

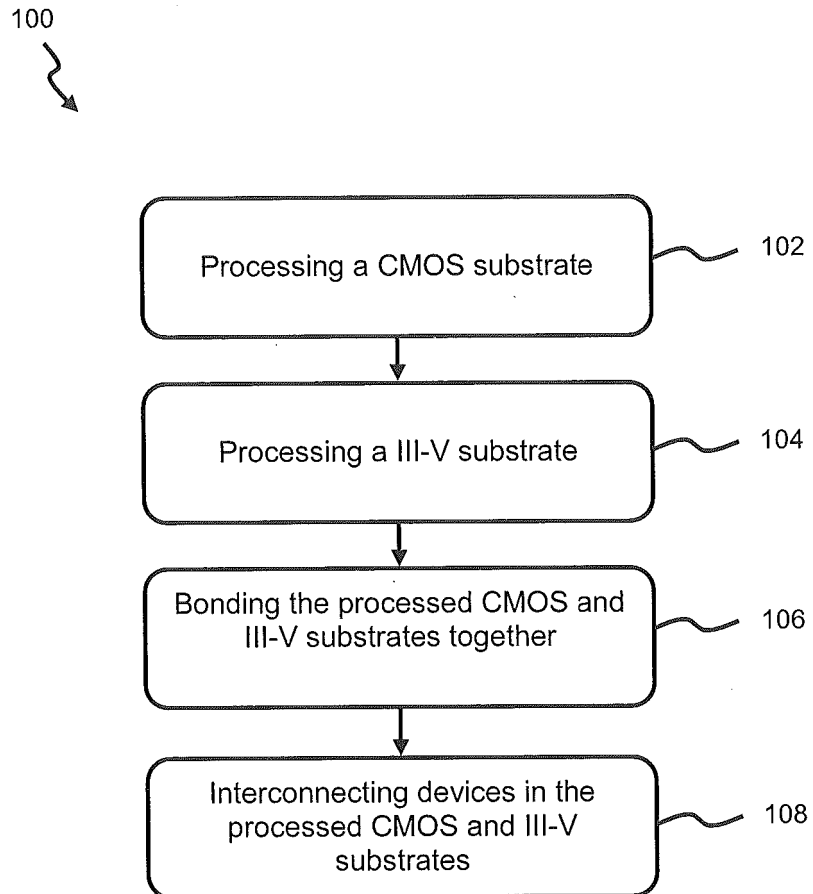


FIG. 1

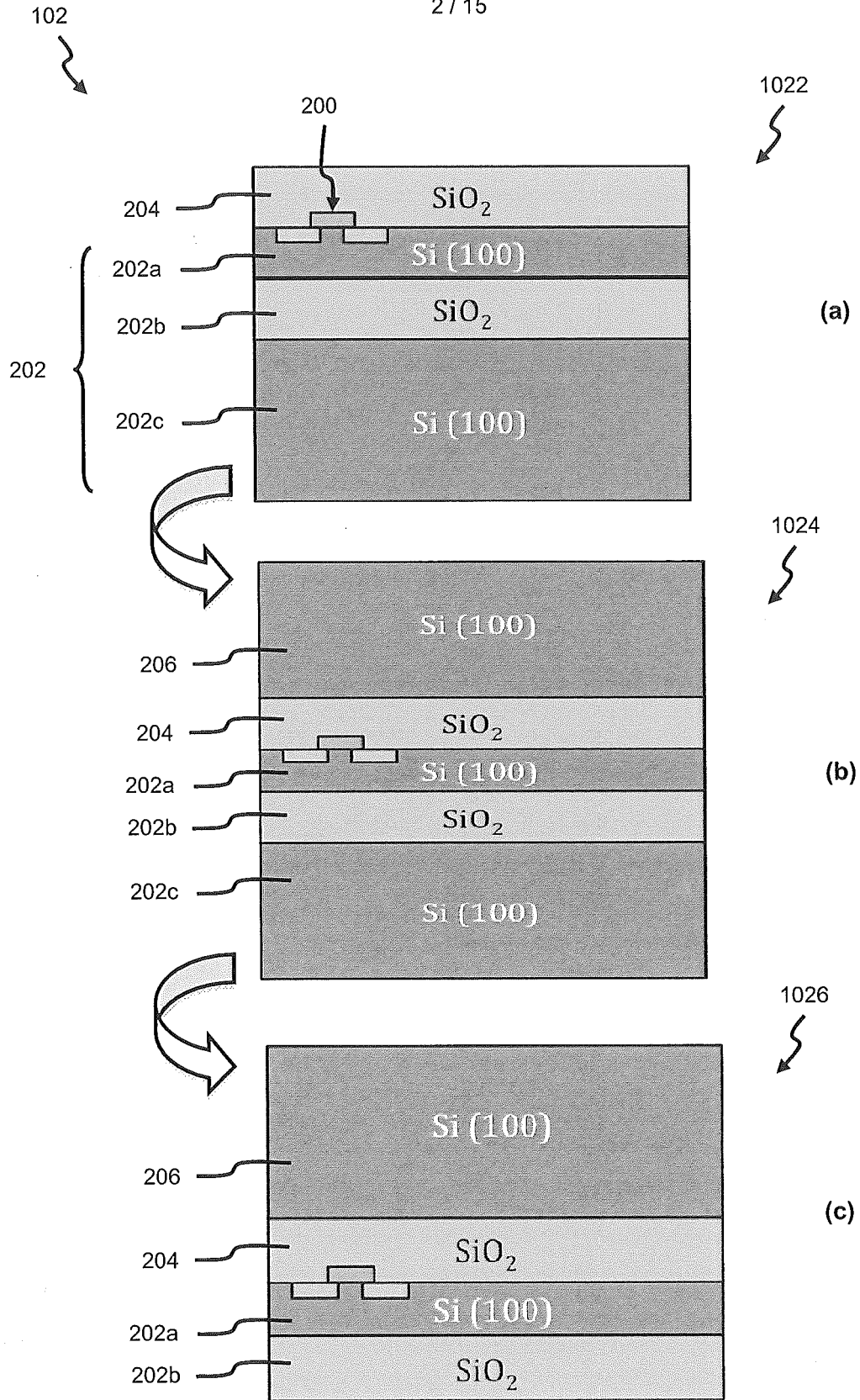


FIG. 2

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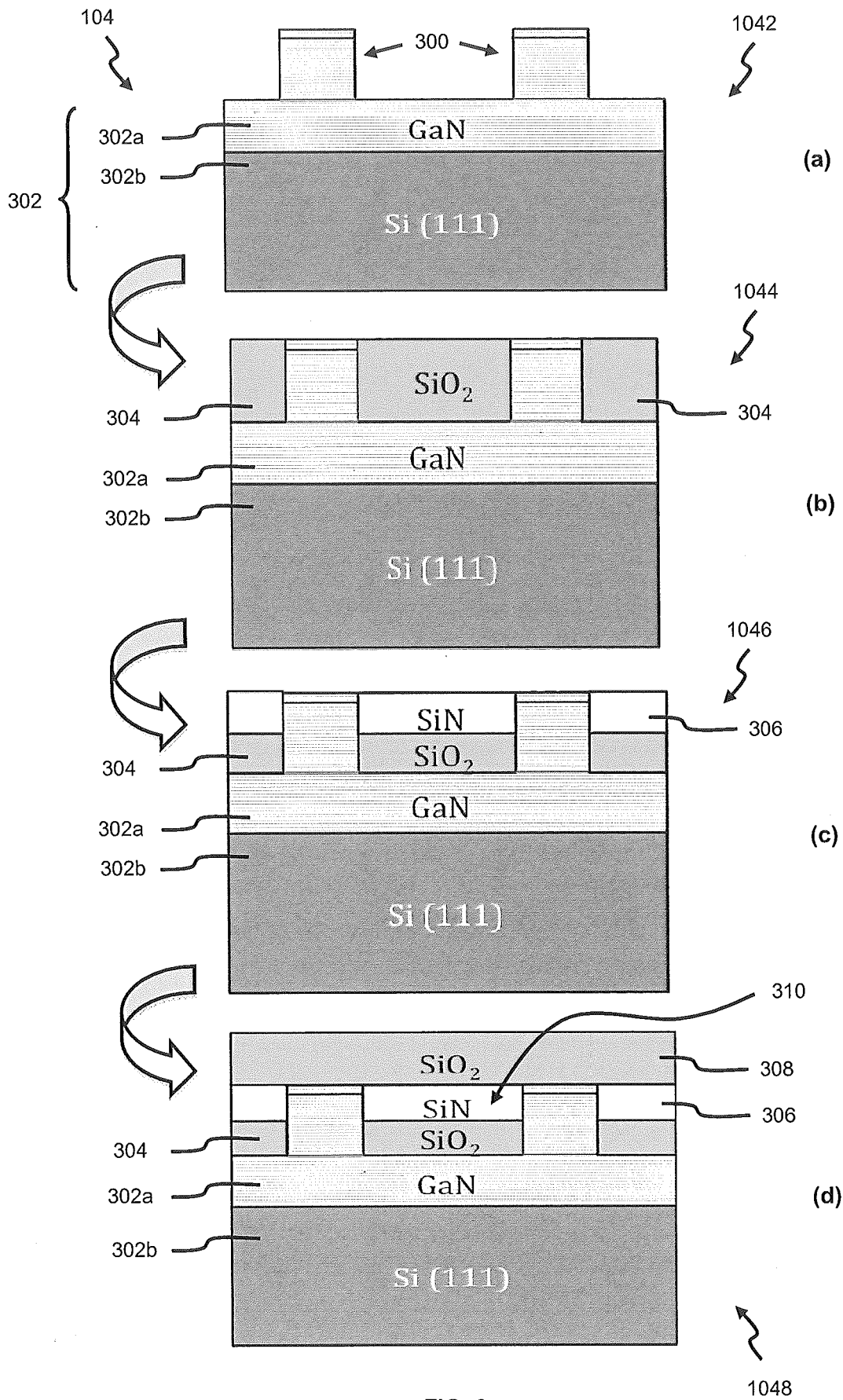


