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(12) (B1)

(51) Int. Cl. 7
G11C 16/14

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(11) 10-0381804
(24) 2003 04 14

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| (21) | 10-2000-0073248 | (65) | 2001-0077936 |
| (22) | 2000 12 05 | (43) | 2001 08 20 |

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| (30) | 2000-018508 | 2000 01 27 | (JP) |
| | 2000-097705 | 2000 03 31 | (JP) |

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| (73) | 가 | 가 | |
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| (72) | 2 | 2 | 3 | 가 | 가 |
|------|---|---|---|---|---|

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|---|---|---|---|---|
| 2 | 2 | 3 | 가 | 가 |
|---|---|---|---|---|

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|---|---|---|---|---|
| 2 | 2 | 3 | 가 | 가 |
|---|---|---|---|---|

(74)

:

(54)

| | | | |
|---|---|---|--------|
| 가 | 가 | , | S2, S3 |
| , | , | , | 가 |

2

| | | | | | | |
|---|---|---|------|-----|---|---|
| 1 | 1 | / | (2)가 | (1) | , | , |
| 2 | 2 | | | S1 | | , |
| 3 | 2 | | | | | , |
| 4 | 2 | | S2가 | | 가 | |

-10V
 BL1 BLm
 49 가 가
 49 ,
 WL -10V
 Vwell 8V
 50 47 , S103
 50 , Vwell V_{SL} 0V
 WL_i 3.5V
 BL_j 1.0V 0V
 50 50
 51 3.5V 가 1.0V 가
 52 , 0V
 52 , V_{SL}
 53 52 , Vwell 0V
 53 1.0V 가 4.5V 가
 가 . 가
 가

47 가
 54 54 , 47 S101 , "0"
 , NOR , "1"
 54 , 5.5V , "0"
 55 47 , 가 가
 47, 55 , S102
 가 , FN(Fowler-Nordheim)
 54 , 1
 56 47 S103
 56 , 3.5V
 , 1V
 56 , 56
 , 1
 , 54

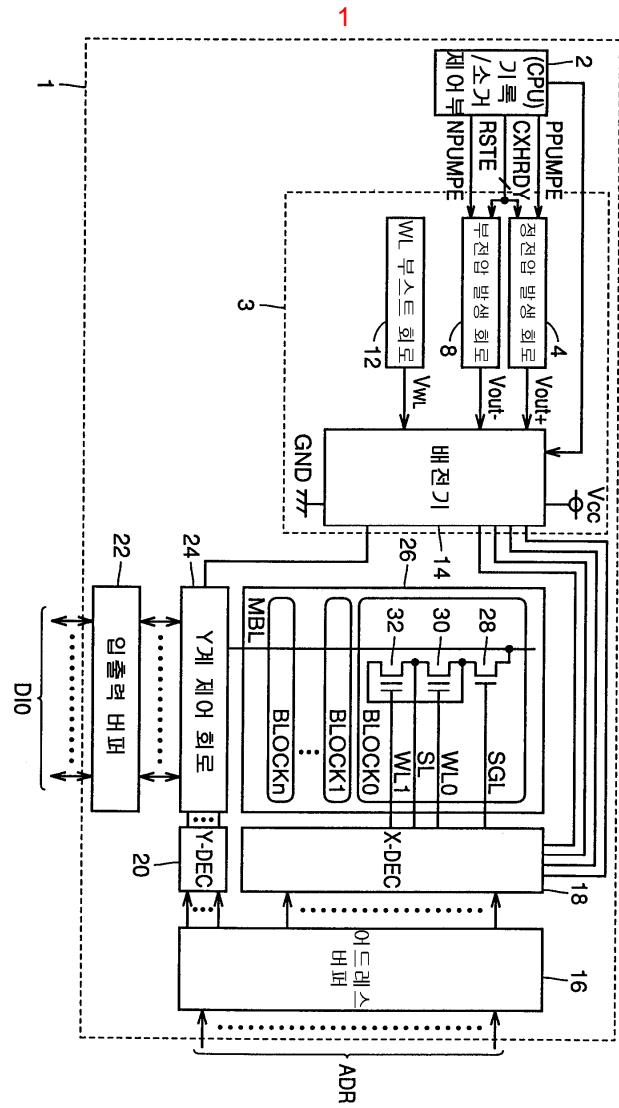
62
 63 62
 63 ,
 31 가
 62
 64 63 62
 64 S131
 64 , V_{SL}
 65 BL1 BLm
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 65 -8V
 66 63 S131
 66 , "1" 5.5V 7V
 67 3.5V
 67 , "0"
 68 "0"
 68 , "1"
 68 5.5V
 68
 V
 9

, , 가 23 가 Vmax
 가 Vmax , 23 t10 Vmax
 , , S32 S34 가 S33 가 , S34
 , , 21 S34
 , , , ,
 (4 4)
 25 25 22 4 S35 S34 22
 26 25 26 t2 S31 0.5V t4 S33 가 -5V
 25, 26 , S32 가 , S35 가 0.5V
 , S31 가 , S35 가 t7
 가 S33 , S34 , t10, t13, t16, t19 S35
 가 , , ,
 27 26 t3 가 S32
 , S34 (narrow)
 , S35 가 , S6
 (5)
 28 5
 29 28
 28, 29 5
 4, S20, S5 S40 S44 6 S6 S10 6 , S3, S
 t1 , t2 S41 , S40 가 가 , , t3 t4 t10 , S42 S41
 가 , S42
 , t11 S42
 S43 t12
 S42
 S42
 t13 S6 , S44 가 가 , S7 ,
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 , S41, S42 ,
 42 5 5)
 30 30 31 30 28 , S42
 , S45 28

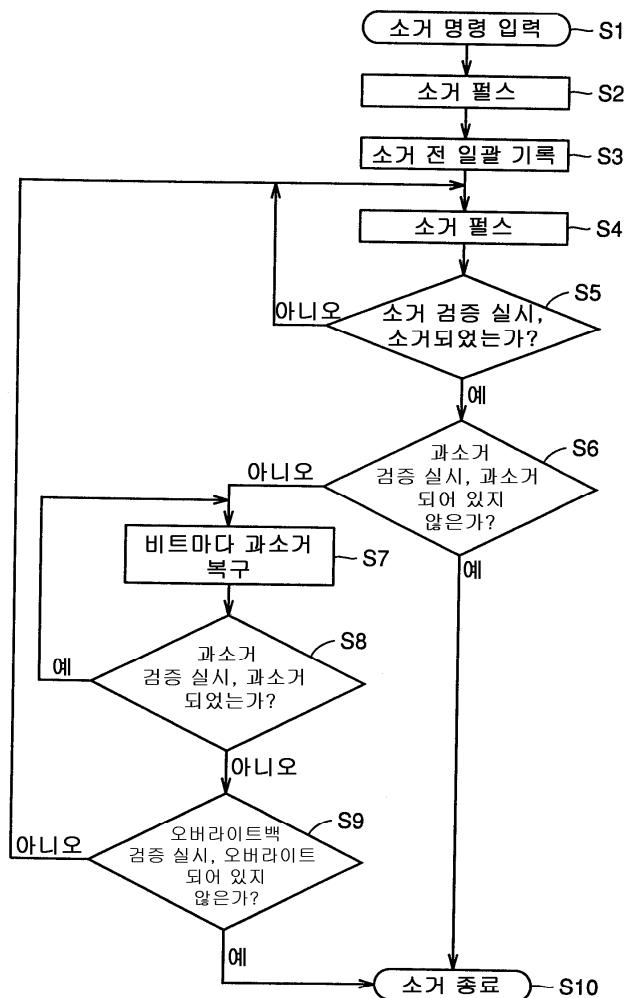
43 , S57 t2 t11 가 S52
 , t16 t22 가 S56 , S
 59 ,
 S56 S56 , 44 t12 t15 가 S53 S54
 ,
 (8) S58 S54
 45 8
 46 45
 45 6 S3, S4, S20, S5 S60 S65
 6 S6 S16 6
 45, 46 S1 t1
 (S60). , t2 가 가 (S61).
 , t3 S62 S61 4.0V
 가 .
 t12 S62 t14 S63
 가 가 . t16 S65
 . S65 ,
 가 t17 t20 S65 S63, S64
 ,
 ,
 ,
 6, 7 가

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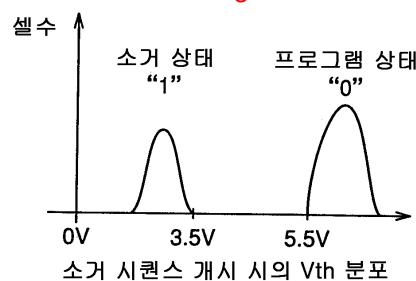
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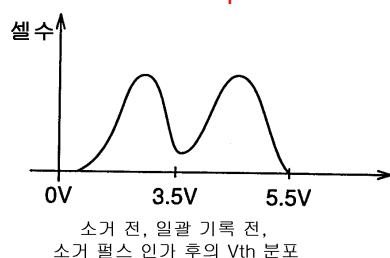
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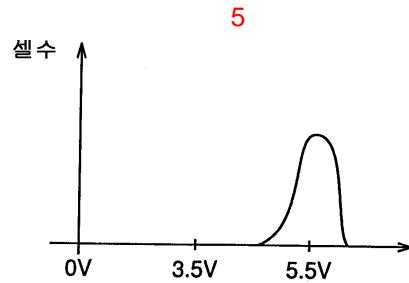


