

**MORE
SUPERHARD**

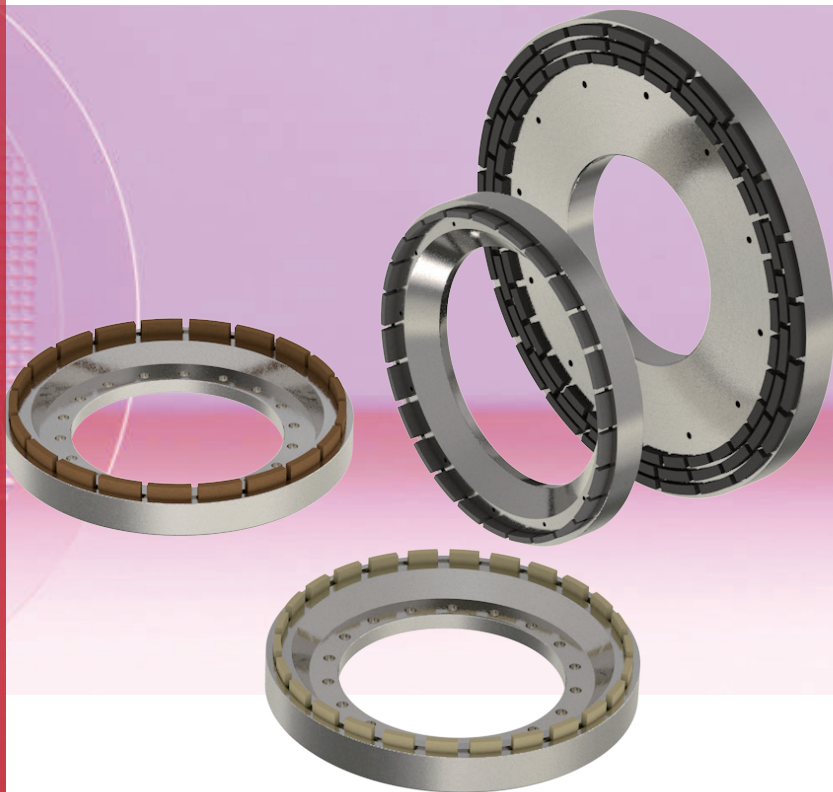


河南磨澳超硬材料有限公司

**MORE
SUPERHARD**

**MORE
THAN
GRINDING**

用磨削创造比磨削更多的价值



半导体行业

**Semiconductor
Industry**

Cutting & Grinding & Polishing

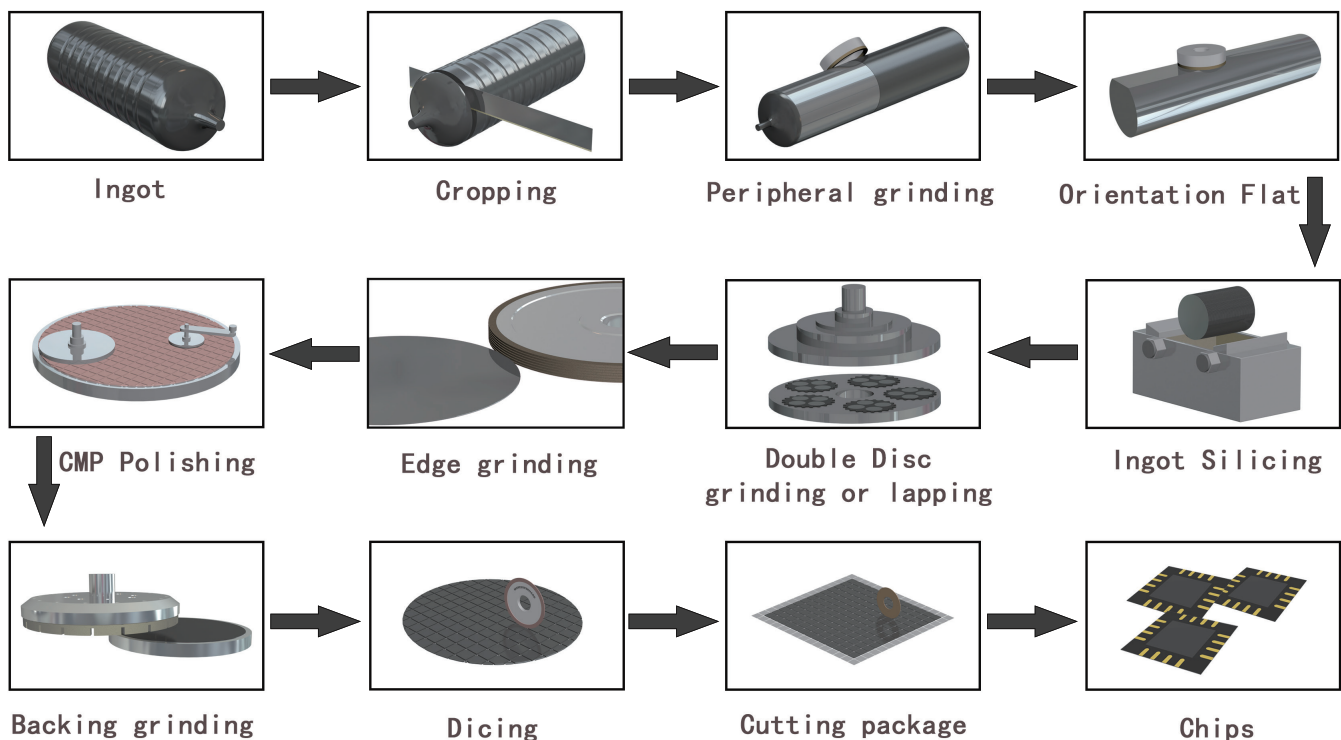
河南磨澳超硬材料有限公司是一家专业致力于金刚石及其它复合超硬材料及超硬材料制品的研发、生产、销售、服务的科技型企业。

半导体行业是电子工业背后的驱动力，随着中国半导体产业的发展，中国的半导体材料也在逐渐发生变化，已经从第一代半导体材料过渡到第三代第四代半导体材料，其中硅是应用最广泛的半导体材料，构成集成电路半导体晶片（芯片）的90%以上都是硅晶片。在半导体硅的多个加工工序中，金刚石工具起着超精密加工的作用。河南磨澳作为一家致力于研发和服务深挖市场的企业，产品不断更新换代，生产研发的金金刚石超硬制品可广泛应用于半导体制程各环节---硅棒剪裁、截断与切片；外圆滚磨、倒角磨边、研磨、背面减薄，以及封装中划片、切割等环节，涵盖硅片制造、晶圆制造、封装测试各环节。

More Superhard Products Co., Ltd. is a scientific and technological enterprise specializing in the research and development, production, sales and service of polycrystalline diamond and other composite superhard materials and superhard material products.

Semiconductor industry is the driving force behind the electronics industry. With the development of China's semiconductor industry, China's semiconductor materials are also gradually changing, from the first generation of semiconductor materials to the third and fourth generation of semiconductor materials, among which silicon is the most widely used semiconductor material, and more than 90% of semiconductor wafers (chips) composed of integrated circuits are silicon wafers.

MRESUPERHARD diamond tools can be used in many machining processes of semiconductor silicon -- silicon rod cutting, cutting and slicing; cylindrical grinding, edge grinding, back thinning, lapping and polishing as well as packaging slice, cutting and other process, covering silicon wafer manufacturing, wafer manufacturing, packaging and testing.



