



Flash Memory Summit

# 3D ReRAM Technology for high speed application

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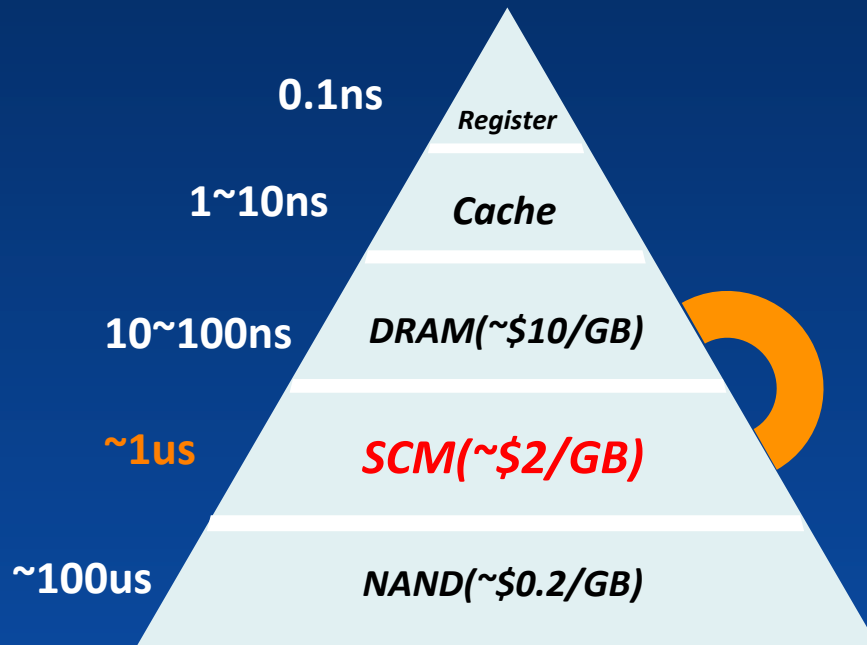
Sony Semiconductor Solutions Corp

Santa Clara, CA  
August 2018



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# Expected SCM for Enterprise



