13	50	30	6.2	28	90	63	7.2
14	60	30	6.2	29	100	63	7.2
15	80	30	6.2				

#### Notice:

1. Operating voltage: 12V~240V; Insulating voltage: 3750V/1sec; 100% withstanding voltage check
2. Surface temperature range: 110°C ~ 290°C, the temperature tolerance:  $\leq \pm 10^\circ\text{C}$
3. The lead wire, fiber glass sleeve, insulating film can be customized according to customers' requirements.
4. Customized shapes are accepted



# MZRB SERIES

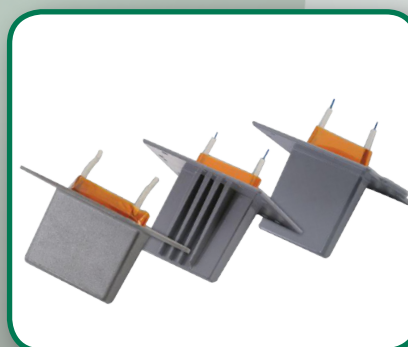
## PTC WATER HEATER

### RoHS



PTC water heater is a kind of heater which used for heating liquid with a specified metal shell or pipe. There are two types: T-type PTC water heater and pipe-type PTC water heater. This kind of products is mainly applied for foot massager, fish tank, air conditioner evaporator and so on.

## T-TYPE PTC WATER HEATER



T-type PTC water heater for foot massager can heat the water in a stable temperature when immerses into a fluid container. As a heat source, this kind of PTC water heater has such advantages as warming up rapidly, constant temperature, power controlling. It enjoys a low cost and is more endurable and will not be damaged when used without water.



