FIG. 1

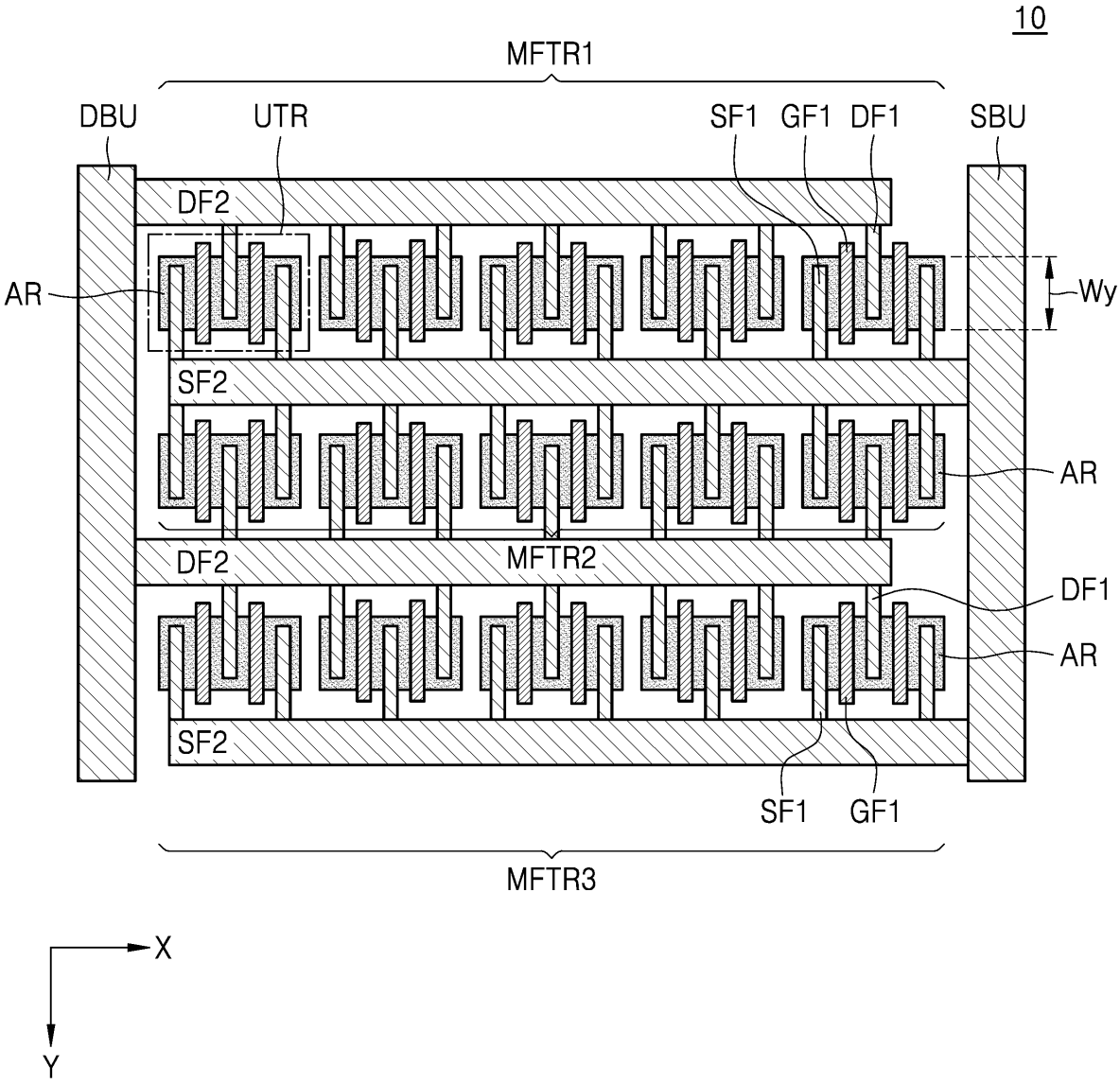

10
MFTR1
DBU
UTR
SF1
GF1
DF1
SBU
DF2
AR
Wy
SF2
AR
DF2
MFTR2
DF1
AR
SF2
SF1
GF1
MFTR3
X
Y

FIG. 2

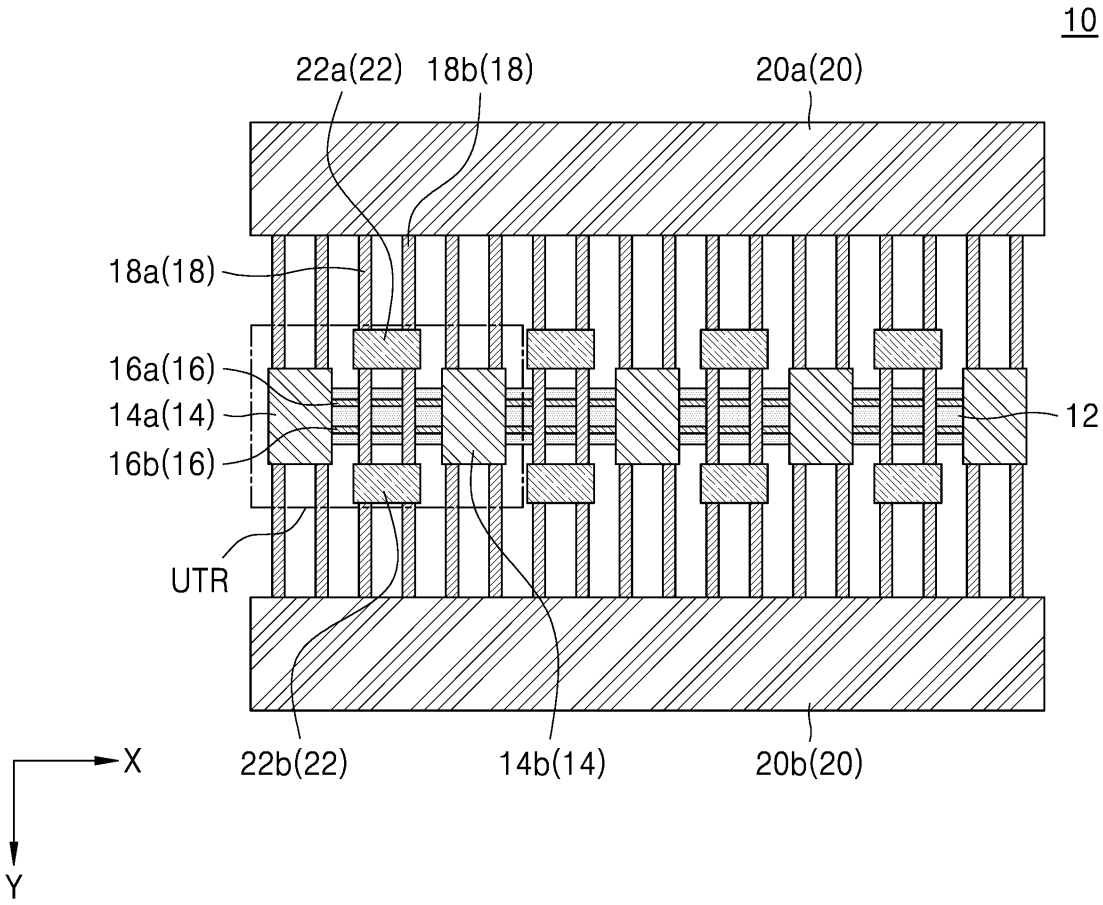

10
22a(22)
18b(18)
20a(20)
18a(18)
16a(16)
14a(14)
16b(16)
12
UTR
22b(22)
14b(14)
20b(20)
X
Y

