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(43)

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2002 09 05

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(73) 가 가 2 2 3

(72) 2 2-3 가 가
2 2-3 가 가
2 2-3 가 가

(74)

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(54)

，
，
，
S (18) (14) ， TEOS (18) CMP (16) ，
(30) ， SiH₄ (30) (20) SiH₄ (16) TEO
(30) ， TEOS(18) ， SiH₄ (30) (20) SiH₄ (20)
(20) (22)

， ， TEOS ， ，

1 2
 2 1 (1).
 3 1 (2).
 4 1 (3).
 5 1 가 .
 6 1 .
 7 1 .
 8 2 .
 9 3 .
 10 4 .
 11 5 .
 12 6 .
 13 7 .
 14 8 .
 15 9 .
 16 10 .

< >

10 :
 12 : 1
 14 :
 16 :
 18 : TEOS
 20, 80 :
 22 :
 24 : F
 30 : SiH₄
 40 :
 50 :
 60, 70 :
 82 : (難)

, ,
 . 1 2 가 ,
 1 (10) 1 (12) . 1 (12)
 (14) (14) (16) TEOS (18)(, 「TEOS (18)」)
 ,
 가 . (16)
 TEOS (18) (20) . (20)
 (22)
 , 2 4 , 1 (10) , , CVD , CMP 1
 2 (12), (14) .

1 (12) (14) (16) SiH₄ 가 , O₂ 가 , C₂F₆ 가 가 CVD , , 가 CVD (16) SiH₄ 가 , O₂ 가 , C₂F₆ 가 가 CVD 가 (14) (角部)가 (14) (16) TEOS (18) TEOS (18) , T EOS O₂ 가 가 CVD , TEOS (18) CVD (14) , TEOS (18) (14) , TEOS (18) CMP (14) TEOS (18) (18) TEOS (18) (14) () , (16) TEOS (18) ()가 , , CVD , , TEOS (18) (20)(1) , (22) CVD (22) 가 ()가 , 1 가 , 1 (16) TEOS (18) CVD CVD (22) 400 (16) TEOS (18) , 400 (14) TEOS (18) (22) 가 , 5 (14) , F (24) (20) , (22) F (24) F (24) AlCu Ti , Ti F (24) , T i F가 가 , Ti/TiN , Ti F (24) , T , 1 , SiH₄ 1.48 , < > , 1 6 (10) 1 (10) CVD 6 CMP 1

1 (12) (14) (14) (16) CVD
 (16) SiH₄ 가 , O₂ 가 , C₂F₆ 가 가 CVD
 (16) (14) 가 가 CVD TEOS (18)
 (16) (14) TEOS O₂ 가 가 CVD , TEOS
 (18) (18) CMP (3)
 TEOS (18) TEOS (18) 6 200nm SiH₄ CVD (30)
 SiH₄ . SiH₄ (30) SiH₄ O₂ 가 SiH₄ CVD
 SiH₄ , SiH₄ (30) TEOS (18) Si O SiH₄ 가 O₂ 가 ,
 , RF (30) Si SiH₄ Si (30)
 SiH₄ , SiH₄ (30) (30) n=1.5 1.6(λ =632.8nm) (14)
 () (30), (16), TEOS (18) ()가
 , CVD ,
 , TEOS (18) (20) , CVD
)가 , 가 (22) (22) (CVD
 TEOS (18), (16) SiH₄ (30) . SiH₄ 400 (30) 가
 , (22) [5 F (24)] (20)
 2.
 7 7 8 2
 1 , SiH₄ 1 (30) (20) (30) (20)
 100nm SiH₄ (30) (20)
 50nm 가
 SiH₄ (30) (16) 가 (30)
 , 가 (16) 가 SiH₄ (30)
 8 가 , TEOS (18) SiH₄ (30) 1
 , SiH₄ (30) (30) 1
 400 가 , 1
 , SiH₄ (20) SiH₄ (20) (30)
 가 , SiH₄ (30) 8 (20) (30)
 SiH₄ (30) 2 가 2
 400 . 2 SiH₄ (30) , SiH₄ (30) , TEOS (18)
 SiH₄ (30) 가 (30) (20) (20)
 SiH₄ (20) 가 (30) (20) SiH₄ (20)
 (30) TEOS (18) 가 , TEOS (18) (22)
 가 ,

1

3.