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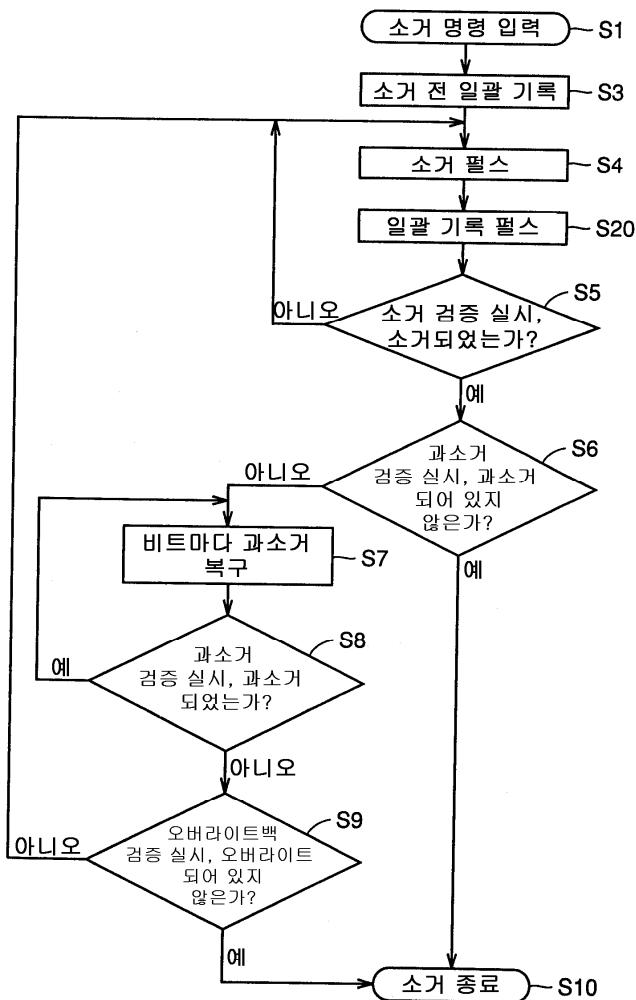
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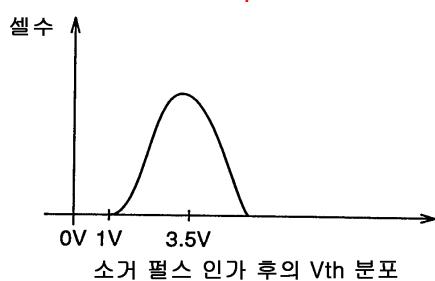


소거 전 일괄 기록 종료 후의 Vth 분포

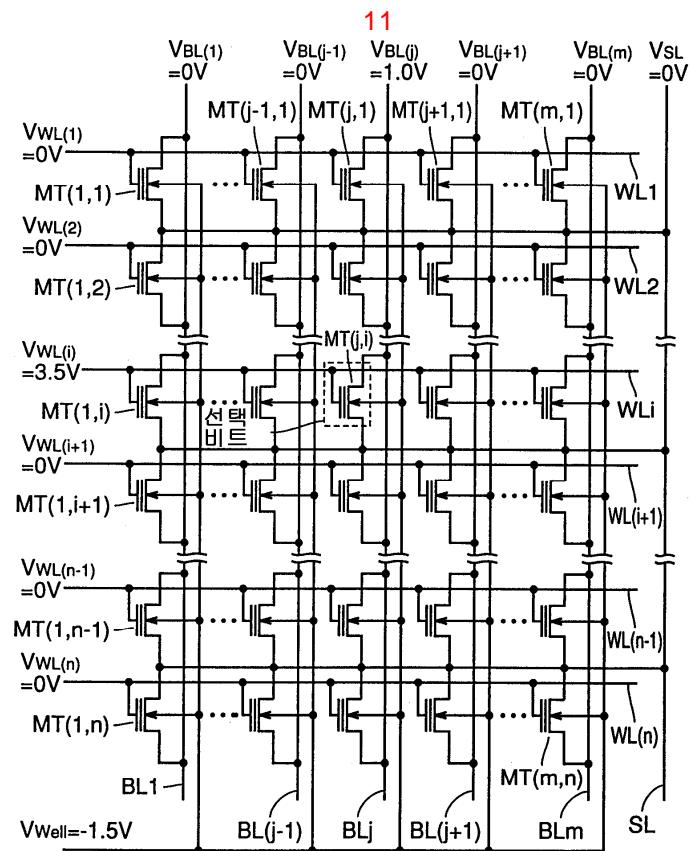
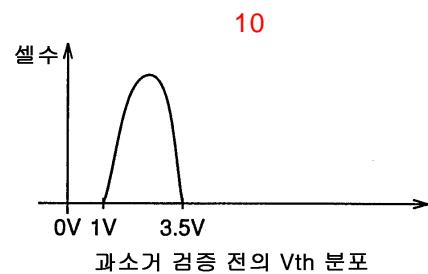
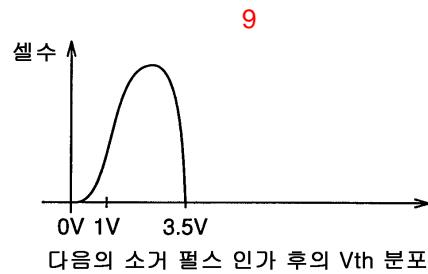
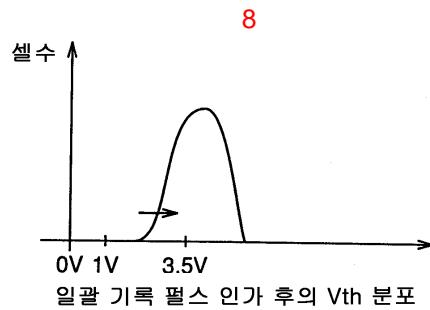
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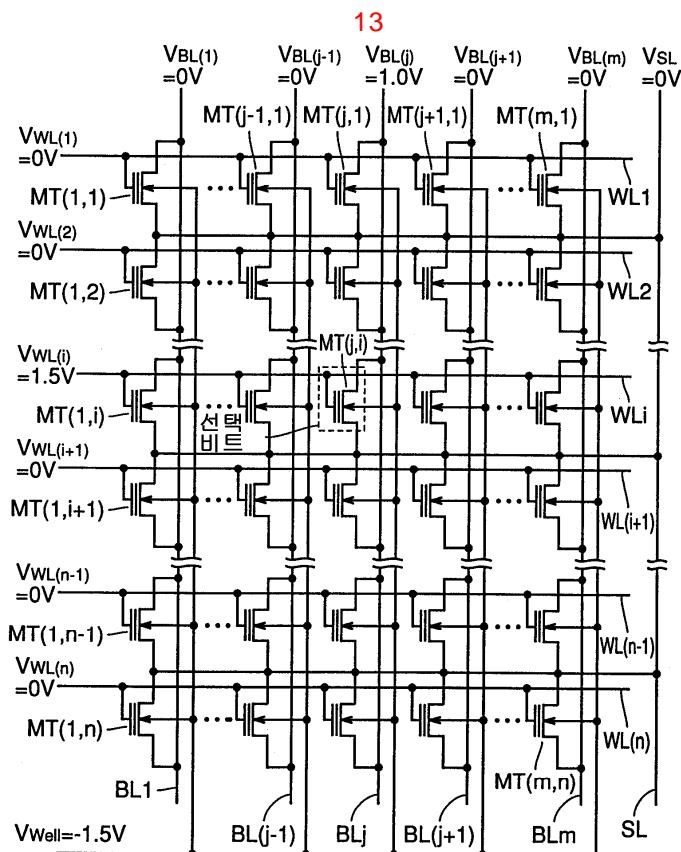
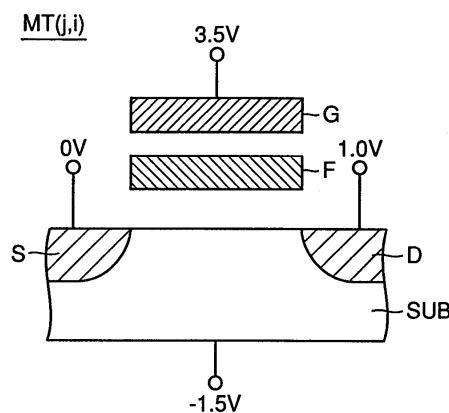
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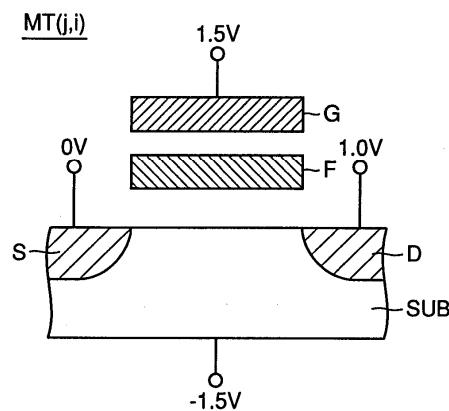
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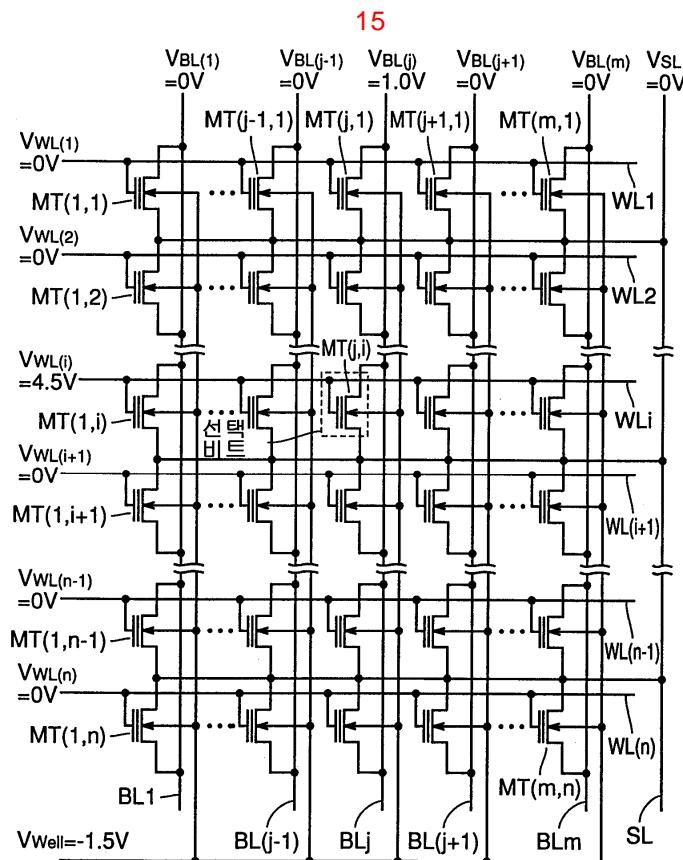


