

(19)
(12)(KR)
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(43)2002 - 0061663
2002 07 25(21) 10 - 2001 - 0002538
(22) 2001 01 17

(71) 34 - 4

(72) 3 457 - 99 3

(74) :

(54)

가

1

2

3

2

4

(26)

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10: 12:

14: 16:

18: 20:

22: 24:

26: 28:

30:

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1 5

, U , 1 , 1 U , , 1 5 .

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가

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가

가

(ROPE)가
가 .

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1 .

(10) , (10) (14) (12) ,

(12) (14) , (14)

(12) (18) . (14)

(16) (16) 가 (16) 가

(16)가 (16) .

(10) (14) 1 2 (LED1, LED2)가 , 1

(LED1) (30)가 .

2 .

(16) (16) (14) (20) , (16) ,
(16) (22) , (22) (20)

(24) , (24) (28) , (24) (26) ,
(26)

(30) .

3 2 .

(14) (16) (16) 가 (20) (BA1)
 (16) (R1) , (16)
 (Q1) , (22) (Q1) 가 ,
 가 (Q1) (Q2)
 . (24) (D1) (L1) (L1) (COM)
 (NO)가 , 가 (COM) (NC) 가
 1 2 (SW1, SW2) (RY1) (30) 2
 (SW2) (COM) (RY1)
 (NC) (COM)가
 (28) (BA1) (RY1) 1 (SW1) (CO
 M) 1 2 (LED1, LED2) . (26) 1 (LED1)
 (Q3) (R2) , (Q3) 가 ,
 (Q3) (Q4) (C1) , (RY1) 1
 (SW1) (COM) (C1) (Q4) (R3) ,

2 (LED2) (Q4) (R5) , (Q4) 가
(RY1) 2 (SW1) (COM) (Q3) (C2) ,
(R10) (BA1) (14) (Q3) (14)
(9V) .

4 (26) .

1 4 .

1 (BA1) (R1) (16) 가
(Q1) 가 가 (Q1) 가 .
(Q1)가 (Q2) 가 가 (Q2) 가 .
(Q2)가 (RY1) (L1) 가 1 2 (SW1, SW2)
(COM)가 (NC) (30) (28) .

(14) (20) (BA1) (14)가 (14) (14)
가 (16) 가 (Q1) 가 (14) (Q
1)가 , (Q1)가 (Q2) 가 (Q2)
NPN (Q2) + 가 Rc ,
- , PN 가
Rb + lb가 (Q2)
+
가 가 가 lc가 .
가 가 lb lc가 10 + 200
lc lb lc가 1 .]

1

$$\text{전류증폭률} = \frac{I_c}{I_b} = 10 \sim 200$$

2) (Q2) (BA1) (RY1) 1 (RY1) (L1)
(COM) (NO) (BA1) 2 (SW1, SW
(26) (16) (26) (R4) (C2)
(26) 4a t=0 (30)

가 (C2) , (R3) (C1) 4b (C1)
 , 2 (LED2) . 1 (LED1)

(C2)가 - Vcc 0V가 4c (C2) ,
 (C1) 0V - Vcc가 4d (Q3)
 , (Q4) 1 (LED1) , 2 (LED2) .
 (R4) (C2) (R3) (C1) 1 2
 (LED1, LED2)가 .
 (F) 2 ,

2

$$F = \frac{1}{T1+T2} = \frac{1}{0.7(R9 \times C1 + R10 \times C2)} [Hz]$$

1 2 (LED1, LED2)가 (14)

(RY1) 2 (SW2) (COM) (NO)가 (10)
 (30) (14)

가

가 .

(57)

1.

가

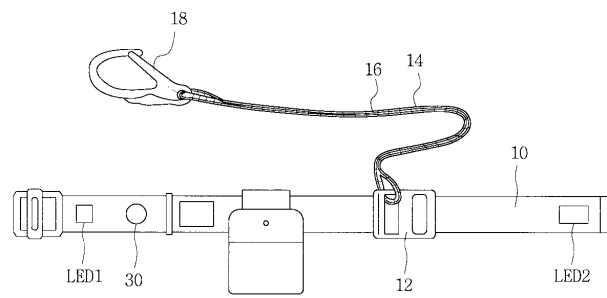
2.

1 ,

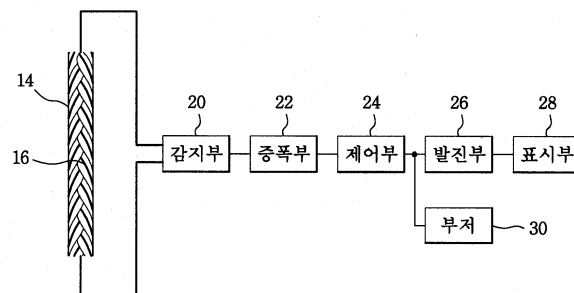
3.

2 ,

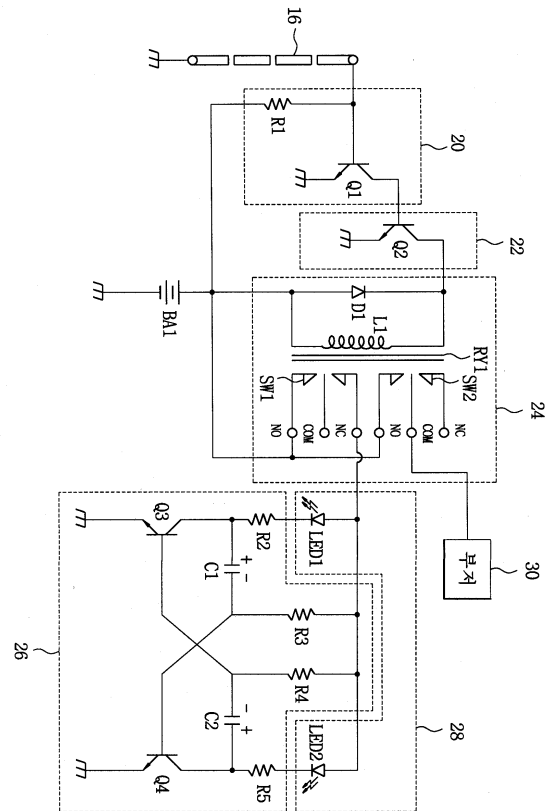
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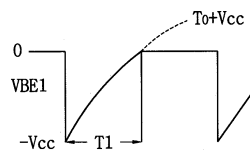
2



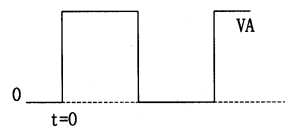
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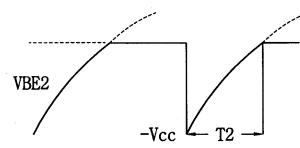
4a



4b



4c



4d

