

蓝宝石载盘

SAPPHIRE CARRIER

高杨氏模量 | 高机械强度
高透过率 | 与晶圆制程完美兼容
——适配先进封装、超薄晶圆处理场景

High Young's Modulus | High Mechanical Strength
High Transmittance | Perfect Compatibility with Wafer Processing
—— Suitable for advanced packaging and ultra-thin wafer processing scenarios

Apply thermal release tape on carrier

Sapphire carrier

Face-down die assembly on carrier

Sapphire carrier

Wafer/panel overmolding

Sapphire carrier

Carrier release

RDL (e.g.thin film,PCB based,...) ,
balling,singulation

Mold first-Face down

Apply temporary bond layer on carrier

Sapphire carrier

Face-up die assembly on carrier

Sapphire carrier

Wafer/panel overmolding

Sapphire carrier

Mold back grinding and RDL

Sapphire carrier

Carrier release and singulation

Mold first-Face up

Apply release layer on carrier

Sapphire carrier

RDL (e.g.thin film,PCB based,...)

Sapphire carrier

Die assembly on carrier

Sapphire carrier

Wafer/panel overmolding

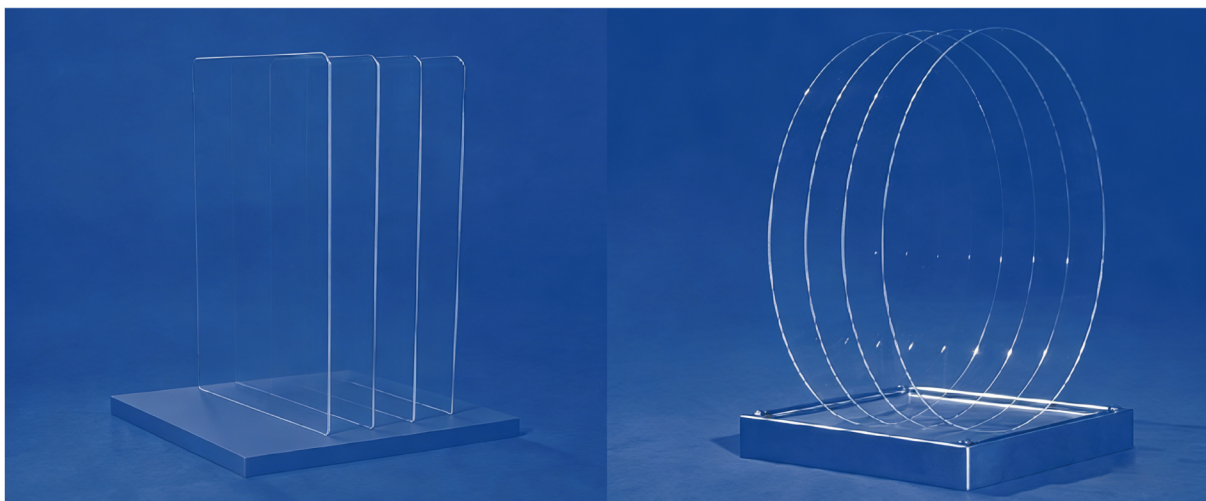
Sapphire carrier

Carrier release,balling singulation

RDL first

蓝宝石性能优势

Performance Advantages of Sapphire



高杨氏模量

High Young's Modulus



蓝宝石的高杨氏模量(345-420Gpa)有效抑制形变和翘曲，解决封装结构翘曲，提升制程稳定性。

High Young's modulus(345-420 GPa) effectively suppresses deformation and warpage, solves the warpage issue of packaging structure, and improves process stability.

高透过率

High Transmittance



蓝宝石在近紫外至中红外区的高透过率(>83%)，可灵活搭配各类解键合方案，其中完美适配激光解键合制程。

With a high transmittance (>83%) across the near-UV to mid-IR range, sapphire is highly adaptable to various debonding methods and ideally suited for laser debonding.

高机械强度

High Mechanical Strength



蓝宝石的高机械强度，可为核心晶圆及芯片稳定提供机械支撑。

Sapphire's high mechanical strength can provide stable mechanical support for core wafers and chips.

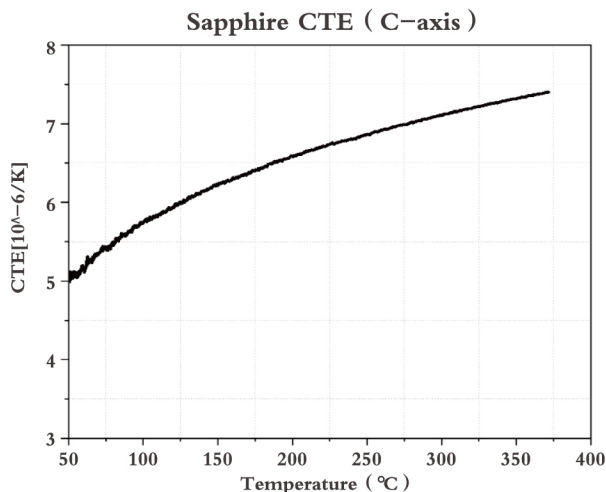
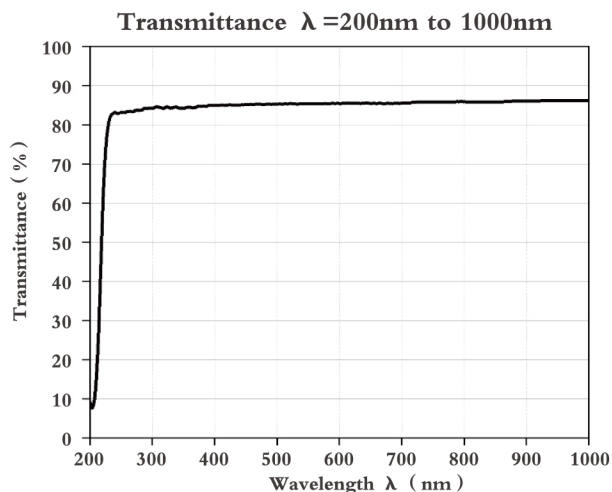
材料均匀性

