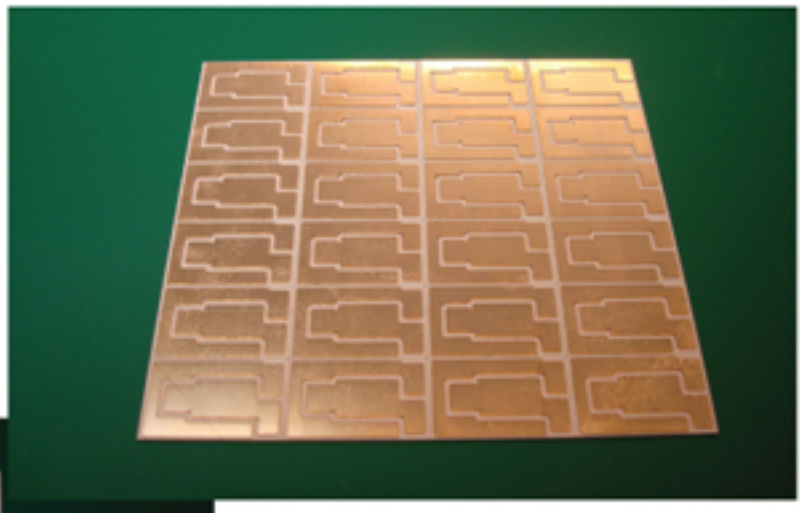
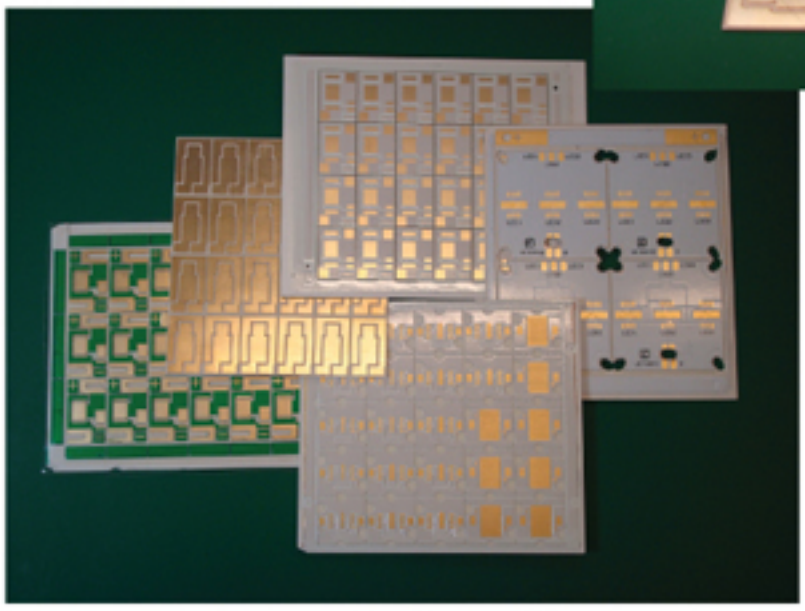
高熱傳導散熱銅箔－陶瓷基板

Direct bond copper (DBC)

Ceramic: AlN or Al_2O_3

Cu : 15~200 μm





- The melt reacts with the Alumina by forming a very thin Copper Aluminum Spinel layer

  $CuO + Al_2O_3 = CuAl_2O_4$

- Copper to copper fusing is possible in the same principle way.
- Copper-Aluminumnitride (AlN) DBC has been possible for several years.

$Cu\text{-}Al_2O_3\text{-}Cu$ composite substrate

(also known as DBC, Direct Bond Copper)

Al_2O_3 → **Offer structural integrity and electrical insulation**

← **Cu** **Offers thermal dissipation**

Material Character:

Condition: 90x90x1.2mm

Cu (0.3mm) x Al (0.6mm) x Cu (0.3mm)

- **Thermal conductivity: z-direction > 200 W/mK (competitor: 20~27)**
  x-y direction > 300 W/mK
- **Thermal expansion coefficient: 6.6ppm/℃ at 200℃**
- **Breakdown voltage: > 3k V**
- **Thermal shock test, passed**
  -MIL-STD-750D, method: 1056.1
- **Flexure strength: > 200 N @ loading rate 0.5mm/min (competitor: > 20)**