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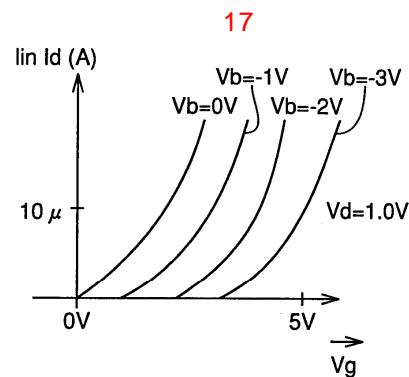
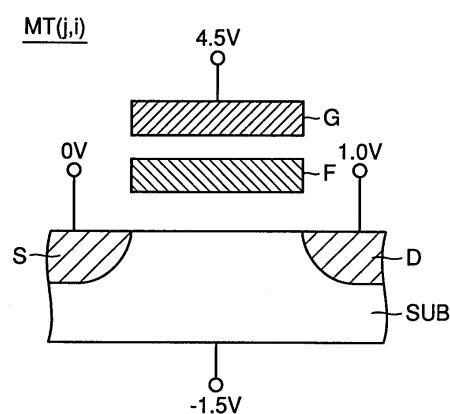


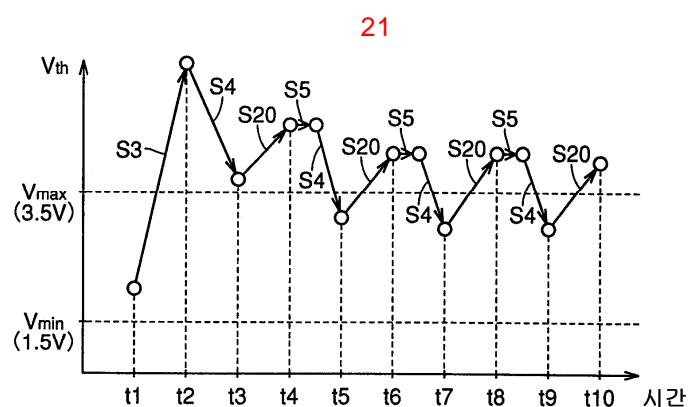
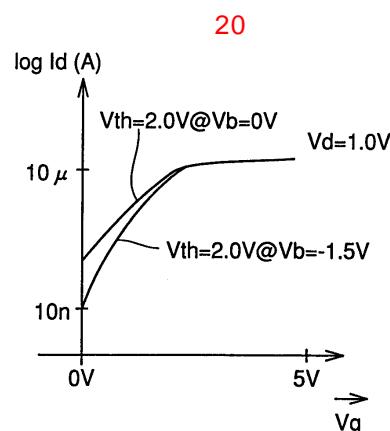
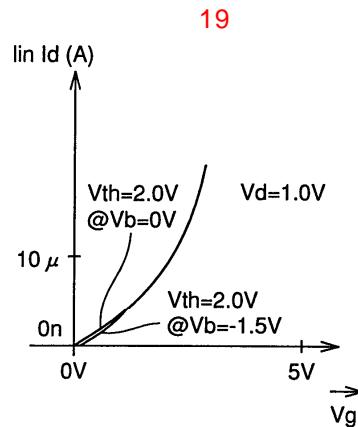
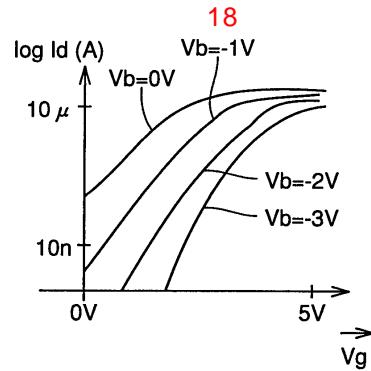
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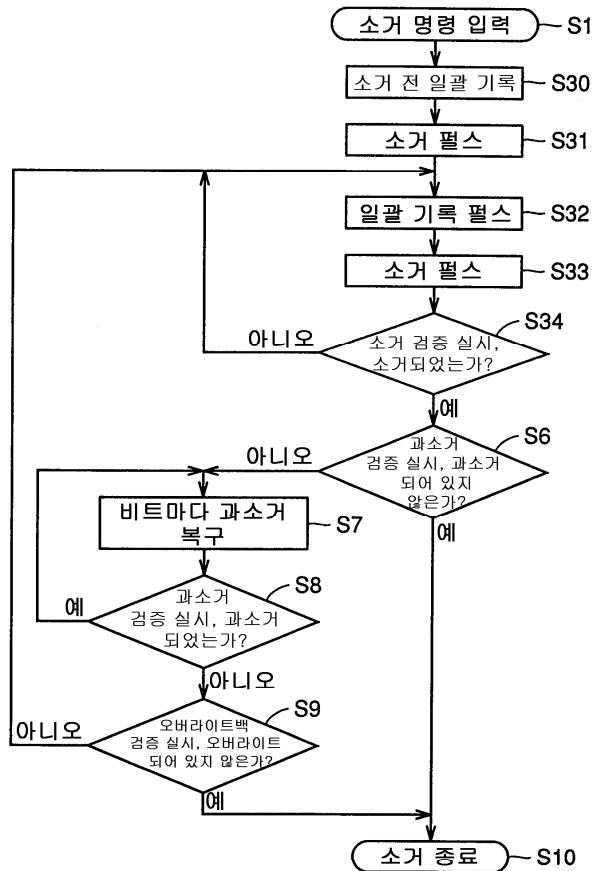


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선택 비트





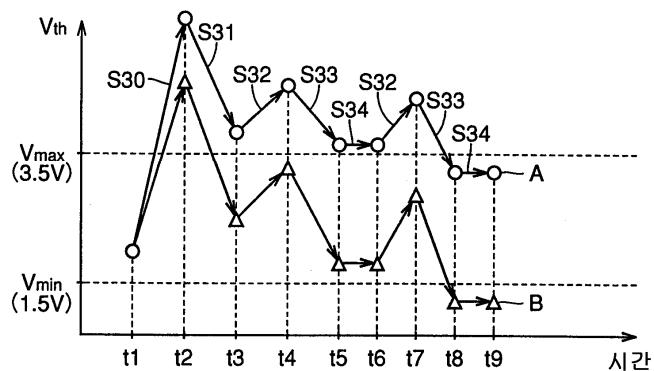
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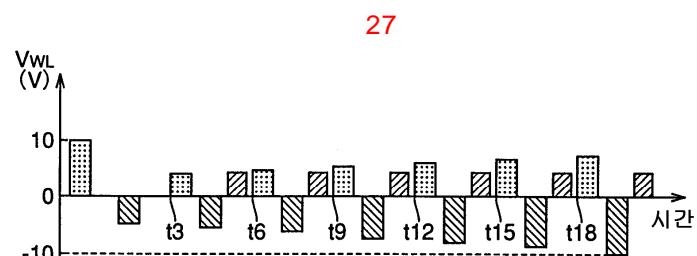
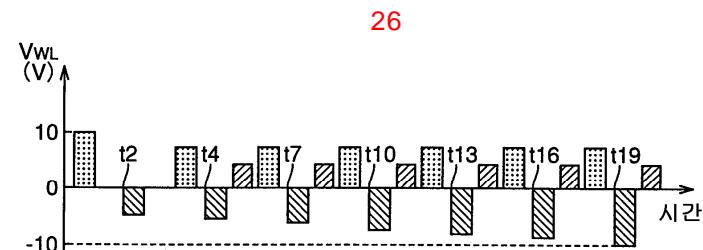
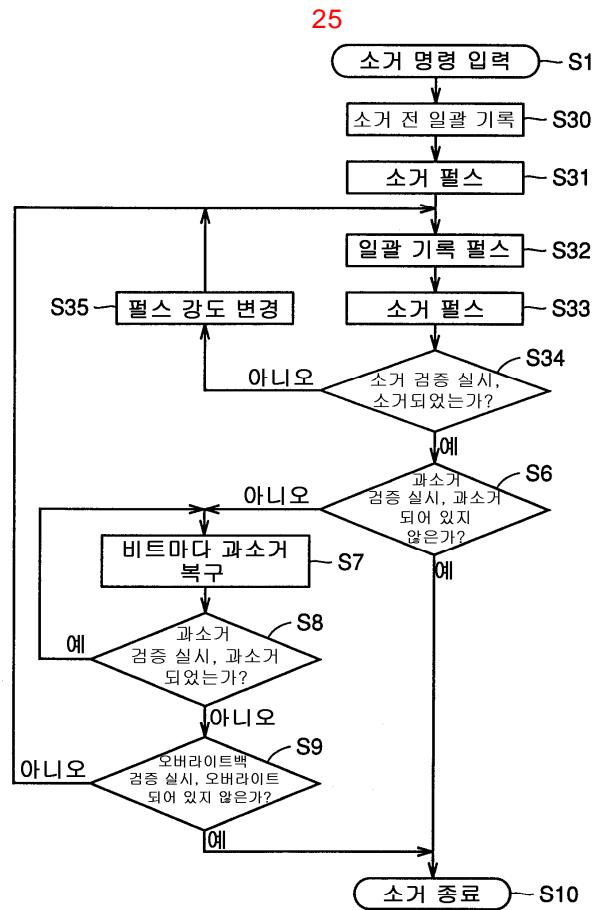


