

Simulation Conditions

Table 1 Simulation Sample

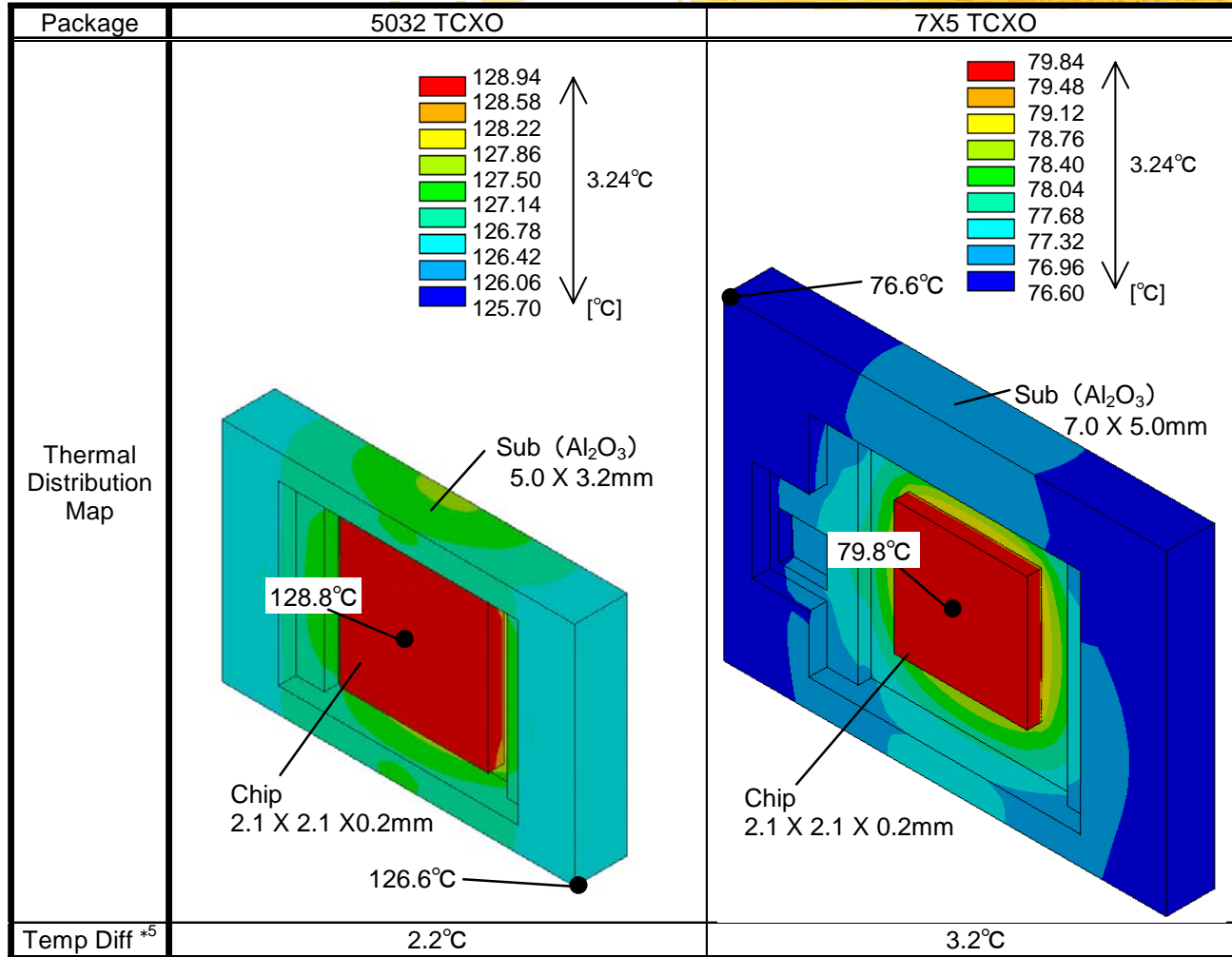
Package	5032 TCXO	7050 TCXO
Body Size	5.0 X 3.2mm	7.0 X 5.0mm
Volume	15mm ³	34 mm ³
Chip Size	2.1 X 2.1 X 0.2mm	2.1 X 2.1 X 0.2mm

- A) Simulation Software : ANSYS Rev. 5.4
- B) Model : 3-D Model
- C) Wind Velocity : 0m/s (Natural Cooling)
- D) Thermal Conductance : See Table 2

Table 2 Thermal Conductance

Material	Parts	W/m·K
Si	Chip	135.0
Al ₂ O ₂	Substrate	17.0
Ag Paste	Die Attach Material	3.9
Air	—	0.03

Simulation Results (1)