Manufacture Processes for Silicon Semiconductors



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More Super Hard Products Co.,Ltd
用磨削创造比磨削更多的价值

滚磨&滚圆

Ingot Grinding & Rounding

硅锭磨削用砂轮

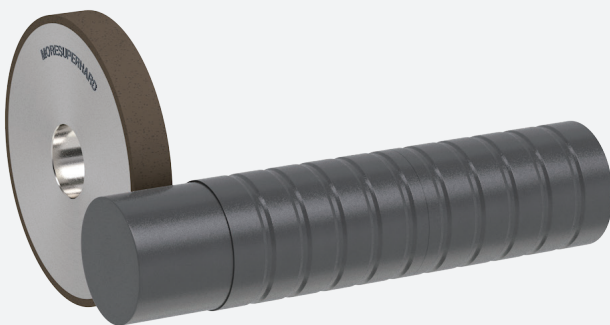
Grinding Wheel for Silicon Ingot

用于单晶硅、多晶硅硅锭的平面，以及 C/R 面（倒角面/圆弧面）的加工，含粗磨和精磨

Mainly used for surface grinding, flat/round chamfering, rough grinding and final polishing of monocrystalline/polycrystalline silicon ingots.

外圆粗加工

Cylindrical Rough Grinding

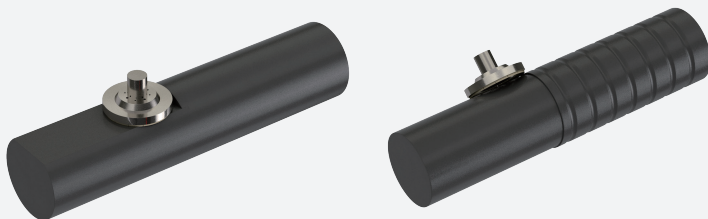
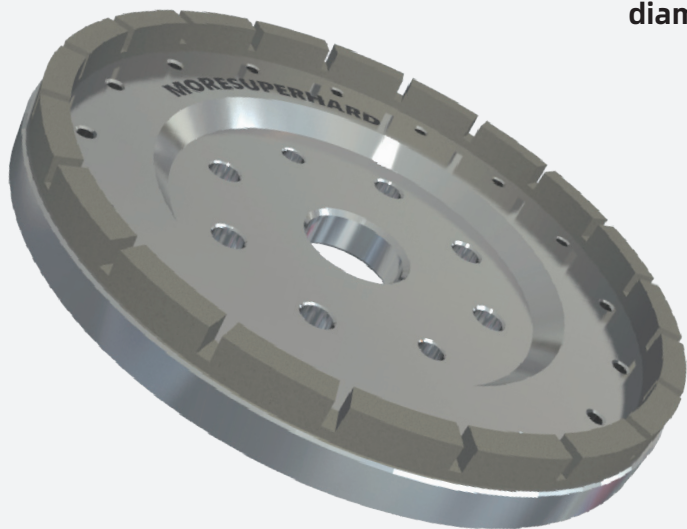


硅锭晶棒滚圆砂轮

Ingot Grinding & Rounding

使用金刚石砂轮（树脂结合剂或金属结合剂）
进行晶棒的结晶方向平研、外径研磨，得到精确的外圆尺寸精度

Using a resin bond or metal bond diamond grinding wheel to flatten
the crystallographic direction of the crystal rod and grind the outer
diameter to obtain precise outer circle dimensional accuracy



用金属或混合结合剂砂轮对晶棒进行滚圆
以达到所需直径和圆度要求
砂轮保持性好，磨削效率高，修整次数少

Using a metal bond or hybrid bond diamond grinding wheel to do ingot
rounding to obtain precise outer circle dimensional accuracy and roundness

