

# Fabrication Process Flow Handout

Reviewed 2025

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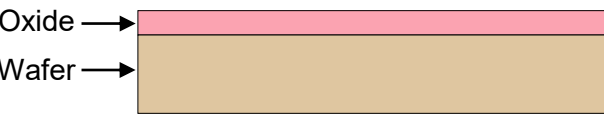
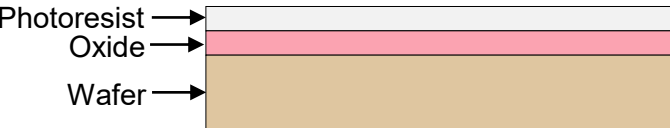
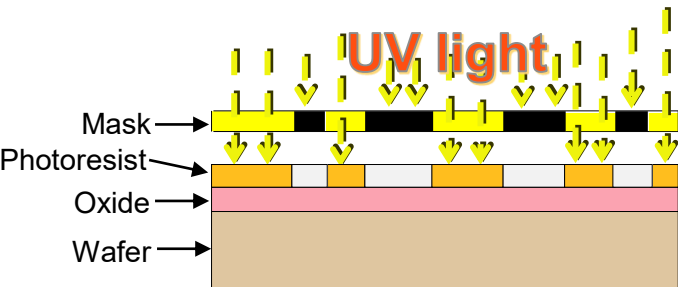
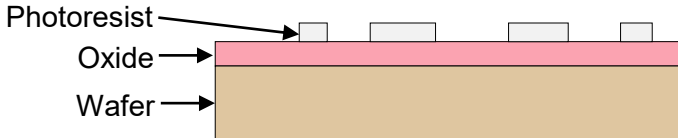
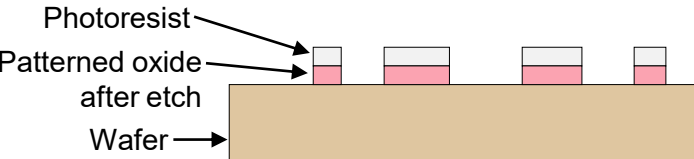
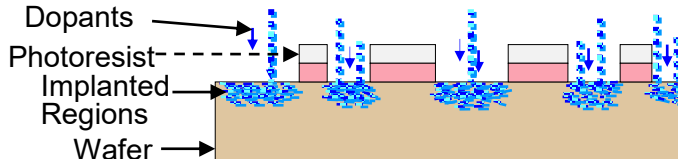
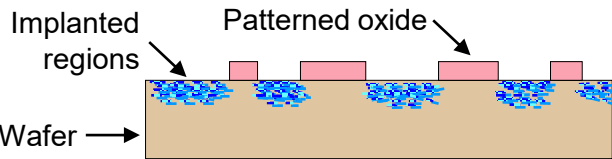
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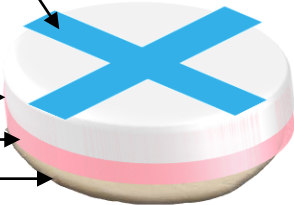
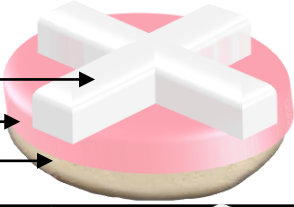
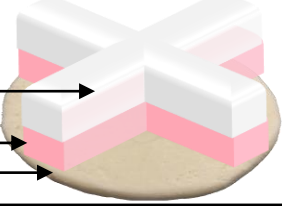

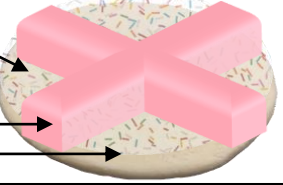
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# Fabrication Process Flow

Clean	 <p>Wafer →</p>	To remove contamination from the wafer surface.
Diffusion	 <p>Oxide → Wafer →</p>	To grow or deposit material layers like Oxide on the wafer surface. Note: "oxide" is the common name for silicon dioxide or $\text{SiO}_2$ , a common insulator used in semiconductor fabrication.
Photolithography Coat & Bake	 <p>Photoresist → Oxide → Wafer →</p>	To apply a layer of UV light sensitive photoresist on the wafer.
Photolithography Align & Expose	 <p>Mask → Photoresist → Oxide → Wafer →</p> <p>UV light</p>	UV light passes through a patterned reticle or mask to transfer a pattern onto the photosensitive photoresist layer by altering portions of the photoresist layer.
Photolithography Develop	 <p>Photoresist → Oxide → Wafer →</p>	Photoresist exposed to UV light is removed using a developing solution.
Etch	 <p>Photoresist → Patterned oxide after etch → Wafer →</p>	Oxide is removed from regions not protected with photoresist using a Wet Etch or Dry Etch process.
Implant	 <p>Dopants → Photoresist → Implanted Regions → Wafer →</p>	Selected regions of the wafer are implanted with dopants to modify the electrical characteristics of the silicon.
Strip	 <p>Implanted regions → Patterned oxide → Wafer →</p>	Photoresist is stripped (removed) from the wafer, leaving the patterned Oxide layer on the wafer surface.

# Fabrication Process Flow – Cookie version

Clean	 <p>Wafer/Cookie</p>	To remove contamination from the wafer surface.
Diffusion	 <p>Oxide/First frosting Wafer/Cookie</p>	To grow or deposit material layers like Oxide on the wafer surface. Note: “oxide” is the common name for silicon dioxide or $\text{SiO}_2$ , a common insulator used in semiconductor fabrication.
Photolithography Coat & Bake	 <p>Photoresist/2<sup>nd</sup> frosting Oxide/1<sup>st</sup> frosting Wafer/Cookie</p>	To apply a layer of UV light sensitive photoresist on the wafer.
Photolithography Align & Expose	 <p>Pattern representing reticle or mask Photoresist/2<sup>nd</sup> frosting Oxide/1<sup>st</sup> frosting Wafer/Cookie</p>	UV light passes through a patterned reticle or mask to transfer a pattern onto the photosensitive photoresist layer by altering portions of the photoresist layer.
Photolithography Develop	 <p>Photoresist/2<sup>nd</sup> frosting Oxide/1<sup>st</sup> frosting Wafer/Cookie</p>	Photoresist exposed to UV light is removed using a developing solution.
Etch	 <p>Photoresist/2<sup>nd</sup> frosting Oxide/1<sup>st</sup> frosting Wafer/Cookie</p>	Oxide is removed from regions not protected with photoresist using a Wet Etch or Dry Etch process.
Implant	 <p>Dopants Photoresist/2<sup>nd</sup> frosting Oxide/1<sup>st</sup> frosting Wafer/Cookie</p>	Selected regions of the wafer are implanted with dopants to modify the electrical characteristics of the silicon.
Strip	 <p>Dopants Oxide/1<sup>st</sup> frosting Wafer/Cookie</p>	Photoresist is stripped (removed) from the wafer, leaving the patterned Oxide layer on the wafer surface.

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