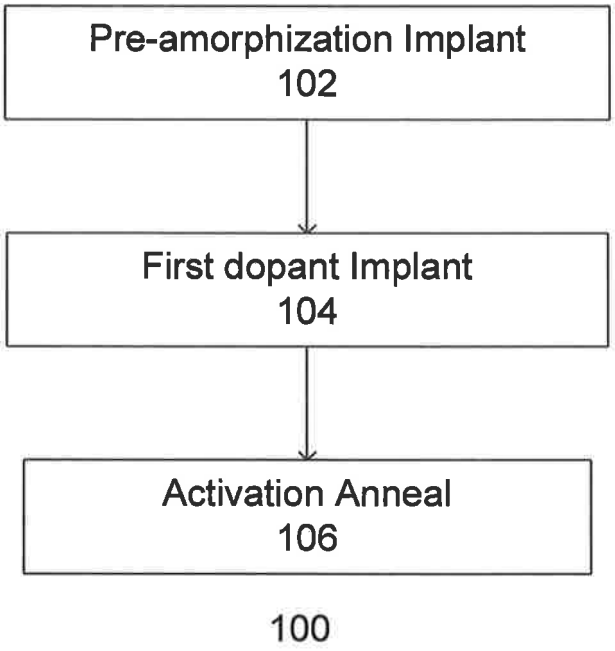

Pre-amorphization Implant
102
First dopant Implant
104
Activation Anneal
106
100

Fig. 1a

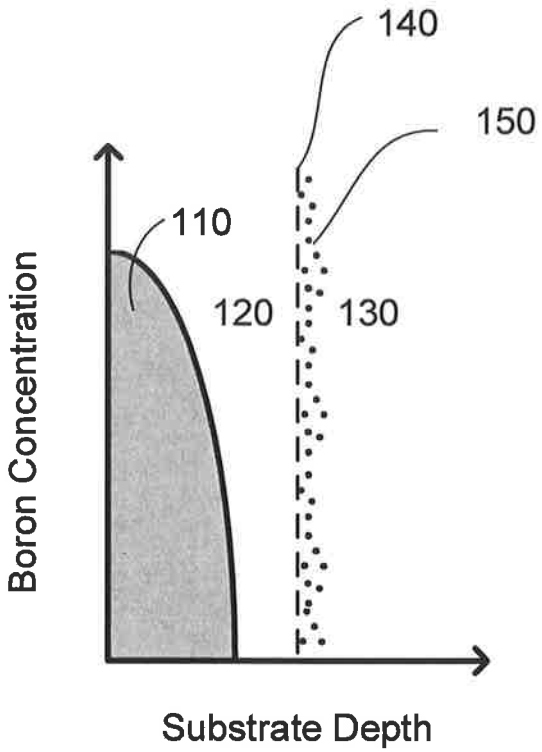

140
150
110
120
130
Boron Concentration
Substrate Depth

Fig. 1b

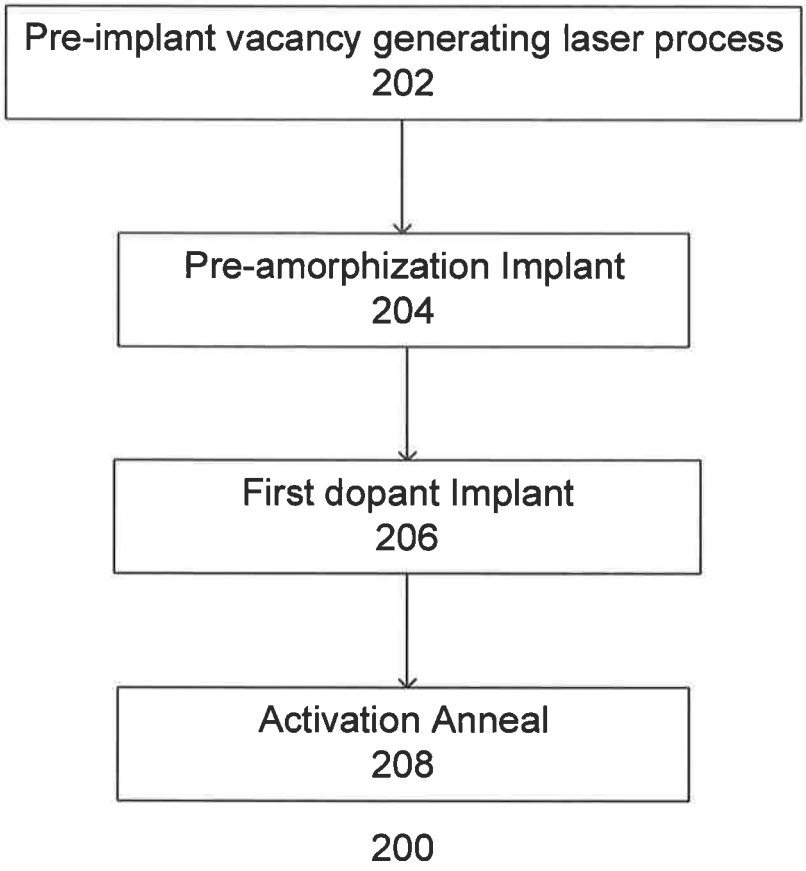

Pre-implant vacancy generating laser process
202
Pre-amorphization Implant
204
First dopant Implant
206
Activation Anneal
208
200

Fig. 2a

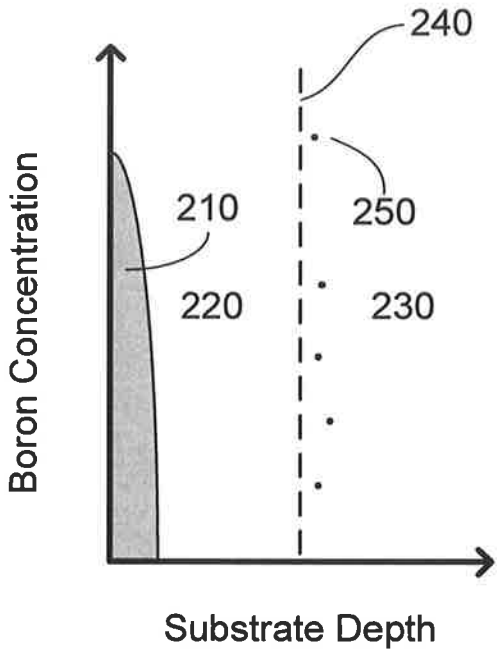

240
210
250
220
230
Boron Concentration
Substrate Depth

Fig. 2b

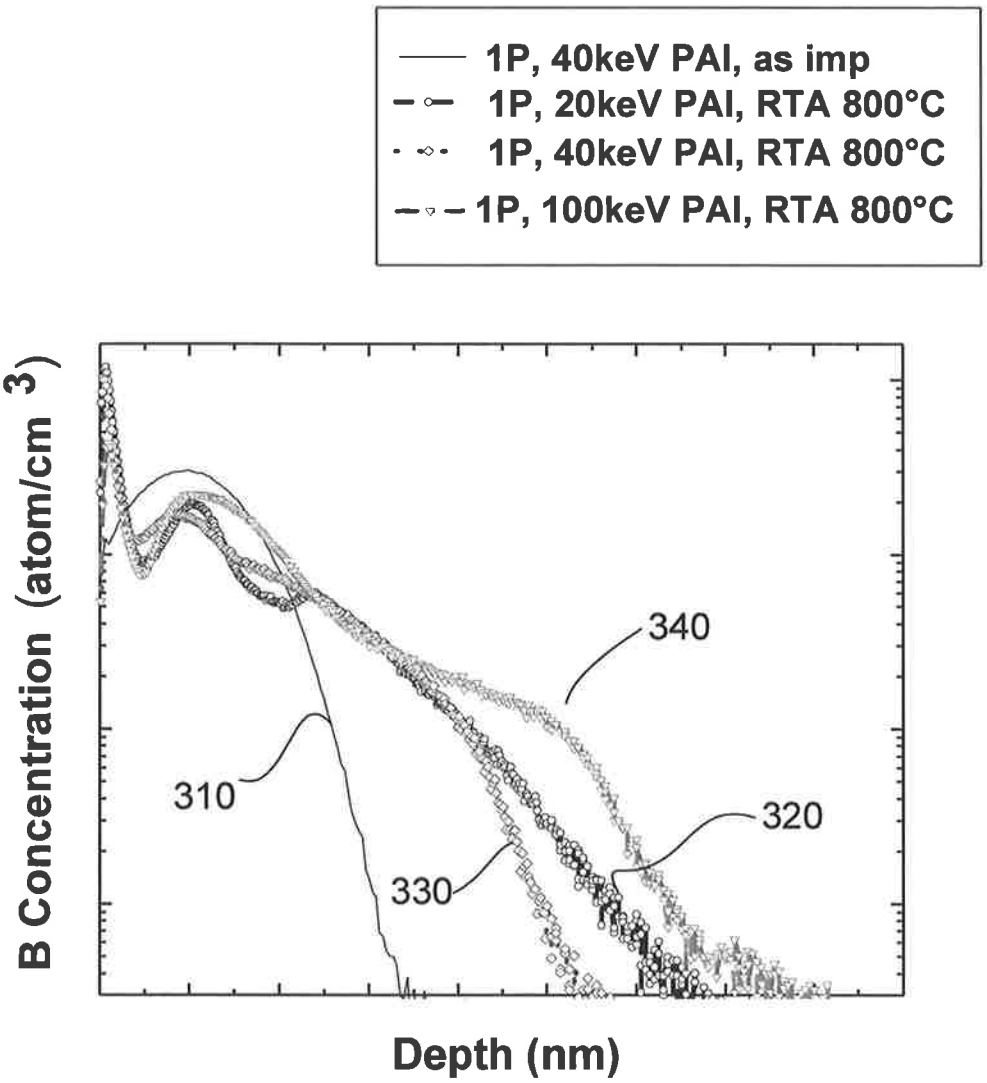

1P, 40keV PAI, as imp
1P, 20keV PAI, RTA 800°C
1P, 40keV PAI, RTA 800°C
1P, 100keV PAI, RTA 800°C
B Concentration (atom/cm 3)
Depth (nm)
340
310
320
330

