

Enhanced Low Dose Rate Sensitivity (ELDRS) Biased & Unbiased Condition Testing



3-Terminal Adjustable Regulators

LM117xRLQMLV

SMD # 5962R995170xVxA

Wafer Lot 3011508, Wafer # 16

HiRel Products Radiation Engineering / RHA Programs
2900 Semiconductor Drive
Santa Clara, CA 95052



Date: July %, 2015
Prepared by: Thang Trinh
Radiation Engineer: Kirby Kruckmeyer
Email ID: Kirby.Kruckmeyer@ti.com

Texas Instruments Incorporated
Radiation Effects Laboratory
Santa Clara, California 95052

ANALOG TOTAL DOSE RADIATION REPORT
Low Dose Rate

Customer: Rad Wafer Qual.

Part Type: LM117xRLQMLV SMD# 5962R99517

Input Bias Circuit: 09784IR

Dose Rate: 10 mrad(Si)/sec (Low Dose)

Test Program Used: LM00117CA/RAD0117CA

Tester: ETS500 Operator: Thang Trinh

Wafer Run Number: 3011508

Wafer Number: 16

Package Type: H03A

Production Lot #: KX3617C019

IPI #: N/A

Disposition: Passes 100 krad Total Ionizing Dose with units biased during irradiation.

(See page 30 - 57 for results with units unbiased during irradiation)

Summary:

Passes Room Temp @: Pre-rad, Post 50krad and Post 100krad.

Part Out of Room Temp Spec @: N/A

Functional Failed @: N/A

Parameters over Limit: N/A

Prepared by: Thang Trinh ÁÁÁÁ% -Jul-15

Approved by Radiation Engineer: Kirby Kruckmeyer ·····% -Jul-15

**Standard Test Flow Sheet For Rad Testing
Customer Special Attachment
Rad Tolerant Linear**

NSID# LM117xRLQMLV LOT# KX3617C019 W#16 IPI N/A

Test Program: LM00117CA/RAD0117C

Machine: ETS500 Operator: Thang Trinh Bias Board: 09784IR

Start Date: 01-Jan-19 Start Time 11:43

Finish Date: 27-Jun-15 Finish Time 10:07 Radiation Officer: FIJ-Jul-15

Control Units s/n: #__1__ #__2__

Duts : #__8__ #__9__ #__10__ #__11__ #__13__

Location Step	Operation Mtd/Cond	Qty In	Qty Out	Var	Mech	Rej	FF
PASS	Pre - Rad Read/Rec. Tp1	5	5	0	0	0	0
	<i>Irradiation</i> <i>50k</i> <i>Level</i>	5	5	0	0	N/A	N/A
PASS	Post Rad Read/Rec. Tp2	5	5	0	0	0	0
	<i>Irradiation</i> <i>100k</i> <i>Level</i>	5	5	0	0	N/A	N/A
PASS	Post Rad Read/Rec. Tp3	5	5	0	0	0	0

Notes:

All irradiations are done per MIL-STD-883, Method 1019

This report includes Data and Plots for each individual unit at each level of total doses.

It also includes data calculation for Standard Deviation, Maximum, Average and Minimum for both Raw Data and Delta between each of the Rad Level to Pre-Rad (0krad) data

The Test #, Test Name, Test Condition and Limits are also included in this report.

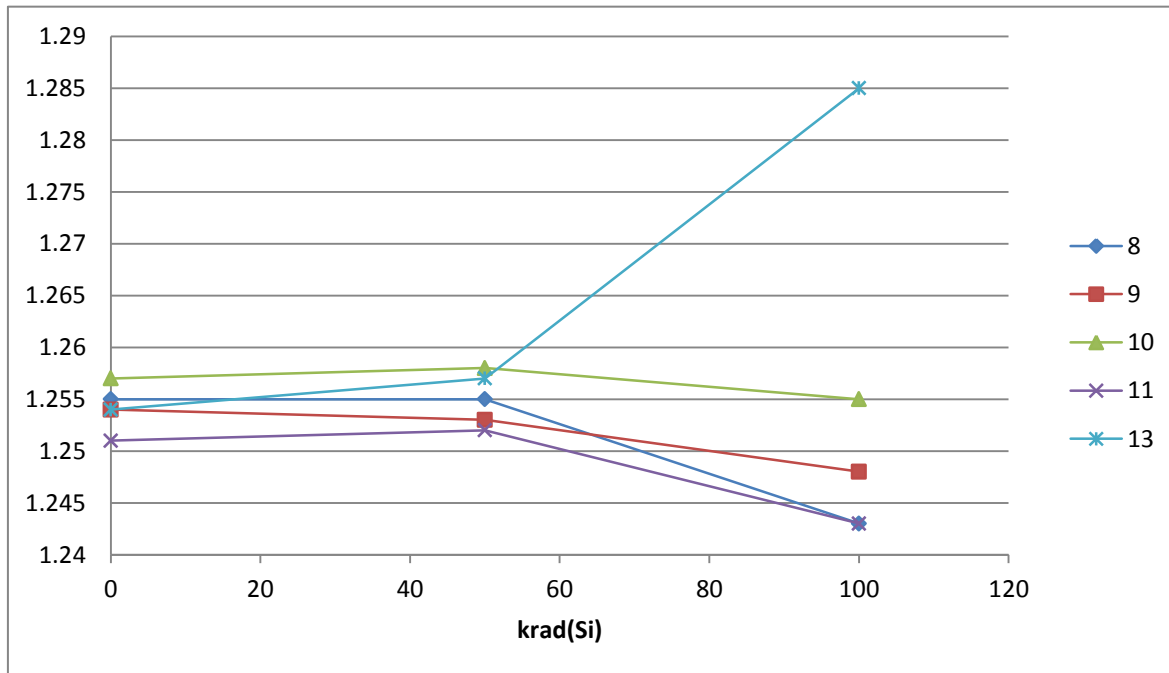
** Test Units were assembled in 3 leads NTD003A / H03A Metal Can Package.*

3.1 VREF @ VIN=4.25V,IL=5MA V

Limit_Min 1.2 Limit_Max 1.35

Device ID	0.0 krad	51.0 krad	101.0 krad
8	1.255	1.255	1.24300003
9	1.25399995	1.25300002	1.24800003
10	1.25699997	1.25800002	1.255
11	1.25100005	1.25199997	1.24300003
13	1.25399995	1.25699997	1.28499997
Average	1.25419998	1.255	1.25480001
MAX	1.25699997	1.25800002	1.28499997
MIN	1.25100005	1.25199997	1.24300003
STD_dev	0.00216792	0.00254951	0.01758406

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0	-0.012
9		-0.00099999	-0.00599999
10		0.00100005	-0.002
11		0.00099993	-0.008
13		0.00300002	0.03100002
Average		0.00080001	0.00060003
MAX		0.00300002	0.03100002
MIN		-0.00099999	-0.012
STD_dev		0.00148322	0.01737239

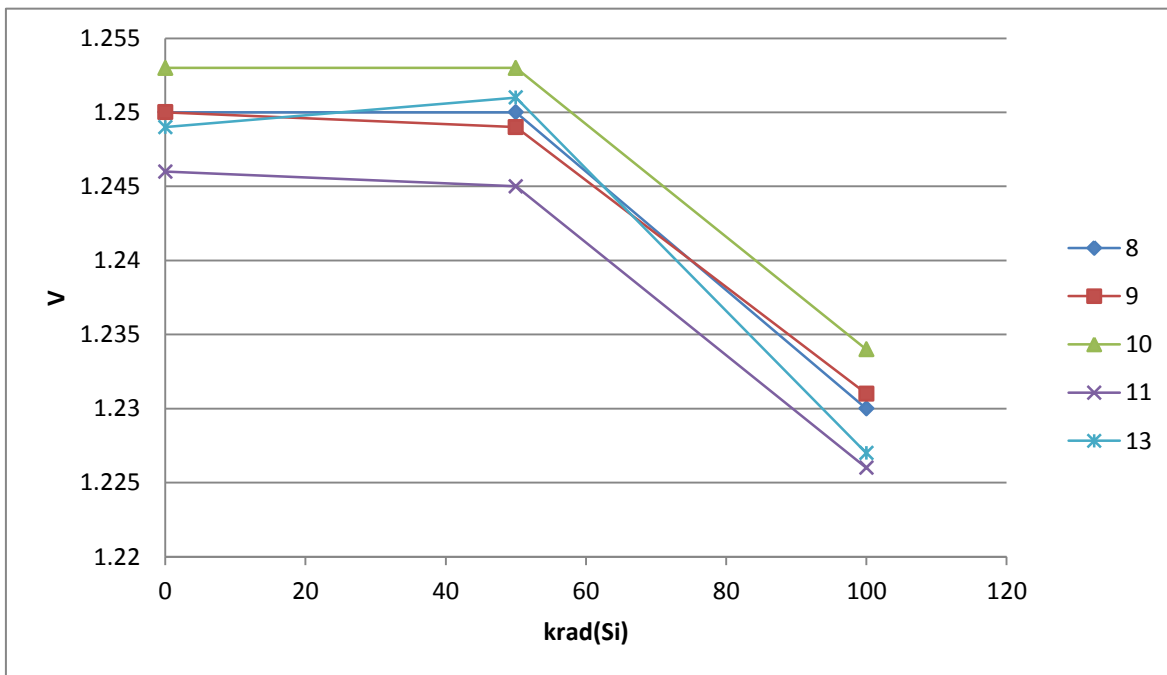


4.1 VREF @ VIN=4.25V,IL=500MA

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
8	1.25	1.25	1.23000002
9	1.25	1.24899995	1.23099995
10	1.25300002	1.25300002	1.23399997
11	1.24600005	1.24500001	1.22599995
13	1.24899995	1.25100005	1.227
Average	1.24960001	1.24960001	1.22959998
MAX	1.25300002	1.25300002	1.23399997
MIN	1.24600005	1.24500001	1.22599995
STD_dev	0.00250997	0.00296649	0.00320936

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0	-0.02
9		-0.001	-0.0190001
10		0	-0.0190001
11		-0.001	-0.0200001
13		0.00200009	-0.022
Average		2E-10	-0.02
MAX		0.00200009	-0.0190001
MIN		-0.001	-0.022
STD_dev		0.0012248	0.0012247

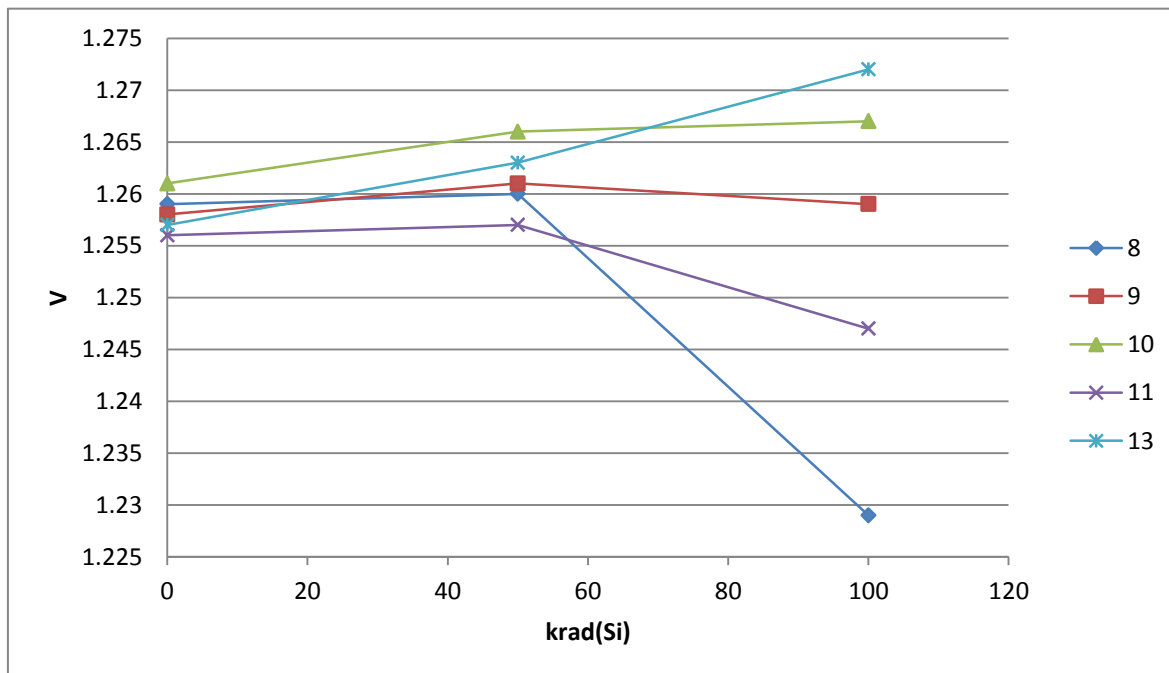


5.1 VREF @ VIN=41.25V,IL=5MA

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
8	1.25899994	1.25999999	1.22899997
9	1.25800002	1.26100004	1.25899994
10	1.26100004	1.26600003	1.26699996
11	1.25600004	1.25699997	1.24699998
13	1.25699997	1.26300001	1.27199996
Average	1.2582	1.26140001	1.25479996
MAX	1.26100004	1.26600003	1.27199996
MIN	1.25600004	1.25699997	1.22899997
STD_dev	0.00192354	0.00336157	0.01723948

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.00100005	-0.03
9		0.00300002	0.00099993
10		0.00499999	0.00599992
11		0.00099993	-0.0090001
13		0.00600004	0.01499999
Average		0.00320001	-0.0034
MAX		0.00600004	0.01499999
MIN		0.00099993	-0.03
STD_dev		0.00228037	0.01721334

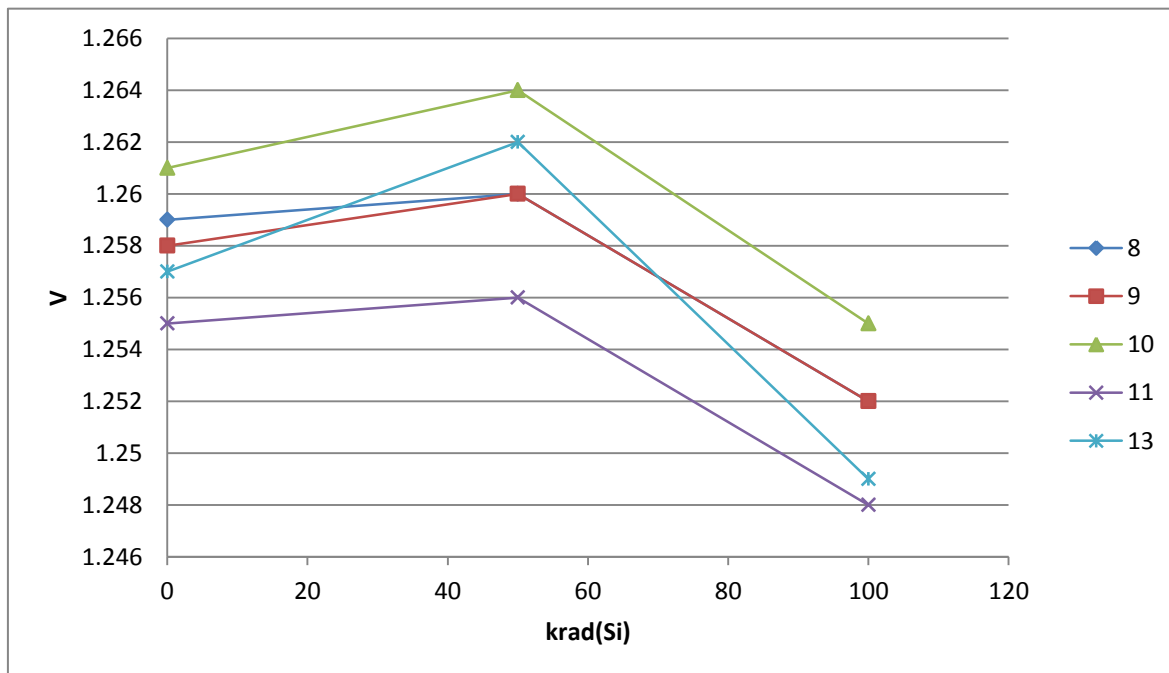


6.1 VREF @ VIN=41.25V,IL=50MA

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
8	1.25899994	1.25999999	1.25199997
9	1.25800002	1.25999999	1.25199997
10	1.26100004	1.26400006	1.255
11	1.255	1.25600004	1.24800003
13	1.25699997	1.26199997	1.24899995
Average	1.25799999	1.26040001	1.25119998
MAX	1.26100004	1.26400006	1.255
MIN	1.255	1.25600004	1.24800003
STD_dev	0.00223608	0.00296648	0.00277488

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.00100005	-0.007
9		0.00199997	-0.006
10		0.00300002	-0.006
11		0.00100005	-0.007
13		0.005	-0.008
Average		0.00240002	-0.0068
MAX		0.005	-0.006
MIN		0.00100005	-0.008
STD_dev		0.0016733	0.00083664

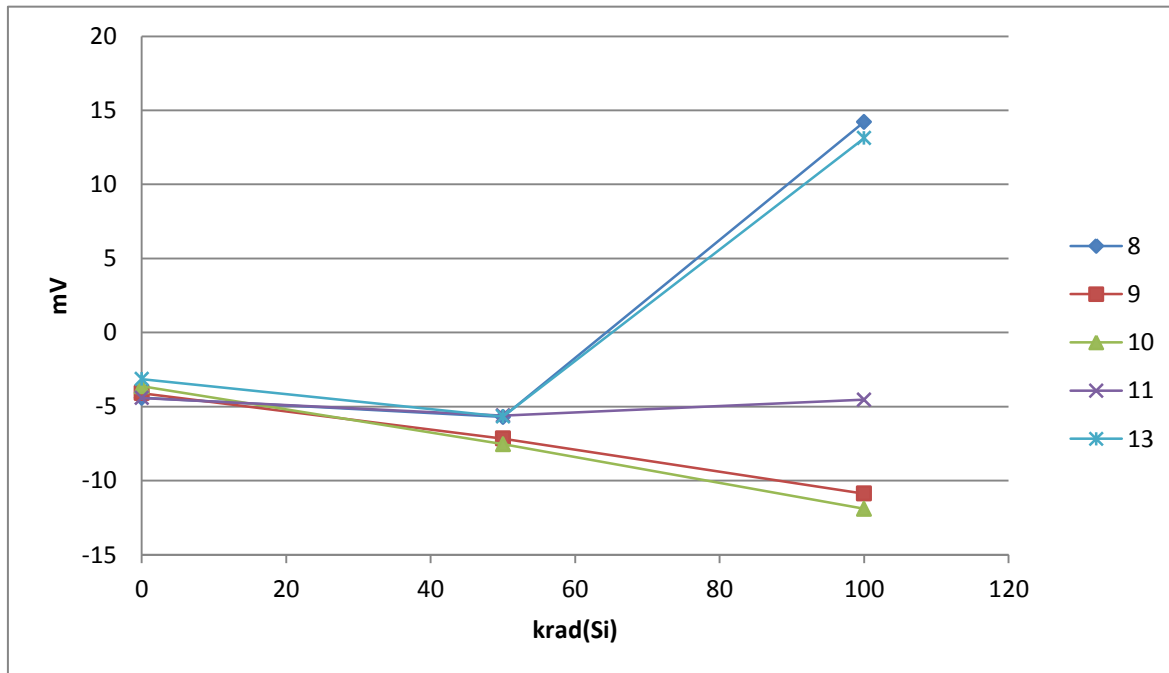


7.1 VRLINE @ 3V<=VDIFF<=40V,IL=5MA

Limit_Min -25 Limit_Max 25 mV

Device ID	0.0 krad	51.0 krad	101.0 krad
8	-4.4099998	-5.6999998	14.2200003
9	-4.0900002	-7.1599998	-10.88
10	-3.6300001	-7.54	-11.9
11	-4.4200001	-5.5999999	-4.54
13	-3.1400001	-5.6700001	13.1300001
Average	-3.9380001	-6.3339999	0.00600014
MAX	-3.1400001	-5.5999999	14.2200003
MIN	-4.4200001	-7.54	-11.9
STD_dev	0.54997267	0.93785926	12.7984484

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-1.29	18.6300001
9		-3.0699997	-6.79
10		-3.9099998	-8.2699995
11		-1.1799998	-0.1199999
13		-2.53	16.2700002
Average		-2.3959999	3.9440002
MAX		-1.1799998	18.6300001
MIN		-3.9099998	-8.2699995
STD_dev		1.16900809	12.7330821

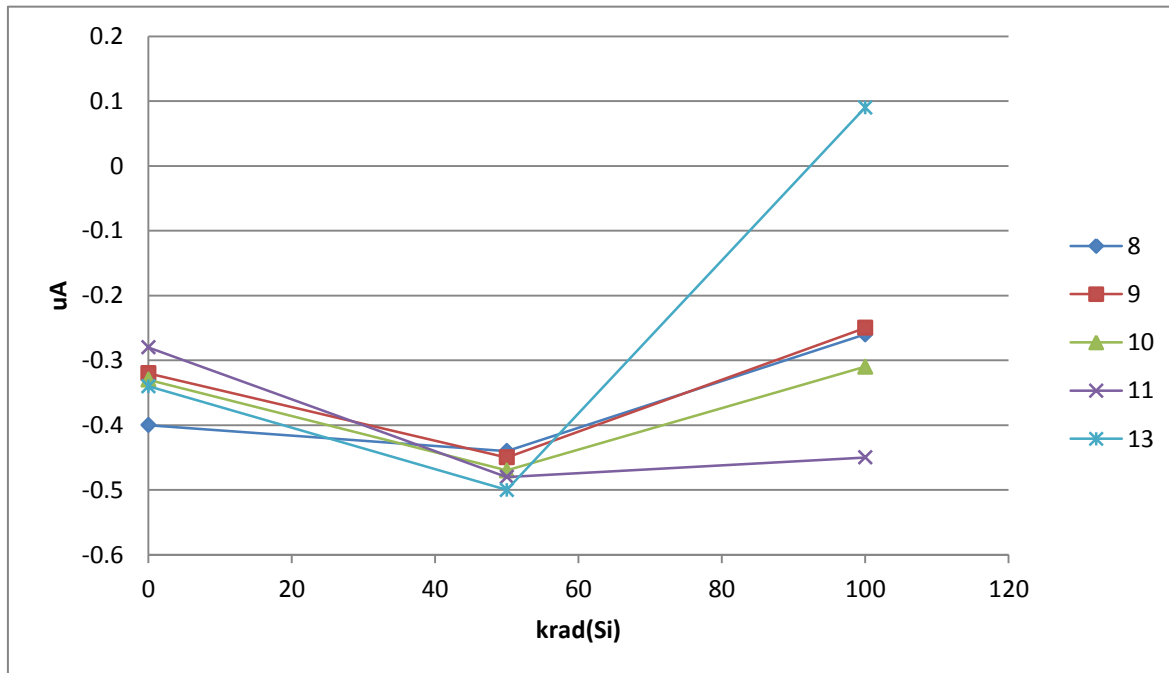


8.1 DELTA IADJ @ 3V<=VDIFF<=40V

Limit_Min -5 Limit_Max 5 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
8	-0.4	-0.44	-0.26
9	-0.32	-0.45	-0.25
10	-0.33	-0.47	-0.31
11	-0.28	-0.48	-0.45
13	-0.34	-0.5	0.09
Average	-0.334	-0.468	-0.236
MAX	-0.28	-0.44	0.09
MIN	-0.4	-0.5	-0.45
STD_dev	0.04335897	0.02387467	0.19894723

