

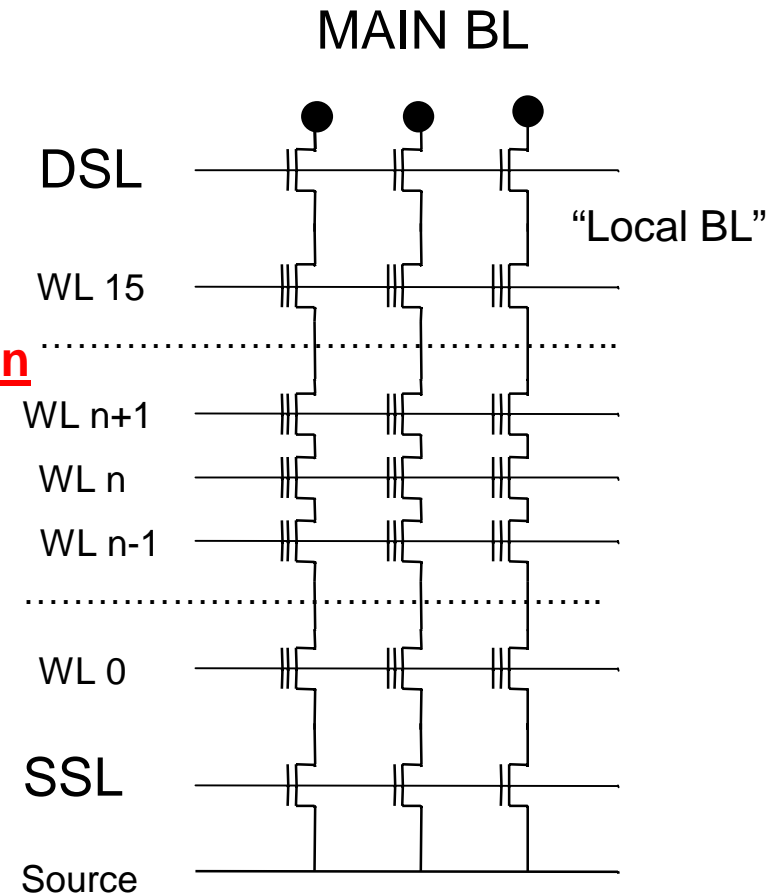
SOMMARIO

- **Introduzione alle memorie a semiconduttore**
- **Il transistor a floating gate**
- **Meccanismi di scrittura**
- **La Flash NOR**
- **Affidabilità**
- **La Flash NAND**
- **La Flash multilivello**
- **Le memorie emergenti a stato solido**

NAND

CONFIDENTIAL

- Sector size 16-64KB
- Row length: 8K-32K cells
- Col length: 16-32 cells
- Long random Tacc (~tenths of us)
- Serial access => **NO direct code execution**
- Small cell size (no drain contact and L,W minimum)
- Multi byte program (512-2048)
- Sector erase
- Prog/erase full FN (Tox 70-80A)
- Fast prog/erase operations



