RIR IN:- 55163

RIR OUT:- 55163

PARTS HISTORY LOG

Radiation Testing

PROGRAMME:- XMM

PART TYPE:- UC1856J

RADIATION REPORT:- RD 241

IGG TASK NUMBER:- 1500

SUMMARY OF TEST RESULTS

S/Nos 21 and 22 failed $I_{N-LATCH}$ after 15KRads(Si). However, S/No 22 subsequently passed this parameter at all the following test stages. In addition, S/No 21 failed I_{SOURCE} after 20KRads(Si). All samples failed a combination of V_{REF}, I_{SOURCE} or $I_{N-LATCH}$ after 30kRads(Si). Various other parameters also drifted significantly across the radiation test sequence. During post annealing electrical measurements S/No 26 failed catastrophically after being overstressed due to a test fixture anomaly.

Radiation Report Number:- RD 241

Project:- XMM

Part Type:- UC1856J Date Code:- 9344A

Manufacturer:- Unitrode IGG Task No:- 1500

Project Approval of Lot Traveller:-

Signed.... M. Wakelin IGG 6 CT ..... Date..... 11-09-97

Position..... PROJECT T.R. .....

Serial Number Range:-

18 through 27 (not inclusive)

I certify that the subject component has been tested in accordance with the following radiation specifications:-

Test Method - ESA/SCC22900 ISSUE- 4 DATE- Jan '95

Irradiation Test Plan - HUY-IP-IGG-016 ISSUE- 1 DATE- Oct '96

Amendment to Plan - N50858

Closed/Approved NCR No:- N N/A

Approved Waiver No:- WAR N/A

Signed.... P.D. Mussell ..... Date..11/9/97..

Upscreening Engineer

Signed... D.G. ..... Date..11/9/97..

Upscreening Manager

RADIATION REPORT NUMBER:- RD 241 DATE:- 9.9.97

PROJECT:- XMM RIR IN:- 55163

PART NUMBER:- UC1856J MANUFACTURER:- Unitrode

PROCUREMENT LEVEL:- HUYIG10501B DATE CODE:- 9344A

TEST METHOD:- ESA/SCC22900 ISSUE- 4 DATE- Jan '95

TEST PLAN:- HUY-IP-IGG-016 ISSUE- 1 DATE- Oct '96

START QUANTITY:- 5

No.	Test (Sample Size)	HUY-IP-IG-016 Test Method and Conditions	Date in	Qty in	Date out	Qty out	SIGNED Op/QA
1	Serialisation and Selection of Control Sample (100%)	Control Sample= SN 18	4/8/97	5	4/8/97	4 + CONTROL SAMPLE	IGG 16 CT
2	Initial Electrical Measurements (100% read and record)	Table A Testing at IGG	4/8/97	4	4/8/97	4	IGG 16 CT
3	Initial Electrical Measurements (100% read and record)	Table A Testing at ERA	5/8/97	4	5/8/97	4	IGG 16 CT
4	Set-up and apply Bias per Figure 1	Verify Bias Circuit and conditions (in-situ) for all 4 test samples	5/8/97	4	5/8/97	4	IGG 16 CT
5	Irradiation 1 (4 samples)	Dose= 10kRAD(Si) Rate= 3RAD(Si) per second Time=3333secs	5/8/97	4	5/8/97	4	IGG 16 CT
6	Interim 1 Electrical Measurements (100% read and record)	Table A. Bias to be maintained until testing is performed. Tdwell=10mins maximum	5/8/97	4	5/8/97	4	IGG 16 CT

Report No: RD 241	Part Type: UC1856J	Date: 9.9.97

No.	Test (Sample Size)	HUY-IP-IG-016 Test Method and Conditions	Date in	Qty in	Date out	Qty out	SIGNED Op/QA
7	Irradiation 2 (4 samples)	Dose= 5kRAD(Si) Rate= 3RAD(Si) per second Time=1667secs	5/8/97	4	5/8/97	4	IGG 16 CT
8	Interim 2 Electrical Measurements (100% read and record)	As Test 6	5/8/97	4	5/8/97	2	IGG 16 CT
9	Irradiation 3 (4 samples)	As Test 7	5/8/97	4	5/8/97	4	IGG 16 CT
10	Interim 3 Electrical Measurements (100% read and record)	As Test 6	5/8/97	4	5/8/97	3	IGG 16 CT
11	Irradiation 4 (4 samples)	As Test 5	5/8/97	4	5/8/97	4	IGG 16 CT
12	Final Electrical Measurements (100% read and record)	As Test 6 At ERA	5/8/97	4	5/8/97	0	IGG 16 CT
13	Annealing Test (4 samples)	Bias for 24hrs min at +25°C (record exact time)	5/8/97	4	6/8/97	4	IGG 16 CT
14	Post Annealing Electrical Measurements (100% read and record)	Table A	7/8/97	4	7/8/97	0	IGG 16 CT
15	Accelerated Aging under bias (4 samples)	168 hours bias at +100±5°C	7/8/97	3	14/8/97	3	IGG 16 CT

Report No: RD 241	Part Type: UC1856J	Date: 9.9.97

No.	Test (Sample Size)	HUY-IP-IG-016 Test Method and Conditions	Date in	Qty in	Date out	Qty out	SIGNED Op/QA
16	Post Aging Electrical Measurements (100% read and record)	Table A	15/8/97	3	15/8/97	0	IGG 16 CT
17	Test Report Collation	[redacted]	[redacted]	[redacted]	11/9/97	[redacted]	IGG 2 CT
18	Test Report Approval	[redacted]	[redacted]	[redacted]	11/9/97	[redacted]	IGG 2 CT
19	NOTES:-						

Report No: RD 241 Part Type: UC1856J Date: 10.9.97

FAILURE LIST AND APPLICABLE NCR

Test No.	Serial Number(s)	Failed Parameter and Failure Mode	Applicable NCR
8	21, 22	FAILED I-N-LATCH.	–
10	21	FAILED I-SOURCE.	–
12	21 22 26 27	FAILED V_{REF}. FAILED I-SOURCE AND V_{REF}. FAILED I-SOURCE. FAILED I-SOURCE AND I-N-LATCH.	–
14	26 27	FAILED SEVERAL PARAMETERS DUE TO TEST FIXTURE ANOMALY. FAILED V_{OL2} AND V_{OL3}.	–
16	21, 22 27	FAILED V_{RLINE} AND V_{OL2} FAILED CMRR, V_{REF}, V_{RLINE}, V_{OL2}, V_{OL3}.	–

Report No: RD 241 Part Type: UC1856J Date: 10.9.97

TEST EQUIPMENT LIST

Item, Type Number and Serial Number	CT Inventory Number	Function	Calibration Due
Item: Radiation Source Type No: Cobalt 60 Serial No: N/A	ERA's Facility	Irradiation	1 / 1 /1998
Item: SZ Type No: M3000 Serial No: 884769	CT339	ATE	27 / 9 /1997
Item: THURLBY Type No: PL320 Serial No: 26P0621	CT287	PSU	24 / 10 /1997
Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199
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Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199

RADIATION TEST SUMMARY

PART TYPE : UC1856J

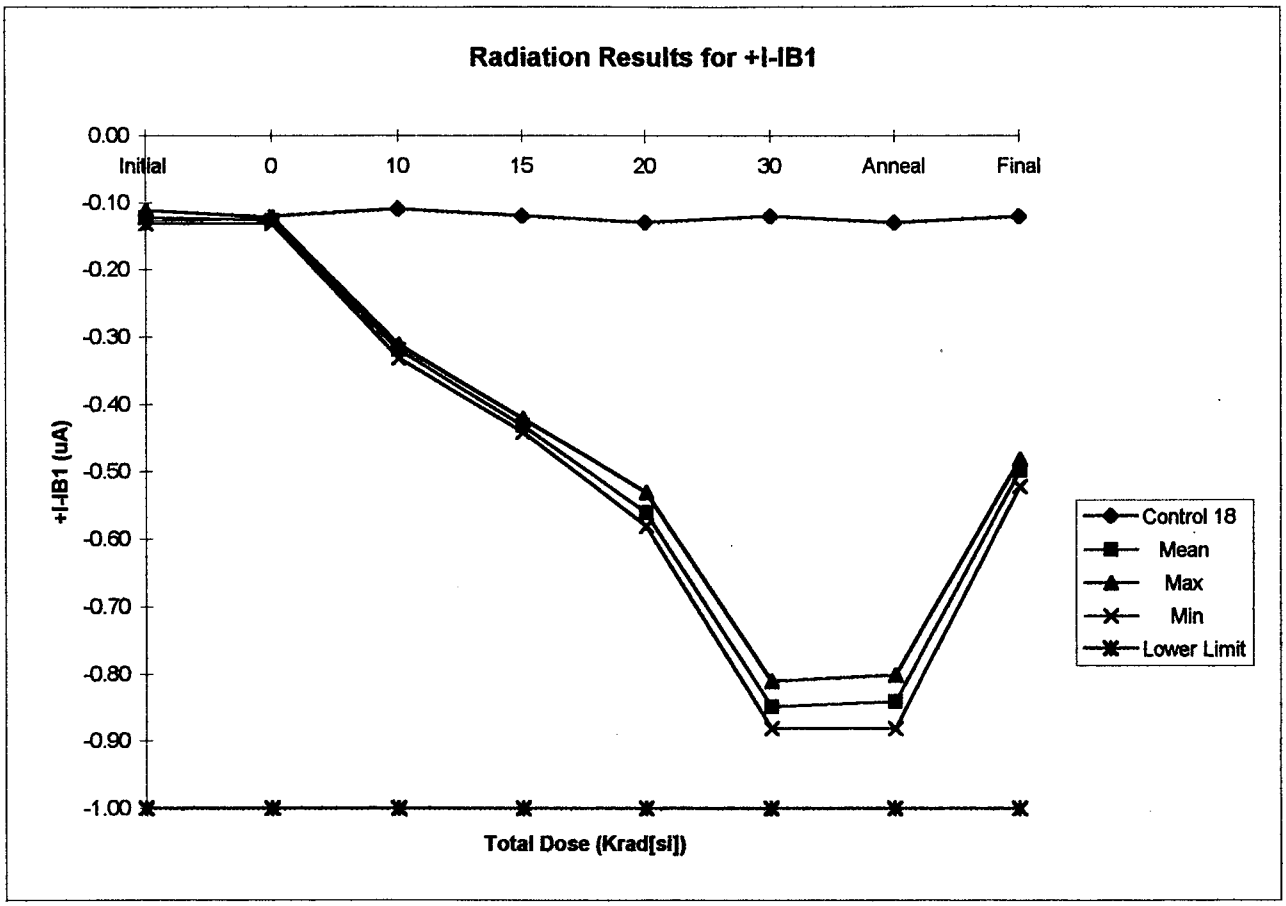
DESCRIPTION : PWM CONTROLLER I.C.

REPORT NO. : RD241

PARAMETERS PLOTTED :

I-IB1
I-IO1
I-SOURCE
V-REF
I-IB2
I-IB3
I-N-LATCH
V-OL2
V-OL3

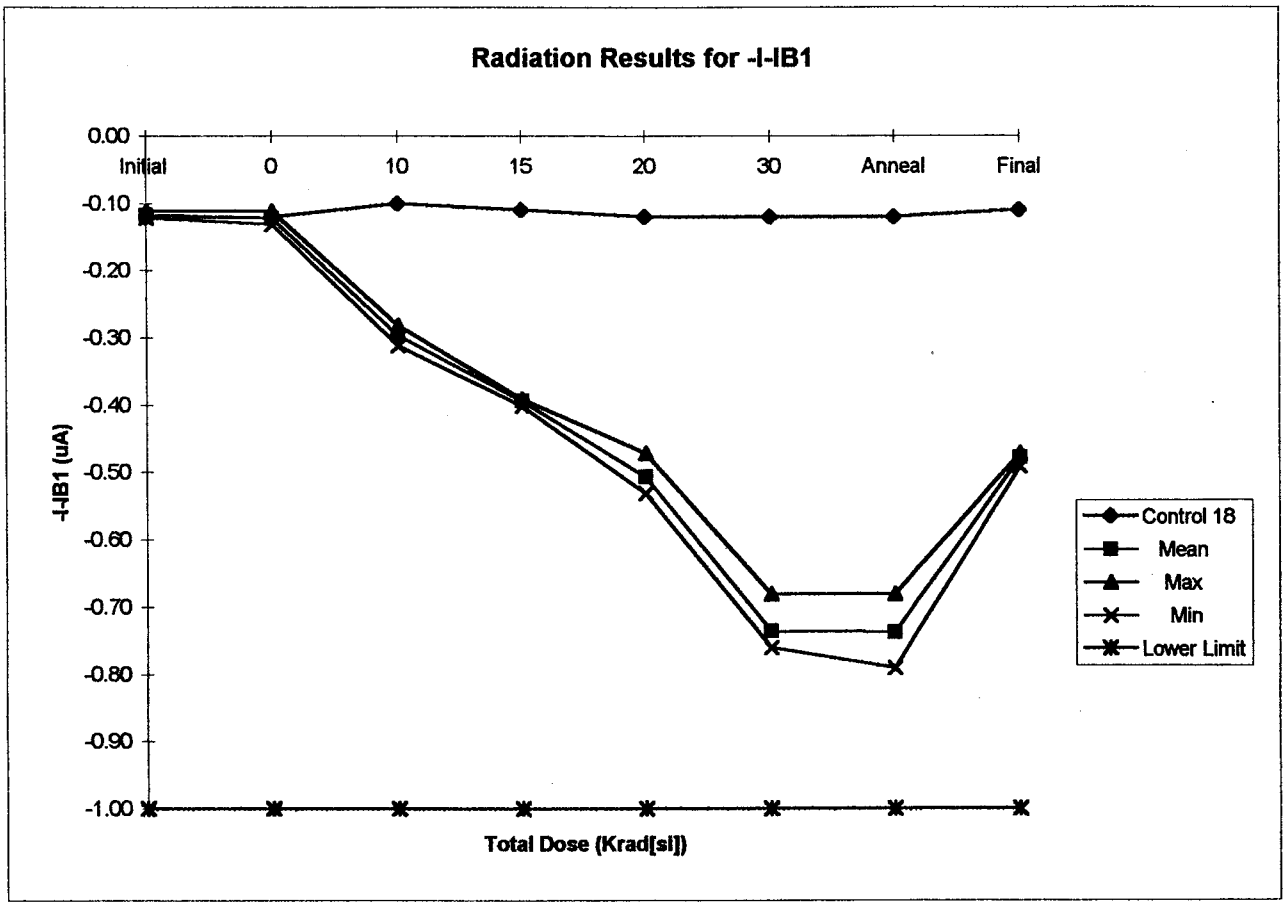
NOTE: The results for the remaining parameters showed no significant change and hence plots were not considered necessary.
S/No 26 has been excluded from the statistical analysis post anneal as it failed due to a test fixture anomaly (IGG fax no. D79453 refers).