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-0.04	0.14000002
9		-0.13	0.069999999
10		-0.14	0.02000001
11		-0.2	-0.17
13		-0.16	0.43000001
Average		-0.134	0.09800001
MAX		-0.04	0.43000001
MIN		-0.2	-0.17
STD_dev		0.05899152	0.2183346

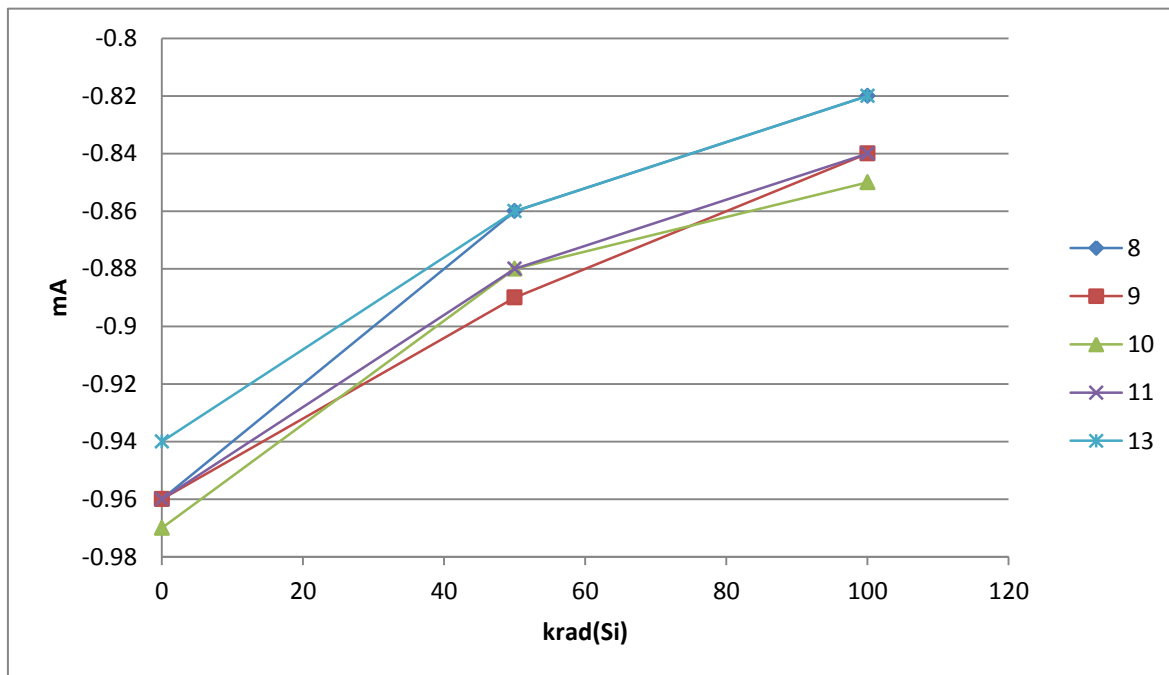


9.1 IQ @ VIN=4.25V

Limit_Min -3 Limit_Max -0.5 mA

Device ID	0.0 krad	51.0 krad	101.0 krad
8	-0.96	-0.86	-0.82
9	-0.96	-0.89	-0.84
10	-0.97	-0.88	-0.85
11	-0.96	-0.88	-0.84
13	-0.94	-0.86	-0.82
Average	-0.958	-0.874	-0.834
MAX	-0.94	-0.86	-0.82
MIN	-0.97	-0.89	-0.85
STD_dev	0.01095446	0.0134164	0.01341641

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.09999997	0.13999999
9		0.06999999	0.12000001
10		0.09000003	0.12000001
11		0.07999998	0.12000001
13		0.07999998	0.12000001
Average		0.08399999	0.124
MAX		0.09999997	0.13999999
MIN		0.06999999	0.12000001
STD_dev		0.01140175	0.00894426

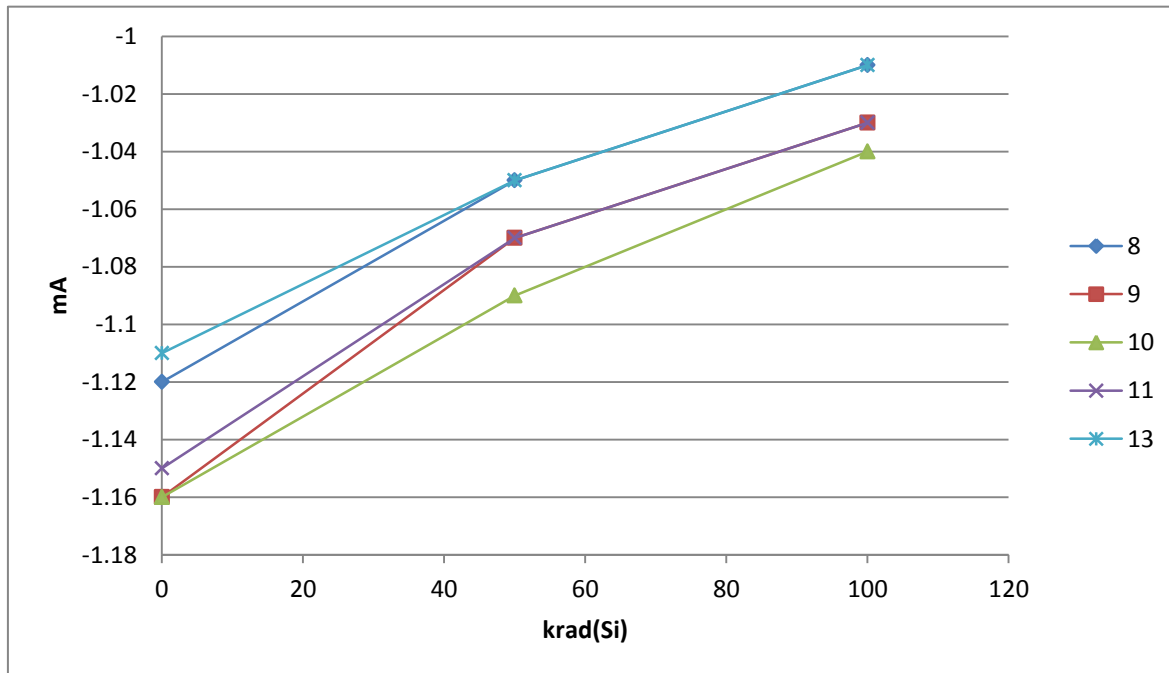


10.1 IQ @ VIN=14.25V

Limit_Min -3 Limit_Max -0.5 mA

Device ID	0.0 krad	51.0 krad	101.0 krad
8	-1.12	-1.05	-1.01
9	-1.16	-1.0700001	-1.03
10	-1.16	-1.09	-1.04
11	-1.15	-1.0700001	-1.03
13	-1.11	-1.05	-1.01
Average	-1.14	-1.066	-1.024
MAX	-1.11	-1.05	-1.01
MIN	-1.16	-1.09	-1.04
STD_dev	0.02345206	0.01673324	0.0134164

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.07000005	0.11000001
9		0.08999991	0.13
10		0.06999993	0.12000001
11		0.07999992	0.12
13		0.06000006	0.10000002
Average		0.07399998	0.11600001
MAX		0.08999991	0.13
MIN		0.06000006	0.10000002
STD_dev		0.0114017	0.01140174

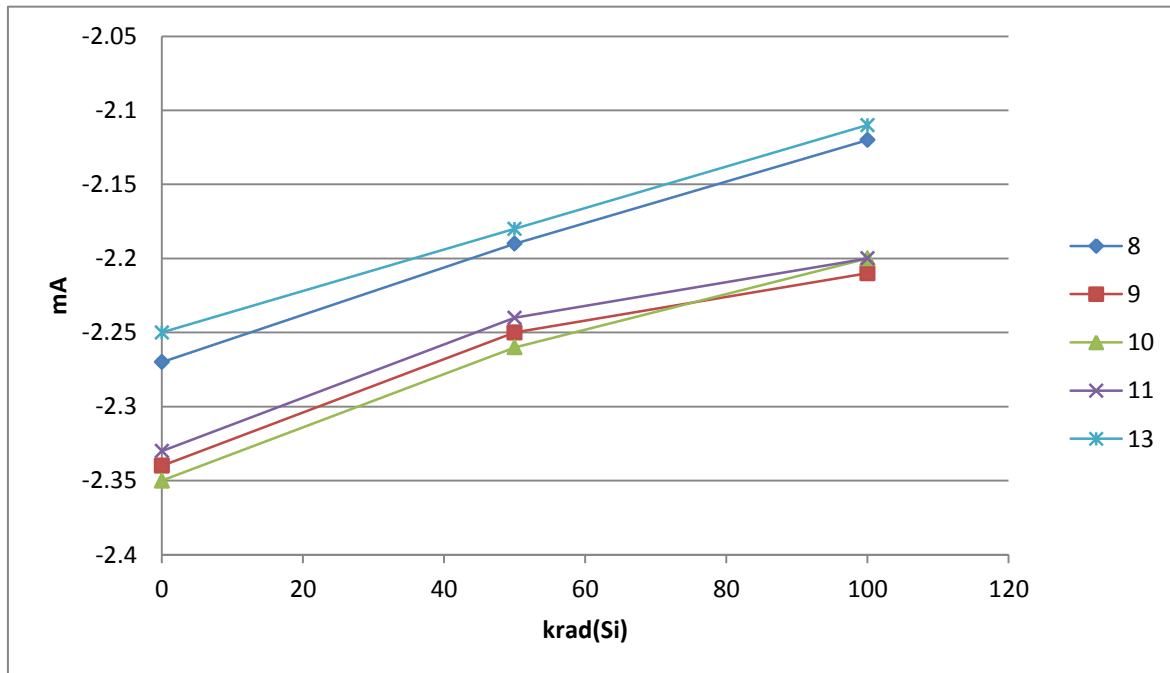


11.1 IQ @ VIN=41.25V

Limit_Min -5 Limit_Max -1 mA

Device ID	0.0 krad	51.0 krad	101.0 krad
8	-2.27	-2.1900001	-2.1199999
9	-2.3399999	-2.25	-2.21
10	-2.3499999	-2.26	-2.2
11	-2.3299999	-2.24	-2.2
13	-2.25	-2.1800001	-2.1099999
Average	-2.3079999	-2.224	-2.168
MAX	-2.25	-2.1800001	-2.1099999
MIN	-2.3499999	-2.26	-2.21
STD_dev	0.04494437	0.03646913	0.04868273

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.07999992	0.1500001
9		0.08999991	0.12999988
10		0.08999991	0.14999986
11		0.08999991	0.12999988
13		0.06999993	0.14000011
Average		0.08399992	0.13999996
MAX		0.08999991	0.1500001
MIN		0.06999993	0.12999988
STD_dev		0.00894426	0.01000005

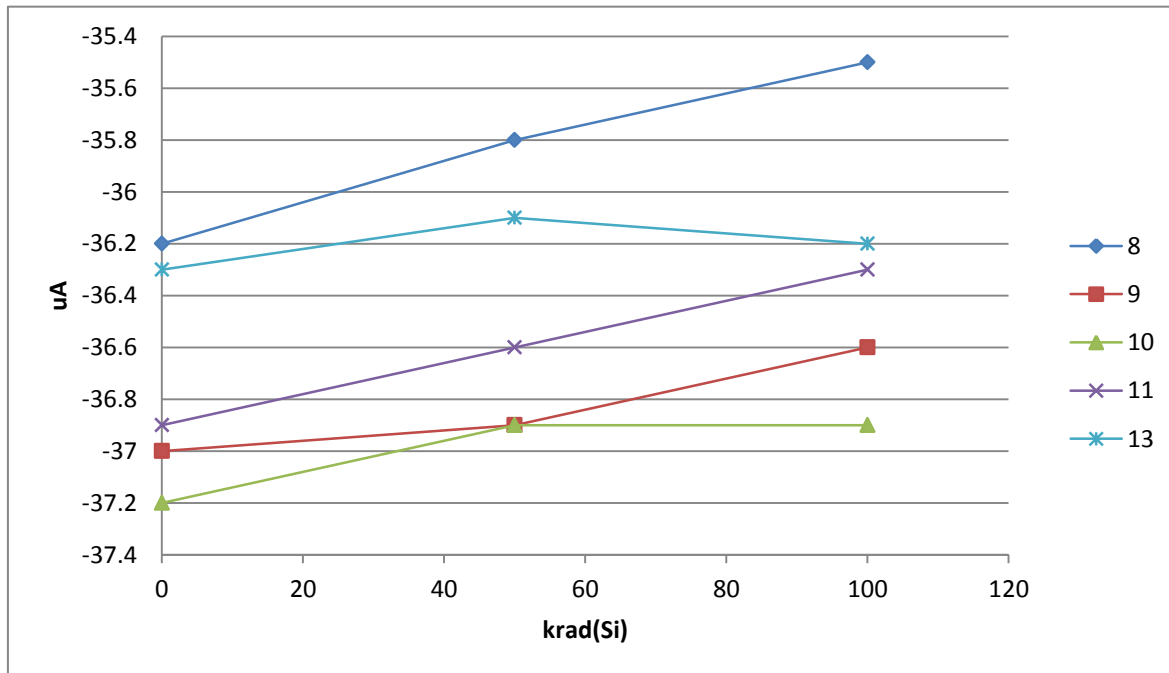


12.1 IADJ @ VDIFF=3V,IL=8MA

Limit_Min -99.9 Limit_Max -15 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
8	-36.200001	-35.799999	-35.5
9	-37	-36.900002	-36.599998
10	-37.200001	-36.900002	-36.900002
11	-36.900002	-36.599998	-36.299999
13	-36.299999	-36.099998	-36.200001
Average	-36.72	-36.46	-36.3
MAX	-36.200001	-35.799999	-35.5
MIN	-37.200001	-36.900002	-36.900002
STD_dev	0.44384714	0.49295141	0.52440461

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.40000153	0.70000076
9		0.09999847	0.40000153
10		0.29999924	0.29999924
11		0.30000305	0.60000229
13		0.20000076	0.09999847
Average		0.26000061	0.42000046
MAX		0.40000153	0.70000076
MIN		0.09999847	0.09999847
STD_dev		0.11401865	0.23874796

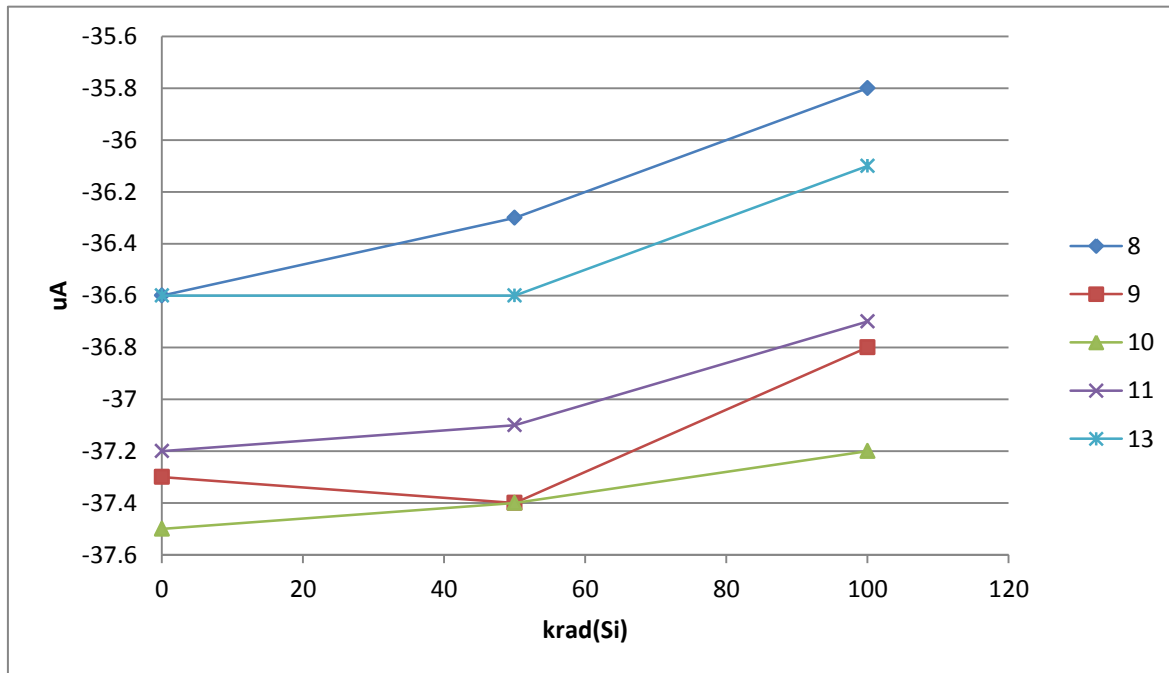


13.1 IADJ @ =40V,IL=8MA

Limit_Min -99.9 Limit_Max -15 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
8	-36.599998	-36.299999	-35.799999
9	-37.299999	-37.400002	-36.799999
10	-37.5	-37.400002	-37.200001
11	-37.200001	-37.099998	-36.700001
13	-36.599998	-36.599998	-36.099998
Average	-37.039999	-36.96	-36.52
MAX	-36.599998	-36.299999	-35.799999
MIN	-37.5	-37.400002	-37.200001
STD_dev	0.41593345	0.49295141	0.56302826

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.29999924	0.79999924
9		-0.1000023	0.5
10		0.09999847	0.29999924
11		0.10000229	0.5
13		0	0.5
Average		0.07999954	0.51999969
MAX		0.29999924	0.79999924
MIN		-0.1000023	0.29999924
STD_dev		0.14832441	0.17888537

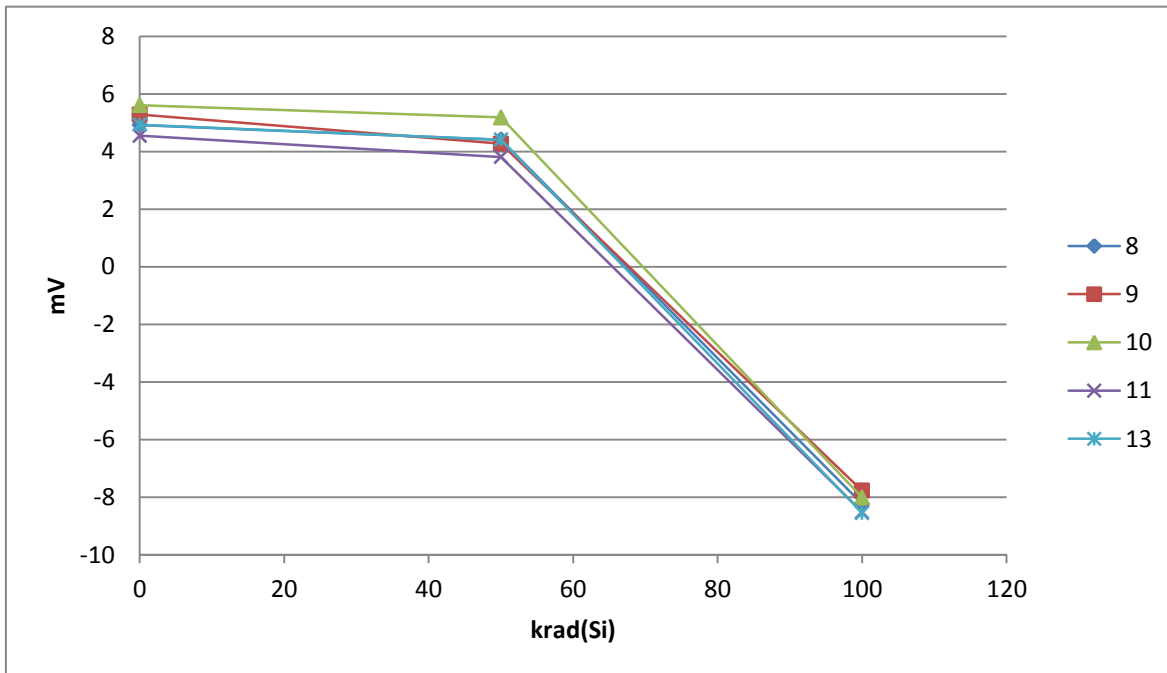


14.1 VRLOAD @ VIN=6.25V,5MA<=IL<=0.5A

Limit_Min -12 Limit_Max 12 mV

Device ID	0.0 krad	51.0 krad	101.0 krad
8	4.92000008	4.40999985	-8.2399998
9	5.28000021	4.26999998	-7.7800002
10	5.61000013	5.17999983	-8.0200005
11	4.55000019	3.80999994	-8.5200005
13	4.92999983	4.40999985	-8.5500002
Average	5.05800009	4.41599989	-8.2220002
MAX	5.61000013	5.17999983	-7.7800002
MIN	4.55000019	3.80999994	-8.5500002
STD_dev	0.40233073	0.49303139	0.32896809

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-0.5100002	-13.16
9		-1.0100002	-13.06
10		-0.4300003	-13.630001
11		-0.7400002	-13.070001
13		-0.52	-13.48
Average		-0.6420002	-13.28
MAX		-0.4300003	-13.06
MIN		-1.0100002	-13.630001
STD_dev		0.23573292	0.25951879

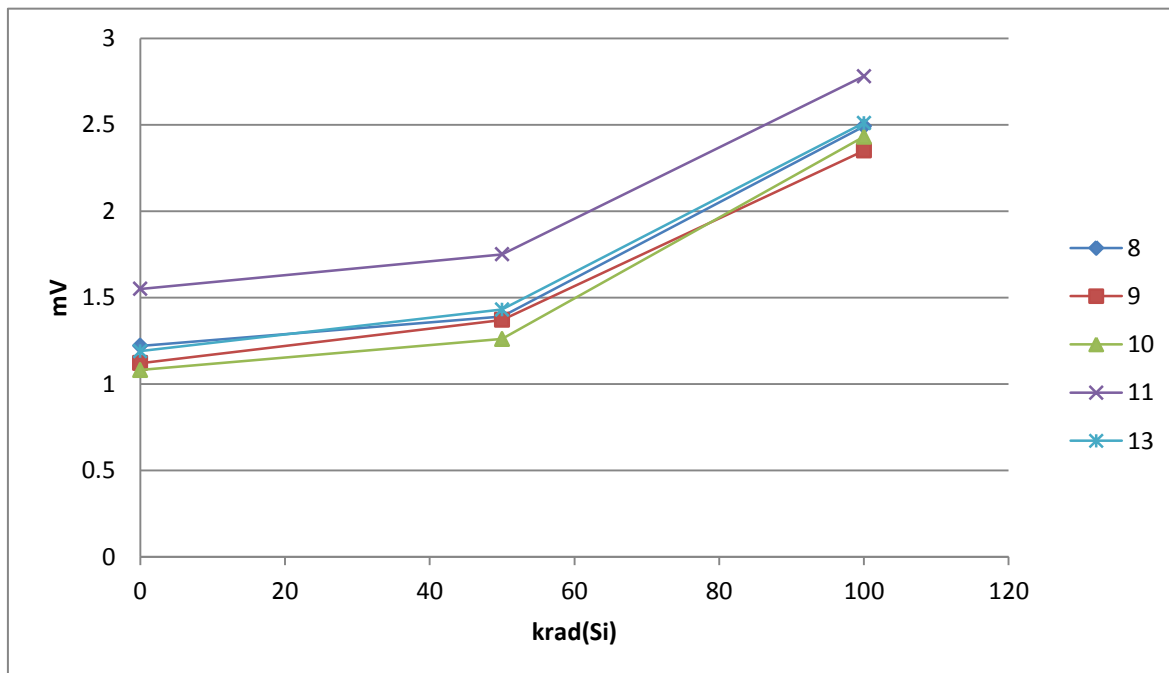


15.1 VRLOAD @ VIN=41.25V,5MA<=IL<=50MA

Limit_Min -12 Limit_Max 12 mV

Device ID	0.0 krad	51.0 krad	101.0 krad
8	1.22000003	1.38999999	2.49000001
9	1.12000001	1.37000001	2.34999991
10	1.08000004	1.25999999	2.43000007
11	1.54999995	1.75	2.77999997
13	1.19000006	1.42999995	2.50999999
Average	1.23200002	1.43999999	2.51199999
MAX	1.54999995	1.75	2.77999997
MIN	1.08000004	1.25999999	2.34999991
STD_dev	0.18619878	0.18439089	0.1622344

