

# THICK FILM CONDUCTION HEATERS

## In-Stock Thick Film Heaters Ideal for Clamp-On Applications

Watlow's 14 gauge, 430 stainless steel thick film conduction heaters are ideal for use in many applications where fast response and uniformity are essential. These high performance heaters use thick film technology to provide maximum temperature response in a compact package.

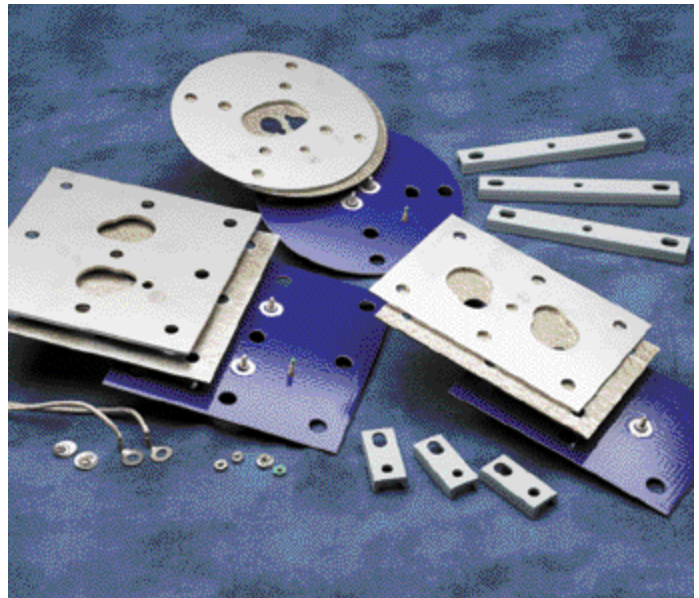
A clamp-on thick film heater provides the best possible combination of heat transfer, thermal efficiency and temperature uniformity. For example, clamping the thick film conduction heater on to a 316 stainless steel pan or aluminum griddle in foodservice applications results in uniform cooking or heating.

This technology can be applied in areas where space is at a premium or where conventional heaters cannot be used because of limited voltage and wattage combinations.

Thick film conduction heaters provide a low-profile heater in a variety of shapes. These shapes include two-dimensional circular, rectangular and square forms. Due to the direct surface contact, thick film heaters ensure greater heat transfer through thermally stable substrates and precise heater patterns.

### Applications

- Foodservice
- Industrial machines
- Life sciences
- Plastics
- Semiconductor



### Features and Benefits

**550°C (1025°F) maximum substrate temperature (dependent upon application demands and substrate material)**

- Allows for higher process temperatures than most conduction heater technologies

#### UR® File #E52951 CSA

- Consult factory for current status of agency recognitions
- Also conforms with applicable CE directives

#### High watt densities for clamp-on applications

- Allow for precise, repeatable wattage distribution and uniform temperature distribution

#### Threaded stud termination

- Produces strong, trouble-free connections, see Termination Assembly drawing on back page



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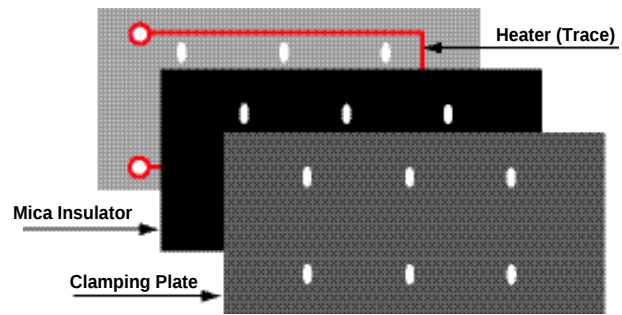
## Construction

Thick film conduction heaters, designed for clamp-on applications, are supplied as a multi-part assembly: heater, mica insulator, clamping plate and mounting hardware.

The mica insulator acts as a thermal barrier to more effectively force the heat into the part being heated, as well as an additional protective layer for the heater.

