FIG. 1

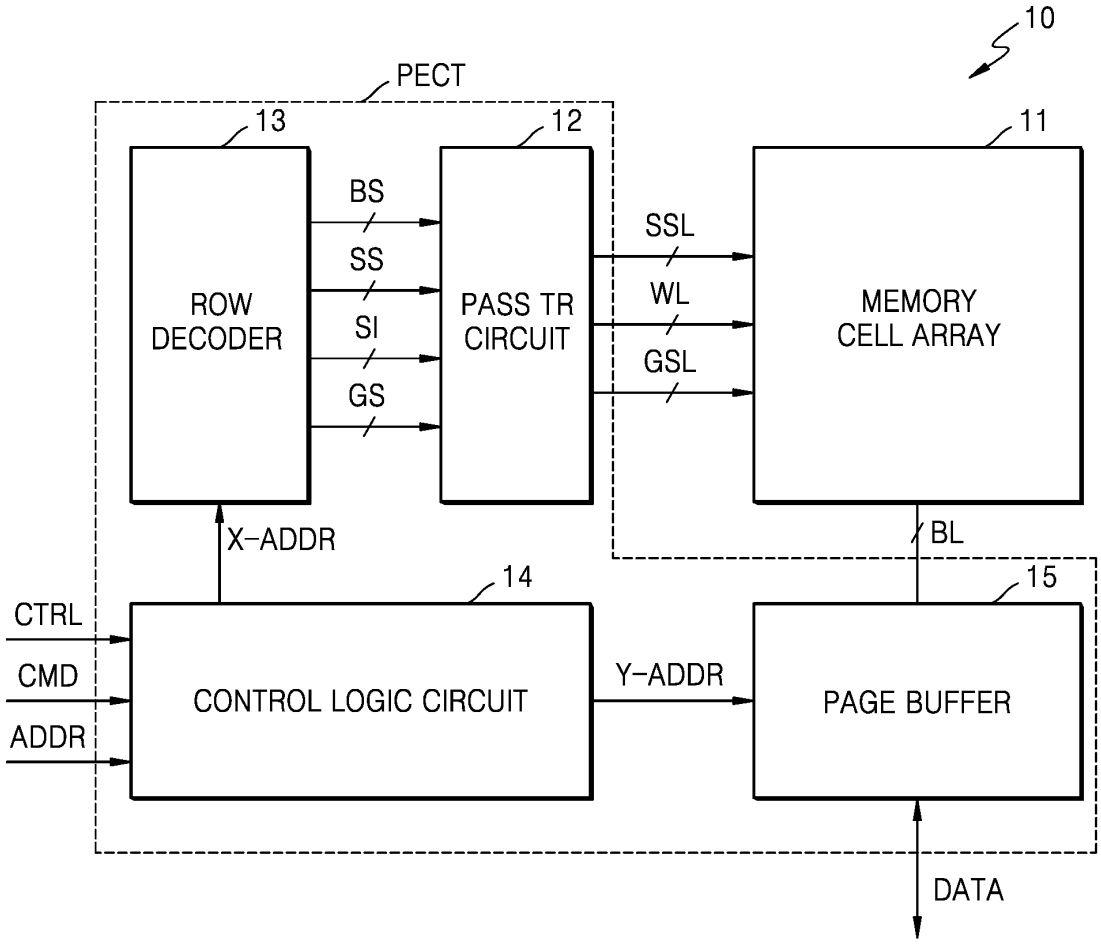

10
PECT
13
12
11
BS
SS
SI
GS
ROW DECODER
PASS TR CIRCUIT
SSL
WL
GSL
MEMORY CELL ARRAY
X-ADDR
BL
14
15
CTRL
CMD
ADDR
CONTROL LOGIC CIRCUIT
Y-ADDR
PAGE BUFFER
DATA

FIG. 2

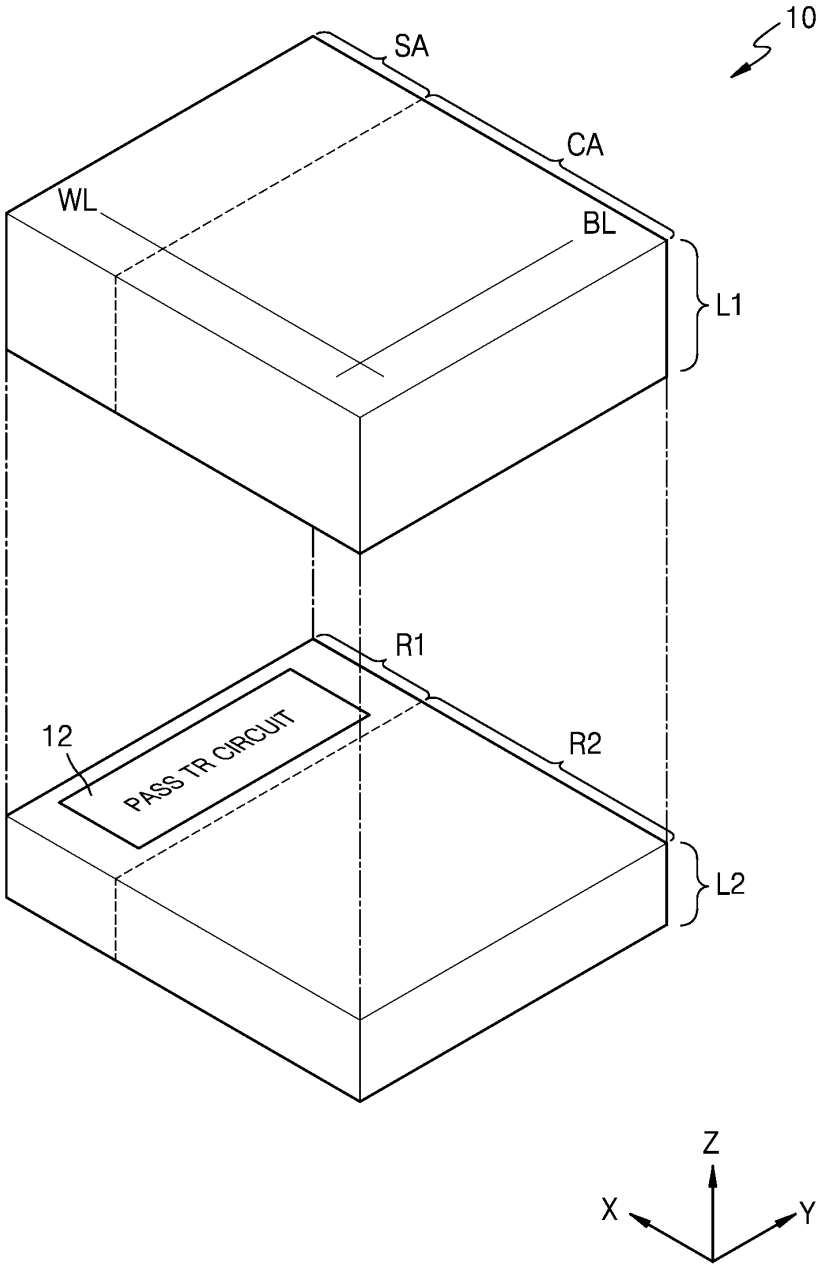


FIG. 3

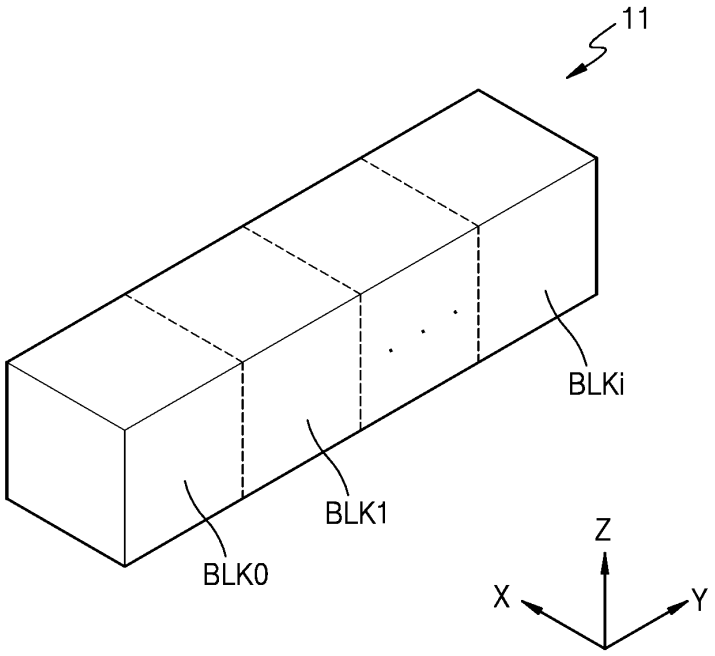


FIG. 4

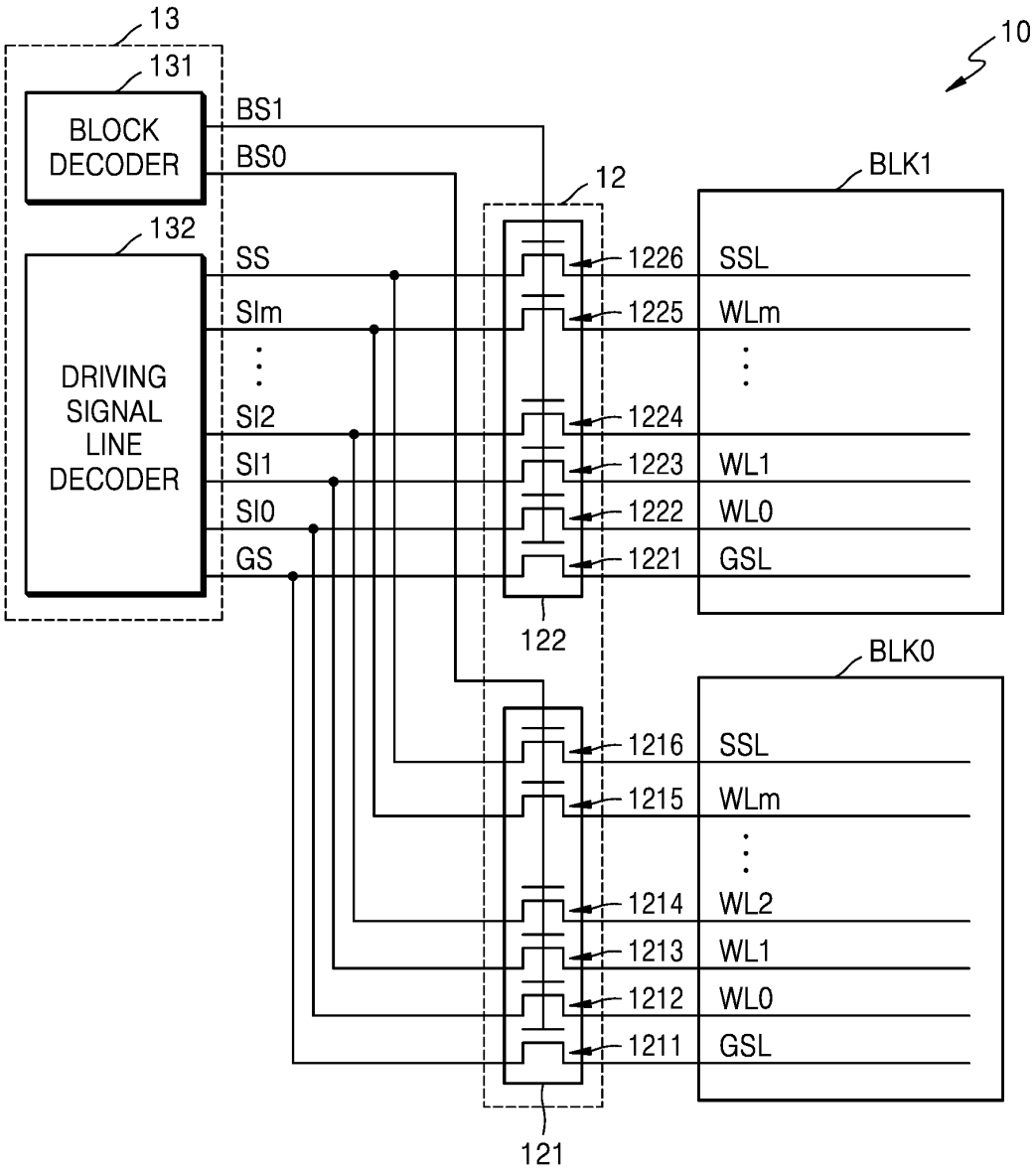

13
131
BLOCK DECODER
132
DRIVING SIGNAL LINE DECODER
BS1
BS0
SS
SIm
SI2
SI1
SI0
GS
12
122
121
10
BLK1
BLK0
1226
1225
1224
1223
1222
1221
1216
1215
1214
1213
1212
1211
SSL
WLm
WL2
WL1
WL0
GSL

FIG. 5

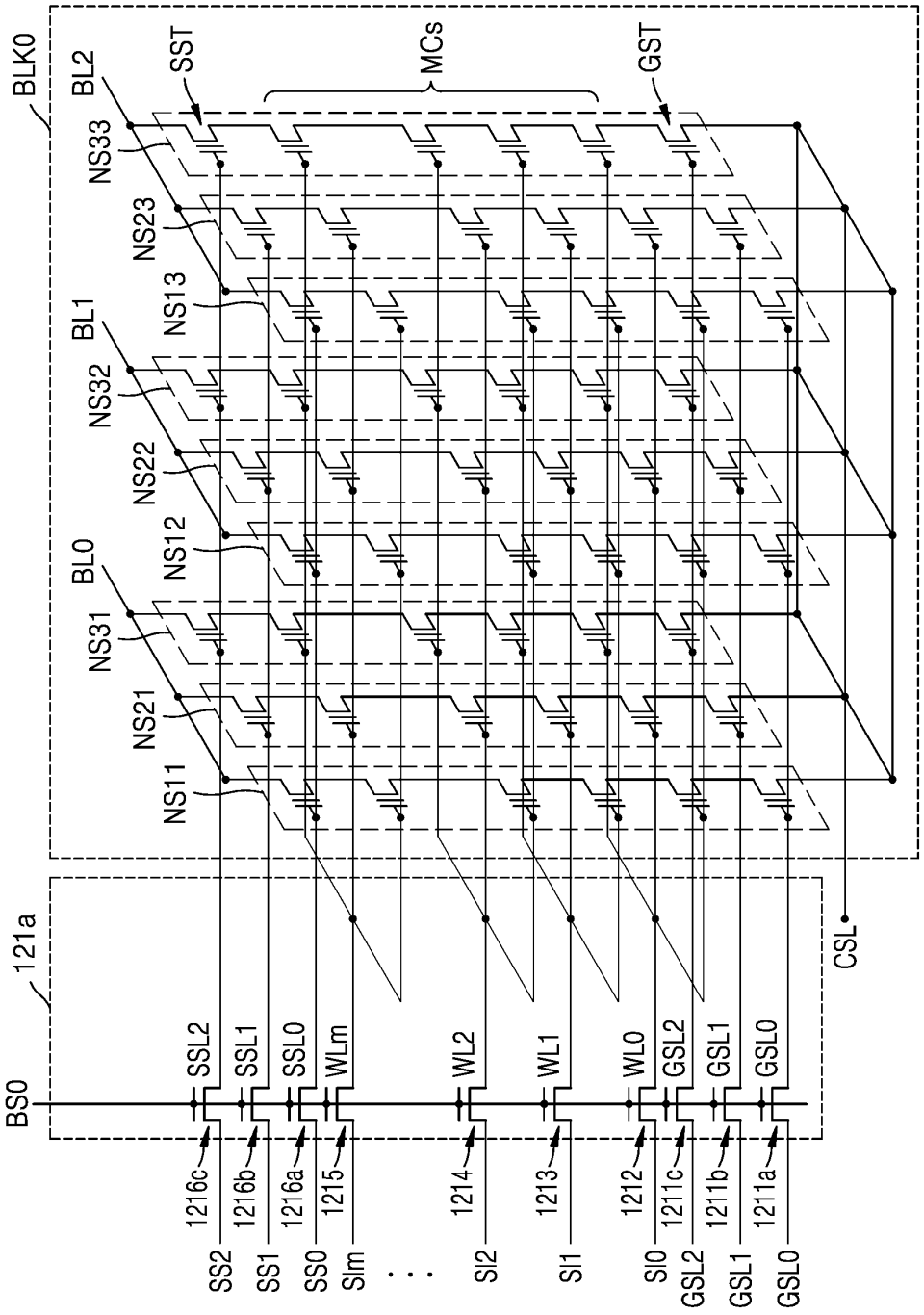

BLK0
121a
BS0
BL0
BL1
BL2
NS11
NS12
NS13
NS21
NS22
NS23
NS31
NS32
NS33
SST
MCs
GST
CSL
SSL2
SSL1
SSL0
WLm
WL2
WL1
WL0
GSL2
GSL1
GSL0
1216c
1216b
1216a
1215
1214
1213
1212
1211c
1211b
1211a
SS2
SS1
SS0
Slm
Sl2
Sl1
Sl0
GSL2
GSL1
GSL0

