

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 11

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KURT H. WEINER
and
PAUL G. CAREY

Appeal No. 1998-1577
Application No. 08/593,766

ON BRIEF

Before HAIRSTON, RUGGIERO, and DIXON, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 18.

The disclosed invention relates to a process for fabricating lightly doped drains (LDD) for MOS transistors. In the process, a single pulse of laser energy is directed onto selected regions of a silicon member to produce lightly

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doped regions in the silicon member, and thereafter a number of laser pulses having an energy level lower than the single pulse is directed onto selected regions of the silicon member to produce heavily doped regions in the silicon member.

Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A process for fabricating a LDD source drain, particularly adapted for MOS transistors, including:

providing a dopant atmosphere about a silicon member;

directing a single pulse of laser energy onto selected regions of the silicon member to produce lightly doped regions in the silicon member; and

directing a number of laser pulses having energy lower than the single pulse onto selected regions of the silicon member to produce heavily doped regions in the silicon member.

The reference relied on by the examiner is:

Ishida et al. (Ishida)	5,316,969	May 31, 1994
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Claims 1 through 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida.

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

OPINION

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The obviousness rejection of claims 1 through 18 is reversed.

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The examiner is of the opinion (Answer, pages 3 and 4) that Ishida discloses substantially all of the method steps including "directing a single pulse of high laser energy onto selected regions of a silicon member to produce lightly doped regions in the silicon," and controlling dosage by "varying either the laser energy or by varying the number of pulses." The examiner concludes (Answer, page 4) that "[i]t would have been obvious to one of ordinary skill in the art to have used the method of Ishida to make an LDD device and to have varied the number of pulses, the laser energy, the duration of the pulse(s) and the wavelength of the pulse(s) for the reasons given in Ishida (column 3, lines 35-45; column 4, lines 22-28)."

Appellants argue (Brief, pages 7 and 8) that:

A detailed review of Ishida et al clearly refutes the Examiner's statement, since nowhere in Ishida et al is there a teaching of using a single pulse of high laser energy. For instance, in "Example 1" of Ishida et al (Col. 3, lines 23-45) it states that Figure 3 of Ishida et al presents results for "a sample which received 20 non-melt pre-dep pulses and 15 drive-in pulses at 175 ns melt duration"; and "The non-melt dose as a function of laser energy and as a function of number of pulses is shown in Figures 4 and 5" of Ishida et al. Lines 35-37 of Col. 3 of Ishida et al discuss "varying the number of pulses". Where in "Example 1" is there a

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teaching of the claimed single pulse? In "Example 2", lines 58-61 of Ishida et al discuss varying the "number of pulses", "pulse repetition rate", and "laser energy fluence" and states that "Sample H6 received 100 pulses . . . ". That certainly doesn't teach a single pulse. Col. 4, lines 22-28 of Ishida et al states "Control over dose is achieved by varying the number of laser pulses". Does that teach or suggest a single laser pulse? The Examiner has referred to Claim 3 of Ishida et al as providing a teaching, but Claim 3 involves "applying a silicide layer" which relates to the GILD doping process. [Emphasis original.]

We agree with appellants' arguments. Ishida does in fact teach varying the number of laser pulses, but never teaches the use of a single pulse of laser energy as specifically required by the claims on appeal. Inasmuch as every embodiment in Ishida requires that the doping process begin with a plurality of laser energy pulses (e.g., column 3, lines 42 through 51), and would not have suggested to one of ordinary skill in the art that the doping process should be initiated by a single laser energy pulse, the obviousness rejection is reversed.

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DECISION

The decision of the examiner rejecting claims 1 through 18 under 35 U.S.C. § 103(a) is reversed.

REVERSED

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KENNETH W. HAIRSTON))
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH F. RUGGIERO)	
Administrative Patent Judge)	APPEALS AND
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JOSEPH L. DIXON)	
Administrative Patent Judge)	

KWH:hh

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