# MZRB SERIES

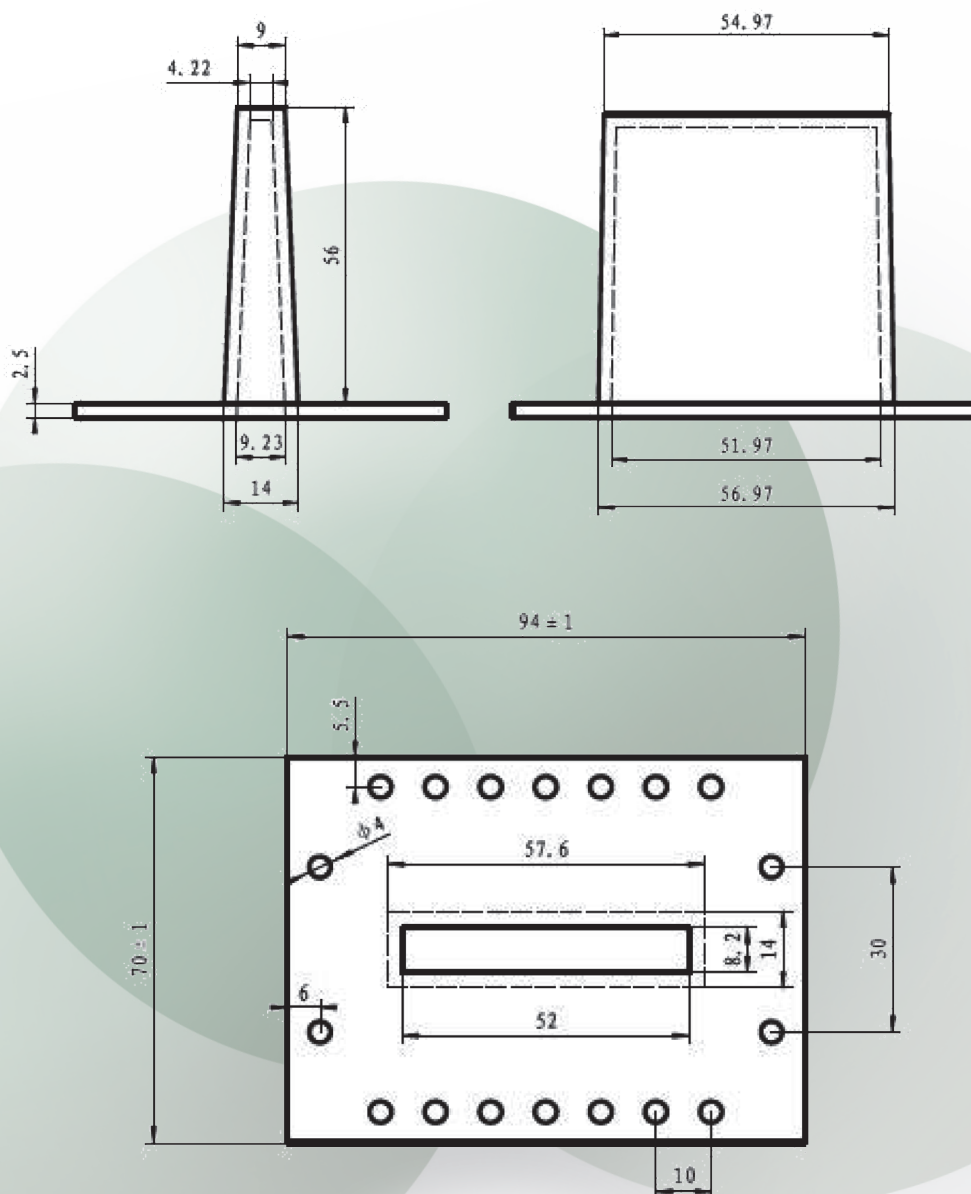
## PTC WATER HEATER

### RoHS

#### TECHNICAL PARAMETERS

- Operating voltage: 6V-240V
- Insulating voltage: >3750V/s
- Safe and reliable after Insulation processing
- Surface temperature: 110°C ~ 290°C
- Rated power: 20w-800w
- Customized orders as per client's specifications available

#### CONFIGURATION





# MZRB SERIES

PTC WATER HEATER

RoHS

## PIPE-TYPE PTC WATER HEATER

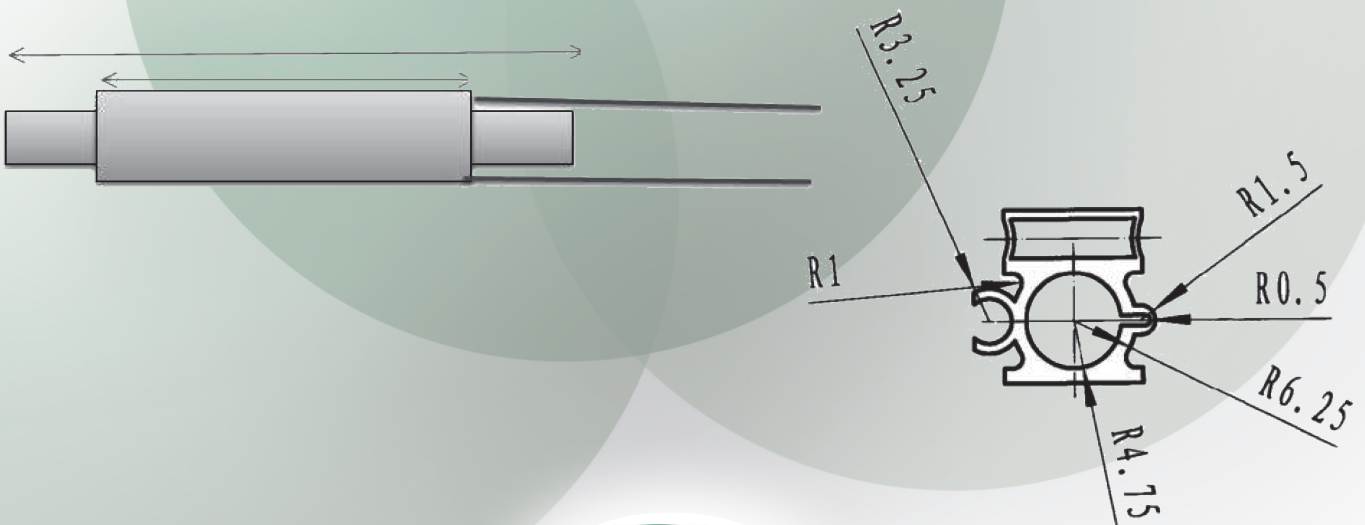


Pipe-type PTC water heater is another kind of products for foot massagers, mainly use in the high-level of foot massagers for cycle heating. Unlike another traditional heating material such as Quartz glass tube, it is easy to fit and not easy to damage which has a long service life. The power ranges from 400w to 1500w.

