



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

ANALOG TOTAL DOSE RADIATION REPORT

Customer: Rad Qual

Part Type: RM137HPQMLV

Input Bias Circuit: 9945 IR

Dose Rate: 12 mrad(Si)/sec

Test Program Used: RH00137HYD

Tester: L.Collins

Wafer Run Number: JM046X22

Wafer Number: 2

Package Type: HT039003

Production Lot #: 172526G019

IPI #: N/A

Disposition: FAILS

Summary:

Passes Room Temp @: 30k

Part Out of Room Temp Spec @: 50k

Functional Failed @: 50k

Parameters over Limit: VO; VRLINE; IADJ; IQ;

VOUT6 (Recov); Delta IADJ (Line); VRLOAD; IOS;

VOUT5 (Recov); IADJ; VRTH; VSTART; VNOISE;

Line Transient Response; Load Transient Response

Review By: Mike Maher

Reviewed By QA: Mike Maher – January 05, 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# RM137HPQMLV

LOT# 172526G019

IPI# N/A

Test Program: RH00137HYD

Machine: LTX 01-4

Operator: D0226

Bias Board: 9945 IR

Start Time: 3:43 P.M Finish Time: 4:47 P.M

Start Date: 21/Sept/2004

Finish Date: 16/Dec/2004

QA: January 05, 2005

Control Units s/n: #1018 #1019

Duts : #1011 #1012 #1013 #1014 #1015 #1016

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>10k</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# RM137HPQMLV LOT# 172526G019 IPI# N/A

Location Step	Operation Mtd/Cond	Qty In	Qty Out	Var	Mech	Rej	FF
PASS	<i>Irradiation</i>	6	6	0	0		
	30k					N/A	N/A
	Level	6	6	0	0	0	0
	Post Rad Read/Rec. Tp4						
	<i>Irradiation</i>	6	6	0	0		
	50k					N/A	N/A
	Level	6	0	0	0	0	6
FAIL	Post Rad Read/Rec. Tp5						
	<i>Irradiation</i>	6	6	0	0		
	80k					N/A	N/A
	Level	6	0	0	0	0	6
FAIL	Post Rad Read/Rec. Tp6						

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

Control device

3k

DEVICE	1018	BIN	1	HEAD 3	03:43 PM	09/21/2004
700.0	0	800.0	25 DGR	98.0	0.92 V	
11.0	63.3 UA	12.0	65.0 UA	13.0	-1.72 UA	
15.0	-0.05 UA	20.0	0.45 MA	21.0	0.54 MA	
22.0	1.67 MA	1.0	-1.267 V	2.0	-1.260 V	
3.0	-1.268 V	4.0	-1.268 V	5.0	1.8 MV	
7.0	-5.7 MV	8.0	-0.9 MV	9.0	-4.4 MV	
10.0	-1.30 MV	70.0	41.1 UV	71.0	13.8 MV	
72.0	14.5 MV	69.0	57.27 DB	16.0	1.07 A	
17.0	-1.267 V	18.0	0.323 A	19.0	-1.269 V	
23.0	-1.261 V					

Control Device

DEVICE	1019	BIN	1	HEAD 3	03:43 PM	09/21/2004
700.0	0	800.0	25 DGR	98.0	0.93 V	
11.0	62.7 UA	12.0	64.2 UA	13.0	-1.53 UA	
15.0	-0.05 UA	20.0	0.46 MA	21.0	0.55 MA	
22.0	1.56 MA	1.0	-1.263 V	2.0	-1.256 V	
3.0	-1.264 V	4.0	-1.264 V	5.0	1.6 MV	
7.0	-5.6 MV	8.0	-1.0 MV	9.0	-4.3 MV	
10.0	-1.53 MV	70.0	41.2 UV	71.0	13.3 MV	
72.0	14.2 MV	69.0	57.08 DB	16.0	1.06 A	
17.0	-1.263 V	18.0	0.325 A	19.0	-1.265 V	
23.0	-1.257 V					

DEVICE	1011	BIN	1	HEAD 3	03:48 PM	09/21/2004
700.0	0	800.0	25 DGR	98.0	0.93 V	
11.0	62.5 UA	12.0	64.1 UA	13.0	-1.58 UA	
15.0	-0.06 UA	20.0	0.46 MA	21.0	0.55 MA	
22.0	1.56 MA	1.0	-1.260 V	2.0	-1.255 V	
3.0	-1.262 V	4.0	-1.261 V	5.0	1.6 MV	
7.0	-3.8 MV	8.0	-0.6 MV	9.0	-3.7 MV	
10.0	-0.98 MV	70.0	40.6 UV	71.0	13.1 MV	
72.0	13.5 MV	69.0	56.99 DB	16.0	1.07 A	
17.0	-1.260 V	18.0	0.336 A	19.0	-1.262 V	
23.0	-1.256 V					

DEVICE	1012	BIN	1	HEAD 3	03:48 PM	09/21/2004
700.0	0	800.0	25 DGR	98.0	0.93 V	
11.0	62.1 UA	12.0	63.7 UA	13.0	-1.63 UA	
15.0	-0.01 UA	20.0	0.45 MA	21.0	0.53 MA	
22.0	1.49 MA	1.0	-1.259 V	2.0	-1.254 V	
3.0	-1.261 V	4.0	-1.260 V	5.0	1.6 MV	
7.0	-3.2 MV	8.0	-0.7 MV	9.0	-3.7 MV	
10.0	-1.10 MV	70.0	40.3 UV	71.0	12.9 MV	
72.0	14.3 MV	69.0	57.32 DB	16.0	1.07 A	
17.0	-1.259 V	18.0	0.335 A	19.0	-1.261 V	
23.0	-1.255 V					

