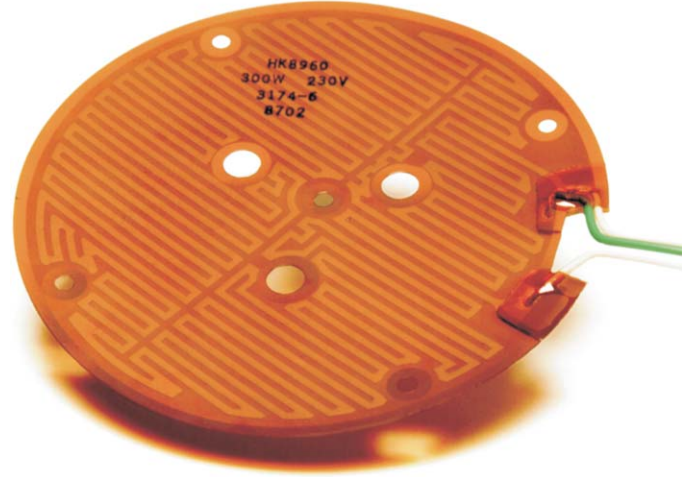


Kapton™ Heaters

200°C

Kapton is a thin, semitransparent material with excellent dielectric strength. Kapton heaters are ideal for applications with space and weight limitations, or where the heater will be exposed to vacuum, oil, or chemicals.

- ◆ FEP internal adhesive for use to 200°C
- ◆ UL component recognition available
- ◆ Suitable for vacuum environments (NASA-RP-1061)
- ◆ NASA approved materials for space applications (S-311-P-079)
- ◆ Resistant to most chemicals: acids, solvents, bases (except NaOH)
- ◆ Radiation resistant to 10⁶ rads if built with polyimide-insulated leads (custom option)
- ◆ Can be made in very small sizes
- ◆ Fluid immersible models available (not standard)



Typical applications

- ◆ Medical diagnostic instruments: Heat sample trays, cuvettes, reagent bottles, etc.
- ◆ Warm satellite components
- ◆ Protect aircraft electronic and mechanical devices against cold at high altitudes
- ◆ Stabilize optoelectronic components
- ◆ Test or simulate integrated circuits
- ◆ Enable cold weather operation of outdoor electronics such as card readers or LCD's
- ◆ Maintain constant temperature in analytic test equipment

Specifications for catalog models

Temperature range: -200 to 200°C (-328 to 392°F). Upper limit with 0.003" (0.08 mm) foil backing is 150°C (302°F).

Material: Kapton/FEP, 0.002"/0.001" (0.05/0.03 mm).

Resistance tolerance: ±10% or ±0.5 Ω, whichever is greater.

Dielectric strength: 1000 VRMS.

Minimum bend radius: 0.030" (0.8 mm).

Leadwire: Red PTFE insulated, stranded.

Current capacity (based on 100°C max. ambient temp.):

AWG 30	AWG 26	AWG 24	AWG 20
3.0 A	5.0 A	7.5 A	13.5 A

Maximum heater thickness:

Over element 0.012" (0.3 mm)

Over leads

AWG 30 (0.057 mm ²)	0.050" (1.3 mm)
AWG 26 (0.141 mm ²)	0.060" (1.5 mm)
AWG 24 (0.227 mm ²)	0.065" (1.7 mm)
AWG 20 (0.563 mm ²)	0.085" (2.2 mm)

Add 0.005" (0.1 mm) to above dimensions for foil backing.

