

Types of Standard Cell Libraries

Standard Cell Library Types

- According to the Density
- According to the Threshold Voltage (VTH)

Classification according to the Density

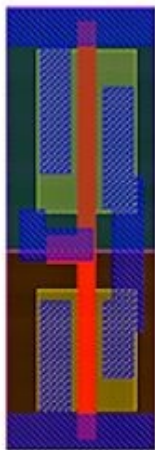
- Ultra High Density (UHD) - 7 Track or 8 Track
- High Density (HD) - 9 Track
- High Performance (HP) - 12 Track

Classification according to the Threshold Voltage (VTH)

- Low VT (LVT) - Fast because of low Gate Delay, but high leakage
 - Standard VT (SVT) or Regular VT (RVT)
 - High VT (HVT) - Low leakage, but slow because of high Gate Delay
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- Metal 2 pitch is used to calculate the Number of Tracks in different Density Libraries
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- Sub-threshold Leakage varies exponentially with VTH compared to the weaker dependency of Delay over VTH
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- HVT Cells are used in Non-critical paths to reduce Leakage Power while SVT Cells are used in Critical paths to meet Timing

High Density

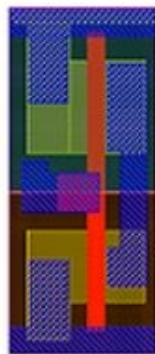
9 or 10-tracks high cells



Balanced transistor size for high density and good performance, low power

Ultra-High Density

7 or 8-tracks high cells



Small transistors for high density and low power

High Performance

12-tracks high cells



Large transistors for optimal speed, but also low power features

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VLSI BACK-END ADVENTURE
