



NAND Flash Memory Trends

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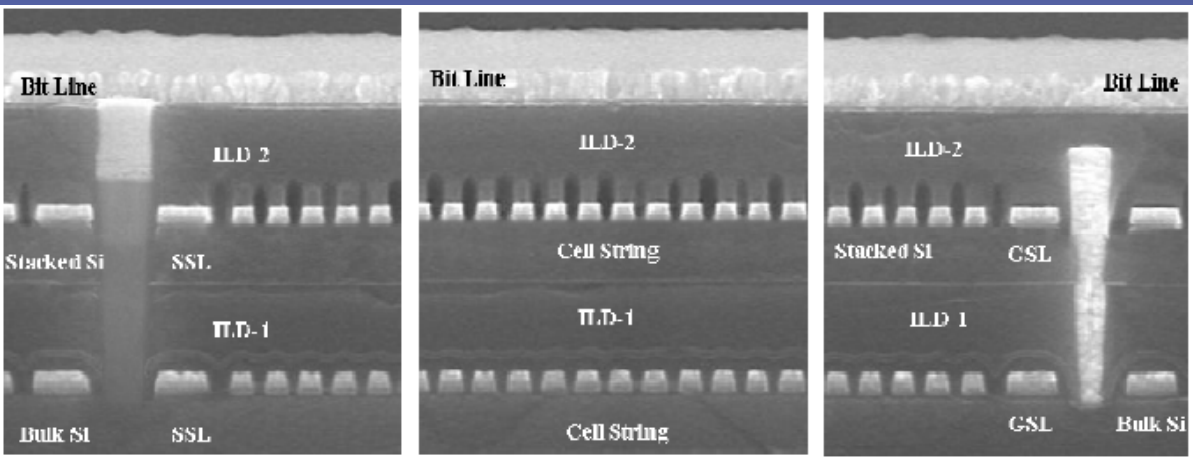
Industry Trends

- NAND
 - Number of bits per cell ↑
 - Process complexity ↑
 - Design complexity ↑
 - Access latency ↑
 - Endurance ↓

- Market
 - Applications usage model and characteristics will dictate technology employed
 - 3C's

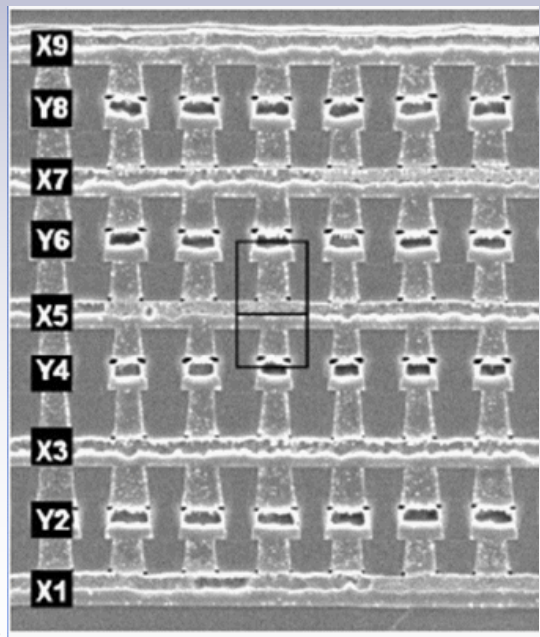
The Future is UP?

