

(19)  
(12)

(KR)  
(B1)

(51) 。 Int. Cl.<sup>7</sup>  
H01L 27/10  
H01L 27/115

(45)  
(11)  
(24)

2004 06 23  
10-0437452  
2004 06 15

(21) 10-2002-0020889  
(22) 2002 04 17

(65)  
(43)

10-2003-0082240  
2003 10 22

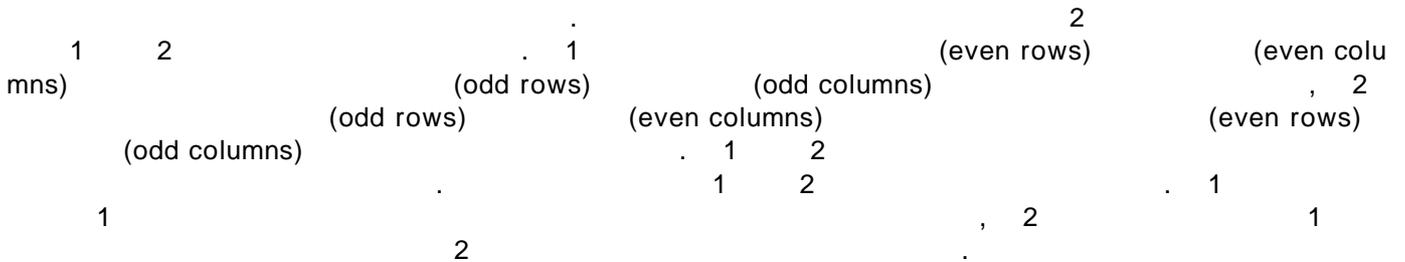
(73) 416

(72) 101 1606

102 1206

(74)  
:

(54)



4

1 (typical phase changeable memory device)

2  
3  
4  
5 4 -

가





3  
 4  
 4 가 (53a) (55) (55) x (53a) (53a)  
 (55) 3 (55) (55) (53a) (53a)  
 x (rows) y (columns) (positions)  
 (63) y (data storage elements) 2  
 a) 1 (74a) 2 (74b) 1 (74  
 (even rows) (even columns) (odd rows) (o  
 dd columns) (74b) (even rows)  
 (odd columns) (odd rows) (even columns)  
 1 2 (74a, 74b) (69a)  
 1 2 (74a, 74b) 가 (81a 81a') 2 (81b  
 89) 1 (81a 81a') 1 (77a 77a') (81  
 b) 89) 1 (74a) 가 2 (81  
 2 (77b 85) 2 (74b) (81  
 1 (81a) 1 (77a) (81a, 81b) 1 (74a)  
 2 (81b) 2 (77b) 2 (74b)  
 2 (89) 1 (81a')  
 1 (81a') 1 (77a') 1 (74a)  
 2 (89) 2 (85) 2 (74b)  
 (D)

$$D = \sqrt{R^2 + C^2}$$

, R , C  
 (D) 가 ,  
 5 4 -  
 5 (66) (51) (67) (68) (66) (68)  
 (67) (67) (68)  
 (69) (69) (69) (51)  
 2 (69) (74a) 2 (69) (74b)  
 74b) 1 (74a) (69) 2  
 (74b) (69) 2  
 (71a) 1 (73a) 1 (74a) 1  
 (71b) 2 (73b) 2 (74b) 2  
 1 2 (74a, 74b) (75)  
 1 (75) (73a) 1 (81a) 2 (

73b) 2 (81b) 1 1 (81a)

(75) 1 (77a) 1 (73a) (77b)

2 (81b) (75) 2 (77a, 77b)

1 2 (73b) (79a, 79b) 1 2 (74a, 74b)

(73a, 73b) 1 2 (81a, 81b) 1 2

6 4 -

6 (51) 5 1 1 2 (74a, 74b) 2

1 2 (74a, 74b) 5 1 (75)