Dose (kRad)	Control 18	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
	(uA)	(uA)	(uA)	(uA)	(uA)	(uA)	
Initial	-0.13	-0.12	-0.11	-0.13	-1.0	1.0	0.01
0	-0.12	-0.13	-0.12	-0.13	-1.0	1.0	0.01
10	-0.11	-0.32	-0.31	-0.33	-1.0	1.0	0.01
15	-0.12	-0.43	-0.42	-0.44	-1.0	1.0	0.01
20	-0.13	-0.56	-0.53	-0.58	-1.0	1.0	0.02
30	-0.12	-0.85	-0.81	-0.88	-1.0	1.0	0.03
Anneal	-0.13	-0.84	-0.80	-0.88	-1.0	1.0	5.87
Final	-0.12	-0.50	-0.48	-0.52	-1.0	1.0	0.02

Lot size for statistics : 4 devices

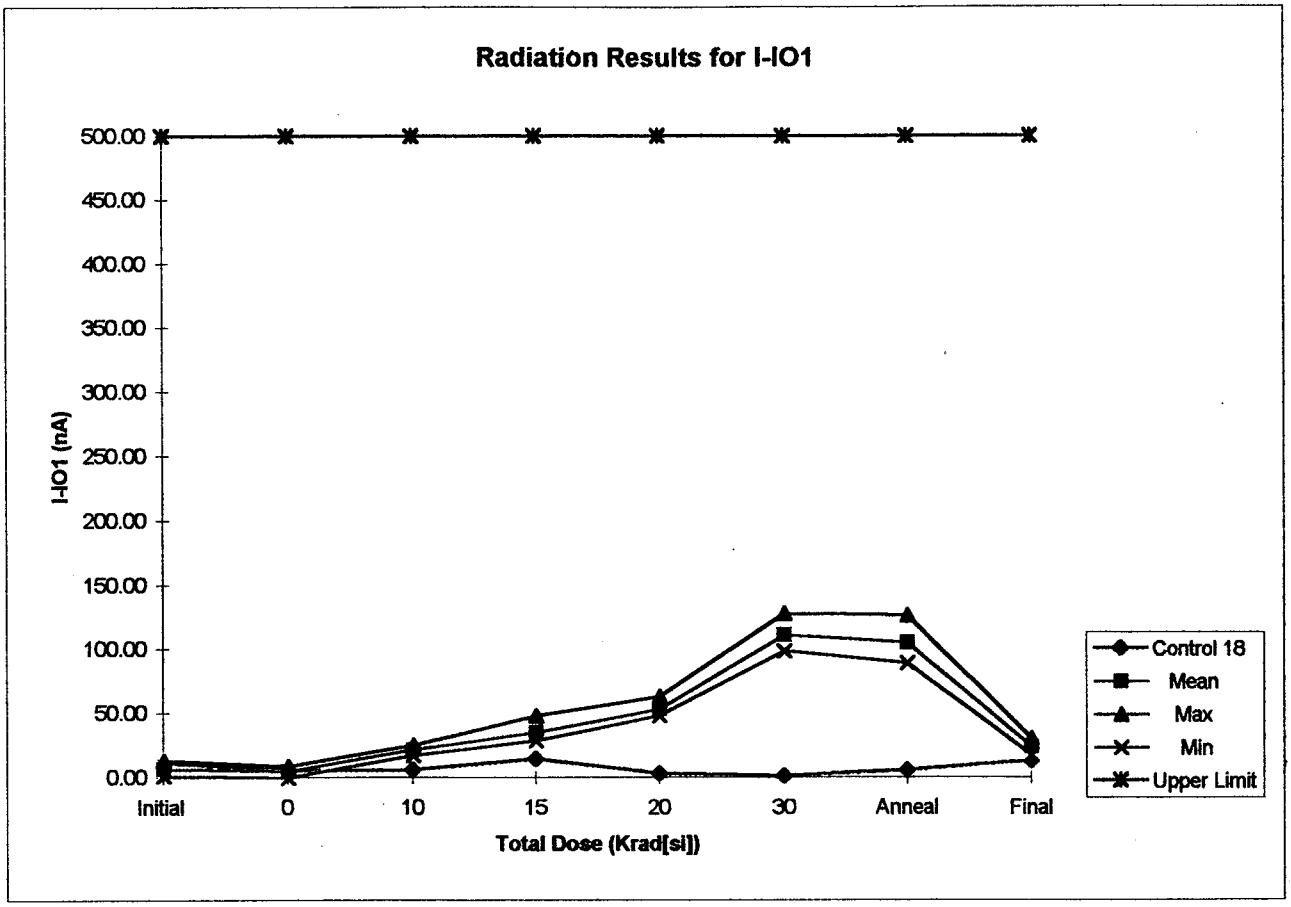
RD 241 Date Code: 9344A



Dose (kRad)	Control 18	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
	(uA)	(uA)	(uA)	(uA)	(uA)	(uA)	
Initial	-0.12	-0.12	-0.11	-0.12	-1.0	1.0	0.01
0	-0.12	-0.12	-0.11	-0.13	-1.0	1.0	0.01
10	-0.10	-0.30	-0.28	-0.31	-1.0	1.0	0.01
15	-0.11	-0.39	-0.39	-0.40	-1.0	1.0	0.00
20	-0.12	-0.51	-0.47	-0.53	-1.0	1.0	0.03
30	-0.12	-0.74	-0.68	-0.76	-1.0	1.0	0.04
Anneal	-0.12	-0.74	-0.68	-0.79	-1.0	1.0	5.93
Final	-0.11	-0.48	-0.47	-0.49	-1.0	1.0	0.01

Lot size for statistics : 4 devices

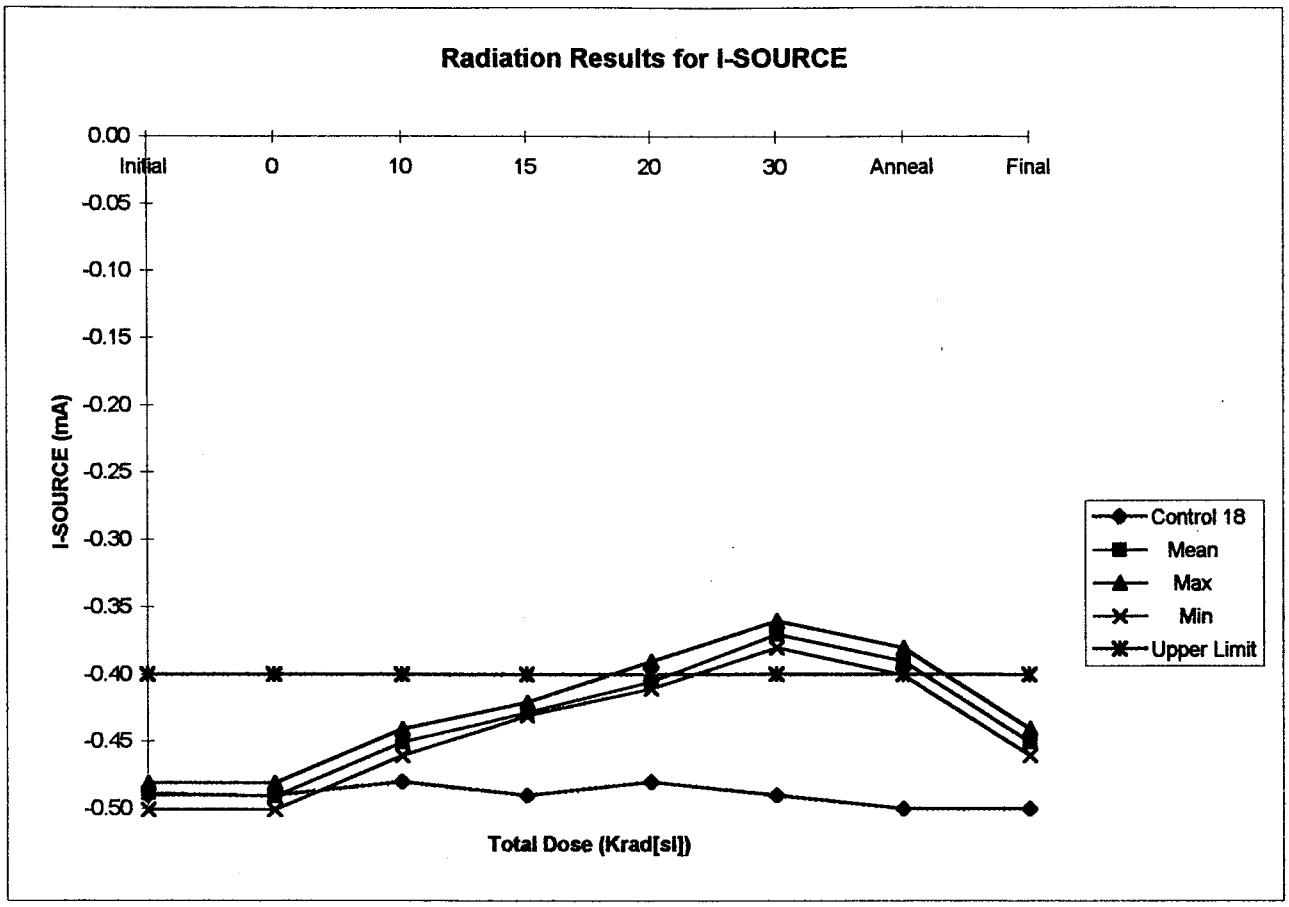
RD 241 Date Code: 9344A



Dose (kRad)	Control 18 (nA)	Mean (nA)	Max (nA)	Min (nA)	Upper Limit (nA)	Lower Limit (nA)	Std.Dev.
Initial	11.50	7.21	13.83	2.00	500	-	5.81
0	5.67	5.33	9.67	0.33	500	-	3.98
10	6.17	22.38	25.83	18.00	500	-	3.57
15	14.50	35.92	48.83	29.17	500	-	8.80
20	3.00	53.75	63.33	48.50	500	-	6.55
30	1.17	111.17	128.17	98.50	500	-	13.86
Anneal	5.50	105.00	126.33	89.17	500	-	53.43
Final	13.00	24.16	30.83	17.83	500	-	6.51

