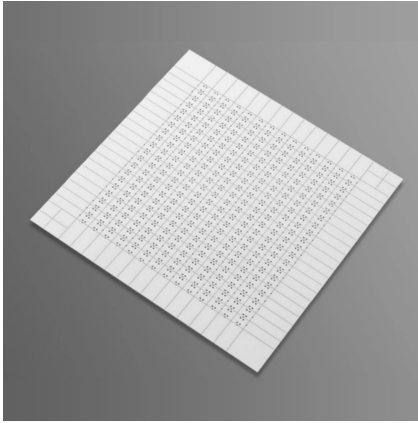




Alumina ceramic panel with repeated holes and separation lines

Alumina Ceramic Substrates for Crystal Oscillators

Product ID / SKU: FWM/CS-ALU-007

Material: Alumina

Product type: Ceramic Substrate

High-purity alumina substrates for stable crystal-oscillator circuit support and microelectronic packaging.

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
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)