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(54) THIN-FILM SEMICONDUCTOR DEVICE AND ITS PRODUCTION METHOD

(57) In the present invention, the substrate sheet for the thin film semiconductor device is produced as a substrate sheet having a thin film layer of semiconductor in which large size single-crystalline grains having a grain size exceeding 2μm are arranged in a regulated configuration mode, by irradiating a thin film layer of non-single-crystalline semiconductor formed on a base layer of insulation material, with energy beam having intensity distribution of irradiation such that the area to which maximum intensity value of energy beam is given and the area to which minimum intensity value of energy beam is given are arranged in a regulated mode. The each electric circuit unit of thin film semiconductor device is formed by adjusting its position so as to correspond to the position of the single-crystalline grain in the layer of semiconductor of the substrate sheet. By the above process, a thin film semiconductor device, in which a plurality of electric circuit unit having gate electrode, source electrode and drain electrode are arranged in a regulated configuration mode corresponding to the arrangement of single-crystalline grains of semiconductor, is obtained. The device can operate with high mobility without being influenced such phenomenon as by electron dispersion at the boundary of grains.

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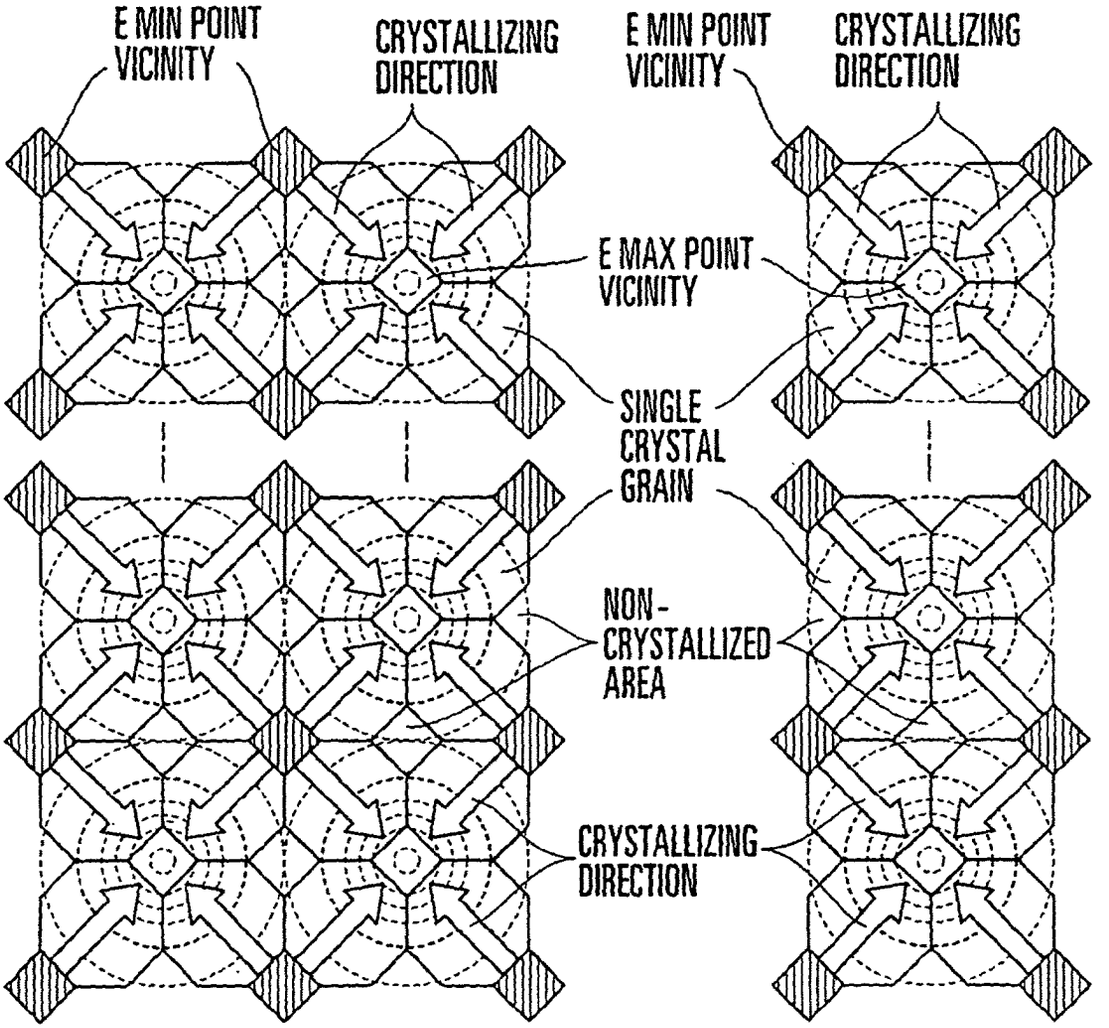
E MIN POINT VICINITY
CRYSTALLIZING DIRECTION
E MIN POINT VICINITY
CRYSTALLIZING DIRECTION
E MAX POINT VICINITY
SINGLE CRYSTAL GRAIN
NON-CRYSTALLIZED AREA
CRYSTALLIZING DIRECTION

FIG. 4