

Flexible Heaters

Polyimide Heaters

Polyimide is a thin, lightweight organic polymer film which provides excellent tensile strength, tear resistance and dimensional stability. This heater is ideal for applications requiring low outgassing in a vacuum, or resistance to radiation, fungus and chemicals. Polyimide is also solvent resistant.

Performance Capabilities

- For operating environments as low as -319°F (-195°C), heater temperature as high as 392°F (200°C)
- Watt densities up to 50 W/in² (7.75 W/cm²)^①
- UR[®] and C-UR[®] recognitions

Features and Benefits

Excellent physical and electrical properties

- Results in thermal stability over a wide temperature range

Transparent polyimide material

- Allows inspection of internal details

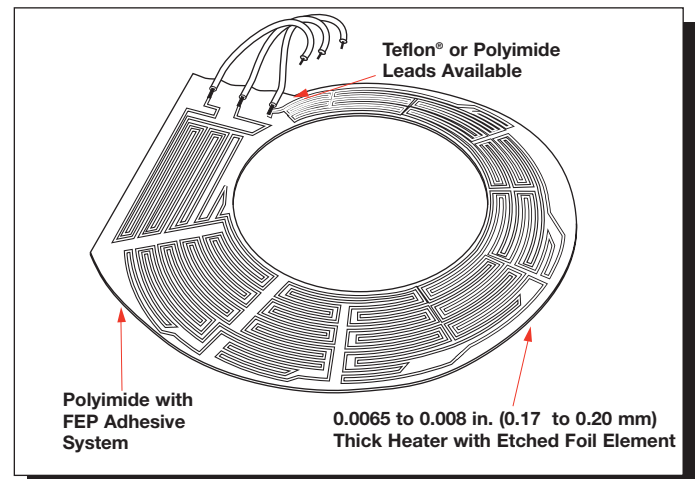
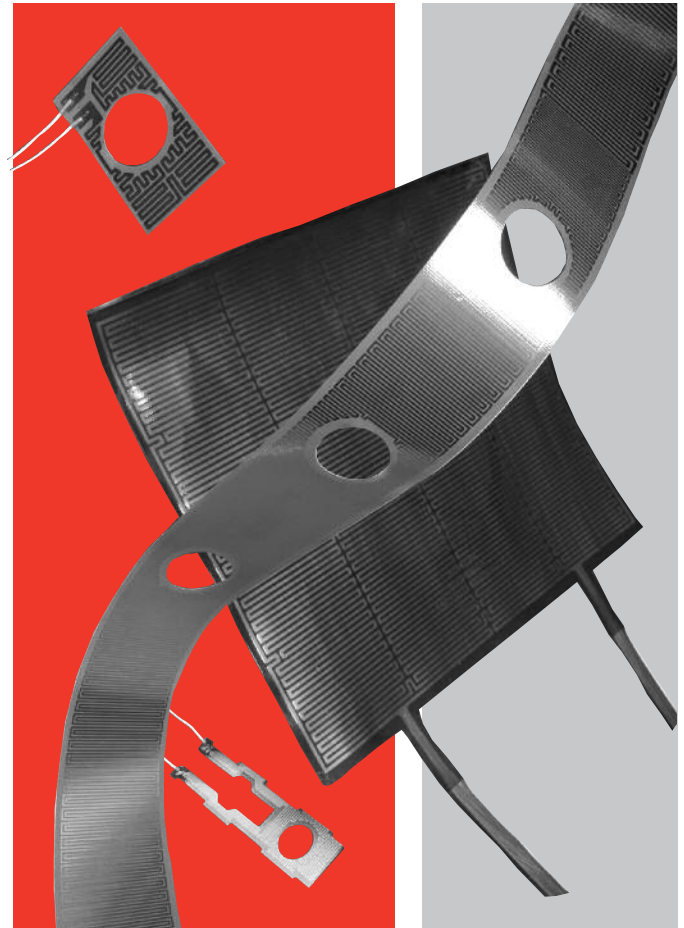
Resistance of radiation and fungus

- Allows it to be used in a wide range of applications

Typical Applications

- Medical, where thorough cleaning or sterilization is needed
- Laboratory research
- Semiconductor processing equipment
- Optical equipment
- LCD displays
- Computer equipment
- Photographic equipment
- Military/aerospace, where low outgassing properties are required

^① Watt density limits are application dependent (operating temperatures, bonding method and heat sink).