FIG. 3

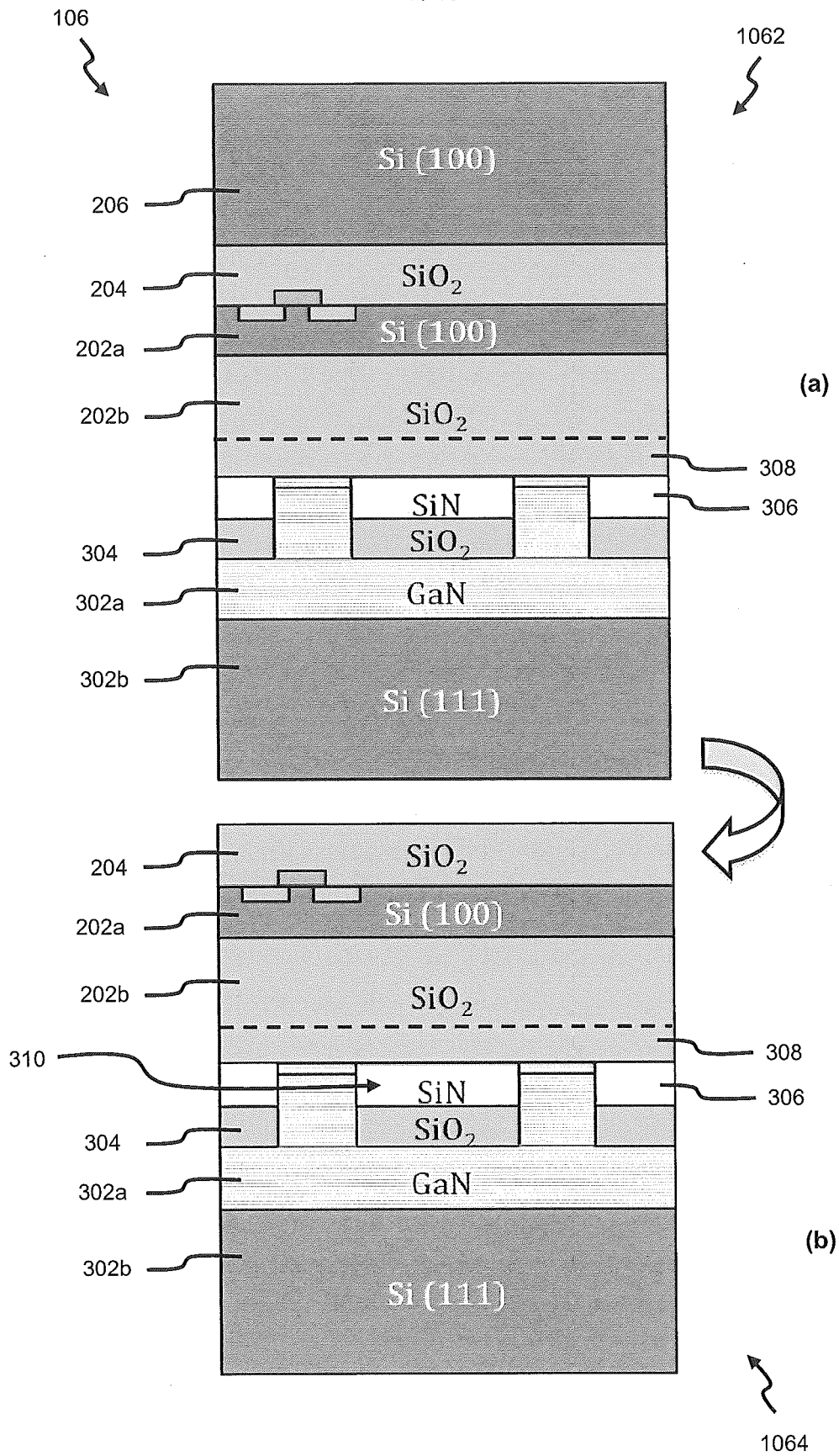


FIG. 4

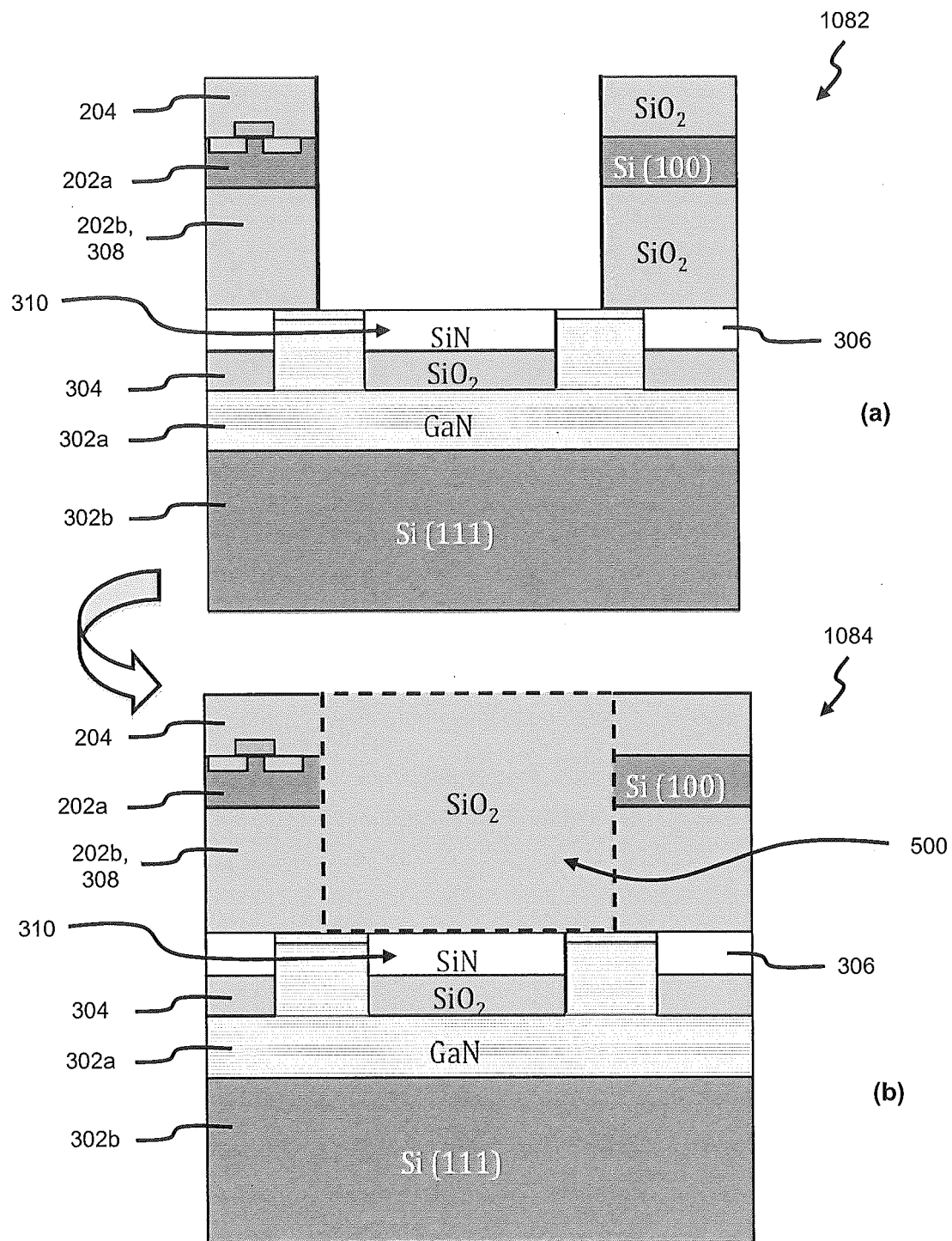


