Patterned copper-bonded alumina DBC substrates

Alumina Direct-Bonded Copper DBC Substrates

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

Material: Ceramic / Direct-Bonded Copper System

Product type: Ceramic Substrate

Alumina DBC substrates for mature thick-copper power circuits and cost-balanced electronic assemblies.

96% Alumina Substrate (708 S) Properties

Property	96% Al_2O_3 - 708 S	Test conditions / measurement tolerance ±10%
Density (g/cm³)	≥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·m½)	≥3.0	Indentation-fracture (IF)

Typical Construction Parameters

Construction item	Typical configuration	Applicable condition
Ceramic base	96% alumina (Al2O3)	Route dependent
Ceramic thickness	Alumina: 0.25-1.00 mm	Matched ceramic / copper stack
Copper thickness	0.10-0.30 mm	Copper thickness and ceramic stack selected together

Construction item	Typical configuration	Applicable condition
Line / space	Etched-pattern dependent	Copper thickness, etch profile and insulation clearance
Surface finish	Bare/protected Cu; selected Ni, Ni/Au or Ag	Assembly-process dependent
Bond / peel testing	Construction-specific test	Peel method, coupon geometry and acceptance criterion