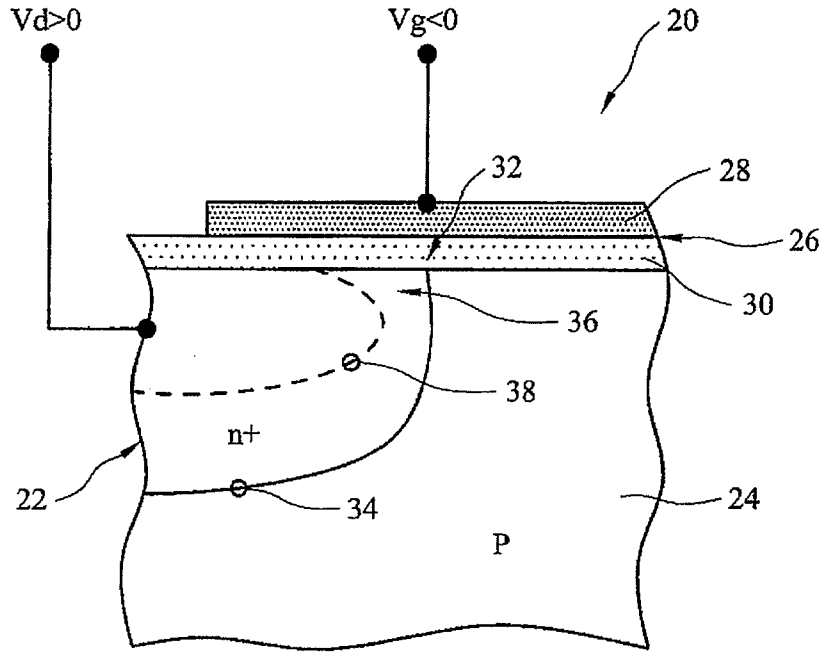


FIG. 1A
(PRIOR ART)

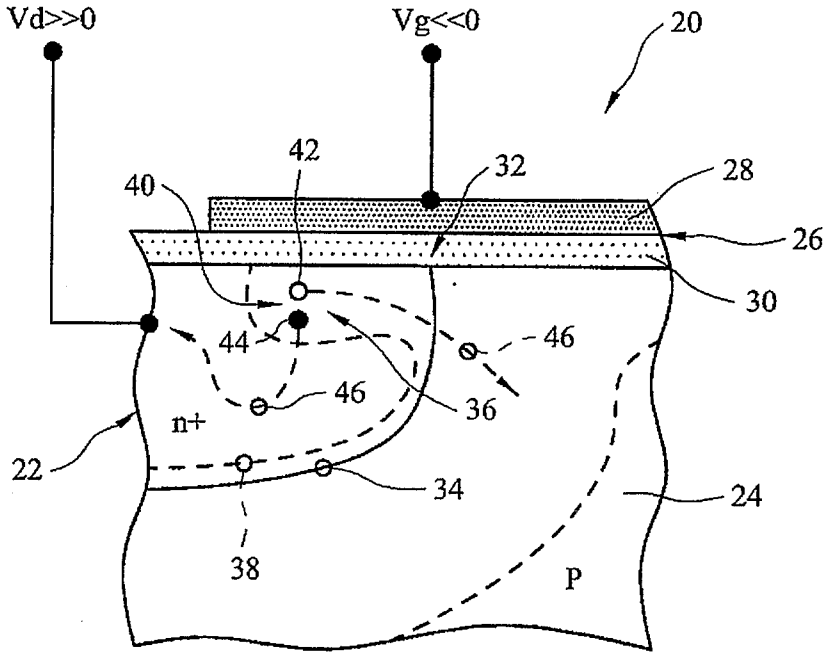


FIG. 1B
(PRIOR ART)

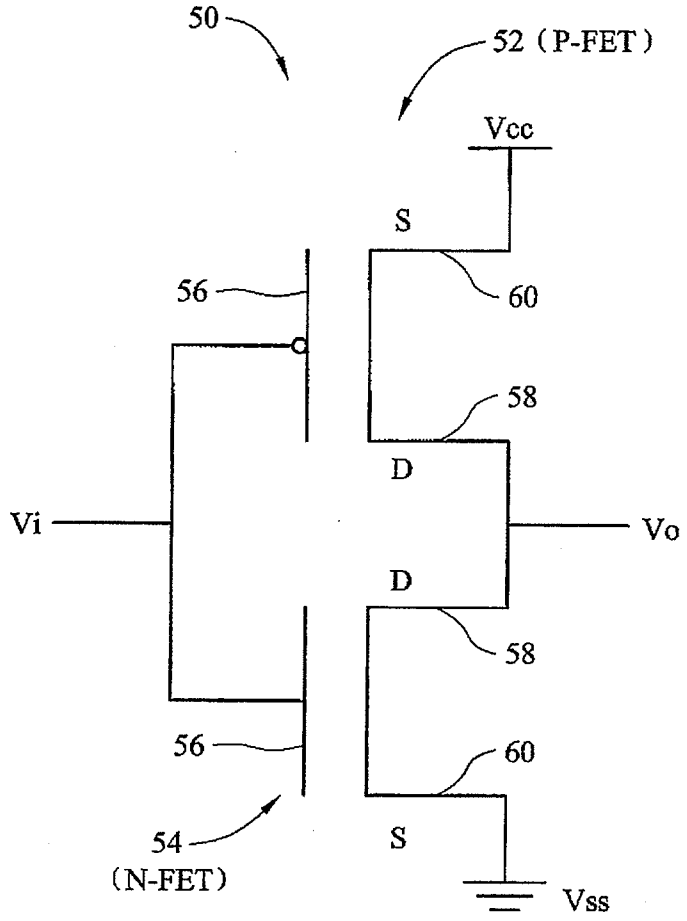


FIG. 2A
(PRIOR ART)

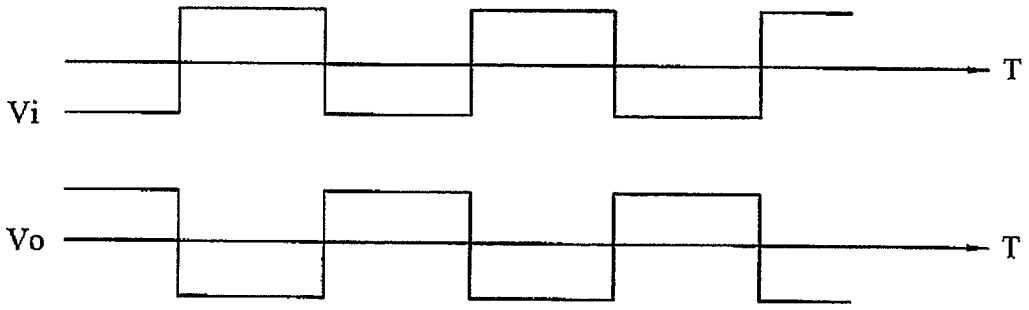


FIG. 2B
(PRIOR ART)

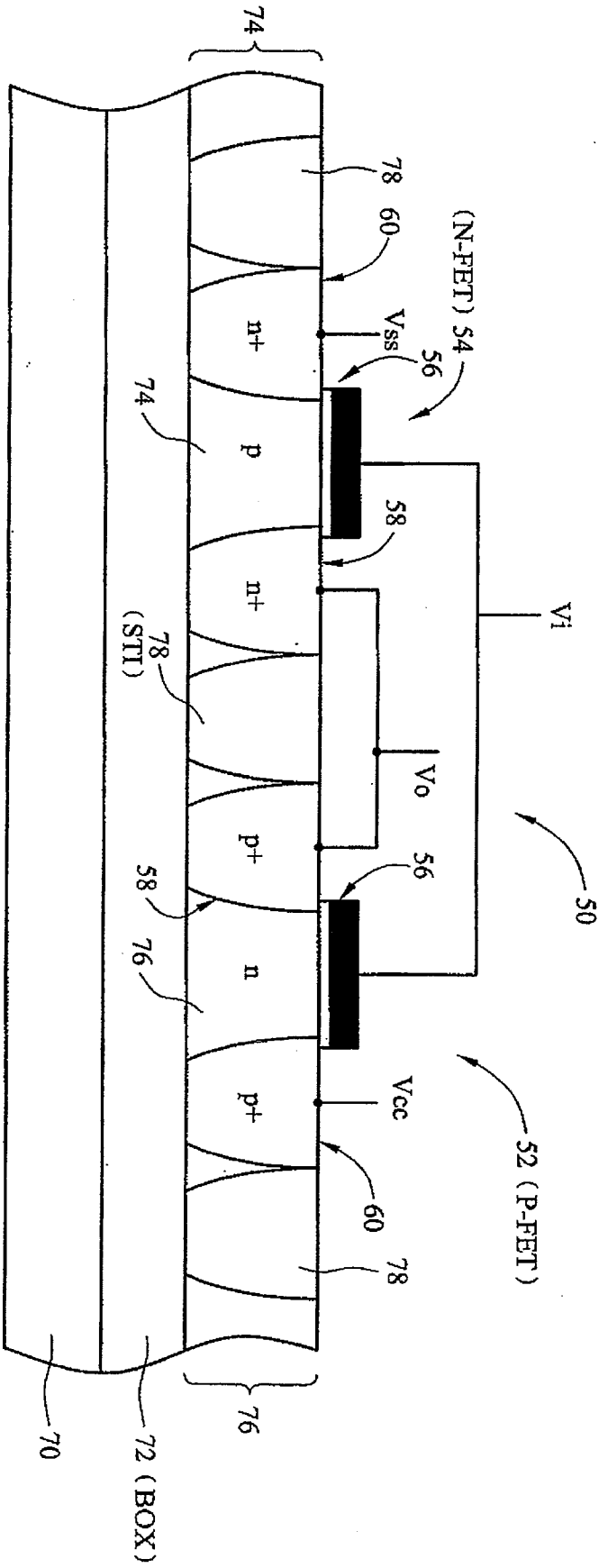


FIG. 2C
(PRIOR ART)

