RIR IN:- 78627

RIR OUT:- 78627

PARTS HISTORY LOG

Radiation Testing

PROGRAMME:- XMM

PART TYPE:- 2N3810

RADIATION REPORT:- RD 230

IGG TASK NUMBER:- 1500

SUMMARY OF TEST RESULTS

The only parameters to be significantly affected by irradiation were all of the 5 h_{FE} measurements. These all drifted towards the minimum limits from the start of the irradiation sequence with limit failures recorded from 30kRads(Si) onwards. The minimum h_{FE5} limit was not failed by any of the test samples but the same downward trend was experienced as for h_{FE1} through h_{FE4}.

Radiation Report Number:- RD 230

Project:- XMM

Part Type:- 2N3810 Date Code:- 9716

Manufacturer:- SGS/F IGG Task No:- 1500

Project Approval of Lot Traveller:-

Signed.....M. Walton IGG 6 CT..... Date.....1-09-97.....

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

Serial Number Range:-

275 and 257 through 266 (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- XM-PL-IGG-0019 ISSUE- 2 DATE- Nov '96

Closed/Approved NCR No:- N n/a

Approved Waiver No:- WAR N/A

Signed.....P.A. Russell..... Date.....29/8/97.....

Upscreening Engineer

Signed.....[signature]..... Date.....29/8/97.....

Upscreening Manager

RADIATION REPORT NUMBER:- RD 230 DATE:- 27.8.97

PROJECT:- XMM RIR IN:- 78627

PART NUMBER:- 2N3810 MANUFACTURER:- STM/F

PROCUREMENT LEVEL:- ESA/SCC5207/005-02B DATE CODE:- 9716

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

TEST PLAN:- XM-PL-IGG-0019 ISSUE- 2 DATE- Nov '96

START QUANTITY:- 11

No.	Test (Sample Size)	XM-PL-IGG-0019 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 275	10/7/97	11	10/7/97	10 + CONTROL SAMPLE	IGG 16 CT
2	Initial Electrical Measurements (100% read and record)	Table A Testing at IGG	10/7/97	10	10/7/97	10	IGG 16 CT
3	Initial Electrical Measurements (100% read and record)	Table A Testing at RMC	15/7/97	10	15/7/97	10	IGG 16 CT
4	Set-up and apply Bias per Figure 1	Verify Bias Circuit and conditions (in-situ) for all 10 test samples	15/7/97	10	15/7/97	10	IGG 16 CT
5	Irradiation 1 (10 samples)	Dose= 10kRAD(Si) Rate= 10RAD(Si) per second Time= 1000secs	15/7/97	10	15/7/97	10	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	15/7/97	10	15/7/97	10	IGG 16 CT

Report No: RD 230	Part Type: 2N3810	Date: 27.8.97

No.	Test (Sample Size)	XM-PL-IGG-0019 Test Method and Conditions	Date in	Qty in	Date out	Qty out	SIGNED Op/QA
7	Irradiation 2 (10 samples)	As Test 5	15/7/97	10	15/7/97	10	IGG 16 CT
8	Interim 2 Electrical Measurements (100% read and record)	As Test 6	15/7/97	10	15/7/97	10	IGG 16 CT
9	Irradiation 3 (10 samples)	As Test 5	15/7/97	10	15/7/97	10	IGG 16 CT
10	Interim 3 Electrical Measurements (100% read and record)	As Test 6	15/7/97	10	15/7/97	7	IGG 16 CT
11	Irradiation 4 (10 samples)	Dose= 20kRAD(Si) Rate= 10RAD(Si) per second Time=2000secs	15/7/97	10	15/7/97	10	IGG 16 CT
12	Interim 4 Electrical Measurements (100% read and record)	As Test 6	15/7/97	10	15/7/97	0	IGG 16 CT
13	Irradiation 5 (10 samples)	Dose= 25kRAD(Si) Rate= 10RAD(Si) per second Time=2500secs	15/7/97	10	15/7/97	10	IGG 16 CT
14	Interim 5 Electrical Measurements (100% read and record)	As Test 6	15/7/97	10	15/7/97	0	IGG 16 CT
15	Irradiation 6 (10 samples)	As Test 13	15/7/97	10	15/7/97	10	IGG 16 CT

Report No: RD 230		Part Type: 2N3810					Date: 27.8.97
No.	Test (Sample Size)	XM-PL-IGG-0019 Test Method and Conditions	Date in	Qty in	Date out	Qty out	SIGNED Op/QA
16	Final Electrical Measurements (100% read and record)	As Test 6 At RMC	15/7/97	10	15/7/97	0	IGG 16 CT
17	Annealing Test (10 samples)	Bias for 24hrs min at +25°C (record exact time)	15/7/97	10	16/7/97	10	IGG 16 CT
18	Post Annealing Electrical Measurements (100% read and record)	Table A	16/7/97	10	16/7/97	0	IGG 16 CT
19	Accelerated Aging under bias (10 samples)	168 hours bias at +100±5°C	17/7/97	10	24/7/97	10	IGG 16 CT
20	Post Aging Electrical Measurements (100% read and record)	Table A	25/7/97	10	25/7/97	1	IGG 16 CT
21	Test Report Collation	[redacted]	[redacted]	[redacted]	29/8/97	[redacted]	IGG 2 CT
22	Test Report Approval	[redacted]	[redacted]	[redacted]	29/8/97	[redacted]	IGG 2 CT
23	NOTES:-						

Report No: RD 230 Part Type: 2N3810 Date: 27.8.97

FAILURE LIST AND APPLICABLE NCR

Test No.	Serial Number(s)	Failed Parameter and Failure Mode	Applicable NCR
10	260, 261, 265	FAIL h_{fe2}.	
12	257, 262, 263, 264.	FAIL h_{fe2} AND h_{fe3}.	
	258, 266.	FAIL h_{fe2}.	
	259, 260, 261, 265.	FAIL h_{fe1}, h_{fe2}, h_{fe3} AND h_{fe4}.	
14	ALL PARTS	FAIL h_{fe1}, h_{fe2}, h_{fe3}, h_{fe4}.	

Report No: RD 230 Part Type: 2N3810 Date: 27.8.97

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	RMC's Facility	Irradiation	14 /02 /1998
Item: SZ Type No: M3000 Serial No: 884769	CT339	ATE	27 / 9 /1997
Item: THURLBY Type No: PL320 Serial No: 2GP0621	CT287	PSU	24 / 10 /1997
Item: KEITHLEY Type No: 179A Serial No: 147792	SM030	DMM	24 / 10 /1997
Item: TEKTRONIX Type No: 370 Serial No: 300553	CT217	CURVE TRACER	12 / 2 /1998
Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199
Item: Type No: Serial No:			/ /199

RADIATION TEST SUMMARY

PART TYPE : 2N3810

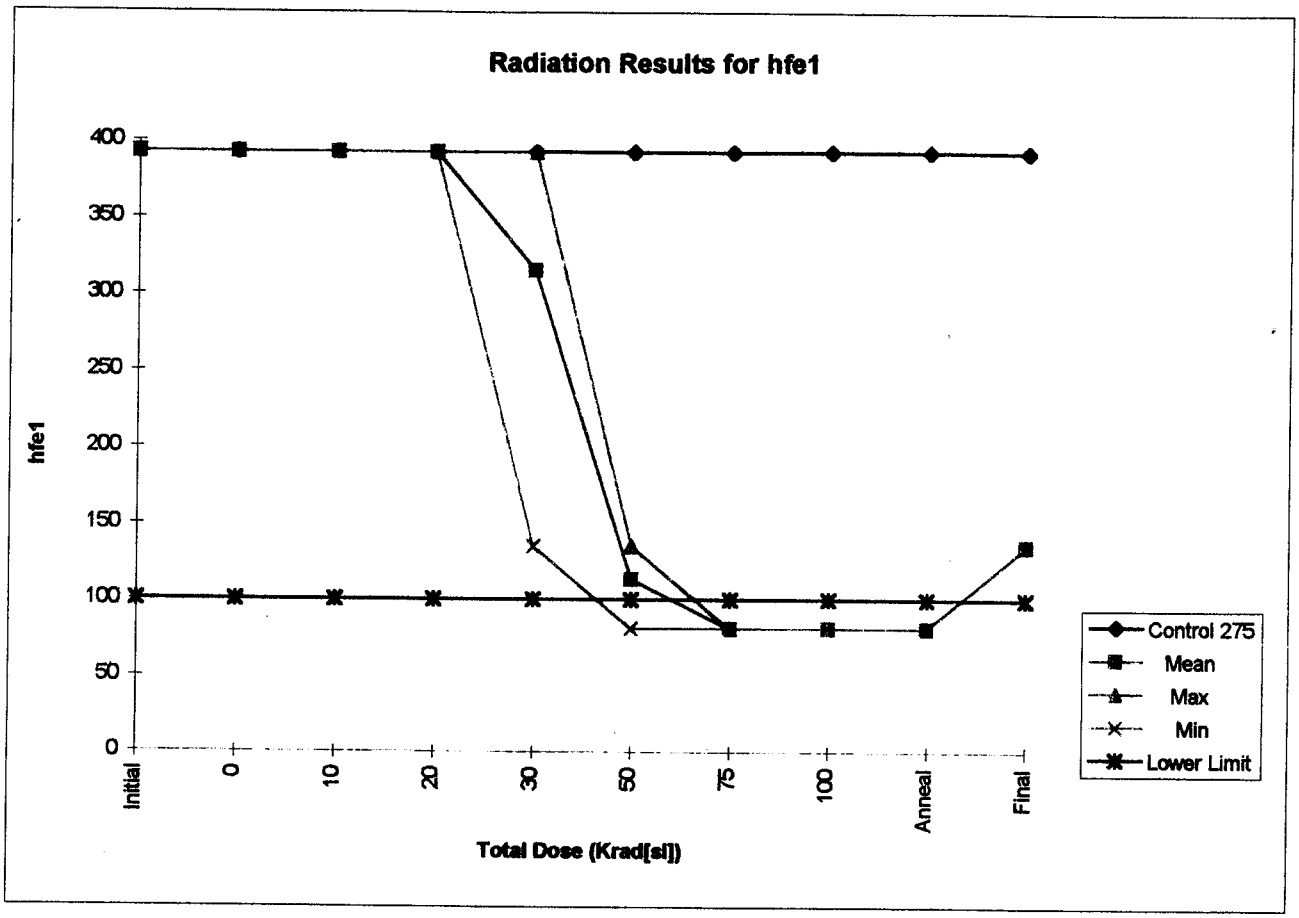
DESCRIPTION : DUAL,MATCHED,PNP TRANSISTOR

REPORT NO. : RD 230

PARAMETERS PLOTTED :

hfe1
hfe2
hfe3
hfe4
hfe5

NOTE : The results for the remaining parameters showed no significant change and hence plots were not considered necessary.