FIG. 5

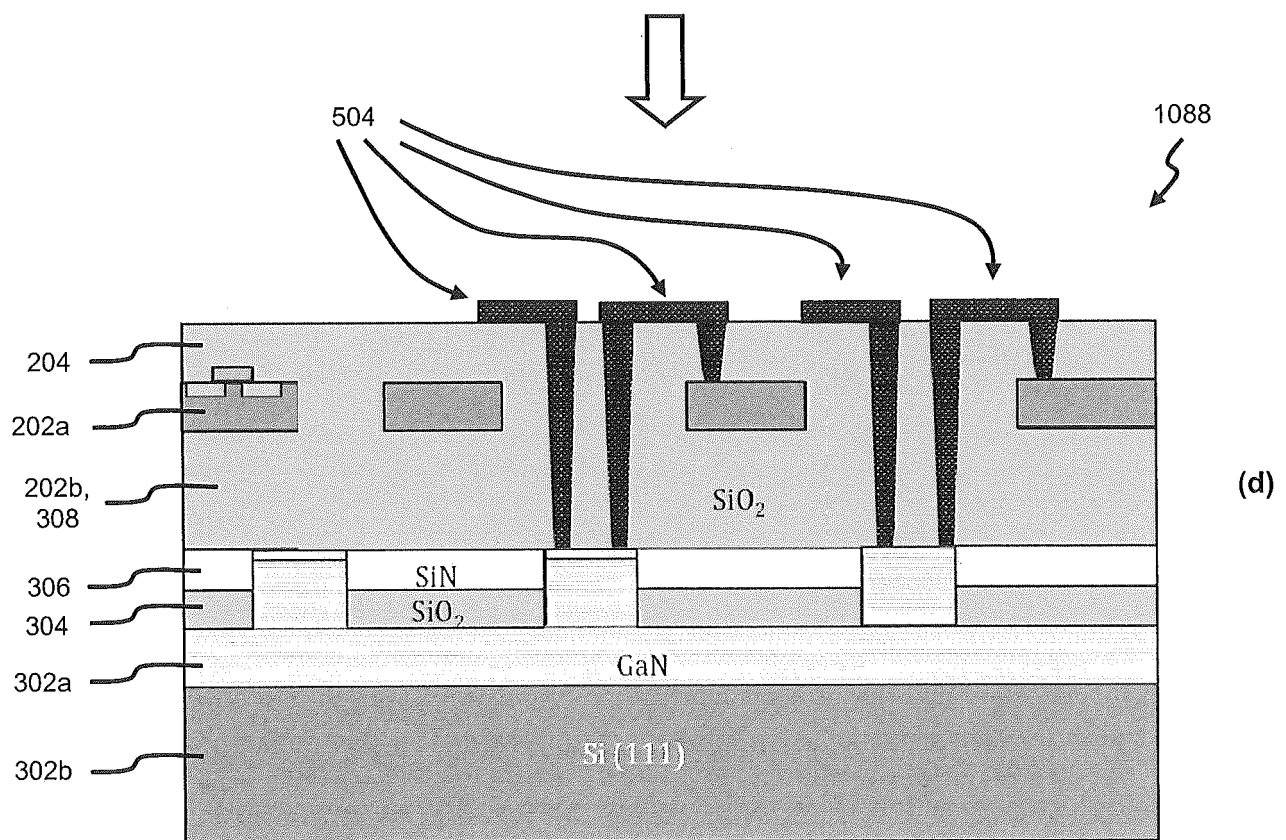
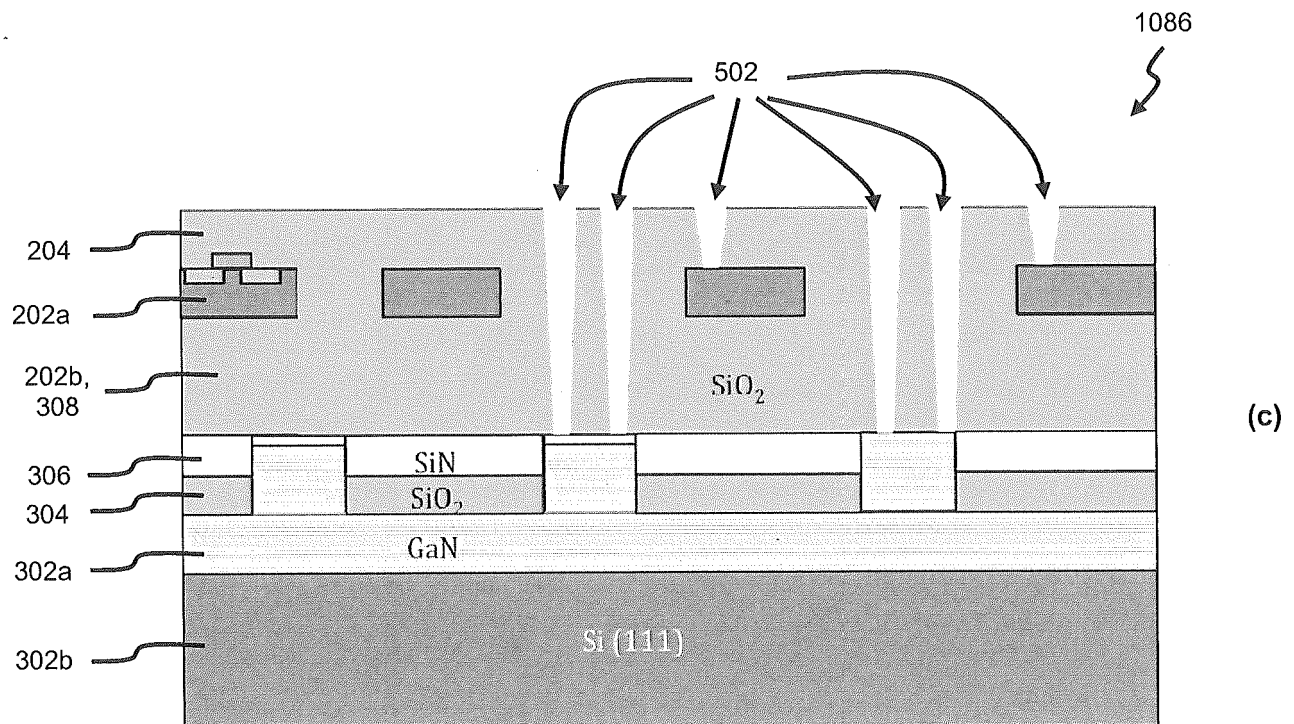


