

(19) (KR)  
(12) (A)

(51) 。 Int. Cl.<sup>7</sup> (11) 10-2004-0029106  
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(22) 2004 02 27  
2004 02 27  
(86) PCT/US2002/025909 (87) WO 2003/021661  
(86) 2002 08 13 (87) 2003 03 13

(30) 09/942,208 2001 08 29 (US)  
(71) , 60196, , 1303  
(72) , 78757, , 7608  
, 78664, , 3016  
(74)

:

(54) M I M

MIM(metal - insulator - metal) 가 (10) (20)  
40) 1 (30, 40) 1 (30) (30, 40) (20)  
(50) 1 (30, 40) , 2 (65)가 (50)  
1 (30, 40) (40) 1 (30) (p  
eriphery)

11

MIM , 1 , 1 , 2

\_\_\_\_\_  
sulator-metal) . , MIM(metal-in

\_\_\_\_\_  
( polysilicon) , (back-end) (copper)가 MIM (post-metal)) (p ,  
RF , MIM 가 MIM  
가  
( copper diffusion))

가 , MIM  
1 MIM  
2 1 1  
3 1 2  
4 (recess) 1 3  
5 2 4  
6 MIM (bottom electrode) 2  
5  
7 , 3 , (etch stop layer)  
6  
8 1 7

9 (top electrode)

8 MIM

3

10

9

2

11 MIM (conductive via)

10

MIM

가

20

MIM

가

가

(50) (30) (40) (40) (200) MIM (205) 가

MIM (40) (40) (30) (hafnium)

가

가

1 11 MIM (10) (20) (SOI)

(10) (10) (MOS) /

(20) (CVD), (PVD)

2 (20) (trench) (recess) (200)

1 (30) (30) PVD, CVD, (electroplating)

1 (30) (30) PVD, CVD, (atomic layer deposition)(ALD),

(30) (diffusion barrier)

(lined).

3 (damascene structure) 1 (30) 1 (30)

(etch-back) (CMP), (dis

hing) (slotting)

[illegible]

ESL (70) PVD, CVD, ALD, ESL (70), ESL (60)  
(ILD)

(antireflective coating)

ESL (70) ESL (

70) 10

(50), 3 (60), ESL (70)  
(50), 3 (60) ESL (70)

8 가 , 1 (80) ESL (70) 3 (60)  
. ESL (70) 3 (60) ( ) (65)( 2 (65)) 9  
1 (80)

10 가 , ILD(90)가 (10) 2 (100)  
ILD(90) 1 ( ) ESL (75) 11 (110)

ILD 가 ILD 가 (40)  
, ESL (75) 1 (40)  
가 (65) , 1 ESL  
(50) 가 .

, (50) ESL (75) 2

, (chamber)

11 가 , 가 (110)  
가 (65)  
, (110)

11 MIM 1

. 가 , 가 , MIM  
가 가 -  
(>1GHz) RF - (on-chip)  
(40) (40)  
가

MIM (65) 1 (30)  
가 , ( ) , (6  
5) (40) 1 (30) (40)  
(40) 1 (30)  
1 (30) (40) , ESL (70) 3  
(60) 가 , ILD (90) (50)  
, MIM (50)  
, IC  
가 MIM ,  
가 .

(non-exclusive)

가  
가  
MIM  
가

(57)

1.

MIM(metal - insulator - metal)

(10) ;

(10) (20) ;

(20) (205) ;

1 (30) , 1 , ;

(30) ;

(30) 2 (40) , 2 (40) 1 (30)  
(conductive oxidation barrier) , ;

(40) (50) ;

(50) 3 (60) , .

2.

1. ,

1 (30) :

(20) 1 (30) ;

(damascene structure) 1 (30) ,

**3.**

1. The company is a public company, and the stock is traded on the New York Stock Exchange.

2. The company has a market capitalization of approximately \$50 billion.

3. The company has a long history of innovation and growth, and is a leader in its industry.

4. The company has a strong commitment to environmental, social, and governance (ESG) issues.

5. The company has a strong commitment to diversity and inclusion.

6. The company has a strong commitment to community development and philanthropy.

7. The company has a strong commitment to employee development and training.

8. The company has a strong commitment to customer satisfaction and service.

9. The company has a strong commitment to product quality and safety.

10. The company has a strong commitment to ethical business practices.

4.

1.  $\frac{1}{2}$  (20) ;

1 1 (30) (periphery) 2 (40) - (self-align)  
 (30) (205) 2 (40) ;  
 (20) 2 (40) , .

5.

