



# TOTAL DOSE RADIATION TEST REPORT




**Part Type : K6R4008C1C**  
**Package : 36-Pin SOJ**  
**4Mb Static RAM (512-kword x 8-bit)**  
**Manufacturer: Samsung**  
**Report Reference : ESA\_QCA0102T\_C**  
**Issue : 01**  
**Date : January 19th 2001**

**ESA Contract no. 13528/99/NL/MV CCN N°3 dated 24/11/00**

**ESTEC Technical Officer: R. Harboe Sorensen**

European Space Agency Contract Report

The work described in this report was done under ESA contract.  
Responsibility for the contents resides in the author or organization that prepared it

<b>Hirex reference :</b>	HRX/TID/0074	Issue : 01	Date :	January 19 <sup>th</sup> 2001
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**TOTAL DOSE RADIATION TEST REPORT**  
**on**  
**Samsung K6R4008C1C**  
**4Mb Static RAM (512-kword x 8-bit).**

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<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>		Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung

## 1 Abstract

Under ESA Contract no. 13528/99/NL/MV CCN N°3 dated 24/11/00, covering "Radiation Evaluation of COTS semiconductor Components", four different commercially available 4Mb Static RAM device types were radiation assessed. Results from these assessments, primarily focussing on the sensitivity of these devices to Total Ionizing Dose (TID) and Single Event Effects (SEE), are reported in individual TID and SEE reports. The below summary table lists manufacturer and evaluated types, and gives references to the various reports issued.

<b>Manufacturer</b>	<b>Type</b>	<b>TID Report</b>	<b>SEE Report</b>
Hitachi	HM6216255H	ESA_QCA0104T_C	ESA_QCA0104S_C
Samsung	K6R4008C1C	ESA_QCA0102T_C	ESA_QCA0102S_C
Samsung	K6R4008V1C	ESA_QCA0103T_C	ESA_QCA0103S_C
Samsung	KM684002AJ	-	ESA_QCA0101S_C

<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>		Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung

## 2 Introduction

A total dose radiation evaluation test of the Samsung K6R4008C1C, high-speed, 5.0 V, Monolithic 4Mb Static RAM has been performed with an accumulated dose of about 47 Krad(Si), in response to European Space Agency contract reference : ESA Contract no. 13528/99/NL/MV CCN N°3 dated 24/11/00.

The purpose of this test was to evaluate total dose withstanding of this component, to investigate its suitability for being used in space applications. This test was conducted on commercial samples procured from Samsung and provided to HIREX by ESA.

A complete set of electrical measurements together with graphical representation of measured parameters with respect to total dose received, are provided for all samples.

SEE results for this device type can be found in SEE radiation test report: ESA\_QCA0102S\_C.

## 3 Applicable and Reference Documents

### 3.1 Applicable Documents

- ESA/SCC Basic specification N° 22900 issue 4.
- Samsung K6R4008C1C datasheet – Rev. 3.0 March 2000.
- ESA Contract no. 13528/99/NL/MV CCN N°3 dated 24/11/00.

### 3.2 Reference Documents

- MIL-STD-883: test methods and procedures for microcircuits.

## 4 Test Samples

5 samples of the K6R4008C1C device were tested (4 + 1 control sample). Each device was submitted to exposures at a dose rate of 200 Rad(Si)/hour.

Serial Number	Allocation
10	Control
11	Irradiated under bias
12	Irradiated under bias
13	Irradiated under bias
14	Irradiated under bias

Identification of the K6R4008C1C is given below:

<b>Part Number:</b>	K6R4008C1C-J12	<b>Mask Set:</b>	NA
<b>Top Marking:</b>	SAMSUNG 019 K6R4008C1C- J12 T2A017R3 KOREA	<b>Chip Marking:</b>	NA
<b>Diffusion Lot:</b>	NA	<b>Wafer #:</b>	NA
<b>Date Code:</b>	NA	<b>Project:</b>	Multi-Project

Further K6R4008C1C identification details can be found in ESA\_QCA0102S\_C.

<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>		Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung

## 5 Experimental Conditions

### 5.1 Radiation Source Dose Rate and Annealing

The dose exposures were performed at ONERA-CERT. In this irradiation facility, a Cobalt 60 source is used with the possibility to vary the dose rate by simply adjusting the distance to the source. The irradiation conditions used for this test are provided in the following tables:

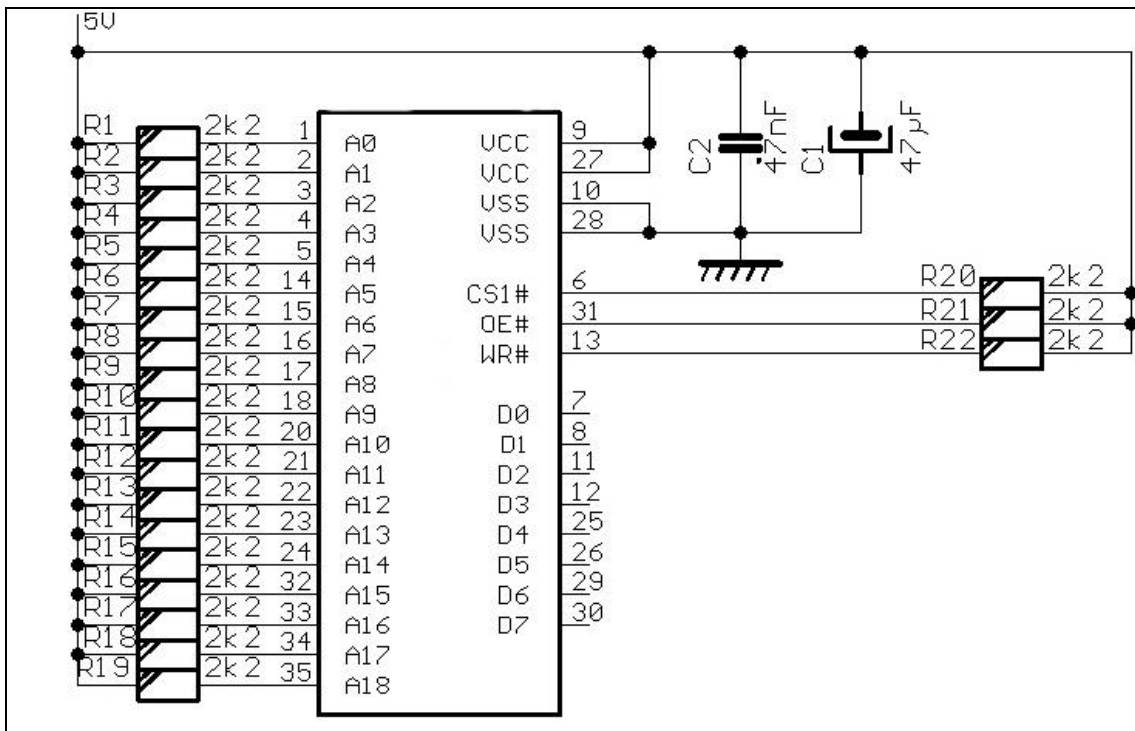
<b>Irradiation Steps</b>	<b>Dose rate</b>	<b>Annealing steps</b>	<b>Temperature</b>
<b>krads</b>	<b>krads/hour</b>	<b>hours</b>	<b>°C</b>
0			25
4.6	0,2		25
10	0,2		25
14.8	0,2		25
19	0,2		25
31.8	0,2		25
47.2	0,2	0	25
		24	25
		192	100

**Table 1 : Experimental Conditions**

<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>		Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung

### 5.2 Bias condition during Dose Exposures and Annealing

During exposures a dedicated test board was used mounted on a special board-holder made for irradiation. The test board allowed to bias the devices in accordance with the electrical circuit provided in Figure 1.



**Figure 1 : Bias Conditions during Irradiation Exposures and Annealing**

<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>		Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung

### 5.3 Measurements conditions

The electrical measurements were performed at HIREX ENGINEERING.  
Electrical parameters test program principle for K6R4008C1C is provided in Figure 2.

The test Setup for this device includes an IMS ATS Test Station and a DC test system HP4142B.  
The ATS generates and then acquires data. A dedicated sequencer program analyses the data and displays the results on a SUN workstation.

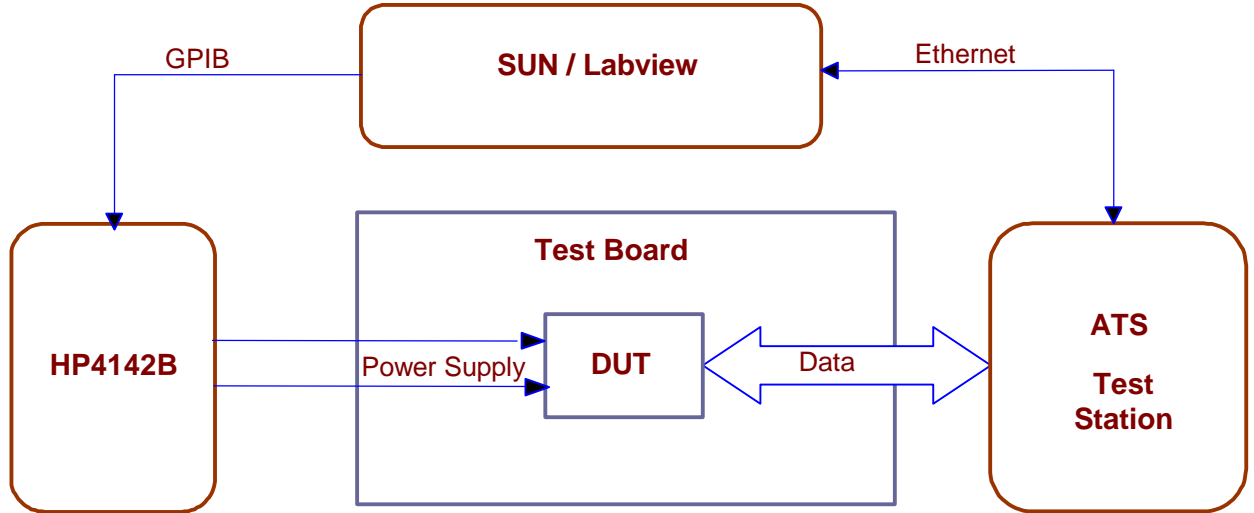


Figure 2 : K6R4008C1C test program principle

<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>		Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung

#### 5.4 Electrical parameters test conditions and limits

Electrical parameters test conditions and limits used for performing this test are given in the following table.

SYMBOL	CHARACTERISTICS	TESTS CONDITIONS	LIMIT		UNIT
			Min	Max	
ILLI	Input Leakage Current Low Level	V <sub>in</sub> (under test) = V <sub>IL</sub> V <sub>in</sub> (remaining inputs) = V <sub>IH</sub> output unloaded	-2	2	μA
IHLI	Input Leakage Current High Level	V <sub>in</sub> (under test) = V <sub>IH</sub> V <sub>in</sub> (remaining inputs) = V <sub>IL</sub> output unloaded	-2	2	μA
ILLO	Output Leakage Current Low Level	V <sub>out</sub> (under test) = V <sub>IL</sub> V <sub>out</sub> (remaining outputs) = tristate CS* = OE* = V <sub>IH</sub> Remaining inputs V <sub>IL</sub> or V <sub>IH</sub>	-2	2	μA
IHLO	Output Leakage Current High Level	V <sub>out</sub> (under test) = V <sub>IH</sub> V <sub>out</sub> (remaining outputs) = tristate CE* = OE* = V <sub>IH</sub> Remaining inputs V <sub>IL</sub>	-2	2	μA
VOH	Output Voltage High Level	I <sub>OH</sub> = -4 mA	2.4		V
VOL	Output Voltage Low Level	I <sub>OL</sub> = 8 mA		0.4	V
ICC	Operating Power Supply Current	CS* = V <sub>IL</sub> OE* = V <sub>IH</sub> F = 80 Mhz outputs unloaded		160	mA
ISB	Standby Power Supply Current	CS* = OE* = V <sub>IH</sub> Outputs unloaded		10	mA
t <sub>AA L-&gt;H</sub>	Address Access Time	Output Load : 50 Ω		12	ns
t <sub>AA H-&gt;L</sub>	Address Access Time	Output Load : 50 Ω		12	ns
t <sub>AS</sub>	Address setup time	Output Load : 50 Ω	0		ns
Zero	Functional Test 1 : , Test Pattern: All 0	Frequency=80MHz			
One	Functional Test 1 : , Test Pattern: All 1	Frequency=80MHz			
Checkerboard	Functional Test 1 : , Test Pattern: Checkerboard	Frequency=80MHz			
*Checkerboard	Functional Test 1 : , Test Pattern: Complementary Checkerboard	Frequency=80MHz			

$$V_{CC} = 5 \text{ V} / V_{IH} = 5 \text{ V} / V_{IL} = 0 \text{ V}$$

**Table 2 : Test Conditions**



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>		Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung

## 6 Conclusion

A Total Ionizing Dose assessment was carried out by Hirex Engineering under ESA contract on the Samsung K6R4008C1C, high-speed, 5.0 V, 4Mb Static RAM (512kword x 8-bit). 4 samples plus one control sample were used during testing. Each device was exposed to Co-60 radiation using a dose rate of 200 Rad(Si)/hour at room temperature.

All samples were functional up to 47.2Krad(Si).

All parameters measured remained within specification limits throughout the testing.

As a general conclusion, this device type has shown a fairly good total dose withstanding without any failure recorded up to 47.2Krad(Si)..

Electrical measurement results can be found in Appendix 1.

<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>		Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung

**APPENDIX 1 : TEST RESULTS**

<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>		Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung

Test results including tables and graphics are provided in this section for each measured parameter.

**Notes on tables and graphics:**

For  $V_{OH}$ ,  $V_{OL}$ ,  $I_{I(L)}$ ,  $I_{O(L)}$ ,  $I_{OZ(L)}$ ,  $I_{OZ(H)}$  measurements were performed on all applicable pins respectively.

In some cases, they may be missing points in tables and graphs, this situation corresponds to a failure corresponding to an out of range measurement.

<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : Negative Input Current Low Level Pin A18: IiL A18**

Vin=0V

Unit= A

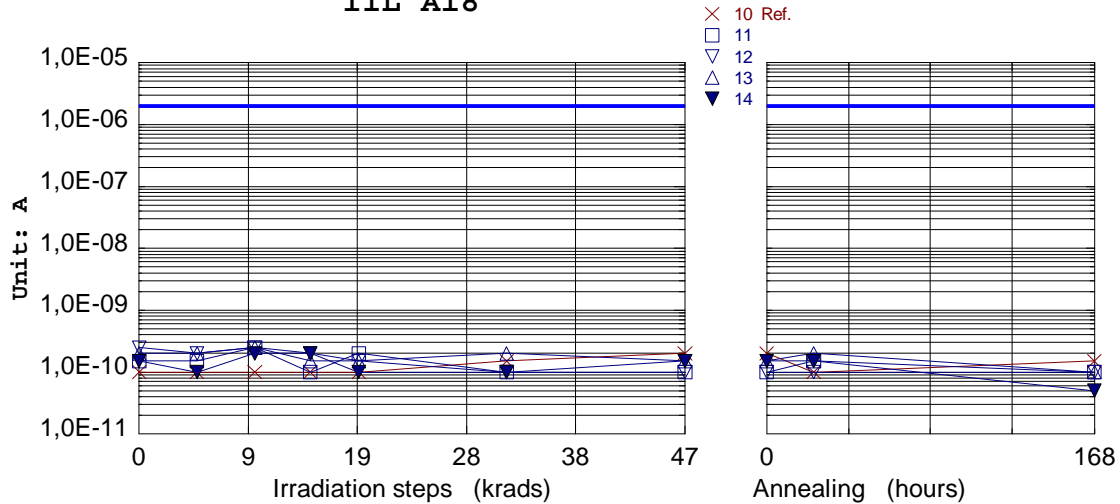
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,500E -10	2,000E -10	1,000E -10
11	1,500E -10	1,500E -10	2,500E -10	1,000E -10	2,000E -10	1,000E -10	1,000E -10	1,500E -10
12	2,500E -10	2,000E -10	2,500E -10	2,000E -10	1,500E -10	1,000E -10	1,000E -10	1,000E -10
13	2,000E -10	2,000E -10	2,500E -10	1,500E -10	1,500E -10	2,000E -10	1,500E -10	2,000E -10
14	1,500E -10	1,000E -10	2,000E -10	2,000E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10
Statistics								
Min	1,500E -10	1,000E -10	2,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10
Max	2,500E -10	2,000E -10	2,500E -10	2,000E -10	2,000E -10	2,000E -10	1,500E -10	2,000E -10
Mean	1,875E -10	1,625E -10	2,375E -10	1,625E -10	1,500E -10	1,250E -10	1,250E -10	1,500E -10
Sigma	4,787E -11	4,787E -11	2,500E -11	4,787E -11	4,082E -11	5,000E -11	2,887E -11	4,082E -11

Test Step	168 hours
Serial #	
10 Ref.	1,500E -10
11	1,000E -10
12	1,000E -10
13	1,000E -10
14	5,000E -11
Statistics	
Min	5,000E -11
Max	1,000E -10
Mean	8,750E -11
Sigma	2,500E -11

**IiL A18**



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A17: IiL A17

Vin=0V

Unit= A

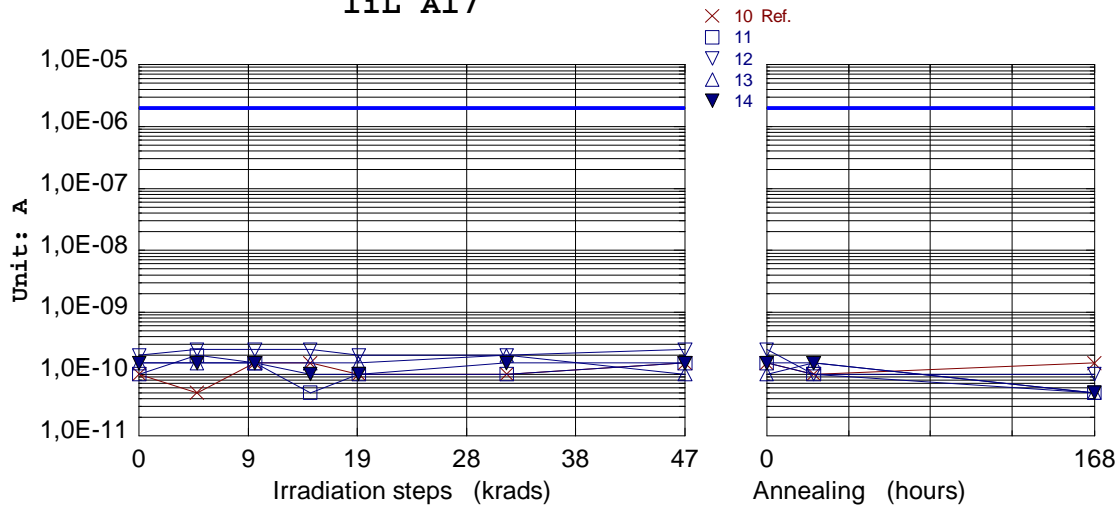
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,000E -10	5,000E -11	1,500E -10	1,500E -10	1,000E -10	1,000E -10	1,500E -10	1,000E -10
11	1,000E -10	2,000E -10	1,500E -10	5,000E -11	1,000E -10	1,000E -10	1,500E -10	1,000E -10
12	2,000E -10	2,500E -10	2,500E -10	2,500E -10	2,000E -10	2,000E -10	2,500E -10	1,000E -10
13	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	2,000E -10	1,000E -10	1,500E -10
14	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10	1,500E -10
Statistics								
Min	1,000E -10	1,500E -10	1,500E -10	5,000E -11	1,000E -10	1,000E -10	1,000E -10	1,000E -10
Max	2,000E -10	2,500E -10	2,500E -10	2,500E -10	2,000E -10	2,000E -10	2,500E -10	1,500E -10
Mean	1,500E -10	1,875E -10	1,750E -10	1,375E -10	1,375E -10	1,625E -10	1,625E -10	1,250E -10
Sigma	4,082E -11	4,787E -11	5,000E -11	8,539E -11	4,787E -11	4,787E -11	6,292E -11	2,887E -11

