

(19)
(12)

(KR)
(A)

(51) 。 Int. Cl. ⁷
H01L 21/8242

(11)
(43)

2001 - 0082647
2001 08 30

(21) 10 - 2001 - 0007464
(22) 2001 02 15

(30) 09/505,762 2000 02 16 (US)

(71) 600 (: 07974 - 0636)

(72) 07921 38
18014 2579

(74) :

(54)

2 , 1 2

(SiO₂) 1 2 , 1 2 , 2

2 , 1 1 , 2

1

, , , ,

(TiN) (Ti) 1
TiN
MOM POP
POP MOM
MOM POP 가 IC 가 IC
, IC , IC 가
가 ,가
1 2 2 1
(SiO₂) 1 2
1 2
1 2 가
50μm 50μm 20fF/μm , 20fF/μm 가
2 1 2 1
1 2 (TiN)

1 1 2 1 2 가 , 가 , (1) 2
 1 1 2 2 가 , 가 , (2)

IC CMOS IC
 IC

가

1 (100) 1 (110) (" A" (100) 가
 2 1 (110) 2 (120) (120) (" B")
 100)가 , x y 1 (110) 2 ()
 가 2 가

(110, 120) (110, 120) 1
 2 TiN

(110) 2 (120) (130)
 (SiO₂) (SiN) 1 (Ta₂O
 5) (130) (110, 120) 1

2a , 1 (100) (200) 가 x - y
 (100) 2a 1 (110) 2 (120)
 2 (120) 2 (110) 1 (210)
 (220, 210) (220) (110, 120)
 0) (110, 120) (110, 120) (210, 22
 (200) (110, 120) 2b

2b , (100) (230) 가 2b
 2 (120) 1 (110) 2a 1 (110) 2 (120)
 . 1 2 (110, 120) 1 2 (210, 220)

3 , (310) (320) 1 2
 가 가
 (100) (310) (320) 가
 (100)

4 , IC(400) 1 3 (100) 가
 , 4 (vias)(415) (420) (410)가
 (430) IC (410)
 (418) , (430) (420) IC (400)
 (410) (410), (420), (400),
 (415) (430) , (100),
 (410), (420) (430) IC(400)

1 2 (110, 120) (420)
 가 (100) IC(400) , 가
 , 1 2 (110, 120)

4 4a 4c , IC(400) 1 2 (110, 120)
 가 (440) (435)
 (440a)
 , 1 2 (110, 120) , T
 aN (440a) , 1 2
 (110, 120) (440a) TiN

(420a) (440a) (CVD) (PVD)
 , 2 (445a) (420a) , 2
 (445a) (440a) , ,
 (450)가 (420a) (450) (420)
 1 2 (110, 120) ()
 , (420) (100)
 1 2 (110, 120) , , (450)
 , (420) 1 2
 (110, 120) (450) 4c (420) (110, 120)
 , 4c (420) (110, 120)
 (440, 445) , , (440)
 , (440) (420) (110, 120)

4 , (100) 1 2 (110, 120)
 , (400) (430) , (100)
 , (110, 120) 가 가
 , 1 2 (110, 120) (420) ,

1 4 , 1 (110) 2 (120)
 , 1 (110) 2 (120) , 1
 (210)(2a) 2 2 (220)(2a) 1

5 , O 가 5
 X , 가 25
 가 , 50 μ m 20fF/ μ m 20fF/ μ m
 , 가 가 (100)(4)가

, 2
, 1
가 , 1 2
2
1 2

(57)

1.

,
2 , 1 2 가 , 가 ,
1 2
1 2
1 2

2.

1 , 1 , 1 , 2 2
1

3.

1 , , .

4.

1 , 50 μ m 20fF/ μ m , .

5.

1 , 1 2 , .

6.

5 , 1 2 , , .

7.

6 , , .

8.

1 , 1 2 , ,

9.

