

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

SAMSUNG ELECTRONICS CO., LTD.;  
MICRON TECHNOLOGY, INC.; and  
SK HYNIX INC.  
Petitioner

v.

ELM 3DS INNOVATIONS, LLC  
Patent Owner

---

Case No. IPR2016-00387  
U.S. Patent No. 8,841,778

---

**PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE**

**TABLE OF CONTENTS**

I.	INTRODUCTION .....	1
II.	3D IC DIELECTRICS COULD HAVE BEEN REPLACED WITH <i>LEEDY '695'S</i> PECVD LTSDS .....	3
A.	PO's FEOL Arguments Lack Merit .....	3
1.	<i>Leedy '695</i> Teaches Using PECVD To Deposit LTSDs In The FEOL .....	3
2.	Prior Art Literature Proves That PECVD Is Used In FEOL .....	11
3.	PECVD Dielectrics Are Compatible With Silicon Substrates And High Temperature Processes .....	11
4.	Silicides Are Not Required—FEOL Dielectrics Need Not Undergo High-Temperature Processing .....	15
5.	PECVD Was A Viable Process For Forming Silicon Dioxide And Silicon Nitride LTSDs .....	16
III.	THE CHALLENGED CLAIMS ARE OBVIOUS .....	17
A.	The Petition Establishes That A POSA Would Have Been Motivated To Combine Prior Art Teachings .....	17
B.	It Would Have Been Obvious To Replace BEOL Dielectrics In The Prior Art With <i>Leedy '695's</i> LTSD .....	20
C.	The Need To Adjust Dielectric Parameters Does Not Preclude Obviousness .....	21
D.	PO's Teaching Away Argument Fails .....	24
IV.	<i>BERTIN</i> COMBINED WITH <i>LEEDY '695</i> RENDERS THE CHALLENGED CLAIMS OBVIOUS .....	25
A.	<i>Bertin's</i> Dielectrics Are BEOL .....	25
B.	Even If <i>Bertin's</i> Dielectrics Are FEOL, The Challenged Claims Are Obvious .....	26
C.	Layer 60 Is Not Removed .....	26
V.	<i>BERTIN</i> COMBINED WITH <i>POOLE</i> AND <i>LEEDY '695</i> RENDERS THE CHALLENGED CLAIMS OBVIOUS .....	27

VI. *HSU* COMBINED WITH *LEEDY* '695 RENDERS THE  
CHALLENGED CLAIMS OBVIOUS .....29

VII. CLAIM CONSTRUCTION .....30

VIII. CONCLUSION.....32

**TABLE OF AUTHORITIES****CASES**

<i>In re Keller</i> , 642 F.2d 413 (CCPA 1981) .....	17
<i>Lockwood v. American Airlines</i> , 107 F.3d 1565 (Fed. Cir. 1997) .....	22
<i>Marine Polymer Techs., Inc. v. HemCon, Inc.</i> , 672 F.3d 1350 (Fed. Cir. 2012) .....	31
<i>In re Mouttet</i> , 686 F.3d 1322 (Fed. Cir. 2012) .....	21
<i>In re Paulsen</i> , 30 F.3d 1475 (Fed. Cir. 1994) .....	31
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005) .....	31
<i>Spectra-Physics, Inc. v. Coherent, Inc.</i> , 827 F.2d 1524 (Fed. Cir. 1987) .....	23
<i>Syntex (U.S.A.) LLC v. Apotex, Inc.</i> , 407 F.3d 1371 (Fed. Cir. 2005) .....	25
<i>Tempo Lighting, Inc. v. Tivoli, LLC</i> , 742 F.3d 973 (Fed. Cir. 2014) .....	31

**OTHER AUTHORITIES**

IPR 2016-00691, Institution Decision .....	20
--	----

**UPDATED EXHIBIT LIST**

<b>Ex. No.</b>	<b>Description</b>	<b>Previously Submitted</b>
Ex. 1001	U.S. Patent No. 8,841,778 (“the ’778 Patent”)	X
Ex. 1002	Declaration of Dr. Paul D. Franzon	X
Ex. 1003	Curriculum Vitae o Dr. Paul D. Franzon	X
Ex. 1004	U.S. Patent No. 5,202,754 to Bertin et al., issued April 13, 1993	X
Ex. 1005	U.S. Patent No. 5,162,251 to Poole et al., issued November 10, 1992	X
Ex. 1006	U.S. Patent No. 5,354,695 to Leedy, issued October 11, 1994	X
Ex. 1007	Japanese Patent Publication No. 3-151637 to Kowa including Japanese-language version, English-language translation, and translation certification	X
Ex. 1008	U.S. Patent No. 5,627,106 to Hsu, issued May 6, 1997	X
Ex. 1009	RESERVED	
Ex. 1010	RESERVED	
Ex. 1011	RESERVED	
Ex. 1012	RESERVED	
Ex. 1013	RESERVED	
Ex. 1014	RESERVED	
Ex. 1015	RESERVED	
Ex. 1016	RESERVED	
Ex. 1017	Prosecution History for U.S. Patent No. 8,841,778	X
Ex. 1018	Excerpt of the Prosecution File History of U.S. Patent No. 8,907,499—Non-Final Office Action dated May 29, 2013.	X

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.