Coraynic Technology Limited

Your reliable advanced ceramic material partner

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About Us

Coraynic Technology Limited is established in Dec 2018,a professional advanced ceramic materials supplier in China.In the base of state-owned enterprise,government military background company,high technology research institute of China electronics technology.With more than 50 professional employees in ceramic and electronics Engineering&Technology.Equipped with advanced analyzing instruments and test facilities,such as thermal conductivity meter, laser particle analyzer,Universal tool microscope,ICP Plasma spectrometer,Intensity test meter, rough meter,etc.

Quality Assurance

With quality policy -'Customer focus, quality first, Sincere service and continuous improvement, quality management organization and invests in advanced analytic devices to guarantee quality control for the whole processes from raw materials to finished products.Every production employees/QC/QA are trained accordingly. Strict operating as working procedures,know the passed quality product required knowledge.Professional technical customer service team,to help customer solve technical support when have any issues in production.Be a excellent ceramic material supplier,be your reliable partner.

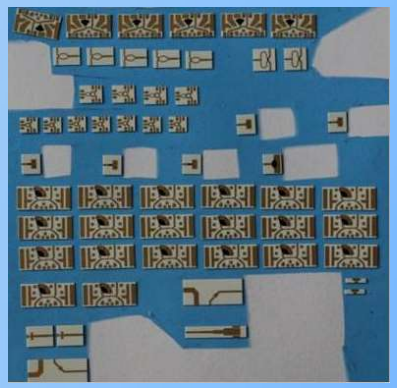
Products

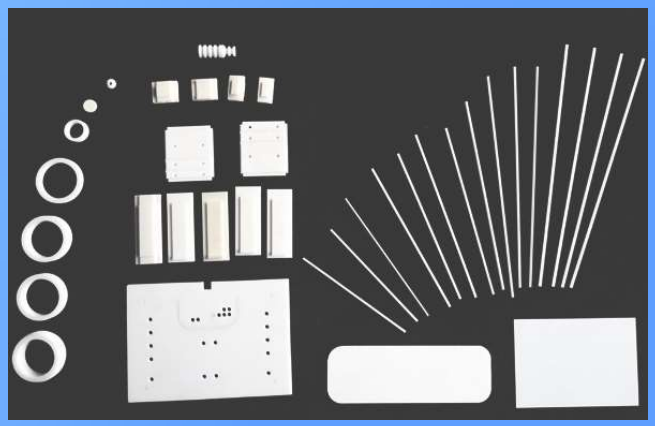
Beryllium Oxide ceramic,BeO has high thermal conductivity,high melting point (2530 ± 10° C),high strength, high insulation, high chemical and thermal stability, low dielectric constant, low dielectric loss and good adaptability properties,etc.Widely used in special metallurgy,vacuum electronics,nuclear technology,microelectronics and optoelectronics.Especially in high-power semiconductor devices,integrated circuits, package microwave vacuum devices and nuclear reactors.

Aluminum Nitride (AlN)ceramics and components,High thermal conductivity (theoretic value 280W/m.K),high electric resistance,low coefficient of heat expansion(4.5X10-6℃) good march with Si(3.5~4×10-6℃) and GaAs(6×10-6℃),Excellent electrical properties(Dielectric constant, dielectric loss, bulk resistivity, dielectric strength).

HTCC/LTCC High /Low Temperature Co-fired Ceramic material.Co-fired ceramic devices are fabricated using a multi-layer approach. The starting material is composite, green tapes. consisting of ceramic particles mixed with polymer binders The tapes are flexible and canbe machined, for example using cutting, milling, punching and embossing, LTCC/HTCC) have a wide range of applications in different fields of electronics and Micro systems.

Si3N4 Ceramic Silicon nitrides (Si_3N_4) feature an excellent combination of material properties. They are nearly as light as silicon carbide (SiC), but their microstructure gives them excellent thermal shock resistance and their high fracture toughness makes them resistant to impacts and shocks. Main Use Of Precision Ceramics For Electronics Power Module Substrates,LED Substrates,Submount For Optical Pick-Up,Heat Dissipation Substrates.