DEVICE	1013	BIN	1	HEAD 3	03:48 PM	09/21/2004
700.0	0	800.0	25 DGR	98.0	0.93 V	
11.0	62.3 UA	12.0	64.1 UA	13.0	-1.82 UA	
15.0	-0.05 UA	20.0	0.43 MA	21.0	0.52 MA	
22.0	1.70 MA	1.0	-1.258 V	2.0	-1.253 V	
3.0	-1.259 V	4.0	-1.259 V	5.0	1.7 MV	
7.0	-4.2 MV	8.0	-0.7 MV	9.0	-3.8 MV	
10.0	-1.13 MV	70.0	40.5 UV	71.0	13.4 MV	
72.0	13.8 MV	69.0	57.47 DB	16.0	1.05 A	
17.0	-1.258 V	18.0	0.320 A	19.0	-1.259 V	
23.0	-1.254 V					

DEVICE	1014	BIN	1	HEAD 3	03:48 PM	09/21/2004
700.0	0	800.0	25 DGR	98.0	0.93 V	
11.0	62.1 UA	12.0	63.7 UA	13.0	-1.56 UA	
15.0	-0.04 UA	20.0	0.45 MA	21.0	0.54 MA	
22.0	1.67 MA	1.0	-1.258 V	2.0	-1.253 V	
3.0	-1.259 V	4.0	-1.259 V	5.0	1.6 MV	
7.0	-3.6 MV	8.0	-0.8 MV	9.0	-3.7 MV	
10.0	-0.68 MV	70.0	40.7 UV	71.0	13.3 MV	
72.0	14.8 MV	69.0	57.23 DB	16.0	1.06 A	
17.0	-1.258 V	18.0	0.330 A	19.0	-1.259 V	
23.0	-1.254 V					

DEVICE	1015	BIN	1	HEAD 3	03:49 PM	09/21/2004
700.0	0	800.0	25 DGR	98.0	0.93 V	
11.0	62.2 UA	12.0	63.8 UA	13.0	-1.63 UA	
15.0	-0.03 UA	20.0	0.45 MA	21.0	0.54 MA	
22.0	1.48 MA	1.0	-1.255 V	2.0	-1.249 V	
3.0	-1.257 V	4.0	-1.256 V	5.0	1.6 MV	
7.0	-4.5 MV	8.0	-0.8 MV	9.0	-4.1 MV	
10.0	-1.08 MV	70.0	40.9 UV	71.0	13.0 MV	
72.0	15.5 MV	69.0	57.12 DB	16.0	1.05 A	
17.0	-1.255 V	18.0	0.329 A	19.0	-1.257 V	
23.0	-1.250 V					

DEVICE	1016	BIN	1	HEAD 3	03:49 PM	09/21/2004
700.0	0	800.0	25 DGR	98.0	0.93 V	
11.0	62.1 UA	12.0	63.7 UA	13.0	-1.63 UA	
15.0	-0.04 UA	20.0	0.44 MA	21.0	0.53 MA	
22.0	1.41 MA	1.0	-1.253 V	2.0	-1.246 V	
3.0	-1.255 V	4.0	-1.254 V	5.0	1.6 MV	
7.0	-6.2 MV	8.0	-0.7 MV	9.0	-4.5 MV	
10.0	-0.48 MV	70.0	40.9 UV	71.0	13.9 MV	
72.0	14.8 MV	69.0	57.37 DB	16.0	1.07 A	
17.0	-1.253 V	18.0	0.335 A	19.0	-1.255 V	
23.0	-1.247 V					

Control Device

10k

DEVICE	1018	BIN	1	HEAD 3	02:44 PM	10/01/2004
700.0	0	800.0	25 DGR	98.0	0.92 V	
11.0	62.7 UA	12.0	64.2 UA	13.0	-1.53 UA	
15.0	-0.05 UA	20.0	0.48 MA	21.0	0.55 MA	
22.0	1.72 MA	1.0	-1.263 V	2.0	-1.257 V	
3.0	-1.265 V	4.0	-1.264 V	5.0	1.5 MV	
7.0	-5.5 MV	8.0	-0.8 MV	9.0	-4.3 MV	
10.0	-0.42 MV	70.0	40.8 UV	71.0	13.1 MV	
72.0	14.5 MV	69.0	57.03 DB	16.0	1.06 A	
17.0	-1.263 V	18.0	0.324 A	19.0	-1.265 V	
23.0	-1.258 V					

Control Device

DEVICE	1019	BIN	1	HEAD 3	02:44 PM	10/01/2004
700.0	0	800.0	25 DGR	98.0	0.92 V	
11.0	62.5 UA	12.0	64.1 UA	13.0	-1.58 UA	
15.0	-0.01 UA	20.0	0.46 MA	21.0	0.55 MA	
22.0	1.52 MA	1.0	-1.257 V	2.0	-1.251 V	
3.0	-1.258 V	4.0	-1.257 V	5.0	1.3 MV	
7.0	-4.5 MV	8.0	-0.7 MV	9.0	-4.1 MV	
10.0	-1.34 MV	70.0	40.3 UV	71.0	13.7 MV	
72.0	14.3 MV	69.0	57.03 DB	16.0	1.06 A	
17.0	-1.257 V	18.0	0.322 A	19.0	-1.258 V	
23.0	-1.252 V					

DEVICE	1011	BIN	1	HEAD 3	02:47 PM	10/01/2004
700.0	0	800.0	25 DGR	98.0	0.93 V	
11.0	62.1 UA	12.0	63.7 UA	13.0	-1.54 UA	
15.0	-0.05 UA	20.0	0.47 MA	21.0	0.55 MA	
22.0	1.57 MA	1.0	-1.260 V	2.0	-1.255 V	
3.0	-1.262 V	4.0	-1.261 V	5.0	1.5 MV	
7.0	-4.1 MV	8.0	-0.7 MV	9.0	-3.8 MV	
10.0	-1.07 MV	70.0	41.6 UV	71.0	12.6 MV	
72.0	13.1 MV	69.0	56.91 DB	16.0	1.07 A	
17.0	-1.260 V	18.0	0.344 A	19.0	-1.262 V	
23.0	-1.256 V					