(10) ;

(10) 1 (20) ;

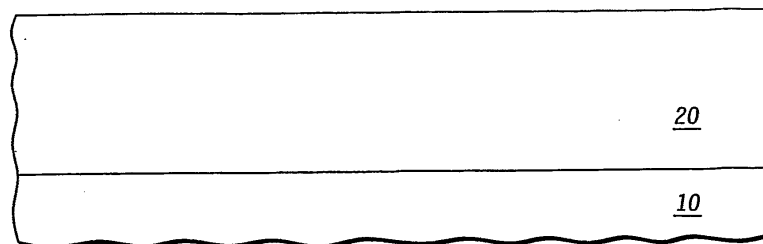
1 (20) (205) ;

(205) 1 (30) , 1 (30) , ;

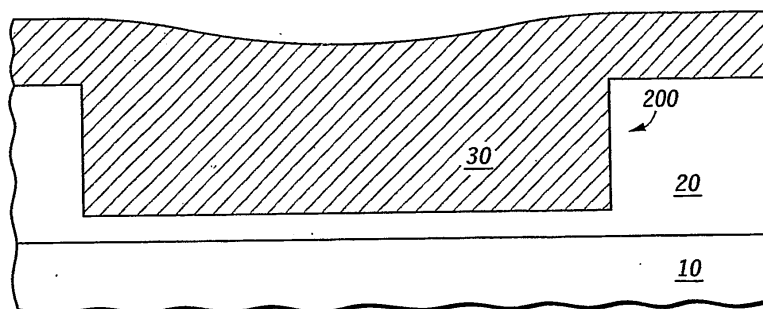
1 (30) ;

1 (30) 2 (40) , 2 (40) 1 (30)  
 가 , , .