FIG. 6

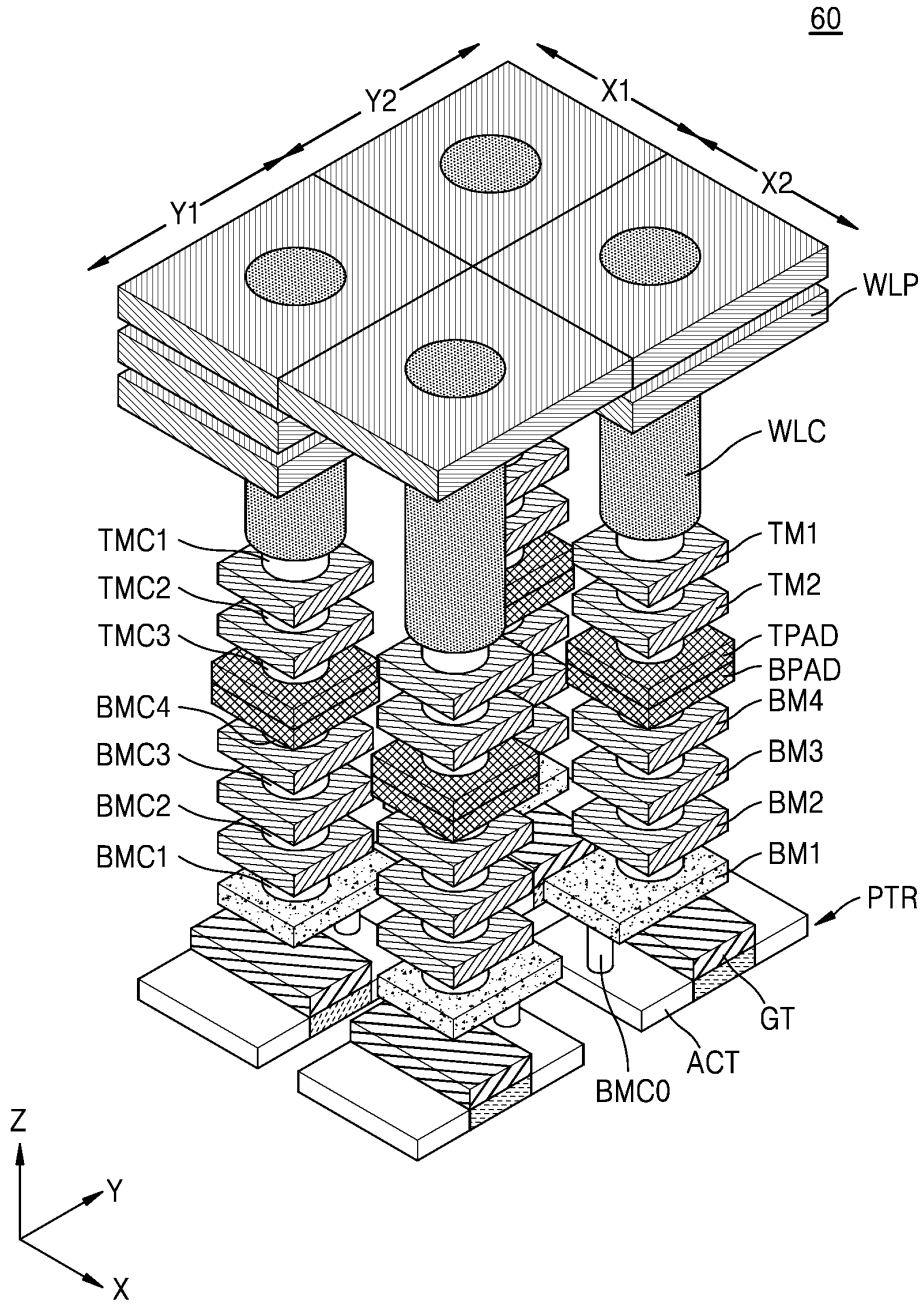

60
Y2
Y1
X1
X2
WLP
WLC
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
PTR
GT
ACT
BMC0
Z
Y
X

FIG. 7A

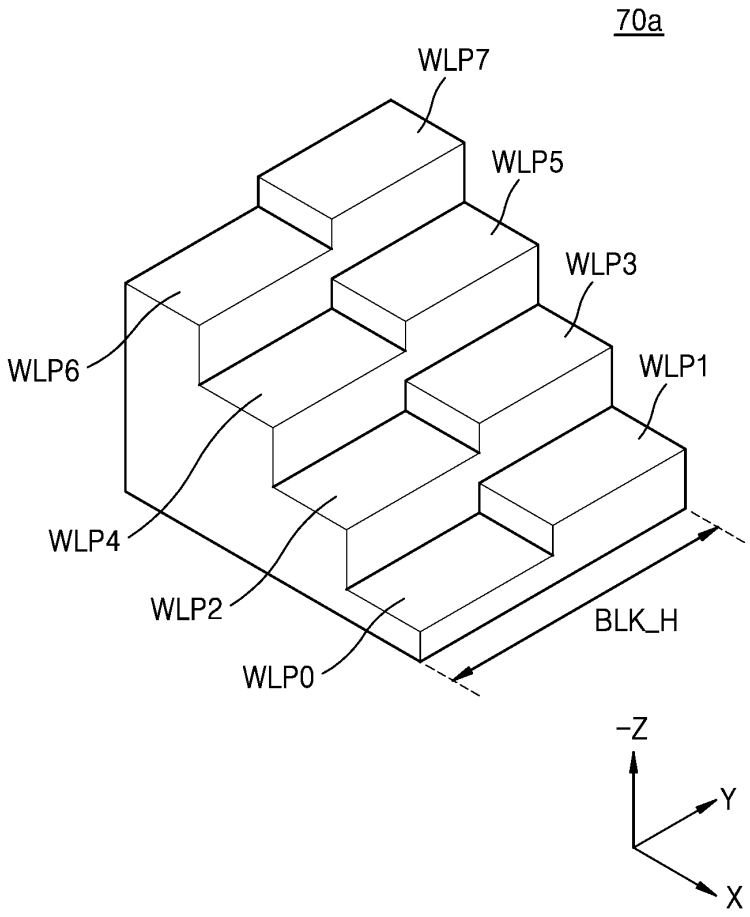


FIG. 7B

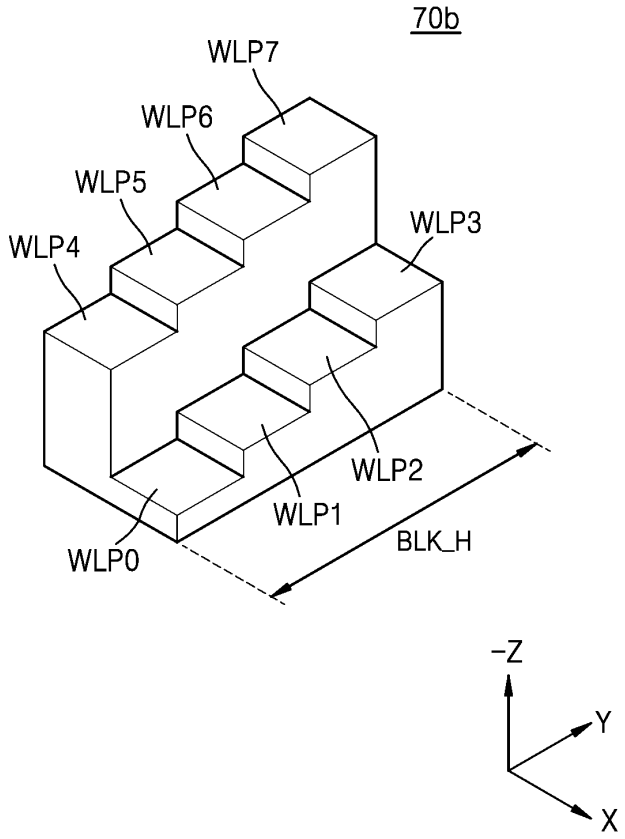


FIG. 8

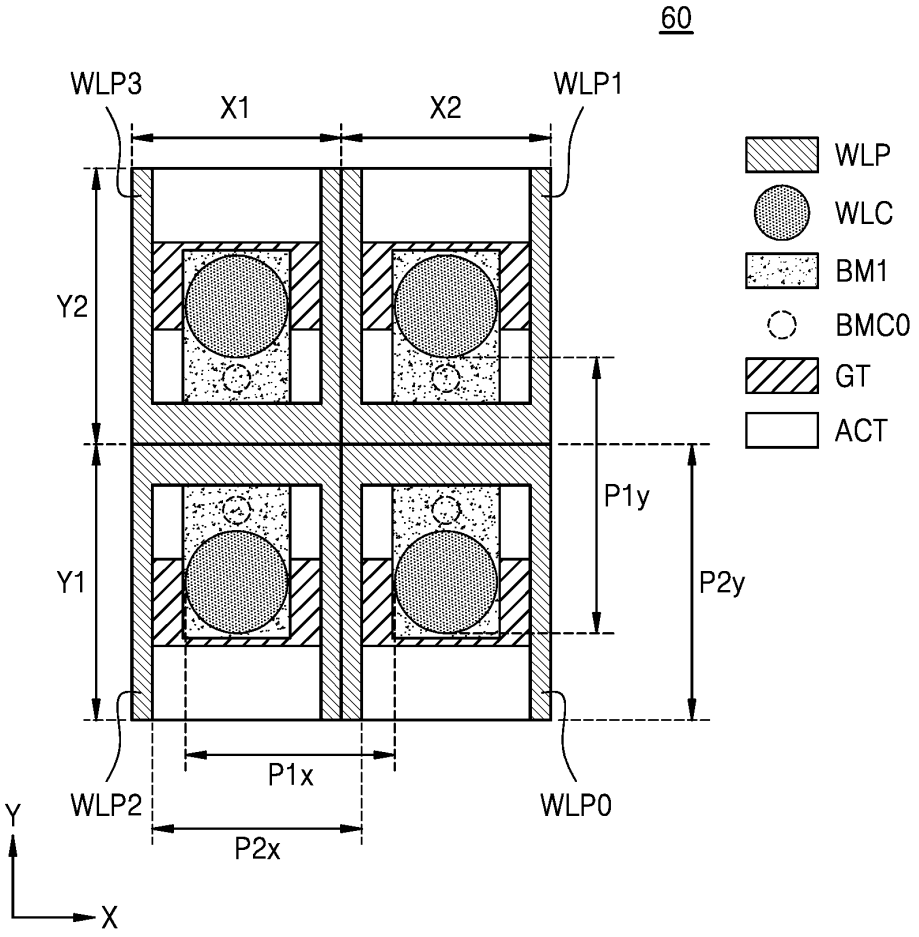

60
WLP3
X1
X2
WLP1
Y2
Y1
P1y
P2y
P1x
P2x
WLP2
WLP0
Y
X
WLP
WLC
BM1
BMC0
GT
ACT

FIG. 9A

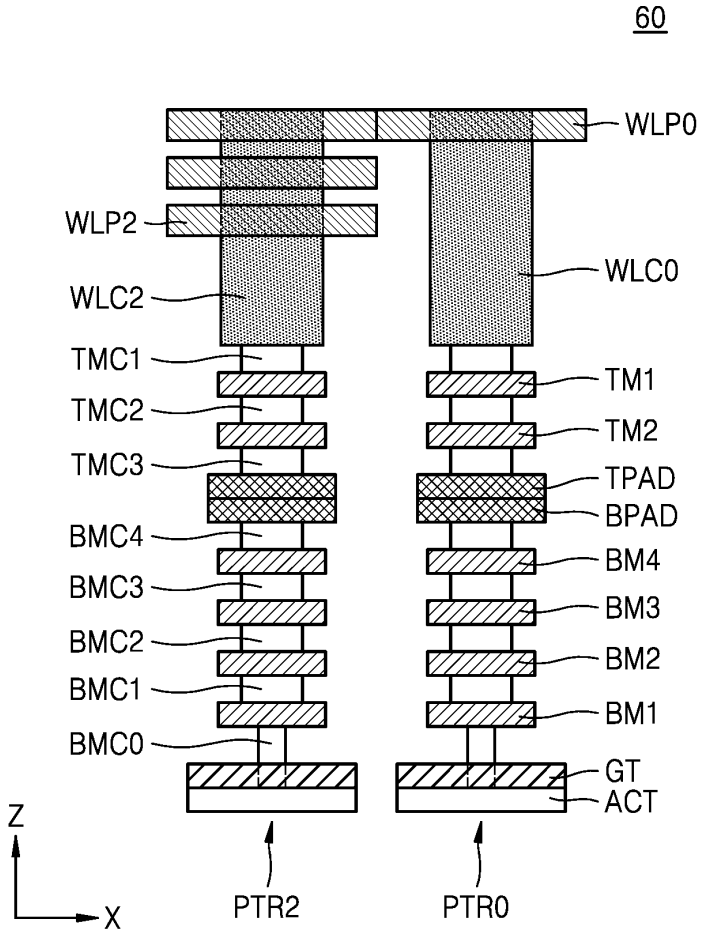

60
WLP0
WLP2
WLC0
WLC2
TMC1
TM1
TMC2
TM2
TMC3
TPAD
BPAD
BMC4
BM4
BMC3
BM3
BMC2
BM2
BMC1
BM1
BMC0
GT
ACT
Z
X
PTR2
PTR0

FIG. 9B

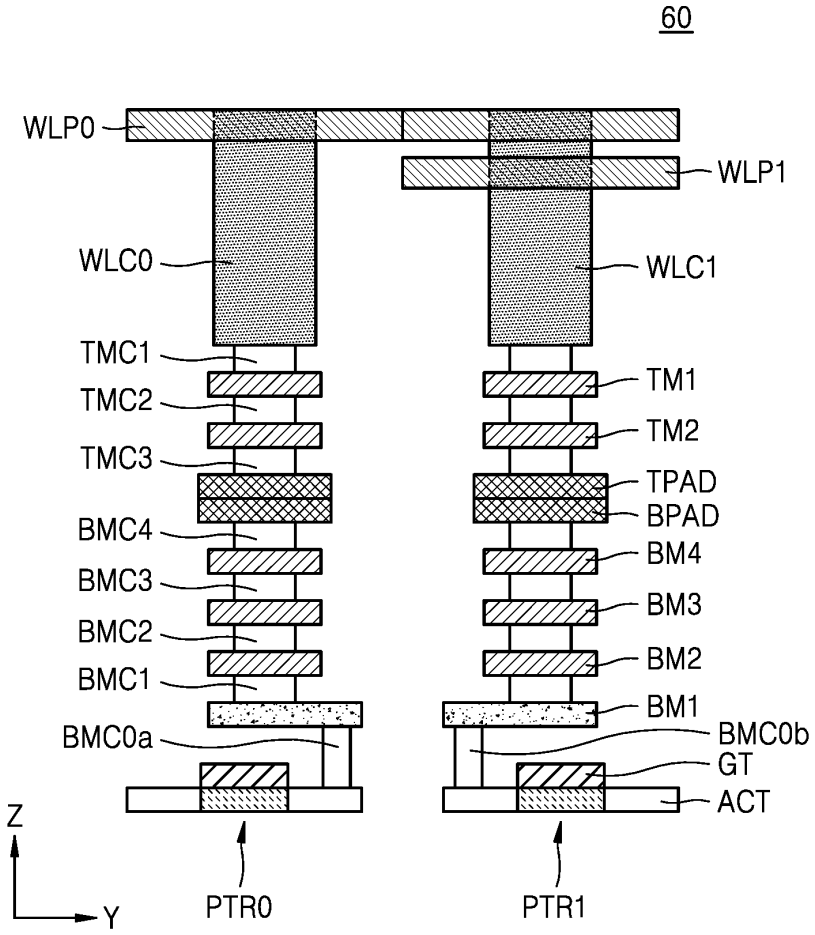

60
WLP0
WLP1
WLC0
WLC1
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0a
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
BMC0b
GT
ACT
Z
Y
PTR0
PTR1

FIG. 9C

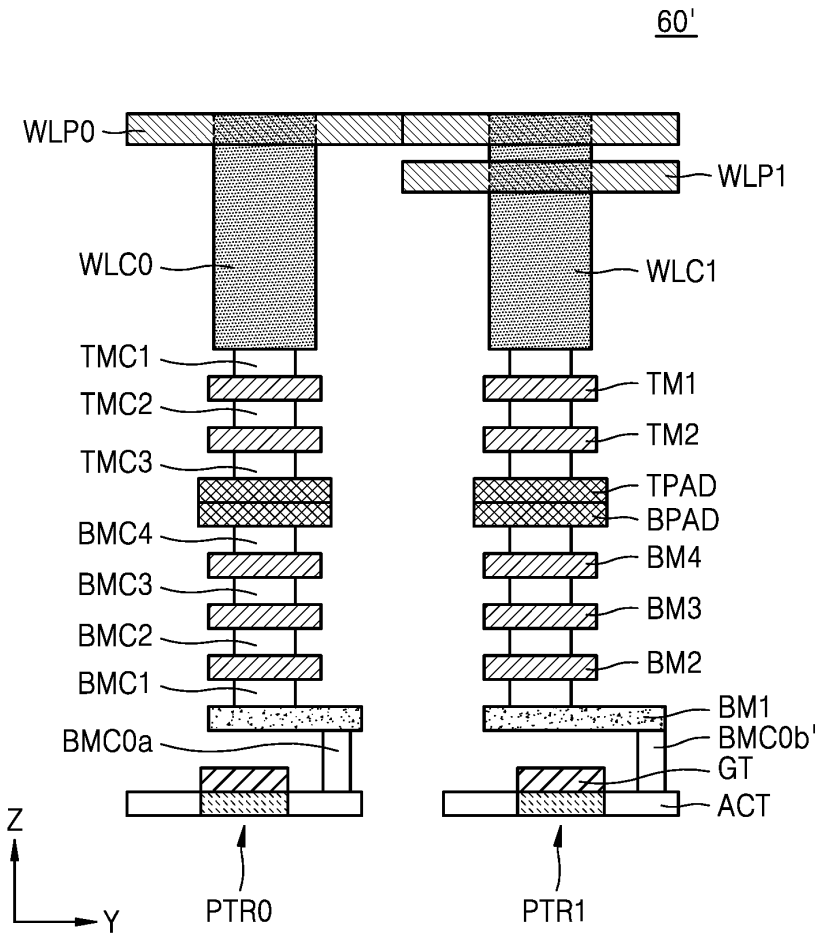

60'
WLP0
WLP1
WLC0
WLC1
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0a
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
BMC0b'
GT
ACT
Z
Y
PTR0
PTR1

FIG. 10A

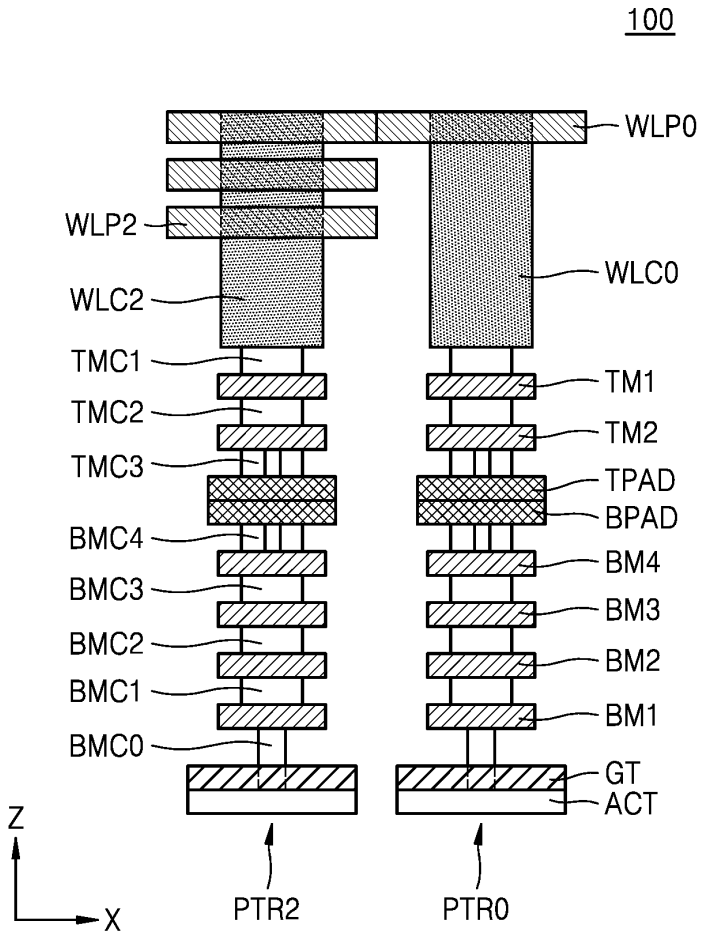

100
WLP0
WLP2
WLC0
WLC2
TMC1
TM1
TMC2
TM2
TMC3
TPAD
BPAD
BMC4
BM4
BMC3
BM3
BMC2
BM2
BMC1
BM1
BMC0
GT
ACT
Z
X
PTR2
PTR0

FIG. 10B

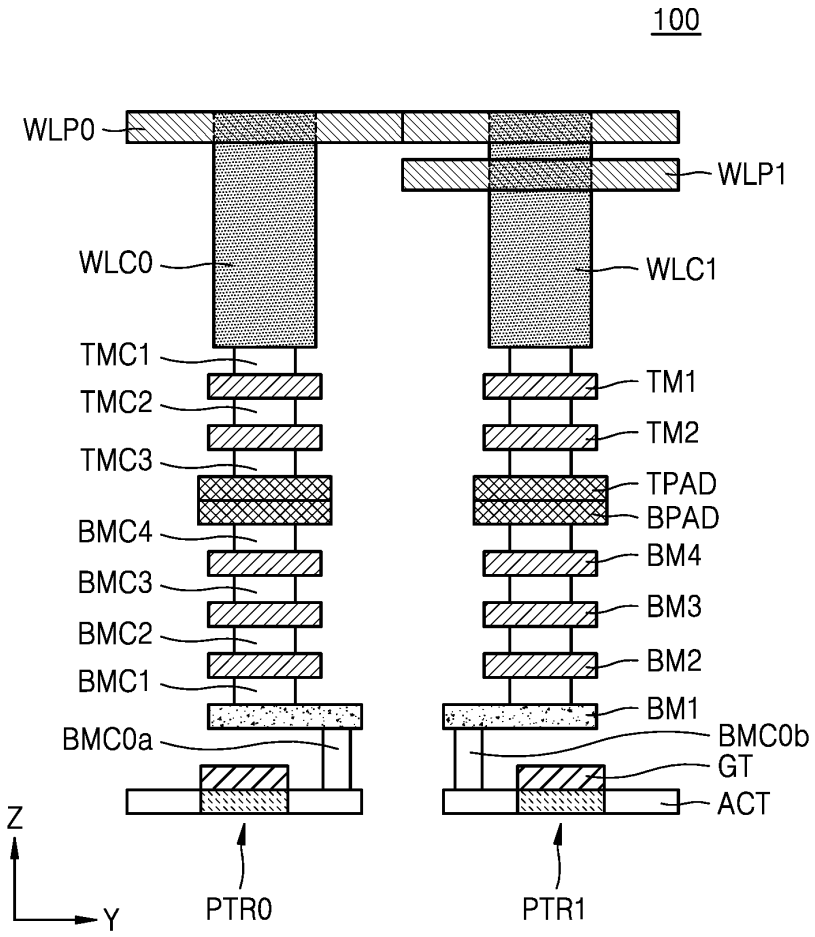

100
WLP0
WLP1
WLC0
WLC1
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0a
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
BMC0b
GT
ACT
Z
Y
PTR0
PTR1

FIG. 11A

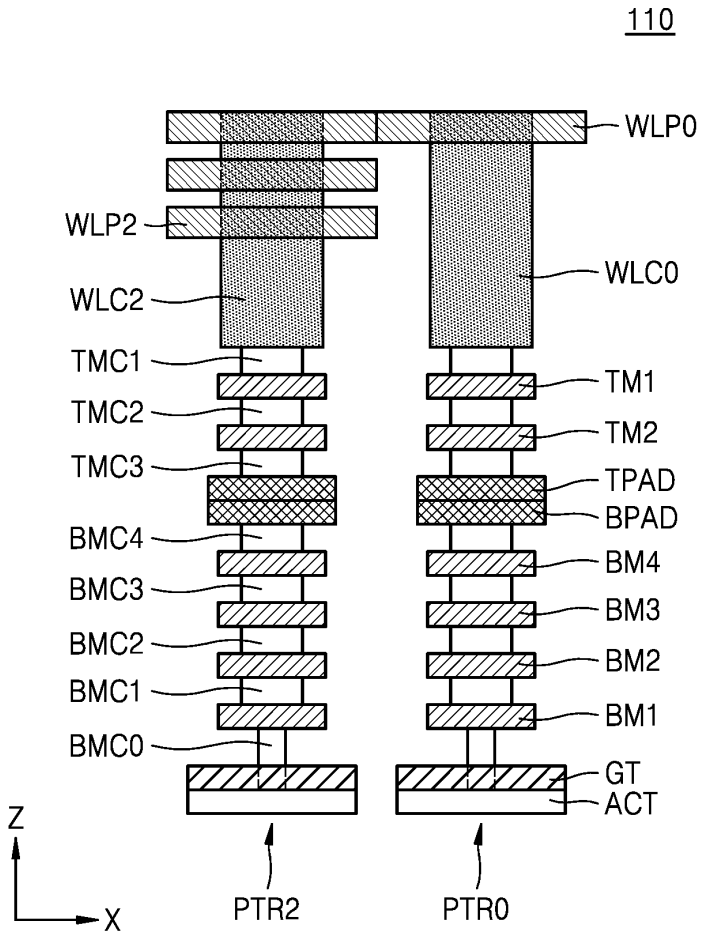

110
WLP0
WLP2
WLC0
WLC2
TMC1
TM1
TMC2
TM2
TMC3
TPAD
BPAD
BMC4
BM4
BMC3
BM3
BMC2
BM2
BMC1
BM1
BMC0
GT
ACT
Z
X
PTR2
PTR0

FIG. 11B

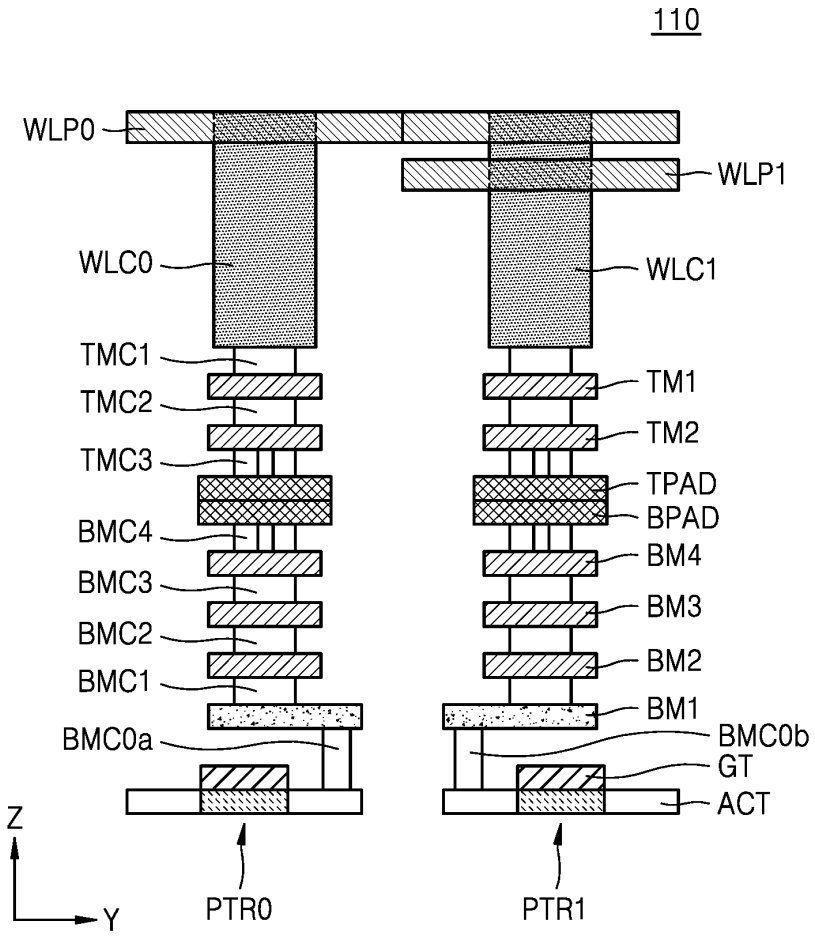

110
WLP0
WLP1
WLC0
WLC1
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0a
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
BMC0b
GT
ACT
Z
Y
PTR0
PTR1