DEVICE	1012	BIN	1	HEAD 3	02:48 PM	10/01/2004
700.0	0	800.0	25 DGR	98.0	0.94 V	
11.0	61.7 UA	12.0	63.4 UA	13.0	-1.67 UA	
15.0	-0.04 UA	20.0	0.44 MA	21.0	0.53 MA	
22.0	1.73 MA	1.0	-1.259 V	2.0	-1.254 V	
3.0	-1.261 V	4.0	-1.260 V	5.0	1.7 MV	
7.0	-4.6 MV	8.0	-0.7 MV	9.0	-3.9 MV	
10.0	-1.00 MV	70.0	40.0 UV	71.0	12.7 MV	
72.0	14.2 MV	69.0	57.35 DB	16.0	1.07 A	
17.0	-1.259 V	18.0	0.347 A	19.0	-1.261 V	
23.0	-1.254 V					

DEVICE	1013	BIN	1	HEAD 3	02:48 PM	10/01/2004
700.0	0	800.0	25 DGR	98.0	0.94 V	
11.0	61.6 UA	12.0	63.6 UA	13.0	-1.95 UA	
15.0	-0.04 UA	20.0	0.42 MA	21.0	0.51 MA	
22.0	1.33 MA	1.0	-1.257 V	2.0	-1.253 V	
3.0	-1.259 V	4.0	-1.259 V	5.0	1.8 MV	
7.0	-3.6 MV	8.0	-0.4 MV	9.0	-3.7 MV	
10.0	-0.81 MV	70.0	41.3 UV	71.0	14.3 MV	
72.0	14.3 MV	69.0	57.50 DB	16.0	1.05 A	
17.0	-1.258 V	18.0	0.336 A	19.0	-1.259 V	
23.0	-1.254 V					

DEVICE	1014	BIN	1	HEAD 3	02:48 PM	10/01/2004
700.0	0	800.0	25 DGR	98.0	0.94 V	
11.0	61.7 UA	12.0	63.3 UA	13.0	-1.63 UA	
15.0	-0.06 UA	20.0	0.45 MA	21.0	0.54 MA	
22.0	1.22 MA	1.0	-1.257 V	2.0	-1.251 V	
3.0	-1.259 V	4.0	-1.258 V	5.0	1.6 MV	
7.0	-5.2 MV	8.0	-0.8 MV	9.0	-4.3 MV	
10.0	-0.96 MV	70.0	40.8 UV	71.0	13.4 MV	
72.0	14.2 MV	69.0	57.30 DB	16.0	1.06 A	
17.0	-1.258 V	18.0	0.339 A	19.0	-1.259 V	
23.0	-1.252 V					

DEVICE	1015	BIN	1	HEAD 3	02:49 PM	10/01/2004
700.0	0	800.0	25 DGR	98.0	0.94 V	
11.0	61.7 UA	12.0	63.3 UA	13.0	-1.69 UA	
15.0	-0.05 UA	20.0	0.43 MA	21.0	0.53 MA	
22.0	1.50 MA	1.0	-1.253 V	2.0	-1.247 V	
3.0	-1.254 V	4.0	-1.254 V	5.0	1.7 MV	
7.0	-4.7 MV	8.0	-0.8 MV	9.0	-4.1 MV	
10.0	-0.87 MV	70.0	40.3 UV	71.0	13.5 MV	
72.0	14.1 MV	69.0	57.45 DB	16.0	1.08 A	
17.0	-1.253 V	18.0	0.347 A	19.0	-1.254 V	
23.0	-1.248 V					

DEVICE	1016	BIN	1	HEAD 3	02:50 PM	10/01/2004
700.0	0	800.0	25 DGR	98.0	0.93 V	
11.0	61.7 UA	12.0	63.3 UA	13.0	-1.63 UA	
15.0	-0.06 UA	20.0	0.45 MA	21.0	0.54 MA	
22.0	1.69 MA	1.0	-1.255 V	2.0	-1.249 V	
3.0	-1.257 V	4.0	-1.256 V	5.0	1.6 MV	
7.0	-4.6 MV	8.0	-0.7 MV	9.0	-4.0 MV	
10.0	-0.87 MV	70.0	40.5 UV	71.0	12.4 MV	
72.0	13.1 MV	69.0	57.01 DB	16.0	1.05 A	
17.0	-1.255 V	18.0	0.341 A	19.0	-1.256 V	
23.0	-1.250 V					

Control Device

30k

DEVICE	1018	BIN	1	HEAD 3	03:03 PM	10/27/2004
700.0	0	800.0	25 DGR	98.0	0.92 V	
11.0	62.7 UA	12.0	64.2 UA	13.0	-1.48 UA	
15.0	-0.03 UA	20.0	0.46 MA	21.0	0.55 MA	
22.0	1.80 MA	1.0	-1.263 V	2.0	-1.257 V	
3.0	-1.264 V	4.0	-1.264 V	5.0	1.5 MV	
7.0	-4.7 MV	8.0	-0.7 MV	9.0	-4.0 MV	
10.0	-1.11 MV	70.0	41.1 UV	71.0	13.0 MV	
72.0	14.6 MV	69.0	57.04 DB	16.0	1.07 A	
17.0	-1.263 V	18.0	0.324 A	19.0	-1.265 V	
23.0	-1.258 V					

Control Device

DEVICE	1019	BIN	1	HEAD 3	03:04 PM	10/27/2004
700.0	0	800.0	25 DGR	98.0	0.92 V	
11.0	62.5 UA	12.0	64.1 UA	13.0	-1.58 UA	
15.0	-0.05 UA	20.0	0.46 MA	21.0	0.55 MA	
22.0	1.72 MA	1.0	-1.256 V	2.0	-1.250 V	
3.0	-1.258 V	4.0	-1.257 V	5.0	1.6 MV	
7.0	-5.3 MV	8.0	-0.8 MV	9.0	-4.2 MV	
10.0	-1.53 MV	70.0	40.8 UV	71.0	14.5 MV	
72.0	15.3 MV	69.0	57.03 DB	16.0	1.06 A	
17.0	-1.257 V	18.0	0.323 A	19.0	-1.258 V	
23.0	-1.251 V					