Beryllium Oxide ceramic property,deatures amd application

Performance Parameters of Beryllia Ceramic:

NO.	Property	Performance parameter	
		B-99	B-99.5
1	Dielectric Constant	6.6±0.2 (1MHz)	6.6±0.2 (1MHz)
		6.9±0.2 (10GHz)	6.8±0.2 (10GHz)
2	Dissipation Factor	≤4×10-4 (1MHz)	≤4×10-4 (1MHz)
		≤6×10-4 ((10±0.5) GHz)	≤4×10-4 ((10±0.5) GHz)
3	Volustivity me Resi	≥10^{14}Ω·cm (100℃)	≥10^{14}Ω·cm (20℃)
4	Dielectric Strength(DC)	≥30 kV/mm	≥40 kV/mm
5	Flexural Strength	≥200 MPa	≥200 MPa
6	Density	≥2.85 g/cm3	≥2.88 g/cm3
7	Average Linear Expansion Coeff	7.0~8.0×10^{-6} 1/K (25℃~500℃)	7.0~8.0×10^{-6} 1/K (25℃~500℃)
8	Thermal Conductivity	≥260 W/ (m·K) (25℃)	≥285 W/ (m·K) (25℃)
		≥190 W/ (m·K) (100℃)	≥200 W/ (m·K) (100℃)
9	Thermal shock resistance	adopt	adopt
10	Chemical stability	≤0.1 mg/cm2 (1:9HCl)	≤0.1 mg/cm2 (1:9HCl)
		≤0.1 mg/cm2 (10%NaOH)	≤0.1 mg/cm2 (10%NaOH)
11	Air tightness	≤5×10^{-12} Pa·m^3/s	≤5×10^{-12} Pa·m^3/s
12	Grain Size	10~20μm	10~20μm

Features:

1-Higher thermal conductivity than aluminum.

2- With high strength and stiffness, low density, heat resistance and exceptional reflectivity.

3- High melting point (2530 ± 10° C,high insulation, high chemical and thermal stability.

Application:

1--microwave high-power electric vacuum devices

2--microelectronic packaging devices,high reliability hermetic lids, ceramic packages, preforms, and braze & solder alloys.

3--Military and aerospace fields
generally used as a shell for rockets and missiles returning to the atmosphere and rocket nozzles or refractory materials in a new generation of supersonic aircraft.

4--High power,high brightness LED.

5--Neutron reflectors and moderators, Neutron filter assemblies, Neutron sources.

6– Vacuum electronics. heat sinks, vacuum tubes, gas lasers and magnetrons.

Beryllium Oxide Ceramic

General product size

Thickness (mm)	Length and width (mm)			
0.385 0.5 0.635 1.0 1.5	2"* 2" 50.8*50.8mm	3"* 3" 76.2*76.2mm	4"* 4" 101.6*101.6mm	4.5"* 4.5" 114.3*114.3mm

	Diameter (mm)						
1.0 1.2 1.5 2.0 2.5	Φ20 Φ26	Φ30 Φ35	Φ50 Φ52	Φ60	Φ75	Φ100	Φ110

Notes: Other specifications and sizes can be customized according to customer's requirements.

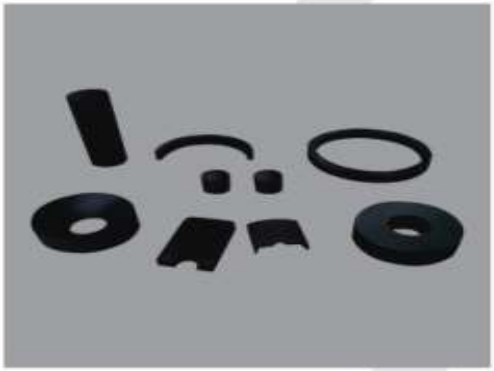
Property Content	Unit	Property Index
Surface roughness	μm	Ra:0.05 ~ 0.8
Camber	(length‰)	≤2‰

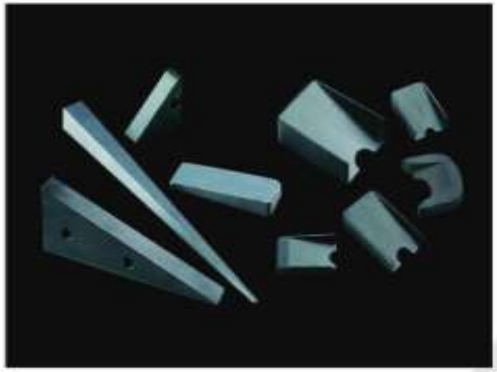
Beryllia Ceramic Column Beryllia Ceramic Rod

Beryllia ceramic material is applied as nuclear fuel neutron reflector, moderator, and control rod in nuclear reactor. It can be used with U2O ceramics as nuclear fuel.