FIG. 3

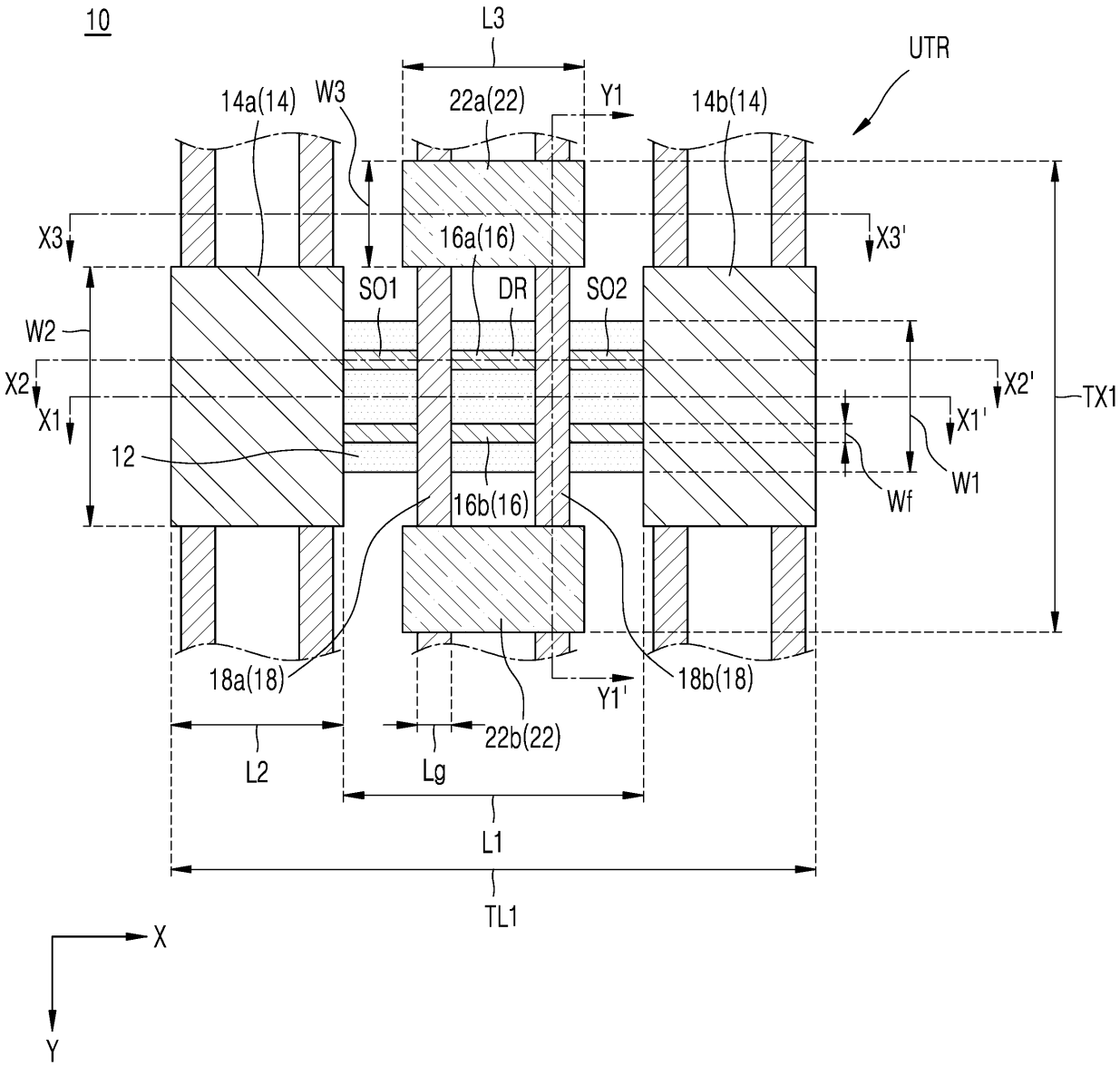

10
L3
UTR
14a(14)
W3
22a(22)
Y1
14b(14)
X3
X3'
16a(16)
SO1
DR
SO2
W2
X2
X2'
TX1
X1
X1'
12
W1
Wf
16b(16)
18a(18)
18b(18)
Y1'
22b(22)
L2
Lg
L1
TL1
X
Y