FIG. 5

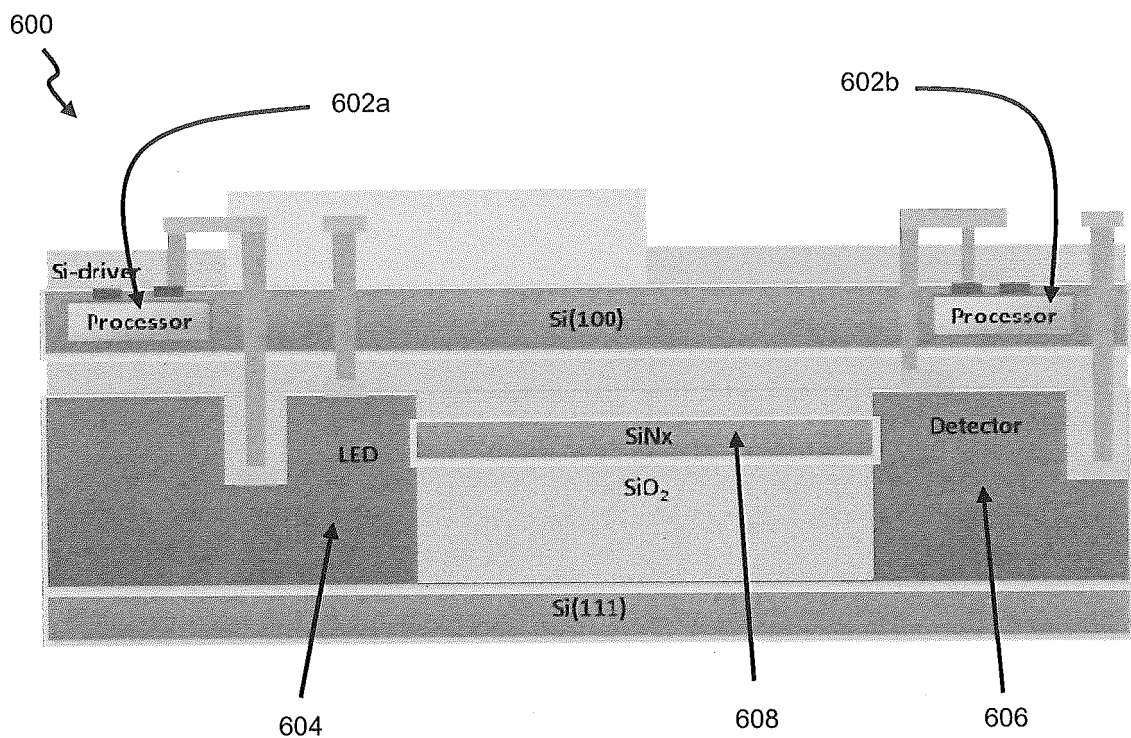


FIG. 6a

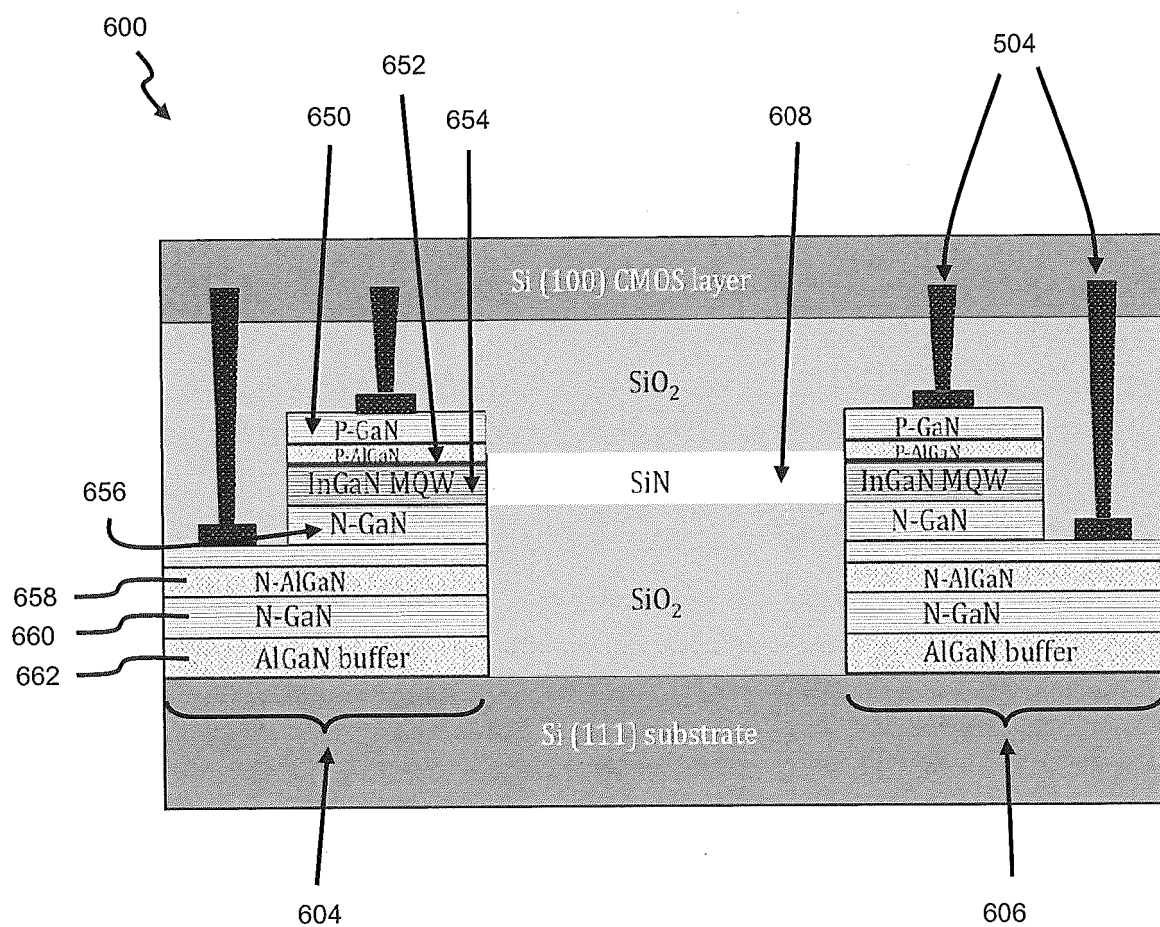


FIG. 6b

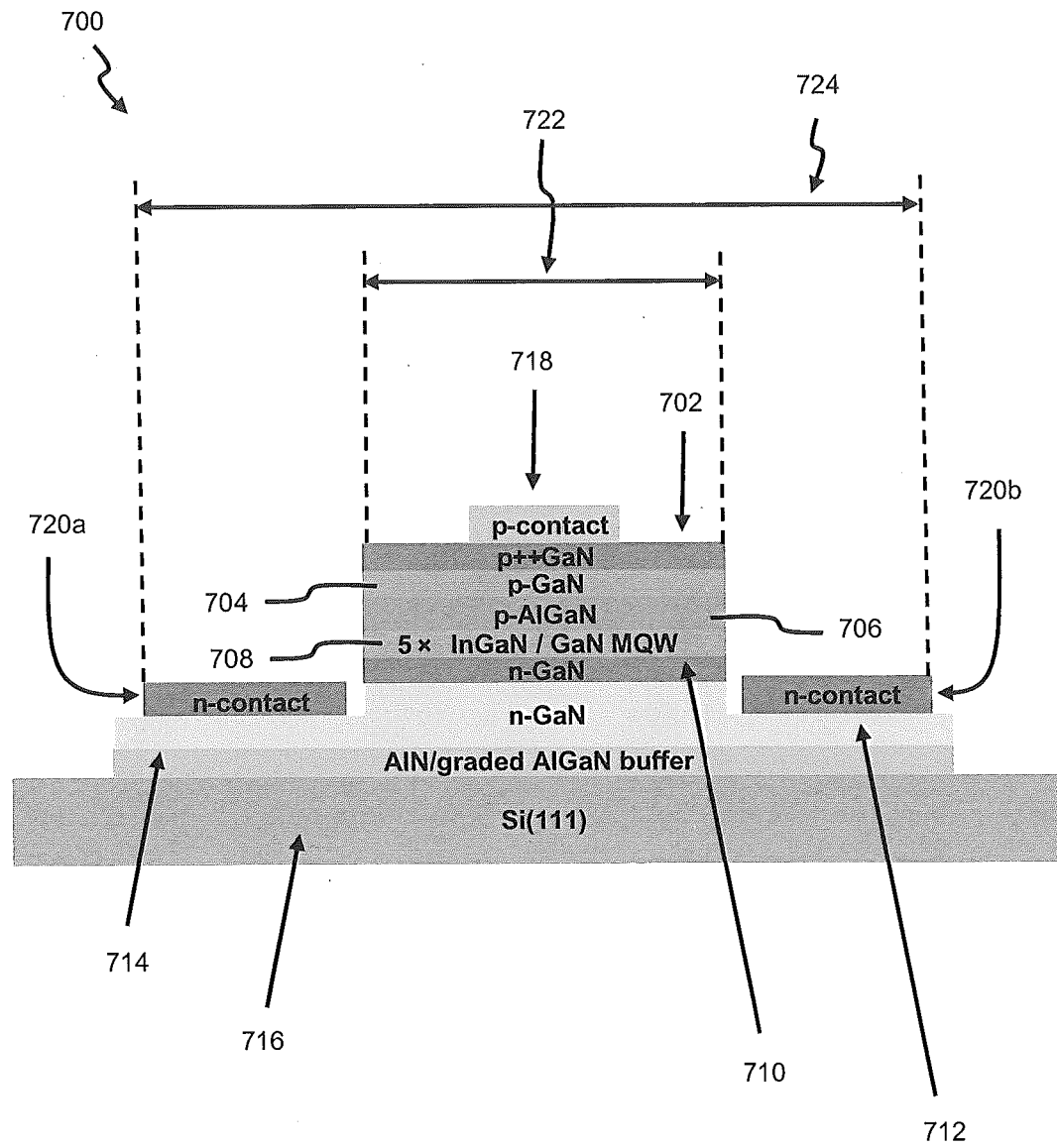


FIG. 7

800


Layer	Composition	Doping (cm ⁻³)	Thickness (nm)
PD n	GaN	$\sim 1 \times 10^{18}$	100
PD i	InGaN	$\sim 1 \times 10^{16}$	50
LED p++	GaN	$\sim 1 \times 10^{18}$	50
LED p	GaN	$\sim 6 \times 10^{17}$	100
LED p	AlGaIn	$\sim 6 \times 10^{17}$	10
5×MQW	InGaIn/GaN	-	5×(2.7+15)
Barrier	GaN	-	15
LED-n	GaN	$\sim 7 \times 10^{17}$	150
LED-n	GaN	$\sim 5 \times 10^{18}$	2400
Buffer	AlN/graded AlGaIn	-	1000
Substrate	Si(111)	-	-

