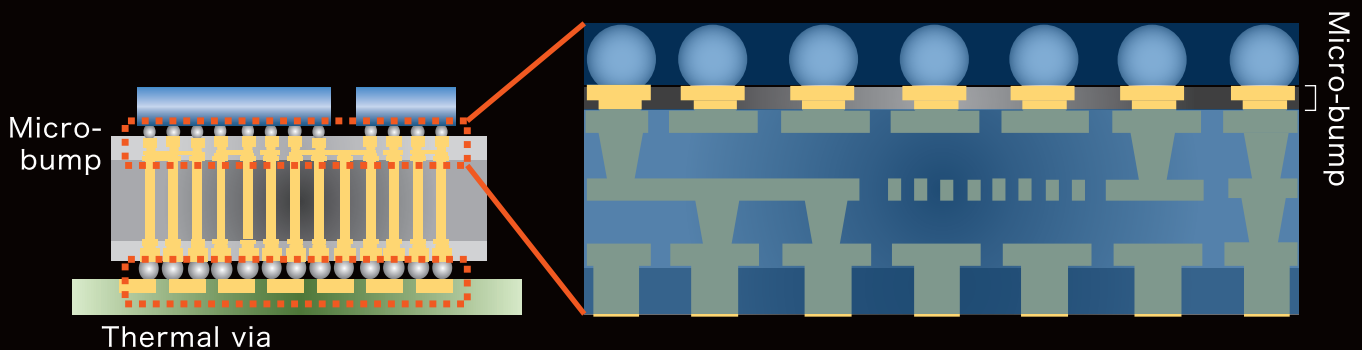


Acid copper plating additive to low aspect ratio via filling
for high current, high heat radiation

TORYZA LCN SD

- ▶ Can use for low aspect ratio vias to make micro bumps
- ▶ Can use for thermal vias to realize low noise, high current density, heat radiation
- ▶ Can use also for trench filling

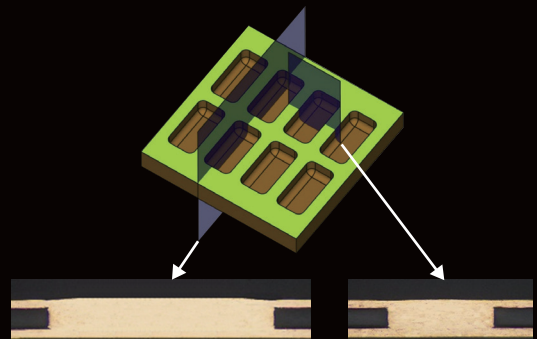


Micro-bump formation



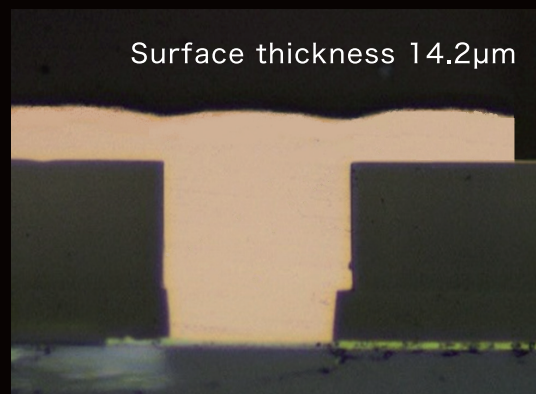
Current density $1.5\text{A}/\text{dm}^2$, 15min,
via diameter $40\mu\text{m}$,
via depth $5\mu\text{m}$

Thermal via filling



$50 \times 100\mu\text{m}$, via depth $30\mu\text{m}$
Current density $1.5\text{A}/\text{dm}^2$,
Plating time 60min

Trench filling



Surface thickness $14.2\mu\text{m}$

Current density $1.5\text{A}/\text{dm}^2$, 60min,
trench width $50\mu\text{m}$,
depth $55\mu\text{m}$