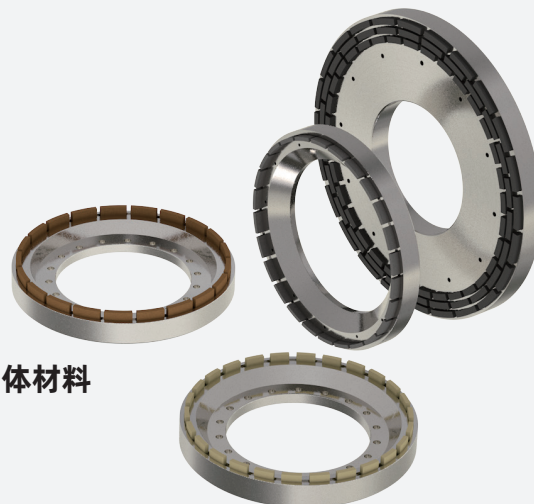
半导体行业减薄砂轮

主要应用于半导体晶圆的减薄与精研加工。

- 砂轮自锐性好，高效率
- 低损伤,低加工成本
- 被加工工件表面质量高

加工对象：分立器件、集成电路衬底及原始晶片等。

工件材料：单晶硅、砷化镓、磷化铟、碳化硅，氮化镓等半导体材料



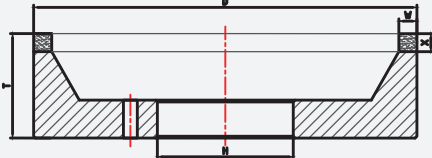
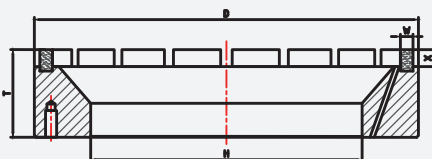
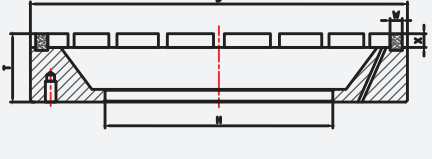
Back Grinding for Semiconductor Industry

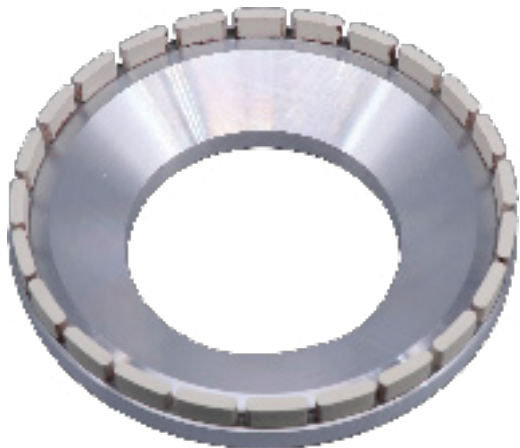
Mainly used for the backside thinning and fine grinding of the silicon wafer.

- Good self-sharpening with high efficiency
- Low processing damage and cost
- High surface quality

Workpiece: silicon wafer of discrete devices, integrated chips(IC) and virgin etc.

Material of workpiece: Monocrystalline silicon, AsGa, Inp, SiC, GaN and other semiconductor materials.

Model	D(mm)	T(mm)	H(mm)
 6A2/6A2H	175	30.35	76
	200	35	76
	350	45	127
 6A2T	195	22.5,25	170
	280	30	228.6
 6A2T(three ellipses)	350	35	235
	209	22.5	158
Other specifications can be produced according to customers' requirements			



芯片减薄砂轮

加工材料: 用于微芯片等的减薄加工

加工优势: 自锐性好, 修整少; 表面研磨质量好; 尺寸精度高

Back Grinding for Micro Chips

Mainly used for thinning processing of microchips, etc.

- Good self-sharpening, less trimming
- Good surface grinding quality
- High dimensional accuracy

LED行业背减砂轮

主要用于LED 行业外延片背减薄加工, 减薄效率高, 表面质量好。

加工对象: 蓝宝石衬底外延片、SiC 衬底外延片、Si 衬底外延片等。

工件材料: 人造蓝宝石、SiC、单晶硅等。

- 表面质量好, 效率高
- 不易深刮、碎片
- 自锐性和形状保持性好



Back grinding for LED Industry

Mainly used for back thinning of epitaxial wafer, silicon wafer, Carborundum wafer, GaAs and GaN wafer in LED industry.

Workpiece: sapphire epitaxial wafer, SiC Substrate epitaxial wafer, Si Substrate epitaxial wafer.

Material of workpiece: Synthetic sapphire, SiC, single crystal silicon.