Fig. 3a

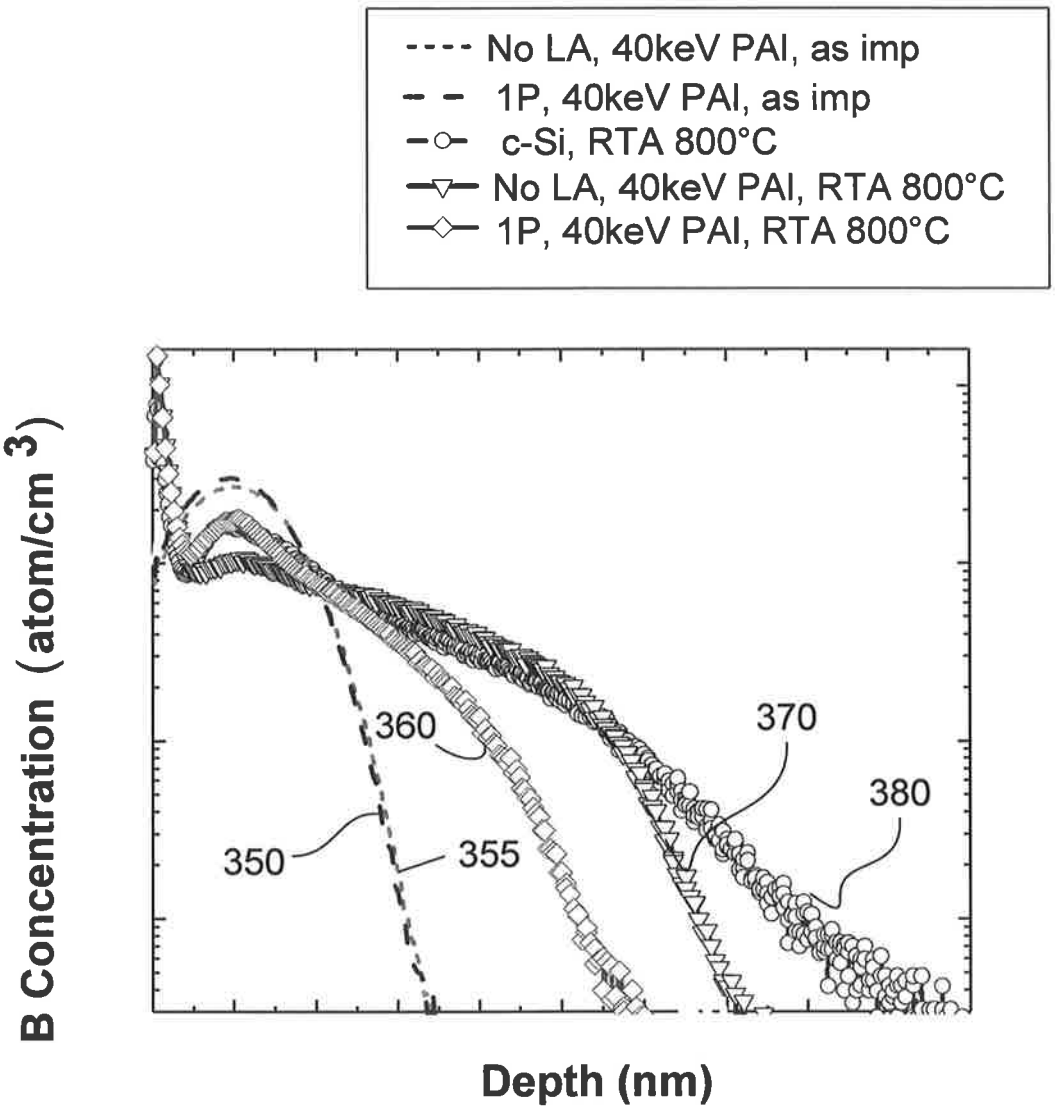
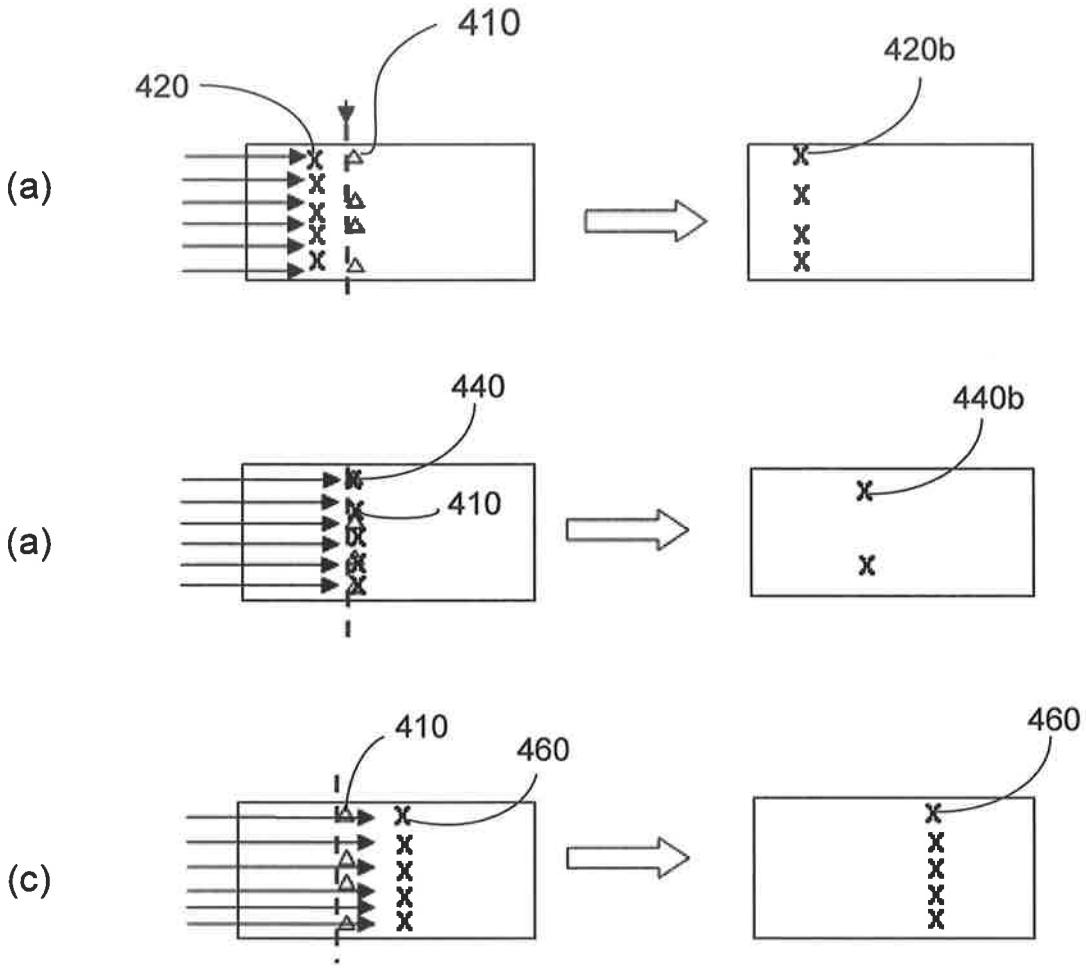

---- No LA, 40keV PAI, as imp
- - 1P, 40keV PAI, as imp
-○- c-Si, RTA 800°C
-▽- No LA, 40keV PAI, RTA 800°C
-◇- 1P, 40keV PAI, RTA 800°C
B Concentration (atom/cm 3)
Depth (nm)
350
355
360
370
380