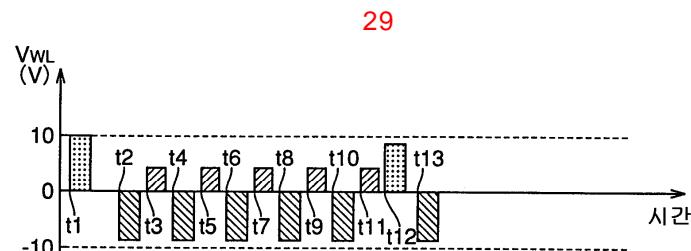
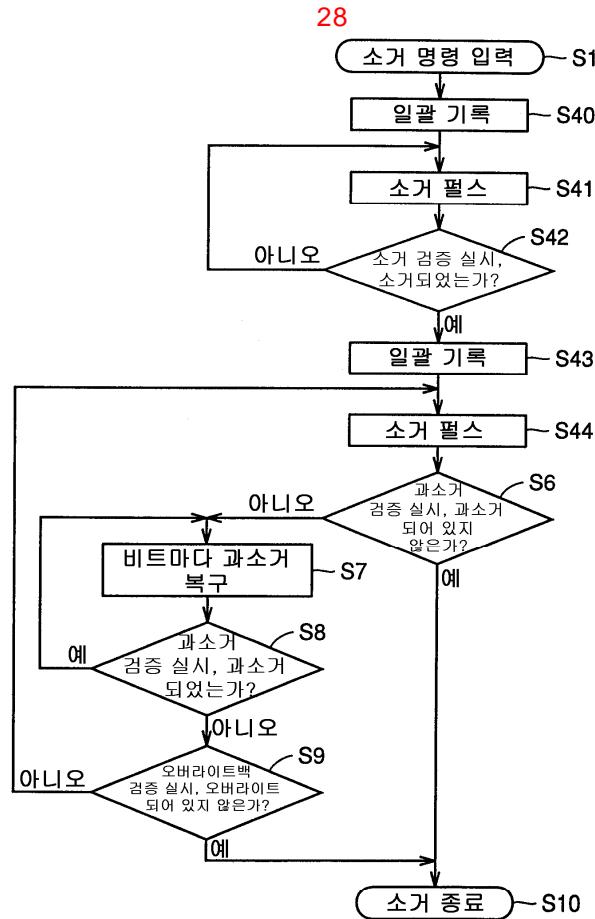
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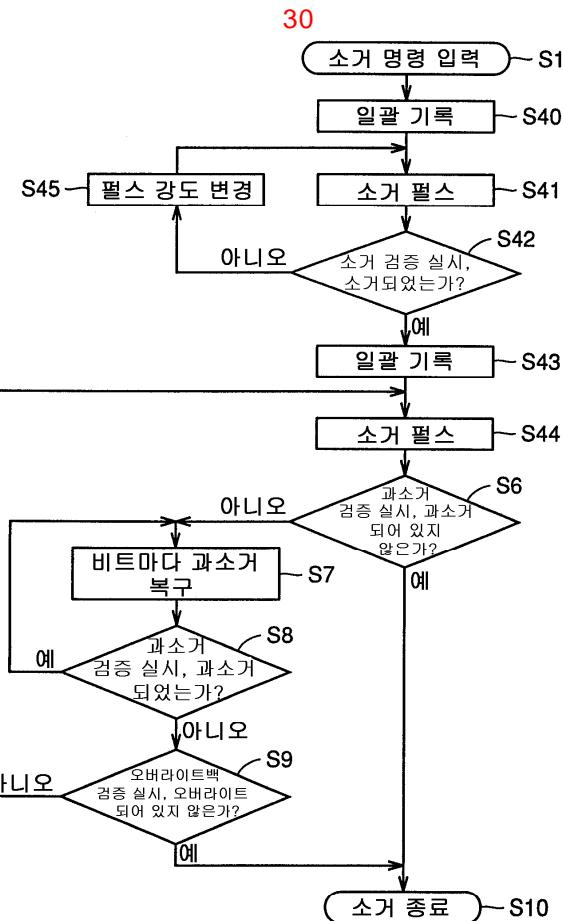


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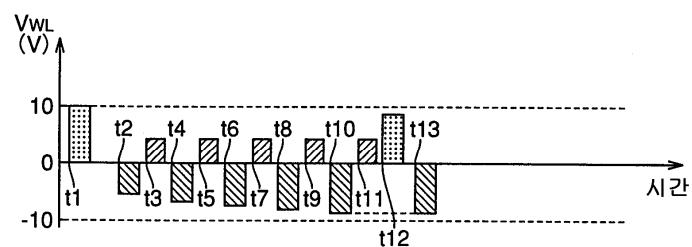




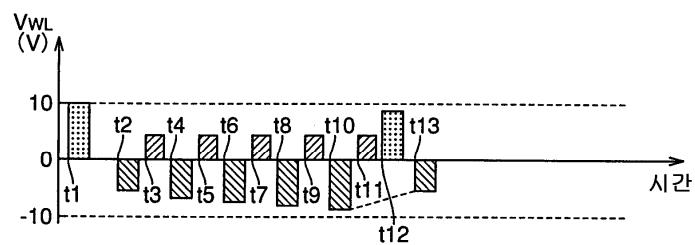


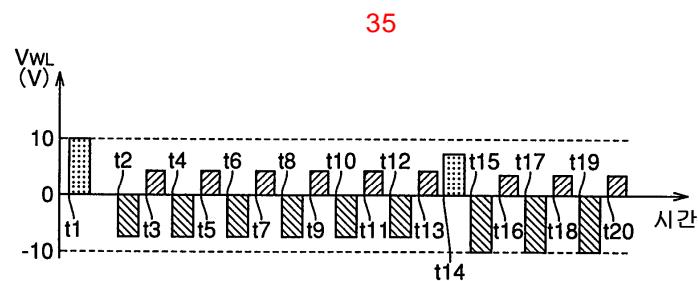
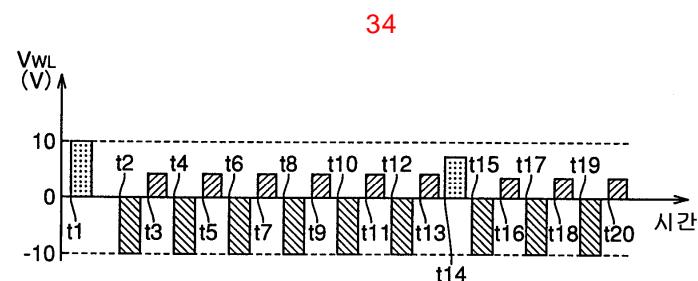
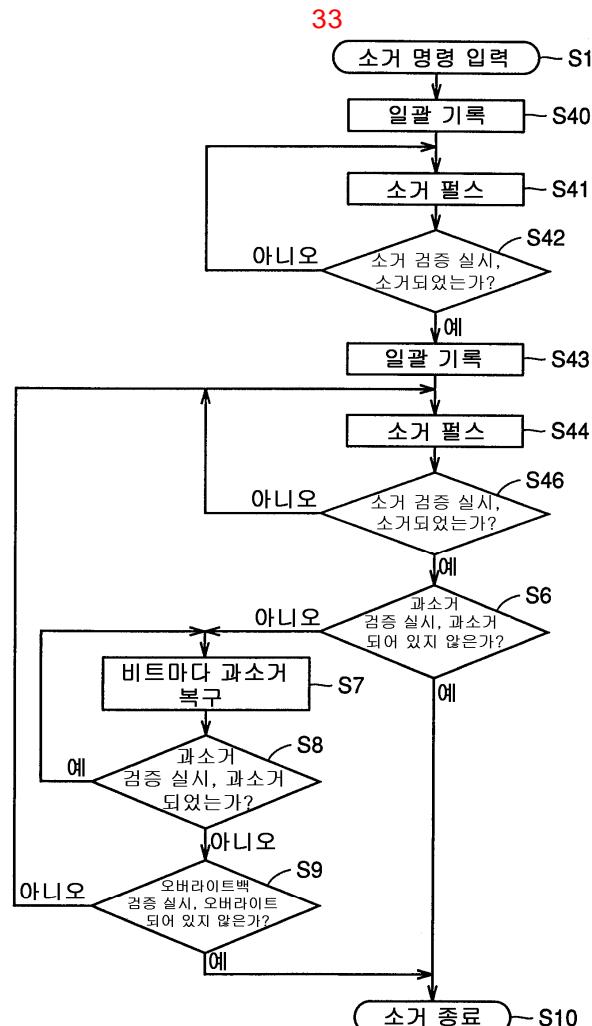