FIG. 4

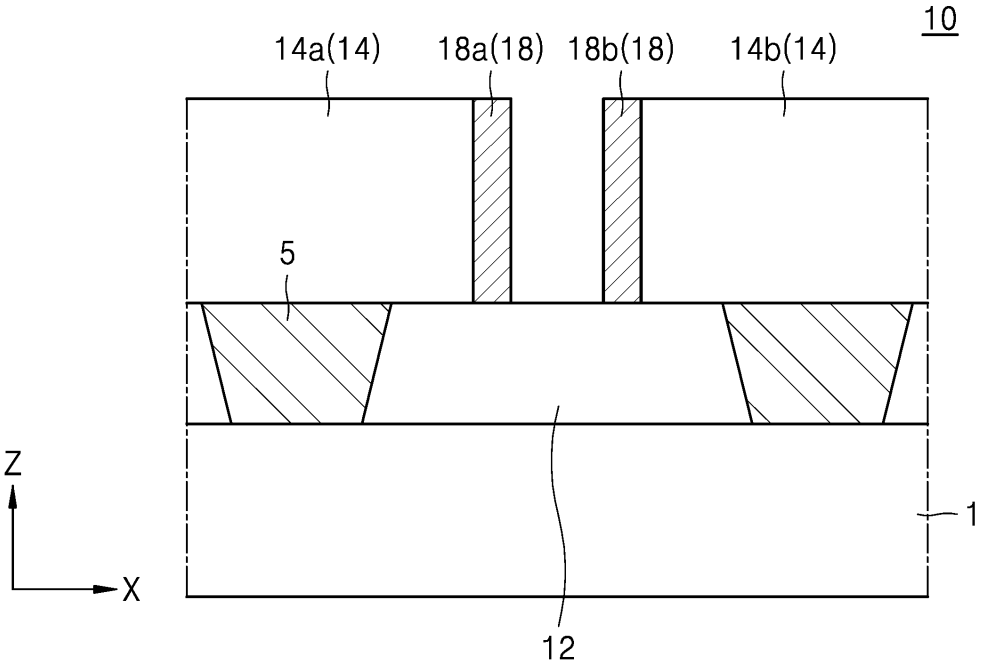

10
14a(14)
18a(18)
18b(18)
14b(14)
5
Z
X
1
12

FIG. 5

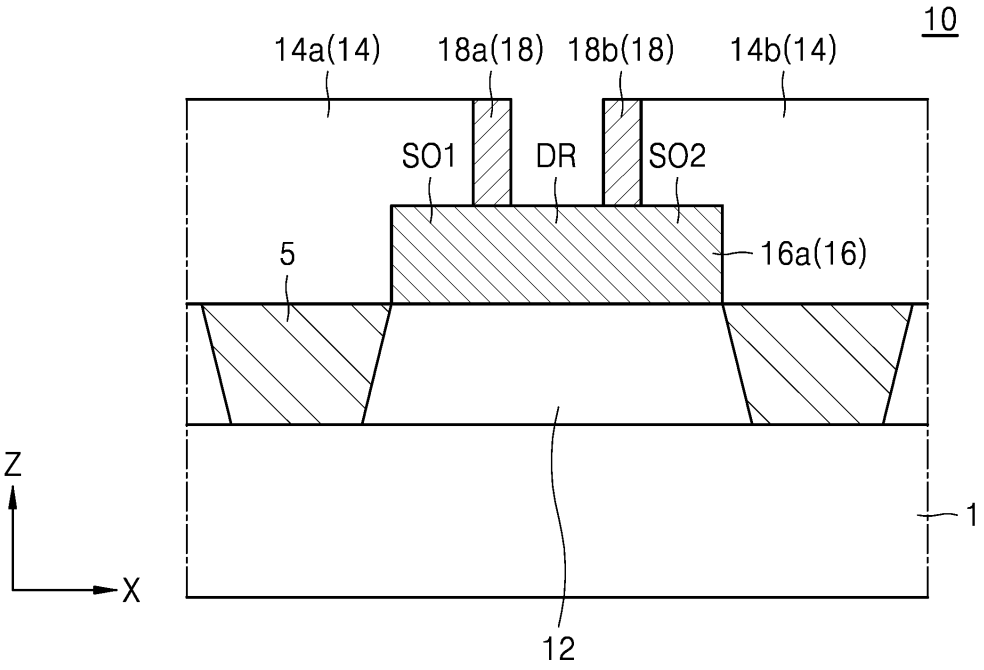

10
14a(14)
18a(18)
18b(18)
14b(14)
SO1
DR
SO2
5
16a(16)
Z
X
1
12

FIG. 6

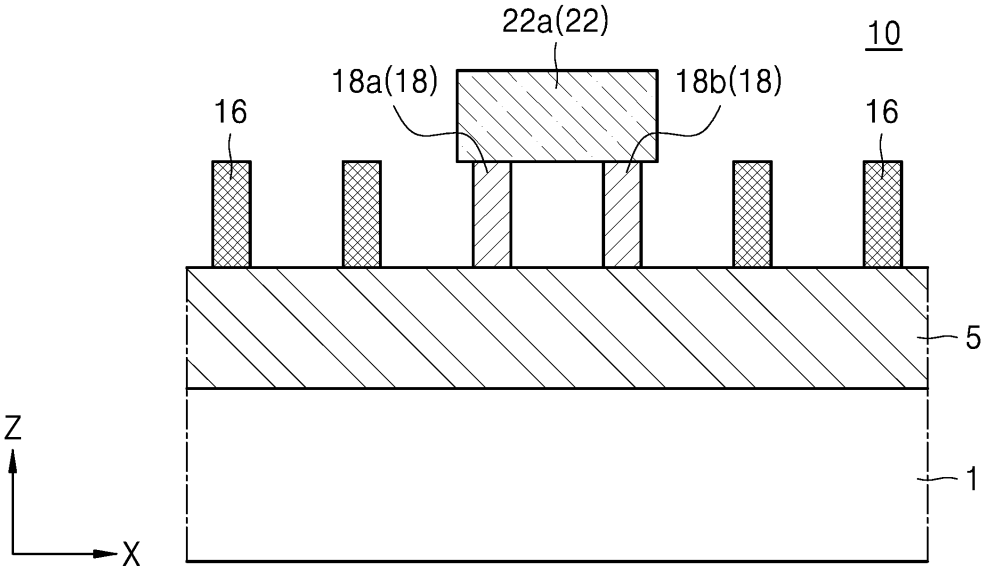


FIG. 7

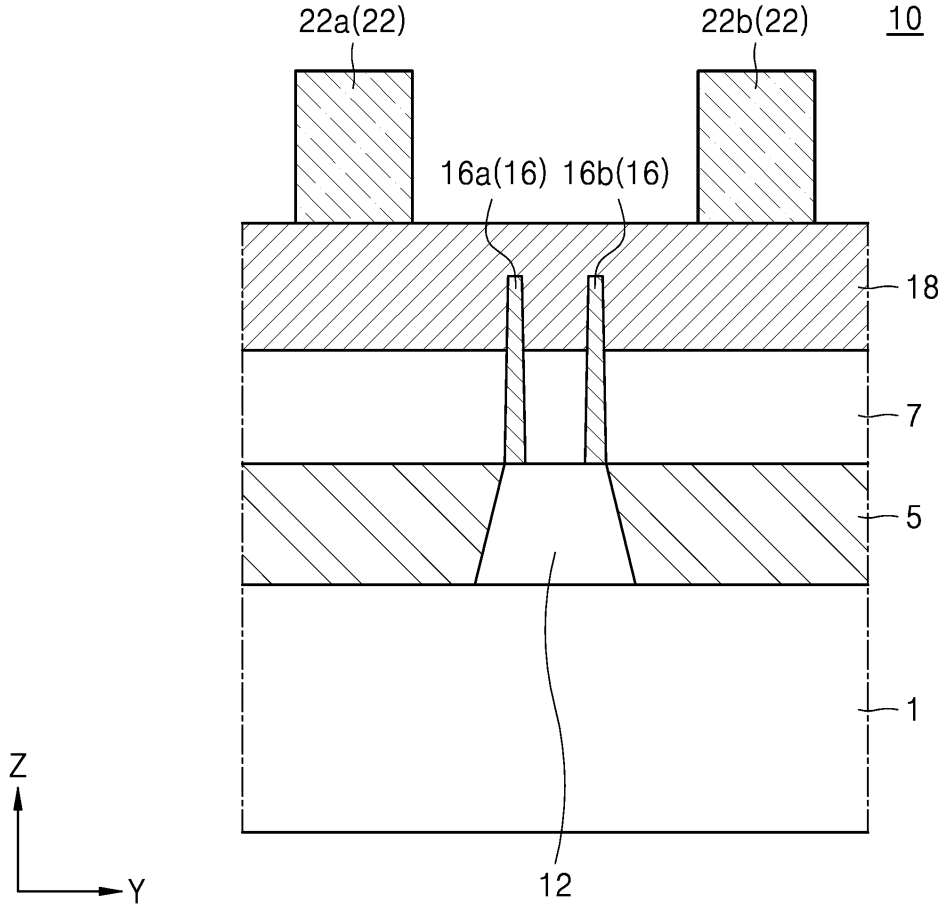


FIG. 8

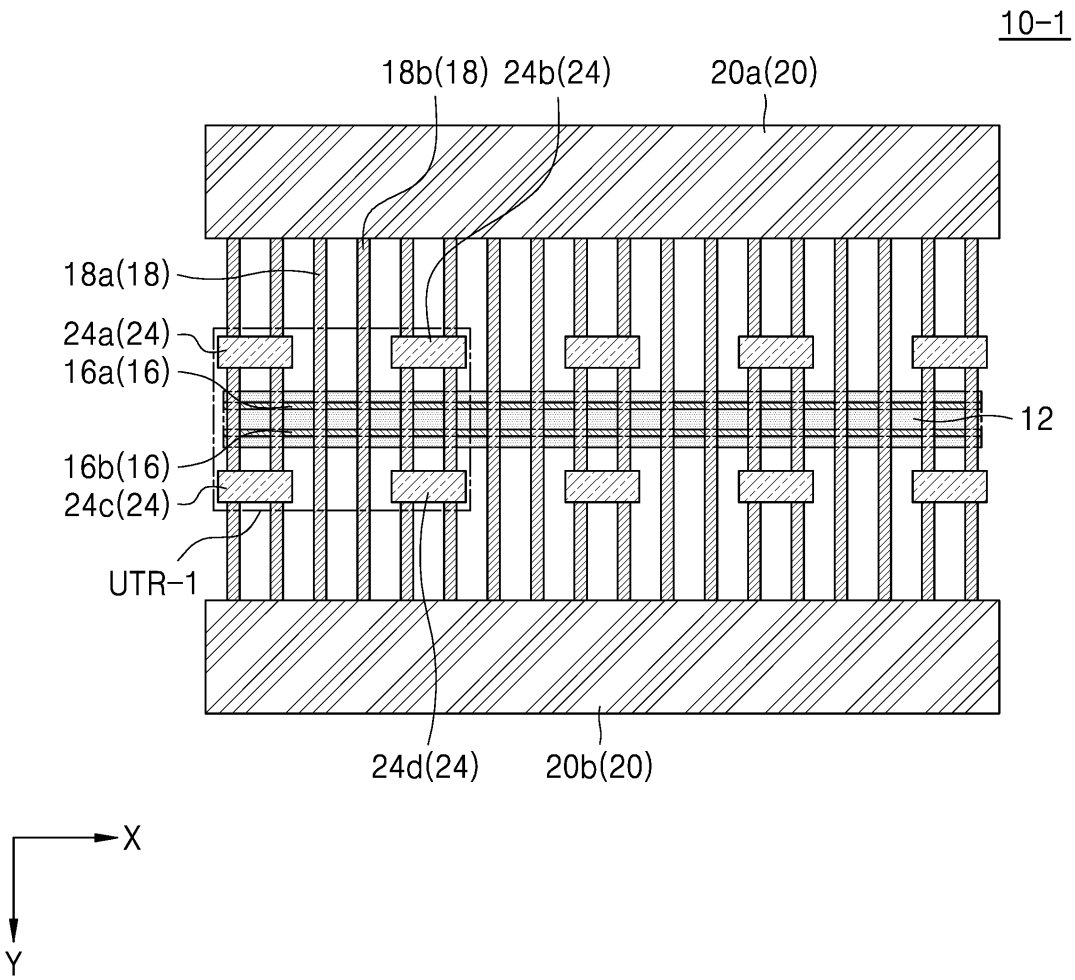

10-1
18b(18)
24b(24)
20a(20)
18a(18)
24a(24)
16a(16)
12
16b(16)
24c(24)
UTR-1
24d(24)
20b(20)
X
Y