Lot size for statistics : 4 devices

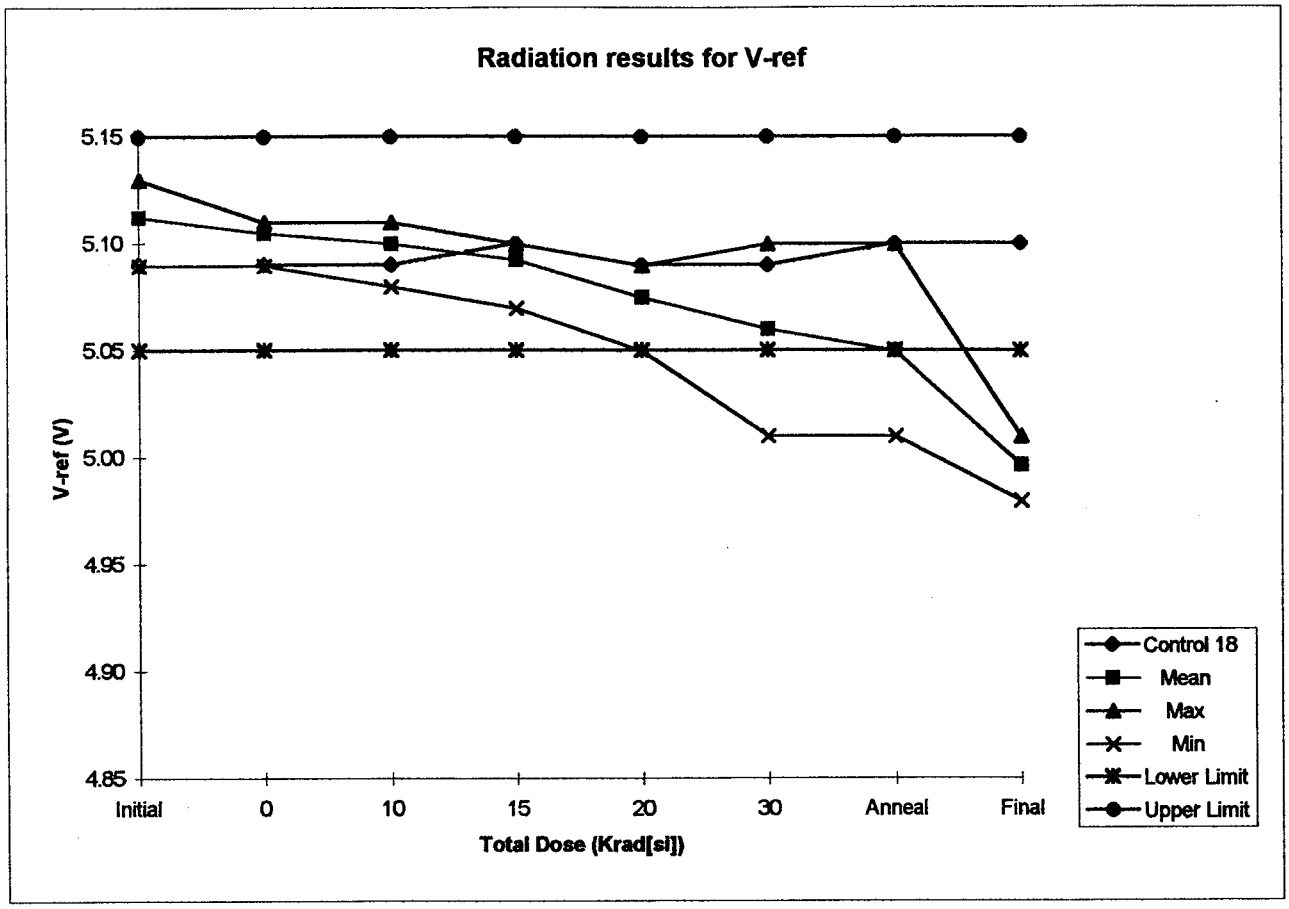
RD 241 Date Code: 9344A



Dose (kRad)	Control 18	Mean	Max	Min	Upper Limit	Lower Limit	Std.Dev.
	(mA)	(mA)	(mA)	(mA)	(mA)	(mA)	
Initial	-0.49	-0.49	-0.48	-0.50	-0.4	-	0.01
0	-0.49	-0.49	-0.48	-0.50	-0.4	-	0.01
10	-0.48	-0.45	-0.44	-0.46	-0.4	-	0.01
15	-0.49	-0.43	-0.42	-0.43	-0.4	-	0.00
20	-0.48	-0.41	-0.39	-0.41	-0.4	-	0.01
30	-0.49	-0.37	-0.36	-0.38	-0.4	-	0.01
Anneal	-0.50	-0.39	-0.38	-0.40	-0.4	-	12.34
Final	-0.50	-0.45	-0.44	-0.46	-0.4	-	0.01

Lot size for statistics : 4 devices

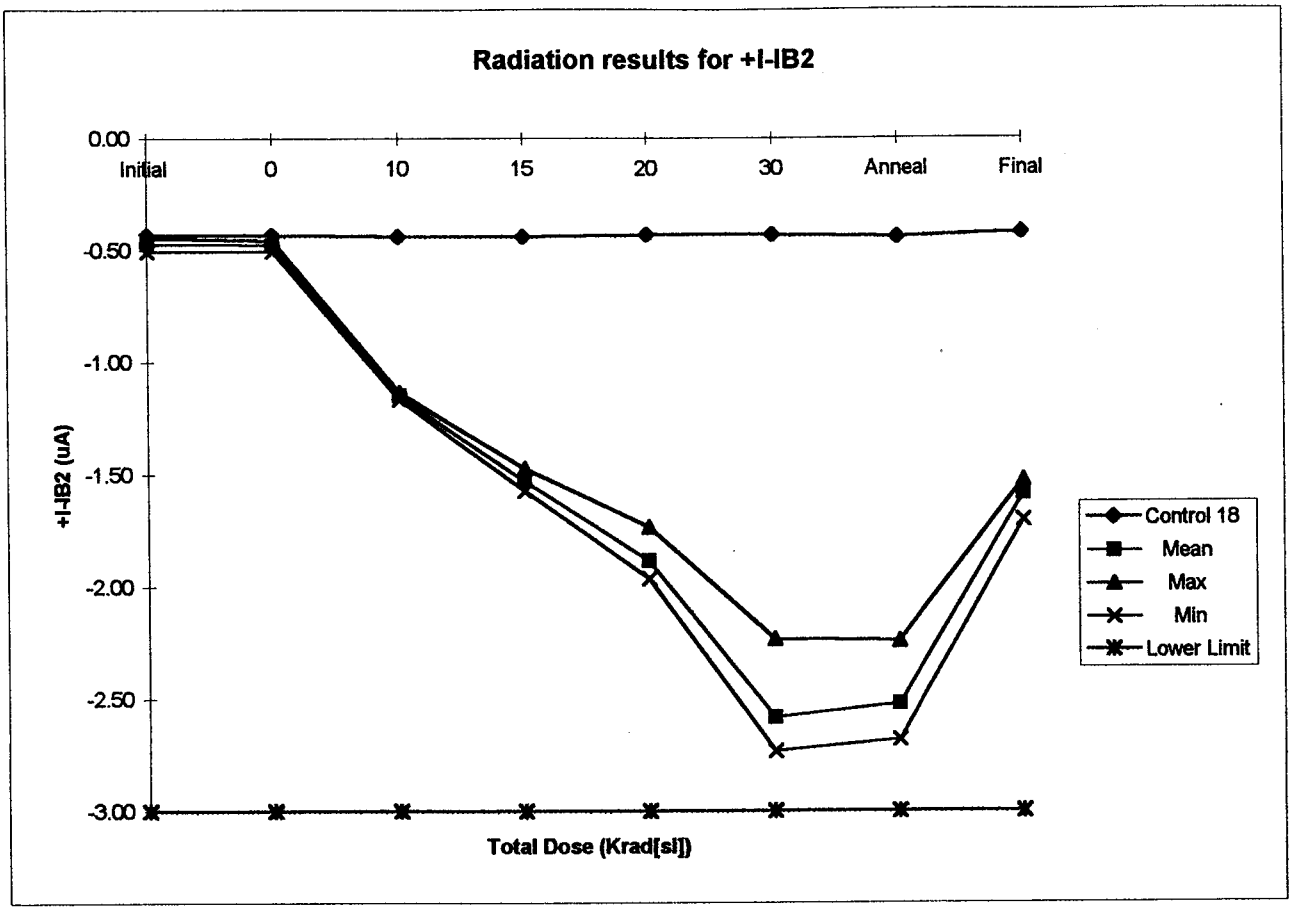
RD 241 Date Code: 9344A



Dose (kRad)	Control 18	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
	(V)	(V)	(V)	(V)	(V)	(V)	
Initial	5.09	5.11	5.13	5.09	5.05	5.15	0.02
0	5.09	5.11	5.11	5.09	5.05	5.15	0.01
10	5.09	5.10	5.11	5.08	5.05	5.15	0.01
15	5.10	5.09	5.10	5.07	5.05	5.15	0.02
20	5.09	5.08	5.09	5.05	5.05	5.15	0.02
30	5.09	5.06	5.10	5.01	5.05	5.15	0.04
Anneal	5.10	5.05	5.10	5.01	5.05	5.15	0.45
Final	5.10	5.00	5.01	4.98	5.05	5.15	0.02

Lot size for statistics : 4 devices

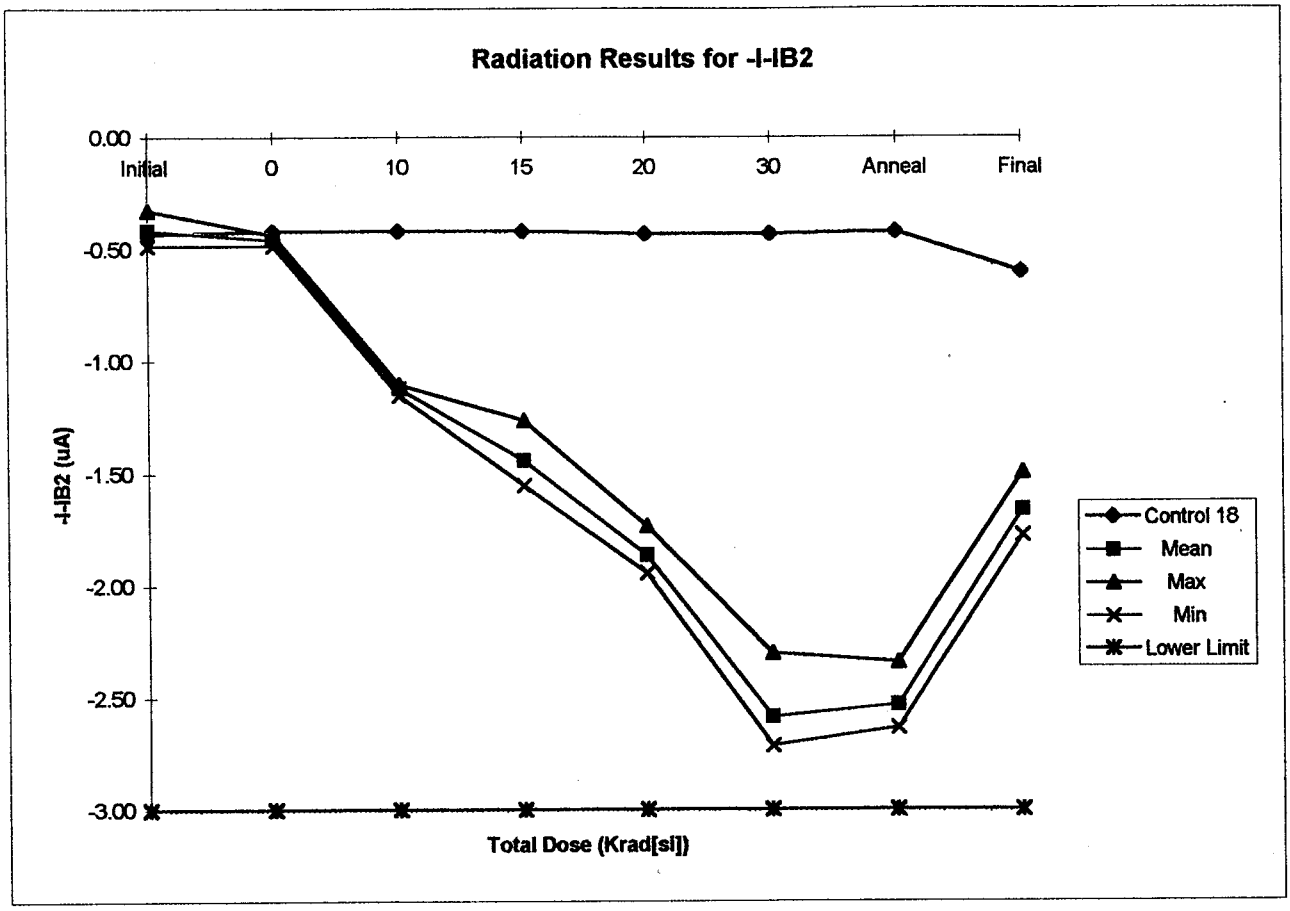
RD 241 Date Code: 9344A



Dose (kRad)	Control 18	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
	(uA)	(uA)	(uA)	(uA)	(uA)	(uA)	
Initial	-0.43	-0.47	-0.44	-0.50	-3.00	-	0.03
0	-0.43	-0.47	-0.45	-0.50	-3.00	-	0.02
10	-0.44	-1.14	-1.13	-1.16	-3.00	-	0.01
15	-0.44	-1.53	-1.47	-1.57	-3.00	-	0.04
20	-0.43	-1.88	-1.73	-1.96	-3.00	-	0.10
30	-0.43	-2.58	-2.23	-2.73	-3.00	-	0.24
Anneal	-0.44	-2.52	-2.24	-2.68	-3.00	-	5.03
Final	-0.42	-1.58	-1.52	-1.70	-3.00	-	0.10