Fig. 3b



x Excess Interstitials

△ Excess Vacancies

Fig. 4

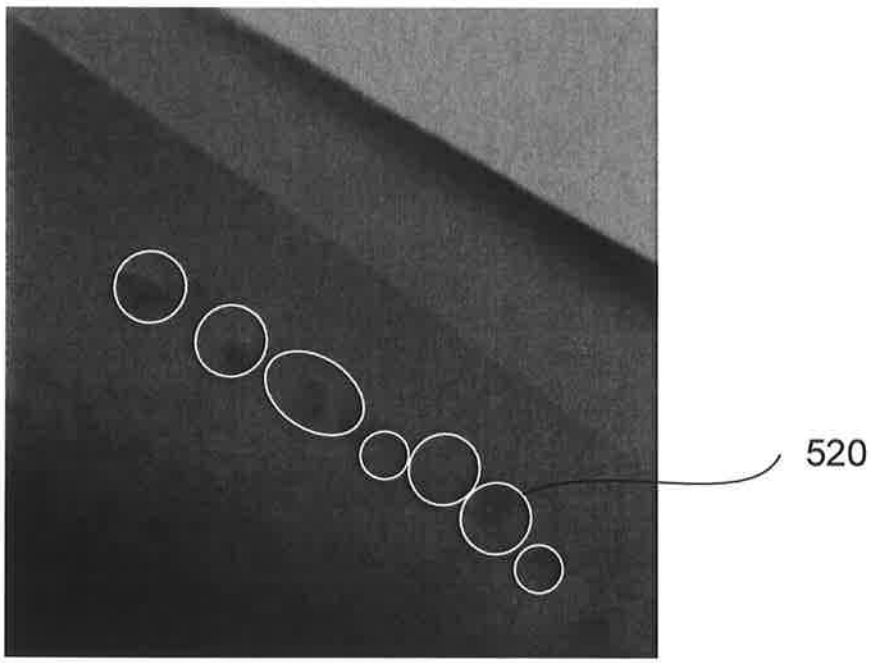


Fig. 5a

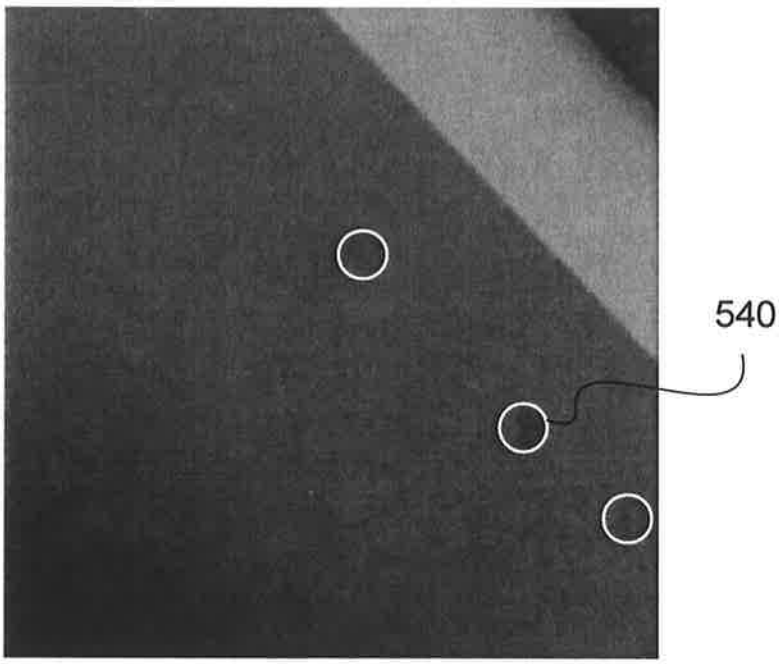
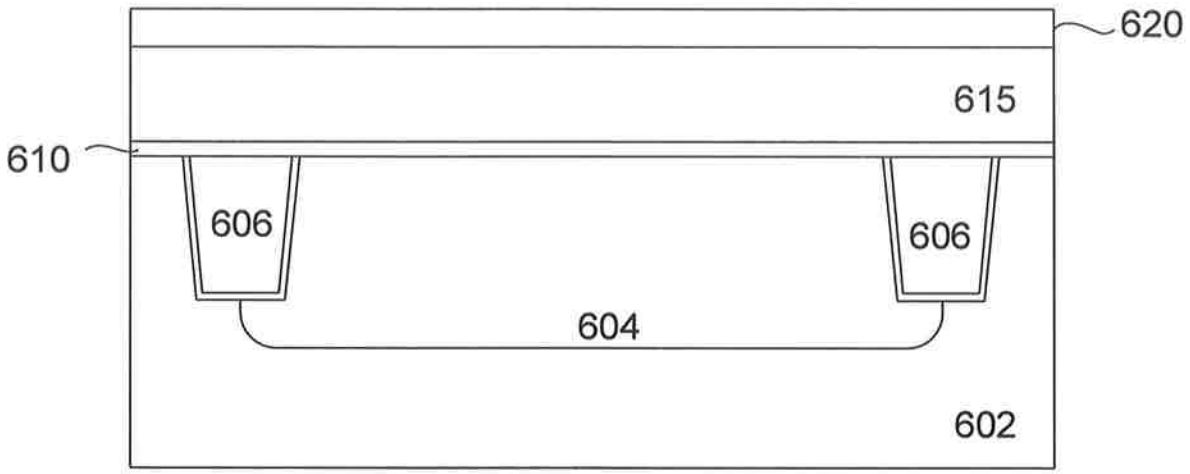
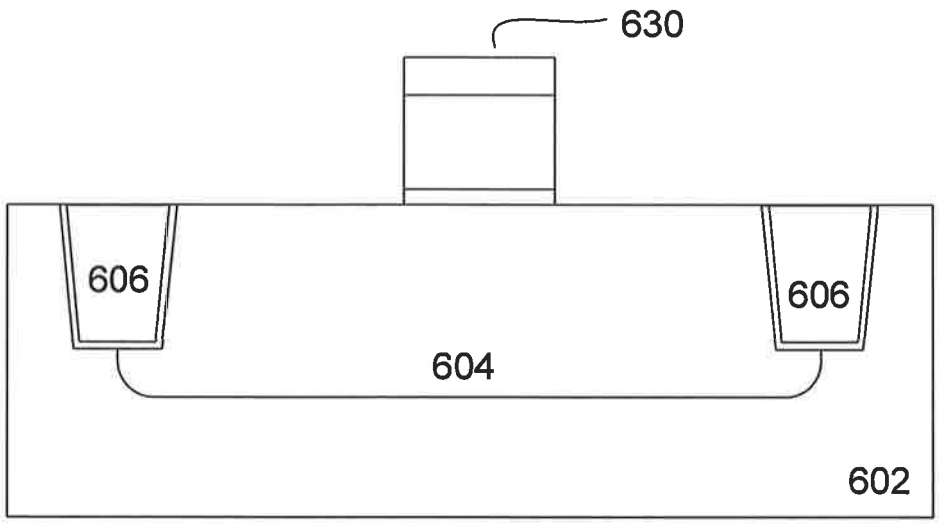