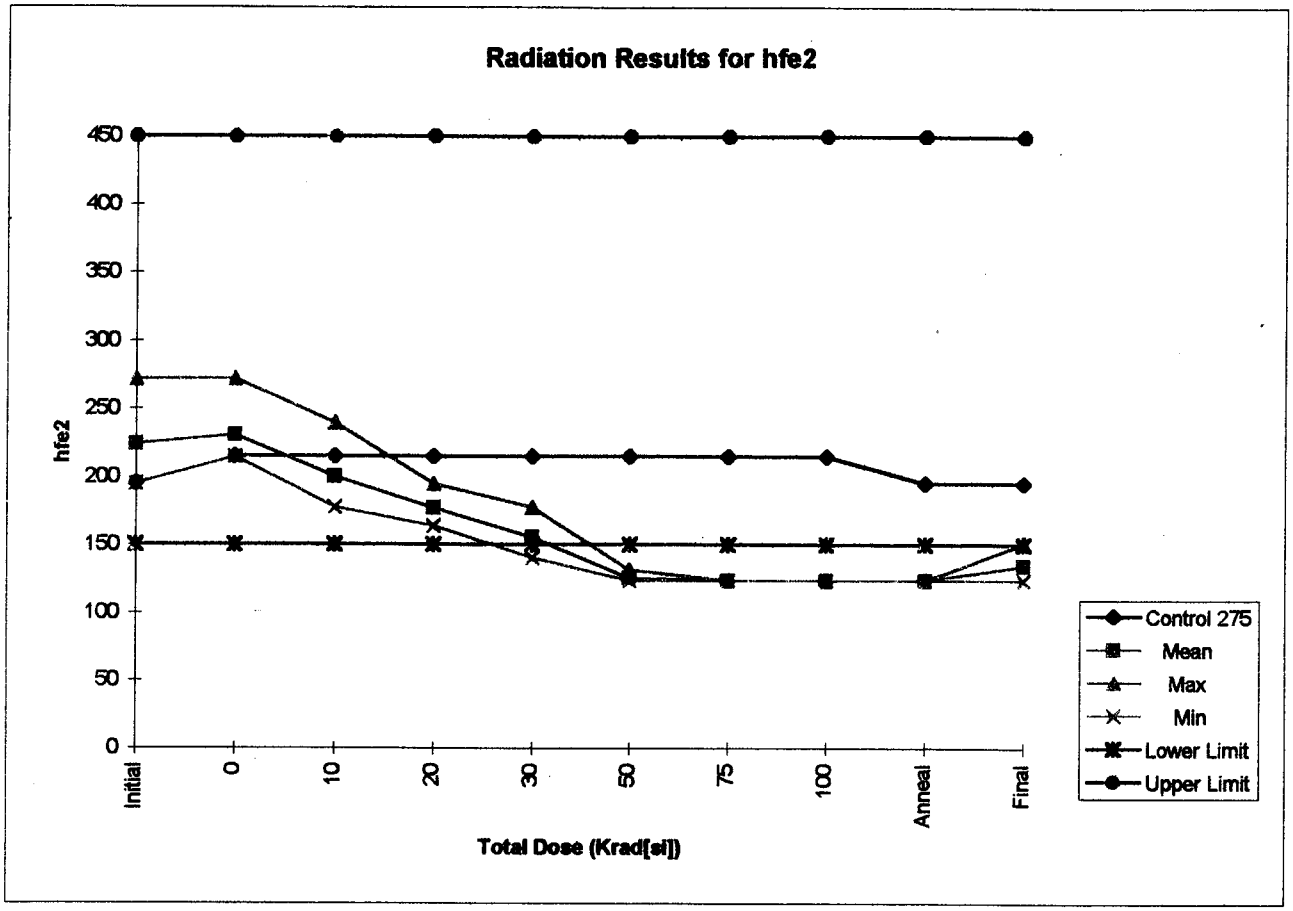


Dose (kRad)	Control 275	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
Initial	393	393	393	393	100	-	0.00
0	393	393	393	393	100	-	0.00
10	393	393	393	393	100	-	0.00
20	393	393	393	393	100	-	0.00
30	393	316	393	135	100	-	124.63
50	393	113	135	81	100	-	27.89
75	393	81	81	81	100	-	0.00
100	393	81	81	81	100	-	0.00
Anneal	393	81	81	81	100	-	0.00
Final	393	135	135	135	100	-	0.00

Note: Results for transistor 1 plotted ; transistor 2 results similar.

Lot size for statistics : 10 devices

RD 230 Date code 9716

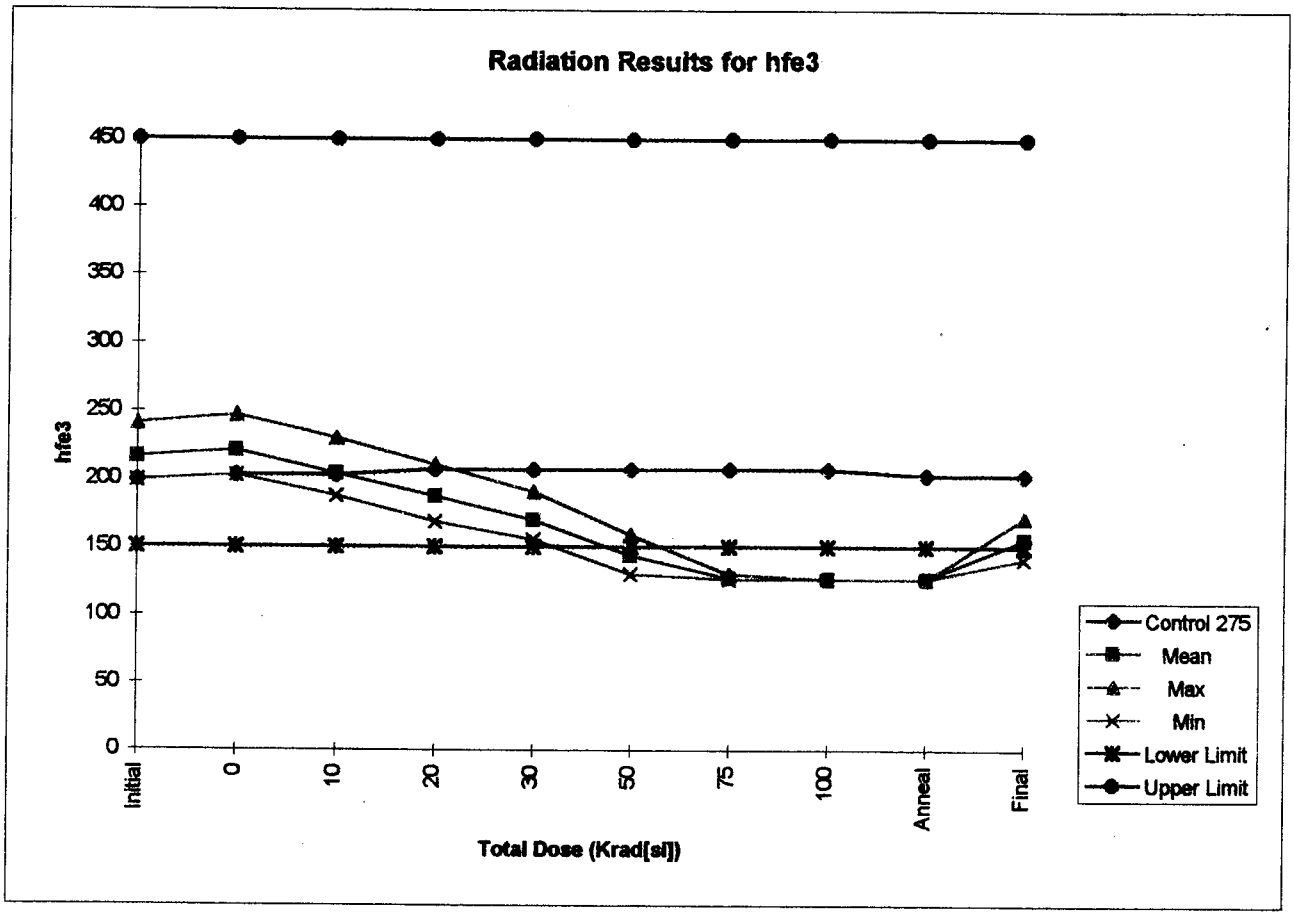


Dose (kRad)	Control 275	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
Initial	195	224	272	195	150	450	23.75
0	215	231	272	215	150	450	19.10
10	215	200	240	178	150	450	20.55
20	215	177	195	164	150	450	11.35
30	215	156	178	141	150	450	14.32
50	215	126	132	124	150	450	3.37
75	215	124	124	124	150	450	0.00
100	215	124	124	124	150	450	0.00
Anneal	195	124	124	124	150	450	0.00
Final	195	135	151	124	150	450	7.48

Note: Results for transistor 1 plotted ; transistor 2 results similar.

Lot size for statistics : 10 devices

RD 230 Date code 9716

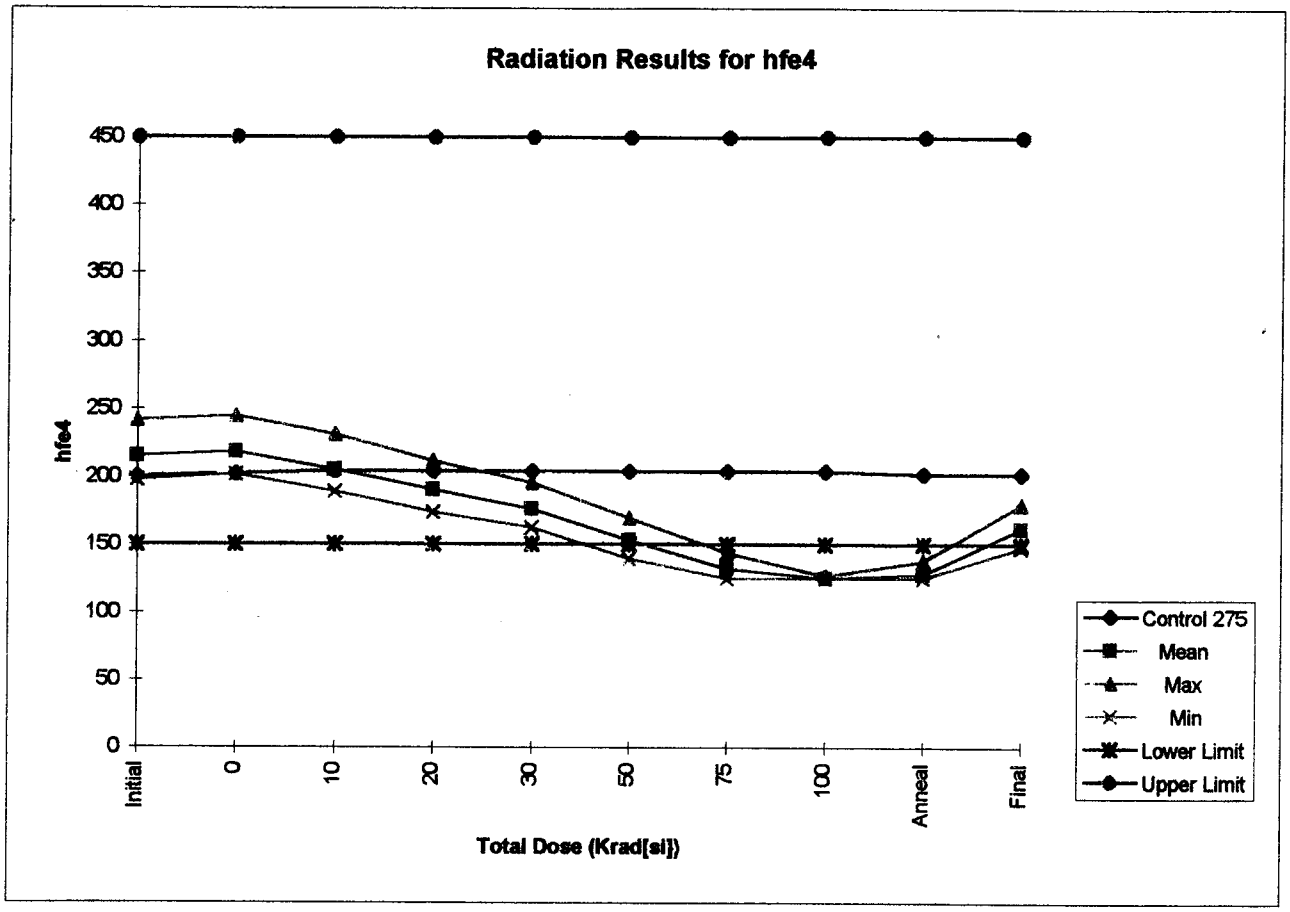


Dose (kRad)	Control 275	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
Initial	199	216	241	199	150	450	13.21
0	203	221	247	203	150	450	13.85
10	203	204	230	188	150	450	14.82
20	207	187	211	169	150	450	13.44
30	207	170	191	156	150	450	11.43
50	207	144	159	130	150	450	9.31
75	207	127	130	126	150	450	1.69
100	207	126	126	126	150	450	0.00
Anneal	203	126	126	126	150	450	0.00
Final	203	155	172	141	150	450	9.76

Note: Results for transistor 1 plotted ; transistor 2 results similar.