Test Step	168 hours
Serial #	
10 Ref.	1,500E -10
11	5,000E -11
12	1,000E -10
13	5,000E -11
14	5,000E -11
Statistics	
Min	5,000E -11
Max	1,000E -10
Mean	6,250E -11
Sigma	2,500E -11

IiL A17



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : Negative Input Current Low Level Pin A16: IiL A16**

Vin=0V

Unit= A

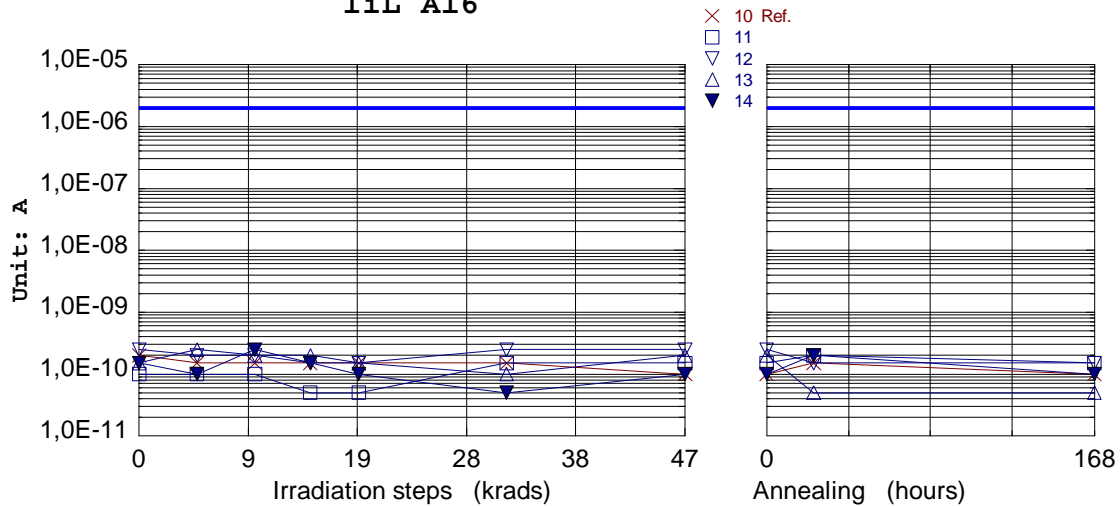
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	2,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10
11	1,000E -10	1,000E -10	1,000E -10	5,000E -11	5,000E -11	1,500E -10	1,500E -10	2,000E -10
12	2,500E -10	2,000E -10	2,000E -10	1,500E -10	1,500E -10	2,500E -10	2,500E -10	1,500E -10
13	1,500E -10	2,500E -10	2,000E -10	2,000E -10	1,500E -10	1,000E -10	2,000E -10	5,000E -11
14	1,500E -10	1,000E -10	2,500E -10	1,500E -10	1,000E -10	5,000E -11	1,000E -10	2,000E -10
Statistics								
Min	1,000E -10	1,000E -10	1,000E -10	5,000E -11	5,000E -11	5,000E -11	1,000E -10	5,000E -11
Max	2,500E -10	2,500E -10	2,500E -10	2,000E -10	1,500E -10	2,500E -10	2,500E -10	2,000E -10
Mean	1,625E -10	1,625E -10	1,875E -10	1,375E -10	1,125E -10	1,375E -10	1,750E -10	1,500E -10
Sigma	6,292E -11	7,500E -11	6,292E -11	6,292E -11	4,787E -11	8,539E -11	6,455E -11	7,071E -11

Test Step	168 hours
Serial #	
10 Ref.	1,000E -10
11	1,500E -10
12	1,500E -10
13	5,000E -11
14	1,000E -10
Statistics	
Min	5,000E -11
Max	1,500E -10
Mean	1,125E -10
Sigma	4,787E -11

**IiL A16**



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : Negative Input Current Low Level Pin A15: IiL a15**

Vin=0V

Unit= A

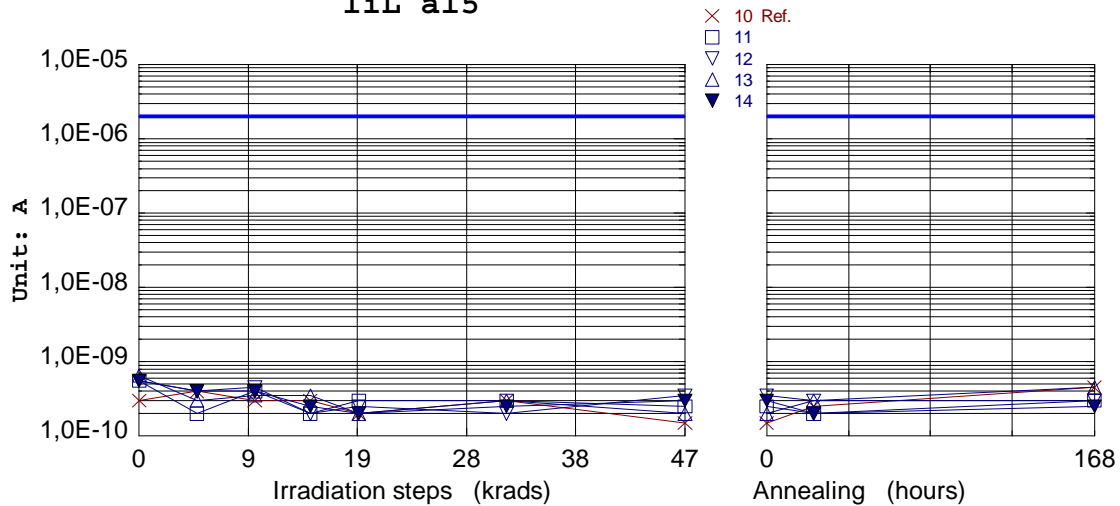
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,000E -10	4,000E -10	3,000E -10	3,000E -10	2,000E -10	3,000E -10	1,500E -10	2,500E -10
11	5,500E -10	2,000E -10	4,000E -10	2,000E -10	3,000E -10	3,000E -10	2,500E -10	2,000E -10
12	5,500E -10	4,000E -10	4,500E -10	2,000E -10	2,500E -10	2,000E -10	3,500E -10	3,000E -10
13	6,500E -10	3,000E -10	3,500E -10	3,500E -10	2,000E -10	3,000E -10	2,000E -10	3,000E -10
14	5,500E -10	4,000E -10	4,000E -10	2,500E -10	2,000E -10	2,500E -10	3,000E -10	2,000E -10
Statistics								
Min	5,500E -10	2,000E -10	3,500E -10	2,000E -10	2,000E -10	2,000E -10	2,000E -10	2,000E -10
Max	6,500E -10	4,000E -10	4,500E -10	3,500E -10	3,000E -10	3,000E -10	3,500E -10	3,000E -10
Mean	5,750E -10	3,250E -10	4,000E -10	2,500E -10	2,375E -10	2,625E -10	2,750E -10	2,500E -10
Sigma	5,000E -11	9,574E -11	4,082E -11	7,071E -11	4,787E -11	4,787E -11	6,455E -11	5,774E -11

Test Step	168 hours
Serial #	
10 Ref.	4,500E -10
11	3,000E -10
12	3,000E -10
13	4,500E -10
14	2,500E -10
Statistics	
Min	2,500E -10
Max	4,500E -10
Mean	3,250E -10
Sigma	8,660E -11

**IiL a15**



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A14: IiL a14

Vin=0V

Unit= A

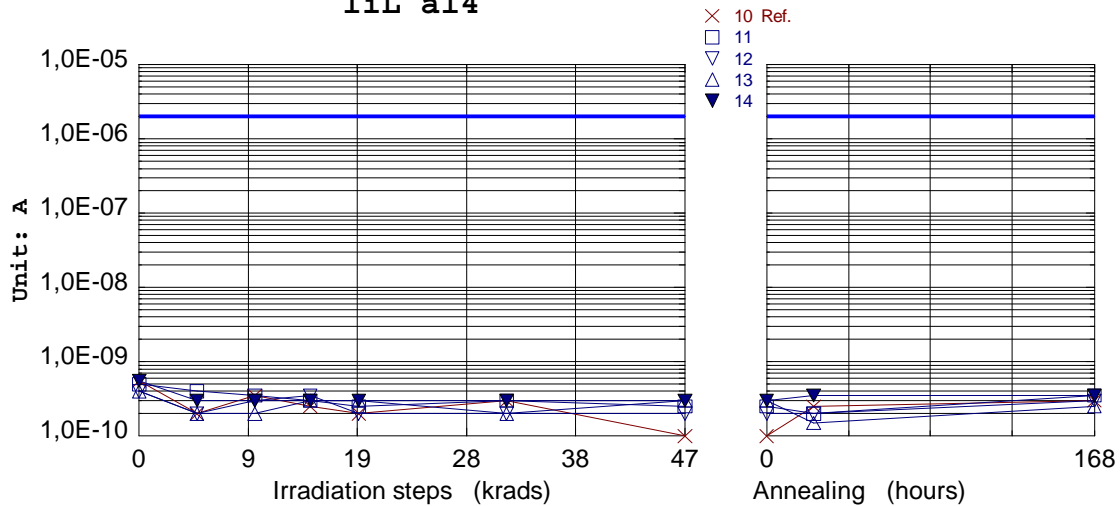
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,500E -10	2,000E -10	3,500E -10	2,500E -10	2,000E -10	3,000E -10	1,000E -10	2,500E -10
11	5,000E -10	4,000E -10	3,500E -10	3,000E -10	2,500E -10	3,000E -10	2,500E -10	2,000E -10
12	4,000E -10	2,000E -10	3,000E -10	3,500E -10	2,000E -10	2,000E -10	2,000E -10	2,000E -10
13	4,000E -10	2,000E -10	2,000E -10	3,000E -10	3,000E -10	2,000E -10	3,000E -10	1,500E -10
14	5,500E -10	3,000E -10	3,000E -10	3,000E -10	3,000E -10	3,000E -10	3,000E -10	3,500E -10
Statistics								
Min	4,000E -10	2,000E -10	2,000E -10	3,000E -10	2,000E -10	2,000E -10	2,000E -10	1,500E -10
Max	5,500E -10	4,000E -10	3,500E -10	3,500E -10	3,000E -10	3,000E -10	3,000E -10	3,500E -10
Mean	4,625E -10	2,750E -10	2,875E -10	3,125E -10	2,625E -10	2,500E -10	2,625E -10	2,250E -10
Sigma	7,500E -11	9,574E -11	6,292E -11	2,500E -11	4,787E -11	5,774E -11	4,787E -11	8,660E -11

Test Step	168 hours
Serial #	
10 Ref.	3,000E -10
11	3,500E -10
12	3,000E -10
13	2,500E -10
14	3,500E -10
Statistics	
Min	2,500E -10
Max	3,500E -10
Mean	3,125E -10
Sigma	4,787E -11

IiL a14





HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A13: IiL a13

Vin=0V

Unit= A

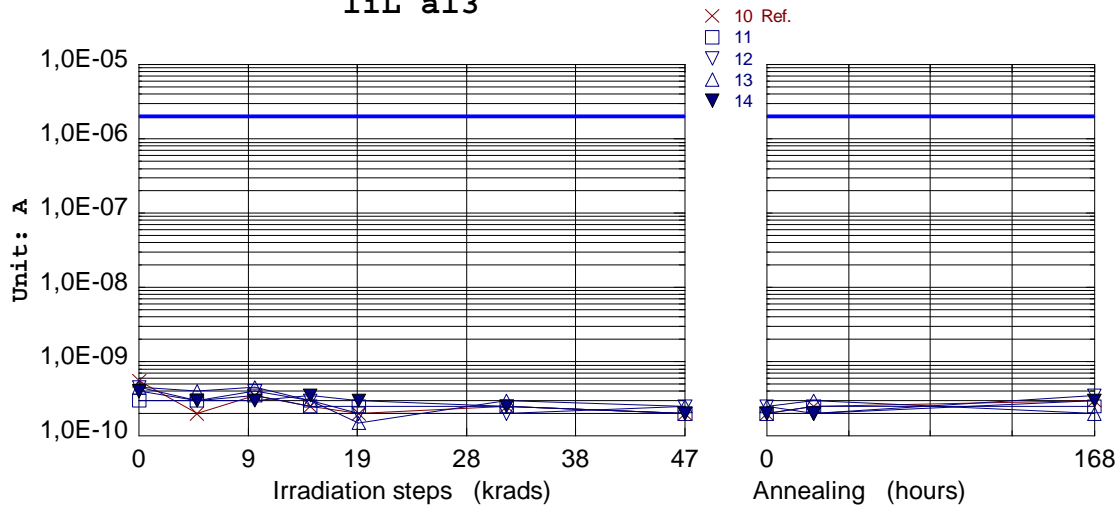
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,500E -10	2,000E -10	3,500E -10	2,500E -10	2,000E -10	2,500E -10	2,000E -10	2,500E -10
11	3,000E -10	3,000E -10	3,500E -10	2,500E -10	2,500E -10	2,500E -10	2,000E -10	2,500E -10
12	4,500E -10	3,000E -10	4,000E -10	3,000E -10	2,000E -10	2,000E -10	2,500E -10	2,000E -10
13	4,500E -10	4,000E -10	4,500E -10	3,000E -10	1,500E -10	3,000E -10	2,500E -10	3,000E -10
14	4,000E -10	3,000E -10	3,000E -10	3,500E -10	3,000E -10	2,500E -10	2,000E -10	2,000E -10
Statistics								
Min	3,000E -10	3,000E -10	3,000E -10	2,500E -10	1,500E -10	2,000E -10	2,000E -10	2,000E -10
Max	4,500E -10	4,000E -10	4,500E -10	3,500E -10	3,000E -10	3,000E -10	2,500E -10	3,000E -10
Mean	4,000E -10	3,250E -10	3,750E -10	3,000E -10	2,250E -10	2,500E -10	2,250E -10	2,375E -10
Sigma	7,071E -11	5,000E -11	6,455E -11	4,082E -11	6,455E -11	4,082E -11	2,887E -11	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	3,000E -10
11	2,500E -10
12	3,500E -10
13	2,000E -10
14	3,000E -10
Statistics	
Min	2,000E -10
Max	3,500E -10
Mean	2,750E -10
Sigma	6,455E -11

IiL a13



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A12: IiL a12

Vin=0V

Unit= A

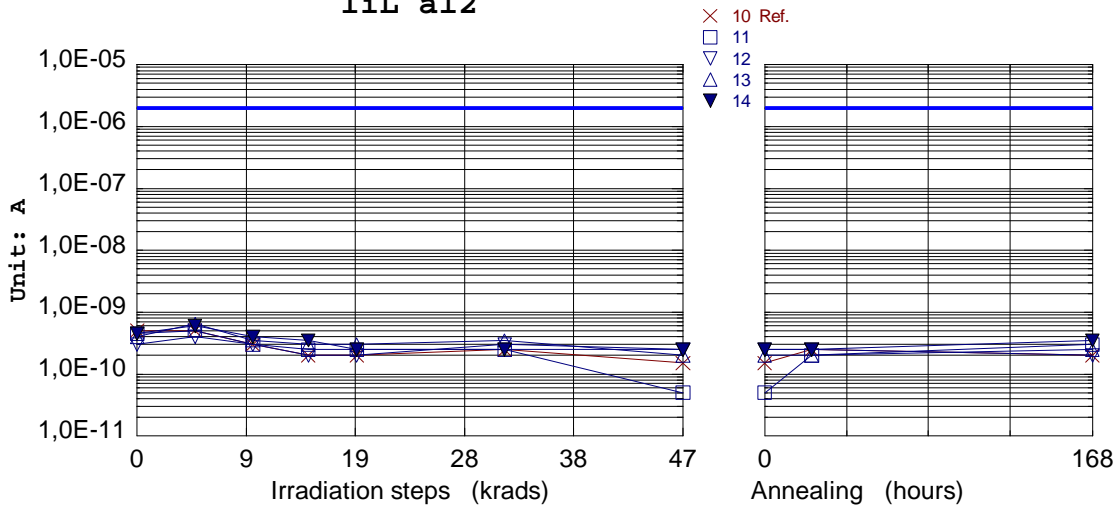
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,000E -10	5,000E -10	3,000E -10	2,000E -10	2,000E -10	2,500E -10	1,500E -10	2,500E -10
11	4,500E -10	5,000E -10	3,000E -10	2,500E -10	2,500E -10	2,500E -10	5,000E -11	2,000E -10
12	3,000E -10	4,000E -10	3,000E -10	2,000E -10	2,000E -10	3,000E -10	2,500E -10	2,500E -10
13	4,000E -10	6,500E -10	3,500E -10	3,000E -10	3,000E -10	3,500E -10	2,000E -10	2,000E -10
14	4,500E -10	6,000E -10	4,000E -10	3,500E -10	2,500E -10	2,500E -10	2,500E -10	2,500E -10
Statistics								
Min	3,000E -10	4,000E -10	3,000E -10	2,000E -10	2,000E -10	2,500E -10	5,000E -11	2,000E -10
Max	4,500E -10	6,500E -10	4,000E -10	3,500E -10	3,000E -10	3,500E -10	2,500E -10	2,500E -10
Mean	4,000E -10	5,375E -10	3,375E -10	2,750E -10	2,500E -10	2,875E -10	1,875E -10	2,250E -10
Sigma	7,071E -11	1,109E -10	4,787E -11	6,455E -11	4,082E -11	4,787E -11	9,465E -11	2,887E -11

Test Step	168 hours
Serial #	
10 Ref.	2,000E -10
11	3,000E -10
12	2,000E -10
13	2,500E -10
14	3,500E -10
Statistics	
Min	2,000E -10
Max	3,500E -10
Mean	2,750E -10
Sigma	6,455E -11

IiL a12



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : Negative Input Current Low Level Pin A11: IiL a11**

Vin=0V

Unit= A

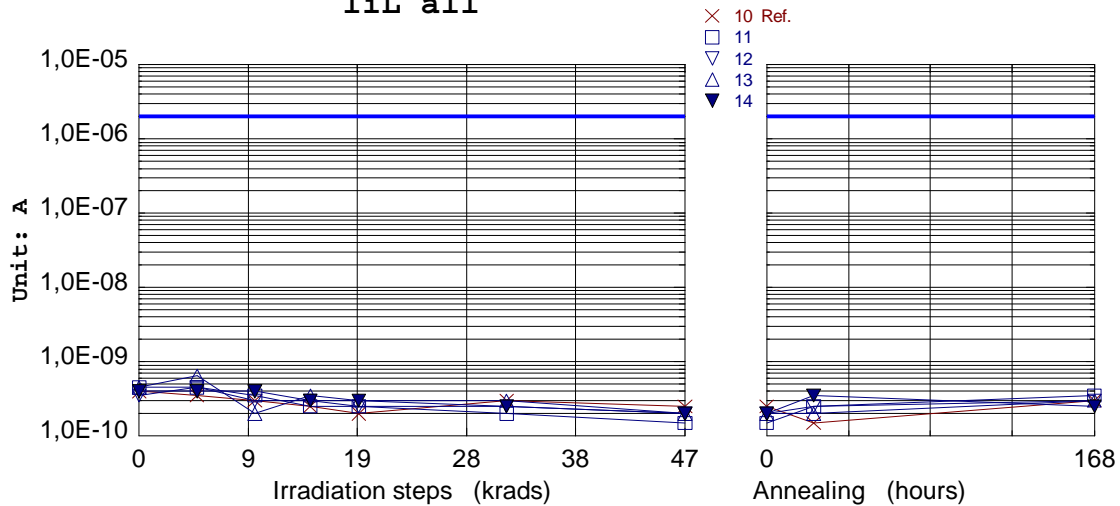
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	3,500E -10	3,000E -10	2,500E -10	2,000E -10	3,000E -10	2,500E -10	1,500E -10
11	4,500E -10	4,500E -10	3,500E -10	2,500E -10	2,500E -10	2,000E -10	1,500E -10	2,500E -10
12	3,500E -10	4,500E -10	3,000E -10	3,000E -10	2,500E -10	2,500E -10	2,000E -10	2,500E -10
13	4,500E -10	6,500E -10	2,000E -10	3,500E -10	3,000E -10	3,000E -10	2,000E -10	2,000E -10
14	4,000E -10	4,000E -10	4,000E -10	3,000E -10	3,000E -10	2,500E -10	2,000E -10	3,500E -10
Statistics								
Min	3,500E -10	4,000E -10	2,000E -10	2,500E -10	2,500E -10	2,000E -10	1,500E -10	2,000E -10
Max	4,500E -10	6,500E -10	4,000E -10	3,500E -10	3,000E -10	3,000E -10	2,000E -10	3,500E -10
Mean	4,125E -10	4,875E -10	3,125E -10	3,000E -10	2,750E -10	2,500E -10	1,875E -10	2,625E -10
Sigma	4,787E -11	1,109E -10	8,539E -11	4,082E -11	2,887E -11	4,082E -11	2,500E -11	6,292E -11