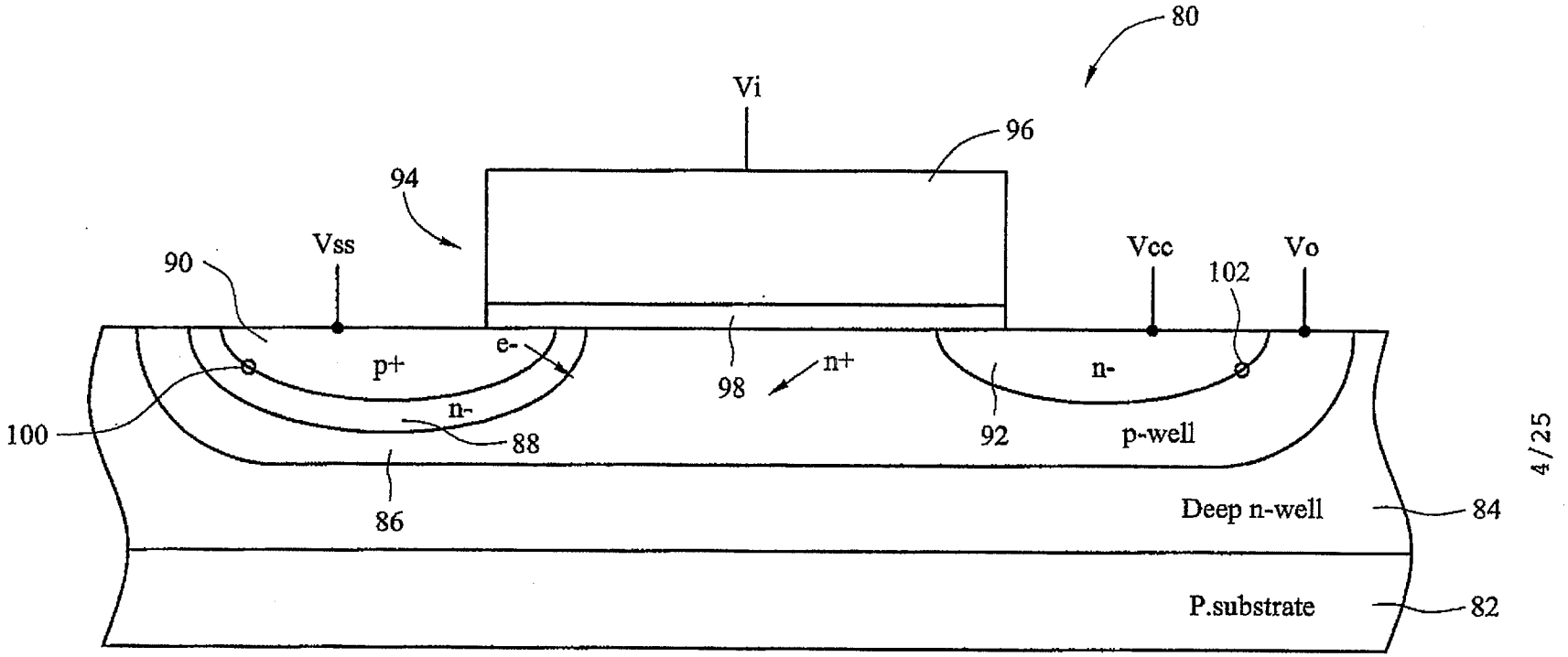


FIG. 3
(PRIOR ART)

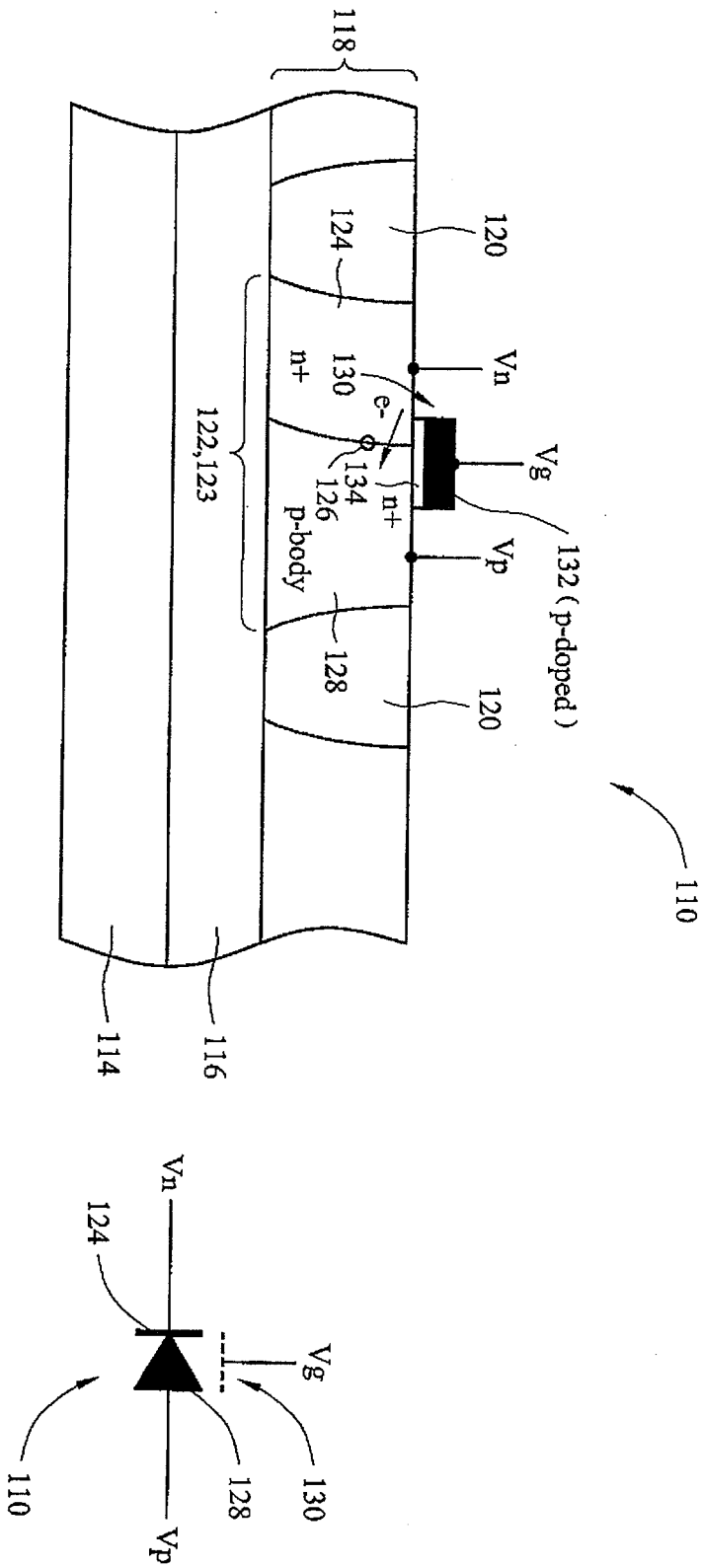

118
120
124
Vn
130
e-
n+
Vg
134
126
n+
p-body
Vp
132 (p-doped)
120
110
122,123
128
114
116
Vn
124
Vg
110
128
130
Vp

FIG. 4A

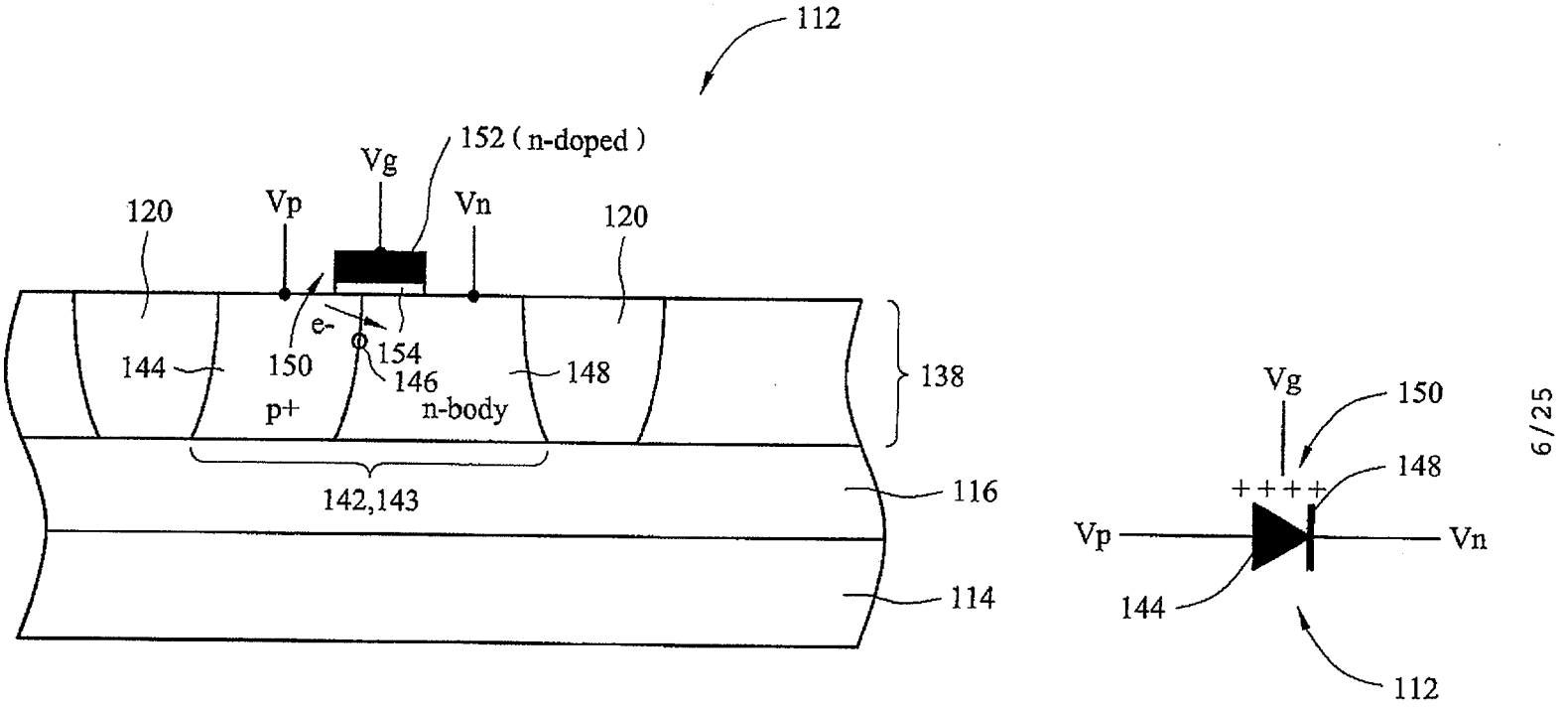

112
152 (n-doped)
Vg
120
Vp
Vn
120
e-
144
150
154
146
148
138
p+
n-body
142,143
116
114
Vg
150
148
+ + + +
Vp
Vn
144
112