- **NO 100% data retention & sector E/W guarantee**

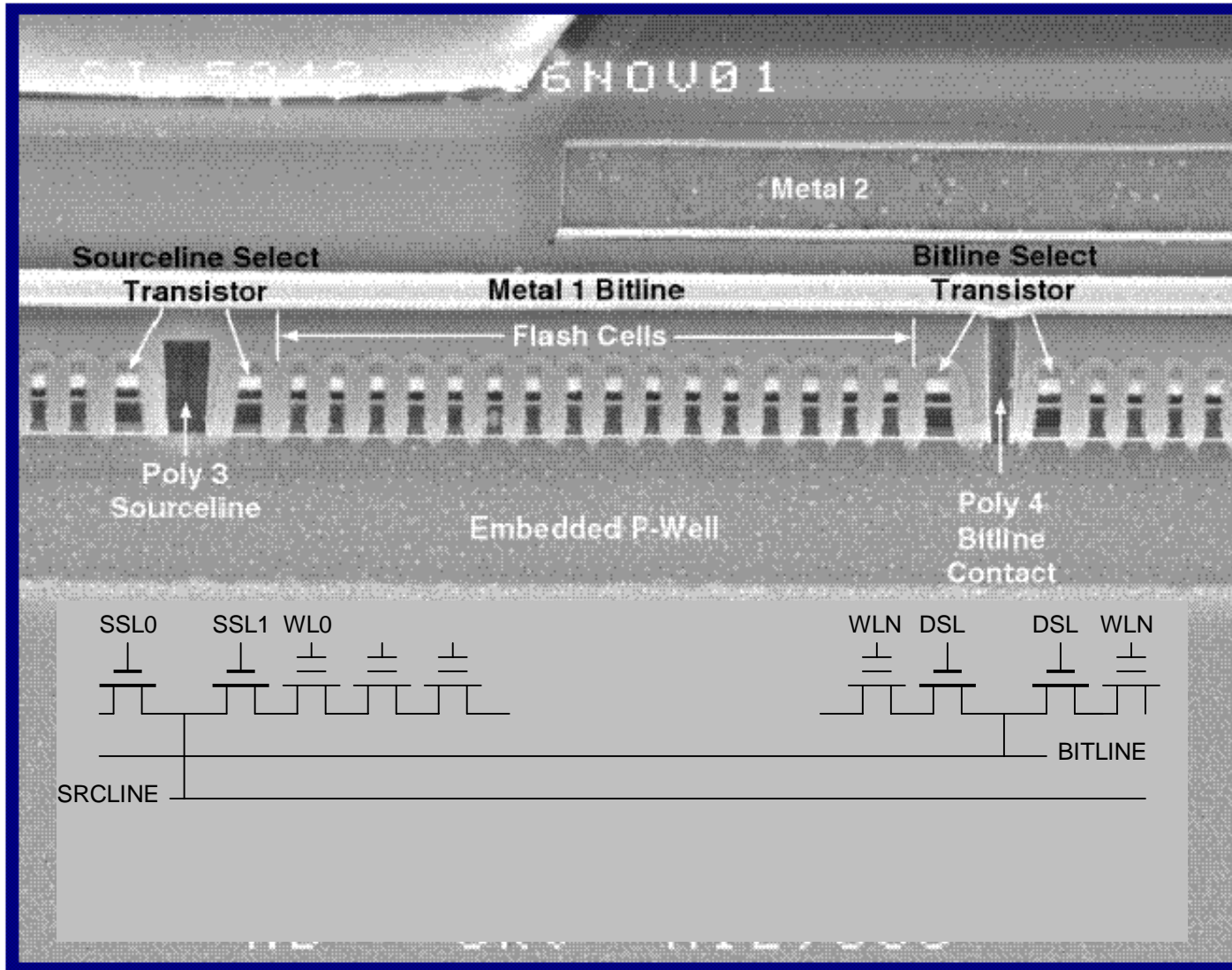
- Central R&D