Lot size for statistics : 4 devices

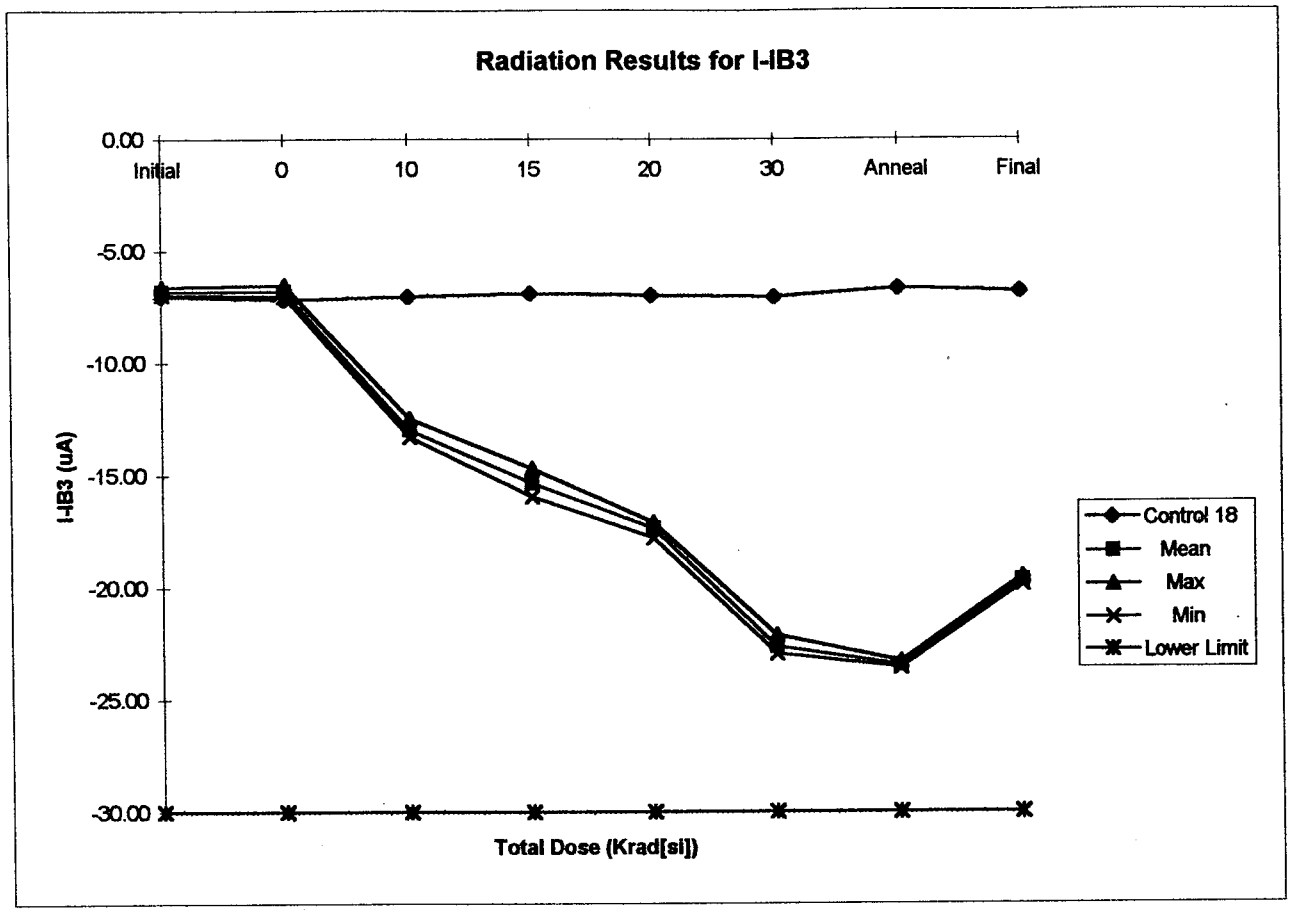
RD 241 Date Code: 9344A



Dose (kRad)	Control 18	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
	(uA)	(uA)	(uA)	(uA)	(uA)	(uA)	
Initial	-0.43	-0.41	-0.32	-0.48	-3.00	-	0.07
0	-0.42	-0.46	-0.43	-0.48	-3.00	-	0.02
10	-0.42	-1.12	-1.10	-1.15	-3.00	-	0.02
15	-0.42	-1.44	-1.26	-1.55	-3.00	-	0.13
20	-0.43	-1.86	-1.73	-1.94	-3.00	-	0.09
30	-0.43	-2.58	-2.30	-2.71	-3.00	-	0.19
Anneal	-0.42	-2.53	-2.34	-2.63	-3.00	-	5.03
Final	-0.60	-1.66	-1.49	-1.77	-3.00	-	0.15

Lot size for statistics : 4 devices

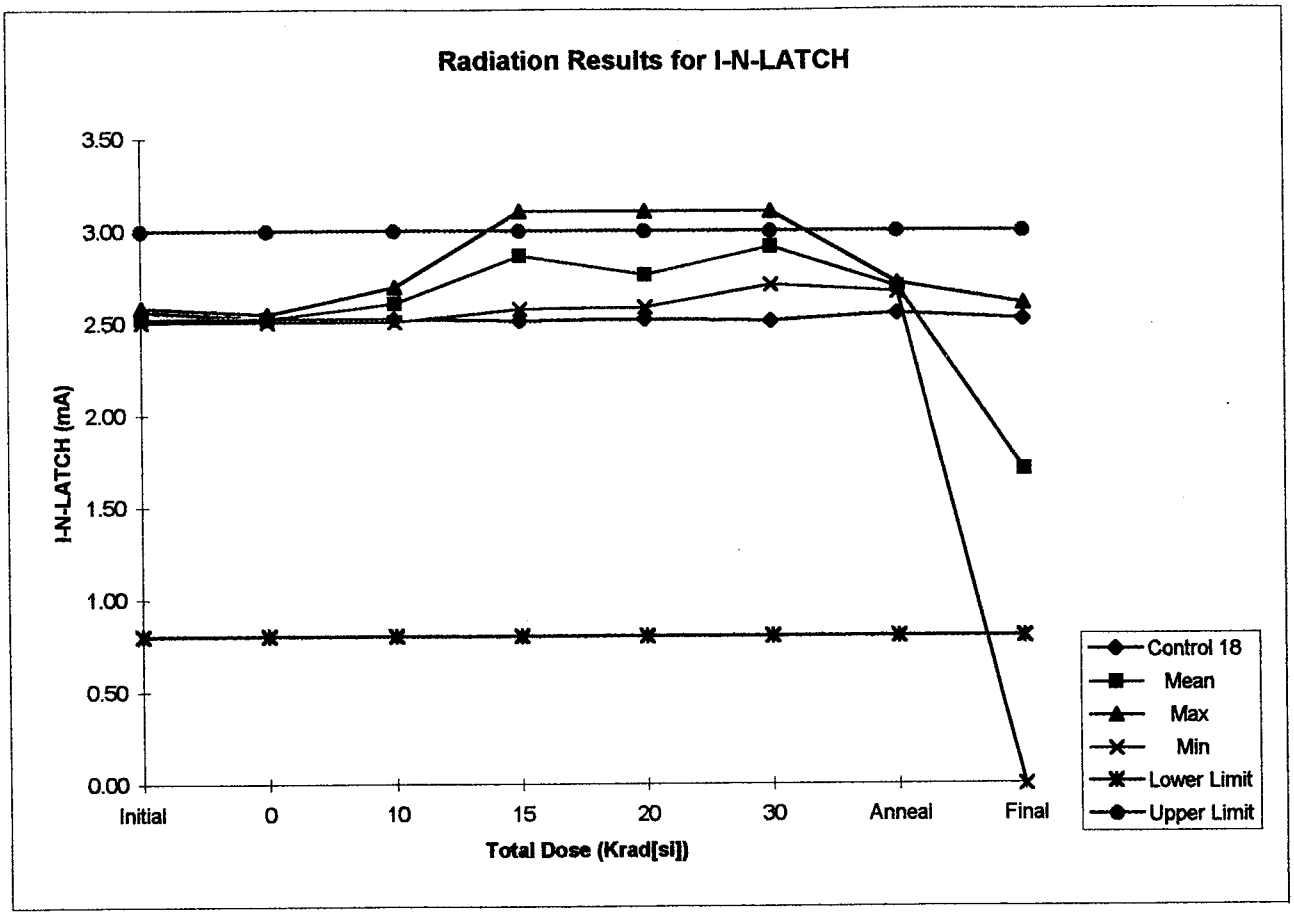
RD 241 Date Code: 9344A



Dose (kRad)	Control 18	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
	(uA)	(uA)	(uA)	(uA)	(uA)	(uA)	
Initial	-7.02	-6.75	-6.56	-6.89	-30.0	-	0.14
0	-7.19	-6.76	-6.48	-6.97	-30.0	-	0.22
10	-7.04	-12.93	-12.43	-13.26	-30.0	-	0.36
15	-6.91	-15.32	-14.68	-15.93	-30.0	-	0.60
20	-6.98	-17.34	-17.10	-17.78	-30.0	-	0.30
30	-7.06	-22.61	-22.10	-22.94	-30.0	-	0.37
Anneal	-6.68	-23.45	-23.28	-23.56	-30.0	-	11.73
Final	-6.80	-19.67	-19.50	-19.85	-30.0	-	0.18

Lot size for statistics : 4 devices

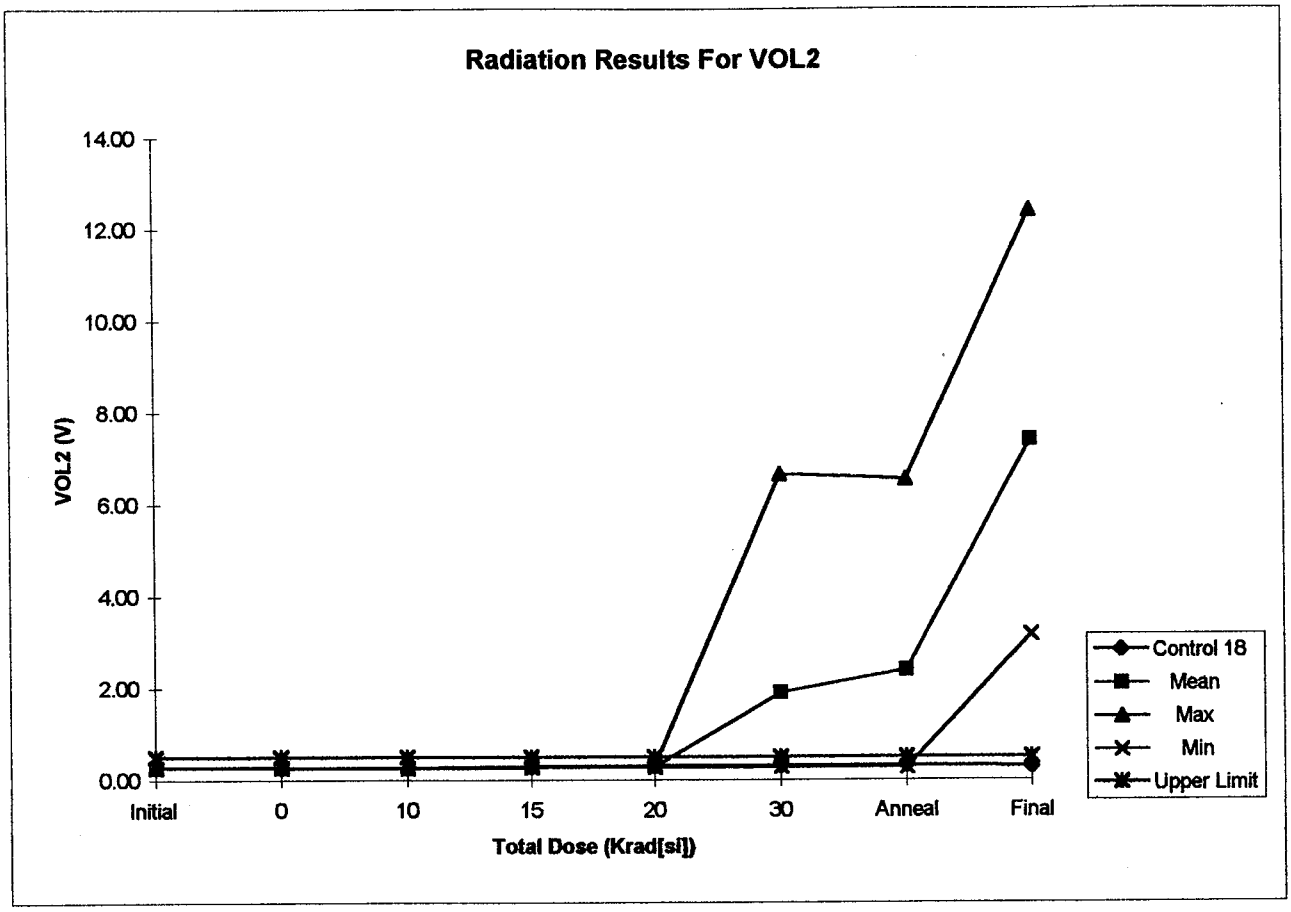
RD 241 Date Code: 9344A



Dose (kRad)	Control 18	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
	(mA)	(mA)	(mA)	(mA)	(mA)	(mA)	
Initial	2.56	2.53	2.59	2.51	0.8	3.0	0.04
0	2.52	2.53	2.55	2.51	0.8	3.0	0.02
10	2.52	2.61	2.70	2.51	0.8	3.0	0.08
15	2.51	2.87	3.11	2.58	0.8	3.0	0.28
20	2.52	2.77	3.11	2.59	0.8	3.0	0.24
30	2.51	2.92	3.11	2.71	0.8	3.0	0.21
Anneal	2.55	2.70	2.72	2.67	0.8	3.0	1.35
Final	2.52	1.71	2.61	0.00	0.8	3.0	1.48