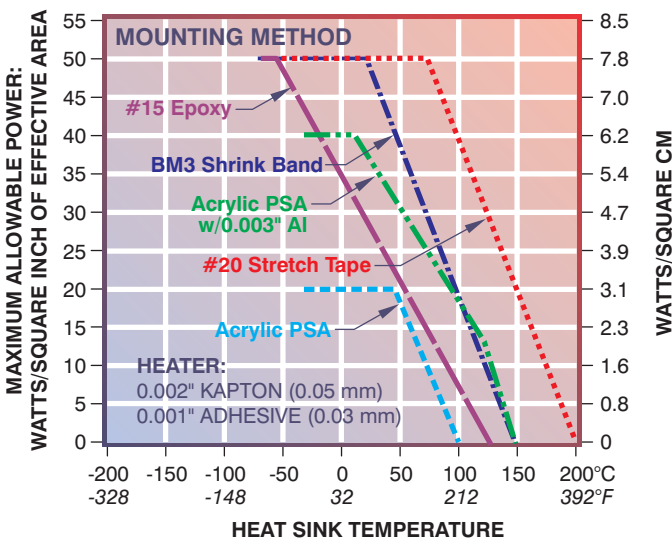
Dimensional tolerance:

6" (150 mm) or less	±0.03" (±0.8 mm)
6.01 to 12" (150 to 300 mm)	±0.06" (±1.5 mm)
Over 12" (300 mm)	±0.12" (±3.0 mm)

Custom options

- ◆ Custom shapes and sizes to 10 × 22" (250 × 560 mm) with FEP adhesive; 12 × 72" (300 × 1830 mm) with WA/ULA
- ◆ Custom resistance to 450 Ω/in² (70 Ω/cm²)
- ◆ WA or ULA adhesive (see page A-8); preferred for custom designs below 150°C
- ◆ Available with surface mount sensors, connectors, even integral controllers
- ◆ TÜV or UL approval is optional
- ◆ Tighter resistance tolerance
- ◆ See section J for custom design assistance

Maximum watt density, Kapton™ heaters




Example: At 50°C, the maximum power for a heater mounted with acrylic PSA is 18 W/in².

*Kapton™ is the DuPont tradename for polyimide

Stock Kapton™ Heaters

These heaters are normally available from stock for immediate shipment. Voltage and wattage values are for reference only. Heaters may be operated at other voltages if they do not exceed the maximum allowable watt density ratings.

See section D for these and other models with additional ordering options:

- ◆ Greater selection of resistances
- ◆ Variable lead length
- ◆ More backing options
- ◆ UL recognition 

How to order stock heaters

HK5160R157L12	Model number
A	Heater backing:
	A = No adhesive -200 to 200°C
	B = Acrylic PSA -32 to 100°C
HK5160R157L12A ← Sample part number	

Type (configuration)
































LEAD LENGTH:
12" (305 mm)