Fig. 5b



600

Fig. 6a



600

Fig. 6b

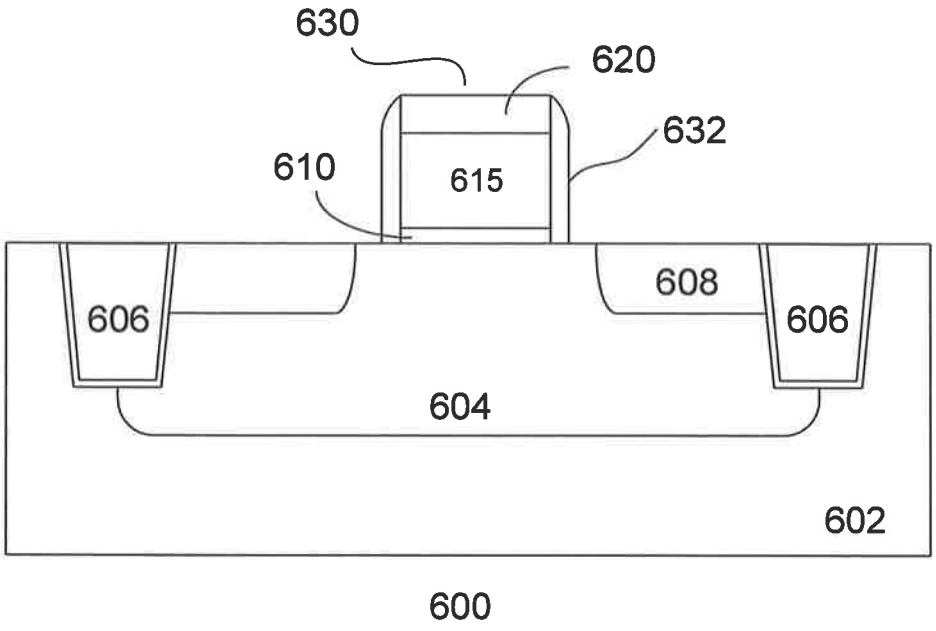

630
620
632
610
615
606
608
606
604
602
600

Fig. 6c

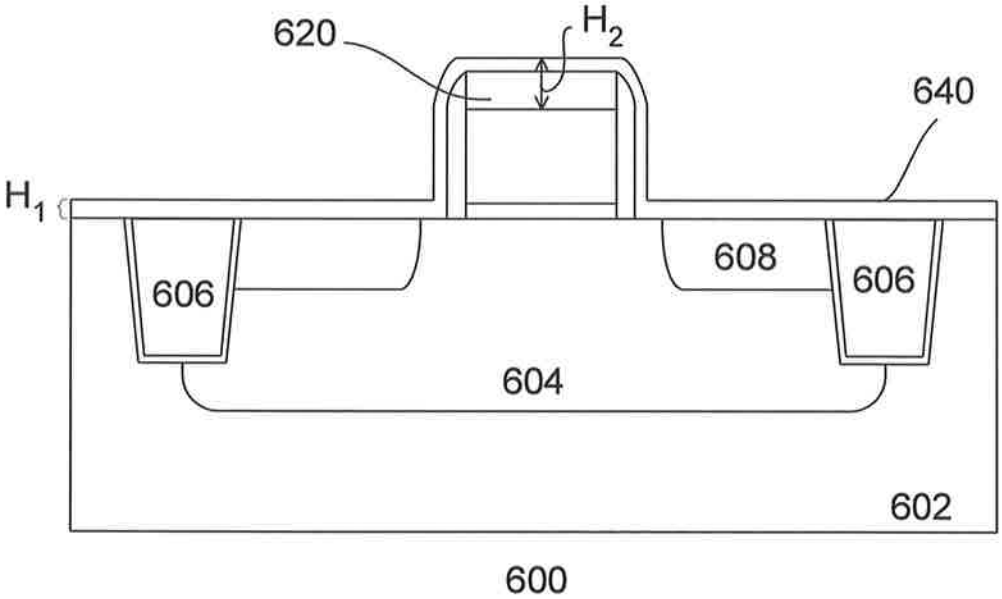

620
H_2
640
H_1
606
608
606
604
602
600

Fig. 6d

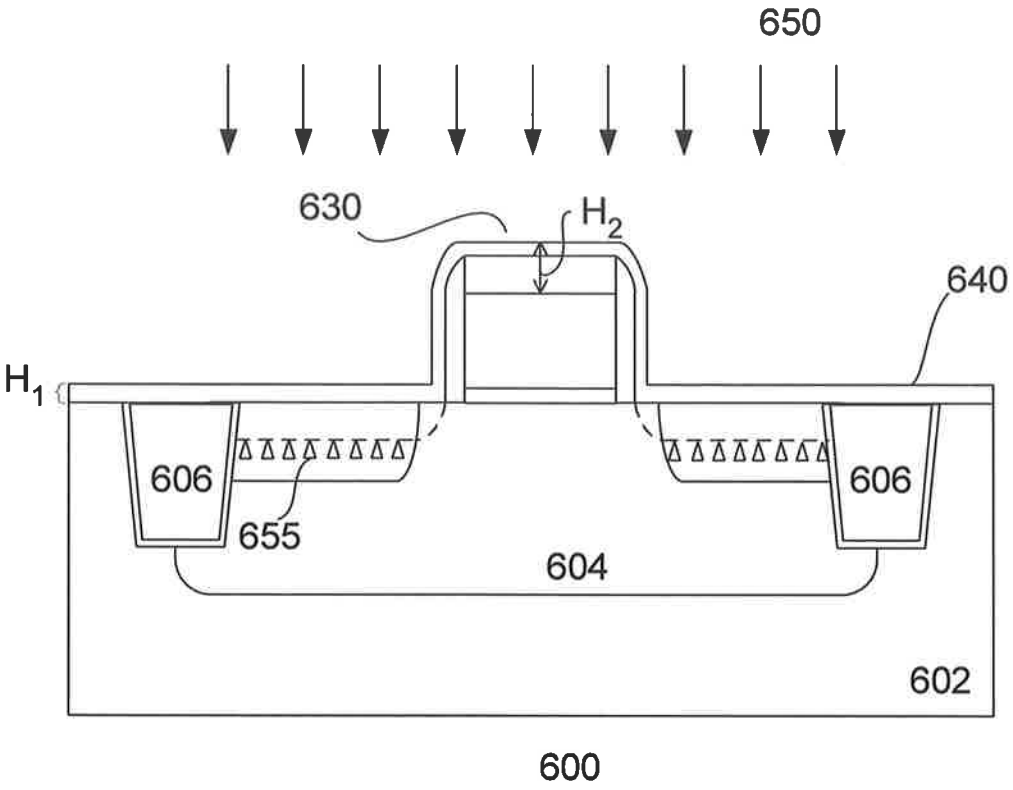

650
630
H_2
640
H_1
606
655
604
606
602
600

Fig. 6e

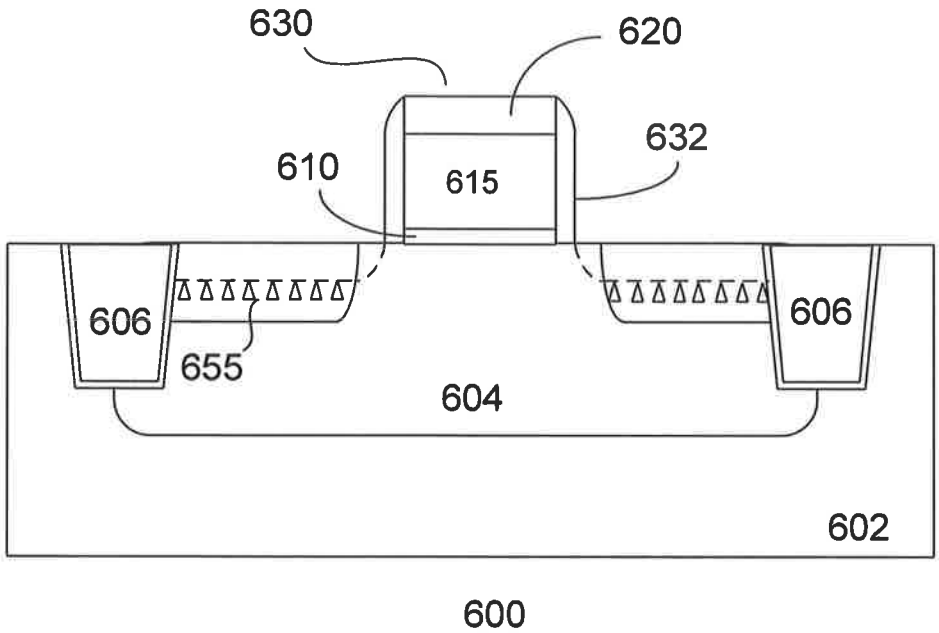

630
620
632
610
615
606
655
604
606
602
600

Fig. 6f

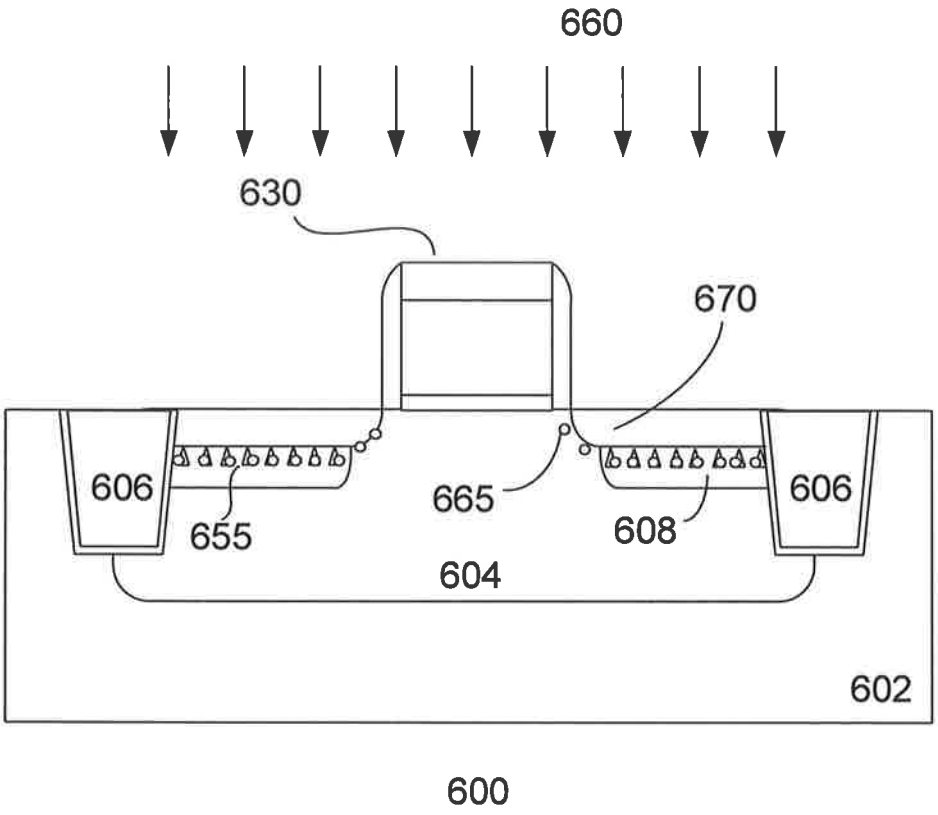
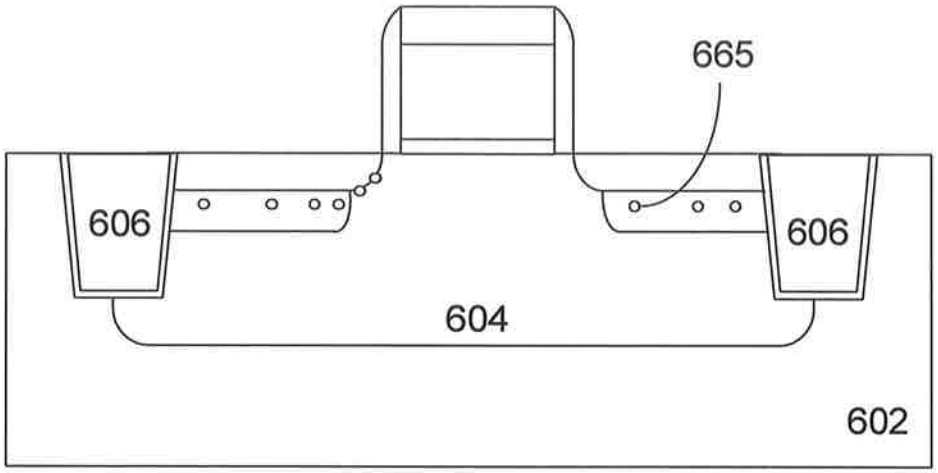
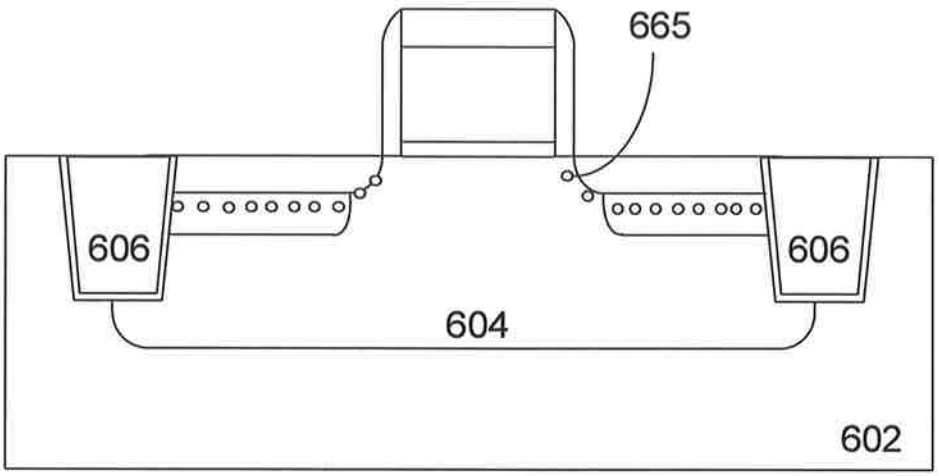


Fig. 6g



600

Fig. 6h(i)



600

Fig. 6h(ii)