DEVICE	1011	BIN	1	HEAD 3	03:07 PM	10/27/2004
700.0	0	800.0	25 DGR	98.0	0.95 V	
11.0	61.2 UA	12.0	64.2 UA	13.0	-3.05 UA	
15.0	-0.07 UA	20.0	0.44 MA	21.0	0.54 MA	
22.0	1.44 MA	1.0	-1.259 V	2.0	-1.254 V	
3.0	-1.263 V	4.0	-1.262 V	5.0	4.0 MV	
7.0	-4.2 MV	8.0	-0.6 MV	9.0	-3.7 MV	
10.0	-1.17 MV	70.0	41.0 UV	71.0	12.5 MV	
72.0	13.4 MV	69.0	57.03 DB	16.0	1.07 A	
17.0	-1.259 V	18.0	0.368 A	19.0	-1.263 V	
23.0	-1.255 V					

DEVICE	1012	BIN	1	HEAD 3	03:07 PM	10/27/2004
700.0	0	800.0	25 DGR	98.0	0.95 V	
11.0	60.6 UA	12.0	63.5 UA	13.0	-2.88 UA	
15.0	-0.04 UA	20.0	0.43 MA	21.0	0.52 MA	
22.0	1.49 MA	1.0	-1.258 V	2.0	-1.254 V	
3.0	-1.260 V	4.0	-1.259 V	5.0	1.4 MV	
7.0	-3.7 MV	8.0	-0.4 MV	9.0	-3.7 MV	
10.0	-1.00 MV	70.0	41.3 UV	71.0	12.6 MV	
72.0	13.5 MV	69.0	57.44 DB	16.0	1.06 A	
17.0	-1.259 V	18.0	0.371 A	19.0	-1.260 V	
23.0	-1.255 V					

DEVICE	1013	BIN	1	HEAD 3	03:07 PM	10/27/2004
700.0	0	800.0	25 DGR	98.0	0.96 V	
11.0	60.2 UA	12.0	62.5 UA	13.0	-2.36 UA	
15.0	-0.08 UA	20.0	0.41 MA	21.0	0.50 MA	
22.0	1.64 MA	1.0	-1.256 V	2.0	-1.252 V	
3.0	-1.259 V	4.0	-1.258 V	5.0	2.3 MV	
7.0	-3.3 MV	8.0	-0.4 MV	9.0	-3.5 MV	
10.0	-0.86 MV	70.0	41.2 UV	71.0	13.7 MV	
72.0	13.5 MV	69.0	58.04 DB	16.0	1.04 A	
17.0	-1.257 V	18.0	0.366 A	19.0	-1.259 V	
23.0	-1.253 V					

DEVICE	1014	BIN	1	HEAD 3	03:08 PM	10/27/2004
700.0	0	800.0	25 DGR	98.0	0.94 V	
11.0	60.8 UA	12.0	63.3 UA	13.0	-2.47 UA	
15.0	-0.05 UA	20.0	0.44 MA	21.0	0.53 MA	
22.0	1.54 MA	1.0	-1.257 V	2.0	-1.251 V	
3.0	-1.259 V	4.0	-1.259 V	5.0	2.2 MV	
7.0	-4.7 MV	8.0	-0.7 MV	9.0	-3.9 MV	
10.0	-1.00 MV	70.0	41.3 UV	71.0	12.5 MV	
72.0	13.5 MV	69.0	57.23 DB	16.0	1.06 A	
17.0	-1.257 V	18.0	0.358 A	19.0	-1.259 V	
23.0	-1.253 V					

DEVICE	1015	BIN	1	HEAD 3	03:09 PM	10/27/2004
700.0	0	800.0	25 DGR	98.0	0.95 V	
11.0	60.7 UA	12.0	64.9 UA	13.0	-4.16 UA	
15.0	-0.08 UA	20.0	0.43 MA	21.0	0.52 MA	
22.0	1.55 MA	1.0	-1.252 V	2.0	-1.245 V	
3.0	-1.255 V	4.0	-1.254 V	5.0	2.6 MV	
7.0	-5.3 MV	8.0	-0.8 MV	9.0	-4.2 MV	
10.0	-1.22 MV	70.0	40.5 UV	71.0	15.0 MV	
72.0	14.9 MV	69.0	57.44 DB	16.0	1.07 A	
17.0	-1.252 V	18.0	0.369 A	19.0	-1.254 V	
23.0	-1.246 V					

DEVICE	1016	BIN	1	HEAD 3	03:09 PM	10/27/2004
700.0	0	800.0	25 DGR	98.0	0.95 V	
11.0	60.7 UA	12.0	63.1 UA	13.0	-2.41 UA	
15.0	-0.06 UA	20.0	0.43 MA	21.0	0.52 MA	
22.0	1.27 MA	1.0	-1.254 V	2.0	-1.250 V	
3.0	-1.256 V	4.0	-1.256 V	5.0	2.4 MV	
7.0	-3.1 MV	8.0	-0.6 MV	9.0	-3.7 MV	
10.0	-0.99 MV	70.0	41.0 UV	71.0	12.5 MV	
72.0	13.8 MV	69.0	57.19 DB	16.0	1.05 A	
17.0	-1.254 V	18.0	0.365 A	19.0	-1.256 V	
23.0	-1.250 V					

Control Device

50k

DEVICE	1018	BIN	1	HEAD 3	02:18 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.92 V	
11.0	62.7 UA	12.0	64.2 UA	13.0	-1.50 UA	
15.0	-0.05 UA	20.0	0.45 MA	21.0	0.55 MA	
22.0	1.64 MA	1.0	-1.263 V	2.0	-1.257 V	
3.0	-1.264 V	4.0	-1.264 V	5.0	1.4 MV	
7.0	-5.2 MV	8.0	-0.6 MV	9.0	-4.2 MV	
10.0	-0.23 MV	70.0	40.5 UV	71.0	14.4 MV	
72.0	25.0 MV	69.0	57.03 DB	16.0	1.07 A	
17.0	-1.263 V	18.0	0.324 A	19.0	-1.265 V	
23.0	-1.258 V					

