IceMOS CSOI Solutions

Cooler than Cool

Applications:

Our customised CSOI solutions are used in the following fields:

- Pressure Sensors
- Microphones
- Inertial MEMS
- Microfluidics
- Resonators

End Markets:

- Telecommunications
- Medical
- Automotive
- Consumer
- Instrumentation

IceMOS Technology is a leading supplier of 100–150mm Cavity Bonded SOI wafers for a large range of MEMS applications. By utilising years of deep silicon trench etch expertise and experience coupled with our advanced wafer bonding technology allow customer cavity expectations to be materialized into innovative products.

The IceMOS Cavity Bonded SOI is a pre-etched feature embedded under a silicon membrane. This provides an opportunity for the customer designers to develop more intelligent devices in order to meet the most demanding markets.

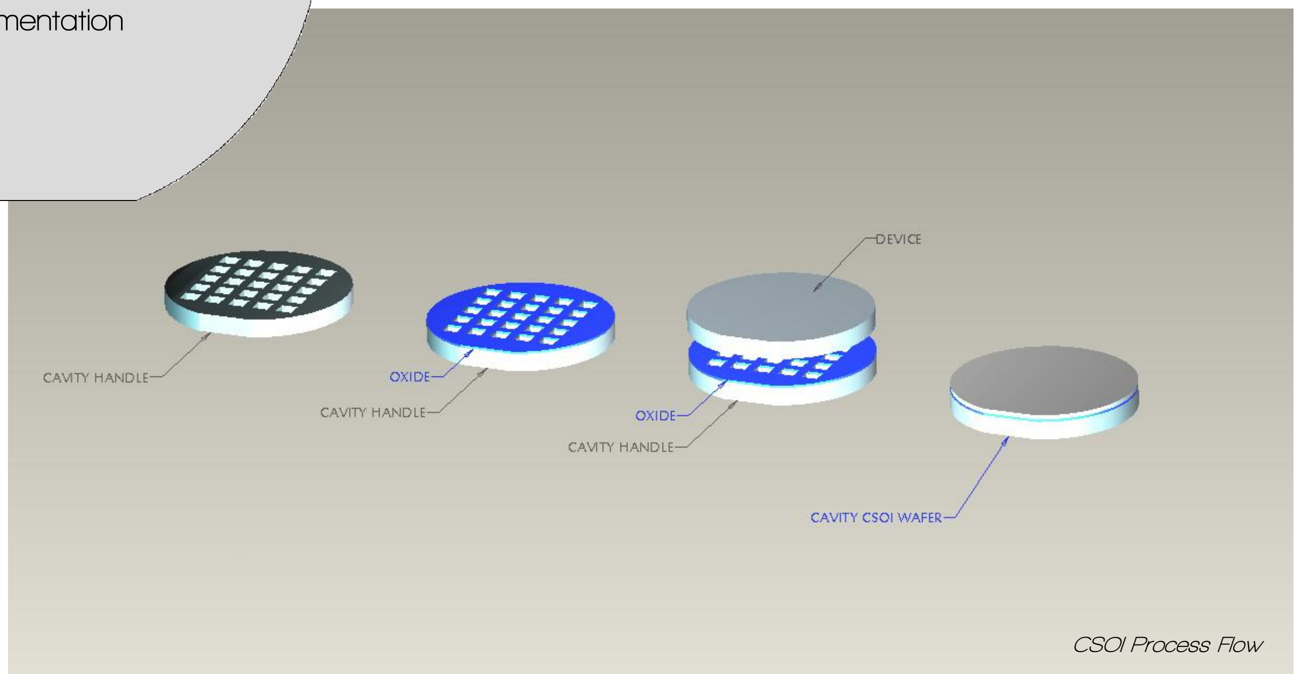
Our Cavity Bonded SOI solutions allows the customer to take advantage –

- IceMOS superior bonding technology and expertise.
- Reduce any stiction issues at release
- Simplified manufacturing flows.
- Low Cost Cavity SOI/Si-Si Solutions.
- Flexibility in construction around customer needs/downstream applications.

IceMOS can offer the various methods of constructing the customers Cavity Bonded SOI Solutions in order to optimize customer cavity requirements.

We also have the added advantage of incorporating advanced features into cavity Bonded SOI solutions which potentially opens up possibilities that might otherwise not have been considered.

IceMOS embedded Cavity Feature



CSOI Process Flow

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CSOI Bonded SOI Specification

Parameter	Specification Range	
Wafer Diameter	100, 125, 150 mm	200 mm
Handle Layer Specifications		
Handle Thickness	200–1000 µm	500–750 µm
Handle Thickness Tolerance	±5 µm	
Stack Thickness	≥280 – ≤1250 µm	
Dopant Type	N or P	
Doping	N type: Phos, Red Phos, Sb & As P type: Boron	
Resistivity	≤0.001 – ≥10000 Ω-cm	
Growth Method	CZ, MCZ or FZ	
Crystal Orientation	<100>, <111> or <110>	
Backside Finish	Lapped/Etched or Polished	
Buried Oxide Specifications		
Thermally Oxidised Buried Oxide Thickness	0.2 – 5.0 µm grown on Handle, Device or both wafers	
Device Layer Specifications		
Device Layer Thickness	≥1.5 µm	5–300 µm
Tolerance	± 0.5 µm	±0.8 µm
Dopant Type	N or P	
Doping	N type: Phos, Red Phos, Sb & As P type: Boron	
Resistivity	≤0.001 – ≥10000 Ω-cm	
Growth Method	CZ, MCZ or FZ	
Crystal Orientation	<100>, <111> or <110>	
Buried Layer Implant	N type or P type	
Membrane Thickness/SOI Thickness	>4 µm	
Membrane Tolerance	+/-0.5 µm	
Cavity Span : Membrane Thickness	<50:1 µm (dependent on design)	
Minimum Bonding Size Features	20 µm	
Alignment Accuracy of Cavity to Alignment Marks	+/-3 µm	
Cavity Depth	1-150 µm @ +/-10% 150-300 µm @ +/-10%	
Cavity Location	Handle, Device or Buried Oxide	

The above is a standard IceMOS specification; however, we are always happy to work with our customers to engineer specific solutions. If you would like to discuss an alternative specification, please contact our sales team: sales@icemostech.com