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Technical Data

Specifications

Thickness

- 0.007 in. (0.2 mm)

Flexibility (min. radius)

- $\frac{1}{32}$ in. (0.8 mm)

Weight

- 1.5 oz./ft² (0.05 g/cm²)

Operating temperature: ②

- Max.: 392°F (200°C)
- Min.: -319°F (-195°C)

Watt density rating on stock units

- 5 W/in² (0.8W/cm²)

Dielectric strength

- Min. VAC: 1000

Flammability rating

- Self-extinguishing

Heater size limitations

- 18 x 26 in. (457 mm x 660 mm)

Weight loss (outgassing):

- 0.51%

Lead length

- 12 in. (305 mm) Teflon® E

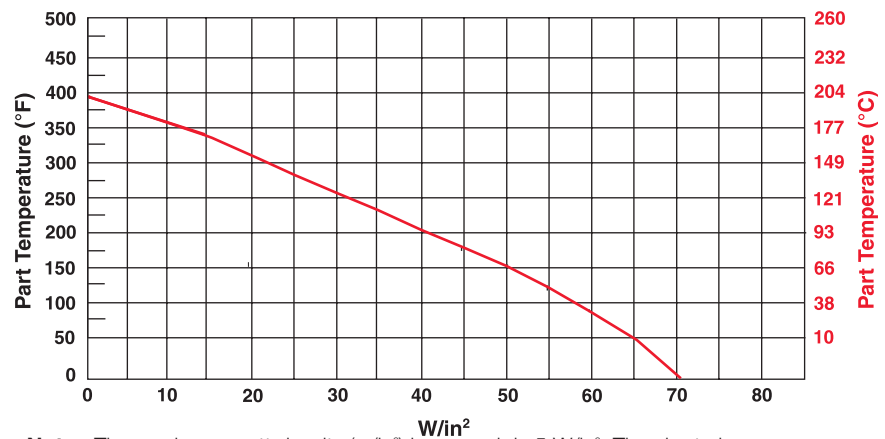
② We recommend maximum **part** temperature at 300°F (150°C).

Options

Maximum Allowable Watt Density Versus Temperature

To achieve the optimum performance with your Watlow polyimide sample heater, a proper watt density must be used on the surface of the heater.

This graph illustrates recommended watt densities for given operating temperatures with the process being controlled with a temperature controller. It does not indicate the watt density necessary to achieve a given part temperature.



Note: The maximum watt density (w/in²) in open air is 5 W/in². The chart above assumes bonding the polyimide heater to a part.

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Options (Continued)

Lead length, 12 in. (305 mm) “E” Teflon®

Width in. (mm)	Length in. (mm)	Watts	28V Code Number	120V Code Number
0.5 (13)	2 (51)	5	K005020C5-0009B	
1 (25)	1 (25)	5	K010010C5-0009B	
	3 (76)	15	K010030C5-0009B	
	5 (127)	25		K010050C3-0009B
	15 (381)	75		K010150C3-0009B
2 (51)	10 (254)	100		K020100C3-0009B
3 (76)	5 (127)	75		K030050C3-0009B
4 (102)	4 (102)	80		K040040C3-0009B
5 (127)	5 (127)	125		K050050C3-0009B

RAPID SHIP

- 2 to 5 day shipment

Bonding Method

- Pressure sensitive adhesive surface (PSAS)

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Special Product Offering

Code Number	Size in. (mm)	Circuit	Resistance	Max. Voltage	Watts @ Max. Voltage
K05711980-A	½ x 2½ (13 x 54)	A	40	12	4
K05711980-B	1 x 2½ (25 x 54)	B	90	48	26
K05711980-C	1½ x 2½ (38 x 54)	C	145	75	39
K05711980-D	2 x 2½ (51 x 54)	D	205	105	54
K05711980-E	½ x 3½ (13 x 34.9)	E	80	48	29
K05711980-F	1 x 3½ (25 x 92.1)	F	165	90	49
K05711980-G	1½ x 3½ (38 x 92.1)	G	275	120	52
K05711980-H	2 x 3½ (51 x 92.1)	H	375	120	38
K05711980-I	½ x 5½ (13 x 146)	I	130	60	28
K05711980-J	1 x 5½ (25 x 146)	J	255	120	56
K05711980-K	1 x 1½ (25 x 28.6)	K	28	12	5
K05711980-L	½ x 1½ (13 x 28.6)	L	13	6	3
K05711980-M	1 in O.D. (25)	M	32	12	5
K05711980-N	2 in O.D. (51)	N	180	105	61
K05711980-O	4 in O.D. (102)	O	185	120	78
K05711980-P	1 x 1½ (25 x 34.9)	P	45	24	13

Notes:

- To order individual heater circuits from the polyimide kit, see the matrix above.
- Leads shipped loose not soldered.

Example: To order the J heater circuit with PSAS use K05711980A-J.

To order the J heater circuit with PSAS and leads use K05711980AL-J.

Polyimide Handy Heater Kit—For Quick Heating Solutions

Watlow offers a convenient way to use polyimide heaters. The handy heater kit consists of 16 polyimide heaters — 13 rectangular and three circular—in different sizes and resistances. So when a small flexible heater is needed in a hurry, one can be picked that fits the application.

Other Features

- The heater sheet can be ordered with or without pressure sensitive adhesive (PSAS), depending on your needs. To specify PSAS add **A** to code number.
- The kit comes with instructions for wiring, lead attachment and selection and installation. Pre-tinned solder pads are provided for easy lead connections.
- The instructions also show how to dial in the desired wattage using a variable voltage transformer.
- The heaters can be wired individually, in series, or parallel for hundreds of variations to satisfy the special application.