### TECHNICAL PARAMETERS

- Operating voltage: 120V-240V
- Insulating voltage: >3750V/s
- Safe and reliable after Insulation processing
- Surface temperature: 110°C ~ 290°C
- Rated power: 400w-1500w
- Customized orders as per client's specifications available

### CONFIGURATION





# MZRB SERIES

## PTC WATER HEATER

### RoHS

#### ADVANTAGES

This kind of PTC water heater is used ceramic semiconductor - PTC heating elements as the main heating unit. There are many advantages as follows:

- a. PTC heating elements are not contact with water, which truly realized the separation between water and electricity.
- b. When power on it, the heater only fevers, no light, and not in danger of electric shock or open fire.
- c. Electrical insulation strength: 2000V/  $\leq 5\text{mA}/5\text{s}$ . No damage abnormal phenomenon after test.
- d. Long -time usage and stable heating capability.
- e. Good ability to resisting scale incrustation.
- f. Easily installation due to the small dimension

#### APPLIANCE

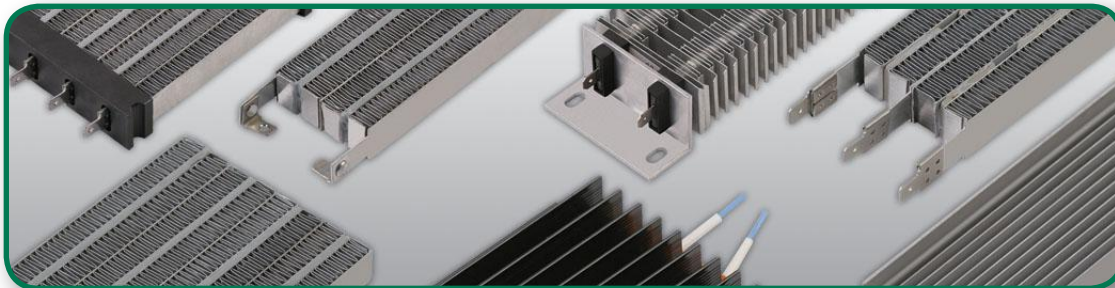
- a. Electric cainuanlu heating hot water circulation
- b. Instant electric water heater
- c. High temperature cleaning machine
- d. Commercial plant
- f. Solar assisted heat



# MZRB & MZRD SERIES

## PTC AIR HEATER

### RoHS

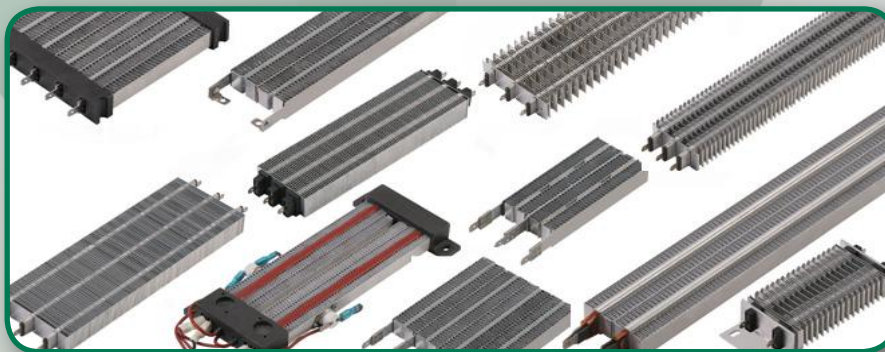


PTC air heater consists of one or more PTC heating element(s) combined in parallel with two aluminum radiator with silicon paste. It is designed for the self-regulated heating such as in the field of air conditioner, heater fan, and son on. This type of the PTC heaters is characterized as high efficiency, high reliability, safety and convenience operation.