FIG. 12A

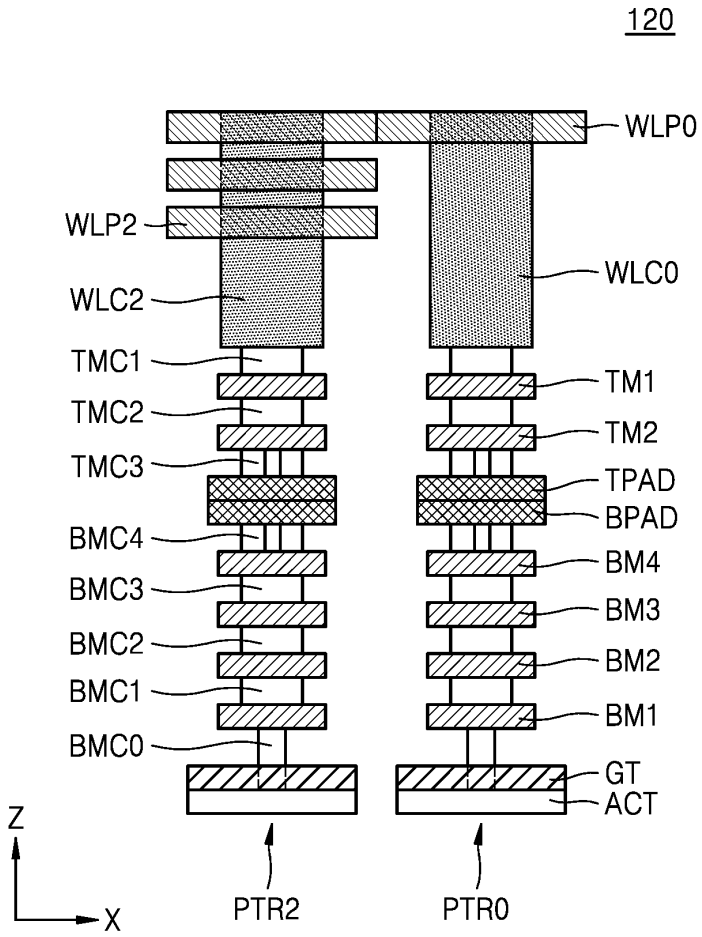

120
WLP0
WLP2
WLC0
WLC2
TMC1
TM1
TMC2
TM2
TMC3
TPAD
BPAD
BMC4
BM4
BMC3
BM3
BMC2
BM2
BMC1
BM1
BMC0
GT
ACT
Z
X
PTR2
PTR0

FIG. 12B

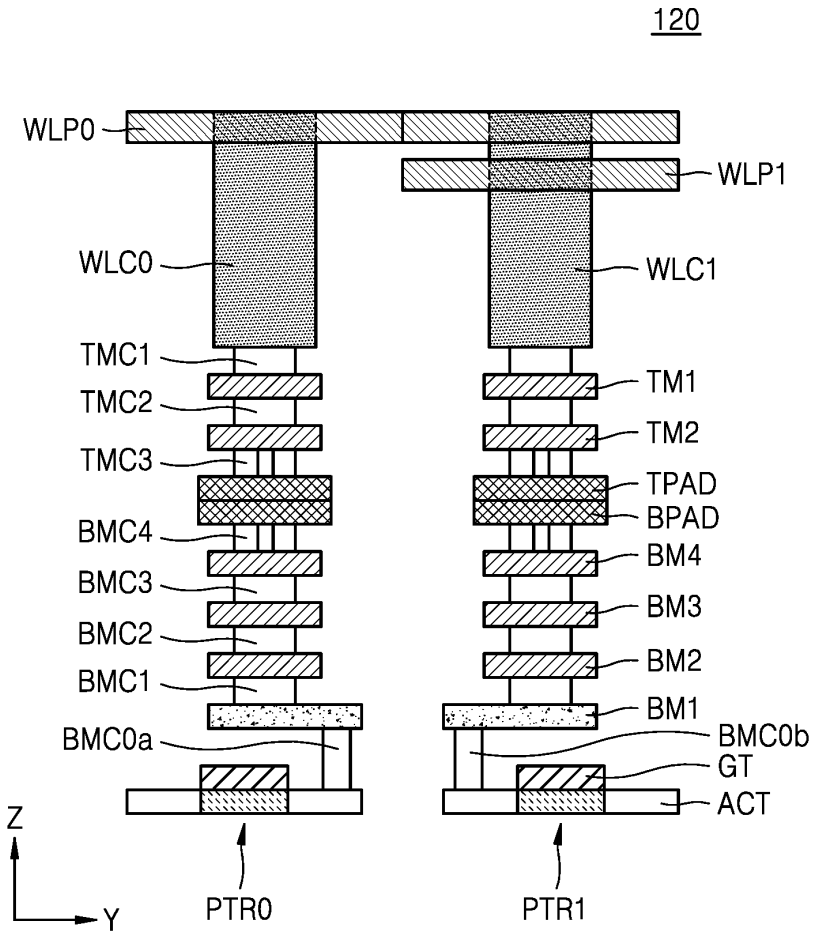

120
WLP0
WLP1
WLC0
WLC1
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0a
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
BMC0b
GT
ACT
Z
Y
PTR0
PTR1

FIG. 13

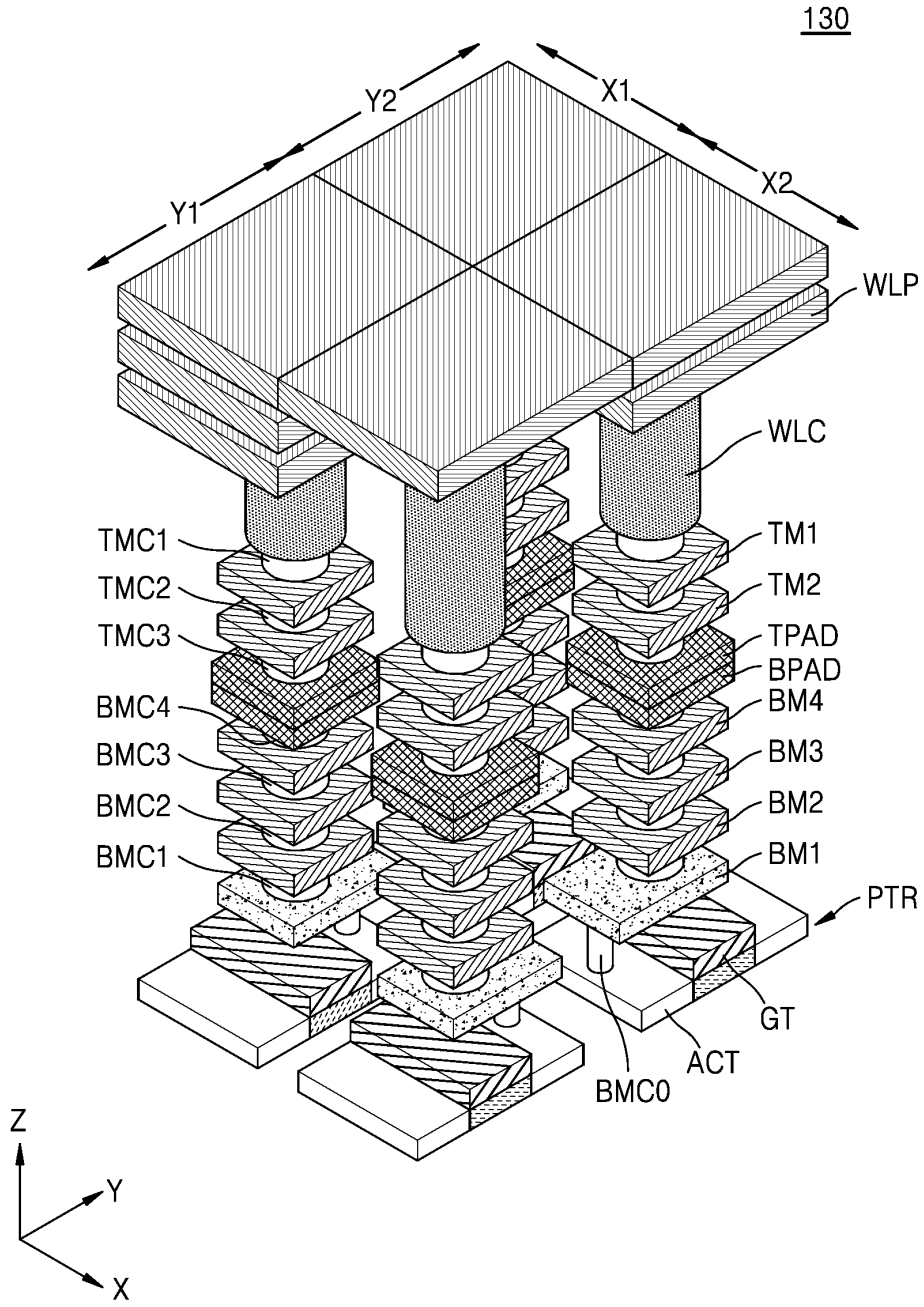

130
Y2
Y1
X1
X2
WLP
WLC
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
PTR
GT
ACT
BMC0
Z
Y
X

FIG. 14A

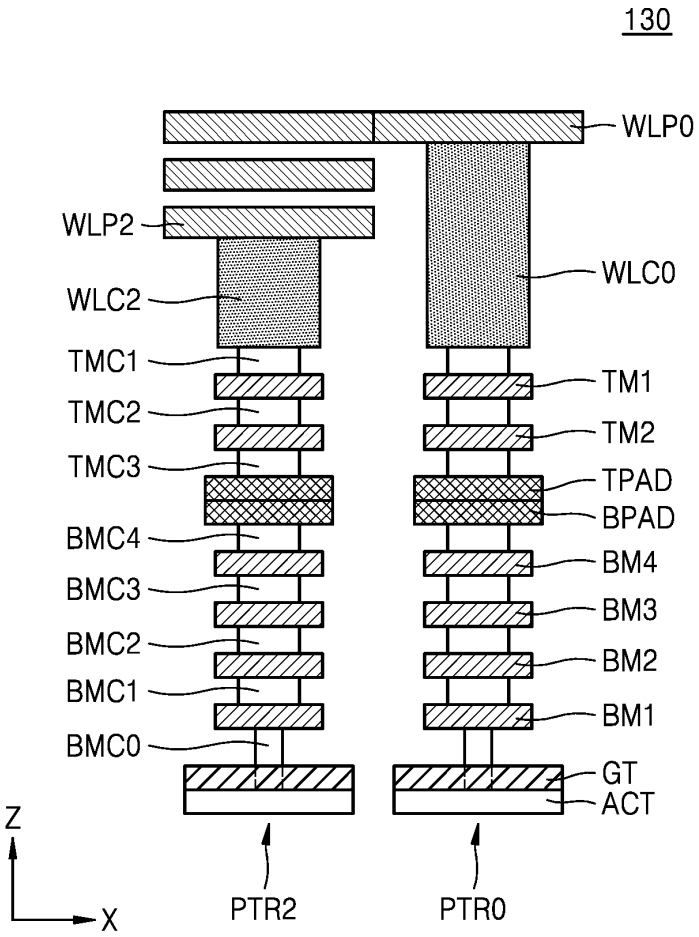

130
WLP0
WLP2
WLC0
WLC2
TMC1
TM1
TMC2
TM2
TMC3
TPAD
BPAD
BMC4
BM4
BMC3
BM3
BMC2
BM2
BMC1
BM1
BMC0
GT
ACT
Z
X
PTR2
PTR0

FIG. 14B

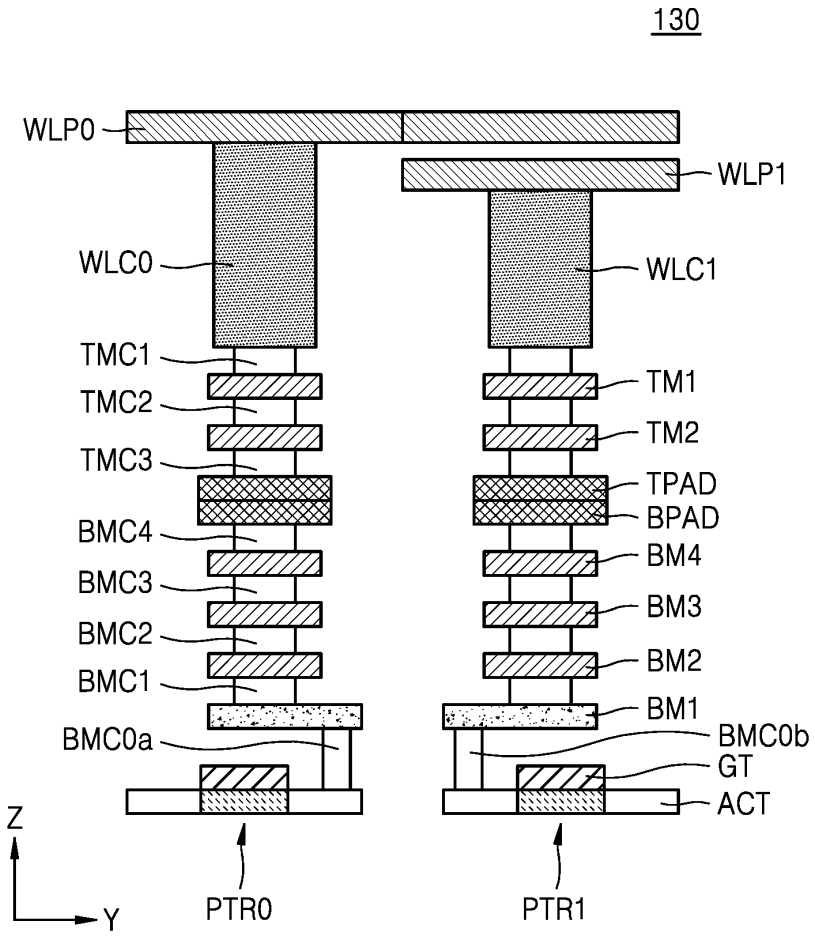

130
WLP0
WLP1
WLC0
WLC1
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0a
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
BMC0b
GT
ACT
Z
Y
PTR0
PTR1

