

(19)  
(12)

(KR)  
(A)

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H01L 33/00

(11)  
(43)

2002 - 0020194  
2002 03 14

(21) 10 - 2001 - 0054163  
(22) 2001 09 04

(30) JP - P - 2000 - 00270252 2000 09 06 (JP)

(71) 가 가  
가 가 22 22

(72) 634 - 0812 4 12 - 24 - 612  
631 - 0833 가 1 - 3 - 8

(74)

:

(54) L E D

LED , ; ;  
; ,  
LED ; LED 가 1 LED  
, .

1a	1f, 2g	2k,	3l	3o	LED
4	1				LED
5	1				LED
6	2				LED
7	3				LED
8	3				LED
9	4				LED
10					LED 가
11					LED 가
12					LED
13					LED

LED( (Light Emitting Diode)) LED

LED  
90 - 37385 " LED " 55 ( ) ,  
, , cd/m<sup>2</sup> 가 ( , )

(1) 가

(2) 가

( , , 95 - 122360 , 95 - 122361 , LED 가  
241047 96 - 227276 , " LED " 62 , IEDM98 87  
5 ).

LED

가

가

LED

2  
95 - 111341

, SID98 11

).

가

LED

98 - 189252

).

LED

가

(

LED

96 - 227276

)

(

98 - 12377

)

(

.

LED

LED

LED

98 - 208881

99 - 260549

)

(

99 - 273859

)

LED

LED

가 nm

가

LED

LED

LED

LED

LED

가

LED  
LED

(base film)

L

가

LED

LED

;

;

;

LED

1  
가

LED

LED

LED

가

LED

LED

LED

가

LED



1 LED LED 가 LED LED

(1) ;

(2) ;

(3) ;

(4) , ;

(5) , , ;

(6) , , 가 .

ED 가 ( , 4,4' - (2,2' - ) (D  
 PVBi) , 5 - - 2 - [2 - [4 - (5 - - 2 - ) ] ]  
 - (2 - ) , 3 - (4 - ) - 4 - - 5 - t - - 1,2,4 - (TAZ) , 1,4  
 , (8 - )  
 (Alq3) ); ( , (2 - - 1,4 -  
 ](MPS - PPV), [2,5 - [2 - (N,N,N - ) ] - 1,4 - - 1,4 - ]  
 (PPP - NEt<sub>3</sub><sup>+</sup>), [2 - (2' - ) - 5 - - 1,4 - ](MEH - PPV), [5 -  
 (2 - ) - 1,4 - ](MPS - PPV), [2,5 - ( ) - 1,4 - - (1 -  
 )](CN - PPV), (9,9 - ) (PDAF) ); ( , PPV, PNV P  
 PP ) .

, , , , 가 ( , )  
 (dopant) , , .

( ) , 1 LED , 가 ,

N,N' - (3 - ) - N,N' - - (TPD) N,N' - ( - 1 - ) - N,N' - (NP  
 D) 3 , ,  
 (PANI), 3,4 - / (PEDT/PSS), [ ]  
 ( - TPD), (PVCz) , (p - ) (Pre - PPV)  
 (p - ) (Pre - PNV) ); ( , n  
 , , , , , [ ](Poly - OXZ)  
 ) , 가 .

(wet process) ( ), 99 - 260549 )

$\mu\text{m}$  가 , 1000 1

(28) , (31) 가 . 12 , (27) (31) (32) (30) (29) , (26) (32)

, (29) (29) APR( ) ( )가 . (29)

, 13 , (34) - (35) (36) LED (6) ( ) (37) , LED (33) ; , LED LED

, ITO, IDIXO SnO<sub>2</sub> 가 Au, Pt, Ni Li:Al , (sputtering) , 가 ( , LiF/Al ) Ca, Al, Mg:Ag EB

