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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* OSVALDO JORGE LOPEZ and  
JONATHAN ALMERIA NOQUIL

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Appeal 2018-008481  
Application 15/361,700  
Technology Center 2800

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Before DONNA M. PRAISS, MICHELLE N. ANKENBRAND, and  
DEBRA L. DENNETT, *Administrative Patent Judges*.

PRAISS, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>2</sup> appeals from the Examiner’s decision to reject claims 13–32. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> In this Decision, we refer to the Specification filed Nov. 28, 2016 (“Spec.”), the Final Office Action dated Nov. 2, 2017 (“Final Act.”), the Appeal Brief filed Mar. 27, 2018 (“Appeal Br.”), the Examiner’s Answer dated June 28, 2018 (“Ans.”), and the Reply Brief filed Aug. 24, 2018 (“Reply Br.”).

<sup>2</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Texas Instruments Incorporated is identified as the real party in interest. Appeal Br. 2.

### STATEMENT OF THE CASE

The invention relates to semiconductor devices. Spec. ¶ 2. The Specification describes the structure of thin packaged synchronous buck converters being free of clips and having chips embedded outside the package in a pre-coined recess of the leadframe. *Id.* A synchronous buck converter is also referred to as a power stage and includes a regulating driver and controller added to a power block with two power MOS field effect transistors (FETs) connected in series and coupled together by a common switch node. *Id.* ¶ 3. Figure 5 below illustrates Appellant's stamped and coined leadframe 201 having first surface 201a shown from a perspective bottom view. *Id.* ¶ 22; Appeal Br. 5.

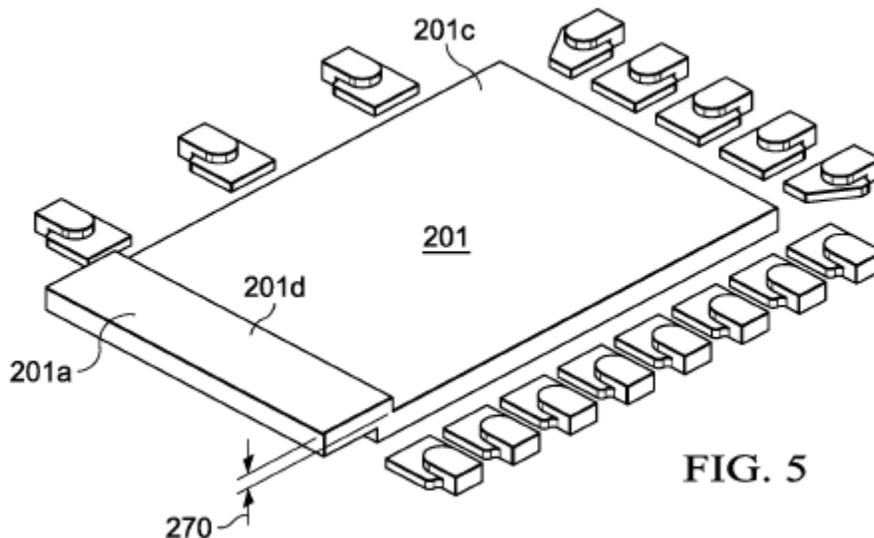


FIG. 5

Figure 5 illustrates pad portion 201c recessed relative to the leads and to remaining pad portion 201d. Spec. ¶¶ 22, 38, 39.

Claim 13, reproduced below, is the sole independent claim in this appeal and illustrative of the subject matter on appeal (emphasis added).

13. A semiconductor device comprising:

a leadframe having one or more leads and a pad, wherein the pad includes a first surface and a second surface opposite the first surface, and wherein the second surface of the pad comprises a recessed portion and an un-recessed portion, *wherein the un-recessed portion is contiguous and is the only un-recessed portion of the second surface*;

a first chip attached to the first surface of the pad and comprising one or more terminals, each of the one or more terminals being connected to a respective one of the one or more leads;

packaging material encapsulating the first chip and the first surface of the pad, but leaving the second surface of the pad exposed; and

a second chip attached to the recessed portion of the second surface of the pad so that at least one terminal of the second chip is substantially coplanar with the un-recessed portion of the second surface of the pad.

Appeal Br. 18 (Claims Appendix).

### ANALYSIS

We review the appealed rejections for error based upon the issues Appellant identifies, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (“[I]t has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections.”). After considering the argued claims in light of the case law presented in this Appeal and each of Appellant’s arguments, we are not persuaded of reversible error in the appealed rejections.

