



Fullchance silicone heater factory

Rugged and flexible to 235°C

Overview

Silicone rubber is a rugged, flexible elastomer material with excellent temperature properties. It is most suited to larger heaters and industrial applications.

- Rugged construction provides high reliability in a wide range of heating applications
- Optional custom profiled heat density creates a uniform heat sink temperature which can improve processing yields
- Factory vulcanization and high temperature capability allows higher wattage levels for faster processing
- High temperature capability to 235°C (455°F)
- UL and TÜV component recognition available
- Resistant to many chemicals
- Not suitable for radiation, vacuum, or prolonged exposure to oil
- Most economical in large sizes

Typical applications

- Thermal developing in graphic imaging equipment
- Prevent condensation in instrument cabinets
- Heat outdoor electronics
- Food service equipment
- Medical respirators
- Laminators
- Drums and other vessels
- Airplane engine heaters

Custom options

- Custom shapes and sizes to 22" x 90" (560 x 2285 mm)
- Custom resistance to 200 Ω/in² (31 Ω/cm²)
- Fullchance can factory vulcanize rubber heaters to metal shapes for best economy and performance
- Heaters can have integral snaps, straps, or Velcro® for removable installation
- Heaters can include thermostats, temperature sensors and cutouts, wiring harnesses, and connectors
- RoHS compliance
- Contact Access: Fullchance Sales and Support for design assistance



Specifications

Temperature range: -45 to 235°C (-50 to 455°F).
With UL component recognition: -45 to 220°C (-50 to 428°F).

Material: Fiberglass reinforced silicone rubber, 0.008" (0.20 mm).

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

Dielectric strength: 1000 VRMS.

Minimum bend radius: 0.125" (3.2 mm).

Leadwire: Red PTFE insulated, stranded.

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

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

Maximum heater thickness:

	No adhesive (A):	#12 PSA (B):
Over element	0.020" (0.5 mm)	0.025" (0.6 mm)

Over leads

AWG 30 (0.057 mm ²)	0.070" (1.8 mm)	0.085" (2.2 mm)
AWG 26 (0.141 mm ²)	0.080" (2.0 mm)	0.095" (2.4 mm)
AWG 24 (0.227 mm ²)	0.090" (2.3 mm)	0.105" (2.7 mm)
AWG 20 (0.563 mm ²)	0.120" (3.0 mm)	0.135" (3.4 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)

Tighter tolerances are available on custom designs if needed.

Configure Fullchance heaters and order online at:

www.silicone-heater.com

Specifications subject to change



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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 "Standard Polyimide and Rubber Heaters" for these and other models with additional ordering options:

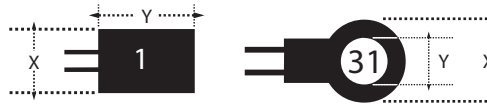
Greater selection of resistances

- Variable lead length
- More backing options

Specification options

HR5167R264L12	Model number
B	Heater backing
	A = No adhesive -45 to 235°C B = #12 PSA -45 to 177°C
HR5167R264L12B = Sample part number	

Type (configuration)



