

Silicon Nitride (Si_3N_4)

Performance parameters of silicon nitride

Material Properties	Unit	Silicon Nitride
Density	g/cm ³	3.2
Vickers hardness	GPa	15
Bending strength	MPa	1000
Compressive strength	MPa	3000
Elastic modulus	GPa	320
Toughness	MPa·m ^{1/2}	8
Poisson's ratio	—	0.26
Young's Modulus	GPa	320

Thermal Properties	Unit	Silicon Nitride
Thermal conductivity	W/mK	25
melting point	°C	1900
Specific heat capacity	J/g·K	0.71
linear expansion coefficient	10 ⁻⁶ /K	3.2
Maximum operating temperature	°C	1400

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Electrical Properties	Unit	Silicon Nitride
Dielectric constant	1 MHz	8
Breakdown voltage	V/cm	> 10 ⁶
Dielectric loss	1 MHz	0.001
Resistivity	Ω·cm	10 ¹⁴

Note: This value is for reference only and may vary slightly depending on the batch conditions.

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