

(19)
(12)

(KR)
(A)

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(43)

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(21) 10-2001-0081141
(22) 2001 12 19

(71) 136-1

(72) 1 1604-17

194 704-402

(74)
:

(54)

			EM	가	EM	
		EM				2
,	,	1	2	2	2	,
1				2		2
	1			.		

3a

1	EM	,			
2	2	EM	(M2C EM TP)	1	EM (M1C E
M TP)	,				
3a	1	EM	,		

3b 3a - ' ,
 4a 4c 1 EM ,
 5a 2 EM ,
 5b 5a - ' ,
 6a 6c 2 EM .

*

41 : 42 :
 43 : 44 : 가
 45a, 45b, 45c : 1 46 : 1
 47 : 48 : 가

EM (Test pattern; TP)
 (Stress Migration)
 가 (Electro Migration; 'EM')
 , (Reliability) EM 가 가
 (feedback) 가 EM
 , 4 가 1 (M1) 0.24 μ m
 80% 0.35 μ m 가 가 (local interconnection)
 EM
 1 (M1) 2 (AI) (M2) , (W) 1 (M1)
 (via) EM , 1,2
 2 0.16 μ m (M2C) EM 1 (M1C) (WBL) EM
 1 (M1C)

2 (M2C) EM 1 (M1C) EM

2) 1 (M1C) EM 1 (M1) 2 (M1C) EM (AI) a link length)가 50 μ m

1 (M1) 2 (M2) 2 (M2C) (Via)

800 (WBL) (sub-micron) EM 가 (failure) 1 (WBL) (M1C) EM 1 (M1)

(void) (WBL) (WBL) 가 1 EM (M1) 1 (M1)

1 (WBL) (WBL) 1 (M1C) EM 가 EM EM 1a (chain)

2 EM 200

1 (WBL1,WBL2) (WBL1) 1-1 (M1C1) (M1C2) 1-2 (M1C2) 1 (M1C2) (M1)

1-1 (M1C1) 1-2 (M1C2) 1 (M1C2) (M1)

1-1 1-2 (M1C1,M1C2) 0.24 μ m 0.26 μ m 가 4500 6000 가 (WBL1)

(WBL1, WBL2) 1 (M1) 가 (OverLap; OL) (I+, I-)가 (V+, V-)가 (WBL1, WBL2)

(I+, I-) (branch) (V+, V-) (WBL1, WBL2)

가 EM 2 2 EM (M2C EM) TP) 300 5000 5200 EM (M1)

2 20% 가 3% 4% 가

EM 가 EM

EM

1 2 2 2

가 가 (48)가 .
 , (47) 가 (48) 1 (46)
 1 1 (M1) (M1C) EM 1 () (WBL) 1 (M1C)
 1 1 EM).
 가 가 EM (WBL) EM 가 EM (WBL)
 , 1 (quality pass) 가 EM
 , 1 가 (M1C) 가 2 (worst)
 5a 2 EM , 5b 5a - '
 5a 5b 가 가 (plate) (,)
 가 (51), (52a) 가 (51) 1 (53a)
 가 (52b) 2 (53b) 가 1 (53), 1 2 (53b)
 가 (54) (55), 가 (55) 1 2 (53b)
 , (52a) 가 (52b) .
 (51) (51) EM EM 1
 (Al)(53)
 6a 6c 5a EM .
 6a (, ,) EM (51) 1 (51) 50μm
 (51) 가 1 EM 1
 6b () 1 (M1C)(52a, 52b)
 , 1 (52a,52b) 1 1 (51)
 1 2 (52a) 가 가 (52a)
 6c (52b) , 가 (52a) (51) 1 (53a)
 가 b) 1 (53) . (51) 2 (53)

(53b) (51) (54)가
 (I+/I-, 55)가 (V+/V-, 54) 2 (53b) 가
 EM 2 1 (51) EM 1 EM (52) EM
 (AI)(53) (M1C)(52)
 가 2 (WBL) 가 EM (WBL) 가
 WLR(Water Level Reliability) EM 가
 (M1C) 가 1
 가 2 가
 WLR EM
 2 1
 가 가
 EM 가 EM
 가 가
 EM

