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(71) . 20

(72) 105 1201

147

(74)

• •

(54)

EM(Electro Magnetic)

2

,

,

,

,

가

,

2

EM

,

•

8

, EM(Electro Magnetic)

;

;

3

3

1

2

3

4 3 |~|'

5 3 ~ '

6a	6b	X	Y
----	----	---	---

7	6a	6b	X, Y	EM	~	'
---	----	----	------	----	---	---

8 1 7 EM

9 2 7 EM

* *

30 : 31 :

32 : 33 :

34 : 35 :

36 : 37 :

38 : 300 :

60 : 20 :

41 : X 42 : 가

43 : X-MUX 44 : 1

45 : Y 46 : 가

47 : Y-MUX 48 : 2

50 : EM 80 :

81 : 82 :

83 :

EM(Electro Magnetic)

(Digitizer)

(Input Device)

PC(Personal Computer)

가

가

(Touch Panel)

가

가

(Resistive)

(Capacitive),

가

가

가

(Capacitance Coupling)

가

가

가

(hand in)

()

PCB(flexible Printed Circuit Board)

X, Y

가

가

가

가

가

가

가

가

1

1

(10)
(10)

(11)
(13)

(12)
(10)
(14)

(10)

(14)

(17)

(15)

(10),

(13),

(14),

(15)

() (14) (17) .

(10) (10), (13), (14), (15)

(10)

(14) X Y PCB PCB , PCB X

(shield plate) , (connector)

Y

(15) (14) (14) CPU(Control Processor Unit)가

(17)

(17)

(15) 가 (14) X Y

(16)

(14)

(17) 가 RLC 가

(f)

$f = \frac{1}{2\pi \sqrt{LC}}$ (, L , C),

,

,

2

2 , (14) X Y X-MUX Y-MUX

(X-ADDR) Y (Y-ADDR) (15) X X

Y X (15)

(24) (24) (25) (LPF)(26) (sa

mple and hold : S/H) (27) - (Analog-Digital Converter)(28)

(23) - (28) (digital format) CPU

(24) (25) (26) (27)

(hold) (27) (28)가

(14) PCB , X, Y

가

가 (17) (hand in) CPU(23) (21)
 (22)가 (17) 가 (17) .
 , 가 (14) (17) (17) (14)
 CPU(23) (25) - (28)
 , CPU(23) (14) (17) 0 °
 360 ° , (17) (10) 가 CPU(
 23) .
 , (14)
 (14)
 , (14)
 , (17) (14)
 LCM 가 (14)가 (10)
 , (14) (10) , 가
 (14)가 (10) 가
 , 가
 , 가
 , 1mm
 가
 EM(Electro Magnetic)
 ,
 ,
 , 가
 ,
 EM
 EM X , Y
 X , Y , - , -
 EM X , X
 1 1 , 2
 Y , Y

1, 2

(PhotoAcryl)

BCB(BenzoCycloButene),

(Polyamide)

X Y

X Y

X Y (MUX)

EM

가

(PhotoAcryl)

BCB(BenzoCycloButene),

(Polyamide)

EM X, Y

X, Y

EM

1

X

X

Y

Y

1

2

X Y

X Y

X Y (MUX)

3, 5 3 ~ ' 4 3 I-I'

3 (4 5 300
) (30)

(34), (30) (34) (31),
(TFT) (33) ' | ' (TFT)

(37), ' n ' (37) (36) (31)

, 4 5

, (300)
(30) (30) (31) .

, (30) (31) (300) (32) .

, (32) (38) .

, (32) (30)
(34) / (33) (TFT)가 (38),
/ (33) (TFT)가 .

, (34) (300) (35) .

, (TFT) (33) (31)
(35) (TFT) (33)
(37) , (37) (31) (36) .

(37) , (36) (31)
(TFT) / 가 , (31)
(Vcom) 가 .

(300) (300) (60)

6a 6b X Y .

6a , X (41) (40)

가 (42) (Vss) , X-M
UX(43) X 가

X-MUX(33) (20) , (T : Transmitting mode) CPU
(R-mode : Receiving mode) .

6b , Y (45) X (41) Y (44)
(46) (Vss) , X (41) 가 ,
Y Y-MUX(47)
가

가 , Y-MUX(47) (20) , (T : Transmitting mode)
CPU (R-mode : Receiving mode) .

(20) X (41) Y (45) .

