



ELECTRO-FLEX HEAT

a Division of MCF, LLC

Product Data Sheet for Kapton[®] Heaters

FEATURES

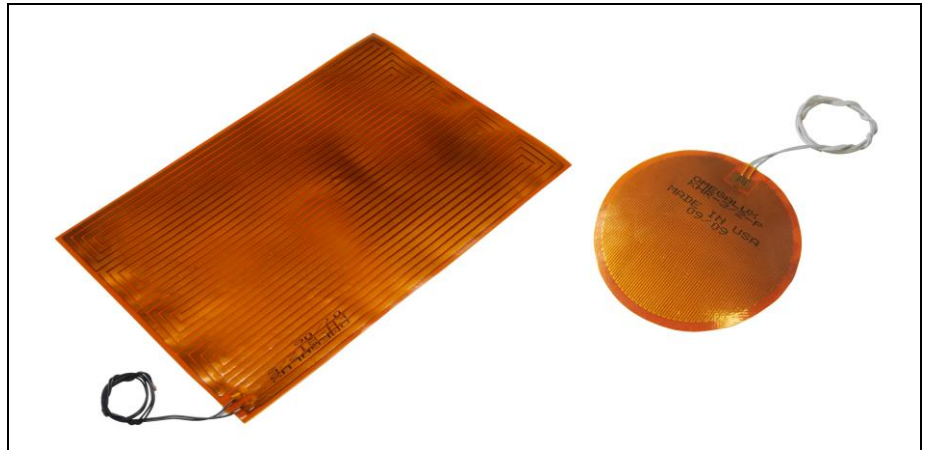
- Rectangular and round standard heaters in the most frequently requested dimensions for immediate delivery
- 28V and 115V standard, other configurations available
- Power densities of 2.5W/in.², 5 W/in.² and 10 W/in.² cover a wide range of applications
- Operating temperature range of -328°F to 392°F
- Excellent tensile strength and tear resistance
- Low outgassing
- Chemically resistant to many solvents and oils
- Available with or without PSA
- Heaters are UL recognized
- Custom products available

APPLICATIONS

Ideal for applications that have weight and/or space limitations, or where the heater will be exposed to oil, chemicals or a vacuum such as:

- Aerospace
- Analytical equipment
- Tooling
- Commercial equipment
- Agriculture
- Packaging

Please contact the engineering department at Electro-Flex Heat, a Division of MCF, LLC, for assistance with specific applications.



GENERAL INFORMATION

Kapton[®] is a polyimide material that has high dielectric strength, allowing for a very thin heater construction. It also has excellent tensile strength, tear resistance, cut-through resistance and dimensional stability which produce an extremely strong, flexible and lightweight heater. All our Kapton heaters contain etched foil elements covered on both sides with Kapton film insulation, bonded with Teflon[®] FEP.

Although Electro-Flex Heat offers two standard configurations (rectangular and round) available for immediate delivery, we can also customize heaters in a wide variety of shapes, patterns and heat concentrations to fit the requirements of your specific application.

Three power densities are available for most stock heaters: 2.5W/in.², 5W/in.², and 10W/in.². Gentle warming is best done with 2.5W/in.², while 5W/in.² is used for all-purpose heaters. Rapid warm up and high temperature are achieved with the 10W/in.² heaters; however, temperature should be controlled to ensure a safe limit of 392 °F is not exceeded. The rectangular configurations are 28V or 115V while the round configuration is 115V.

All heaters are available with or without PSA (Pressure Sensitive Adhesive) backing.

How to order:

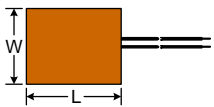
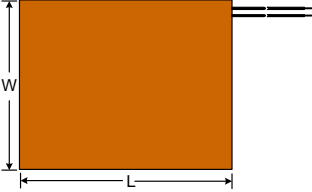
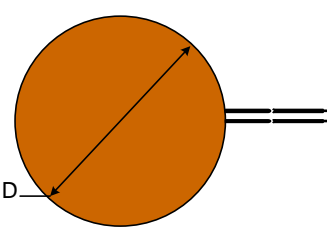
1. Determine specifications desired (see Figure 1 and Tables 2, 3, 4).
2. Specify model number (see Figure 2).
3. Contact factory or representative (see back page for contact information.)



