

# High Thermally Conductive Silicone Pad

## TC-UP12

1/2

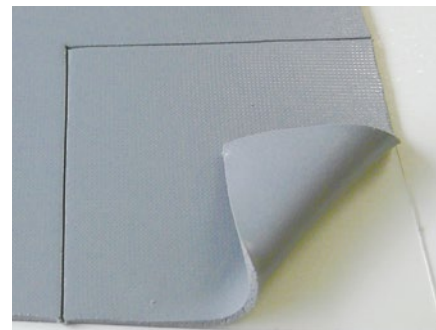
TC-UP12 has good compressibility and higher thermal conductivity than our conventional products.

### 1 Features

- 1) High thermal conductivity; 12 W/m-K
- 2) Low hardness and good compressibility
- 3) Electrical insulation
- 4) Long term reliability
- 5) Single side less tackiness is available.

### 2 Applications

Thermal conductive pad for SoC (System on Chip) and so on



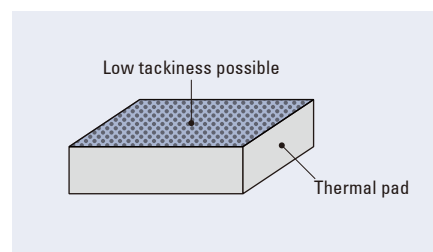
### 3 General properties

Parameter	Test Method	Grade	TC-UP12
Color	—		Gray
Structure*	—		Single layer
Thickness	mm	—	0.5 to 3.0
Thermal conductivity	W/m-K	Hotdisk (ISO22007-2)	12
Hardness		Asker C	20
Thermal resistance	cm <sup>2</sup> -K/W@1.0 mm	50°C/100 psi ASTM D5470	0.45
Breakdown voltage in oil	kV	JIS C 2110-1 @1 mmt	13
Volume resistivity	Ω-cm	JIS K 6249	1.1 × 10 <sup>11</sup>
Dielectric constant (ε)	50 Hz	ASTM D150	13
	1 kHz		11
	1 MHz		10
Dielectric dissipation factor (tan δ)	50 Hz	ASTM D150	2.0 × 10 <sup>-1</sup>
	1 kHz		5.4 × 10 <sup>-2</sup>
	1 MHz		2.2 × 10 <sup>-2</sup>
Low molecular Siloxane content	D <sub>3</sub> -D <sub>10</sub> ppm	Acetone extraction	20
Flame retardance		UL94	V-0 equivalent
Density at 23°C	g/cm <sup>3</sup>	JIS K 6249	3.0

\* For improving handling, we can prepare the product;  
-TL which has less tackiness in one side by special treatment

(Not specified values)

### 4 Structure



### 5 How to read Model Number

Example:

**TC-100UP12-TL**

Thickness  
1.0mm\*

Thermal  
conductivity  
12W

Less tackiness  
(By customer request)

\* The Thickness of the TC-UP Series product is specified by a two digit code corresponding to the thickness in millimeters multiplied by 100.

### 6 Thermal resistance

Thermal resistance (cm<sup>2</sup>-K/W) by ASTM D5470

Pressure (psi)	0.5 mmt	1.0 mmt	1.5 mmt	2.0 mmt
10	0.45	0.89	1.21	1.77
40	0.34	0.63	0.79	1.10
70	0.29	0.52	0.64	0.89
100	0.26	0.45	0.54	0.74
130	0.24	0.39	0.46	0.63
170	0.23	0.32	0.37	0.53

(Not specified values)