Control Device

DEVICE	1019	BIN	1	HEAD 3	02:19 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.92 V	
11.0	62.6 UA	12.0	64.2 UA	13.0	-1.59 UA	
15.0	-0.05 UA	20.0	0.46 MA	21.0	0.55 MA	
22.0	1.66 MA	1.0	-1.256 V	2.0	-1.251 V	
3.0	-1.258 V	4.0	-1.257 V	5.0	1.8 MV	
7.0	-4.5 MV	8.0	-0.7 MV	9.0	-3.9 MV	
10.0	-1.36 MV	70.0	40.7 UV	71.0	14.6 MV	
72.0	15.9 MV	69.0	57.02 DB	16.0	1.06 A	
17.0	-1.257 V	18.0	0.324 A	19.0	-1.258 V	
23.0	-1.252 V					

DEVICE	1011	BIN	32	HEAD	3	02:22 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.96 V		
11.0	61.2 UA	12.0 F	203.5 UA	13.0 F	-142.22 UA		
15.0	-0.03 UA	20.0	0.44 MA	21.0	0.53 MA		
22.0 F	A999999.2 MA	1.0	-1.259 V	2.0	-1.253 V		
3.0 F	-1.634 V	4.0 F	-1.630 V	5.0 F	374.7 MV		
7.0	-4.6 MV	8.0	-4.3 MV	9.0	-4.2 MV		
10.0	-1.52 MV	70.0	40.5 UV	71.0	13.3 MV		
72.0	13.4 MV	69.0	57.12 DB	16.0	1.07 A		
17.0	-1.260 V	18.0	0.393 A	19.0 F	-1.638 V		
23.0	-1.255 V						

DEVICE	1011	BIN	32	HEAD	3	02:22 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.95 V		
11.0	61.3 UA	12.0 F	211.4 UA	13.0 F	-150.11 UA		
15.0	-0.01 UA	20.0	0.44 MA	21.0	0.54 MA		
22.0 F	A999999.2 MA	1.0	-1.259 V	2.0	-1.254 V		
3.0 F	-1.680 V	4.0 F	-1.676 V	5.0 F	420.4 MV		
7.0	-4.4 MV	8.0	-3.9 MV	9.0	-4.2 MV		
10.0	-1.53 MV	70.0	41.7 UV	71.0	13.2 MV		
72.0	14.2 MV	69.0	57.06 DB	16.0	1.07 A		
17.0	-1.260 V	18.0	0.393 A	19.0 F	-1.680 V		
23.0	-1.256 V						

DEVICE	1012	BIN	32	HEAD	3	02:22 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.96 V		
11.0	60.7 UA	12.0 F	194.2 UA	13.0 F	-133.47 UA		
15.0	-0.05 UA	20.0	0.43 MA	21.0	0.52 MA		
22.0 F	A999999.2 MA	1.0	-1.257 V	2.0	-1.252 V		
3.0 F	-1.590 V	4.0 F	-1.585 V	5.0 F	332.2 MV		
7.0	-3.7 MV	8.0	-4.2 MV	9.0	-3.9 MV		
10.0	-0.89 MV	70.0	41.5 UV	71.0	13.5 MV		
72.0	21.8 MV	69.0	57.57 DB	16.0	1.06 A		
17.0	-1.258 V	18.0	0.394 A	19.0 F	-1.596 V		
23.0	-1.253 V						

DEVICE	1012	BIN	32	HEAD	3	02:22 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.95 V		
11.0	60.8 UA	12.0 F	202.4 UA	13.0 F	-141.55 UA		
15.0	0.00 UA	20.0	0.42 MA	21.0	0.52 MA		
22.0 F	A999999.2 MA	1.0	-1.257 V	2.0	-1.252 V		
3.0 F	-1.647 V	4.0 F	-1.640 V	5.0 F	389.1 MV		
7.0	-3.9 MV	8.0 F	-6.1 MV	9.0	-3.8 MV		
10.0	-0.82 MV	70.0	42.1 UV	71.0	13.2 MV		
72.0	16.0 MV	69.0	57.51 DB	16.0	1.06 A		
17.0	-1.258 V	18.0	0.394 A	19.0 F	-1.639 V		
23.0	-1.254 V						

DEVICE	1013	BIN	32	HEAD 3	02:23 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.96 V	
11.0	59.9 UA	12.0 F	194.6 UA	13.0 F	-134.67 UA	
15.0	-0.01 UA	20.0	0.40 MA	21.0	0.49 MA	
22.0 F	A999999.2 MA	1.0	-1.256 V	2.0	-1.251 V	
3.0 F	-1.749 V	4.0 F	-1.744 V	5.0 F	493.1 MV	
7.0	-3.4 MV	8.0	-5.1 MV	9.0	-3.7 MV	
10.0	-1.26 MV	70.0	42.1 UV	71.0	14.8 MV	
72.0	16.1 MV	69.0	58.22 DB	16.0	1.04 A	
17.0	-1.256 V	18.0	0.390 A	19.0 F	-1.744 V	
23.0	-1.252 V					

DEVICE	1013	BIN	32	HEAD 3	02:23 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.96 V	
11.0	60.0 UA	12.0 F	201.9 UA	13.0 F	-141.88 UA	
15.0	-0.03 UA	20.0	0.40 MA	21.0	0.50 MA	
22.0 F	A999999.2 MA	1.0	-1.256 V	2.0	-1.251 V	
3.0 F	-1.799 V	4.0 F	-1.795 V	5.0 F	543.4 MV	
7.0	-3.9 MV	8.0	-4.0 MV	9.0	-3.8 MV	
10.0	-1.26 MV	70.0	41.9 UV	71.0	15.0 MV	
72.0	14.4 MV	69.0	58.16 DB	16.0	1.04 A	
17.0	-1.256 V	18.0	0.390 A	19.0 F	-1.790 V	
23.0	-1.252 V					