FIG. 15A

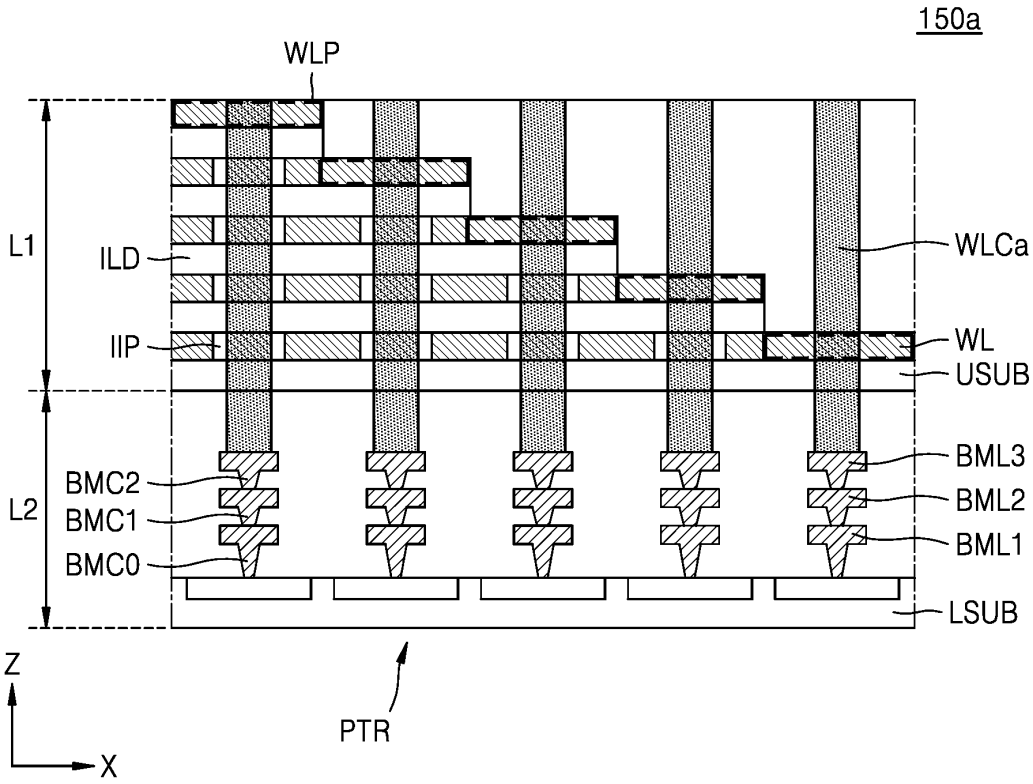

150a
WLP
L1
ILD
IIP
WLCa
WL
USUB
L2
BMC2
BMC1
BMC0
BML3
BML2
BML1
LSUB
Z
X
PTR

FIG. 15B

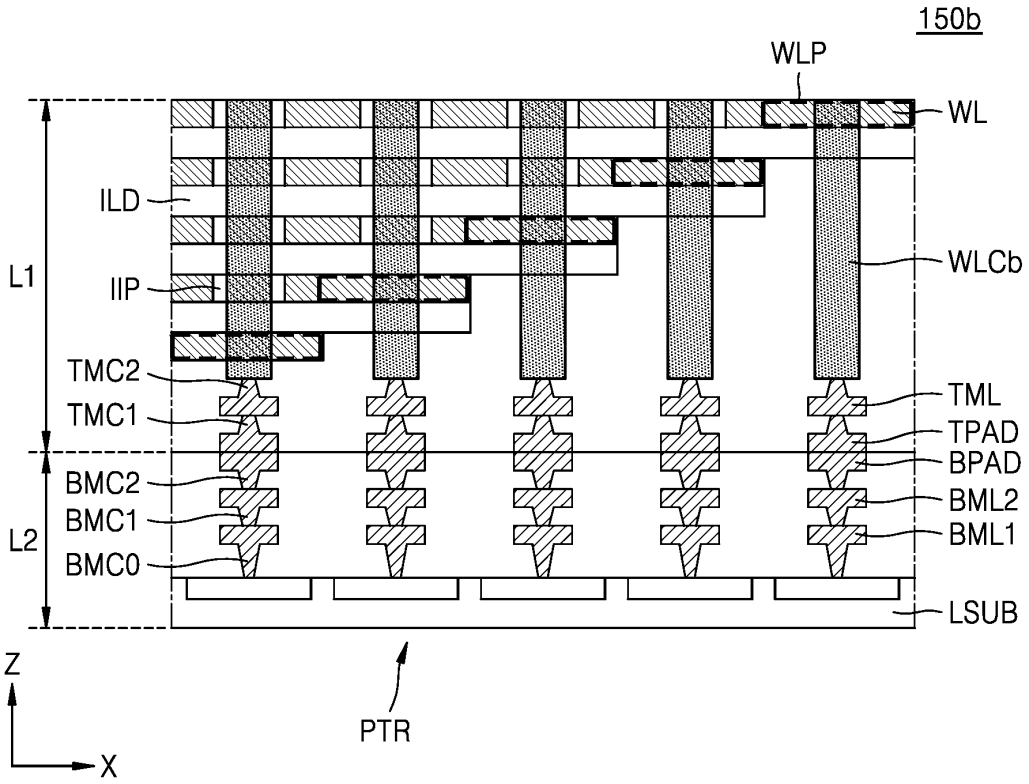

150b
WLP
WL
ILD
WLCb
L1
IIP
TMC2
TMC1
TML
TPAD
BPAD
BMC2
BMC1
BML2
BML1
L2
BMC0
LSUB
Z
X
PTR

FIG. 15C

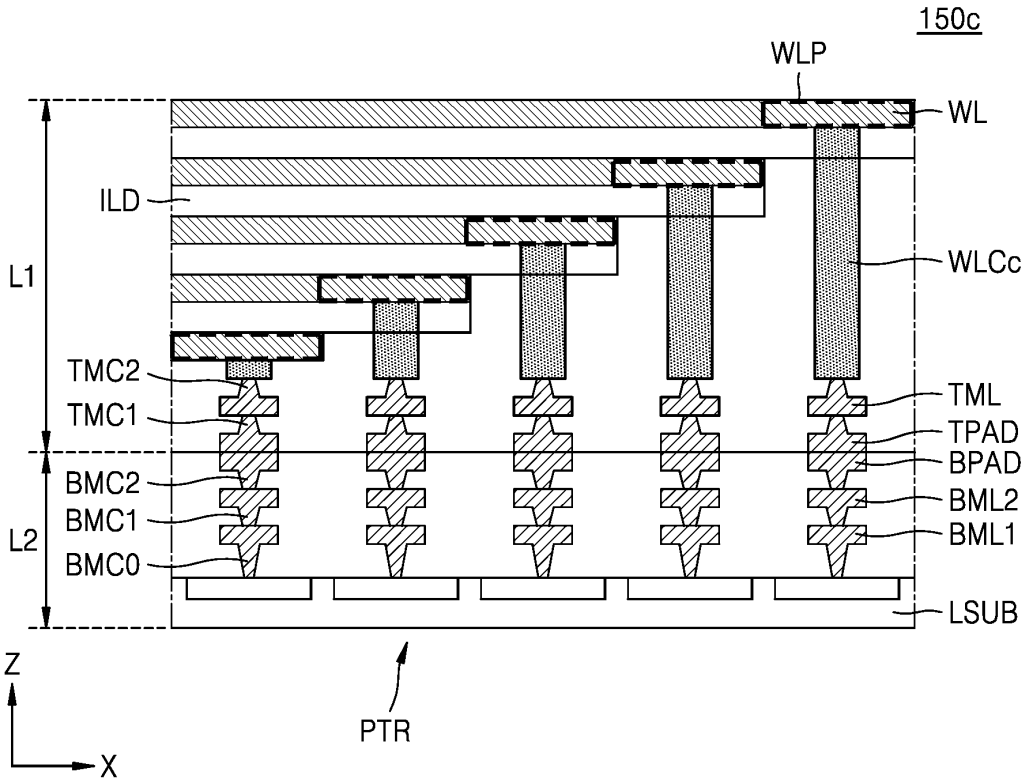

150c
WLP
WL
ILD
WLCc
L1
TMC2
TMC1
TML
TPAD
BPAD
BMC2
BMC1
BML2
BML1
L2
BMC0
LSUB
Z
X
PTR

FIG. 16

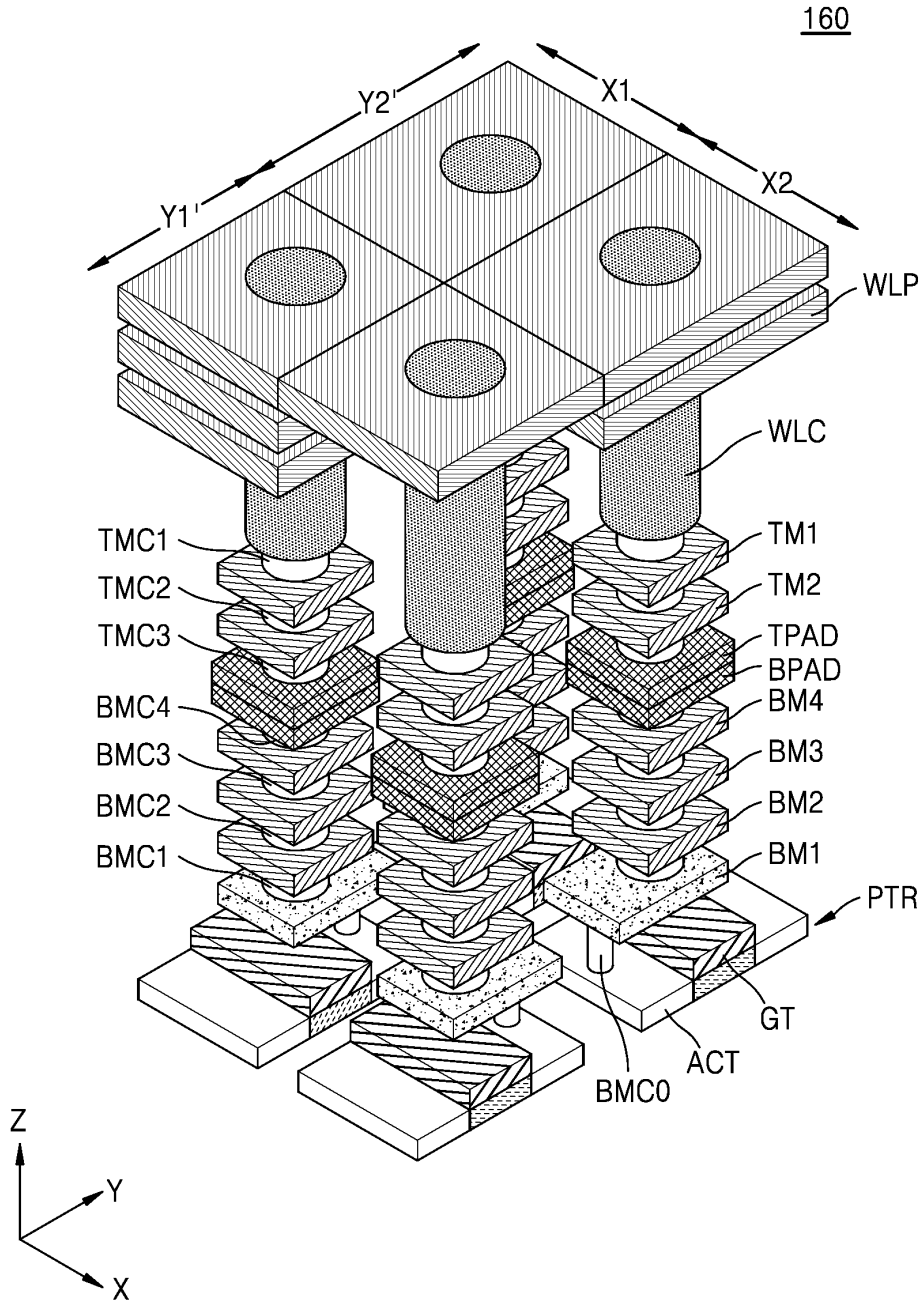

160
Y2'
X1
Y1'
X2
WLP
WLC
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
PTR
GT
ACT
BMC0
Z
Y
X

FIG. 17A

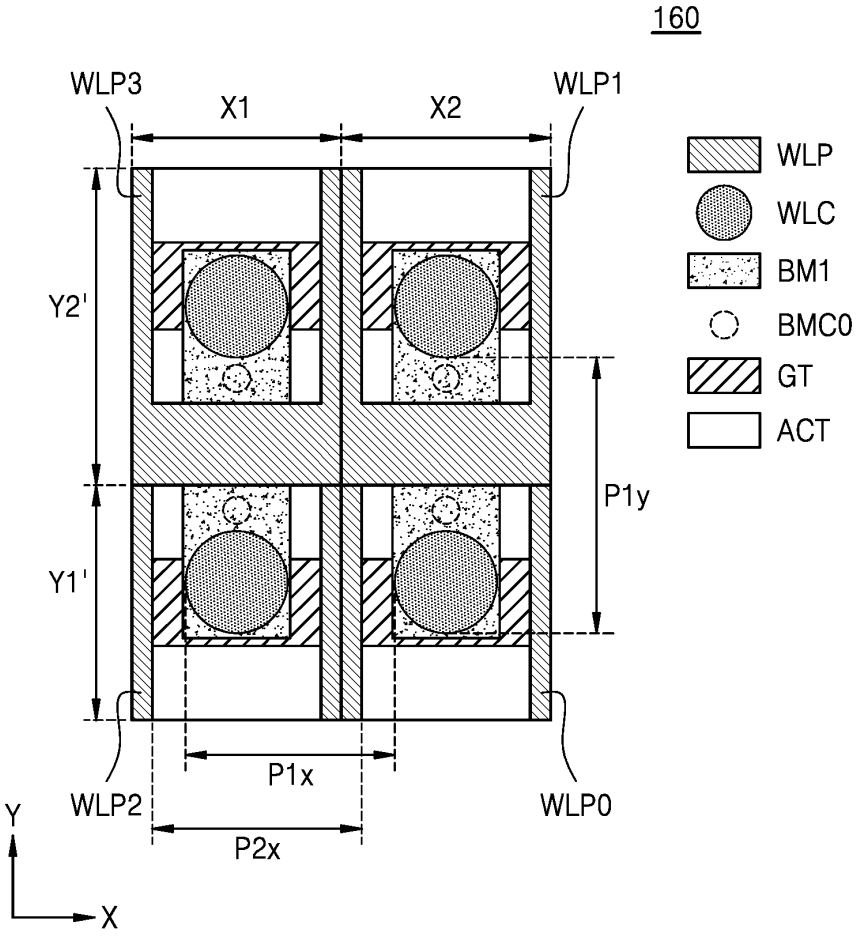

160
WLP3
X1
X2
WLP1
WLP
WLC
BM1
BMC0
GT
ACT
Y2'
Y1'
P1y
P1x
WLP2
WLP0
P2x
Y
X

FIG. 17B

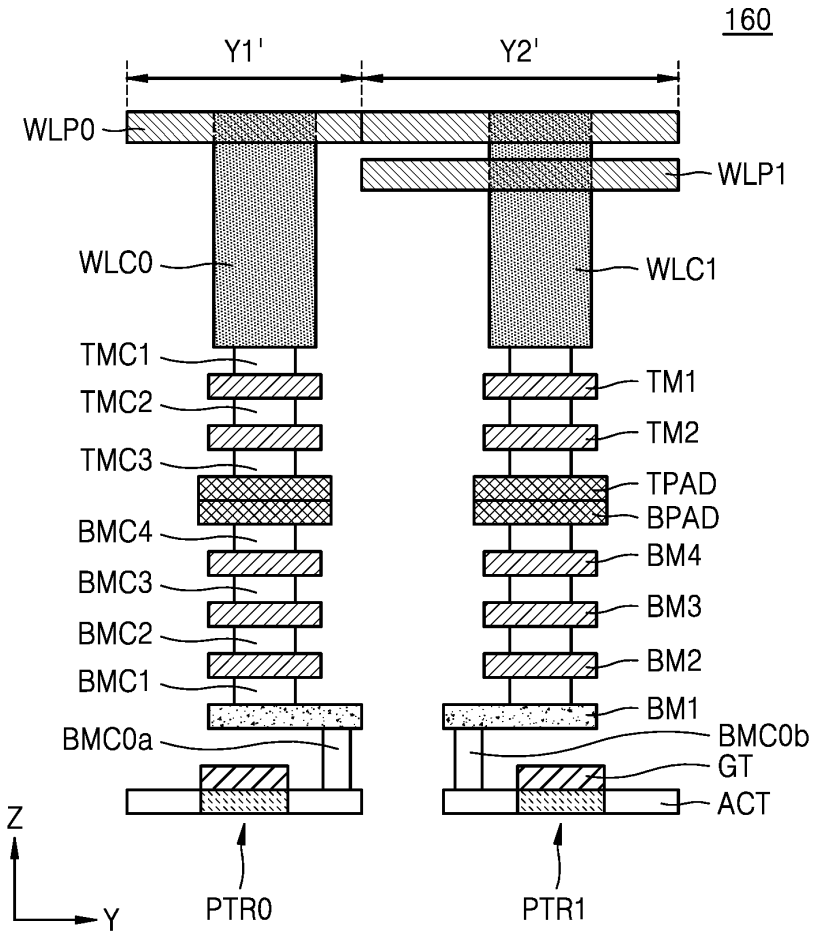

160
Y1'
Y2'
WLP0
WLP1
WLC0
WLC1
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0a
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
BMC0b
GT
ACT
Z
Y
PTR0
PTR1

FIG. 18A

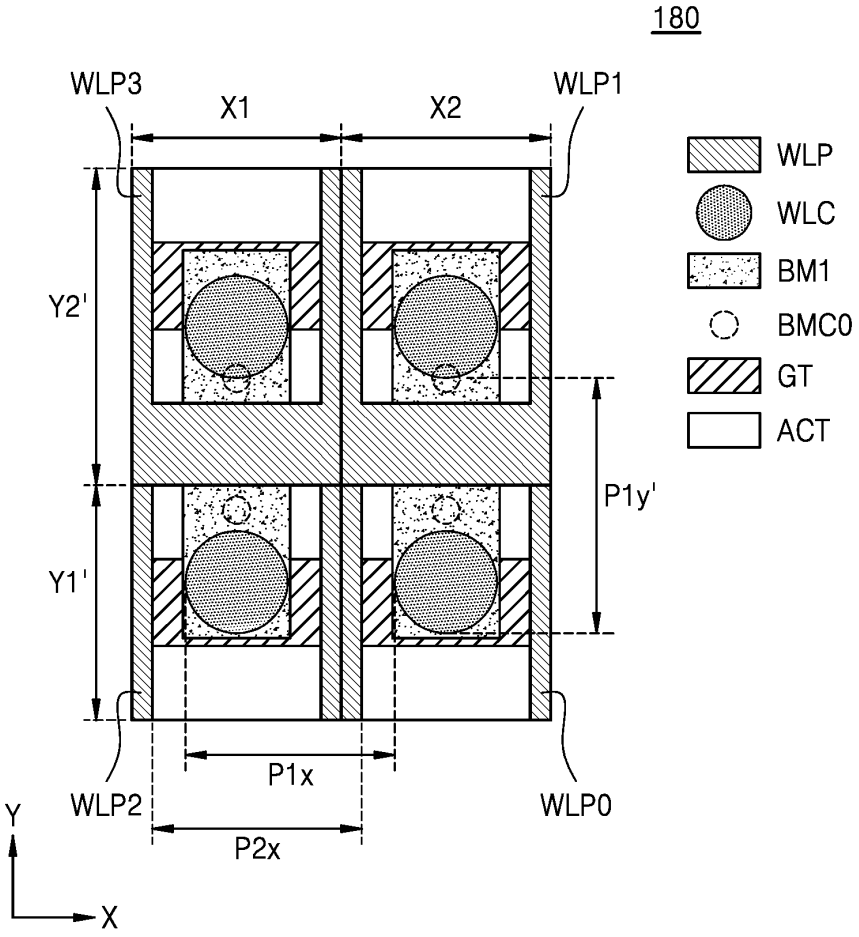

180
WLP3
X1
X2
WLP1
Y2'
Y1'
P1y'
P1x
P2x
WLP2
WLP0
Y
X
WLP
WLC
BM1
BMC0
GT
ACT

FIG. 18B

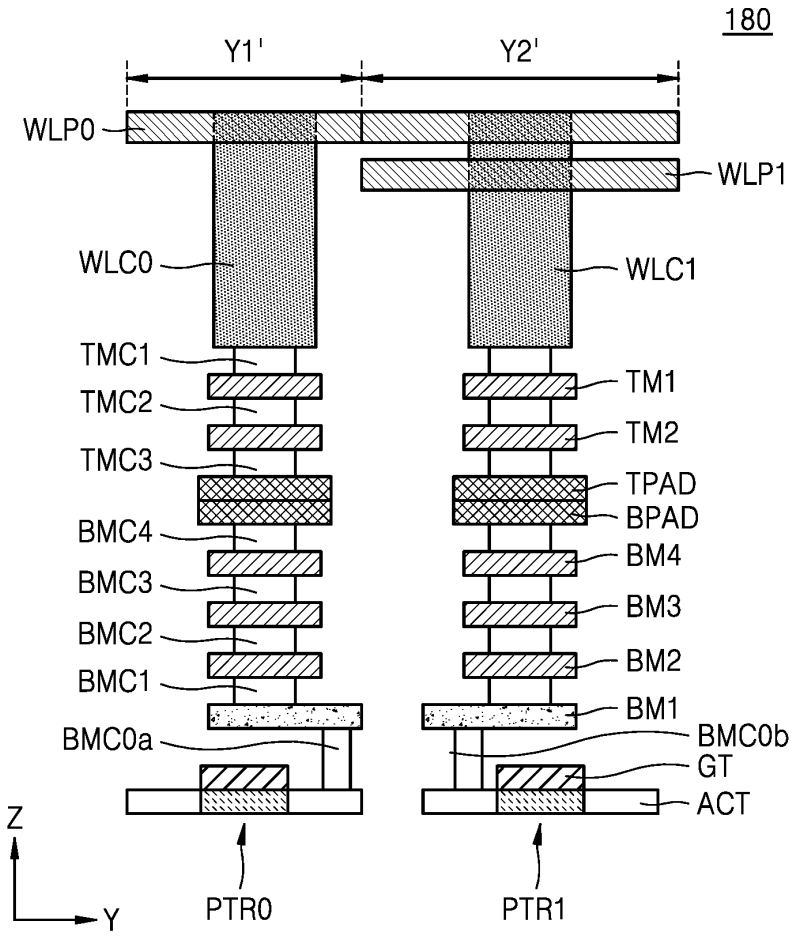

180
Y1'
Y2'
WLP0
WLP1
WLC0
WLC1
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0a
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
BMC0b
GT
ACT
Z
Y
PTR0
PTR1