Beryllia Attenuating Ceramic Materials

As an irreplaceable key material, beryllia attenuating ceramic can be used in microwave electric vacuum devices such as traveling wave tubes and klystrons. When being applied in microwave tubes, it can fully absorb signals, reduce reflections, selectively suppress clutter in all modes so as to ensure the given microwave parameters and thus to improve the stability of the devices.



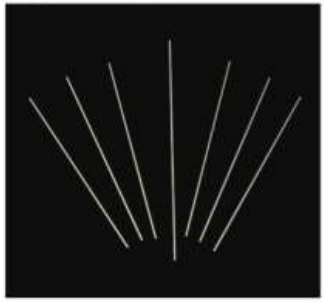


Beryllia Ceramic Rod / Boron Nitride Ceramic Rod

Having the characteristics of low dielectric constant, low microwave loss, high strength, exellent thermal conductivity, high processing precision, and good consistency, beryllia and boron nitride clamping rod can be applied to a traveling wave tube to support its spiral structure and to provide a good cooling channel.

High strength
High precision

The machining accuracy: 0.005mm
Minimum machining size: 0.15mm
length: ≤300mm
straightness: 0.01/50mm



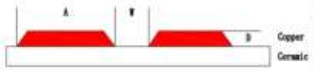
Aluminum Nitride (AlN)

AlN ceramic substrate Specification

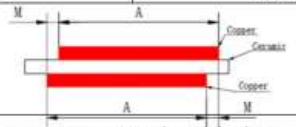
分类 Property Sort	项目 Characteristic		单位 Unit	指标值 Property Index
基本性能 Basic Property	颜色 Color		—	灰色 Gray
	吸水率 Water absorption		%	0
	体积密度 Volume density		g/cm^3	≥3.30
	表面粗糙度 Surface roughness		um	0.1~0.6
	翘曲度 Camber		(length ‰)	≤3‰
热学性能 Thermal Property	热导率 Thermal conductivity（20℃）		W/m.k	≥170
	热膨胀系数 Coefficient of thermal expansion	(20℃~300℃)	$(\times 10^{-6}/℃)$	4.6
		(40℃~800℃)		5.2
	比热（25℃）Specific Heat		J/(kg*K)	720
力学性能 Mechanical Property	抗弯强度 Bending strength		MPa	≥450
	弹性模量 Modulus strength		GPa	320
	莫氏硬度 Moh's hardness		—	8
	断裂韧性（IF 法）Fracture Toughness		$Mpa*m^{1/2}$	3
电学性能 Electrical Property	抗电强度 Dielectric strengh		KV/mm	≥25
	体积电阻率 Volume resistivity		Ω.cm	$\geq 10^{14}$
	介电常数 Dielectric constant		—	9
	介电损耗 Dielectric loss		$\times 10^{-4}$	2.98

AlN-AMB property

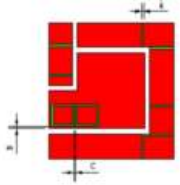
陶瓷厚度 Ceramic thickness	0.38，0.5，0.635，1.00mm
铜箔厚度 Copper thickness	0.1, 0.2 , 0.25 , 0.3, 0.4mm
最大外形尺寸 Max. outside dimensions	整板 Master Card：139.7×190.5 mm
	单枚 Single part：+0.20 /-0.05 mm
最大有效区域 Max. usable area	127×178 mm
总厚度公差 Tolerance of total thickness	±7 %(瓷 Ceramic +铜 Copper)
交货形式 Delivery form	单枚/整板 Single part/ Master Card

铜箔线距/线宽 Pattern of conductor	铜箔厚度D Copper thickness	最小线距W Min. Space between conductors	最小线宽A Min. Width of Cu conductor
	0.127 mm	0.3 mm	0.3 mm
	0.20 mm	0.4 mm	0.4 mm
	0.25 mm	0.5 mm	0.5 mm
	0.30 mm	0.5 mm	0.6 mm
	0.40 mm	0.6 mm	0.7 mm