Lot size for statistics : 10 devices

RD 230 Date code 9716

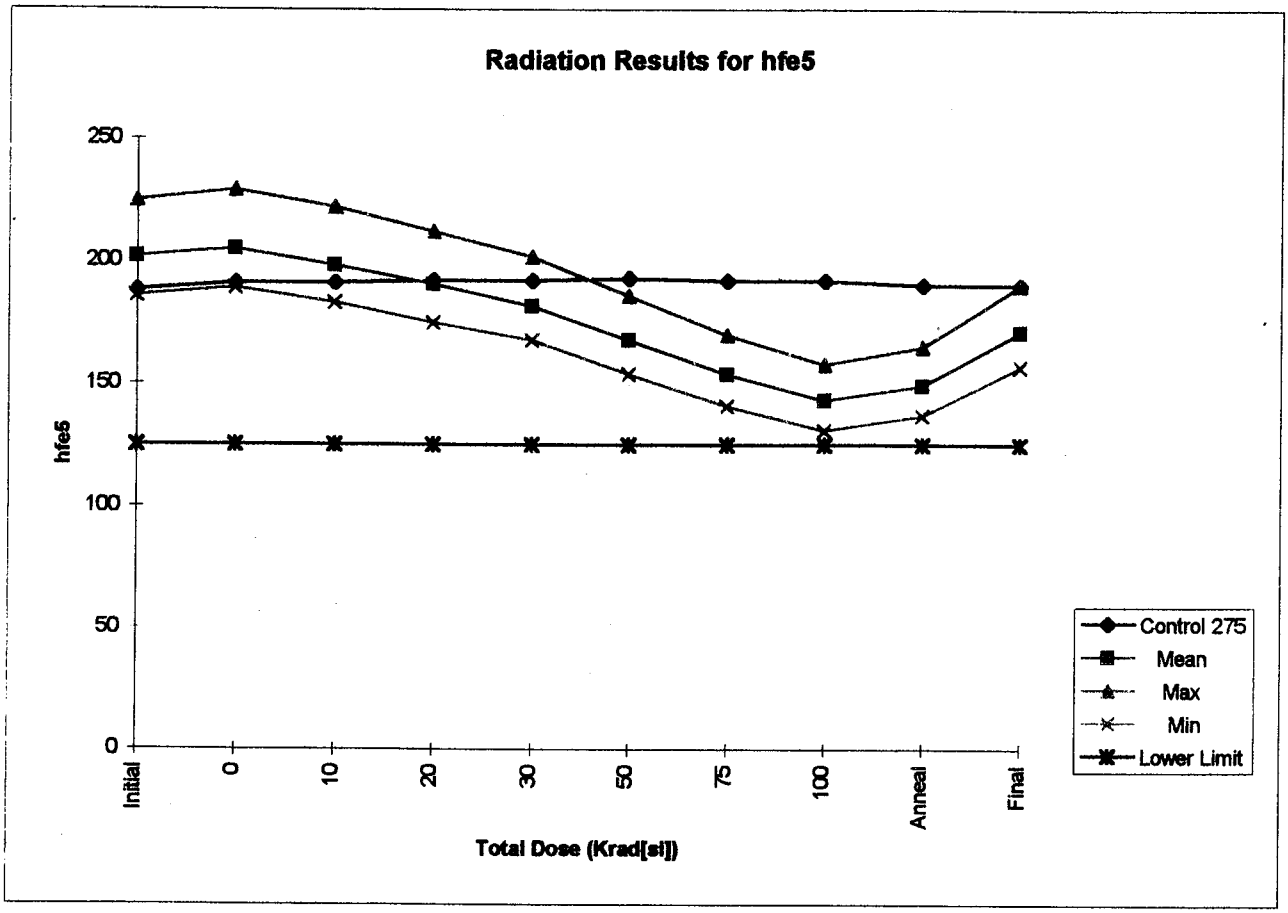


Dose (kRad)	Control 275	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
Initial	200	216	242	198	150	450	14.05
0	202	218	245	202	150	450	13.91
10	204	205	231	189	150	450	14.18
20	204	191	212	174	150	450	12.56
30	204	177	196	163	150	450	11.18
50	204	153	170	140	150	450	9.71
75	204	133	144	125	150	450	6.92
100	204	125	127	125	150	450	0.63
Anneal	202	128	138	125	150	450	4.76
Final	202	162	180	148	150	450	10.24

Note: Results for transistor 1 plotted ; transistor 2 results similar.

Lot size for statistics : 10 devices

RD 230 Date code 9716



Dose (kRad)	Control 275	Mean	Max	Min	Lower Limit	Upper Limit	Std.Dev.
Initial	188	202	225	186	125	-	12.47
0	191	205	229	189	125	-	12.80
10	191	198	222	183	125	-	12.71
20	192	191	212	175	125	-	11.64
30	192	182	202	168	125	-	11.07
50	193	168	186	154	125	-	10.29
75	192	154	170	141	125	-	9.31
100	192	143	158	131	125	-	8.47
Anneal	190	149	165	137	125	-	9.01
Final	190	171	190	157	125	-	10.37

Note: Results for transistor 1 plotted ; transistor 2 results similar.

Lot size for statistics : 10 devices

RD 230 Date code 9716

RD230

XMM

RIR 78627

IRRADIATION TEST PLAN NO. 1	Issue No. 2
XM-PL-IGG-0019	Date: November 1996
	Page: 1/5 2

Component No. 3	Component Designation: 4	Irradiation Spec No. N/A 5
520700502B	Transistor, PNP, Dual, Matched, Type 2N3810	Iss. Rev.

Specification 6	Acceptance 7	Electrical Meas. 8	Project/Programme 9
Detail ESA/SCC 5207/005 Iss. 4D	Evaluation ___ Element Diffusion ___ Lot X	In-situ ___ Remote X	XMM

Manufacturer: SGS Thomson Address: Avenue De Suisse BP 4199 35041 Rennes-Cedex FRANCE 10	Test Facility: ERA Address: Leatherhead Surrey ENGLAND 11	Originator: IGG CT Name: S. Thacker 12

Radiation Source: 13	Sample Size: 10 Control Devices: 1 14	Exposure: 15 Single ___ Multiple X	Annealing Test: 16 YES X NO ___	Radiation Level: 17 10kRAD(Si), 50kRAD(Si) 20kRAD(Si), 75kRAD(Si) 30kRAD(Si), 100kRAD(Si)
COBALT 60				

Single Exposure:
Dose [kRAD(Si)]
Dose Rate [RAD(Si)/s]
Exposure Time

Not Applicable 18

Multiple Exposure: 19

Irradiation Steps	1	2	3	4	5	6
Dose [kRAD(Si)]	10	10	10	20	25	25
Maximum Dose Rate [RAD(Si)/s]	10	10	10	10	10	10
Minimum Exposure Time[s]	1000	1000	1000	2000	2500	2500

Bias Requirements: During and after Exposure (for remote electrical measurements): YES

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

Shielding: Shielding is required to minimize 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 Al 0.7 to 1.0mm. 20

Irradiation Test Sequence 21

Test Step	Description	Requirements
1	Irradiation Test Samples	Quantity 11 devices shall be selected from the lot delivered to IGG.
2	Serialisation	Serialisation - (if the devices are not serialised). Test units shall be serialised 1 to 10 and the control unit shall be 11.
3	Initial Electrical Measurements (at IGG)	Per Table A herein - (Read and Record) - on all 11 parts at IGG. (See Remarks 1 and 2).
4	Initial Electrical Measurements (at ERA)	Per Table A herein - (Read and Record) - on all 11 parts at ERA. (See Remarks 1 and 2).

S.T 6.11.96

2237

Irradiation Test Sequence (Cont.) 21

Test Step	Description	Requirements
5	Set-up Test	Verify Bias Circuit and Voltages (In-situ) for 10 test units. (See Remark 3).
6	Irradiation Exposure	Verify radiation dose rate and position in the chamber to achieve required dose. Verify and witness duration of exposure to achieve required dose. (See Remark 4).
7	Intermediate Electrical Measurement (at ERA)	Bias to be maintained until test is performed. Test per Table A herein - (Read and Record) - on all 11 parts. Test to be performed immediately upon removal from chamber (less than 10 mins interval). Upon completion of test 10 test units shall be replaced in bias circuit and returned to chamber. Maximum interval between two consecutive exposures to be 30 mins. (See Remark 2).
8 to 22	Repeat Set-up/Exposure/Test sequence upto a Final Total Dose of 100kRAD(Si)	Repeat Steps 5, 6, 7 for a total of 6 cycles as per multiple exposure in Box No. 19. (See Remark 5).
23	Annealing	Bias shall be maintained during Annealing for 10 test units. Annealing shall be at room temperature for 24 hours. (See Remark 3).
24	Post Annealing Electrical Measurements (at IGG)	Per Table A herein - (Read and Record) - on all 11 parts at IGG. (See Remark 2).
25	Accelerated Aging under Bias	Bias shall be maintained during Aging for 10 test units. Aging shall be at T_{amb} = +100±5°C for 168 hours. (See Remark 3).
26	Final Electrical Measurements (at IGG)	Per Table A herein - (Read and Record) - on all 11 parts at IGG (See Remark 2).
27	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.
3. The control unit shall not be biased during testing.
4. 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.
5. The set up/exposure/test sequence shall be stopped for any device that exhibits repeated functional failure.

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

NO.	CHARACTERISTICS	SYMBOL	MIL-STD-750 TEST METHOD	TEST CONDITIONS (See Note 1)	LIMITS MIN.	LIMITS MAX.	UNIT
1	Collector-emitter breakdown voltage	$V_{(BR)CEO}$	3011	I_C = 10mA I_B = 0 (See Note 2)	-60	-	V
2	Collector-base breakdown voltage	$V_{(BR)CBO}$	3001	I_C = 10μA I_E = 0	-60	-	V
3	Emitter-base breakdown voltage	$V_{(BR)EBO}$	3026	I_E = 10μA I_C = 0	-5.0	-	V
4	Collector-base cut-off current	I_{CBO}	3036	V_{CB} = 50V I_E = 0	-	-10	nA
5	Emitter-base cut-off current	I_{EBO}	3061	V_{BE} = 4V I_C = 0	-	-20	nA
6	D.C. Forward current transfer ratio	h_{FE1}	3076	I_C = 10μA, V_{CE} = 5V	100	-	-
		h_{FE2}		I_C = 100μA, V_{CE} = 5V	150	450	
		h_{FE3}		I_C = 500μA, V_{CE} = 5V	150	450	
		h_{FE4}		I_C = 1mA, V_{CE} = 5V	150	450	
		h_{FE5}		I_C = 10mA, V_{CE} = 5V	125	-	
7	Collector-emitter saturation voltage	$V_{CE(sat)1}$	3071	I_C = 100μA I_B = 10μA (See Note 2)	-	-0.2	V
		$V_{CE(sat)2}$		I_C = 1mA I_B = 100μA (See Note 2)	-	-0.25	
8	Base-emitter saturation voltage	$V_{BE(sat)1}$	3066	I_C = 100μA I_B = 10μA (See Note 2)	-	0.7	V
		$V_{BE(sat)2}$		I_C = 1mA I_B = 100μA (See Note 2)	-	0.8	
9	D.C. Forward Current Transfer Ratio Comparison	$\frac{h_{FE2-1}}{h_{FE2-2}}$	3076	I_C = 100μA V_{CE} = 5V	0.9	1.1	-

NOTES: See Page 4.