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.16999996	1.26999998
9		0.25	1.22999999
10		0.17999995	1.35000002
11		0.20000005	1.23000002
13		0.23999989	1.31999993
Average		0.20799997	1.27999997
MAX		0.25	1.35000002
MIN		0.16999996	1.22999999
STD_dev		0.03563705	0.05385166

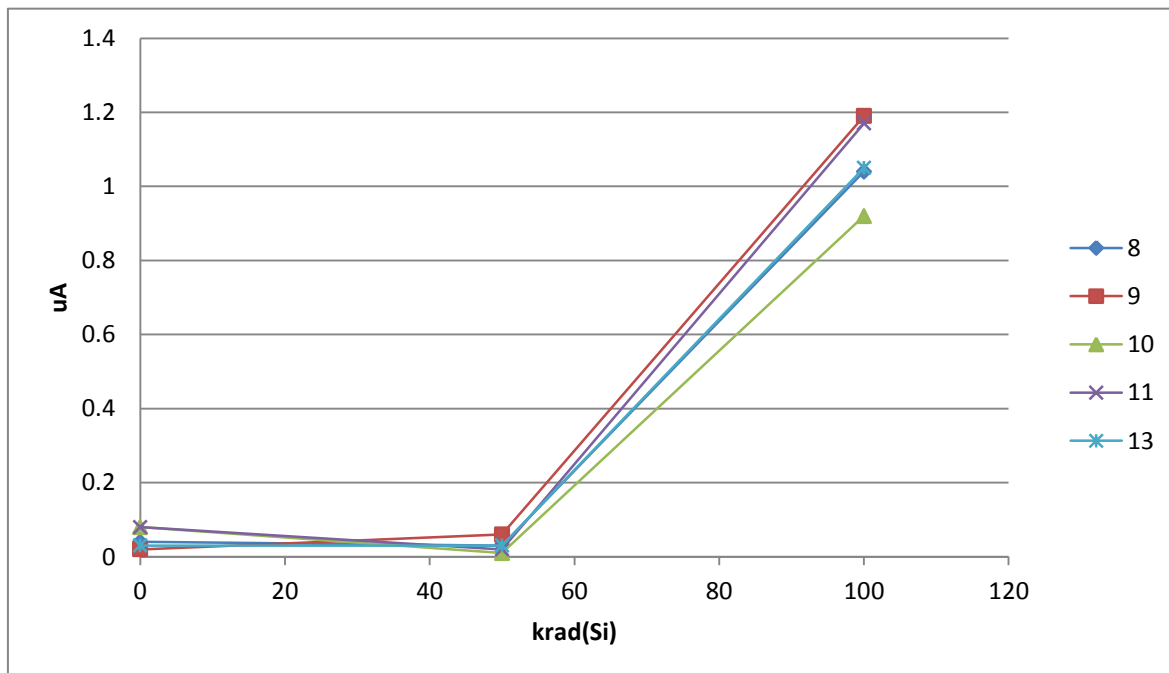


16.1 DELTA IADJ @ VIN=6.25V,5MA<=IL<=0.5A

Limit_Min -5 Limit_Max 5 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
8	0.04	0.03	1.03999996
9	0.02	0.06	1.19000006
10	0.08	0.01	0.92000002
11	0.08	0.02	1.16999996
13	0.03	0.03	1.04999995
Average	0.05	0.03	1.07399999
MAX	0.08	0.06	1.19000006
MIN	0.02	0.01	0.92000002
STD_dev	0.02828427	0.01870829	0.10968136

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-0.01	0.99999996
9		0.04	1.17000006
10		-0.07	0.84000002
11		-0.06	1.08999996
13		0	1.01999995
Average		-0.02	1.02399999
MAX		0.04	1.17000006
MIN		-0.07	0.84000002
STD_dev		0.04527692	0.12259691

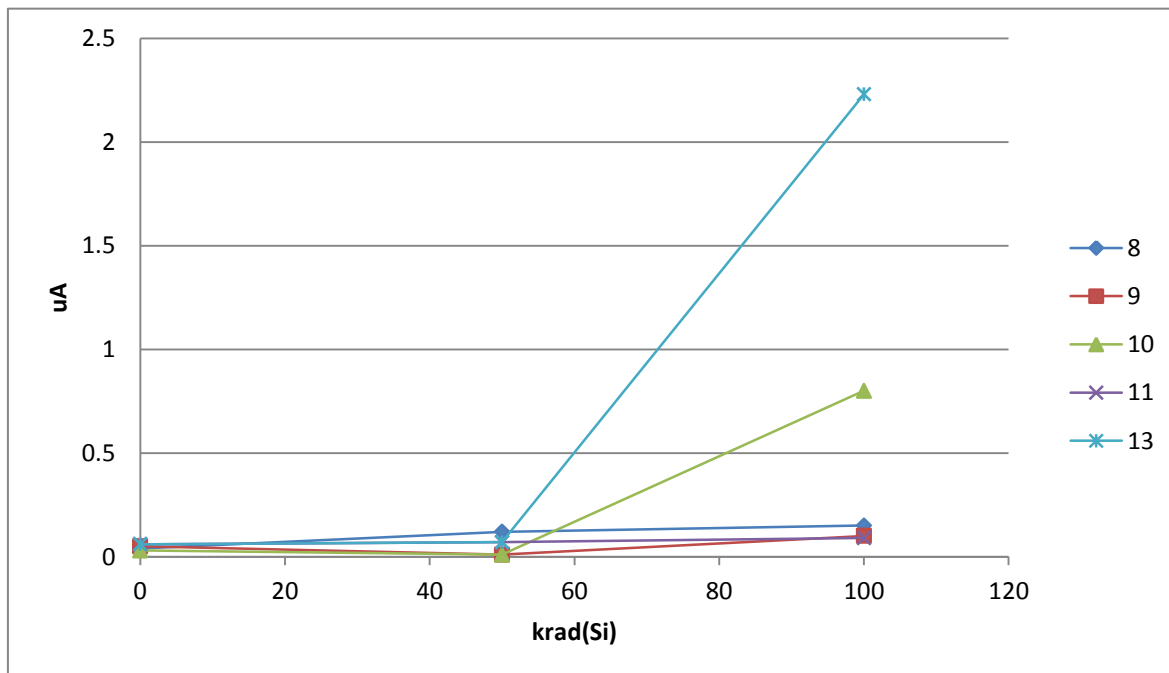


17.1 DELTA IADJ @ VDIFF=40V,10MA<=IL<=150MA

Limit_Min -5 Limit_Max 5 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
8	0.04	0.12	0.15000001
9	0.05	0.01	0.1
10	0.03	0.01	0.80000001
11	0.06	0.07	0.09
13	0.06	0.07	2.23000002
Average	0.048	0.056	0.67400001
MAX	0.06	0.12	2.23000002
MIN	0.03	0.01	0.09
STD_dev	0.0130384	0.04669047	0.91952706

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.08	0.11000001
9		-0.04	0.05
10		-0.02	0.77000001
11		0.01	0.03
13		0.01	2.17000002
Average		0.008	0.62600001
MAX		0.08	2.17000002
MIN		-0.04	0.03
STD_dev		0.04549725	0.91623142

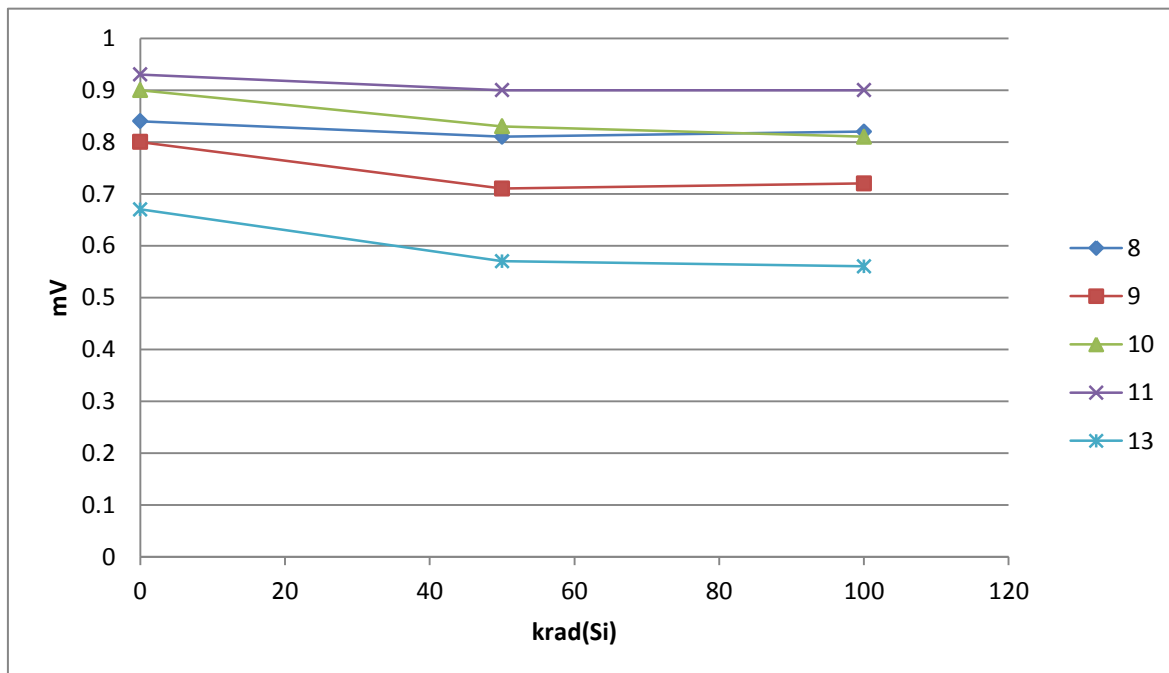


18.1 VRTH @ VIN=14.6V,IL=500MA,T=20MS

Limit_Min -12 Limit_Max 12 mV

Device ID	0.0 krad	51.0 krad	101.0 krad
8	0.83999997	0.81	0.81999999
9	0.80000001	0.70999998	0.72000003
10	0.89999998	0.82999998	0.81
11	0.93000001	0.89999998	0.89999998
13	0.67000002	0.56999999	0.56
Average	0.828	0.76399999	0.762
MAX	0.93000001	0.89999998	0.89999998
MIN	0.67000002	0.56999999	0.56
STD_dev	0.10183319	0.12798437	0.12969193

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-0.03	-0.02
9		-0.09	-0.08
10		-0.07	-0.09
11		-0.03	-0.03
13		-0.1	-0.11
Average		-0.064	-0.066
MAX		-0.03	-0.02
MIN		-0.1	-0.11
STD_dev		0.03286337	0.03911521

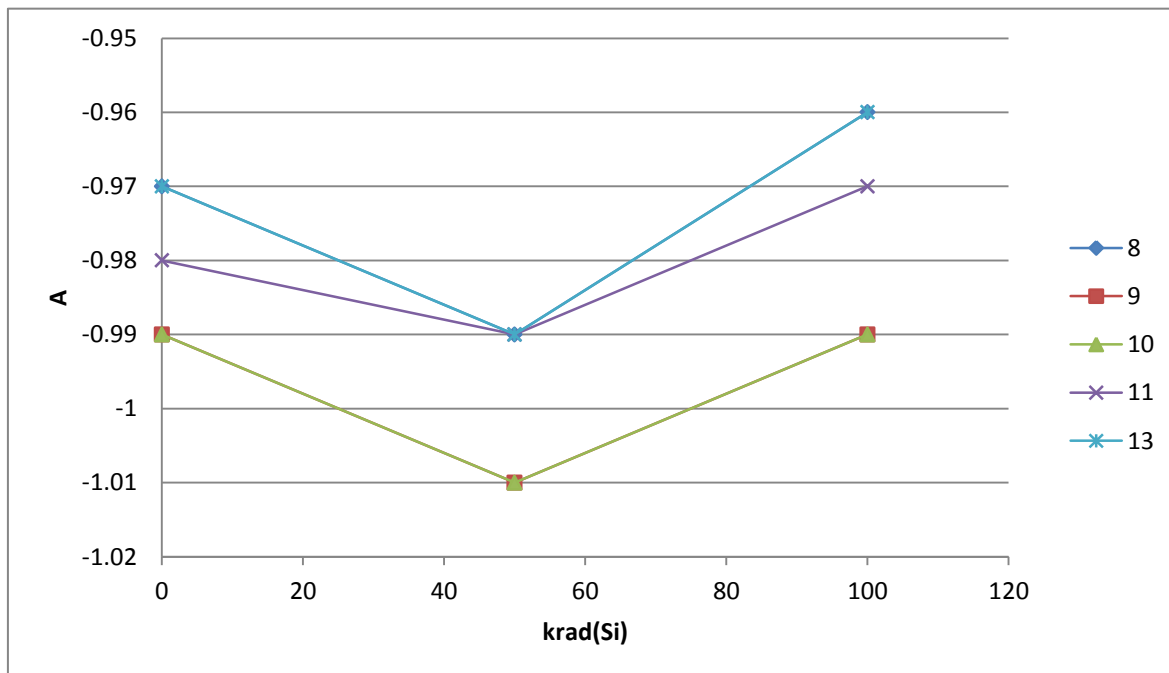


19.1 IOS @ VIN = 4.25V

Limit_Min -1.8 Limit_Max -0.5 A

Device ID	0.0 krad	51.0 krad	101.0 krad
8	-0.97	-0.99	-0.96
9	-0.99	-1.01	-0.99
10	-0.99	-1.01	-0.99
11	-0.98	-0.99	-0.97
13	-0.97	-0.99	-0.96
Average	-0.98	-0.998	-0.974
MAX	-0.97	-0.99	-0.96
MIN	-0.99	-1.01	-0.99
STD_dev	0.00999999	0.01095444	0.01516576

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-0.02	0.01000005
9		-0.02	0
10		-0.02	0
11		-0.01	0.00999999
13		-0.02	0.01000005
Average		-0.018	0.00600002
MAX		-0.01	0.01000005
MIN		-0.02	0
STD_dev		0.00447213	0.00547724

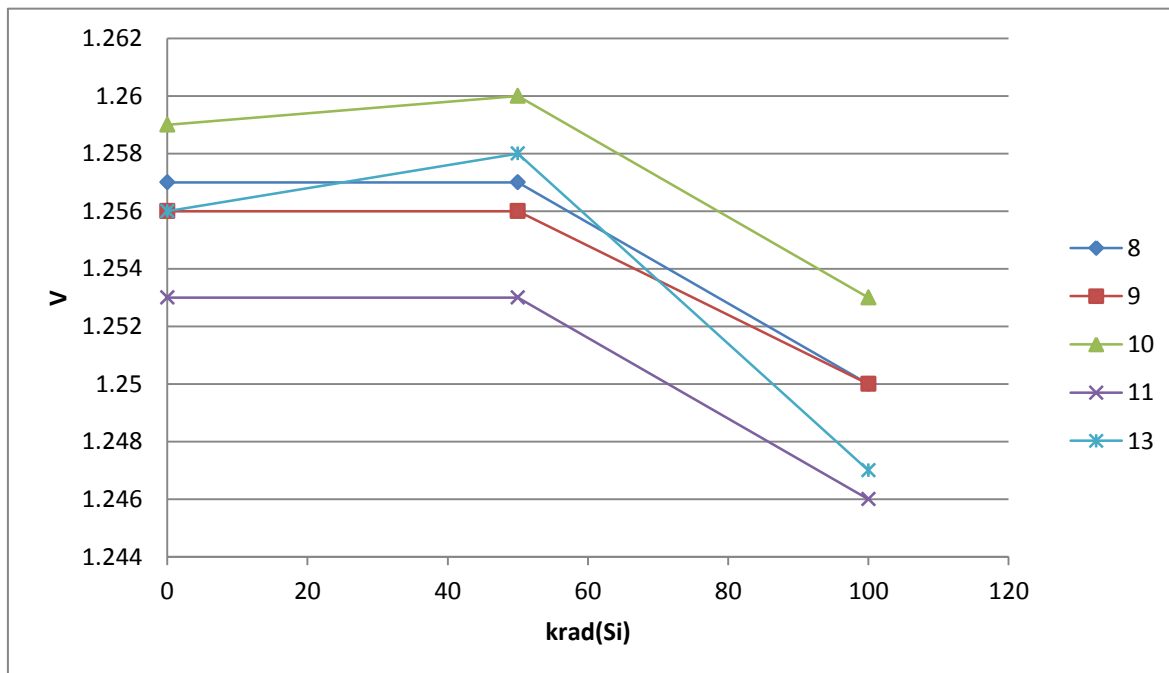


20.1 Vout Recovery @ VIN=4.25V

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
8	1.25699997	1.25699997	1.25
9	1.25600004	1.25600004	1.25
10	1.25899994	1.25999999	1.25300002
11	1.25300002	1.25300002	1.24600005
13	1.25600004	1.25800002	1.24699998
Average	1.2562	1.25680001	1.24920001
MAX	1.25899994	1.25999999	1.25300002
MIN	1.25300002	1.25300002	1.24600005
STD_dev	0.00216792	0.00258842	0.00277488

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0	-0.007
9		0	-0.006
10		0.00100005	-0.0059999
11		0	-0.007
13		0.00199997	-0.0090001
Average		0.0006	-0.007
MAX		0.00199997	-0.0059999
MIN		0	-0.0090001
STD_dev		0.00089442	0.00122478

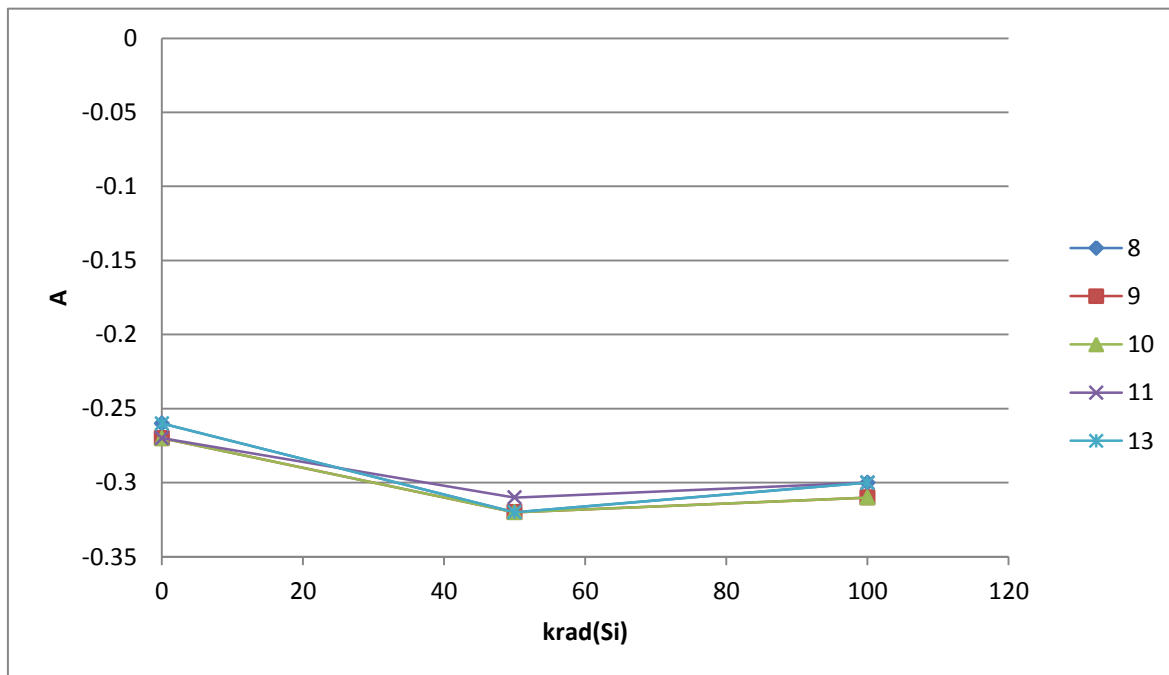


21.1 IOS @ VIN = 40V

Limit_Min -0.5 Limit_Max -0.05 A

Device ID	0.0 krad	51.0 krad	101.0 krad
8	-0.26	-0.32	-0.3
9	-0.27	-0.32	-0.31
10	-0.27	-0.32	-0.31
11	-0.27	-0.31	-0.3
13	-0.26	-0.32	-0.3
Average	-0.266	-0.318	-0.304
MAX	-0.26	-0.31	-0.3
MIN	-0.27	-0.32	-0.31
STD_dev	0.00547724	0.00447213	0.00547722

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-0.06	-0.04
9		-0.05	-0.04
10		-0.05	-0.04
11		-0.04	-0.03
13		-0.06	-0.04
Average		-0.052	-0.038
MAX		-0.04	-0.03
MIN		-0.06	-0.04
STD_dev		0.00836661	0.00447214

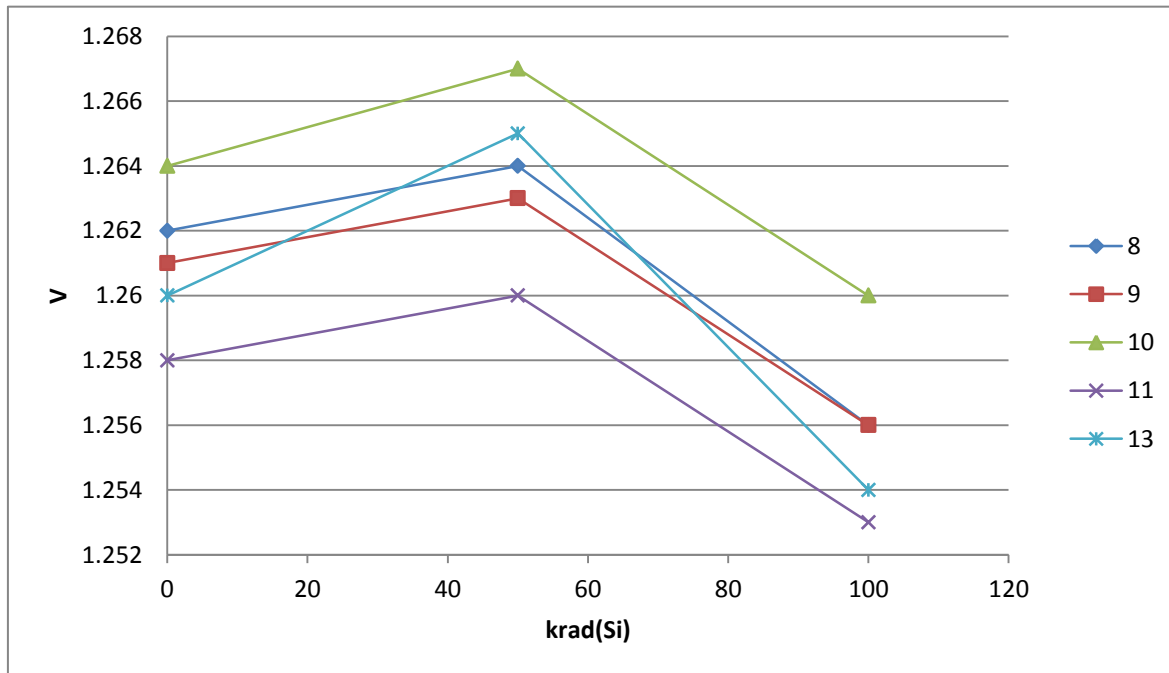


22.1 Vout Recovery @ VIN=41.25V

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
8	1.26199997	1.26400006	1.25600004
9	1.26100004	1.26300001	1.25600004
10	1.26400006	1.26699996	1.25999999
11	1.25800002	1.25999999	1.25300002
13	1.25999999	1.26499999	1.25399995
Average	1.26100001	1.2638	1.25580001
MAX	1.26400006	1.26699996	1.25999999
MIN	1.25800002	1.25999999	1.25300002
STD_dev	0.00223608	0.00258843	0.00268328