FIG. 4B

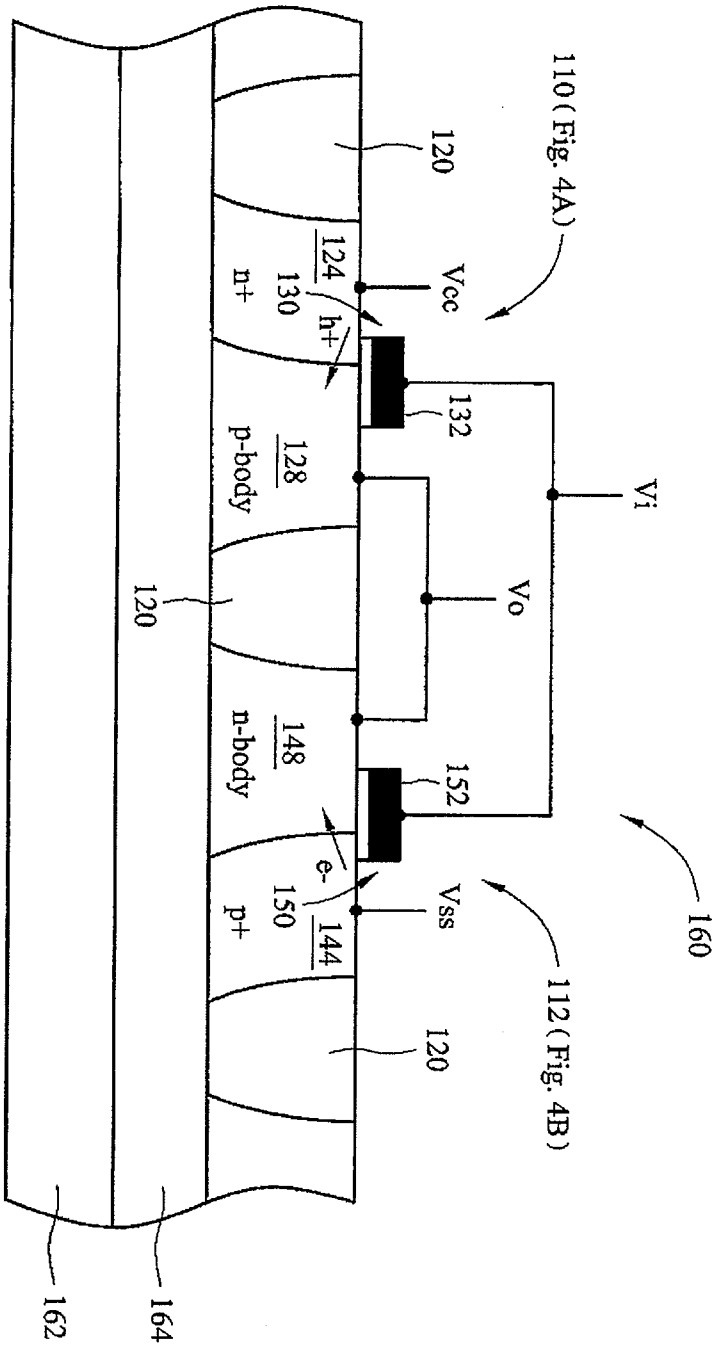

110 (Fig. 4A)
120
Vcc
124
130
n+
h+
132
128
p-body
Vi
Vo
120
148
n-body
152
e-
150
144
p+
Vss
120
160
112 (Fig. 4B)
162
164

FIG. 5A

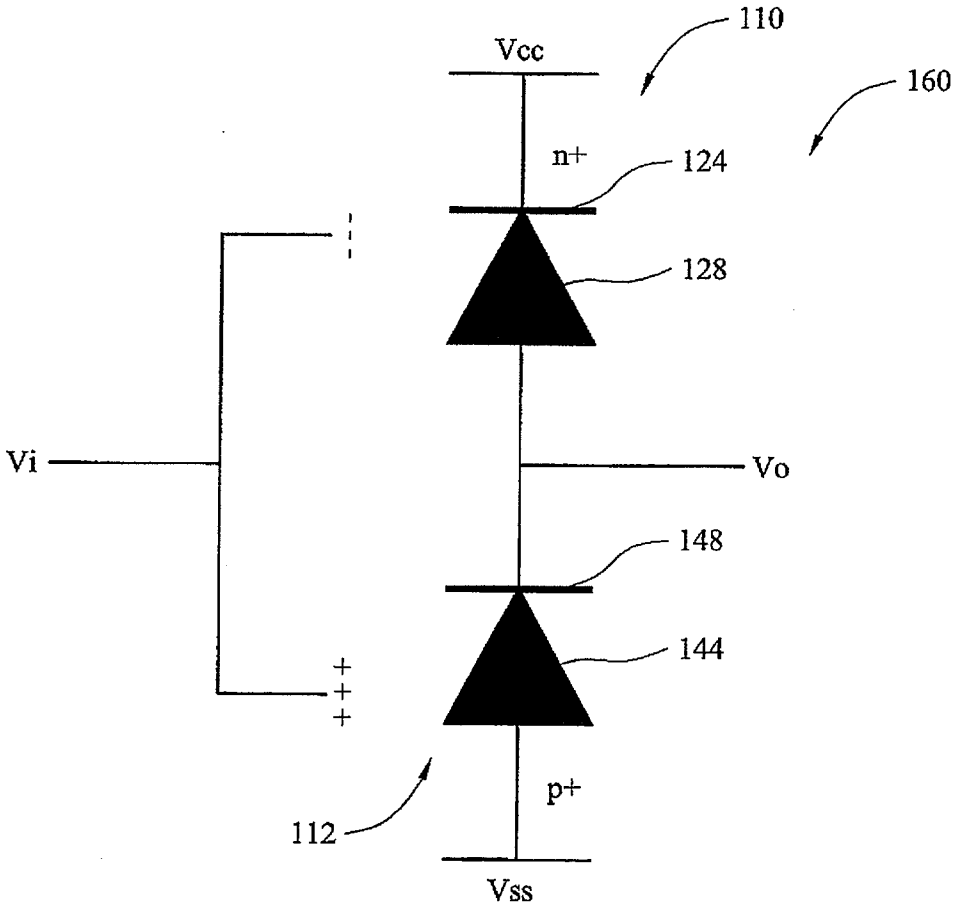


FIG. 5B

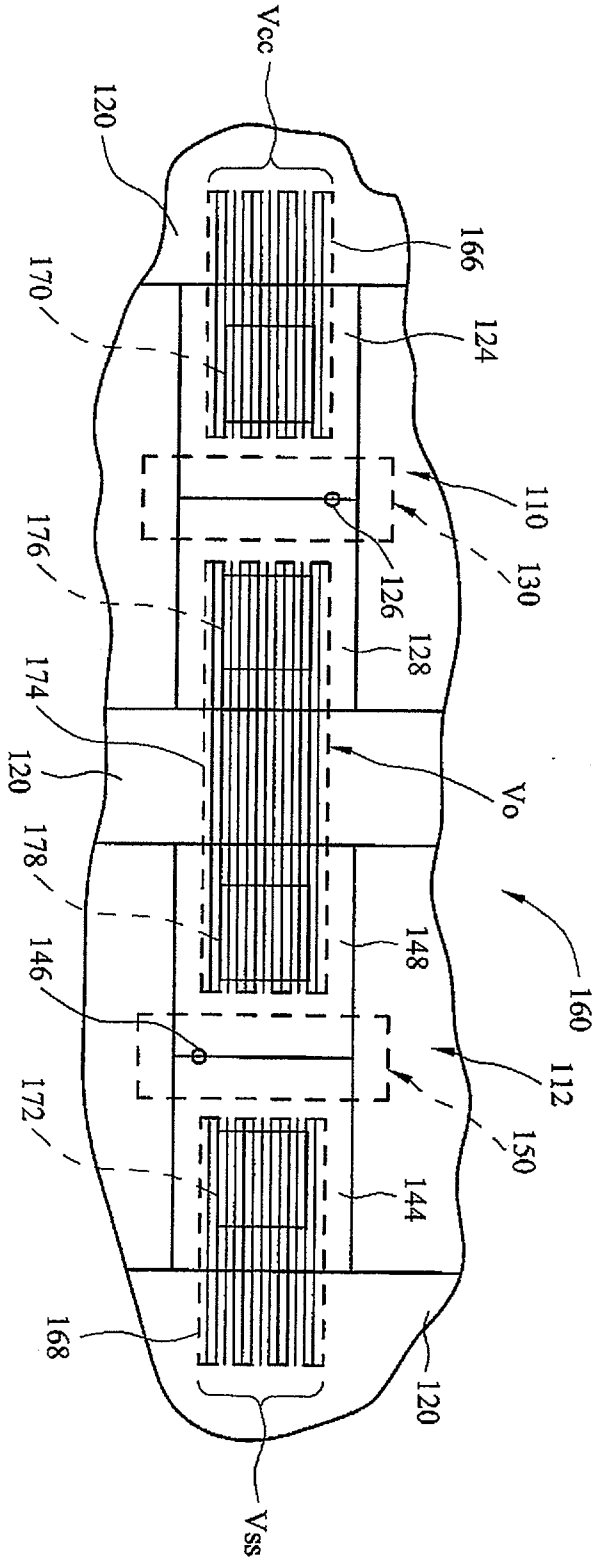

Vcc
120
166
170
124
110
130
176
126
128
174
120
Vo
178
160
148
146
112
172
150
144
168
120
Vss