Lot size for statistics : 4 devices

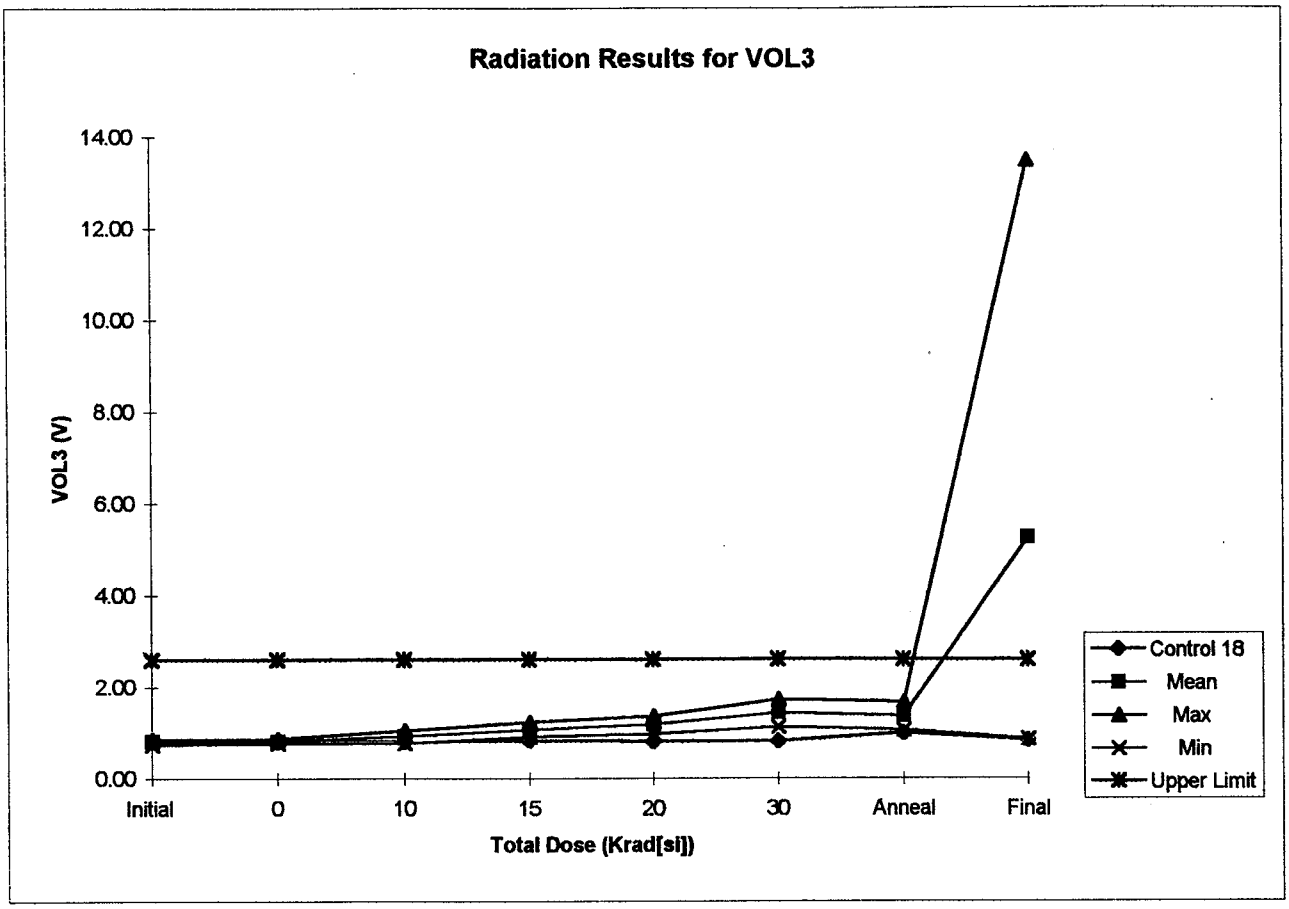
RD 241 Date Code: 9344A



Dose (kRad)	Control 18	Mean	Max	Min	Upper Limit	Lower Limit	Std.Dev.
	(V)	(V)	(V)	(V)	(V)	(V)	
Initial	0.31	0.29	0.30	0.29	0.5	-	0.01
0	0.28	0.29	0.30	0.29	0.5	-	0.01
10	0.31	0.29	0.29	0.28	0.5	-	0.00
15	0.29	0.30	0.32	0.29	0.5	-	0.01
20	0.31	0.31	0.33	0.29	0.5	-	0.02
30	0.31	1.92	6.67	0.30	0.5	-	3.17
Anneal	0.32	2.41	6.56	0.29	0.5	-	3.15
Final	0.29	7.42	12.42	3.18	0.5	-	4.67

Lot size for statistics : 4 devices

RD 241 Date Code: 9344A



Dose (kRad)	Control 18	Mean	Max	Min	Upper Limit	Lower Limit	Std.Dev.
	(V)	(V)	(V)	(V)	(V)	(V)	
Initial	0.82	0.83	0.88	0.76	2.6	-	0.05
0	0.81	0.83	0.89	0.79	2.6	-	0.04
10	0.80	0.95	1.07	0.79	2.6	-	0.12
15	0.84	1.09	1.25	0.93	2.6	-	0.13
20	0.80	1.20	1.37	0.98	2.6	-	0.16
30	0.81	1.44	1.74	1.14	2.6	-	0.25
Anneal	0.98	1.38	1.68	1.07	2.6	-	5.85
Final	0.83	5.28	13.50	0.87	2.6	-	7.13

Lot size for statistics : 4 devices

RD 241 Date Code: 9344A

IGG HUYGENS RD241	**IRRADIATION TEST PLAN NO.** HUY-IP-IG-016 1	Issue No: 1 Rev. Date: October 1996 Page: 1/6 2

Component No. HUYIG10501B 3	Component Designation:- Integrated Circuit, PWM Controller, Type UC1856J 4	Irradiation Spec No. N/A Iss. Rev. 5

Specifications Detail HUY-SP-IG-105 Issue 2 6	Acceptance Evaluation ____ Element ____ Diffusion ____ Lot X 7	Electrical Meas In-situ ____ Remote X 8	Project/Programme **HUYGENS** 9

Manufacturer: Name: Unitrode/USA Address: 7 Continental Boulevard Merrimack NH 03054-0399 Tel: 603 429 8610 10	Test Facility: Name: ERA Address: Leatherhead Surrey England 11	Originator: IGG CT Name: S Thacker Telephone: (01329) 829311 12

Radiation Source COBALT 60 13	Sample Size: 4 Control Devices: 1 14	Exposure Single ____ Multiple X 15	Annealing Test YES X NO ____ 16	Radiation Level: 10KRad(Si) 20KRad(Si) 15KRad(Si) 30KRad(Si) 17

Single Exposure
Dose [KRad(Si)]
Dose Rate [Rad(Si)/s]
Exposure Time
18

Multiple Exposure + Irradiation Steps	1	2	3	4
Dose [Krad(Si)]	10	5	5	10
Dose Rate [Rad(Si)/sec]	3	3	3	3
Exposure Time(s)	3333	1667	1667	3333

19

Bias Requirements: During and after Exposure (for remote Electrical Measurements): YES

Bias Conditions:
Test Circuits: The Electrical Bias circuit is given in Figure 1

Shielding: Shielding is required to minimise dose enhancement effects caused by low energy, scattered radiation. The test specimens shall be enclosed in a Pb/Al container of Pb 1.5mm minimum, surrounding an inner shield of 0.7 to 1.0mm Al. 20

Irradiation Test Sequence 21

TEST STEP	DESCRIPTION	REQUIREMENTS
1	Irradiation Test Samples Selection	Quantity 5 devices shall be selected from the lot delivered to IGG.
2	Serialisation	Serialisation - (if the devices are not already serialised). Test units shall be serialised 1 to 4 and the control unit shall be 5.
3	Initial Electrical Measurements (at IGG)	Per Table A herein - (Read & Record) - on all 5 parts at IGG. (See Remarks 1 and 2).

TEST STEP	DESCRIPTION	REQUIREMENTS
4	Initial Electrical Measurements	Per Table A herein - (Read & Record) - on all 5 parts at ERA. (See Remarks 1 and 2).
5	Set-Up of Test	Verify bias circuit and voltages (in-situ) for 4 test units.
6	Irradiation Exposure	Verify dose rate and position in the chamber to achieve required dose. Verify and witness duration of exposure to achieve required dose. (See Remark 3).
7	Intermediate Electrical Measurement (at ERA)	Bias to be maintained until test is performed. Test per Table A herein - (Read & Record) - on all 5 parts. Test to be performed immediately upon removal from chamber (less than 10 mins interval). Upon completion of test 4 test units shall be replaced in bias circuit and returned to chamber. Maximum interval between 2 consecutive exposures to be 30 mins. (See Remark 2).
8 to 16	Repeat Set-up/Exposure/Test sequence upto a Final Total Dose of 30KRad(Si)	Repeat steps 5, 6,7 for a total of 4 cycles as per multiple exposure in Box No: 19. (See Remark 4)
17	Annealing	Bias shall be maintained during Annealing for 4 test units. Annealing shall be at room temperature for 24 hours.
18	Post-Annealing Electrical Measurements (at IGG)	Per Table A herein - Read & Record - on all 5 parts at IGG. (See Remark 2).
19	Accelerated Aging Under Bias	Bias shall be maintained during Aging for 5 test units. Aging shall be at T_{amb} = +100 ±5°C for 168 hours.
20	Final Electrical Measurements (at IGG)	Per Table A herein - (Read & Record) - on all 5 parts at IGG. (See Remark 2).
21	Total Dose Irradiation Test Report	ESA/SCC No: 22900.

REMARKS:- 22

1. The initial electrical measurements performed at IGG (Test Step 3) shall be performed within 24 hours of the initial electrical measurements at ERA (Test Step 4).
2. All electrical testing shall be performed on the same set of equipment in order to achieve correlation of results both at IGG and ERA. All results plus details of any failures shall be advised to Project.
3. The dose rates and exposure times given above may be adjusted during irradiation testing to achieve convenient test points, but shall not exceed the limits specified in Box No: 19. The dose rates and exposure times used during the testing shall be recorded for each test step.
4. The set-up/exposure/test sequence shall be stopped for any device that exhibits repeated functional failure.

TABLE A - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE - TAMB = +25 ±5°C
BEFORE, AT INTERMEDIATE POINTS AND ON COMPLETION OF IRRADIATION TESTING

NO		CHARACTERISTICS	SYMBOL	TEST METHOD MIL-STD-883	TEST CONDITIONS	LIMITS		UNIT
						MIN	MAX	
1	REFERENCE SECTION	Output Voltage	V_{REF}	-	T_j = 25°C I_O = 1mA	5.05	5.15	V
2		Line Regulation	V_{RLINE}	-	V_{IN} = 8V to 40V	-	20	mV
3		Load Regulation	V_{RLOAD}	-	I_L = 1mA to 10mA	-	15	mV
6	OSCILLATOR SECTION	Sync Output Voltage High Level	V_{SOH}	-	I_O = -1mA	2.4	-	V
7		Sync Output Voltage Low Level	V_{SOL}	-	I_O = +1mA	-	0.4	V
12	ERROR AMPLIFIER SECTION	Input Bias Current 1	I_{IB1}	4001		-1	1	µA
13		Input Offset Current 1	I_{IO1}	4001		-	500	nA
14		Open Loop Voltage Gain	A_{VS}	4004	ΔV_O = 1.2V to 3V V_{CM} = 2V (See Note 3)	80	-	dB
15		Common Mode Rejection Ratio 1	$CMRR_1$	4003	V_{CM} = 0V to 38V V_{IN} = 40V (See Note 4)	75	-	dB
18		Output Source Current (Pin 7)	I_{SOURCE}	-	V_{ID} = 15mV COMPENSATION (Pin 7) = 2.5V	-	-0.4	mA
19		High Level Output Voltage 1	V_{OH1}	-	R_L (Pin 7)=15KΩ V_{ID} = 50mV	4.3	4.9	V
20		Low Level Output Voltage 1	V_{OL1}	-	R_L (Pin 7)=15KΩ V_{ID} = 50mV	-	1.0	V
21	CURRENT SENSE AMPLIFIER SECTION	Amplifier Gain	A_V	-	Pin 3 = 0V Pin 1 = OPEN (See Notes 6 & 7)	2.5	3.0	V/V
26		Input Bias Current 2	I_{IB2}	4001	Pin 1 = 0.5V Pin 7 = OPEN (See Note 6)	-	3	µA
27		Input Offset Current 2	I_{IO2}	4001	Pin 1 = 0.5V Pin 7 = OPEN (See Note 6)	-	1	µA

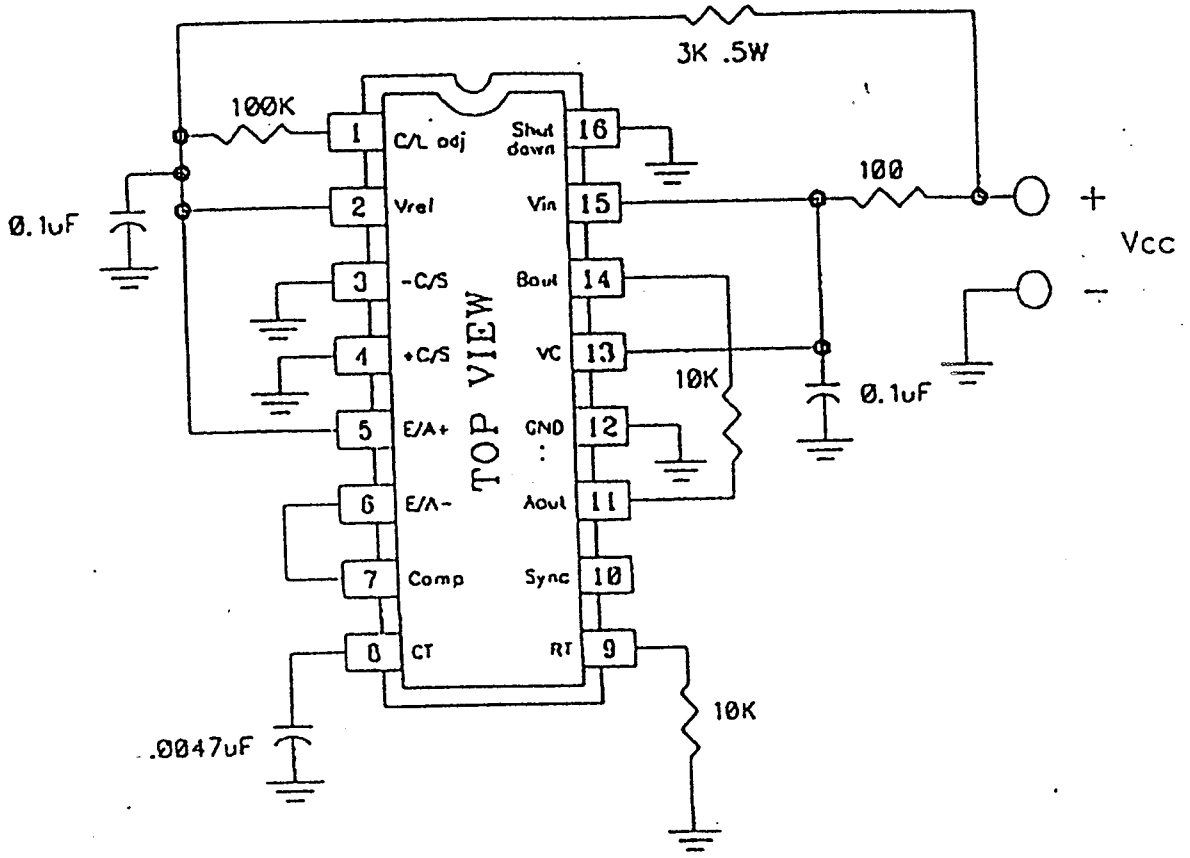
NOTES:- See Page 5.