FIG. 19

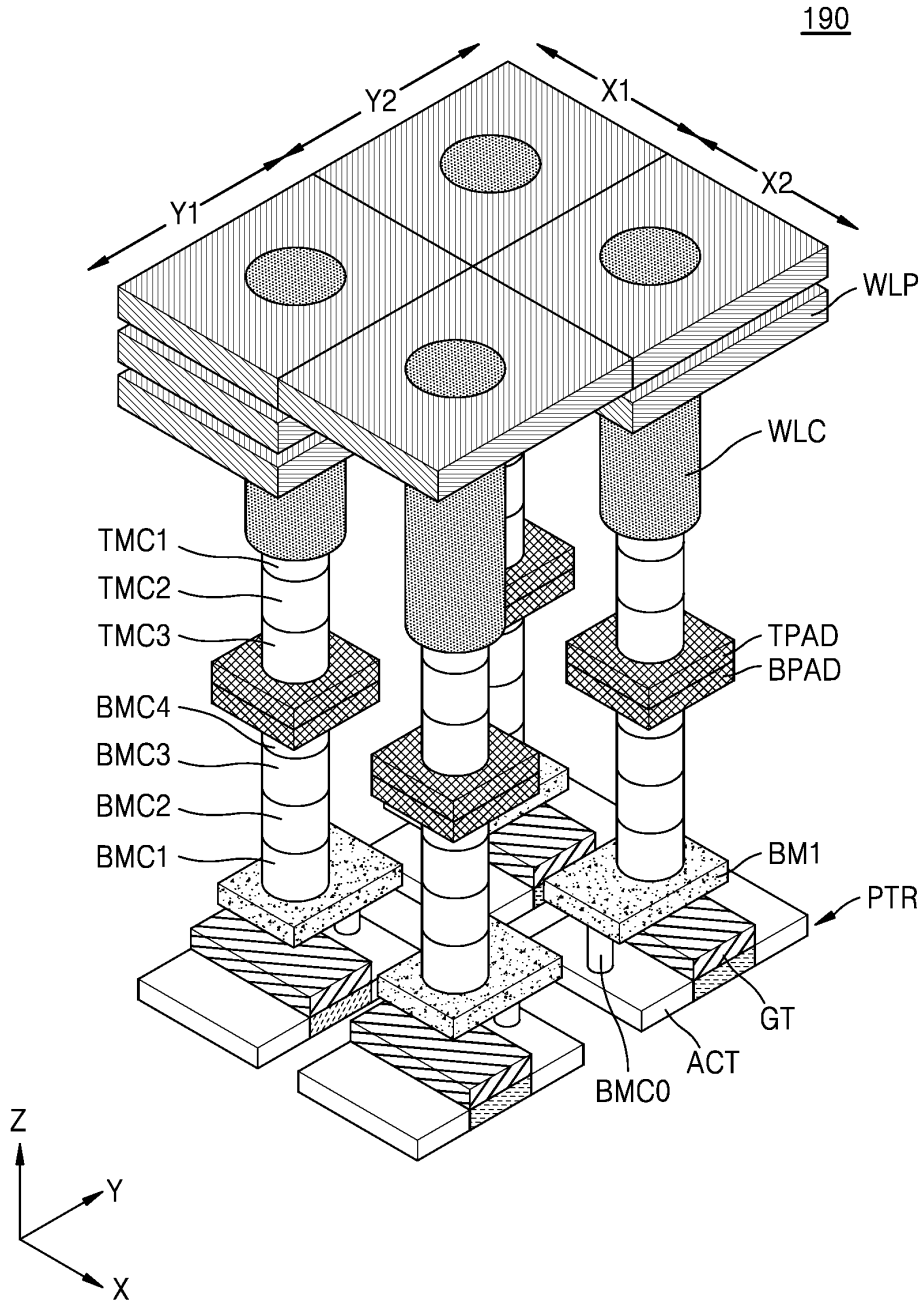

190
Y2
Y1
X1
X2
WLP
WLC
TMC1
TMC2
TMC3
TPAD
BPAD
BMC4
BMC3
BMC2
BMC1
BM1
PTR
GT
ACT
BMC0
Z
Y
X

FIG. 20

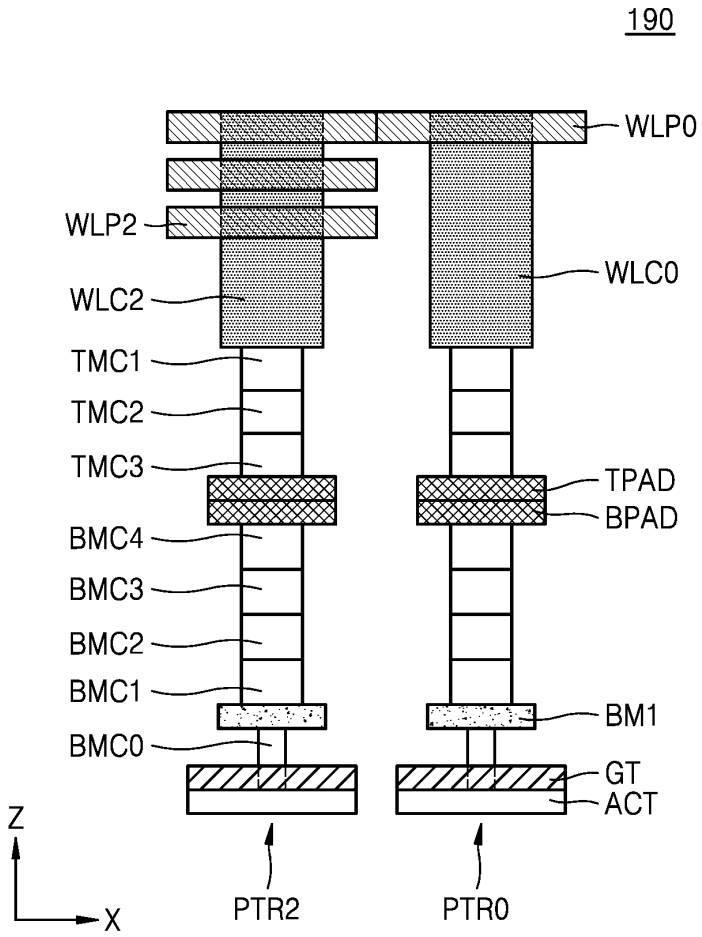

190
WLP0
WLP2
WLC0
WLC2
TMC1
TMC2
TMC3
TPAD
BPAD
BMC4
BMC3
BMC2
BMC1
BM1
BMC0
GT
ACT
Z
X
PTR2
PTR0

FIG. 21

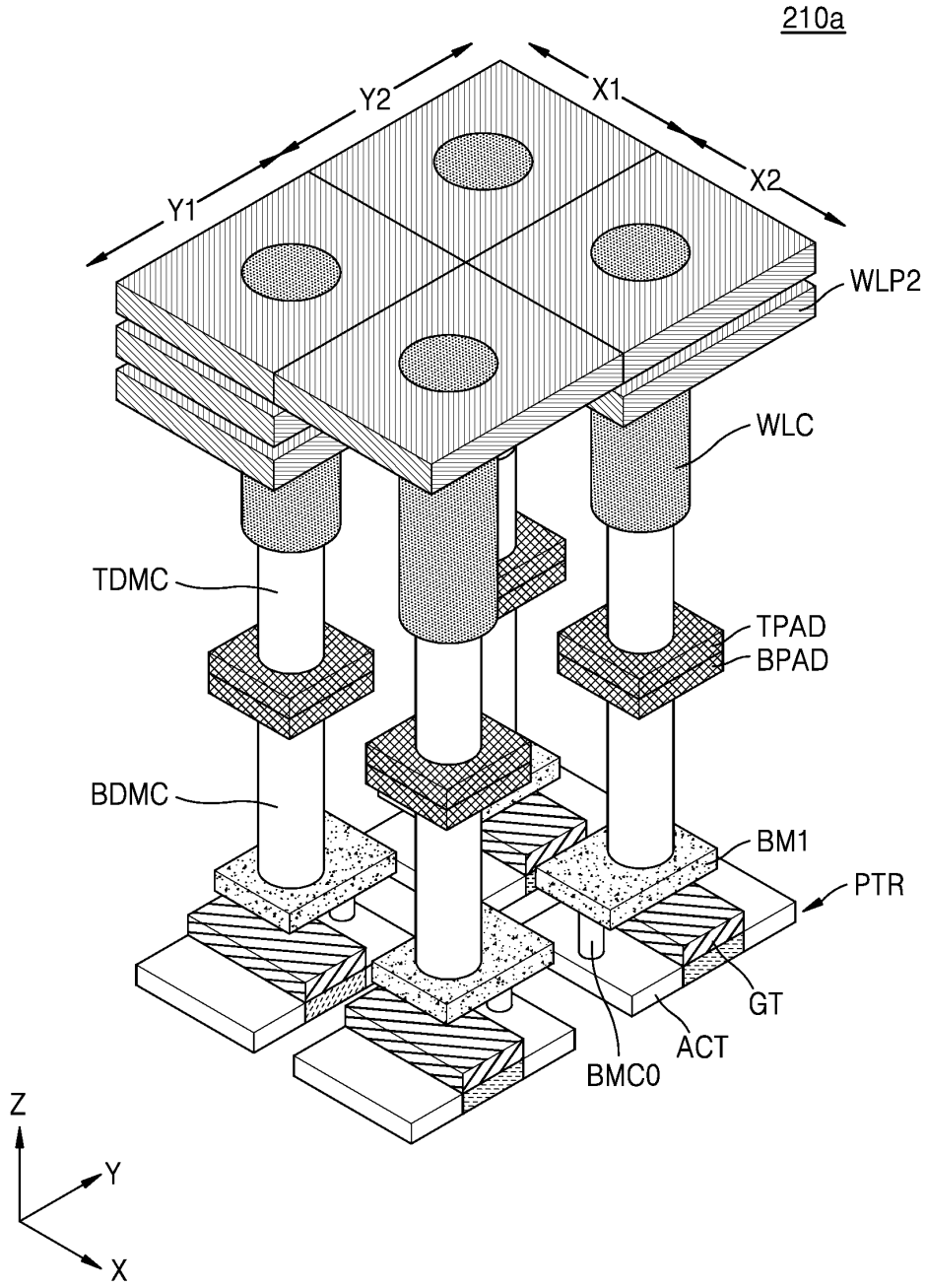

210a
Y2
Y1
X1
X2
WLP2
WLC
TDMC
TPAD
BPAD
BDMC
BM1
PTR
GT
ACT
BMC0
Z
Y
X

FIG. 22

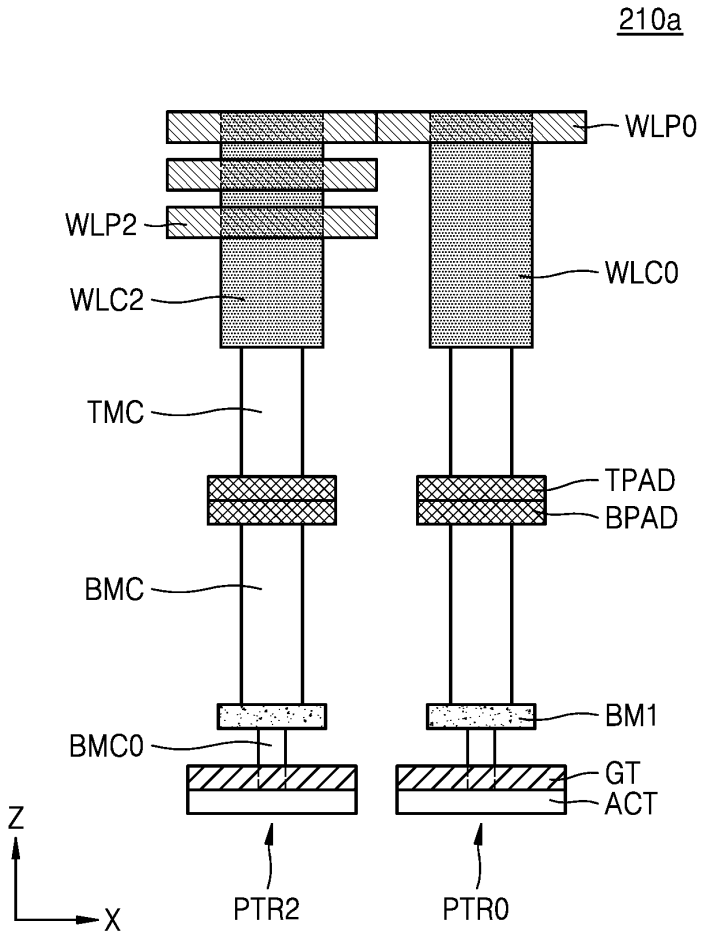

210a
WLP0
WLP2
WLC0
WLC2
TMC
TPAD
BPAD
BMC
BM1
BMC0
GT
ACT
Z
X
PTR2
PTR0

FIG. 23A

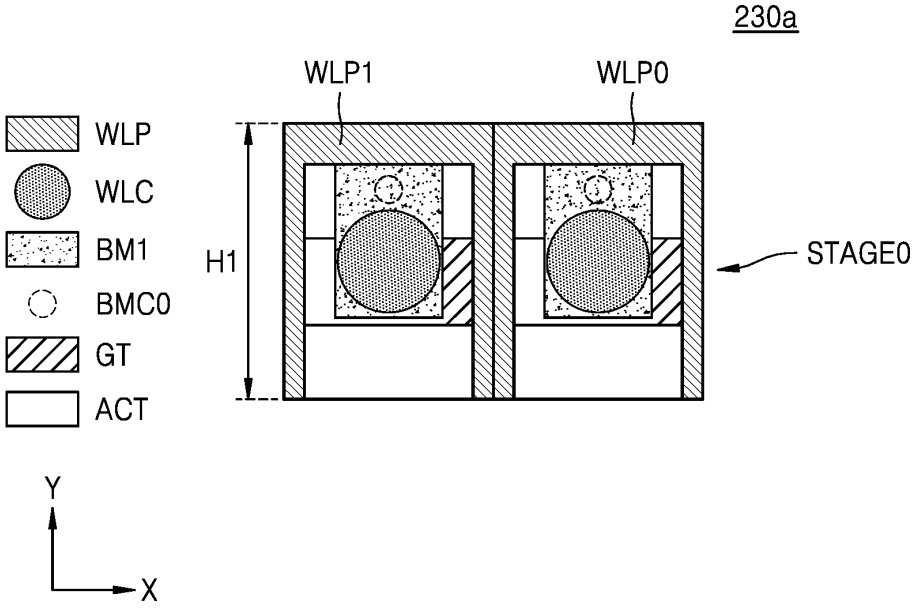


FIG. 23B

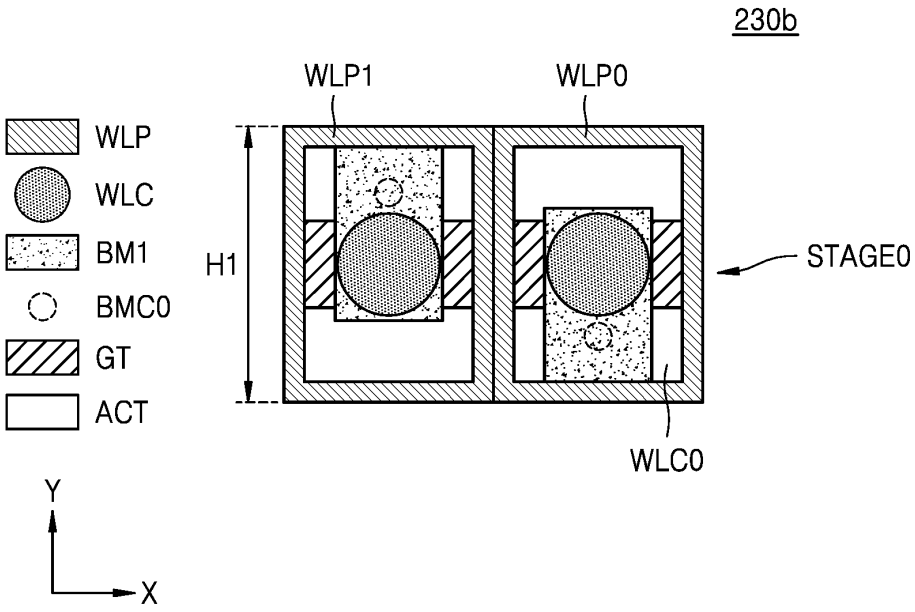


FIG. 24A

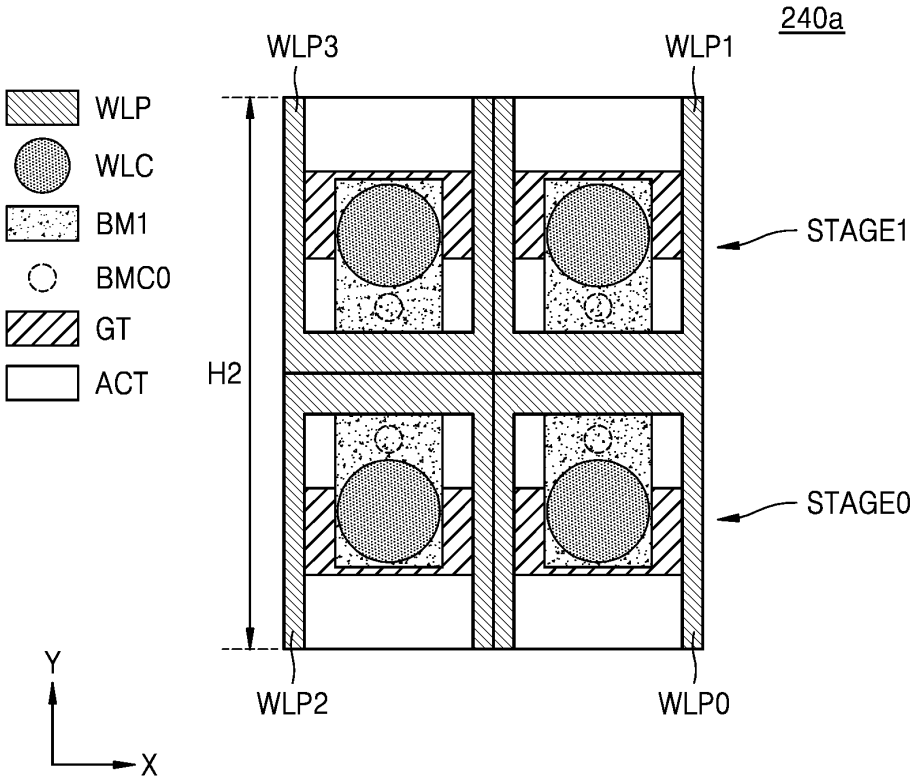

240a
WLP3
WLP1
WLP
WLC
BM1
BMC0
GT
ACT
H2
STAGE1
STAGE0
Y
X
WLP2
WLP0

FIG. 24B

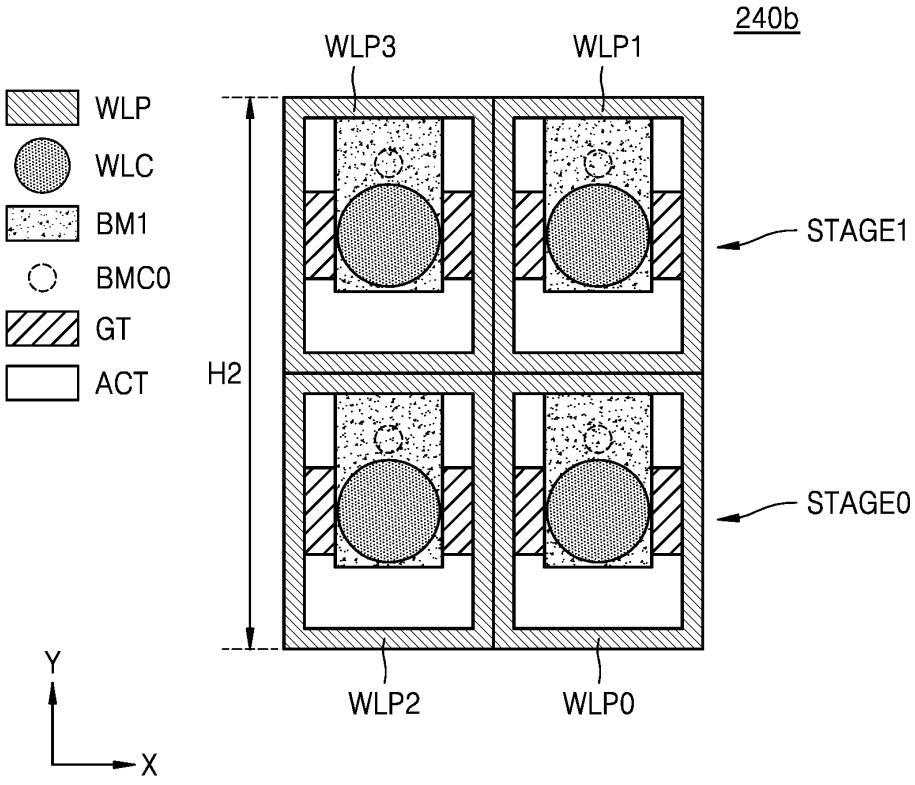

240b
WLP3
WLP1
WLP
WLC
BM1
BMC0
GT
ACT
H2
STAGE1
STAGE0
WLP2
WLP0
