



**National Semiconductor Corporation
Radiation Effects Laboratory
South Portland, Maine 04106**

ANALOG TOTAL DOSE RADIATION REPORT

Customer: ELDRS Rad. Qual.

Part Type: RM136AH2.5RQMLV

Input Bias Circuit: 9988 IR

Dose Rate: 12 mrad(Si)/sec (ELDRS)

Test Program Used: RL136A1HXA

Tester: L.Collins

Wafer Run Number: JM046X24

Wafer Number: 3

Package Type: HT046003

Production Lot #: 183061C019

IPI #: N/A

Disposition: Passes

Summary:

Passes Room Temp @: 100k

Part Out of Room Temp Spec @: N/A

Functional Failed @: N/A

Parameters over Limit:

Review By: Mike Maher

Reviewed By QA: Mike Maher – March 21, 2005

Note:

These parts may be dose rate sensitive in a space environment and demonstrate enhanced low dose rate effect

Standard Test Flow Sheet For Rad Testing
Customer Special Attachment
Rad Hard Linear

Comment:

Comment:

NSID# RM136AH2.5RQMLV

LOT# 183061C019

IPI# N/A

Test Program: RL136A1HXA

Machine: LTX 01-3

Operator: D0226

Bias Board: 9988 IR

Start Time: 10:06 A.M

Finish Time: 3:22 P.M

Start Date: 21/Oct/2004

Finish Date: 16/Mar/2005

QA: March 21, 2005

Control Units s/n: #1001 #1002

Duts : #1009 #1010 #1011 #1012 #1013 #1014

Location Step	Operation Mtd/Cond	Qty In	Qty Out	Var	Mech	Rej	FF
PASS	Pre - Rad Read/Rec. Tp1	6	6	0	0	0	0
	<i>Irradiation</i> <i>3k</i> <i>Level</i>	6	6	0	0	N/A	N/A
PASS	Post Rad Read/Rec. Tp2	6	6	0	0	0	0
	<i>Irradiation</i> <i>20k</i> <i>Level</i>	6	6	0	0	N/A	N/A
PASS	Post Rad Read/Rec. Tp3	6	6	0	0	0	0

Standard Test Flow Sheet For Rad Testing
Customer Special Attachment
Rad Hard Linear

Comment:

Comment:

Comment:

Comment:

NSID# RM136AH2.5RQMLV LOT# 183061C019 IPI# N/A

Location Step	Operation Mtd/Cond <i>Irradiation</i> <i>50k</i> <i>Level</i>	Qty In 6	Qty Out 6	Var 0	Mech 0	Rej N/A	FF N/A
PASS	Post Rad Read/Rec. Tp4	6	6	0	0	0	0
	<i>Irradiation</i> <i>82k</i> <i>Level</i>	6	6	0	0	N/A	N/A
PASS	Post Rad Read/Rec. Tp5	6	6	0	0	0	0
	<i>Irradiation</i> <i>100k</i> <i>Level</i>	6	6	0	0	N/A	N/A
PASS	Post Rad Read/Rec. Tp5	6	6	0	0	0	0

Note: All irradiation's are done per MAS-5010

RM136AH2.5RQMLV JM046X24 WFR#3 183061C019 Pre-Rad Data

DEVICE	1001	BIN	1	HEAD 3	10:06 AM	10/21/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.3 UA	3.0	2.591 V	
4.0	1.99 MV	5.0	2.482 V			
DEVICE	1002	BIN	1	HEAD 3	10:07 AM	10/21/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.2 UA	3.0	2.589 V	
4.0	2.07 MV	5.0	2.480 V			
DEVICE	1009	BIN	1	HEAD 3	10:10 AM	10/21/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.428 V	2.0	-10.4 UA	3.0	2.589 V	
4.0	2.23 MV	5.0	2.480 V			
DEVICE	1010	BIN	1	HEAD 3	10:12 AM	10/21/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.431 V	2.0	-10.2 UA	3.0	2.591 V	
4.0	2.15 MV	5.0	2.483 V			
DEVICE	1011	BIN	1	HEAD 3	10:12 AM	10/21/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.432 V	2.0	-10.3 UA	3.0	2.592 V	
4.0	2.04 MV	5.0	2.484 V			
DEVICE	1012	BIN	1	HEAD 3	10:13 AM	10/21/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.3 UA	3.0	2.590 V	
4.0	1.98 MV	5.0	2.481 V			
DEVICE	1013	BIN	1	HEAD 3	10:13 AM	10/21/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.431 V	2.0	-10.2 UA	3.0	2.591 V	
4.0	2.14 MV	5.0	2.482 V			
DEVICE	1014	BIN	1	HEAD 3	10:14 AM	10/21/2004
700.0	300	800.0	0 DGR	50.0	2.49 V	
1.0	2.433 V	2.0	-10.3 UA	3.0	2.594 V	
4.0	2.09 MV	5.0	2.485 V			