Test Step	168 hours
Serial #	
10 Ref.	3,000E -10
11	3,500E -10
12	3,000E -10
13	3,000E -10
14	2,500E -10
Statistics	
Min	2,500E -10
Max	3,500E -10
Mean	3,000E -10
Sigma	4,082E -11

**IiL a11**



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A10: IiL a10

Vin=0V

Unit= A

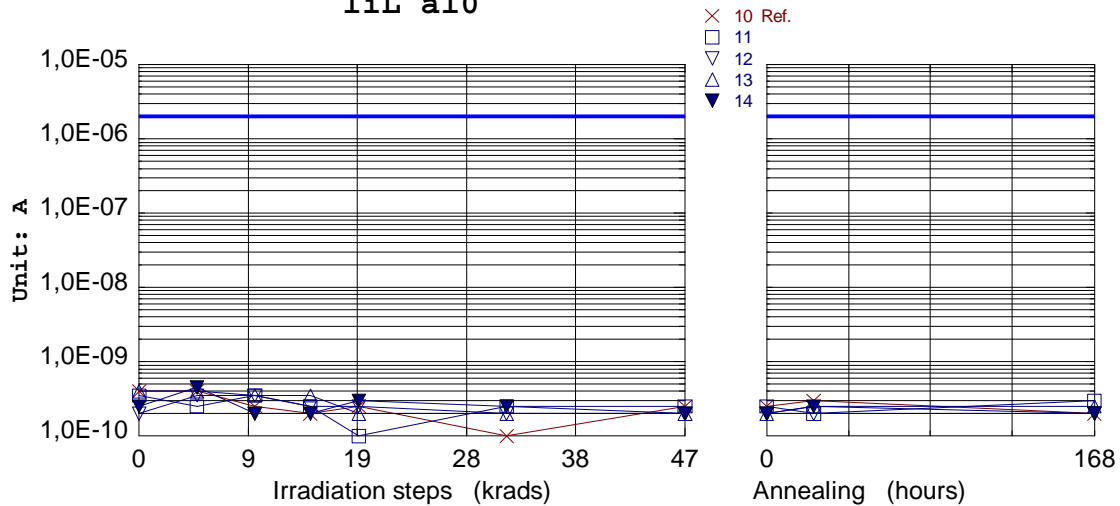
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	4,000E -10	2,500E -10	2,000E -10	2,500E -10	1,000E -10	2,500E -10	3,000E -10
11	3,500E -10	2,500E -10	3,500E -10	2,500E -10	1,000E -10	2,500E -10	2,500E -10	2,000E -10
12	2,000E -10	3,500E -10	3,500E -10	2,500E -10	2,500E -10	2,000E -10	2,000E -10	2,000E -10
13	4,000E -10	4,000E -10	3,500E -10	3,500E -10	2,000E -10	2,000E -10	2,000E -10	2,500E -10
14	2,500E -10	4,500E -10	2,000E -10	2,000E -10	3,000E -10	2,500E -10	2,000E -10	2,500E -10
Statistics								
Min	2,000E -10	2,500E -10	2,000E -10	2,000E -10	1,000E -10	2,000E -10	2,000E -10	2,000E -10
Max	4,000E -10	4,500E -10	3,500E -10	3,500E -10	3,000E -10	2,500E -10	2,500E -10	2,500E -10
Mean	3,000E -10	3,625E -10	3,125E -10	2,625E -10	2,125E -10	2,250E -10	2,125E -10	2,250E -10
Sigma	9,129E -11	8,539E -11	7,500E -11	6,292E -11	8,539E -11	2,887E -11	2,500E -11	2,887E -11

Test Step	168 hours
Serial #	
10 Ref.	2,000E -10
11	3,000E -10
12	2,000E -10
13	2,500E -10
14	2,000E -10
Statistics	
Min	2,000E -10
Max	3,000E -10
Mean	2,375E -10
Sigma	4,787E -11

IiL a10



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A9: IiL a9  
Vin=0V

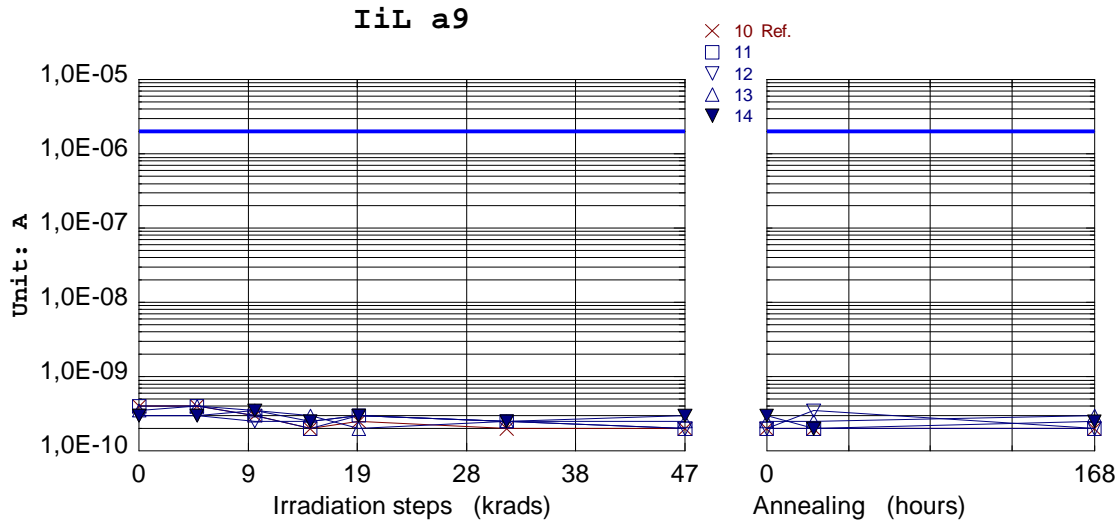
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	4,000E -10	3,000E -10	2,000E -10	2,500E -10	2,000E -10	2,000E -10	2,000E -10
11	4,000E -10	4,000E -10	3,000E -10	2,000E -10	3,000E -10	2,500E -10	2,000E -10	2,000E -10
12	3,000E -10	3,000E -10	2,500E -10	2,500E -10	3,000E -10	2,500E -10	2,000E -10	3,500E -10
13	3,500E -10	4,000E -10	3,500E -10	3,000E -10	2,000E -10	2,500E -10	2,500E -10	2,500E -10
14	3,000E -10	3,000E -10	3,500E -10	2,500E -10	3,000E -10	2,500E -10	3,000E -10	2,000E -10
Statistics								
Min	3,000E -10	3,000E -10	2,500E -10	2,000E -10	2,000E -10	2,500E -10	2,000E -10	2,000E -10
Max	4,000E -10	4,000E -10	3,500E -10	3,000E -10	3,000E -10	2,500E -10	3,000E -10	3,500E -10
Mean	3,375E -10	3,500E -10	3,125E -10	2,500E -10	2,750E -10	2,500E -10	2,375E -10	2,500E -10
Sigma	4,787E -11	5,774E -11	4,787E -11	4,082E -11	5,000E -11	2,342E -19	4,787E -11	7,071E -11

Test Step	168 hours
Serial #	
10 Ref.	2,000E -10
11	2,000E -10
12	2,000E -10
13	3,000E -10
14	2,500E -10
Statistics	
Min	2,000E -10
Max	3,000E -10
Mean	2,375E -10
Sigma	4,787E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A8: IiL a8  
Vin=0V

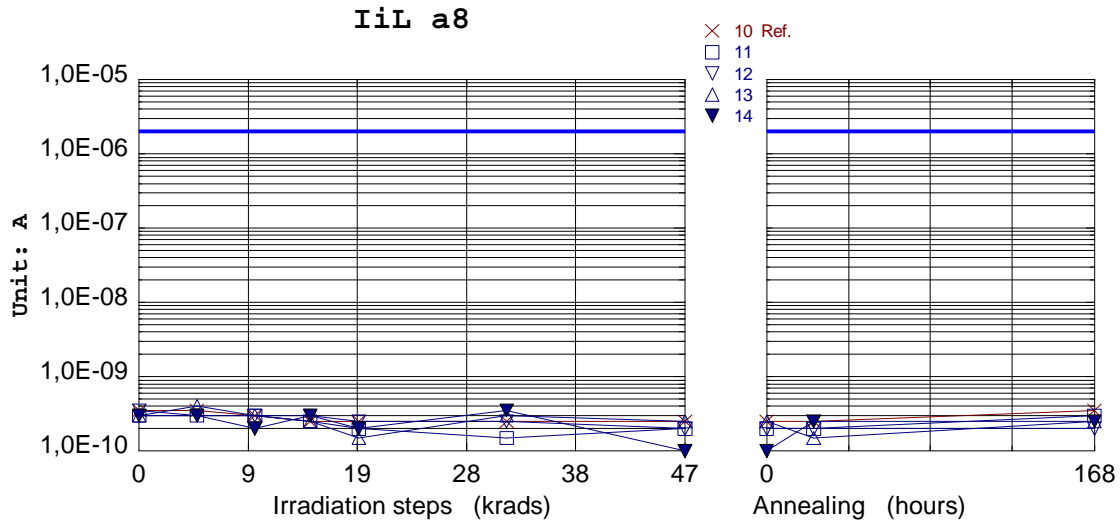
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,500E -10	3,500E -10	3,000E -10	2,500E -10	2,500E -10	2,500E -10	2,500E -10	2,500E -10
11	3,000E -10	3,000E -10	3,000E -10	2,500E -10	2,000E -10	1,500E -10	2,000E -10	2,000E -10
12	3,500E -10	3,000E -10	3,000E -10	3,000E -10	2,500E -10	2,500E -10	2,000E -10	2,000E -10
13	3,000E -10	4,000E -10	3,000E -10	2,500E -10	1,500E -10	3,000E -10	2,500E -10	1,500E -10
14	3,000E -10	3,000E -10	2,000E -10	3,000E -10	2,000E -10	3,500E -10	1,000E -10	2,500E -10
Statistics								
Min	3,000E -10	3,000E -10	2,000E -10	2,500E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10
Max	3,500E -10	4,000E -10	3,000E -10	3,000E -10	2,500E -10	3,500E -10	2,500E -10	2,500E -10
Mean	3,125E -10	3,250E -10	2,750E -10	2,750E -10	2,000E -10	2,625E -10	1,875E -10	2,000E -10
Sigma	2,500E -11	5,000E -11	5,000E -11	2,887E -11	4,082E -11	8,539E -11	6,292E -11	4,082E -11

Test Step	168 hours
Serial #	
10 Ref.	3,500E -10
11	3,000E -10
12	2,000E -10
13	2,500E -10
14	2,500E -10
Statistics	
Min	2,000E -10
Max	3,000E -10
Mean	2,500E -10
Sigma	4,082E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A7: IiL a7  
Vin=0V

Unit= A

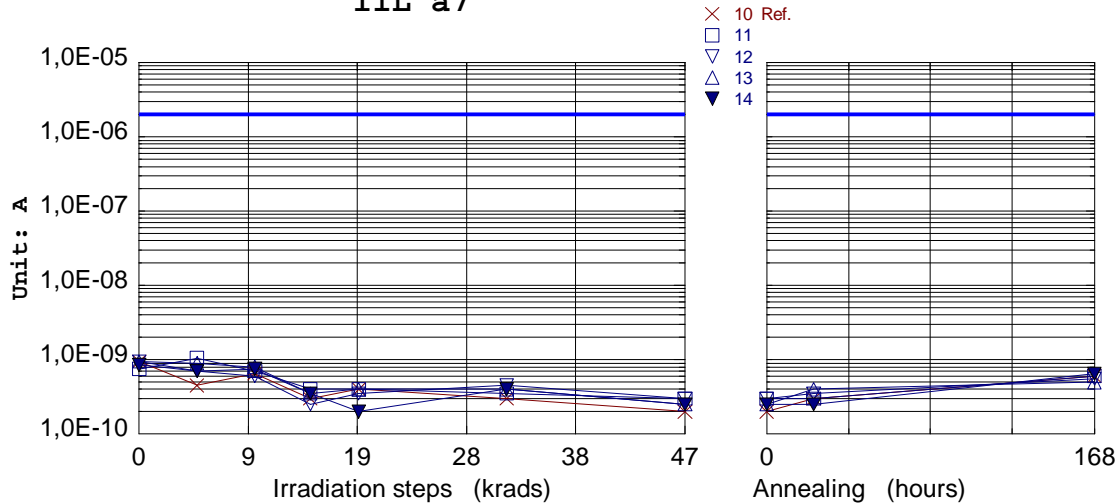
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	9,500E -10	4,500E -10	6,500E -10	3,000E -10	4,000E -10	3,000E -10	2,000E -10	3,000E -10
11	7,500E -10	1,050E -09	7,000E -10	4,000E -10	4,000E -10	3,500E -10	3,000E -10	3,000E -10
12	9,500E -10	7,000E -10	6,000E -10	2,500E -10	3,500E -10	4,500E -10	3,000E -10	3,500E -10
13	9,500E -10	9,000E -10	8,000E -10	3,500E -10	4,000E -10	4,000E -10	2,500E -10	4,000E -10
14	8,500E -10	7,000E -10	7,500E -10	3,500E -10	2,000E -10	4,000E -10	2,500E -10	2,500E -10
Statistics								
Min	7,500E -10	7,000E -10	6,000E -10	2,500E -10	2,000E -10	3,500E -10	2,500E -10	2,500E -10
Max	9,500E -10	1,050E -09	8,000E -10	4,000E -10	4,000E -10	4,500E -10	3,000E -10	4,000E -10
Mean	8,750E -10	8,375E -10	7,125E -10	3,375E -10	3,375E -10	4,000E -10	2,750E -10	3,250E -10
Sigma	9,574E -11	1,702E -10	8,539E -11	6,292E -11	9,465E -11	4,082E -11	2,887E -11	6,455E -11

Test Step	168 hours
Serial #	
10 Ref.	6,000E -10
11	6,000E -10
12	5,500E -10
13	5,000E -10
14	6,500E -10
Statistics	
Min	5,000E -10
Max	6,500E -10
Mean	5,750E -10
Sigma	6,455E -11

IiL a7



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A6: IiL a6  
Vin=0V

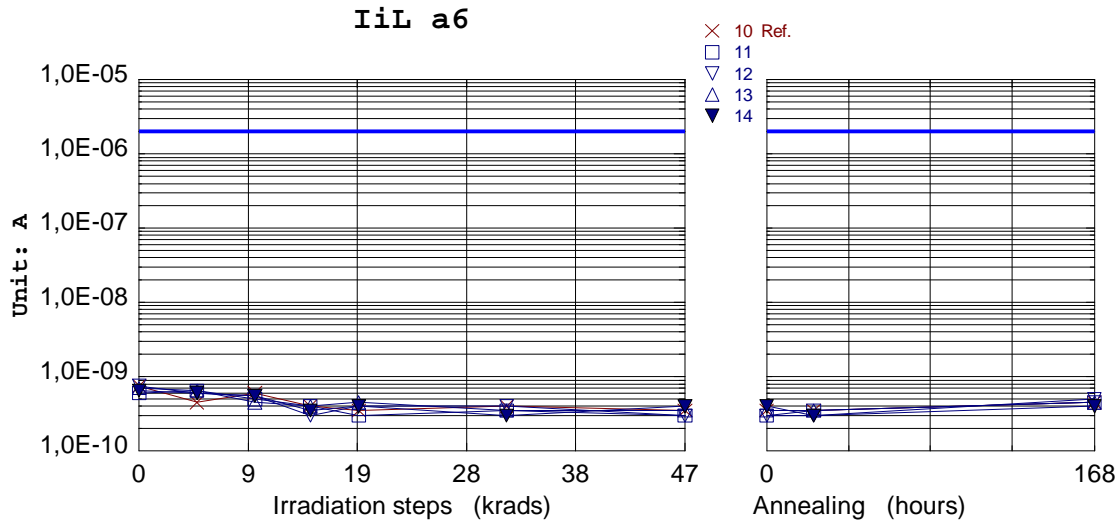
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	7,500E -10	4,500E -10	6,000E -10	4,000E -10	3,500E -10	4,000E -10	3,500E -10	3,500E -10
11	6,000E -10	6,500E -10	5,000E -10	4,000E -10	3,000E -10	3,500E -10	3,000E -10	3,500E -10
12	7,500E -10	6,000E -10	5,500E -10	3,000E -10	4,000E -10	4,000E -10	3,000E -10	3,000E -10
13	7,000E -10	6,500E -10	4,500E -10	4,000E -10	4,500E -10	3,500E -10	3,500E -10	3,500E -10
14	6,500E -10	6,000E -10	5,500E -10	3,500E -10	4,000E -10	3,000E -10	4,000E -10	3,000E -10
Statistics								
Min	6,000E -10	6,000E -10	4,500E -10	3,000E -10	3,000E -10	3,000E -10	3,000E -10	3,000E -10
Max	7,500E -10	6,500E -10	5,500E -10	4,000E -10	4,500E -10	4,000E -10	4,000E -10	3,500E -10
Mean	6,750E -10	6,250E -10	5,125E -10	3,625E -10	3,875E -10	3,500E -10	3,375E -10	3,250E -10
Sigma	6,455E -11	2,887E -11	4,787E -11	4,787E -11	6,292E -11	4,082E -11	4,787E -11	2,887E -11

Test Step	168 hours
Serial #	
10 Ref.	4,500E -10
11	4,500E -10
12	5,000E -10
13	4,500E -10
14	4,000E -10
Statistics	
Min	4,000E -10
Max	5,000E -10
Mean	4,500E -10
Sigma	4,082E -11





HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A5: IiL a5  
Vin=0V

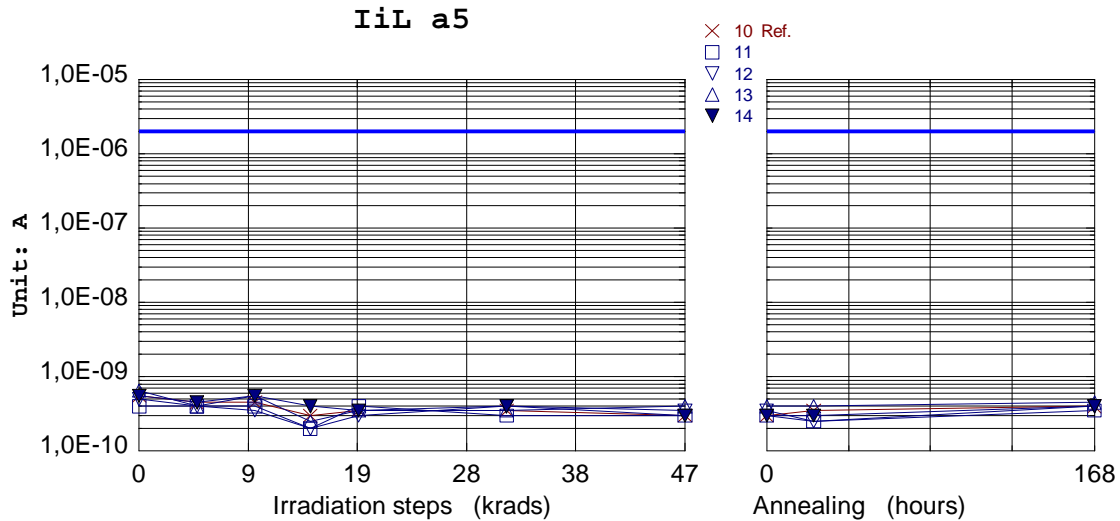
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,500E -10	4,500E -10	4,500E -10	3,000E -10	3,500E -10	3,500E -10	3,000E -10	3,500E -10
11	4,000E -10	4,000E -10	4,000E -10	2,000E -10	4,000E -10	3,000E -10	3,000E -10	2,500E -10
12	5,000E -10	4,000E -10	3,500E -10	2,000E -10	3,000E -10	4,000E -10	3,500E -10	2,500E -10
13	6,500E -10	4,000E -10	5,500E -10	2,500E -10	3,500E -10	3,500E -10	4,000E -10	4,000E -10
14	5,500E -10	4,500E -10	5,500E -10	4,000E -10	3,500E -10	4,000E -10	3,000E -10	3,000E -10
Statistics								
Min	4,000E -10	4,000E -10	3,500E -10	2,000E -10	3,000E -10	3,000E -10	3,000E -10	2,500E -10
Max	6,500E -10	4,500E -10	5,500E -10	4,000E -10	4,000E -10	4,000E -10	4,000E -10	4,000E -10
Mean	5,250E -10	4,125E -10	4,625E -10	2,625E -10	3,500E -10	3,625E -10	3,375E -10	3,000E -10
Sigma	1,041E -10	2,500E -11	1,031E -10	9,465E -11	4,082E -11	4,787E -11	4,787E -11	7,071E -11

Test Step	168 hours
Serial #	
10 Ref.	4,000E -10
11	3,500E -10
12	4,000E -10
13	4,500E -10
14	4,000E -10
Statistics	
Min	3,500E -10
Max	4,500E -10
Mean	4,000E -10
Sigma	4,082E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A4: IiL a4  
Vin=0V

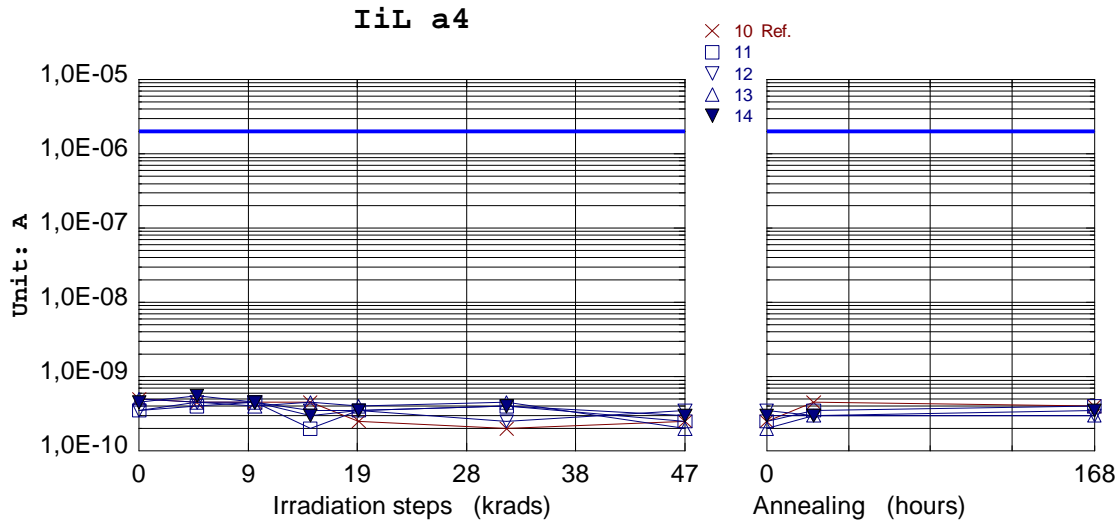
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,000E -10	4,500E -10	4,500E -10	4,500E -10	2,500E -10	2,000E -10	2,500E -10	4,500E -10
11	3,500E -10	4,000E -10	4,500E -10	2,000E -10	3,500E -10	4,000E -10	2,500E -10	3,500E -10
12	3,500E -10	4,500E -10	4,500E -10	3,500E -10	3,500E -10	2,500E -10	3,500E -10	3,000E -10
13	5,000E -10	4,500E -10	4,000E -10	4,500E -10	4,000E -10	4,500E -10	2,000E -10	3,000E -10
14	4,500E -10	5,500E -10	4,500E -10	3,000E -10	3,500E -10	4,000E -10	3,000E -10	3,000E -10
Statistics								
Min	3,500E -10	4,000E -10	4,000E -10	2,000E -10	3,500E -10	2,500E -10	2,000E -10	3,000E -10
Max	5,000E -10	5,500E -10	4,500E -10	4,500E -10	4,000E -10	4,500E -10	3,500E -10	3,500E -10
Mean	4,125E -10	4,625E -10	4,375E -10	3,250E -10	3,625E -10	3,750E -10	2,750E -10	3,125E -10
Sigma	7,500E -11	6,292E -11	2,500E -11	1,041E -10	2,500E -11	8,660E -11	6,455E -11	2,500E -11

Test Step	168 hours
Serial #	
10 Ref.	4,000E -10
11	4,000E -10
12	3,000E -10
13	3,000E -10
14	3,500E -10
Statistics	
Min	3,000E -10
Max	4,000E -10
Mean	3,375E -10
Sigma	4,787E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A3: IiL a3  
Vin=0V

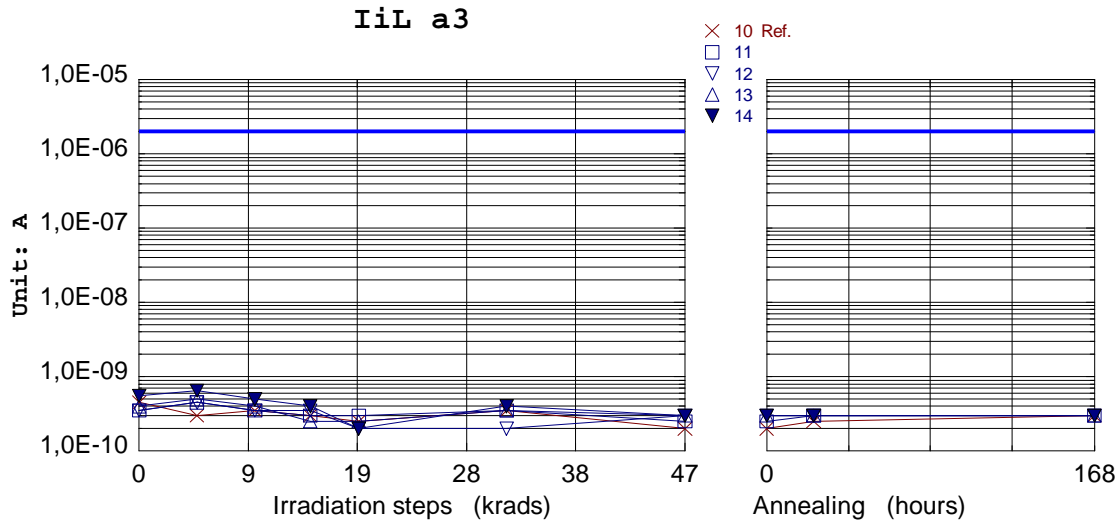
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,500E -10	3,000E -10	3,500E -10	3,000E -10	2,500E -10	3,500E -10	2,000E -10	2,500E -10
11	3,500E -10	4,500E -10	3,500E -10	3,000E -10	3,000E -10	3,500E -10	2,500E -10	3,000E -10
12	3,500E -10	4,500E -10	3,500E -10	3,500E -10	2,000E -10	2,000E -10	3,000E -10	3,000E -10
13	4,000E -10	5,000E -10	4,000E -10	2,500E -10	2,500E -10	3,500E -10	3,000E -10	3,000E -10
14	5,500E -10	6,500E -10	5,000E -10	4,000E -10	2,000E -10	4,000E -10	3,000E -10	3,000E -10
Statistics								
Min	3,500E -10	4,500E -10	3,500E -10	2,500E -10	2,000E -10	2,000E -10	2,500E -10	3,000E -10
Max	5,500E -10	6,500E -10	5,000E -10	4,000E -10	3,000E -10	4,000E -10	3,000E -10	3,000E -10
Mean	4,125E -10	5,125E -10	4,000E -10	3,250E -10	2,375E -10	3,250E -10	2,875E -10	3,000E -10
Sigma	9,465E -11	9,465E -11	7,071E -11	6,455E -11	4,787E -11	8,660E -11	2,500E -11	3,650E -19

Test Step	168 hours
Serial #	
10 Ref.	3,000E -10
11	3,000E -10
12	3,000E -10
13	3,000E -10
14	3,000E -10
Statistics	
Min	3,000E -10
Max	3,000E -10
Mean	3,000E -10
Sigma	3,650E -19



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A2: IiL a2  
Vin=0V

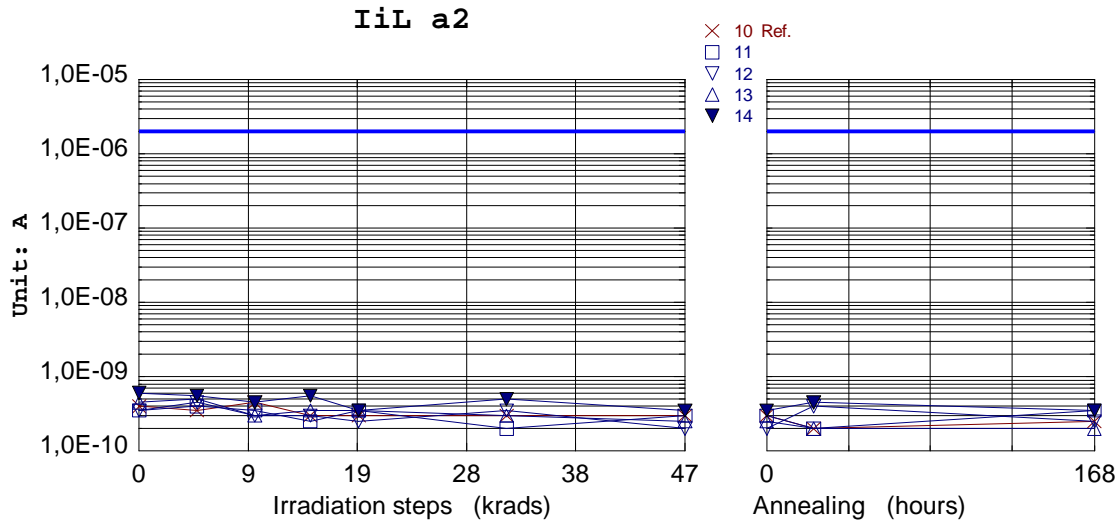
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	3,500E -10	4,500E -10	3,000E -10	3,000E -10	3,000E -10	3,000E -10	2,000E -10
11	3,500E -10	4,000E -10	3,500E -10	2,500E -10	3,500E -10	2,000E -10	3,000E -10	2,000E -10
12	3,500E -10	4,500E -10	3,000E -10	3,000E -10	2,500E -10	3,500E -10	2,000E -10	4,000E -10
13	4,500E -10	5,000E -10	3,000E -10	3,500E -10	3,500E -10	3,000E -10	2,500E -10	2,000E -10
14	6,000E -10	5,500E -10	4,500E -10	5,500E -10	3,500E -10	5,000E -10	3,500E -10	4,500E -10
Statistics								
Min	3,500E -10	4,000E -10	3,000E -10	2,500E -10	2,500E -10	2,000E -10	2,000E -10	2,000E -10
Max	6,000E -10	5,500E -10	4,500E -10	5,500E -10	3,500E -10	5,000E -10	3,500E -10	4,500E -10
Mean	4,375E -10	4,750E -10	3,500E -10	3,625E -10	3,250E -10	3,375E -10	2,750E -10	3,125E -10
Sigma	1,181E -10	6,455E -11	7,071E -11	1,315E -10	5,000E -11	1,250E -10	6,455E -11	1,315E -10

Test Step	168 hours
Serial #	
10 Ref.	2,500E -10
11	3,500E -10
12	2,500E -10
13	2,000E -10
14	3,500E -10
Statistics	
Min	2,000E -10
Max	3,500E -10
Mean	2,875E -10
Sigma	7,500E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A1: IiL a1  
Vin=0V

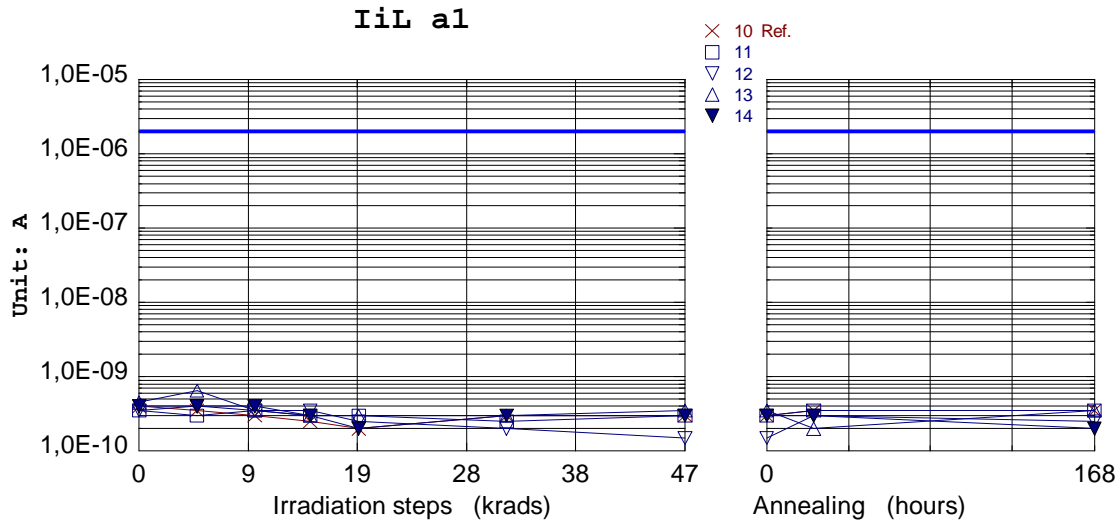
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	3,500E -10	3,000E -10	2,500E -10	2,000E -10	3,000E -10	3,000E -10	3,500E -10
11	3,500E -10	3,000E -10	3,500E -10	3,000E -10	3,000E -10	2,500E -10	3,000E -10	3,500E -10
12	3,500E -10	4,000E -10	3,500E -10	3,500E -10	2,500E -10	2,000E -10	1,500E -10	3,000E -10
13	4,500E -10	6,500E -10	3,500E -10	3,000E -10	3,000E -10	3,000E -10	3,500E -10	2,000E -10
14	4,000E -10	4,000E -10	4,000E -10	3,000E -10	2,000E -10	3,000E -10	3,000E -10	3,000E -10
Statistics								
Min	3,500E -10	3,000E -10	3,500E -10	3,000E -10	2,000E -10	2,000E -10	1,500E -10	2,000E -10
Max	4,500E -10	6,500E -10	4,000E -10	3,500E -10	3,000E -10	3,000E -10	3,500E -10	3,500E -10
Mean	3,875E -10	4,375E -10	3,625E -10	3,125E -10	2,625E -10	2,625E -10	2,750E -10	2,875E -10
Sigma	4,787E -11	1,493E -10	2,500E -11	2,500E -11	4,787E -11	4,787E -11	8,660E -11	6,292E -11

Test Step	168 hours
Serial #	
10 Ref.	3,500E -10
11	3,500E -10
12	2,500E -10
13	3,500E -10
14	2,000E -10
Statistics	
Min	2,000E -10
Max	3,500E -10
Mean	2,875E -10
Sigma	7,500E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Input Current Low Level Pin A0: IiL a0  
Vin=0V

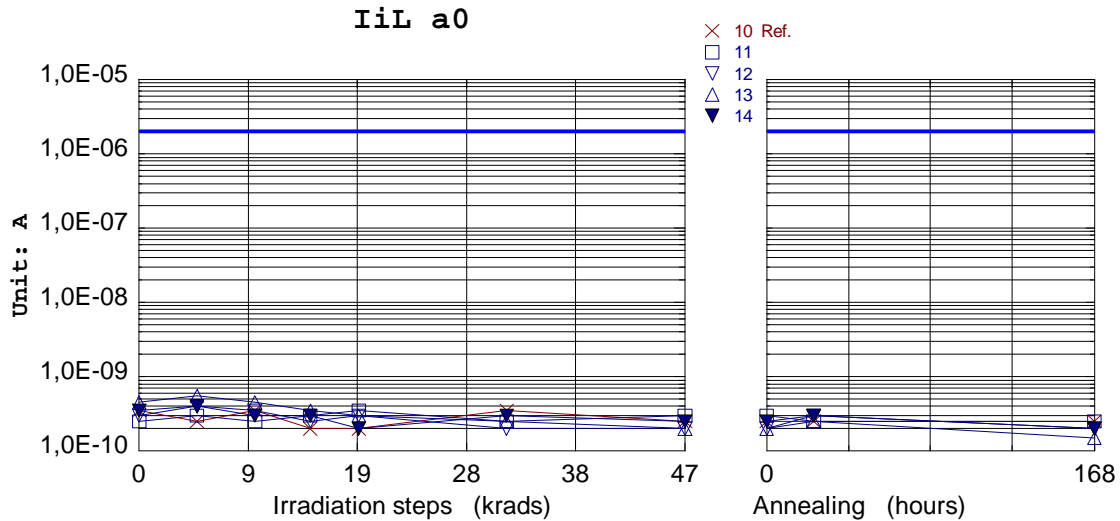
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,500E -10	2,500E -10	3,500E -10	2,000E -10	2,000E -10	3,500E -10	2,500E -10	2,500E -10
11	2,500E -10	3,000E -10	2,500E -10	3,000E -10	3,500E -10	2,500E -10	3,000E -10	2,500E -10
12	3,000E -10	4,000E -10	3,500E -10	2,500E -10	3,000E -10	2,000E -10	2,000E -10	3,000E -10
13	4,500E -10	5,500E -10	4,500E -10	3,500E -10	3,000E -10	2,500E -10	2,000E -10	2,500E -10
14	3,500E -10	4,000E -10	3,000E -10	3,000E -10	2,000E -10	3,000E -10	2,500E -10	3,000E -10
Statistics								
Min	2,500E -10	3,000E -10	2,500E -10	2,500E -10	2,000E -10	2,000E -10	2,000E -10	2,500E -10
Max	4,500E -10	5,500E -10	4,500E -10	3,500E -10	3,500E -10	3,000E -10	3,000E -10	3,000E -10
Mean	3,375E -10	4,125E -10	3,375E -10	3,000E -10	2,875E -10	2,500E -10	2,375E -10	2,750E -10
Sigma	8,539E -11	1,031E -10	8,539E -11	4,082E -11	6,292E -11	4,082E -11	4,787E -11	2,887E -11

