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**Datasheet for the decision
of 12 September 2019**

Case Number: T 2426/16 - 3.5.05

Application Number: 10150110.4

Publication Number: 2209065

IPC: G06F3/044

Language of the proceedings: EN

Title of invention:

Touch screen panel and method for fabricating the same

Applicant:

Samsung Display Co., Ltd.

Headword:

Sensing patterns for a touch screen/SAMSUNG

Relevant legal provisions:

EPC Art. 123(2), 56

Keyword:

Added subject-matter - (yes)

Inventive step - (no): no synergistic technical effect

Right to be heard - withdrawal of request for oral proceedings



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Case Number: T 2426/16 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 12 September 2019

Appellant: Samsung Display Co., Ltd.
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Gyeonggi-do (KR)

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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 22 June 2016
refusing European patent application
No. 10150110.4 pursuant to Article 97(2) EPC**

Composition of the Board:

Chair A. Ritzka
Members: K. Bengi-Akyuerek
R. Moufang

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse the present European patent application for lack of inventive step (Article 56 EPC) as regards the claims of a main request and an auxiliary request, having regard to the disclosure of

D7: US-A-2008/0231605,

combined with

D6: US-A-2005/0156906;

D8: US-A-2007/0252614.

II. With the statement setting out the grounds of appeal, the appellant filed amended sets of claims according to a main request and first to third auxiliary requests. It requested that the examining division's decision be set aside and that a patent be granted on the basis of one of the above claim requests. In addition, oral proceedings were requested as an auxiliary measure.

III. In a communication annexed to the summons to oral proceedings pursuant to Article 15(1) RPBA, the board gave its preliminary opinion on the appeal. In particular, it raised objections under Articles 123(2) and 56 EPC.

IV. In a letter of reply dated 22 August 2019, the appellant indicated that it had withdrawn its request for oral proceedings and that it would not be attending the oral proceedings. It did not submit any comments on the substance of the board's communication.

V. The oral proceedings scheduled for 23 January 2020 were cancelled. The board established from the file that the appellant's final requests were that the decision under appeal be set aside and that a patent be granted on the basis of the claims of either the main request or one of the first to third auxiliary requests, all submitted with the statement setting out the grounds of appeal.

VI. Claim 1 of the **main request** reads as follows:

"A touch screen panel (10) comprising:
a transparent substrate (11);
a plurality of first sensing patterns (12) on a first side of the transparent substrate (11) coupled to each other along a first direction;
a first insulating film (13) on the first sensing patterns (12); and
a plurality of second sensing patterns (14) on the first insulating film (13) coupled to each other along a second direction crossing the first direction,
wherein the first sensing patterns (12) having a same coordinate in the second direction are coupled to each other along the first direction by a column unit integrally formed with the first sensing patterns (12) and the second sensing patterns (14) having a same coordinate in the first direction are coupled to each other along the second direction by a row unit integrally formed with the second sensing patterns (14),
the first sensing patterns (12) having pads provided on at least one side of an upper and a lower side of a region where the first (12) and second (14) sensing patterns are formed and the second sensing patterns (14) having pads provided on at least one side of a left and a right side of said region, and
characterized in that

the touch screen panel (10) further comprises a plurality of metal patterns (15) provided on an edge portion of said region to electrically couple the first (12) and second (14) sensing patterns by the row unit or by the column unit to position detecting lines, wherein the metal patterns (15) comprise a low resistance material having lower surface resistance than the second sensing patterns (14)."

Claim 1 of the **first auxiliary request** includes all of the features of claim 1 of the main request and further adds the following clause at the end:

"and wherein the metal patterns (15) comprise a triple layer of molybdenum/aluminum/molybdenum or a chrome film."

Claim 1 of the **second auxiliary request** includes all of the features of claim 1 of the first auxiliary request and further adds the following clause at the end:

"and wherein the first and second sensing patterns (12, 14) are made of ITO and have a thickness between 100 and 300Å."

Claim 1 of the **third auxiliary request** includes all of the features of claim 1 of the second auxiliary request and further adds the following clause at the end:

"and wherein the first insulating film (13) has a thickness between 400 and 700Å and an optical refractive index between 1.6 and 1.9 (based on a 550 nm wavelength)."

Reasons for the Decision

1. The present application

The present application is concerned with the fabrication of a multi-layer touch panel. It describes essentially two embodiments, a first embodiment relating to the overall structure of the touch panel (see page 5, line 5 to page 10, line 21; Figs. 1 to 4) and a second embodiment relating to the fabrication of the touch panel (see page 10, line 22 to page 12, line 10; Figs. 5A to 5E).

According to the description, the technical problem to be solved by the present application is "to reduce the number of masks used in the fabrication process of the touch screen panel 10 and to simplify the process" (see page 9, lines 5-9 as originally filed).

2. MAIN REQUEST

Claim 1 of the main request comprises the following limiting features, as labelled by the board:

A touch-screen panel comprising:

- A) a transparent substrate;
- B) a plurality of first sensing patterns on a first side of the transparent substrate coupled to each other along a first direction;
- C) a first insulating film on the first sensing patterns;
- D) a plurality of second sensing patterns on the first insulating film coupled to each other along a second direction crossing the first direction,

- E) wherein the first sensing patterns having a same coordinate in the second direction are coupled to each other along the first direction by a column unit integrally formed with the first sensing patterns,
- F) wherein the second sensing patterns having a same coordinate in the first direction are coupled to each other along the second direction by a row unit integrally formed with the second sensing patterns,
- G) wherein the first sensing patterns have pads provided on at least one side of an upper and a lower side of a region where the first and second sensing patterns are formed;
- H) wherein the second sensing patterns have pads provided on at least one side of a left and a right side of said region,
- I) wherein the touch-screen panel further comprises a plurality of metal patterns provided on an edge portion of said region to electrically couple the first and second sensing patterns by the row unit or by the column unit to position detecting lines, and comprising a low-resistance material having lower surface resistance than the second sensing patterns.