D.C. LED , EB , 가

LED

1/4

가 가 (spin - coating) 가 가 가

LED

(resist) , SiO<sub>2</sub>, SiN(Si<sub>3</sub>N<sub>4</sub>), TaO(Ta<sub>2</sub>O<sub>5</sub>), Ni<sub>x</sub>Zn<sub>y</sub>Fe<sub>2</sub>O<sub>4</sub>, SOG ; CVD

, SiO<sub>2</sub>, SiN(Si<sub>3</sub>N<sub>4</sub>), TaO(Ta<sub>2</sub>O<sub>5</sub>), Ni<sub>x</sub>Zn<sub>y</sub>Fe<sub>2</sub>O<sub>4</sub>, SOG , CVD

LED

LED

LED

( )

( )

가

가

( )

가

, 1

( LED )

가

, CMP

LED

LED 가 1

LED

Ta, Al,

Cu

1

2

LED

1

LED

30

4

(1)

1

(2)

LED

LED

(8)

(2)

(1)

(9)

(9)

(3)

(11)

LED

(8)

(5),

(5)

(61)

(6

2),

LED

(6)

(7)

(12)

(2)

(12)

LED

(8)가

(2)

(9)

(13)

(2)

(12)

(10)

10)

(2)

(5)

(5)

(taper)

(15)

(7)

(17)

(1)

(18)

30

4

14

19

, 20

, 21

, 22

, 23

(1)

( 1 )

( 2 )

LED

1a , 50nm - Si (1)( : 1.1mm(± 10%), > 10<sup>14</sup> . cm,  
 : 667 ) , LP - CVD Si<sub>2</sub>H<sub>6</sub> ,  
 (9a) .

1b , (9a) ,  
 / (9) .

1c , (9) (1) , 50nm SiO<sub>2</sub> (3)  
 , (3) Al (11) .  
 , ( ) .  
 , (11) , (11)  
 (9) / . 1d , (14),  
 (13), ( ) ( ) , ( )  
 ) . TFT(2) .

1e , (1) (12) SiO<sub>2</sub> 3μm .

1f , (12)  
 (R1) . (R1) (12)  
 , (R1) .

2g , (12) (10a) 4μm ,  
 2h , (10a) (10) ,  
 (12) (10) .  
 , (10) (12) ITO 150nm .  
 , 300 . 2i , ITO ,  
 (10) (5) . (5) , 1  
 0 /mm<sup>2</sup> , 87%(550nm) ± 2% .

2j , (1) (15a) SiO<sub>2</sub> 200nm  
 , (R2) .

2k , (R2) SiO<sub>2</sub>  
 (15) , (5)  
 , (15) , LED  
 , (1) , LED .

3l , PEDT/PSS (15)  
 (1) 50nm (61) .

3m , 1g PDAF (leveling) 0.0001g KF96L - 1(  
 ) 100ml , , (29) 가  
 , (61) ( ) (62)  
 .

3n , 1g Pre - PPV 0.0001g KF96L - 1( ) 100ml  
 : (7:3) ,  
 (61) ( ) (62) .



(1) ( 1 ) ( 2 )  
LED

$i_2H_6$  (1) ( : 2.2mm(±3.0%),  $> 10^{14}$  .cm, : 1400 ) LP - CVD S  
50nm - Si (solid phase epitaxy)

1000 100nm  $SiO_2$

Al

(11)

(14)

TFT

(1)  $SiO_2$  3 $\mu m$

가

4 $\mu m$  3 $\mu m$  (12)

150nm (5) 300 ITO ITO  
, ±2% (5) 10 /mm<sup>2</sup> , 550nm 87%

$SiO_2$  200nm

$SiO_2$

LED  
LED

, NPD 가 50nm 가

13W YAG

0.1mm

5 $\mu$ m

[ij] - 8 - ) Alq<sub>3</sub> DCM<sub>2</sub> (4 - ) (coevaporation) - 2 - - 6 - [2 - (2,3,6,7 - 가 70nm가 - 1H,5H -

5 $\mu$ m

) 1 $\mu$ m

Alq<sub>3</sub>

가 70nm가

5 $\mu$ m

DPVBi

70nm

가

1 $\mu$ m

, Al Li

50nm

가

(7)

