Strip TEG

M. Hazumi and T. Tsuboyama

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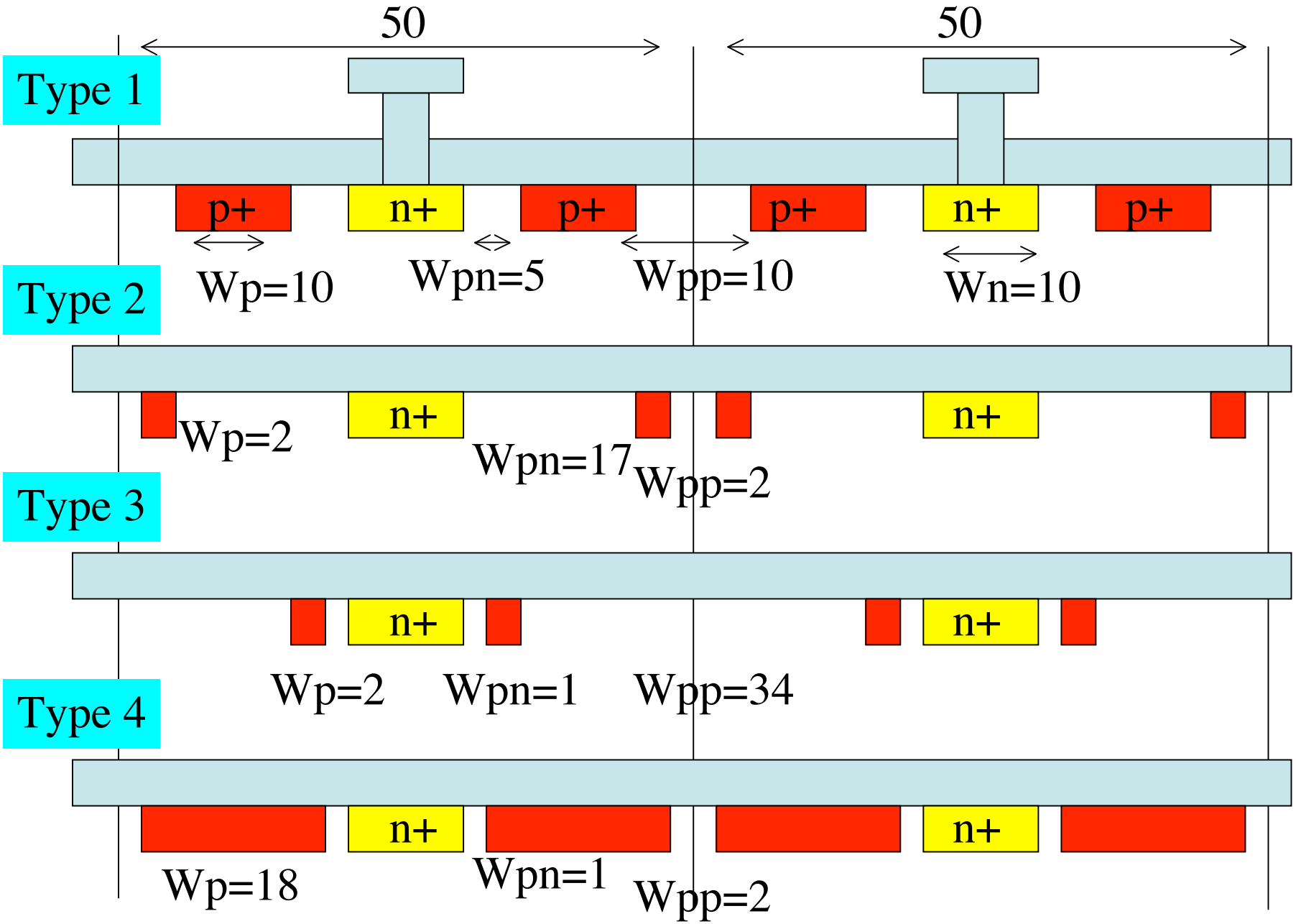
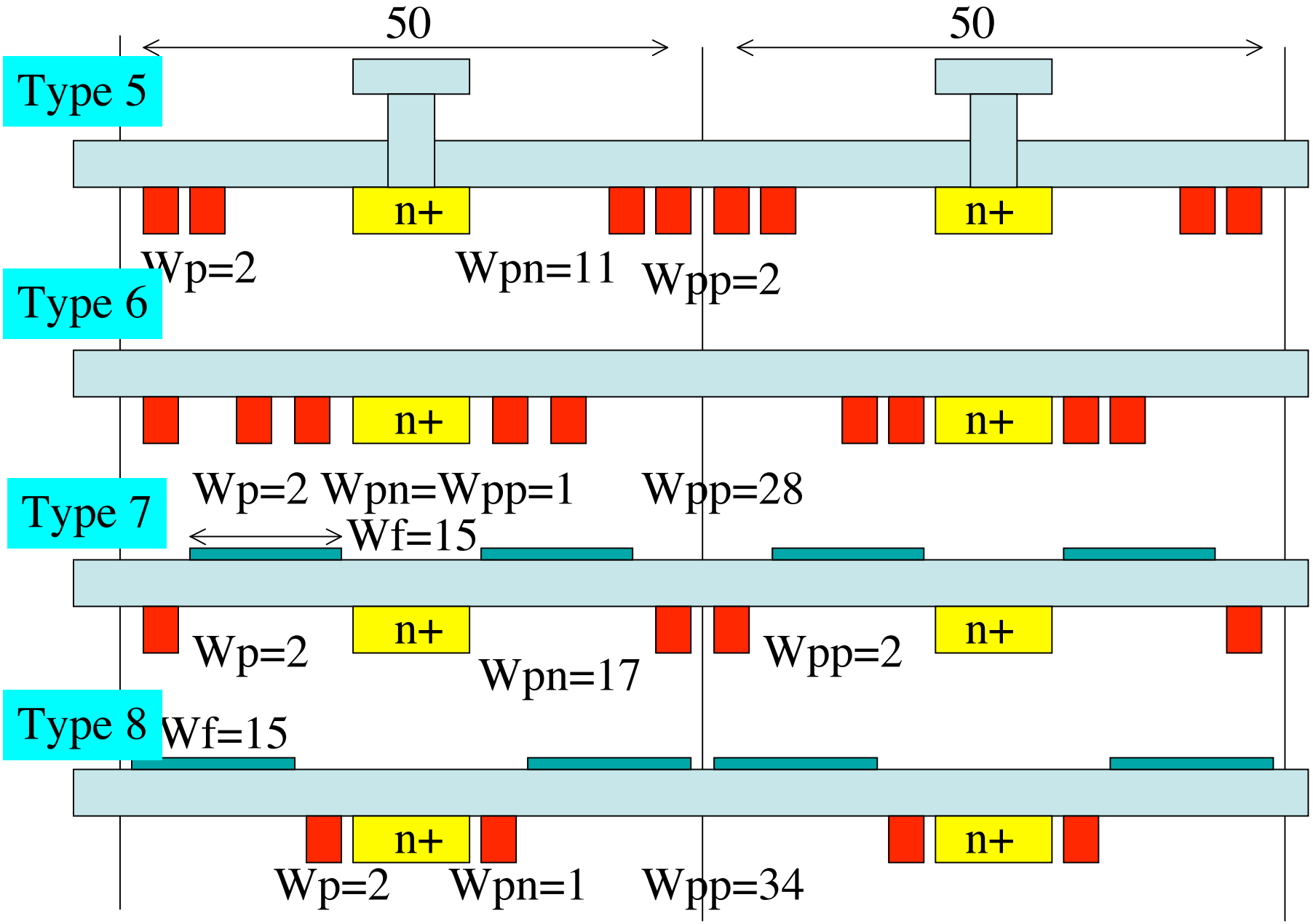
General design