- (57)
1. ;
 2 ;
 1 2 2 ;
 1 2 2 ;
 1 1 2
 2. 가 2

3. 1 ,

1

1

2

4. 3 ,

2

1

3

5. 가 가 ;

가 ;

2

1

가

;

2

가

1

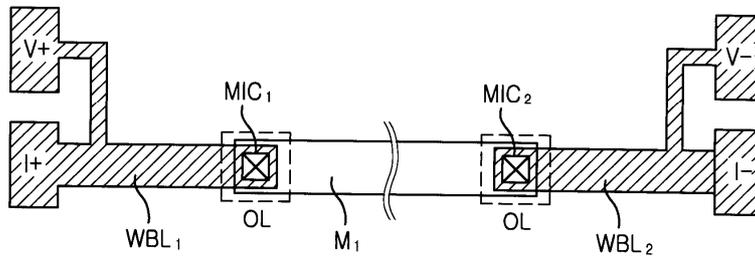
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1

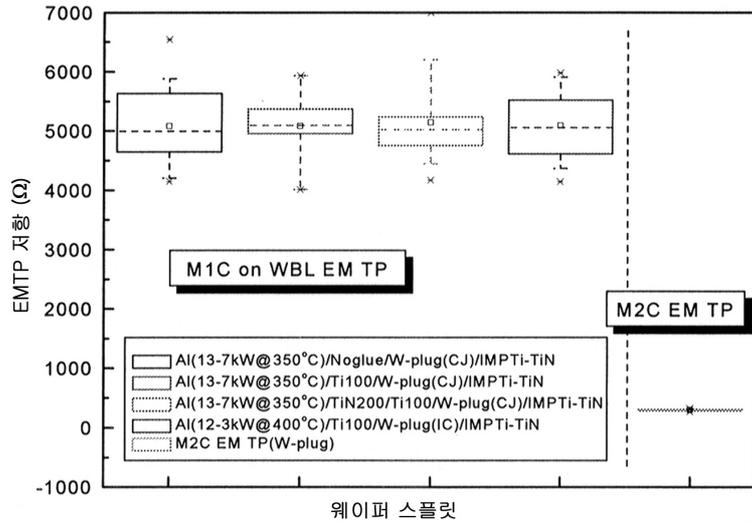
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2

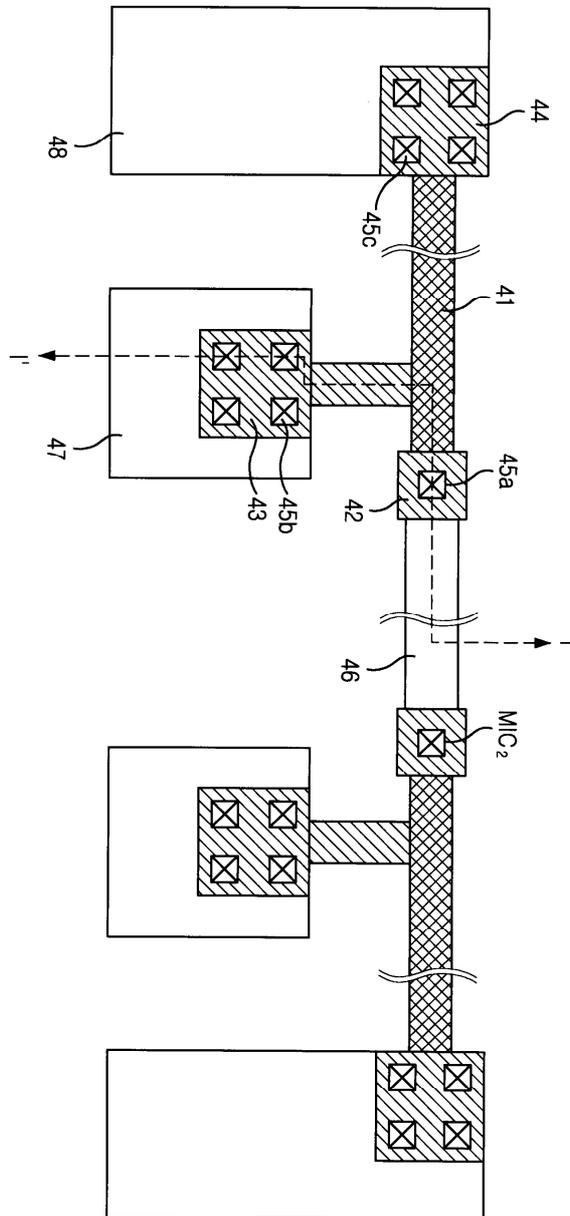
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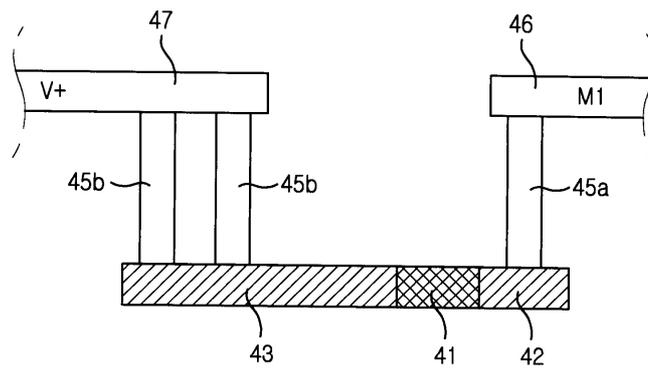
2



