Panasonic INDUSTRY





Halogen-free

R-2400

High-thermal conductive film for multi-layer circuit board

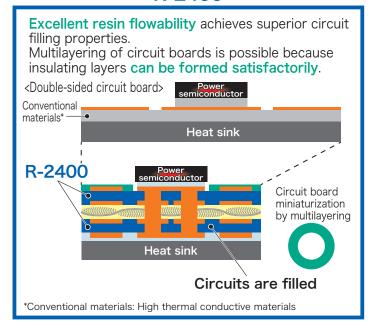
High-thermal conductivity of 2.7 W/m·K* helps reduce the number of thermal management components. The excellent resin flowability enables multilayering of electronic circuit boards, contributing to the miniaturization of equipment. Certified to meet the UL-specified rated temperature of 150°C and can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

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

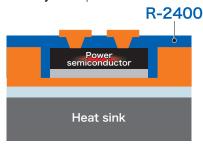
Conventional materials

Insufficient resin flowability makes circuit filling difficult. Multilayering of circuit boards is not possible because insulating layers cannot be formed. <Double-sided circuit board> semiconductor Conventional _ materials* Heat sink Power semiconductor Conventional Circuit board materials* miniaturization by multilayering Heat sink Circuits are not filled (Generation of voids) *Conventional materials: High thermal conductive materials

R-2400

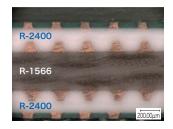


Component-embedded applications
 It is expected to apply R-2400's excellent resin flowability to component-embedded circuit boards.



Example of copper pattern embedding

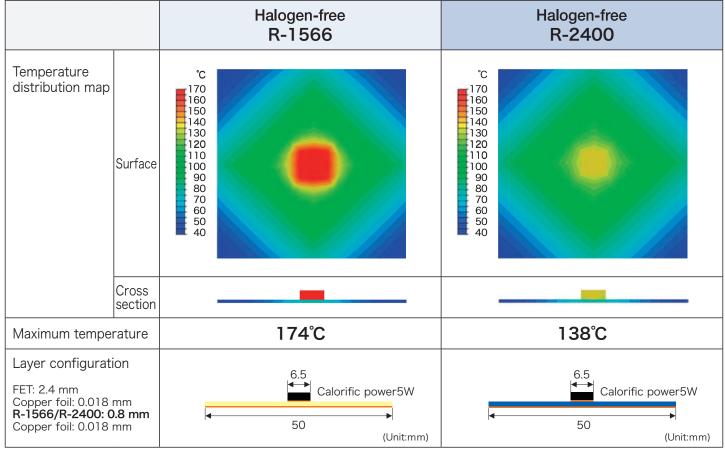
Cu thickness : 105um Film thickness : 100um x 2ply



Product line-up(Thickness) $100 \mu m$, $150 \mu m$



Comparison of thermal conductivity



Analyzed by using Murata software's Femtet.

General properties

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

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.