2 , , 1 1 2 가 , 가 ,
 , 1 2 ,
 1 2 ,

10.

9 , 1 1 ,
 2 , 2 , .

11.

9 , 1 2 .

12.

9 , , 50 μ m ,
 , 20fF/ μ m , .

13.

9 , 1 2 ,

14.

13 , 1 2 ,

15.

14 , ,

16.

9 , ,
 ,
 ,

1 2

17.

2

18.

17

19.

17

20.

17

21.

17

22.

21

23.

22

24.

17

50 μ m

20fF/ μ m

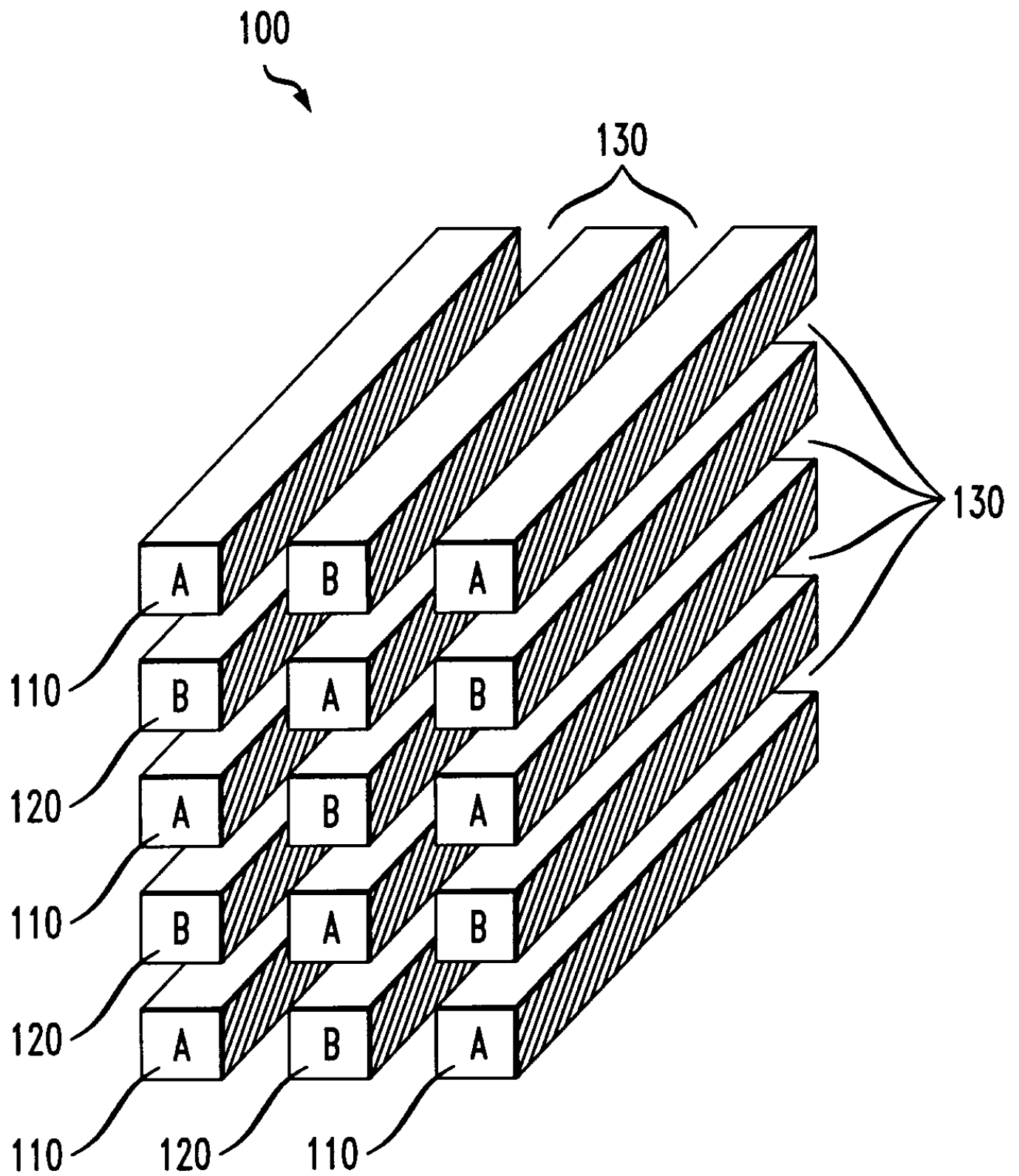
25.