Non Volatile Memory Technology Development

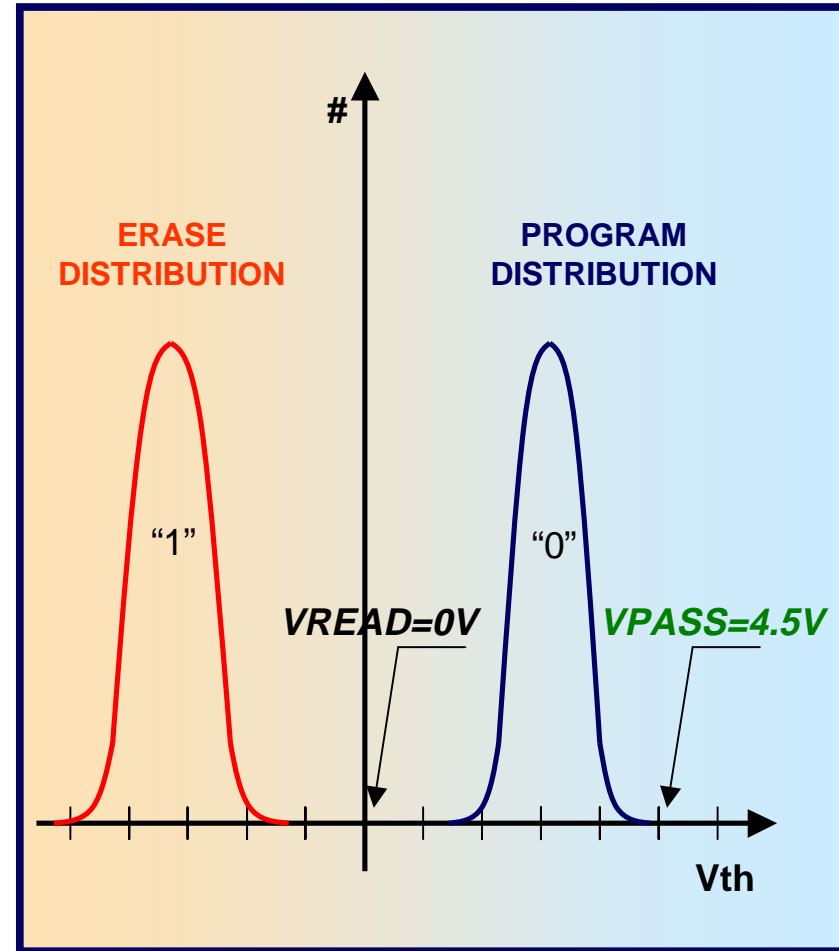
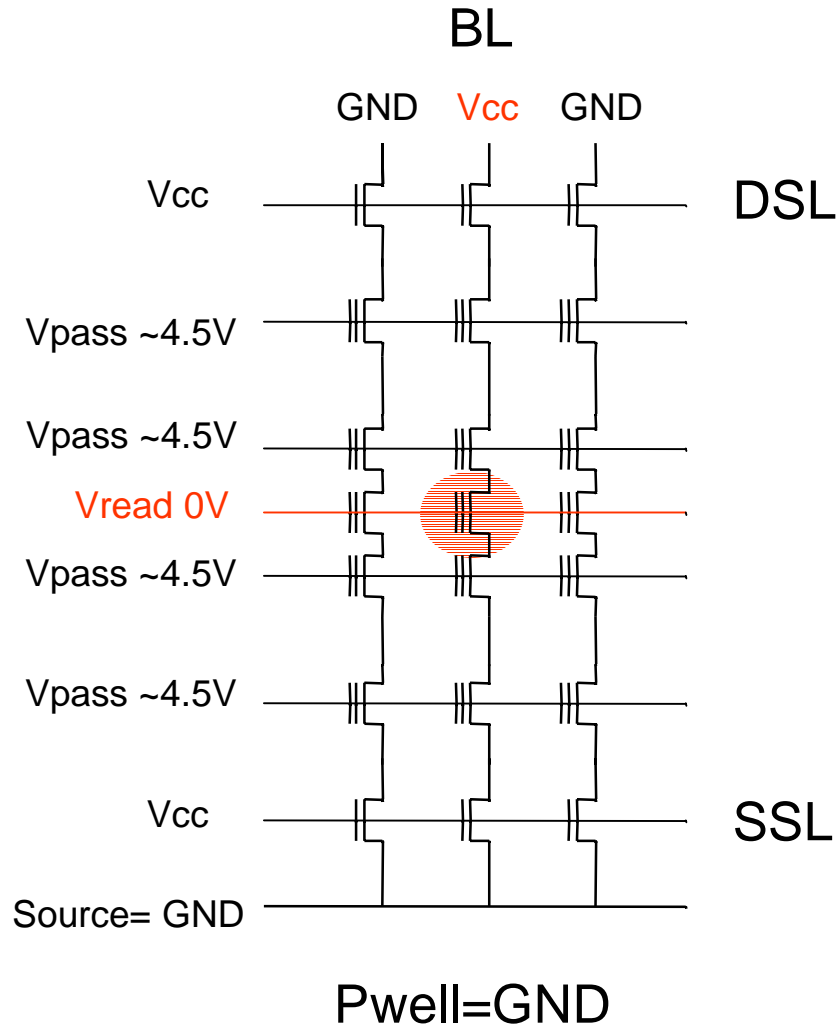