TABLE A - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE - TAMB = +25 ±5°C BEFORE, AT INTERMEDIATE POINTS AND ON COMPLETION OF IRRADIATION TESTING - (CONTINUED...)

NO		CHARACTERISTICS	SYMBOL	TEST METHOD MIL-STD-883	TEST CONDITIONS (SEE NOTE 1)	LIMITS		UNIT	
						MIN	MAX		
29	CURRENT LIMIT ADJUST SECTION	Input Bias Current 3	I_{IB3}	4001	Pin 5 = V_{REF} Pin 6 = 0V	-	30	µA	32
31	SHUTDOWN TERMINAL SECTION	Minimum Latching Current (Pin 1)	I_{LATCH}	-	See Note 8	3.0	-	mA	34
32		Maximum Non-Latching Current (Pin 1)	$I_{N-LATCH}$	-	See Note 9	-	0.8	mA	34
34	OUTPUT SECTION	Collector Leakage Current	I_C	-	V_C = 40V	-	200	µA	37
35		Low Level Output Voltage 2	V_{OL2}	-	I_{SINK} = 20mA	-	0.5	V	38
36		Low Level Output Voltage 3	V_{OL3}	-	I_{SINK} = 200mA	-	2.6	V	39
41	TOTAL STANDBY	Supply Current	I_{IN}	-	-	-	23	mA	1

NOTES:- See Page 5.

FIGURE 5(b) - ELECTRICAL CIRCUIT FOR IRRADIATION TESTING



NOTES:-

1. All resistors are ±5% ⅛W.
2. All Capacitors are ±10% 50V
3. V_{cc} = 35V, I_{cc} = 14mA.

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for UTS3
RD241 UC1856J INIT EMS @ IGG / V 1.0 IR 04/09/96 ROOM TEMP

Results file : RD241 UC1856J INIT EMS @ IGG from: 04.08.97 / 09:27:45
Operator : PAUL RUSSELL
Part number : UC1856J
Lot number : RD241
Order number : D/C 9344A
Vendor : UNITRODE
: CONTROL 18 ; RAD 21,22,26,27
: INITIAL EMS @ IGG
: UC1856 HUY-SP-IG-105 ISSUE 2 RM / V1.0 IR 04/09/96 ROOMTEMP

Test steps

1.	Supply Current	0.00	...	23.00	mA
2.	Vos Error Amplifier	not active			
3.	+I.Bias - Error Amp.	-1.00	...	0.00	uA
4.	-I.Bias - Error Amp.	-1.00	...	0.00	uA
5.	Ios - Error Amp.	0.00	...	500.00	nA
6.	Avs Error Amplifier	80.000	...	120.000	dB
7.	PSRR Error Amplifier	not active			
8.	CMRR Error Amplifier	75.0	...	140.0	dB
9.	I-Sink Error Amp.	not active			
10.	I-Source Error Amp.	-10.00	...	-0.40	mA
11.	V-oh Error Amplifier	4.30	...	4.90	V
12.	V-ol Error Amplifier	0.00	...	1.00	V
13.	V-ref Output Voltage	5.05	...	5.15	V
14.	Line Regulation	0.0	...	20.0	mV
15.	Load Regulation	0.0	...	15.0	mV
16.	Isc - Voltage Ref.	not active			
17.	Current Sense Gain	2.50	...	3.00	V/V
18.	Current Sense V-Diff	not active			
19.	Vos Current Sense	not active			
20.	CMRR Current Sense	not active			
21.	PSRR Current Sense	not active			
22.	Current Sense +IBias	-3.00	...	0.00	uA
23.	Current Sense -IBias	-3.00	...	0.00	uA
24.	Current Sense Ios	0.00	...	1.00	uA
25.	V-oh Sync Output	2.40	...	5.00	V
26.	V-ol Sync Output	0.00	...	0.40	V
27.	V-ih/V-il Sync Input	not active			
28.	I-in Sync Input	not active			
29.	Initial Accuracy	not active			
30.	Voltage Stability	not active			
31.	Vos Current Limit	not active			
32.	Current Limit I-Bias	-30.00	...	0.00	uA
33.	Shutdown V-th	not active			
34.	Shutdown I-N-Latch	0.80	...	3.00	mA
35.	UVLO Shutdown V-th	not active			
36.	UVLO Start-Up V-th	not active			
37.	Vc Leakage Current	0.00	...	200.00	uA
38.	VOL @ 20mA	0.00	...	0.50	V
39.	VOL @ 200mA	0.00	...	2.60	V
40.	VOH @ 20mA	not active			
41.	VOH @ 200mA	not active			

		18	21	22	26	27
1.1	[mA]	17.50	17.34	18.02	17.62	17.59
3.1	[uA]	-0.13	-0.13	-0.11	-0.12	-0.12
4.1	[uA]	-0.12	-0.12	-0.11	-0.11	-0.12
5.1	[nA]	11.50	10.33	2.00	13.83	2.67
6.1	[dB]	87.642	87.639	87.687	90.123	87.639
8.1	[dB]	93.4	93.4	93.4	93.4	93.4
10.1	[mA]	-0.49	-0.48	-0.50	-0.48	-0.49
11.1	[V]	4.63	4.64	4.66	4.66	4.68
12.1	[V]	0.72	0.73	0.73	0.73	0.75
13.1	[V]	5.09	5.09	5.12	5.11	5.13
14.1	[mV]	3.1	2.6	3.1	3.3	3.3
15.1	[mV]	0.9	0.5	2.1	1.0	9.1
17.1	[V/V]	2.60	2.60	2.60	2.60	2.60
22.1	[uA]	-0.43	-0.47	-0.44	-0.45	-0.50
23.1	[uA]	-0.43	-0.44	-0.32	-0.41	-0.48
24.1	[uA]	0.01	0.03	0.12	0.04	0.01
25.1	[V]	3.91	3.90	3.93	3.93	3.94
26.1	[V]	0.33	0.33	0.33	0.34	0.35
32.1	[uA]	-7.02	-6.89	-6.56	-6.78	-6.78
34.1	[mA]	2.56	2.59	2.51	2.51	2.51
37.1	[uA]	0.07	0.06	0.07	0.12	0.07
38.1	[V]	0.31	0.30	0.29	0.29	0.29
38.2	[V]	0.28	0.28	0.30	0.28	0.30
39.1	[V]	0.82	0.86	0.76	0.81	0.88
39.2	[V]	0.78	0.83	0.77	0.75	0.85

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for UTS3
RD241_UC1856J_INIT_EMS_@_ERA / V 1.0 IR 04/09/96 ROOM TEMP

Results file : RD241_UC1856J_INIT_EMS_@_ERA from: 05.08.97 / 10:47:28
Operator : PAUL RUSSELL
Part number : UC1856J
Lot number : RD241
Order number : O/C 9344A
Vendor : UNITRODE
: CONTROL 18 ; RAD 21,22,26,27
: INITIAL EMS @ ERA
: UC1856 HUY-SP-IG-105 ISSUE 2 RM / V1.0 IR 04/09/96 ROOMTEMP

Test steps

1.	Supply Current	0.00	...	23.00	mA
2.	Vos Error Amplifier	not active			
3.	+I.Bias - Error Amp.	-1.00	...	0.00	uA
4.	-I.Bias - Error Amp.	-1.00	...	0.00	uA
5.	Ios - Error Amp.	0.00	...	500.00	nA
6.	Avs Error Amplifier	80.000	...	120.000	dB
7.	PSRR Error Amplifier	not active			
8.	CMRR Error Amplifier	75.0	...	140.0	dB
9.	I-Sink Error Amp.	not active			
10.	I-Source Error Amp.	-10.00	...	-0.40	mA
11.	V-oh Error Amplifier	4.30	...	4.90	V
12.	V-ol Error Amplifier	0.00	...	1.00	V
13.	V-ref Output Voltage	5.05	...	5.15	V
14.	Line Regulation	0.0	...	20.0	mV
15.	Load Regulation	0.0	...	15.0	mV
16.	Isc - Voltage Ref.	not active			
17.	Current Sense Gain	2.50	...	3.00	V/V
18.	Current Sense V-Diff	not active			
19.	Vos Current Sense	not active			
20.	CMRR Current Sense	not active			
21.	PSRR Current Sense	not active			
22.	Current Sense +IBias	-3.00	...	0.00	uA
23.	Current Sense -IBias	-3.00	...	0.00	uA
24.	Current Sense Ios	0.00	...	1.00	uA
25.	V-oh Sync Output	2.40	...	5.00	V
26.	V-ol Sync Output	0.00	...	0.40	V
27.	V-ih/V-il Sync Input	not active			
28.	I-in Sync Input	not active			
29.	Initial Accuracy	not active			
30.	Voltage Stability	not active			
31.	Vos Current Limit	not active			
32.	Current Limit I-Bias	-30.00	...	0.00	uA
33.	Shutdown V-th	not active			
34.	Shutdown I-N-Latch	0.80	...	3.00	mA
35.	UVLO Shutdown V-th	not active			
36.	UVLO Start-Up V-th	not active			
37.	Vc Leakage Current	0.00	...	200.00	uA
38.	VOL @ 20mA	0.00	...	0.50	V
39.	VOL @ 200mA	0.00	...	2.60	V
40.	VOH @ 20mA	not active			
41.	VOH @ 200mA	not active			

		18	21	22	26	27
1.1	[mA]	17.72	17.38	18.08	17.65	17.57
3.1	[uA]	-0.12	-0.12	-0.12	-0.13	-0.13
4.1	[uA]	-0.12	-0.11	-0.12	-0.12	-0.13
5.1	[nA]	5.67	4.33	7.00	9.67	0.33
6.1	[dB]	87.684	87.806	87.775	89.846	87.799
8.1	[dB]	93.4	93.4	93.4	93.4	93.4
10.1	[mA]	-0.49	-0.48	-0.50	-0.49	-0.49
11.1	[V]	4.65	4.64	4.66	4.66	4.66
12.1	[V]	0.74	0.73	0.73	0.73	0.73
13.1	[V]	5.09	5.09	5.11	5.11	5.11
14.1	[mV]	3.4	2.7	3.9	3.4	3.4
15.1	[mV]	0.6	1.2	0.9	0.7	0.9
17.1	[V/V]	2.60	2.60	2.60	2.60	2.60
22.1	[uA]	-0.43	-0.46	-0.45	-0.47	-0.50
23.1	[uA]	-0.42	-0.46	-0.43	-0.45	-0.48
24.1	[uA]	0.01	0.01	0.03	0.02	0.02
25.1	[V]	3.89	3.89	3.92	3.92	3.92
26.1	[V]	0.33	0.33	0.33	0.34	0.34
32.1	[uA]	-7.19	-6.89	-6.48	-6.71	-6.97
34.1	[mA]	2.52	2.51	2.52	2.52	2.55
37.1	[uA]	0.06	0.06	0.06	0.11	0.07
38.1	[V]	0.28	0.30	0.29	0.29	0.29
38.2	[V]	0.29	0.28	0.29	0.28	0.30
39.1	[V]	0.81	0.89	0.79	0.80	0.83
39.2	[V]	0.79	0.85	0.71	0.74	0.80

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for UTS3
RD241_UC1856J_EMS_@_10_KRAD / V 1.0 IR 04/09/96 ROOM TEMP

Results file : RD241_UC1856J_EMS_@_10_KRAD from: 05.08.97 / 11:01:33
Operator : PAUL RUSSELL
Part number : UC1856J
Lot number : RD241
Order number : D/C 9344A
Vendor : UNITRODE
: CONTROL 18 ; RAD 21,22,26,27
: EMS @ 10 KRAD
: UC1856 HUY-SP-IG-105 ISSUE 2 RM / V1.0 IR 04/09/96 ROOMTEMP