(18)

(7)

1 $\mu$ m

가

(17)

가

4

LED

9

(2)

(4)

(12)

(15)

(5)

(5)

3

Al<sub>2</sub>O<sub>3</sub>

(1)( : 1.2mm(±5.0%), : 2.7x10<sup>-6</sup> · cm  
( : 150 nm(± 5. 0%), : 10<sup>14</sup> · cm

, : 660 )  
, : 1400℃)

3

가

(9)

/

(14)

(4)

3 $\mu$ m SiO<sub>2</sub>

(13),

(16)

TFT

(1)

(12)

SiO<sub>2</sub>

3 $\mu$ m

(12)

(12)

(1)

가

(12) 3 $\mu$ m , 4 $\mu$ m  
 (12) ,  
 00nm가 , 가 , 30nm가 , 1  
 (5) ,  
 , 200nm SiO<sub>2</sub> ,  
 , LED , LED ,  
 , 13W YAG , (62) ,  
 가 ,  
 , 0.1mm ,  
 , 5 $\mu$ m , MEH - PPV  
 (baking) , MEH - PPV , 70nm ( - ) 1 $\mu$ m , 80 1  
 가 , 180 , " " ,  
 , 5 $\mu$ m , PPV , 70nm ( - ) 1 $\mu$ m  
 , 5 $\mu$ m , PDAF , 70nm ( - ) 1 $\mu$ m , 80  
 , 13W YAG ,  
 , 5 $\mu$ m , PEDT/PSS , 50nm ( - ) 1  
 , 80 , 1  
 , 100 10 ,  
 , IDIXO 150nm (7) ,  
 (7) , 30 /mm<sup>2</sup> , 80%(550 nm)  $\pm$  2%

, (7) 1μm (17) ,  
(18) .

가

5 ( )

, 1 4 10 .

10 , LED (8) 2 TFT(22) 1 (23)  
TFT(22) (23) , (19), (20) (21) .

6 ( )

, 1 4 , 11 .

11 , LED (8) , 4 TFT(22) 2 (23)  
TFT(23) (23) (19), (20), (21), 1 (24) 2 (25) .

가 ,

1 ,

1 ,

( )

LED

가 ,

가

LED

1 ,

LED

(57)

1.

;

;

;

, ' 1

LED

LED

;

LED 가

,

,

LED .

2.

1 , .

,

LED

3.

1 ,

,

LED .

4.

1 ,

LED

LED

1

,

5.

1 , .

,

LED

6.

LED LED 가

가

LED

LED

,

;

;

;

;

;

1

LED

;

LED

,

LED

.

7.

6

,

,

,

,

LED

.

8.

6

,

LED

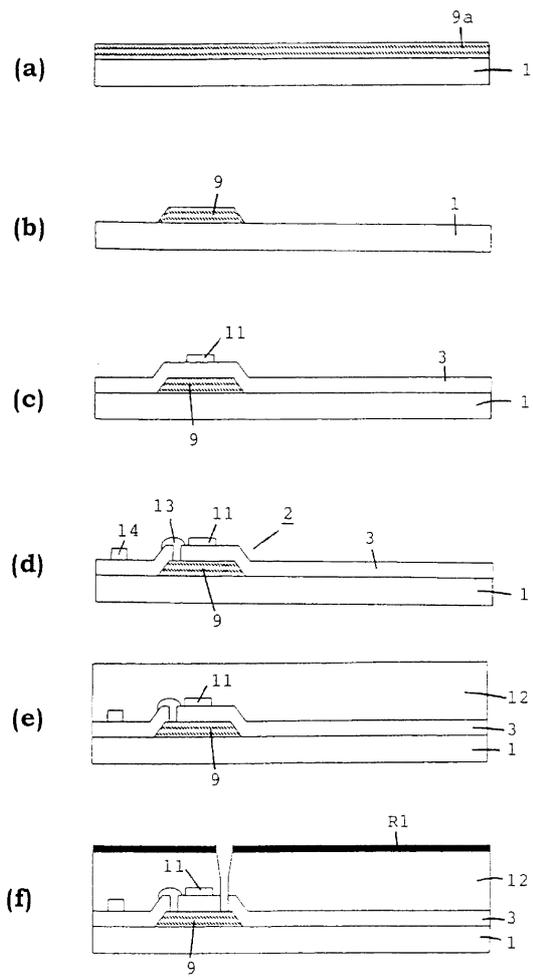
LED

.

