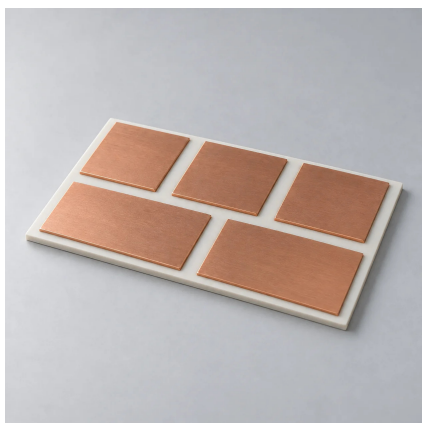




Overview

Alumina AMB Copper-Clad Substrates

Product ID / SKU: FWM/CS-AMB-005

 Material: Alumina (Al₂O₃) / Copper

Product type: Ceramic Substrate

Alumina-based AMB copper-clad substrates for selected power-electronics layouts subject to ceramic and braze-system review.

96% Alumina Substrate (708 S) Properties

Property	96% Al ₂ O ₃ - 708 S	Test conditions / measurement tolerance ±10%
Density (g/cm ³)	≥3.75	DIN EN 993-1
Bending strength, σ_0 (MPa)	≥500	-
Young's modulus (GPa)	≥300	-
Thermal conductivity (W/(m·K))	24	Room temperature; DIN EN 821-2
Linear thermal expansion coefficient (10 ⁻⁶ /K)	7-9	100-800°C; DIN 51045-1
Specific heat capacity (J/(g·K))	≥0.75	20°C; DIN EN 821-3 method B
Relative permittivity	~9.8	Room temperature, 1 MHz; Ra ≤0.4 μm
Dielectric loss factor	≤0.005	Room temperature; 1 MHz; Ra ≤0.4 μm
Volume resistivity (Ω·cm)	≥10 ¹⁴	Room temperature; IEC 62631-3
Breakdown strength (kV/mm)	AC≥15; DC≥15	20°C; AC / DC
Fracture toughness (MPa·m ^{1/2})	≥3.0	Indentation-fracture (IF)

99.6% Alumina Substrate (710 C) Properties

Property	99.6% Al ₂ O ₃ - 710 C	Test conditions / measurement tolerance ±10%
Density (g/cm ³)	≥3.80	DIN EN 993-1
Bending strength, σ_0 (MPa)	≥420	ASTM C1499-08
Young's modulus (GPa)	≥300	-
Thermal conductivity (W/(m·K))	≥25	Room temperature; DIN EN 821-2

Property	99.6% Al ₂ O ₃ - 710 C	Test conditions / measurement tolerance ±10%
Linear thermal expansion coefficient (10 ⁻⁶ /K)	7-9	100-800°C; DIN 51045-1
Specific heat capacity (J/(g·K))	≥0.65	20°C; DIN EN 821-3 method B
Relative permittivity	8.5-11.5	Room temperature, 1 MHz
Dielectric loss factor	≤0.010	Room temperature; 1 MHz; Ra ≤0.4 μm
Volume resistivity (Ω·cm)	≥10 ¹⁴	Room temperature; IEC 62631-3
Breakdown strength (kV/mm)	AC≥15; DC≥15	20°C; AC / DC
Fracture toughness (MPa·m ^{1/2})	≥3.0	Indentation-fracture (IF)

Typical Construction Parameters

Construction item	Typical configuration	Applicable condition
Ceramic base	Alumina (Al ₂ O ₃)	Grade and braze-system compatibility
Ceramic thickness	Confirmed from the drawing	Alumina grade, size and process dependent
Copper thickness	Defined with the alumina / braze stack	Alumina-specific bonding and thermal-cycle qualification
Pattern	Custom power circuit	Drawing review required
Surface finish	Bare Cu and selected plated finishes	Assembly-process dependent