

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DIODES INCORPORATED

Petitioner

v.

NORTH PLATE SEMICONDUCTOR, LLC

Patent Owner.

Case IPR2018-01196

U.S. Patent 7,564,097

PATENT OWNER PRELIMINARY RESPONSE

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<i>Pfizer, Inc. v. Apotex, Inc.</i> , 480 F.3d 1348 (Fed. Cir. 2007).....	44, 61

EXHIBIT LIST

Exhibit	Description
2001	U.S. Patent No. 6,433,396 (“Kinzer”)
2002	Reserved
2003	“Graphic Symbols for Electrical and Electronics Diagrams (Including Reference Designation Letters,” <i>IEEE Standard, American Nat’l Standard, Canadian Standard</i> , IEEE Std 315-1975 (Reaffirmed 1993) (selected pages)
2004	B. Jayant Baliga, “Fundamentals of Power Semiconductor Devices” (2008, Springer) (selected section)
2005	R.K. Williams et al., “A 30V P-Channel Trench Gated DMOSFET with 900 mW cm ² Specific On-Resistance at 2.7 V”, IEEE International Symposium on Power Semiconductor Devices and ICs, pp. 53-56, 1996
2006	B. Jayant Baliga, “Advanced Power MOSFET Concepts” (2010, Springer) (selected section)

North Plate Semiconductor, LLC (“**North Plate**” or “**Patent Owner**”) respectfully submits this Patent Owner Preliminary Response (“**POPR**”) to the Petition (“**Pet.**”) filed by Diodes Incorporated. (“**Diodes**” or “**Petitioner**”) on June 5, 2018 seeking *inter partes* review of U.S. Patent No. 7,564,097 (“**the ‘097 patent**”) (Ex. 1001). The Petition was filed on June 5, 2018, and thus this POPR is timely filed under 35 U.S.C. § 313 and 37 C.F.R. § 42.107.

I. Introduction

The ‘097 patent is directed to an integrated trench MOSFET with Schottky diode. Because Schottky diodes have low forward voltage drop, they suffer from high reverse leakage current, which reduces their efficiency. To overcome this problem, the ‘097 patent discloses an integrated trench MOSFET with Schottky diode having unique features distinguishable over the prior art. The device contains a vertical metal layer embedded within a second trench. In some embodiments, the p-body layer extends farther down along the sidewalls of the trench. In other embodiments, a higher-impurity p-doped region is in contact with the p-base layer and Schottky metal layer to increase the device’s avalanche tolerance.

The Petition fails on many grounds. In Ground 1, Petitioner relies upon a claim construction of “metal layer” that is blatantly at odds with the patent’s intrinsic evidence. Indeed, Petitioner’s construction is undermined by the patent’s

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