Grinders: SHUWA, NTS, WEC, GALAXY, SPEEDFAM, OKAMOTO

- Good surface quality with high efficiency
- No deep scratch and crash
- Good self-sharpening and shape retention



磨边倒角轮

用于硅、碳化硅、砷化钾、蓝宝石等半导体晶圆和LCD&OLED&MLED、玻璃等半导体材料基板的倒边及斜面磨削加工。

- 严格的精度和耐磨性
- 稳定的研磨能力，均匀的倒角宽度
- 沟槽形状保持力强
- 可单沟或多沟，粗细磨一体

Edge Grinding Wheel

Mainly used for edge, bevel grinding of semiconductor wafers(such as Si,SiC, GaAS, LT,ALN,Sapphire GALLIUM wafers)

- Strict shape precision and wear resistance
- Stable grinding capabilities, grinded with uniform chamfer width
- Strong groove shape retention
- Can be designed in single groove or multi grooves, integrated rough and fine grinding



磨削类型 (Grinding Mode)	粒度 (Grit)	砂轮直径 (Wheel OD)	金刚石层厚 (Thickness of diamond layer)	沟槽数 (NO. of grooves)
粗磨 (Rough)	400#-800#	φ38.1-φ202	2.5-5mm	1-10
精磨 (Fine)	1000#-3000#			

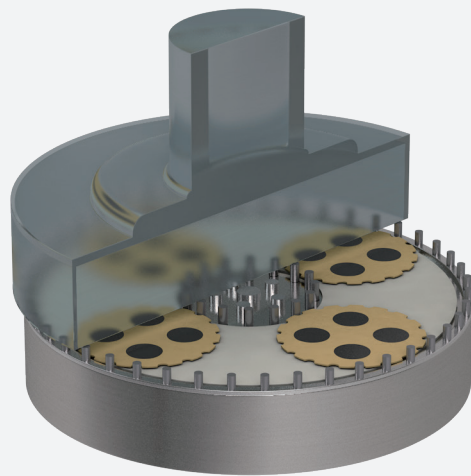
研磨

Lapping

研磨可以减少在硅锭切片过程中产生的应力，同时也有助于消除晶圆正面和背面的缺陷

Lapping-process of making the surface of wafer smooth and flat.

Lapping reduces stress which can build up during the ingot slicing process, while also helping to remove defects on the wafer front and back sides



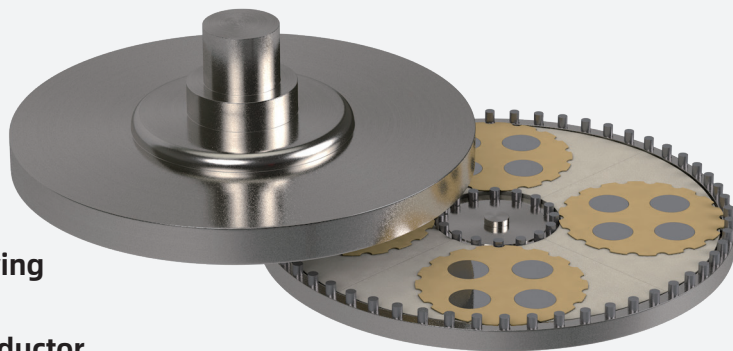
双端面磨削

Double-sided Polishing

实现多个半导体晶片的双面同时磨削，大大提升研磨效率。双面磨削可有效去除切片时造成的晶片切割损伤层及改善晶片的平面度

Double-sided polishing (DSP) - Process of removing small bumps on the wafer surface.

DSP can grinding both sides of multiple semiconductor wafers at the same time, greatly improving the grinding efficiency. DSP can effectively remove the damaged layer caused by slicing and improve the flatness of the wafer