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.00200009	-0.0059999
9		0.00199997	-0.005
10		0.0029999	-0.0040001
11		0.00199997	-0.005
13		0.005	-0.006
Average		0.00279999	-0.0052
MAX		0.005	-0.0040001
MIN		0.00199997	-0.006
STD_dev		0.00130383	0.00083663

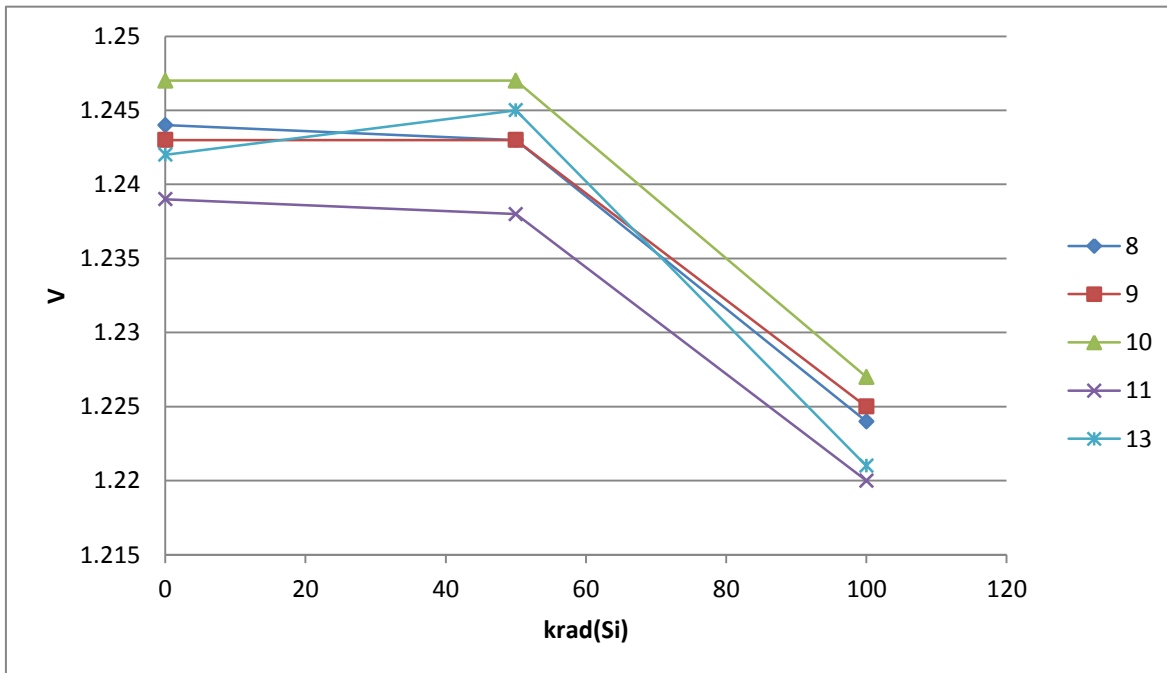


23.1 Voltage Start-up

Limit_Min 1.2 Limit_Max 1.3 V

Device ID	0.0 krad	51.0 krad	101.0 krad
8	1.24399996	1.24300003	1.22399998
9	1.24300003	1.24300003	1.22500002
10	1.24699998	1.24699998	1.227
11	1.23899996	1.23800004	1.22000003
13	1.24199998	1.24500001	1.22099996
Average	1.24299998	1.24320002	1.2234
MAX	1.24699998	1.24699998	1.227
MIN	1.23899996	1.23800004	1.22000003
STD_dev	0.00291548	0.00334662	0.00288097

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-0.0009999	-0.02
9		0	-0.018
10		0	-0.02
11		-0.0009999	-0.0189999
13		0.00300002	-0.021
Average		0.00020003	-0.0196
MAX		0.00300002	-0.018
MIN		-0.0009999	-0.021
STD_dev		0.00164315	0.00114019

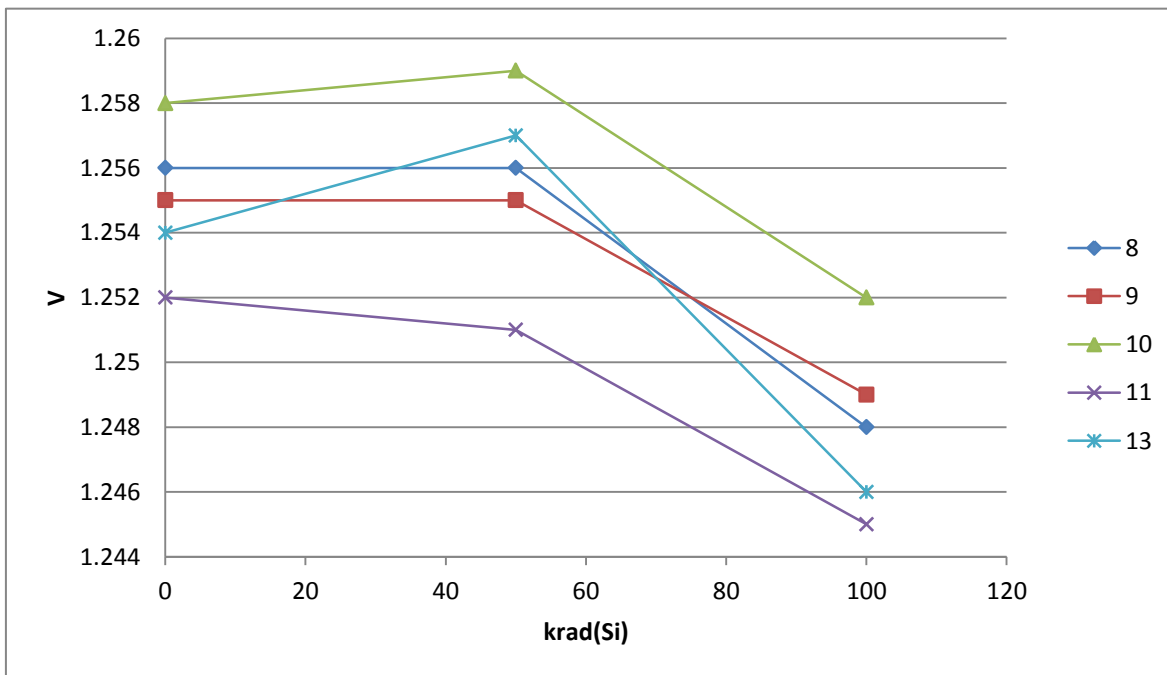


24.1 OUTPUT FUNCTIONAL CHECK

Limit_Min 1.2 Limit_Max 1.3 V

Device ID	0.0 krad	51.0 krad	101.0 krad
8	1.25600004	1.25600004	1.24800003
9	1.255	1.255	1.24899995
10	1.25800002	1.25899994	1.25199997
11	1.25199997	1.25100005	1.24500001
13	1.25399995	1.25699997	1.24600005
Average	1.255	1.2556	1.248
MAX	1.25800002	1.25899994	1.25199997
MIN	1.25199997	1.25100005	1.24500001
STD_dev	0.00223609	0.00296644	0.00273859

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0	-0.008
9		0	-0.006
10		0.00099993	-0.006
11		-0.00099999	-0.007
13		0.00300002	-0.0079999
Average		0.0006	-0.007
MAX		0.00300002	-0.006
MIN		-0.00099999	-0.008
STD_dev		0.00151656	0.00099996

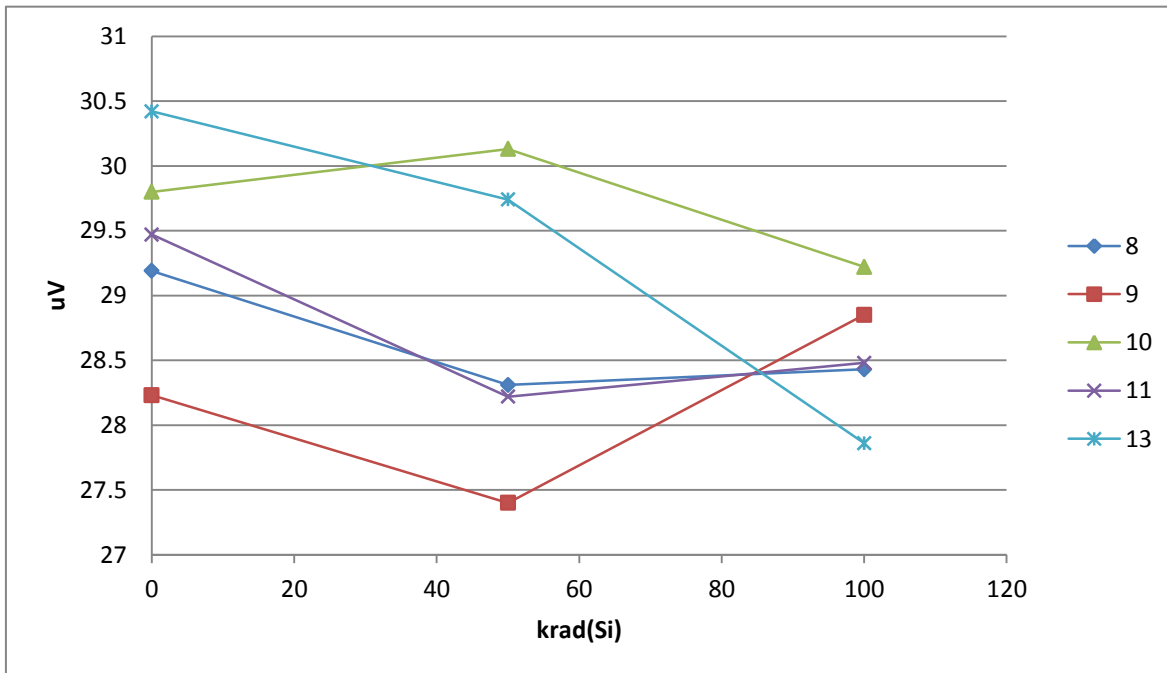


25.1 V (NOISE)

Limit_Min NA Limit_Max 120 uV

Device ID	0.0 krad	51.0 krad	101.0 krad
8	29.1900005	28.3099995	28.4300003
9	28.2299995	27.3999996	28.8500004
10	29.7999992	30.1299992	29.2199993
11	29.4699993	28.2199993	28.4799995
13	30.4200001	29.7399998	27.8600006
Average	29.4219997	28.7599995	28.568
MAX	30.4200001	30.1299992	29.2199993
MIN	28.2299995	27.3999996	27.8600006
STD_dev	0.80868417	1.13809045	0.50810394

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-0.8800011	-0.7600002
9		-0.8299999	0.62000084
10		0.32999992	-0.5799999
11		-1.25	-0.9899998
13		-0.6800003	-2.5599995
Average		-0.6620003	-0.8539997
MAX		0.32999992	0.62000084
MIN		-1.25	-2.5599995
STD_dev		0.59284912	1.13858691

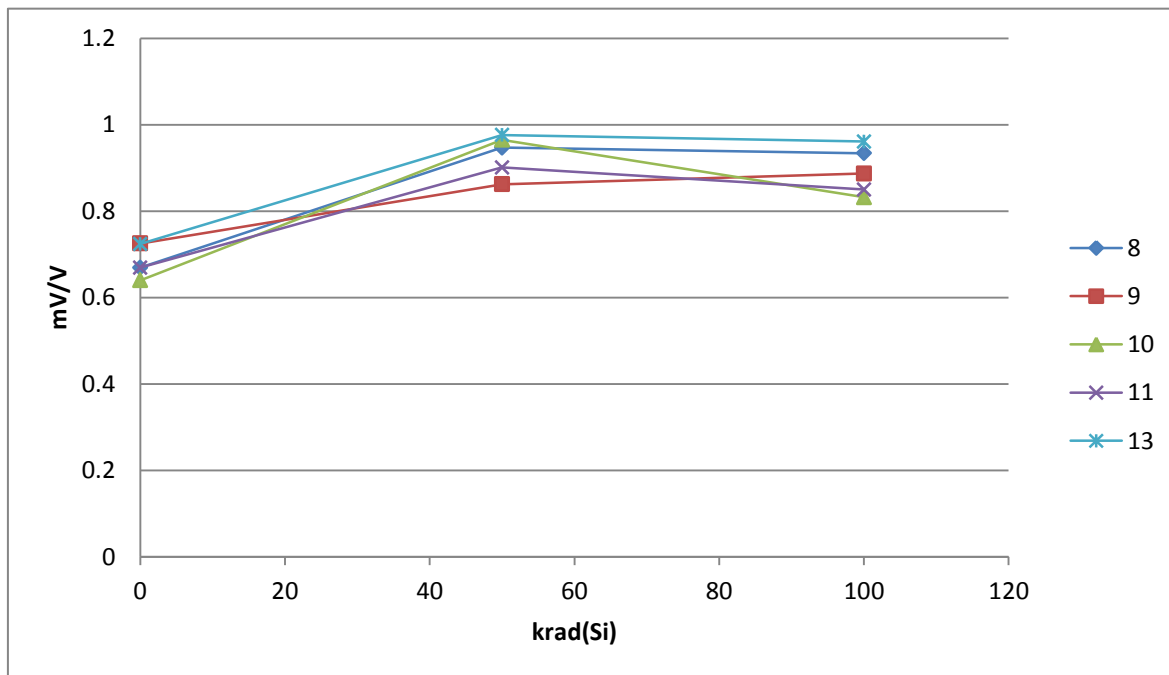


26.1 Line Transient Response

Limit_Min NA Limit_Max 6 mV/V

Device ID	0.0 krad	51.0 krad	101.0 krad
8	0.66900003	0.94700003	0.93400002
9	0.72500002	0.86199999	0.88700002
10	0.63999999	0.96499997	0.83200002
11	0.66900003	0.90100002	0.85000002
13	0.72399998	0.97600001	0.96100003
Average	0.68540001	0.9302	0.89280002
MAX	0.72500002	0.97600001	0.96100003
MIN	0.63999999	0.86199999	0.83200002
STD_dev	0.03760718	0.04768333	0.05456831

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.278	0.26499999
9		0.13699997	0.162
10		0.32499999	0.19200003
11		0.23199999	0.18099999
13		0.25200003	0.23700005
Average		0.2448	0.20740001
MAX		0.32499999	0.26499999
MIN		0.13699997	0.162
STD_dev		0.06958952	0.04239458

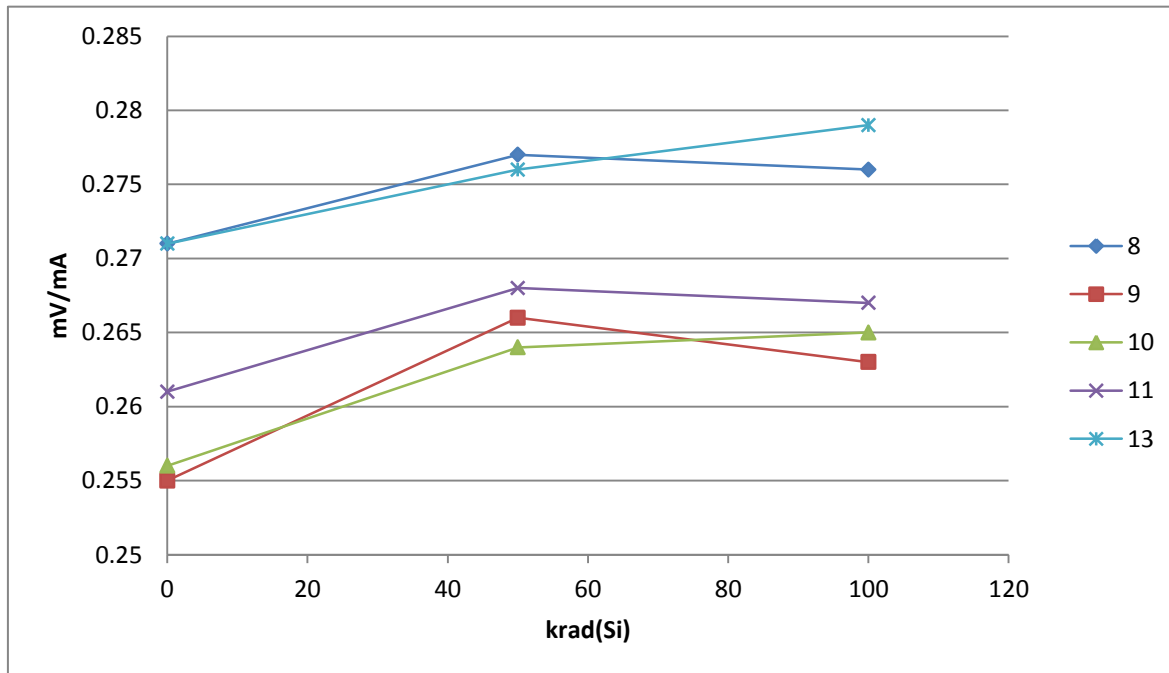


27.1 Load Transient Response

Limit_Min NA Limit_Max 0.6 mV/mA

Device ID	0.0 krad	51.0 krad	101.0 krad
8	0.271	0.27700001	0.27599999
9	0.255	0.266	0.26300001
10	0.25600001	0.264	0.26499999
11	0.26100001	0.26800001	0.26699999
13	0.271	0.27599999	0.27900001
Average	0.2628	0.2702	0.27
MAX	0.271	0.27700001	0.27900001
MIN	0.255	0.264	0.26300001
STD_dev	0.00782304	0.00593296	0.00707107

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		0.00600001	0.00499999
9		0.01100001	0.00800002
10		0.00799999	0.00899997
11		0.007	0.00599998
13		0.00499999	0.00800002
Average		0.0074	0.0072
MAX		0.01100001	0.00899997
MIN		0.00499999	0.00499999
STD_dev		0.00230217	0.00164317

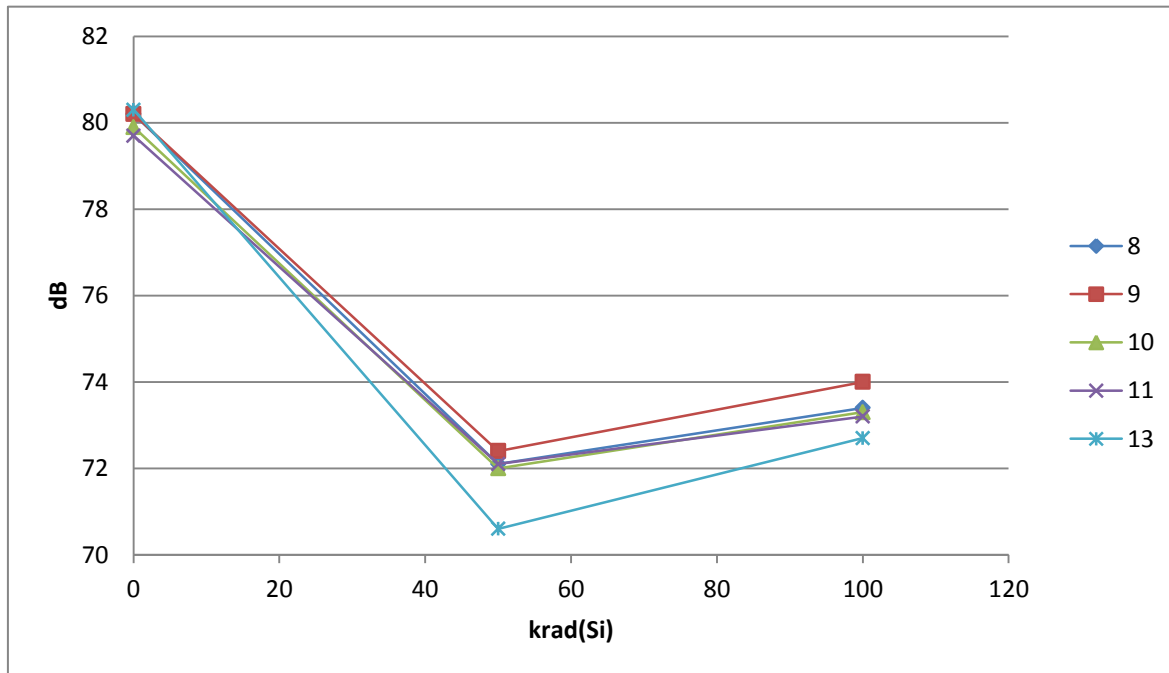


28.1 RIPPLE REJECTION @ 2400HZ, IL=125MA

Limit_Min 60 Limit_Max NA dB

Device ID	0.0 krad	51.0 krad	101.0 krad
8	80.1999969	72.0999985	73.4000015
9	80.1999969	72.4000015	74
10	79.9000015	72	73.3000031
11	79.6999969	72.0999985	73.1999969
13	80.3000031	70.5999985	72.6999969
Average	80.0599991	71.8399994	73.3199997
MAX	80.3000031	72.4000015	74
MIN	79.6999969	70.5999985	72.6999969
STD_dev	0.25099874	0.70922562	0.46583383

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
8		-8.0999985	-6.7999954
9		-7.7999954	-6.1999969
10		-7.9000015	-6.5999985
11		-7.5999985	-6.5
13		-9.7000046	-7.6000061
Average		-8.2199997	-6.7399994
MAX		-7.5999985	-6.1999969
MIN		-9.7000046	-7.6000061
STD_dev		0.84676128	0.52726029



Texas Instruments Incorporated
Radiation Effects Laboratory
Santa Clara, California 95052

ANALOG TOTAL DOSE RADIATION REPORT
Low Dose Rate

Customer: Rad Wafer Qual.

Part Type: LM117xRLQMLV SMD# 5962R99517

Input Bias Circuit: Unbiased (0V)

Dose Rate: 10 mrad(Si)/sec (Low Dose)

Test Program Used: LM00117CA/RAD0117CA

Tester: ETS500 Operator: Thang Trinh

Wafer Run Number: 3011508

Wafer Number: 16

Package Type: H03A

Production Lot #: KX3617C019

IPI #: N/A

Disposition: Passes 100 krad Total Ionizing Dose with units Unbiased (0V) during irradiation.

Summary:

Passes Room Temp @: Pre-rad, Post 50krad and Post 100krad.