FIG. 9

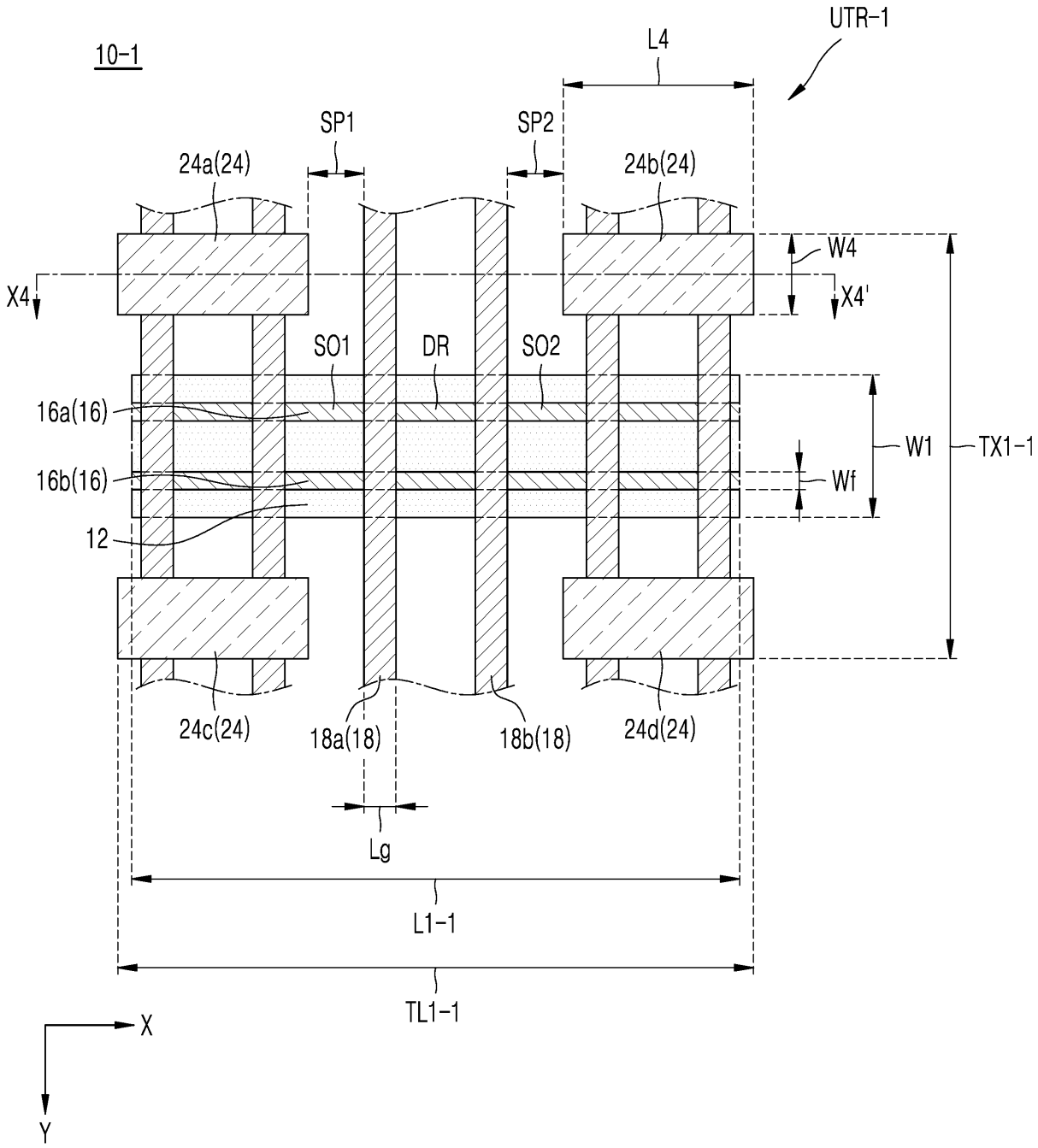

10-1
UTR-1
L4
SP1
SP2
24a(24)
24b(24)
W4
X4
X4'
SO1
DR
SO2
16a(16)
16b(16)
12
W1
Wf
TX1-1
24c(24)
18a(18)
18b(18)
24d(24)
Lg
L1-1
TL1-1
X
Y

FIG. 10

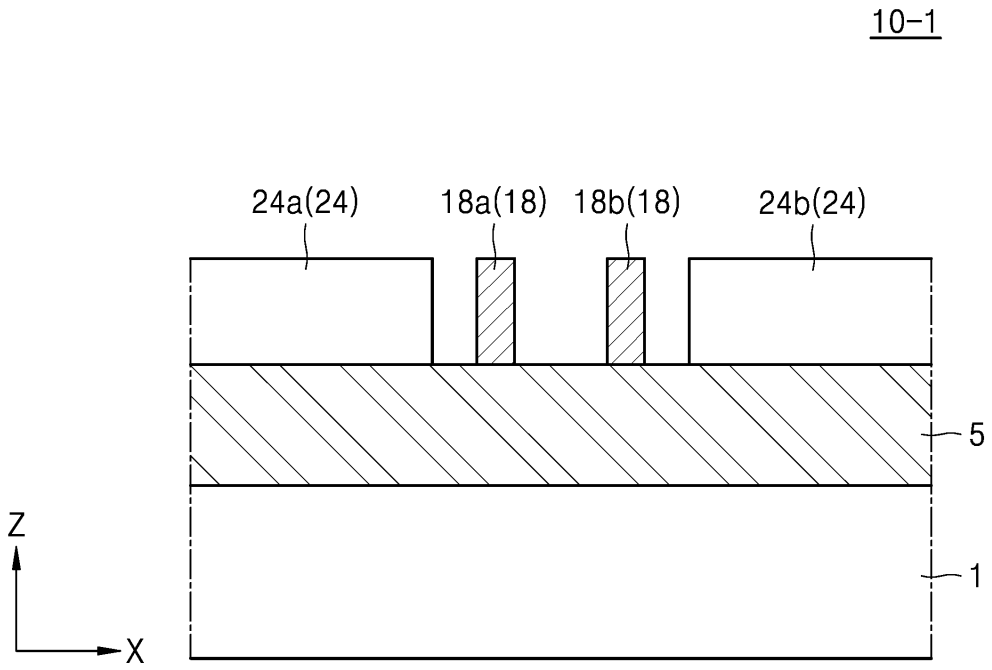


FIG. 11

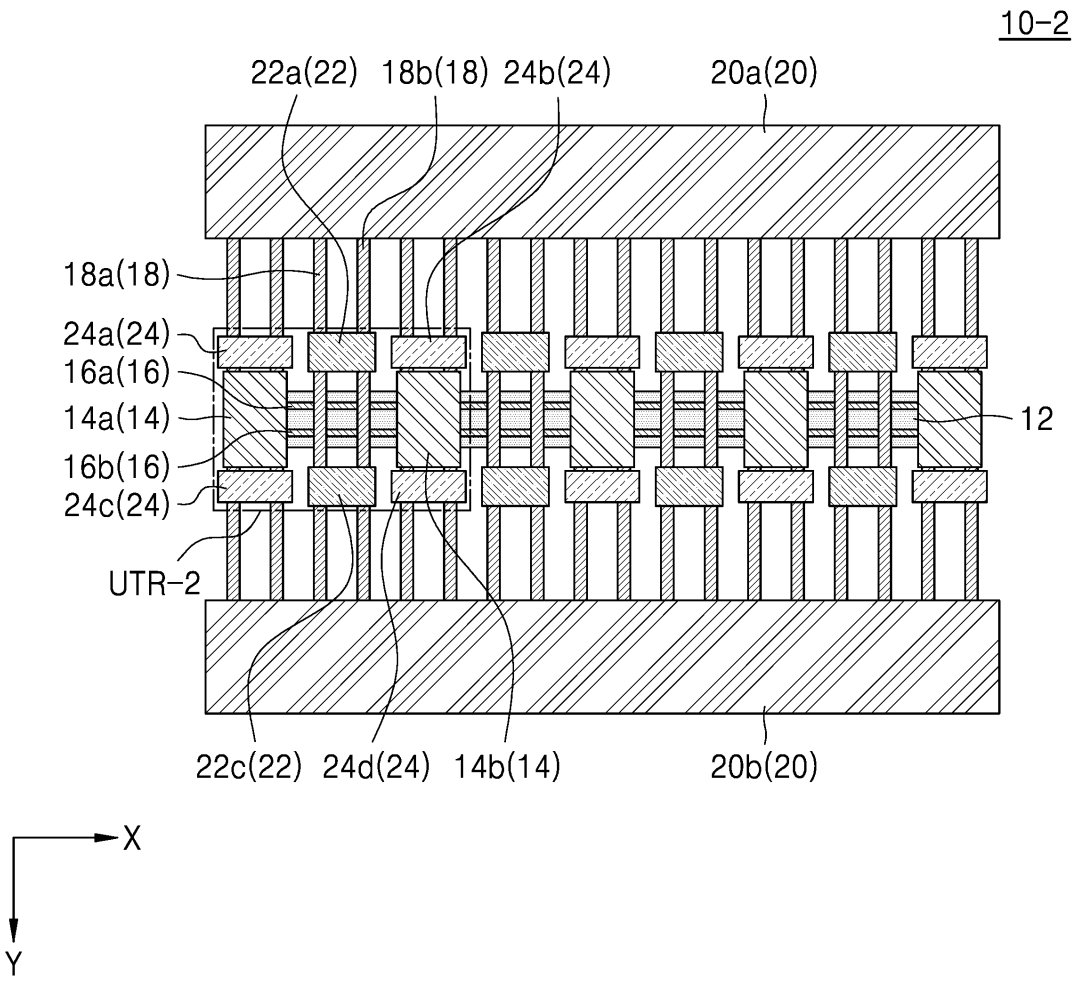

10-2
22a(22)
18b(18)
24b(24)
20a(20)
18a(18)
24a(24)
16a(16)
14a(14)
16b(16)
24c(24)
UTR-2
12
22c(22)
24d(24)
14b(14)
20b(20)
X
Y