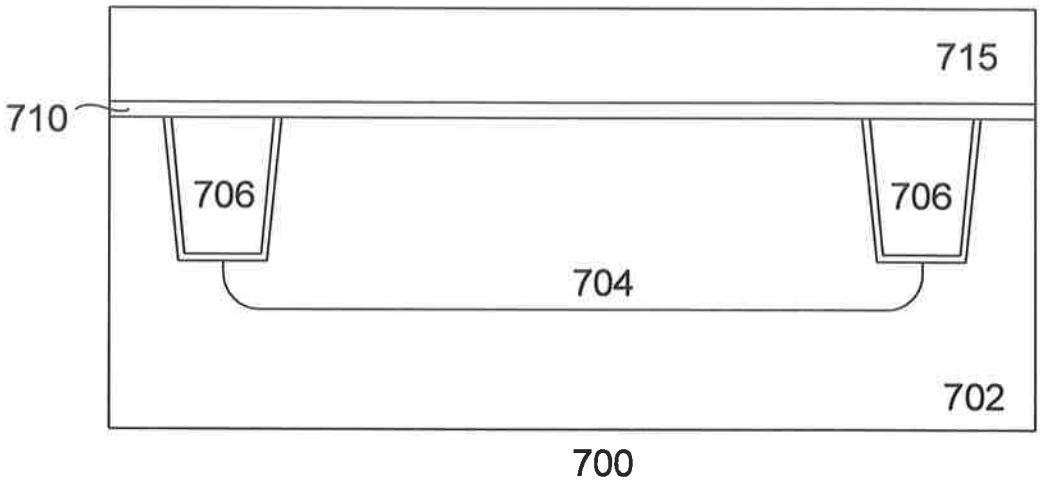


Fig. 7a

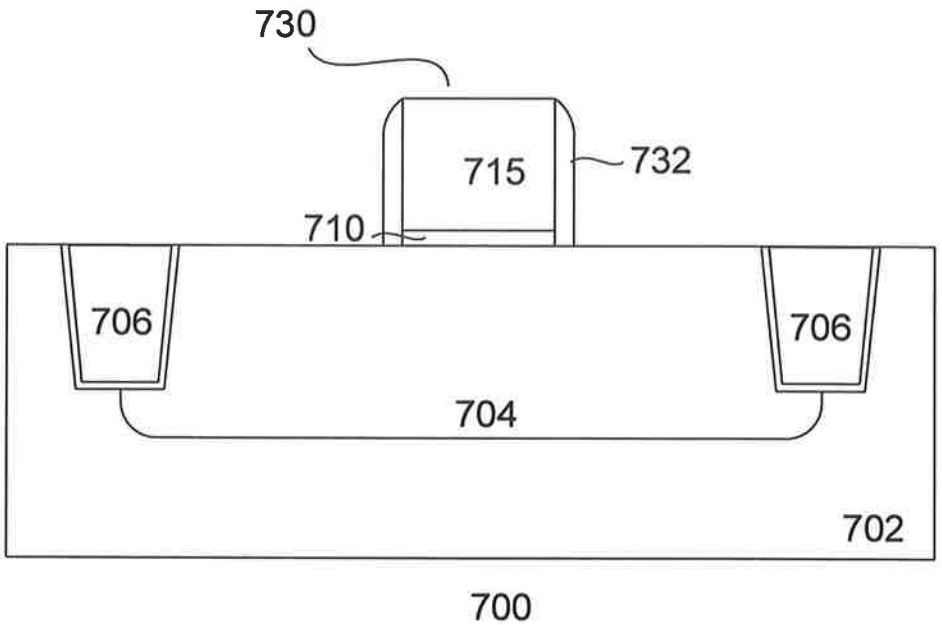


Fig. 7b

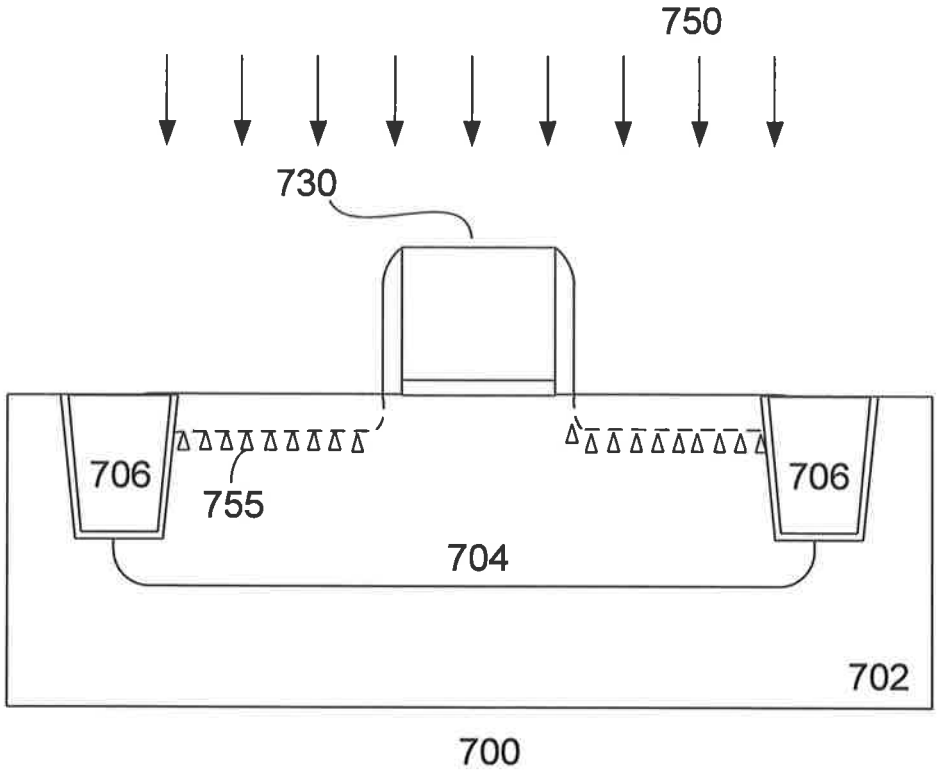

750
730
706
755
706
704
702
700

Fig. 7c

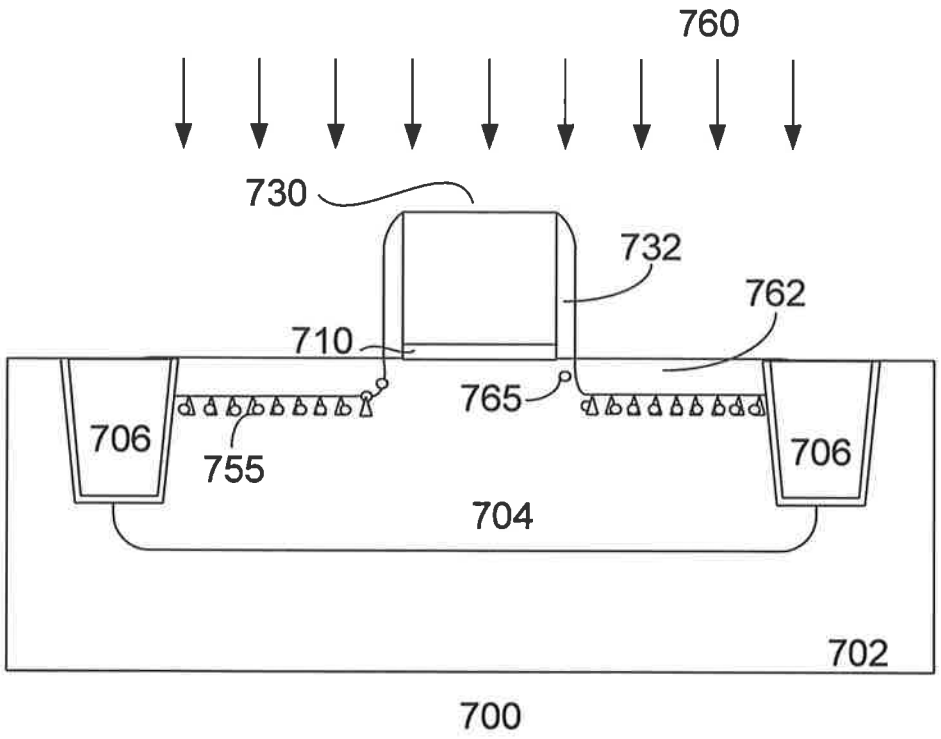

760
730
732
762
710
765
706