FIG. 5C

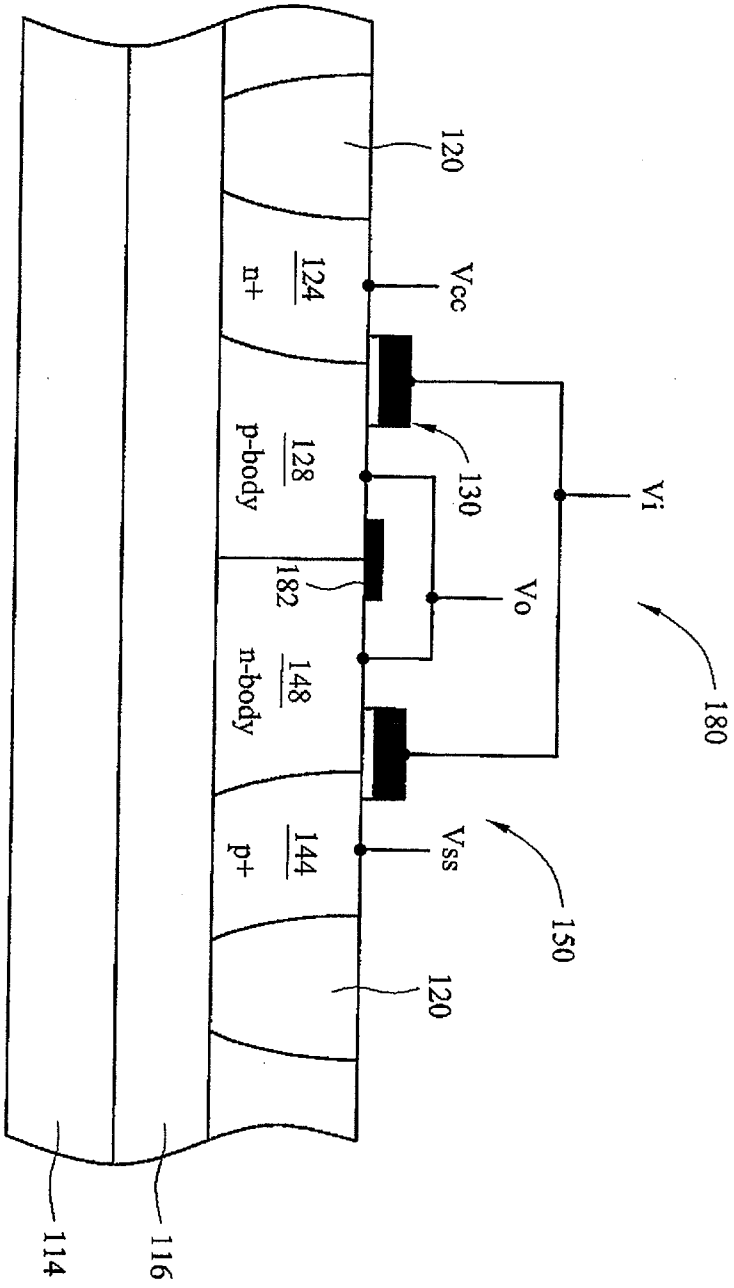

120
Vcc
124
n+
128
p-body
130
Vi
Vo
182
148
n-body
180
144
p+
Vss
150
120
114
116

FIG. 6

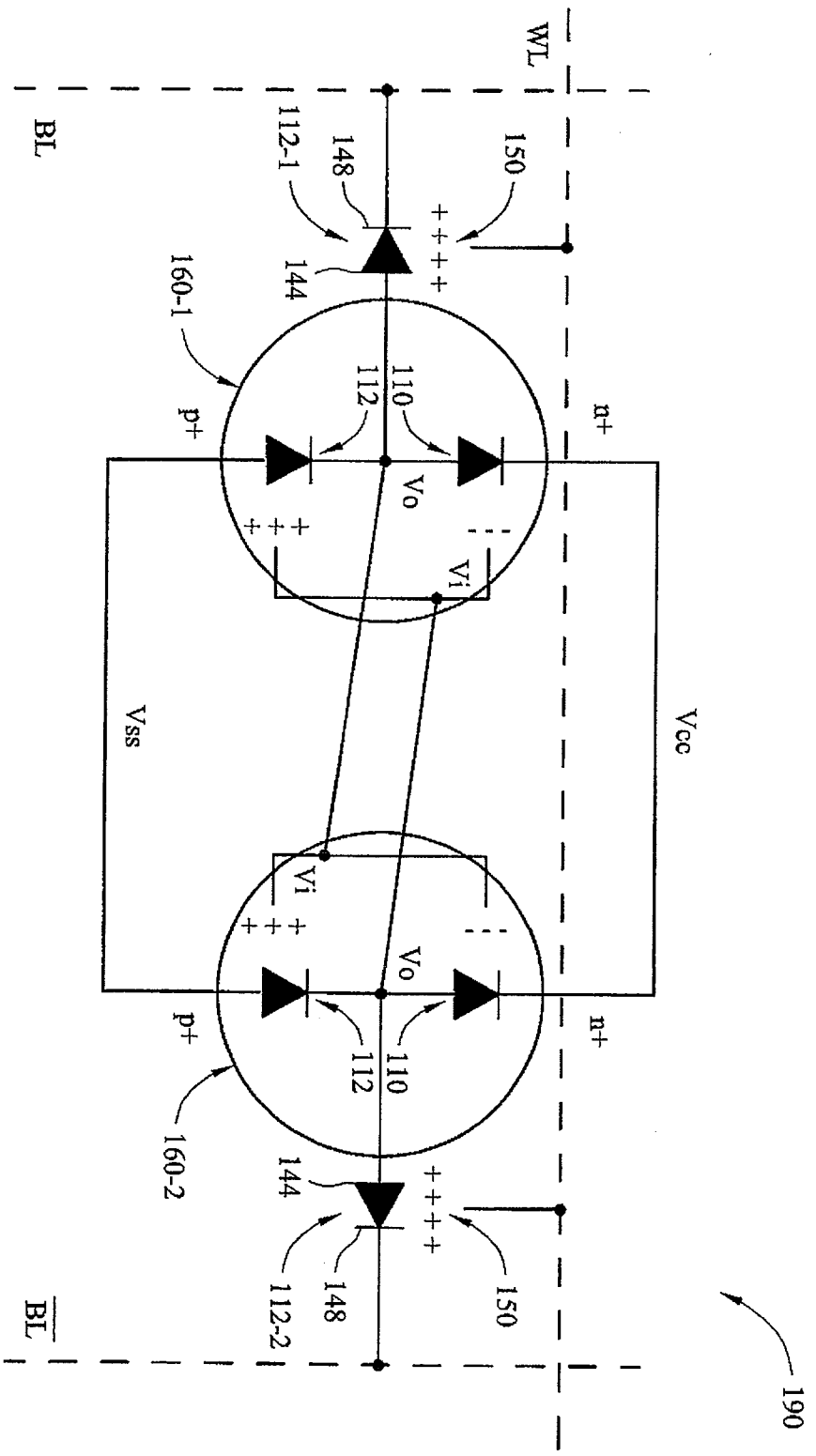

WL
BL
112-1
148
150
144
160-1
110
112
p+
n+
Vo
Vi
Vss
Vcc
Vi
Vo
p+
n+
112
110
160-2
144
148
112-2
150
BL
190

FIG. 7A

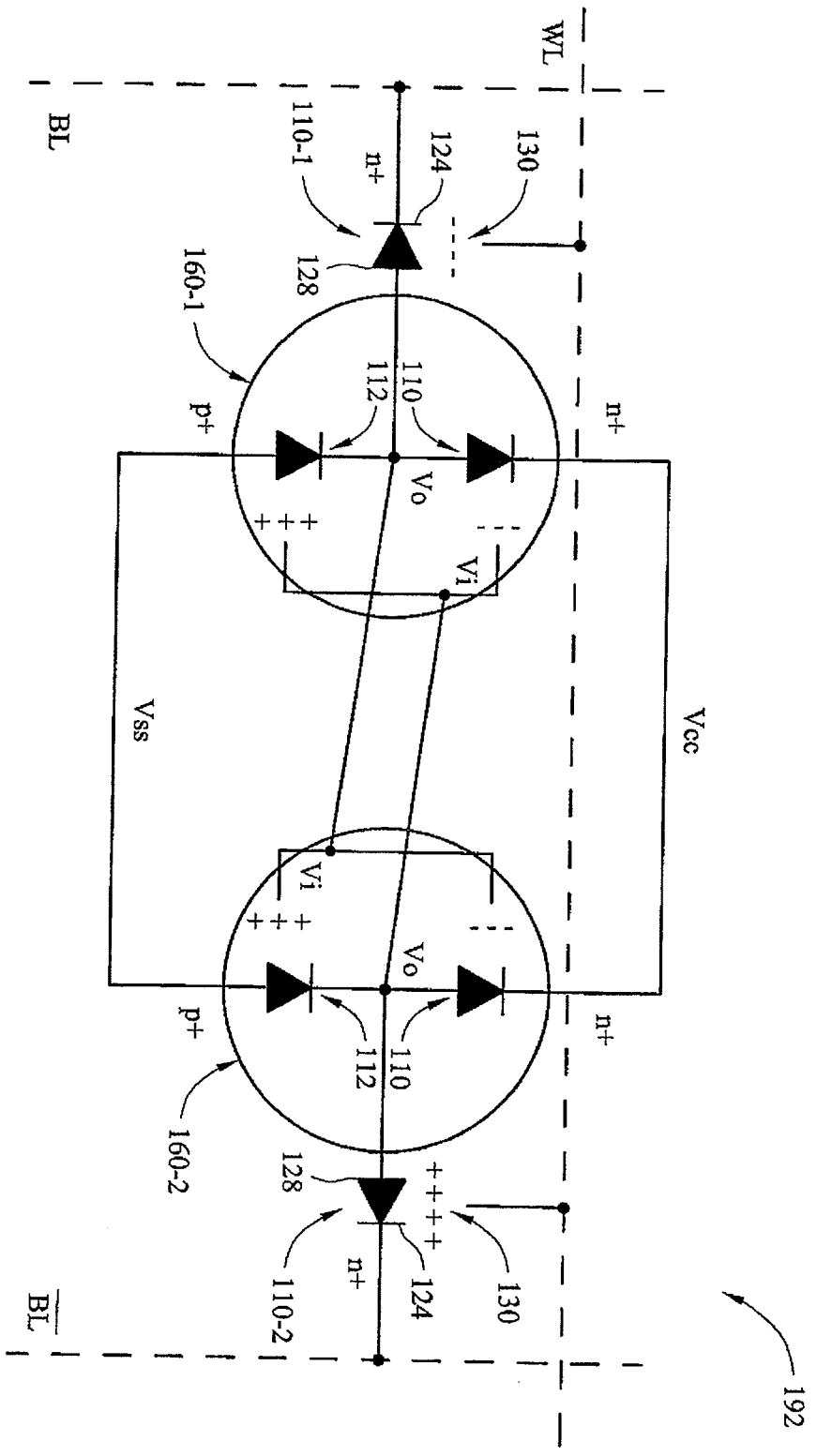

WL
BL
110-1
n+
124
130
128
160-1
p+
112
110
n+
Vo
Vi
Vss
Vcc
Vi
Vo
p+
112
110
n+
160-2
128
110-2
n+
124
130
BL
192

FIG. 7B

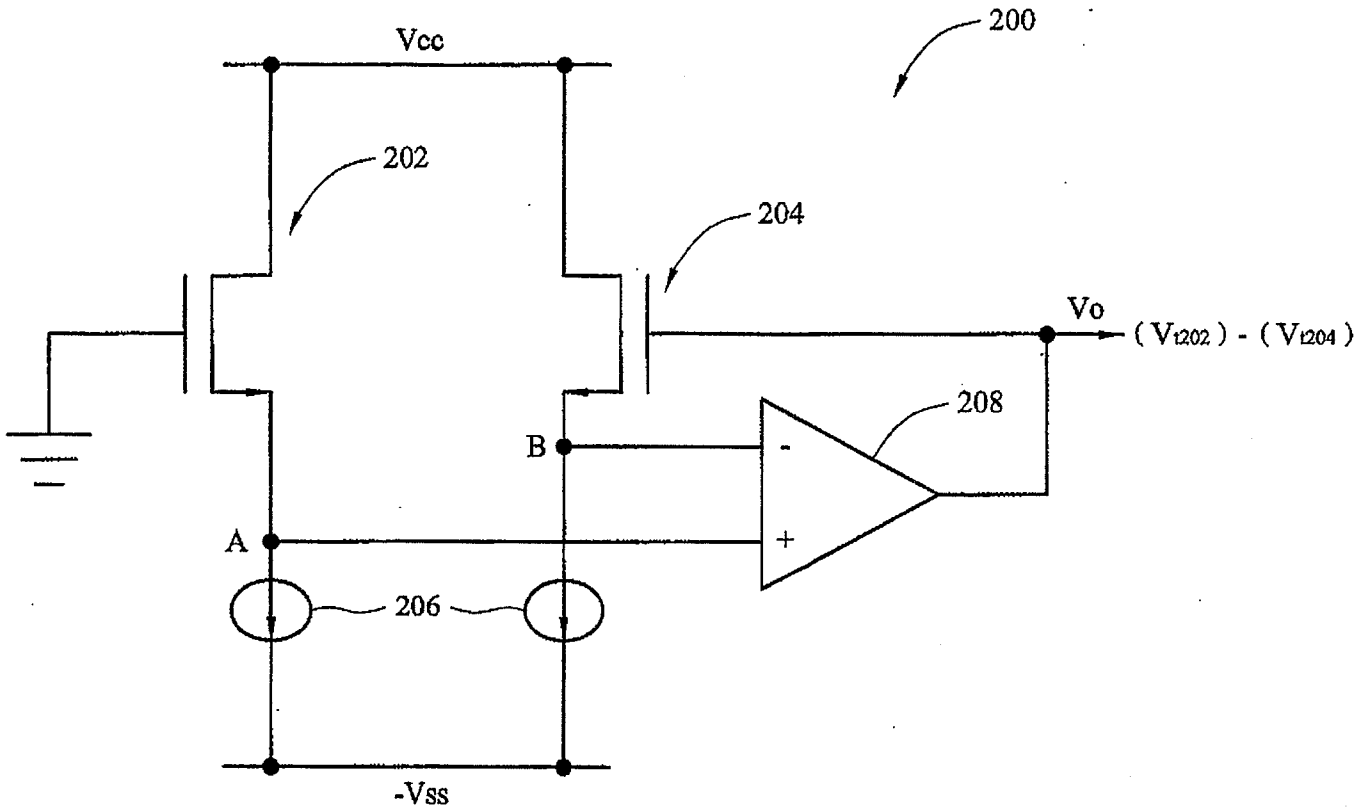


FIG. 8
(PRIOR ART)