FIG. 12

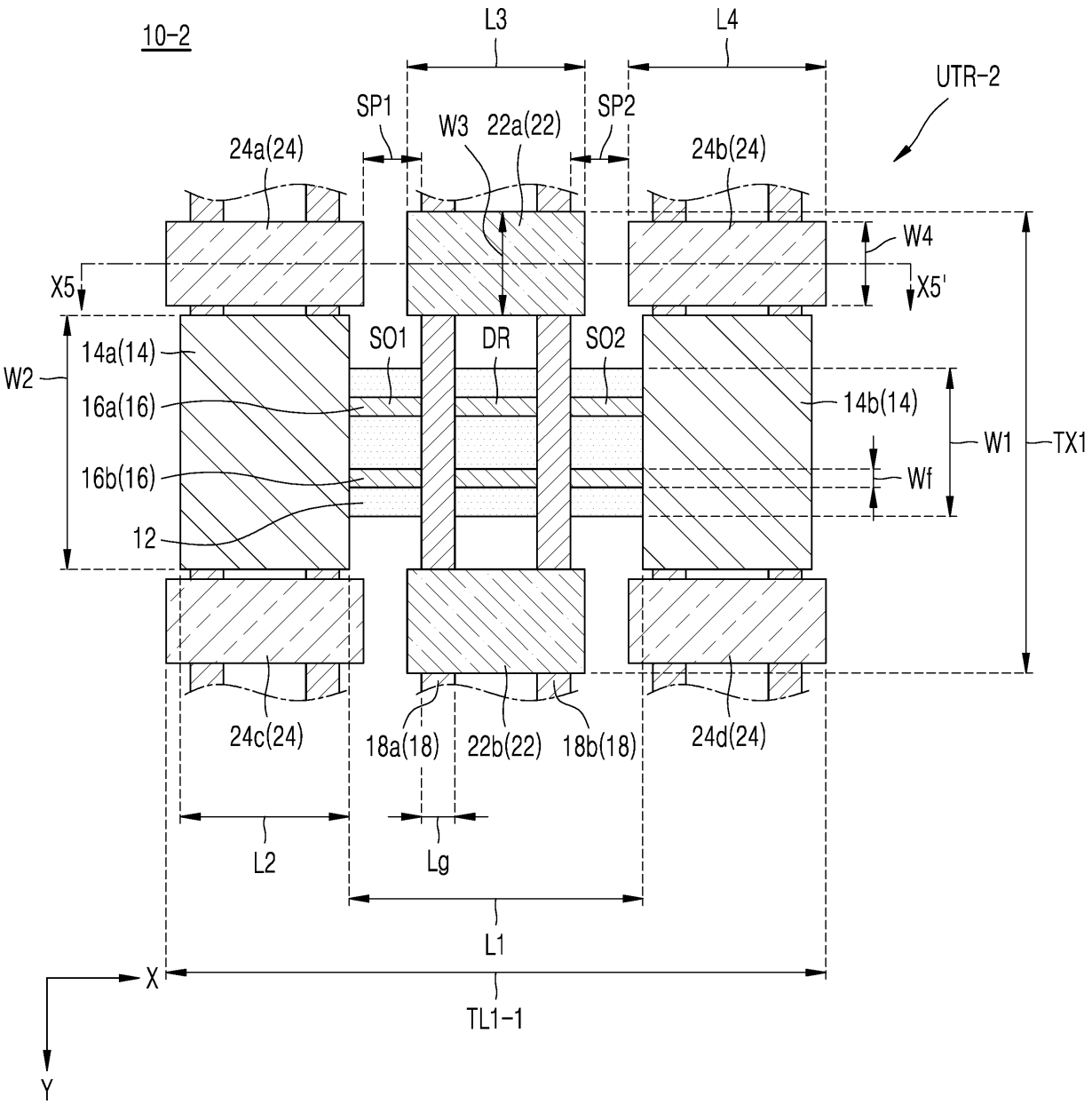

10-2
L3
L4
UTR-2
SP1
W3
22a(22)
SP2
24a(24)
24b(24)
W4
X5
X5'
SO1
DR
SO2
14a(14)
W2
16a(16)
14b(14)
W1
TX1
16b(16)
Wf
12
24c(24)
18a(18)
22b(22)
18b(18)
24d(24)
L2
Lg
L1
X
TL1-1
Y