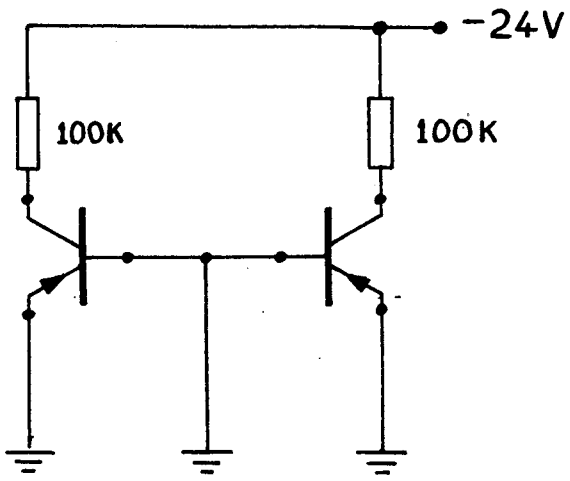
TABLE A - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE - T_{amb} = +25 ±5°C BEFORE, AT INTERMEDIATE POINTS AND ON COMPLETION OF IRRADIATION

NO.	CHARACTERISTICS	SYMBOL	MIL-STD-750 TEST METHOD	TEST CONDITIONS (See Note 1)	LIMITS		UNIT
					MIN.	MAX.	
10	Base-emitter voltage differential	$\lvert V_{BE1}-V_{BE2}\rvert$	3066 Cond B	I_C = 10μA V_{CE} = 5V	-	5	mV
				I_C = 10mA V_{CE} = 5V	-	5	
				I_C = 100μA V_{CE} = 5V	-	3	

NOTES:-

1. Characteristics shall be measured for each of the two transistors in each device.
2. Pulse Measurement: Pulse length ≤ 300μs; Duty cycle ≤ 2%.

FIGURE 1 - ELECTRICAL BIAS CIRCUIT FOR IRRADIATION TESTING



SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_INIT_EMS_@_IGG / V1.0 10/07/97 PAR

Results file : RD230_2N3810_INIT_EMS_@_IGG from: 10.07.97 / 15:59:29
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: INITIAL EMS @ IGG
: 2N3810 XM-PL-IGG-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)		60.0	...	700.0	V
2.	-ICB0	(	0.00	)...	10.00	uA
3.	-VEB0		5000	...	15000	mV
4.	-ICB0	(	0.0	)...	10.0	nA
5.	-IEB0	(	0.0	)...	20.0	nA
6.	hfe1 (DC)		100	...	200000	
7.	hfe1 (DC)		150	...	450	
8.	hfe1 (DC)		150	...	450	
9.	hfe1 (DC)		150	...	450	
10.	hfe1 (DC)		125	...	200000	
11.	-VCE (sat)		0.0	...	200.0	mV
12.	-VCE (sat)		0.0	...	250.0	mV
13.	-VBE (sat)		0.0	...	700.0	mV
14.	-VBE (sat)		0.0	...	800.0	mV

	275	257	258	259	260	261
1.1 [V]	122.6	122.0	117.3	123.1	120.1	118.7
1.2 [V]	122.8	122.1	117.2	123.0	119.9	118.7
2.1 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6851	6857	6869	6849	6864	6879
3.2 [mV]	6852	6855	6872	6857	6869	6885
4.1 [nA]	0.6	0.5	0.5	0.5	0.5	0.5
4.2 [nA]	0.6	0.6	0.6	0.6	0.6	0.6
5.1 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
6.1 []	393	393	393	393	393	393
6.2 []	393	393	393	393	393	393
7.1 []	195	215	272	215	195	195
7.2 []	195	215	272	215	195	195
8.1 []	199	215	241	211	199	199
8.2 []	199	215	241	211	195	199
9.1 []	200	214	242	208	198	198
9.2 []	198	214	242	208	196	198
10.1 []	188	202	225	195	186	186
10.2 []	186	202	225	195	185	186
11.1 [mV]	54.2	53.2	49.8	53.7	53.9	54.1
11.2 [mV]	54.2	53.2	49.7	53.6	54.0	53.9
12.1 [mV]	52.4	51.4	48.6	52.4	51.5	51.2
12.2 [mV]	52.5	51.5	48.3	52.1	51.9	51.3
13.1 [mV]	604.0	602.8	601.1	603.8	604.7	604.7
13.2 [mV]	604.3	602.6	600.7	603.8	604.8	604.4
14.1 [mV]	670.3	669.3	667.9	670.1	670.9	670.5
14.2 [mV]	670.2	669.3	667.9	670.2	671.0	670.5

	262	263	264	265	266
1.1 [V]	120.9	121.5	123.0	122.4	119.7
1.2 [V]	121.1	121.3	123.1	122.7	119.6
2.1 [uA]	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6861	6869	6846	6856	6865
3.2 [mV]	6861	6858	6857	6852	6863
4.1 [nA]	0.5	0.5	0.5	0.6	0.5
4.2 [nA]	0.6	0.6	0.6	0.6	0.6
5.1 [nA]	0.2	0.2	0.1	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2
6.1 []	393	393	393	393	393
6.2 []	393	393	393	393	393
7.1 []	240	240	215	215	240
7.2 []	240	240	215	215	240
8.1 []	225	220	211	211	230
8.2 []	225	220	211	211	230
9.1 []	224	221	210	210	231
9.2 []	221	219	208	210	229
10.1 []	210	206	196	197	215
10.2 []	208	206	195	197	214
11.1 [mV]	51.8	52.6	53.5	53.5	51.2
11.2 [mV]	52.3	52.5	53.9	53.0	51.4
12.1 [mV]	50.7	51.0	52.3	51.7	49.8
12.2 [mV]	51.1	50.9	52.1	51.8	49.8
13.1 [mV]	602.5	602.6	603.6	603.0	601.2
13.2 [mV]	602.5	602.6	603.9	603.4	601.5

14.1 [mV]	669.3		669.5		670.4		670.0		668.4	
14.2 [mV]	669.3		669.5		670.1		669.8		668.5	

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_INIT_EMS_@_RMC / V1.0 10/07/97 PAR

Results file : RD230_2N3810_INIT_EMS_@_RMC from: 15.07.97 / 11:09:51
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: INITIAL EMS @ RMC
: 2N3810 XM-PL-IGG-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)		60.0	...	700.0		V
2.	-ICB0	(	0.00	)...	10.00		uA
3.	-VEB0		5000	...	15000		mV
4.	-ICB0	(	0.0	)...	10.0		nA
5.	-IEB0	(	0.0	)...	20.0		nA
6.	hfe1 (DC)		100	...	200000		
7.	hfe1 (DC)		150	...	450		
8.	hfe1 (DC)		150	...	450		
9.	hfe1 (DC)		150	...	450		
10.	hfe1 (DC)		125	...	200000		
11.	-VCE (sat)		0.0	...	200.0		mV
12.	-VCE (sat)		0.0	...	250.0		mV
13.	-VBE (sat)		0.0	...	700.0		mV
14.	-VBE (sat)		0.0	...	800.0		mV

	275	257	258	259	260	261
1.1 [V]	122.9	122.4	117.4	123.3	120.2	119.0
1.2 [V]	123.0	122.3	117.5	123.1	120.2	118.9
2.1 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6859	6873	6877	6852	6874	6886
3.2 [mV]	6860	6865	6879	6865	6868	6891
4.1 [nA]	0.7	0.7	0.7	0.7	0.7	0.7
4.2 [nA]	0.7	0.7	0.7	0.7	0.7	0.7
5.1 [nA]	0.2	0.2	0.1	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
6.1 []	393	393	393	393	393	393
6.2 []	393	393	393	393	393	393
7.1 []	215	240	272	215	215	215
7.2 []	215	240	272	215	195	215
8.1 []	203	220	247	215	203	203
8.2 []	203	220	247	215	199	203
9.1 []	202	221	245	210	202	202
9.2 []	202	221	245	210	200	202
10.1 []	191	206	229	198	189	189
10.2 []	189	207	228	198	187	189
11.1 [mV]	54.7	53.7	50.3	54.1	54.4	54.7
11.2 [mV]	55.1	53.8	50.5	54.4	54.6	54.6
12.1 [mV]	53.3	52.1	49.0	52.5	52.0	51.8
12.2 [mV]	53.2	52.5	49.0	52.7	52.2	51.8
13.1 [mV]	597.1	593.1	594.8	597.8	598.8	598.1
13.2 [mV]	597.8	593.0	594.4	597.4	598.7	598.1
14.1 [mV]	664.2	661.0	662.4	665.5	665.4	665.1
14.2 [mV]	664.4	661.0	662.2	664.9	665.5	664.6

	262	263	264	265	266
1.1 [V]	121.0	121.5	123.3	122.5	119.9
1.2 [V]	121.4	121.5	123.2	122.7	119.9
2.1 [uA]	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6867	6871	6855	6865	6873
3.2 [mV]	6866	6869	6861	6860	6877
4.1 [nA]	0.7	0.6	0.7	0.7	0.7
4.2 [nA]	0.7	0.7	0.7	0.7	0.7
5.1 [nA]	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.1	0.2	0.2	0.2	0.2
6.1 []	393	393	393	393	393
6.2 []	393	393	393	393	393
7.1 []	240	240	215	215	240
7.2 []	240	240	215	215	240
8.1 []	230	225	215	215	235
8.2 []	225	225	215	215	235
9.1 []	226	221	210	212	234
9.2 []	226	221	210	212	231
10.1 []	213	209	199	200	219
10.2 []	211	209	198	200	218
11.1 [mV]	52.6	52.7	54.1	53.9	52.0
11.2 [mV]	52.7	52.9	54.3	54.0	52.1
12.1 [mV]	51.4	51.2	52.5	52.4	50.8
12.2 [mV]	51.4	51.8	52.8	52.2	50.9
13.1 [mV]	596.9	596.4	597.1	597.7	592.5
13.2 [mV]	596.9	596.2	597.3	597.6	592.6

14.1 [mV]	664.2	663.8	664.3	665.1	660.2	
14.2 [mV]	664.2	663.8	664.2	664.9	660.4	

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_EMS_@_10_KRAD / V1.0 10/07/97 PAR