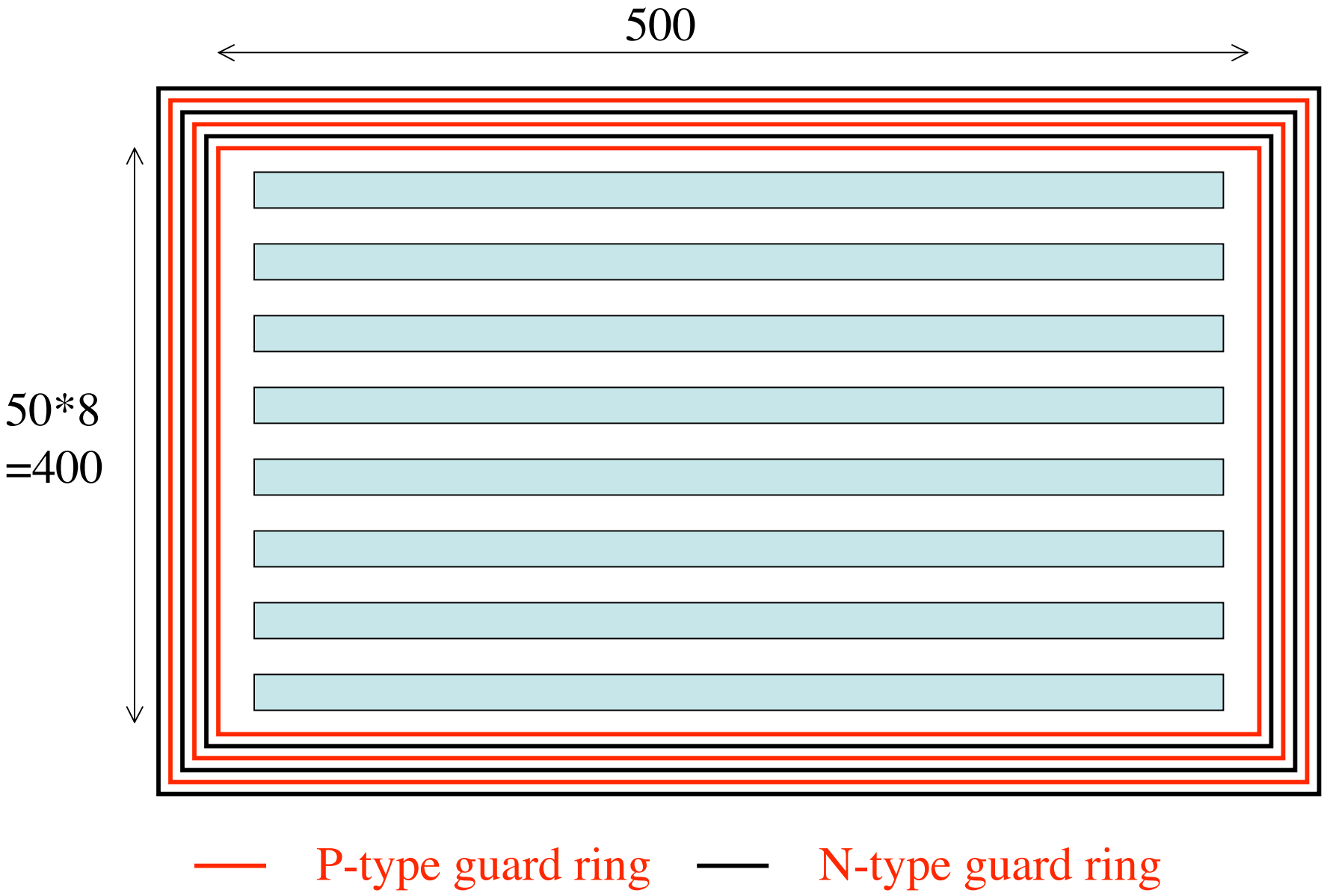
- Strip sensor:
  - Used for prove the validity of 2D simulation of TCAD.
  - Strip sensor is widely used for particle detector.
- DC type sensor. Why?
  - DC test is essential.
  - A few M Ohm poly-silicon resister is not practical.
  - Coupling capacitor (>10 pF) is not practical.
  - Simple structure.
- For evaluation as a prticle sensor, thc chip will be bonded to APV25 readout chip.
  - Several RC chips, used for CLEO3 silicon vertex detector will be somehow obtained.