FIG. 8

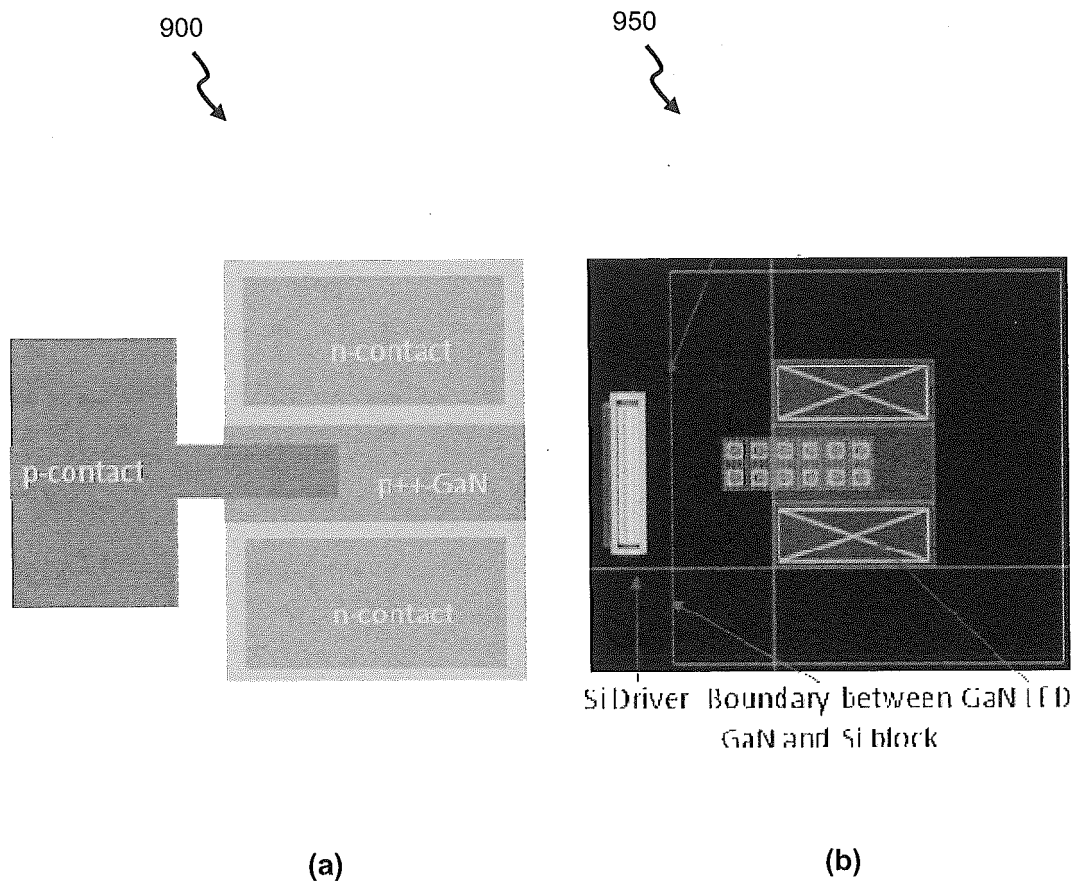


FIG. 9

1000
↘

Component	Minimum size (μm)	Component between	Minimum spacing (μm)
bondpad	2	p-contact and bondpad	1
p-contact	10	bondpad and active emitting area	1
n-contact	16	active emitting area and n-contact	1
active emitting area	12	active emitting area and n-mesa	1