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研磨&抛光
Lapping & Polishing

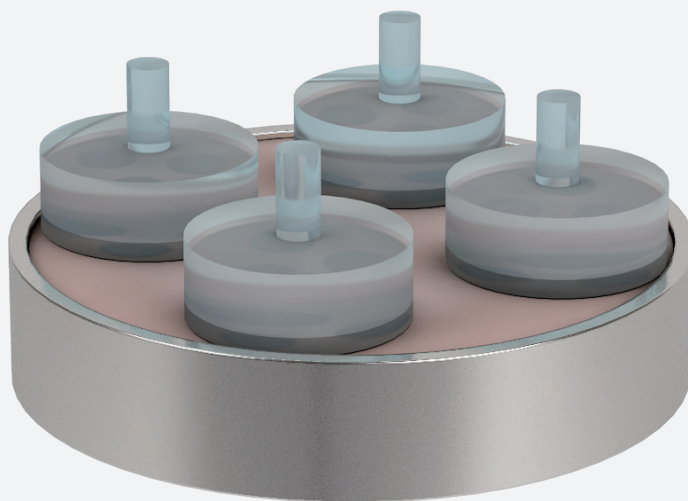
CMP抛光

CMP polishing

通过CMP抛光改善晶片粗糙度，使其表面达到外延片磊晶级精度
多使用抛光垫，抛光液适用于碳化硅、氮化铝、氮化硅、磷化钢
砷化镓、氮化镓等半导体材料的精密研磨抛光

Chemical-mechanical Polishing (CMP) -process
of removing fine bumps on the wafer trough
precision processing.

Suitable for precision grinding and polishing of
SiC, AlN, SiN, InP, AsGa, GaN and other
semiconductor materials. During this process
polishing pads and polishing slurries are widely
used.



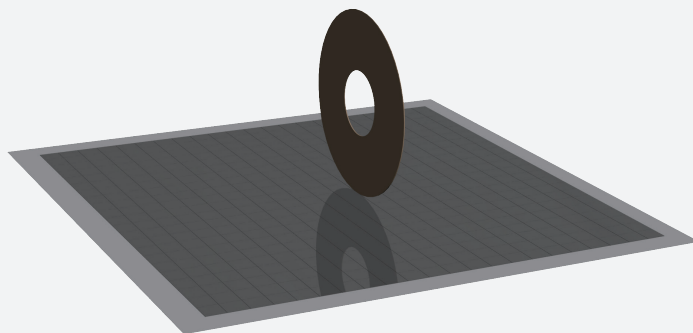
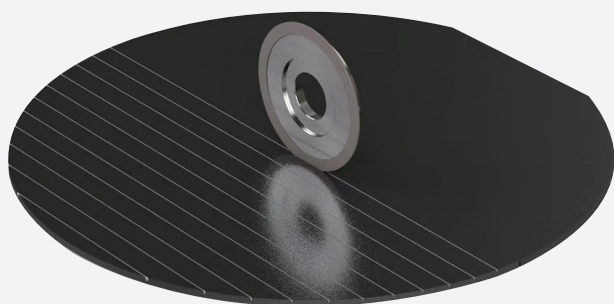


电子及半导体行业用超薄切割片

Ultra-thin Cutting Discs for Electronics and Semiconductor Industries

超精密切割片分为硬刀及软刀两类，适用于晶圆、PCB基板、陶瓷、光纤连接器、光学玻璃等方面精密切割使用

Ultra-precision cutting discs/dicing blades are divided into hub dicing blades and hubless dicing blades, which are suitable for precision cutting&dicing of wafer, PCB substrate, ceramic, optical fiber connector, optical glass and other aspects



硬刀

Hub Dicing Blade

用于切割半导体硅晶圆、化合物半导体晶圆（GaAs、GaP等）、氧化物半导体晶圆（LiTaO3 等）及其他材料

Mainly used for cutting Silicon wafer、Compound semiconductor wafers (GaAs、GaP)、oxide wafer(LiTaO3) and others.





树脂软刀

Resin Bond Dicing Blade

- 用于PCB板, BGA、QFN、DFN, FBGA、CSP、MCP、POP、PBGA等封装的切割
- 用于铁氧体, 陶瓷, 玻璃, 石英, 蓝宝石的V槽切割

Applications

- Sawing of packages such as BGA, QFN,DFN, FBGA, CSP, MCP, POP, PBGA
- Sawing and grooving of Ferrite, Ceramics, Glass, Quartz, Sapphire