Test steps

1.	Supply Current	0.00	...	23.00	mA
2.	Vos Error Amplifier	not active			
3.	+I.Bias - Error Amp.	-1.00	...	0.00	uA
4.	-I.Bias - Error Amp.	-1.00	...	0.00	uA
5.	Ios - Error Amp.	0.00	...	500.00	nA
6.	Avs Error Amplifier	80.000	...	120.000	dB
7.	PSRR Error Amplifier	not active			
8.	CMRR Error Amplifier	75.0	...	140.0	dB
9.	I-Sink Error Amp.	not active			
10.	I-Source Error Amp.	-10.00	...	-0.40	mA
11.	V-oh Error Amplifier	4.30	...	4.90	V
12.	V-ol Error Amplifier	0.00	...	1.00	V
13.	V-ref Output Voltage	5.05	...	5.15	V
14.	Line Regulation	0.0	...	20.0	mV
15.	Load Regulation	0.0	...	15.0	mV
16.	Isc - Voltage Ref.	not active			
17.	Current Sense Gain	2.50	...	3.00	V/V
18.	Current Sense V-Diff	not active			
19.	Vos Current Sense	not active			
20.	CMRR Current Sense	not active			
21.	PSRR Current Sense	not active			
22.	Current Sense +IBias	-3.00	...	0.00	uA
23.	Current Sense -IBias	-3.00	...	0.00	uA
24.	Current Sense Ios	0.00	...	1.00	uA
25.	V-oh Sync Output	2.40	...	5.00	V
26.	V-ol Sync Output	0.00	...	0.40	V
27.	V-ih/V-il Sync Input	not active			
28.	I-in Sync Input	not active			
29.	Initial Accuracy	not active			
30.	Voltage Stability	not active			
31.	Vos Current Limit	not active			
32.	Current Limit I-Bias	-30.00	...	0.00	uA
33.	Shutdown V-th	not active			
34.	Shutdown I-N-Latch	0.80	...	3.00	mA
35.	UVLO Shutdown V-th	not active			
36.	UVLO Start-Up V-th	not active			
37.	Vc Leakage Current	0.00	...	200.00	uA
38.	VOL @ 20mA	0.00	...	0.50	V
39.	VOL @ 200mA	0.00	...	2.60	V
40.	VOH @ 20mA	not active			
41.	VOH @ 200mA	not active			

		18	21	22	26	27
1.1	[mA]	17.70	17.00	17.72	17.38	17.32
3.1	[uA]	-0.11	-0.33	-0.31	-0.31	-0.32
4.1	[uA]	-0.10	-0.31	-0.28	-0.29	-0.30
5.1	[nA]	6.17	21.00	25.83	24.67	18.00
6.1	[dB]	87.733	87.680	87.740	87.831	87.691
8.1	[dB]	93.4	93.4	93.4	93.4	93.4
10.1	[mA]	-0.48	-0.44	-0.46	-0.45	-0.45
11.1	[V]	4.65	4.62	4.65	4.65	4.66
12.1	[V]	0.74	0.73	0.73	0.73	0.73
13.1	[V]	5.09	5.08	5.11	5.11	5.10
14.1	[mV]	3.0	4.0	3.8	4.8	6.6
15.1	[mV]	0.7	0.4	0.9	0.8	0.1
17.1	[V/V]	2.60	2.60	2.60	2.60	2.60
22.1	[uA]	-0.44	-1.14	-1.13	-1.16	-1.14
23.1	[uA]	-0.42	-1.12	-1.10	-1.15	-1.10
24.1	[uA]	0.03	0.02	0.03	0.01	0.03
25.1	[V]	3.90	3.88	3.91	3.90	3.90
26.1	[V]	0.33	0.33	0.33	0.34	0.34
32.1	[uA]	-7.04	-13.09	-12.43	-12.95	-13.26
34.1	[mA]	2.52	2.70	2.59	2.51	2.64
37.1	[uA]	0.06	0.06	0.06	0.12	0.07
38.1	[V]	0.31	0.29	0.28	0.29	0.29
38.2	[V]	0.28	0.28	0.28	0.30	0.30
39.1	[V]	0.80	1.07	0.79	0.97	0.96
39.2	[V]	0.79	1.02	0.78	0.90	0.98

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for UTS3
RD241_UC1856J_EMS_@_15_KRAD / V 1.0 IR 04/09/96 ROOM TEMP

Results file : RD241_UC1856J_EMS_@_15_KRAD from: 05.08.97 / 12:18:23
Operator : PAUL RUSSELL
Part number : UC1856J
Lot number : RD241
Order number : D/C 9344A
Vendor : UNITRODE
: CONTROL 18 ; RAD 21,22,26,27
: EMS @ 15 KRAD
: UC1856 HUY-SP-IG-105 ISSUE 2 RM / V1.0 IR 04/09/96 ROOMTEMP

Test steps

1.	Supply Current	0.00	...	23.00	mA
2.	Vos Error Amplifier	not active			
3.	+I.Bias - Error Amp.	-1.00	...	0.00	uA
4.	-I.Bias - Error Amp.	-1.00	...	0.00	uA
5.	Ios - Error Amp.	0.00	...	500.00	nA
6.	Avs Error Amplifier	80.000	...	120.000	dB
7.	PSRR Error Amplifier	not active			
8.	CMRR Error Amplifier	75.0	...	140.0	dB
9.	I-Sink Error Amp.	not active			
10.	I-Source Error Amp.	-10.00	...	-0.40	mA
11.	V-oh Error Amplifier	4.30	...	4.90	V
12.	V-ol Error Amplifier	0.00	...	1.00	V
13.	V-ref Output Voltage	5.05	...	5.15	V
14.	Line Regulation	0.0	...	20.0	mV
15.	Load Regulation	0.0	...	15.0	mV
16.	Isc - Voltage Ref.	not active			
17.	Current Sense Gain	2.50	...	3.00	V/V
18.	Current Sense V-Diff	not active			
19.	Vos Current Sense	not active			
20.	CMRR Current Sense	not active			
21.	PSRR Current Sense	not active			
22.	Current Sense +IBias	-3.00	...	0.00	uA
23.	Current Sense -IBias	-3.00	...	0.00	uA
24.	Current Sense Ios	0.00	...	1.00	uA
25.	V-oh Sync Output	2.40	...	5.00	V
26.	V-ol Sync Output	0.00	...	0.40	V
27.	V-ih/V-il Sync Input	not active			
28.	I-in Sync Input	not active			
29.	Initial Accuracy	not active			
30.	Voltage Stability	not active			
31.	Vos Current Limit	not active			
32.	Current Limit I-Bias	-30.00	...	0.00	uA
33.	Shutdown V-th	not active			
34.	Shutdown I-N-Latch	0.80	...	3.00	mA
35.	UVLO Shutdown V-th	not active			
36.	UVLO Start-Up V-th	not active			
37.	Vc Leakage Current	0.00	...	200.00	uA
38.	VOL @ 20mA	0.00	...	0.50	V
39.	VOL @ 200mA	0.00	...	2.60	V
40.	VOH @ 20mA	not active			
41.	VOH @ 200mA	not active			

		18	21	22	26	27
1.1	[mA]	17.69	16.83	17.64	17.27	17.18
3.1	[uA]	-0.12	-0.43	-0.42	-0.44	-0.43
4.1	[uA]	-0.11	-0.40	-0.39	-0.39	-0.39
5.1	[nA]	14.50	32.17	29.17	48.83	33.50
6.1	[dB]	87.659	87.680	87.694	87.687	87.712
8.1	[dB]	93.4	93.4	93.4	93.4	93.4
10.1	[mA]	-0.49	-0.42	-0.43	-0.43	-0.43
11.1	[V]	4.65	4.62	4.65	4.65	4.65
12.1	[V]	0.74	0.73	0.74	0.74	0.73
13.1	[V]	5.10	5.07	5.10	5.10	5.10
14.1	[mV]	3.1	3.9	5.4	7.1	7.6
15.1	[mV]	2.5	1.6	1.9	0.7	0.0
17.1	[V/V]	2.60	2.60	2.60	2.60	2.60
22.1	[uA]	-0.44	-1.53	-1.54	-1.57	-1.47
23.1	[uA]	-0.42	-1.26	-1.50	-1.55	-1.45
24.1	[uA]	0.03	0.27	0.03	0.01	0.02
25.1	[V]	3.90	3.86	3.90	3.88	3.88
26.1	[V]	0.33	0.33	0.33	0.34	0.34
32.1	[uA]	-6.91	-15.72	-14.96	-14.68	-15.93
34.1	[mA]	2.51	3.11 F	3.11 F	2.58	2.67
37.1	[uA]	0.07	0.06	0.06	0.12	0.07
38.1	[V]	0.29	0.30	0.32	0.29	0.29
38.2	[V]	0.29	0.29	0.30	0.30	0.30
39.1	[V]	0.84	1.25	0.93	1.07	1.10
39.2	[V]	0.80	1.18	0.86	1.00	1.09

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for UTS3
RD241_UC1856J_EMS_@_20_KRAD / V 1.0 IR 04/09/96 ROOM TEMP

Results file : RD241_UC1856J_EMS_@_20_KRAD from: 05.08.97 / 12:51:28
Operator : PAUL RUSSELL
Part number : UC1856J
Lot number : RD241
Order number : D/C 9344A
Vendor : UNITRODE
: CONTROL 18 ; RAD 21,22,26,27
: EMS @ 20 KRAD
: UC1856 HUY-SP-I6-105 ISSUE 2 RM / V1.0 IR 04/09/96 ROOMTEMP

Test steps

1.	Supply Current	0.00	...	23.00	mA
2.	Vos Error Amplifier	not active			
3.	+I.Bias - Error Amp.	-1.00	...	0.00	uA
4.	-I.Bias - Error Amp.	-1.00	...	0.00	uA
5.	Ios - Error Amp.	0.00	...	500.00	nA
6.	Avs Error Amplifier	80.000	...	120.000	dB
7.	PSRR Error Amplifier	not active			
8.	CMRR Error Amplifier	75.0	...	140.0	dB
9.	I-Sink Error Amp.	not active			
10.	I-Source Error Amp.	-10.00	...	-0.40	mA
11.	V-oh Error Amplifier	4.30	...	4.90	V
12.	V-ol Error Amplifier	0.00	...	1.00	V
13.	V-ref Output Voltage	5.05	...	5.15	V
14.	Line Regulation	0.0	...	20.0	mV
15.	Load Regulation	0.0	...	15.0	mV
16.	Isc - Voltage Ref.	not active			
17.	Current Sense Gain	2.50	...	3.00	V/V
18.	Current Sense V-Diff	not active			
19.	Vos Current Sense	not active			
20.	CMRR Current Sense	not active			
21.	PSRR Current Sense	not active			
22.	Current Sense +IBias	-3.00	...	0.00	uA
23.	Current Sense -IBias	-3.00	...	0.00	uA
24.	Current Sense Ios	0.00	...	1.00	uA
25.	V-oh Sync Output	2.40	...	5.00	V
26.	V-ol Sync Output	0.00	...	0.40	V
27.	V-ih/V-il Sync Input	not active			
28.	I-in Sync Input	not active			
29.	Initial Accuracy	not active			
30.	Voltage Stability	not active			
31.	Vos Current Limit	not active			
32.	Current Limit I-Bias	-30.00	...	0.00	uA
33.	Shutdown V-th	not active			
34.	Shutdown I-N-Latch	0.80	...	3.00	mA
35.	UVLO Shutdown V-th	not active			
36.	UVLO Start-Up V-th	not active			
37.	Vc Leakage Current	0.00	...	200.00	uA
38.	VOL @ 20mA	0.00	...	0.50	V
39.	VOL @ 200mA	0.00	...	2.60	V
40.	VOH @ 20mA	not active			
41.	VOH @ 200mA	not active			

		18	21	22	26	27
1.1	[mA]	17.68	16.44	17.40	17.05	17.01
3.1	[uA]	-0.13	-0.58	-0.56	-0.57	-0.53
4.1	[uA]	-0.12	-0.53	-0.51	-0.51	-0.47
5.1	[nA]	3.00	48.50	51.50	63.33	51.67
6.1	[dB]	87.733	87.701	87.806	87.708	87.771
8.1	[dB]	93.4	93.4	93.4	93.4	93.4
10.1	[mA]	-0.48	-0.39 F	-0.41	-0.41	-0.41
11.1	[V]	4.65	4.58	4.63	4.63	4.64
12.1	[V]	0.73	0.72	0.73	0.73	0.73
13.1	[V]	5.09	5.05	5.08	5.09	5.08
14.1	[mV]	3.0	5.9	7.4	7.1	9.1
15.1	[mV]	1.0	1.7	0.7	1.1	0.1
17.1	[V/V]	2.60	2.60	2.60	2.60	2.60
22.1	[uA]	-0.43	-1.90	-1.94	-1.96	-1.73
23.1	[uA]	-0.43	-1.88	-1.90	-1.94	-1.73
24.1	[uA]	0.00	0.02	0.04	0.03	0.00
25.1	[V]	3.90	3.86	3.88	3.86	3.86
26.1	[V]	0.33	0.33	0.33	0.34	0.34
32.1	[uA]	-6.98	-17.10	-17.78	-17.20	-17.29
34.1	[mA]	2.52	3.11 F	2.61	2.59	2.75
37.1	[uA]	0.07	0.06	0.06	0.12	0.07
38.1	[V]	0.31	0.30	0.29	0.30	0.33
38.2	[V]	0.29	0.29	0.29	0.30	0.30
39.1	[V]	0.80	1.37	0.98	1.21	1.22
39.2	[V]	0.81	1.30	0.93	1.08	1.17

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for UTS3
RD241_UC1856J_EMS_@_30_KRAD / V 1.0 IR 04/09/96 ROOM TEMP

Results file : RD241_UC1856J_EMS_@_30_KRAD from: 05.08.97 / 13:30:11
Operator : PAUL RUSSELL
Part number : UC1856J
Lot number : RD241
Order number : D/C 9344A
Vendor : UNITRODE
: CONTROL 18 ; RAD 21,22,26,27
: EMS @ 30 KRAD
: UC1856 HUY-SP-IG-105 ISSUE 2 RM / V1.0 IR 04/09/96 ROOMTEMP