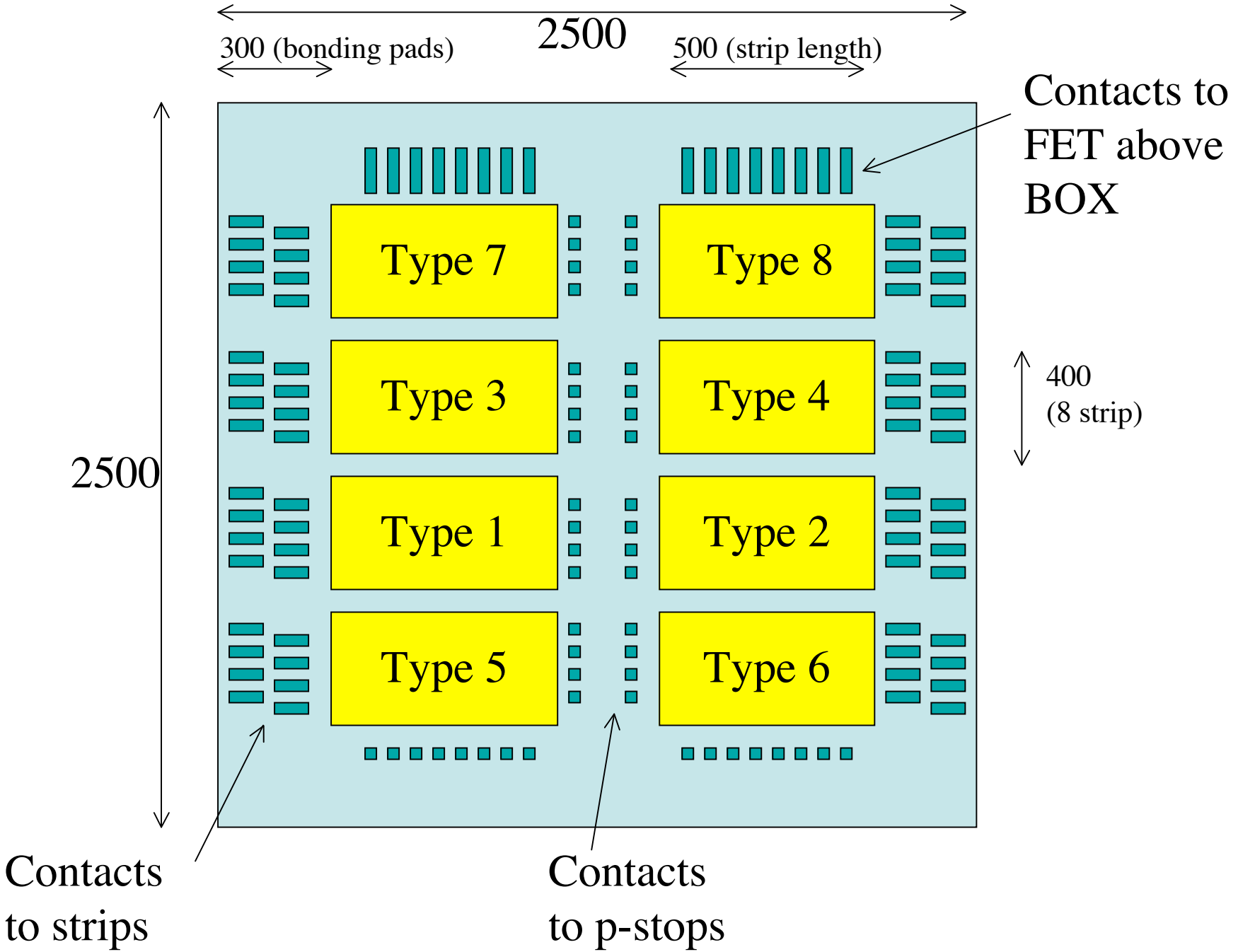
n-type strips on p-bulk.

