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# DFM LPE Extraction

## TSMC/PDKD

PDKD



Empowering Innovation

# Content

- DFM Rules
- Contact Placement Effect
- Stack Gate Effect
- OD Rounding Effect
- PO Rounding Effect

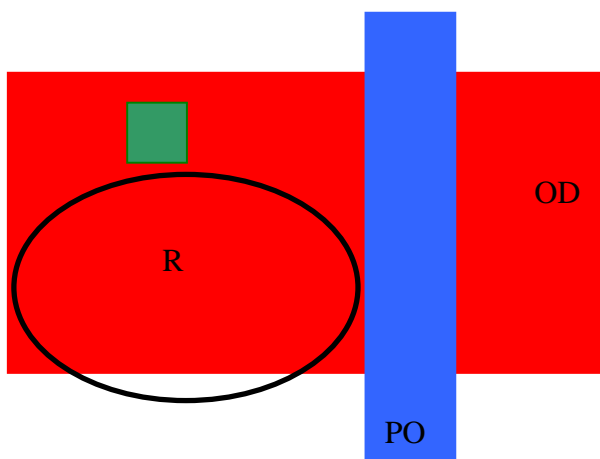
# DFM RULES

- The DFM LPE rule deck includes four rules, which are listed below
  - Contact Placement Effect( NRS2/NRD2 ) :
    - ◆ PO.EX.2 : OD extension on PO.
  - Stack Gate Effect( NRS3/NRD3 ) :
    - ◆ PO.S.2 : Gate space in the same OD.
  - OD Rounding Effect( revise gate width ) :
    - ◆ PO.S.5 : PO space to L-shape OD.
  - PO Rounding Effect( revise gate length ) :
    - ◆ PO.S.6 : OD space to L-shape PO.

# Contact Placement Effect (NRS2/NRD2)

**DFM rule: PO.EX.2:**

For R in source/drain area, our DFM LPE deck will calculate the R and assign it to NRD2/NRS2 according to different contact placement.