n-mesa	18	n-contact and n-mesa	1
Device to device			10

FIG. 10

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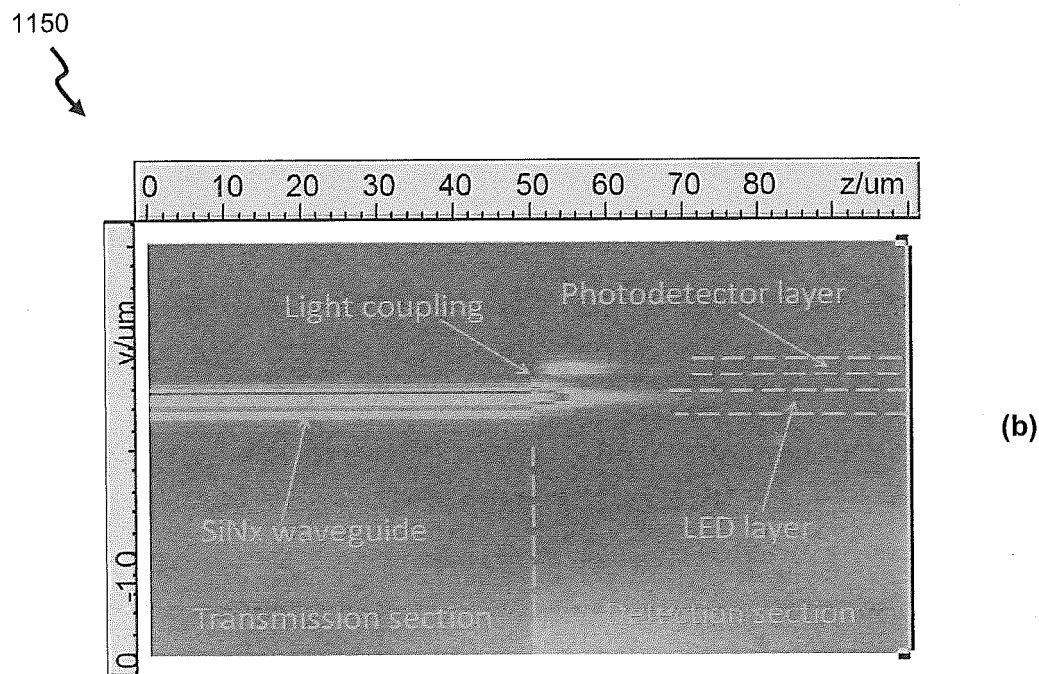
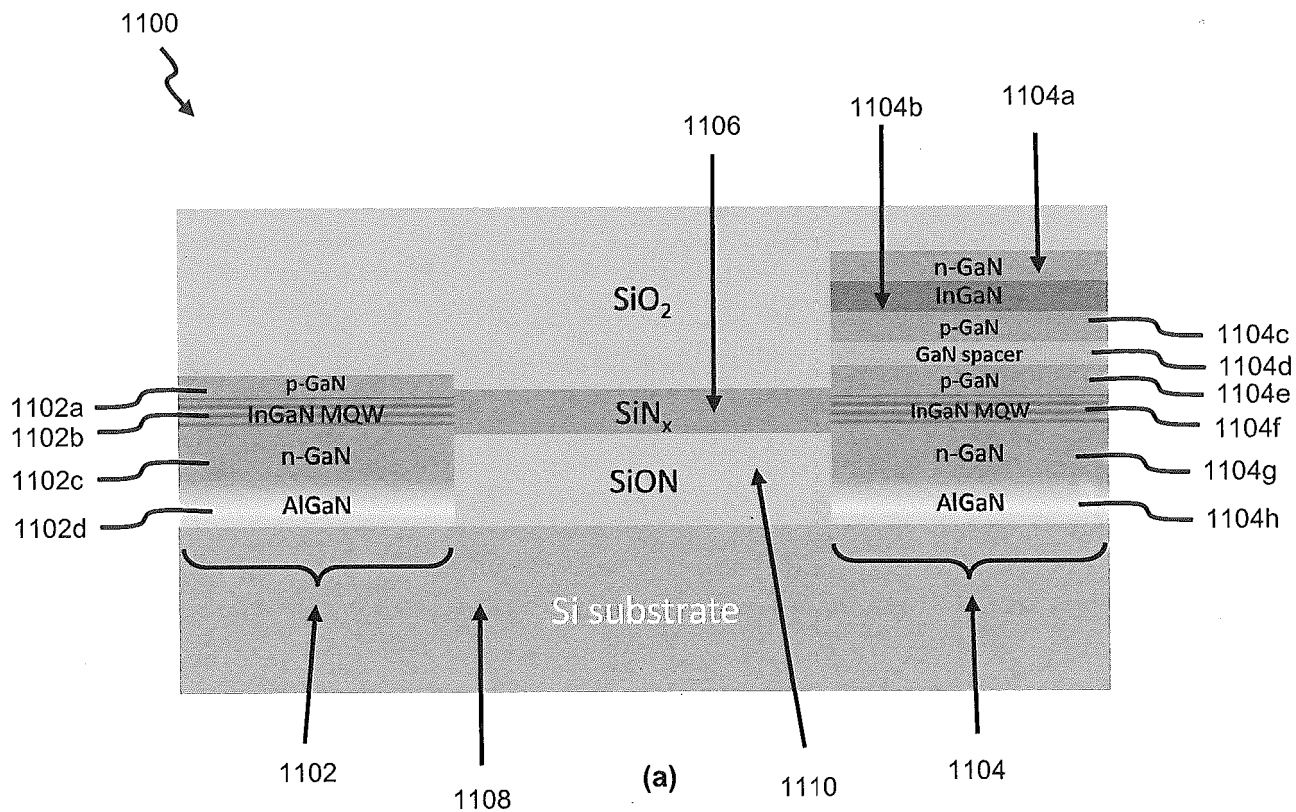
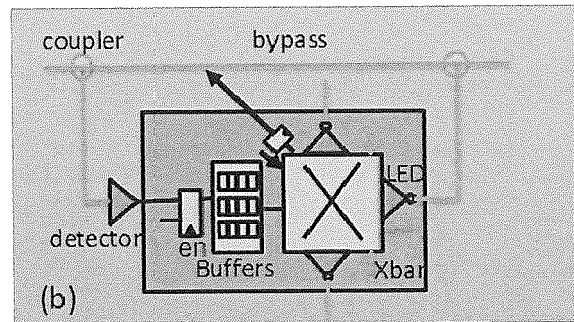
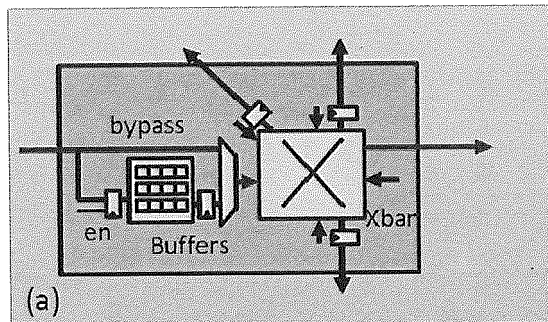