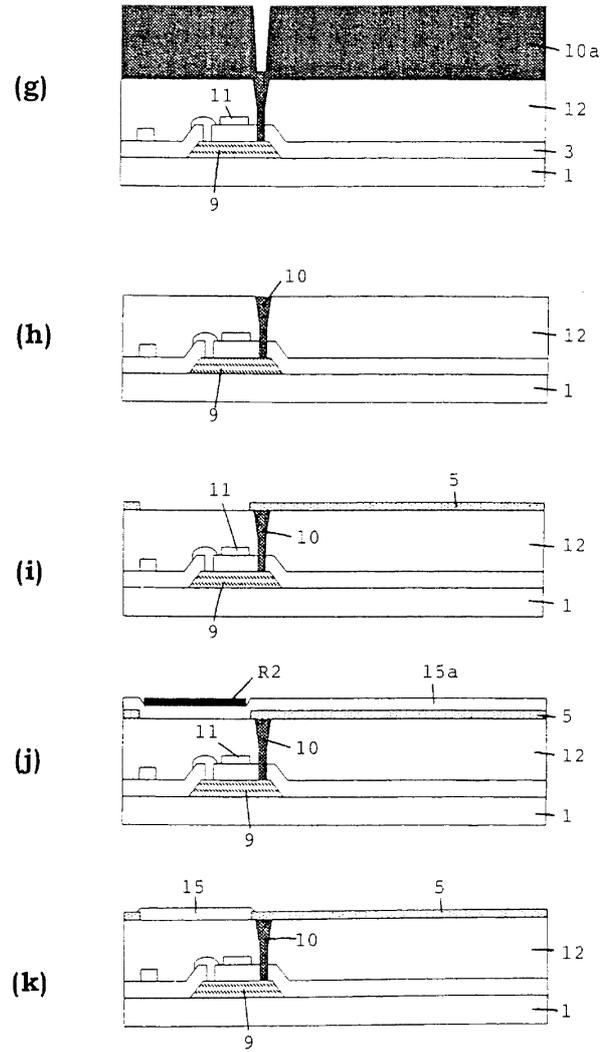
1

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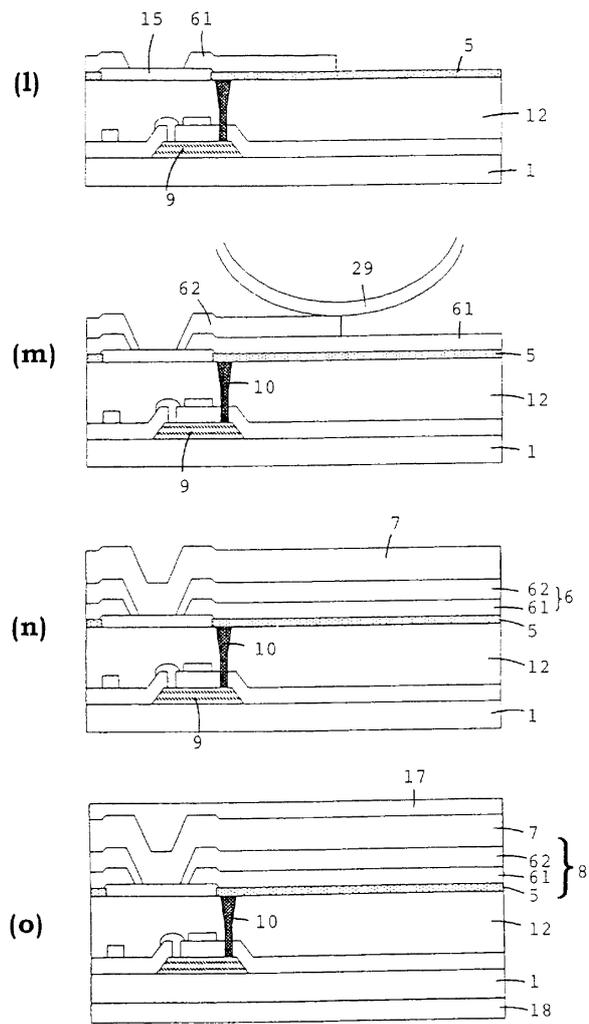
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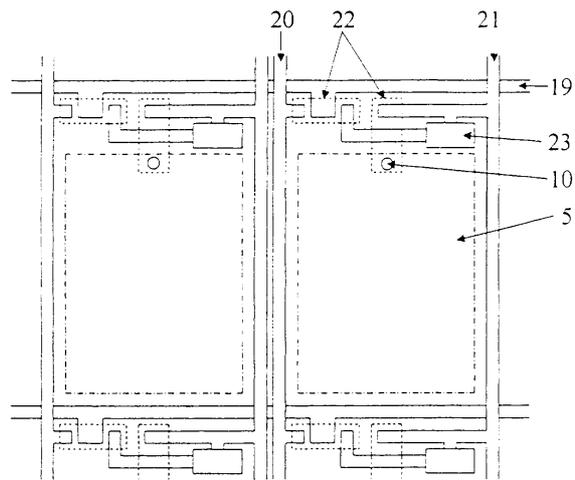