Y
X

FIG. 24C

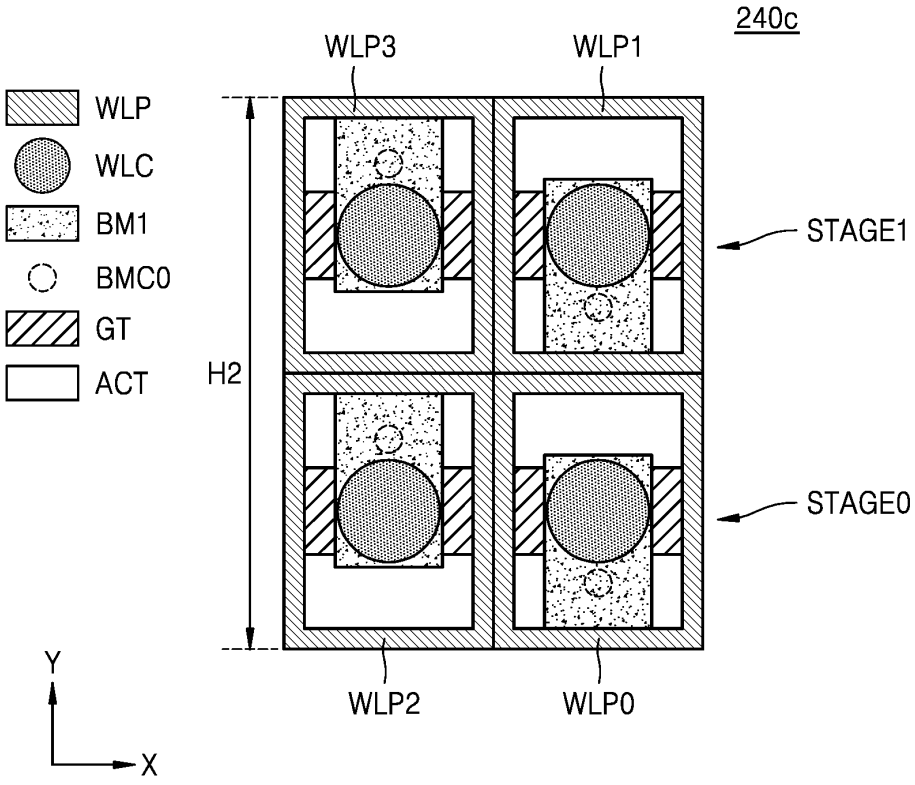

240c
WLP3
WLP1
WLP
WLC
BM1
BMC0
GT
ACT
H2
STAGE1
STAGE0
WLP2
WLP0
Y
X

FIG. 24D

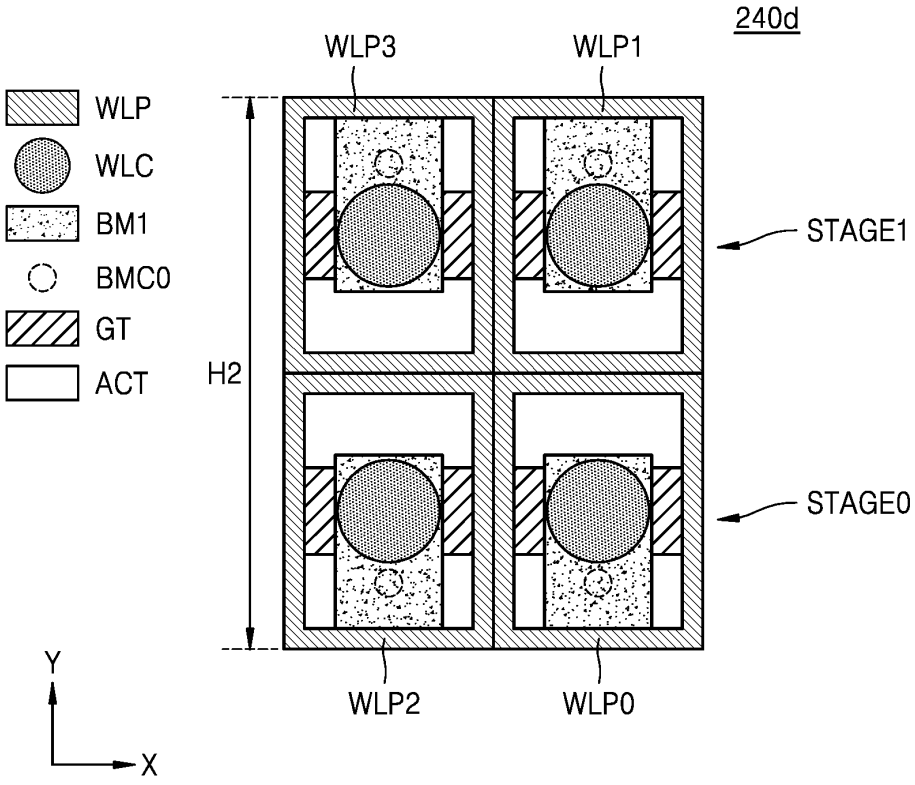

240d
WLP3
WLP1
WLP
WLC
BM1
BMC0
GT
ACT
H2
STAGE1
STAGE0
WLP2
WLP0
Y
X

FIG. 25A

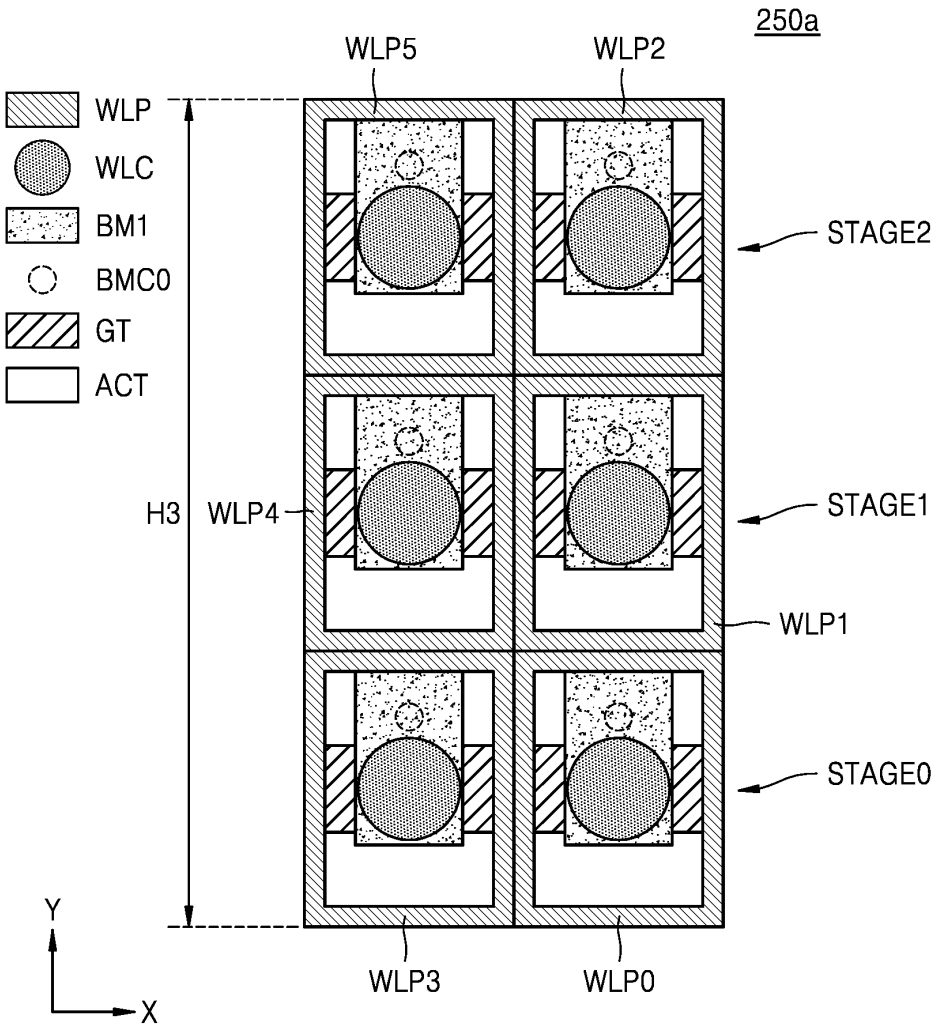

250a
WLP5
WLP2
WLP
WLC
BM1
BMC0
GT
ACT
STAGE2
H3
WLP4
STAGE1
WLP1
STAGE0
Y
X
WLP3
WLP0

FIG. 25B

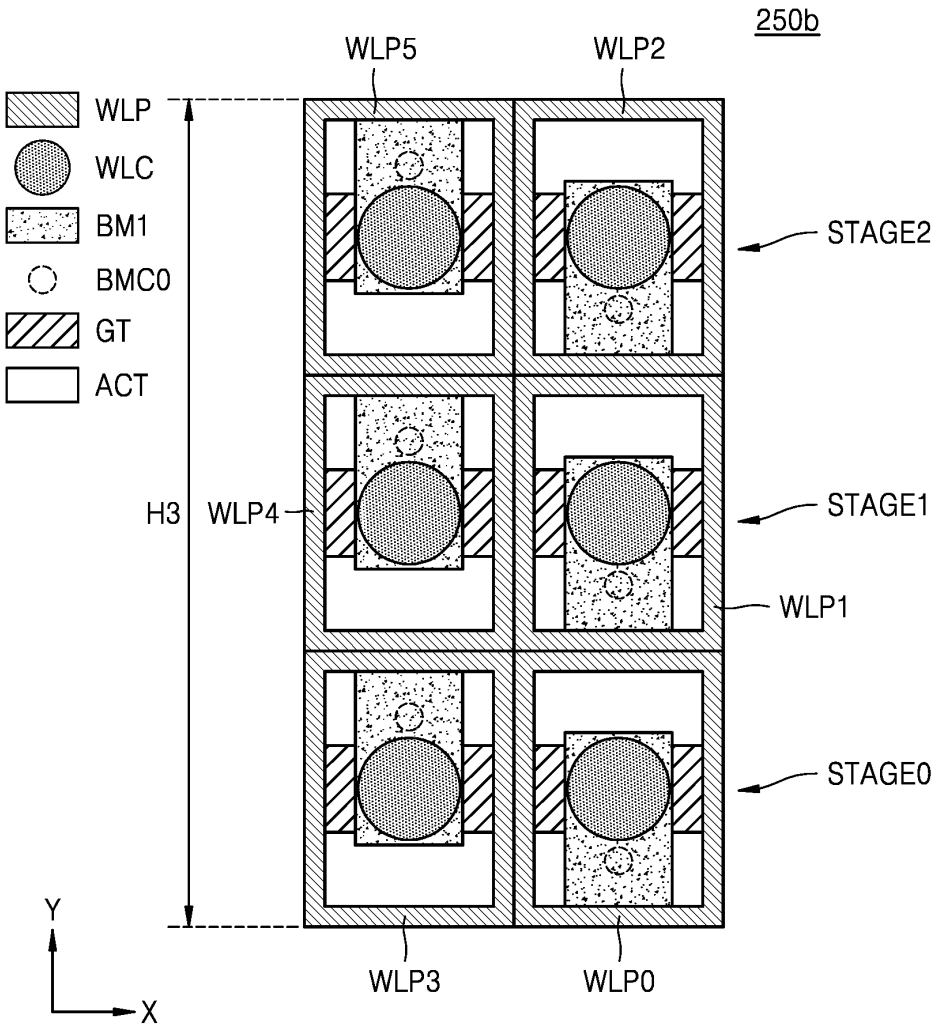

250b
WLP5
WLP2
WLP
WLC
BM1
BMC0
GT
ACT
STAGE2
H3
WLP4
STAGE1
WLP1
STAGE0
Y
X
WLP3
WLP0

FIG. 25C

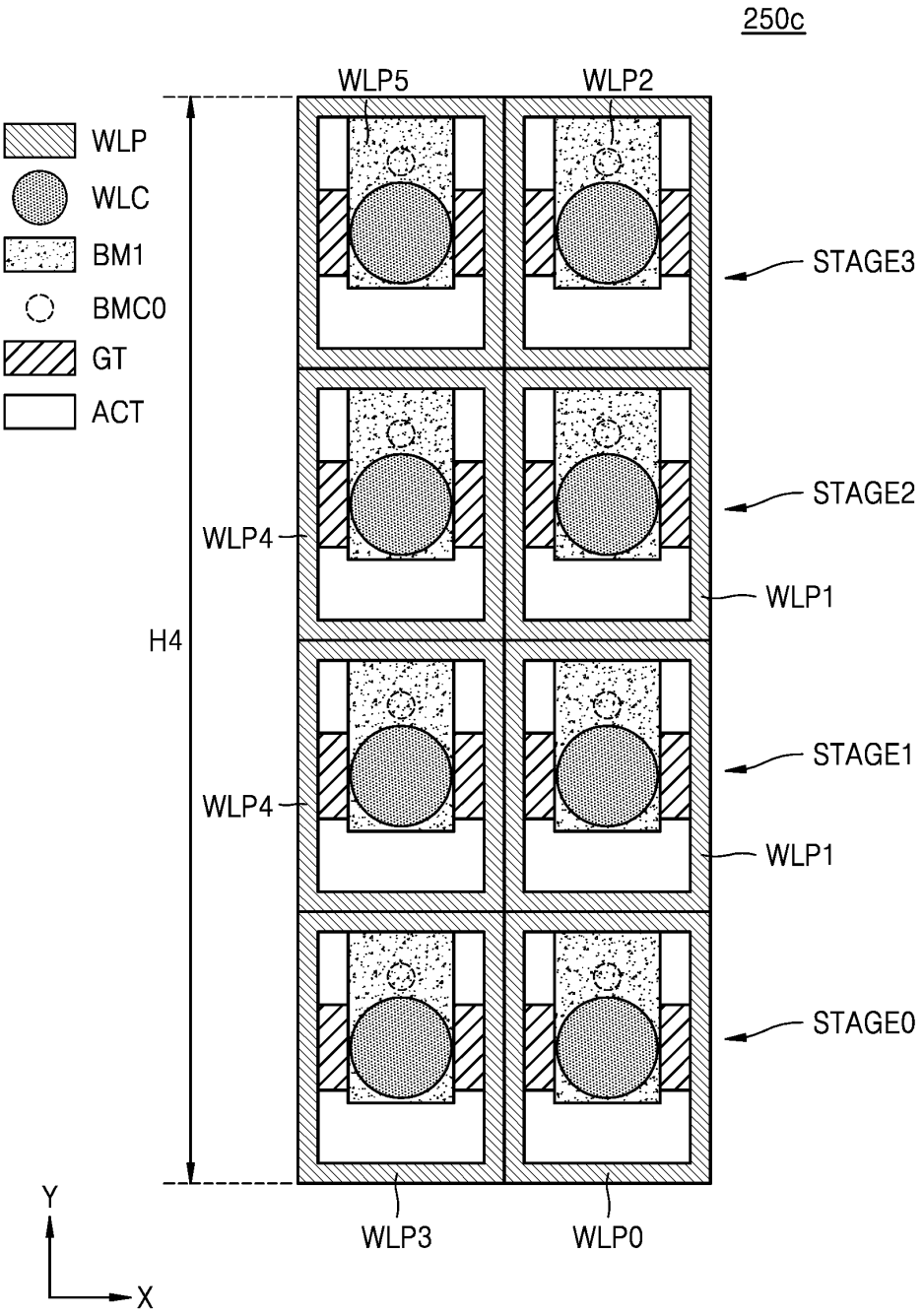

250c
WLP5
WLP2
WLP
WLC
BM1
BMC0
GT
ACT
STAGE3
STAGE2
WLP4
WLP1
H4
STAGE1
WLP4
WLP1
STAGE0
Y
X
WLP3
WLP0

FIG. 26

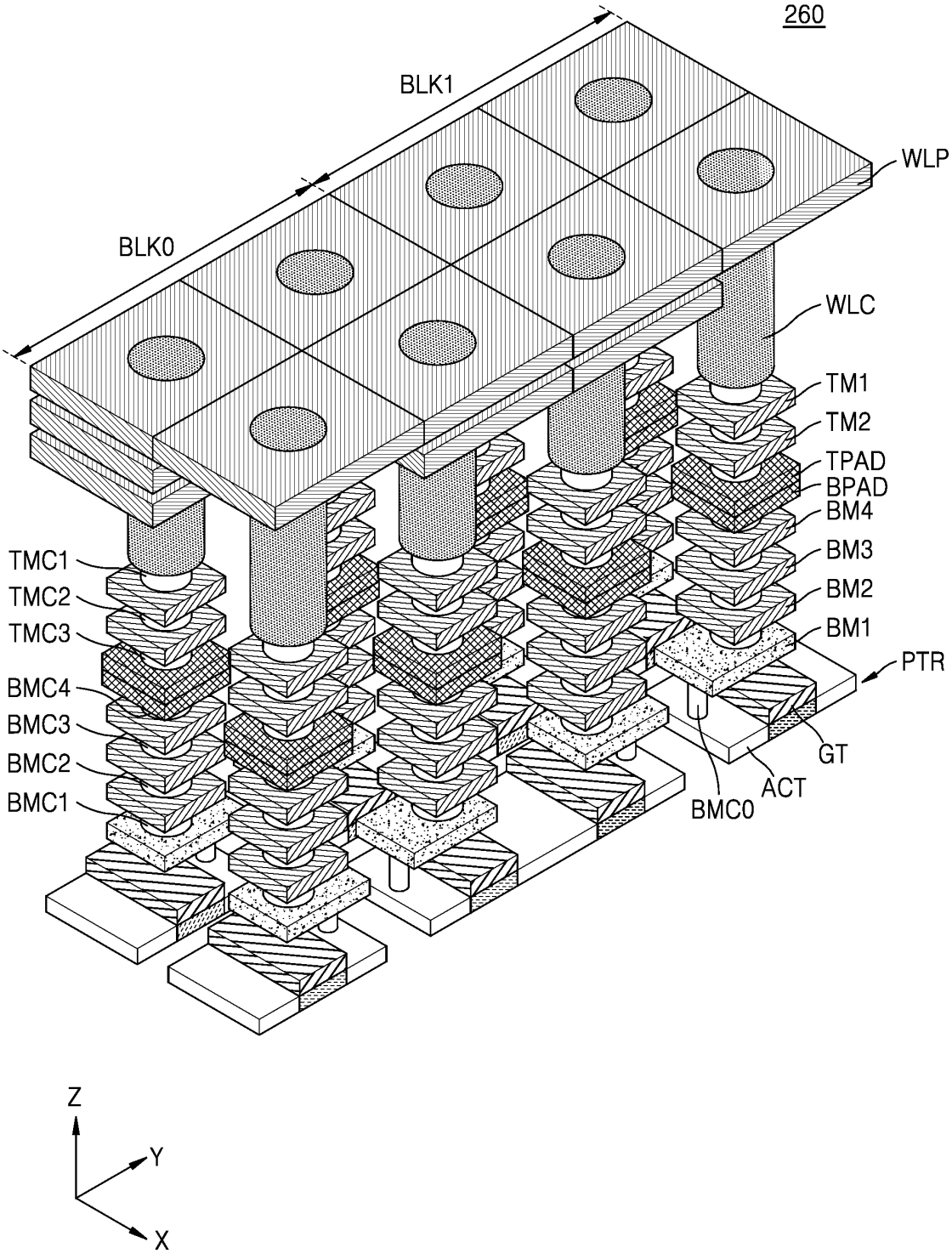

260
BLK1
BLK0
WLP
WLC
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
PTR
GT
ACT
BMC0
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
Z
Y
X