FIG. 13

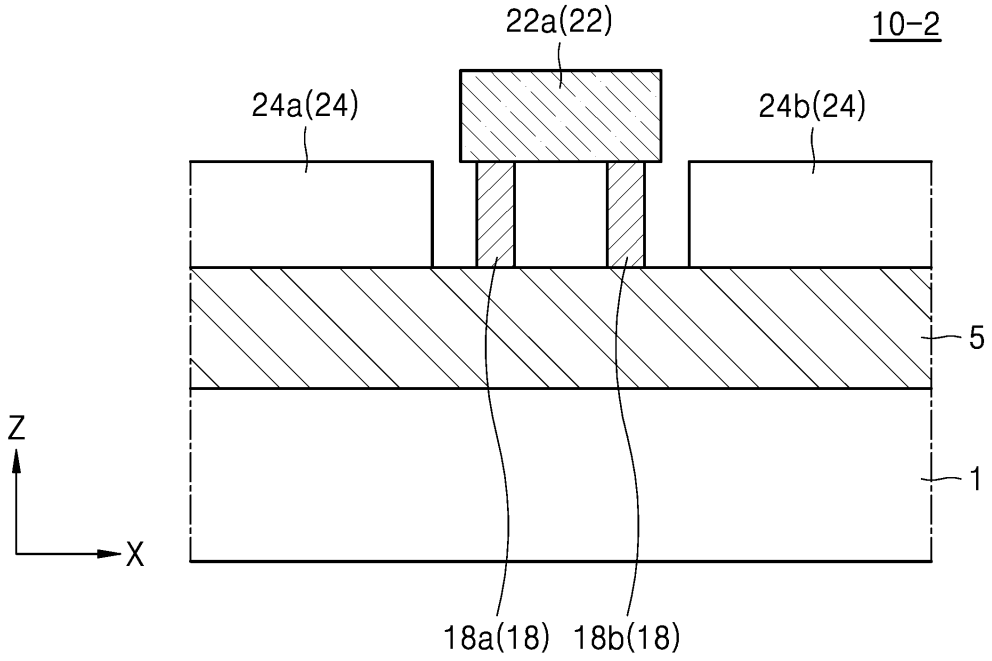


FIG. 14

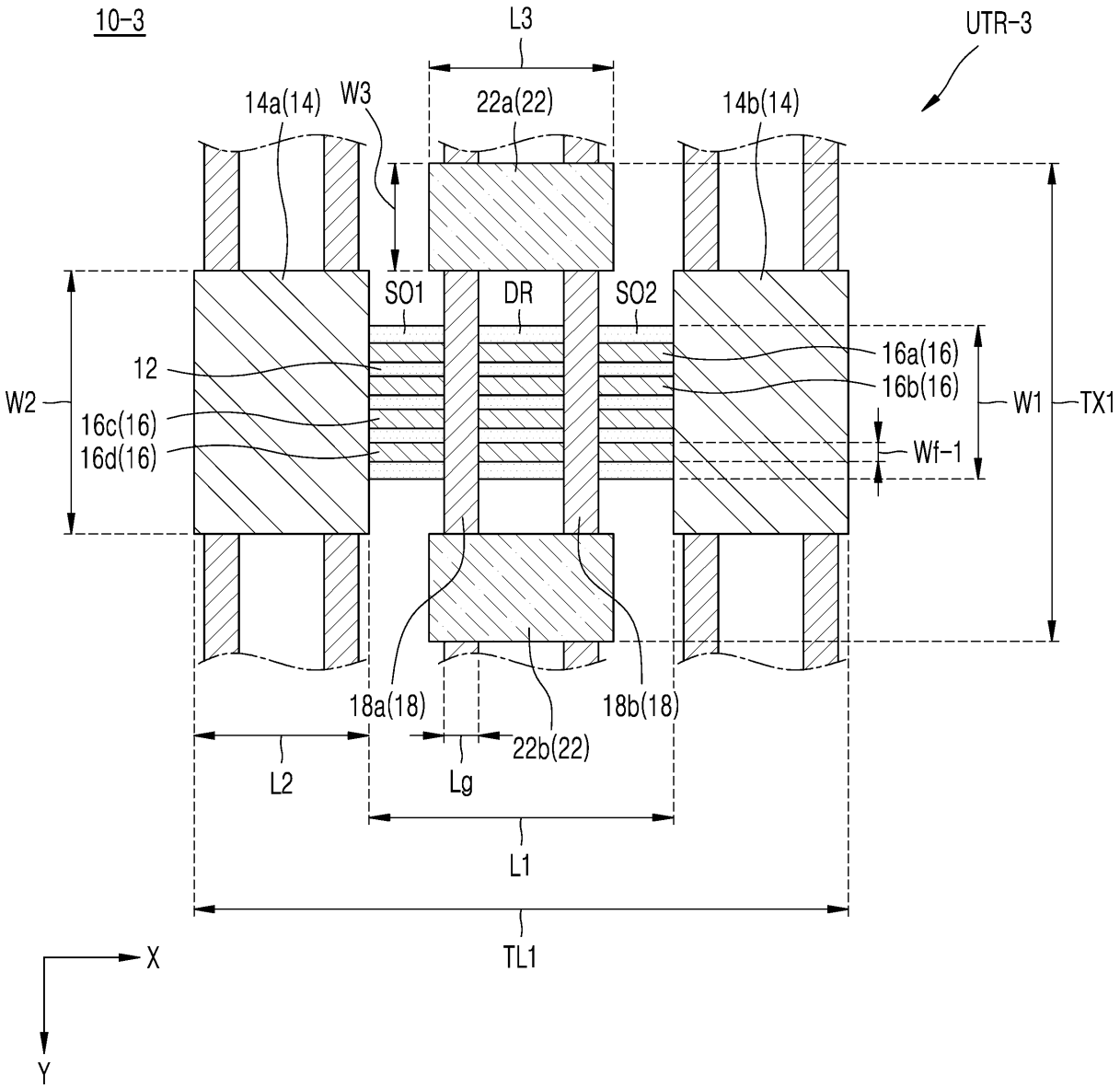

10-3
L3
UTR-3
14a(14)
W3
22a(22)
14b(14)
SO1
DR
SO2
W2
12
16c(16)
16d(16)
16a(16)
16b(16)
W1
TX1
Wf-1
18a(18)
18b(18)
22b(22)
L2
Lg
L1
TL1
X
Y

FIG. 15

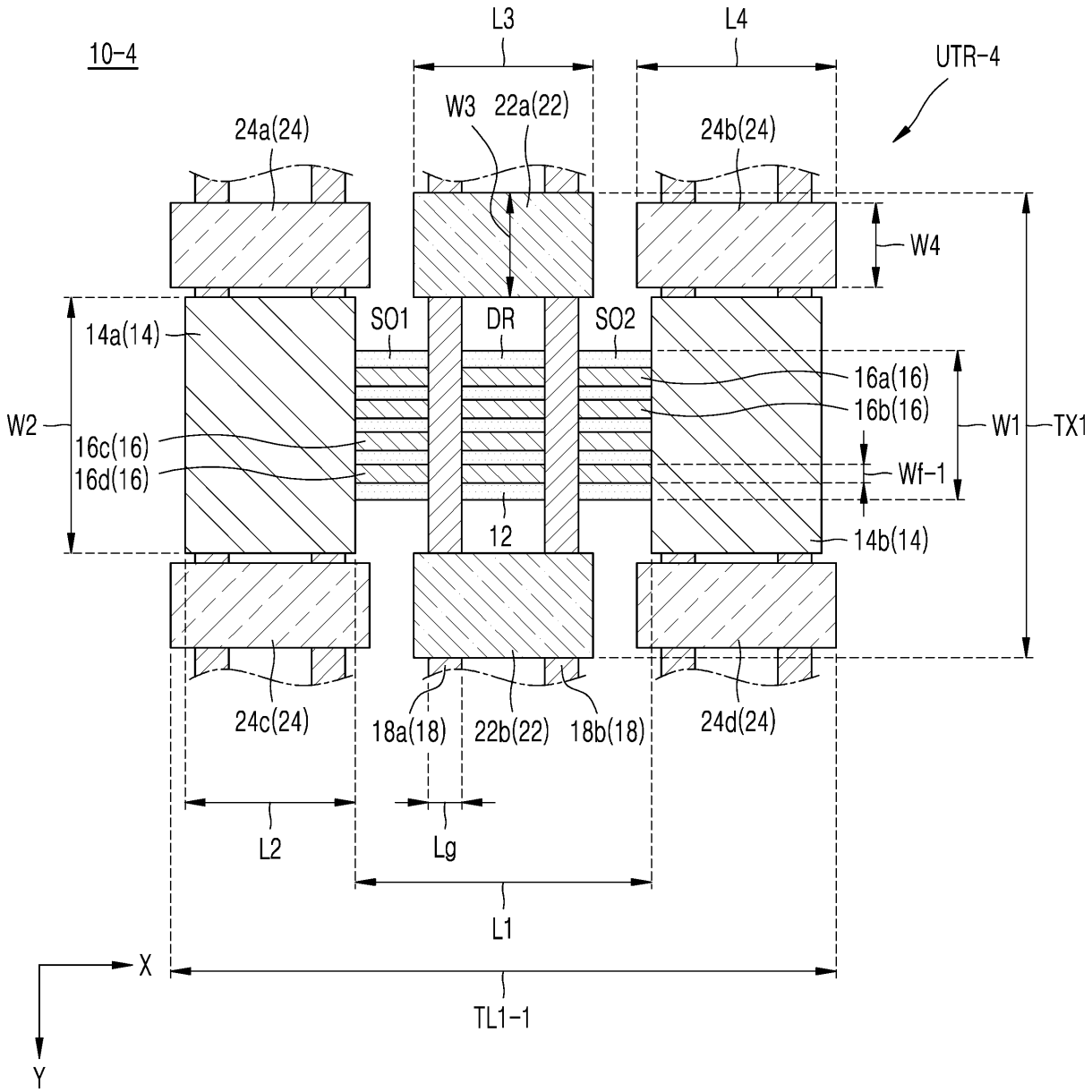

10-4
L3
L4
UTR-4
W3
22a(22)
24a(24)
24b(24)
W4
SO1
DR
SO2
14a(14)
16a(16)
16b(16)
W2
16c(16)
16d(16)
W1
TX1
Wf-1
12
14b(14)
24c(24)
18a(18)
22b(22)
18b(18)
24d(24)
L2
Lg
L1
X
TL1-1
Y

