THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ALAN C. SEABAUGH

Appeal No. 96-3296
Application 08/145,267[1]

ON BRIEF

Before THOMAS, HAIRSTON and KRASS, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 5, 8 and 9. Claims 6 and 7 are said by the examiner to

[1] Application for patent filed October 29, 1993.

be directed to allowable subject matter and stand objected to as relying on a rejected parent claim.

The invention pertains to providing an integrated circuit coupling a silicon-based transistor with a silicon-based resonant tunneling diode having tunneling barriers including an amorphous silicon-oxygen compound.

Independent claim 5 is reproduced as follows:

5. An integrated circuit, comprising:

(a) a silicon-based transistor; and

(b) a silicon resonant tunneling diode with tunneling barriers including an amorphous silicon-oxygen compound, said diode coupled to said transistor.

The examiner relies on the following references:

Tanoue et al. (Tanoue)	5,229,623	Jul. 20, 1993
European patent (Suematsu)	0194061	Sep. 10, 1986
Japanese patent (Iwamatsu)	63-124467	May 27, 1988

Claims 5, 8 and 9 stand rejected under 35 U.S.C. 103 as unpatentable over Tanoue, Iwamatsu and Suematsu.

Reference is made to the brief and answer for the respective positions of appellant and the examiner.

OPINION

We reverse.

In our view, the examiner simply has not established a prima facie case of obviousness with regard to the instant claimed subject matter.

The examiner contends [answer, page 3] that Tanoue teaches a field effect transistor integrated with a Resonant Tunneling Diode (RTD) and appellant does not deny it. The examiner then contends that Iwamatsu and Suematsu suggest the practice of a circuit as in Tanoue with silicon semiconductor based material rather than III-V material "because silicon material is standard in the industry and forms a good oxide for insulation purposes, and is also shown to be useful for tunneling and field effect transistor devices." However, it is unclear to us what portions of Iwamatsu and Suematsu are being relied on by the examiner for such teachings. The examiner has failed to identify the particular portions of the references on which he relies and it appears to us that the examiner's rationale may, in reality, be based improperly on what is taught by appellant's own specification.

Further, the examiner contends [answer, page 3] that Iwamatsu "shows a semiconductor tunneling device with amorphous silicon oxide tunneling insulator structure" but, again, the examiner fails to identify exactly what portion of the reference

he relies on for such a teaching. We find no evidence in the applied references of "a silicon resonant tunneling diode with tunneling barriers including an amorphous silicon-oxygen compound," as claimed. At the bottom of page 3 of the answer, the examiner also contends that "from Suematsu it is shown that amorphous silicon oxide tunneling insulator [sic] would have been clearly obvious tunneling insulator material" but, again, there is no indication from the examiner as to what portion or portions of Suematsu are relied on for such a teaching. It is unclear to us how the examiner is construing the "artificial semiconductors" of Suematsu to somehow suggest the claimed silicon resonant tunneling diode with tunneling barriers including an amorphous silicon-oxygen compound.

We agree with appellant, at page 4 of the brief, that if Iwamatsu and/or Suematsu were combined with Tanoue,

> ...the result would be either a field effect transistor plus an induced potential well field effect transistor (Iwmatsu [sic, Iwamatsu]) or a field effect transistor plus a junction diode of "artificial semiconductor" materials which could give resonant conduction behavior (Suematsu). But neither of these would suggest the silicon based resonant tunneling with amorphous tunneling barriers as required by independent claim 5 and its dependent claims...

The examiner has not convinced us otherwise.

The examiner's decision rejecting claims 5, 8 and 9 under 35 U.S.C. 103 is reversed.

REVERSED

JAMES D. THOMAS Administrative Patent Judge	)
KENNETH W. HAIRSTON Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
ERROL A. KRASS Administrative Patent Judge	)

Carlton H. Hoel
Texas Instruments Patent Department
Mail Station 219
P.O. Box 655474
Dallas, TX 75265