



BIRK

Engineering Thermal Solutions

STANDARD HEATER SPECIFICATIONS, STACK UP AND FAQs

Frequently Asked Questions

OHM'S LAW:

$$V = IR \quad W = \frac{V^2}{R}$$

$$R = \frac{V^2}{W} \quad V = \sqrt{RW}$$

➤ V: VOLTAGE (VOLTS)

➤ I: AMPERAGE/CURRENT (AMPS)

➤ R: RESISTANCE (OHMS)

➤ W: WATTAGE (WATTS)

➤ Standard heaters are RoHS Compliant

➤ No maximum voltage or wattage. Heaters are limited by the amperage and thus the lead wire

➤ AMPERAGE = WATTAGE / VOLTAGE

➤ 30 AWG Leads Max Amperage: 2 amps

➤ 24 AWG Leads Max Amperage: 5.5 amps

➤ No maximum watt density. The higher the watt density, the hotter the heater will get in a shorter amount of time. Customer needs to monitor temperature to not go over maximum temp.

Frequently Asked Questions Cont.

Temperature Capabilities:

- Standard Heaters can run continuously up to 200°C.

Foil Backing

- 0.005" Aluminum
- Provides more uniform heat distribution.

PSA – Pressure Sensitive Adhesive

- 0.005" 3M 9755
- Rated up to 232°C for short term use (minutes, hours) and 149°C for long term use (days, weeks)

Frequently Asked Questions Cont.

Lead Locations

Lead Location A: 3504-3518, 3520-3540, 3547-3553, 3555-3558

Lead Location B: 3519

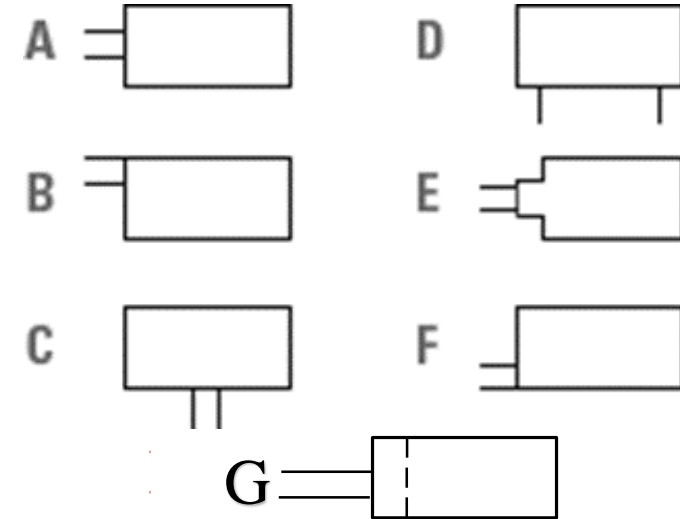
Lead Location D: 3554, 3559

Lead Location E: 3561 (INCLUDES UNHEATED TAB)

Lead Location F: 3563

Lead Location G: 3542-3546, 3501-3503 (INCLUDES UNHEATED TAB)

- Leads are done under cover layers of Kapton® and Silicone
- Standard lead color is red
- Available lead lengths: 12" or 24"

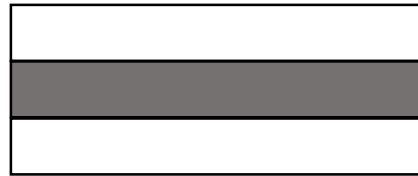


- Lead gauges are 30AWG or 24AWG depending on heater (inquire for specific P/N's)
- Lead area thickness: In general, add 0.060" to heater thickness

Birk Standard Heaters Build up: Resistance Option 1



Kapton® Heater:



Kapton®: 0.0025"
Foil: 0.0005"
Kapton®: 0.0025"

Silicone Heater:



Silicone: 0.015"
Foil: 0.0005"
Silicone: 0.015"

Birk Mfg. Standard Tolerances

Resistance: +10%/-5%	Die Cut Kapton®	Die Cut Silicone
Min. Dist. Edge to Conductor:	<12" +/- 0.020"	< 12" +/- 0.030"
Sil. 0.060" Kap. 0.020"	12 < 24" +/- 0.040"	12 < 24" +/- 0.040"
Stripped Lead Wire length +/- 0.062"	> 24" +/- 0.080"	> 24" +/- 0.080"

Quality Policy: Through continuous improvement, Birk Manufacturing, Inc. is dedicated to providing superior parts and service to our customers.

Birk Standard Heaters Build up: Resistance Option 2

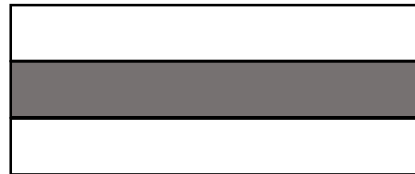


Kapton® Heater:



Kapton®: 0.0025"
Foil: 0.001"
Kapton®: 0.0025"

Silicone Heater:



Silicone: 0.015"
Foil: 0.001"
Silicone: 0.015"