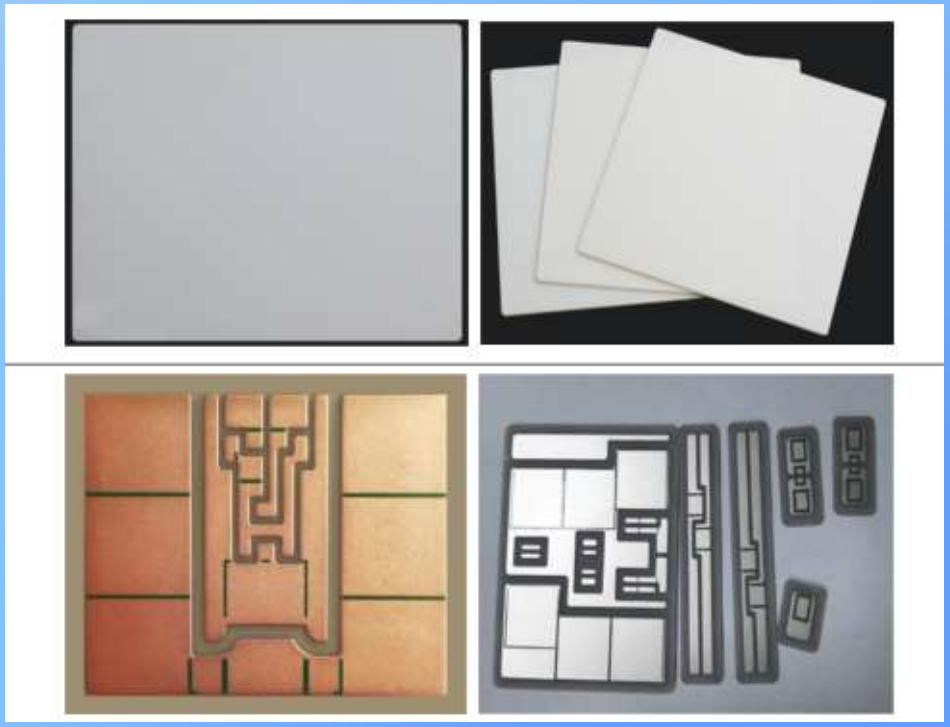
铜箔边距 Copper free perimeter	铜箔厚度 Copper thickness	铜箔边距A Copper free perimeter
	≤0.2 mm	≥0.2 mm
	≤0.3 mm	≥0.3 mm
	≤0.4 mm	≥0.4 mm

铜箔错位 Mismatch copper pattern front/back	
	M≤0.2mm 

表面处理 Surface finished	
	1. 裸铜 (防氧化) Bare copper (Anti-oxidation) 2. 化镀镍 Electroless Ni: 3~7μm (8%±2%) 3. 化镀金 Electroless NiAu: Ni: 3~7μm (8%±2%) Au:0.01~0.10μm 4. 化镀镍钯金 Electroless NiPdAu: Ni: 3~7μm (8%±2%) Pd: 0.05~0.15μm Au:0.01~0.10μm

阻焊 Solder stop	
	1. 阻焊最小宽度 Min. Width of solder stop A≥0.3 mm 2. 阻焊边到铜边缘偏差 Mismatch B≥0 3. 阻焊边之间最小距离 C≥0.3 mm Min. space between the edges of solder stop 4. 公差 Tolerance ±0.2 mm 5. 适用温度 Temperature 标准≤288 °C/10 s 高温≤400 °C/5 min

烧结孔洞 Sintering hole	超声波探伤 Ultrasonic test	<1 %
剥离强度 Copper peeling strength	90° 剥离测试 peeling test (50 mm/min)	>15 N/mm
焊接润湿率 Solderability	焊料 Sn/Ag3.5/Cu 还原性气氛或者真空气氛 Reducing atmosphere or vacuum	>95 %
引线键合强度 Bonding strength of wire	铝线 Alumina wire diameter，剪切力 Shear strength: 300μm	≥1000 gf
绝缘电阻 Insulation resistance	直流 DC，500V	>100 MΩ
耐温特性 Temperature resistance	410±10 °C 持续 5 min	无膨胀、剥离 No peeling
热冲击 Thermal shock test	-55°C (60 min)~150 °C (60 min) 转换时间 transfer time <60s	边缘打孔 Cycles dimples：>1000 次
空洞率（超声扫描）Void content (C-SAM)	50um 分辨率	≤3%,且扫描显示空洞的尺寸小于Φ1 mm



AlN ceramic feature and application

Features:

