

Paper No. \_\_\_\_\_

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

SK hynix Inc., SK hynix America Inc., SK hynix memory solutions Inc., and  
Hynix Semiconductor Manufacturing America Inc.

Petitioners,

v.

DSS Technology Management, Inc.

Patent Owner.

Patent No. 6,784,552

Issued: August 31, 2004

Filed: March 31, 2000

Inventors: James E. Nulty, Christopher J. Petti

Title: STRUCTURE HAVING REDUCED LATERAL SPACER  
EROSION

---

*Inter Partes* Review No. \_\_\_\_\_

**PETITION FOR *INTER PARTES* REVIEW**

## TABLE OF CONTENTS

	<u>Page</u>
I. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(a)(1).....	1
A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1) .....	1
B. Related Matters Under 37 C.F.R. § 42.8(b)(2) .....	2
C. Lead and Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3) and Service Information Under 37 C.F.R. § 42.8(b)(4).....	3
II. PAYMENT OF FEES UNDER 37 C.F.R. § 42.15 .....	3
III. REQUIREMENTS FOR IPR UNDER 37 C.F.R. § 42.104.....	3
A. Grounds for Standing Under 37 C.F.R. § 42.104(a).....	3
B. Identification of Challenge Under 37 C.F.R. § 42.104(b) and Relief Requested.....	4
IV. CLAIM CONSTRUCTION UNDER 37 C.F.R. § 42.104(B)(3).....	5
A. Insulating spacer in the contact region (claims 1, 4, 5)/insulative spacer in the contact opening (claims 8-10).....	6
B. Etch stop material (claims 1-5, 8-10).....	8
C. Etch stop material over said first insulating layer and adjacent to the insulating spacer (claim 1) .....	9
V. SUMMARY OF THE '552 PATENT .....	10
A. Description of the Alleged Invention.....	10
B. Summary of the File History.....	11
VI. AT LEAST ONE CLAIM OF THE '552 PATENT IS UNPATENTABLE.....	13
A. GROUND 1 – Claims 1-12 are anticipated by Havemann under 35 U.S.C. § 102 .....	14
1. Overview of Havemann .....	14
B. GROUND 2 – Claims 1, 2, 4-10 are anticipated by Heath under 35 U.S.C. § 102 .....	34
1. Overview of Heath.....	34
C. GROUND 3 – Claim 3 is unpatentable over Heath in view of Havemann under 35 U.S.C. § 103.....	49

D.	GROUND 4 – Claims 1, 4, and 5 are anticipated by the APA of the '552 Patent under 35 U.S.C. § 102 .....	53
1.	Overview of the APA.....	53
VII.	REDUNDANCY .....	58
VIII.	CONCLUSION.....	58

## EXHIBITS

HYNIX-1001 - U.S. Patent No. 6,784,552 to Nulty et al., filed Mar. 31, 2000

HYNIX-1002 - DSS Technology Management Inc. v. SK Hynix, Inc. et al., Case No. 6:15-cv-00691, Plaintiff's Original Complaint for Patent Infringement (July 16, 2015)

HYNIX-1003 – Declaration of Dr. Vivek Subramanian

HYNIX-1004 - U.S. Patent No. 5,482,894 to Havemann, filed Aug. 23, 1994

HYNIX-1005 - U.S. Patent No. 4,686,000 to Heath, filed Feb. 19, 1986

HYNIX-1006 – Prosecution History of U.S. Patent No. 6,784,552 to Nulty et al., filed Mar. 31, 2000

HYNIX-1007 - Gary W. Jones and Sanjay Tandon, *Multilevel Metal*

*Interconnection Utilizing CVD Tungsten and Liftoff Processing*, 29 Journal of Electronic Materials (1990)

HYNIX-1008 – Claim Chart A (cited in Declaration of Dr. Vivek Subramanian)

HYNIX-1009 – Claim Chart B (cited in Declaration of Dr. Vivek Subramanian)

HYNIX-1010 – Claim Chart C (cited in Declaration of Dr. Vivek Subramanian)

HYNIX-1011 – Claim Chart D (cited in Declaration of Dr. Vivek Subramanian)

SK hynix Inc.; SK hynix America Inc.; SK hynix memory solutions Inc.; and Hynix Semiconductor Manufacturing America Inc., (collectively, “Petitioner” or “Hynix”) respectfully petitions for *Inter Partes* Review (“IPR”) under 35 U.S.C. §§ 311–319 and 37 C.F.R. § 42 of claims 1-12 (the “Challenged Claims”) of U.S. Patent No. 6,784,552 (the “’552 Patent”) (Ex. HYNIX-1001), of apparent assignee DSS Technology Management, Inc. (“Patentee” or “DSS”). As explained in this Petition, there exists a reasonable likelihood that Hynix will prevail with respect to at least one of the Challenged Claims.

**I. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(A)(1)**

**A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)**

The real parties of interest of this petition are: SK hynix Inc. with its principal place of business and home office at 2091, Gyeongchung-daero, bubal-eub, Icheon-si, Gyeonggi-do, South Korea; SK hynix America Inc. with its principal place of business at 3101 North First Street, San Jose, CA 95134; SK hynix memory solutions Inc. with its principal place of business at 3103 North First Street, San Jose, CA 95134; and Hynix Semiconductor Manufacturing America Inc. with its principal place of business at 1830 Willow Creek Circle, Eugene, Oregon 97402.

# 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.