Results file : RD230_2N3810_EMS_@_10_KRAD from: 15.07.97 / 11:19:37
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: EMS @ 10 KRAD
: 2N3810 XM-PL-IGG-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)		60.0	...	700.0	V
2.	-ICB0	(	0.00	)...	10.00	uA
3.	-VEB0		5000	...	15000	mV
4.	-ICB0	(	0.0	)...	10.0	nA
5.	-IEB0	(	0.0	)...	20.0	nA
6.	hfe1 (DC)		100	...	200000	
7.	hfe1 (DC)		150	...	450	
8.	hfe1 (DC)		150	...	450	
9.	hfe1 (DC)		150	...	450	
10.	hfe1 (DC)		125	...	200000	
11.	-VCE (sat)		0.0	...	200.0	mV
12.	-VCE (sat)		0.0	...	250.0	mV
13.	-VBE (sat)		0.0	...	700.0	mV
14.	-VBE (sat)		0.0	...	800.0	mV

	275	257	258	259	260	261
1.1 [V]	123.1	122.8	117.8	123.7	120.6	119.3
1.2 [V]	123.0	122.7	117.8	123.6	120.6	119.4
2.1 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6863	6873	6885	6860	6877	6897
3.2 [mV]	6863	6866	6885	6874	6879	6901
4.1 [nA]	0.8	0.7	0.7	0.7	0.7	0.7
4.2 [nA]	0.8	0.7	0.7	0.7	0.7	0.8
5.1 [nA]	0.3	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
6.1 []	393	393	393	393	393	393
6.2 []	393	393	393	393	393	393
7.1 []	215	195	240	195	178	178
7.2 []	215	195	240	195	178	178
8.1 []	203	203	230	195	188	188
8.2 []	203	207	230	195	184	188
9.1 []	204	206	231	200	189	189
9.2 []	202	206	231	200	187	190
10.1 []	191	198	222	192	183	183
10.2 []	189	199	222	192	181	183
11.1 [mV]	54.9	54.2	51.1	55.2	55.6	55.6
11.2 [mV]	55.1	54.8	51.4	55.2	55.5	55.4
12.1 [mV]	52.8	52.6	49.8	53.4	52.8	53.0
12.2 [mV]	53.3	53.3	49.8	53.4	53.2	52.4
13.1 [mV]	596.6	592.7	590.1	594.0	595.0	595.0
13.2 [mV]	596.7	593.0	590.1	594.0	595.1	594.8
14.1 [mV]	663.8	660.7	658.2	661.4	662.0	662.1
14.2 [mV]	663.8	660.6	658.1	661.4	662.1	661.7

	262	263	264	265	266
1.1 [V]	121.4	121.9	123.6	123.3	120.3
1.2 [V]	121.6	122.0	123.6	123.3	120.2
2.1 [uA]	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6882	6883	6863	6875	6878
3.2 [mV]	6877	6874	6870	6870	6877
4.1 [nA]	0.7	0.7	0.7	0.7	0.7
4.2 [nA]	0.7	0.7	0.7	0.8	0.8
5.1 [nA]	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2
6.1 []	393	393	393	393	393
6.2 []	393	393	393	393	393
7.1 []	215	215	195	178	215
7.2 []	215	215	195	195	215
8.1 []	215	211	199	188	220
8.2 []	215	211	195	199	215
9.1 []	214	210	202	190	221
9.2 []	212	210	200	202	219
10.1 []	206	203	193	189	212
10.2 []	205	202	192	194	211
11.1 [mV]	53.3	53.6	55.1	55.0	52.5
11.2 [mV]	53.5	53.9	55.1	54.8	52.9
12.1 [mV]	51.7	52.2	53.4	53.3	51.2
12.2 [mV]	52.1	52.2	53.6	53.2	51.1
13.1 [mV]	592.7	592.3	593.3	593.5	591.2
13.2 [mV]	592.8	592.2	593.2	593.9	591.0

14.1 [mV]	660.6	659.9	660.5	661.4	659.5	
14.2 [mV]	660.5	660.2	660.8	661.1	659.5	

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_EMS_@_20_KRAD / V1.0 10/07/97 PAR

Results file : RD230_2N3810_EMS_@_20_KRAD from: 15.07.97 / 12:17:05
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: EMS @ 20 KRAD
: 2N3810 XM-PL-IGG-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)		60.0	...	700.0		V
2.	-ICB0	(	0.00	)...	10.00		uA
3.	-VEB0		5000	...	15000		mV
4.	-ICB0	(	0.0	)...	10.0		nA
5.	-IEB0	(	0.0	)...	20.0		nA
6.	hfe1 (DC)		100	...	200000		
7.	hfe1 (DC)		150	...	450		
8.	hfe1 (DC)		150	...	450		
9.	hfe1 (DC)		150	...	450		
10.	hfe1 (DC)		125	...	200000		
11.	-VCE (sat)		0.0	...	200.0		mV
12.	-VCE (sat)		0.0	...	250.0		mV
13.	-VBE (sat)		0.0	...	700.0		mV
14.	-VBE (sat)		0.0	...	800.0		mV

	275	257	258	259	260	261
1.1 [V]	122.9	123.2	118.3	124.2	121.1	120.1
1.2 [V]	122.9	123.2	118.4	124.0	121.1	119.9
2.1 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6867	6877	6889	6865	6884	6898
3.2 [mV]	6868	6870	6884	6874	6886	6906
4.1 [nA]	0.7	0.6	0.6	0.6	0.6	0.6
4.2 [nA]	0.7	0.6	0.6	0.6	0.6	0.6
5.1 [nA]	0.3	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
6.1 []	393	393	393	393	393	393
6.2 []	393	393	393	393	393	393
7.1 []	215	178	195	178	164	164
7.2 []	215	178	195	178	164	164
8.1 []	207	184	211	181	169	172
8.2 []	203	188	211	181	169	172
9.1 []	204	190	212	184	174	176
9.2 []	202	192	212	184	173	177
10.1 []	192	190	212	184	175	176
10.2 []	190	190	211	184	173	176
11.1 [mV]	55.0	55.2	52.0	55.9	56.1	56.2
11.2 [mV]	54.9	55.2	52.0	55.8	56.5	56.3
12.1 [mV]	53.1	53.1	50.0	53.7	53.3	53.1
12.2 [mV]	53.3	53.4	50.3	53.8	53.5	53.1
13.1 [mV]	594.4	592.2	589.7	592.5	593.1	592.7
13.2 [mV]	594.5	592.1	589.6	592.3	593.4	592.5
14.1 [mV]	662.0	659.9	657.9	659.9	660.6	659.8
14.2 [mV]	662.0	659.6	657.9	660.0	660.5	659.7

	262	263	264	265	266
1.1 [V]	122.0	122.5	124.1	124.4	120.8
1.2 [V]	122.3	122.5	124.1	124.0	120.8
2.1 [uA]	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6881	6888	6868	6895	6881
3.2 [mV]	6880	6877	6874	6889	6886
4.1 [nA]	0.6	0.6	0.6	0.5	0.6
4.2 [nA]	0.6	0.6	0.6	0.6	0.6
5.1 [nA]	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2
6.1 []	393	393	393	393	393
6.2 []	393	393	393	393	393
7.1 []	178	178	178	164	195
7.2 []	178	178	178	178	178
8.1 []	195	195	181	181	203
8.2 []	195	195	181	191	199
9.1 []	200	196	185	184	206
9.2 []	198	196	185	194	204
10.1 []	198	195	186	187	203
10.2 []	196	195	185	192	203
11.1 [mV]	54.2	54.5	55.9	56.7	53.3
11.2 [mV]	54.2	54.6	56.0	56.4	53.5
12.1 [mV]	52.3	52.7	54.0	54.7	51.5
12.2 [mV]	52.7	52.7	53.9	54.4	51.6
13.1 [mV]	590.8	589.6	591.1	579.9	588.6
13.2 [mV]	590.8	589.5	591.5	580.4	588.4

14.1 [mV]	658.8	¦	658.0	¦	659.3	¦	648.8	¦	656.9	¦
14.2 [mV]	658.6	¦	657.4	¦	659.0	¦	649.1	¦	656.8	¦

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_EMS_@_30_KRAD / V1.0 10/07/97 PAR

Results file : RD230_2N3810_EMS_@_30_KRAD from: 15.07.97 / 12:59:24
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: EMS @ 30 KRAD
: 2N3810 XM-PL-IGG-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)		60.0	...	700.0		V
2.	-ICB0	(	0.00	)...	10.00		uA
3.	-VEB0		5000	...	15000		mV
4.	-ICB0	(	0.0	)...	10.0		nA
5.	-IEB0	(	0.0	)...	20.0		nA
6.	hfe1 (DC)		100	...	200000		
7.	hfe1 (DC)		150	...	450		
8.	hfe1 (DC)		150	...	450		
9.	hfe1 (DC)		150	...	450		
10.	hfe1 (DC)		125	...	200000		
11.	-VCE (sat)		0.0	...	200.0		mV
12.	-VCE (sat)		0.0	...	250.0		mV
13.	-VBE (sat)		0.0	...	700.0		mV
14.	-VBE (sat)		0.0	...	800.0		mV

	275	257	258	259	260	261
1.1 [V]	122.7	123.8	119.1	124.8	121.5	120.4
1.2 [V]	122.8	123.7	118.7	124.5	121.6	120.3
2.1 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6867	6881	6888	6864	6883	6898
3.2 [mV]	6862	6873	6889	6877	6887	6906
4.1 [nA]	0.7	0.5	0.5	0.5	0.5	0.5
4.2 [nA]	0.7	0.5	0.5	0.5	0.5	0.5
5.1 [nA]	0.3	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
6.1 []	393	393	393	393	135	135
6.2 []	393	393	393	393	135	135
7.1 []	215	151	178	151	141 F	141 F
7.2 []	215	151	178	151	141 F	141 F
8.1 []	207	169	191	164	156	156
8.2 []	203	169	188	166	156	156
9.1 []	204	176	196	170	163	163
9.2 []	202	177	196	170	162	163
10.1 []	192	181	202	175	168	168
10.2 []	190	182	202	176	166	168
11.1 [mV]	54.9	56.2	52.9	56.5	57.4	57.4
11.2 [mV]	55.2	56.3	53.1	57.0	57.7	57.1
12.1 [mV]	52.9	53.8	50.3	54.1	54.2	53.7
12.2 [mV]	53.3	53.9	50.6	54.4	54.6	53.9
13.1 [mV]	595.4	591.5	588.7	592.7	591.0	592.4
13.2 [mV]	595.5	591.0	588.5	592.5	591.4	592.5
14.1 [mV]	662.8	659.2	656.7	660.3	658.7	659.5
14.2 [mV]	662.7	658.6	657.0	660.1	658.6	659.6

	262	263	264	265	266
1.1 [V]	122.2	122.9	124.7	124.5	121.2
1.2 [V]	122.8	122.9	124.6	124.2	121.1
2.1 [uA]	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6884	6886	6866	6880	6884
3.2 [mV]	6878	6877	6874	6877	6886
4.1 [nA]	0.5	0.5	0.5	0.5	0.5
4.2 [nA]	0.5	0.5	0.5	0.5	0.5
5.1 [nA]	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2
6.1 []	393	393	393	135	393
6.2 []	393	393	393	393	393
7.1 []	164	164	151	141 F	178
7.2 []	164	164	151	164	178
8.1 []	178	175	166	161	181
8.2 []	178	175	166	172	181
9.1 []	184	182	173	169	190
9.2 []	184	182	171	177	189
10.1 []	189	186	178	176	194
10.2 []	188	186	177	181	193
11.1 [mV]	55.2	55.7	56.6	56.6	54.1
11.2 [mV]	55.5	55.6	56.8	56.7	54.3
12.1 [mV]	52.9	53.2	54.8	54.3	52.2
12.2 [mV]	53.1	53.2	54.6	54.0	52.4
13.1 [mV]	590.8	590.1	591.0	590.2	589.2
13.2 [mV]	591.1	590.1	591.4	590.6	589.0