FIG. 27A

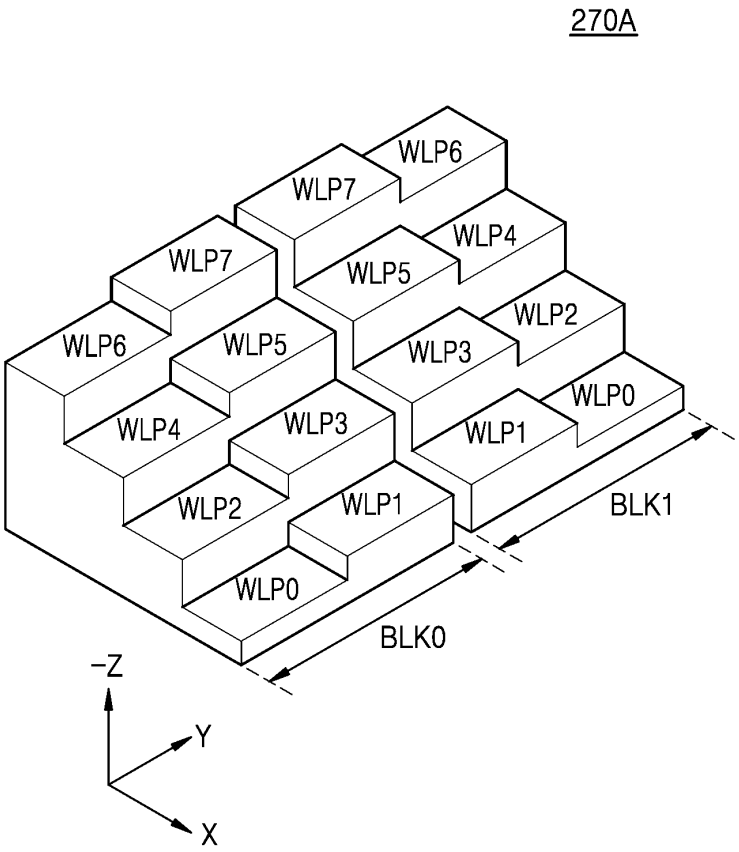

270A
WLP6
WLP7
WLP4
WLP7
WLP5
WLP2
WLP6
WLP5
WLP3
WLP0
WLP4
WLP3
WLP1
WLP2
WLP1
BLK1
WLP0
BLK0
-Z
Y
X

FIG. 27B

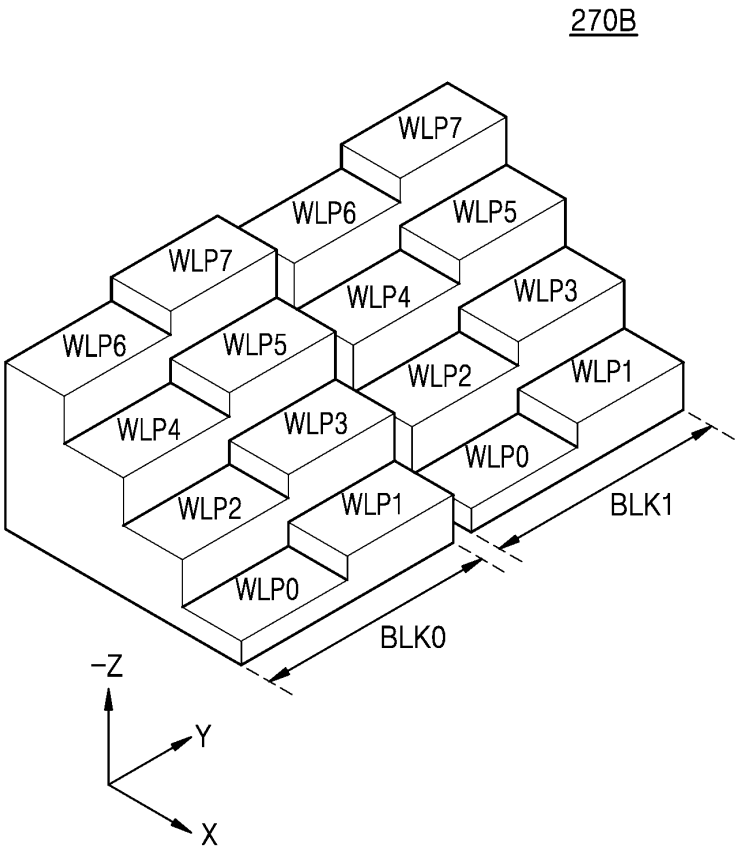

270B
WLP7
WLP6
WLP5
WLP7
WLP4
WLP3
WLP6
WLP5
WLP2
WLP1
WLP4
WLP3
WLP0
WLP2
WLP1
BLK1
WLP0
BLK0
-Z
Y
X

FIG. 27C

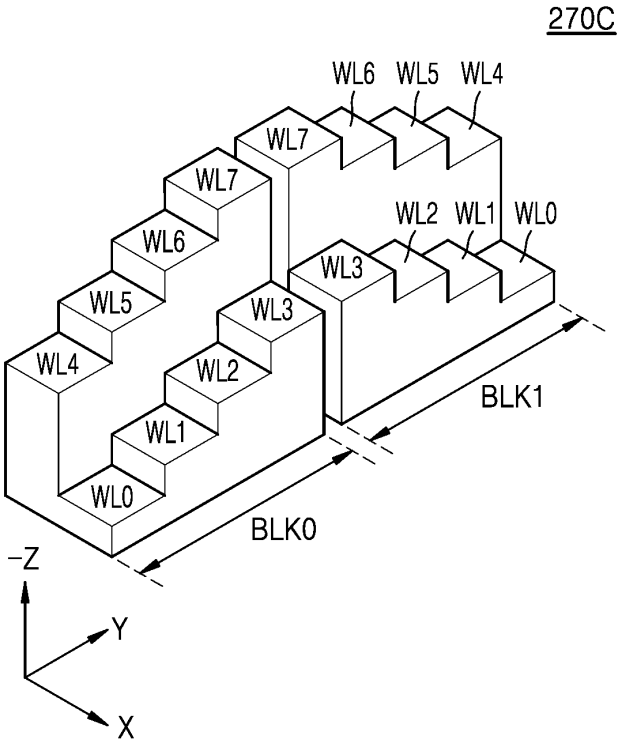

270C
WL6
WL5
WL4
WL7
WL7
WL6
WL5
WL4
WL3
WL2
WL1
WL0
WL3
WL2
WL1
WL0
BLK1
BLK0
-Z
Y
X

FIG. 27D

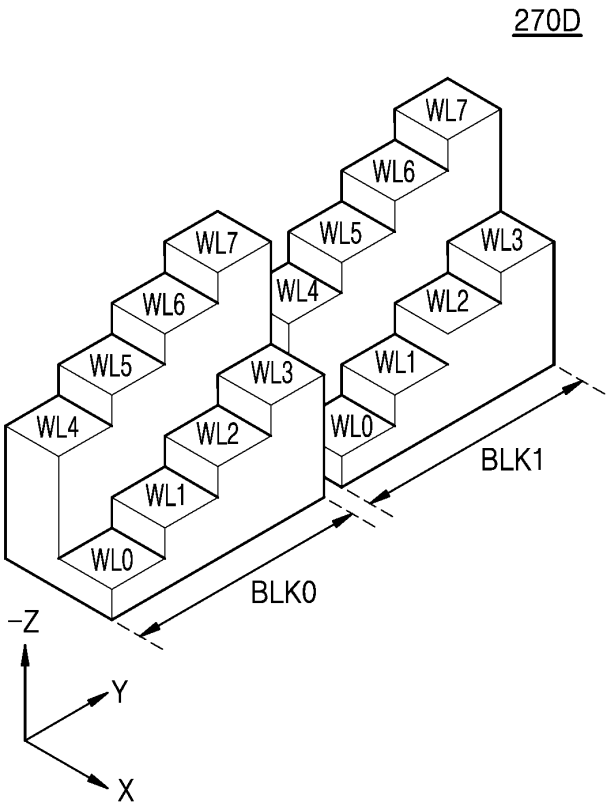

270D
WL7
WL6
WL5
WL4
WL3
WL2
WL1
WL0
WL7
WL6
WL5
WL4
WL3
WL2
WL1
WL0
BLK1
BLK0
-Z
Y
X

FIG. 28

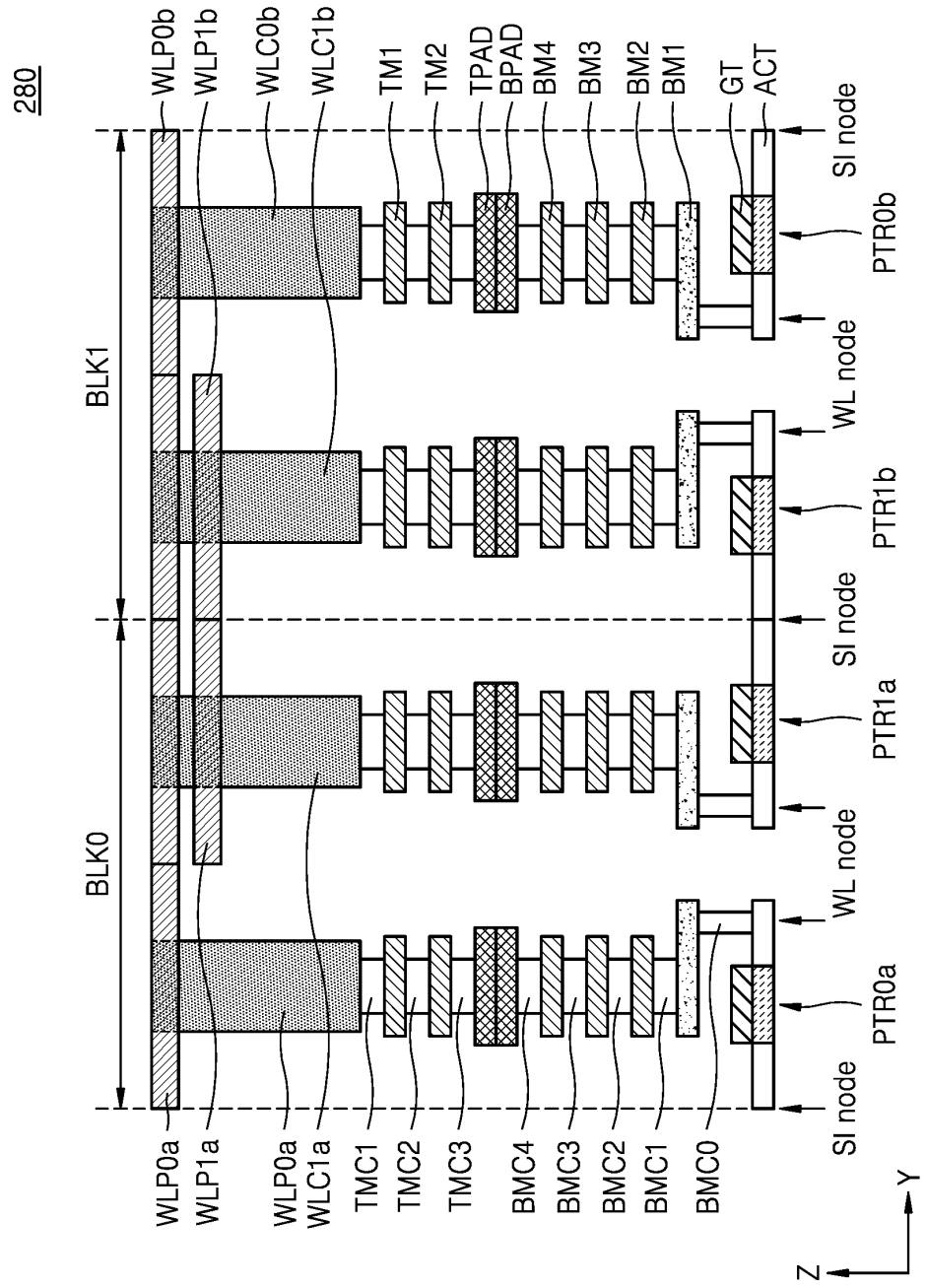

280
WLP0b
WLP1b
WLC0b
WLC1b
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
GT
ACT
BLK1
BLK0
SI node
PTR0b
WL node
PTR1b
SI node
PTR1a
WL node
PTR0a
SI node
WLP0a
WLP1a
WLP0a
WLC1a
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0
Z
Y

FIG. 29A

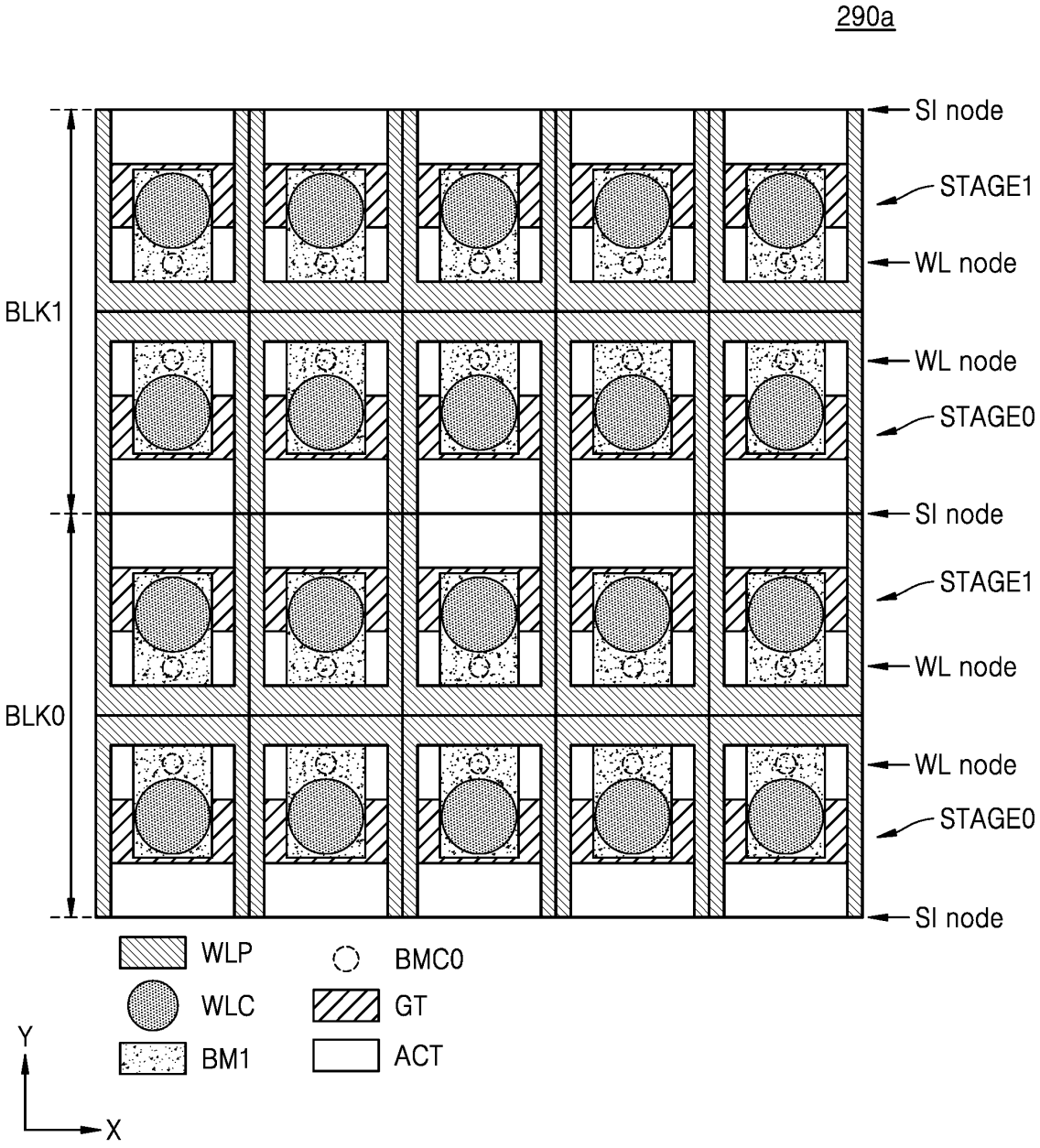

290a
SI node
STAGE1
WL node
WL node
STAGE0
SI node
STAGE1
WL node
WL node
STAGE0
SI node
BLK1
BLK0
WLP
WLC
BM1
BMC0
GT
ACT
Y
X

FIG. 29B

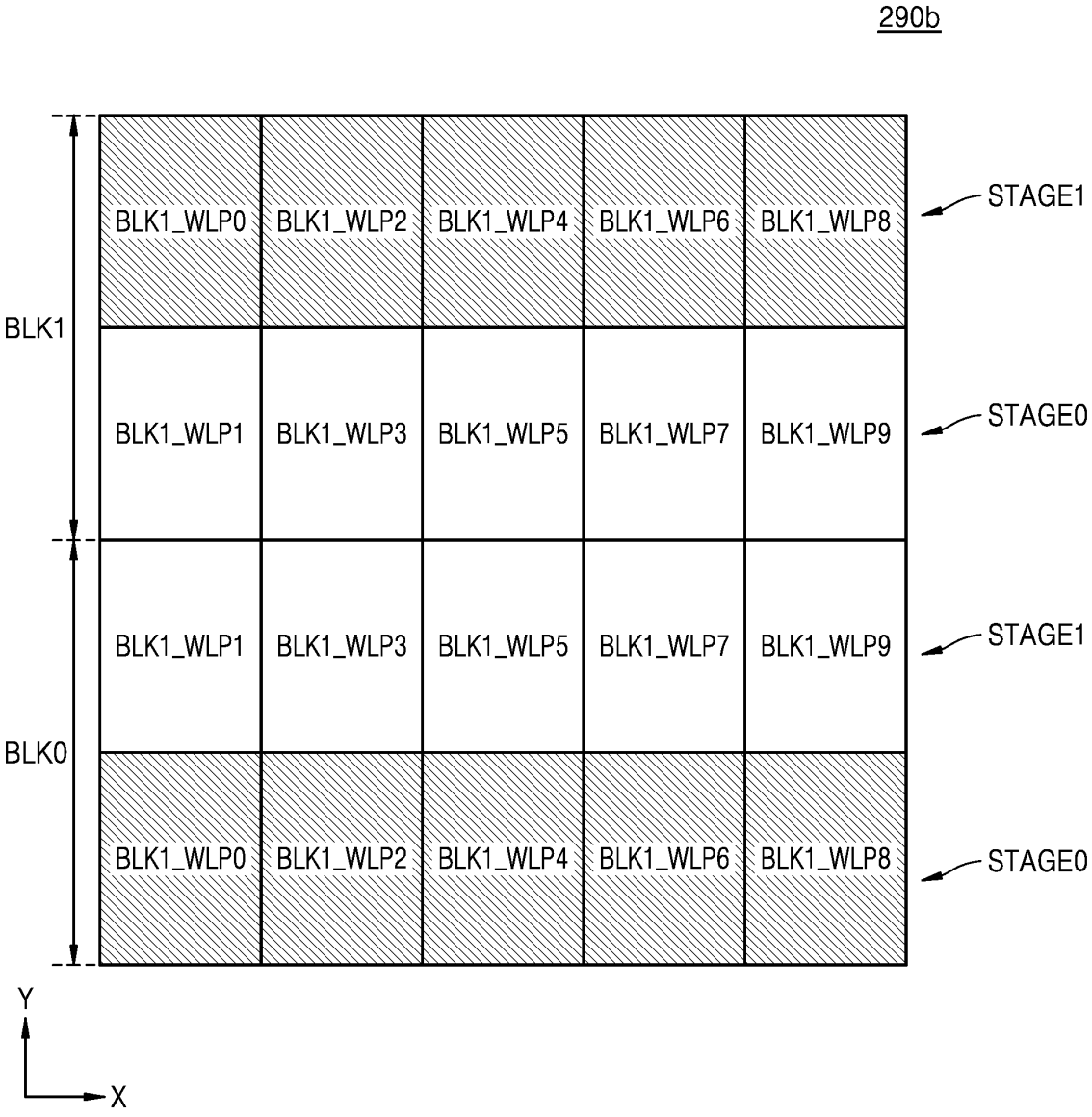

290b
BLK1
BLK0
BLK1_WLP0
BLK1_WLP2
BLK1_WLP4
BLK1_WLP6
BLK1_WLP8
STAGE1
BLK1_WLP1
BLK1_WLP3
BLK1_WLP5
BLK1_WLP7
BLK1_WLP9
STAGE0
BLK1_WLP1
BLK1_WLP3
BLK1_WLP5
BLK1_WLP7
BLK1_WLP9
STAGE1
BLK1_WLP0
BLK1_WLP2
BLK1_WLP4
BLK1_WLP6
BLK1_WLP8
STAGE0
Y
X

FIG. 30A

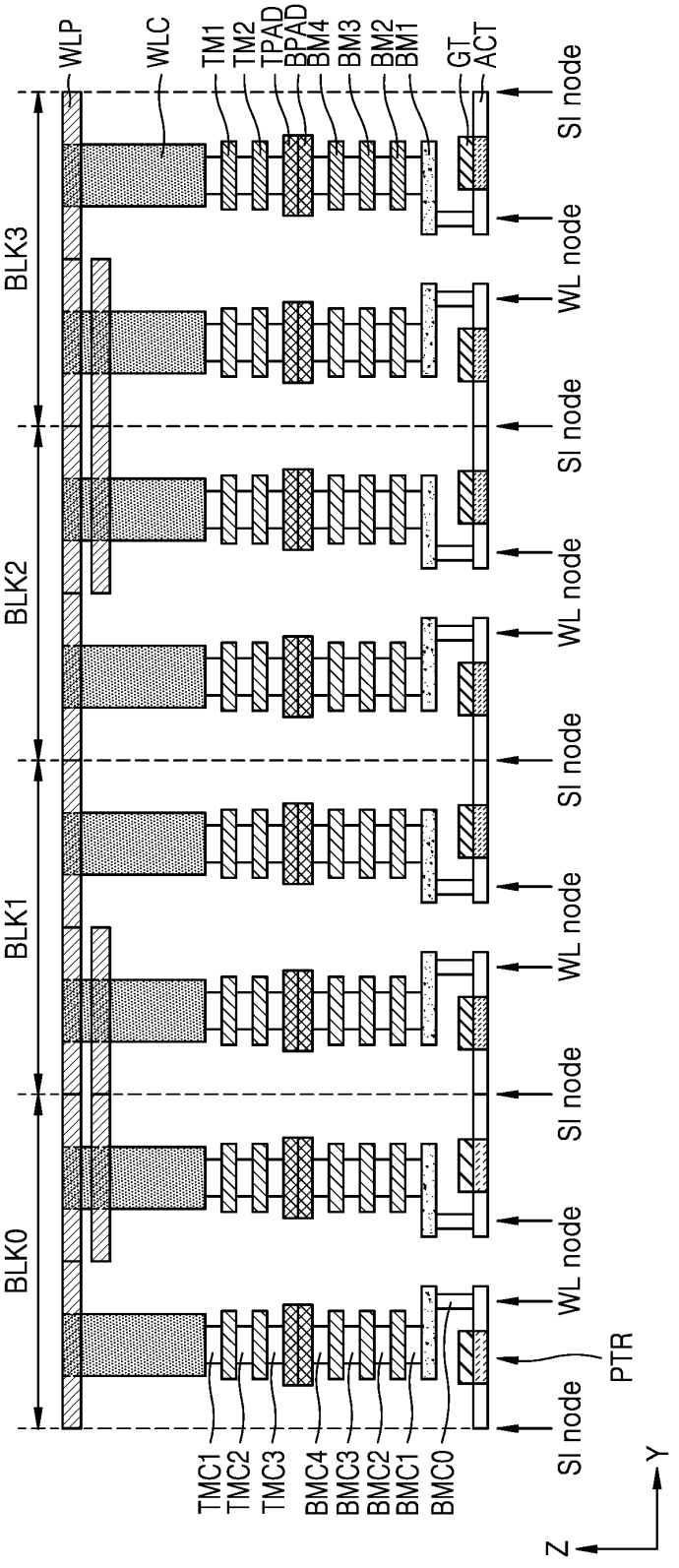

300a
WLP
WLC
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
GT
ACT
BLK3
BLK2
BLK1
BLK0
SI node
WL node
PTR
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0
Z
Y

FIG. 30B

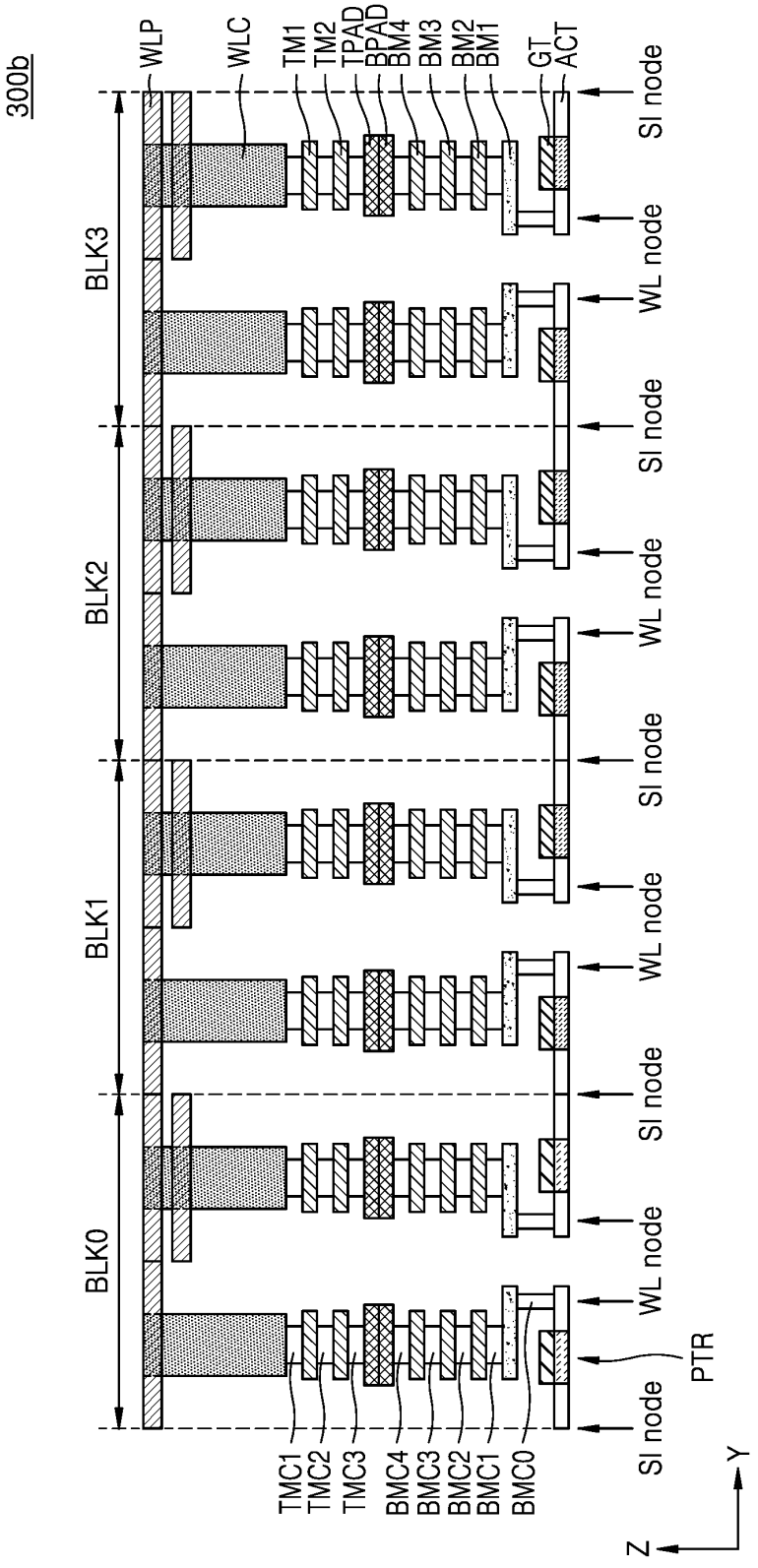

300b
WLP
WLC
TM1
TM2
TPAD
BPAD
BM4
BM3
BM2
BM1
GT
ACT
BLK3
BLK2
BLK1
BLK0
SI node
WL node
PTR
TMC1
TMC2
TMC3
BMC4
BMC3
BMC2
BMC1
BMC0
Z
Y