## High speed application with lower cost

Latency: ~1us  
Transfer Rate: ~2GB/s

## New usage (New application)

Non volatile  
Endurance: >1M

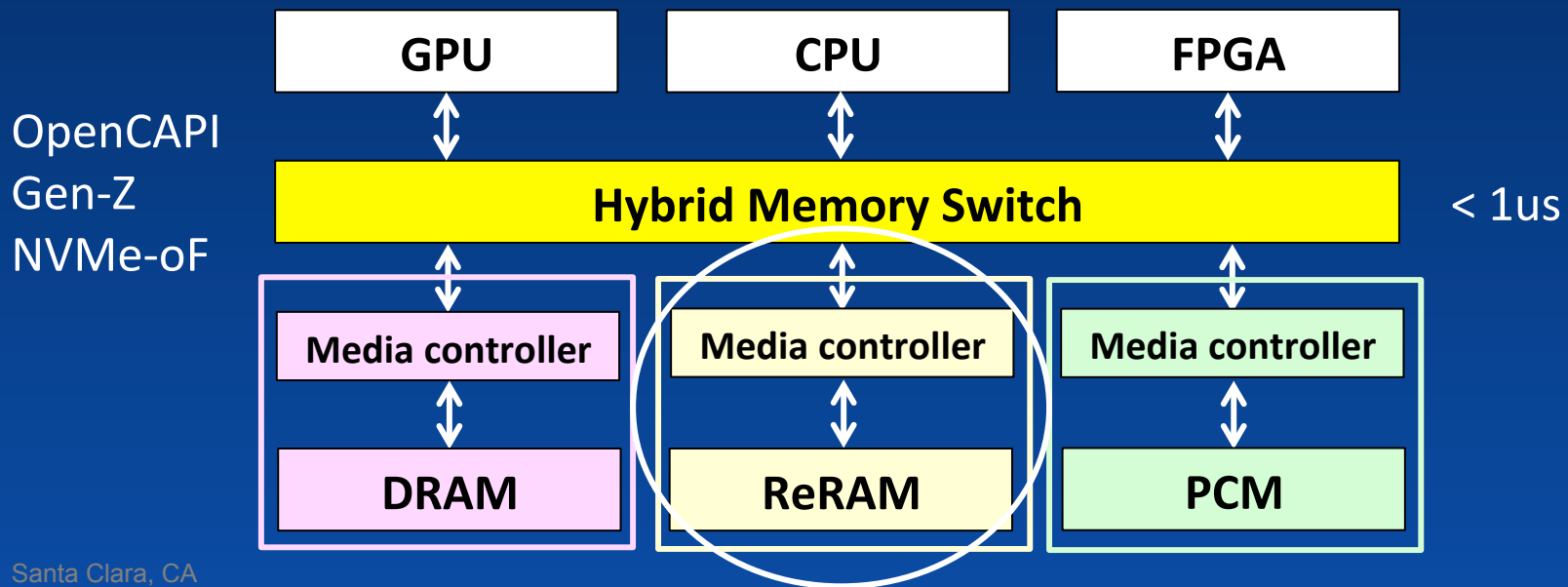


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# Fabric Attached Memory

Higher capacity in server memory subsystems

→ New interface switch to built a hybrid memory

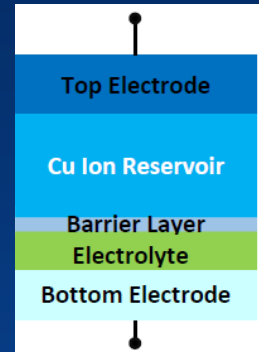
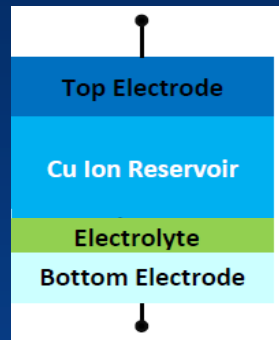
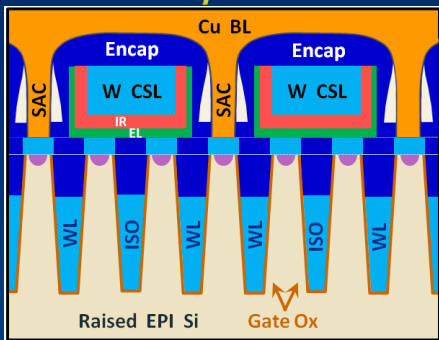


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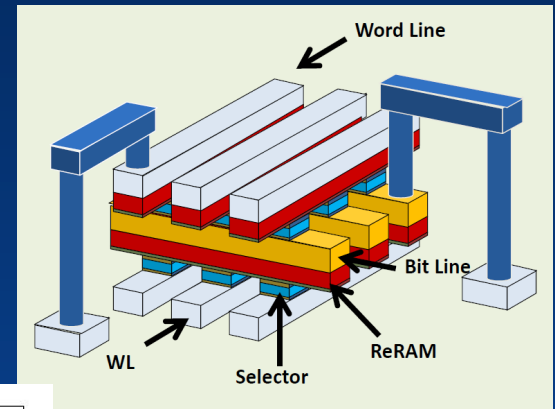