, X (41) Y (45) ,

가 (42, 46) X-MUX(43) Y-MUX(47) (Ag) (Cu
)

7 6a 6b X, Y EM I~I' .

7 , EM (50) , (80
) (300) (41) 1 (44) , X (41) (41)
, X Y (45) , 1 2 (48)

8 1 7 EM

, 8 3 I~I' (300) (80) (80),
(36) (37)

8 1
(80) (81), (81) (81) (83), (8
0) (82), (82) (83), Y
(45), 2 (48)
(83) X (41), 1 (44),
(80) (300)
(36) (37) (34), (

(80, 300) (90)

8 7 EM (50), X (41) (83),
(80) (82), EM (50) (50) X (41), Y (80) (45)
, EM (50)

, 1, 2 (48)
(36) (37) 가 , 가 , EM (300)
(50)

, (PhotoAcryl) BCB(BenzoCycloButene), (Polyamide)

, X, Y (41, 45), - , -

, (50) (80) (37) (36) (300) , EM
가 , 가 가 , (300)
가 ,

TN(Twist Nematic), (300) EM (50) (50) 가
(80) EM (50)

9 2 7 EM

9 (300) 8 EM (50)가
(300)

, EM (50)가 (36) (37) (300)
(60) (37) (38)

(38), (PhotoAcryl) BCB(BenzoCycloButene), (Polyami
de)

, (82) (83) .

, EM (50) EM (50) .

, 가 , , .

가 .

, EM
 , EM
 , EM EM 가 , EM , EM , EM .

(57)

1.

;
 ;
 ;
 ;
 가 ;
 ;
 ;

EM

2.

1 ,
EM X , Y .

3.

2 ,
X , Y , , - , - , .

4.

1 ,
EM
X ,
X 1 ,
Y ,
Y 1 2 .
5.
4 ,
1, 2 .
6.
5 ,
(PhotoAcryl) BCB(BenzoCycloButene), (Polyamide) .
7.
4 ,
X Y .
8.
7 ,
X Y .
9.
8 ,
X Y (MUX) ,
.
10.
;
;
;
;
;
EM ;
;

가 ;

10 11.

11 12.

(PhotoAcryl) BCB(BenzoCycloButene), (Polyamide)

10 13.

EM X , Y

13 14.

X , Y , , , - , - ,

10 15.

EM X , 1 , Y , 2

15 16.

X Y

16 17.

X Y

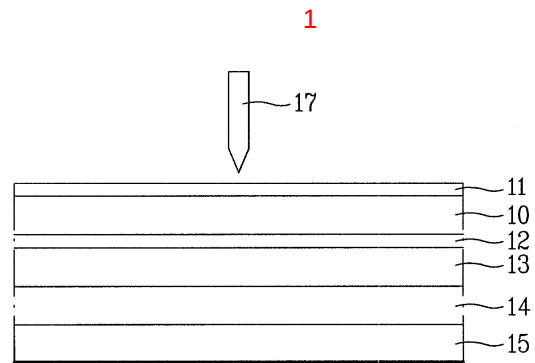
16 18.