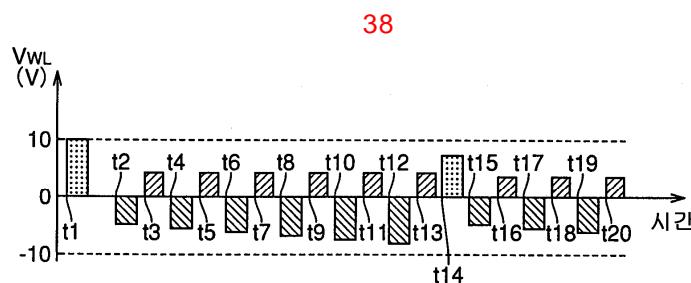
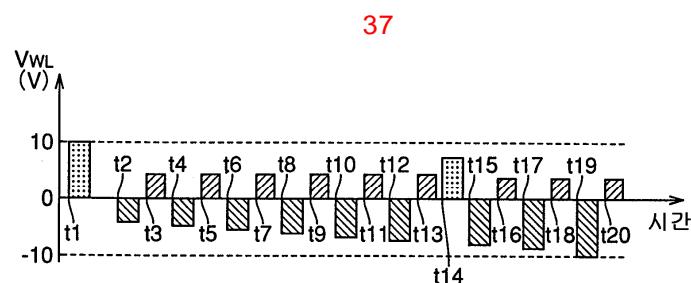
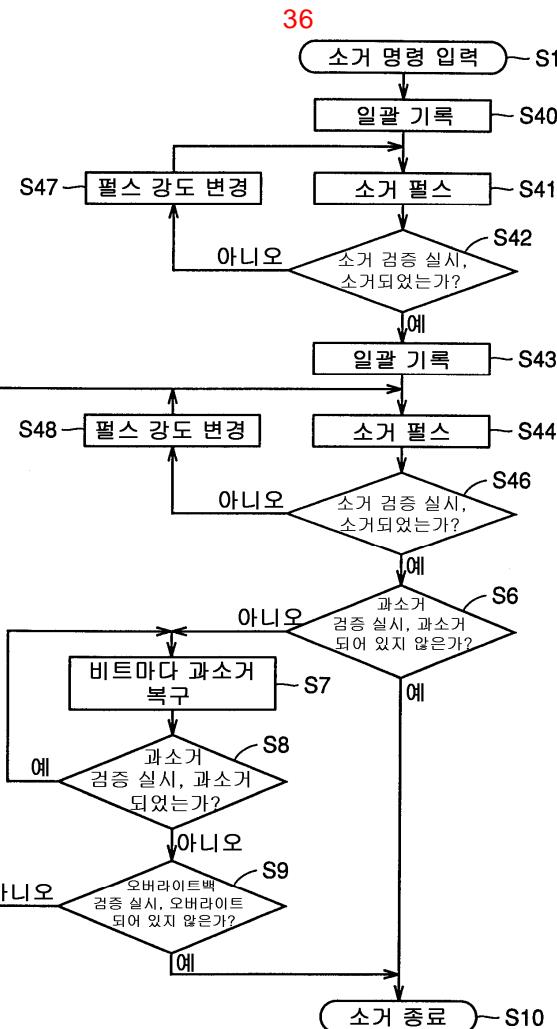
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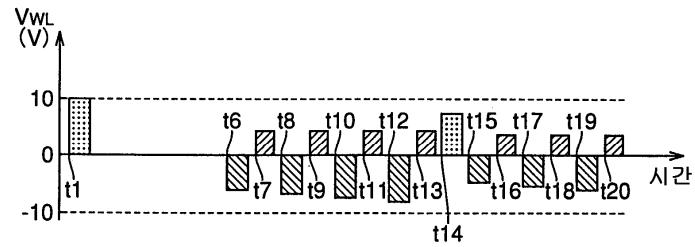
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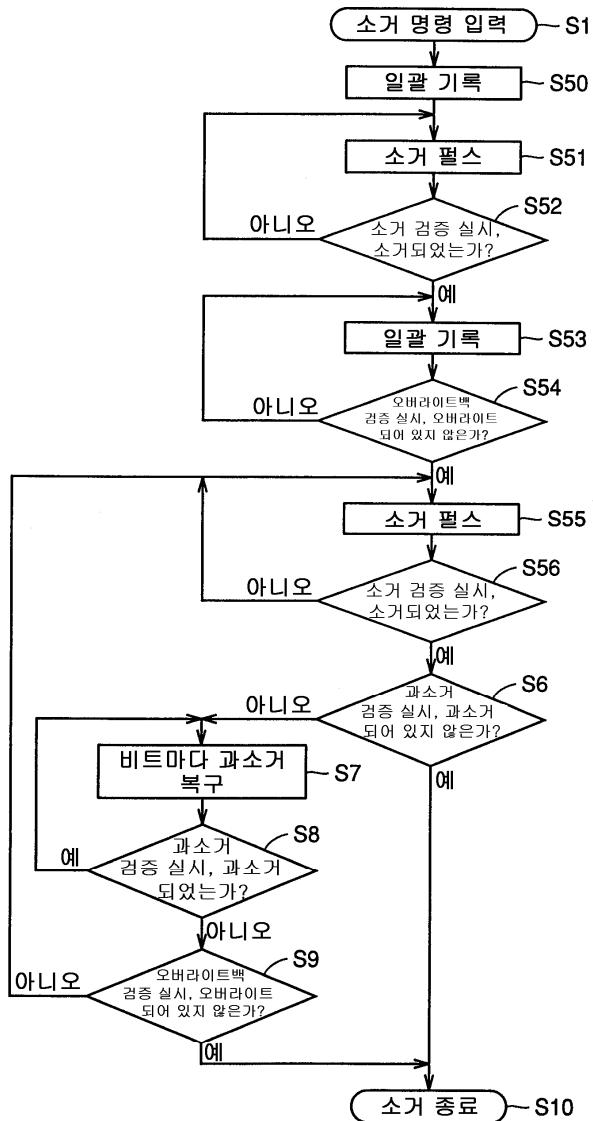




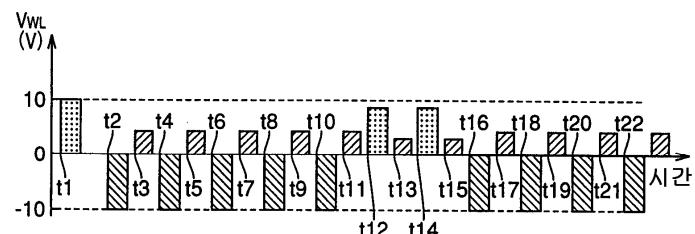
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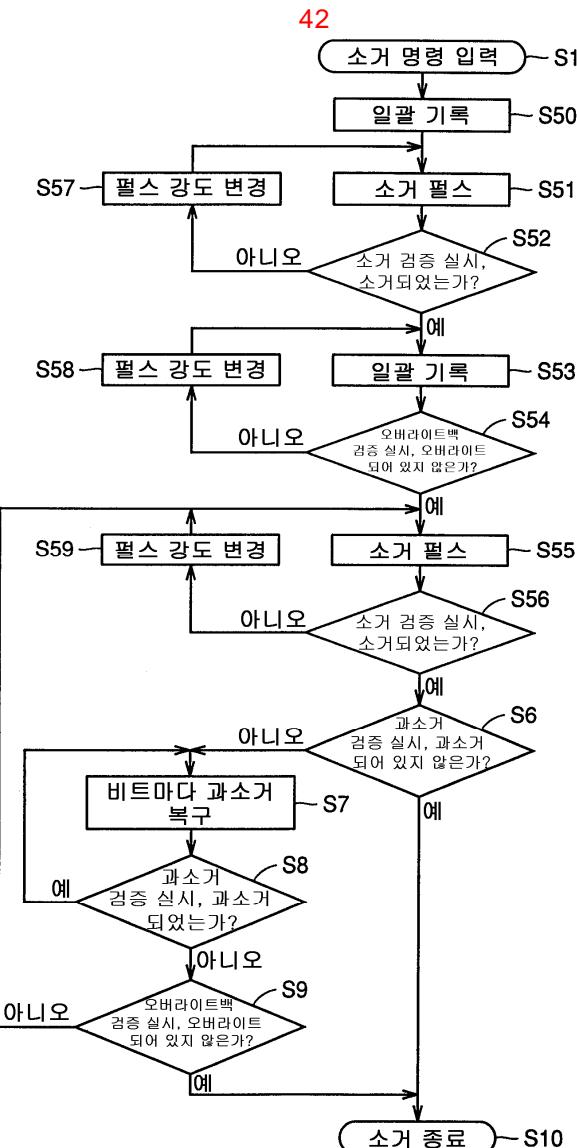


