

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIAM R. YOUNG and GREGG D. CROFT

Appeal No. 2005-0176
Application No. 10/076,716

ON BRIEF

Before HAIRSTON, SAADAT, and MACDONALD, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1, 2, 4 through 16, 22, 26 through 31, 33, 34 and 46 through 48. Claims 36 through 45 and 50 through 57 are allowed, and claims 3, 17 through 21, 23 through 25, 32, 35 and 49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The disclosed invention relates to an electrostatic discharge protection circuit for an integrated circuit.

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

1. An electrostatic discharge protection circuit comprising:

one or more electrostatic bus lines to direct electrostatic discharge around internal circuitry;

a plurality of signal bonding pads to receive external voltage signals, each signal bonding pad is coupled to an associated electrostatic bus line via an unidirectional conducting device; and

a charge pump for each electrostatic bus line to precharge its associated electrostatic bus line to an associated predetermined voltage level, wherein pre-charging each electrostatic bus line to its predetermined voltage level reduces transient currents on the signal bonding pads associated with capacitive charging of the electrostatic bus lines when the external voltage signal levels are beyond normal supply voltage ranges.

The references relied on by the examiner are:

Smith et al. (Smith)	6,046,897	Apr. 4, 2000
Ker et al. (Ker)	6,144,542	Nov. 7, 2000

Claims 1, 2, 4, 5, 14 through 16 and 46 through 48 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Smith.

Claims 10 through 13, 22, 26 through 31, 33 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith in view of Ker.

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Claims 6 through 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith in view applicants' admitted prior art.

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

OPINION

We have carefully considered the entire record before us, and we will reverse the anticipation rejection of claims 1, 2, 4, 5, 14 through 16 and 46 through 48, and reverse the obviousness rejections of claims 6 through 13, 22, 26 through 31, 33 and 34.

Turning first to the anticipation rejection of independent claims 1 and 14, the examiner has made findings (answer, pages 3 and 6) that the diodes 810 and 816 in Smith (Figure 8; column 13, lines 13 through 20) precharge the segmented electrostatic discharge (ESD) buses during normal operation of the integrated circuit. Appellants argue (reply brief, pages 1, 3 and 4) that the diodes 810 and 816 can not function as a charge pump, and that the examiner has incorrectly assigned a meaning to the term "charge pump" that is inconsistent with the ordinary meaning of the term. According to the definitions provided by appellants (reply brief, page 3), a charge pump has to use one or more capacitors to generate an output voltage.

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Based upon a review of the definitions provided by appellants, and our independent research of the term, we find that a "charge pump" is defined in the art as limited to the use of capacitors to increase the voltage in a circuit. Since the diode circuit in Smith can not function as a "charge pump," we must reverse the anticipation rejection of independent claims 1 and 14, and dependent claims 2, 4, 5, 15 and 16.

Turning next to the anticipation rejection of independent claim 46, the examiner states (answer, page 6) that "Col. 13, lines 20-30 state [that] the ESD is discharged to VDD, in the embodiment of a large positive voltage with respect to VDD, through VSS and diode 26, thus indicating 810, 816 are not forward biased." Appellants argue (reply brief, page 4) that the referenced portion of Smith deals with the application of a large positive voltage to one of the I/O pads, and does not pertain to the bus lines. We agree with the appellants' argument. Although Smith indicates (column 13, lines 13 through 20) that the segmented bus lines are precharged during normal operation, Smith is silent as to the relative value of this precharge with respect

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to "the signal voltage level expected to be applied to the integrated circuit." In the absence of a specific teaching in Smith, we can only speculate as to the value of the voltage level to be applied to the integrated circuit. Thus, the anticipation rejection of claim 46 and dependent claims 47 and 48 is reversed because we will not resort to improper speculation.

The obviousness rejections of claims 6 through 13, 22, 26 through 31, 33 and 34 are reversed because the teachings of Ker and appellants' admitted prior art do not cure the noted shortcomings in the teachings of Smith.

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DECISION

The decision of the examiner rejecting claims 1, 2, 4, 5, 14 through 16 and 46 through 48 under 35 U.S.C. § 102(b) is reversed, and the decision of the examiner rejecting claims 6 through 13, 22, 26 through 31, 33 and 34 under 35 U.S.C. § 103(a) is reversed.

REVERSED

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
MAHSHID SAADAT)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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ALLEN R. MACDONALD)	
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KWH:hh

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