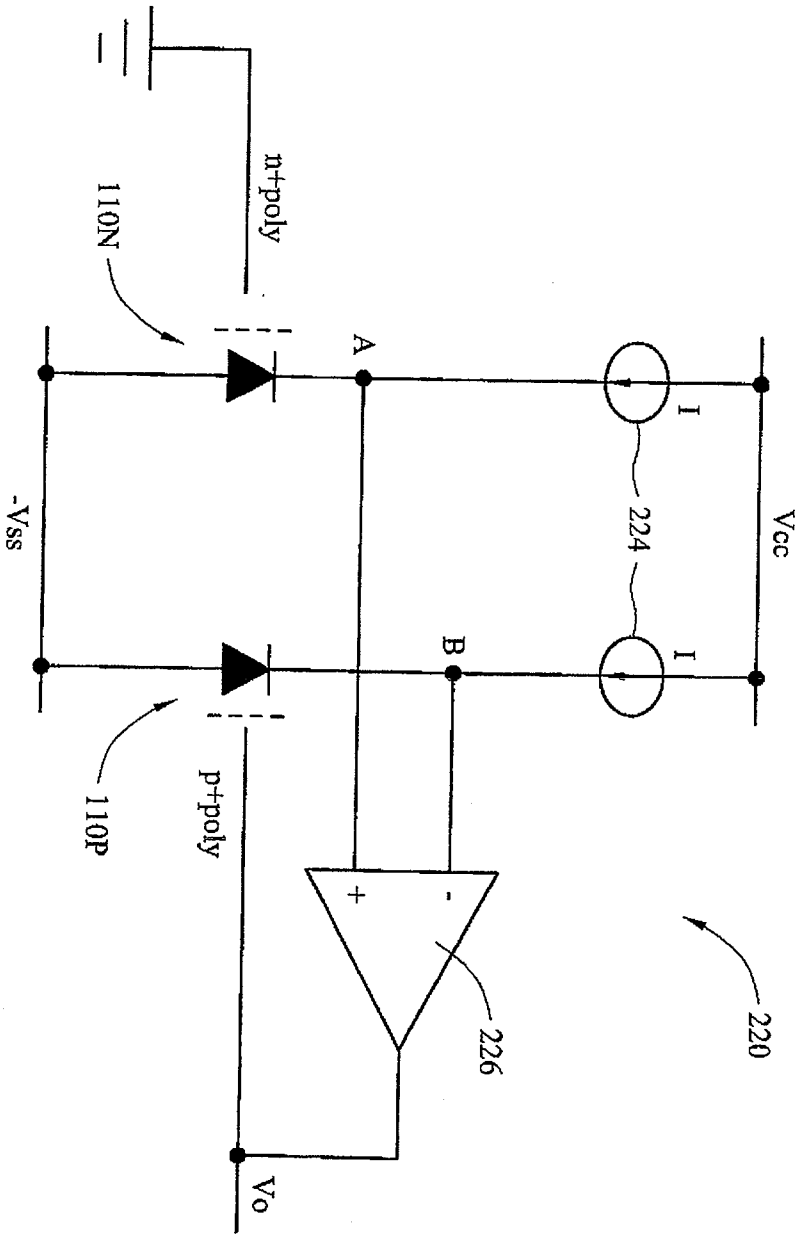


FIG. 9A

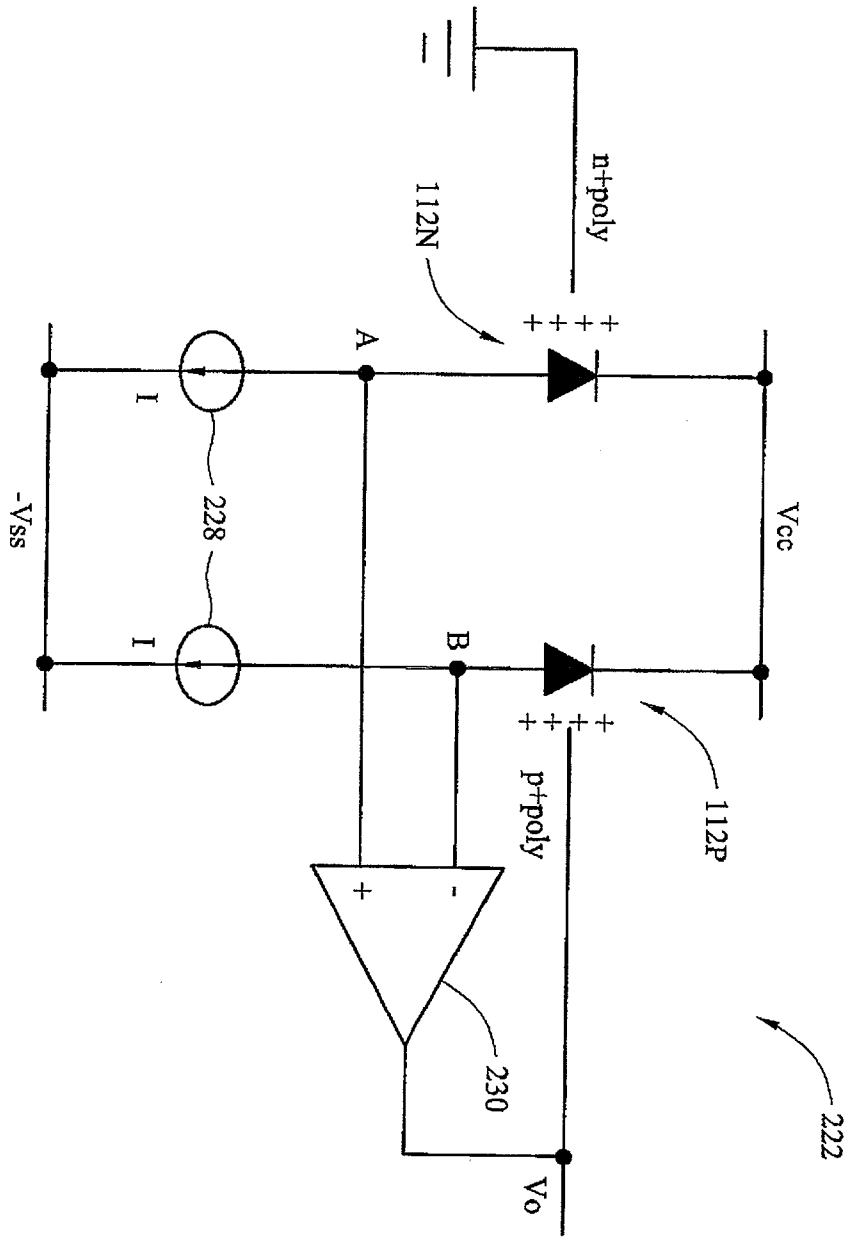


FIG. 9B

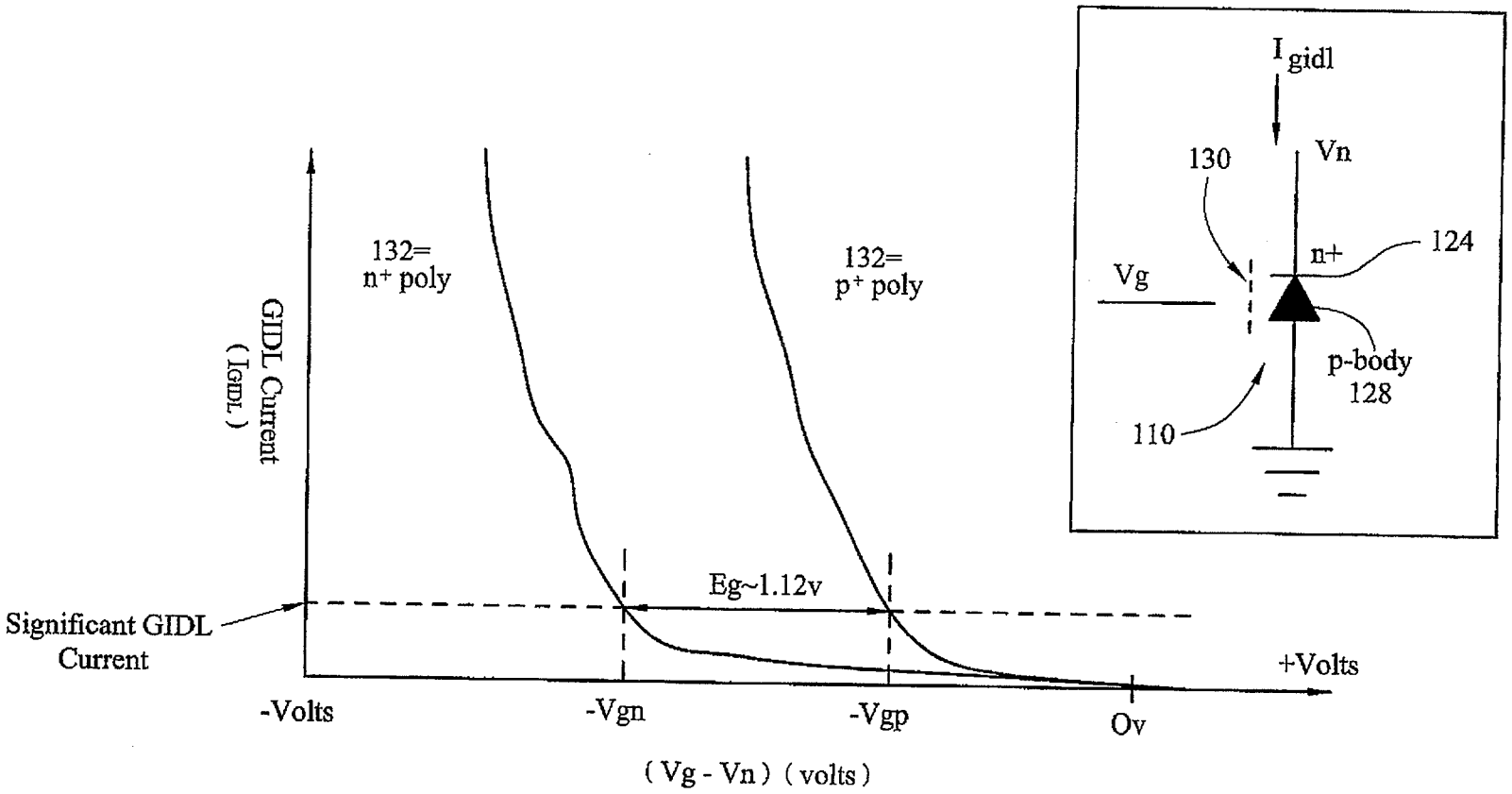

I gidl
130
Vn
n+
124
Vg
p-body
128
110
132=
n+ poly
132=
p+ poly
GIDL Current
(IGIDL)
Eg~1.12v
Significant GIDL
Current
+Volts
-Volts
-Vgn
-Vgp
Ov
(Vg - Vn) (volts)