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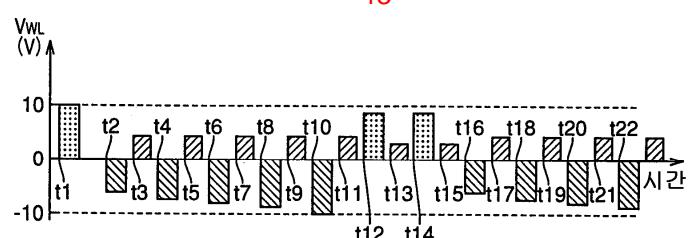


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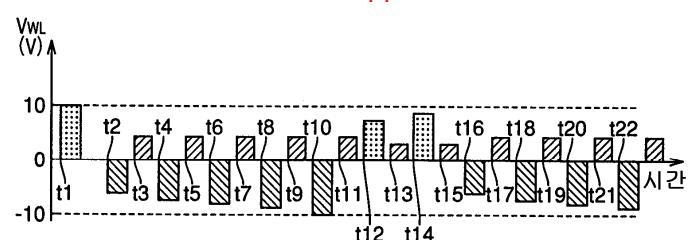


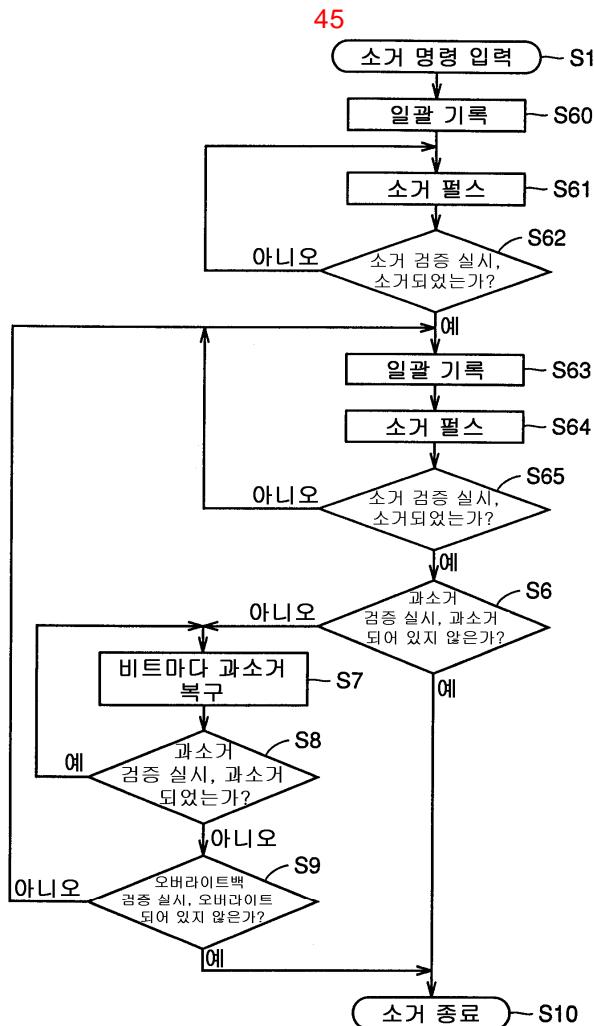


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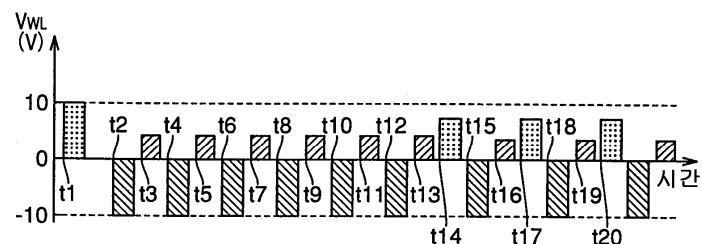


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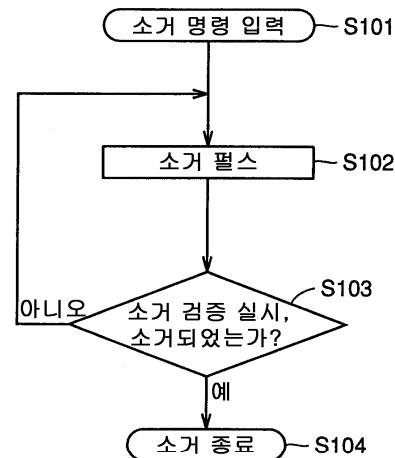