4 ) 1 (75) (81a') (77a') 1

(79a') 1 (73a) (81a')

(83) 1 (81a') (83) (89) 2

2 (89) (73b) (83) (75) (85) 2 (85) (87)

2 2 1 가

7a 9a 7b 9b 7b 9b

4 - 4, 7a 7b (51) (53) (5)

3a) 가 (53a) 4 (55) 2 (55) (53a) (53a) (53a) x

(row) ( ) (55) (53) (55) 4 (57s) (57a)

(53a) (57s) (57d) (57a) 2

(rows) (columns) (57d) (57s) 1 (59)

1 (59) (57d) ( 4 61) (59)

(61) (61) (63) (63) 4 y

(column) (63) (61)

(57d) (63) 2 (65) (67)

(63) (65) (67)

67) (66) (66) 1 (59) 2 (65) (lower inter

layer dielectric layer; 68) (68) (69a) (57s) (69a) (TiAlN),

4, 8a 8b ( 4 69a) (TiN), (TaSiN)

(TiSiN), (TaAlN) (67) (69)

(69a) (69)

(69) 1 2 (even rows) (even

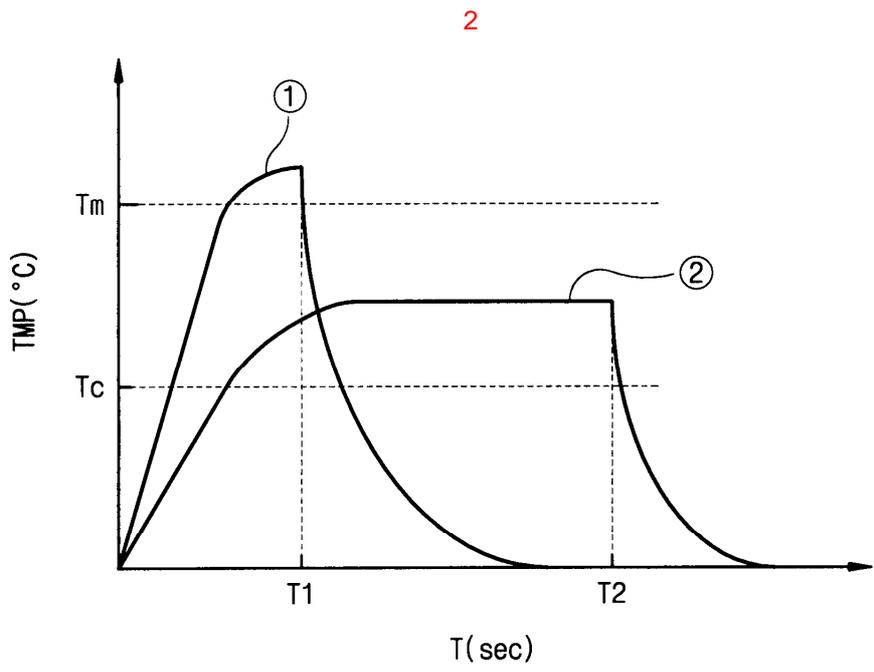
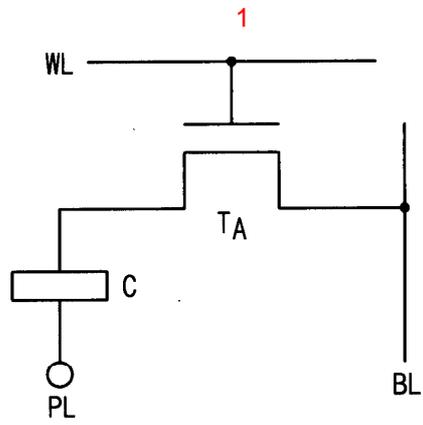
columns) 1 2



(57)