- p-stop is necessary to separate signal between strips.
- Shape of n-type implant is common (10um*460 um)


50
50
Type 1
p+
n+
p+
p+
n+
p+
Wp=10
Wpn=5
Wpp=10
Wn=10
Type 2
n+
n+
Wp=2
Wpn=17
Wpp=2
Type 3
n+
n+
Wp=2
Wpn=1
Wpp=34
Type 4
n+
n+
Wp=18
Wpn=1
Wpp=2

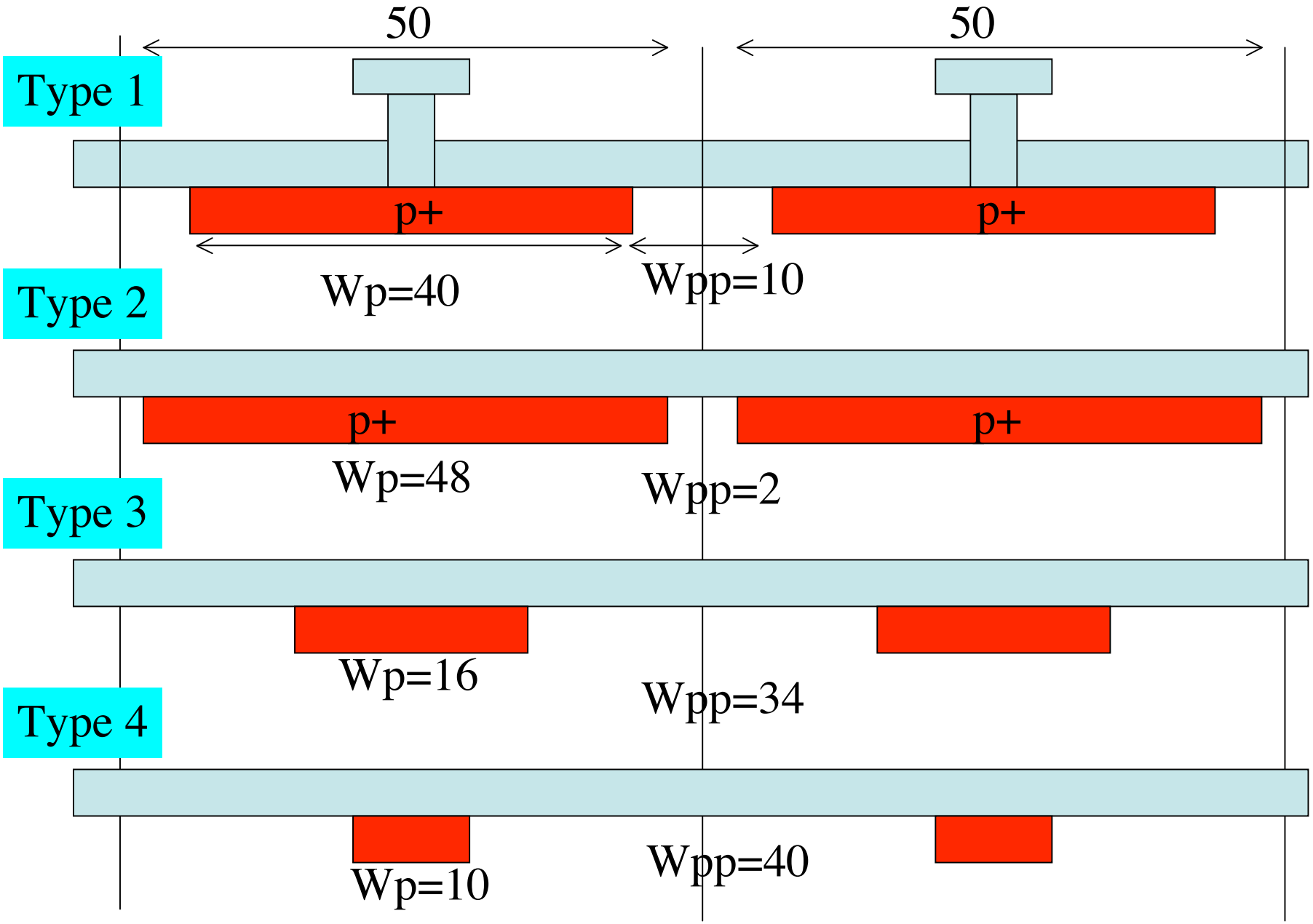

50
50
Type 5
n+
n+
Wp=2
Wpn=11
Wpp=2
Type 6
n+
n+
Wp=2
Wpn=Wpp=1
Wpp=28
Type 7
Wf=15
Wp=2
n+
Wpn=17
Wpp=2
n+
Type 8
Wf=15
n+
n+
Wp=2
Wpn=1
Wpp=34