X

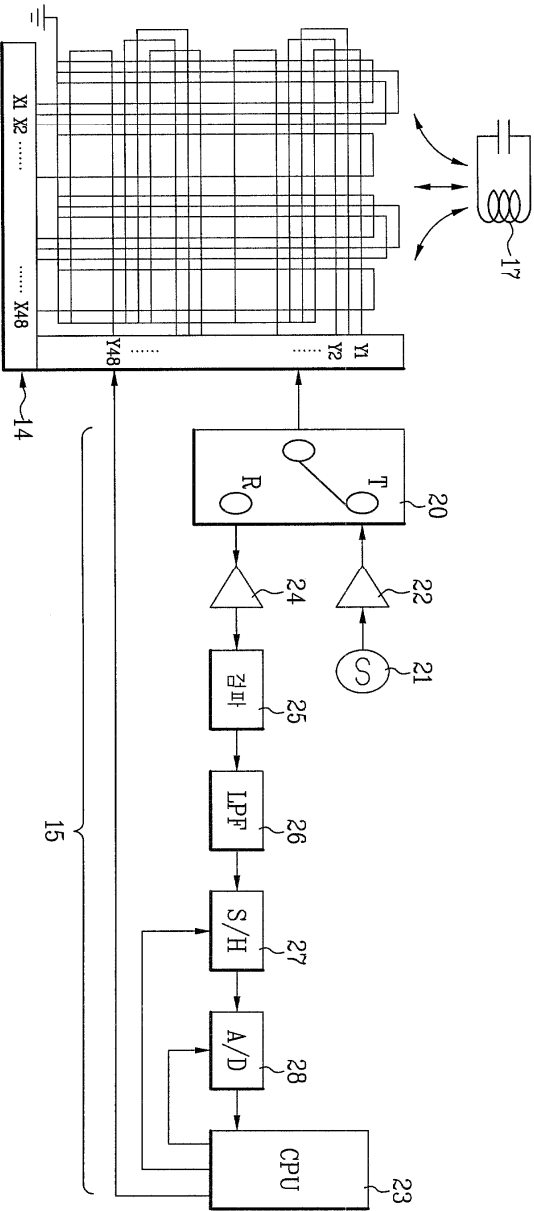
Y

(MUX)