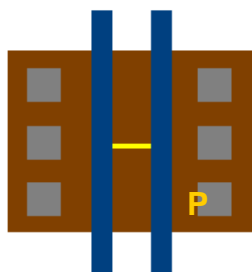


- Input: CONT, OD, POLY
- Output Property: **NRS2,NRD2**

# Stack Gate Effect (NRS3/NRD3)

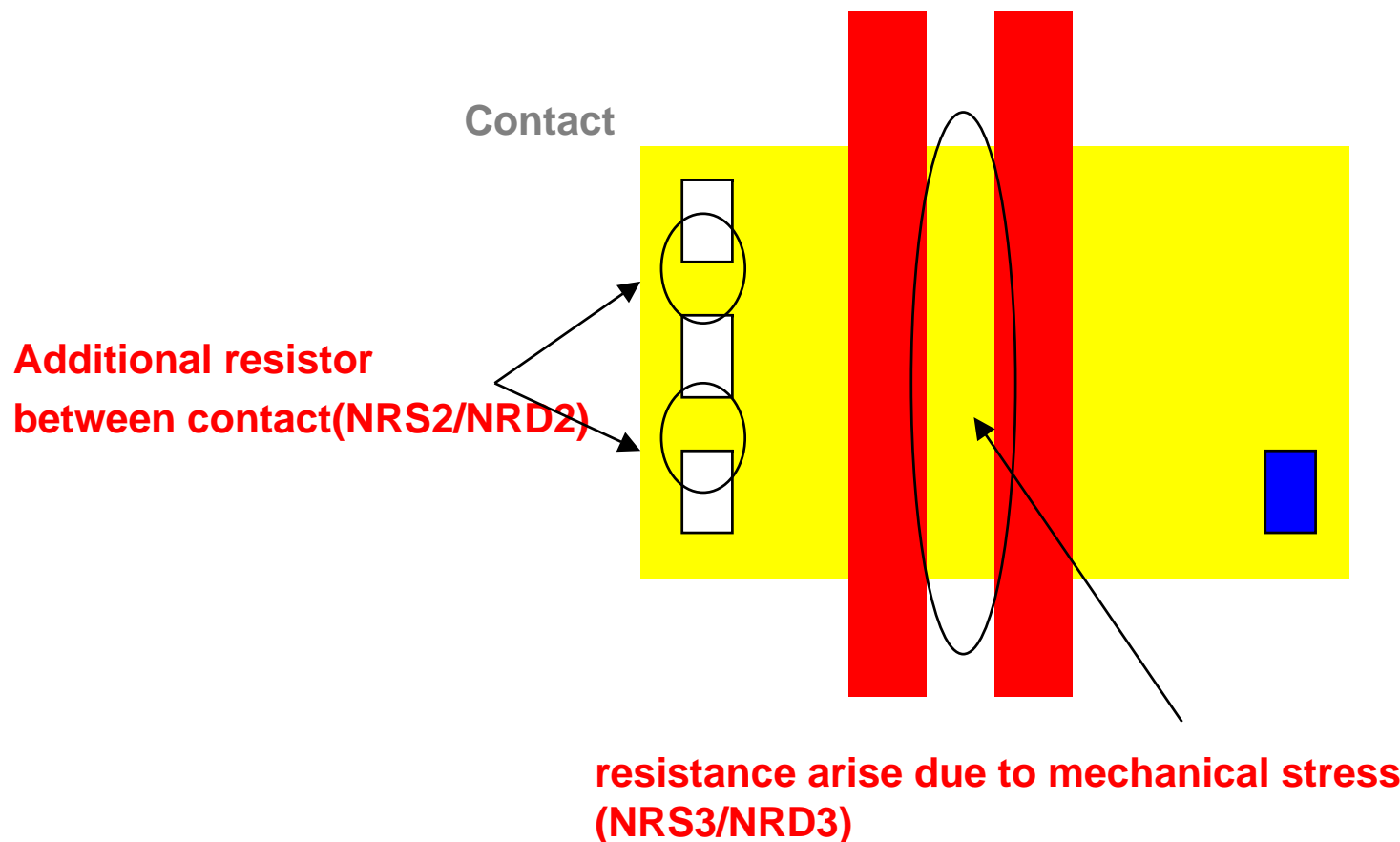
## *DFM rule: PO.S.2:*

When gate to gate spacing is less than a specified value, there is a huge resistor between the gates. Our DFM LPE deck will calculate the R and assign it to NRD3/NRS3



- Input: OD, POLY
- Output Property: **NRS3,NRD3**

## Effective NRS/NRD



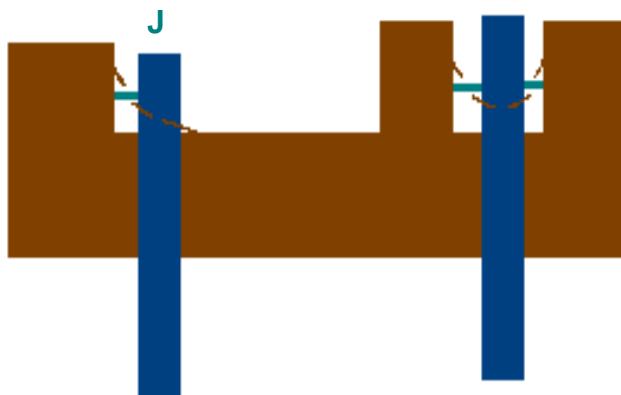
$$\text{Final NRS} = \text{NRS1(original)} + \text{NRS2} + \text{NRS3}$$

$$\text{NRD} = \text{NRD1(original)} + \text{NRD2} + \text{NRD3}$$

# OD Rounding Effect (Weff)

**DFM rule: PO.S.5:**

The OD rounding effect will add to the gate width.



- Input: OD, POLY
- Output Property: **W**, **L**

# PO Rounding Effect (Leff)

**DFM rule: PO.S.6:**

The PO rounding effect will add to the gate length.



Fig. 1

- Input: OD, POLY
- Output Property: **W**, **L**