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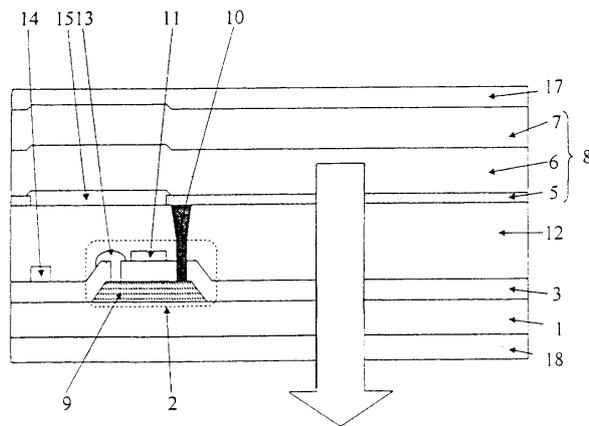
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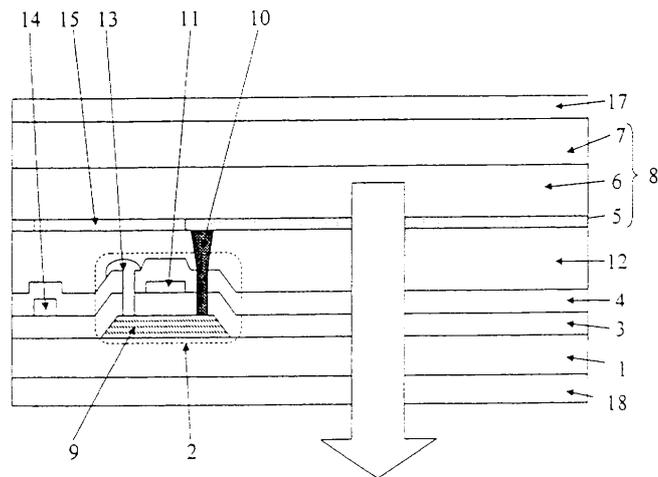
4



