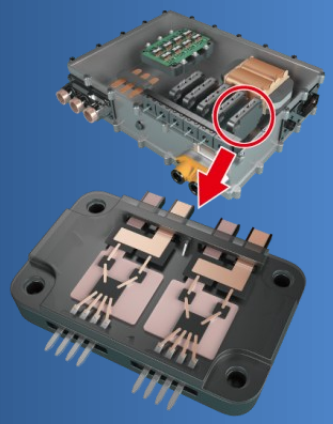
PROTERIAL
博迈立铖

功率半导体模块用
氮化硅（Si3N4）绝缘电路板

Silicon Nitride Substrate for Power Module



高强度・高导热性，有效提升功率模块的功率密度和安全性

Silicon nitride substrate having high bending strength, fracture toughness and thermal conductivity contributes to improvement of the power density and reliability for the power module.

电控

概要

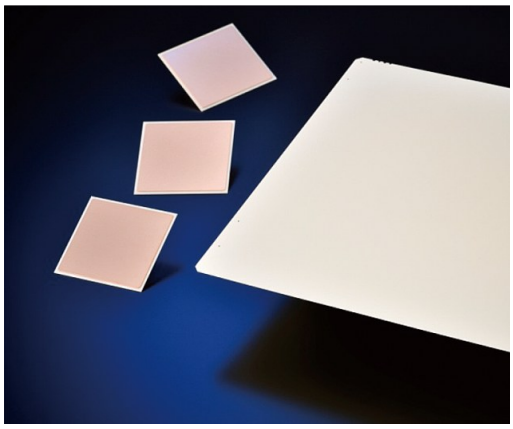
本公司制造的氮化硅电路板，热传导和机械强度性能优越，适用于IGBT、SiC等对可靠性要求较高的大功率半导体器件的绝缘电路板。
此外，新开发了支持低热阻的130W/m・K产品。

Proterial' silicon nitride substrates are best suited as insulated substrates for large power semiconductors that require high reliability, including insulated gate bipolar transistors (IGBT) and silicon carbide (SiC) devices. Our product lineup also includes 130W/m・K substrates to support reductions in thermal resistance.

用途

SiC功率模块
Si-IGBT模块
EV用PCU

SiC Power module, Si-IGBT Module, PCU for EV



特点

卓越的机械强度和高导热性
Having high bending strength, fracture toughness and thermal conductivity

可覆厚铜
Thicker Cu can be bonded on the Silicon nitride substrate

促进功率模块的小型化，提升其可靠性
Silicon nitride substrate contribute to reduce size and improve the reliability of power module

性能

性能参数
Basic characteristics

New!

项目 Item	单位 Unit	Si_3N_4	Si_3N_4	AlN	Al_2O_3
抗弯强度 Bending strength	Mpa	700	700	350-500	250
断裂韧性Fracture toughness	$MPa \cdot m^{1/2}$	6.5	6.5	2.0-3.0	3.5
导热性 Thermal conductivity	W/m·K	130	90	180	24
热膨胀率 Thermal expansion coefficient	ppm/K	2.5	2.5	4.8	7.2
体积电阻 Volume resistivity	Ω・m	$>10^{12}$	$>10^{12}$	$>10^{12}$	$>10^{12}$
绝缘强度 Dielectric strength	kV/mm	≧18	18	17-37	13
介电常数 Dielectric constant (@1MHz)	-	8	8	9	9.5

绝缘电压
Break down voltage

厚度 Thickness	0.2mm	0.3mm	0.6mm
耐压(kV) Breakdown voltage	8.2	11.8	15.7