FIG. 16

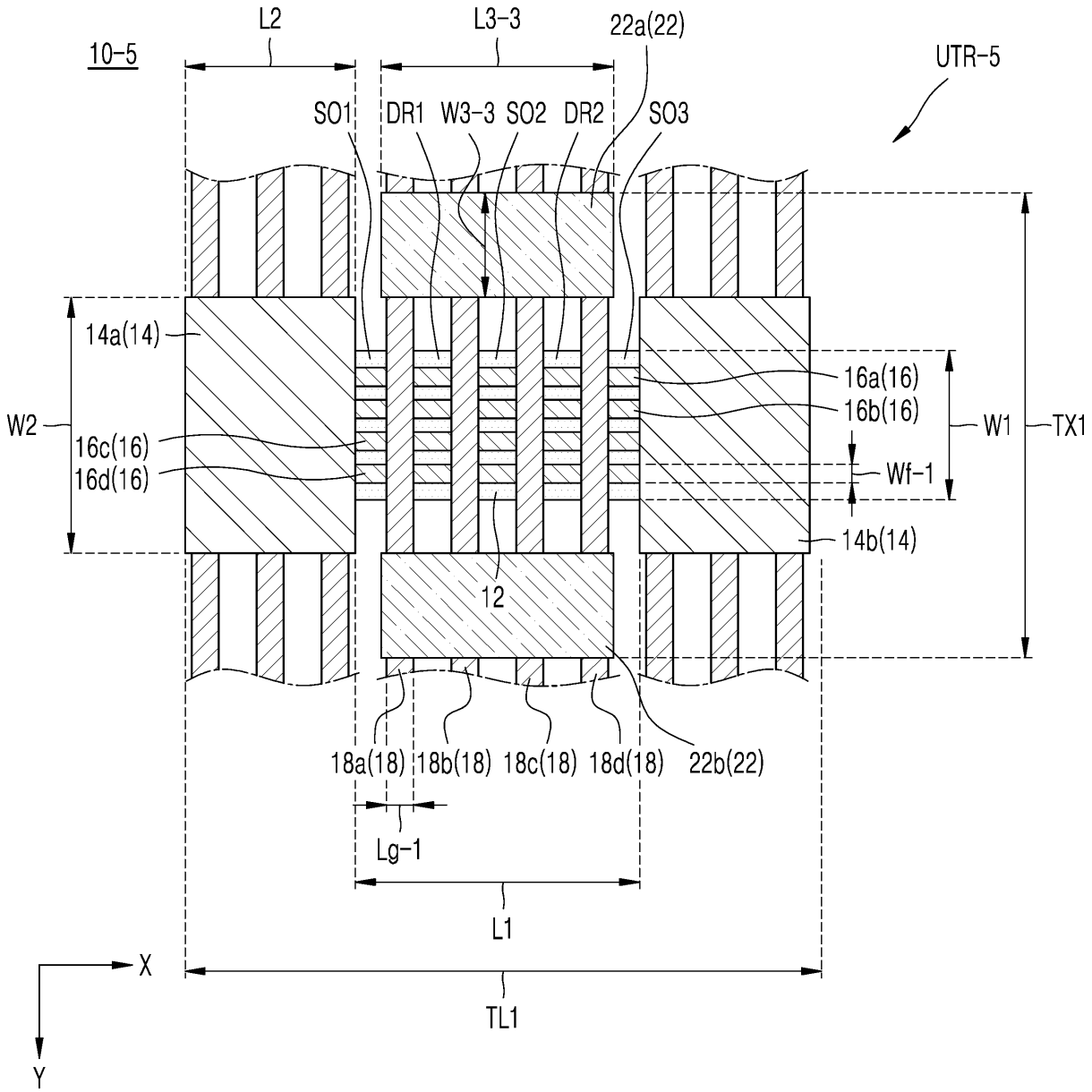

10-5
L2
L3-3
22a(22)
UTR-5
SO1
DR1
W3-3
SO2
DR2
SO3
14a(14)
W2
16c(16)
16d(16)
16a(16)
16b(16)
W1
TX1
Wf-1
14b(14)
12
18a(18)
18b(18)
18c(18)
18d(18)
22b(22)
Lg-1
L1
X
Y
TL1

FIG. 17

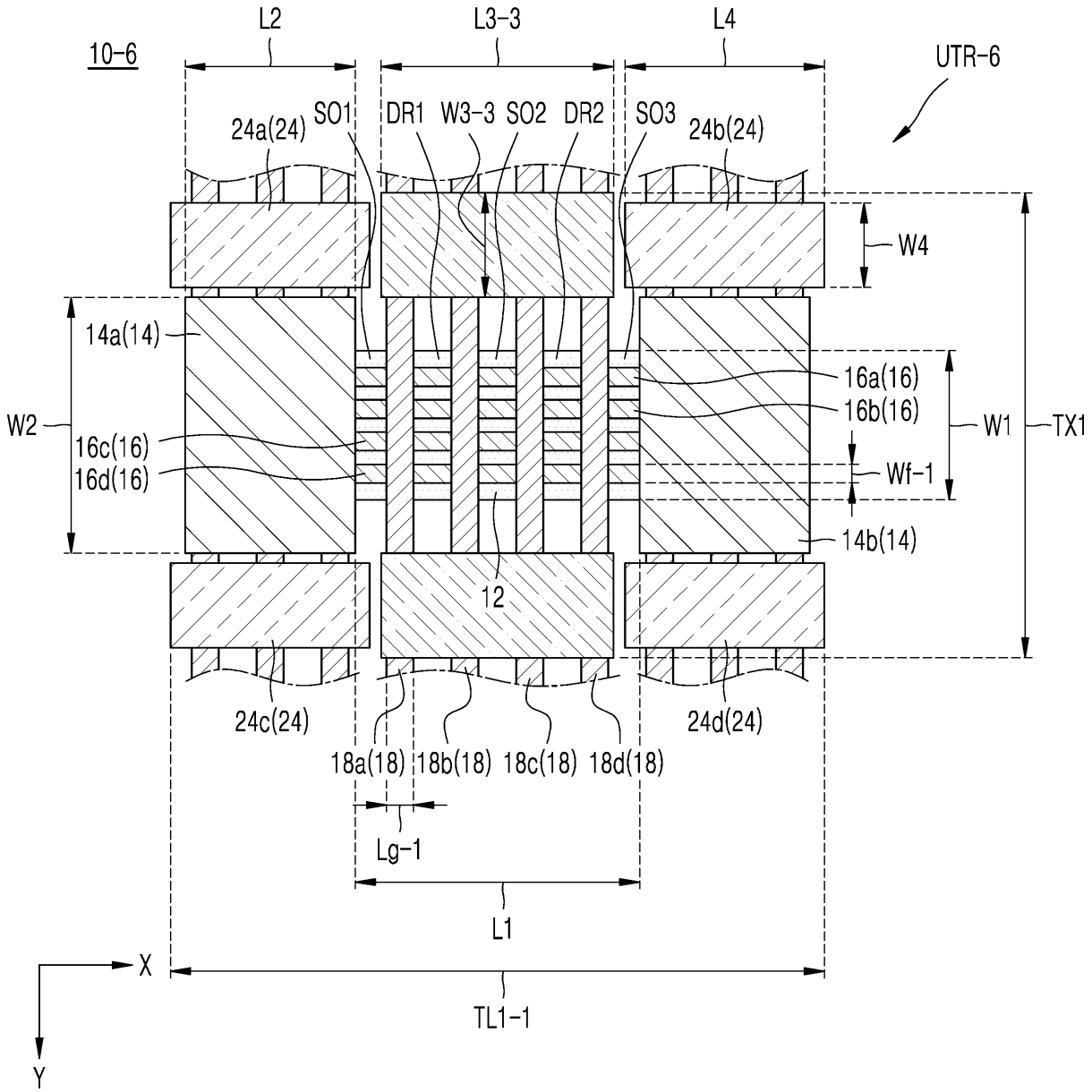

10-6
L2
L3-3
L4
UTR-6
24a(24)
SO1
DR1
W3-3
SO2
DR2
SO3
24b(24)
W4
14a(14)
W2
16c(16)
16d(16)
16a(16)
16b(16)
W1
TX1
Wf-1
14b(14)
12
24c(24)
24d(24)
18a(18)
18b(18)
18c(18)
18d(18)
Lg-1
L1
X
Y
TL1-1