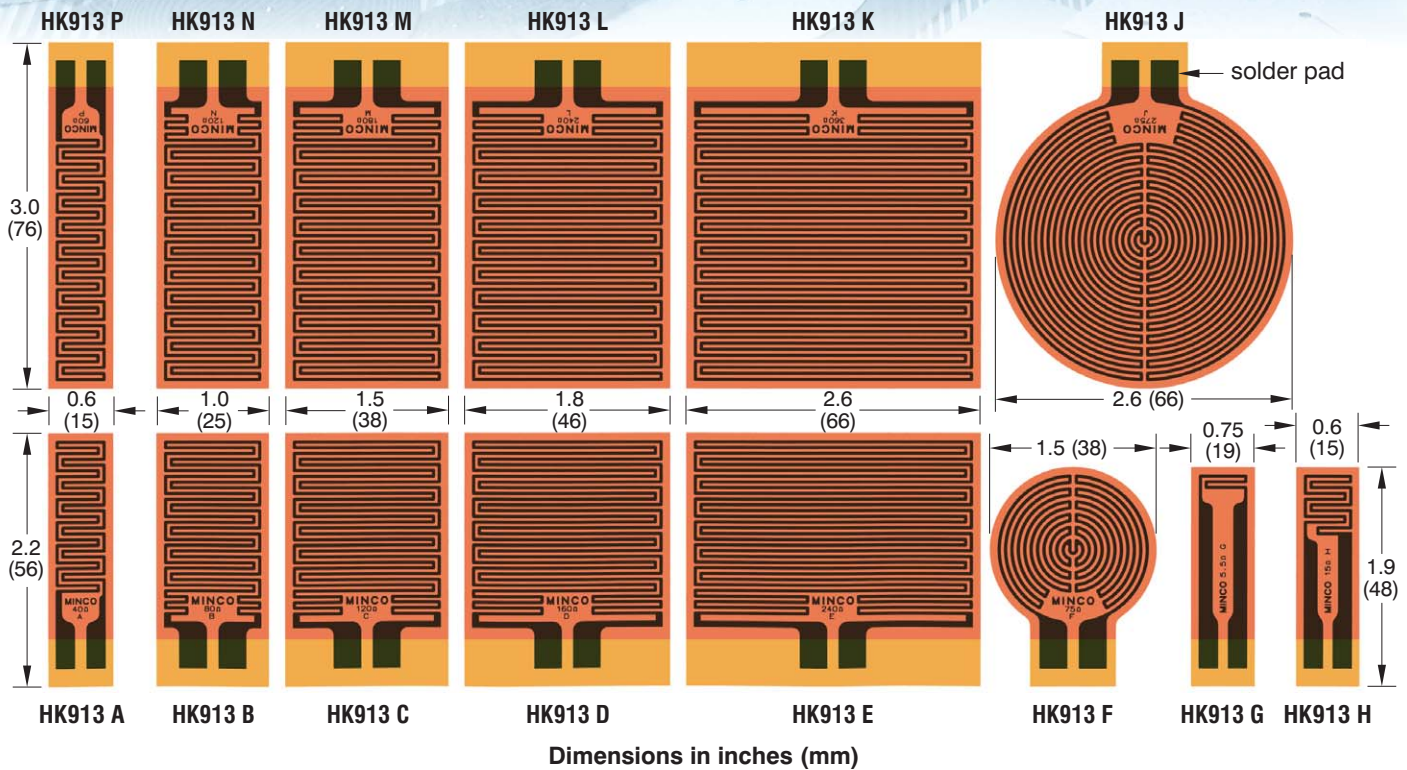
TAB DIMENSIONS:
AWG 30: 0.40" × 0.25" (10.2 × 6.4 mm)
AWG 24/26: 0.40" × 0.40" (10.2 × 10.2 mm)