TANOS



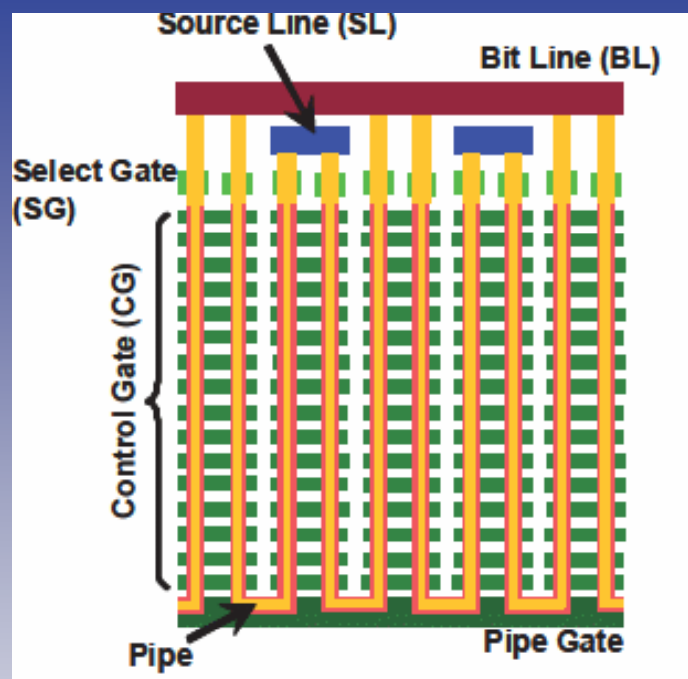
Source: K.Kim et. al., IEDM 2006

3D Memory



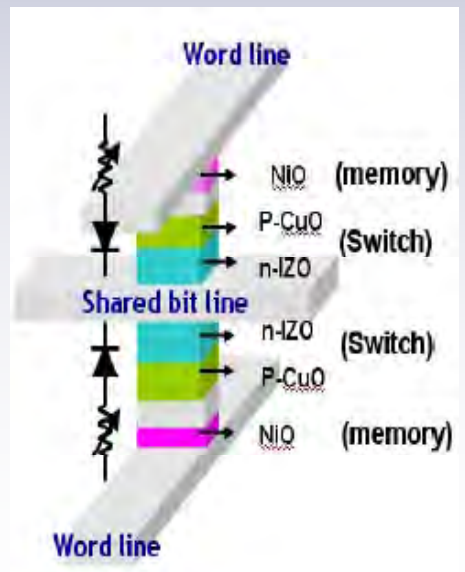
Source: SanDisk, FMS 2008

BiCS



Source: T. Maeda et. al., VLSI 2009

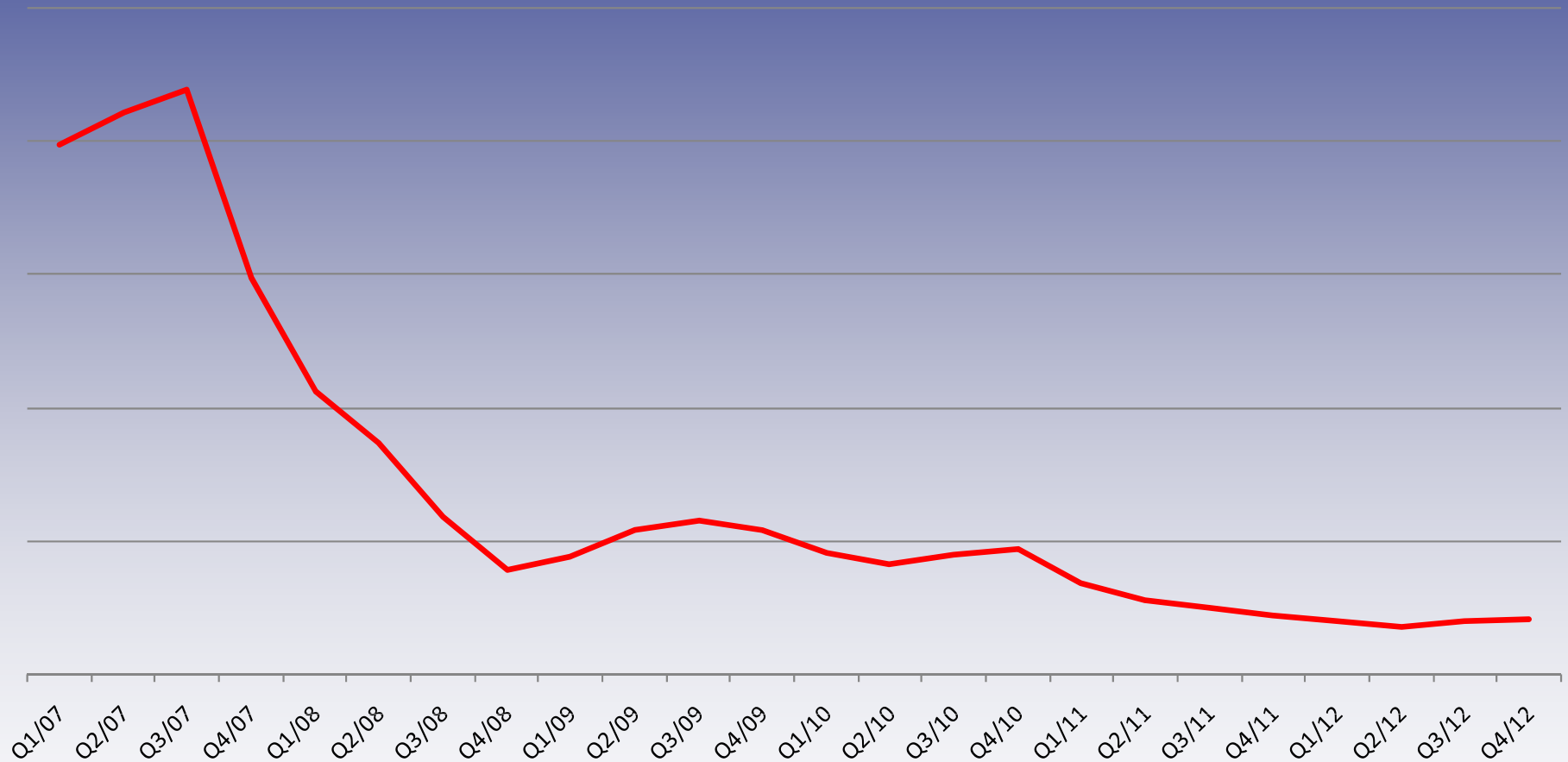
RRAM



Source: I.K. Yoo et al., IEDM 2007

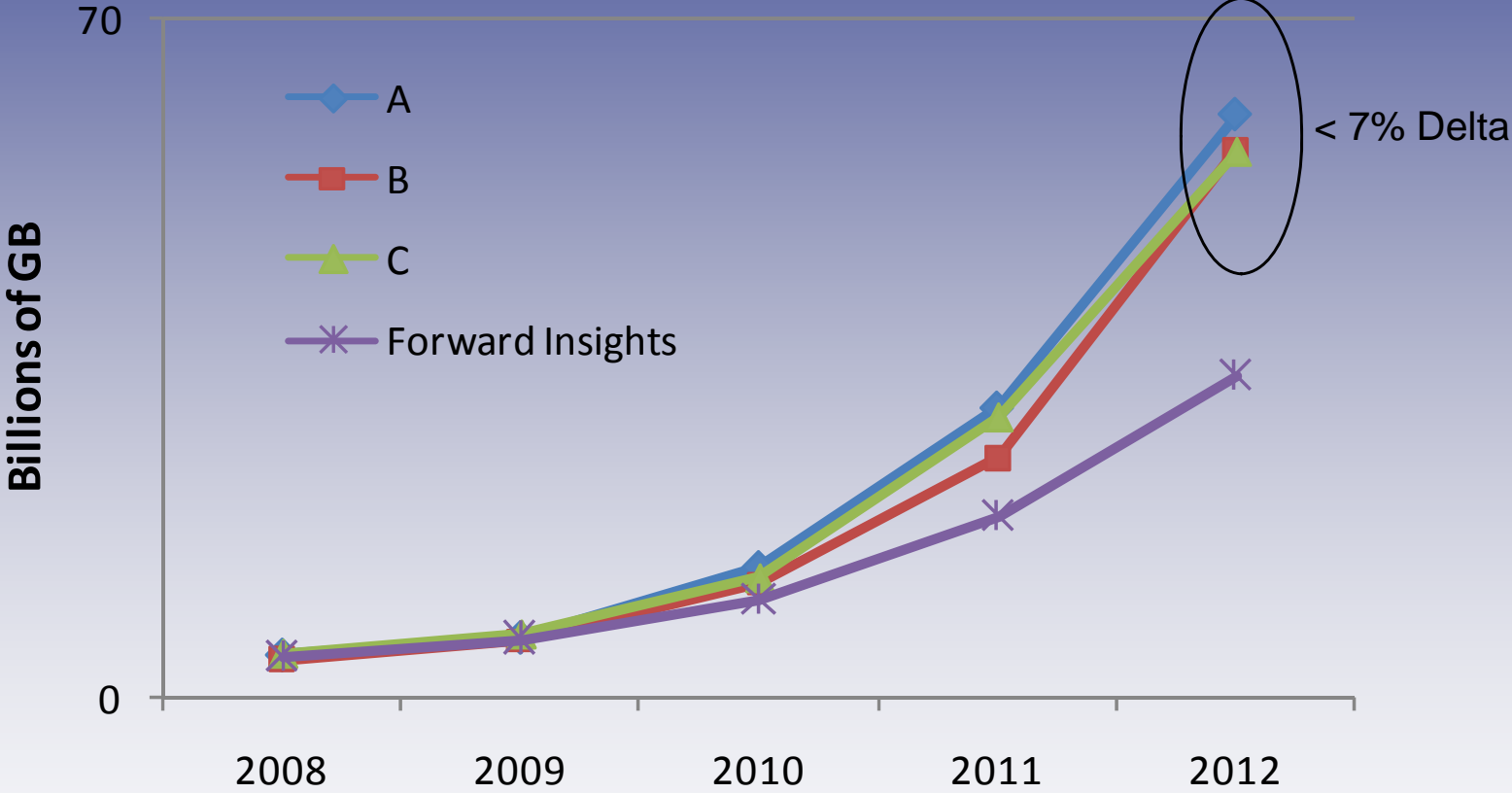
Moderating Price Declines

NAND Flash ASP / GB



A Fresh Perspective

NAND Flash GB Forecasts



Q2/09 Forecasts



*"Unique and strategic perspectives on
semiconductor memories, emerging memory technologies and
solid state storage"*



Forward Thinking

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