Part Out of Room Temp Spec @: N/A

Functional Failed @: N/A

Parameters over Limit: N/A

Prepared by: Thang Trinh%* -Jul-15

Approved by Radiation Engineer: Kirby Kruckmeyer%* -Jul-15

**Standard Test Flow Sheet For Rad Testing
Customer Special Attachment
Rad Tolerant Linear**

NSID# LM117xRLQMLV **LOT#** KX3617C019 W#16 **IPI** N/A

Test Program: LM00117CA/RAD0117C

Machine: ETS500 **Operator:** Thang Trinh **Bias Board:** 0V (Unbiased)

Start Date: 01-Jan-19 **Start Time** 11:43

Finish Date: 27-Jun-15 **Finish Time** 07:43 **Radiation Officer:** FIJ-Jul-15

Control Units s/n: #___1___ #___2___

Duts : #___14___ #___15___ #___16___ #___17___ #___18___

Location Step	Operation Mtd/Cond	Qty In	Qty Out	Var	Mech	Rej	FF
PASS	Pre - Rad Read/Rec. Tp1	5	5	0	0	0	0
	<i>Irradiation</i> 50k <i>Level</i>	5	5	0	0	N/A	N/A
PASS	Post Rad Read/Rec. Tp2	5	5	0	0	0	0
	<i>Irradiation</i> 100k <i>Level</i>	5	5	0	0	N/A	N/A
PASS	Post Rad Read/Rec. Tp3	5	5	0	0	0	0

Notes:

All irradiation's are done per MIL-STD-883, Method 1019

This report includes Data and Plots for each individual unit at each level of total doses.

It also includes data calculation for Standard Deviation, Maximum, Average and Minimum for both Raw Data and Delta between each of the Rad Level to Pre-Rad (0krad) data

The Test #, Test Name, Test Condition and Limits are also included in this report.

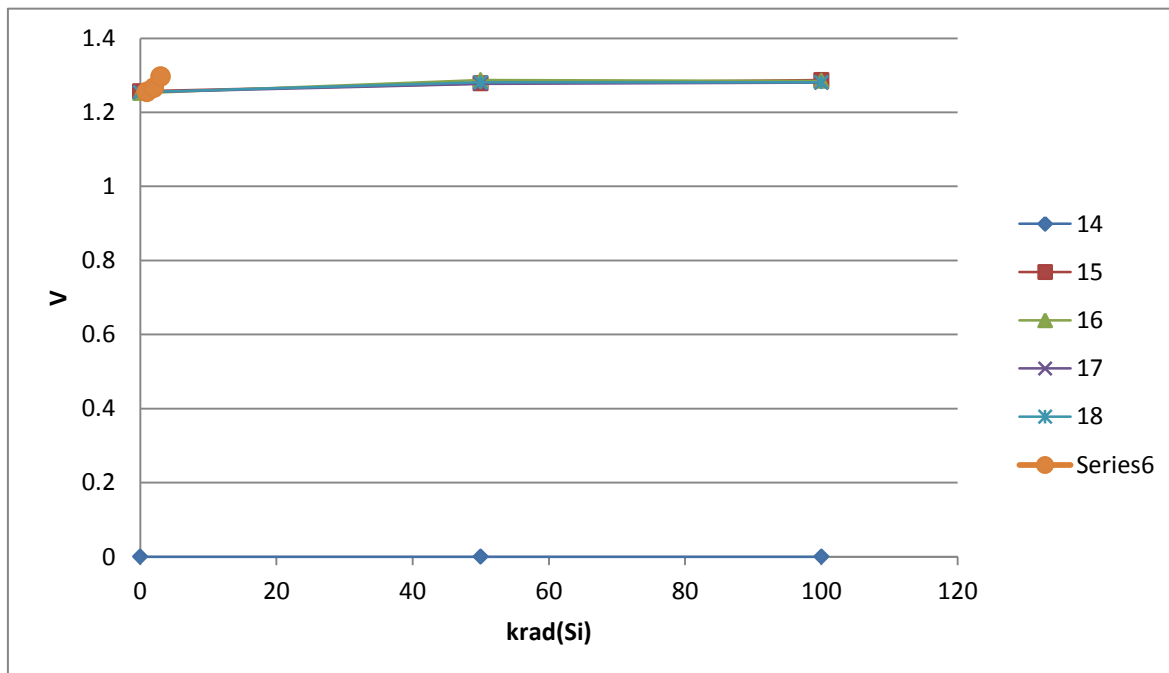
** Test Units were assembled in 3 leads NTD003A / H03A Metal Can Package.*

3.1 VREF @ VIN=4.25V,IL=5MA

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
14	1.25699997	1.278	1.28699994
15	1.25199997	1.28699994	1.28499997
16	1.25399995	1.27699995	1.27999997
17	1.25399995	1.28100002	1.28100002
18	1.255	1.26600003	1.296
Average	1.25439997	1.27779999	1.28579998
MAX	1.25699997	1.28699994	1.296
MIN	1.25199997	1.26600003	1.27999997
STD_dev	0.00181659	0.00766157	0.00637966

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.02100003	0.02999997
15		0.03499997	0.03299999
16		0.023	0.02600002
17		0.02700007	0.02700007
18		0.01100004	0.04100001
Average		0.02340002	0.03140001
MAX		0.03499997	0.04100001
MIN		0.01100004	0.02600002
STD_dev		0.00876354	0.00602494

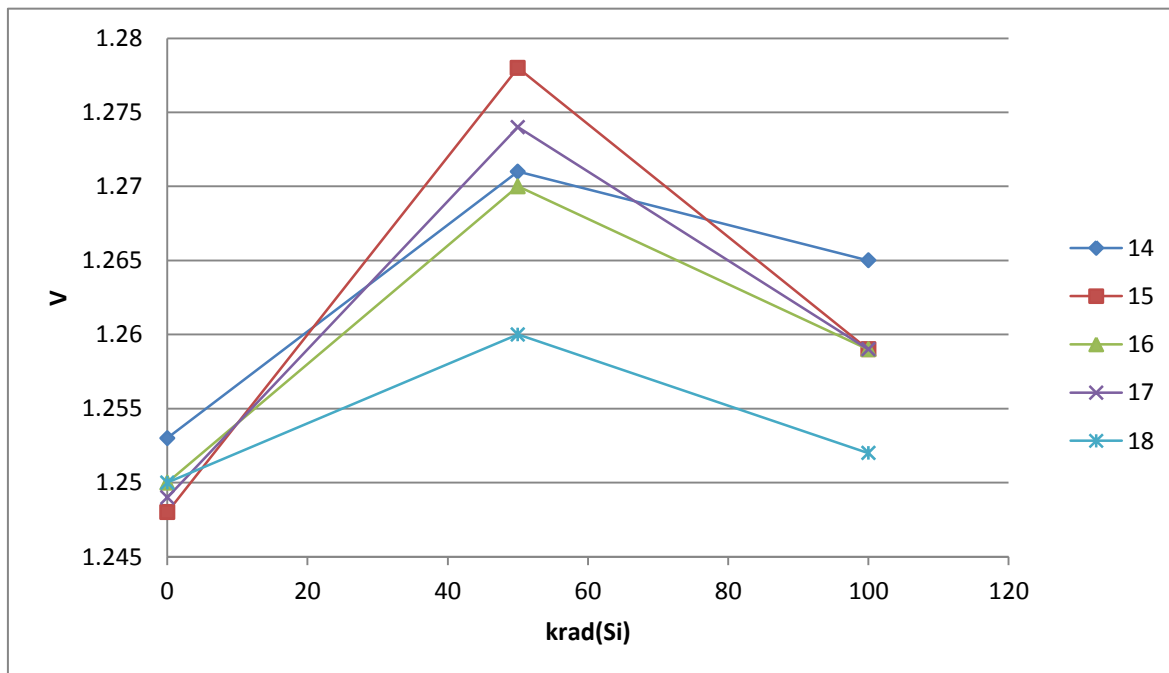


4.1 VREF @ VIN=4.25V, IL=500MA

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
14	1.25300002	1.27100003	1.26499999
15	1.24800003	1.278	1.25899994
16	1.25	1.26999998	1.25899994
17	1.24899995	1.27400005	1.25899994
18	1.25	1.25999999	1.25199997
Average	1.25	1.27060001	1.25879996
MAX	1.25300002	1.278	1.26499999
MIN	1.24800003	1.25999999	1.25199997
STD_dev	0.00187084	0.00669329	0.00460435

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.01800001	0.01199997
15		0.02999997	0.01099992
16		0.01999998	0.00899994
17		0.0250001	0.00999999
18		0.00999999	0.00199997
Average		0.02060001	0.00879996
MAX		0.02999997	0.01199997
MIN		0.00999999	0.00199997
STD_dev		0.00753659	0.00396231

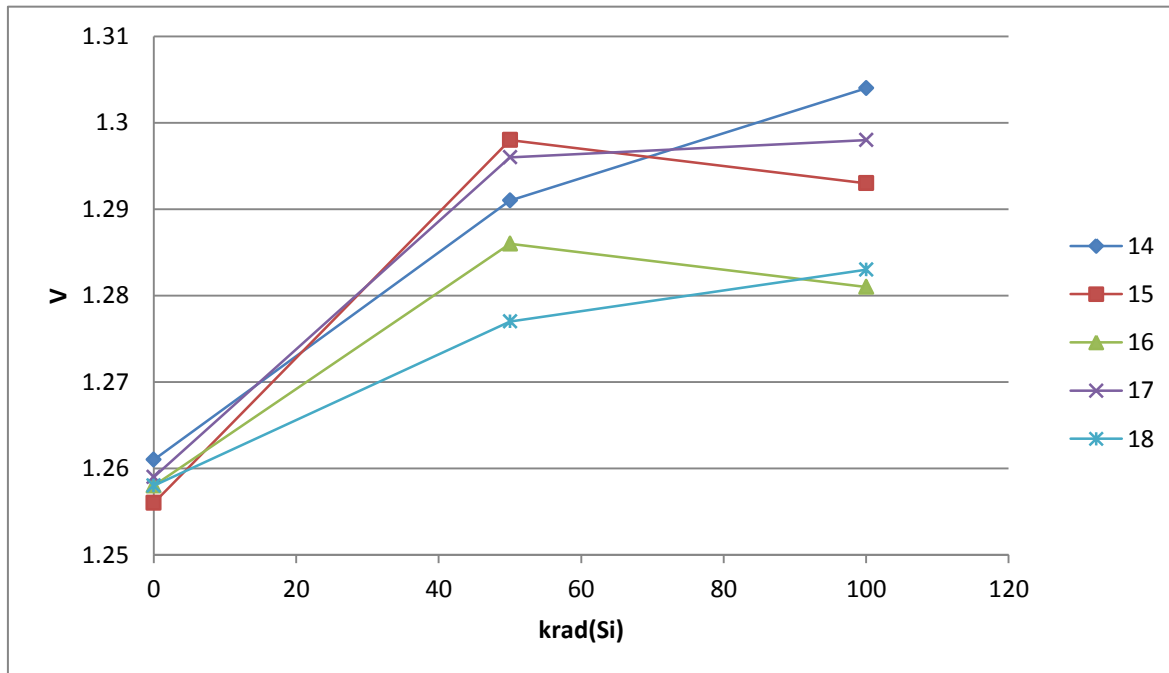


5.1 VREF @ VIN=41.25V, IL=5MA

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
14	1.26100004	1.29100001	1.30400002
15	1.25600004	1.29799998	1.29299998
16	1.25800002	1.28600001	1.28100002
17	1.25899994	1.296	1.29799998
18	1.25800002	1.27699995	1.28299999
Average	1.25840001	1.28959999	1.2918
MAX	1.26100004	1.29799998	1.30400002
MIN	1.25600004	1.27699995	1.28100002
STD_dev	0.00181658	0.00844395	0.00978264

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.02999997	0.04299998
15		0.04199994	0.03699994
16		0.028	0.023
17		0.03700006	0.03900003
18		0.01899993	0.02499998
Average		0.03119998	0.03339999
MAX		0.04199994	0.04299998
MIN		0.01899993	0.023
STD_dev		0.00881477	0.00887694

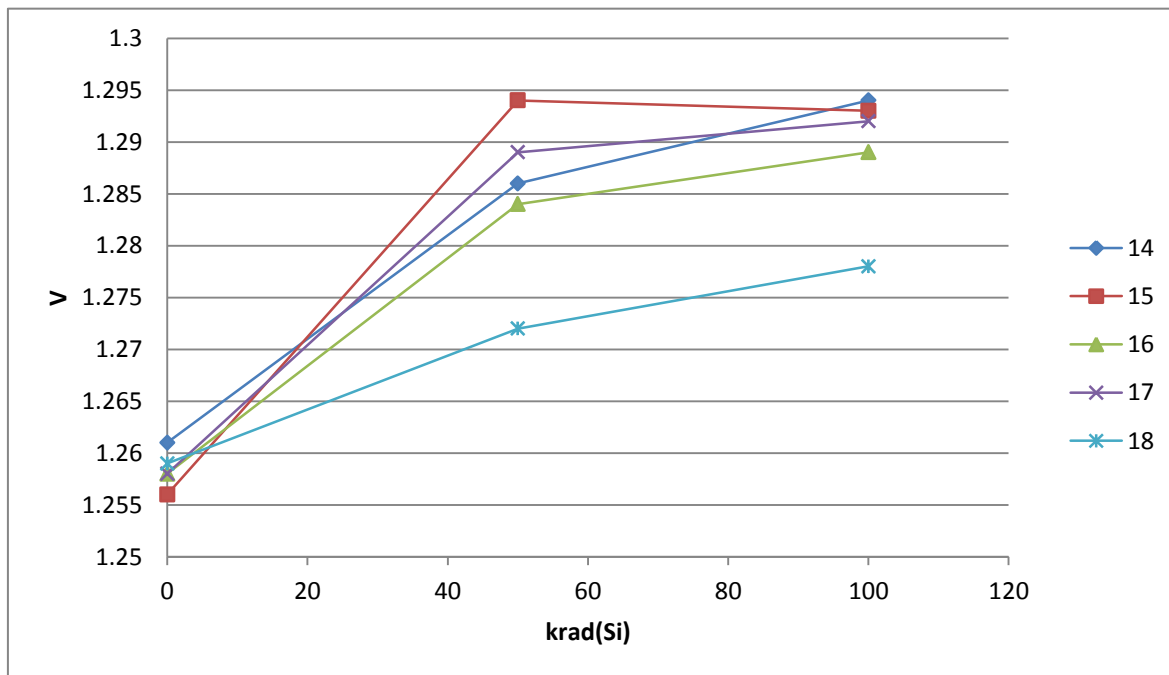


6.1 VREF @ VIN=41.25V, IL=50MA

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
14	1.26100004	1.28600001	1.29400003
15	1.25600004	1.29400003	1.29299998
16	1.25800002	1.28400004	1.28900003
17	1.25800002	1.28900003	1.29200006
18	1.25899994	1.27199996	1.278
Average	1.25840001	1.28500001	1.28920002
MAX	1.26100004	1.29400003	1.29400003
MIN	1.25600004	1.27199996	1.278
STD_dev	0.00181658	0.00818538	0.00653453

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.02499998	0.03299999
15		0.03799999	0.03699994
16		0.02600002	0.03100002
17		0.03100002	0.03400004
18		0.01300001	0.01900005
Average		0.0266	0.03080001
MAX		0.03799999	0.03699994
MIN		0.01300001	0.01900005
STD_dev		0.0091815	0.00694259

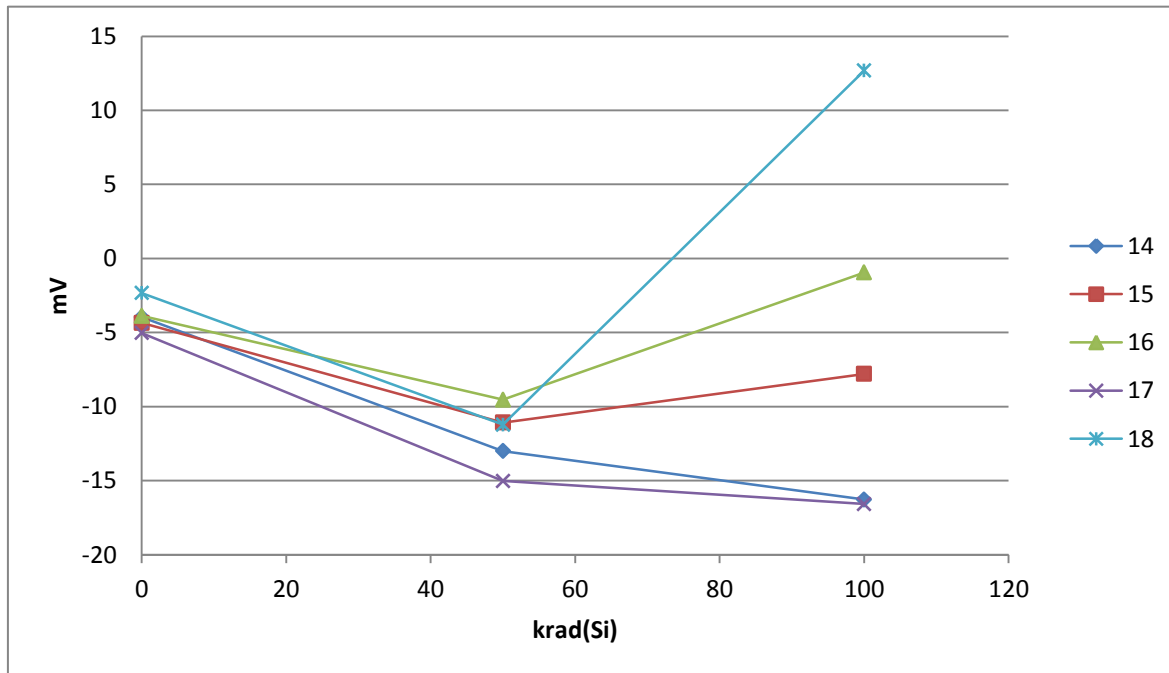


7.1 VRLINE @ 3V<=VDIFF<=40V,IL=5MA

Limit_Min -25 Limit_Max 25 mV

Device ID	0.0 krad	51.0 krad	101.0 krad
14	-3.96	-13	-16.280001
15	-4.3499999	-11.08	-7.8000002
16	-3.8800001	-9.54	-0.95
17	-5.0300002	-15.02	-16.58
18	-2.3299999	-11.22	12.6800003
Average	-3.91	-11.972	-5.7860001
MAX	-2.3299999	-9.54	12.6800003
MIN	-5.0300002	-15.02	-16.58
STD_dev	0.99345365	2.09898087	12.197036

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-9.04	-12.320001
15		-6.73	-3.4500003
16		-5.6599998	2.93000013
17		-9.9900002	-11.55
18		-8.8900003	15.0100002
Average		-8.0620001	-1.8760001
MAX		-5.6599998	15.0100002
MIN		-9.9900002	-12.320001
STD_dev		1.79604302	11.328896

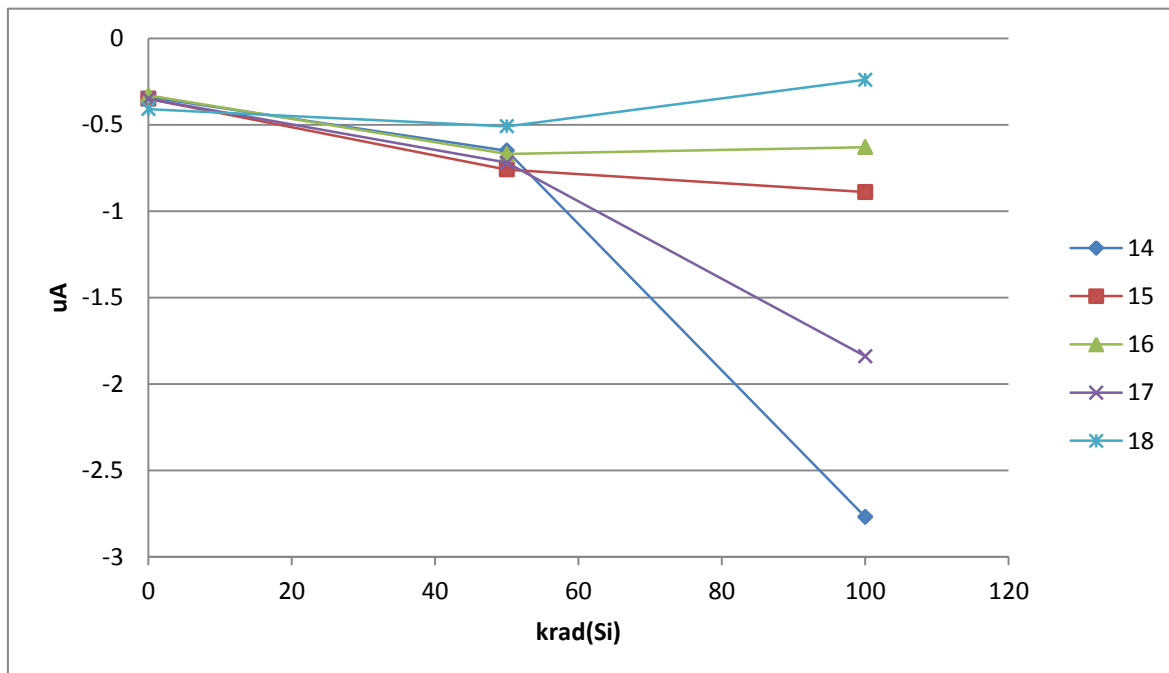


8.1 DELTA IADJ @ 3V<=VDIFF<=40V

Limit_Min -5 Limit_Max 5 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
14	-0.34	-0.65	-2.77
15	-0.35	-0.76	-0.89
16	-0.33	-0.67	-0.63
17	-0.35	-0.72	-1.84
18	-0.41	-0.51	-0.24
Average	-0.356	-0.662	-1.274
MAX	-0.33	-0.51	-0.24
MIN	-0.41	-0.76	-2.77
STD_dev	0.03130495	0.09523655	1.02344028

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-0.31	-2.43
15		-0.41	-0.54
16		-0.34	-0.3
17		-0.37	-1.49
18		-0.1	0.17
Average		-0.306	-0.918
MAX		-0.1	0.17
MIN		-0.41	-2.43
STD_dev		0.12095454	1.03945659

