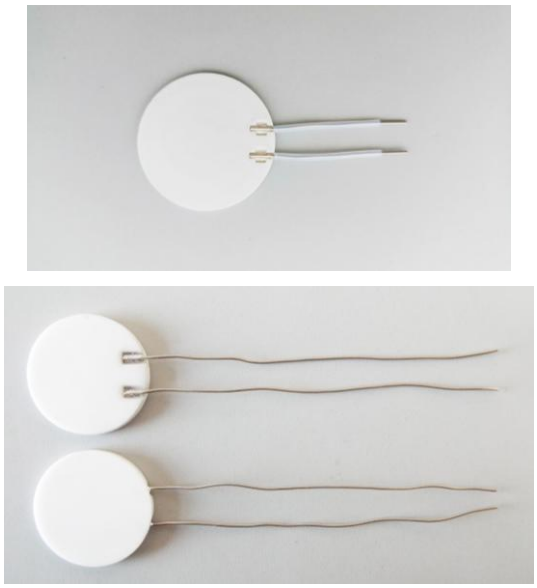


Figure 1. Physical Photo of Metal Ceramics Heater

FEATURES

- No noise
- High efficiency
- Saves energy
- Long service life
- Corrosion resistance
- High temperature resistance
- Cold and heat shock resistance

APPLICATIONS

Widely used in daily life, industrial and agricultural technology, communication, environmental protection, industrial drying equipment, water, oil, acid and alkali liquid heaters such as: hair dryer, electronic cigarette, aromatherapy stove, air conditioner, instant water heater, automobile exhaust oxidation sensor, ultrasonic heating element and other rapid heating devices, multi-function microwave oven, kettle, coffee maker, infrared physiotherapy, intravenous fluid heater, etc.

DESCRIPTION

MCH is acronym for Metal Ceramic Heater, which is made up of high melting point metal heating resistance slurry such as tungsten or molybdenum-manganese printed onto 96% alumina casting ceramic green body according to the design requirements of the heating circuit. After being laminated by heat pressing, ceramic heaters are then formed by co-firing ceramic substrate and metal circuit in hydrogen reduction atmosphere protection furnace at 1650° C.

It can also be called MCH heater, MCH ceramic heating element, alumina metallic ceramic heating element, HTCC ceramic heating element, ceramic heater, etc.

MCH ceramic heater features no noise during operation and radiates infrared light that is beneficial to the human body. It is mainly used to replace the most widely used alloy wire and PTC heating elements and components. Compared with the former two, this heater features corrosion resistance, high temperature resistance, cold and heat shock resistance, long life, high efficiency, energy saving, uniform heating, high thermal conductivity, free of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl, polybrominated diphenyl ether, etc. It is in compliance with RoHS and other environmental requirements. Specific performances can be found as follows:

Energy saving and high thermal efficiency. The unit heat consumption is 20~30% less than PTC. Rapid heating without open flame, it takes only 10 seconds to heat up to rated 100°C~230°C; and 30 seconds to 500°C~700°C. It features uniform heating and PTC characteristics TCR: 3300ppm/°C, power density ≥ 50W/cm^2.

Safe surface without charge and good insulation. It can pass 4500V/1s withstand voltage test without breakdown. Leakage current <0.5mA, water insulation resistance DC in 750V voltage >200MΩ.

No impact peak current; no power attenuation; less impact on the circuit board. Improve the service life of the circuit board and the whole machine. The ceramic heater circuit is isolated from the air. It is resistant to acid, alkali and other corrosive substances, thus featuring a long service life.

Resistance-temperature change is linear. Temperature can be easily controlled by resistance or voltage, and no temperature control is required below 500 °C.

Raw materials and production processes:

Main raw materials: 96% alumina ceramic green body, tungsten, molybdenum slurry, and nickel slurry.

Production process:

Printing circuit on the surface of ceramic green body——heat pressing——high temperature sintering in hydrogen furnace at 1650°C for 21 hours——smoothing at 800°C for 8 hours——electrode nickel plating——withstand voltage test and insulation resistance test in water——dry burn aging and power performance test (full inspection)——water cycle test——assembling flange——welding electronic wire (including temperature fuses and terminals)——withstand voltage and power performance test for finished products——visual inspection

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SPECIFICATIONS

1. Substrate material: white multi-layer 96% alumina ceramic

2. Density: >3.75g/cm^3

3. Warpage: <0.1 mm

4. Bending strength: >270MPa

5. Available sizes: Circular shape: Diameter Φ30mm or Φ19mm. Other diameters and thickness can be customized;
Square shape: 70mm(L) ×30mm(W)/83mm(L)×50mm(W)/70mm(L)×15mm(W);
We can design and make special MCH's for your applications if our standard ones don't fit your need. They can have different heights, from 0.8mm to 3.0mm, different shapes, and different powers.

6. Working voltage: 3.7V, 4.5V, 5V, etc.

7. Normal temperature cold resistance: 0.1~2000Ω@ 25±1°C, designed and produced according to voltage, chip size power and customer requirements.

8. Temperature coefficient of resistance: 3300±200 ppm/°C

9. Power-on performance rated voltage: electricity in the air, dry burning ≥ 90s, no cracking

10. Thermal conductivity: ≥25W (m.k) @20°C

11. Withstand voltage: 4500V/10s @25±1°C and leakage current <0.5mA

12. Insulation resistance: >200MΩ@750V DC input voltage

13. Cyclic experiment: a 270V input voltage is applied for 10s and suspended for 10s; cycled such for 10 times. 60s' powering on without damage

14. High temperature endurance test: The component under the highest temperature condition (500~700°C), continuous powering on > 24h without damage

15. Lead/terminal pull: horizontal pull ≥20kg, vertical pull ≥1kg

Table 1. Specifications & Prices

Part #	Dimension Φ×H (mm)	Internal Resistance (Ω)	Max. Power Allowed (W)	Unit Price ($)			
				1 ~ 4 PCs	5 ~ 24 PCs	25 ~ 99 PCs	≥100 PCs
AMCHC1R18W	30×1.2	5.0~5.3	18	$13.99	$13.36	$12.73	$12.10
AMCHC5R03W	19×1.2	4.9~5.1	3	$13.99	$13.36	$12.73	$12.10
AMCHC4R04W	19×1.2	3.8~4.1	4	$13.99	$13.36	$12.73	$12.10
AMCHC2R10W	19×2.0	2.05~2.2	10	$13.99	$13.36	$12.73	$12.10

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