DEVICE	1014	BIN	32	HEAD 3	02:23 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.96 V	
11.0	60.7 UA	12.0 F	202.4 UA	13.0 F	-141.68 UA	
15.0	-0.03 UA	20.0	0.42 MA	21.0	0.52 MA	
22.0 F	A999999.2 MA	1.0	-1.257 V	2.0	-1.252 V	
3.0 F	-1.626 V	4.0 F	-1.622 V	5.0 F	369.3 MV	
7.0	-3.8 MV	8.0	-4.5 MV	9.0	-3.7 MV	
10.0	-1.15 MV	70.0	41.4 UV	71.0	13.2 MV	
72.0	14.2 MV	69.0	57.43 DB	16.0	1.06 A	
17.0	-1.257 V	18.0	0.387 A	19.0 F	-1.627 V	
23.0	-1.253 V					

DEVICE	1014	BIN	32	HEAD 3	02:23 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.95 V	
11.0	60.8 UA	12.0 F	210.8 UA	13.0 F	-150.01 UA	
15.0	-0.02 UA	20.0	0.43 MA	21.0	0.52 MA	
22.0 F	A999999.2 MA	1.0	-1.257 V	2.0	-1.252 V	
3.0 F	-1.675 V	4.0 F	-1.671 V	5.0 F	418.4 MV	
7.0	-3.9 MV	8.0	-4.0 MV	9.0	-3.7 MV	
10.0	-0.92 MV	70.0	41.9 UV	71.0	12.7 MV	
72.0	14.6 MV	69.0	57.38 DB	16.0	1.06 A	
17.0	-1.257 V	18.0	0.386 A	19.0 F	-1.671 V	
23.0	-1.253 V					

DEVICE	1015	BIN	32	HEAD 3	02:24 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.96 V	
11.0	60.5 UA	12.0 F	224.8 UA	13.0 F	-164.24 UA	
15.0	0.00 UA	20.0	0.43 MA	21.0	0.51 MA	
22.0 F	A999999.2 MA	1.0	-1.251 V	2.0	-1.245 V	
3.0 F	-1.791 V	4.0 F	-1.787 V	5.0 F	540.3 MV	
7.0	-5.0 MV	8.0	-4.7 MV	9.0	-4.3 MV	
10.0	-1.07 MV	70.0	41.2 UV	71.0	14.4 MV	
72.0	13.8 MV	69.0	57.63 DB	16.0	1.07 A	
17.0	-1.252 V	18.0	0.399 A	19.0 F	-1.777 V	
23.0	-1.246 V					

DEVICE	1015	BIN	32	HEAD 3	02:24 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.95 V	
11.0	60.6 UA	12.0 F	233.3 UA	13.0 F	-172.74 UA	
15.0	-0.03 UA	20.0	0.42 MA	21.0	0.52 MA	
22.0 F	A999999.2 MA	1.0	-1.251 V	2.0	-1.245 V	
3.0 F	-1.843 V	4.0 F	-1.838 V	5.0 F	591.4 MV	
7.0	-5.2 MV	8.0	-4.7 MV	9.0	-4.2 MV	
10.0	-1.11 MV	70.0	42.5 UV	71.0	13.8 MV	
72.0	14.3 MV	69.0	57.59 DB	16.0	1.07 A	
17.0	-1.251 V	18.0	0.399 A	19.0 F	-1.822 V	
23.0	-1.246 V					

DEVICE	1016	BIN	32	HEAD 3	02:24 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.96 V	
11.0	60.7 UA	12.0 F	205.1 UA	13.0 F	-144.39 UA	
15.0	-0.03 UA	20.0	0.43 MA	21.0	0.52 MA	
22.0 F	A999999.2 MA	1.0	-1.253 V	2.0	-1.247 V	
3.0 F	-1.653 V	4.0 F	-1.649 V	5.0 F	399.7 MV	
7.0	-4.8 MV	8.0	-4.0 MV	9.0	-4.1 MV	
10.0	-1.31 MV	70.0	41.4 UV	71.0	13.4 MV	
72.0	13.6 MV	69.0	57.39 DB	16.0	1.05 A	
17.0	-1.254 V	18.0	0.389 A	19.0 F	-1.658 V	
23.0	-1.249 V					

DEVICE	1016	BIN	32	HEAD 3	02:24 PM	11/17/2004
700.0	0	800.0	25 DGR	98.0	0.96 V	
11.0	60.8 UA	12.0 F	213.9 UA	13.0 F	-153.12 UA	
15.0	0.02 UA	20.0	0.43 MA	21.0	0.52 MA	
22.0 F	A999999.2 MA	1.0	-1.253 V	2.0	-1.247 V	
3.0 F	-1.705 V	4.0 F	-1.701 V	5.0 F	451.3 MV	
7.0	-5.2 MV	8.0	-4.2 MV	9.0	-4.2 MV	
10.0	-1.29 MV	70.0	41.9 UV	71.0	12.5 MV	
72.0	13.6 MV	69.0	57.34 DB	16.0	1.05 A	
17.0	-1.254 V	18.0	0.389 A	19.0 F	-1.704 V	
23.0	-1.249 V					

Control Device

80k

DEVICE	1018	BIN	1	HEAD 3	04:43 PM	12/16/2004
700.0	0	800.0	25 DGR	98.0	0.92 V	
11.0	62.7 UA	12.0	64.2 UA	13.0	-1.50 UA	
15.0	-0.02 UA	20.0	0.46 MA	21.0	0.55 MA	
22.0	1.81 MA	1.0	-1.263 V	2.0	-1.256 V	
3.0	-1.264 V	4.0	-1.264 V	5.0	1.6 MV	
7.0	-5.5 MV	8.0	-1.0 MV	9.0	-4.4 MV	
10.0	-1.36 MV	70.0	41.4 UV	71.0	14.0 MV	
72.0	14.6 MV	69.0	57.05 DB	16.0	1.07 A	
17.0	-1.263 V	18.0	0.324 A	19.0	-1.265 V	
23.0	-1.257 V					

