AlN AMB Copper-Clad Substrates

AlN AMB ceramic substrate with bonded copper pads

Product ID / SKU: FWM/CS-AMB-001

Material: Aluminum Nitride (AlN) / Copper

Product type: Ceramic Substrate

FreeWill Material supplies aluminum nitride (AlN) AMB copper-clad substrates for power modules that need efficient heat transfer, electrical insulation and drawing-defined copper circuits.

Typical Construction Parameters

Parameter	Typical value / configuration	Applicable condition
Ceramic base	High-purity aluminum nitride (AlN)	Grade and material data sheet
Copper layer	Oxygen-free high-conductivity copper	Copper grade and supply condition
Bonding route	Active metal brazing (AMB)	Braze system and process route
Thermal conductivity	170-200 W/(m·K)	Selected AlN grade and test method
Bond strength	>70 MPa	-
Dielectric strength	>15 kV/mm	Thickness, voltage and test conditions
Coefficient of thermal expansion	4.7 × 10^{-6}/K	Temperature range and assembly design
Ceramic thickness	0.2-2.0 mm	Drawing-defined thickness and tolerance
Copper thickness	0.1-0.6 mm; customizable	Top and bottom copper configuration
Maximum panel size	240 × 280 mm	Usable area, outline and flatness
Surface finishes	Immersion gold, OSP, Ni/Au, Ni/Pd, Ag	Finish stack and assembly compatibility
Thermal cycling	>5,000 cycles (-55°C to 150°C)	Cycle profile and failure criteria