9 (14) 3 (40) 9 (40)

1 (40) SiH_4 (16) 가 (14)

1 (14) F F 가 (14)

(40) (40)

4.

10 (20) SiH_4 (30) 2 (14) (4)

10 (16) (14) TEOS (18) (2)

3

5.

11 (20) SiH_4 (30) (22)

TEOS (18) (50) (16)

CMP 가 (16) TEOS (18)

1 (22) 4 가 TEOS (18) (16)

가 (50) (16) TEOS (18) (22)

(50) 1 4 (50) 1.48

(50) (16) (22) (50)

(22) (50)

가 (50)

(16) (22) (50)

6.

12 (16) TEOS (18) 1

CMP (60) SiH_4 O₂ 가 CVD (60) SiH_4

NH₃ 가 400 (430) 가 (60)

(60) (16) 100nm)가

(60) , (60) , (60)
 (22) (60) (1) , (60) , (20) 400
 , , 400 , TEOS (18) (16) 400 (60) (22)
 F (20) ,
 7.
 13 7 1
 CMP (70) , 400 (16) TEOS (18) (70)
 Ti (70) , T
 i가 F TiF (16) (70) , TEOS (18)
 (22) (70) (1) , (60) 가 (20) 400
 , , 400 , TEOS (18) (16) 400 TiF (22)
 F (20) ,
 8.
 14 8 14
 (2 4) , 6 (12) , 7 , TEOS (18) (13)
 TEOS (18) (80) (80) 가
 , Ta (82) , TaN , (82) (82) AlCu (84) TiN (86)
 Ti
 (82) (80) , , TEOS (18) (80)
 6 7
 9.
 15 9 (16)
 1 8
 15 15
 (16) 가 (16) 가 (14)
 가 (14)
 (16) CVD CVD (16) CV
 D 가 (16) 가
 가 (14)

(16)

10.

16 (a) 16 (b) 10

16 (a) (16)

16 (b) (16)

1 8

16 (a) 16 (b)

16 (a) 16 (b)

(16) (14) 가 16 (a), 16 (b) 가

(14) 2 1 2

가 (14) , TEOS (18)

가 (16) CVD (16)

CVD (14) , TEOS (18)

(20) (16) (20)

SiH₄

F

SiH₄

(Ta TaN)

가

(57)

1.

SiH₄

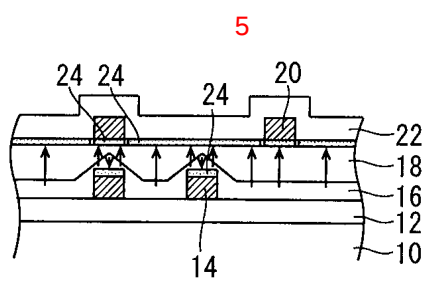
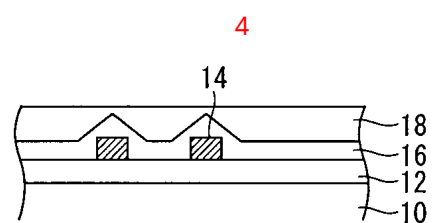
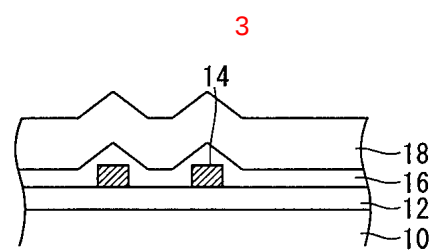
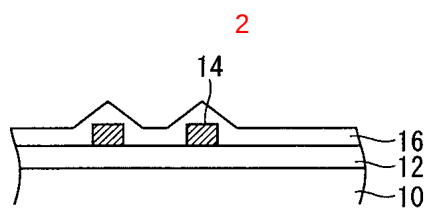
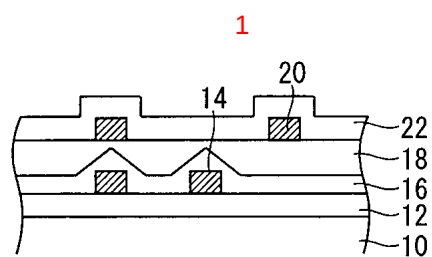
2.