17

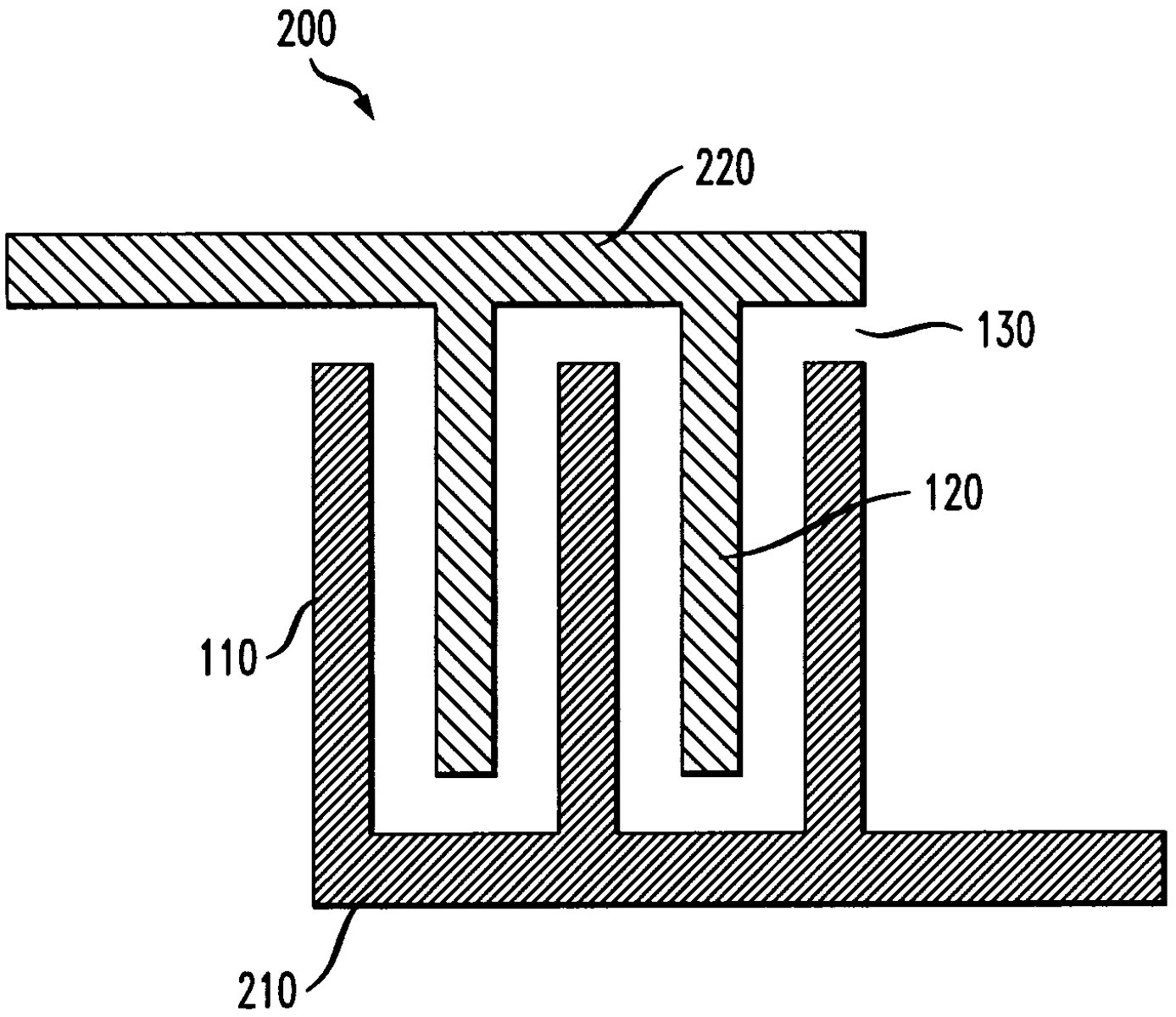
CMOS

CMOS(complementary metal oxide semiconductor)