755
706
704
702
700

Fig. 7d

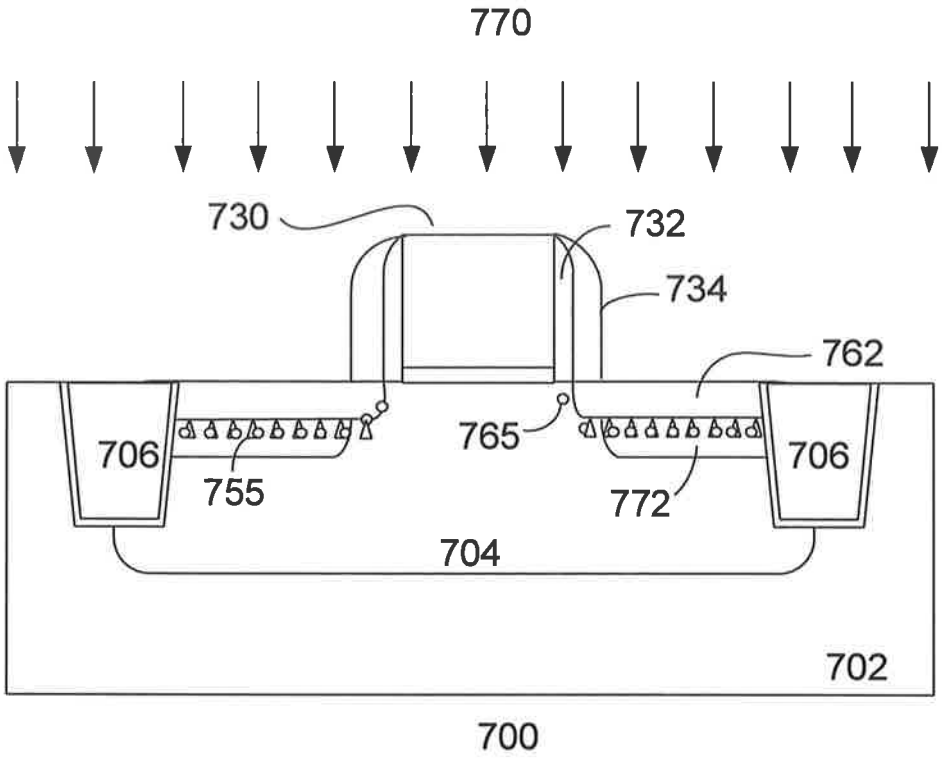

770
730
732
734
762
706
765
706
755
772
704
702
700

Fig. 7e

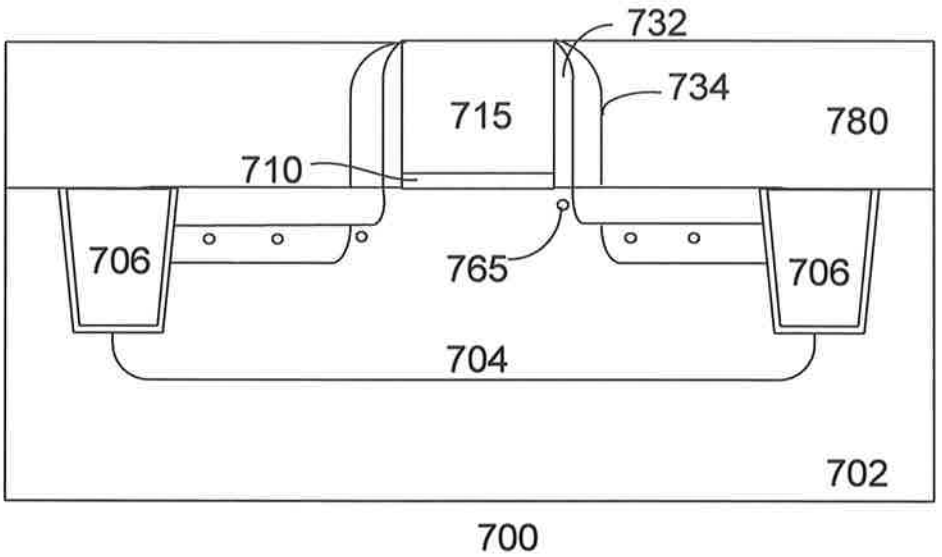
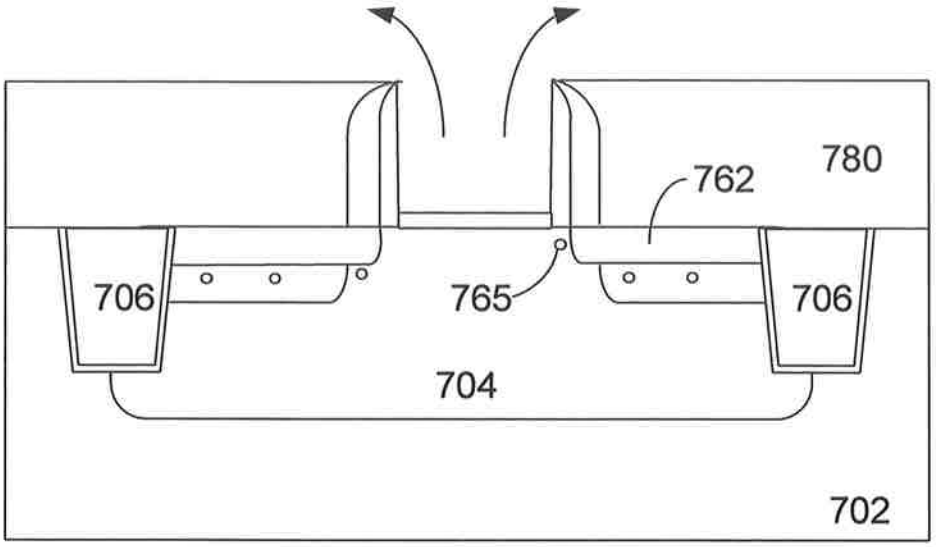
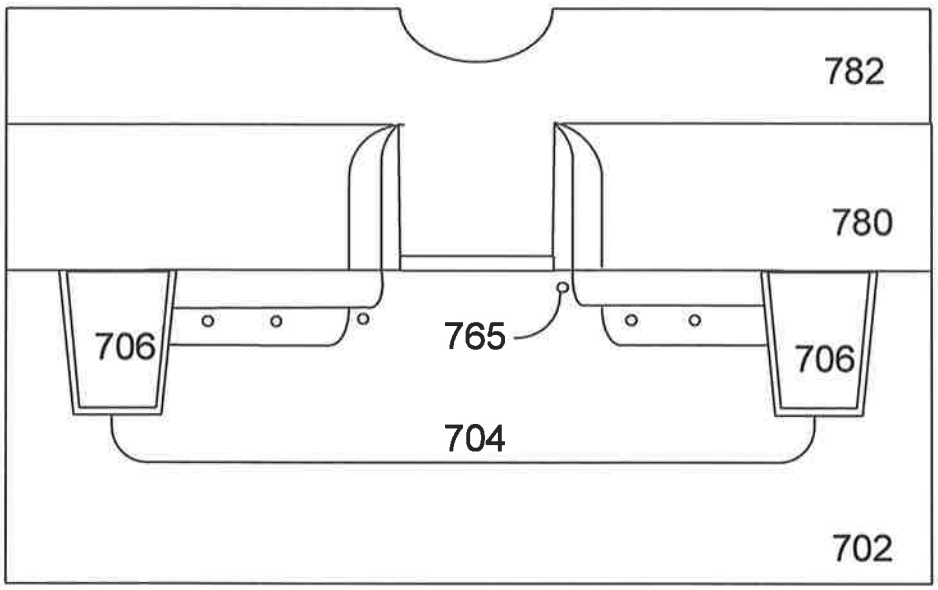

