Active metal brazed layer copper (AMC) substrates

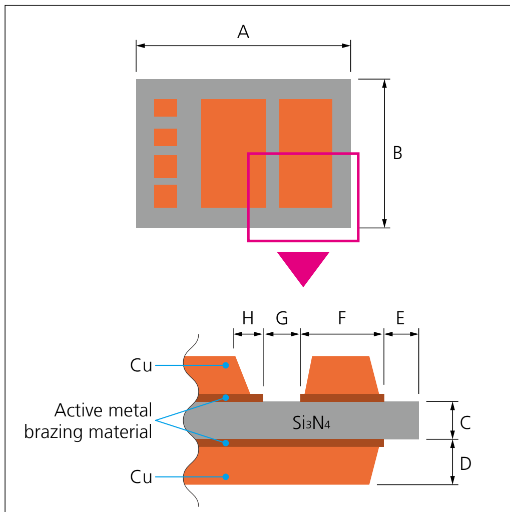
We offer all purpose copper plated ceramic substrates by active metal brazing method to meet diversified requirements that have arisen in power module substrates.
Active metal brazed copper (AMC) substrates are made by joining copper circuit plate onto ceramic substrates by brazing. They are suitable for making fine patterned power module circuits with high thermal cycle performance. We offer silicon nitride AMC (SIN-AMC) substrates and aluminum nitride AMC (ALN-AMC) substrates for the basement ceramic substrates.
AMC substrates are best fit for high power semiconductor module substrates such as power transistor substrates like IGBTs. They directly dissipate heat with sufficient insulation.

[Characteristics of SIN-AMC substrates]

- Simple structure with low thermal resistance. Specifically, thermal resistance of SIN-AMC substrate with the thickness of 0.32mm is almost equivalent to that of ALN-AMC substrate with the thickness of 0.635mm.
- Excellent mechanical strength properties; They have high thermal cycle performance even if the copper circuit is made thick (up to 0.8mm) to lower thermal resistance and increase power output.
- Their high fracture toughness allows direct ultrasonic bonding of electrode terminals onto the copper circuit plate and securing the substrate onto heat sink by rivets.
- Coefficient of thermal expansion equivalent to that of ceramics substrates enables direct mounting of Si chips onto the copper circuit plate.
- High joint strength of copper circuit plate
- High voltage resistance

[Applications]

- Power transistor module (IGBT, MOSFET, etc.)
- Peltier thermoelectric module



Standard design

Type of ceramics		Silicon Nitride (Si_3N_4)		
A, B	Ceramic dimension	Maximum effective area 90 X 110		
	Tolerance	±0.15		
C	Ceramic thickness	0.25/0.32/0.635		
	Tolerance	±0.05		
Electrode material		Cu		
D	Cu thickness	0.1–0.4	0.5–0.6	0.7–0.8
E	Pull back	≧0.5	≧0.7	≧1.0
F	Pattern dimension	≧0.5	≧0.7	≧1.0
G	Pattern gap dimension	≧0.4	≧1.0	≧1.2
H	Taper dimension	≧0.5D (Less than 1/2 of the Cu)		

Values on the chart are standard design rule and not guaranteed value.
Please contact us for possibility of correponding to designs not covered in above chart.