(1)High thermal conductivity (280W/m.K)
(2) High electrical insulation capacity (>1.1012Ωcm)
(3) Low thermal expansion (coefficient of heat expansion)(4.5X10-6℃) Good with Si(3.5~4×10-6℃) and GaAs(6×10-6℃)
(4)Excellent electricity properties(Dielectric constant, dielectric loss, bulk resistivity, dielectric strength).
(5) Good mechanic properties
(6) Excellent corrosion resistance
(7) Good optical transmission property

Application:

1--Power Module

Due to its high thermal conductivity, high electricity resistance, excellent electricity properties （Dielectric constant, dielectric loss, bulk resistivity, dielectric strength),AlN ceramics are widely applied to large scale IC package, silicon controlled rectifier,high speed conversion module,audio frequency and microwave power amplifier, photo-electron IC module, IGBT module, etc

2-- LED Package

AlN ceramics will replace traditional materials for high power LED substrates, High Brightness LED (HBLED): Products with high power but small size such as heat radiation base and frame for LED.UVLED (UVA, UVC): efficiency, safety, environmental friendly and durability.

3-- RF/Microwave communication

RF components are essential and vital components for telecommunication equipment.Due to AlN ceramics properties is becoming ideal material for RF/microwave communication industries.

4-- Automotive Electronics

AlN ceramics is widely applied to industrial areas for car electronic pumps, invertor, cigar lighters, sensors, ceramic motors.

5-- Image Sensing

3D face recognition is becoming a hot-spot is the industry in recent years. Global mobile manufactures must follow the trend to capture the opportunity. 3D face recognition has a very high possibility to become a standard of smart phone in coming 5 years. VCSEL will become more and more popular in applications to gesture recognition and 3D sensing technology for consumer electronics.

Ceramic Materials-LTCC

Manufacturer	**FERRO**	**Coraynic Technology Ceramic**
Model NUM.	**A6-M**	CTL7
Dielectric Constant	**5.9（1-100GHz）**	**6.26（1MHz）**
Dielectric LOSS	**0.2%（1-100GHz）**	**0.074%（1MHz）**
Insulation Resistance	**＞1×10$_{12}$Ω•cm**	**＞1×10$_{12}$Ω•cm**
Breakdown Voltage	**＞1000V/mil**	**＞1250V/mil**
Bending Strength	**170MPa**	**260MPa**
TCE（ppm/℃）	**7.0**	**7.0**
Thickness（μm）	**96.5**	**40/100**
Density（g/cm3）	**2.5**	**2.92**
Surface Roughness	**＜10μm**	**＜10μm**
Warp Degree	**＜3mil/in**	**＜3mil/in**
Shrinkage（X/Y、Z	**X/Y14.5%±0.2%；Z24.0±0.5 %**	**X/Y15.0%±0.2%；Z24.0±0.5 %**

Ceramic Materials-LTCC

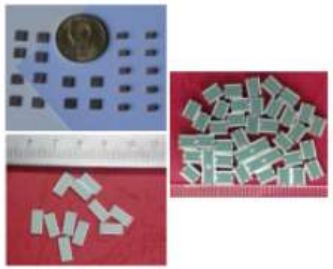
LTCC ceramic substrate used for filter,coupler,SIW duplexer.