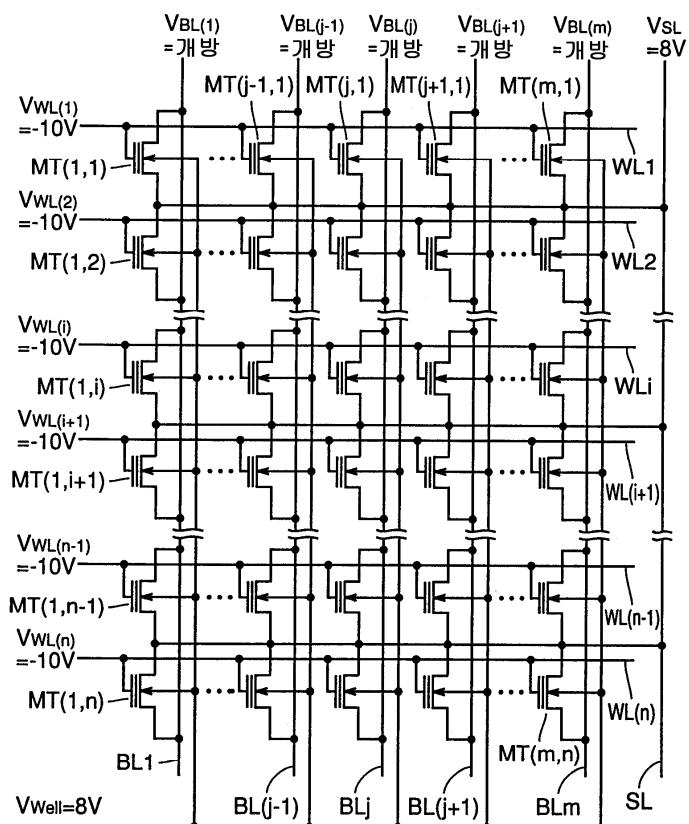
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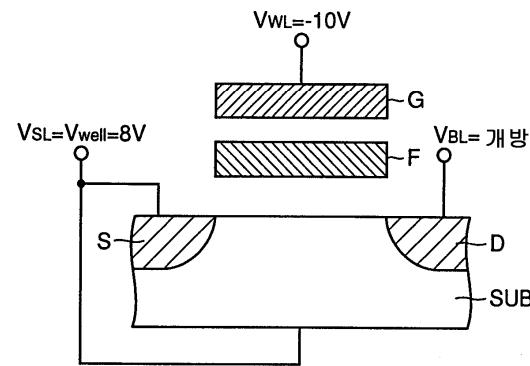
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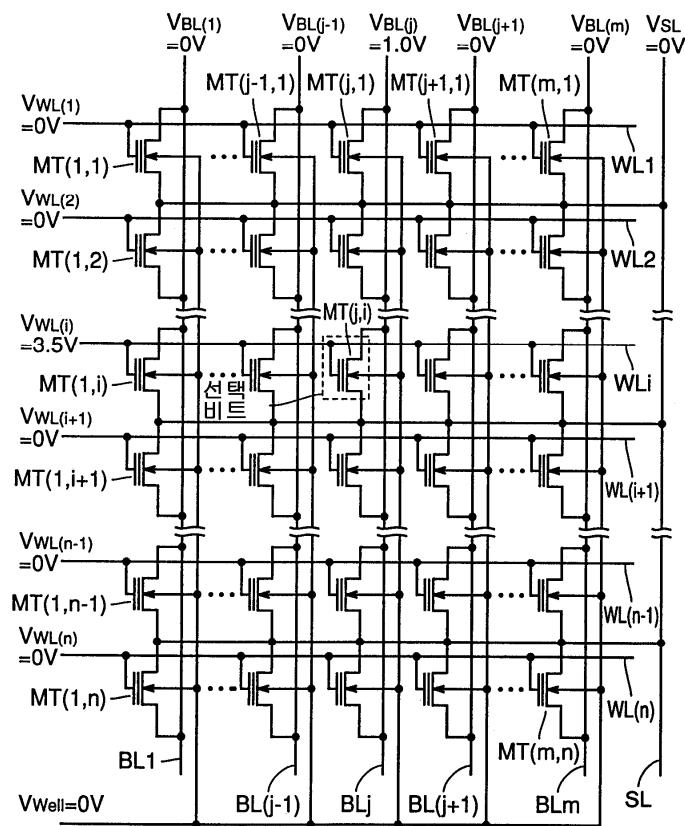
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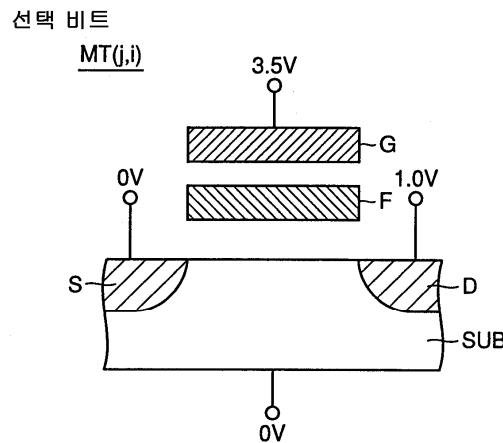
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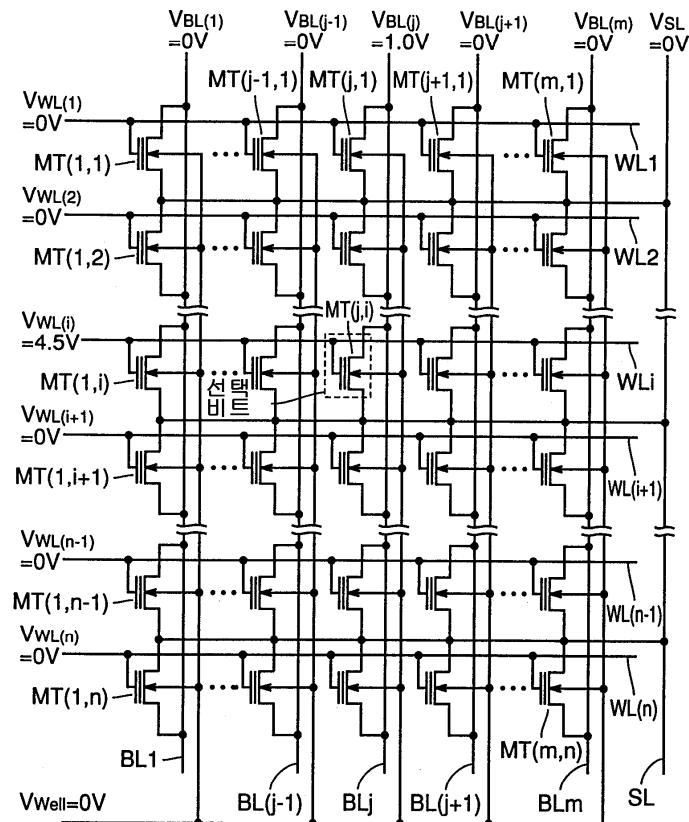
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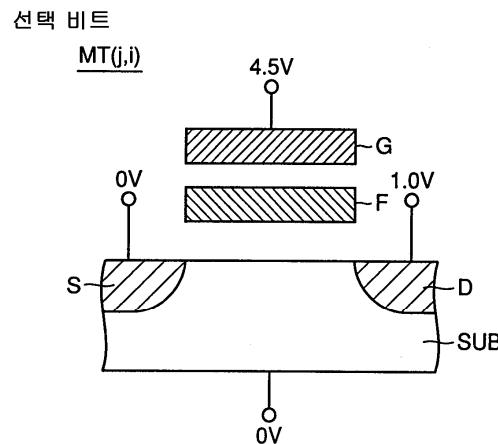
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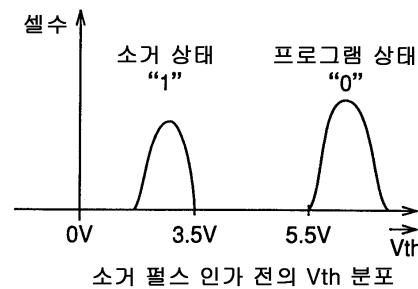
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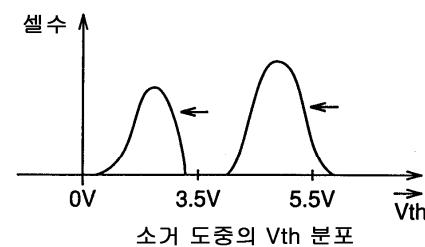
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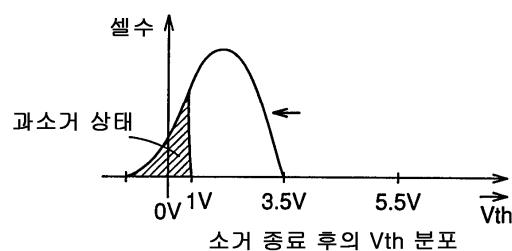
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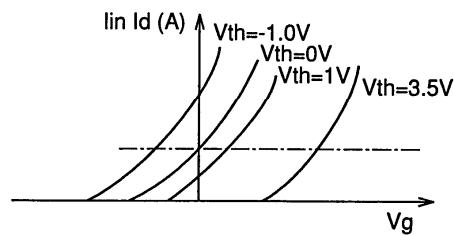
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56
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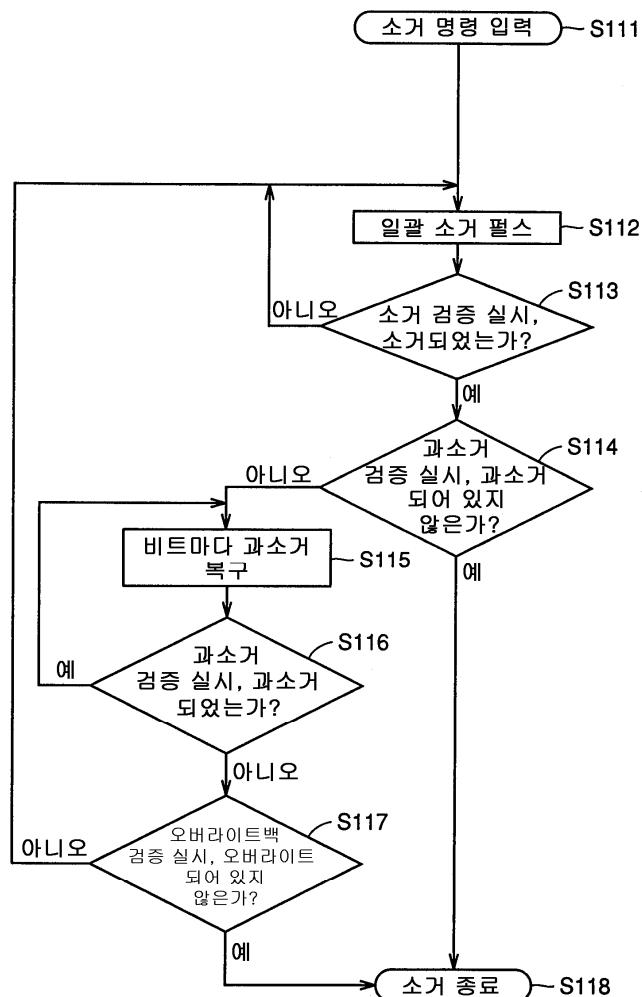


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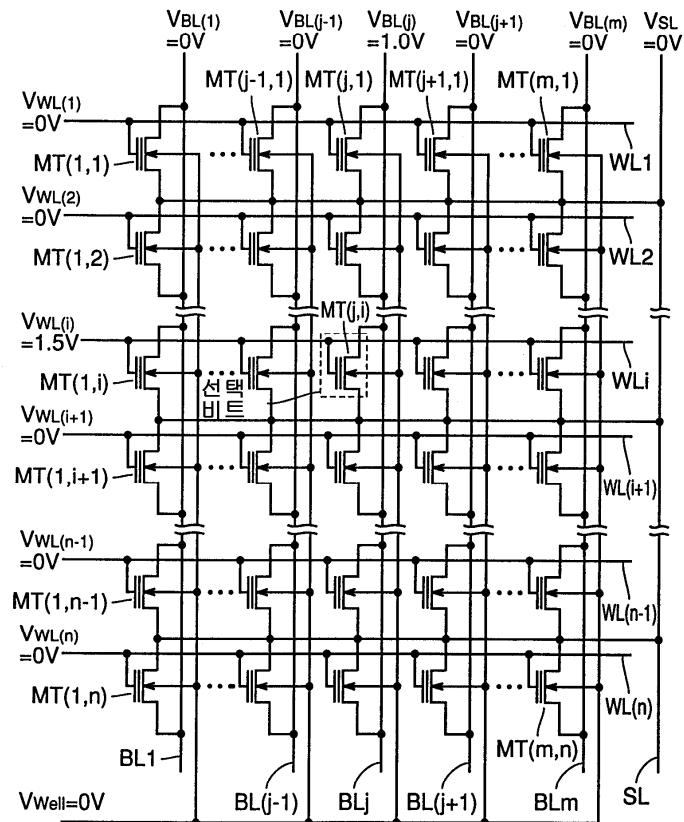