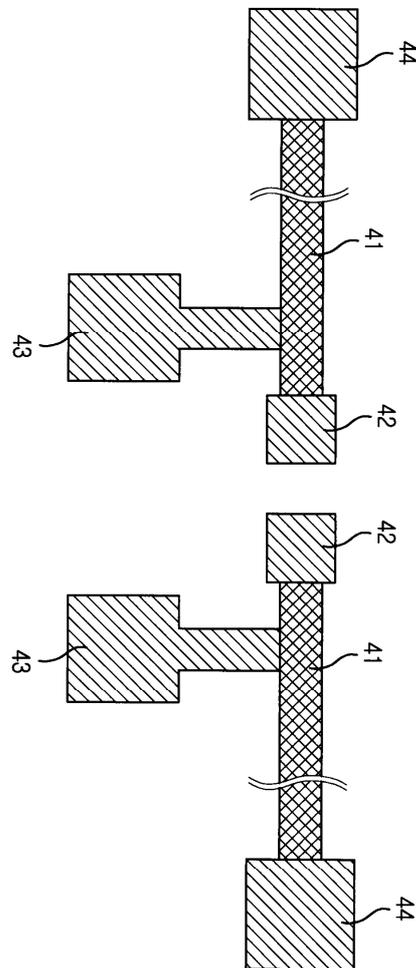
3a



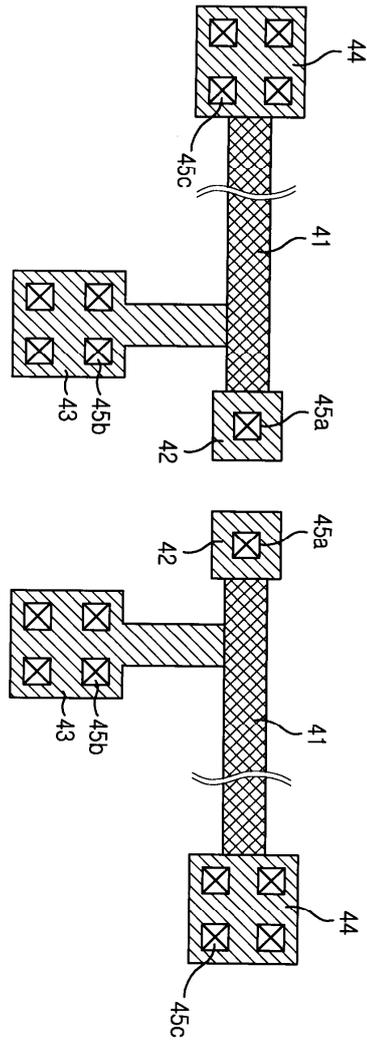
3b



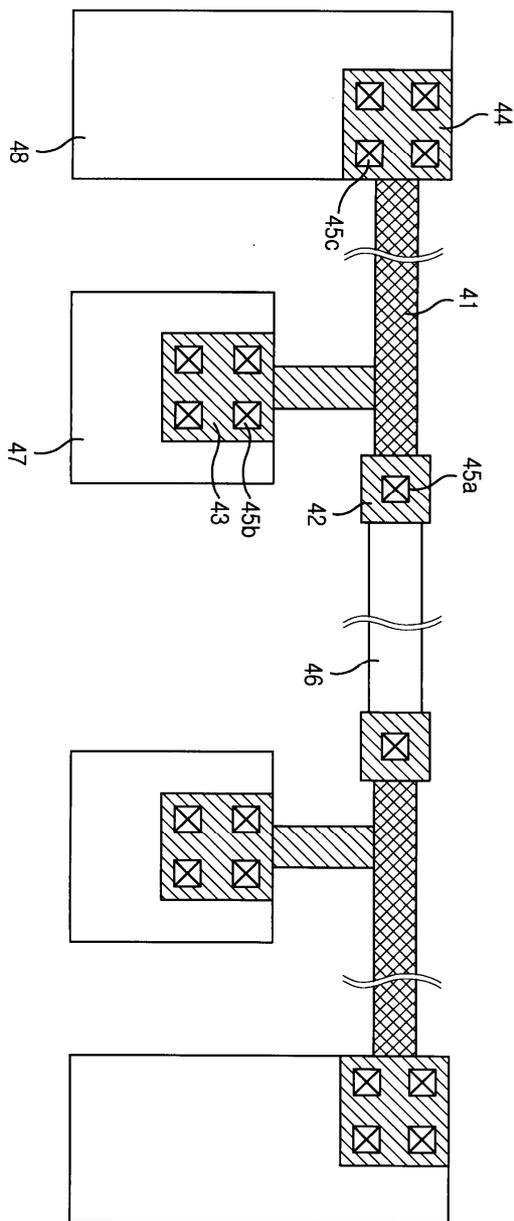
4a



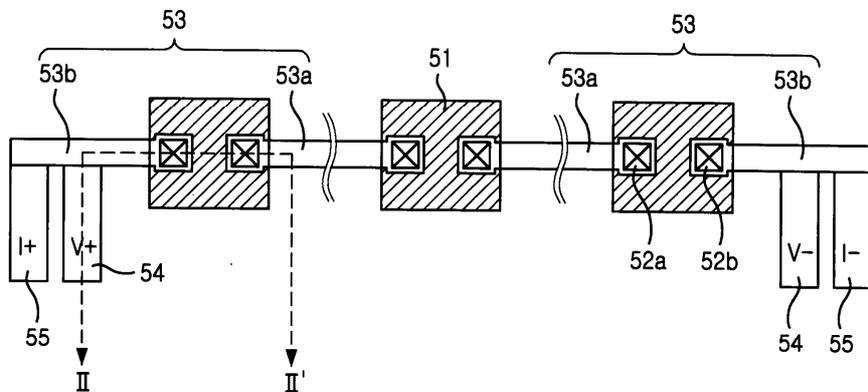