14.1 [mV]	658.8		658.0		658.8		658.2		657.3		
14.2 [mV]	658.6		658.0		658.8		658.1		657.3		

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_EMS_@_50_KRAD / V1.0 10/07/97 PAR

Results file : RD230_2N3810_EMS_@_50_KRAD from: 15.07.97 / 14:00:47
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: EMS @ 50 KRAD
: 2N3810 XM-PL-IGG-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)		60.0	...	700.0	V
2.	-ICB0	(	0.00	)...	10.00	uA
3.	-VEB0		5000	...	15000	mV
4.	-ICB0	(	0.0	)...	10.0	nA
5.	-IEB0	(	0.0	)...	20.0	nA
6.	hfe1 (DC)		100	...	200000	
7.	hfe1 (DC)		150	...	450	
8.	hfe1 (DC)		150	...	450	
9.	hfe1 (DC)		150	...	450	
10.	hfe1 (DC)		125	...	200000	
11.	-VCE (sat)		0.0	...	200.0	mV
12.	-VCE (sat)		0.0	...	250.0	mV
13.	-VBE (sat)		0.0	...	700.0	mV
14.	-VBE (sat)		0.0	...	800.0	mV

	275	257	258	259	260	261
1.1 [V]	122.7	125.0	119.9	125.6	122.6	121.3
1.2 [V]	123.1	124.6	119.6	125.7	122.6	121.1
2.1 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6869	6882	6892	6870	6885	6898
3.2 [mV]	6870	6875	6890	6883	6888	6908
4.1 [nA]	0.7	0.2	0.2	0.2	0.2	0.2
4.2 [nA]	0.7	0.3	0.3	0.3	0.2	0.2
5.1 [nA]	0.3	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
6.1 []	393	135	135	81 F	81 F	81 F
6.2 []	393	135	135	81 F	81 F	81 F
7.1 []	215	124 F	132 F	124 F	124 F	124 F
7.2 []	215	124 F	132 F	124 F	124 F	124 F
8.1 []	207	143 F	159	137 F	130 F	134 F
8.2 []	203	145 F	159	139 F	130 F	134 F
9.1 []	204	152	170	148 F	140 F	142 F
9.2 []	202	153	169	148 F	139 F	143 F
10.1 []	193	167	186	162	154	155
10.2 []	190	168	185	162	153	156
11.1 [mV]	55.0	59.4	55.8	60.3	61.1	60.9
11.2 [mV]	55.2	59.7	56.2	60.4	61.5	60.7
12.1 [mV]	52.9	55.1	52.1	55.8	56.2	55.8
12.2 [mV]	53.3	55.5	52.1	56.1	56.1	55.3
13.1 [mV]	593.6	590.3	587.7	590.3	590.4	589.9
13.2 [mV]	593.9	590.2	587.6	590.2	590.8	589.8
14.1 [mV]	661.5	658.2	656.0	658.1	657.9	657.4
14.2 [mV]	661.5	658.1	655.8	657.7	658.2	657.0

	262	263	264	265	266
1.1 [V]	123.3	123.9	125.6	125.1	122.2
1.2 [V]	123.7	123.9	125.6	125.0	122.1
2.1 [uA]	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6886	6886	6872	6884	6889
3.2 [mV]	6883	6884	6876	6877	6890
4.1 [nA]	0.2	0.2	0.2	0.2	0.2
4.2 [nA]	0.3	0.3	0.3	0.3	0.3
5.1 [nA]	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2
6.1 []	135	135	135	81 F	135
6.2 []	135	135	135	135	135
7.1 []	124 F	124 F	124 F	124 F	132 F
7.2 []	124 F	124 F	124 F	132 F	132 F
8.1 []	149 F	147 F	141 F	139 F	156
8.2 []	147 F	147 F	143 F	147 F	156
9.1 []	158	158	150	149 F	166
9.2 []	158	158	150	157	164
10.1 []	174	172	164	164	180
10.2 []	173	172	164	168	179
11.1 [mV]	58.6	58.5	60.5	59.9	57.3
11.2 [mV]	58.3	58.8	60.4	59.7	57.5
12.1 [mV]	54.5	54.8	56.1	55.5	53.5
12.2 [mV]	54.6	54.9	56.3	55.8	53.8
13.1 [mV]	589.1	588.1	589.1	588.7	586.7
13.2 [mV]	589.2	588.1	589.2	588.9	586.9

14.1 [mV]	657.2	¦	656.5	¦	656.7	¦	656.6	¦	654.9 ¦
14.2 [mV]	657.2	¦	656.3	¦	657.1	¦	656.8	¦	655.3 ¦

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_EMS_@_75_KRAD / V1.0 10/07/97 PAR

Results file : RD230_2N3810_EMS_@_75_KRAD from: 15.07.97 / 14:17:04
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: EMS @ 75 KRAD
: 2N3810 XM-PL-IGG-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)		60.0	...	700.0	V
2.	-ICB0	(	0.00	)...	10.00	uA
3.	-VEB0		5000	...	15000	mV
4.	-ICB0	(	0.0	)...	10.0	nA
5.	-IEB0	(	0.0	)...	20.0	nA
6.	hfe1 (DC)		100	...	200000	
7.	hfe1 (DC)		150	...	450	
8.	hfe1 (DC)		150	...	450	
9.	hfe1 (DC)		150	...	450	
10.	hfe1 (DC)		125	...	200000	
11.	-VCE (sat)		0.0	...	200.0	mV
12.	-VCE (sat)		0.0	...	250.0	mV
13.	-VBE (sat)		0.0	...	700.0	mV
14.	-VBE (sat)		0.0	...	800.0	mV

	275	257	258	259	260	261
1.1 [V]	122.9	125.8	120.9	126.6	123.4	122.1
1.2 [V]	123.0	125.7	120.6	126.5	123.3	122.0
2.1 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6865	6880	6888	6868	6888	6901
3.2 [mV]	6869	6874	6890	6883	6890	6904
4.1 [nA]	0.7	0.2	0.2	0.2	0.3	0.3
4.2 [nA]	0.7	0.2	0.2	0.2	0.3	0.2
5.1 [nA]	0.2	0.3	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
6.1 []	393	81 F	81 F	81 F	81 F	81 F
6.2 []	393	81 F	81 F	81 F	81 F	81 F
7.1 []	215	124 F	124 F	124 F	124 F	124 F
7.2 []	215	124 F	124 F	124 F	124 F	124 F
8.1 []	207	126 F	130 F	126 F	126 F	126 F
8.2 []	203	126 F	130 F	126 F	126 F	126 F
9.1 []	204	131 F	144 F	126 F	125 F	125 F
9.2 []	202	131 F	144 F	127 F	125 F	125 F
10.1 []	192	153	170	148	141	142
10.2 []	190	154	169	148	140	143
11.1 [mV]	55.1	66.3	62.5	67.1	68.5	68.2
11.2 [mV]	55.0	66.3	62.8	67.3	68.9	68.3
12.1 [mV]	53.2	58.1	54.2	59.0	59.0	58.8
12.2 [mV]	53.2	58.4	54.6	58.9	59.1	58.6
13.1 [mV]	595.1	589.9	587.9	590.7	588.7	590.1
13.2 [mV]	595.1	589.9	587.8	590.8	588.7	589.9
14.1 [mV]	662.2	657.8	656.1	658.6	656.2	657.4
14.2 [mV]	662.5	657.7	655.8	658.6	656.6	657.4

	262	263	264	265	266
1.1 [V]	124.4	125.0	126.5	125.9	123.1
1.2 [V]	124.7	124.7	126.7	126.0	122.9
2.1 [uA]	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6887	6892	6870	6882	6887
3.2 [mV]	6885	6883	6875	6880	6889
4.1 [nA]	0.2	0.2	0.2	0.1	0.2
4.2 [nA]	0.2	0.2	0.2	0.1	0.2
5.1 [nA]	0.3	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2
6.1 []	81 F	81 F	81 F	81 F	81 F
6.2 []	81 F	81 F	81 F	81 F	81 F
7.1 []	124 F	124 F	124 F	124 F	124 F
7.2 []	124 F	124 F	124 F	124 F	124 F
8.1 []	126 F	126 F	126 F	126 F	130 F
8.2 []	126 F	126 F	126 F	126 F	129 F
9.1 []	135 F	136 F	130 F	130 F	143 F
9.2 []	135 F	135 F	130 F	135 F	142 F
10.1 []	159	158	151	152	165
10.2 []	158	158	150	155	164
11.1 [mV]	65.0	65.8	66.6	66.0	64.1
11.2 [mV]	65.8	65.7	67.3	66.0	64.2
12.1 [mV]	56.9	57.3	58.5	57.7	55.9
12.2 [mV]	57.1	57.4	58.5	58.1	56.4
13.1 [mV]	589.7	587.9	588.5	590.3	585.3
13.2 [mV]	589.4	587.9	588.8	590.3	584.9

14.1 [mV]	657.5	¦	655.9	¦	656.3	¦	658.0	¦	653.6 ¦
14.2 [mV]	657.6	¦	656.0	¦	656.7	¦	658.2	¦	653.9 ¦

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_EMS_@_100_KRAD / V1.0 10/07/97 PAR

Results file : RD230_2N3810_EMS_@_100_KRAD from: 15.07.97 / 15:11:20
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: EMS @ 100 KRAD
: 2N3810 XM-PL-IG6-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)	60.0	...	700.0	V
2.	-ICB0	(0.00	)...	10.00	uA
3.	-VEB0	5000	...	15000	mV
4.	-ICB0	(0.0	)...	10.0	nA
5.	-IEB0	(0.0	)...	20.0	nA
6.	hfe1 (DC)	100	...	200000	
7.	hfe1 (DC)	150	...	450	
8.	hfe1 (DC)	150	...	450	
9.	hfe1 (DC)	150	...	450	
10.	hfe1 (DC)	125	...	200000	
11.	-VCE (sat)	0.0	...	200.0	mV
12.	-VCE (sat)	0.0	...	250.0	mV
13.	-VBE (sat)	0.0	...	700.0	mV
14.	-VBE (sat)	0.0	...	800.0	mV

	275	257	258	259	260	261
1.1 [V]	122.7	126.6	121.9	127.7	124.2	122.8
1.2 [V]	122.9	126.6	121.6	127.5	124.1	122.7
2.1 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6868	6882	6894	6873	6886	6900
3.2 [mV]	6868	6875	6897	6885	6891	6910
4.1 [nA]	0.7	0.9	0.9	1.0	1.0	0.9
4.2 [nA]	0.7	0.9	0.9	1.0	1.0	0.9
5.1 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
6.1 []	393	81 F	81 F	81 F	81 F	81 F
6.2 []	393	81 F	81 F	81 F	81 F	81 F
7.1 []	215	124 F	124 F	124 F	124 F	124 F
7.2 []	215	124 F	124 F	124 F	124 F	124 F
8.1 []	207	126 F	126 F	126 F	126 F	126 F
8.2 []	203	126 F	126 F	126 F	126 F	126 F
9.1 []	204	125 F	127 F	125 F	125 F	125 F
9.2 []	202	125 F	127 F	125 F	125 F	125 F
10.1 []	192	142	158	138	131	133
10.2 []	190	143	158	139	130	133
11.1 [mV]	54.8	76.9	71.7	77.9	79.5	78.6
11.2 [mV]	54.9	77.1	72.6	78.1	80.2	79.0
12.1 [mV]	53.0	61.4	57.6	62.2	62.6	62.6
12.2 [mV]	53.1	61.5	58.2	62.1	63.1	62.7
13.1 [mV]	595.4	589.2	585.3	588.2	589.1	589.8
13.2 [mV]	595.5	588.9	584.9	588.4	589.4	589.9
14.1 [mV]	662.2	657.2	653.7	656.2	656.5	657.2
14.2 [mV]	662.8	657.0	653.5	656.3	656.4	657.0