Test Step	168 hours
Serial #	
10 Ref.	2,500E -10
11	2,500E -10
12	2,000E -10
13	1,500E -10
14	2,000E -10
Statistics	
Min	1,500E -10
Max	2,500E -10
Mean	2,000E -10
Sigma	4,082E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : High Input Current Pin A18: IiH A18**  
**Vin=Vcc**

Unit= A

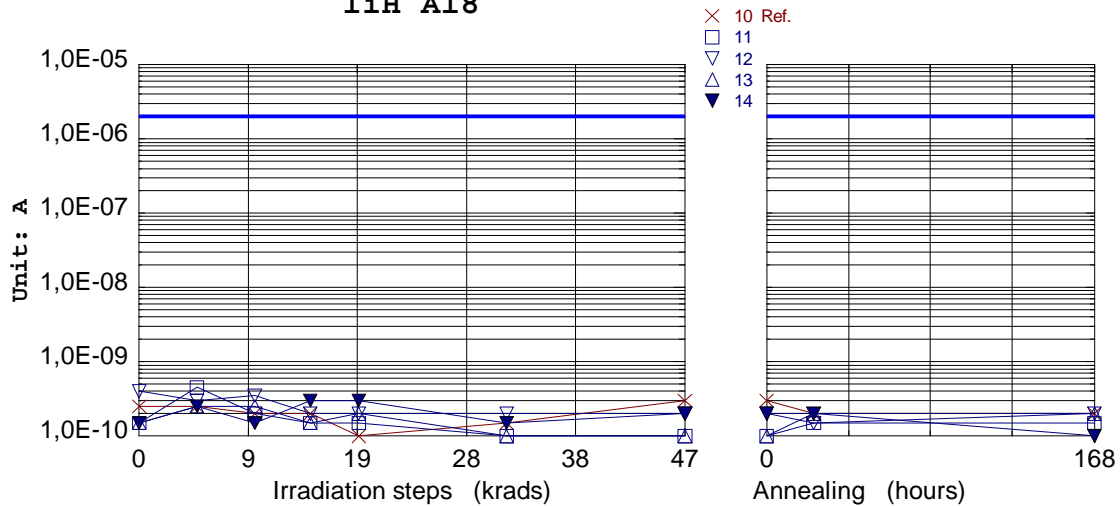
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	2,500E -10	2,500E -10	2,000E -10	2,000E -10	1,000E -10	1,500E -10	3,000E -10	2,000E -10
11	1,500E -10	4,500E -10	2,000E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10	1,500E -10
12	4,000E -10	3,000E -10	3,500E -10	2,000E -10	2,000E -10	2,000E -10	2,000E -10	1,500E -10
13	1,500E -10	2,500E -10	2,500E -10	1,500E -10	2,000E -10	1,000E -10	1,000E -10	2,000E -10
14	1,500E -10	2,500E -10	1,500E -10	3,000E -10	3,000E -10	1,500E -10	2,000E -10	2,000E -10
Statistics								
Min	1,500E -10	2,500E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10	1,500E -10
Max	4,000E -10	4,500E -10	3,500E -10	3,000E -10	3,000E -10	2,000E -10	2,000E -10	2,000E -10
Mean	2,125E -10	3,125E -10	2,375E -10	2,000E -10	2,125E -10	1,375E -10	1,500E -10	1,750E -10
Sigma	1,250E -10	9,465E -11	8,539E -11	7,071E -11	6,292E -11	4,787E -11	5,774E -11	2,887E -11

Test Step	168 hours
Serial #	
10 Ref.	2,000E -10
11	1,500E -10
12	2,000E -10
13	2,000E -10
14	1,000E -10
Statistics	
Min	1,000E -10
Max	2,000E -10
Mean	1,625E -10
Sigma	4,787E -11

**IiH A18**



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A17: IiH A17  
Vin=Vcc

Unit= A

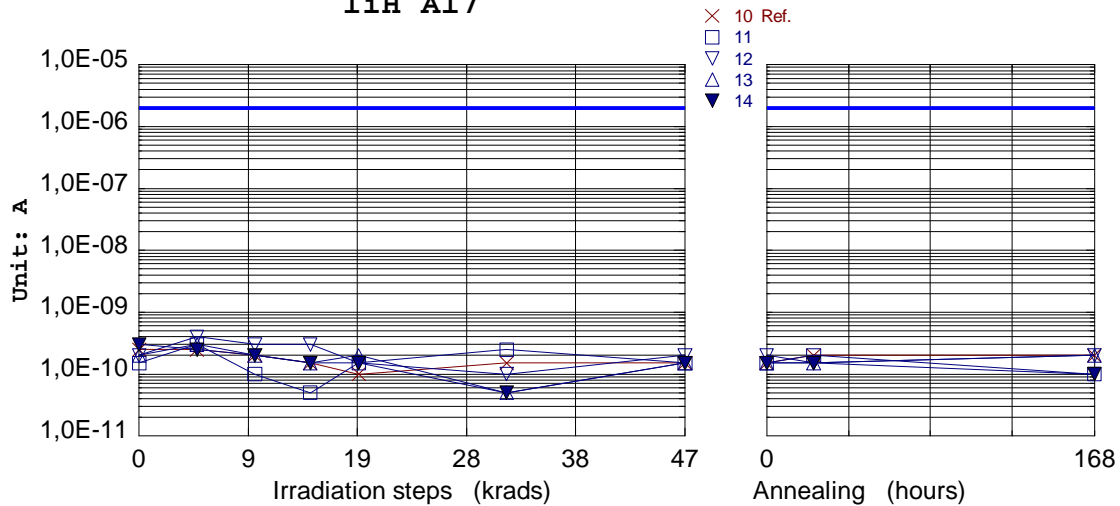
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	2,500E -10	2,500E -10	2,000E -10	1,500E -10	1,000E -10	1,500E -10	1,500E -10	2,000E -10
11	1,500E -10	3,000E -10	1,000E -10	5,000E -11	1,500E -10	2,500E -10	1,500E -10	2,000E -10
12	2,000E -10	4,000E -10	3,000E -10	3,000E -10	1,500E -10	1,000E -10	2,000E -10	1,500E -10
13	2,000E -10	3,000E -10	2,000E -10	1,500E -10	2,000E -10	5,000E -11	1,500E -10	1,500E -10
14	3,000E -10	2,500E -10	2,000E -10	1,500E -10	1,500E -10	5,000E -11	1,500E -10	1,500E -10
Statistics								
Min	1,500E -10	2,500E -10	1,000E -10	5,000E -11	1,500E -10	5,000E -11	1,500E -10	1,500E -10
Max	3,000E -10	4,000E -10	3,000E -10	3,000E -10	2,000E -10	2,500E -10	2,000E -10	2,000E -10
Mean	2,125E -10	3,125E -10	2,000E -10	1,625E -10	1,625E -10	1,125E -10	1,625E -10	1,625E -10
Sigma	6,292E -11	6,292E -11	8,165E -11	1,031E -10	2,500E -11	9,465E -11	2,500E -11	2,500E -11

Test Step	168 hours
Serial #	
10 Ref.	2,000E -10
11	1,000E -10
12	2,000E -10
13	2,000E -10
14	1,000E -10
Statistics	
Min	1,000E -10
Max	2,000E -10
Mean	1,500E -10
Sigma	5,774E -11

IiH A17





<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A16: IiH A16  
Vin=Vcc

Unit= A

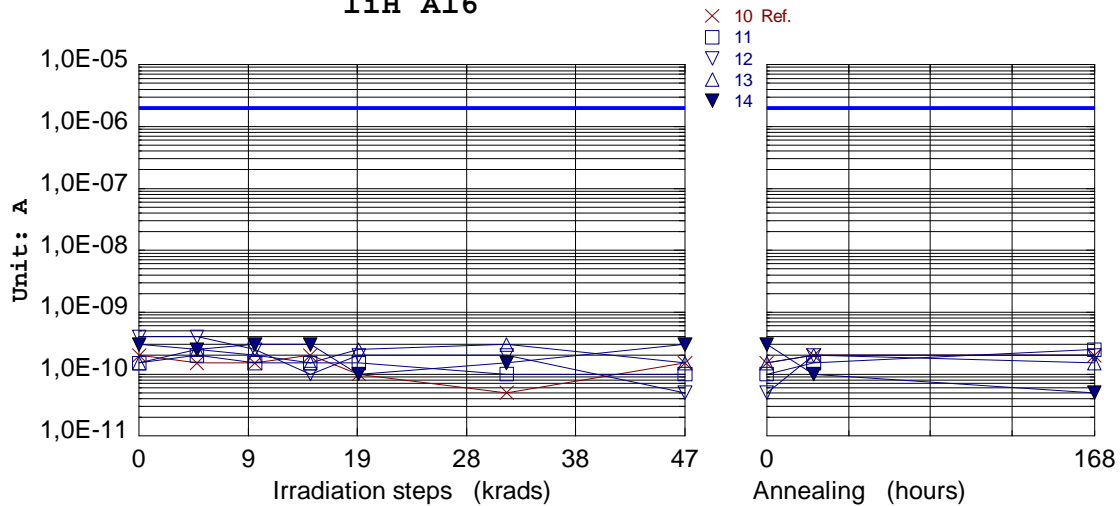
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	2,000E -10	1,500E -10	1,500E -10	2,000E -10	1,000E -10	5,000E -11	1,500E -10	2,000E -10
11	1,500E -10	2,000E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10	1,500E -10
12	4,000E -10	4,000E -10	2,500E -10	1,000E -10	2,000E -10	2,000E -10	5,000E -11	2,000E -10
13	1,500E -10	2,500E -10	2,000E -10	1,500E -10	2,500E -10	3,000E -10	1,500E -10	2,000E -10
14	3,000E -10	2,500E -10	3,000E -10	3,000E -10	1,000E -10	1,500E -10	3,000E -10	1,000E -10
Statistics								
Min	1,500E -10	2,000E -10	1,500E -10	1,000E -10	1,000E -10	1,000E -10	5,000E -11	1,000E -10
Max	4,000E -10	4,000E -10	3,000E -10	3,000E -10	2,500E -10	3,000E -10	3,000E -10	2,000E -10
Mean	2,500E -10	2,750E -10	2,250E -10	1,750E -10	1,750E -10	1,875E -10	1,500E -10	1,625E -10
Sigma	1,225E -10	8,660E -11	6,455E -11	8,660E -11	6,455E -11	8,539E -11	1,080E -10	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	2,000E -10
11	2,500E -10
12	2,000E -10
13	1,500E -10
14	5,000E -11
Statistics	
Min	5,000E -11
Max	2,500E -10
Mean	1,625E -10
Sigma	8,539E -11

**IiH A16**



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A15: IiH a15  
Vin=Vcc

Unit= A

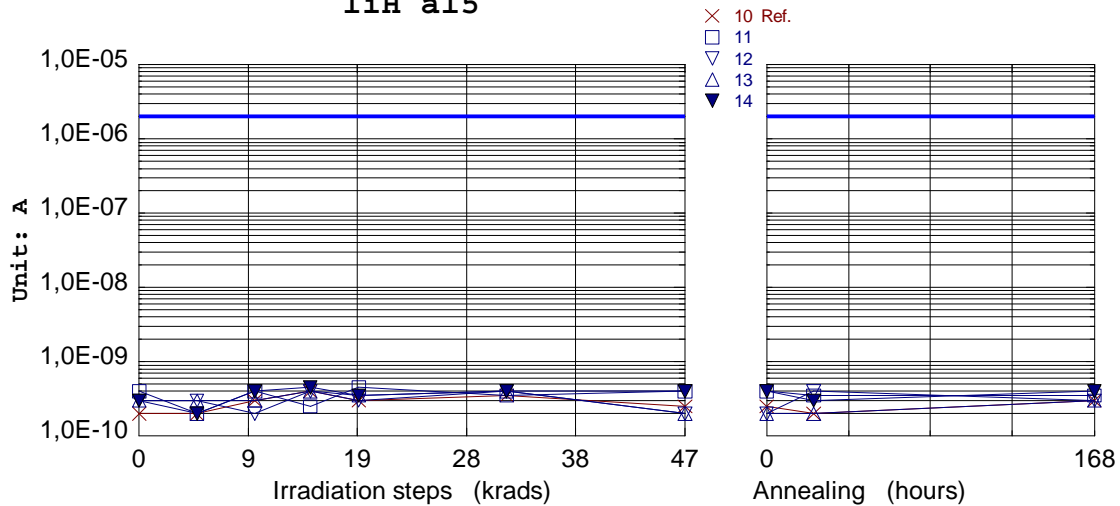
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	2,000E -10	2,000E -10	3,000E -10	4,000E -10	3,000E -10	3,500E -10	2,500E -10	2,000E -10
11	4,000E -10	2,000E -10	4,000E -10	2,500E -10	4,500E -10	3,500E -10	4,000E -10	3,500E -10
12	3,000E -10	3,000E -10	2,000E -10	4,000E -10	3,000E -10	4,000E -10	2,000E -10	4,000E -10
13	3,000E -10	3,000E -10	3,000E -10	4,000E -10	3,500E -10	4,000E -10	2,000E -10	2,000E -10
14	3,000E -10	2,000E -10	4,000E -10	4,500E -10	3,500E -10	4,000E -10	4,000E -10	3,000E -10
Statistics								
Min	3,000E -10	2,000E -10	2,000E -10	2,500E -10	3,000E -10	3,500E -10	2,000E -10	2,000E -10
Max	4,000E -10	3,000E -10	4,000E -10	4,500E -10	4,500E -10	4,000E -10	4,000E -10	4,000E -10
Mean	3,250E -10	2,500E -10	3,250E -10	3,750E -10	3,625E -10	3,875E -10	3,000E -10	3,125E -10
Sigma	5,000E -11	5,774E -11	9,574E -11	8,660E -11	6,292E -11	2,500E -11	1,155E -10	8,539E -11

Test Step	168 hours
Serial #	
10 Ref.	3,000E -10
11	3,500E -10
12	3,000E -10
13	3,000E -10
14	4,000E -10
Statistics	
Min	3,000E -10
Max	4,000E -10
Mean	3,375E -10
Sigma	4,787E -11

### IiH a15



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A14: IiH a14  
Vin=Vcc

Unit= A

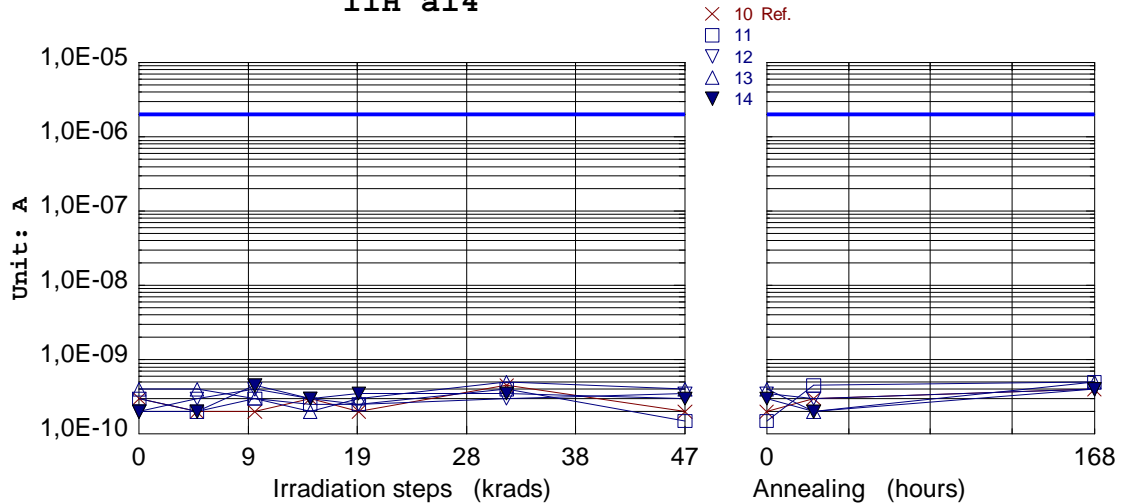
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,000E -10	2,000E -10	2,000E -10	3,000E -10	2,000E -10	4,500E -10	2,000E -10	3,000E -10
11	3,000E -10	2,000E -10	3,000E -10	2,500E -10	2,500E -10	4,000E -10	1,500E -10	4,500E -10
12	2,000E -10	3,000E -10	4,000E -10	3,000E -10	2,500E -10	3,000E -10	3,500E -10	3,000E -10
13	4,000E -10	4,000E -10	3,000E -10	2,000E -10	3,000E -10	5,000E -10	4,000E -10	2,000E -10
14	2,000E -10	2,000E -10	4,500E -10	3,000E -10	3,500E -10	3,500E -10	3,000E -10	2,000E -10
Statistics								
Min	2,000E -10	2,000E -10	3,000E -10	2,000E -10	2,500E -10	3,000E -10	1,500E -10	2,000E -10
Max	4,000E -10	4,000E -10	4,500E -10	3,000E -10	3,500E -10	5,000E -10	4,000E -10	4,500E -10
Mean	2,750E -10	2,750E -10	3,625E -10	2,625E -10	2,875E -10	3,875E -10	3,000E -10	2,875E -10
Sigma	9,574E -11	9,574E -11	7,500E -11	4,787E -11	4,787E -11	8,539E -11	1,080E -10	1,181E -10

Test Step	168 hours
Serial #	
10 Ref.	4,000E -10
11	5,000E -10
12	4,000E -10
13	5,000E -10
14	4,000E -10
Statistics	
Min	4,000E -10
Max	5,000E -10
Mean	4,500E -10
Sigma	5,774E -11

IiH a14



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A13: IiH a13  
 Vin=Vcc

Unit= A

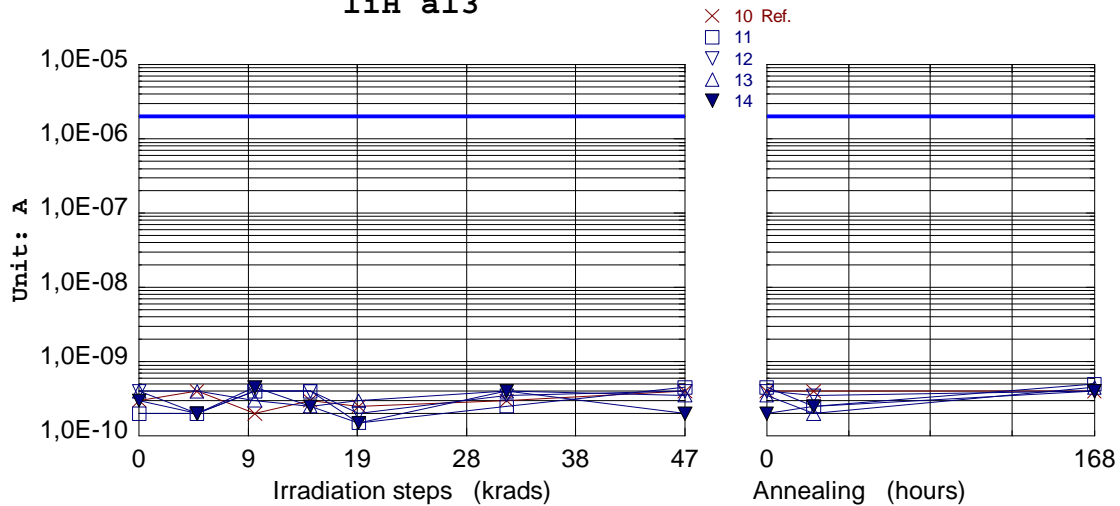
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,000E -10	4,000E -10	2,000E -10	3,000E -10	2,500E -10	3,000E -10	4,000E -10	4,000E -10
11	2,000E -10	2,000E -10	4,000E -10	4,000E -10	1,500E -10	2,500E -10	4,500E -10	2,500E -10
12	4,000E -10	2,000E -10	4,000E -10	4,000E -10	2,000E -10	3,500E -10	4,000E -10	3,500E -10
13	4,000E -10	4,000E -10	3,000E -10	2,500E -10	3,000E -10	4,000E -10	3,500E -10	2,000E -10
14	3,000E -10	2,000E -10	4,500E -10	2,500E -10	1,500E -10	4,000E -10	2,000E -10	2,500E -10
Statistics								
Min	2,000E -10	2,000E -10	3,000E -10	2,500E -10	1,500E -10	2,500E -10	2,000E -10	2,000E -10
Max	4,000E -10	4,000E -10	4,500E -10	4,000E -10	3,000E -10	4,000E -10	4,500E -10	3,500E -10
Mean	3,250E -10	2,500E -10	3,875E -10	3,250E -10	2,000E -10	3,500E -10	3,500E -10	2,625E -10
Sigma	9,574E -11	1,000E -10	6,292E -11	8,660E -11	7,071E -11	7,071E -11	1,080E -10	6,292E -11