1.48

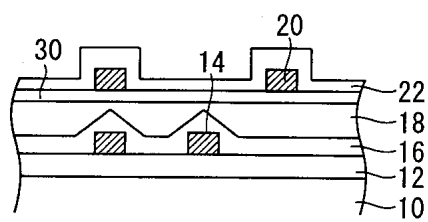
3.

(難)

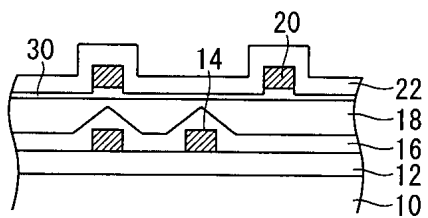
(fluorination retardant metal layer)



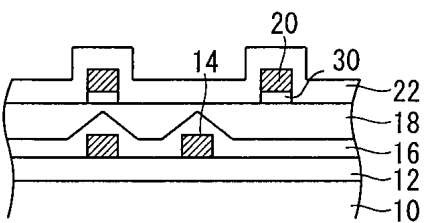
6



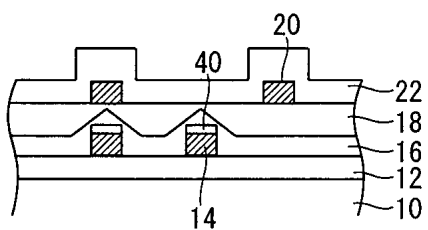
7



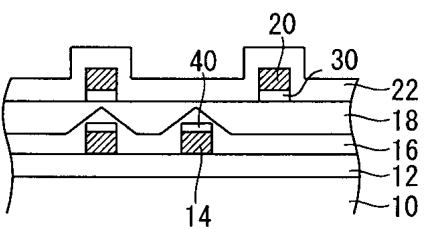
8



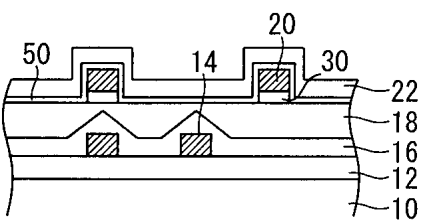
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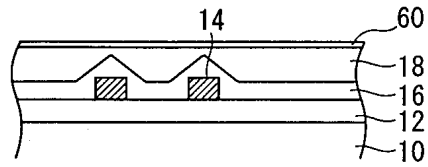
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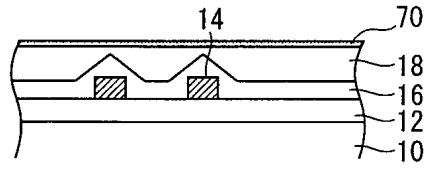
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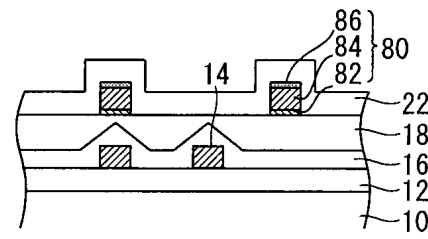
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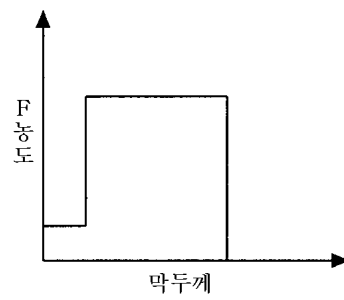
13



14

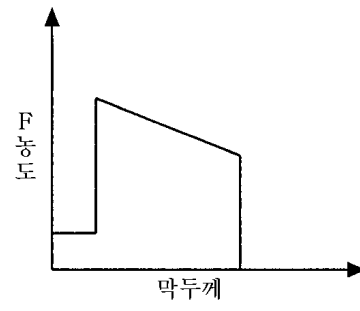


15



16

(a)



(b)