FIG. 10A

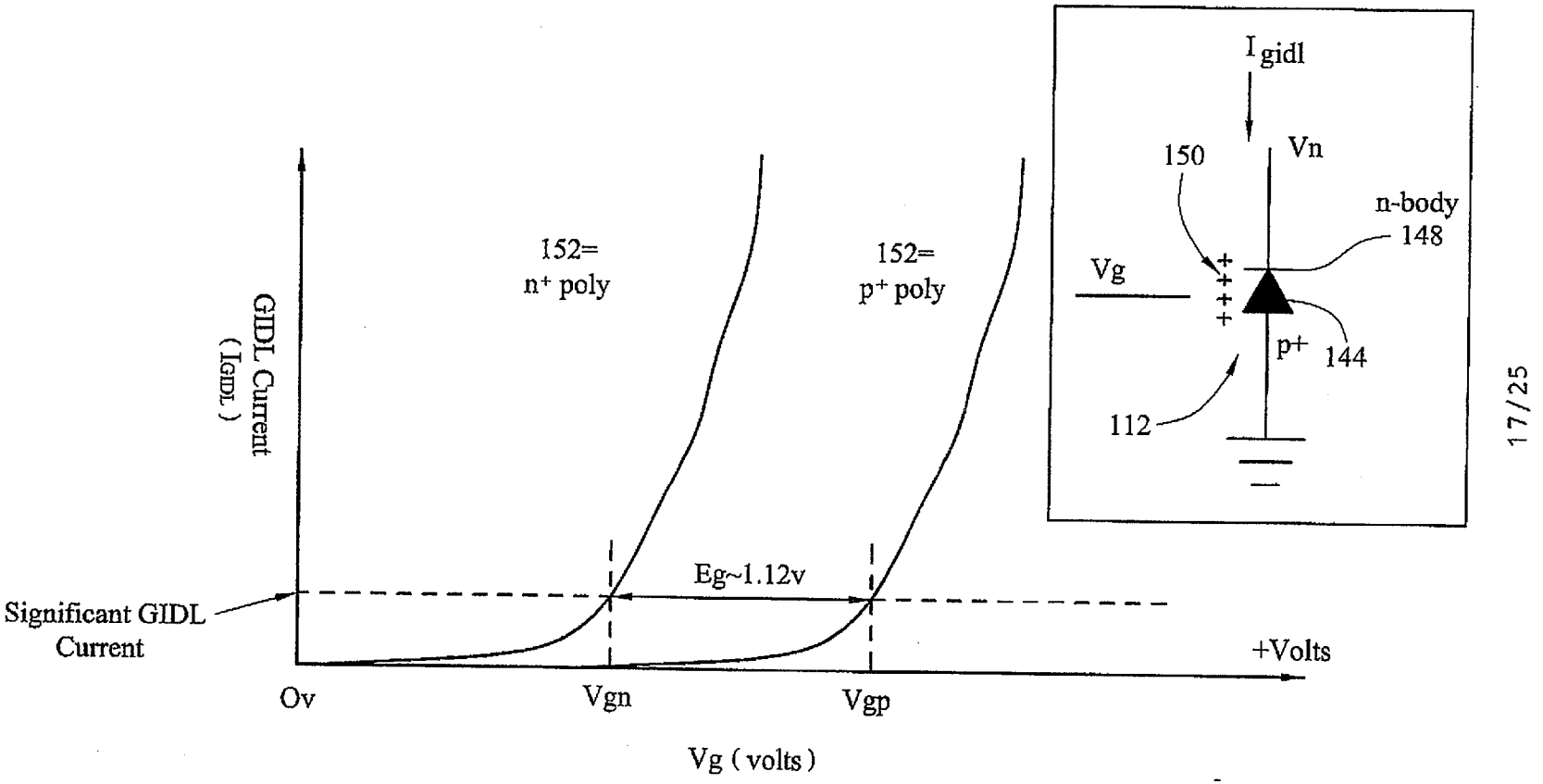

I gidl
150
Vn
n-body
148
Vg
p+
144
112
152=
n+ poly
152=
p+ poly
GIDL Current
(IGIDL)
Eg~1.12v
Significant GIDL
Current
+Volts
Ov
Vgn
Vgp
Vg (volts)

FIG. 10B

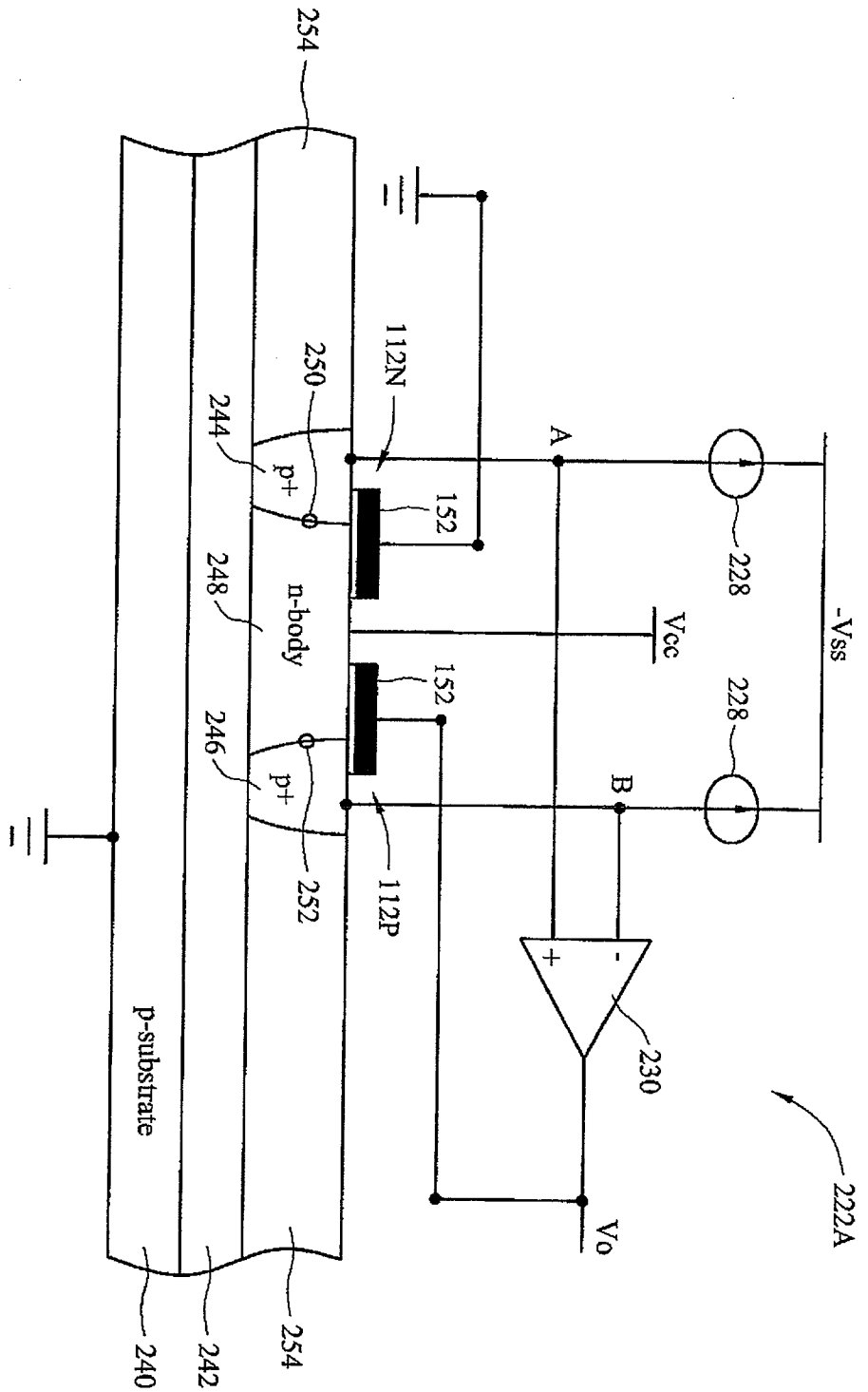

254
112N
250
244
p+
152
248
n-body
152
246
p+
252
112P
A
B
228
228
-Vss
Vcc
230
+
-
Vo
222A
p-substrate
240
242
254