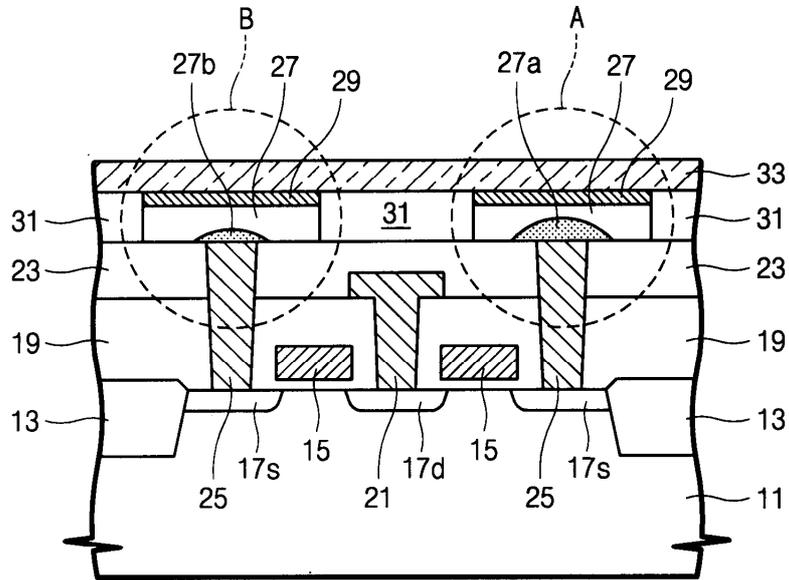
1. (odd rows) 2 (even rows) (even columns) 1 (dat  
a storage elements);  
2 (odd columns) (odd rows) (even columns) 2  
; 1 1 ; 2 2  
1 1 2  
2. 1 1 2  
3. 2 1 1 1 ;  
2 2 2  
4. 1 2 1  
5. 4 1 1 1 ;  
2 2 2 2  
6. 2 1 1 2  
1 2  
7. 6 1 1 2  
1 2 2 1 2 1  
1 2 1 2  
8. 7 1 2 1 2  
9. 6 1 2 1 2

1 1 1 1 1  
 1 1 1 1 1  
 1 1 1 1 1  
 2 2 2 2 2  
 2 2 2 2 2  
 10.  
 9 1 1 1 1  
 2 2 2 2