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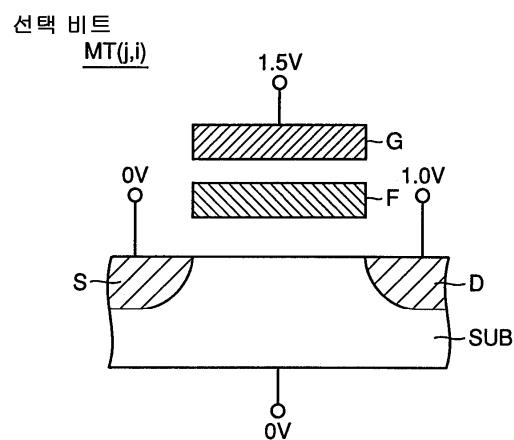
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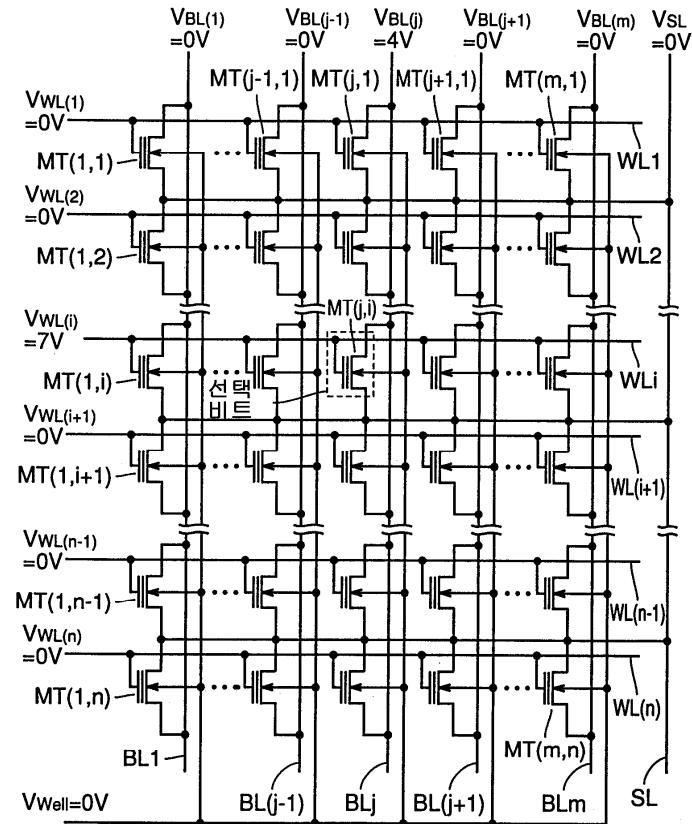
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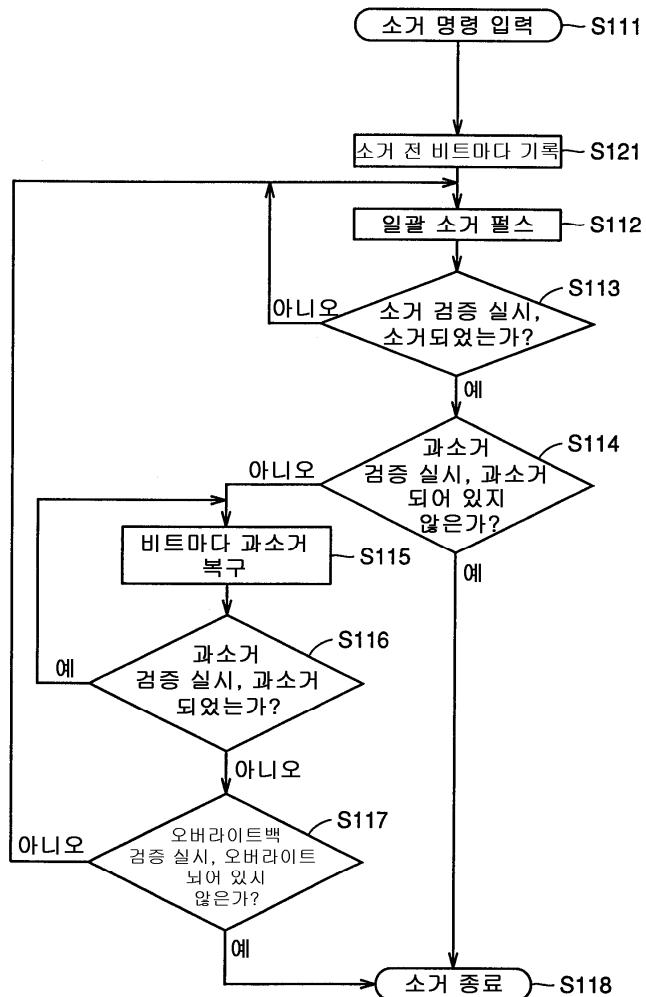
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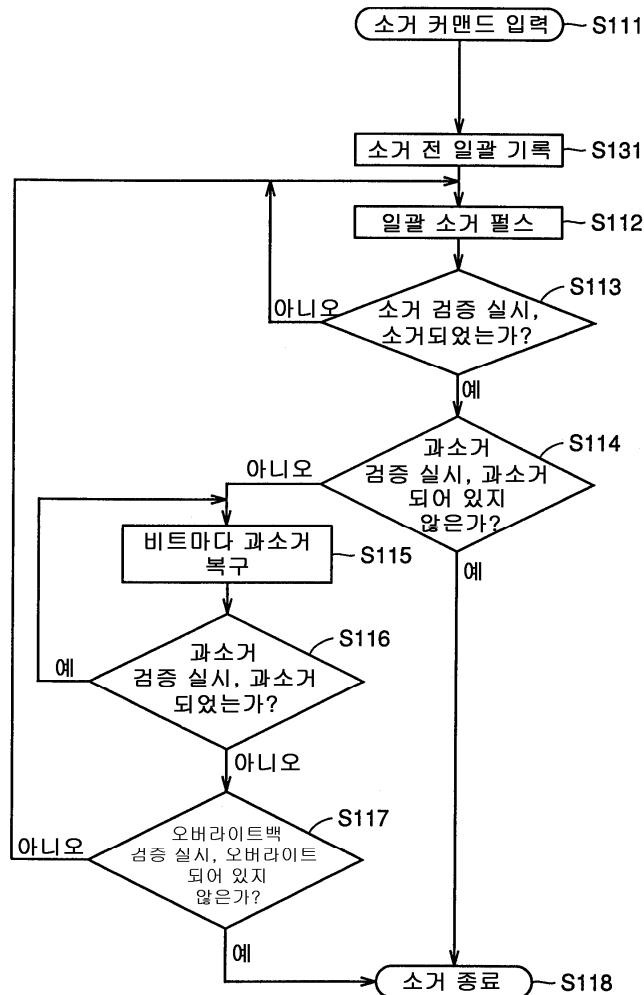
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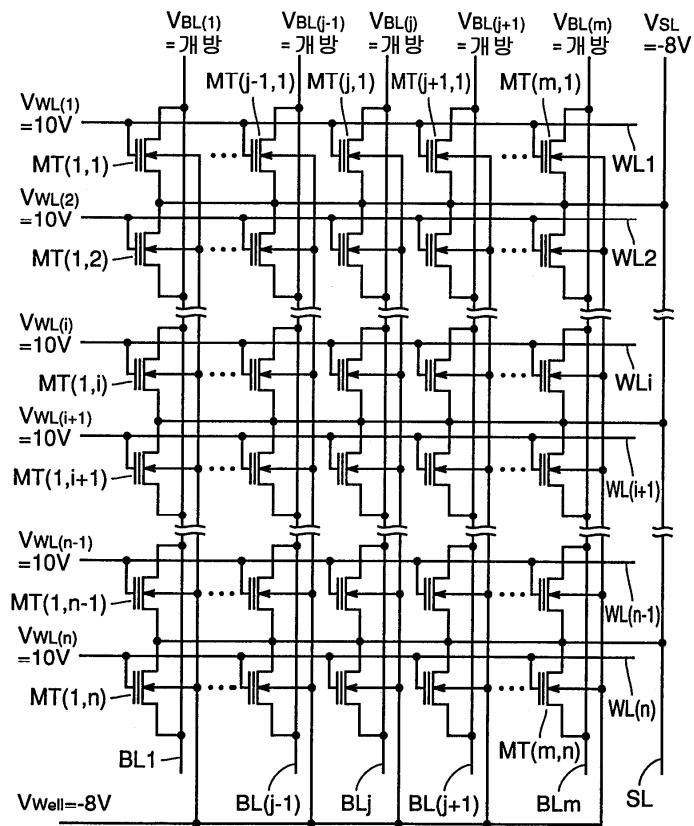
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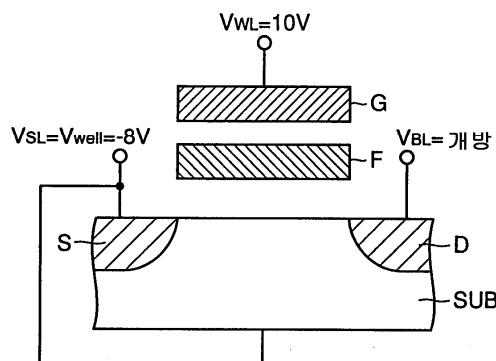
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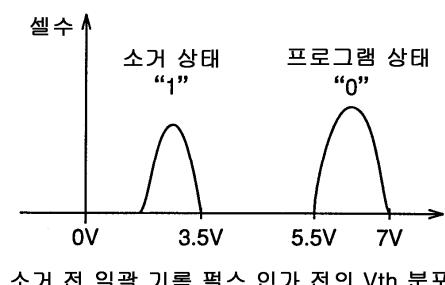
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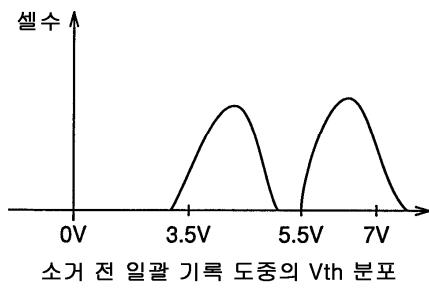
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(종래기술)



66
(종래기술)



67
(종래기술)



68
(종래기술)