Test Step	168 hours
Serial #	
10 Ref.	4,000E -10
11	5,000E -10
12	4,000E -10
13	4,500E -10
14	4,000E -10
Statistics	
Min	4,000E -10
Max	5,000E -10
Mean	4,375E -10
Sigma	4,787E -11

IiH a13



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A12: IiH a12  
Vin=Vcc

Unit= A

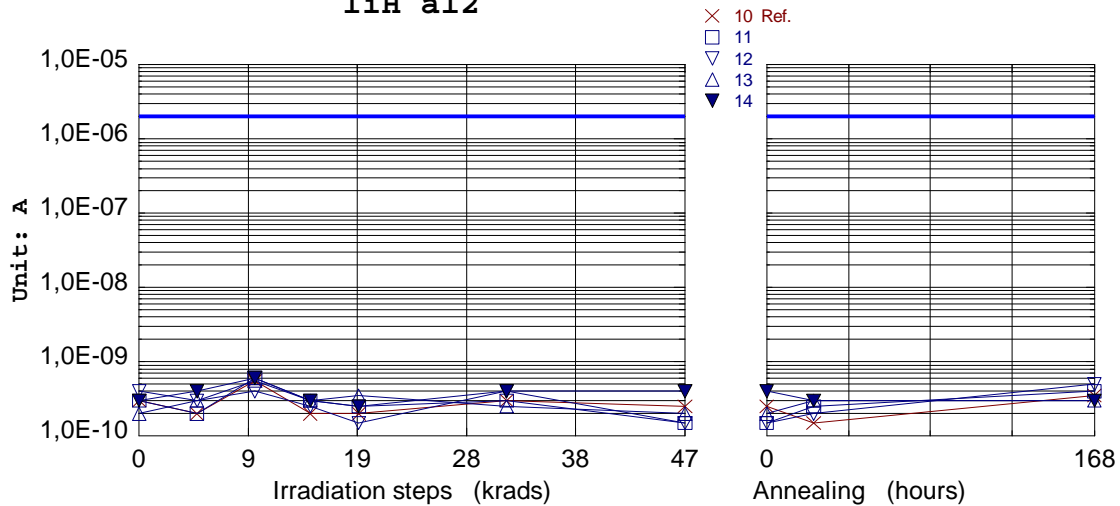
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,000E -10	2,000E -10	5,500E -10	2,000E -10	2,000E -10	3,000E -10	2,500E -10	1,500E -10
11	3,000E -10	2,000E -10	6,000E -10	3,000E -10	2,500E -10	3,000E -10	1,500E -10	2,500E -10
12	4,000E -10	3,000E -10	4,000E -10	2,500E -10	1,500E -10	4,000E -10	1,500E -10	2,000E -10
13	2,000E -10	3,000E -10	5,500E -10	3,000E -10	3,500E -10	2,500E -10	2,000E -10	3,000E -10
14	3,000E -10	4,000E -10	6,000E -10	3,000E -10	2,500E -10	4,000E -10	4,000E -10	3,000E -10
Statistics								
Min	2,000E -10	2,000E -10	4,000E -10	2,500E -10	1,500E -10	2,500E -10	1,500E -10	2,000E -10
Max	4,000E -10	4,000E -10	6,000E -10	3,000E -10	3,500E -10	4,000E -10	4,000E -10	3,000E -10
Mean	3,000E -10	3,000E -10	5,375E -10	2,875E -10	2,500E -10	3,375E -10	2,250E -10	2,625E -10
Sigma	8,165E -11	8,165E -11	9,465E -11	2,500E -11	8,165E -11	7,500E -11	1,190E -10	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	3,500E -10
11	4,000E -10
12	5,000E -10
13	3,000E -10
14	3,000E -10
Statistics	
Min	3,000E -10
Max	5,000E -10
Mean	3,750E -10
Sigma	9,574E -11

**IiH a12**



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : High Input Current Pin A11: IiH a11**  
**Vin=Vcc**

Unit= A

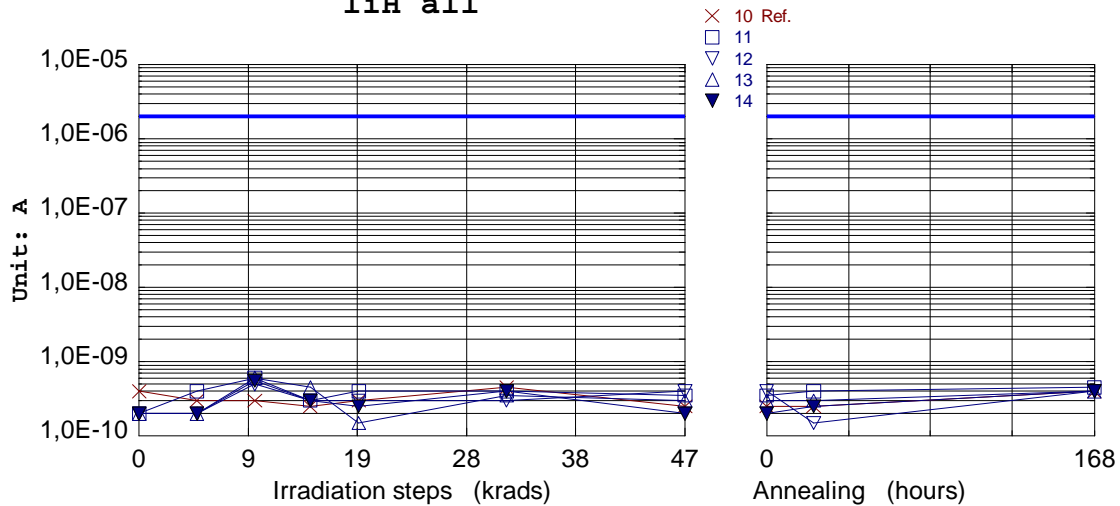
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	3,000E -10	3,000E -10	2,500E -10	3,000E -10	4,500E -10	2,500E -10	2,500E -10
11	2,000E -10	4,000E -10	6,000E -10	3,000E -10	4,000E -10	4,000E -10	3,500E -10	4,000E -10
12	2,000E -10	2,000E -10	5,000E -10	3,000E -10	3,000E -10	3,000E -10	4,000E -10	1,500E -10
13	2,000E -10	2,000E -10	6,000E -10	4,500E -10	1,500E -10	3,500E -10	3,000E -10	3,000E -10
14	2,000E -10	2,000E -10	5,500E -10	3,000E -10	2,500E -10	4,000E -10	2,000E -10	2,500E -10
Statistics								
Min	2,000E -10	2,000E -10	5,000E -10	3,000E -10	1,500E -10	3,000E -10	2,000E -10	1,500E -10
Max	2,000E -10	4,000E -10	6,000E -10	4,500E -10	4,000E -10	4,000E -10	4,000E -10	4,000E -10
Mean	2,000E -10	2,500E -10	5,625E -10	3,375E -10	2,750E -10	3,625E -10	3,125E -10	2,750E -10
Sigma	1,878E -19	1,000E -10	4,787E -11	7,500E -11	1,041E -10	4,787E -11	8,539E -11	1,041E -10

Test Step	168 hours
Serial #	
10 Ref.	4,000E -10
11	4,500E -10
12	4,000E -10
13	4,000E -10
14	4,000E -10
Statistics	
Min	4,000E -10
Max	4,500E -10
Mean	4,125E -10
Sigma	2,500E -11

**IiH a11**



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A10: IiH a10  
Vin=Vcc

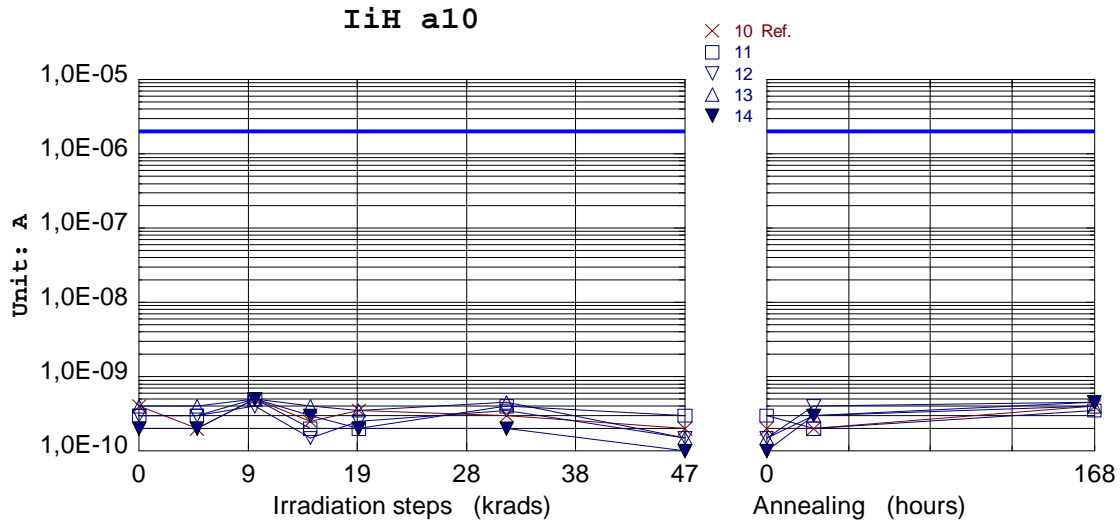
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	2,000E -10	5,000E -10	2,500E -10	3,500E -10	3,000E -10	2,000E -10	2,000E -10
11	3,000E -10	3,000E -10	5,000E -10	2,000E -10	2,000E -10	4,000E -10	3,000E -10	2,000E -10
12	3,000E -10	3,000E -10	4,000E -10	1,500E -10	2,500E -10	3,500E -10	1,500E -10	4,000E -10
13	4,000E -10	4,000E -10	5,000E -10	4,000E -10	3,500E -10	4,500E -10	1,500E -10	3,000E -10
14	2,000E -10	2,000E -10	5,000E -10	3,000E -10	2,000E -10	2,000E -10	1,000E -10	3,000E -10
Statistics								
Min	2,000E -10	2,000E -10	4,000E -10	1,500E -10	2,000E -10	2,000E -10	1,000E -10	2,000E -10
Max	4,000E -10	4,000E -10	5,000E -10	4,000E -10	3,500E -10	4,500E -10	3,000E -10	4,000E -10
Mean	3,000E -10	3,000E -10	4,750E -10	2,625E -10	2,500E -10	3,500E -10	1,750E -10	3,000E -10
Sigma	8,165E -11	8,165E -11	5,000E -11	1,109E -10	7,071E -11	1,080E -10	8,660E -11	8,165E -11

Test Step	168 hours
Serial #	
10 Ref.	4,000E -10
11	3,500E -10
12	4,500E -10
13	4,000E -10
14	4,500E -10
Statistics	
Min	3,500E -10
Max	4,500E -10
Mean	4,125E -10
Sigma	4,787E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A9: IiH a9

Vin=Vcc

Unit= A

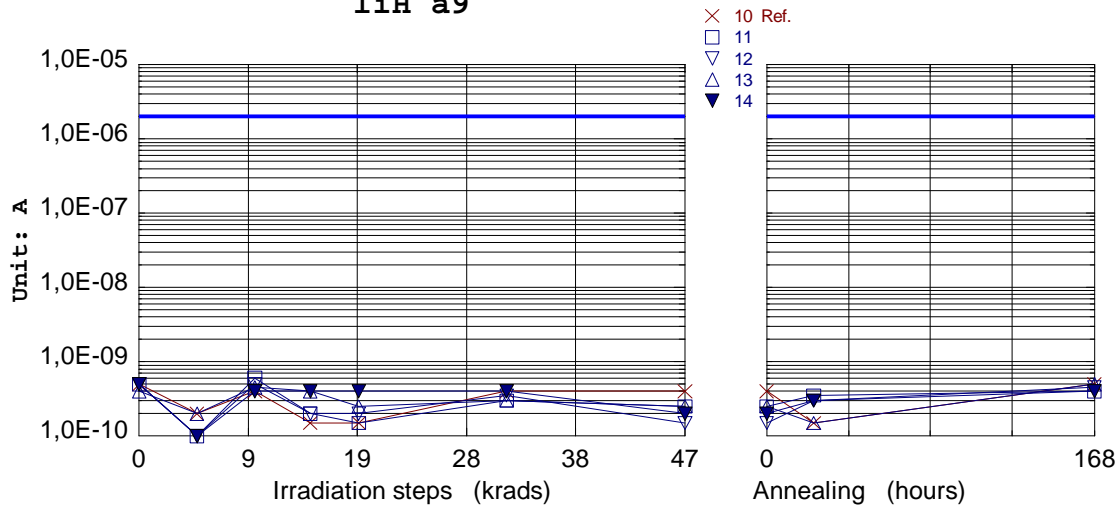
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,000E -10	2,000E -10	4,000E -10	1,500E -10	1,500E -10	4,000E -10	4,000E -10	1,500E -10
11	5,000E -10	1,000E -10	6,000E -10	2,000E -10	1,500E -10	3,000E -10	2,500E -10	3,500E -10
12	5,000E -10	1,000E -10	5,000E -10	2,000E -10	2,000E -10	3,500E -10	1,500E -10	3,000E -10
13	4,000E -10	2,000E -10	4,500E -10	4,000E -10	2,500E -10	3,000E -10	2,500E -10	1,500E -10
14	5,000E -10	1,000E -10	4,000E -10	4,000E -10	4,000E -10	4,000E -10	2,000E -10	3,000E -10
Statistics								
Min	4,000E -10	1,000E -10	4,000E -10	2,000E -10	1,500E -10	3,000E -10	1,500E -10	1,500E -10
Max	5,000E -10	2,000E -10	6,000E -10	4,000E -10	4,000E -10	4,000E -10	2,500E -10	3,500E -10
Mean	4,750E -10	1,250E -10	4,875E -10	3,000E -10	2,500E -10	3,375E -10	2,125E -10	2,750E -10
Sigma	5,000E -11	5,000E -11	8,539E -11	1,155E -10	1,080E -10	4,787E -11	4,787E -11	8,660E -11

Test Step	168 hours
Serial #	
10 Ref.	5,000E -10
11	4,000E -10
12	4,500E -10
13	5,000E -10
14	4,000E -10
Statistics	
Min	4,000E -10
Max	5,000E -10
Mean	4,375E -10
Sigma	4,787E -11

IiH a9





HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A8: IiH a8  
 Vin=Vcc

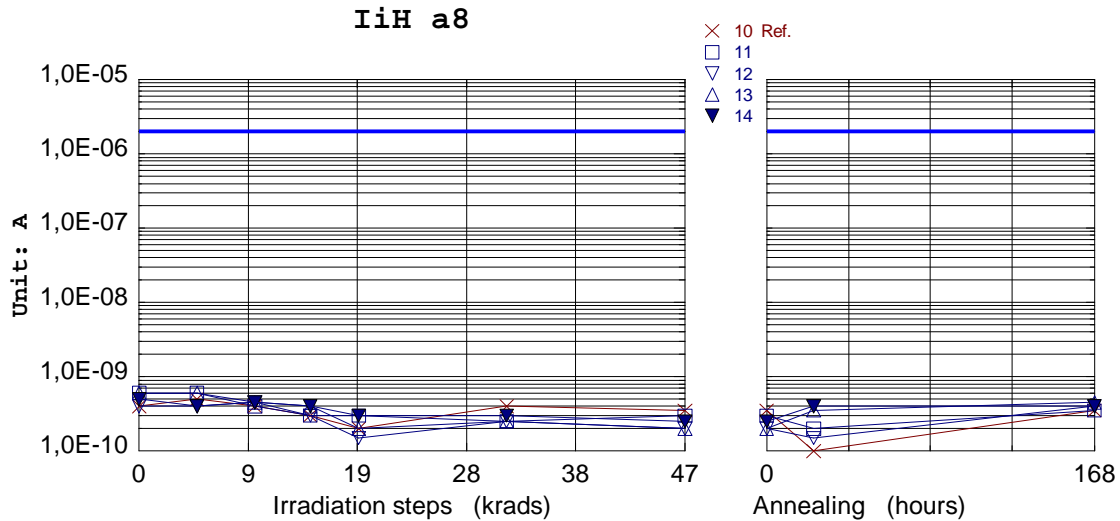
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	5,000E -10	4,000E -10	3,000E -10	2,000E -10	4,000E -10	3,500E -10	1,000E -10
11	6,000E -10	6,000E -10	4,000E -10	3,000E -10	3,000E -10	2,500E -10	3,000E -10	2,000E -10
12	4,000E -10	4,000E -10	4,500E -10	3,000E -10	1,500E -10	2,500E -10	2,000E -10	1,500E -10
13	6,000E -10	6,000E -10	4,500E -10	4,000E -10	2,000E -10	2,500E -10	2,000E -10	3,500E -10
14	5,000E -10	4,000E -10	4,500E -10	4,000E -10	3,000E -10	3,000E -10	2,500E -10	4,000E -10
Statistics								
Min	4,000E -10	4,000E -10	4,000E -10	3,000E -10	1,500E -10	2,500E -10	2,000E -10	1,500E -10
Max	6,000E -10	6,000E -10	4,500E -10	4,000E -10	3,000E -10	3,000E -10	3,000E -10	4,000E -10
Mean	5,250E -10	5,000E -10	4,375E -10	3,500E -10	2,375E -10	2,625E -10	2,375E -10	2,750E -10
Sigma	9,574E -11	1,155E -10	2,500E -11	5,774E -11	7,500E -11	2,500E -11	4,787E -11	1,190E -10

Test Step	168 hours
Serial #	
10 Ref.	3,500E -10
11	3,500E -10
12	4,000E -10
13	4,500E -10
14	4,000E -10
Statistics	
Min	3,500E -10
Max	4,500E -10
Mean	4,000E -10
Sigma	4,082E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A7: IiH a7

