



Confidential
Security C

DFM LPE Extraction

TSMC/PDKD

PDKD



Empowering Innovation

Content

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

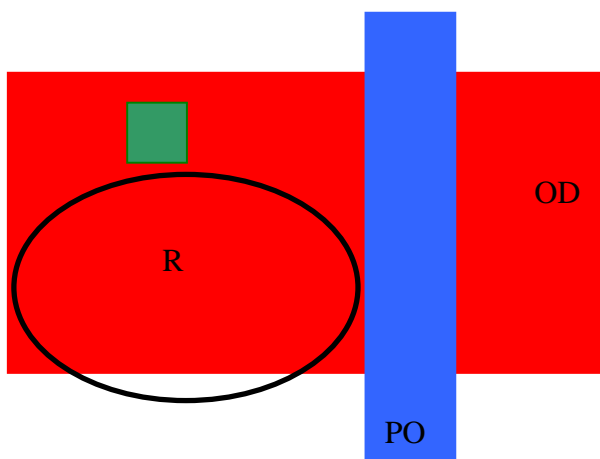
DFM RULES

- 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.

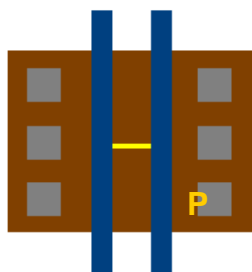


- Input: CONT, OD, POLY
- Output Property: **NRS2, NRD2**

Stack Gate Effect (NRS3/NRD3)

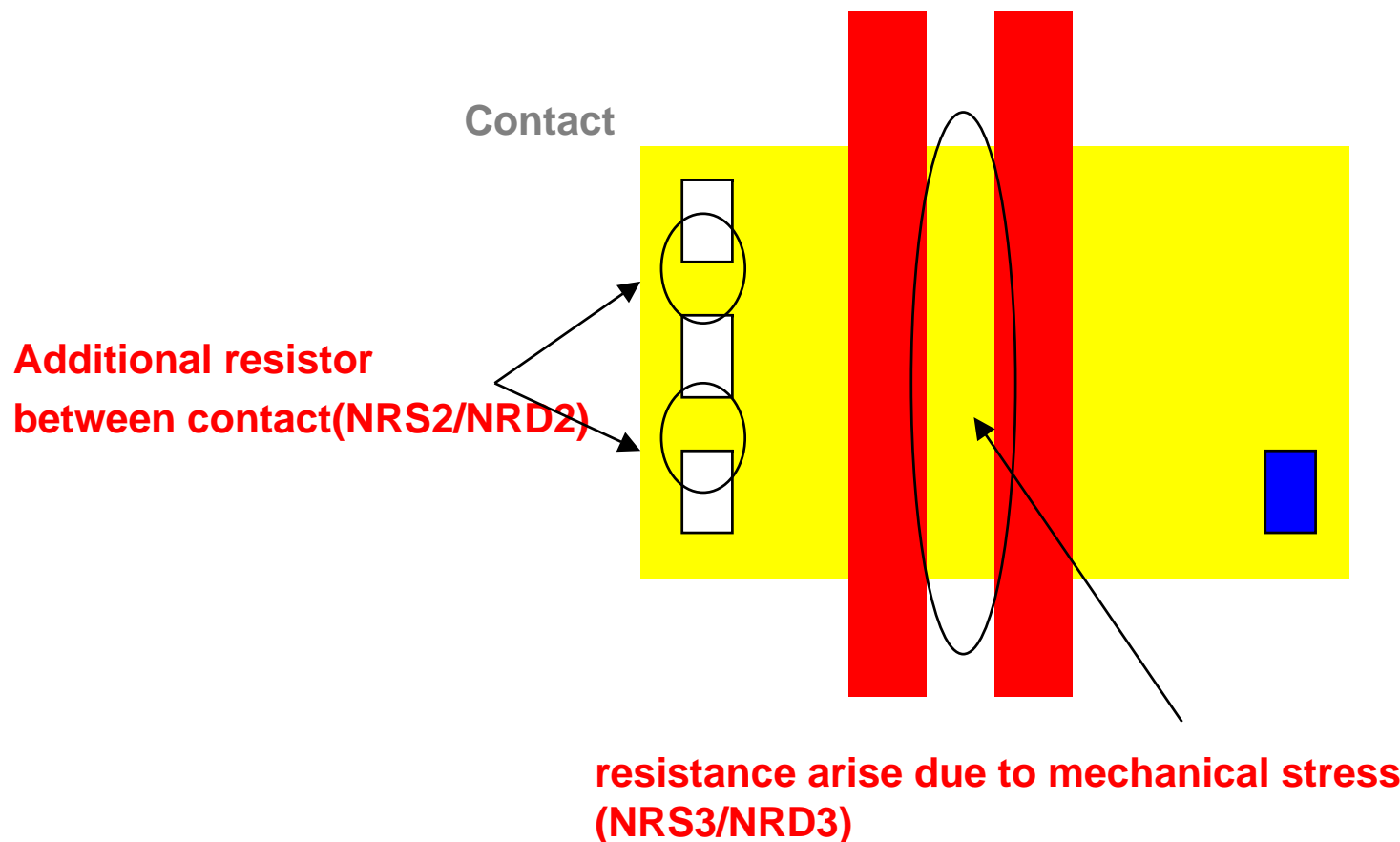
DFM rule: PO.S.2:

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



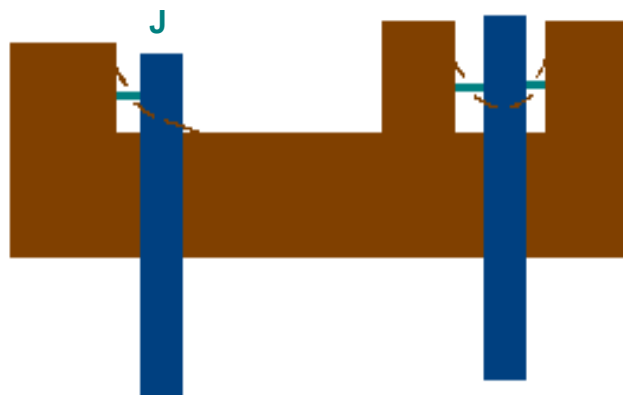
$$\text{Final NRS} = \text{NRS1(original)} + \text{NRS2} + \text{NRS3}$$

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

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**