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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SAORI UCHIDA
and
AKIO UENISHI

Appeal No. 1997-0600
Application 08/291,207[1]

HEARD: October 21, 1999

Before JERRY SMITH, FLEMING and BARRY, ***Administrative Patent Judges***.

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[1] Application for patent filed August 16, 1994.

FLEMING, ***Administrative Patent Judge***.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 2 through 7, 10 and 11, all of the claims pending in the present application. Claims 1, 8 and 9 have been cancelled.

The invention relates to an improvement for compatibly suppressing the occurrence of switching loss and the occurrence of surge voltage when connected to an inductive load for a power switching device. Appellants disclose on page 1 of the specifi- cation that figure 6 is a circuit diagram showing a conventional power switching device. Appellants disclose on page 7 of the specification that figure 1 is a circuit diagram showing the structure of a power switching device and the structure of peripheral devices thereof in the preferred embodiment of the present invention. Appellants disclose on page 8 of the specifi- cation that inductor 13 is

connected to emitter electrode E of element 6 and ground. Appellants further disclose that the emitter of element 6 is also connected to pulse generator 1. Appellants disclose on pages 11 and 12 that the closed circuit of the OFF driving current (indicated by a solid arrow in figure 1) formed when the OFF driving transistor 3b turns on includes inductor 13. The closed circuit of the ON driving current I_{ON} (designated by the dotted arrow in figure 1) formed when the ON

driving transistor 3a turns on does not include inductor 13. Appellants disclose that this arrangement suppresses the surge voltage when the element 6 makes transition from ON to OFF when the surge voltage due to the parasitic inductances 11 and 12 occurs.

Independent claim 10 is reproduced as follows:

10. A power switching device comprising:

a control circuit having an output;

a power switching element having a control electrode connected to the output of said control circuit and having a pair of main electrodes; and

an inductor connected to one of said pair of main electrodes of said power switching element;

said power switching element performing an OFF operation and an ON operation in response to an output of said control circuit to turn off and on a main current flowing across said pair of main electrodes;

wherein a path of an OFF driving current, which said control circuit supplies to said control electrode to bring said power switching element to said OFF operation, includes said inductor; said off driving current flowing in the opposite direction as said main current of said power switching element in said inductor; and

wherein a path of an ON driving current, which said control circuit supplies to said control electrode to bring said power switching element to said ON operation, excludes said inductor.

The Examiner relies on the following reference:

Kuroki	4,639,823	Jan. 27, 1987

Claims 2 through 7, 10 and 11 stand rejected under 35 U.S.C. § 103 as being unpatentable in view of the prior art circuit shown in figure 6 of the Appellants' specification and Kuroki.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the briefs[2] and answer for the respective details thereof.

OPINION

We will not sustain the rejection of claims 2 through 7, 10 and 11 under 35 U.S.C. § 103.

The Examiner has failed to set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6

[2] Appellants filed an appeal brief on June 5, 1996. Appellants filed a reply brief on August 26, 1996. The Examiner mailed a communication on November 27, 1996 stating that the reply brief has been entered and considered but no further response by the Examiner is deemed necessary.

(Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." ***Para-Ordnance Mfg. v. SGS Importers Int'l, Inc.***, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995), ***cert. denied***, 519 U.S. 822 (1996) ***citing W. L. Gore & Assoc., Inc. v. Garlock, Inc.***, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), ***cert. denied,*** 469 U.S. 851 (1984).

On pages 1 and 2 of the reply brief, Appellants argue that since the Examiner has removed the novelty rejection of claim 10 and substituted an obviousness rejection for that claim, the previously made arguments still apply to the obviousness rejection. In particular, Appellants point out that the Examiner states that it would be obvious to include an inductor as shown by Kuroki in the prior art device. Appellants argue that Kuroki would teach adding an inductor but would not teach adding an inductor with the several connections of the present invention which make up a different circuit.

We note that claim 10 recites

> wherein a path of an OFF driving current, which said control circuit supplies to said control electrode to bring said power switching element to said OFF operation,
>
> includes said inductor; said off driving current flowing in the opposite direction as said main current of said power switching element in said inductor; and
>
> wherein a path of an ON driving current, with said control circuit supplies to said control electrode to bring said power switching element to said ON operation, excludes said inductor.

Turning to figure 1, we see that these paths are represented by a solid line and a dotted line, respectively. We also note that these paths are due to the fact that the inductor is not simply connected to the emitter and ground without any other connections, but instead include an additional connection to the emitter which connects the pulse generator 1.

Turning to Kuroki, we note that Kuroki teaches simply connecting the inductor 5 between the emitter and ground. Kuroki does not teach these additional connections which would establish alternate paths depending on whether the power switch is on or off. Therefore, we find that Kuroki

fails to teach or suggest providing the claimed path of an OFF driving current that includes the inductor and a path of an ON driving current which excludes the inductor as recited in Appellants' claims.

The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the

Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." ***In re Fritch***, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), ***citing In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

We have not sustained the rejection of claims 2 through 7, 10 and 11 under 35 U.S.C. § 103. Accordingly, the Examiner's decision is reversed.

REVERSED

JERRY SMITH)
Administrative Patent Judge)
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) BOARD OF PATENT
MICHAEL R. FLEMING) APPEALS AND
Administrative Patent Judge) INTERFERENCES
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LANCE LEONARD BARRY)
Administrative Patent Judge)

MRF:psb

Oblon Spivak McClelland Maier Neustadt
4th Floor
1755 Jefferson Davis Highway
Arlington, VA 22202