

Thermal conductivity  
2.7W/m·K\*

Excellent resin flowability

RTI 150°C

\* Measured with the laser flash method

**Applications**  
**Automotive**

Vehicle chargers, Power supplies for railroads,  
Power conditioners for photovoltaic power  
generation, Inverters, Step-up converters, etc.



## Halogen-free

# R-2400

## High-thermal conductive film for multi-layer circuit board

High-thermal conductivity of 2.7 W/m·K\* helps reduce the number of thermal management components. The excellent resin flowability enables multilayering of electronic circuit boards, contributing to the miniaturization of equipment. Certified to meet the UL-specified rated temperature of 150°C and can be used in high-temperature environment.

**Superiority of R-2400** Miniaturization of circuit boards by multilayering (cross-sectional view)

### Conventional materials

Insufficient resin flowability makes circuit filling difficult. Multilayering of circuit boards is not possible because insulating layers **cannot be formed**.

<Double-sided circuit board>

Conventional materials\*  
Heat sink  
Power semiconductor  
Heat sink

Conventional materials\*  
Circuit board miniaturization by multilayering

**Circuits are not filled (Generation of voids)**

\*Conventional materials: High thermal conductive materials

### R-2400

**Excellent resin flowability** achieves superior circuit filling properties. Multilayering of circuit boards is possible because insulating layers **can be formed satisfactorily**.

<Double-sided circuit board>

Conventional materials\*  
Heat sink  
Power semiconductor  
Heat sink

R-2400  
Circuit board miniaturization by multilayering

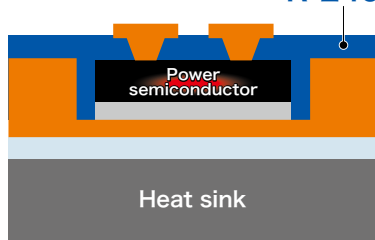
**Circuits are filled**

\*Conventional materials: High thermal conductive materials

### ● Component-embedded applications

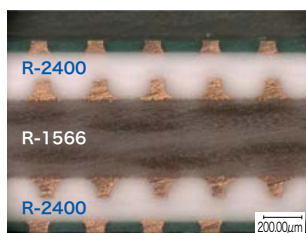
It is expected to apply R-2400's **excellent resin flowability** to component-embedded circuit boards.

R-2400



### ● Example of copper pattern embedding

Cu thickness : 105um  
Film thickness : 100um x 2ply



**Product line-up(Thickness)**  
100μm, 150μm



## Comparison of thermal conductivity

		Halogen-free R-1566	Halogen-free R-2400
Temperature distribution map	Surface		
	Cross section		
Maximum temperature		<b>174°C</b>	<b>138°C</b>
Layer configuration FET: 2.4 mm Copper foil: 0.018 mm <b>R-1566/R-2400: 0.8 mm</b> Copper foil: 0.018 mm			

Analyzed by using Murata software's Femtet.

## General properties

Item	Test method	Condition	Unit	Halogen-free R-2400
Thermal conductivity	ASTM D5470	A	W/m·K	<b>3.8</b>
	Laser flash	A		<b>2.7</b>
Glass transition temp. (Tg)	DMA	E-1/105	°C	<b>200</b>
Withstand voltage vertical to layer	ASTM D149	C-48/23/50	kV	<b>6.5 (100um)</b>
CLTE	IPC-TM-650 2.4.24	E-2/105	ppm	<b>30 (40-260°C)</b>
Tracking resistance	ASTM D3638	C-48/23/50	V	<b>600 (PLC-0)</b>
Rated temperature (RTI)	UL	—	°C	<b>150</b>
Flammability	UL	C-48/23/50	—	<b>94V-0</b>

The sample thickness is 0.8mm. Withstand voltage vertical to layer data is for a thickness of 0.1mm.

Tracking resistance, rated temperature and flammability are data for a combination of R-2400 0.1mm above and below a 0.38mm core material.

Our Halogen-free materials are based on JPCA-ES-01-2003 standard and others.  
The above data are typical values and not guaranteed values.

Please see our website for Notes before you use.

[industrial.panasonic.com/ww/electronic-materials](http://industrial.panasonic.com/ww/electronic-materials)

**Panasonic Industry R-2400**

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