

FILM LAMINATE BODY FOR PRESSURE SENSITIVE FINGERPRINT SENSOR

TECHNICAL FIELD

The present invention relates to a film laminate body for a pressure sensitive fingerprint sensor, and to a pressure sensitive fingerprint sensor using this film laminate body.

BACKGROUND

One type of known fingerprint sensor is a pressure sensitive fingerprint sensor that recognizes the shape of a fingerprint by detecting a pressure distribution caused by ridges and valleys of a fingerprint when a fingertip is pressed. For example, semiconductor matrix type ultrafine surface pressure distribution sensors and matrix type surface pressure distribution detection elements as described in Japanese Unexamined Patent Application Publication No. H6-288845 and Japanese Unexamined Patent Application Publication No. H6-288846 are commonly known. Furthermore, Japanese Unexamined Patent Application Publication No. 2002-228410 discloses a pressure fingerprint sensor where a fingerprint detecting part made of a flexible film with a conductive membrane is placed on a substrate with a matrix electrode, in a configuration provided with a powder single layer coating formed by completely covering and fixing powder particles in a single particle layer on a side opposite to the conductive membrane on the flexible film.

A pressure sensitive fingerprint sensor is required to be able to obtain an accurate pressure distribution corresponding to the degree of ridges and valleys of fingerprints, and thereby be able to recognize accurately the shape of fingerprints, in order to achieve accurate fingerprint pattern recognition.

SUMMARY

A first aspect of the present invention provides a film laminate body for a pressure sensitive fingerprint sensor containing a base film with a first surface and a second surface, as well as a conductive layer formed by a dry film forming process on the first surface, and an elastic layer provided on the second surface, which is a side opposite the first surface of the base film, wherein the base film has a thickness of 6 μm or less, and the elastic layer has a thickness of no less than the thickness of the base film, and has an elasticity of 10^8 Pa or less.

In one embodiment, the film laminate body for a pressure sensitive fingerprint sensor may further include a cover film on a surface side of the elastic layer opposite the base film.

In one embodiment, the elastic layer can also include a pressure sensitive adhesive. Furthermore, the base film may contain polyphenylene sulfide.

5 ~~A second~~ Another aspect of the present invention ~~provides~~ is a pressure sensitive fingerprint sensor including a substrate ~~having~~ with matrix electrodes, and a film laminate body for the pressure sensitive fingerprint sensor ~~as defined in the first aspect, arranged~~ placed on this substrate ~~such that so as to contact~~ the matrix electrodes and the conductive layer ~~are~~ facing each other.

10 ~~Embodiments of~~ The present invention can provide a film laminate body for a pressure sensitive fingerprint sensor that can obtain an accurate pressure distribution corresponding to the degree of ridges and valleys of a fingerprint and thereby can clearly recognize the shape of the fingerprint, and that can be manufactured inexpensively, and that
15 can also provide a pressure sensitive fingerprint sensor provided with this film laminate body that can clearly recognize the shape of the fingerprint.

BRIEF DESCRIPTION OF THE DRAWINGS

15 FIG. 1 is a diagram schematically illustrating a cross-section configuration of the film laminate body for a pressure sensitive fingerprint sensor of a preferred embodiment.

FIG. 2 is a diagram schematically illustrating a condition of performing fingerprint recognition using a pressure sensitive fingerprint sensor 100.

20 FIGs. 3a-3c are diagrams illustrating results obtained by a fingerprint recognition device using a pressure sensitive fingerprint sensor provided with films 1 through 3 respectively according to an example of the present invention.

FIGs. 4a-4b are diagrams illustrating results obtained by a fingerprint recognition device using a pressure sensitive fingerprint sensor provided with films 4 and 5 respectively according to an example of the present invention.

25 FIGs. 5a-5c are diagrams illustrating results obtained by a fingerprint recognition device using a pressure sensitive fingerprint sensor provided with films 6 through 8 respectively according to a comparative example.

DETAILED DESCRIPTION

30 Preferred embodiments of the present invention are described below in detail while referring to the drawings, but the present invention is not restricted to the following embodiments. Note that in the following descriptions, identical or similar constituents are assigned the same code and a duplicate description is omitted.

35 FIG. 1 is a diagram schematically illustrating a cross-section configuration of a film laminate body for a pressure sensitive fingerprint sensor of a preferred embodiment. A film laminate body for a pressure sensitive fingerprint sensor 10 (hereinafter abbreviated as "film