There are two kind of PTC air heaters—Insulated PTC heater series (MZRD) and Non-insulated PTC heater series (MZRB series) for different use.

### USING TIPS

1. Since the power of PTC heater is greatly influenced by ambient, the ideal test measure is to fix it in a complete machine under standard ambient conditions. In practice, we are used to do the test after adjusting relative parameters of simulate air passage by confirmed sample in a complete machine, with ambient temperature at 20°C ~ 25°C.
2. Considering of the thermal expansion, there should be some gap (above 5mm) around the PTC heaters.
3. For heaters of surface-electrified type, it should be aware that safety spacing is necessary to keep away from body, metals and frost
4. When heaters connected to three-phase supply, the neutral point should be connected with null line so that terminal voltage would not overtop due to imbalance.





# MZRB & MZRD SERIES

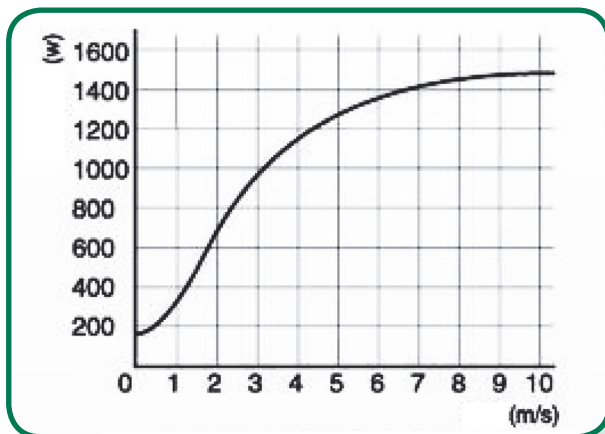
## PTC AIR HEATER

### RoHS

#### POWER-WIND SPEED AND POWER-AMBIENT TEMPERATURE

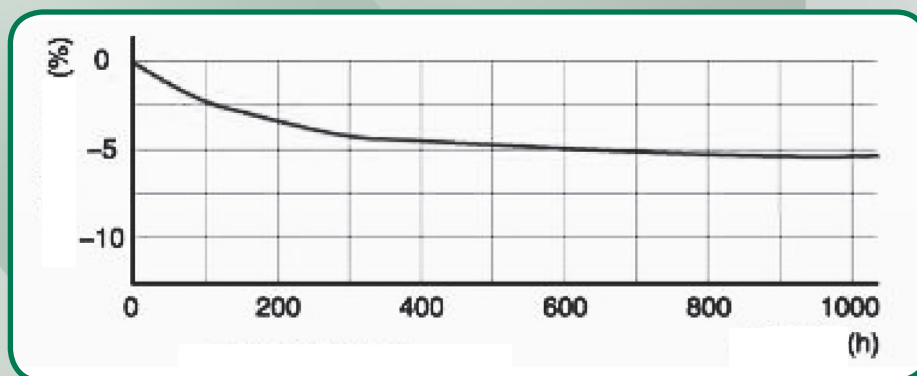
At present, our MZRD and MZRB series have been extensively applied in home air conditioner, commercial air condition as well as household heating appliance.

The relations between power and wind speed, between power and ambient temperature as follows:



Standard test wind rate 4.5m/s, ambient temperature 25°C

#### DURABILITY OF PTC HEATERS (DECAY RATE)



Decay rate is used for evaluating the durance of PTC heaters. According to Industry Standard, the decay rate should  $\leq 10\%$  after working for 1000 hours.

Here above is the decay rate chart of our standard Insulation PTC heaters.