FIG. 11

1200

1250



Prior Art

FIG. 12

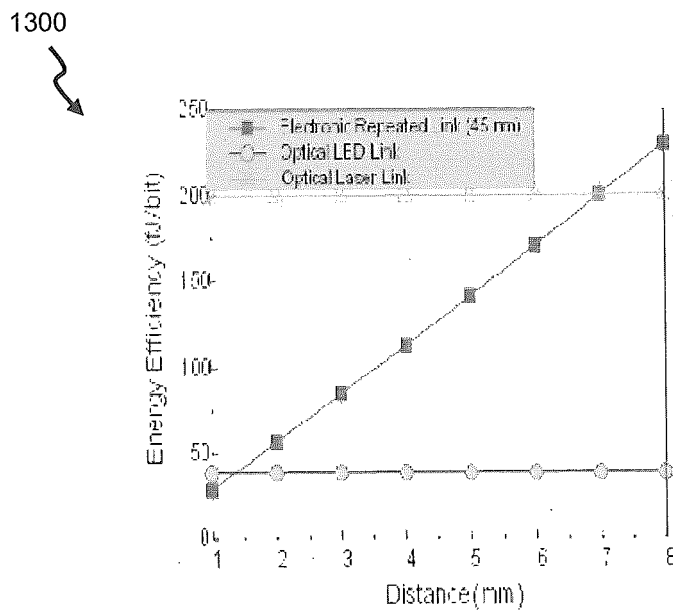
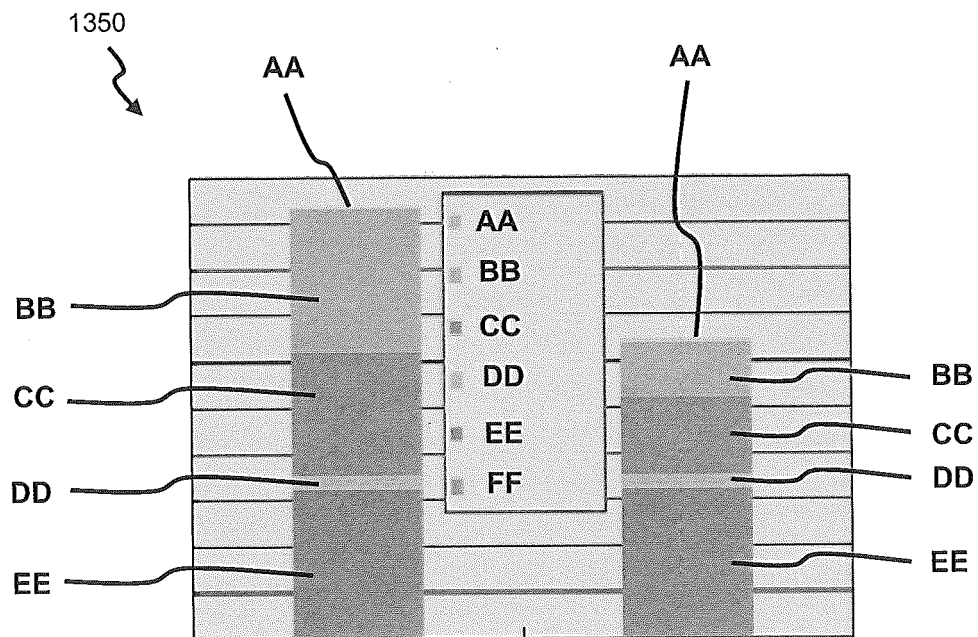


FIG. 13a



Legend: AA – SSR, BB – Link, CC – Crossbar, DD – Switch Allocation, EE – Buffer, and FF – Clock.

FIG. 13b

1400


Component	Minimum size (μm)	Component between	Minimum spacing (μm)
bondpad	0.2	p-contact and bondpad	0.1
p-contact	0.2	bondpad and active emitting area	0.1
n-contact	0.2	active emitting area and n-contact	0.1
active emitting area	0.2	active emitting area and n-mesa	0.1
n-mesa	0.2	n-contact and n-mesa	0.1
Device to device			0.2

FIG. 14