The Examiner rejects claims 13–32 as follows.<sup>3</sup> Final Act. 6–11;  
Ans. 2–8.

<b>Claim(s)</b>	<b>35 U.S.C. §</b>	<b>Basis/Reference(s)</b>
13	103	Herbsommer <sup>4</sup>
14–32	103	Herbsommer, EP '113 <sup>5</sup>
13–32	Non-statutory double patenting	Lopez '121 <sup>6</sup>
13–32	Non-statutory double patenting	Lopez '872 <sup>7</sup>
13–32	Non-statutory double patenting	Lopez '240 <sup>8</sup>

Appellant does not challenge the Examiner's non-statutory double patenting rejections of claims 13–32 over claims 1–20 of Lopez '121, claims 1–8 of Lopez '872, and claims 1–8 of Lopez '240. Final Act. 11–13. In the Reply Brief, Appellant confirms the non-statutory double patenting rejections are not being challenged and offers to file a terminal disclaimer. Reply Br. 2. Accordingly, we summarily affirm the Examiner's non-statutory double patenting rejections.

We separately address the prior art rejections below.

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<sup>3</sup> The Examiner's rejections of claims 13–32 under 35 U.S.C. §§ 112(a) and 112(b) have been withdrawn and are not part of this Appeal. Ans. 8.

<sup>4</sup> US 2013/0077250 A1, published Mar. 28, 2013.

<sup>5</sup> EP 2 393 113 A1, published Dec. 7, 2011.

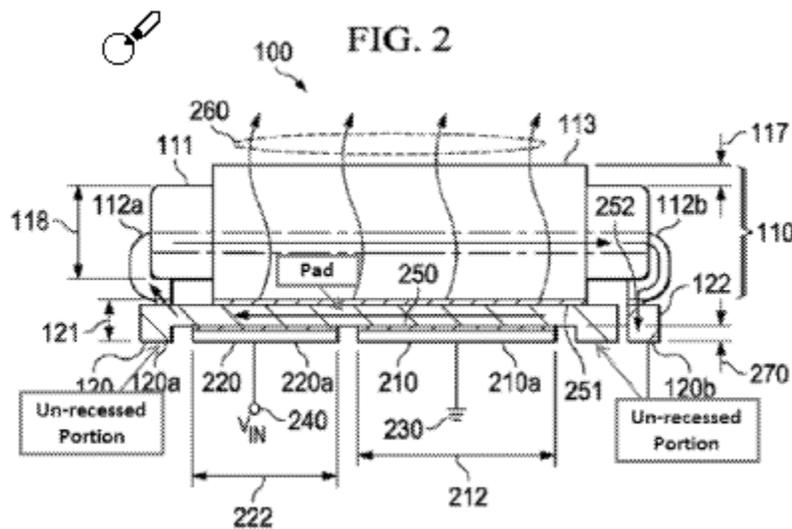
<sup>6</sup> US 9,184,121 B2, issued Nov. 10, 2015.

<sup>7</sup> US 9,305,872 B2, issued Apr. 5, 2016.

<sup>8</sup> US 9,543,240 B2, issued Jan. 10, 2017.

*Obviousness over Herbsommer (Claim 13)*

Appellant contends that the Examiner erred in rejecting claim 13 because claim 13 requires “*only one contiguous un-recessed portion*” and Herbsommer does not disclose this limitation. Appeal Br. 13. According to Appellant, Herbsommer’s pad includes two separate un-recessed portions at opposite ends of the lower surface. *Id.* Appellant identifies these two un-recessed portions in Herbsommer’s annotated Figure 2 below. *Id.*



Herbsommer’s annotated Figure 2 depicts leadframe 120 having two portions labelled “Un-recessed Portion.” According to Appellant, Herbsommer’s un-recessed portions appear contiguous in Figure 2, but neither is the only un-recessed portion on the lower surface due to the presence of the other. *Id.* Appellant argues that the Examiner’s position—that if one of the two un-recessed portions was not desired, it would have been obvious to remove it—is conclusory and not a reasoned analysis. *Id.* at 14–15.

The Examiner responds that the claims do not preclude the presence of additional surfaces which can contain additional un-recessed portions.

Ans. 9. The Examiner further responds that no showing of criticality has been shown for having only one un-recessed portion as claimed. *Id.* at 10.

