N3 Dummy Pickup Checking

LVSRCE/DMKD
TSMC

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Filter Dummy OD in Soft connect Check

- **Soft connect check violation in Dummy Cell's OD**

  - **Reason : Dummy Cell's OD are floating**

VDD

Dummy OD

(Floating signal)

N-Well

Soft check violation
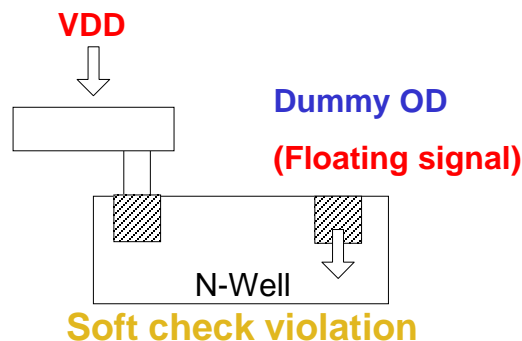
- **Avoid soft connect check violation in dummy section**

  - **Remove dummy OD to WELL connection in LVS flow**

VDD

Dummy OD

(Floating signal)

N-Well

No Soft check violation
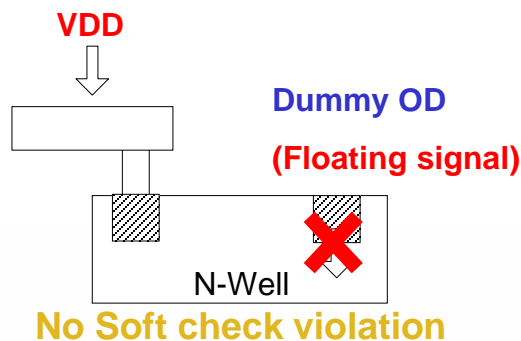
Dummy Pickup for Soft-connect Check

● **Dummy pickup means that the OD is not able to connect out (OD's MD w/o VD/VDR/MD_text)**

● **To avoid soft-connect false error, the dummy pickup is ignored during LVS stage**

Dummy pickup   Real pickup

VDD

🟥	**OD**
🟦	**POLY**
🟩	**MD**
🟥	**NW**
🟪	**VD**
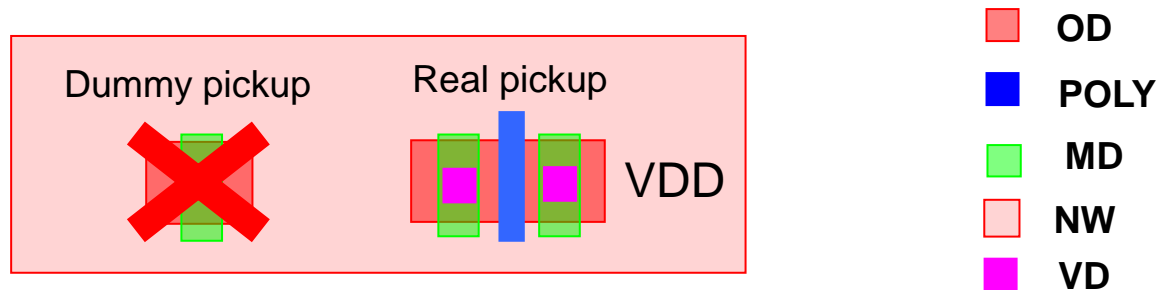
● **LPE extraction includes all pickups (real pickup and dummy pickup) connection**

Dummy Pickup checking(1/4)

- ● **Purpose**
  - ■ **Check Dummy pickups are connected by separated WELL in LVS Stage**

- ● **Three kinds of Pickup Checking**
  - ■ **N-pickup to P-pickup ERC checking**
  - ■ **N-pickup to N-pickup ERC checking**
  - ■ **P-pickup to P-pickup ERC checking**

Dummy Pickup checking(2/4)

- **N-pickup to P-pickup ERC checking**

  - **Highlight MD condition**

    - **MD w/o (VD/VDR/MD_text) interacts N-pickup and P-pickup**

  - **Example**

Pickup ERC violation
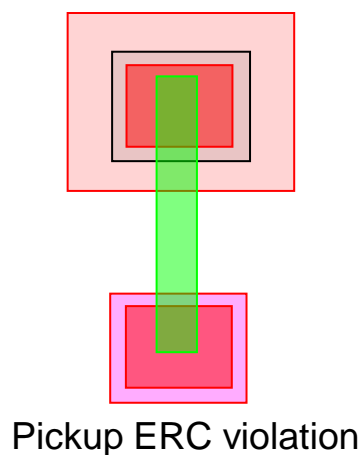
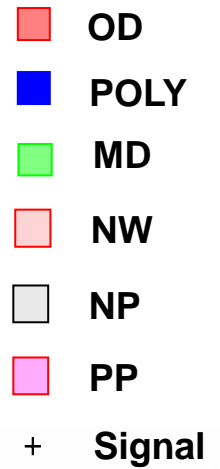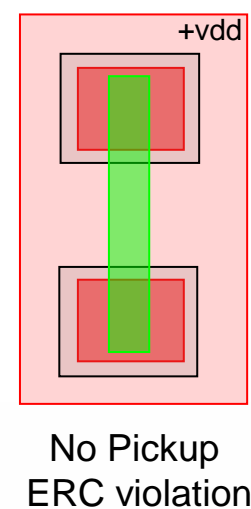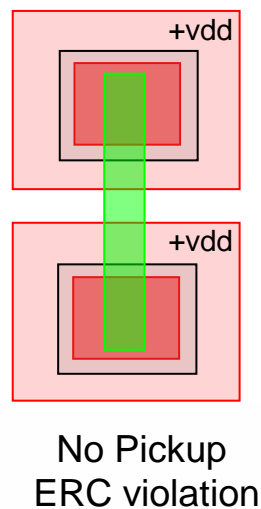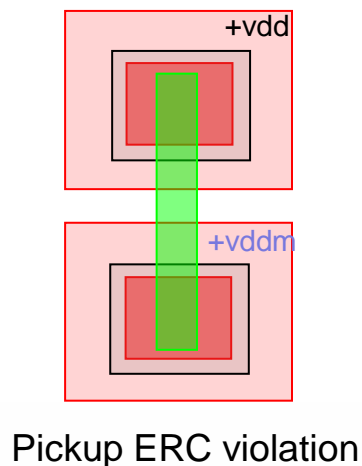|	
🟥	**OD**
🟦	**POLY**
🟩	**MD**
🟥	**NW**
⬜	**NP**
🟪	**PP**

