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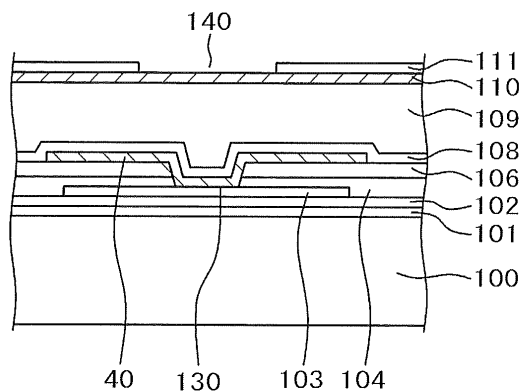
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(54) **Liquid crystal display device**

(57) In a liquid crystal display device that uses a top gate TFT, a contact hole (130) is formed to connect to an image signal line (40). An inorganic passivation film (108) and an organic passivation film (109) are formed in this order so as to cover the TFT, on which a common electrode is formed. Then, an interlayer insulating film

(106) is formed on the common electrode. A through hole (140) for gas release is formed in the interlayer insulating film (106). The diameter of the through hole (140) is greater than the diameter of the contact hole (130), so as to be able to easily release gas from the organic passivation film (109), and to prevent the interlayer insulating film (106) from peeling off.

FIG. 3





EUROPEAN SEARCH REPORT

Application Number
EP 11 19 3409

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2009/040442 A1 (TANNO JUNJI [JP] ET AL) 12 February 2009 (2009-02-12) * paragraph [0005] * * paragraph [0052] - paragraph [0056] * * figures 1,3 *	1-4,8	INV. G02F1/1333 G02F1/1343 G02F1/1362
A	US 2006/118828 A1 (KIM BYEONG K [KR] ET AL KIM BYEONG KOO [KR] ET AL) 8 June 2006 (2006-06-08) * paragraph [0003] * * paragraph [0031] - paragraph [0037] * * figure 1 *	1-4,8	
A	US 2010/201932 A1 (GOTOH JUN [JP] ET AL) 12 August 2010 (2010-08-12) * paragraph [0111] - paragraph [0112] * * paragraph [0143] - paragraph [0145] * * figures 1-5,16,17 *	1-4,8	
A	US 2001/040648 A1 (ONO KIKUO [JP] ET AL) 15 November 2001 (2001-11-15) * paragraph [0003] * * paragraph [0047] - paragraph [0050] * * figures 2A,2B *	1-4,8	TECHNICAL FIELDS SEARCHED (IPC) G02F
A	US 2008/273159 A1 (SEOK MIN-GOO [KR] ET AL) 6 November 2008 (2008-11-06) * paragraph [0041] - paragraph [0064] * * figure 5 *	6,7	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 August 2012	Examiner Petitpierre, Olivier
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.02 (P04C01)



Application Number

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☒ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

1-4, 6-8

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



LACK OF UNITY OF INVENTION
SHEET B

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-4, 8

The subject matter of independent claims 1 and 3 is an active-matrix liquid crystal display wherein the TFT of each pixel has a specific structure involving, among others, an image signal line, an organic passivation film, a common (cl. 1) or pixel (cl. 3) electrode on the organic passivation layer, and an interlayer insulating film on the latter electrode, the special technical features of these claims being that the image signal line has a wider portion, the image signal line and the drain portion of the TFT are connected via a contact whole, and that a through hole is formed in the interlayer insulating film in the wider portion and with a diameter greater than the diameter of the contact hole.

2. claim: 5

The subject matter of independent claim 5 is a peripheral circuit portion of a liquid crystal display wherein this peripheral circuit portion includes a TFT of specific structure involving, among others, a metal line, an organic passivation film, a line of ITO on the organic passivation layer, and an interlayer insulating film on the line of ITO, the special technical features of these claims being that the metal line and the drain portion of the TFT are connected via a contact whole, and that a through hole is formed at an unspecified location in the interlayer insulating film but with a diameter greater than the diameter of the contact hole.

3. claims: 6, 7

The subject matter of independent claims 6 and 7 is a terminal portion together with a testing element group (cl. 6) or an alignment mark (cl. 7) located outside the actual display area, wherein the testing element group or the alignment mark involves, among others, an organic passivation film, an ITO electrode on the organic passivation layer, and an interlayer insulating film on the latter electrode, the special technical features of these claims being that a through hole of unspecified diameter is formed in the interlayer insulating film in the area of the testing element group or of the alignment mark.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 19 3409

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-08-2012

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专利名称(译)	液晶显示装置		
公开(公告)号	EP2466365A3	公开(公告)日	2012-09-26
申请号	EP2011193409	申请日	2011-12-14
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IPC分类号	G02F1/1333 G02F1/1343 G02F1/1362		
CPC分类号	G02F1/136286 G02F1/133345 G02F1/134363 G02F1/136227 G02F1/1368 G02F2001/133354		
审查员(译)	PETITPIERRE , OLIVIER		
优先权	2010279155 2010-12-15 JP		
其他公开文献	EP2466365B1 EP2466365A2		
外部链接	Espacenet		

摘要(译)

在使用顶栅TFT的液晶显示装置中，形成接触孔（130）以连接到图像信号线（40）。依次形成无机钝化膜（108）和有机钝化膜（109）以覆盖其上形成有公共电极的TFT。然后，在公共电极上形成层间绝缘膜（106）。在层间绝缘膜（106）中形成用于释放气体的通孔（140）。通孔（140）的直径大于接触孔（130）的直径，以便能够容易地从有机钝化膜（109）释放气体，并且防止层间绝缘膜（106）从剥落。

FIG. 3