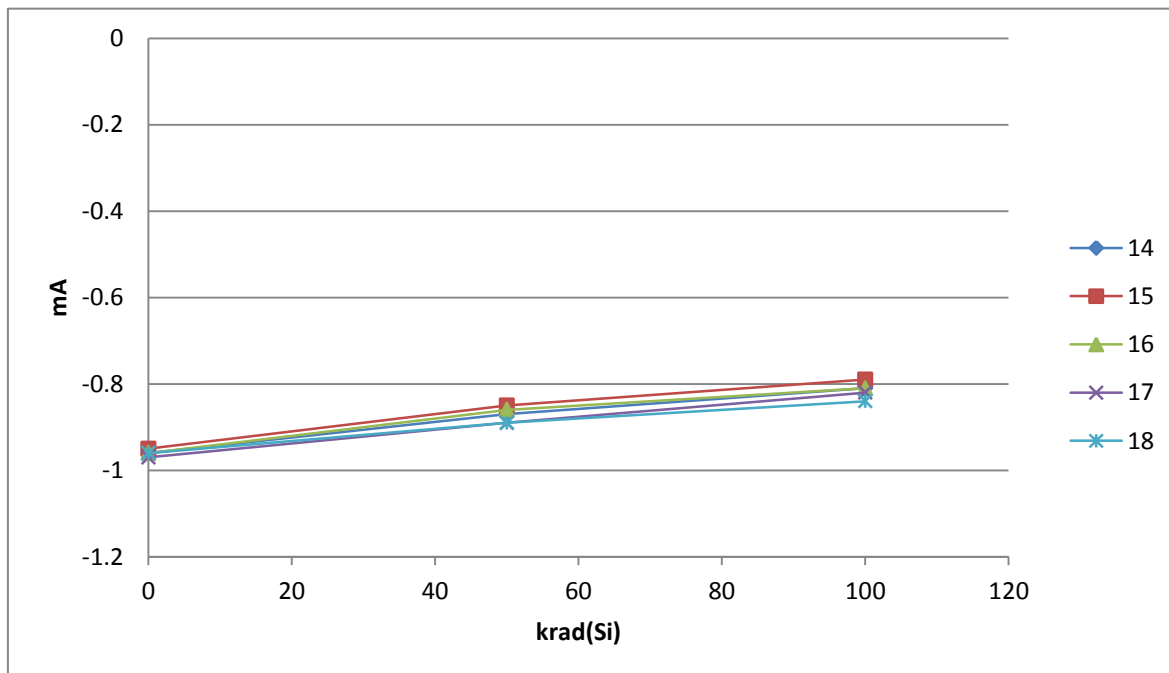


9.1 IQ @ VIN=4.25V

Limit_Min -3 Limit_Max -0.5 mA

Device ID	0.0 krad	51.0 krad	101.0 krad
14	-0.96	-0.87	-0.81
15	-0.95	-0.85	-0.79
16	-0.96	-0.86	-0.81
17	-0.97	-0.89	-0.82
18	-0.96	-0.89	-0.84
Average	-0.96	-0.872	-0.814
MAX	-0.95	-0.85	-0.79
MIN	-0.97	-0.89	-0.84
STD_dev	0.00707108	0.01788853	0.01816589

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.08999997	0.14999998
15		0.09999996	0.15999997
16		0.09999997	0.14999998
17		0.08000004	0.15000004
18		0.06999999	0.12000001
Average		0.08799999	0.14599999
MAX		0.09999997	0.15999997
MIN		0.06999999	0.12000001
STD_dev		0.01303838	0.01516574

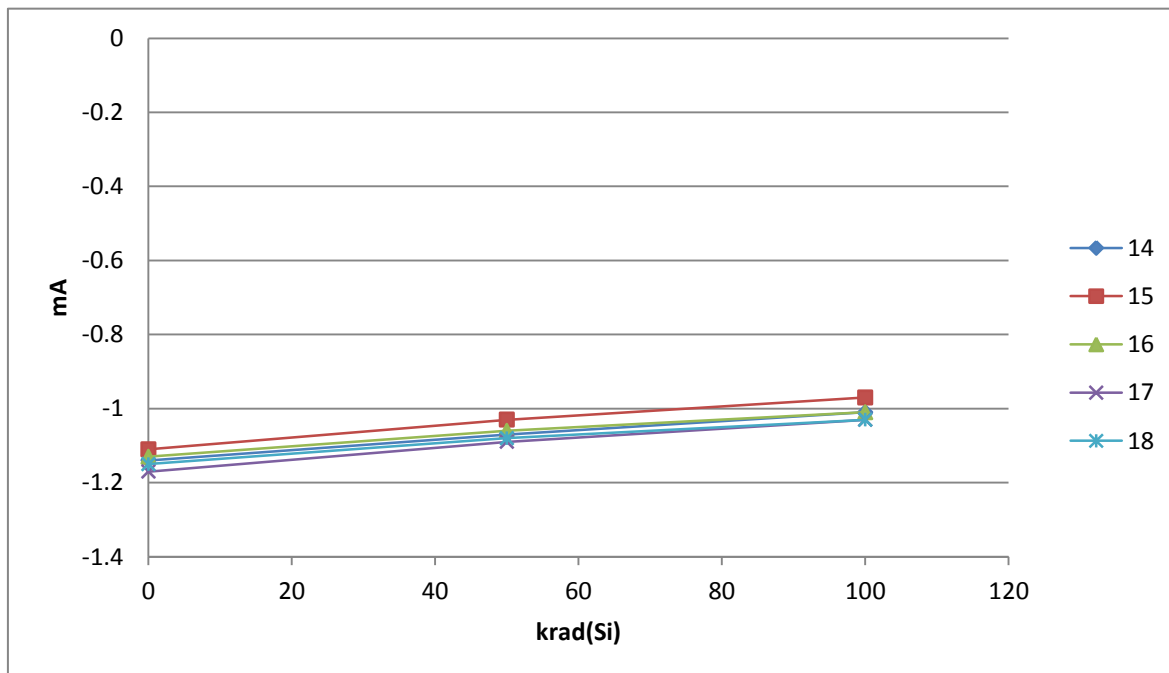


10.1 IQ @ VIN=14.25V

Limit_Min -3 Limit_Max -0.5 mA

Device ID	0.0 krad	51.0 krad	101.0 krad
14	-1.14	-1.0700001	-1.01
15	-1.11	-1.03	-0.97
16	-1.13	-1.0599999	-1.01
17	-1.17	-1.09	-1.03
18	-1.15	-1.08	-1.03
Average	-1.14	-1.066	-1.01
MAX	-1.11	-1.03	-0.97
MIN	-1.17	-1.09	-1.03
STD_dev	0.02236066	0.02302176	0.02449487

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.06999993	0.13
15		0.08000004	0.13999999
16		0.07000005	0.12
17		0.07999992	0.13999999
18		0.06999993	0.12
Average		0.07399998	0.13
MAX		0.08000004	0.13999999
MIN		0.06999993	0.12
STD_dev		0.00547723	0.00999999

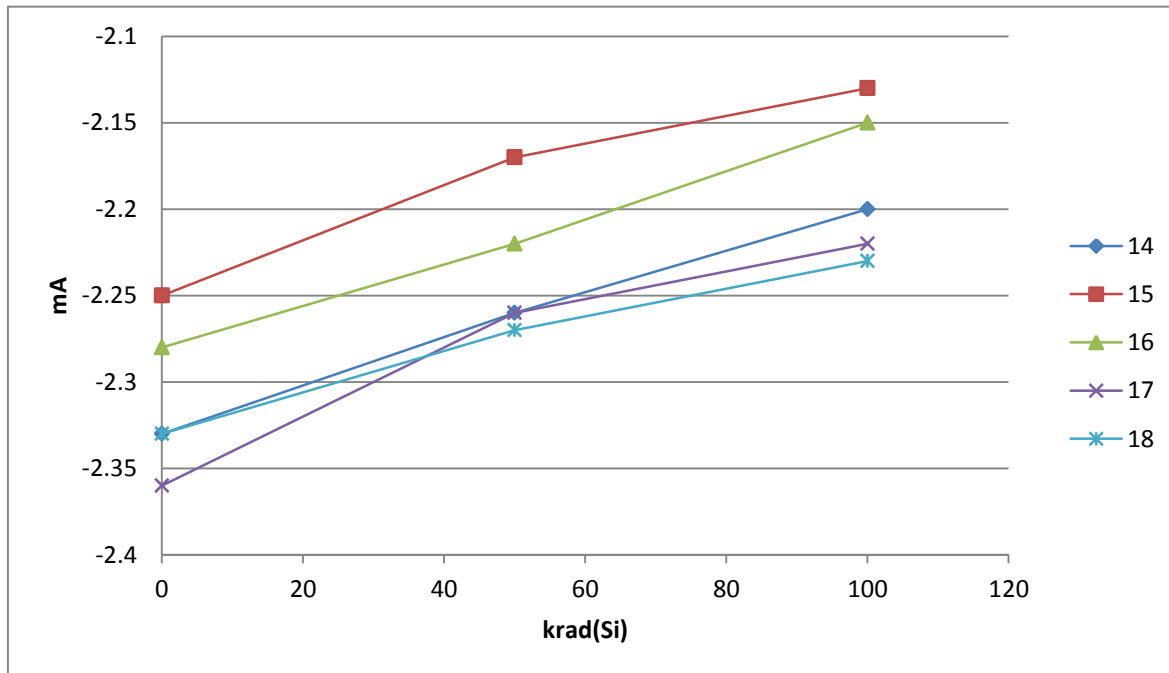


11.1 IQ @ VIN=41.25V

Limit_Min -5 Limit_Max -1 mA

Device ID	0.0 krad	51.0 krad	101.0 krad
14	-2.3299999	-2.26	-2.2
15	-2.25	-2.1700001	-2.1300001
16	-2.28	-2.22	-2.1500001
17	-2.3599999	-2.26	-2.22
18	-2.3299999	-2.27	-2.23
Average	-2.3099999	-2.236	-2.1860001
MAX	-2.25	-2.1700001	-2.1300001
MIN	-2.3599999	-2.27	-2.23
STD_dev	0.04415876	0.04159323	0.04393172

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.06999993	0.12999988
15		0.07999992	0.11999989
16		0.05999994	0.12999988
17		0.09999991	0.13999987
18		0.05999994	0.0999999
Average		0.07399993	0.12399988
MAX		0.09999991	0.13999987
MIN		0.05999994	0.0999999
STD_dev		0.01673318	0.01516574

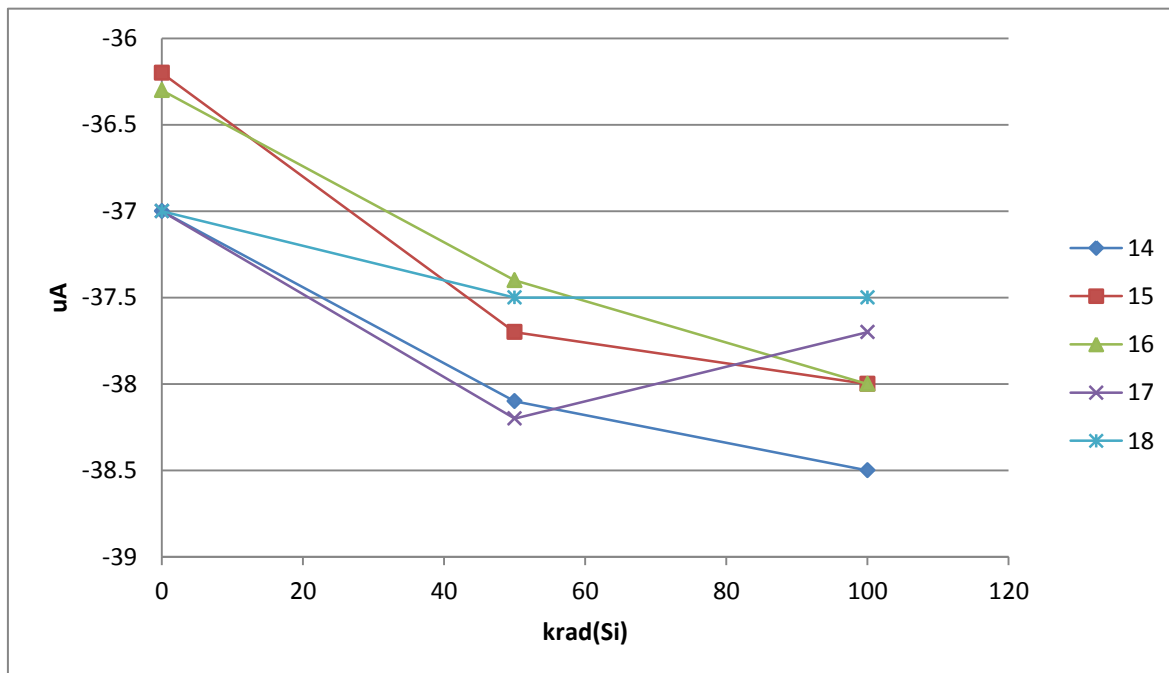


12.1 IADJ @ VDIFF=3V, IL=8MA

Limit_Min -99.9 Limit_Max -15 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
14	-37	-38.099998	-38.5
15	-36.200001	-37.700001	-38
16	-36.299999	-37.400002	-38
17	-37	-38.200001	-37.700001
18	-37	-37.5	-37.5
Average	-36.7	-37.78	-37.94
MAX	-36.200001	-37.400002	-37.5
MIN	-37	-38.200001	-38.5
STD_dev	0.41231052	0.35637003	0.37815329

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-1.0999985	-1.5
15		-1.5	-1.7999992
16		-1.1000023	-1.7000008
17		-1.2000008	-0.7000008
18		-0.5	-0.5
Average		-1.0800003	-1.2400002
MAX		-0.5	-0.5
MIN		-1.5	-1.7999992
STD_dev		0.36331812	0.59833081

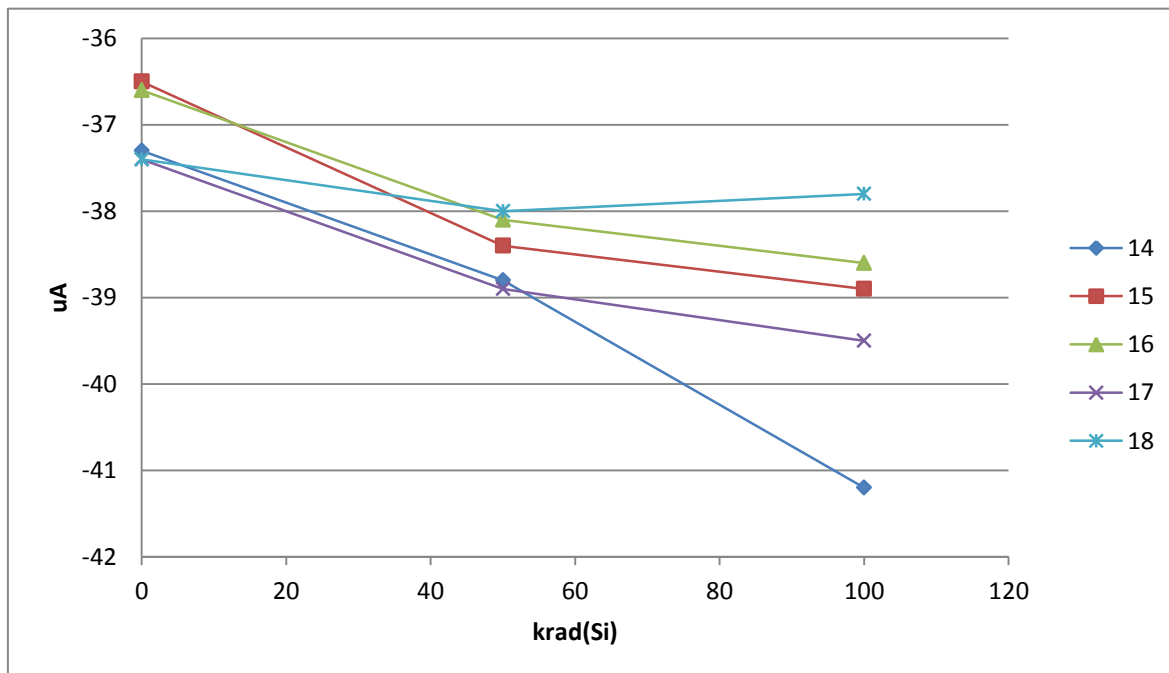


13.1 IADJ @ =40V, IL=8MA

Limit_Min -99.9 Limit_Max -15 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
14	-37.299999	-38.799999	-41.200001
15	-36.5	-38.400002	-38.900002
16	-36.599998	-38.099998	-38.599998
17	-37.400002	-38.900002	-39.5
18	-37.400002	-38	-37.799999
Average	-37.04	-38.44	-39.2
MAX	-36.5	-38	-37.799999
MIN	-37.400002	-38.900002	-41.200001
STD_dev	0.45055609	0.40373313	1.27475548

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-1.5	-3.9000015
15		-1.9000015	-2.4000015
16		-1.5	-2
17		-1.5	-2.0999985
18		-0.5999985	-0.3999977
Average		-1.4	-2.1599998
MAX		-0.5999985	-0.3999977
MIN		-1.9000015	-3.9000015
STD_dev		0.47958419	1.24619564

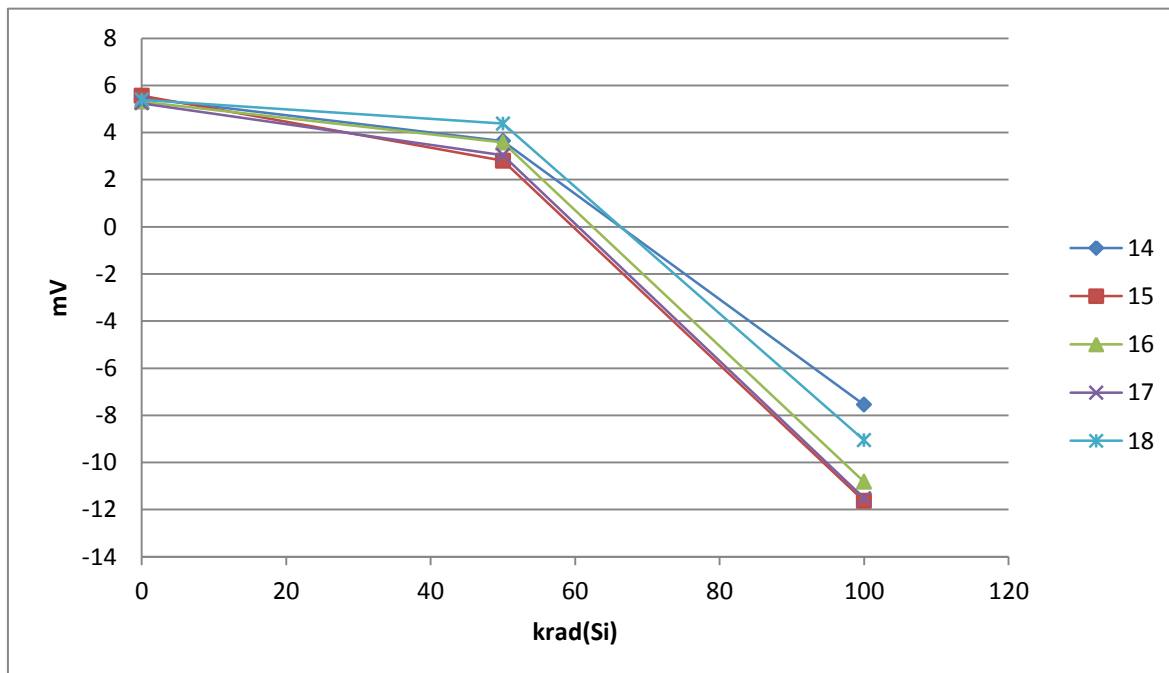


14.1 VRLOAD @ VIN=6.25V, 5MA<=IL<=0.5A

Limit_Min -12 Limit_Max 12 mV

Device ID	0.0 krad	51.0 krad	101.0 krad
14	5.46999979	3.64000011	-7.5500002
15	5.55999994	2.79999995	-11.64
16	5.30999994	3.57999992	-10.82
17	5.23999977	3.03999996	-11.52
18	5.38999987	4.38000011	-9.0600004
Average	5.39399986	3.48800001	-10.118
MAX	5.55999994	4.38000011	-7.5500002
MIN	5.23999977	2.79999995	-11.64
STD_dev	0.12660967	0.61263372	1.76698048

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-1.82999997	-13.02
15		-2.76	-17.2
16		-1.73	-16.13
17		-2.19999998	-16.76
18		-1.00999998	-14.45
Average		-1.9059999	-15.512
MAX		-1.00999998	-13.02
MIN		-2.76	-17.2
STD_dev		0.64329627	1.74116919

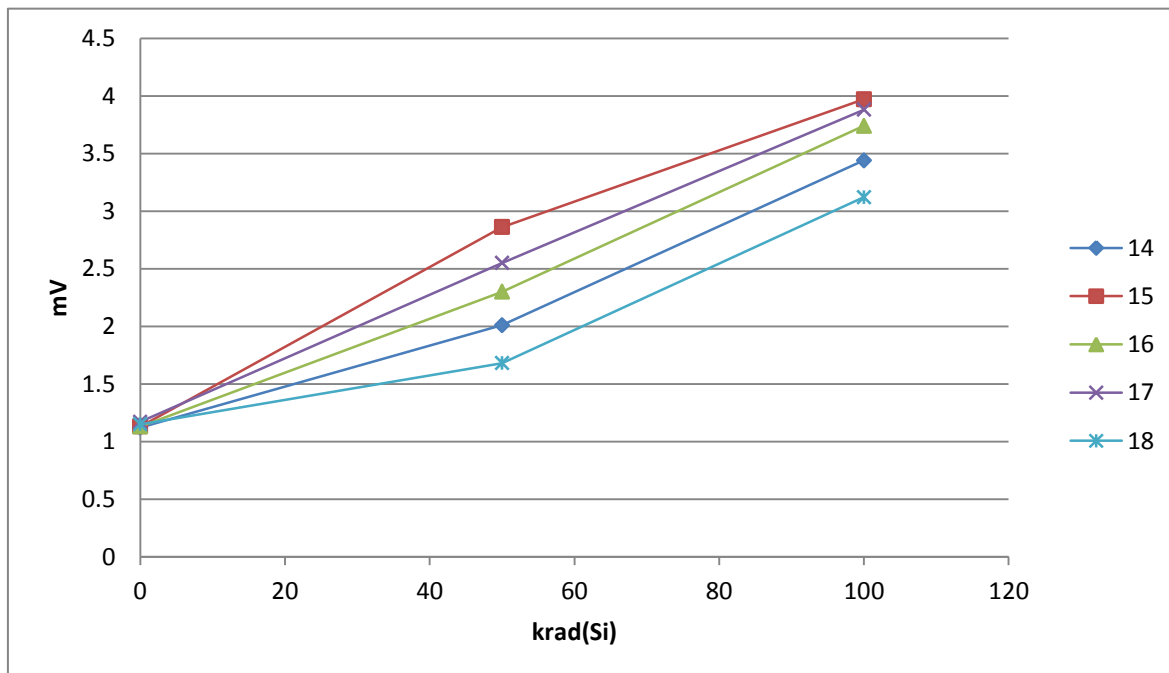


15.1 VRLOAD @ VIN=41.25V, 5MA<=IL<=50MA

Limit_Min -12 Limit_Max 12 mV

Device ID	0.0 krad	51.0 krad	101.0 krad
14	1.12000001	2.00999999	3.44000006
15	1.13	2.8599999	3.97000003
16	1.13	2.29999995	3.74000001
17	1.16999996	2.54999995	3.88000011
18	1.14999998	1.67999995	3.11999989
Average	1.13999999	2.27999995	3.63000002
MAX	1.16999996	2.8599999	3.97000003
MIN	1.12000001	1.67999995	3.11999989
STD_dev	0.01999998	0.45896621	0.34871198

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.88999999	2.32000005
15		1.7299999	2.84000003
16		1.16999996	2.61000002
17		1.38	2.71000016
18		0.52999997	1.96999991
Average		1.13999996	2.49000003
MAX		1.7299999	2.84000003
MIN		0.52999997	1.96999991
STD_dev		0.45858476	0.34806615