2.1 *Added subject-matter (Article 123(2) EPC)*

2.1.1 As to features E) and F) of claim 1, it is apparent to the board that the present application as filed describes merely that the first and second patterns are patterned in order to be coupled to each other in a column or row direction (see page 10, lines 24-28 and page 11, lines 10 to 13).

However, the board cannot find any basis for the

feature that said column and row "units" are indeed "integrally formed", i.e. fabricated as one block, with the respective sensing patterns. In particular, it is not taught, as argued by the appellant (see its statement of grounds of appeal, page 4, second paragraph), that those units are integrally formed in the sense that the sensing patterns are "simultaneously" formed with the associated column and row units in a "single manufacturing step", thereby requiring only two masks for forming them.

Thus, the teaching of the present application as filed does not extend beyond the fact that the respective sensing patterns are simply coupled to each other along a column or row direction (see e.g. page 5, lines 12-17), rather than being integrally formed with the underlying column and row units.

2.1.2 Accordingly, features E) and F) of claim 1 give rise to an unallowable extension of the application's original content. The appellant did not comment on this finding (indicated in the board's communication under Article 15(1) RPBA) in its letter of reply of 22 August 2019 (see point IV above).

2.2 In view of the above, the main request is not allowable under Article 123(2) EPC.

2.3 *Inventive step (Article 56 EPC)*

2.3.1 Notwithstanding the above deficiencies under Article 123(2) EPC, with regard to inventiveness, the board notes that it does not see any prejudicial errors in the assessment of inventive step as conducted in the impugned decision having regard to prior-art documents

D7, D6 and/or **D8** (see Reasons 2).

2.3.2 As regards distinguishing feature I), the appellant argued that D6 did not disclose any "metal pattern" because conductive patterns 18 and 22 and trace joints 50 and 52 were all formed by "silver glue". The latter was not a metal and thus the trace joints were not "metal patterns" comprising a low-resistance material having a lower surface resistance than the second sensing patterns as claimed.

The board is not convinced. In fact, document D6 shows, apart from the trace joints, the use of connection pads 250 which are electrically connected to the edge portions of the conductive patterns 208 and 212, i.e. the sensing patterns (see in particular paragraphs [0021] and [0022], in conjunction with Fig. 5). Given that those connection pads 250 are made of copper and that "copper" commonly has a lower surface resistance than a "glue", D6 likewise discloses - in the absence of a more specific definition of a "metal pattern" in claim 1 - feature I) of present claim 1.

2.3.3 Moreover, in view of the objections raised under Article 123(2) EPC in point 2.1 above, features E) and F) also cannot distinguish present claim 1 from the disclosures of the available prior art.

2.3.4 In view of the above, the board maintains that the skilled person would indeed combine the teachings of D7 and D6 in order to "provide a touch-screen panel with superior electrical performance and low manufacturing cost" (see D6, paragraph [0023]), and would thus arrive at the claimed solution without exercising inventive

skills (Article 56 EPC).

3. AUXILIARY REQUESTS

Claim 1 of the first to third auxiliary requests differs from claim 1 of the main request basically in that it further specifies that (emphasis added by the board)

J) the metal patterns comprises a triple layer of molybdenum/aluminum/molybdenum or a chrome film **(first to third auxiliary requests)**;

K) the first and second sensing patterns are made of ITO (Indium Tin Oxide) and have a thickness between 100 and 300Å **(second and third auxiliary requests)**;

L) the first insulating film has a thickness between 400 and 700Å and an optical refractive index between 1.6 and 1.9 (based on a 550 nm wavelength) **(third auxiliary request)**.

3.1 *Added subject-matter (Article 123(2) EPC)*

Given that claim 1 of the present auxiliary requests likewise comprises features E) and F), the objection raised in point 2.1 above applies *mutatis mutandis* to claim 1 of the present auxiliary requests.

3.2 *Inventive step (Article 56 EPC)*

3.2.1 The reasoning set out in point 2.3 above applies equally to claim 1 of the present auxiliary requests.

3.2.2 As to added features J) to L), it is apparent to the board that the present application is silent as to an objective synergistic technical effect derivable from

the mere definition of specific materials used for the metal/sensing patterns and the insulating films together with their associated parameter ranges (see page 8, lines 7-11 and page 11, lines 18-22 of the application as filed).

Moreover, concerning feature J), it is also evident that prior-art document **D8** not only teaches the use of a triple layer as claimed (see paragraph [0157]) but, contrary to the appellant's view, that it is also concerned with touch-screen panels (see e.g. paragraph [0009]). In the absence of any such objectively discernible technical effect associated with those features, no objective technical problem to be solved in the framework of the problem-solution approach can be established and, consequently, no inventive step can be acknowledged.

3.3 In summary, the first to third auxiliary requests are not allowable under Article 123(2) and 56 EPC either.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



B. ter Heijden

A. Ritzka

Decision electronically authenticated