CERAMIC MATERIALS

产品

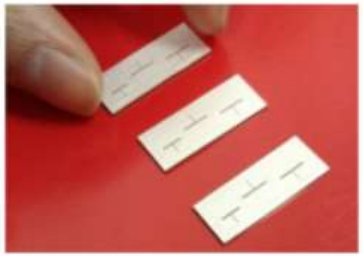
LTCC材料

产品应用



LTCC带通滤波器

耦合器

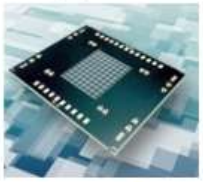


SIW双工器

终端应用

5G通信

汽车电子



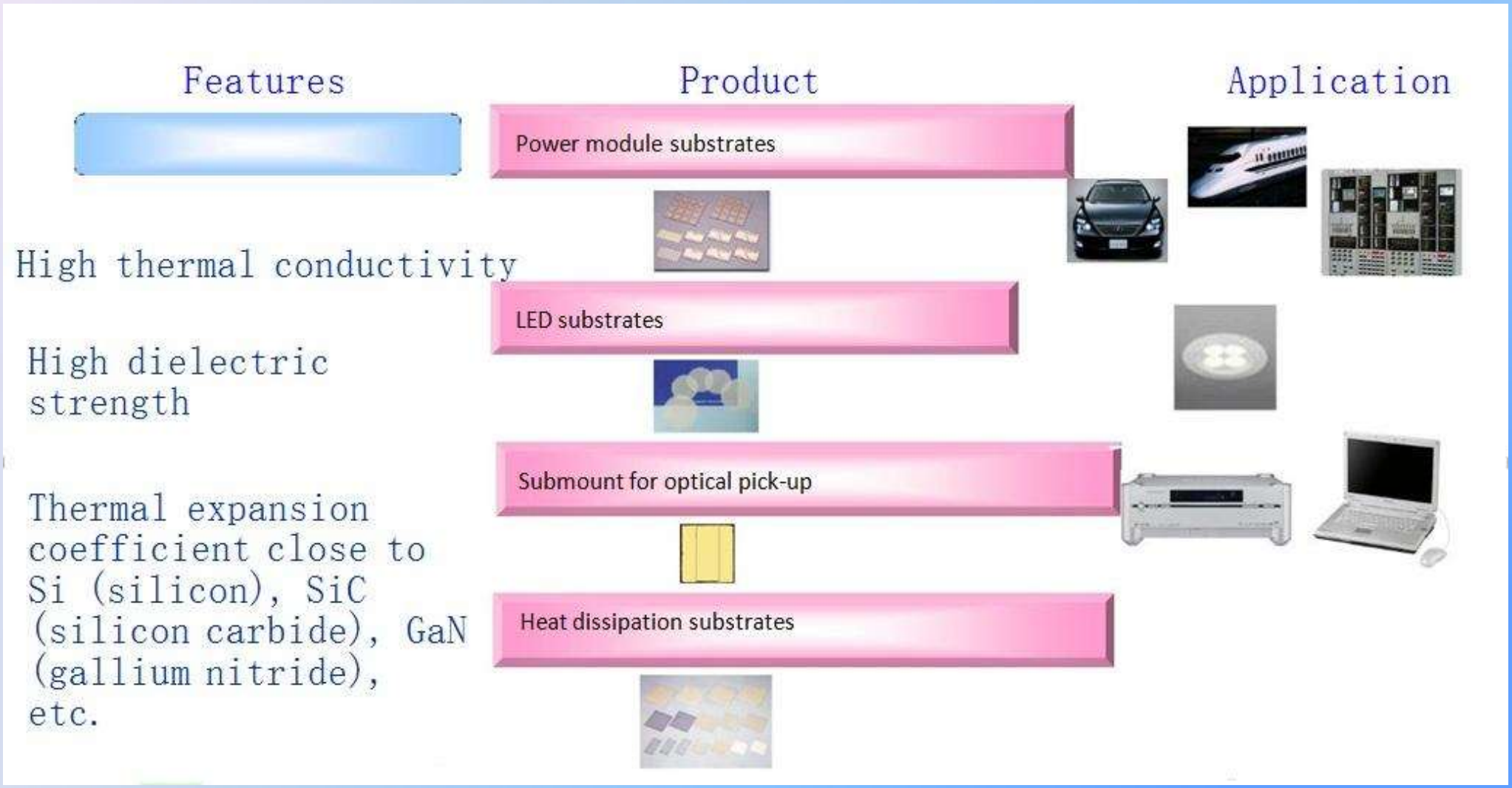
智能装备

环境监测

Ceramic Materials -HTCC

Manufacturer	Coraynic CERAMIC	Coraynic Ceramic
Model NUM.	CH95	CH90
Dielectric Constant	9.8	9.0
Dielectric LOSS	0.2%	0.3%
Insulation Resistance	> $1\times10^{14}\Omega\bullet cm$	> $1\times10^{14}\Omega\bullet cm$
Breakdown Voltage	> 1000V/mil	> 1000V/mil
Bending Strength	400MPa	400MPa
TCE（ppm/℃）	7.0	7.0
Thickness（μm）	100	100
Density（g/cm^3）	3.70	3.75
Surface Roughness	< 10μm	< 10μm
Warp Degree	< 50μm	< 50μm
Shrinkage（X/Y、Z）	X/Y16.8%±0.3%；Z23.0±0.5%；	X/Y16.8%±0.3%；Z23.0±0.5 %；
Color	White	Black