Control Device

DEVICE	1019	BIN	1	HEAD 3	04:43 PM	12/16/2004
700.0	0	800.0	25 DGR			
98.0	0.92 V	11.0	62.6 UA	12.0	64.2 UA	
13.0	-1.59 UA	15.0	-0.03 UA	20.0	0.46 MA	
21.0	0.55 MA	22.0	1.76 MA	1.0	-1.256 V	
2.0	-1.251 V	3.0	-1.258 V	4.0	-1.257 V	
5.0	1.5 MV	7.0	-4.8 MV	8.0	-0.8 MV	
9.0	-3.9 MV	10.0	-1.13 MV	70.0	40.7 UV	
71.0	14.9 MV	72.0	14.6 MV	69.0	57.07 DB	
16.0	1.06 A	17.0	-1.257 V	18.0	0.324 A	
19.0	-1.258 V	23.0	-1.251 V			

DEVICE	1010	BIN	32	HEAD	3	04:45 PM	12/16/2004
700.0	0	800.0	25 DGR	98.0	0.96 V		
11.0	60.1 UA	12.0 F	168.3 UA	13.0 F	-108.19 UA		
15.0	-0.04 UA	20.0	0.43 MA	21.0	0.52 MA		
22.0 F	A999999.2 MA	1.0	-1.252 V	2.0	-1.247 V		
3.0 F	-1.543 V	4.0 F	-1.538 V	5.0 F	290.8 MV		
7.0	-4.1 MV	8.0	-4.3 MV	9.0	-4.0 MV		
10.0	-1.29 MV	70.0	41.7 UV	71.0	13.3 MV		
72.0	13.5 MV	69.0	57.51 DB	16.0	1.03 A		
17.0	-1.252 V	18.0	0.377 A	19.0 F	-1.543 V		
23.0	-1.248 V						

DEVICE	1010	BIN	32	HEAD	3	04:45 PM	12/16/2004
700.0	0	800.0	25 DGR	98.0	0.95 V		
11.0	60.2 UA	12.0 F	175.0 UA	13.0 F	-114.78 UA		
15.0	-0.03 UA	20.0	0.42 MA	21.0	0.52 MA		
22.0 F	A999999.2 MA	1.0	-1.252 V	2.0	-1.247 V		
3.0 F	-1.588 V	4.0 F	-1.584 V	5.0 F	335.9 MV		
7.0	-4.4 MV	8.0	-4.0 MV	9.0	-4.1 MV		
10.0	-1.26 MV	70.0	41.9 UV	71.0	13.1 MV		
72.0	25.1 MV	69.0	57.47 DB	16.0	1.03 A		
17.0	-1.252 V	18.0	0.376 A	19.0 F	-1.582 V		
23.0	-1.248 V						

DEVICE	1011	BIN	32	HEAD	3	04:45 PM	12/16/2004
700.0	0	800.0	25 DGR	98.0 F	0.53 V		
11.0 A	60.6 UA	12.0 F A	186.8 UA	13.0 F	-126.22 UA		
15.0	-0.02 UA	20.0	1.13 MA	21.0 F	A999999.2 MA		
22.0 F	A999999.2 MA	1.0 F	-0.713 V	2.0 F	-1.049 V		
3.0 F	-2.357 V	4.0 F	-1.580 V	5.0 F	1644.1 MV		
7.0 F	355.2 MV	8.0 F	-776.8 MV	9.0 F	474.5 MV		
10.0 F	45.99 MV	70.0 F	A997248.8 UV	71.0 F	242.5 MV		
72.0	40.1 MV	69.0 F	41.42 DB	16.0	1.05 A		
17.0 F	-0.216 V	18.0	0.391 A	19.0 F	-0.398 V		
23.0 F	-0.939 V						

DEVICE	1011	BIN	32	HEAD	3	04:45 PM	12/16/2004
700.0	0	800.0	25 DGR	98.0 F	0.57 V		
11.0 A	60.7 UA	12.0 F A	194.2 UA	13.0 F	-133.54 UA		
15.0	-0.00 UA	20.0	0.98 MA	21.0 F	A999999.2 MA		
22.0 F	A999999.2 MA	1.0 F	-0.701 V	2.0 F	-1.049 V		
3.0 F	-2.403 V	4.0 F	-1.623 V	5.0 F	1701.2 MV		
7.0 F	354.1 MV	8.0 F	-780.1 MV	9.0 F	473.9 MV		
10.0 F	46.48 MV	70.0 F	A997248.8 UV	71.0 F A	49877.6 MV		
72.0	48.1 MV	69.0 F	41.43 DB	16.0	1.06 A		
17.0 F	-0.212 V	18.0	0.393 A	19.0 F	-0.425 V		
23.0 F	-0.949 V						

DEVICE	1012	BIN	32	HEAD 3	04:45 PM	12/16/2004
700.0	0	800.0	25 DGR	98.0	0.96 V	
11.0	60.2 UA	12.0 F	175.7 UA	13.0 F	-115.49 UA	
15.0	-0.02 UA	20.0	0.42 MA	21.0	0.51 MA	
22.0 F	A999999.2 MA	1.0	-1.256 V	2.0	-1.250 V	
3.0 F	-1.507 V	4.0 F	-1.504 V	5.0 F	251.4 MV	
7.0	-4.2 MV	8.0	-3.5 MV	9.0	-4.1 MV	
10.0	-0.92 MV	70.0 F	A997248.8 UV	71.0 F A	49877.6 MV	
72.0	44.3 MV	69.0 F	41.43 DB	16.0	1.05 A	
17.0 F	-0.214 V	18.0	0.384 A	19.0 F	-0.429 V	
23.0 F	-0.948 V					

DEVICE	1012	BIN	32	HEAD 3	04:46 PM	12/16/2004
700.0	0	800.0	25 DGR	98.0 F	0.56 V	
11.0 A	60.2 UA	12.0 F A	179.9 UA	13.0 F	-119.63 UA	
15.0	-0.03 UA	20.0	1.23 MA	21.0 F	A999999.2 MA	
22.0 F	A999999.2 MA	1.0 F	-0.696 V	2.0 F	-1.051 V	
3.0 F	-2.367 V	4.0 F	-1.588 V	5.0 F	1671.7 MV	
7.0 F	383.4 MV	8.0 F	-779.2 MV	9.0 F	501.3 MV	
10.0 F	38.85 MV	70.0 F	A997248.8 UV	71.0 F A	49877.6 MV	
72.0	45.5 MV	69.0 F	41.43 DB	16.0 F	-0.01 A	
17.0 F	0.018 V	18.0 F	-0.002 A	19.0 F	0.006 V	
23.0 F	-0.926 V					