### 7 Compression property

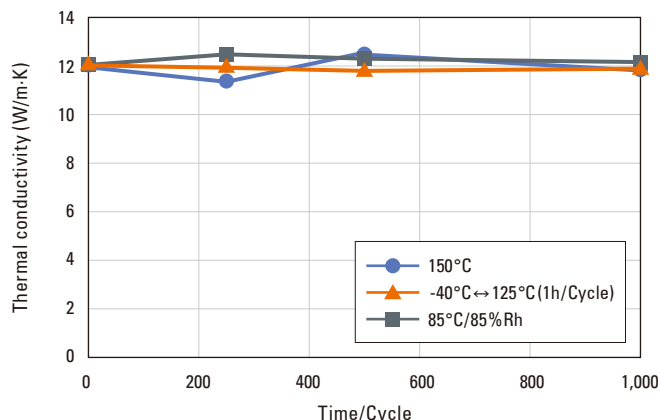
Compression ratio (%)

Pressure (psi)	0.5 mmt	1.0 mmt	1.5 mmt	2.0 mmt
10	13	11	14	13
40	30	36	43	41
70	39	46	54	53
100	45	55	62	62
130	48	61	68	68
170	50	67	74	74

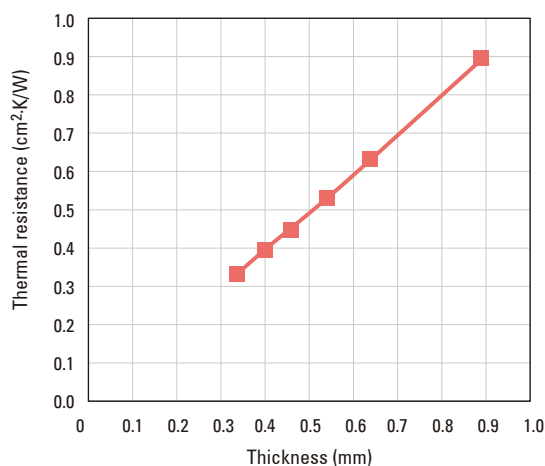
(Not specified values)

## 8 Reliability data (1 mm)

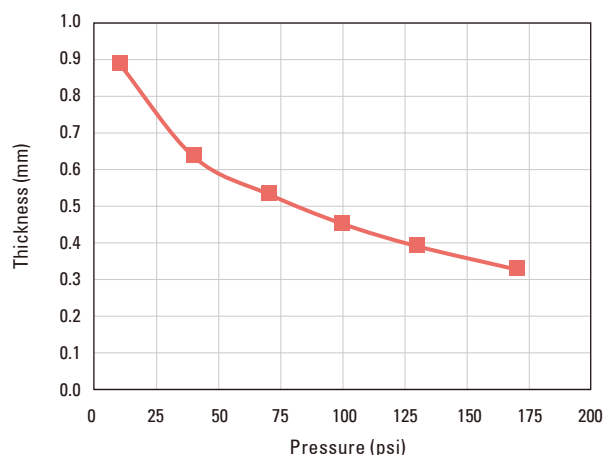
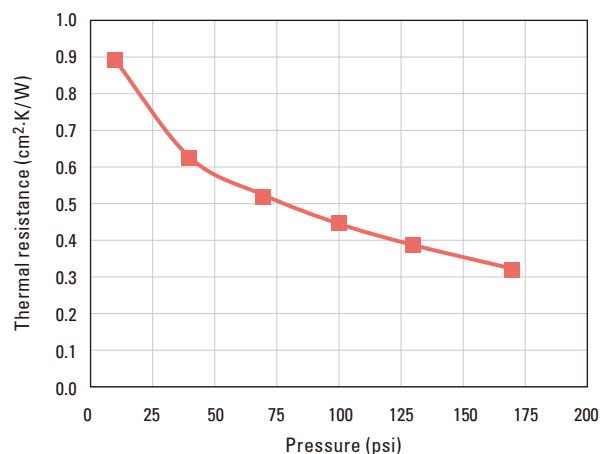
### Long-term reliability



## 9 Thermal resistance vs. Thickness



## 10 Thermal resistance, Thickness vs. Pressure (1 mm)



## 11 Handling precautions

- 1) Products should be stored in a dry place out of direct sunlight.
- 2) Avoid contact with residual solvents or oils as they may deteriorate the properties of the product.
- 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 reach 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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