Si3N4 ceramic



Si3N4 ceramic Size

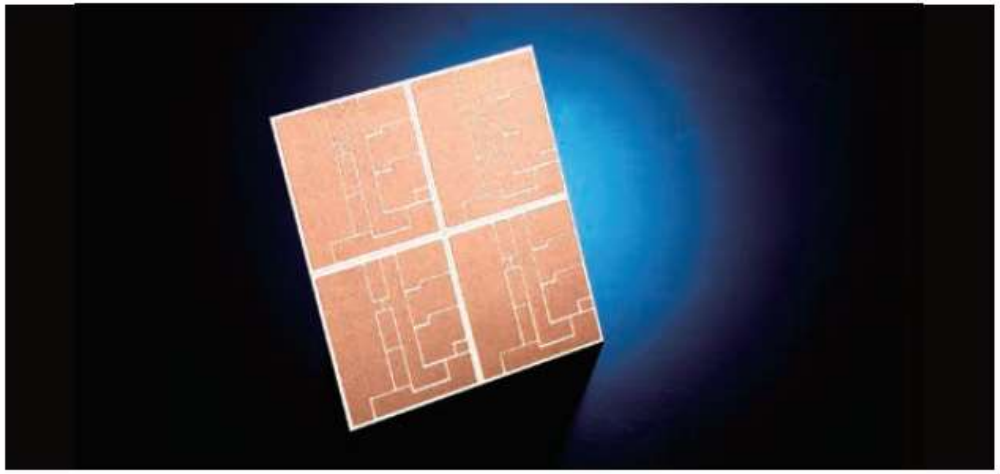
氮化铝基板尺寸

规格厚度	英寸	0.254	0.381	0.5	0.635	0.8	1.0	1.5	2.0	2.5	3.0
114.3*114.3mm	4.5*4.5	★	★	★	★	★	★	★	★	★	★
120*120mm		★	★	★	★	★	★	★	★	★	★
124*124mm			★	★	★	★	★	★	★	★	★
152*152mm	6*6				★	★	★	★	★	★	★
138*190.5mm	5.5*7.5				★	★	★	★	★	★	★
152*203mm	6*8					★	★	★	★	★	★
203*203mm	8*8					★	★	★	★	★	★
220*220mm						★	★	★	★	★	★
110*290mm						★	★	★	★	★	★
Φ50		★	★	★	★	★	★	★	★	★	★
Φ100		★	★	★	★	★	★	★	★	★	★
Φ150					★	★	★	★	★	★	★
Φ200						★	★	★	★	★	★
Φ300							★	★	★	★	★

Al2O3 ceramic substrate

氧化铝材料的性能 Al_2O_3 Performances

	项目（Item）		单位（Unit）	数值（Value）
氧化铝陶瓷基板 Al_2O_3 ceramic substrate	颜色（Color）			白色（White）
	Al_2O_3含量（Al_2O_3 content）		%	96
	密度（Density）		g/cm^3	3.75
	表面粗糙度（Surface roughness）		μm	0.4
	热学性能（Thermal property）	导热系数（Coefficient of thermal conductivity）25℃	W/(m.K)	24
		热膨胀系数（Thermal expansion coefficient）40-800℃	10^{-6}/K	7.8
	机械性能（Mechanical Properties）	抗弯强度（Bending strength）	MPa	400
		维氏硬度（Vickers hardness）	Gpa	14
	电学性能（Electrical Properties）	介电常数（Dielectric constant）1MHz		9.8
		介电损耗（Dielectric loss）1MHz	$*10^{-4}$	3
		体积电阻率（Volume resistivity）25℃	Ω.cm	$>10^{14}$
		击穿电压（Breakdown voltage）	KV/mm	>15



High-purity alumina ceramics are ceramic materials with Al2O3 content of 99.9% or more, due to its sintering temperature up to 1650-1990 ℃, transmission wavelength of 1-6 μm, generally made of fused glass to replace the platinum crucible; the use of its light transmission and resistance to alkali metal corrosion used as a sodium lamp; in the electronics industry can be used as an integrated circuit substrate and high-frequency Insulation material.

Production capability

PRODUCTION CAPABILITY

THANKS

Contact us if you have any questions, or need more information for your new project.
Our expert will support you with profession and experienced advanced ceramic work.