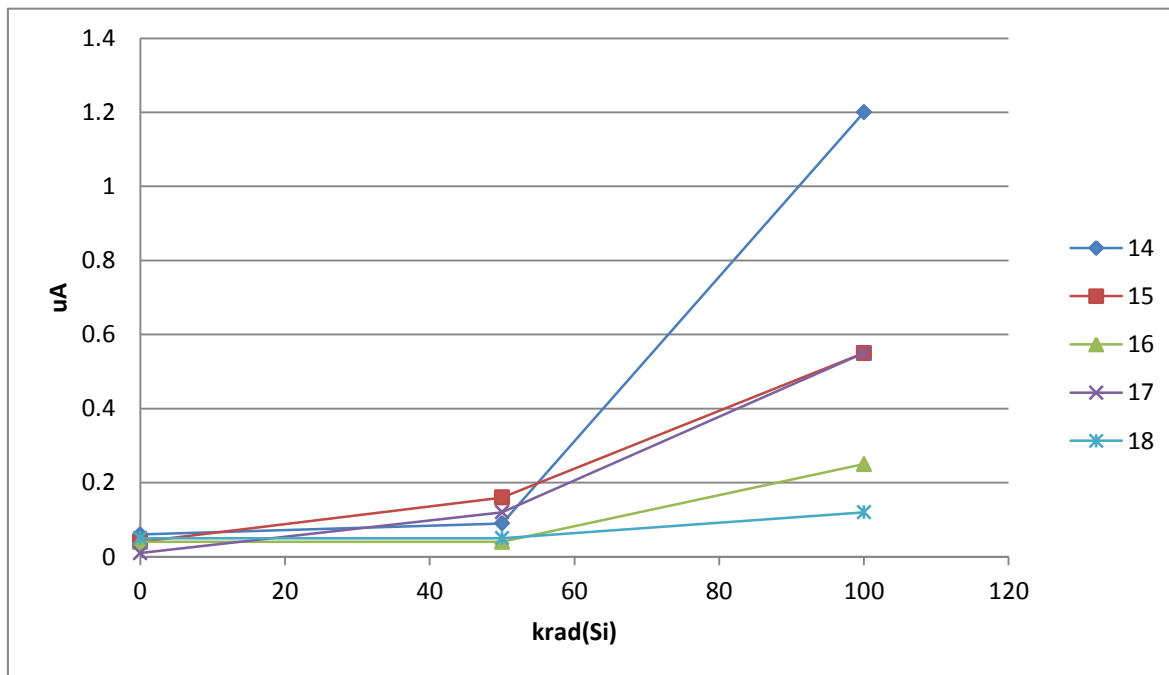


16.1 DELTA IADJ @ VIN=6.25V, 5MA<=IL<=0.5A

Limit_Min -5 Limit_Max 5 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
14	0.06	0.09	1.20000005
15	0.04	0.16	0.55000001
16	0.04	0.04	0.25
17	0.01	0.12	0.55000001
18	0.05	0.05	0.12
Average	0.04	0.092	0.53400001
MAX	0.06	0.16	1.20000005
MIN	0.01	0.04	0.12
STD_dev	0.01870829	0.04969909	0.41716905

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.03	1.14000005
15		0.12	0.51000001
16		0	0.21
17		0.11	0.54000001
18		0	0.07
Average		0.052	0.49400001
MAX		0.12	1.14000005
MIN		0	0.07
STD_dev		0.0589067	0.41234696

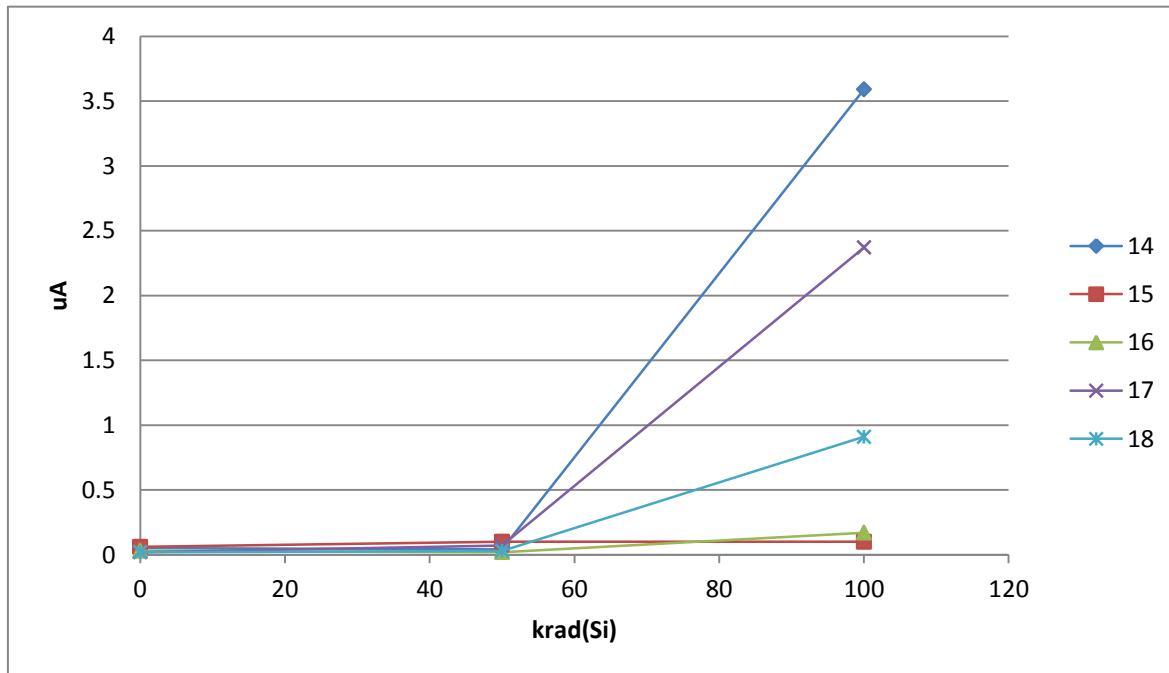


17.1 DELTA IADJ @ VDIFF=40V, 10MA<=IL<=150MA

Limit_Min -5 Limit_Max 5 uA

Device ID	0.0 krad	51.0 krad	101.0 krad
14	0.05	0.04	3.58999991
15	0.06	0.1	0.1
16	0.03	0.02	0.17
17	0.02	0.07	2.36999989
18	0.02	0.03	0.91000003
Average	0.036	0.052	1.42799997
MAX	0.06	0.1	3.58999991
MIN	0.02	0.02	0.1
STD_dev	0.0181659	0.03271086	1.51460221

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-0.01	3.53999991
15		0.04	0.04
16		-0.01	0.14
17		0.05	2.34999989
18		0.01	0.89000003
Average		0.016	1.39199997
MAX		0.05	3.53999991
MIN		-0.01	0.04
STD_dev		0.02792848	1.51484978

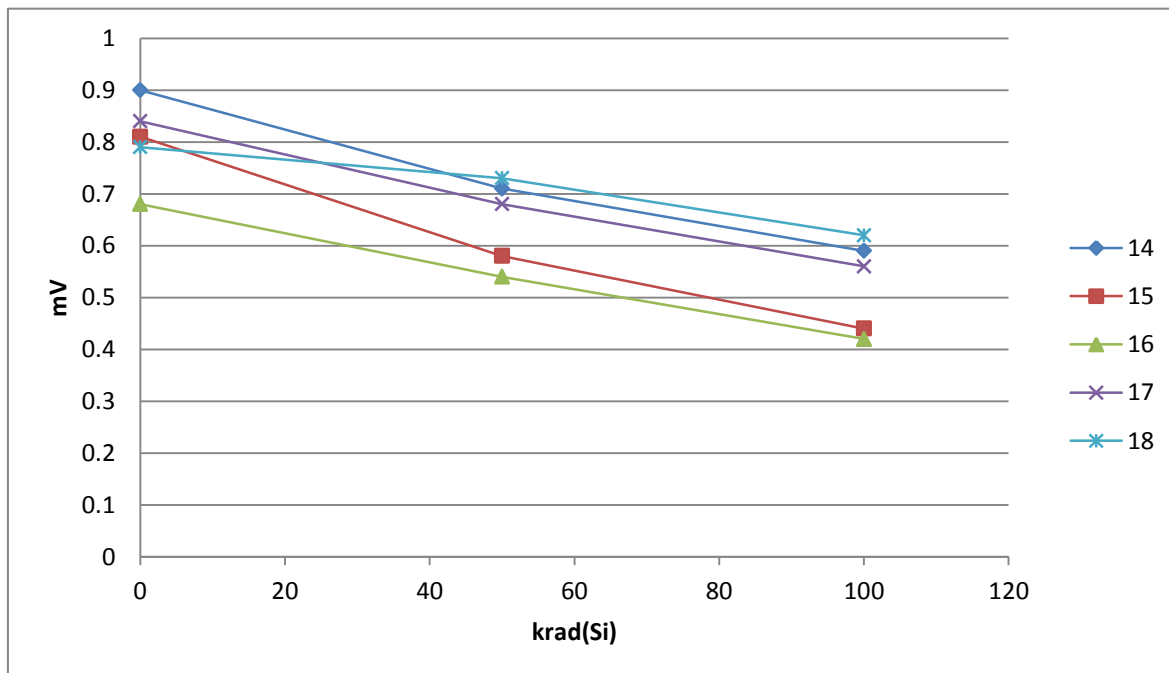


18.1 VRTH @ VIN=14.6V, IL=500MA, T=20MS

Limit_Min -12 Limit_Max 12 mV

Device ID	0.0 krad	51.0 krad	101.0 krad
14	0.89999998	0.70999998	0.58999997
15	0.81	0.57999998	0.44
16	0.68000001	0.54000002	0.41999999
17	0.83999997	0.68000001	0.56
18	0.79000002	0.73000002	0.62000001
Average	0.804	0.648	0.52599999
MAX	0.89999998	0.73000002	0.62000001
MIN	0.68000001	0.54000002	0.41999999
STD_dev	0.0808084	0.08348652	0.09044335

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-0.19	-0.31
15		-0.23	-0.37
16		-0.14	-0.26
17		-0.16	-0.28
18		-0.06	-0.17
Average		-0.156	-0.278
MAX		-0.06	-0.17
MIN		-0.23	-0.37
STD_dev		0.06348229	0.07328028

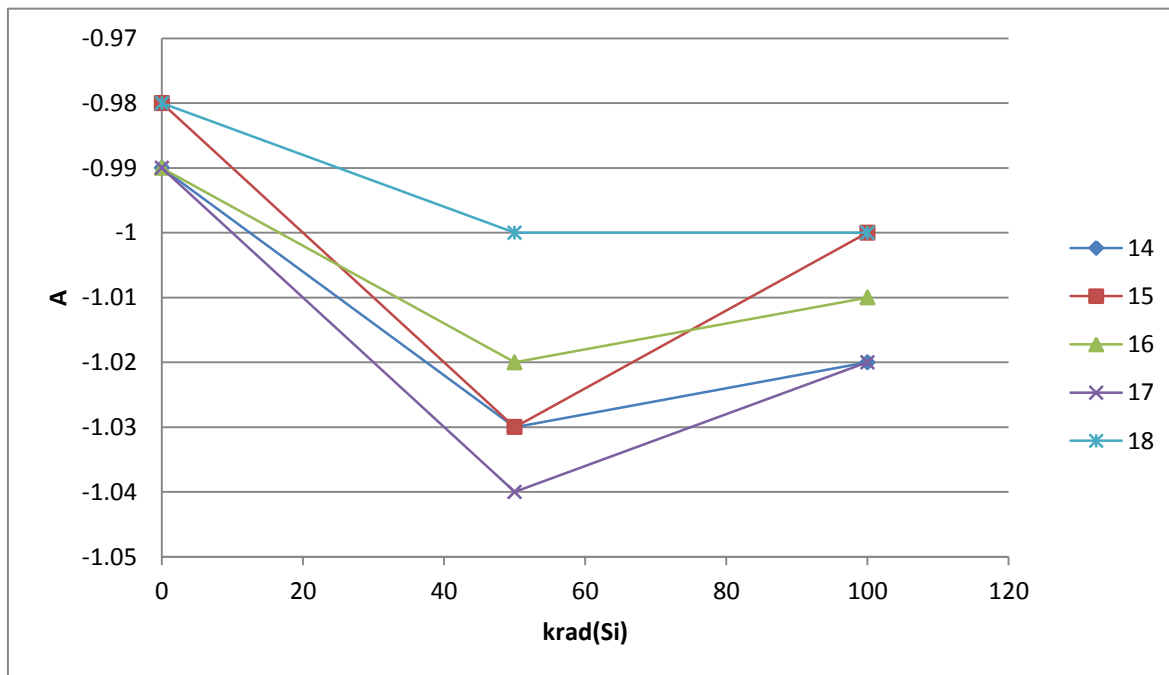


19.1 IOS @ VIN = 4.25V

Limit_Min -1.8 Limit_Max -0.5 A

Device ID	0.0 krad	51.0 krad	101.0 krad
14	-0.99	-1.03	-1.02
15	-0.98	-1.03	-1
16	-0.99	-1.02	-1.01
17	-0.99	-1.04	-1.02
18	-0.98	-1	-1
Average	-0.986	-1.024	-1.01
MAX	-0.98	-1	-1
MIN	-0.99	-1.04	-1.02
STD_dev	0.00547722	0.01516574	0.00999999

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-0.04	-0.03
15		-0.05	-0.02
16		-0.03	-0.02
17		-0.05	-0.03
18		-0.02	-0.02
Average		-0.038	-0.024
MAX		-0.02	-0.02
MIN		-0.05	-0.03
STD_dev		0.01303839	0.00547722

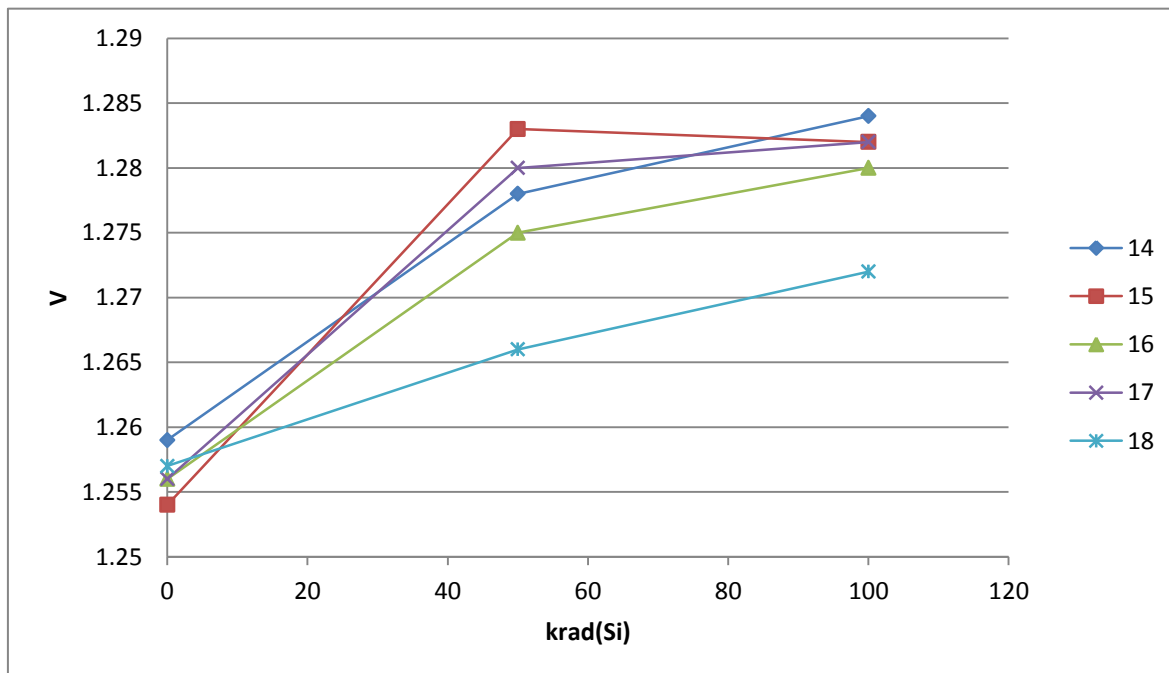


20.1 Vout Recovery @ VIN=4.25V

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
14	1.25899994	1.278	1.28400004
15	1.25399995	1.28299999	1.28199995
16	1.25600004	1.27499998	1.27999997
17	1.25600004	1.27999997	1.28199995
18	1.25699997	1.26600003	1.27199996
Average	1.25639999	1.27639999	1.27999997
MAX	1.25899994	1.28299999	1.28400004
MIN	1.25399995	1.26600003	1.27199996
STD_dev	0.00181658	0.00650383	0.00469043

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.01900005	0.0250001
15		0.02900004	0.028
16		0.01899993	0.02399993
17		0.02399993	0.0259999
18		0.00900006	0.01499999
Average		0.02	0.02359998
MAX		0.02900004	0.028
MIN		0.00900006	0.01499999
STD_dev		0.00741618	0.00502991

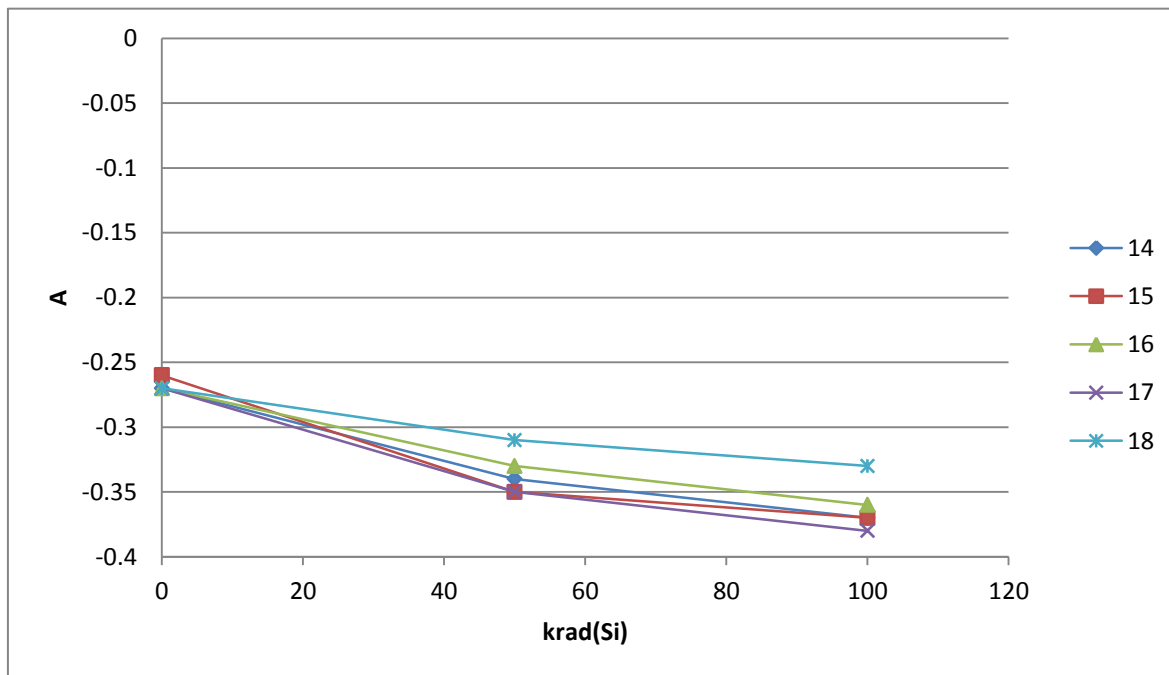


21.1 IOS @ VIN = 40V

Limit_Min -0.5 Limit_Max -0.05 A

Device ID	0.0 krad	51.0 krad	101.0 krad
14	-0.27	-0.34	-0.37
15	-0.26	-0.35	-0.37
16	-0.27	-0.33	-0.36
17	-0.27	-0.35	-0.38
18	-0.27	-0.31	-0.33
Average	-0.268	-0.336	-0.362
MAX	-0.26	-0.31	-0.33
MIN	-0.27	-0.35	-0.38
STD_dev	0.00447215	0.0167332	0.01923538

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-0.07	-0.1
15		-0.09	-0.11
16		-0.06	-0.09
17		-0.08	-0.11
18		-0.04	-0.06
Average		-0.068	-0.094
MAX		-0.04	-0.06
MIN		-0.09	-0.11
STD_dev		0.01923539	0.02073644

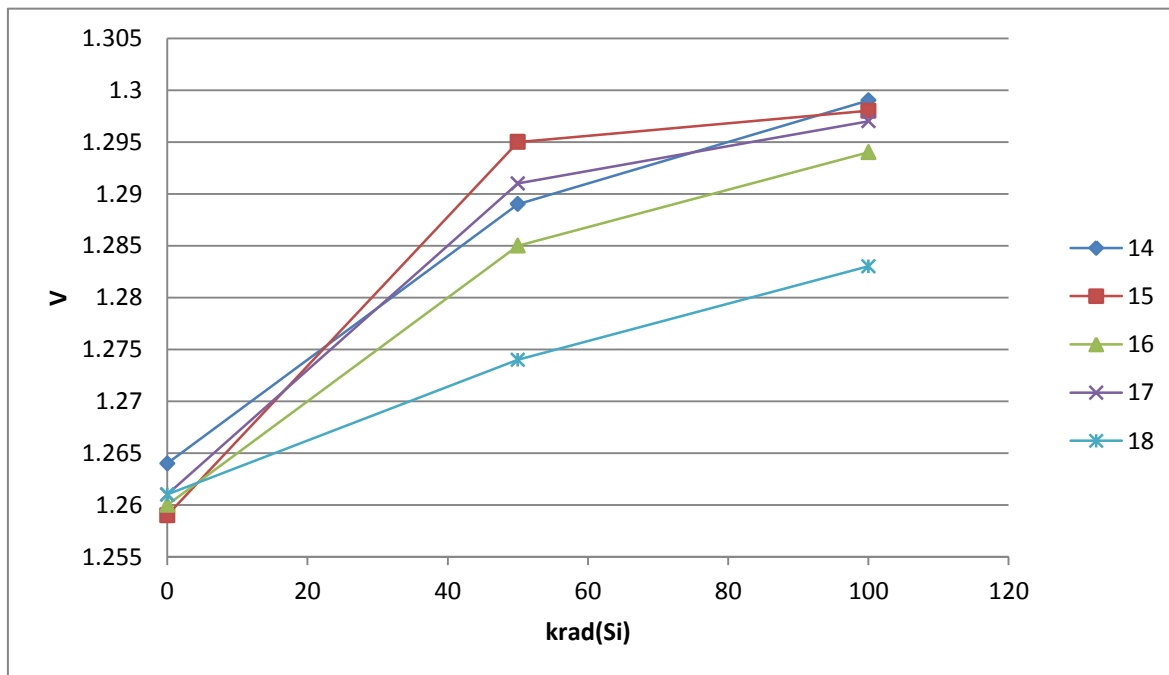


22.1 Vout Recovery @ VIN=41.25V

Limit_Min 1.2 Limit_Max 1.35 V

Device ID	0.0 krad	51.0 krad	101.0 krad
14	1.26400006	1.28900003	1.29900003
15	1.25899994	1.29499996	1.29799998
16	1.25999999	1.28499997	1.29400003
17	1.26100004	1.29100001	1.29700005
18	1.26100004	1.27400005	1.28299999
Average	1.26100001	1.2868	1.29420002
MAX	1.26400006	1.29499996	1.29900003
MIN	1.25899994	1.27400005	1.28299999
STD_dev	0.00187087	0.00801247	0.00653453

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.02499998	0.03499997
15		0.03600001	0.03900003
16		0.02499998	0.03400004
17		0.02999997	0.03600001
18		0.01300001	0.02199995
Average		0.02579999	0.0332
MAX		0.03600001	0.03900003
MIN		0.01300001	0.02199995
STD_dev		0.00846758	0.00653455