Material Uniformity



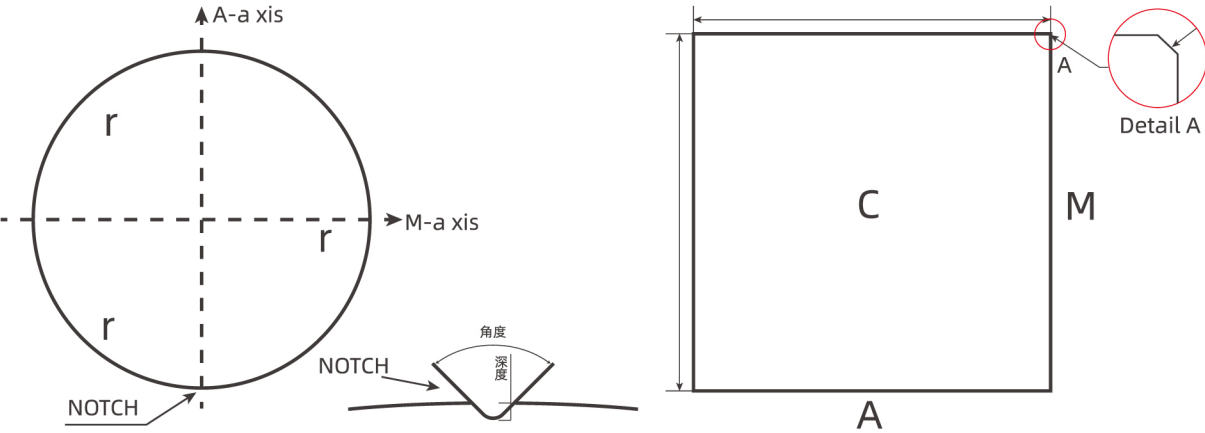
蓝宝石的材料均匀性，可有效避免封装制程中因载盘应力分布不均造成的局部变形。

Sapphire's material uniformity can effectively avoid local deformation caused by uneven stress distribution of the carrier during the packaging process.



蓝宝石载盘规格

Specifications of Sapphire Carrier



类型 Type	规格 Specification
Wafer	8" , 12" ; THK 0.7~2mm
Panel	100*100mm , 310*310mm, 510*515mm; THK 0.7~2mm

特性 Property	数值 Vaule		
	—	φ300mm	310*310mm
总厚度变化 TTV	Standard	≤ 3μm	≤ 5μm
	Advanced	≤ 2μm	≤ 3μm
厚度偏差 Thickness Tolerances	Standard	±0.010mm	±0.015mm
	Advanced	±0.005mm	±0.010mm
翘曲度 Warp	Standard	≤100μm	
	Advanced	≤50μm	
表面粗糙度 Ra	-	< 1.0nm	
外观质量 Appearance Quality	Standard	Scratch / Dig: 60/40	
	Advanced	Scratch / Dig: 40/20	

●大尺寸蓝宝石载盘的具体规格可根据客户需求定制。

Specific specs for large-size sapphire carrier can be customized according to customer requirement.

获取产品电子手册，扫描下方二维码，或访问官网下载中心（<https://www.tdgcore.com>）

Obtain E-brochure manually by scanning the QR code on the right, or visit the download center of TDG official website (<https://www.tdgcore.com>).



先进封装载盘性能矩阵

Advanced Packaging Carrier Performance Matrix

特性 Property	玻璃 Glass	透明陶瓷 Transparent Ceramic	蓝宝石 Sapphire
热膨胀系数 CTE, 10 ⁻⁶ /K	3.3~9	6~8	5.0 @50°C; 7.4@350°C
热导率 Thermal Conductivity, W/m · K	1~1.5	15~30	⊥ C 35; // C 40
透过率 Transmittance, %	> 90	> 65	> 83%@300~1200nm
杨氏模量 Young's Modulus, GPa	80~163	330~400	345~420
维氏硬度 Vickers HV	500~600	1500~2000	1800~2200
抗弯强度 Bending Strength, Mpa	50~200	200~400	⊥ C 1540; // C 1030
抗压强度 Compressive Strength, Mpa	500~1000	2000~3500	2000~2900
莫氏硬度 Mohs hardness	5.5~7	8	9
断裂模量 MOR, Mpa	~100	~300	350 ~ 690
密度 Density, g/cm ³	2.2~2.8	3.6~3.9	3.98

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