

Thick Film Conduction Heaters

Thick Film Heater is Ideal for Clamp-On Applications

The Watlow® 430 stainless steel thick film conduction heater is ideal for many applications where fast response and uniformity are essential. A clamp-on, thick film heater provides the best possible combination of heat transfer, thermal efficiency, temperature response and uniformity in a low profile package.

This high-performance heater can be used in areas where space is limited or where conventional heaters cannot be used due to limited voltage and wattage combinations.

Thick film conduction heaters provide a low-profile in a variety of shapes including two-dimensional circular and rectangular forms. Direct contact of thick film heaters to surfaces ensures efficient heat transfer through thermally stable substrates and precise resistance trace patterns.

Performance Capabilities

- Maximum substrate temperature up to 1022°F (550°C). Contact your Watlow representative for application temperatures higher than 842°F (450°C)
- Watt densities up to 75 W/in² (11.6 W/cm²)
- Voltages up to 240V

Features and Benefits

Watt densities up to 75 W/in² (11.6 W/cm²) for clamp-on applications

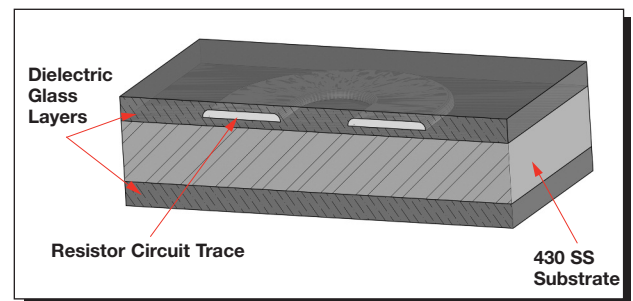
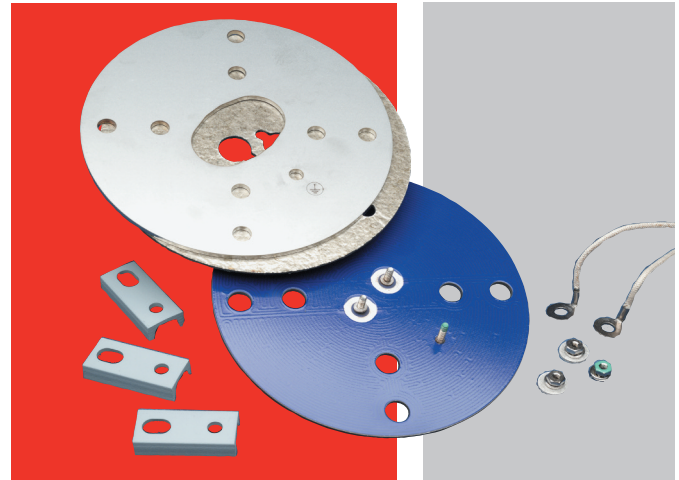
- Allow precise, repeatable wattage distribution and uniform temperature profile

Threaded stud termination

- Enables strong, trouble-free connections. See *Termination Assembly* drawing.

Agency approvals

- UL® component recognition available upon request



Typical Applications

- Food warming cabinets
- Load dump resistors
- Seal bars
- Deposition chamber lids

Specifications

Min. Length: 2.25 in. (57 mm)

Max. Length: 24 in. (610 mm)

Max. Voltage: 240VAC

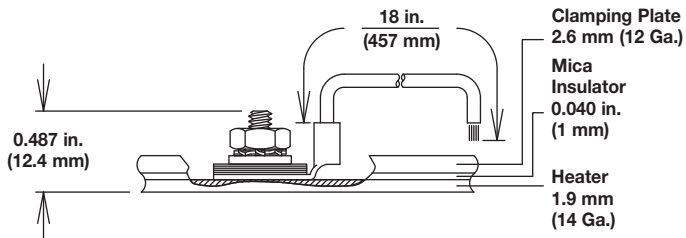
Max. Amperage: 25A

Terminations: Stud terminals

Substrate: 14 ga. typical

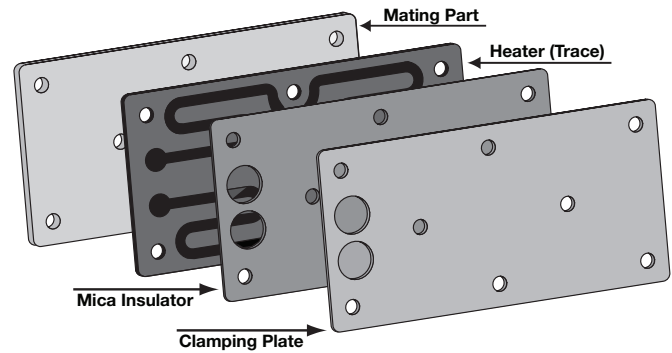
Features: Holes/slots up to 15% of area

Termination Assembly



To install, mount the heater to the surface being heated and assemble mounting hardware. Standard measurements of assembly hardware are illustrated in the *Termination Assembly* drawing above. Please refer to the *Installation and Maintenance Manual (316-42-32-1)* supplied with the heater for mounting instructions.

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 effectively force heat into the part being heated and as an additional protective layer for the heater.

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

The mounting hardware is designed to effectively clamp to the part requiring heat, based on the heater size.

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Specialty Heaters



Thick Film Conduction Heaters

Technical Information

Heater Part Numbers

Heater Size in. (mm)		Voltage	Wattage ^①	W/in ² (W/cm ²)		Approximate Assembly Weight lbs (kg)		Watlow Part Number ^②
Round								
4.5 dia.	(114)	120	325	20.4	(3.2)	1.10	(0.50)	TFA004JA03EL18B
6.0 dia.	(152)	120	850	30.1	(4.7)	2.74	(1.24)	TFA006AA08KL18C
6.0 dia.	(152)	240	1125	39.8	(6.2)	2.74	(1.24)	TFA006AE11EL18C
8.0 dia.	(203)	240	2000	39.8	(6.2)	4.91	(2.23)	TFA008AE200L18C
10.0 dia.	(254)	240	3000	38.2	(5.9)	7.24	(3.28)	TFA010AE300L18C
Square								
2.25 x 2.25	(57 x 57)	120	100	19.8	(3.1)	0.27	(0.12)	TFA2E2EA010L18B
3.00 x 3.00	(76 x 76)	120	225	25.0	(3.8)	0.50	(0.23)	TFA3A3AA02EL18B
4.00 x 4.00	(102 x 102)	120	400	25.0	(3.8)	1.61	(0.73)	TFA4A4AA040L18C
6.00 x 6.00	(152 x 152)	120	1250	34.7	(5.4)	3.74	(1.70)	TFA6A6AA12KL18C
6.00 x 6.00	(152 x 152)	240	1450	40.3	(6.3)	3.74	(1.70)	TFA6A6AE14KL18C
8.00 x 8.00	(203 x 203)	240	2500	39.1	(6.1)	6.36	(2.88)	TFA8A8AE250L18C
Rectangle								
2.0 X 4.0	(51 x 102)	120	240	30.0	(4.6)	0.47	(0.21)	TFA2A4AA02HL18B
4.0 X 6.0	(102 x 152)	120	725	30.2	(4.7)	2.46	(1.12)	TFA4A6AA07EL18C
6.0 X 8.0	(152 x 203)	240	1920	40.0	(6.2)	5.01	(2.27)	TFA6A8AE19DL18C

^①Wattage output at 77°F (25°C).

^②Includes clamping plate, mica insulator and mounting hardware. Replace the last letter of the part number with "O" for heater only.