# Cu ReRAM Improvement

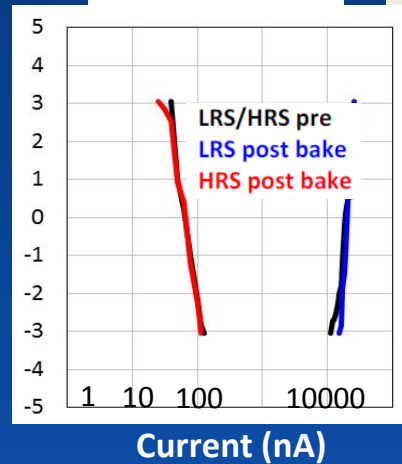
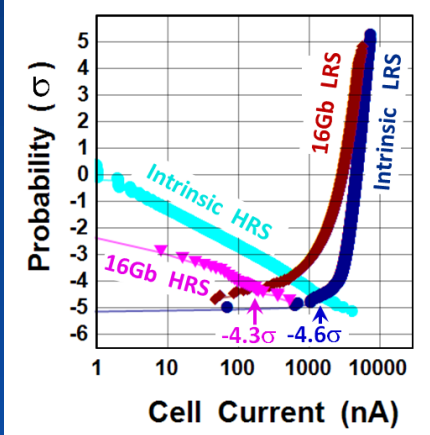
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## 3D Cross Point



300ns Set/Reset  
10K cycles



100ns Set/Reset  
1M cycles

VLSI symposium 2017

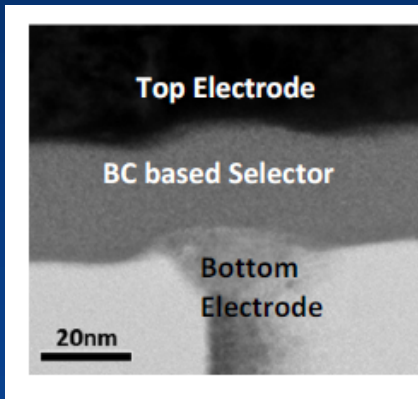
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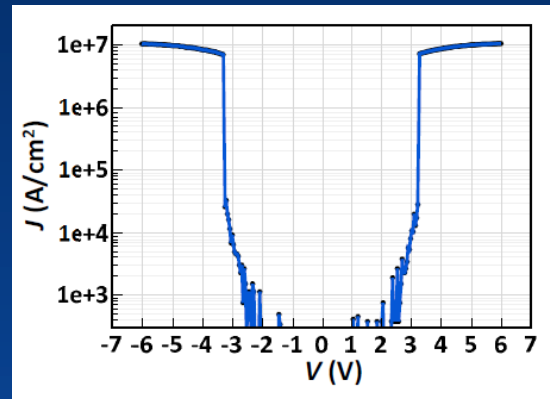
# BC(Boron Carbon) based OTS Selector

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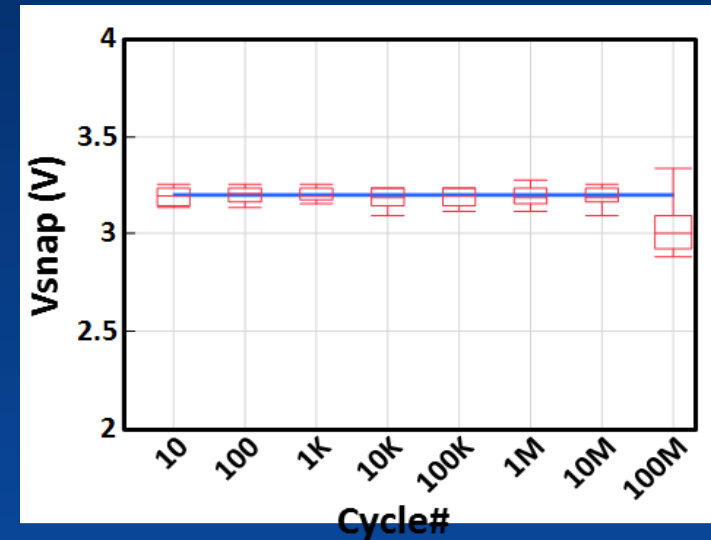
TEM cross section



Pulsed JV curve



Cycling Endurance



BC makes good amorphous film

- Bidirectional Switching
- High Current density
- Low Leakage



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## Summary

- 3D cross point ReRAM is looking at high speed application such as fabric attached memory
- Latency of cross point ReRAM was improved from 1T1R ReRAM
- The selector should support high endurance for high speed application