Dummy Pickup checking(3/4)

- ## N-pickup to N-pickup ERC checking

  - ### Highlight MD with two conditions

    - ◆ **MD w/o (VD/VDR/MD_text) interacts more than one N-pickup which is different OD region**

    - ◆ **Crossover NWELLs which has different node information**

  - ### Example

Pickup ERC violation

No Pickup
ERC violation

No Pickup
ERC violation

▮ (red)	**OD**
▮ (blue)	**POLY**
▮ (green)	**MD**
▯ (pink)	**NW**
▯ (gray)	**NP**
▯ (magenta)	**PP**
+	**Signal**

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Dummy Pickup checking(4/4)

- **P-pickup to P-pickup ERC checking**

  - **Highlight MD with two conditions**

    - ◆ **MD w/o (VD/VDR/MD_text) interacts more than one P-pickup which is different OD region**

    - ◆ **Crossover PWELLs which has different node information**
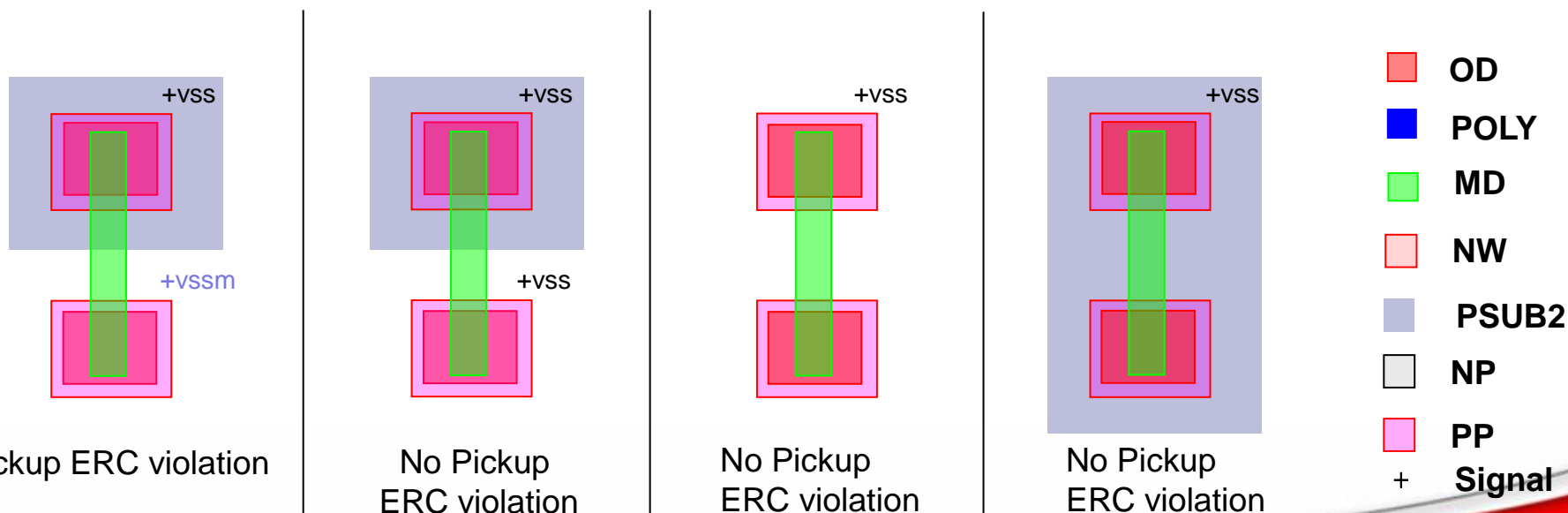
  - **Example**

+VSS	+VSS	+VSS	+VSS
+vssm	+VSS		
Pickup ERC violation	No Pickup ERC violation	No Pickup ERC violation	No Pickup ERC violation

Legend:
- OD
- POLY
- MD
- NW
- PSUB2
- NP
- PP
- + Signal

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Dummy Pickup checking(5/5)

- **P-pickup to P-pickup ERC checking with respect to PSUB2**
  - **LVS waive violations caused by any kinds of bridging crossing PSUB2(111;0). The bridging is formed by SR_DOD(6;7) and SR_DMD(82;170)**
  - **Example**
    - **Case#1~#4 will not be highlighted**
    - **Case#5 and case#6 are highlighted still**

Legend:
- PP
- SR_DMD
- SR_DPO
- SR_DOD
- MD
- PO
- OD
- PSUB2