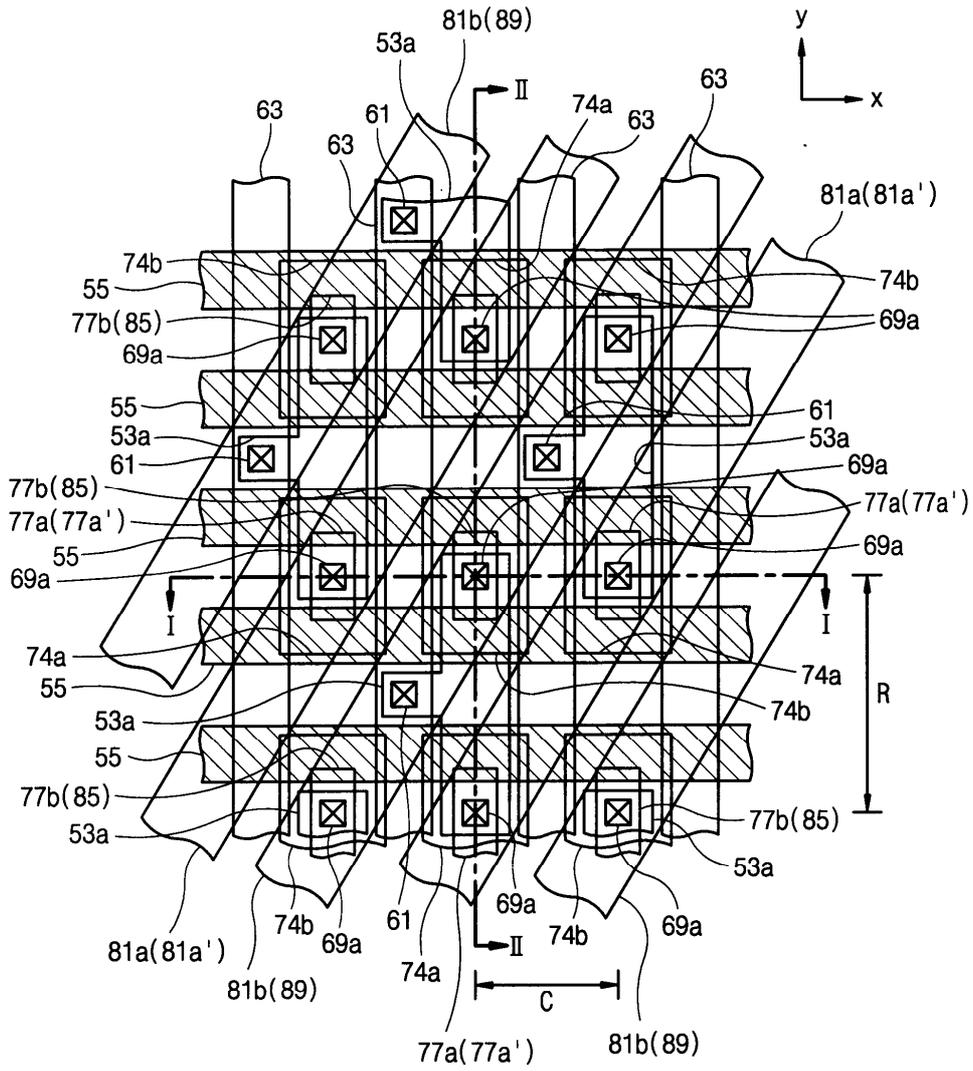


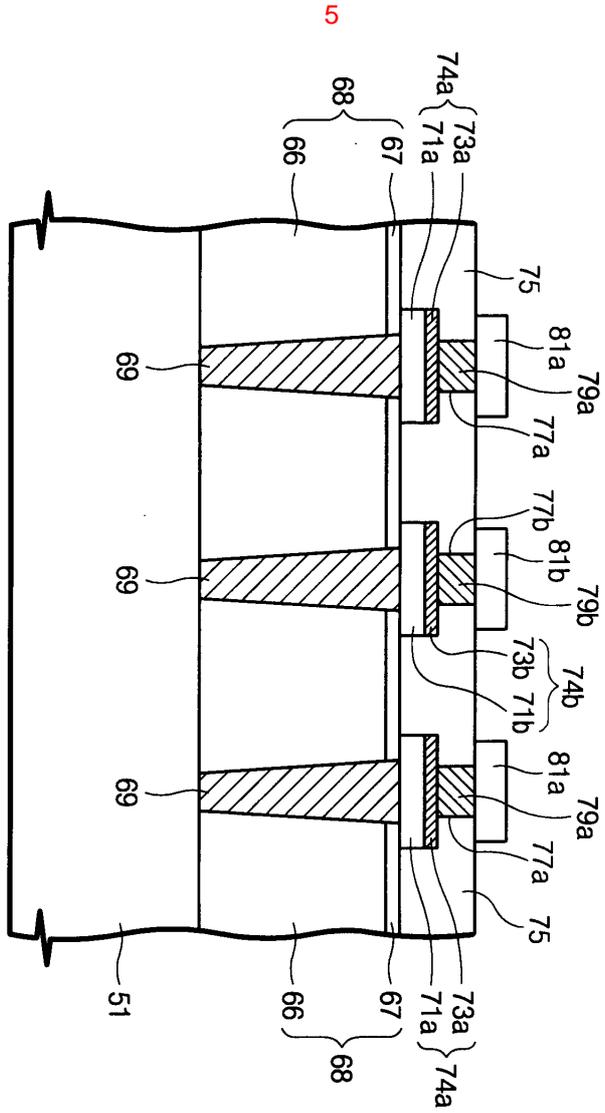
3