RM136AH2.5RQMLV JM046X24 WFR#3 183061C019 3K Data

DEVICE	1001	BIN	1	HEAD 3	04:19 PM	12/02/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.3 UA	3.0	2.591 V	
4.0	2.14 MV	5.0	2.482 V			
DEVICE	1002	BIN	1	HEAD 3	04:20 PM	12/02/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.2 UA	3.0	2.589 V	
4.0	2.29 MV	5.0	2.480 V			
DEVICE	1009	BIN	1	HEAD 3	04:21 PM	12/02/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.428 V	2.0	-10.5 UA	3.0	2.589 V	
4.0	2.66 MV	5.0	2.480 V			
DEVICE	1010	BIN	1	HEAD 3	04:21 PM	12/02/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.431 V	2.0	-10.3 UA	3.0	2.591 V	
4.0	2.38 MV	5.0	2.483 V			
DEVICE	1011	BIN	1	HEAD 3	04:21 PM	12/02/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.432 V	2.0	-10.3 UA	3.0	2.592 V	
4.0	2.26 MV	5.0	2.484 V			
DEVICE	1012	BIN	1	HEAD 3	04:22 PM	12/02/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.3 UA	3.0	2.590 V	
4.0	2.45 MV	5.0	2.481 V			
DEVICE	1013	BIN	1	HEAD 3	04:22 PM	12/02/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.2 UA	3.0	2.591 V	
4.0	2.26 MV	5.0	2.482 V			
DEVICE	1014	BIN	1	HEAD 3	04:22 PM	12/02/2004
700.0	300	800.0	0 DGR	50.0	2.49 V	
1.0	2.433 V	2.0	-10.3 UA	3.0	2.594 V	
4.0	2.15 MV	5.0	2.485 V			

RM136AH2.5RQMLV JM046X24 WFR#3 183061C019 20k Data

DEVICE	1001	BIN	1	HEAD 3	04:20 PM	12/16/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.3 UA	3.0	2.591 V	
4.0	2.01 MV	5.0	2.482 V			
DEVICE	1002	BIN	1	HEAD 3	04:20 PM	12/16/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.2 UA	3.0	2.589 V	
4.0	2.31 MV	5.0	2.480 V			
DEVICE	1009	BIN	1	HEAD 3	04:21 PM	12/16/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.428 V	2.0	-10.4 UA	3.0	2.589 V	
4.0	2.40 MV	5.0	2.480 V			
DEVICE	1010	BIN	1	HEAD 3	04:21 PM	12/16/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.431 V	2.0	-10.2 UA	3.0	2.591 V	
4.0	2.33 MV	5.0	2.483 V			
DEVICE	1011	BIN	1	HEAD 3	04:22 PM	12/16/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.432 V	2.0	-10.2 UA	3.0	2.592 V	
4.0	2.28 MV	5.0	2.484 V			
DEVICE	1012	BIN	1	HEAD 3	04:22 PM	12/16/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.3 UA	3.0	2.590 V	
4.0	2.32 MV	5.0	2.481 V			
DEVICE	1013	BIN	1	HEAD 3	04:23 PM	12/16/2004
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.431 V	2.0	-10.2 UA	3.0	2.591 V	
4.0	2.24 MV	5.0	2.483 V			
DEVICE	1014	BIN	1	HEAD 3	04:23 PM	12/16/2004
700.0	300	800.0	0 DGR	50.0	2.49 V	
1.0	2.433 V	2.0	-10.3 UA	3.0	2.594 V	
4.0	2.25 MV	5.0	2.485 V			

