

1.适用范围 Scope

本标准适用于由福建华清电子材料有限公司提供的 96%氧化铝陶瓷基板。

This specification is applied to 96% Al₂O₃ ceramic substrate supplied by Fujian Huaqing Electronic Material Technology Co.,Ltd

2.产品 Product

2.1 产品名称 Product Name

96%氧化铝陶瓷基板（96%Al₂O₃ 陶瓷基板） 96% Al₂O₃ ceramic substrate

2.2 产品规格 Type of Product

产品 Product	厚度 Thickness	长宽 (mm) Length*Width
96%氧化铝 陶瓷基板 96%Al ₂ O ₃ ceramic substrate	0.2mm	82*135
	0.25mm	82*135; 130*109; 82*82
	0.3mm	82*82; 120*120; 110*110
	0.38mm	90*160; 114*114; 120*120; 127*127; 130*140; 130*109; 130*150; 140*190; 140*240
	0.5mm	
	0.635mm	
	0.76mm	
	0.8mm	
	1.0mm	
	1.2mm	130*109
	1.5mm	130*109; 120*120
	2.0mm	110*110;120*120

注：其他规格可根据客户需求激光划线。

Note: other specifications can be laser marking according to customer's requirements.

2.3 产品公差 Tolerances for products

2.3.1 厚度公差 Thickness tolerance

公差类别 Tolerance class	要求规格 Size	标准公差 Standard tolerance
厚度公差 Thickness tolerance	$T \leq 0.635$	±0.03mm
	$0.635 < T \leq 1.0$	±0.05mm
	$T > 1.0$	±0.07mm

2.3.2 激光加工长宽公差 Length*Width tolerance of laser processing

公差类别 Tolerance class	要求规格 Size	标准公差 Standard tolerance
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划线长宽公差 Tolerance of Length and Width	$T \leq 0.635$	+ 0.15 - 0.05
	$0.635 < T \leq 1.0$	+ 0.20 - 0.05
	$T > 1.0$	+ 0.25 - 0.05
孔线距公差 Tolerance of Hole and line distance	$T \leq 0.635$	+ 0.15 - 0.05
	$0.635 < T \leq 1.0$	+ 0.20 - 0.05
	$T > 1.0$	+ 0.25 - 0.05
孔直径公差 Tolerance of Hole Diameter	$< \varphi 5.0$	± 0.05
	$\geq \varphi 5.0$	± 0.1

2.4 性能指标 Materials Properties

项目 Item	单位 Unit	指标值 Value	测试标准 Test Standard
1) 颜色状态 Colour	----	白色 White	3.2
2) 体积密度 Density	g/cm ³	≥ 3.7	GB/T 2413
3) 导热率 Thermal Conductivity	20°C, W/(m·K)	≥ 24	GB/T 5598
4) 介电常数 Dielectric Constant	1MHz	9~10	GB/T 5594.4
5) 击穿强度 Dielectric Strength	KV/mm	≥ 17	GB/T 5593
6) 抗弯强度 Flexural Strength	MPa	≥ 350	GB/T 5593
7) 翘曲度 Camber	Length‰	$\leq 2‰$	
8) 表面粗糙度 Surface roughness Ra	μ m	0.2~0.75	GB/T 6062
9) 吸水率 Water absorption	%	0	GB/T 3299-1996
10) 体积电阻率 Volume resistivity	20°C, Ω .cm	$\geq 10^{14}$	GB/T 5594.5
11) 热膨胀系数 Thermal expansivity	10 ⁻⁶ /°C	20~300°C	6.5~7.5
		300~800°C	6.5~8.0

3. 明细规范 Specification

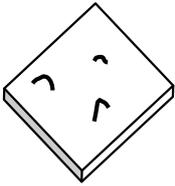
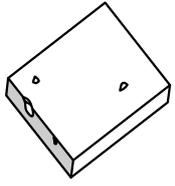
3.1 尺寸和表面粗糙度 Dimension and Surface Roughness

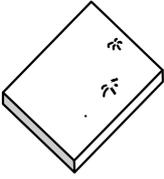
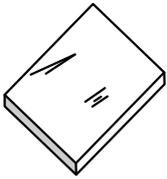
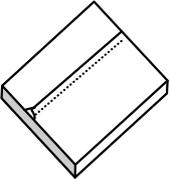
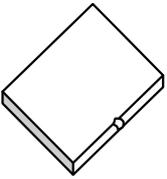
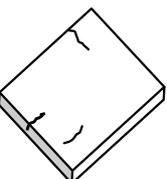
项目 Item	明细规范 specification	检测方法 Inspection Method
1) 长宽尺寸 Length and Width	按照图纸要求 In accordance with customer's drawing	游标卡尺 Vernier caliper
2) 厚度 Thickness		测厚规 Thickness gauge 千分尺 Micrometer
3) 基片弧度 Camber		数显量表 Digimatic indicater
4) 表面粗糙度 Surface Roughness	$0.2\mu\text{ m} \leq Ra \leq 0.75\mu\text{ m}$	表面粗糙度检测仪 Surface roughness meter

3.2 外观 Appearance

外观检测一般采用目测。

The inspection of appearance is visual inspection.

项目 Item	定义 Definition	图样 Drawing	检验分级标准 Inspection classification standard	检验方法 Inspection Method
粘粒 脏污 Clay smudgy	多余物质的碎屑, 或者粘附于瓷片表面的外来小颗粒 Excess materials, or foreign particles on the surface of the adhesive in ceramics		不允许 Not allowed	1、对比标样目测 Contrast the prototype with visual 2、使用测厚规测量粘粒高度 Thickness gauge is used to measure the height of clay
凹坑 针孔 斑点 Holes, Pits	瓷片上形成的孔洞或明显印迹 Holes or pits on the surface		不允许 Not allowed	1、对比标样目测 Contrast the prototype with visual 2、使用带刻度显微镜测量 Using the scale measuring microscope

黑点 瓷疱 Black spots Porcelain blister	气泡或包含气体破裂后在瓷片表面形成的坑、点或孔 After the bursting of bubbles or containing gas in ceramics surface pits, or holes		黑点 Black spot	$\phi \leq 0.2\text{mm};$ ≤ 1 个 $/\text{inch}^2$	1、对比标样目测 Contrast the prototype visual 2、使用带刻度显微镜测量 Using a scale measuring microscope 3、使用测厚规测量高度 Thickness gauge is used to measure
			瓷疱 Porcelain bubble	不允许 Not allowed	
划痕 伤痕 scratch	瓷片表面相对较长、窄、浅的凹痕 Ceramics surface relatively long, narrow and shallow grooves		长度 $\leq 0.02\text{mm}$ length $\leq 0.02\text{mm}$		1、对照标样目测 Contrast the prototype visual 2、使用带刻度显微镜测量 Using a scale measuring microscope
凸脊 (点) Convex ridge	瓷片表面狭长的突点(楞) Ceramics surface narrow metal dots		不允许 Not allowed		1、对比标样目测 Contrast the prototype visual 2、使用带刻度显微镜测量 Using a scale measuring microscope 3、使用测厚规测量高度 Thickness gauge is used to measure the height
缺损 Defect	瓷片沿边或角破损 Ceramics border or Angle of breakage		不允许 Not allowed		1、对照标样目测 Contrast the prototype visual 2、使用带刻度显微镜测量 Using a scale measuring microscope
裂纹 Cracks	线性破裂, 但未导致瓷片分离 Linear rupture, but did not lead to ceramics separation		不允许 Not allowed		1、在适合的光源下目测 Under the suitable light visual 2、浸品红后目测 Visual inspection after immersion magenta