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Patent Number(s): JP2012137393-A

Title: Silicon substrate i.e. semiconductor wafer, inspection apparatus, has through-silicon via hole depth acquisition part acquiring depth of through-silicon via hole formed in hole formation area based on phase difference

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Derwent Primary Accession No.: 2012-J37533

Abstract: NOVELTY - The apparatus (100) has an electromagnetic wave pulse irradiation part (13) irradiating an electromagnetic wave pulse toward a silicon substrate (9). An electromagnetic wave pulse detection part (15) detects the pulse. A phase difference acquisition part (25) compares two time waveforms of the pulse that permeates a reference area different from a through-silicon via (TSV) hole formation area and acquires a phase difference. A TSV hole depth acquisition part (27) acquires depth of a TSV hole formed in the hole formation area based on the phase difference.

USE - Apparatus for inspecting a silicon substrate such as semiconductor wafer. Can also be used for LCD device substrate and solar-cell-panel-oriented substrate.

ADVANTAGE - The TSV hole depth acquisition part acquires the depth of the TSV hole formed in the hole formation area based on the phase difference so as to measure the depth of the hole at arbitrary time based on refractive index and aperture ratio. The apparatus can test the depth of the hole in a favorable manner by utilizing electromagnetic waves with the range of 0.1-10 terahertz.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a silicon substrate inspection method.

DESCRIPTION OF DRAWING(S) - The drawing shows a schematic block diagram of a silicon substrate inspection apparatus. '(Drawing includes non-English language text)'

Silicon substrate (9)

Electromagnetic wave pulse irradiation part (13)

Electromagnetic wave pulse detection part (15)

Phase difference acquisition part (25)

TSV hole depth acquisition part (27)

Silicon substrate inspection apparatus (100)

Derwent Class Code(s): S01 (Electrical Instruments including e.g. instrument panels); S02 (Engineering Instrumentation, recording equipment, general testing methods); S03 (Scientific Instrumentation, photometry, calorimetry); U11 (Semiconductor Materials and Processes)

Derwent Manual Code(s): S01-G02B1; S02-A03B3; S02-A03B5; S02-A05A; S02-A05C3; S03-E04A5; S03-E04B5; U11-C05G2C; U11-F01B2; U11-F01C3; U11-F01D3

IPC: G01B-011/22; G01B-015/00; G01N-021/35; G01N-021/41