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

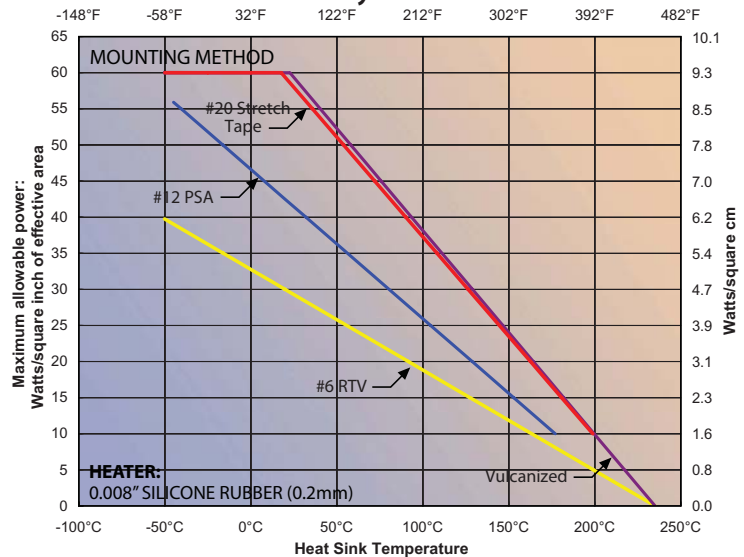


Size (inches)		Size (mm)		Type	Resistance in ohms*	Typical power	Effective area in ² (cm ²)	Lead AWG	Model number
X	Y	X	Y						
0.50	2.00	12.7	50.8	1	44.0	18 W at 28 V	0.79 (5.10)	30	HR5160R44.0L12
0.50	4.00	12.7	101.6	1	78.4	10 W at 28 V	1.67 (10.77)	30	HR5161R78.4L12
1.00	1.00	25.4	25.4	1	78.4	10 W at 28 V	0.82 (5.29)	30	HR5163R78.4L12
1.00	3.00	25.4	76.2	1	52.3	15 W at 28 V	2.70 (17.42)	30	HR5165R52.3L12
1.00	5.00	25.4	127.0	1	529.0	25 W at 115 V	4.41 (28.45)	30	HR5166R529L12
1.00	10.00	25.4	254.0	1	264.0	50 W at 115 V	8.96 (57.81)	30	HR5167R264L12
2.00	3.00	50.8	76.2	1	441.0	30 W at 115 V	5.50 (35.48)	30	HR5170R441L12
3.00	3.00	76.2	76.2	1	294.0	45 W at 115 V	8.41 (54.26)	30	HR5174R294L12
3.00	5.00	76.2	127.0	1	176.0	75 W at 115 V	14.23 (91.81)	30	HR5175R176L12
4.00	4.00	101.6	101.6	1	42.9	308 W at 115 V	15.20 (98.06)	30	HR5178R42.9L12
4.00	4.00	101.6	101.6	1	165.0	80 W at 115 V	15.20 (98.06)	30	HR5178R165L12
4.00	8.00	101.6	203.2	1	82.7	160 W at 115 V	30.84 (198.97)	24	HR5179R82.7L12
3.00	0.12	76.2	3.1	31	107.0	64 W at 115 V	6.61 (42.65)	26	HR5188R107L12

*Resistance tolerance is ±10% or ±0.5 Ω, whichever is greater
Note: Standard leadwire length is 12" (305mm) minimum

Silicone Rubber Heaters (foil)

Silicone Rubber Heaters (foil) Maximum Watt Density



Example: At 100°C, the maximum power of a vulcanized heater is 36 W/in² (5.58 W/cm²).

Specifications subject to change

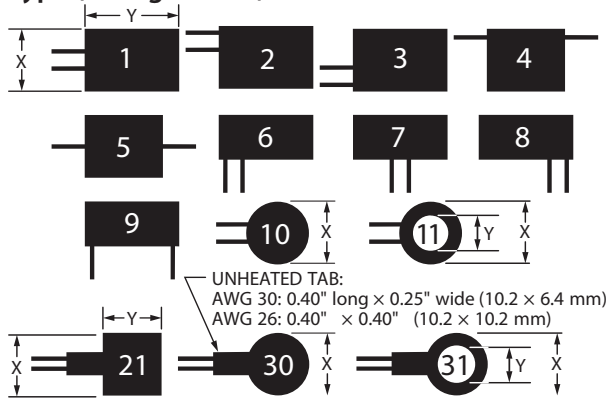
Standard Polyimide and Rubber Heaters

Fullchance has invested in the design time and fabrication tooling so you can jump immediately to your prototyping efforts. The following table outlines the specifications of previously designed polyimide and silicone rubber Thermofoil™ heaters.

Fullchance's build-to-order turnaround time is typically 3 weeks depending on quantity requirements. There is a limited available inventory of a variety of part configurations which generally allows us to meet your immediate delivery needs.

