

High Thermal Conductive Silicone Pad

STC-PAC50

STC-PAC50 is extremely high performance thermal conductive pad with highly thermally conductive filler oriented vertically.

1 Features

- 1) Extremely high thermal conductivity through the thickness; 50W/m·K
- 2) Flexibility
- 3) Long term reliability

2 Applications

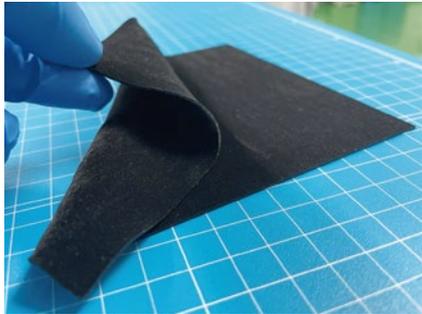
Thermal conductive pad for server, communication base station and so on.

3 General properties

Parameter	Test Method	Grade	STC-PAC50
Color		—	Black
Structure		—	Single layer
Thickness	mm	—	0.5 to 2.5
Thermal conductivity (Bulk)	W/m·K	Xenon flash method	50
Hardness		Asker C	45
		Shore 00	70
Thermal resistance*	50°C/100 psi cm ² ·K/W	ASTM D5470	0.27
Volume resistance	Ω·cm	JIS K 6249	5.0
Dielectric constant (ε)	50 Hz	ASTM D150	2.4 × 10 ³
	1 kHz		6.7 × 10 ²
	1 MHz		5.8 × 10 ²
Dielectric dissipation factor (tanδ)	50 Hz	ASTM D150	5.8 × 10 ³
	1 kHz		8.2 × 10 ²
	1 MHz		9.5 × 10 ⁻¹
Flame retardance		UL94	V-0 equivalent
Density at 23°C	g/cm ²	JIS K 6249	1.6
Continuous use temp.	°C	—	-40 to 180

* Uses 1.0 mm pad

(Not specified values)



4 How to read Model Number

Example:

STC-100PAC50

Thickness 1.0 mm* Thermal conductivity 50 W/m·K

* The thickness of the STC-PAC50 product is specified by a two digit code corresponding to the thickness in millimeters multiplied by 100.

With this product, compression control is important. Excessive compression will cause an increase in thermal resistance.

5 Thermal resistance

Thermal resistance (cm²·K/W) by ASTM D5470

Compression ratio (%)	0.5 mmt	1.0 mmt	1.5 mmt	2.0 mmt	2.5 mmt
5	2.13	0.94	0.58	0.58	0.71
10	0.77	0.37	0.39	0.49	0.61
15	0.30	0.27	0.37	0.49	0.60
20	0.18	0.26	0.38	0.51	0.61
30	0.18	0.27	0.40	0.54	0.66
40	0.18	0.29	0.44	0.59	0.72

(Not specified values)

6 Pressure required for compression

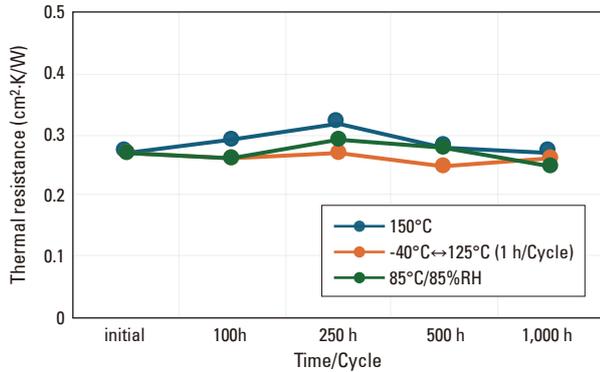
Pressure (psi)

Compression ratio (%)	0.5 mmt	1.0 mmt	1.5 mmt	2.0 mmt	2.5 mmt
5	2.9	7.6	25.9	30.2	26.7
10	8.9	36.5	73.3	50.6	46.7
15	29.0	95.3	81.8	54.6	51.8
20	116.3	123.0	85.9	56.3	52.5
30	189.3	135.5	97.2	62.7	57.1
40	261.7	167.3	118.9	75.3	67.7

(Not specified values)

7 Reliability data (1.0 mmt)

■ Long-term reliability

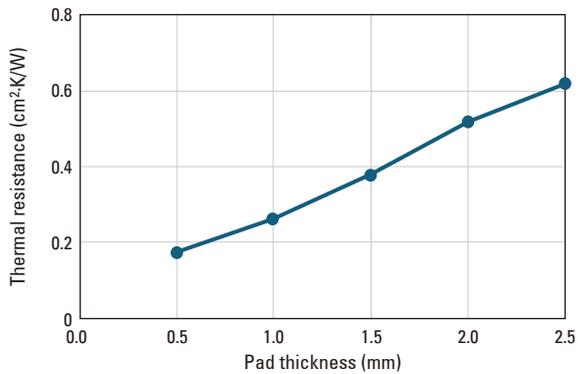


Thermal resistance (cm²-K/W) with 30% compression

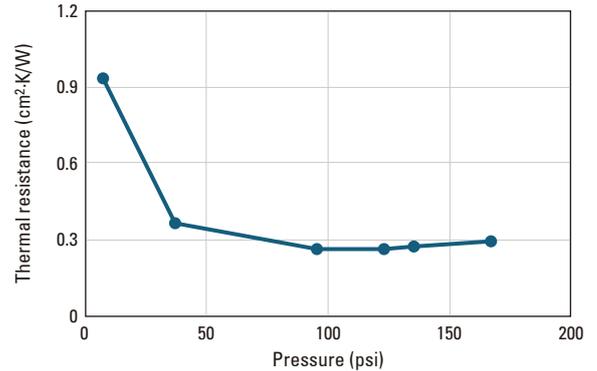
	initial	100 h	250 h	500 h	1,000 h
150°C	0.27	0.29	0.32	0.28	0.27
-40°C↔125°C (1h/Cycle)	0.27	0.26	0.27	0.25	0.26
85°C/85%RH	0.27	0.26	0.29	0.28	0.25

(Not specified values)

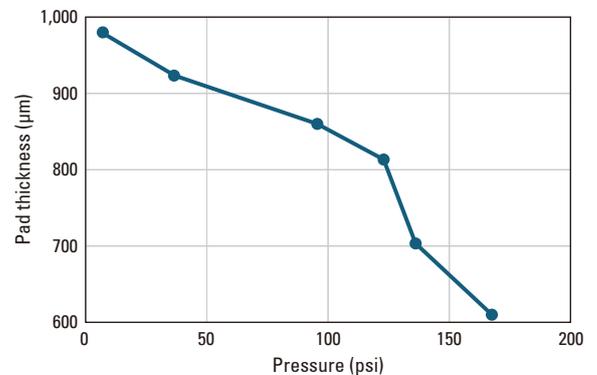
8 Thermal resistance vs. Thickness (20% compression)



9 Thermal resistance vs. Pressure (1.0 mmt)



10 Thickness vs. Pressure (1.0 mmt)



11 Handling precautions

- 1) Products should be stored in a dry out of direct sunlight.
- 2) Avoid contact with residual solvents or oils as they may deteriorate the properties.
- 3) For better results, the substrate surface should be cleaned and dried to remove any dirt, moisture or oils before application.
- 4) Prior to using the product with a thermal interface grease, test a sample with a small amount to determine compatibility.
- 5) Keep out of children.
- 6) Be sure to read the Safety Data Sheets (SDS) for these products before use. SDS are available from the Shin-Etsu Silicone website. If the SDS is not listed on the website, please contact the sales department.

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