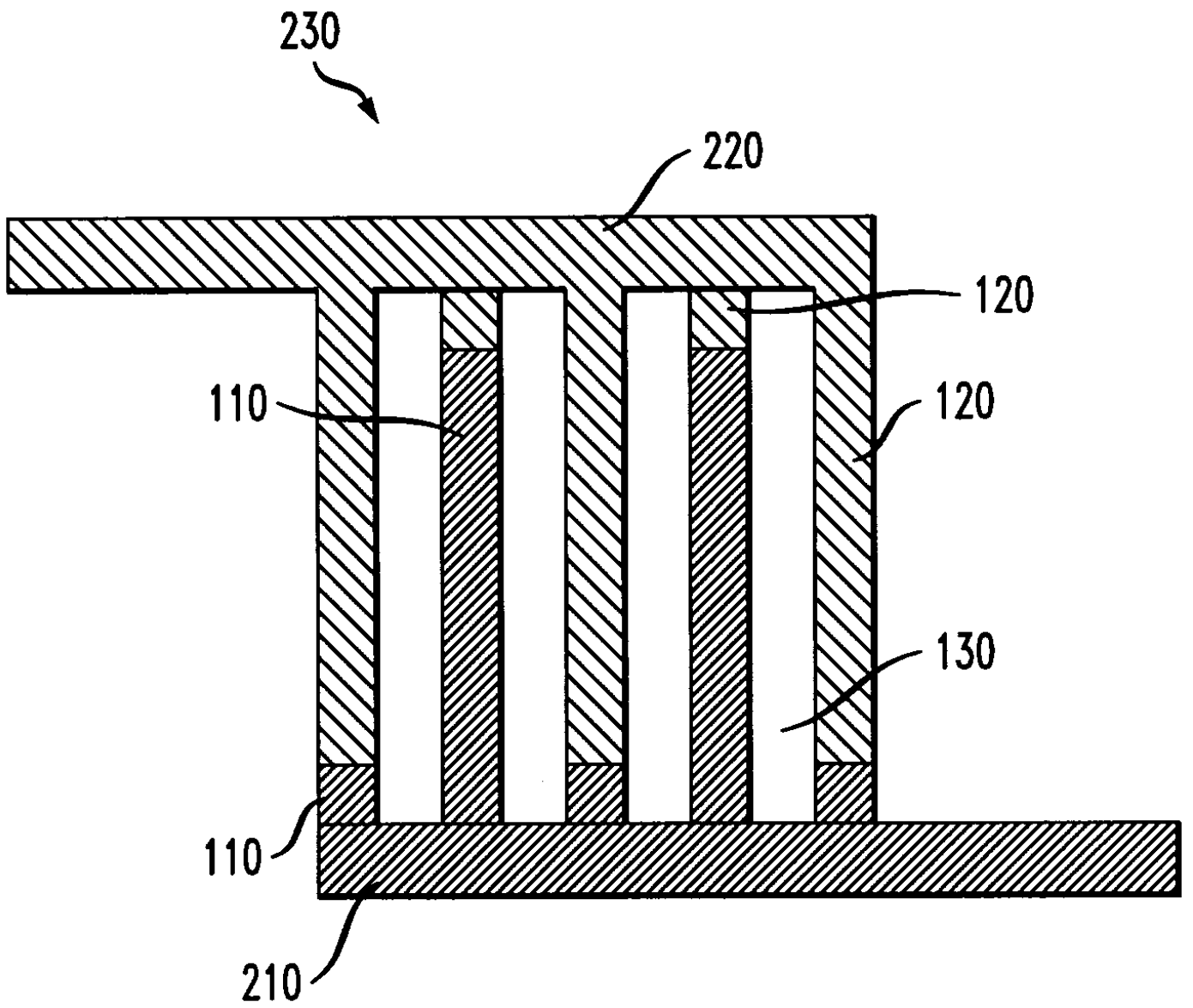
1



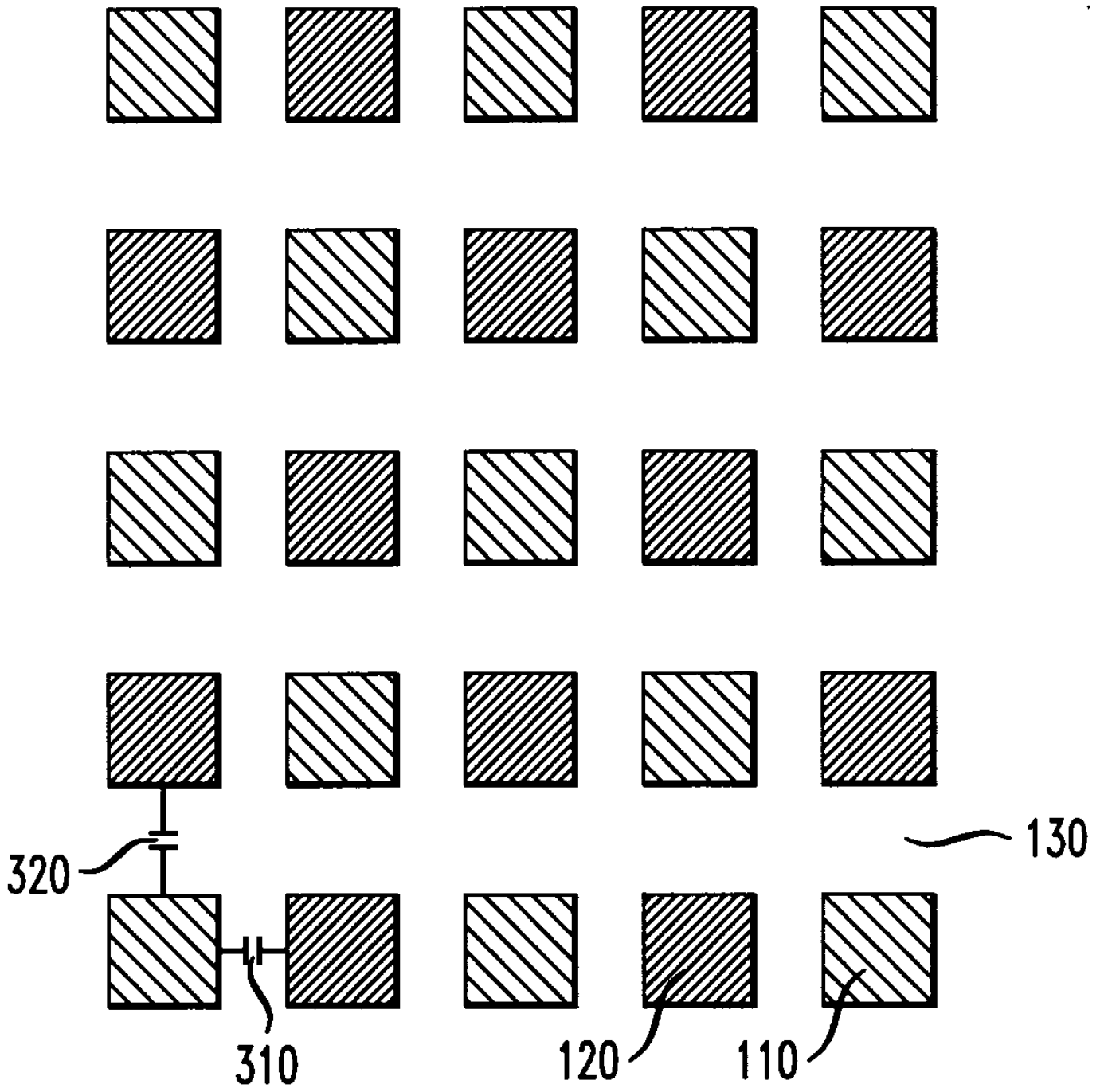
