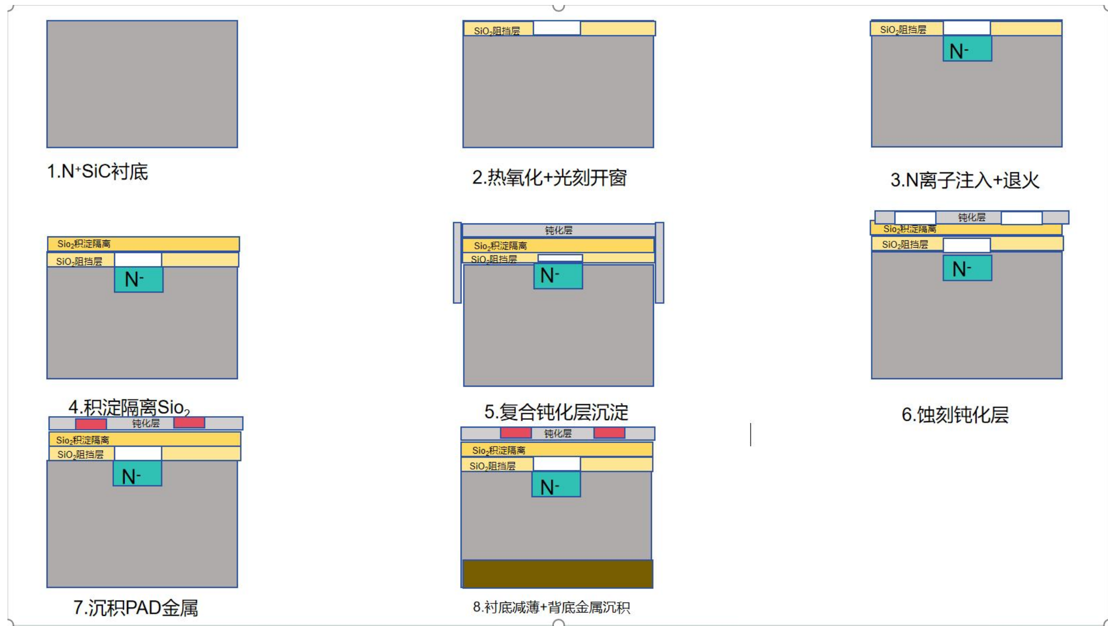


1. N 型 SiC 衬底来料

基底：N^+ SiC 衬底，后续采用选择性离子注入形成漂移区。

2. 光刻开窗：漂移区注入窗口

表面生长薄 SiO_2 阻挡层→光刻胶开窗，露出漂移区区域。

3. N 型漂移区离子注入+高温退火激活

高能 N 离子选择性注入形成 N^- 漂移层，高温退火修复晶格、激活杂质；去除光刻胶与阻挡氧化层。

4. 场氧/隔离介质 SiO_2 淀积+局部刻蚀

整面 PECVD 淀积 SiO_2 隔离介质，光刻刻蚀有源区、终端保护环区域窗口。

5. 钝化介质淀积

整面沉积 SO_2 /Si_3 N_4 钝化层，光刻开孔。

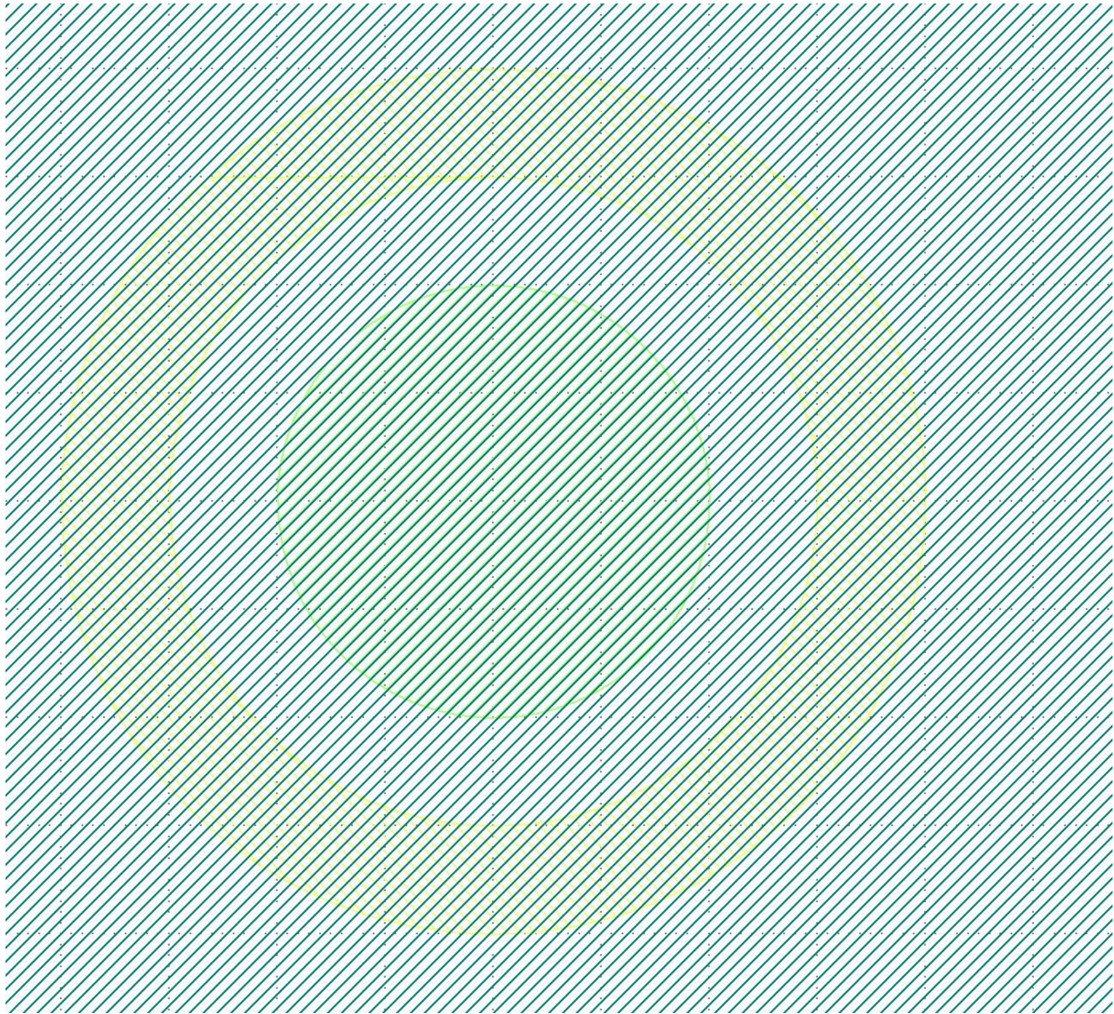
6. 钝化层开孔刻蚀

干法刻蚀钝化介质。

7. 沉淀 PAD 金属

8. 衬底减薄+背面金属淀积

衬底背面研磨减薄。



代码

```
layout = RBA::Layout.new
top_cell = layout.create_cell("TOP")
layer_anode      = layout.layer(20, 0)
layer_guard      = layout.layer(21, 0)
layer_border     = layout.layer(30, 0)
center_y = 50000
anode_radius = 10000
guard_outer_r = 20000
guard_inner_r = 15000
border_half = 30000
```

```
circle_points = 64
def make_circle(cx, cy, r, n_points)
  points = []
  (0...n_points).each do |i|
    angle = 2 * Math::PI * i / n_points
    x = cx + r * Math.cos(angle)
    y = cy + r * Math.sin(angle)
    points << RBA::Point.new(x.round, y.round)
  end
  RBA::Polygon.new(points)
end
anode_circle = make_circle(center_x, center_y, anode_radius, circle_points)
top_cell.shapes(layer_anode).insert(anode_circle)
guard_outer = make_circle(center_x, center_y, guard_outer_r, circle_points)
guard_inner = make_circle(center_x, center_y, guard_inner_r, circle_points)
guard_ring = RBA::Region.new(guard_outer) - RBA::Region.new(guard_inner)
top_cell.shapes(layer_guard).insert(guard_ring)
border_box = RBA::Box.new(
  center_x - border_half, center_y - border_half,
  center_x + border_half, center_y + border_half
)
top_cell.shapes(layer_border).insert(border_box)
save_path = "C:/Users/#{ENV['USERNAME']}/Desktop/etch_circular_device.gds"
layout.write(save_path)
mw = RBA::Application.instance.main_window
mw.load_layout(save_path, 0)
puts
```