Vin=Vcc

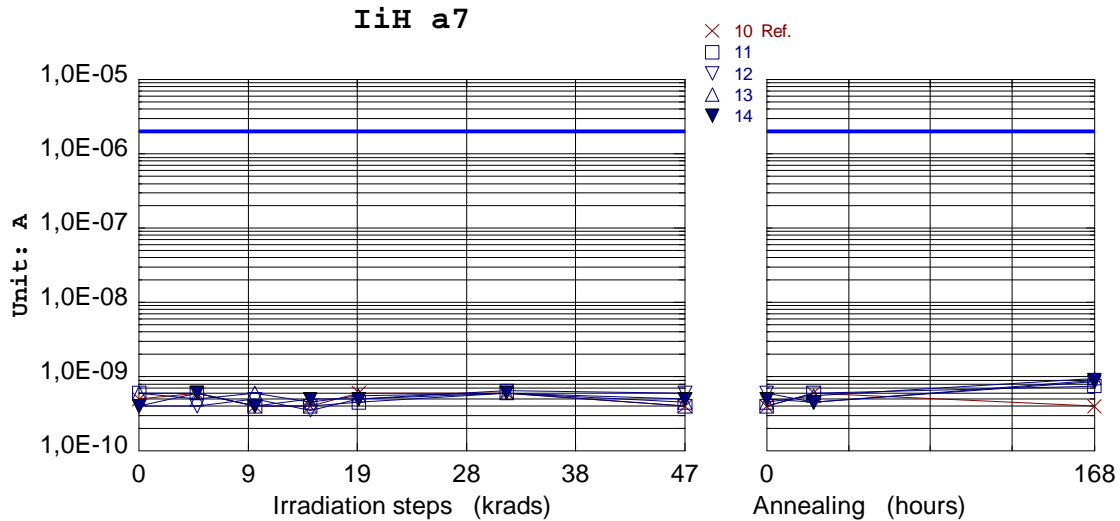
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,000E -10	6,000E -10	4,000E -10	4,000E -10	6,000E -10	6,000E -10	4,000E -10	6,000E -10
11	6,000E -10	6,000E -10	4,000E -10	4,000E -10	4,500E -10	6,000E -10	4,000E -10	6,000E -10
12	4,000E -10	4,000E -10	5,000E -10	3,500E -10	5,000E -10	6,500E -10	6,000E -10	4,500E -10
13	6,000E -10	5,000E -10	6,000E -10	4,500E -10	5,500E -10	6,000E -10	4,500E -10	5,500E -10
14	4,000E -10	6,000E -10	4,000E -10	5,000E -10	5,000E -10	6,000E -10	5,000E -10	4,500E -10
Statistics								
Min	4,000E -10	4,000E -10	4,000E -10	3,500E -10	4,500E -10	6,000E -10	4,000E -10	4,500E -10
Max	6,000E -10	6,000E -10	6,000E -10	5,000E -10	5,500E -10	6,500E -10	6,000E -10	6,000E -10
Mean	5,000E -10	5,250E -10	4,750E -10	4,250E -10	5,000E -10	6,125E -10	4,875E -10	5,125E -10
Sigma	1,155E -10	9,574E -11	9,574E -11	6,455E -11	4,082E -11	2,500E -11	8,539E -11	7,500E -11

Test Step	168 hours
Serial #	
10 Ref.	4,000E -10
11	7,500E -10
12	8,500E -10
13	9,500E -10
14	9,000E -10
Statistics	
Min	7,500E -10
Max	9,500E -10
Mean	8,625E -10
Sigma	8,539E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A6: IiH a6  
Vin=Vcc

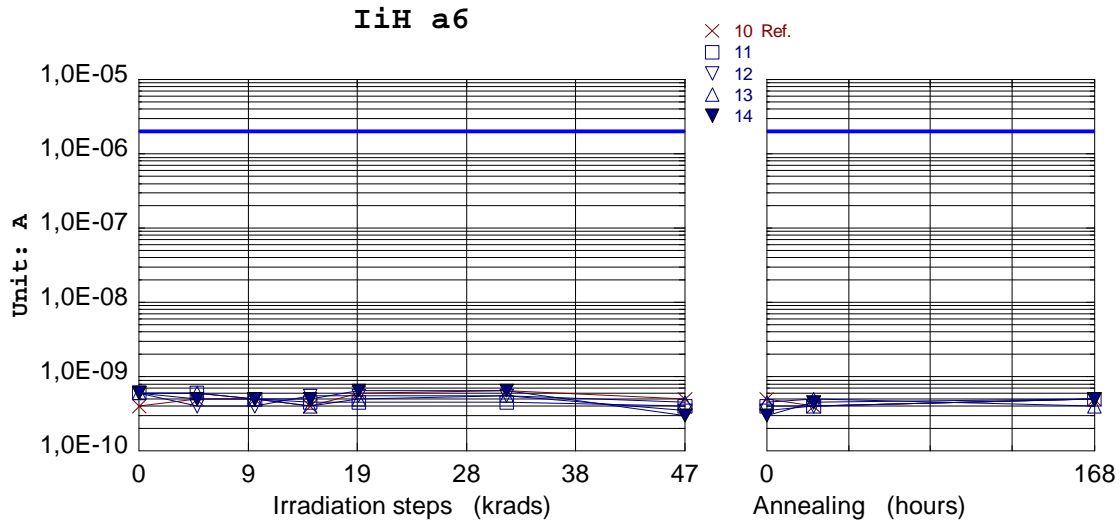
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	5,000E -10	5,000E -10	4,000E -10	6,000E -10	6,500E -10	5,000E -10	4,000E -10
11	6,000E -10	6,000E -10	5,000E -10	4,500E -10	4,500E -10	4,500E -10	4,000E -10	4,000E -10
12	6,000E -10	4,000E -10	4,000E -10	5,500E -10	5,500E -10	5,500E -10	3,500E -10	4,000E -10
13	6,000E -10	6,000E -10	5,000E -10	4,000E -10	5,000E -10	5,500E -10	4,500E -10	5,000E -10
14	6,000E -10	5,000E -10	5,000E -10	5,000E -10	6,500E -10	6,500E -10	3,000E -10	4,500E -10
Statistics								
Min	6,000E -10	4,000E -10	4,000E -10	4,000E -10	4,500E -10	4,500E -10	3,000E -10	4,000E -10
Max	6,000E -10	6,000E -10	5,000E -10	5,500E -10	6,500E -10	6,500E -10	4,500E -10	5,000E -10
Mean	6,000E -10	5,250E -10	4,750E -10	4,750E -10	5,375E -10	5,500E -10	3,750E -10	4,375E -10
Sigma	7,300E -19	9,574E -11	5,000E -11	6,455E -11	8,539E -11	8,165E -11	6,455E -11	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	5,000E -10
11	5,000E -10
12	5,000E -10
13	4,000E -10
14	5,000E -10
Statistics	
Min	4,000E -10
Max	5,000E -10
Mean	4,750E -10
Sigma	5,000E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A5: IiH a5  
Vin=Vcc

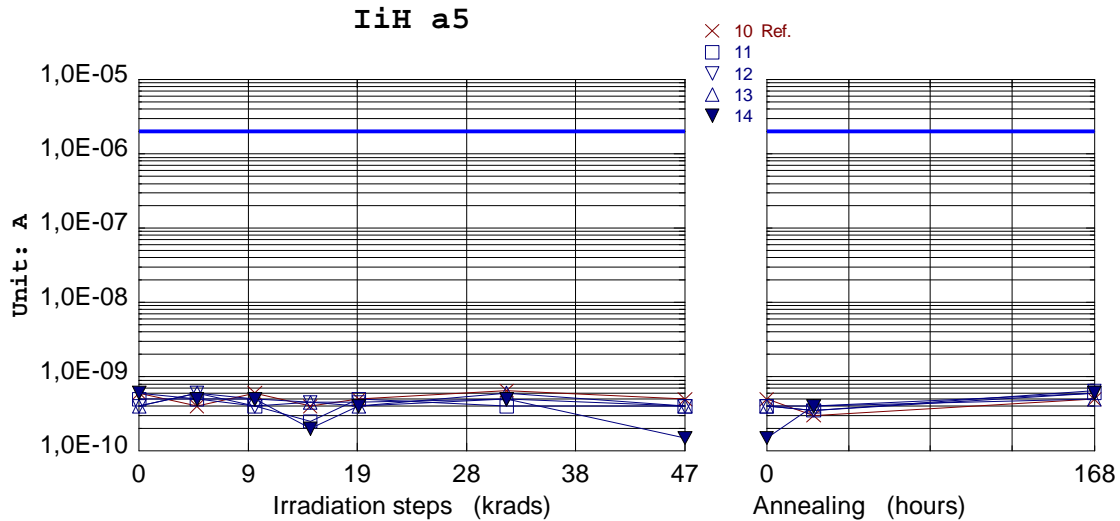
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	6,000E -10	4,000E -10	6,000E -10	4,000E -10	5,000E -10	6,500E -10	5,000E -10	3,000E -10
11	5,000E -10	5,000E -10	4,000E -10	2,500E -10	5,000E -10	4,000E -10	4,000E -10	3,500E -10
12	4,000E -10	6,000E -10	4,000E -10	4,500E -10	4,500E -10	5,000E -10	4,000E -10	3,500E -10
13	4,000E -10	6,000E -10	5,000E -10	4,500E -10	4,000E -10	6,000E -10	4,000E -10	4,000E -10
14	6,000E -10	5,000E -10	5,000E -10	2,000E -10	4,000E -10	5,000E -10	1,500E -10	4,000E -10
Statistics								
Min	4,000E -10	5,000E -10	4,000E -10	2,000E -10	4,000E -10	4,000E -10	1,500E -10	3,500E -10
Max	6,000E -10	6,000E -10	5,000E -10	4,500E -10	5,000E -10	6,000E -10	4,000E -10	4,000E -10
Mean	4,750E -10	5,500E -10	4,500E -10	3,375E -10	4,375E -10	5,000E -10	3,375E -10	3,750E -10
Sigma	9,574E -11	5,774E -11	5,774E -11	1,315E -10	4,787E -11	8,165E -11	1,250E -10	2,887E -11

Test Step	168 hours
Serial #	
10 Ref.	5,000E -10
11	6,000E -10
12	6,500E -10
13	5,000E -10
14	6,000E -10
Statistics	
Min	5,000E -10
Max	6,500E -10
Mean	5,875E -10
Sigma	6,292E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A4: IiH a4  
Vin=Vcc

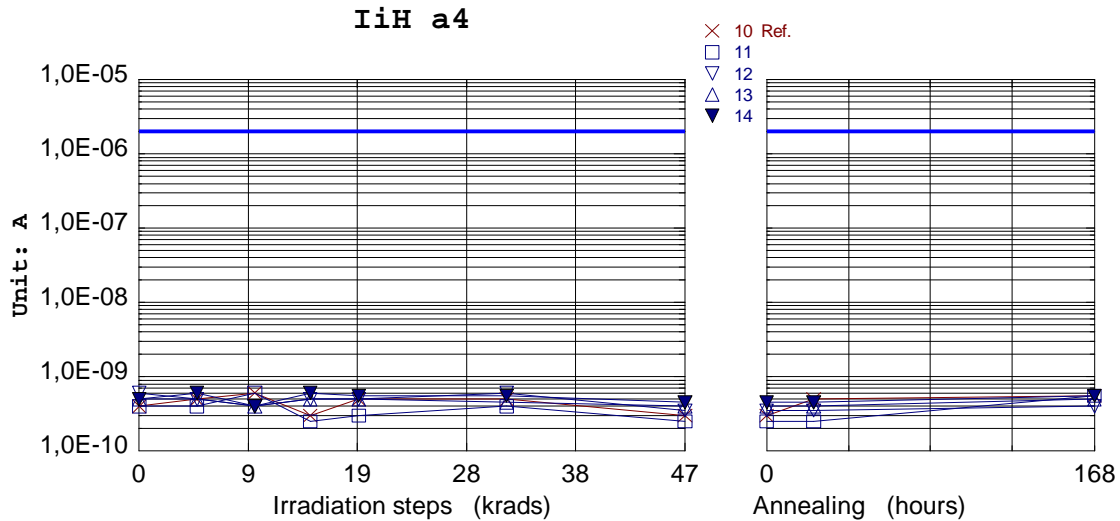
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	5,000E -10	6,000E -10	3,000E -10	5,000E -10	5,000E -10	3,000E -10	5,000E -10
11	4,000E -10	4,000E -10	6,000E -10	2,500E -10	3,000E -10	4,000E -10	2,500E -10	2,500E -10
12	6,000E -10	5,000E -10	4,000E -10	5,000E -10	5,000E -10	6,000E -10	3,500E -10	3,500E -10
13	5,000E -10	5,000E -10	4,000E -10	5,000E -10	5,000E -10	4,500E -10	4,000E -10	4,000E -10
14	5,000E -10	6,000E -10	4,000E -10	6,000E -10	5,500E -10	5,500E -10	4,500E -10	4,500E -10
Statistics								
Min	4,000E -10	4,000E -10	4,000E -10	2,500E -10	3,000E -10	4,000E -10	2,500E -10	2,500E -10
Max	6,000E -10	6,000E -10	6,000E -10	6,000E -10	5,500E -10	6,000E -10	4,500E -10	4,500E -10
Mean	5,000E -10	5,000E -10	4,500E -10	4,625E -10	4,625E -10	5,000E -10	3,625E -10	3,625E -10
Sigma	8,165E -11	8,165E -11	1,000E -10	1,493E -10	1,109E -10	9,129E -11	8,539E -11	8,539E -11

Test Step	168 hours
Serial #	
10 Ref.	5,500E -10
11	5,500E -10
12	4,000E -10
13	5,000E -10
14	5,500E -10
Statistics	
Min	4,000E -10
Max	5,500E -10
Mean	5,000E -10
Sigma	7,071E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A3: IiH a3

Vin=Vcc

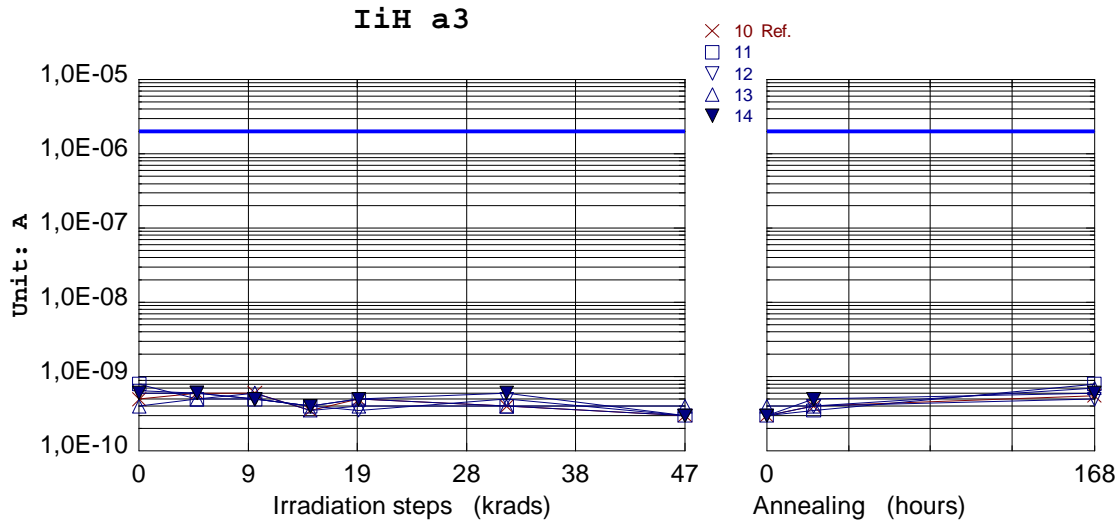
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,000E -10	6,000E -10	6,000E -10	3,500E -10	5,000E -10	4,000E -10	3,000E -10	4,000E -10
11	8,000E -10	5,000E -10	5,000E -10	4,000E -10	5,000E -10	4,000E -10	3,000E -10	3,500E -10
12	6,500E -10	6,000E -10	5,000E -10	4,000E -10	3,500E -10	5,000E -10	3,000E -10	4,000E -10
13	4,000E -10	5,000E -10	6,000E -10	3,500E -10	4,000E -10	4,000E -10	4,000E -10	4,000E -10
14	6,000E -10	6,000E -10	5,000E -10	4,000E -10	5,000E -10	6,000E -10	3,000E -10	5,000E -10
Statistics								
Min	4,000E -10	5,000E -10	5,000E -10	3,500E -10	3,500E -10	4,000E -10	3,000E -10	3,500E -10
Max	8,000E -10	6,000E -10	6,000E -10	4,000E -10	5,000E -10	6,000E -10	4,000E -10	5,000E -10
Mean	6,125E -10	5,500E -10	5,250E -10	3,875E -10	4,375E -10	4,750E -10	3,250E -10	4,125E -10
Sigma	1,652E -10	5,774E -11	5,000E -11	2,500E -11	7,500E -11	9,574E -11	5,000E -11	6,292E -11

Test Step	168 hours
Serial #	
10 Ref.	5,500E -10
11	8,000E -10
12	5,000E -10
13	7,000E -10
14	6,000E -10
Statistics	
Min	5,000E -10
Max	8,000E -10
Mean	6,500E -10
Sigma	1,291E -10



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A2: IiH a2  
Vin=Vcc

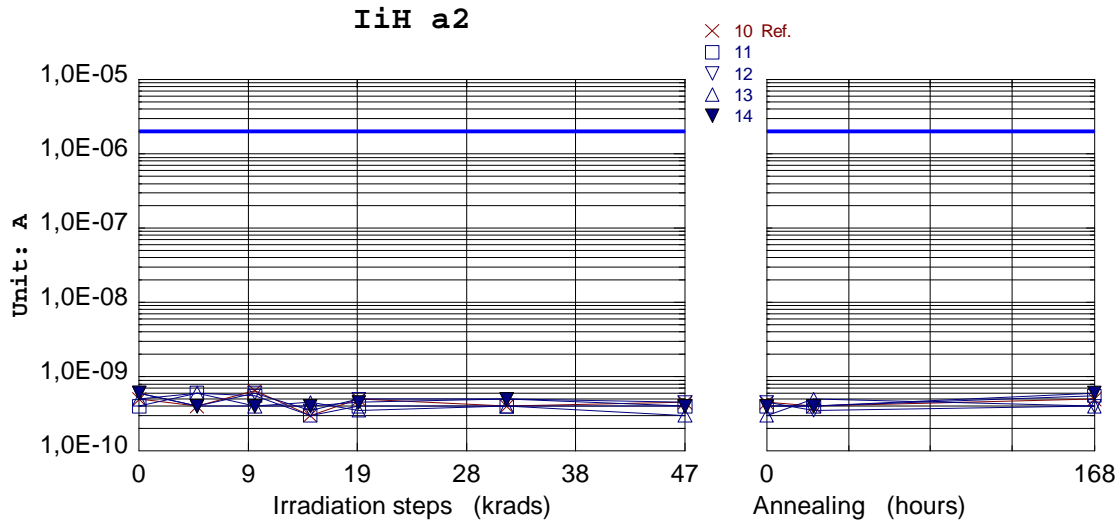
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,000E -10	4,000E -10	6,500E -10	3,000E -10	5,000E -10	4,000E -10	4,500E -10	4,000E -10
11	4,000E -10	6,000E -10	5,500E -10	3,000E -10	4,000E -10	4,000E -10	4,000E -10	4,000E -10
12	6,000E -10	4,000E -10	6,000E -10	3,500E -10	5,000E -10	5,000E -10	4,500E -10	3,500E -10
13	5,000E -10	6,000E -10	4,000E -10	4,500E -10	3,500E -10	4,000E -10	3,000E -10	5,000E -10
14	6,000E -10	4,000E -10	4,000E -10	4,000E -10	4,500E -10	5,000E -10	4,000E -10	4,000E -10
Statistics								
Min	4,000E -10	4,000E -10	4,000E -10	3,000E -10	3,500E -10	4,000E -10	3,000E -10	3,500E -10
Max	6,000E -10	6,000E -10	6,000E -10	4,500E -10	5,000E -10	5,000E -10	4,500E -10	5,000E -10
Mean	5,250E -10	5,000E -10	4,875E -10	3,750E -10	4,250E -10	4,500E -10	3,875E -10	4,125E -10
Sigma	9,574E -11	1,155E -10	1,031E -10	6,455E -11	6,455E -11	5,774E -11	6,292E -11	6,292E -11

Test Step	168 hours
Serial #	
10 Ref.	5,000E -10
11	5,500E -10
12	4,000E -10
13	4,000E -10
14	6,000E -10
Statistics	
Min	4,000E -10
Max	6,000E -10
Mean	4,875E -10
Sigma	1,031E -10