Size (inches)		Size (mm)		Type	Resistance in ohms*	Typical power	Effective area (in ²)	Lead AWG	Model number
X	Y	X	Y						
0.50	2.00	12.7	50.8	1 	157	5 W at 28 V	0.79	30	HK5160R157L12
0.50	4.00	12.7	101.6	1 	78.4	10 W at 28 V	1.67	30	HK5161R78.4L12
0.50	6.00	12.7	152.4	1 	52.3	15 W at 28 V	2.35	30	HK5162R52.3L12
1.00	1.00	25.4	25.4	1 	157	5 W at 28 V	0.82	30	HK5163R157L12
1.00	2.00	25.4	50.8	1 	78.4	10 W at 28 V	1.76	30	HK5164R78.4L12
1.00	3.00	25.4	76.2	1 	52.3	15 W at 28 V	2.70	30	HK5165R52.3L12
1.00	5.00	25.4	127.0	1 	529	25 W at 115 V	4.41	30	HK5166R529L12
1.00	10.00	25.4	254.0	1 	264	50 W at 115 V	8.96	30	HK5167R264L12
1.00	15.00	25.4	381.0	1 	176	75 W at 115 V	13.51	30	HK5168R176L12
2.00	2.00	50.8	50.8	1 	661	20 W at 115 V	3.59	30	HK5169R661L12
2.00	3.00	50.8	76.2	1 	441	30 W at 115 V	5.50	30	HK5170R441L12
2.00	4.00	50.8	101.6	1 	331	40 W at 115 V	7.41	30	HK5171R331L12
2.00	6.00	50.8	152.4	1 	220	60 W at 115 V	11.23	30	HK5172R220L12
2.00	12.00	50.8	304.8	1 	110	120 W at 115 V	22.69	24	HK5173R110L12
3.00	3.00	76.2	76.2	1 	294	45 W at 115 V	8.41	30	HK5174R294L12
3.00	5.00	76.2	127.0	1 	176	75 W at 115 V	14.23	30	HK5175R176L12
3.00	10.00	76.2	254.0	1 	88.2	150 W at 115 V	28.75	24	HK5176R88.2L12
3.00	15.00	76.2	381.0	1 	58.8	225 W at 115 V	43.30	24	HK5177R58.8L12
4.00	4.00	101.6	101.6	1 	165	80 W at 115 V	15.20	30	HK5178R165L12
4.00	8.00	101.6	203.2	1 	82.7	160 W at 115 V	30.84	24	HK5179R82.7L12
4.00	12.00	101.6	304.8	1 	55.1	240 W at 115 V	46.48	24	HK5180R55.1L12
5.00	5.00	127.0	127.0	1 	106	125 W at 115 V	24.02	24	HK5181R106L12
5.00	10.00	127.0	254.0	1 	52.9	250 W at 115 V	48.57	24	HK5182R52.9L12
5.00	15.00	127.0	381.0	1 	35.3	375 W at 115 V	73.12	24	HK5183R35.3L12
10.00	10.00	254.0	254.0	1 	26.4	500 W at 115 V	97.52	20	HK5184R26.4L12
10.00	15.00	254.0	381.0	1 	17.6	750 W at 115 V	146.92	20	HK5185R17.6L12
0.50	0.09	12.7	2.4	31 	25.0	1 W at 5 V	0.13	30	HK5186R25.0L12
1.00	0.09	25.4	2.4	31 	157	5 W at 28 V	0.68	26	HK5187R157L12
3.00	0.12	76.2	3.1	31 	378	35 W at 115 V	6.61	26	HK5188R378L12

*Resistance tolerance is ±10% or ±0.5 Ω, whichever is greater

HK913 Heater Kit



The HK913 heater kit permits low-cost evaluation and prototyping of Thermofoil heaters. Available from stock, it contains 14 heating elements you can arrange in more than 1000 combinations. When ordering the complete kit, one sheet (6 × 12") of acrylic PSA is included for easy installation. Specify acrylic PSA for individual heaters, if desired.

Specifications

- Temperature range:** -200 to 200°C (-328 to 392°F), -32 to 100°C (-26 to 212°F) with acrylic PSA.
- Material:** Kapton/FEP, 0.002"/0.001" (0.05/0.03 mm).
- Resistance tolerance:** ±15%.
- Minimum bend radius:** 0.030" (0.8 mm).

How to order

HK913	Model number
E	Individual element code from table (leave blank for entire kit)
HK913E ←	Sample part number

Element code	Size (inches)	Size (mm)	Resistance in ohms	Effective area (in ²)
A	0.6 × 2.2	15 × 56	40	0.58
B	1.0 × 2.2	25 × 56	80	1.20
C	1.5 × 2.2	38 × 56	120	1.86
D	1.8 × 2.2	46 × 56	160	2.45
E	2.6 × 2.2	66 × 56	240	3.67
F	1.5 Dia.	38 Dia.	75	1.03
G	0.75 × 1.9	19 × 48	5.5	0.04
H	0.6 × 1.9	15 × 48	15	0.21
J	2.6 Dia.	66 Dia.	275	4.49
K	2.6 × 3.0	66 × 76	360	5.59
L	1.8 × 3.0	46 × 76	240	3.75
M	1.5 × 3.0	38 × 76	180	2.87
N	1.0 × 3.0	25 × 76	120	1.87
P	0.6 × 3.0	15 × 76	60	0.94