FIG. 11A

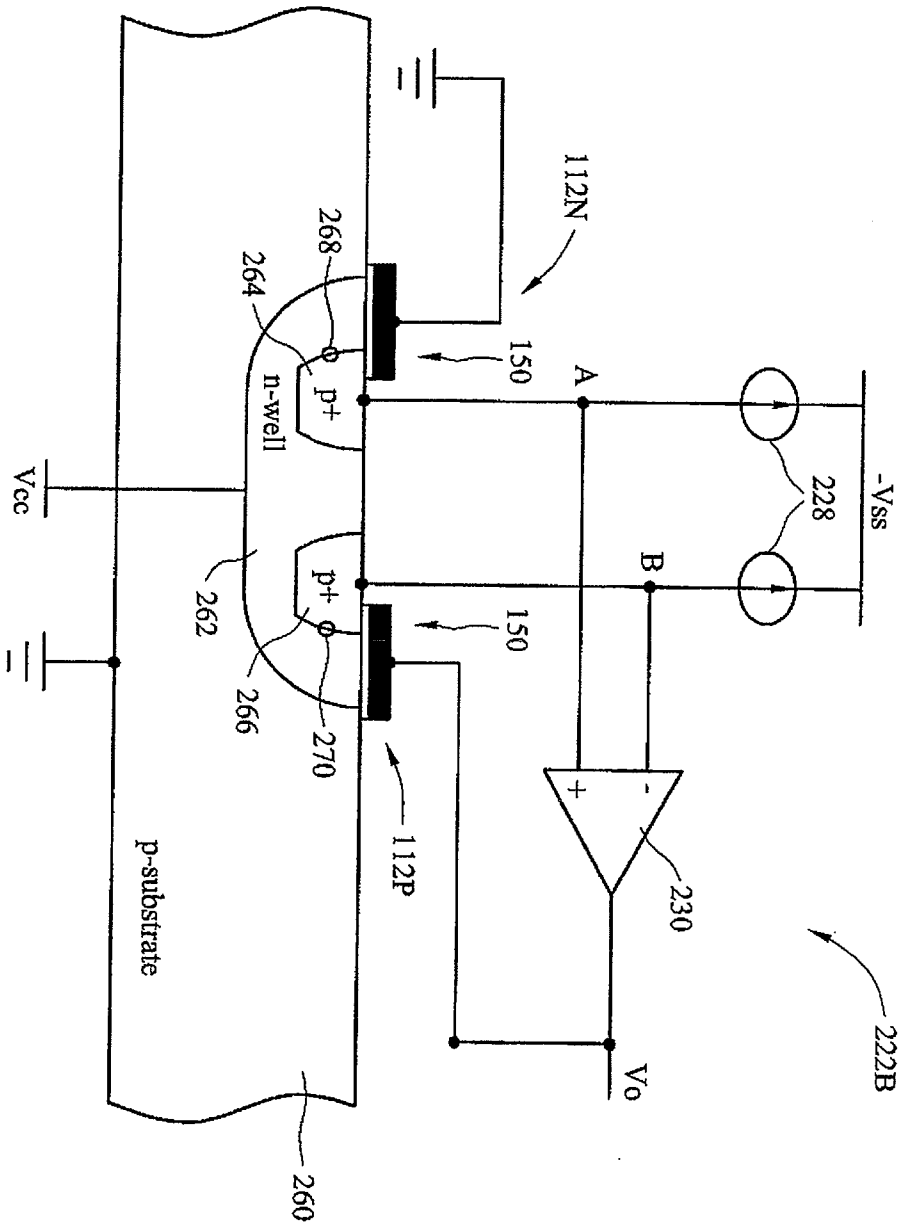

112N
268
264
150
A
n-well
p+
-Vss
228
Vcc
B
p+
150
262
266
270
112P
+
-
230
p-substrate
Vo
222B
260

FIG. 11B

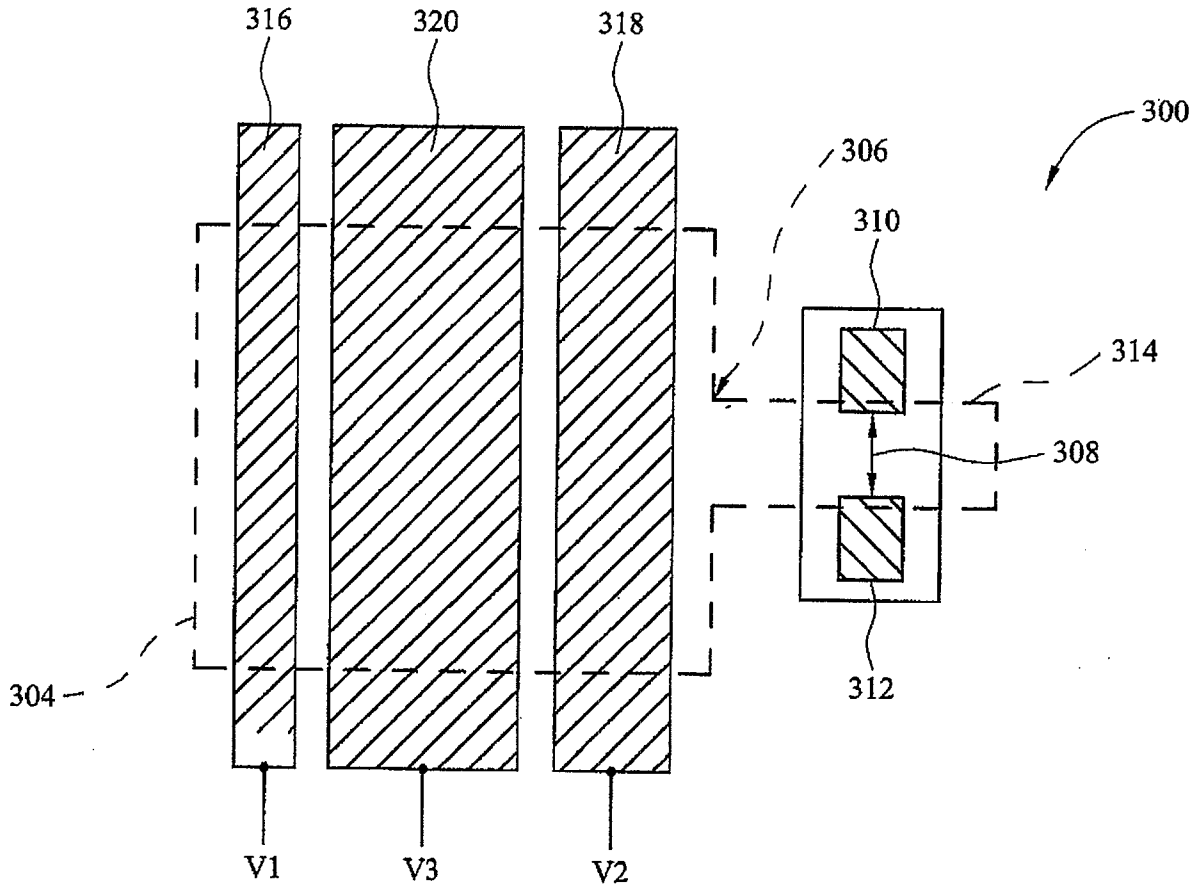


FIG. 12
(PRIOR ART)

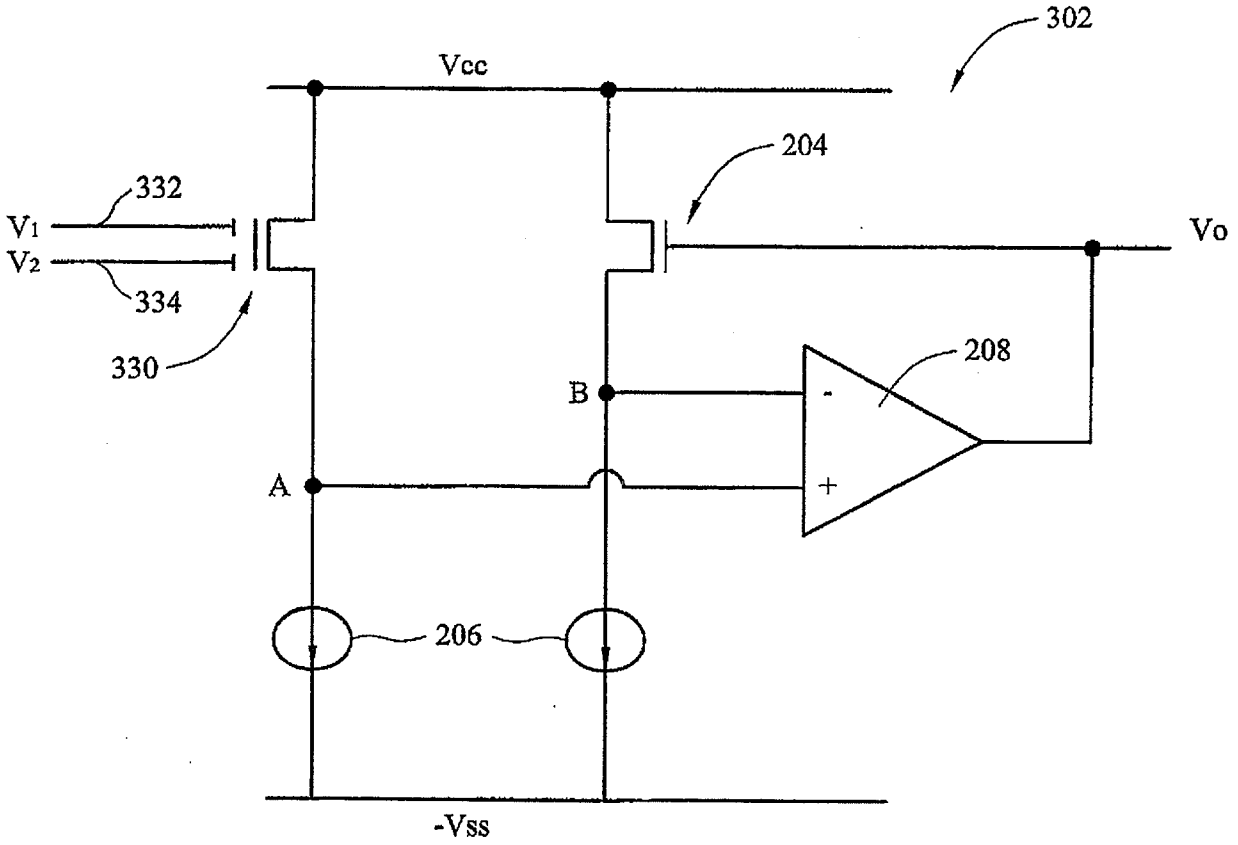


FIG. 13
(PRIOR ART)