DEVICE	1013	BIN	32	HEAD 3	04:46 PM	12/16/2004
700.0	0	800.0	25 DGR	98.0	0.96 V	
11.0	59.4 UA	12.0 F	165.7 UA	13.0 F	-106.31 UA	
15.0	-0.02 UA	20.0	0.41 MA	21.0	0.49 MA	
22.0 F	A999999.2 MA	1.0	-1.254 V	2.0	-1.250 V	
3.0 F	-1.602 V	4.0 F	-1.598 V	5.0 F	347.3 MV	
7.0	-3.4 MV	8.0	-3.9 MV	9.0	-3.6 MV	
10.0	-1.51 MV	70.0	41.3 UV	71.0	13.5 MV	
72.0	13.9 MV	69.0	58.26 DB	16.0	1.03 A	
17.0	-1.255 V	18.0	0.372 A	19.0 F	-1.591 V	
23.0	-1.251 V					

DEVICE	1013	BIN	32	HEAD 3	04:46 PM	12/16/2004
700.0	0	800.0	25 DGR	98.0	0.95 V	
11.0	59.4 UA	12.0 F	171.8 UA	13.0 F	-112.39 UA	
15.0	-0.02 UA	20.0	0.40 MA	21.0	0.49 MA	
22.0 F	A999999.2 MA	1.0	-1.255 V	2.0	-1.250 V	
3.0 F	-1.648 V	4.0 F	-1.644 V	5.0 F	393.1 MV	
7.0	-3.3 MV	8.0	-3.8 MV	9.0	-3.7 MV	
10.0	-1.75 MV	70.0	41.8 UV	71.0	13.6 MV	
72.0	12.7 MV	69.0	58.21 DB	16.0	1.03 A	
17.0	-1.255 V	18.0	0.372 A	19.0 F	-1.630 V	
23.0	-1.251 V					

DEVICE	1014	BIN	32	HEAD 3	04:47 PM	12/16/2004
700.0		0	800.0	25 DGR	98.0	0.96 V
11.0		60.2 UA	12.0 F	183.8 UA	13.0 F	-123.66 UA
15.0		-0.04 UA	20.0	0.43 MA	21.0	0.52 MA
22.0 F	A999999.2 MA		1.0	-1.255 V	2.0	-1.250 V
3.0 F	-1.486 V		4.0 F	-1.483 V	5.0 F	231.1 MV
7.0	-4.3 MV		8.0	-3.2 MV	9.0	-3.8 MV
10.0	-1.14 MV		70.0	43.4 UV	71.0 F A	49877.6 MV
72.0	45.7 MV		69.0 F	41.43 DB	16.0	1.05 A
17.0 F	-0.211 V		18.0	0.387 A	19.0 F	-0.368 V
23.0 F	-0.968 V					

DEVICE	1014	BIN	32	HEAD 3	04:47 PM	12/16/2004
700.0		0	800.0	25 DGR	98.0 F	0.56 V
11.0	A	60.3 UA	12.0 F A	191.2 UA	13.0 F	-130.95 UA
15.0		0.02 UA	20.0	1.00 MA	21.0 F	A999999.2 MA
22.0 F	A999999.2 MA		1.0 F	-0.699 V	2.0 F	-1.056 V
3.0 F	-2.363 V		4.0 F	-1.585 V	5.0 F	1664.4 MV
7.0 F	393.6 MV		8.0 F	-778.1 MV	9.0 F	508.3 MV
10.0 F	43.89 MV		70.0 F	A997248.8 UV	71.0 F A	49877.6 MV
72.0	44.1 MV		69.0 F	41.43 DB	16.0	1.05 A
17.0 F	-0.211 V		18.0	0.385 A	19.0 F	-0.391 V
23.0 F	-0.939 V					

DEVICE	1015	BIN	32	HEAD 3	04:47 PM	12/16/2004
700.0		0	800.0	25 DGR	98.0	A 0.75 V
11.0	A	60.1 UA	12.0 F A	190.2 UA	13.0 F	-130.18 UA
15.0		0.06 UA	20.0	A 0.46 MA	21.0	A 0.24 MA
22.0 F	A999999.2 MA		1.0	A -1.250 V	2.0	-1.247 V
3.0 F A	-1.641 V		4.0 F	-1.621 V	5.0 F	391.0 MV
7.0	A -7.2 MV		8.0 F	-19.5 MV	9.0 F	-7.7 MV
10.0	0.08 MV		70.0 F	A997248.8 UV	71.0 F A	49920.4 MV
72.0 F A	49920.4 MV		69.0 F	41.43 DB	16.0 F	0.11 A
17.0	-1.250 V		18.0	0.144 A	19.0 F	-1.515 V
23.0 F	A-1000.00 V					

DEVICE	1015	BIN	32	HEAD 3	04:47 PM	12/16/2004
700.0		0	800.0	25 DGR	98.0	A 0.76 V
11.0	A	60.1 UA	12.0 F A	190.7 UA	13.0 F	-130.67 UA
15.0		0.07 UA	20.0	A 0.45 MA	21.0	A 0.24 MA
22.0 F	A999999.2 MA		1.0	A -1.250 V	2.0	-1.247 V
3.0 F A	-1.645 V		4.0 F	-1.623 V	5.0 F	394.9 MV
7.0	A -7.2 MV		8.0 F	-22.1 MV	9.0 F	-7.5 MV
10.0	0.23 MV		70.0 F	A997248.8 UV	71.0 F A	49920.4 MV
72.0 F A	49920.4 MV		69.0	69.59 DB	16.0	1.17 A
17.0 F	-1.285 V		18.0	0.393 A	19.0 F	-1.670 V
23.0 F	0.065 V					