Carbon Nanotube Thermal Interface Material (CNT-TIM)

- Under development -

Introduction

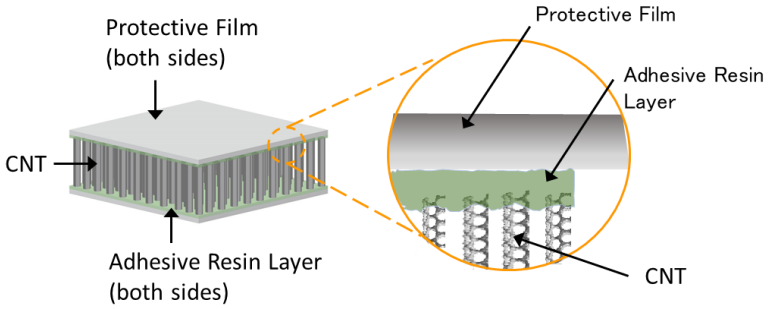
Heat generation in IC chips has increased with advancements in electronic device performance. Therefore, it is important and necessary to design a semiconductor package and module that takes heat dissipation into consideration. In addition, thermal interface material (TIM[*1]) requires high-thermal conductance, high-temperature resistance, and higher thermal stress relaxation performance.

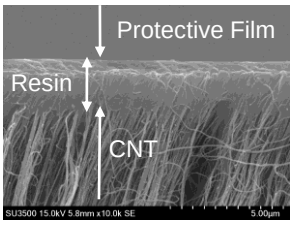
SHINKO developed a carbon nanotube (CNT[*2]) TIM which utilizes the high thermal conductivity and flexibility of CNT to solve these problems with technology under license from Fujitsu Limited.

[*1] TIM : Thermal Interface Material
[*2] CNT : Carbon Nanotube

Features/Structure

CNT-TIM is a uniquely structured with high thermal conductivity and flexibility. Grown on an axial direction keeping a vertical CNT array of which both edges are laminated with protective film and adhesive resin.





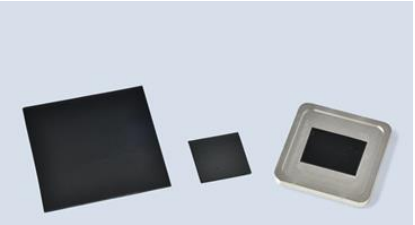
Electron Micrograph
(Cross-Sectional View)

Specification	
TIM-Size	Max 50 × 50 mm
TIM-Thickness	50~150 μm
Thermal Conductivity	*50 W/mK
Thermal Resistance	*0.04 k·cm²/W
Adhesive Resin	Thermosetting resin
Heat Resistance Temperature of Resin	380 ℃ (5% Weight loss)
Assembly Conditions (Temporary)	Temp. : 120 ℃ Pressure : 0.7 MPa Fixed Time : 30 min.

*Note : SHINKO internal measurement data, not a guaranteed value

Application

- Power semiconductor modules for automotive and industrial applications
- CPU/GPU for personal computers and servers
- Solutions for thermal management in electronic devices



CNT-TIM

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