NAND Array Structure

CONFIDENTIAL



NAND FLASH CELL OPERATION: READ



CONFIDENTIAL

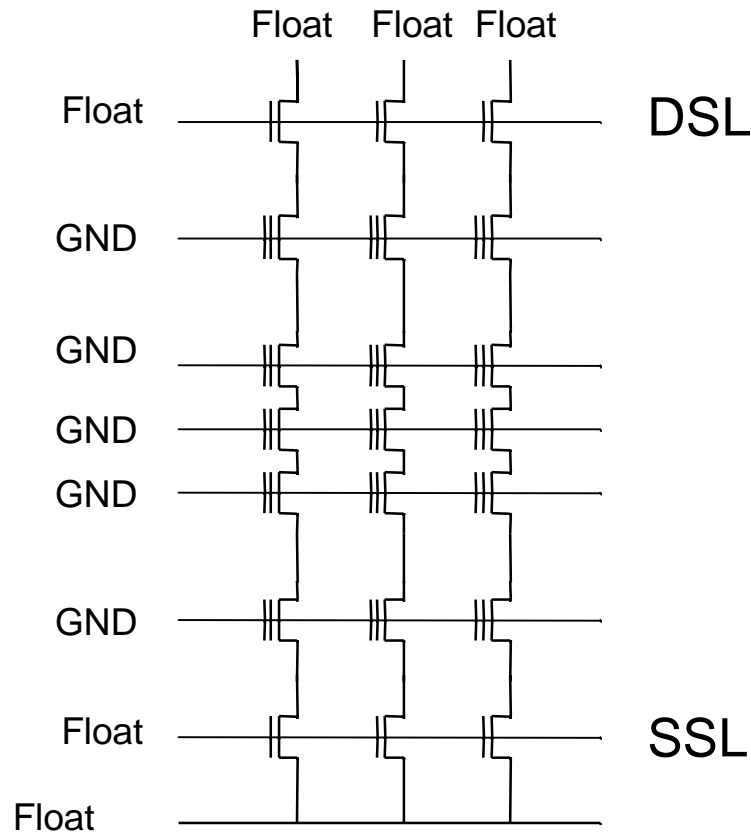
NAND FLASH CELL OPERATION: ERASE

Selected sector

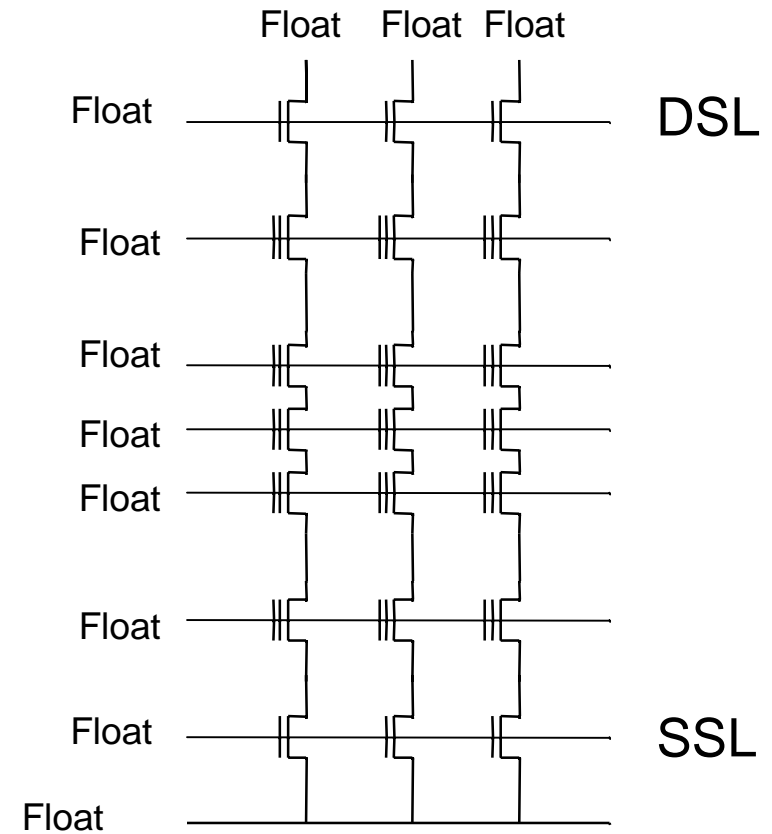
Unselected sector

BL

BL



$P_{well}=20V$



$P_{well}=20V$

