

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INNOSCIENCE (ZHUHAI) TECHNOLOGY COMPANY, LTD.,
AND
INNOSCIENCE AMERICA, INC.,
Petitioner,

v.

EFFICIENT POWER CONVERSION CORPORATION,
Patent Owner.

Case IPR2023-01383
U.S. Patent 8,404,508

**PETITIONER'S RESPONSIVE BRIEF TO PATENT OWNER'S OPENING
BRIEF REGARDING CONSTRUCTION OF CLAIM ELEMENT [1E4]**

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EPC inaccurately represents in its opening supplemental brief that there is no dispute over element [1e4] and that the parties agreed to a construction at the ITC. Although the parties initially agreed to a construction of element [1e4] in form, EPC unwound that agreement during its infringement analysis, applying a broad construction that contradicts the narrow construction it takes here now in hopes of preserving the validity of its patent. For example, the ITC Judge summarized EPC's argument in the ITC case, explaining that "EPC contends that etching *any section of the GaN layer* that is not beneath the gate contact satisfies [element [1e4]]." Thus, unlike Innoscience's position requiring etching (i.e., removing) the GaN layer to the extent that the gate and GaN layer beneath it are aligned at their point of intersection, EPC's ITC interpretation (improperly) allows element [1e4] to be met when *any* portion of the GaN layer is etched/removed, even when portions of the GaN layer after the etching are left protruding beyond the width of the gate above it. Thus, EPC's broad ITC interpretation was disputed and wrong.

EPC suggests that Innoscience admitted at the ITC that *all* GaN material must be removed outside the perimeter of the gate region, regardless of whether the GaN material is away from the gate region. This misstates Innoscience's position. The dispute at the ITC over element [1e4] focused on etching occurring *within the gate region* (i.e., the region where the stack of gate contact and doped GaN layer forms), not etching occurring elsewhere. The Judge at the ITC

explained: “Innoscence and Staff contend that Innoscence does not perform this step of the method because the etching step in the Innoscence process leaves unetched a portion of the GaN layer **around the perimeter of the gate contact.**”

The issue of etching a doped GaN layer disconnected and/or away from the gate region was not at issue at the ITC. Petitioner’s construction here (and at the ITC) properly confines element [1e4] to what the patent contends distinguishes its alleged invention over the prior art—etching/removing the doped GaN layer and gate contact using a single mask to align the GaN layer with the gate contact immediately above it. This has been and remains Petitioner’s position.

I. EPC Changed Its Claim Construction Position at ITC

EPC currently agrees with Innoscence that element [1e4] requires aligning the GaN layer and gate contact above it. If EPC stopped there, there would be no dispute over the construction. But EPC’s proposed construction (improperly) injects the additional requirement that the doped GaN material *must be* removed “everywhere except beneath the gate contact,” *regardless of whether that material is away from the gate region.* Paper 36, 3.

This is not what EPC argued at the ITC. Although the parties agreed to a construction for element [1e4] in form—i.e., “etching away the doped gallium nitride layer where it is not beneath the gate contact without etching beneath the gate contact”—the application of this construction became hotly contested. The

Chief ALJ confirmed this in his Final Initial Determination (“FID”) in Investigation No. 337-1166,¹ explaining that “EPC contends that etching *any section of the GaN layer* that is not beneath the gate contact” satisfies element [1e4] and that “the Accused Products were made in the manner required by the claim because *Innoscence etches a section of the GaN layer.*” See *Innoscence (Zhuhai) Tech. Co., Ltd. v. Efficient Power Conversion Corp.*, IPR2023-01381, Ex. 2022, at 59 (emphases added). See also Ex. 1053, 1185:8-11. EPC cannot dispute that it flipped from a broad construction at the ITC requiring no alignment to a narrower one here requiring alignment plus unregulated removal of GaN layer.