Table 1. General Specifications

Characteristic	Value
Material and construction	etched foil elements covered on both sides with Kapton film insulation, bonded with Teflon® FEP
Voltage	28V, 115V
Power densities available (28V, 115V)	2.5W/in. ² , 5W/in. ² , 10W/in. ²
Operating temperature range	-328°F to 392°F
Operating temperature range	-328°F to 392°F
Resistance tolerance	±10%
Thickness	0.007in. (except at lead exit)
Leads: gage insulation length	varies according to heater wattage and voltage Teflon® insulated wires 12.0in. min.
Approvals	none
High-potential dielectric testing (115V0)	1250V
Serviceable parts	none

Figure 1. Off-the-Shelf Configurations Available for Immediate Delivery

<p>Rectangular 0.5in. and 1.0in. wide heaters only: the leads exit centrally from the width (W).</p>  <p>All other widths: the leads exit from the upper right-hand corner of the width (W).</p> 	<p>Round Leads exit round heaters axially.</p> 
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CAUTION

PRODUCT DAMAGE

Ensure all units rated at 10W/in.² are securely fastened to a heat sink with some form of temperature control.

Failure to comply with these instructions may result in product damage.

Table 2. Rectangular Configuration 28V Heaters

Dimensions (WxL) (in.)	Total Wattage (W)			Resistance ±10% (Ohm)		
	2.5 W/in. ²	5 W/in. ²	10 W/in. ²	2.5 W/in. ²	5 W/in. ²	10 W/in. ²
0.5 x 2.0	–	5.0	10.0	–	157	78.4
0.5 x 4.0	5.0	10.0	20.0	157	78.4	39.2
1.0 x 1.0	–	5.0	10.0	–	157	78.4
1.0 x 2.0	5.0	10.0	20.0	157	78.4	39.2
1.0 x 3.0	7.5	15.0	30.0	105	52.3	26.1
1.0 x 4.0	10.0	20.0	40.0	78.4	39.2	19.6
1.0 x 5.0	12.5	25.0	50.0	62.7	31.4	15.7
2.0 x 2.0	10.0	20.0	40.0	78.4	39.2	19.6

Table 3. Round Configuration 115V Heaters

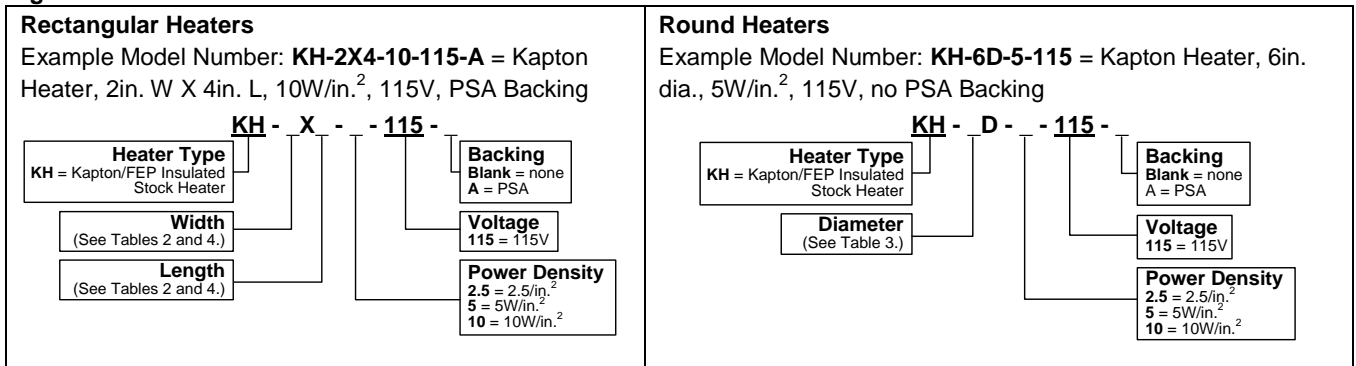
Dimensions (Dia.) (in.)	Total Wattage (W)			Resistance ±10% (Ohm)		
	2.5 W/in. ²	5 W/in. ²	10 W/in. ²	2.5 W/in. ²	5 W/in. ²	10 W/in. ²
2.0	–	–	31.4	–	–	421
3.0	17.7	35.3	70.7	748	374	187
4.0	31.4	62.8	126	421	210	105
5.0	49.1	98.2	196	269	135	67.4
6.0	70.7	141	283	187	93.5	46.8
7.0	96.2	192	385	137	68.7	34.4
8.0	126	251	503	105	52.6	26.3
9.0	159	318	636	83.2	41.6	20.8
10.0	196	393	785	67.4	33.7	16.8
11.0	238	475	950	55.7	27.8	13.9
12.0	283	565	1131	46.8	23.4	11.7