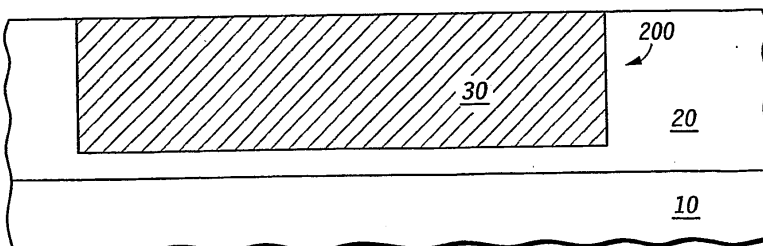
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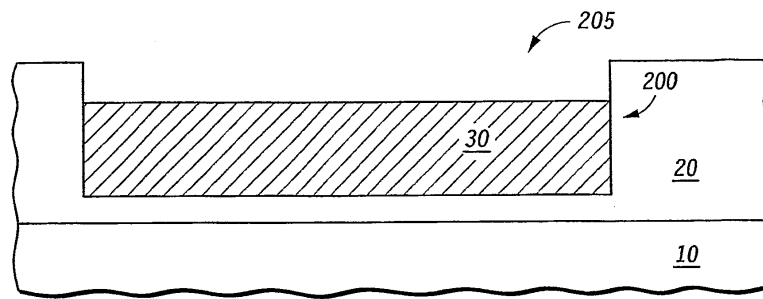
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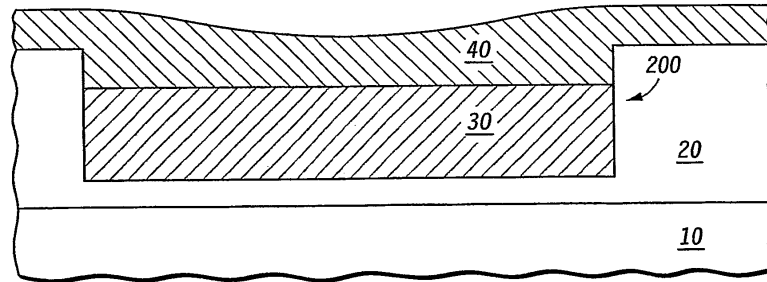
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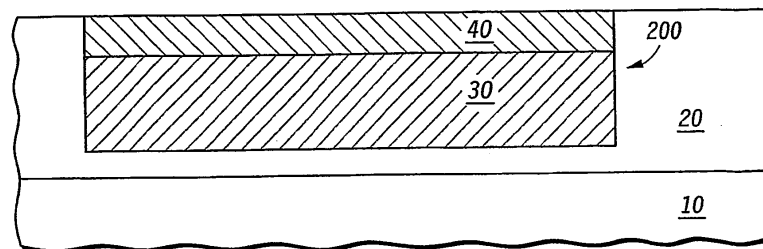
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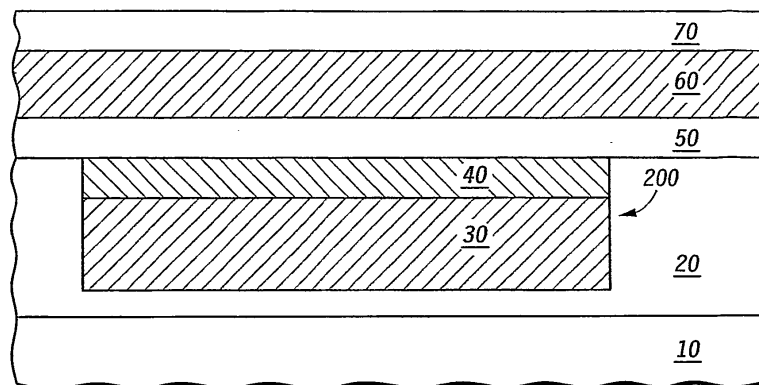
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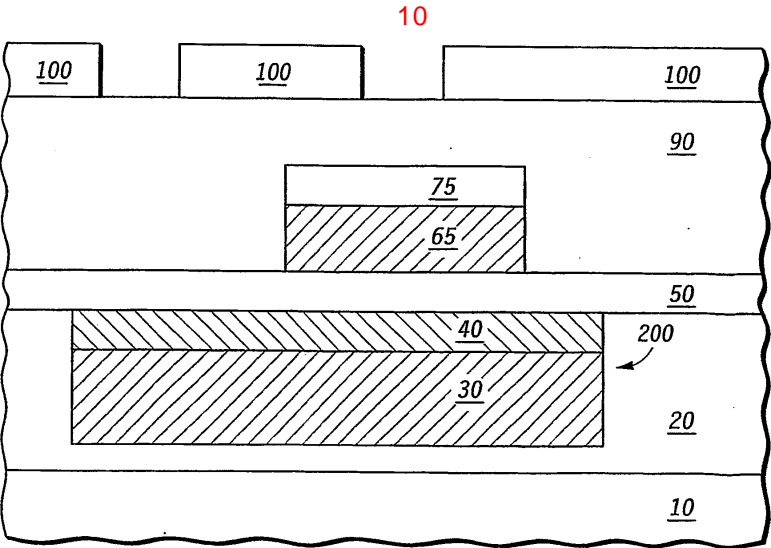
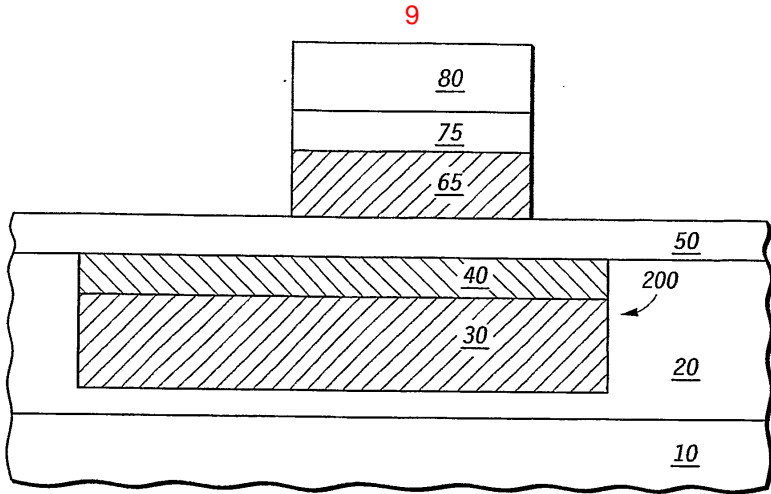
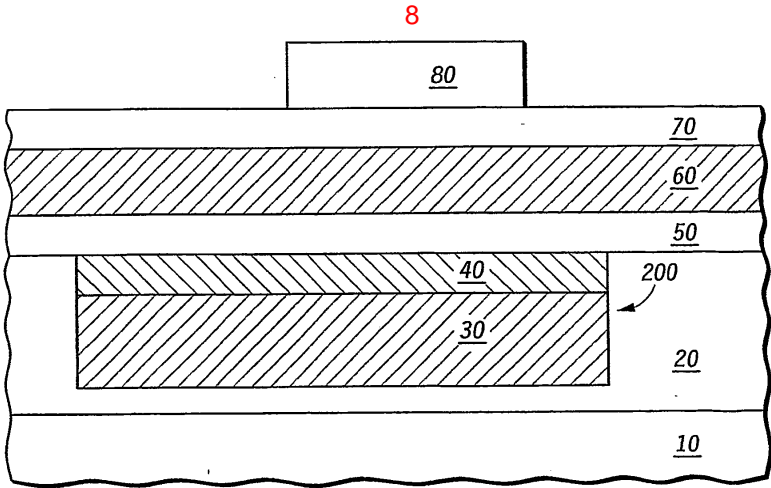
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7







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