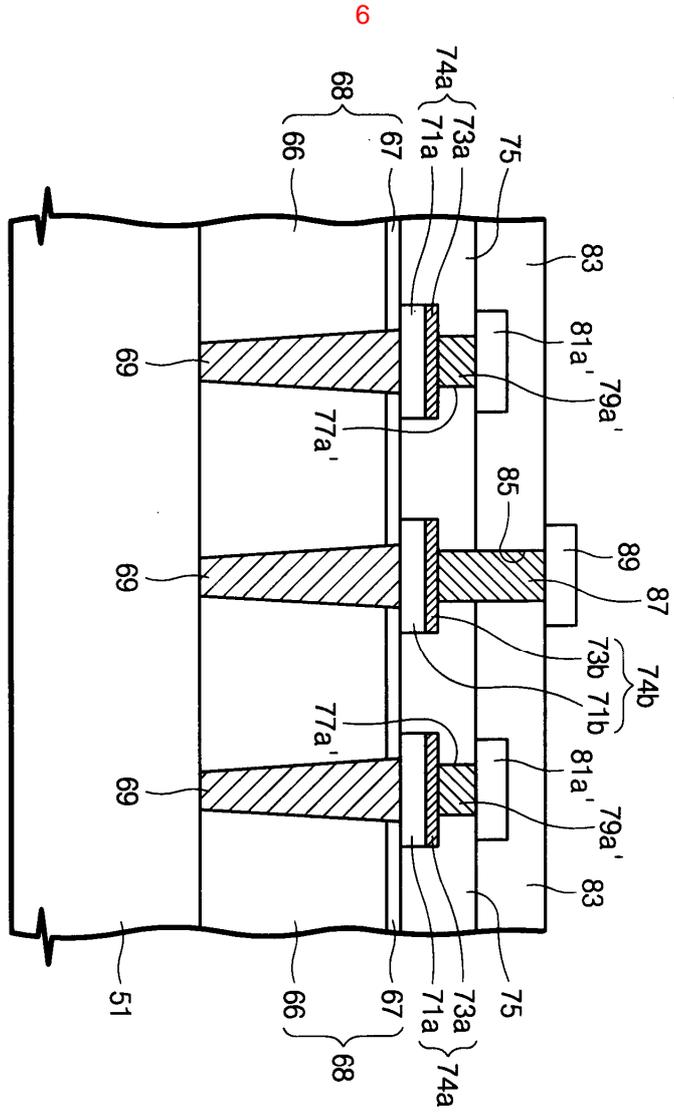
(종래 기술)



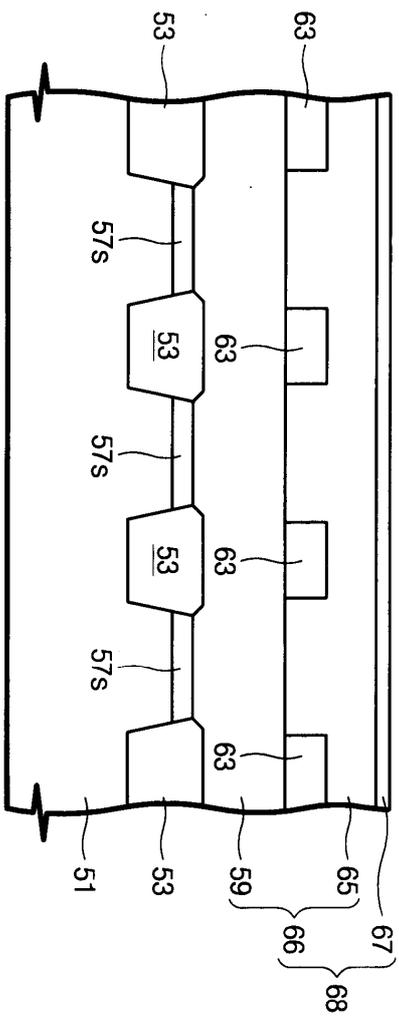
4







7a



7b