Table 4. Rectangular Configuration for 115V Heaters

Dimensions (WxL) (in.)	Total Wattage (W)			Resistance ±10% (Ohm)		
	2.5W/in. ²	5W/in. ²	10W/in. ²	2.5W/in. ²	5W/in. ²	10W/in. ²
1.0 x 3.0	–	–	30.0	–	–	441
1.0 x 4.0	–	20.0	40.0	–	661	330
1.0 x 5.0	–	25.0	50.0	–	529	264
1.0 x 6.0	15.0	30.0	60.0	882	441	220
1.0 x 8.0	20.0	40.0	80.0	661	331	165
1.0 x 10.0	25.0	50.0	100	529	264	132
1.0 x 12.0	30.0	60.0	120	441	220	110
2.0 x 2.0	–	20.0	40.0	–	661	330
2.0 x 3.0	15.0	30.0	60.0	882	441	220
2.0 x 4.0	20.0	40.0	80.0	661	331	165
2.0 x 5.0	25.0	50.0	100	529	264	132
2.0 x 6.0	30.0	60.0	120	441	220	110
2.0 x 8.0	40.0	80.0	160	331	165	82.7
2.0 x 10.0	50.0	100	200	264	132	66.1
2.0 x 12.0	60.0	120	240	220	110	55.1
3.0 x 3.0	22.5	45.0	90.0	588	294	147
3.0 x 4.0	30.0	60.0	120	441	220	110
3.0 x 5.0	37.5	70.0	150	353	176	88.2
3.0 x 6.0	45.0	90.0	180	294	147	73.5
3.0 x 8.0	60.0	120	240	220	110	55.1
3.0 x 10.0	75.0	150	300	176	88.2	44.1
3.0 x 12.0	90.0	180	360	176	88.2	44.1
4.0 x 4.0	40.0	80.0	160	331	165	82.7
4.0 x 5.0	50.0	100	200	264	132	66.1
4.0 x 6.0	60.0	120	240	220	110	55.1
4.0 x 8.0	80.0	160	320	220	110	55.1
4.0 x 10.0	100	200	400	132	66.1	33.1
4.0 x 12.0	120	240	480	110	55.1	27.6
5.0 x 5.0	62.5	125	250	212	106	52.9
5.0 x 6.0	75.0	150	300	176	88.2	44.1
5.0 x 8.0	100	200	400	132	66.1	33.1
5.0 x 10.0	125	250	500	110	55.1	27.6
5.0 x 12.0	150	300	600	88.2	44.1	22.0
6.0 x 6.0	90.0	180	360	147	73.5	36.7
6.0 x 8.0	120	240	480	110	55.1	27.6
6.0 x 10.0	150	300	600	88.2	44.1	22.0
6.0 x 12.0	180	360	720	73.5	36.7	18.4
8.0 x 8.0	160	320	640	82.7	41.3	20.7
8.0 x 10.0	200	400	800	66.1	33.1	16.5
8.0 x 12.0	240	480	960	55.1	27.6	13.8
10.0 x 10.0	250	500	1000	52.9	26.4	13.2
10.0 x 12.0	300	600	1200	44.1	22.0	11.0
12.0 x 12.0	360	720	1440	36.7	18.4	9.18

Figure 2. Part Number Order Guide





WARRANTY AND LIMITATION OF REMEDY AND LIABILITY

Electro-Flex Heat, a Division of MCF, LLC (hereafter referred to as “Electro-Flex Heat”) warrants its products against defects in material and workmanship for at least one (1) year from the time of delivery, provided such product is properly applied, used and maintained. **Electro-Flex Heat** does not warrant any product against damage from corrosion, contamination, misapplication, improper specification or wear and tear and operational conditions beyond **Electro-Flex Heat’s** control. The terms of this warranty are the exclusive terms available to buyer and to any other person or entity to which products are transferred during the period of this warranty. No person has authority to bind **Electro-Flex Heat** to a presentation or warranty other than this express warranty.

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USERS ARE RESPONSIBLE FOR THE SUITABILITY OF THE PRODUCTS TO THEIR APPLICATION. PRICING IS F.O.B.



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