FIG. 31A

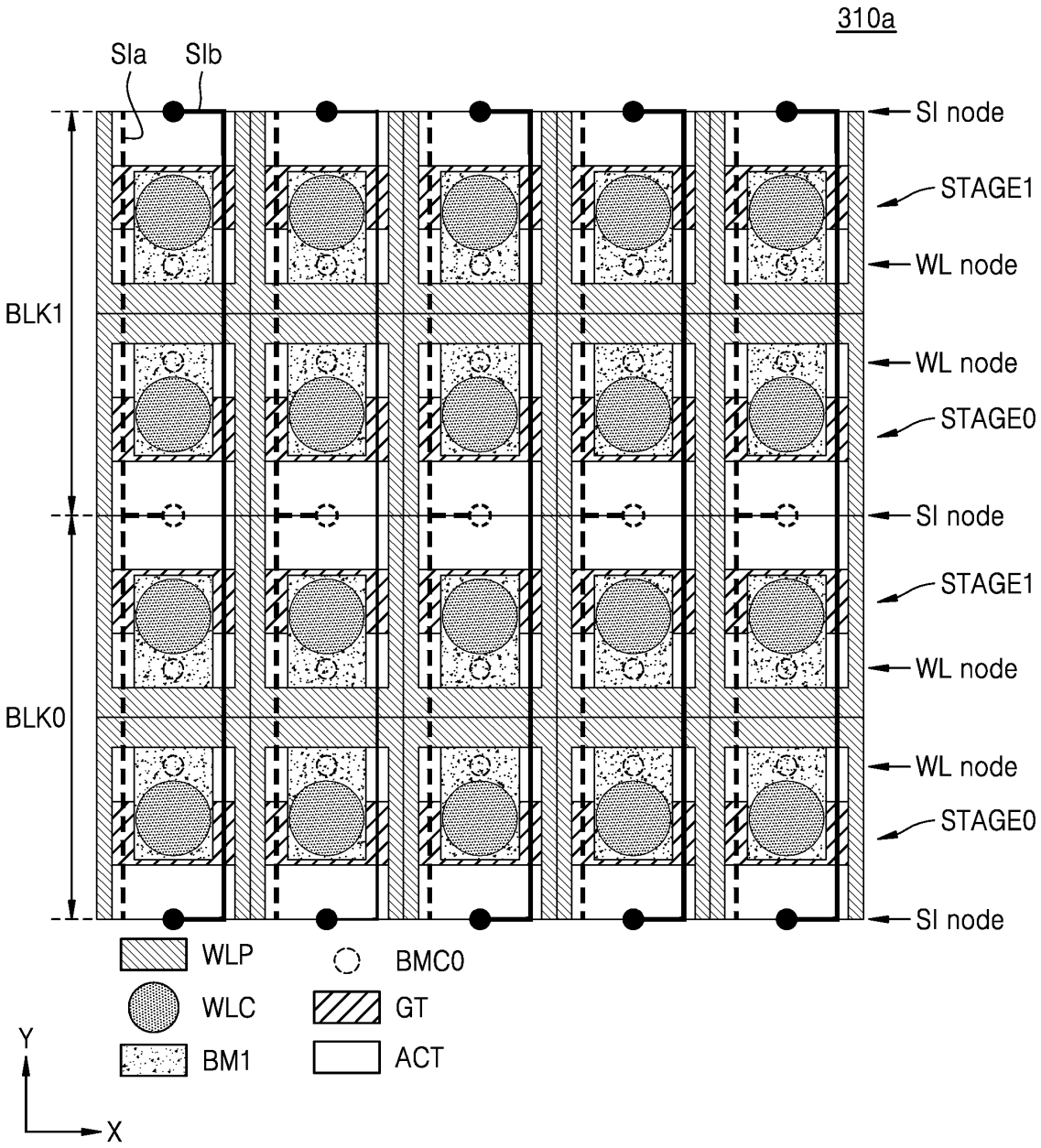

310a
SIa
SIb
SI node
STAGE1
WL node
WL node
STAGE0
SI node
STAGE1
WL node
WL node
STAGE0
SI node
BLK1
BLK0
WLP
WLC
BM1
BMC0
GT
ACT
Y
X

FIG. 31B

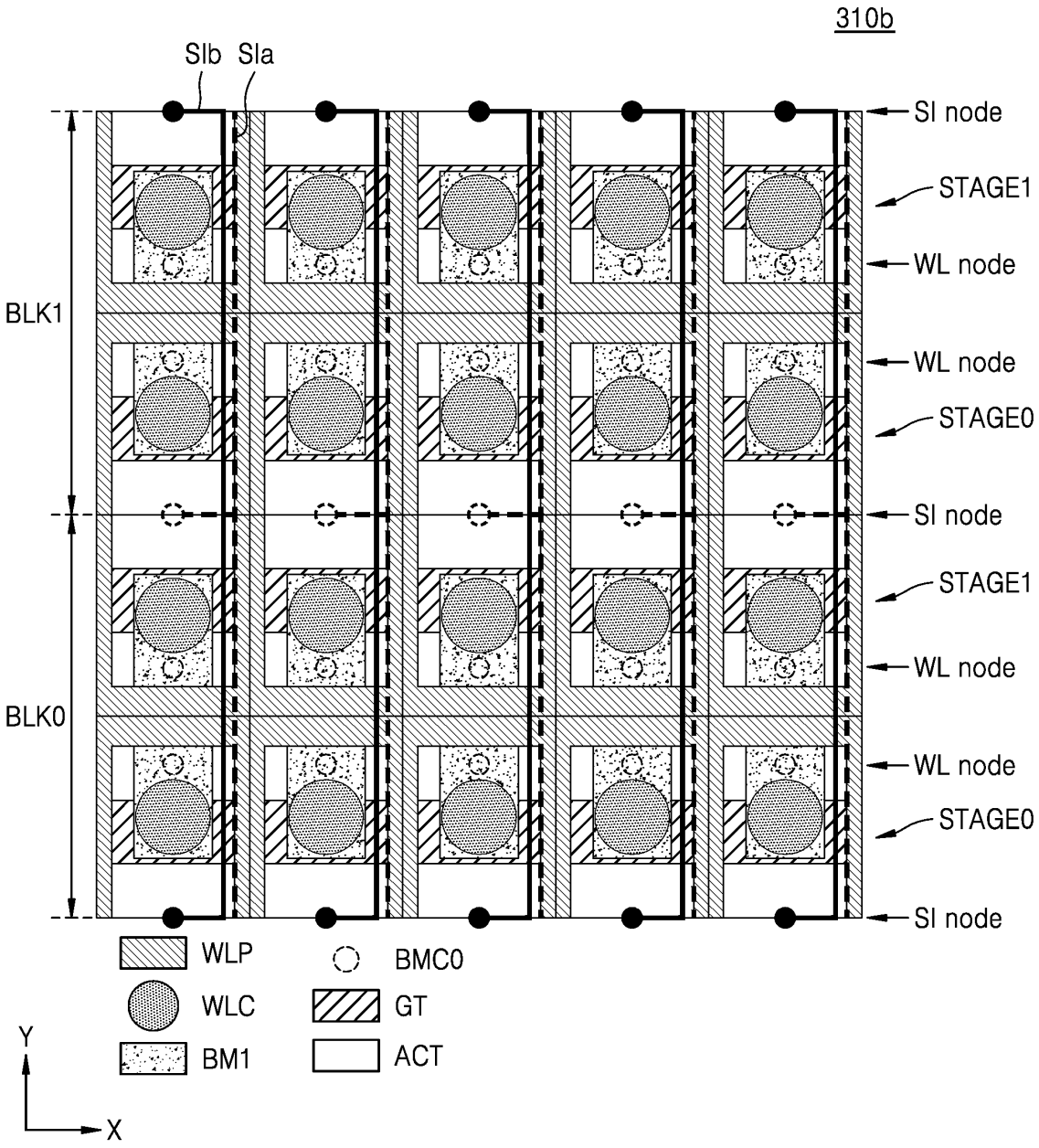

310b
Slb
Sla
SI node
STAGE1
WL node
WL node
STAGE0
SI node
STAGE1
WL node
WL node
STAGE0
SI node
BLK1
BLK0
WLP
WLC
BM1
BMC0
GT
ACT
Y
X

FIG. 32A

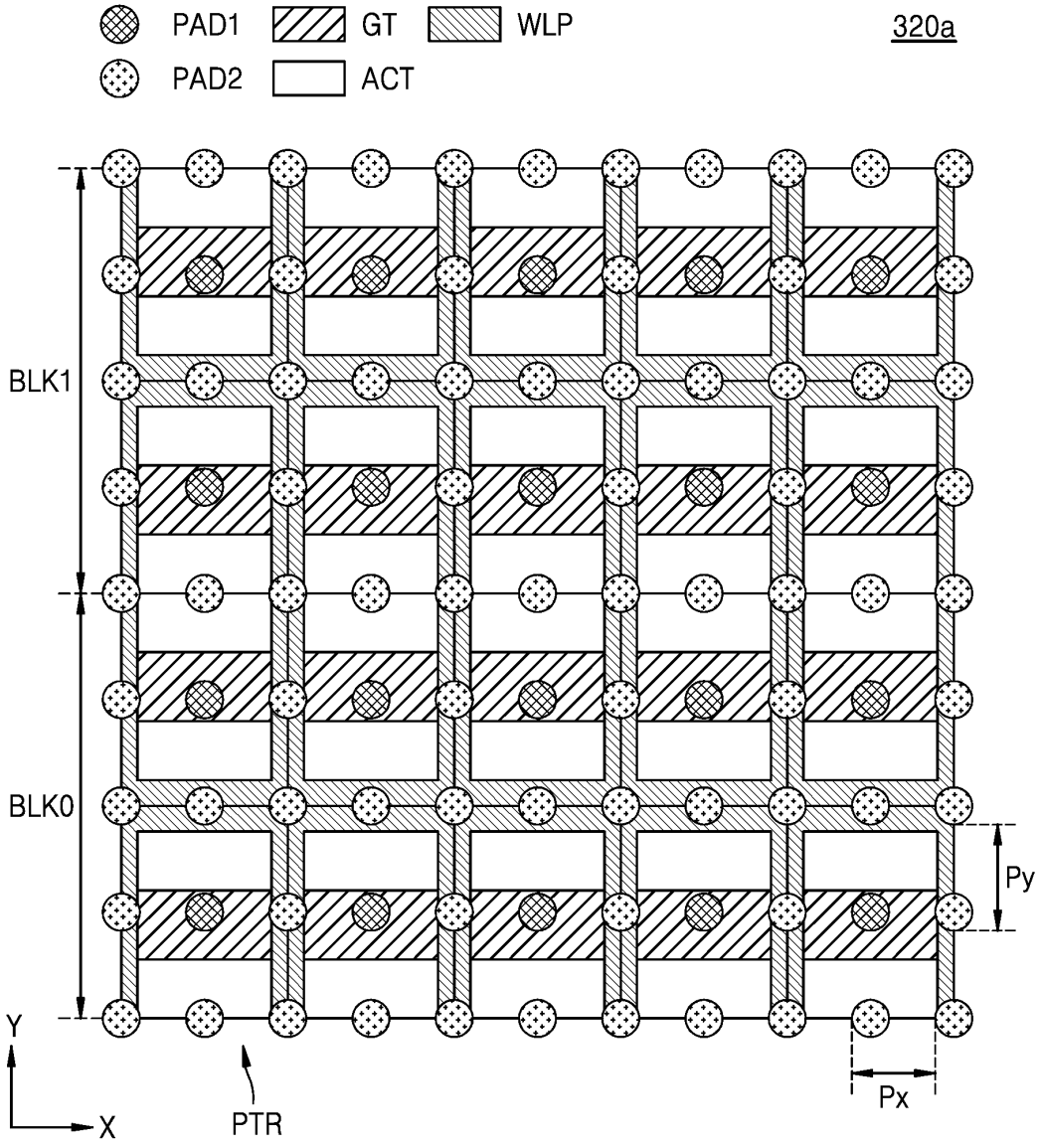


FIG. 32B

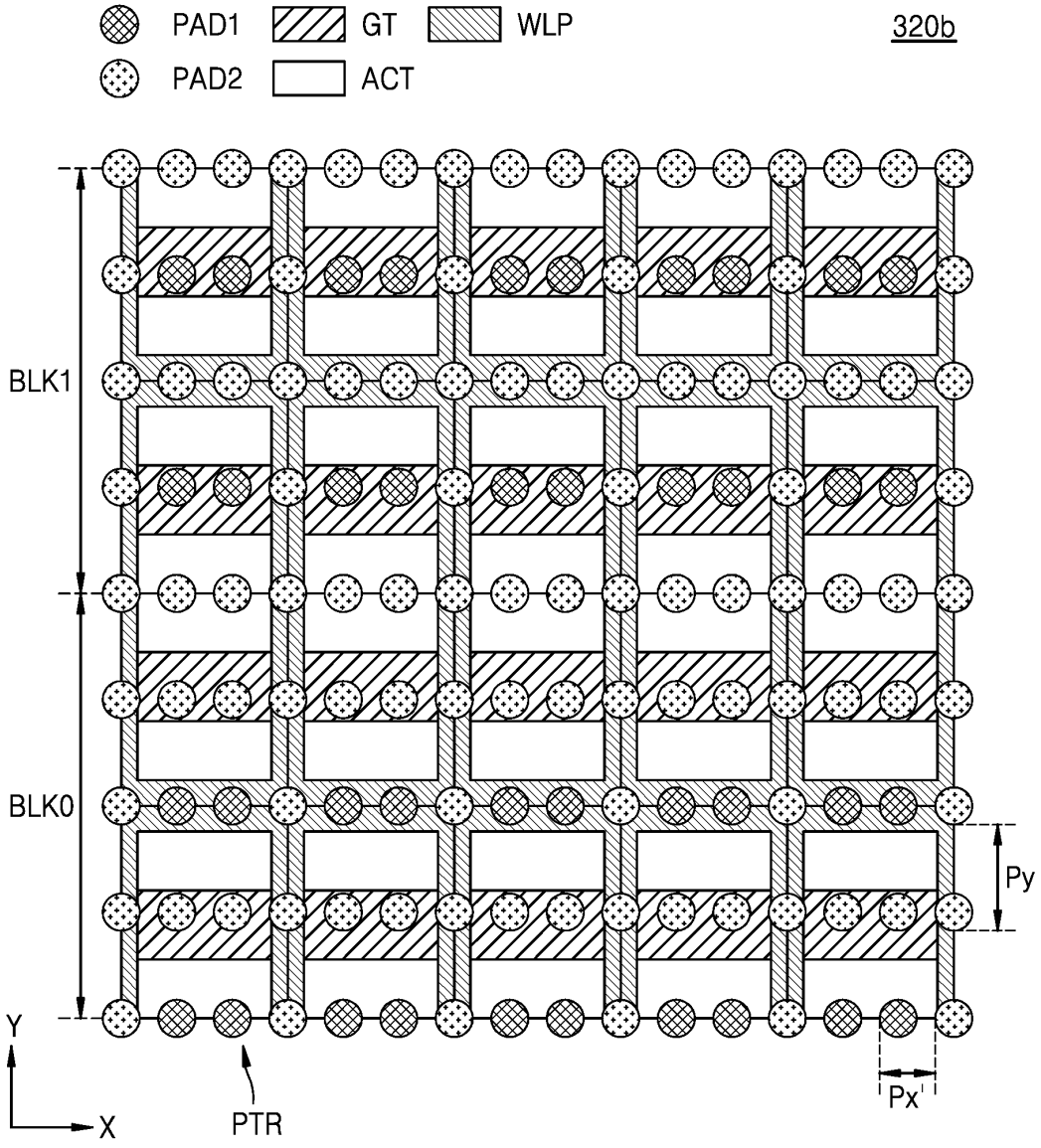


FIG. 32C

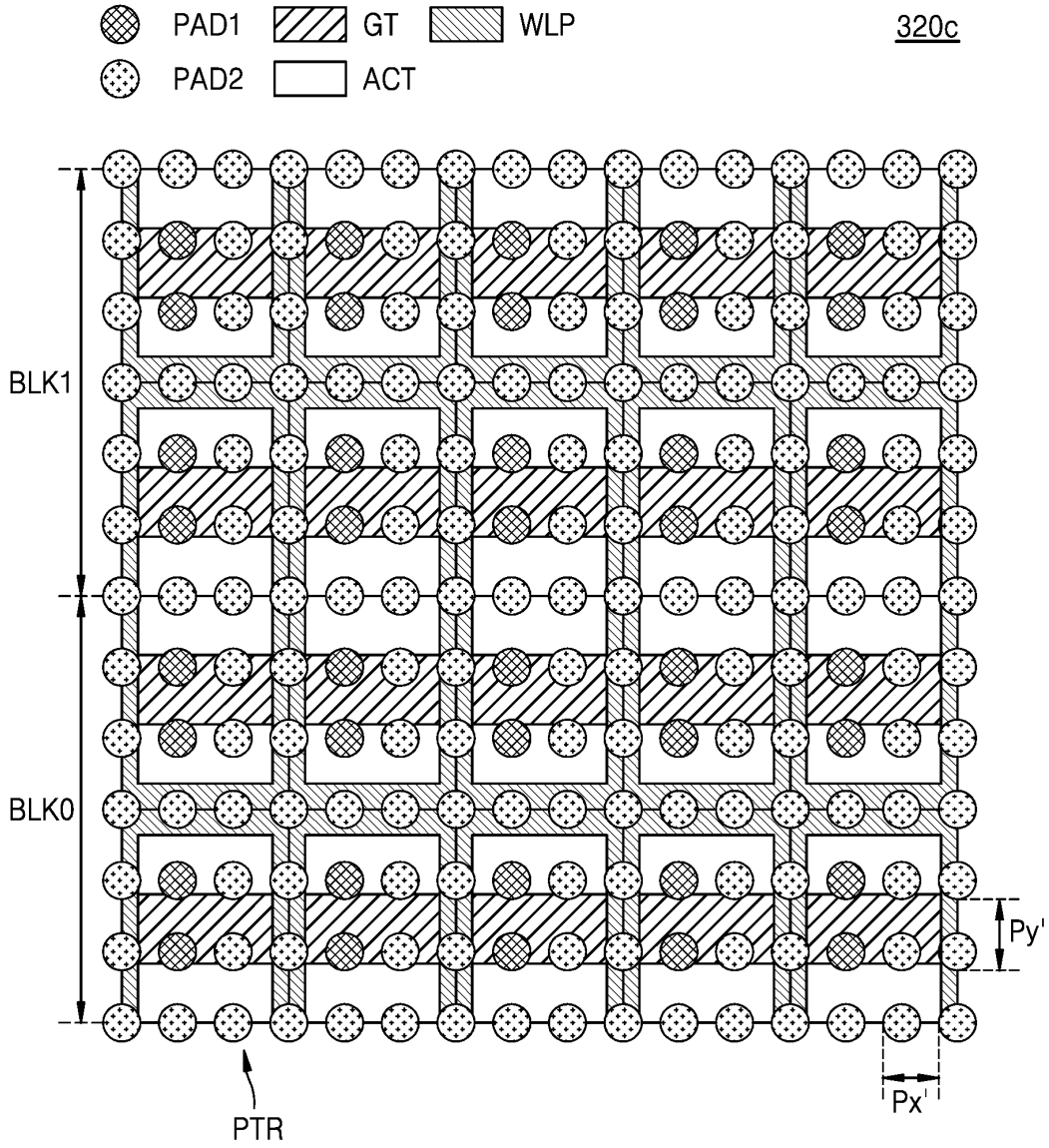
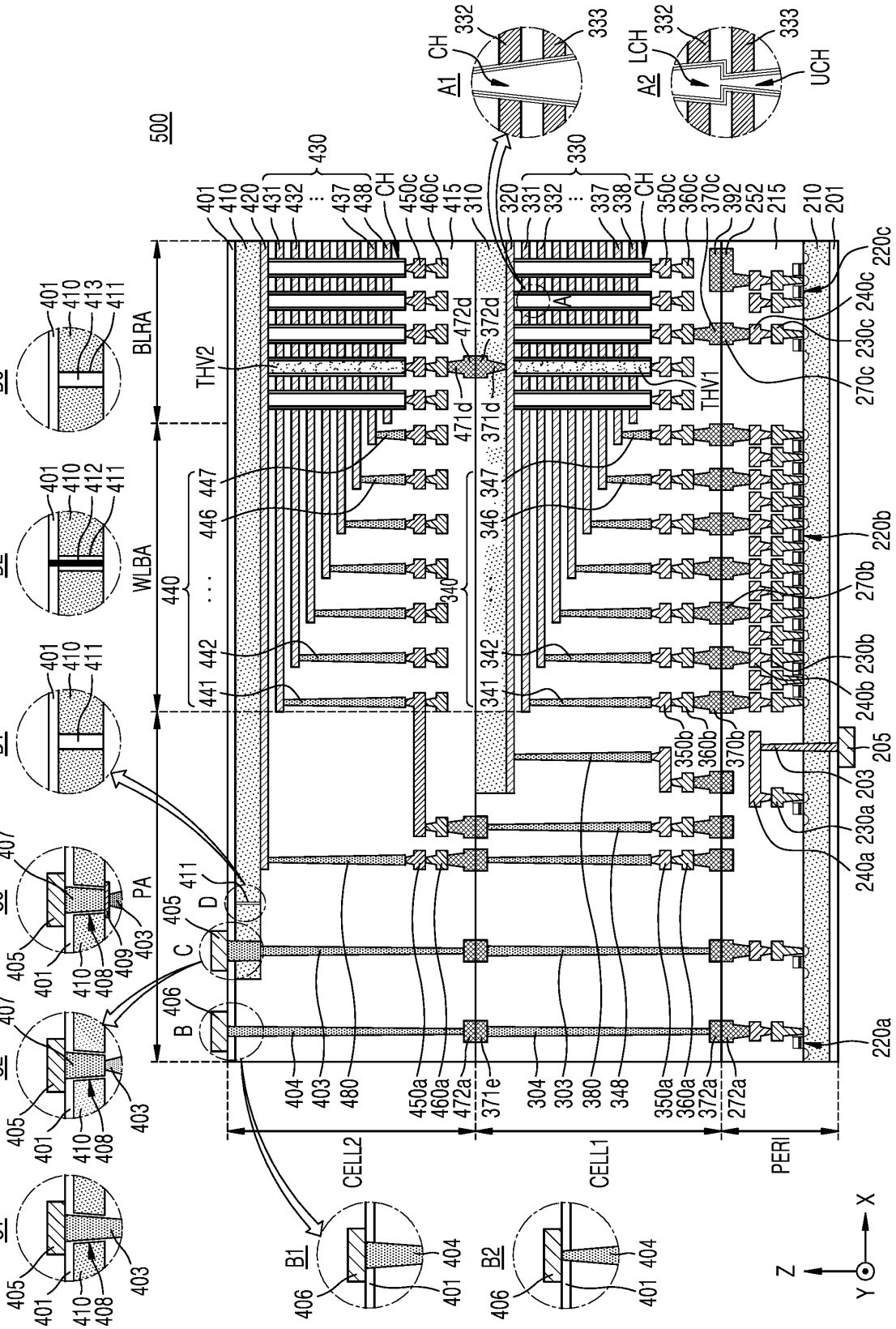


FIG. 33


500
BLRA
WLBA
THV2
THV1
CELL2
CELL1
PERI
A1
A2
B1
B2
C1
C2
C3
D1
D2
D3
CH
LCH
UCH
X
Y
Z