2a



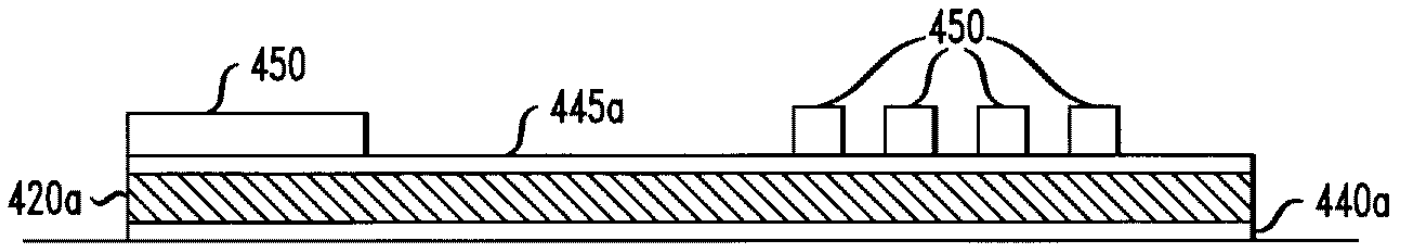
2b



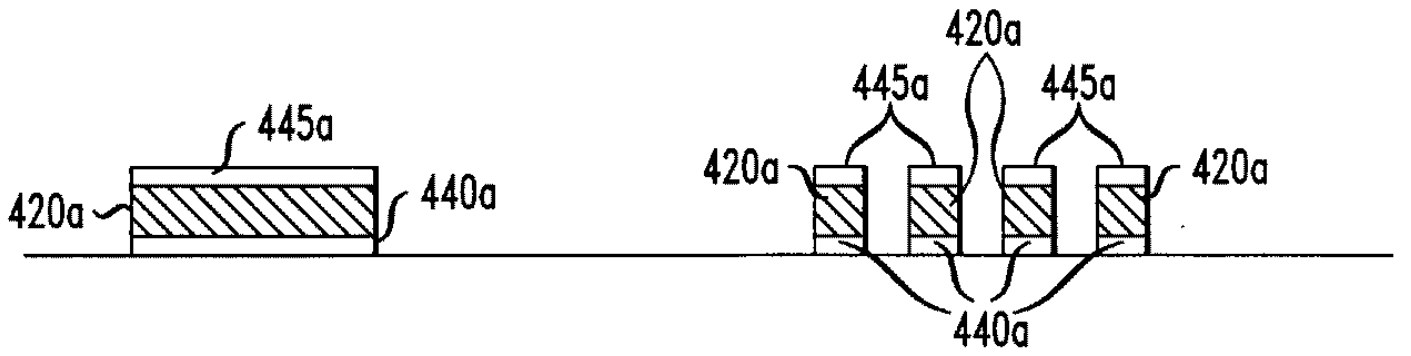
3



4b

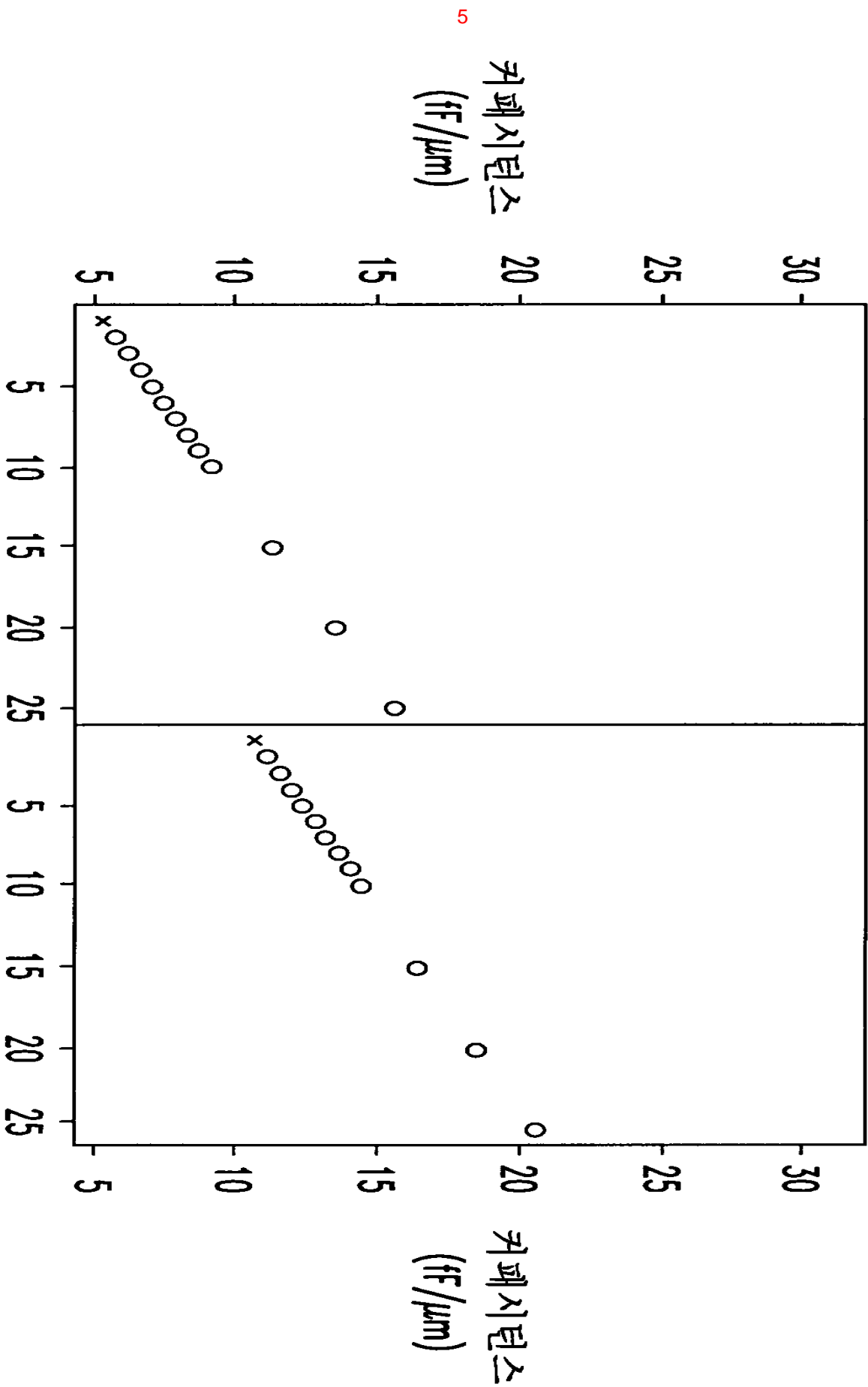


4c



커패시터 폭 = 25 μm

커패시터 폭 = 50 μm



서로 맞물린 커패시터의 전극 소지들의 수