FIG. 18

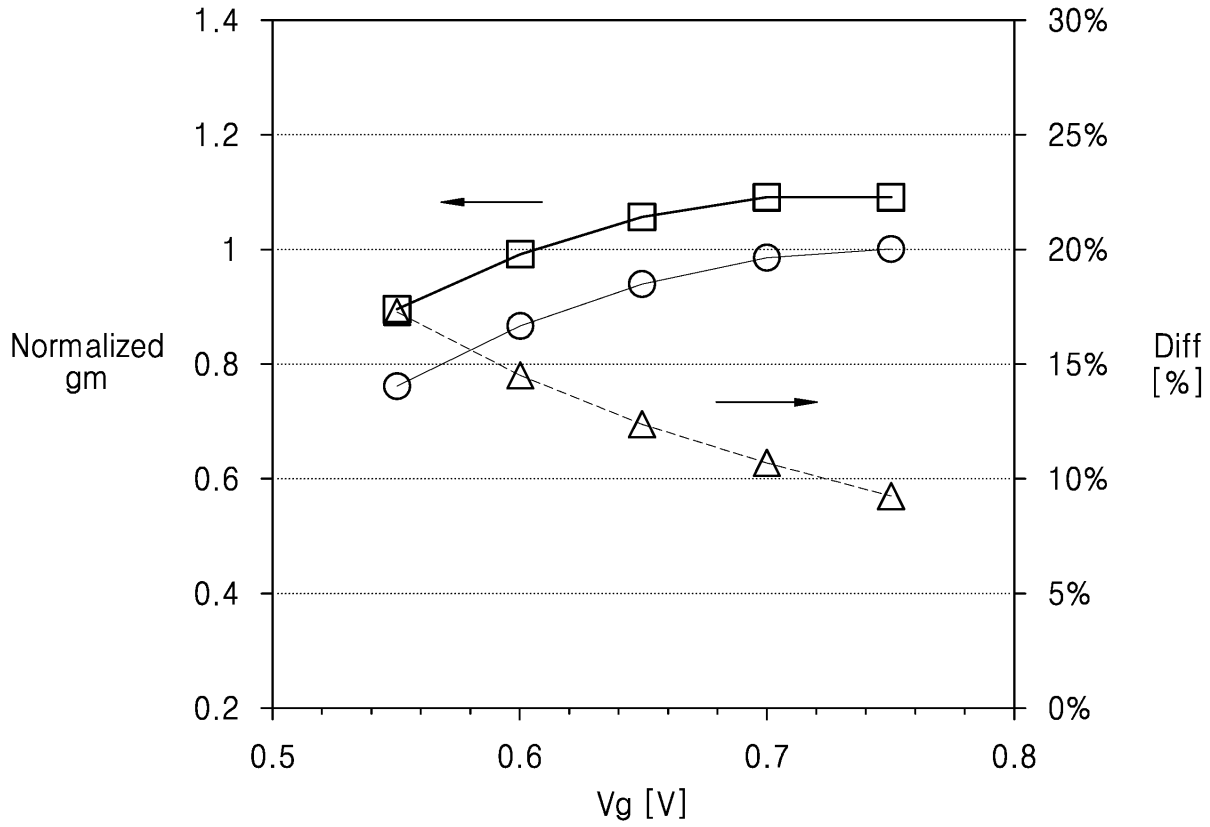

1.4
1.2
1
0.8
0.6
0.4
0.2
30%
25%
20%
15%
10%
5%
0%
Normalized gm
Diff [%]
0.5
0.6
0.7
0.8
Vg [V]

FIG. 19

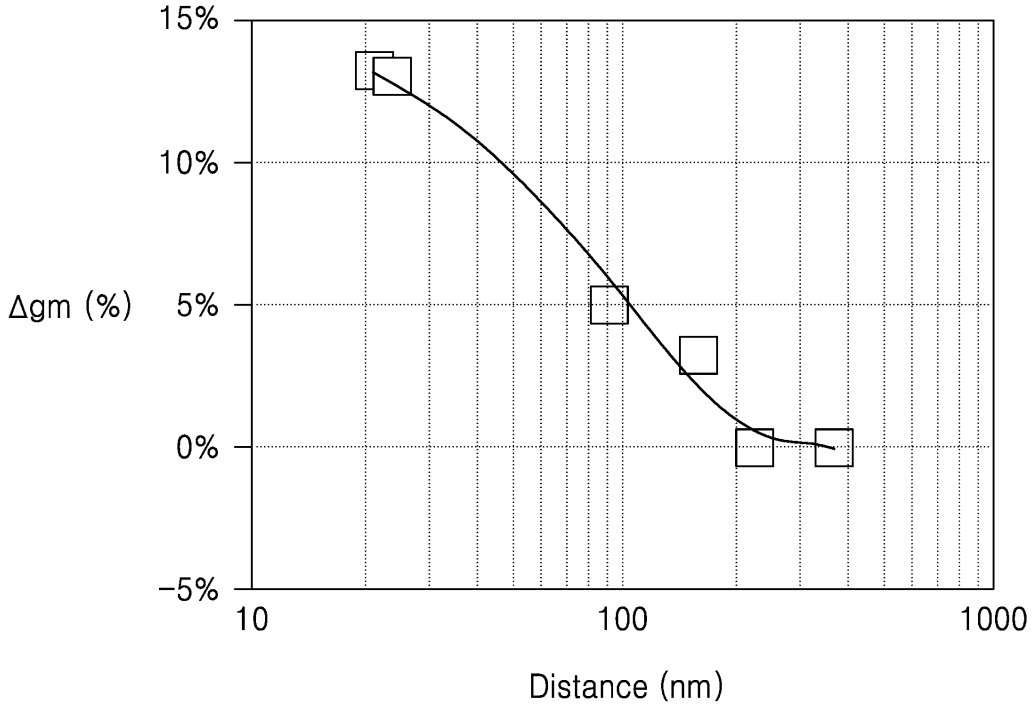

15%
10%
5%
0%
-5%
Δgm (%)
10
100
1000
Distance (nm)

FIG. 20

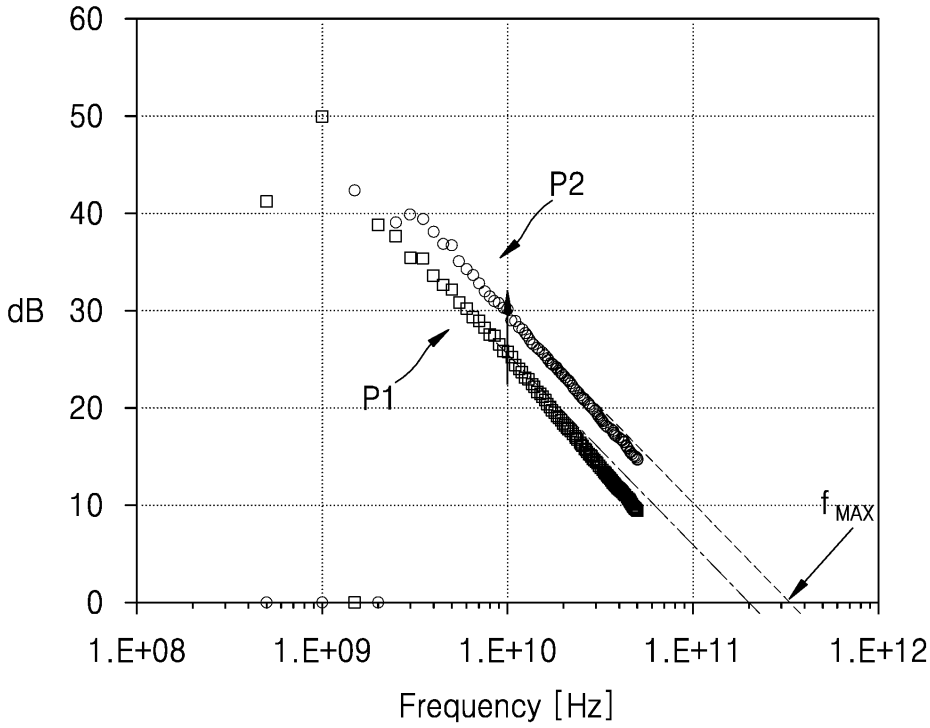
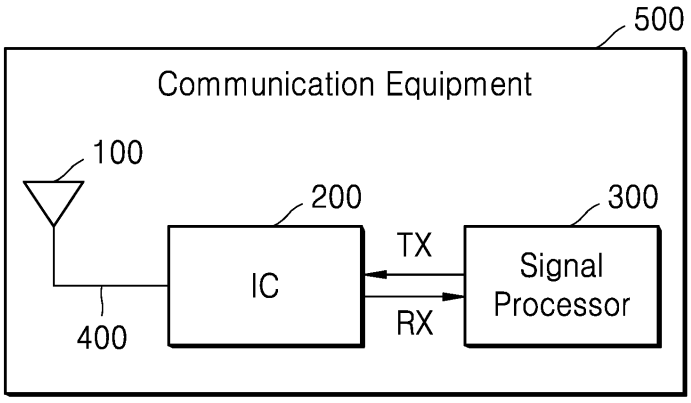

60
50
40
30
20
10
0
dB
P1
P2
f MAX
1.E+08
1.E+09
1.E+10
1.E+11
1.E+12
Frequency [Hz]

FIG. 21


500
Communication Equipment
100
200
300
TX
IC
Signal
Processor
RX
400