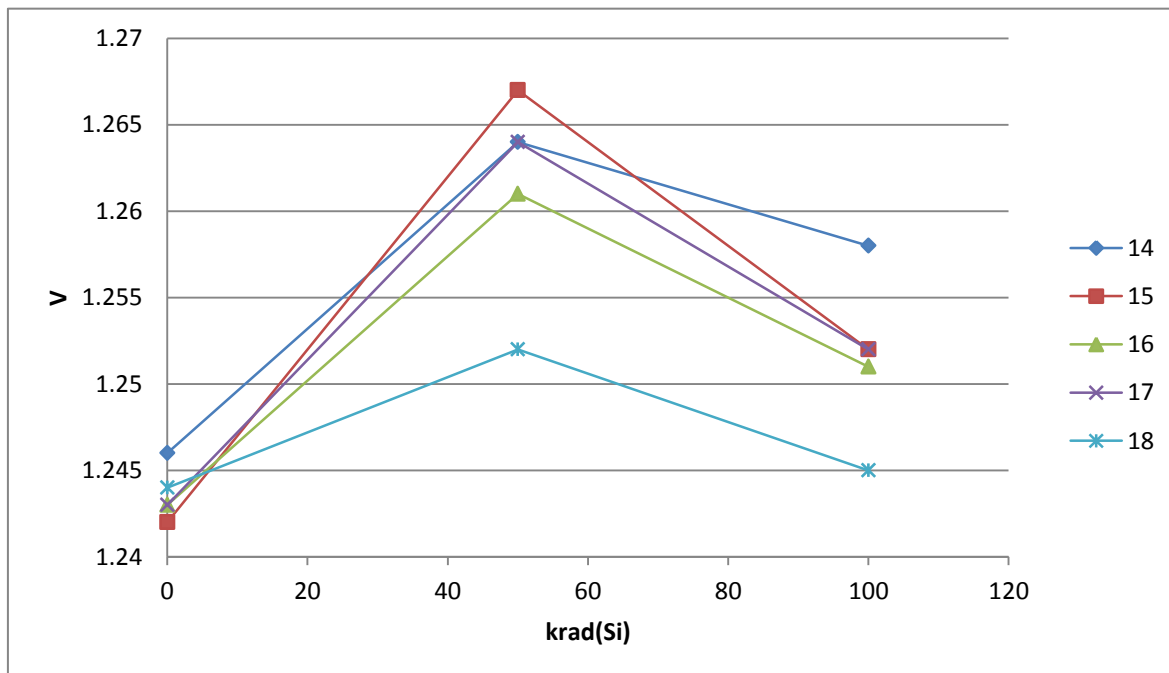


23.1 Voltage Start-up

Limit_Min 1.2 Limit_Max 1.3 V

Device ID	0.0 krad	51.0 krad	101.0 krad
14	1.24600005	1.26400006	1.25800002
15	1.24199998	1.26699996	1.25199997
16	1.24300003	1.26100004	1.25100005
17	1.24300003	1.26400006	1.25199997
18	1.24399996	1.25199997	1.24500001
Average	1.24360001	1.26160002	1.2516
MAX	1.24600005	1.26699996	1.25800002
MIN	1.24199998	1.25199997	1.24500001
STD_dev	0.00151659	0.00577063	0.00461519

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.01800001	0.01199997
15		0.02499998	0.00999999
16		0.01800001	0.00800002
17		0.02100003	0.00899994
18		0.00800002	0.00100005
Average		0.01800001	0.00799999
MAX		0.02499998	0.01199997
MIN		0.00800002	0.00100005
STD_dev		0.00628489	0.00418327

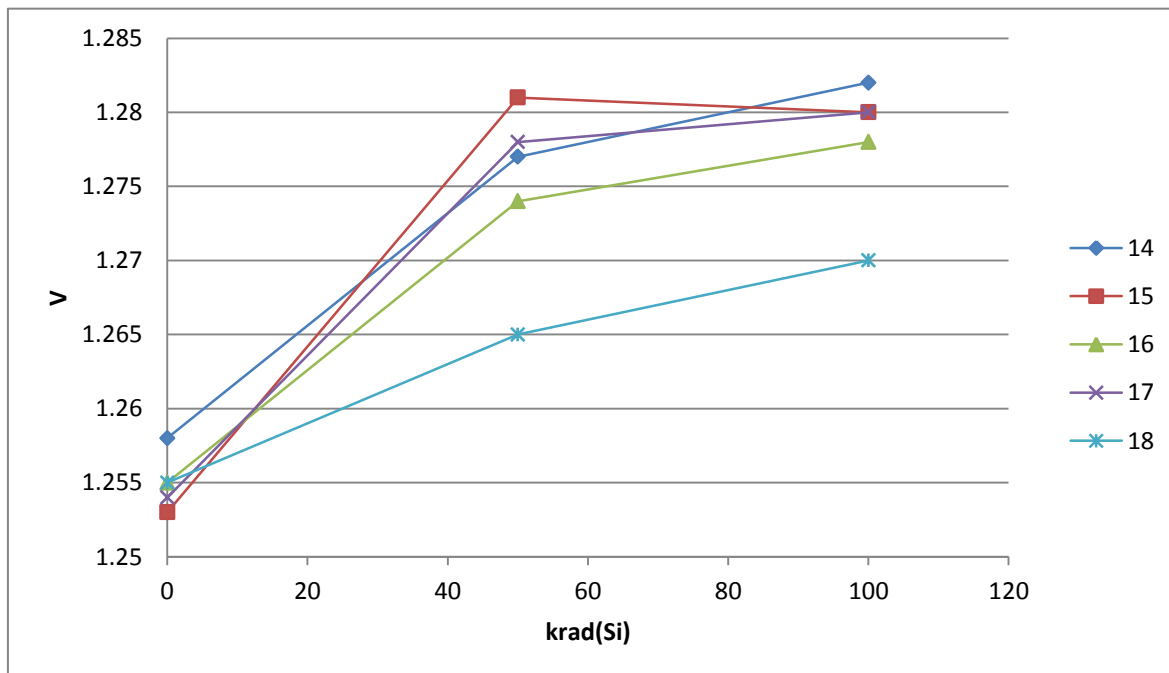


24.1 OUTPUT FUNCTIONAL CHECK

Limit_Min 1.2 Limit_Max 1.3 V

Device ID	0.0 krad	51.0 krad	101.0 krad
14	1.25800002	1.27699995	1.28199995
15	1.25300002	1.28100002	1.27999997
16	1.255	1.27400005	1.278
17	1.25399995	1.278	1.27999997
18	1.255	1.26499999	1.26999998
Average	1.255	1.275	1.27799997
MAX	1.25800002	1.28100002	1.28199995
MIN	1.25300002	1.26499999	1.26999998
STD_dev	0.00187084	0.00612373	0.00469041

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.01899993	0.02399993
15		0.028	0.02699995
16		0.01900005	0.023
17		0.02400005	0.02600002
18		0.00999999	0.01499999
Average		0.02	0.02299998
MAX		0.028	0.02699995
MIN		0.00999999	0.01499999
STD_dev		0.00674538	0.00474341

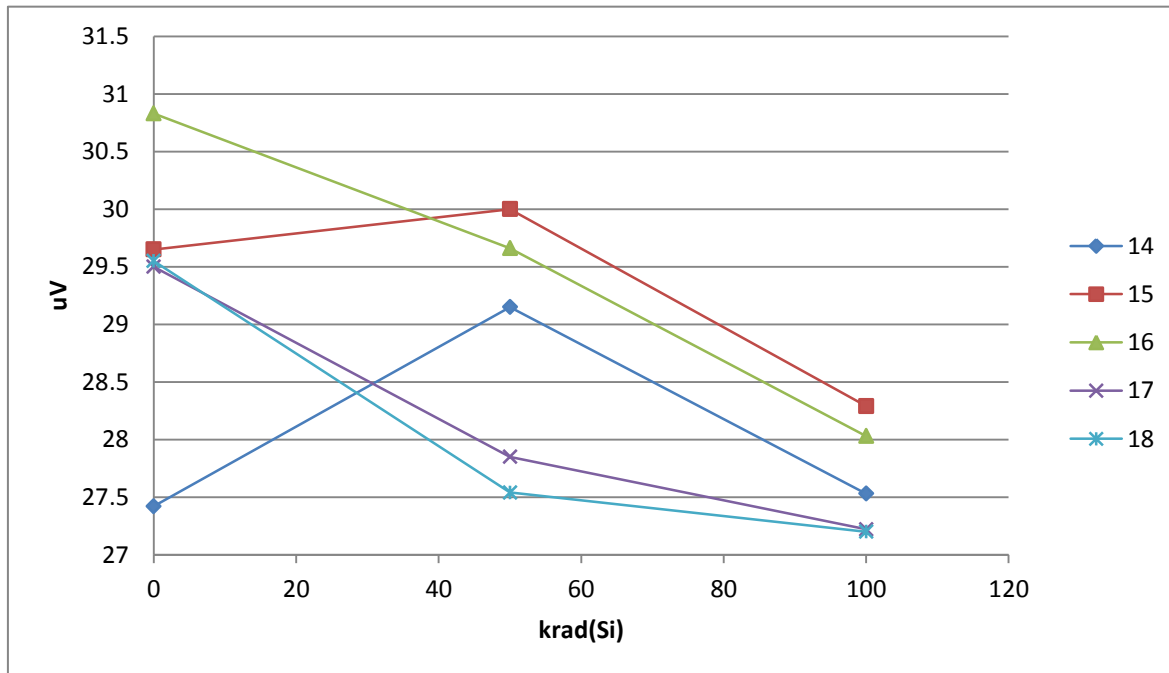


25.1 V (NOISE)

Limit_Min NA Limit_Max 120 uV

Device ID	0.0 krad	51.0 krad	101.0 krad
14	27.4200001	29.1499996	27.5300007
15	29.6499996	30	28.2900009
16	30.8299999	29.6599998	28.0300007
17	29.5	27.8500004	27.2199993
18	29.5499992	27.5400009	27.2000008
Average	29.3899998	28.8400002	27.6540005
MAX	30.8299999	30	28.2900009
MIN	27.4200001	27.5400009	27.2000008
STD_dev	1.23083295	1.09364029	0.48880503

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		1.72999954	0.11000061
15		0.35000038	-1.3599987
16		-1.1700001	-2.7999992
17		-1.6499996	-2.2800007
18		-2.0099983	-2.3499985
Average		-0.5499996	-1.7359993
MAX		1.72999954	0.11000061
MIN		-2.0099983	-2.7999992
STD_dev		1.55999944	1.15694862

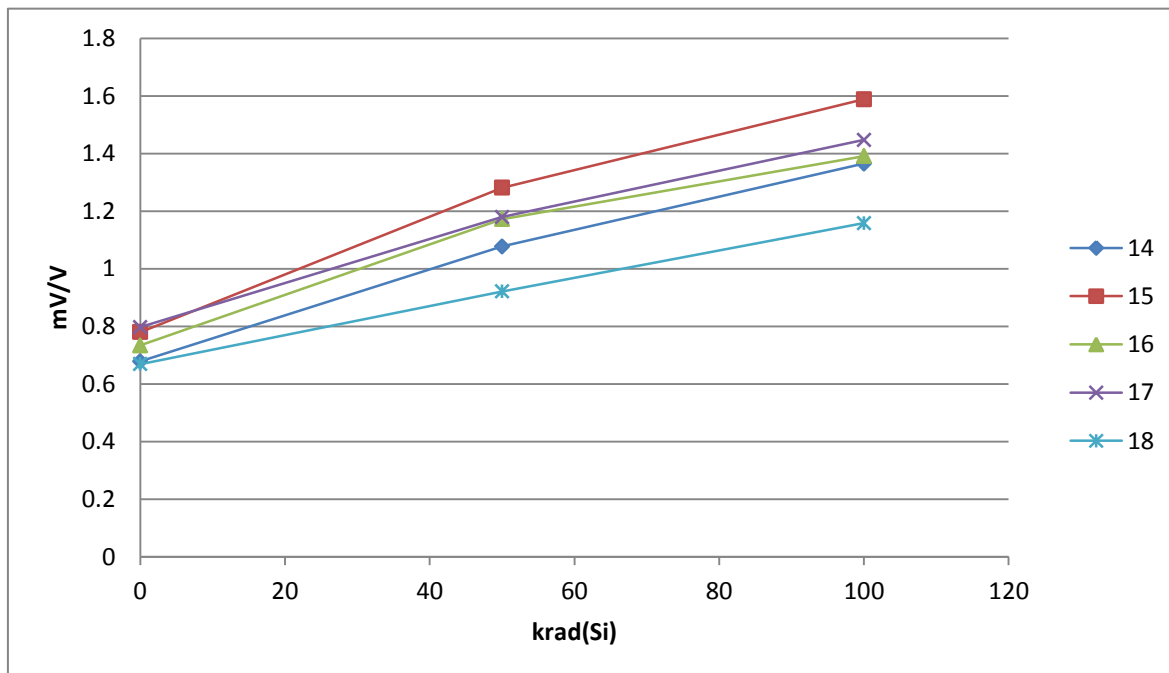


26.1 Line Transient Response

Limit_Min NA Limit_Max 6 mV/V

Device ID	0.0 krad	51.0 krad	101.0 krad
14	0.67799997	1.07700002	1.36500001
15	0.77999997	1.28100002	1.58800006
16	0.73400003	1.17200005	1.39100003
17	0.79699999	1.17900002	1.44700003
18	0.66900003	0.921	1.15799999
Average	0.7316	1.12600002	1.38980002
MAX	0.79699999	1.28100002	1.58800006
MIN	0.66900003	0.921	1.15799999
STD_dev	0.05791631	0.13544003	0.1556461

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.39900005	0.68700004
15		0.50100005	0.80800009
16		0.43800002	0.65700001
17		0.38200003	0.65000004
18		0.25199997	0.48899996
Average		0.39440002	0.65820003
MAX		0.50100005	0.80800009
MIN		0.25199997	0.48899996
STD_dev		0.09181125	0.11398118

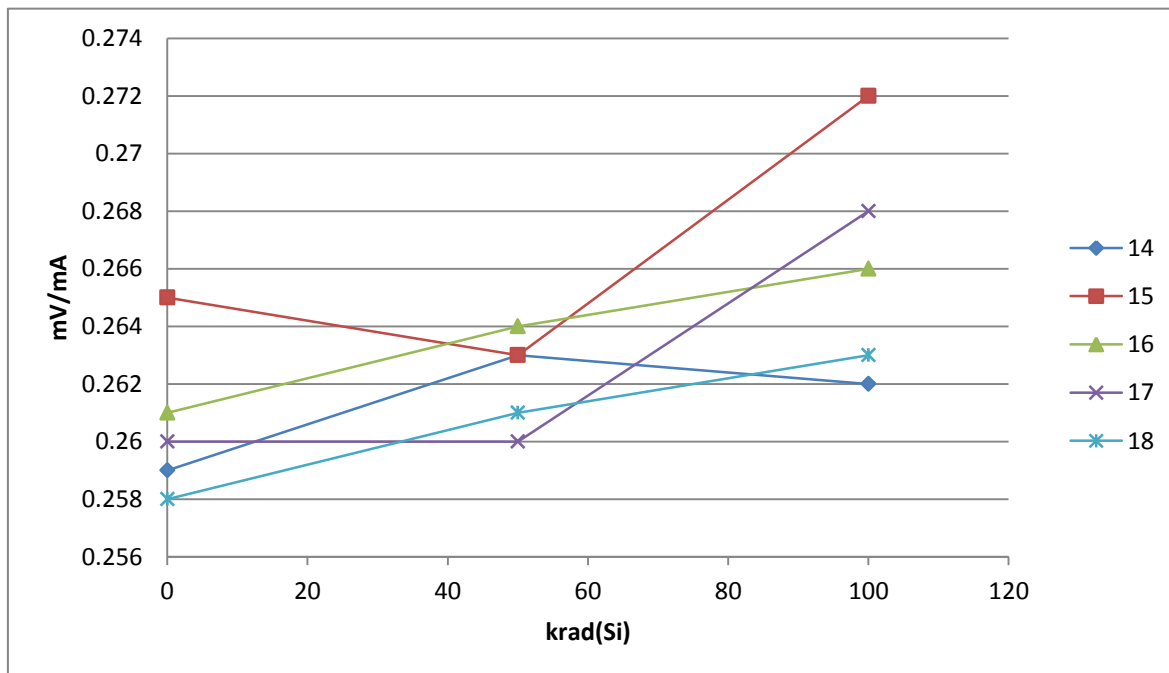


27.1 Load Transient Response

Limit_Min NA Limit_Max 0.6 mV/mA

Device ID	0.0 krad	51.0 krad	101.0 krad
14	0.259	0.26300001	0.262
15	0.26499999	0.26300001	0.27200002
16	0.26100001	0.264	0.266
17	0.25999999	0.25999999	0.26800001
18	0.25799999	0.26100001	0.26300001
Average	0.26059999	0.2622	0.26620001
MAX	0.26499999	0.264	0.27200002
MIN	0.25799999	0.25999999	0.262
STD_dev	0.00270185	0.00164317	0.00402493

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		0.00400001	0.00299999
15		-0.002	0.00700003
16		0.00299999	0.005
17		0	0.00800002
18		0.00300002	0.00500002
Average		0.00160001	0.00560001
MAX		0.00400001	0.00800002
MIN		-0.002	0.00299999
STD_dev		0.00250997	0.00194937

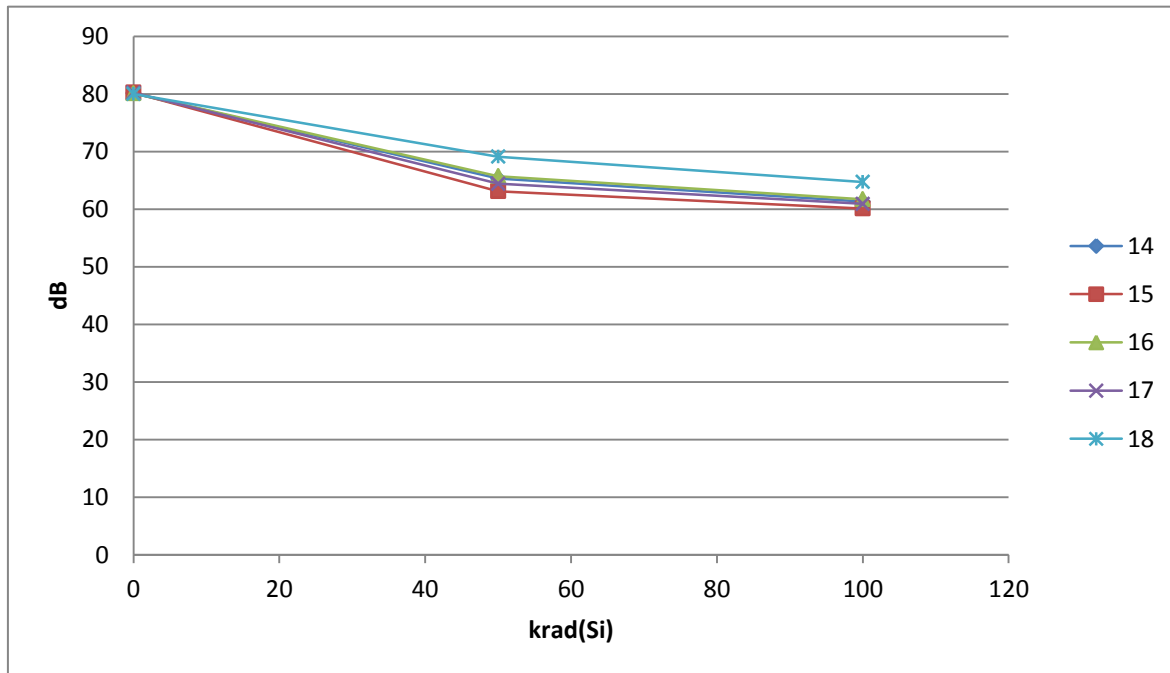


28.1 RIPPLE REJECTION @ 2400HZ, IL=125MA

Limit_Min 60 Limit_Max NA dB

Device ID	0.0 krad	51.0 krad	101.0 krad
14	80.0999985	65.3000031	61.2999992
15	80.1999969	63.0999985	60.0999985
16	80.0999985	65.6999969	61.7000008
17	80.1999969	64.4000015	60.9000015
18	80	69.0999985	64.6999969
Average	80.1199982	65.5199997	61.7399994
MAX	80.1999969	69.0999985	64.6999969
MIN	80	63.0999985	60.0999985
STD_dev	0.08366473	2.23651462	1.75726954

Delta			
Device ID	0.0 krad	51.0 krad	101.0 krad
14		-14.799995	-18.799999
15		-17.099998	-20.099998
16		-14.400002	-18.399998
17		-15.799995	-19.299995
18		-10.900002	-15.300003
Average		-14.599998	-18.379999
MAX		-10.900002	-15.300003
MIN		-17.099998	-20.099998
STD_dev		2.31624522	1.83493643



LM117H RAD TEST KEYS; LM00117CA/EQR0117CA.ds & RAD0117CA.ds						
Test #	Test name & Conditions	PRE RAD		POST RAD		Units
		Min	Max	Min	Max	
3.1	VREF @ VIN=4.25V,IL=5MA	1.2	1.3	1.2	1.35	V
4.1	VREF @ VIN=4.25V,IL=500MA	1.2	1.3	1.2	1.35	V
5.1	VREF @ VIN=41.25V,IL=5MA	1.2	1.3	1.2	1.35	V
6.1	VREF @ VIN=41.25V,IL=50MA	1.2	1.3	1.2	1.35	V
7.1	VRLINE @ 3V<=VDIFF<=40V,IL=5MA	-9	9	-25	25	mV
8.1	DELTA IADJ @ 3V<=VDIFF<=40V	-5	5	-5	5	uA
9.1	IQ @ VIN=4.25V	-3	-0.5	-3	-0.5	mA
10.1	IQ @ VIN=14.25V	-3	-0.5	-3	-0.5	mA
11.1	IQ @ VIN=41.25V	-5	-1	-5	-1	mA
12.1	IADJ @ VDIFF=3V,IL=8MA	-100	-15	-100	-15	uA
13.1	IADJ @ =40V,IL=8MA	-100	-15	-100	-15	uA
14.1	VRLOAD @ VIN=6.25V,5MA<=IL<=0.5A	-12	12	-12	12	mV
15.1	VRLOAD @ VIN=41.25V,5MA<=IL<=50MA	-12	12	-12	12	mV
16.1	DELTA IADJ @ VIN=6.25V,5MA<=IL<=0.5A	-5	5	-5	5	uA
17.1	DELTA IADJ @ VDIFF=40V,10MA<=IL<=150MA	-5	5	-5	5	uA
18.1	VRTH @ VIN=14.6V,IL=500MA,T=20MS	-12	12	-12	12	mV
19.1	IOS @ VIN = 4.25V	-1.8	-0.5	-1.8	-0.5	A
20.1	Vout Recovery @ VIN=4.25V	1.2	1.3	1.2	1.35	V
21.1	IOS @ VIN = 40V	-0.5	-0.05	-0.5	-0.05	A
22.1	Vout Recovery @ VIN=41.25V	1.2	1.3	1.2	1.35	V
23.1	Voltage Start-up	1.2	1.3	1.2	1.3	V
24.1	OUTPUT FUNCTIONAL CHECK	1.2	1.3	1.2	1.3	V
25.1	V(NOISE)		120		120	uV
26.1	Line Transient Response		6		6	mV/V
27.1	Load Transient Response		0.6		0.6	mV/mA
28.1	RIPPLE REJECTION @ 2400HZ, IL=125MA	65		60		dB

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