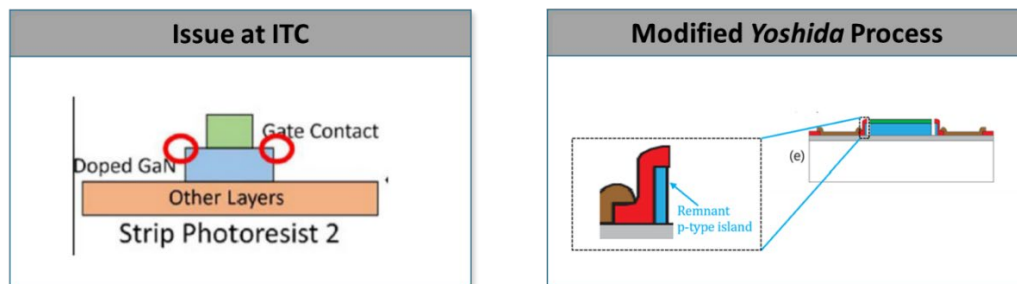
II. The Proper Construction of Element [1e4] Does Not Require Etching the Doped GaN Material Separate from the Gate Region—Instead, the Construction Requires Etching the Doped GaN Layer Using the Same Mask Used to Etch the Gate Contact Layer so They Are Self-Aligned

EPC now pursues the (improperly) narrow construction described above because its patent cannot survive its ITC positions. The problem with EPC’s narrow construction, however, is that, in arguing that all doped GaN material beyond the perimeter of the self-aligned gate region must be etched/removed—regardless of whether that GaN material is away from *or even connected to* the gate region—EPC excludes from its claims processes falling *within* the scope of the patent’s purported invention. This is a far cry from EPC’s ITC arguments on

¹ The Board should take judicial notice of this FID. IPR2023-01381, Ex. 2022.

element [1e4], which broadly subsumed prior-art designs.

As Petitioner's expert at the ITC explained, the reason etching the doped GaN layer outside the area beneath the gate contact came up in the ITC case was because the parties were focusing on designs where a continuous GaN layer under the gate contact protruded beyond the width of the gate contact. *See* Ex. 1053, 1186:17-1187:4. Indeed, the FID in Investigation No. 337-1166 describes the dispute as the accused products having a **wider doped GaN layer** under the **gate contact** in the gate region (see below, left), not remnant p-type GaN island separate from the gate region (see below, right).



See IPR2023-01381, Ex. 2022, at 58. As the ITC explained, “Innoscience and Staff contend that Innoscience does not perform [element [1e4]] because the etching step in the Innoscience process leaves unetched a portion of the GaN layer ***around the perimeter of the gate contact.***”). Ex. 1053, at 57. Simply put, etching a doped GaN layer that is *disconnected* from the gate region (e.g., a remnant p-type island design) was not before the ITC.

Notably, EPC's opening supplemental brief fails to identify any disclosure in the '508 patent describing removing doped GaN material in areas outside the gate

structure. EPC acknowledges that the '508 patent requires a “self-aligned gate formation process” where the gate and GaN material are etched using the same mask, Paper 36, 4, and EPC does not dispute that modified *Yoshida*’s remnant p-type GaN islands meet that design. Nothing in the claims or specification of the '508 patent indicate that any remaining GaN material in regions separate from the gate must be removed. Instead, the '508 patent flexibly allows for “[m]odifications and substitutions to specific process conditions,” leaving the door open for the claims to cover processes consistent with the specified invention of self-aligned gate formation. Ex. 1001, 6:52-53. *See Seabed Geosolutions (US) Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1288 (Fed. Cir. 2021) (“silence does not support reading the claims to exclude gimbaled geophones” where the specification “never mentions gimbaled or non-gimbaled geophones.”); *Williams v. Gen. Surgical Innovations, Inc.*, 60 F. App’x 284, 287 (Fed. Cir. 2003) (“The absence of a requirement to leave the expander in place is not a teaching to remove it.”).

Nothing in the '508 patent requires removing *all* GaN material outside the gate region. Modified *Yoshida*’s self-aligned gate structure using the same mask to etch both the gate and doped GaN material meets element [1e4]. The *disconnected* remnant p-type islands in modified *Yoshida* do not change this. Separately, EPC does not dispute that the modified *Yoshida* process *without* the remnant p-type islands meets element [1e4], even under EPC’s narrow construction here.

Respectfully submitted,

Dated: January 21, 2025

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I certify that on January 21, 2025, a copy of
**Petitioner's Responsive Brief to Patent Owner's Opening Brief Regarding
Construction of Claim Element [1e4]** was served upon the below-listed counsel
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