Birk Mfg. Standard Tolerances

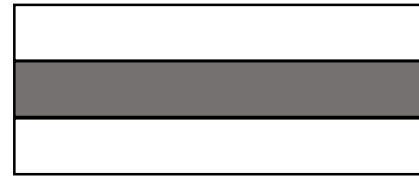
Resistance: +10%/-5%	Die Cut Kapton®	Die Cut Silicone
Min. Dist. Edge to Conductor:	<12" +/- 0.020"	< 12" +/- 0.030"
Sil. 0.060" Kap. 0.020"	12 < 24" +/- 0.040"	12 < 24" +/- 0.040"
Stripped Lead Wire length +/- 0.062"	> 24" +/- 0.080"	> 24" +/- 0.080"

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Birk Standard Heaters Build up: Resistance Option 3



Kapton® Heater:



Kapton®: 0.0025"
Foil: 0.0015"
Kapton®: 0.0025"

Silicone Heater:



Silicone: 0.015"
Foil: 0.0015"
Silicone: 0.015"

Birk Mfg. Standard Tolerances

Resistance: +10%/-5%	Die Cut Kapton®	Die Cut Silicone
Min. Dist. Edge to Conductor:	<12" +/- 0.020"	< 12" +/- 0.030"
Sil. 0.060" Kap. 0.020"	12 < 24" +/- 0.040"	12 < 24" +/- 0.040"
Stripped Lead Wire length +/- 0.062"	> 24" +/- 0.080"	> 24" +/- 0.080"

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Birk Standard Heaters Build up: Resistance Option 4



Kapton® Heater:



Kapton®: 0.0025"
Foil: 0.00125"
Kapton®: 0.0025"

Silicone Heater:



Silicone: 0.015"
Foil: 0.00125"
Silicone: 0.015"

Birk Mfg. Standard Tolerances

Resistance: +10%/-5%	Die Cut Kapton®	Die Cut Silicone
Min. Dist. Edge to Conductor:	<12" +/- 0.020"	< 12" +/- 0.030"
Sil. 0.060" Kap. 0.020"	12 < 24" +/- 0.040"	12 < 24" +/- 0.040"
Stripped Lead Wire length +/- 0.062"	> 24" +/- 0.080"	> 24" +/- 0.080"

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Birk Standard Heaters Build up: Resistance Option 5

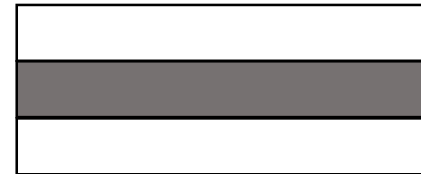


Kapton® Heater:



Kapton®: 0.0025"
Foil: 0.002"
Kapton®: 0.0025"

Silicone Heater:



Silicone: 0.015"
Foil: 0.002"
Silicone: 0.015"

Birk Mfg. Standard Tolerances

Resistance: +10%/-5%	Die Cut Kapton®	Die Cut Silicone
Min. Dist. Edge to Conductor:	<12" +/- 0.020"	< 12" +/- 0.030"
Sil. 0.060" Kap. 0.020"	12 < 24" +/- 0.040"	12 < 24" +/- 0.040"
Stripped Lead Wire length +/- 0.062"	> 24" +/- 0.080"	> 24" +/- 0.080"

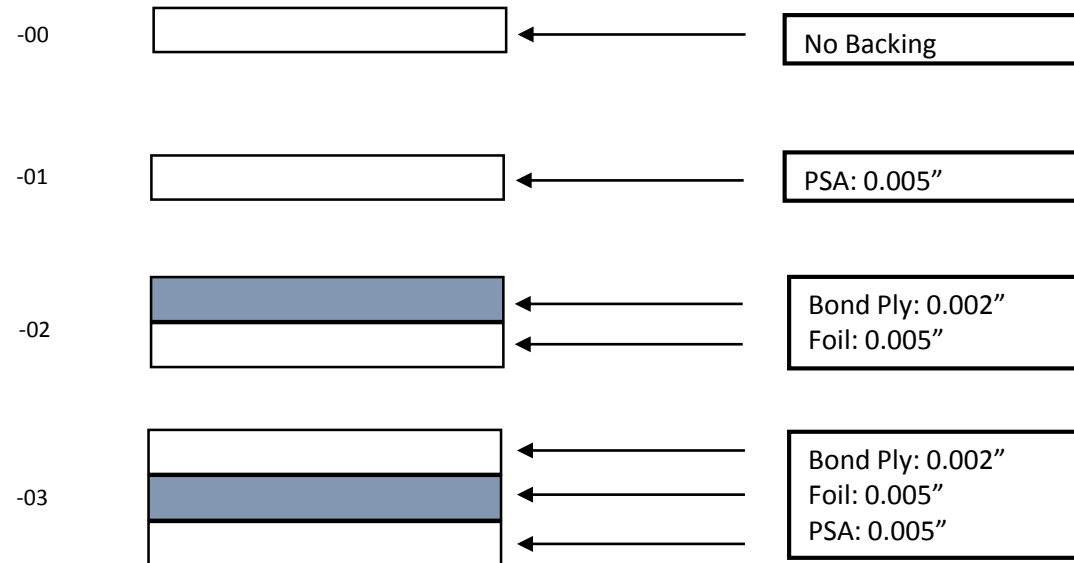
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Birk Kapton® Standard Heaters

Backing Options Build up



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Birk Silicone Standard Heaters

Backing Options Build up



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