	262	263	264	265	266
1.1 [V]	125.3	125.6	127.4	126.6	123.9
1.2 [V]	125.5	125.6	127.4	126.5	123.8
2.1 [uA]	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6886	6891	6874	6880	6888
3.2 [mV]	6889	6879	6875	6878	6885
4.1 [nA]	0.8	0.8	0.9	0.7	0.8
4.2 [nA]	0.8	0.8	0.9	0.7	0.8
5.1 [nA]	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2
6.1 []	81 F	81 F	81 F	81 F	81 F
6.2 []	81 F	81 F	81 F	81 F	81 F
7.1 []	124 F	124 F	124 F	124 F	124 F
7.2 []	124 F	124 F	124 F	124 F	124 F
8.1 []	126 F	126 F	126 F	126 F	126 F
8.2 []	126 F	126 F	126 F	126 F	126 F
9.1 []	125 F	125 F	125 F	125 F	125 F
9.2 []	125 F	125 F	125 F	125 F	125 F
10.1 []	148	147	140	142	153
10.2 []	147	147	140	145	152
11.1 [mV]	74.9	75.5	76.7	75.6	73.1
11.2 [mV]	75.6	75.8	77.1	75.7	74.0
12.1 [mV]	60.4	60.5	61.8	61.0	59.1
12.2 [mV]	60.3	61.0	61.9	61.0	59.4
13.1 [mV]	588.5	587.9	588.5	590.5	586.6
13.2 [mV]	588.6	587.9	588.5	590.3	586.6

14.1 [mV]	656.7		655.6		656.6		658.1		655.2	
14.2 [mV]	656.5		655.9		656.3		658.1		654.8	

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_POST_ANNEAL_EMS / V1.0 10/07/97 PAR

Results file : RD230_2N3810_POST_ANNEAL_EMS from: 16.07.97 / 12:27:43
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: POST ANNEAL EMS
: 2N3810 XM-PL-IGG-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)		60.0	...	700.0	V
2.	-ICB0	(	0.00	)...	10.00	uA
3.	-VEB0		5000	...	15000	mV
4.	-ICB0	(	0.0	)...	10.0	nA
5.	-IEB0	(	0.0	)...	20.0	nA
6.	hfe1 (DC)		100	...	200000	
7.	hfe1 (DC)		150	...	450	
8.	hfe1 (DC)		150	...	450	
9.	hfe1 (DC)		150	...	450	
10.	hfe1 (DC)		125	...	200000	
11.	-VCE (sat)		0.0	...	200.0	mV
12.	-VCE (sat)		0.0	...	250.0	mV
13.	-VBE (sat)		0.0	...	700.0	mV
14.	-VBE (sat)		0.0	...	800.0	mV

	275	257	258	259	260	261
1.1 [V]	122.7	125.7	120.9	126.6	123.2	122.0
1.2 [V]	122.8	125.6	120.7	126.5	123.3	121.9
2.1 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6854	6875	6882	6857	6880	6892
3.2 [mV]	6857	6865	6880	6870	6882	6898
4.1 [nA]	0.6	0.2	0.1	0.2	0.2	0.2
4.2 [nA]	0.5	0.2	0.1	0.2	0.2	0.2
5.1 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2	0.2
6.1 []	393	81 F	81 F	81 F	81 F	81 F
6.2 []	393	81 F	81 F	81 F	81 F	81 F
7.1 []	195	124 F	124 F	124 F	124 F	124 F
7.2 []	195	124 F	124 F	124 F	124 F	124 F
8.1 []	203	126 F	126 F	126 F	126 F	126 F
8.2 []	199	126 F	126 F	126 F	126 F	126 F
9.1 []	202	125 F	138 F	125 F	125 F	125 F
9.2 []	200	125 F	137 F	125 F	125 F	125 F
10.1 []	190	149	165	144	137	138
10.2 []	187	150	165	144	136	139
11.1 [mV]	54.5	72.7	67.9	73.1	75.3	73.9
11.2 [mV]	54.6	72.9	68.4	73.5	75.6	74.6
12.1 [mV]	52.8	59.7	55.9	60.2	60.7	60.6
12.2 [mV]	52.9	59.6	56.3	60.4	61.1	60.5
13.1 [mV]	601.0	595.6	593.9	597.1	596.6	597.8
13.2 [mV]	601.0	595.2	594.0	597.3	596.6	597.5
14.1 [mV]	667.5	662.6	661.9	664.0	663.0	663.7
14.2 [mV]	667.7	662.7	662.0	663.9	663.2	664.1

	262	263	264	265	266
1.1 [V]	124.2	124.7	126.5	125.9	123.1
1.2 [V]	124.6	124.9	126.4	125.7	122.9
2.1 [uA]	0.00	0.00	0.00	0.00	0.00
2.2 [uA]	0.00	0.00	0.00	0.00	0.00
3.1 [mV]	6874	6873	6859	6870	6876
3.2 [mV]	6870	6870	6867	6865	6879
4.1 [nA]	0.2	0.2	0.2	0.1	0.1
4.2 [nA]	0.1	0.1	0.1	0.1	0.1
5.1 [nA]	0.2	0.2	0.2	0.2	0.2
5.2 [nA]	0.2	0.2	0.2	0.2	0.2
6.1 []	81 F	81 F	81 F	81 F	81 F
6.2 []	81 F	81 F	81 F	81 F	81 F
7.1 []	124 F	124 F	124 F	124 F	124 F
7.2 []	124 F	124 F	124 F	124 F	124 F
8.1 []	126 F	126 F	126 F	126 F	126 F
8.2 []	126 F	126 F	126 F	126 F	126 F
9.1 []	129 F	128 F	125 F	125 F	135 F
9.2 []	129 F	128 F	125 F	129 F	134 F
10.1 []	155	153	146	147	160
10.2 []	154	153	146	150	159
11.1 [mV]	71.2	71.5	72.8	71.8	69.5
11.2 [mV]	71.3	71.5	73.1	72.2	70.0
12.1 [mV]	58.4	58.5	59.9	59.5	57.3
12.2 [mV]	58.6	58.7	60.0	59.2	57.7
13.1 [mV]	596.5	596.6	597.1	597.1	595.3
13.2 [mV]	596.4	596.9	597.1	597.2	595.1

14.1 [mV]	663.7		663.9		664.1		664.0		662.6	
14.2 [mV]	663.9		663.7		664.5		664.3		662.8	

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07T
RD230_2N3810_FINAL_EMS / V1.0 10/07/97 PAR

Results file : RD230_2N3810_FINAL_EMS from: 25.07.97 / 15:50:38
Operator : PAUL RUSSELL
Part number : 2N3810
Lot number : RD230
Order number : D/C 9716
Vendor : SGS THOMSON
: CONTROL 275 ; RAD 257-266 ; QTY 10
: FINAL EMS @ IGG
: 2N3810 XM-PL-IGG-0019 ISS 2 / V1.0 10/07/97 PAR

Test steps

1.	-VCE0 (BR)		60.0	...	700.0	V
2.	-ICB0	(	0.00	). . .	10.00	uA
3.	-VEB0		5000	...	15000	mV
4.	-ICB0	(	0.0	). . .	10.0	nA
5.	-IEB0	(	0.0	). . .	20.0	nA
6.	hfe1 (DC)		100	...	200000	
7.	hfe1 (DC)		150	...	450	
8.	hfe1 (DC)		150	...	450	
9.	hfe1 (DC)		150	...	450	
10.	hfe1 (DC)		125	...	200000	
11.	-VCE (sat)		0.0	...	200.0	mV
12.	-VCE (sat)		0.0	...	250.0	mV
13.	-VBE (sat)		0.0	...	700.0	mV
14.	-VBE (sat)		0.0	...	800.0	mV

	275		257		258		259		260		261	
1.1 [V]	122.6		124.1		119.2		125.0		121.8		120.4	
1.2 [V]	122.8		124.1		119.2		124.8		121.7		120.6	
2.1 [uA]	0.00		0.00		0.00		0.00		0.00		0.00	
2.2 [uA]	0.00		0.00		0.00		0.00		0.00		0.00	
3.1 [mV]	6855		6875		6881		6857		6877		6893	
3.2 [mV]	6856		6867		6882		6869		6877		6897	
4.1 [nA]	0.6		0.5		0.5		0.5		0.5		0.5	
4.2 [nA]	0.6		0.5		0.5		0.5		0.5		0.5	
5.1 [nA]	0.2		0.2		0.1		0.2		0.2		0.1	
5.2 [nA]	0.2		0.2		0.2		0.2		0.1		0.2	
6.1 []	393		135		135		135		135		135	
6.2 []	393		135		135		135		135		135	
7.1 []	195		132	F	151		132	F	124	F	132	F
7.2 []	195		132	F	151		132	F	124	F	132	F
8.1 []	203		156		172		149	F	141	F	143	F
8.2 []	199		156		169		149	F	141	F	143	F
9.1 []	202		162		180		156		148	F	149	F
9.2 []	200		163		179		157		148	F	150	
10.1 []	190		171		190		165		157		158	
10.2 []	187		172		190		165		156		158	
11.1 [mV]	54.2		57.0		53.2		57.5		57.6		57.8	
11.2 [mV]	54.6		56.7		53.3		57.2		58.0		57.7	
12.1 [mV]	52.6		54.2		51.0		54.8		54.2		54.0	
12.2 [mV]	52.9		54.3		51.1		54.9		54.6		53.8	
13.1 [mV]	601.5		596.7		597.0		600.1		600.6		601.0	
13.2 [mV]	601.5		596.6		597.0		599.7		600.6		601.0	
14.1 [mV]	668.0		663.5		664.2		666.1		667.1		667.2	
14.2 [mV]	668.1		663.8		664.4		666.4		667.1		667.0	

	262		263		264		265		266	
1.1 [V]	122.8		123.2		124.8		124.5		121.6	
1.2 [V]	123.0		123.3		124.8		124.4		121.5	
2.1 [uA]	0.00		0.00		0.00		0.00		0.00	
2.2 [uA]	0.00		0.00		0.00		0.00		0.00	
3.1 [mV]	6874		6876		6861		6869		6876	
3.2 [mV]	6874		6868		6867		6865		6881	
4.1 [nA]	0.5		0.5		0.5		0.5		0.5	
4.2 [nA]	0.5		0.5		0.5		0.5		0.5	
5.1 [nA]	0.2		0.2		0.1		0.2		0.1	
5.2 [nA]	0.2		0.2		0.2		0.2		0.2	
6.1 []	135		135		135		135		135	
6.2 []	135		135		135		135		135	
7.1 []	141	F	132	F	132	F	132	F	141	F
7.2 []	132	F	132	F	132	F	132	F	141	F
8.1 []	161		159		152		152		166	
8.2 []	159		156		152		154		166	
9.1 []	169		166		158		158		173	
9.2 []	167		164		158		161		171	
10.1 []	177		175		167		167		182	
10.2 []	176		174		166		169		181	
11.1 [mV]	55.9		56.1		57.3		57.1		54.7	
11.2 [mV]	55.8		56.3		57.4		57.0		54.8	
12.1 [mV]	53.4		53.3		54.7		54.4		52.4	
12.2 [mV]	53.4		53.6		54.9		54.4		52.4	
13.1 [mV]	597.8		598.4		598.6		599.6		597.0	
13.2 [mV]	597.9		598.3		599.0		599.6		597.0	

14.1 [mV]	664.9	!	665.4	!	665.5	!	666.5	!	663.9	!
14.2 [mV]	664.6	!	665.1	!	665.4	!	666.3	!	663.9	!