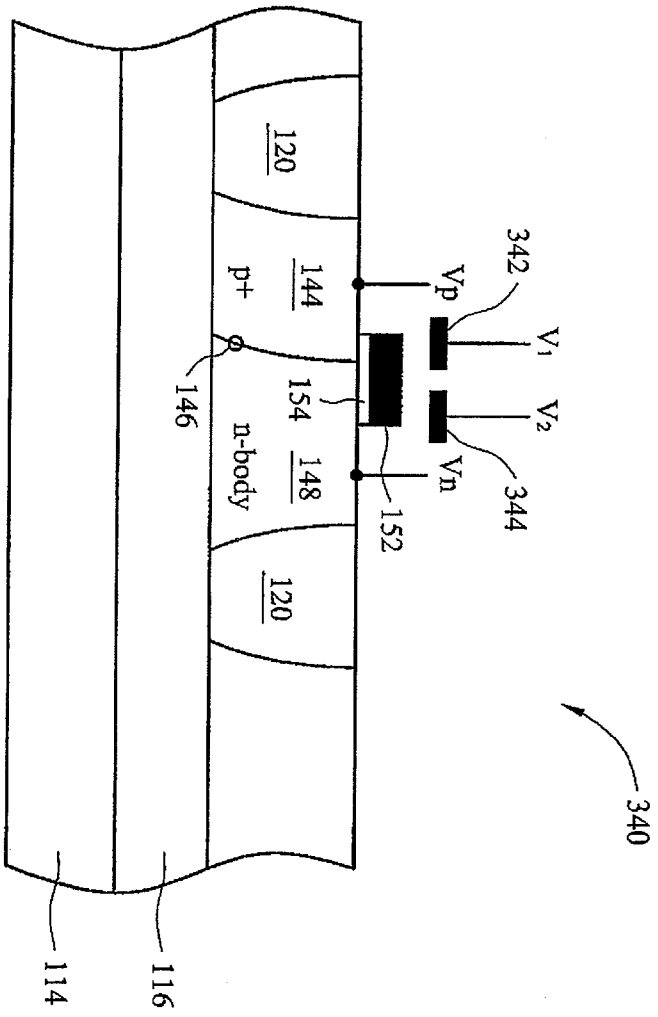

120
144
p+
146
154
n-body
148
120
152
342
Vp
V1
V2
Vn
344
340
114
116

FIG. 14A

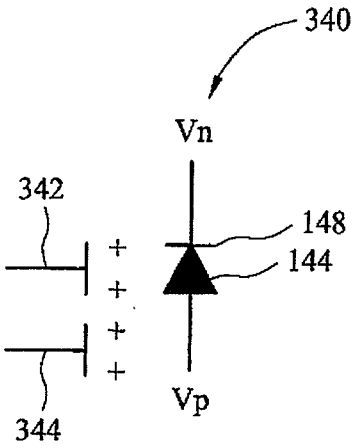
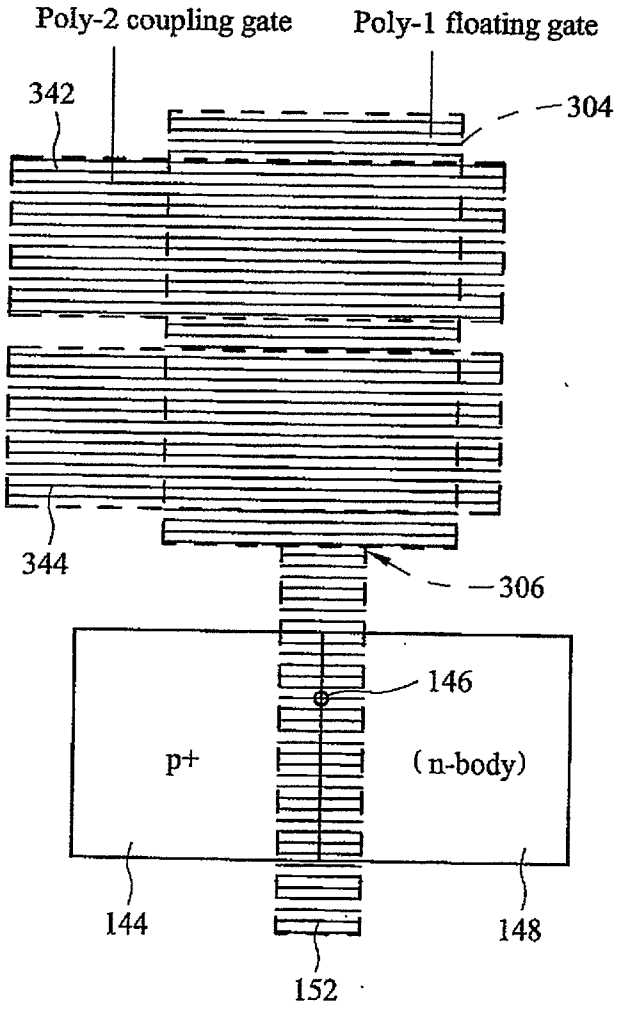


FIG. 14B



(314 in Fig. 12)

FIG. 14C

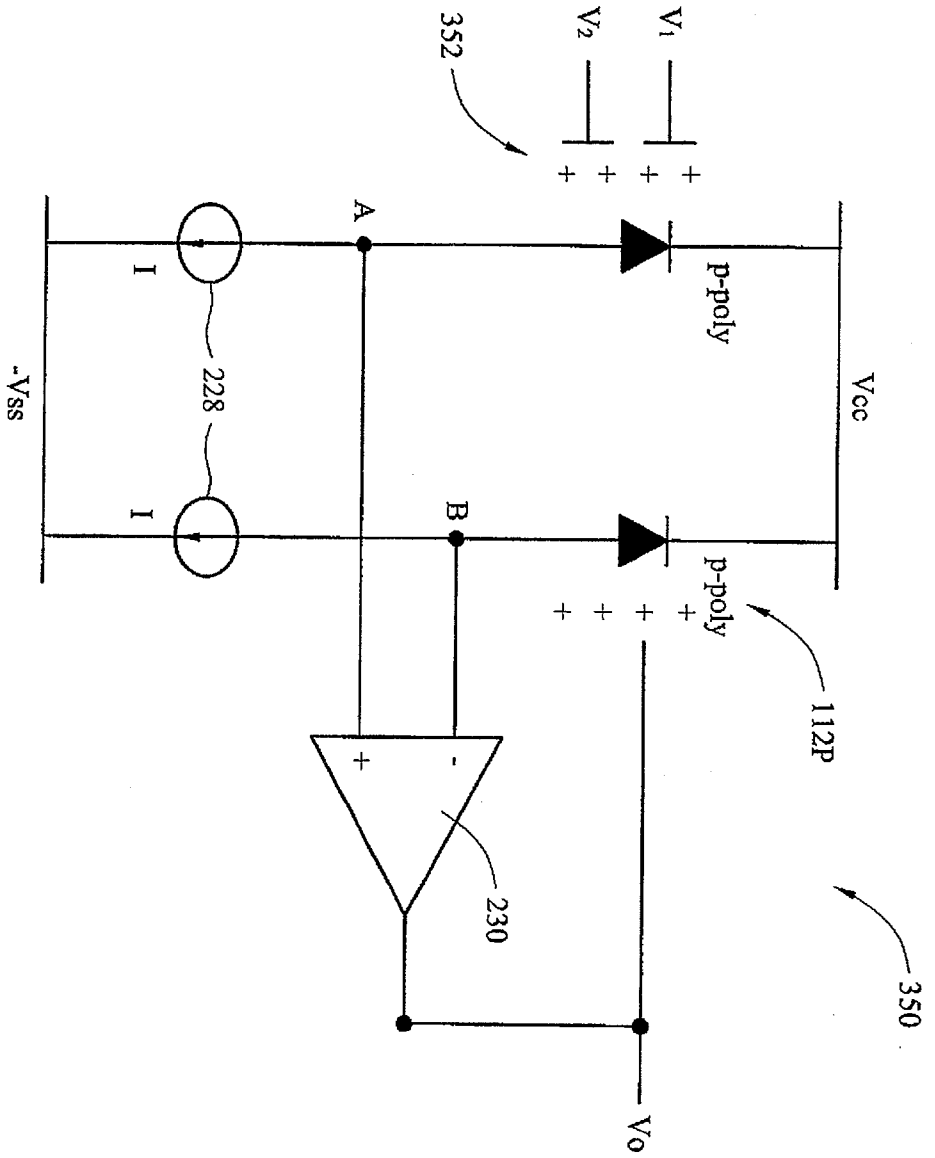


FIG. 15

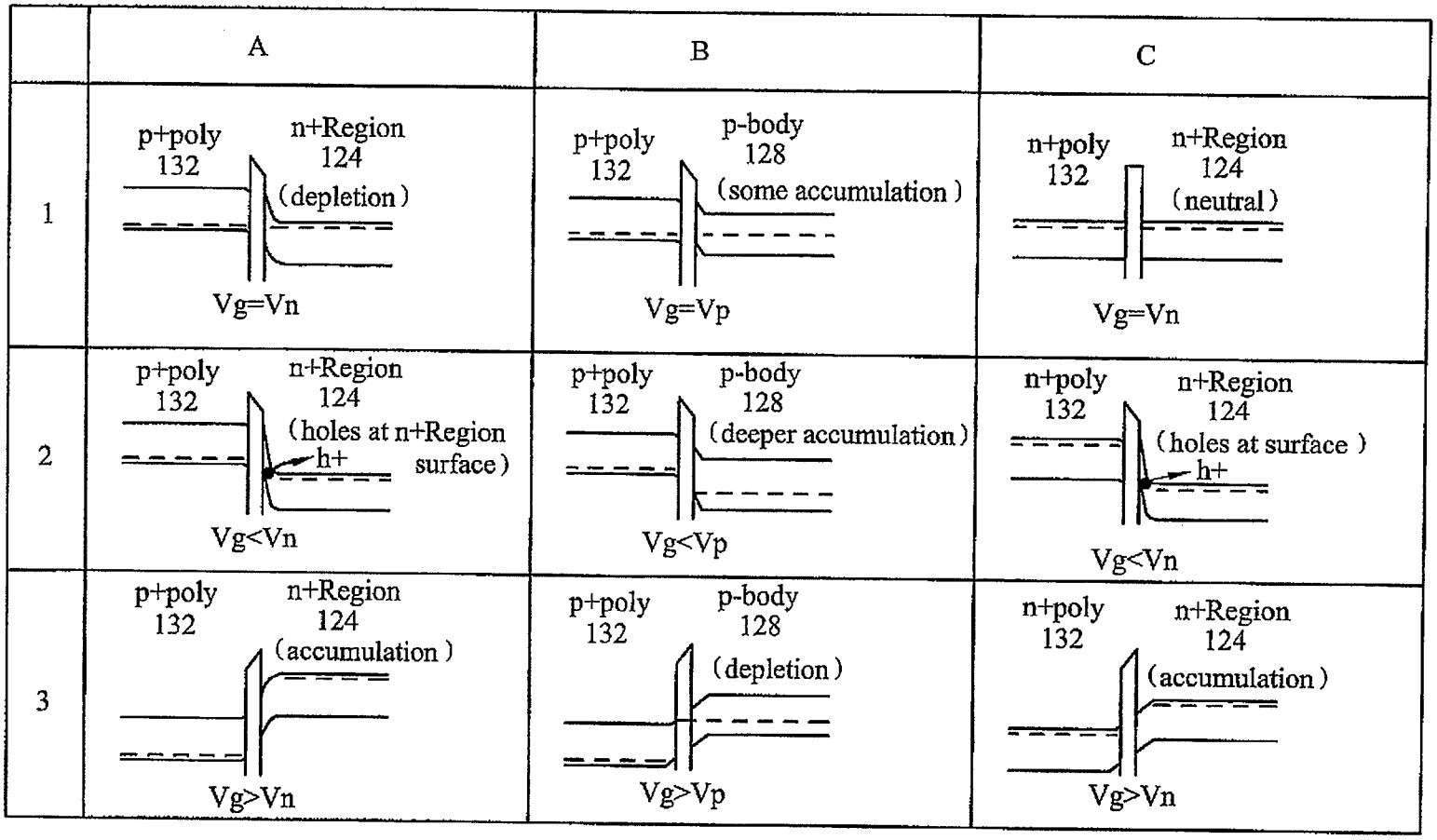

A
B
C
1
p+poly
132
n+Region
124
(depletion)
Vg=Vn
p+poly
132
p-body
128
(some accumulation)
Vg=Vp
n+poly
132
n+Region
124
(neutral)
Vg=Vn
2
p+poly
132
n+Region
124
(holes at n+Region surface)
h+
Vg<Vn
p+poly
132
p-body
128
(deeper accumulation)
Vg<Vp
n+poly
132
n+Region
124
(holes at surface)
h+
Vg<Vn
3
p+poly
132
n+Region
124
(accumulation)
Vg>Vn
p+poly
132
p-body
128
(depletion)
Vg>Vp
n+poly
132
n+Region
124
(accumulation)
Vg>Vn

FIG. 16