In the Reply Brief, Appellant asserts the claim limitation “*the only un-recessed portion of the second surface*” applies to a single specific surface, namely the recited “second surface;” therefore, whether other surfaces may be included is irrelevant. Reply Br. 3. Regarding criticality for having only one un-recessed portion, Appellant contends “having a similar un-recessed portion on any of the other three sides would prevent the location of the external terminals.” *Id.* at 4. Appellant maintains that the Examiner has not provided a reasoned analysis with evidentiary support for removing one of Herbsommer’s two un-recessed portions. *Id.*

Appellant’s arguments do not persuade us that the Examiner reversibly erred in rejecting claim 13 as obvious over Herbsommer’s teachings.

Appellant does not dispute the Examiner’s findings (Ans. 9; Final Act. 7–8) that it would have been obvious, and within the level of skill of one having ordinary skill in the art, to omit an element lacking a desired function such as Herbsommer’s other un-recessed portion. Instead, Appellant argues (Appeal Br. 14–15; Reply Br. 4) that the Examiner’s analysis is not reasoned or supported. The problem with Appellant’s argument is that the record supports the Examiner’s finding that Appellant has not shown criticality to support the non-obviousness of a single un-recessed portion of the second surface as claimed. The record also supports the Examiner’s finding that modifying Herbsommer’s other un-recessed portion would have been obvious if the function of the element was not desired.

Appellant asserts that “it would seem that each un-recessed portion was intentionally included in Herbsommer’s device for a reason” (Appeal Br. 15), however, Appellant does not direct us to any reason for its inclusion in the exemplary power converter depicted in Herbsommer’s Figure 2. Therefore, in the absence of a desired function associated with Herbsommer’s second un-recessed portion, the preponderance of the evidence cited in this Appeal record supports the Examiner’s determination that it would have been within the skill of a person having ordinary skill in the art to modify Herbsommer to omit the second un-recessed portion.

Similarly, Appellant asserts that the location of external terminals on all of the other three sides is critical to the side being recessed. Reply Br. 4. Appellant’s assertion, however, does not adequately explain why a single recessed portion is critical to the leadframe or semiconductor device. Thus, the preponderance of the evidence cited in this Appeal record supports the Examiner’s finding that there is no criticality associated with only one un-recessed portion on the second surface.

In sum, Appellant’s arguments are not persuasive of error in the Examiner’s conclusion that it would have been obvious to modify Herbsommer’s leadframe to have a single un-recessed portion on a second surface. Accordingly, we affirm the Examiner’s rejection of claim 13 under 35 U.S.C. § 103 over Herbsommer.

*Obviousness over Herbsommer and EP ’113 (Claims 14–32)*

Regarding claims 22–28 and 32, which depend from claim 13, Appellant relies on the same arguments presented with respect to claim 13. Appeal Br. 15. Regarding claims 14–20, Appellant asserts that EP ’113 does

not cure the deficiencies of Herbsommer. *Id.* at 16. Regarding claims 21, 29, 30, and 31, Appellant asserts that the Examiner’s Official Notice does not obviate Herbsommer’s deficiencies. *Id.* at 15–16.

The Examiner responds that Appellant’s Specification supports the Official Notice regarding buck converters and encapsulation of wires and maintains that the use of adhesives was “notoriously well known in the art.” Ans. 10 (citing Spec. ¶¶ 2, 4–5).

In the Reply Brief, Appellant asserts that all of the dependent claims are allowable based on their dependency from claim 13. Reply Br. 4.

Appellant’s arguments do not persuade us that the Examiner reversibly erred in rejecting claims 14–32 over the cited prior art references. As discussed above in connection with claim 13, we are not persuaded of error in the Examiner’s finding that Herbsommer discloses an un-recessed portion of the second surface as claim 13 requires. Based on the record cited in this Appeal, the preponderance of the evidence supports the Examiner’s determination (Final Act. 7–8; Ans. 9) that it would have been obvious to eliminate the second un-recessed portion on the basis that it does not serve a desired function.

Accordingly, we affirm the Examiner’s rejection of claims 14–32 under 35 U.S.C. § 103(a).

## CONCLUSION

For these reasons, we uphold the Examiner’s rejections of claims 13–32 under 35 U.S.C. § 103(a) as obvious over the cited prior art references. No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
13	103(a)	Herbsommer	13	
14-32	103(a)	Herbsommer, EP '113	14-32	
13-32	Non-statutory double patenting	Lopez '121	13-32	
13-32	Non-statutory double patenting	Lopez '872	13-32	
13-32	Non-statutory double patenting	Lopez '240	13-32	
<b>Overall Outcome</b>			13-32	

AFFIRMED