INITIALS @ 166

I.G.G. COMPONENT TECHNOLOGY LTD.

REPORT NO. RD230

PART TYPE 2N3810 OPTION - SHEET 1 OF 6

ELECTRICAL MEASUREMENTS w.r.t. XM-PL-166-0019 Table A

Parameter Serial No's	← TRANSISTOR 1 → V_{BE} (mV)	V_{BE} (mV)	V_{BE} (mV)		← TRANSISTOR 2 → V_{BE} (mV)	V_{BE} (mV)	V_{BE} (mV)
CONTROL 275	536·7	701·8	596·7		536·5	700·8	596·7
257	532·3	702·4	595·4		532·4	702·0	595·4
258	528·2	703·3	589·6		528·4	703·0	589·6
259	532·3	705·8	595·4		532·4	705·4	595·4
260	533·0	703·9	596·0		533·0	703·2	596·0
261	532·8	709·6	595·6		533·1	709·4	595·6
262	531·3	703·3	594·3		531·6	703·0	594·3
263	529·6	703·2	593·5		529·6	703·2	593·5
264	532·0	707·0	594·8		532·0	706·8	594·8
265	529·7	710·3	594·8		529·8	709·8	594·8
266	527·1	701·9	592·8		527·1	701·9	592·8
Limit	—	—	—		—	—	—
Condition	I_C = 10μA V_{CE} = 5V	I_C = 10mA V_{CE} = 5V	I_C = 100μA V_{CE} = 5V		I_C = 10μA V_{CE} = 5V	I_C = 10 mA V_{CE} = 5V	I_C = 100μA V_{CE} = 5V

Measured by P.A. Russell Date 14TH JULY 1997

Test Equipment used:-

EQUIPMENT	CT NUMBER
TEKTRONIX 370 CURVE TRACER	CT217
THURLBY PL320 PSU	CT287
KEITHLEY 179A DMM	SM030

INITIALS @ 166

I.G.G. COMPONENT TECHNOLOGY LTD.

REPORT NO. RD230

PART TYPE 2N3810 OPTION - SHEET 2 OF 6

ELECTRICAL MEASUREMENTS w.r.t. XM-PL-166-0019 Table A

Parameter Serial No's	$\lvert V_{BE1}-V_{BE2}\rvert$ (mV)	$\lvert V_{BE1}-V_{BE2}\rvert$ (mV)	$\lvert V_{BE1}-V_{BE2}\rvert$ (mV)				
CONTROL 275	0.2	1.0	0				
257	0.1	0.4	0				
258	0.2	0.3	0				
259	0.1	0.4	0				
260	0	0.7	0				
261	0.3	0.2	0				
262	0.3	0.3	0				
263	0	0	0				
264	0	0.2	0				
265	0.1	0.5	0				
266	0	0	0				
Limit	≤ 5 mV	≤ 5 mV	≤ 3 mV				
Condition	$I_C = 10\mu A$ $V_{CE} = 5V$	$I_C = 10mA$ $V_{CE} = 5V$	$I_C = 100\mu A$ $V_{CE} = 5V$				

Measured by P.A. Russell Date 14TH JULY 1997

Test Equipment used:-

EQUIPMENT	CT NUMBER
—	—

POST ANNEAL EMS

I.G.G. COMPONENT TECHNOLOGY LTD.

REPORT NO. R0230

PART TYPE 2N3810 OPTION - SHEET 3 OF 6

ELECTRICAL MEASUREMENTS w.r.t. XM-PL-IGG-0019 Table A

	← TRANSISTOR 1 →				← TRANSISTOR 2 →		
Parameter Serial No's	V_{BE} (mV)	V_{BE} (mV)	V_{BE} (mV)		V_{BE} (mV)	V_{BE} (mV)	V_{BE} (mV)
CONTROL 275	536.7	703.4	595.2		536.7	702.9	595.2
257	535.1	707.6	592.7		535.1	706.8	592.7
258	532.1	704.3	589.6		532.1	704.0	589.6
259	535.4	710.2	593.5		535.4	709.3	593.5
260	539.2	711.3	594.3		538.7	710.8	594.3
261	537.9	709.6	595.1		537.9	709.1	595.1
262	534.4	707.6	592.0		534.2	707.4	592.0
263	534.5	712.1	592.5		534.4	711.9	592.5
264	536.0	711.8	594.5		535.9	711.1	594.5
265	535.6	710.1	593.9		535.5	708.9	593.8
266	533.5	708.8	592.2		533.3	708.2	592.2
Limit	–	–	–		–	–	–
Condition	I_C = 10μA V_{CE} = 5V	I_C = 10mA V_{CE} = 5V	I_C = 100μA V_{CE} = 5V		I_C = 10μA V_{CE} = 5V	I_C = 10mA V_{CE} = 5V	I_C = 100μA V_{CE} = 5V

Measured by P. A. Mussell Date 17TH JULY 1997

Test Equipment used:-

EQUIPMENT	CT NUMBER
TEKTRONIX 370 CURVE TRACER	CT217
THURLBY PL320 PSU	CT287
KEITHLEY 179A DMM	SM030

POST ANNEAL EMS

I.G.G. COMPONENT TECHNOLOGY LTD.

REPORT NO. RD230

PART TYPE 2N3810 OPTION - SHEET 4 OF 6

ELECTRICAL MEASUREMENTS w.r.t. XM-PL-166-0019 Table A

Parameter Serial No's	$\lvert V_{BE1} - V_{BE2} \rvert$ (mV)	$\lvert V_{BE1} - V_{BE2} \rvert$ (mV)	$\lvert V_{BE1} - V_{BE2} \rvert$ (mV)				
CONTROL 275	0	1·5	0				
257	0	0·8	0				
258	0	0·3	0				
259	0	0·9	0				
260	0·5	0·5	0				
261	0	0·5	0				
262	0·2	0·2	0				
263	0·1	0·2	0				
264	0·1	0·7	0				
265	0·1	1·2	0·1				
266	0·2	0·6	0				
Limit	≤ 5 mV	≤ 5 mV	≤ 3 mV				
Condition	I_C = 10 μA V_{CE} = 5V	I_C = 10 mA V_{CE} = 5V	I_C = 100 μA V_{CE} = 5V				

Measured by P.A. Russell Date 17TH JULY 1997

Test Equipment used:- EQUIPMENT CT NUMBER

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FINAL EMS @ IGG

I.G.G. COMPONENT TECHNOLOGY LTD.

REPORT NO. RD230

PART TYPE 2N3810 OPTION - SHEET 5 OF 6

ELECTRICAL MEASUREMENTS w.r.t. XM-PL-IGG-0019 Table A

	← TRANSISTOR 1 →				← TRANSISTOR 2 →		
Parameter Serial No's	V_{BE} (mV)	V_{BE} (mV)	V_{BE} (mV)		V_{BE} (mV)	V_{BE} (mV)	V_{BE} (mV)
CONTROL 275	535·4	702·8	592·9		535·4	702·3	592·9
257	530·9	709·8	586·8		530·9	709·5	586·8
258	526·0	705·1	588·0		526·0	704·4	588·1
259	530·0	707·1	591·1		530·0	706·9	591·1
260	537·8	703·3	593·8		537·6	703·0	593·8
261	531·6	708·4	592·9		531·6	708·2	593·0
262	532·6	706·4	593·7		532·3	706·0	593·7
263	536·6	704·6	588·8		536·6	704·5	588·8
264	534·1	704·2	589·7		534·1	704·1	589·9
265	532·6	706·5	592·6		532·6	705·9	592·5
266	529·8	709·1	590·9		529·8	708·9	590·9
Limit	-	-	-		-	-	-
Condition	I_C = 10μA V_{CE} = 5V	I_C = 10 mA V_{CE} = 5V	I_C = 100μA V_{CE} = 5V		I_C = 10μA V_{CE} = 5V	I_C = 10 mA V_{CE} = 5V	I_C = 100μA V_{CE} = 5V

Measured by P.A. Mussell Date 25TH JULY 1997

Test Equipment used:-

EQUIPMENT	CT NUMBER
TEKTRONIX 370 CURVE TRACER	CT217
POWERLINE PSU	CT038
KEITHLEY 179A DMM	SM030

FINAL EMS @ IGG

I.G.G. COMPONENT TECHNOLOGY LTD.

REPORT NO. RD230

PART TYPE 2N3810 OPTION - SHEET 6 OF 6

ELECTRICAL MEASUREMENTS w.r.t. XM-PL-IGG-0019 Table A

Parameter Serial No's	$\lvert V_{BE1}-V_{BE2}\rvert$ (mV)	$\lvert V_{BE1}-V_{BE2}\rvert$ (mV)	$\lvert V_{BE1}-V_{BE2}\rvert$ (mV)				
CONTROL 275	0	0.5	0				
257	0	0.3	0				
258	0	0.7	0.1				
259	0	0.2	0				
260	0.2	0.3	0				
261	0	0.2	0.1				
262	0.3	0.4	0				
263	0	0.1	0				
264	0	0.1	0.2				
265	0	0.6	0.1				
266	0	0.2	0				
Limit	≤ 5 mV	≤ 5 mV	≤ 5 mV				
Condition	$I_C = 10\mu A$ $V_{CE} = 5V$	$I_C = 10$ mA $V_{CE} = 5V$	$I_C = 100\mu A$ $V_{CE} = 5V$				

Measured by P.A. Mussell Date 25TH JULY 1997

Test Equipment used:- EQUIPMENT CT NUMBER

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IR

I G G Component Technology — RECEIVING INSPECTION RECORD — RIR No: 78627

Section 1 Goods Inwards

		Date	28May1997	Priority	● 970228
Supplier	STM/G SGS-THOMSON	Manu	STM/F SGS-THOMSON	Doc	DATA
Part Type	TRANSISTOR 2N3810	Value	520700502B LEVEL B		
Spec No/Option	SCC 5000 SCC 5207/005	Issue	7 C 4 D	Date	
PO No	CT11094/2 item 4	PO Qty	664 FLIGHT	Adv Qty	272

Section 2 Project Authorisation

		Project/PLIN	001500 / 150115
SAR No	N/A	Part Family	TRANSISTOR
WAR No			
Related RIR Nos	78628 (LAT 3)		

Section 3 Results

Date Codes: 9716 — Act Qty: 272

Action	Reference	Qty Pass	Qty Rej	N C R	LOT QTY
Travel Visual	100%	272			4-6-97 CT 272
Visual Inspection	100%	276			4-6-97 272
Solderability	-				
Data Review	100%				
Electrical Measurements	100%	272			3-6-97 272 CT
D P A	3 Pcs.				
PRE-CAP	P50796				
RAD TEST. XM-PL-KG-0019	11 PCS				

Section 4 Disposition

Section 4 Disposition	Reference	Qty	Authorisation	Date
Project Store				
Reject-Credit/Replacement				
RADIATION TEST ~~Scrap Store~~	RD 230	11		5/6/96
D P A (Report No)	51515	3	J. C. Jones	5.6.96
VOQ/Lot Acceptance				
Quarantine (Category)				

Section 6 Stores

Signed..... Date.....