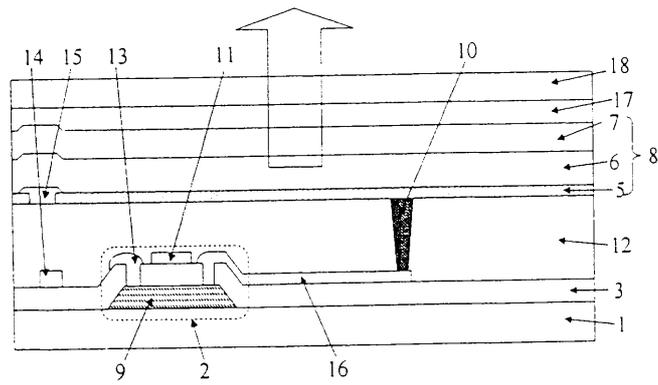
5



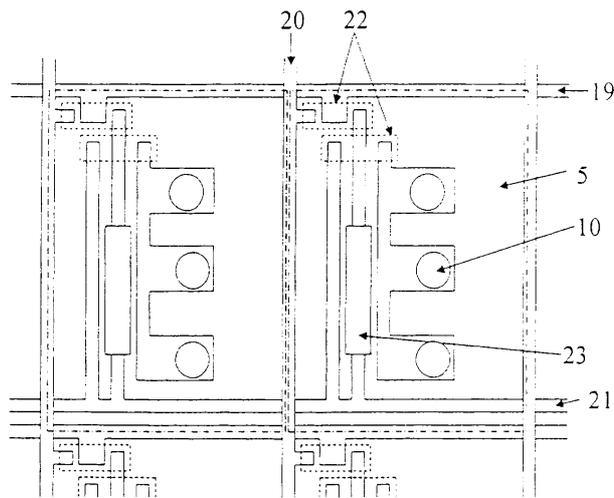
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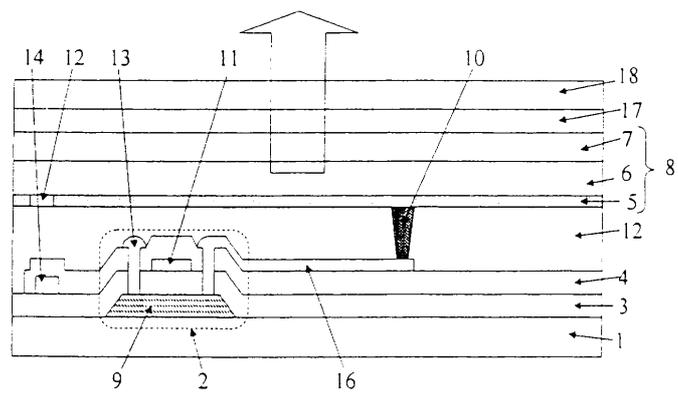
7



