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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN T. CHAMBERS and RICHARD G. TAYLOR

Appeal No. 96-1583
Application 08/066,618[1]

ON BRIEF

Before KIMLIN, JOHN D. SMITH, and SPIEGEL, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1, 2, 4, 5, and 8. Claims 10-14 stand withdrawn from consideration, and claims 3, 6, 7 and 9, the other claims

[1]Application for patent filed May 24, 1993. According to appellants, this application is a continuation of application 07/881,309, filed May 7, 1992, which is a continuation of application 07/690,103, filed April 23, 1991, both now abandoned.

remaining in the present application, have been objected to by the examiner. Claim 1 is illustrative of the appealed claims:

> 1. In the fabrication of a BiCMOS integrated circuit where a bipolar transistor is formed in a substrate region of a first conductivity type, the improvement comprising the steps of:
>
> > forming a base region in said substrate region by implanting ions of a second conductivity type into said first conductivity type substrate region using at least two different energy levels, the lower energy level for implanting said second type conductivity ions into said substrate region so as to form an active base region, the higher energy level for implanting said second conductivity type ions deeper into said substrate region than the lower energy level implant so as to form a more lightly doped first conductivity type substrate region near said base region; and
> >
> > forming an emitter region in said base region over said more lightly doped first conductivity type substrate region.

The examiner relies upon the following reference as evidence of obviousness:

Zdebel et al. (Zdebel) 4,740,478 Apr. 26, 1988

Appellants' claimed invention is directed to the fabrication of a BiCMOS integrated circuit wherein a base

region is formed in a substrate of a first conductivity type by implanting ions of a second conductivity type using at least two different energy levels. The implanting at the lower energy level forms the

active base region whereas the implanting at higher energy level proceeds deeper into the substrate than the lower energy level implantation "so as to form a more lightly doped first conductivity typed substrate region near said base region."

Appealed claims 1, 2, 4, 5 and 8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Zdebel.

We have carefully considered the opposing arguments presented on appeal. In so doing, we find that the applied prior art fails to establish a prima facie case of obviousness for the claimed subject matter. Accordingly, we will not sustain the examiner's rejection.

The appealed claims call for using a low energy implantation into the substrate "so as to form an active base region". While the examiner cites Zdebel at column 14, lines 3-6, for disclosing "using two implants for different penetrations for

active base regions 64", it is clear from the context of the referenced disclosure that the lower energy implantation is not used to form the active base region 64. In the paragraph bridging columns 14 and 15 of Zdebel, the reference teaches that, preferably, less than ten percent of the low energy implantation

penetrates into the epitaxial silicon region 68. As described at column 15, lines 11 et seq. "[t]he purpose of the shallow oxide implant is to completely saturate that portion of oxide 110 near silicon-oxide interface 68B with boron so that out-diffusion of boron from region 68 into oxide 110 across interface 68B is inhibited, so that the deep boron implant remains in silicon region 68 and accurately determines the doping and Gummel number of base 64." Manifestly, the predominant portion of the low energy implantation is located in screen oxide 11 at or near interface or surface 68B between oxide 110 and layer 68 (column 14, lines 10-13). It is the deeper, high energy implantation of Zdebel that "substantially determines the Gummel number in base 64" (column 14, line 17),

and essentially forms the active base region 64. Considering both the claimed invention and the Zdebel process as a whole, it is the low energy implantation that forms the active base region of the claimed invention, whereas the active base region of Zdebel is formed by the higher energy implantation.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is reversed.

REVERSED

EDWARD C. KIMLIN Administrative Patent Judge	)	
JOHN D. SMITH Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
CAROL A. SPIEGEL Administrative Patent Judge	)	

vsh

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