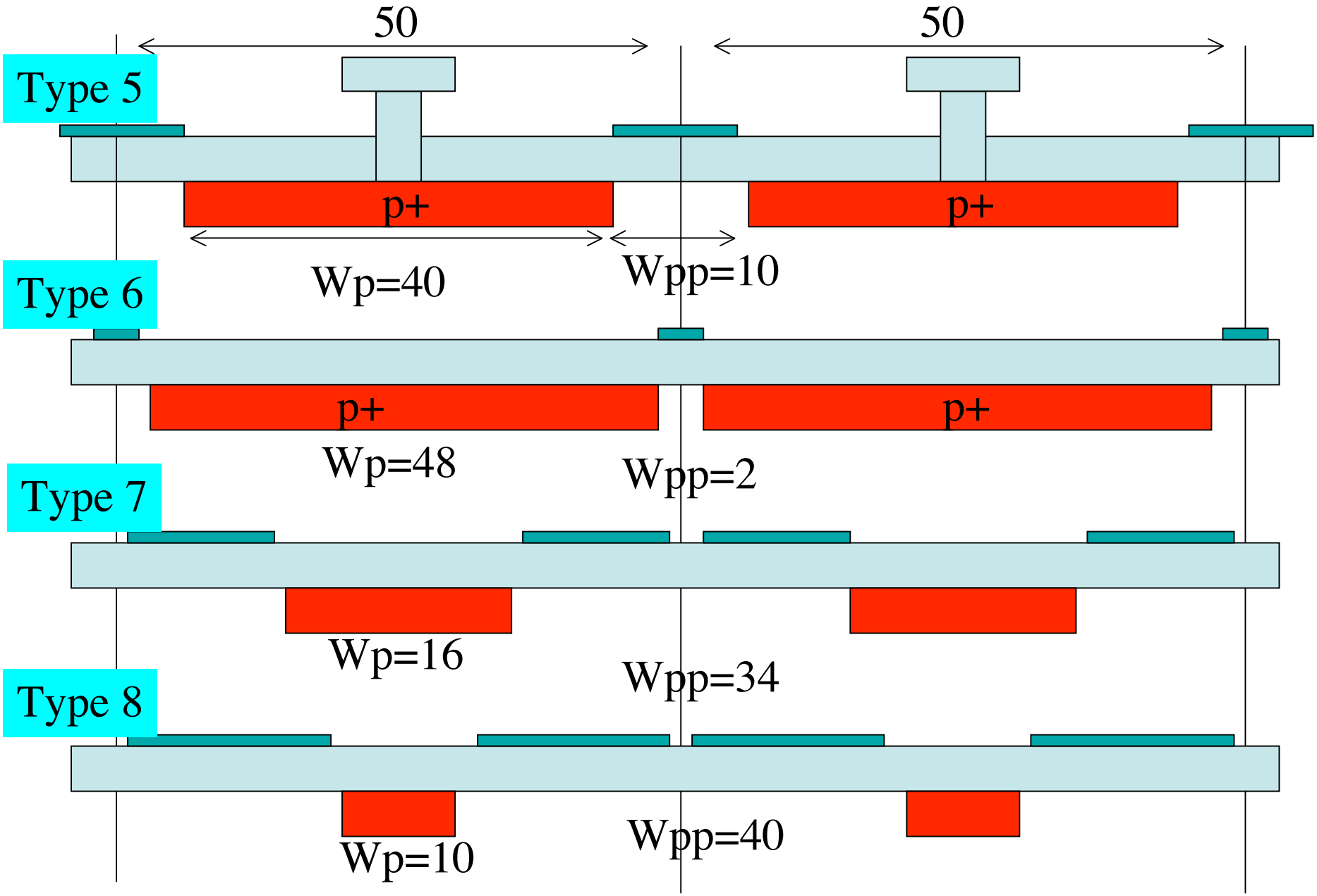

500
50*8
=400
P-type guard ring
N-type guard ring


2500
300 (bonding pads)
500 (strip length)
Contacts to FET above BOX
2500
Type 7
Type 8
Type 3
Type 4
Type 1
Type 2
Type 5
Type 6
400
(8 strip)
Contacts to strips
Contacts to p-stops