Environmental Temp. : 25°C , Wattage : 0.1W

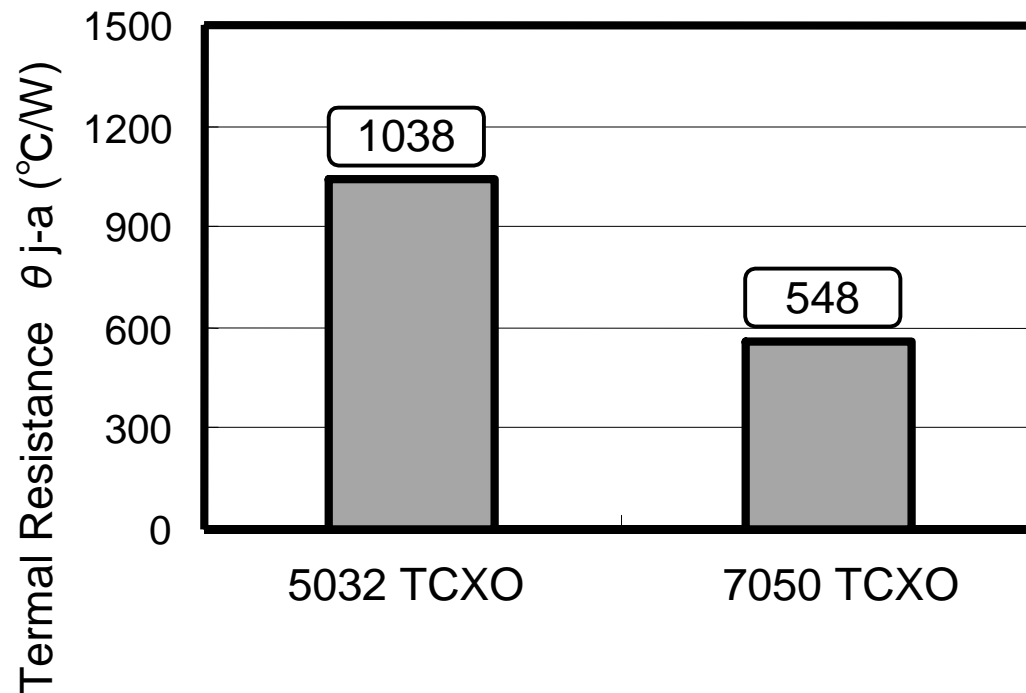
* 5 : Temp Difference within Package

- Max. Temp of 5032 is higher than 7050, Temp Difference within package for 5032 is lower than 7050.

- Reason being, volume of 5032 is smaller at 56%. (See Table 1 on Page 1)

Simulation Results(2)

Table 3: Thermal Resistance θ_{j-a} simulation result



- Thermal Resistance θ_{j-a} of 5032 is bigger than 7050 at x1.9.
- Reason being, 5032 has smaller volume.
- For the reference, Table 4 (next page) shows θ_{j-a} vs. volume. The smaller volume, the (keenly) bigger θ_{j-a}

Reference Data

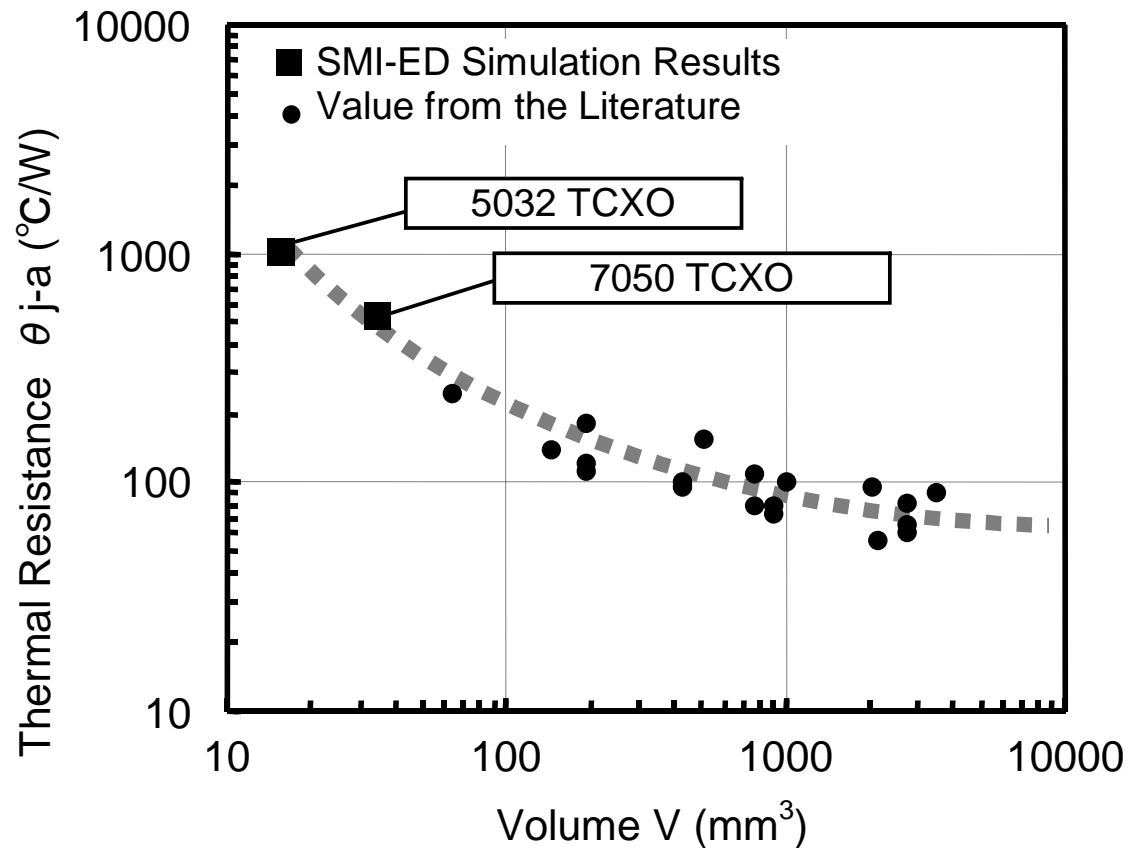


Table 4 θ_{j-a} vs. Volume

This demonstrates Sumitomo modeling capabilities: All data values are based on “Package” only and do not include dissipation via PC board which may substantially improve thermal performance. Factors such as pad sizes and pc board materials and layout must be defined to calculate thermal performance.