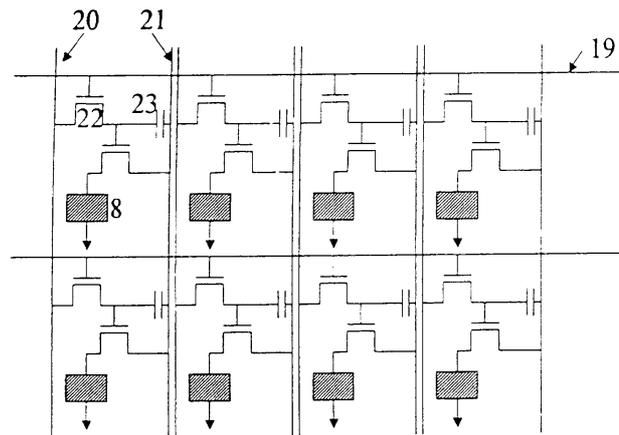
8



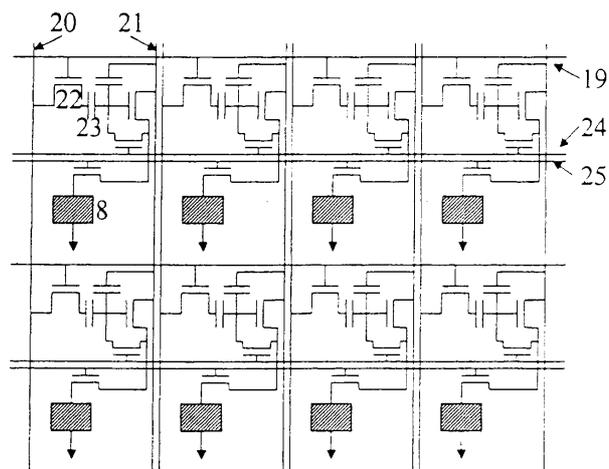
9



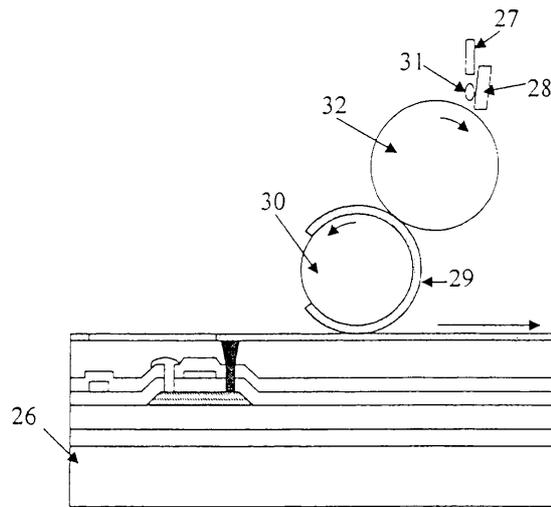
10



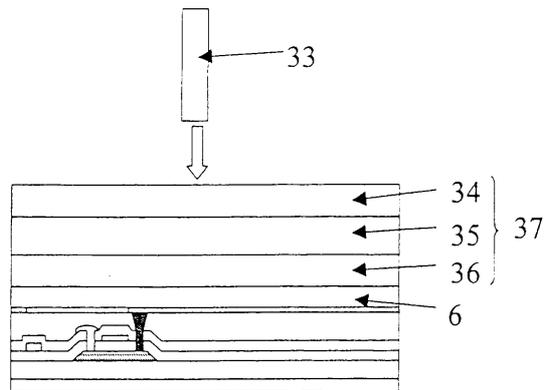
11



12



13



专利名称(译)	有源矩阵驱动的有机LED显示装置及其制造方法		
公开(公告)号	<a href="#">KR1020020020194A</a>	公开(公告)日	2002-03-14
申请号	KR1020010054163	申请日	2001-09-04
[标]申请(专利权)人(译)	夏普株式会社		
申请(专利权)人(译)	夏普株式会社		
当前申请(专利权)人(译)	夏普株式会社		
[标]发明人	FUJITA YOSHIMASA 후지타요시마사 BAN KAZUO 반카즈오		
发明人	후지타요시마사 반카즈오		
IPC分类号	H01L51/50 H01L27/32 H05B33/26 H01L23/522 H01L21/768 G09F9/30 H01L21/3205 G09F9/00 H01L23/52 H01L33/00 H01L29/786 H05B33/10		
CPC分类号	H01L2251/5315 H01L27/3248 H01L27/3246 H01L2227/323		
代理人(译)	LEE, 金泰熙		
优先权	2000270252 2000-09-06 JP		
其他公开文献	KR100451599B1		
外部链接	<a href="#">Espacenet</a>		

摘要(译)

有源矩阵驱动的有机LED显示装置包括有机LED装置：，包括有机LED层，包括电连接到漏电极的像素电极，以及至少一个有机发光层和基板的相对电极，薄膜晶体管设置在基板上，平坦化薄膜设置在薄膜晶体管上，薄膜晶体管通过连接布线施加在LED元件和薄膜晶体管之间的电压控制电流之一。并且连接配线具有与像素电极的平坦化膜的表面相同的截面。通过连接布线的薄膜晶体管被提供给平坦化膜并且延伸通过平坦化膜。