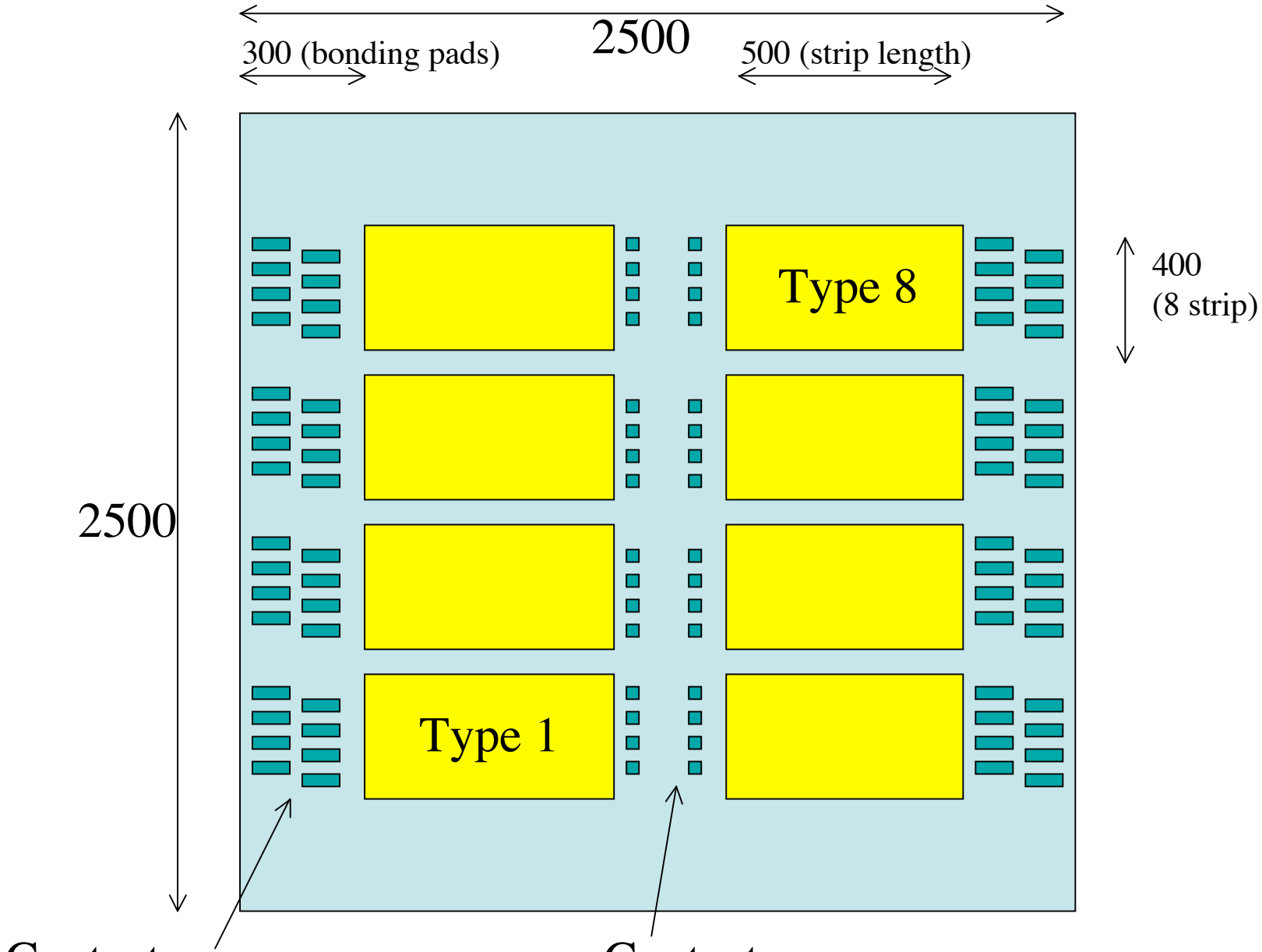
p-type strips on n-bulk.

- Separation is automatically established by p-n junction
- Type 1-4 simulate p-bulk strips.
- Type 5-8 are equipped with FET electrodes to control the interface charge.


50
50
Type 1
p+
p+
Wp=40
Wpp=10
Type 2
p+
p+
Wp=48
Wpp=2
Type 3
Wp=16
Wpp=34
Type 4
Wp=10
Wpp=40


50
50
Type 5
p+
p+
Wp=40
Wpp=10
Type 6
p+
p+
Wp=48
Wpp=2
Type 7
Wp=16
Wpp=34
Type 8
Wp=10
Wpp=40

500
50*8
=400
Overall p-type guard ring
N-type Bias ring


2500
300 (bonding pads)
500 (strip length)
2500
Type 8
400
(8 strip)
Type 1
Contacts
to strips
Contacts
to guard rings and n-side bias ring