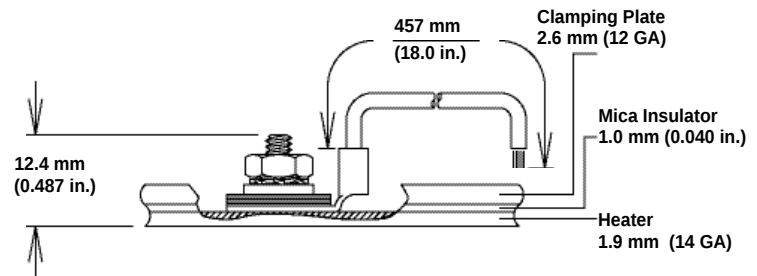
The clamping plate distributes the pressure loading evenly across the entire surface of the heater to promote intimate contact between the thick film heater and the part being heated.

The mounting hardware has been designed to provide the most effective means to clamp the heater to the part being heated, based on the size of the heater.



## Termination Assembly

To install, mount the heater to the surface being heated and assemble mounting hardware. Standard measurements of assembly hardware is illustrated in the Termination Assembly drawing to the right. Please refer to the Installation & Maintenance Manual (316-42-32-1) that is supplied with the heater for proper mounting instruction.



## Stock Product List

| Heater Size<br>mm (inch) | Voltage | Wattage | W/cm <sup>2</sup> | W/in <sup>2</sup> | Approximate<br>Assembly Weight<br>kg (lbs) | Watlow<br>Code Number |
|--------------------------|---------|---------|-------------------|-------------------|--------------------------------------------|-----------------------|
| <b>Round</b>             |         |         |                   |                   |                                            |                       |
| 114 dia. (4.5)           | 120     | 325     | 3.2               | (20.4)            | 0.50 (1.10)                                | TFA004JA03EL18B       |
| 152 dia. (6)             | 120     | 850     | 4.7               | (30.1)            | 1.24 (2.74)                                | TFA006AA08KL18C       |
| 152 dia. (6)             | 240     | 1125    | 6.1               | (39.8)            | 1.24 (2.74)                                | TFA006AE11EL18C       |
| 203 dia. (8)             | 240     | 2000    | 6.1               | (39.8)            | 2.23 (4.91)                                | TFA008AE200L18C       |
| 254 dia. (10)            | 240     | 3000    | 6.04              | (39.0)            | 3.28 (7.24)                                | TFA010AE300L18C       |
| <b>Square</b>            |         |         |                   |                   |                                            |                       |
| 57 X 57 (2.25 X 2.25)    | 120     | 100     | 3.9               | (25.0)            | 0.12 (0.27)                                | TFA2E2EA010L18B       |
| 76 X 76 (3 X 3)          | 120     | 225     | 4.03              | (26.0)            | 0.23 (0.5)                                 | TFA3A3AA02EL18B       |
| 102 X 102 (4 X 4)        | 120     | 400     | 3.9               | (25.0)            | 0.73 (1.61)                                | TFA4A4AA040L18C       |
| 152 X 152 (6 X 6)        | 120     | 1250    | 5.4               | (34.7)            | 1.70 (3.74)                                | TFA6A6AA12KL18C       |
| 152 X 152 (6 X 6)        | 240     | 1450    | 6.6               | (40.3)            | 1.70 (3.74)                                | TFA6A6AE14KL18C       |
| 203 X 203 (8 X 8)        | 240     | 2500    | 6.1               | (39.1)            | 2.88 (6.36)                                | TFA8A8AE250L18C       |
| <b>Rectangle</b>         |         |         |                   |                   |                                            |                       |
| 51 X 102 (2 X 4)         | 120     | 240     | 4.7               | (30.0)            | 0.21 (0.47)                                | TFA2A4AA02HL18B       |
| 102 X 152 (4 X 6)        | 120     | 725     | 4.7               | (30.0)            | 1.12 (2.46)                                | TFA4A6AA07EL18C       |
| 152 X 203 (6 X 8)        | 240     | 1920    | 6.2               | (40.0)            | 2.27 (5.01)                                | TFA6A8AE19DL18C       |

**Note:** Size and wattage may vary with future design enhancements. Please consult factory for current wattage information and pricing.

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