RM136AH2.5RQMLV JM046X24 WFR#3 183061C019 50k Data

DEVICE	1001	BIN	1	HEAD 3	03:02 PM	01/19/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.5 UA	3.0	2.591 V	
4.0	2.05 MV	5.0	2.482 V			
DEVICE	1002	BIN	1	HEAD 3	03:02 PM	01/19/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.4 UA	3.0	2.589 V	
4.0	2.12 MV	5.0	2.481 V			
DEVICE	1009	BIN	1	HEAD 3	03:05 PM	01/19/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.428 V	2.0	-10.5 UA	3.0	2.589 V	
4.0	2.57 MV	5.0	2.480 V			
DEVICE	1010	BIN	1	HEAD 3	03:05 PM	01/19/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.431 V	2.0	-10.4 UA	3.0	2.591 V	
4.0	2.30 MV	5.0	2.483 V			
DEVICE	1011	BIN	1	HEAD 3	03:06 PM	01/19/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.432 V	2.0	-10.4 UA	3.0	2.592 V	
4.0	2.30 MV	5.0	2.484 V			
DEVICE	1012	BIN	1	HEAD 3	03:06 PM	01/19/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.4 UA	3.0	2.590 V	
4.0	2.45 MV	5.0	2.481 V			
DEVICE	1013	BIN	1	HEAD 3	03:07 PM	01/19/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.3 UA	3.0	2.591 V	
4.0	2.37 MV	5.0	2.482 V			
DEVICE	1014	BIN	1	HEAD 3	03:07 PM	01/19/2005
700.0	300	800.0	0 DGR	50.0	2.49 V	
1.0	2.433 V	2.0	-10.4 UA	3.0	2.594 V	
4.0	2.56 MV	5.0	2.485 V			

RM136AH2.5RQMLV JM046X24 WFR#3 183061C019 82k Data

DEVICE	1001	BIN	1	HEAD 3	03:36 PM	02/24/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.5 UA	3.0	2.590 V	
4.0	1.95 MV	5.0	2.482 V			
DEVICE	1002	BIN	1	HEAD 3	03:36 PM	02/24/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.428 V	2.0	-10.3 UA	3.0	2.589 V	
4.0	2.22 MV	5.0	2.480 V			
DEVICE	1009	BIN	1	HEAD 3	03:41 PM	02/24/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.428 V	2.0	-10.4 UA	3.0	2.589 V	
4.0	2.70 MV	5.0	2.480 V			
DEVICE	1010	BIN	1	HEAD 3	03:41 PM	02/24/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.2 UA	3.0	2.591 V	
4.0	2.40 MV	5.0	2.482 V			
DEVICE	1011	BIN	1	HEAD 3	03:41 PM	02/24/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.432 V	2.0	-10.3 UA	3.0	2.592 V	
4.0	2.39 MV	5.0	2.483 V			
DEVICE	1012	BIN	1	HEAD 3	03:42 PM	02/24/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.4 UA	3.0	2.590 V	
4.0	2.74 MV	5.0	2.481 V			
DEVICE	1013	BIN	1	HEAD 3	03:42 PM	02/24/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.2 UA	3.0	2.590 V	
4.0	2.57 MV	5.0	2.482 V			
DEVICE	1014	BIN	1	HEAD 3	03:42 PM	02/24/2005
700.0	300	800.0	0 DGR	50.0	2.49 V	
1.0	2.433 V	2.0	-10.3 UA	3.0	2.593 V	
4.0	2.53 MV	5.0	2.485 V			

RM136AH2.5RQMLV JM046X24 WFR#3 183061C019 100k Data

DEVICE	1001	BIN	1	HEAD 3	03:20 PM	03/16/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.3 UA	3.0	2.591 V	
4.0	2.07 MV	5.0	2.482 V			
DEVICE	1002	BIN	1	HEAD 3	03:20 PM	03/16/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.2 UA	3.0	2.589 V	
4.0	2.13 MV	5.0	2.480 V			
DEVICE	1009	BIN	1	HEAD 3	03:20 PM	03/16/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.428 V	2.0	-10.3 UA	3.0	2.589 V	
4.0	2.77 MV	5.0	2.480 V			
DEVICE	1010	BIN	1	HEAD 3	03:21 PM	03/16/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.431 V	2.0	-10.1 UA	3.0	2.591 V	
4.0	2.46 MV	5.0	2.482 V			
DEVICE	1011	BIN	1	HEAD 3	03:21 PM	03/16/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.432 V	2.0	-10.2 UA	3.0	2.593 V	
4.0	2.57 MV	5.0	2.484 V			
DEVICE	1012	BIN	1	HEAD 3	03:21 PM	03/16/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.429 V	2.0	-10.3 UA	3.0	2.590 V	
4.0	2.69 MV	5.0	2.481 V			
DEVICE	1013	BIN	1	HEAD 3	03:21 PM	03/16/2005
700.0	300	800.0	0 DGR	50.0	2.48 V	
1.0	2.430 V	2.0	-10.1 UA	3.0	2.591 V	
4.0	2.55 MV	5.0	2.482 V			
DEVICE	1014	BIN	1	HEAD 3	03:22 PM	03/16/2005
700.0	300	800.0	0 DGR	50.0	2.49 V	
1.0	2.433 V	2.0	-10.2 UA	3.0	2.594 V	
4.0	2.61 MV	5.0	2.485 V			