金属软刀

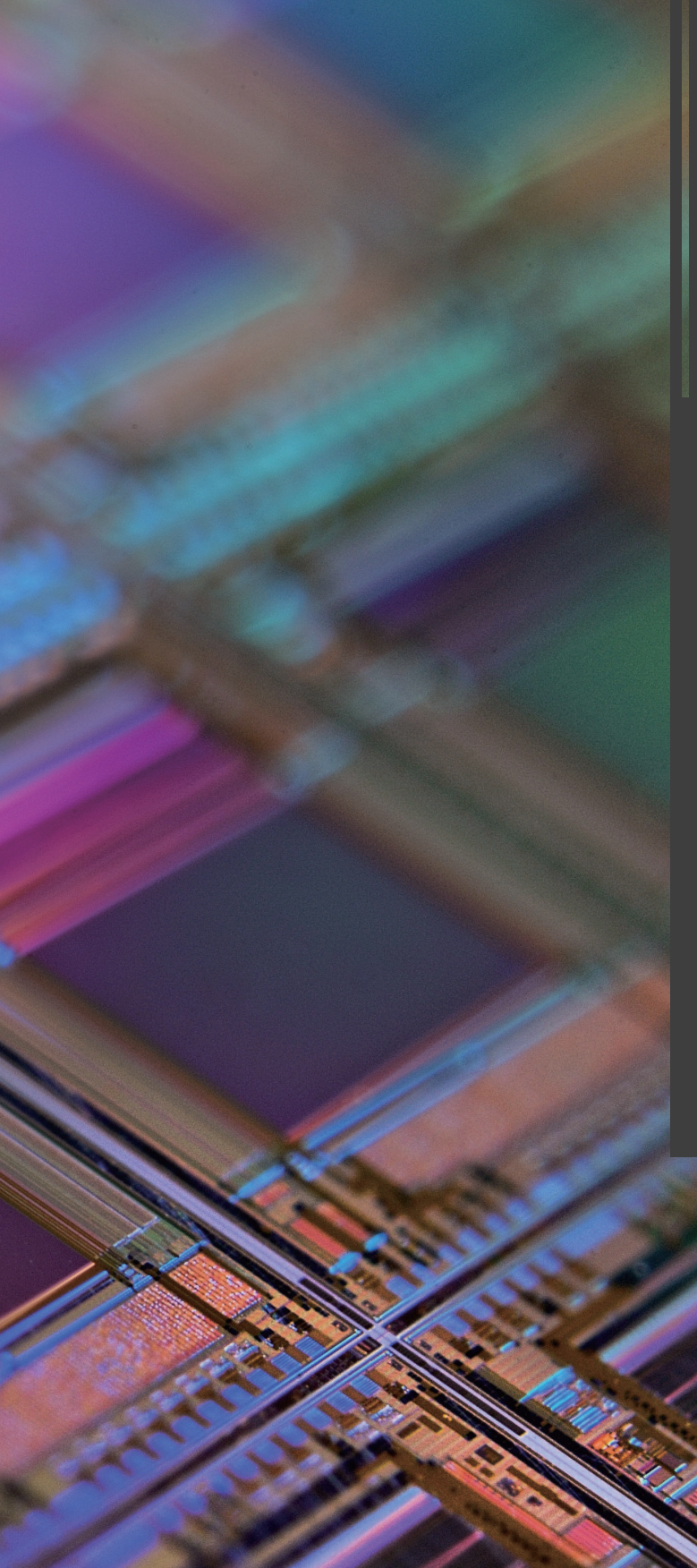
Metal Bond Dicing Blade

- 半导体封装领域如BGA、LGA、LED、二极管等半导体封装元器件的加工
- 光学玻璃领域如滤光片、蓝玻璃、水晶及宝石等的加工
- 光通讯领域如石英V槽加工及石英盖板的切断
- 其它材料如磁性材料、硬质合金、工具钢、不锈钢等的切断或切槽

Applications

- Semiconductor such as BGA, LGA, LED, diode and so on
- Optical glass such as filter, blue glass, crystal and gem
- Optical communication such as slotting-shape on quartz and cutting off quartz cover
- Other material such as slotting and cutting off magnetic materials, carbide, tool steel and stain-less steel





MORESUPERHARD



视频号



Youtube



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