Test steps

1.	Supply Current	0.00	...	23.00	mA
2.	Vos Error Amplifier	not active			
3.	+I.Bias - Error Amp.	-1.00	...	0.00	uA
4.	-I.Bias - Error Amp.	-1.00	...	0.00	uA
5.	Ios - Error Amp.	0.00	...	500.00	nA
6.	Avs Error Amplifier	80.000	...	120.000	dB
7.	PSRR Error Amplifier	not active			
8.	CMRR Error Amplifier	75.0	...	140.0	dB
9.	I-Sink Error Amp.	not active			
10.	I-Source Error Amp.	-10.00	...	-0.40	mA
11.	V-oh Error Amplifier	4.30	...	4.90	V
12.	V-ol Error Amplifier	0.00	...	1.00	V
13.	V-ref Output Voltage	5.05	...	5.15	V
14.	Line Regulation	0.0	...	20.0	mV
15.	Load Regulation	0.0	...	15.0	mV
16.	Isc - Voltage Ref.	not active			
17.	Current Sense Gain	2.50	...	3.00	V/V
18.	Current Sense V-Diff	not active			
19.	Vos Current Sense	not active			
20.	CMRR Current Sense	not active			
21.	PSRR Current Sense	not active			
22.	Current Sense +IBias	-3.00	...	0.00	uA
23.	Current Sense -IBias	-3.00	...	0.00	uA
24.	Current Sense Ios	0.00	...	1.00	uA
25.	V-oh Sync Output	2.40	...	5.00	V
26.	V-ol Sync Output	0.00	...	0.40	V
27.	V-ih/V-il Sync Input	not active			
28.	I-in Sync Input	not active			
29.	Initial Accuracy	not active			
30.	Voltage Stability	not active			
31.	Vos Current Limit	not active			
32.	Current Limit I-Bias	-30.00	...	0.00	uA
33.	Shutdown V-th	not active			
34.	Shutdown I-N-Latch	0.80	...	3.00	mA
35.	UVLO Shutdown V-th	not active			
36.	UVLO Start-Up V-th	not active			
37.	Vc Leakage Current	0.00	...	200.00	uA
38.	VOL @ 20mA	0.00	...	0.50	V
39.	VOL @ 200mA	0.00	...	2.60	V
40.	VOH @ 20mA	not active			
41.	VOH @ 200mA	not active			

		18	21	22	26	27
1.1	[mA]	17.67	15.93	16.88	16.76	16.75
3.1	[uA]	-0.12	-0.86	-0.84	-0.88	-0.81
4.1	[uA]	-0.12	-0.76	-0.74	-0.76	-0.68
5.1	[nA]	1.17	98.50	101.33	116.67	128.17
6.1	[dB]	87.611	87.715	87.747	90.063	87.474
8.1	[dB]	93.4	93.4	93.4	93.4	93.4
10.1	[mA]	-0.49	-0.36 F	-0.37 F	-0.37 F	-0.38 F
11.1	[V]	4.65	4.52	4.57	4.62	4.63
12.1	[V]	0.73	0.71	0.73	0.73	0.73
13.1	[V]	5.09	5.01 F	5.04 F	5.09	5.10
14.1	[mV]	3.2	9.5	10.8	1.3	0.3
15.1	[mV]	0.6	1.3	0.6	0.7	3.7
17.1	[V/V]	2.60	2.60	2.60	2.60	2.60
22.1	[uA]	-0.43	-2.63	-2.73	-2.73	-2.23
23.1	[uA]	-0.43	-2.65	-2.67	-2.71	-2.30
24.1	[uA]	0.00	0.02	0.06	0.02	0.07
25.1	[V]	3.90	3.80	3.84	3.85	3.86
26.1	[V]	0.33	0.32	0.32	0.34	0.34
32.1	[uA]	-7.06	-22.10	-22.94	-22.56	-22.83
34.1	[mA]	2.51	3.09 F	2.71	2.76	3.11 F
37.1	[uA]	0.07	0.06	0.06	0.12	0.07
38.1	[V]	0.31	0.30	0.31	6.67 F	0.38
38.2	[V]	0.28	0.29	0.29	1.09 F	0.30
39.1	[V]	0.81	1.74	1.14	1.39	1.50
39.2	[V]	0.77	1.65	1.07	1.24	1.45

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for UTS3
RD241_UC1856J_POST_ANNEAL_EMS / V 1.0 IR 04/09/96 ROOM TEMP

Results file : RD241_UC1856J_POST_ANNEAL_EMS from: 07.08.97 / 09:02:37
Operator : PAUL RUSSELL
Part number : UC1856J
Lot number : RD241
Order number : D/C 9344A
Vendor : UNITRODE
: CONTROL 18 ; RAD 21,22,26,27
: POST ANNEAL EMS
: UC1856 HUY-SP-IG-105 ISSUE 2 RM / V1.0 IR 04/09/96 ROOMTEMP

Test steps

1.	Supply Current	0.00	...	23.00	mA
2.	Vos Error Amplifier	not active			
3.	+I.Bias - Error Amp.	-1.00	...	0.00	uA
4.	-I.Bias - Error Amp.	-1.00	...	0.00	uA
5.	Ios - Error Amp.	0.00	...	500.00	nA
6.	Avs Error Amplifier	80.000	...	120.000	dB
7.	PSRR Error Amplifier	not active			
8.	CMRR Error Amplifier	75.0	...	140.0	dB
9.	I-Sink Error Amp.	not active			
10.	I-Source Error Amp.	-10.00	...	-0.40	mA
11.	V-oh Error Amplifier	4.30	...	4.90	V
12.	V-ol Error Amplifier	0.00	...	1.00	V
13.	V-ref Output Voltage	5.05	...	5.15	V
14.	Line Regulation	0.0	...	20.0	mV
15.	Load Regulation	0.0	...	15.0	mV
16.	Isc - Voltage Ref.	not active			
17.	Current Sense Gain	2.50	...	3.00	V/V
18.	Current Sense V-Diff	not active			
19.	Vos Current Sense	not active			
20.	CMRR Current Sense	not active			
21.	PSRR Current Sense	not active			
22.	Current Sense +IBias	-3.00	...	0.00	uA
23.	Current Sense -IBias	-3.00	...	0.00	uA
24.	Current Sense Ios	0.00	...	1.00	uA
25.	V-oh Sync Output	2.40	...	5.00	V
26.	V-ol Sync Output	0.00	...	0.40	V
27.	V-ih/V-il Sync Input	not active			
28.	I-in Sync Input	not active			
29.	Initial Accuracy	not active			
30.	Voltage Stability	not active			
31.	Vos Current Limit	not active			
32.	Current Limit I-Bias	-30.00	...	0.00	uA
33.	Shutdown V-th	not active			
34.	Shutdown I-N-Latch	0.80	...	3.00	mA
35.	UVLO Shutdown V-th	not active			
36.	UVLO Start-Up V-th	not active			
37.	Vc Leakage Current	0.00	...	200.00	uA
38.	VOL @ 20mA	0.00	...	0.50	V
39.	VOL @ 200mA	0.00	...	2.60	V
40.	VOH @ 20mA	not active			
41.	VOH @ 200mA	not active			

		18	21	22	26	27
1.1	[mA]	17.70	16.26	16.95	25.50 F	16.75
3.1	[uA]	-0.13	-0.88	-0.84	-12.58 F	-0.80
4.1	[uA]	-0.12	-0.79	-0.74	-12.59 F	-0.68
5.1	[nA]	5.50	89.17	99.50	2.83	126.33
6.1	[dB]	88.156	87.852	87.920	84.145	89.842
8.1	[dB]	93.4	93.4	93.4	100.5	93.4
10.1	[mA]	-0.50	-0.38 F	-0.39 F	24.28 F	-0.40 F
11.1	[V]	4.66	4.55	4.58	0.25 F	4.63
12.1	[V]	0.74	0.73	0.73	1.03 F	0.73
13.1	[V]	5.10	5.01 F	5.04 F	5.94 F	5.10
14.1	[mV]	3.0	14.1	14.6	237.3 F	3.0
15.1	[mV]	5.0	2.7	0.1	32.1 F	0.5
17.1	[V/V]	2.60	2.60	2.60	2.60	2.60
22.1	[uA]	-0.44	-2.64	-2.68	-12.58 F	-2.24
23.1	[uA]	-0.42	-2.62	-2.63	-12.59 F	-2.34
24.1	[uA]	0.02	0.02	0.05	0.00	0.10
25.1	[V]	3.90	4.14	3.82	0.00 F	3.85
26.1	[V]	0.31	0.31	0.31	0.31	0.32
32.1	[uA]	-6.68	-23.28	-23.52	-0.00	-23.56
34.1	[mA]	2.55	2.72	2.67	0.00 F	2.71
37.1	[uA]	0.07	0.06	0.06	0.00	0.07
38.1	[V]	0.32	0.37	0.29	4.68 F	6.56 F
38.2	[V]	0.31	0.30	0.29	7.20 F	1.31 F
39.1	[V]	0.98	1.68	1.07	13.06 F	1.38
39.2	[V]	0.81	1.64	1.01	13.13 F	13.44 F

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for UTS3
RD241_UC1856J_FINAL_EMS / V 1.0 IR 04/09/96 ROOM TEMP

Results file : RD241_UC1856J_FINAL_EMS from: 15.08.97 / 14:05:36
Operator : PAUL RUSSELL
Part number : UC1856J
Lot number : RD241
Order number : D/C 9344A
Vendor : UNITRODE
: CONTROL 18 ; RAD 21,22,27
: FINAL EMS @ IGG
: UC1856 HUY-SP-IG-105 ISSUE 2 RM / V1.0 IR 04/09/96 ROOMTEMP

Test steps

1.	Supply Current	0.00	...	23.00	mA
2.	Vos Error Amplifier	not active			
3.	+I.Bias - Error Amp.	-1.00	...	0.00	uA
4.	-I.Bias - Error Amp.	-1.00	...	0.00	uA
5.	Ios - Error Amp.	0.00	...	500.00	nA
6.	Avs Error Amplifier	80.000	...	120.000	dB
7.	PSRR Error Amplifier	not active			
8.	CMRR Error Amplifier	75.0	...	140.0	dB
9.	I-Sink Error Amp.	not active			
10.	I-Source Error Amp.	-10.00	...	-0.40	mA
11.	V-oh Error Amplifier	4.30	...	4.90	V
12.	V-ol Error Amplifier	0.00	...	1.00	V
13.	V-ref Output Voltage	5.05	...	5.15	V
14.	Line Regulation	0.0	...	20.0	mV
15.	Load Regulation	0.0	...	15.0	mV
16.	Isc - Voltage Ref.	not active			
17.	Current Sense Gain	2.50	...	3.00	V/V
18.	Current Sense V-Diff	not active			
19.	Vos Current Sense	not active			
20.	CMRR Current Sense	not active			
21.	PSRR Current Sense	not active			
22.	Current Sense +IBias	-3.00	...	0.00	uA
23.	Current Sense -IBias	-3.00	...	0.00	uA
24.	Current Sense Ios	0.00	...	1.00	uA
25.	V-oh Sync Output	2.40	...	5.00	V
26.	V-ol Sync Output	0.00	...	0.40	V
27.	V-ih/V-il Sync Input	not active			
28.	I-in Sync Input	not active			
29.	Initial Accuracy	not active			
30.	Voltage Stability	not active			
31.	Vos Current Limit	not active			
32.	Current Limit I-Bias	-30.00	...	0.00	uA
33.	Shutdown V-th	not active			
34.	Shutdown I-N-Latch	0.80	...	3.00	mA
35.	UVLO Shutdown V-th	not active			
36.	UVLO Start-Up V-th	not active			
37.	Vc Leakage Current	0.00	...	200.00	uA
38.	VOL @ 20mA	0.00	...	0.50	V
39.	VOL @ 200mA	0.00	...	2.60	V
40.	VOH @ 20mA	not active			
41.	VOH @ 200mA	not active			

		18	21	22	27
1.1	[mA]	17.67	16.38	17.00	16.22
3.1	[uA]	-0.12	-0.48	-0.49	-0.52
4.1	[uA]	-0.11	-0.47	-0.47	-0.49
5.1	[nA]	13.00	17.83	23.83	30.83
6.1	[dB]	87.828	90.068	89.918	89.954
8.1	[dB]	93.4	93.4	93.4	56.4 F
10.1	[mA]	-0.50	-0.45	-0.46	-0.44
11.1	[V]	4.65	4.55	4.58	4.56
12.1	[V]	0.73	0.73	0.73	0.73
13.1	[V]	5.10	4.98 F	5.01 F	5.00 F
14.1	[mV]	3.2	33.9 F	35.0 F	36.5 F
15.1	[mV]	1.4	1.2	2.3	0.6
17.1	[V/V]	2.60	2.60	2.60	0.00 F
22.1	[uA]	-0.42	-1.52	-1.53	-1.70
23.1	[uA]	-0.60	-1.77	-1.49	-1.71
24.1	[uA]	0.17	0.25	0.03	0.02
25.1	[V]	3.90	4.14	3.81	3.85
26.1	[V]	0.30	0.30	0.31	0.33
32.1	[uA]	-6.80	-19.85	-19.65	-19.50
34.1	[mA]	2.52	2.61	2.52	0.00 F
37.1	[uA]	0.07	0.06	0.06	0.00
38.1	[V]	0.29	3.18 F	6.65 F	12.42 F
38.2	[V]	0.29	1.07 F	2.85 F	11.95 F
39.1	[V]	0.83	1.46	0.87	13.50 F
39.2	[V]	0.79	1.07	0.86	13.43 F