732
734
715
780
710
706
765
706
704
702
700

Fig. 7f



700

Fig. 7g



700

Fig. 7h

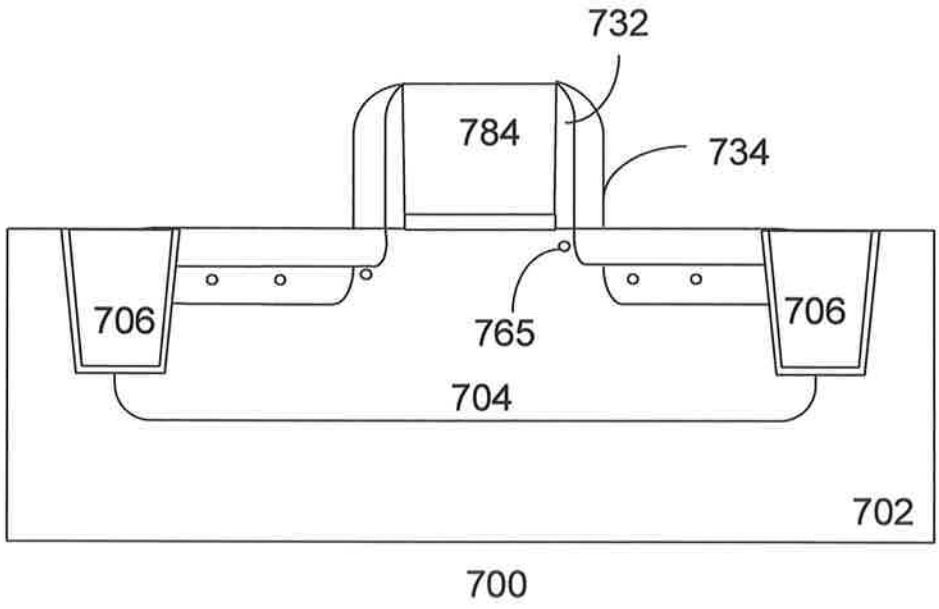


Fig. 7i

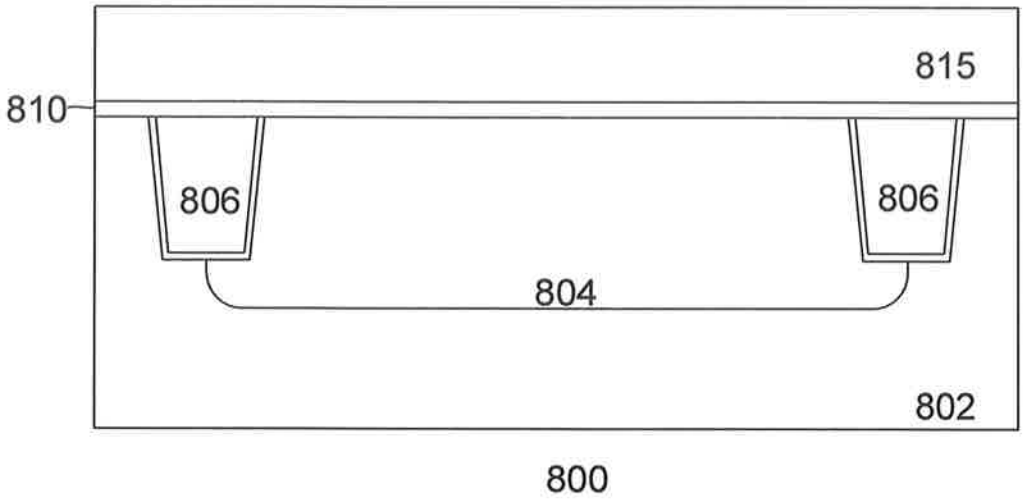


Fig. 8a

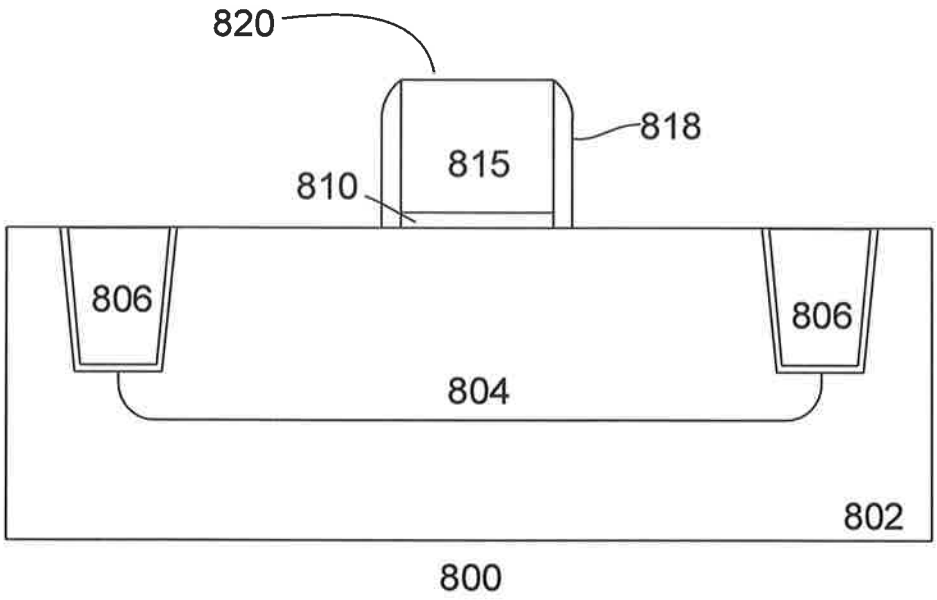


Fig. 8b

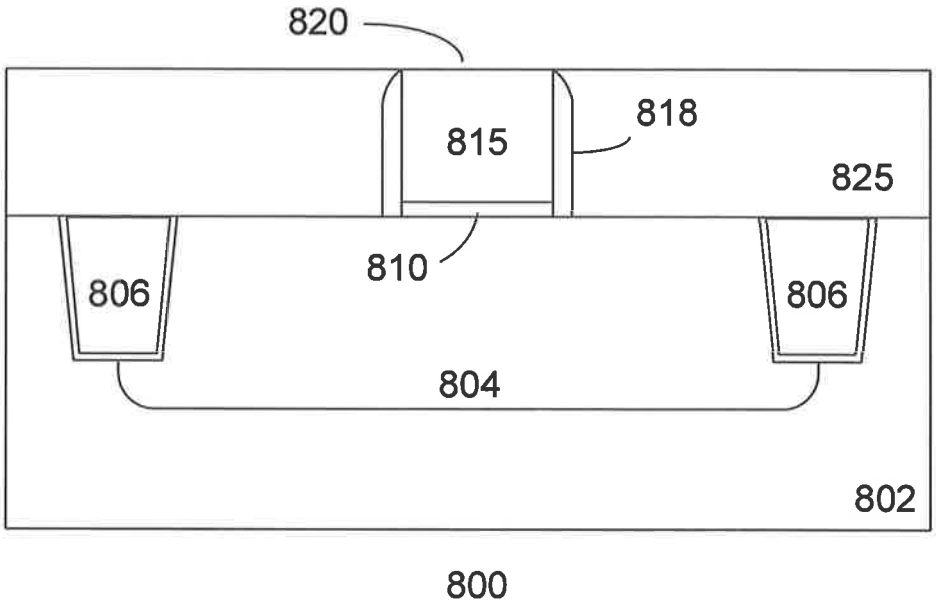

820
815
818
825
810
806
806
804
802
800

Fig. 8c

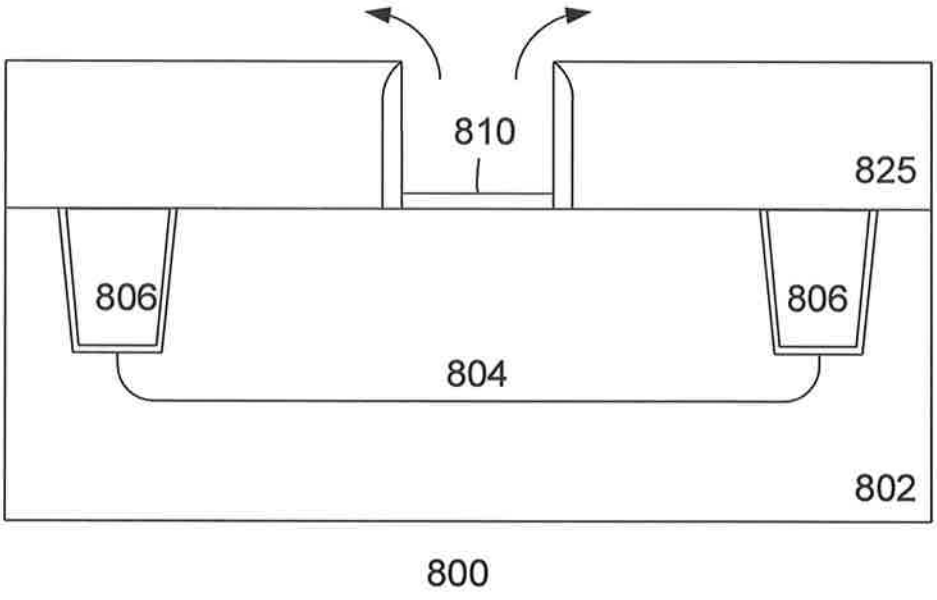

810
825
806
806
804
802
800

Fig. 8d

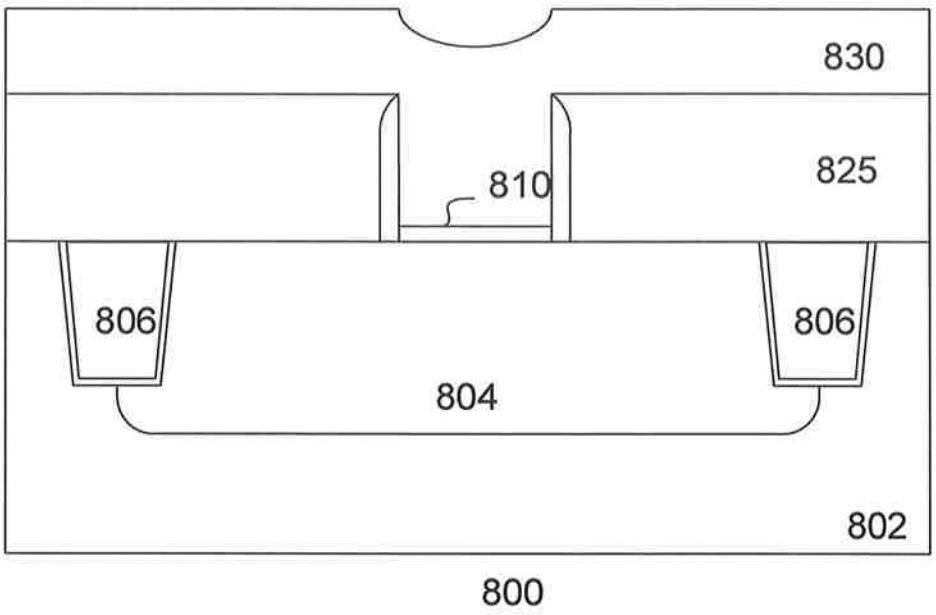

830
825
810
806
806
804
802
800

Fig. 8e