# MZRB & MZRD SERIES

PTC AIR HEATER

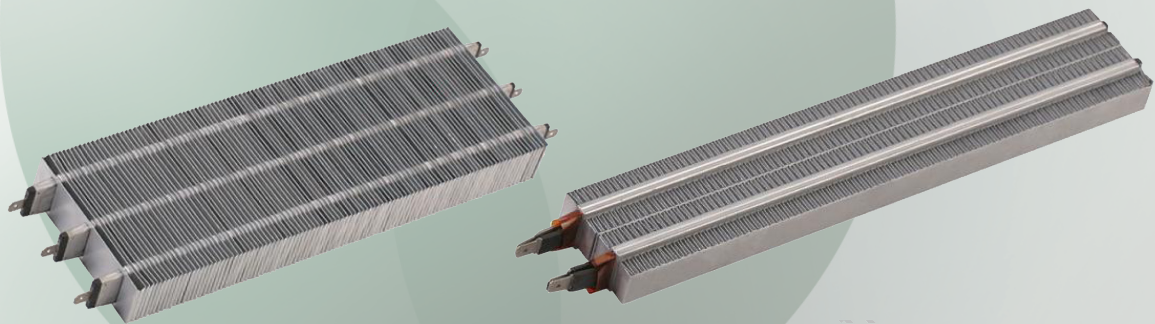
RoHS

## INSULATED PTC HEATER SERIES (MZRD SERIES)



Insulated PTC heater is a kind of large-power with wind blowing. PTC element is fixed in aluminum tube and keeps insulated with it. Outside the aluminum tube, it fixed fins or heat sinks outside aluminum tube. The large-power heater has a series of virtues such as safety, reliability, stable power, small sound, long service life, excellent machinery, and intension and so on. Because of good safe performance, now no-surface-electrified PTC heater is mainly used in large-power house heater such as cold/warm air-condition, heater, disinfecting cabinet, dryer and so on.

### CONFIGURATION



### TECHNICAL PARAMETERS

- Operating voltage: 100V-380V
- Safe and reliable after Insulation processing
- Surface temperature: 100°C ~ 290°C
- Rated power: 20w-5000w
- Customized orders as per client's specifications available

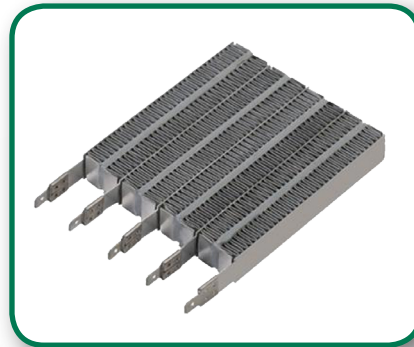


# MZRB & MZRD SERIES

PTC AIR HEATER

RoHS

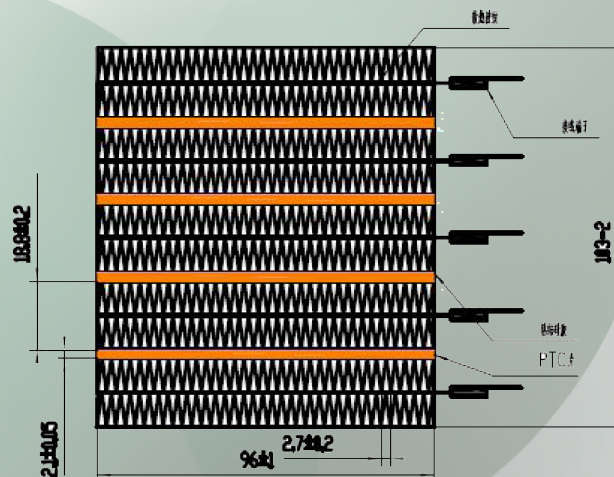
## NON-INSULATED PTC HEATER SERIES (MZRD SERIES)



Non-insulated PTC heater series is a kind of heater that can automatically control temperature and save energy. It is made up of PTC and waves aluminum.

The heater with a lot of virtues such as giving out large heat, stable power, using expediently, long service life, high reliability, without bright flame. It is now widely used in house heating instrument such as air-adjuster, dryer, suit-dryer, moveable heater and automobile etc.

### CONFIGURATION



### TECHNICAL PARAMETERS

- Operating voltage: 100V-380V
- Safe and reliable after Insulation processing
- Surface temperature: 110°C ~290°C
- Rated power: 20w-5000w
- Customized orders as per client's specifications available