Contact Access: Sales and Support to discuss mix and matching heater sizes and resistance values to help satisfy performance and lead time demands.

Type (configuration)



Types 21, 30, and 31 have lead connections on an external tab. The tab produces negligible heat and, in most cases, need not be adhered to the heat sink. On type 21 heaters that are 0.25" (6.4 mm) wide, the tab is the same width as the heated area.

Specification options

Technical Specifications on pages 16 (polyimide) & 20 (rubber).

HK	Insulation: HK = Polyimide HR = Silicone rubber																		
5200	Model number from tables on following pages																		
R17.4	Heater resistance in ohms																		
L12	Lead length in inches 12" (305 mm) is standard Contact Fullchance for other lengths																		
A	Heater backing option (see page 8)																		
	<table border="1"> <thead> <tr> <th></th> <th>HK</th> <th>HR</th> </tr> </thead> <tbody> <tr> <td>A = No adhesive</td> <td>-200 to 200°C</td> <td>-45 to 235°C</td> </tr> <tr> <td>B = PSA backing</td> <td>-32 to 100°C</td> <td>-45 to 177°C</td> </tr> <tr> <td>D = Foil backing</td> <td>-200 to 150°C</td> <td>-45 to 235°C</td> </tr> <tr> <td>E = Foil/Acrylic PSA</td> <td>-32 to 150°C</td> <td>-32 to 150°C</td> </tr> <tr> <td>F = Foil/#12 PSA</td> <td>-73 to 150°C</td> <td>-45 to 204°C</td> </tr> </tbody> </table>		HK	HR	A = No adhesive	-200 to 200°C	-45 to 235°C	B = PSA backing	-32 to 100°C	-45 to 177°C	D = Foil backing	-200 to 150°C	-45 to 235°C	E = Foil/Acrylic PSA	-32 to 150°C	-32 to 150°C	F = Foil/#12 PSA	-73 to 150°C	-45 to 204°C
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A = No adhesive	-200 to 200°C	-45 to 235°C																	
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F = Foil/#12 PSA	-73 to 150°C	-45 to 204°C																	
U	U = Marked for UL component recognition: Omit for no UL marking (lower cost) UL limits: 220°C for rubber heaters																		
HK5200R17.4L12AU = Sample part number																			

Temperature sensitive elements

Heaterstats™ (page 44) require temperature sensitive heating elements, such as those found in the "NiFe" and "Ni" columns. Their resistance increases with temperature. The resistances listed are measured at 0°C (32°F).

How to use the table of Standard Polyimide & Silicone Rubber Heaters

Overall heater size in inches. Listed in ascending order, first by dimension X, then Y. Round heaters are last.

Heater type (lead exit configuration).

Element resistance options in ohms. Select resistance to produce desired wattage with available voltage (see Ohm's law).

Effective heating area. Use this value for calculating watt density.

Available heater insulation options for this model. K=Polyimide R=rubber

Size (in)		Size (mm)		Type	Resistance options- ohms*							Effective area in ² (cm ²)	Lead AWG	Insulation	Model number	
X	Y	X	Y		R(0°C) [May be used with Heaterstat] → NiFe Ni											
0.40	2.60	10.2	66.0	1	123	62.5	37.8	18.2				19.1	0.74 (4.77)	30	K, R	5215
0.41	4.80	10.4	121.9	6	100	50.1	30.2	14.5				15.5	1.40 (9.03)	26	K, R	5218
0.41	8.30	10.4	210.8	5	61.9	31.1	18.8	9.1	6.2	4.3	9.6	2.50 (16.13)	26	K, R	5219	

Overall heater size in millimeters. Listed in ascending order, first by dimension X, then Y.

Temperature sensitive element resistance options (at 0°C) for use with Fullchance heater Rubber (HR) models are not available with NiFe element.

Leadwire size. Maximum current capacities are listed on pages 17 and 20.

Bas

*Resistance tolerance is ±10% or ±0.5, whichever is greater
Rubber (HR) models not available with NiFe element