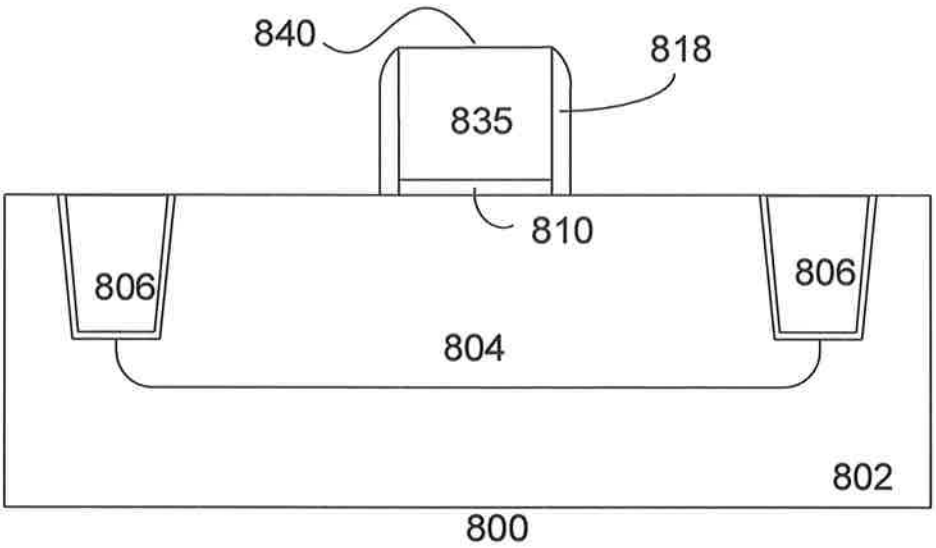

840
818
835
810
806
806
804
802
800

Fig. 8f

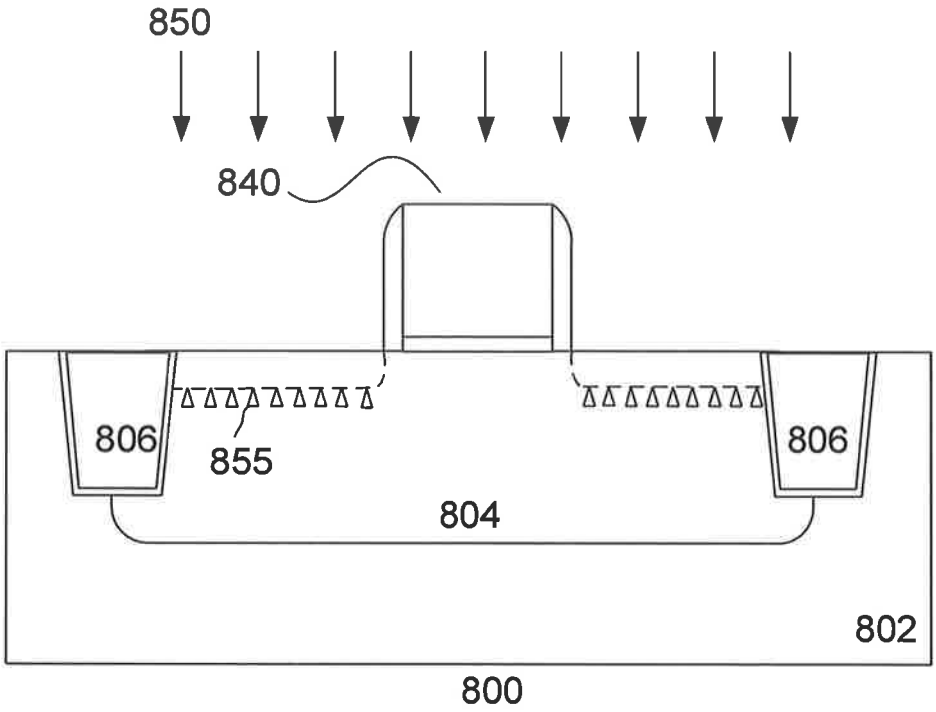

850
840
806
855
806
804
802
800

Fig. 8g

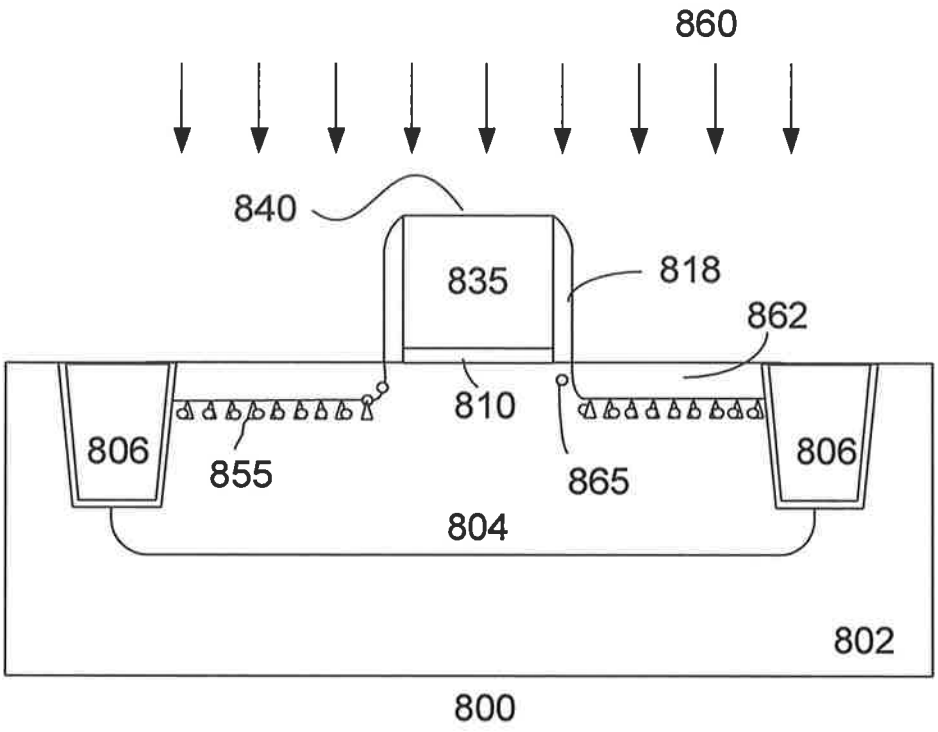

860
840
835
818
862
806
855
810
865
806
804
802
800

Fig. 8h

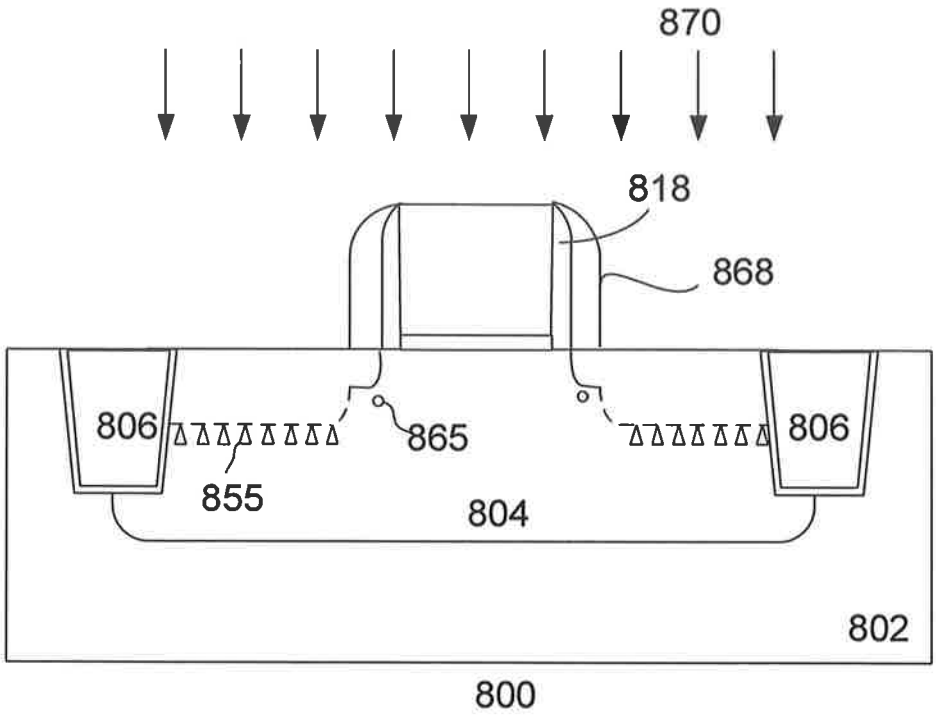

870
818
868
806
865
806
855
804
802
800

Fig. 8i

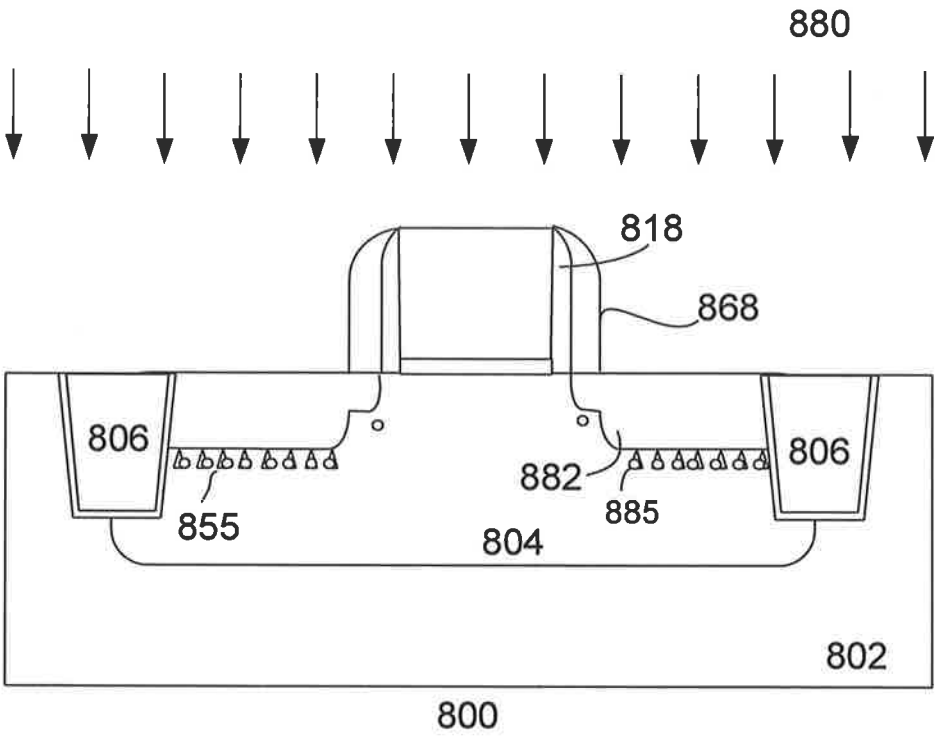

880
818
868
806
806
882
885
855
804
802
800

Fig. 8j

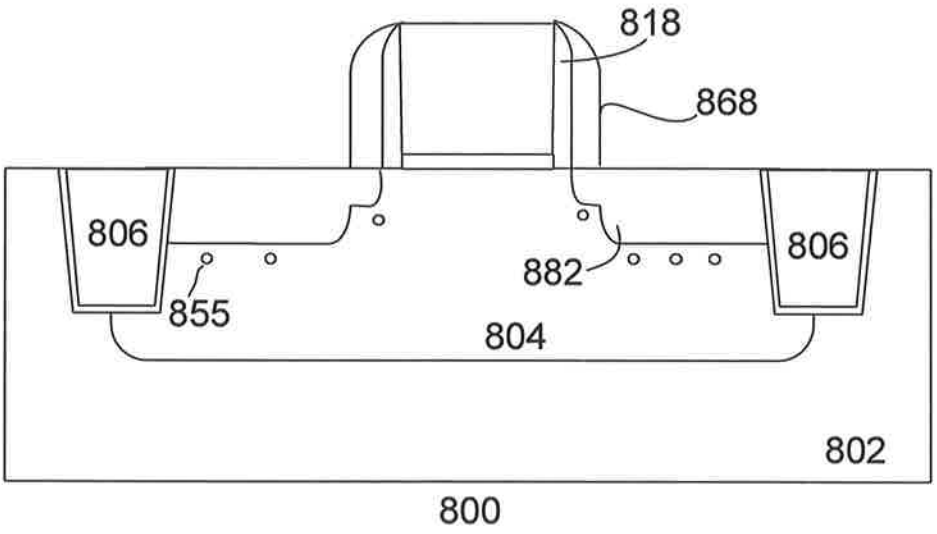


Fig. 8k