4b



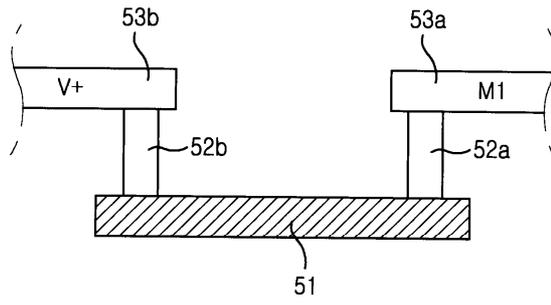
4c



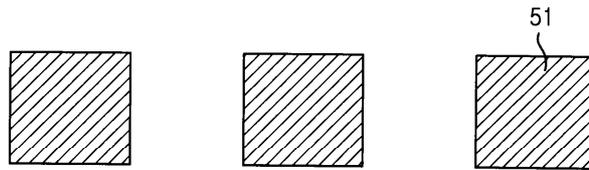
5a



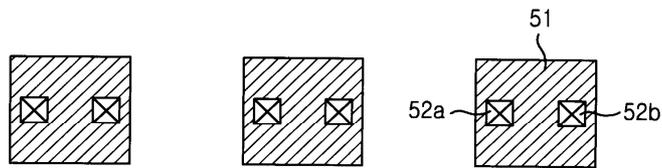
5b



6a



6b



6c