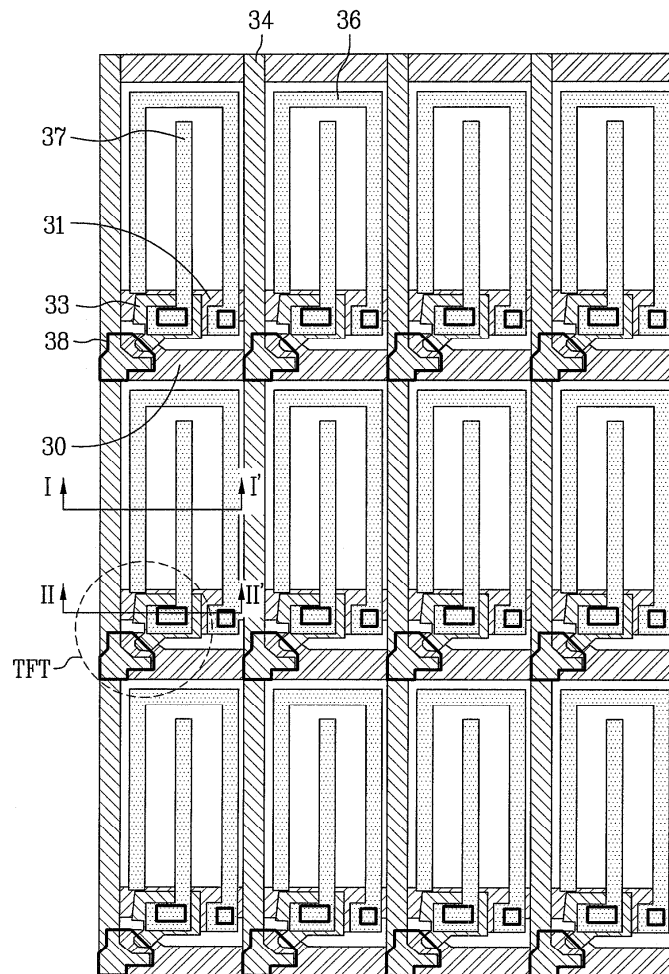
,



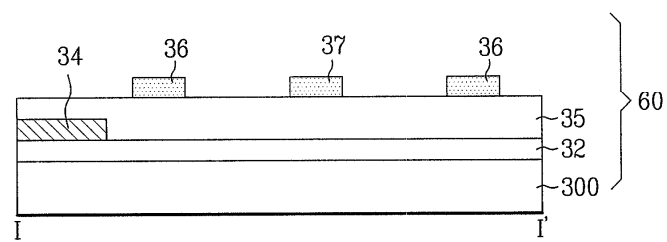
2



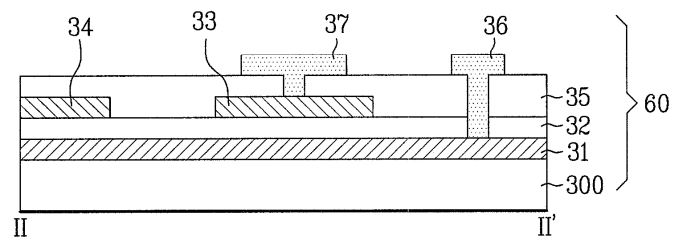
3



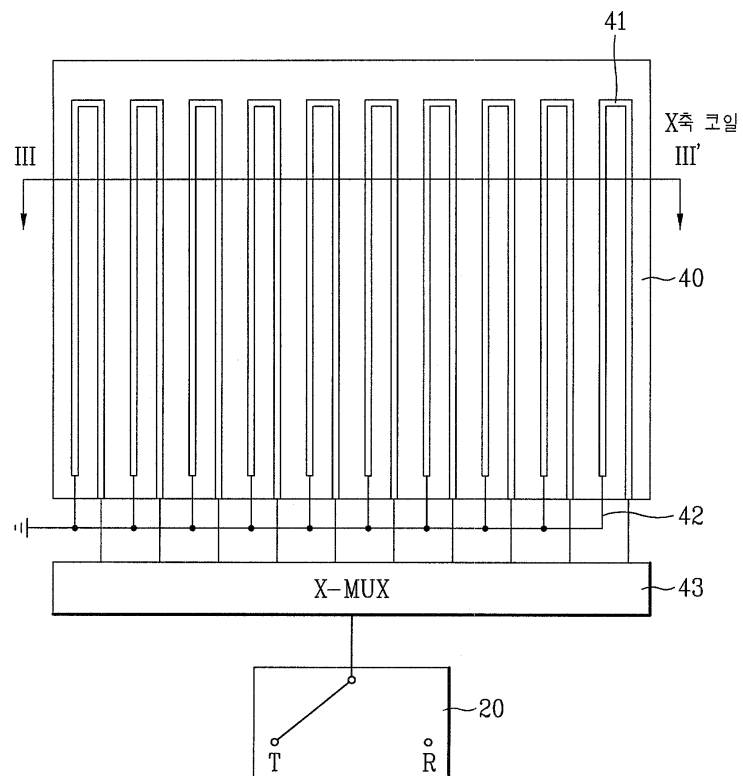
4



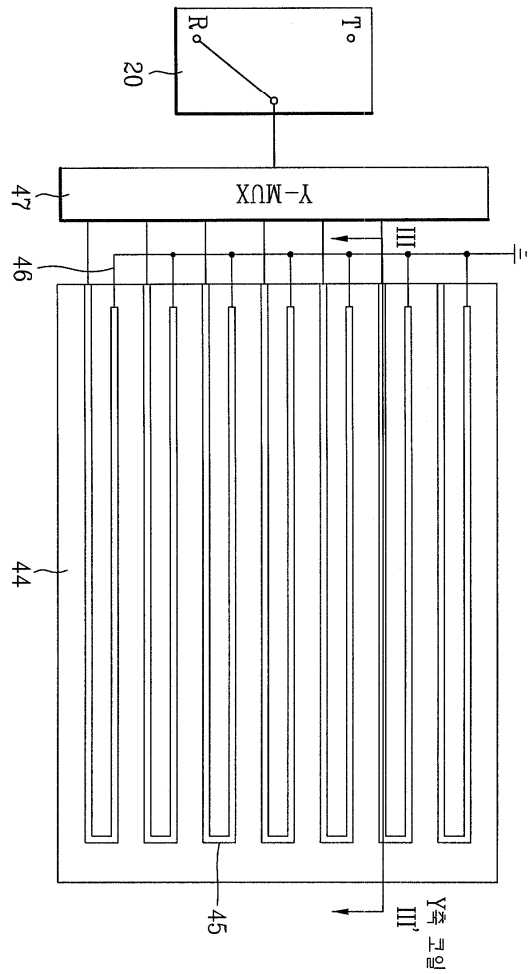
5



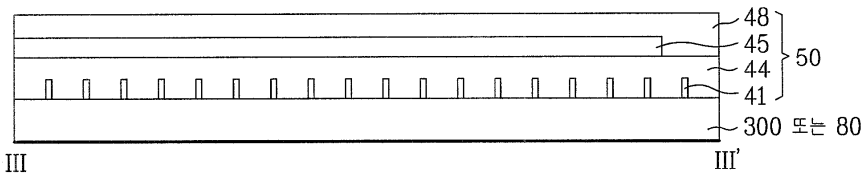
6a



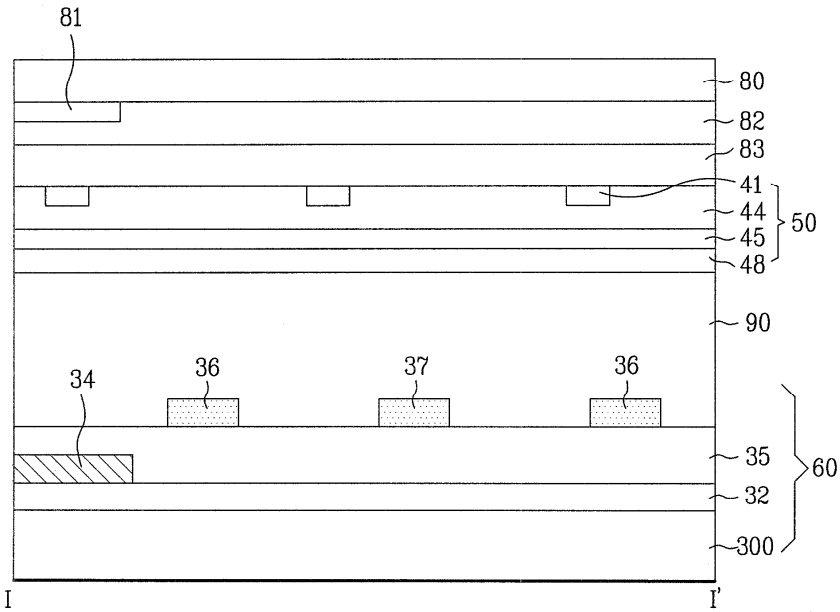
6b



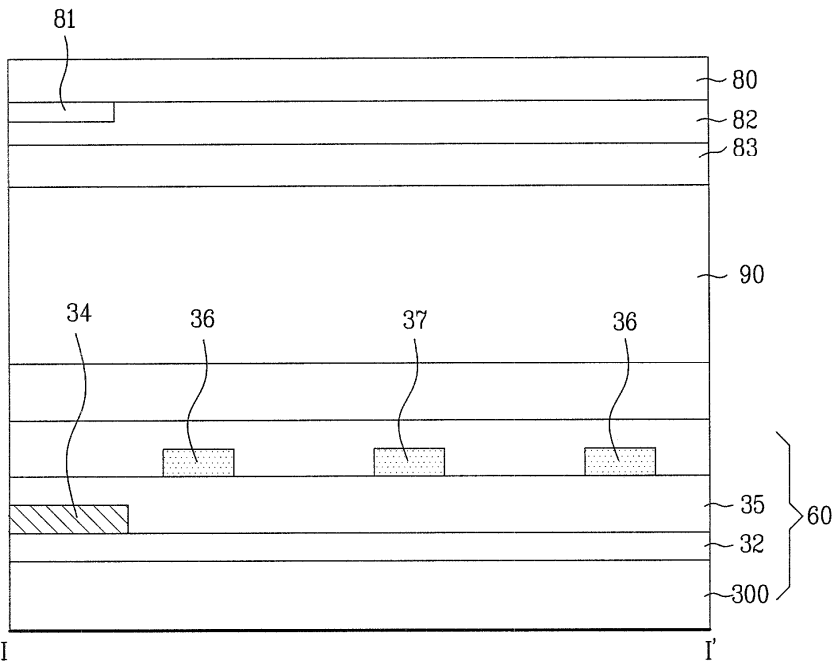
7



8



9



专利名称(译)	具有电磁感应型触摸板的横向电场型液晶显示装置		
公开(公告)号	KR1020040084503A	公开(公告)日	2004-10-06
申请号	KR1020030019630	申请日	2003-03-28
[标]申请(专利权)人(译)	乐金显示有限公司		
申请(专利权)人(译)	LG显示器有限公司		
当前申请(专利权)人(译)	LG显示器有限公司		
[标]发明人	JUNG YONGCHAE 정용채 YANG DONGKYU 양동규		
发明人	정용채 양동규		
IPC分类号	G02F1/1333		
代理人(译)	金勇 新昌		
其他公开文献	KR100499576B1		
外部链接	Espacenet		

摘要(译)

本发明涉及一种面内切换模式液晶显示装置，其在液晶面板内形成EM（电磁）传感器，并且包括减小厚度的电磁感应型触摸面板。并且其特征在于包括在上部框架前部中具有预定厚度的外涂层平坦化表面，以及在上部框架前部中包括外涂层平坦化表面至预定厚度的外涂层上形成的EM传感器单元，以及EM传感器单元形成在外涂层上。公共电极间隙在预定的像素电极之间间隔开并形成。滤色器层分别对应于像素电极并且在光学屏蔽层中重叠并形成。触摸面板为电磁感应式，EM（Electro Magnetic）传感器单元，在平面切换，外涂层，绝缘层，平面化。