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A1: IiH a1  
Vin=Vcc

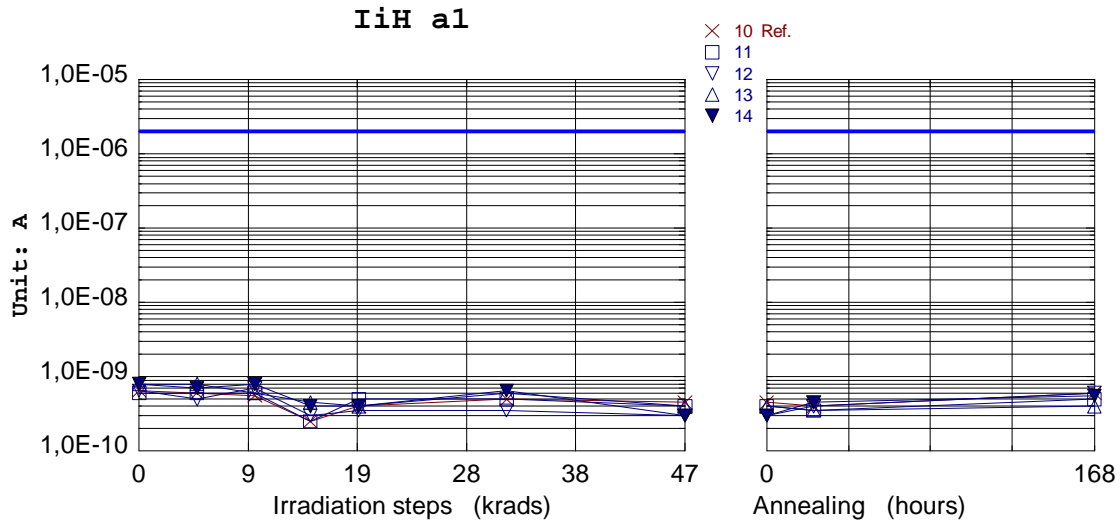
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	6,500E -10	6,000E -10	5,500E -10	2,500E -10	4,000E -10	5,000E -10	4,500E -10	4,000E -10
11	6,000E -10	6,000E -10	6,000E -10	2,500E -10	5,000E -10	5,000E -10	4,000E -10	3,500E -10
12	6,500E -10	5,000E -10	7,000E -10	3,000E -10	3,500E -10	3,500E -10	3,000E -10	4,000E -10
13	8,000E -10	8,000E -10	6,000E -10	4,500E -10	4,000E -10	6,000E -10	4,000E -10	3,500E -10
14	8,000E -10	7,000E -10	8,000E -10	4,000E -10	4,000E -10	6,500E -10	3,000E -10	4,500E -10
Statistics								
Min	6,000E -10	5,000E -10	6,000E -10	2,500E -10	3,500E -10	3,500E -10	3,000E -10	3,500E -10
Max	8,000E -10	8,000E -10	8,000E -10	4,500E -10	5,000E -10	6,500E -10	4,000E -10	4,500E -10
Mean	7,125E -10	6,500E -10	6,750E -10	3,500E -10	4,125E -10	5,250E -10	3,500E -10	3,875E -10
Sigma	1,031E -10	1,291E -10	9,574E -11	9,129E -11	6,292E -11	1,323E -10	5,774E -11	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	6,000E -10
11	5,000E -10
12	6,000E -10
13	4,000E -10
14	5,500E -10
Statistics	
Min	4,000E -10
Max	6,000E -10
Mean	5,125E -10
Sigma	8,539E -11





HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : High Input Current Pin A0: IiH a0  
Vin=Vcc

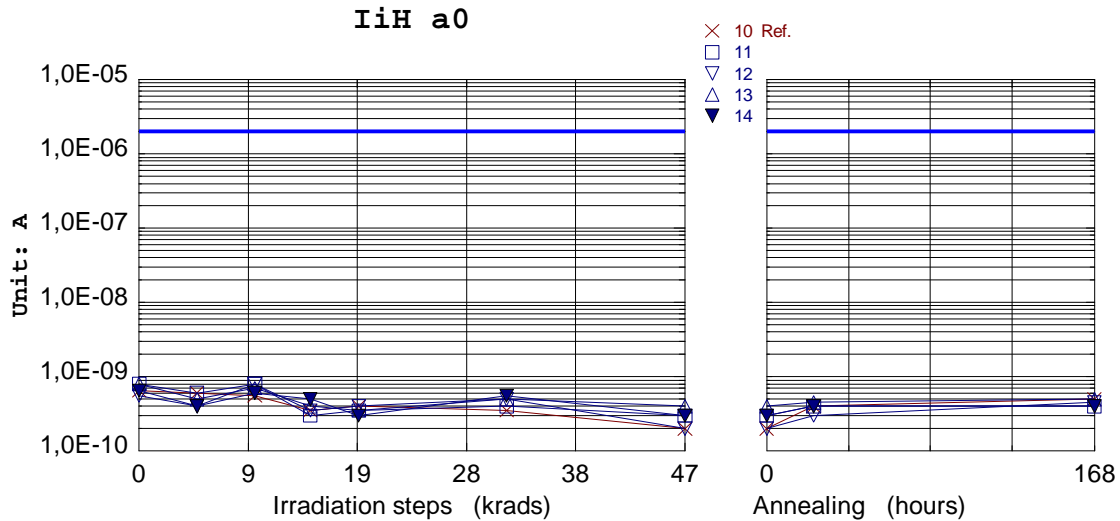
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	6,500E -10	6,000E -10	5,500E -10	3,500E -10	4,000E -10	3,500E -10	2,000E -10	4,000E -10
11	8,000E -10	6,000E -10	8,000E -10	3,000E -10	3,500E -10	4,000E -10	3,000E -10	4,000E -10
12	5,500E -10	4,000E -10	8,000E -10	3,500E -10	4,000E -10	5,000E -10	2,000E -10	3,000E -10
13	8,000E -10	5,000E -10	7,000E -10	4,000E -10	3,500E -10	5,000E -10	4,000E -10	4,500E -10
14	6,500E -10	4,000E -10	6,000E -10	5,000E -10	3,000E -10	5,500E -10	3,000E -10	4,000E -10
Statistics								
Min	5,500E -10	4,000E -10	6,000E -10	3,000E -10	3,000E -10	4,000E -10	2,000E -10	3,000E -10
Max	8,000E -10	6,000E -10	8,000E -10	5,000E -10	4,000E -10	5,500E -10	4,000E -10	4,500E -10
Mean	7,000E -10	4,750E -10	7,250E -10	3,875E -10	3,500E -10	4,875E -10	3,000E -10	3,875E -10
Sigma	1,225E -10	9,574E -11	9,574E -11	8,539E -11	4,082E -11	6,292E -11	8,165E -11	6,292E -11

Test Step	168 hours
Serial #	
10 Ref.	5,000E -10
11	4,000E -10
12	4,500E -10
13	5,000E -10
14	4,000E -10
Statistics	
Min	4,000E -10
Max	5,000E -10
Mean	4,375E -10
Sigma	4,787E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Output Current Low Level Pin I/O7: IozL I/O7  
Vout=0V

Unit= A

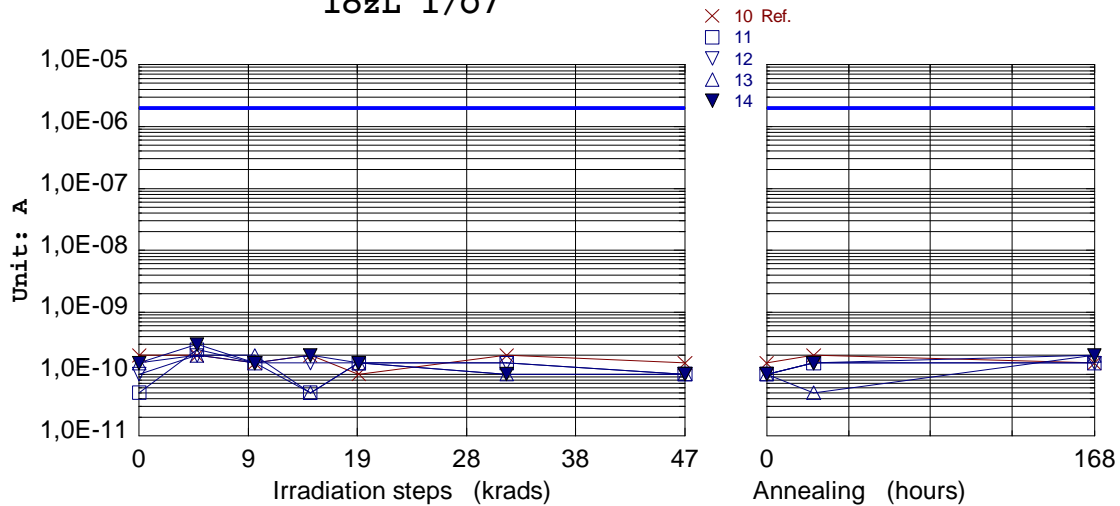
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	2,000E -10	2,000E -10	1,500E -10	2,000E -10	1,000E -10	2,000E -10	1,500E -10	2,000E -10
11	5,000E -11	2,500E -10	1,500E -10	5,000E -11	1,500E -10	1,500E -10	1,000E -10	1,500E -10
12	1,000E -10	2,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10
13	1,500E -10	2,000E -10	2,000E -10	5,000E -11	1,500E -10	1,000E -10	1,000E -10	5,000E -11
14	1,500E -10	3,000E -10	1,500E -10	2,000E -10	1,500E -10	1,000E -10	1,000E -10	1,500E -10
Statistics								
Min	5,000E -11	2,000E -10	1,500E -10	5,000E -11	1,500E -10	1,000E -10	1,000E -10	5,000E -11
Max	1,500E -10	3,000E -10	2,000E -10	2,000E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10
Mean	1,125E -10	2,375E -10	1,625E -10	1,125E -10	1,500E -10	1,250E -10	1,000E -10	1,250E -10
Sigma	4,787E -11	4,787E -11	2,500E -11	7,500E -11	2,028E -19	2,887E -11	9,389E -20	5,000E -11

Test Step	168 hours
Serial #	
10 Ref.	1,500E -10
11	1,500E -10
12	1,500E -10
13	2,000E -10
14	2,000E -10
Statistics	
Min	1,500E -10
Max	2,000E -10
Mean	1,750E -10
Sigma	2,887E -11

### IozL I/O7



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Output Current Low Level Pin I/O6: IozL I/O6  
Vout=0V

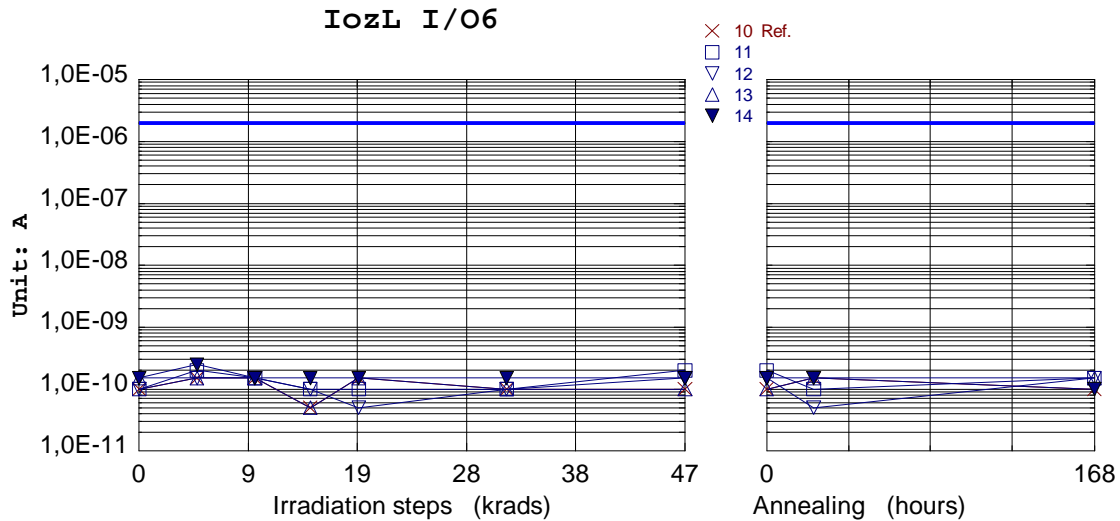
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,000E -10	1,500E -10	1,500E -10	5,000E -11	1,500E -10	1,000E -10	1,000E -10	1,500E -10
11	1,000E -10	2,000E -10	1,500E -10	1,000E -10	1,000E -10	1,000E -10	2,000E -10	1,000E -10
12	1,000E -10	1,500E -10	1,500E -10	1,000E -10	5,000E -11	1,000E -10	1,500E -10	5,000E -11
13	1,500E -10	1,500E -10	1,500E -10	5,000E -11	1,500E -10	1,000E -10	1,000E -10	1,500E -10
14	1,500E -10	2,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10
Statistics								
Min	1,000E -10	1,500E -10	1,500E -10	5,000E -11	5,000E -11	1,000E -10	1,000E -10	5,000E -11
Max	1,500E -10	2,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	2,000E -10	1,500E -10
Mean	1,250E -10	1,875E -10	1,500E -10	1,000E -10	1,125E -10	1,125E -10	1,500E -10	1,125E -10
Sigma	2,887E -11	4,787E -11	2,028E -19	4,082E -11	4,787E -11	2,500E -11	4,082E -11	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	1,000E -10
11	1,500E -10
12	1,500E -10
13	1,500E -10
14	1,000E -10
Statistics	
Min	1,000E -10
Max	1,500E -10
Mean	1,375E -10
Sigma	2,500E -11



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Output Current Low Level Pin I/O5: IozL I/O5  
Vout=0V

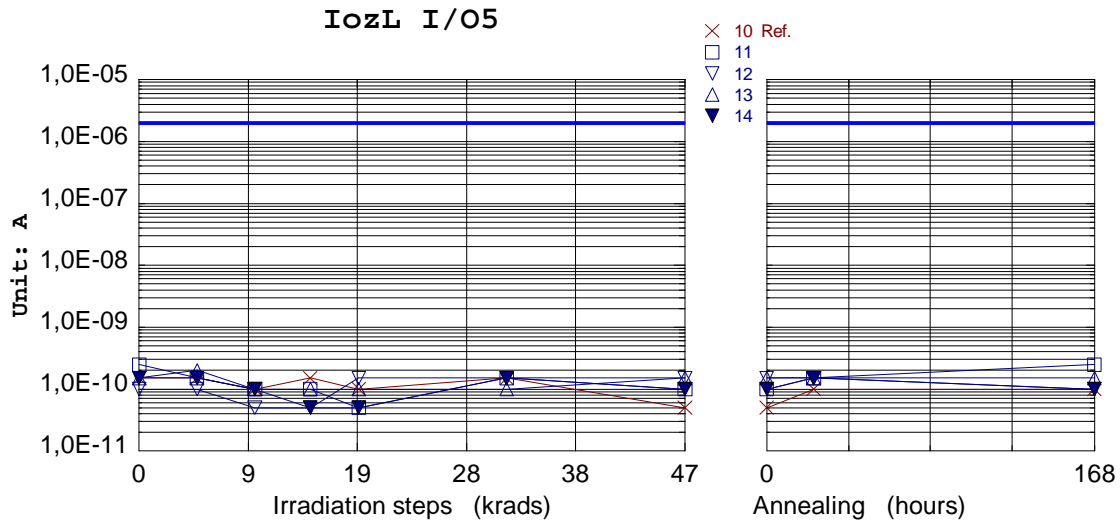
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,500E -10	1,500E -10	1,000E -10	1,500E -10	1,000E -10	1,500E -10	5,000E -11	1,000E -10
11	2,500E -10	1,500E -10	1,000E -10	1,000E -10	5,000E -11	1,500E -10	1,000E -10	1,500E -10
12	1,000E -10	1,000E -10	5,000E -11	5,000E -11	1,500E -10	1,500E -10	1,500E -10	1,500E -10
13	1,500E -10	2,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10
14	1,500E -10	1,500E -10	1,000E -10	5,000E -11	5,000E -11	1,500E -10	1,000E -10	1,500E -10
Statistics								
Min	1,000E -10	1,000E -10	5,000E -11	5,000E -11	5,000E -11	1,000E -10	1,000E -10	1,500E -10
Max	2,500E -10	2,000E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10
Mean	1,625E -10	1,500E -10	8,750E -11	7,500E -11	8,750E -11	1,375E -10	1,250E -10	1,500E -10
Sigma	6,292E -11	4,082E -11	2,500E -11	2,887E -11	4,787E -11	2,500E -11	2,887E -11	2,028E -10

Test Step	168 hours
Serial #	
10 Ref.	1,000E -10
11	2,500E -10
12	1,000E -10
13	1,500E -10
14	1,000E -10
Statistics	
Min	1,000E -10
Max	2,500E -10
Mean	1,500E -10
Sigma	7,071E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Output Current Low Level Pin I/O4: IozL I/O4  
Vout=0V

Unit= A

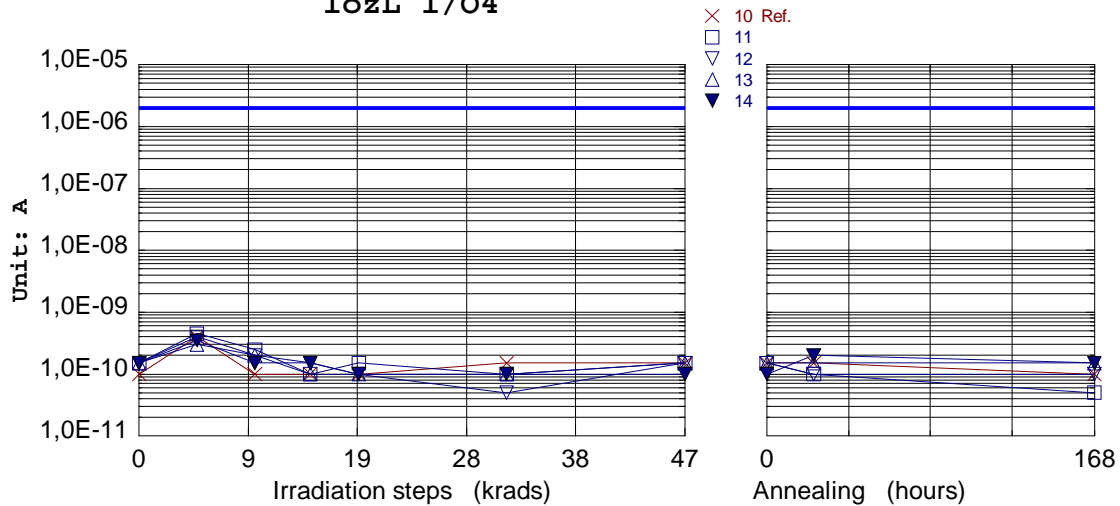
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,000E -10	4,000E -10	1,000E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10	1,500E -10
11	1,500E -10	4,500E -10	2,500E -10	1,000E -10	1,500E -10	1,000E -10	1,500E -10	1,000E -10
12	1,500E -10	4,000E -10	2,000E -10	1,500E -10	1,000E -10	5,000E -11	1,500E -10	1,000E -10
13	1,500E -10	3,000E -10	2,000E -10	1,000E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10
14	1,500E -10	3,500E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10	1,000E -10	2,000E -10
Statistics								
Min	1,500E -10	3,000E -10	1,500E -10	1,000E -10	1,000E -10	5,000E -11	1,000E -10	1,000E -10
Max	1,500E -10	4,500E -10	2,500E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10	2,000E -10
Mean	1,500E -10	3,750E -10	2,000E -10	1,250E -10	1,125E -10	8,750E -11	1,375E -10	1,375E -10
Sigma	2,028E -19	6,455E -11	4,082E -11	2,887E -11	2,500E -11	2,500E -11	2,500E -11	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	1,000E -10
11	5,000E -11
12	1,000E -10
13	1,500E -10
14	1,500E -10
Statistics	
Min	5,000E -11
Max	1,500E -10
Mean	1,125E -10
Sigma	4,787E -11

### IozL I/O4



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Output Current Low Level Pin I/O3: IozL I/O3  
Vout=0V

Unit= A

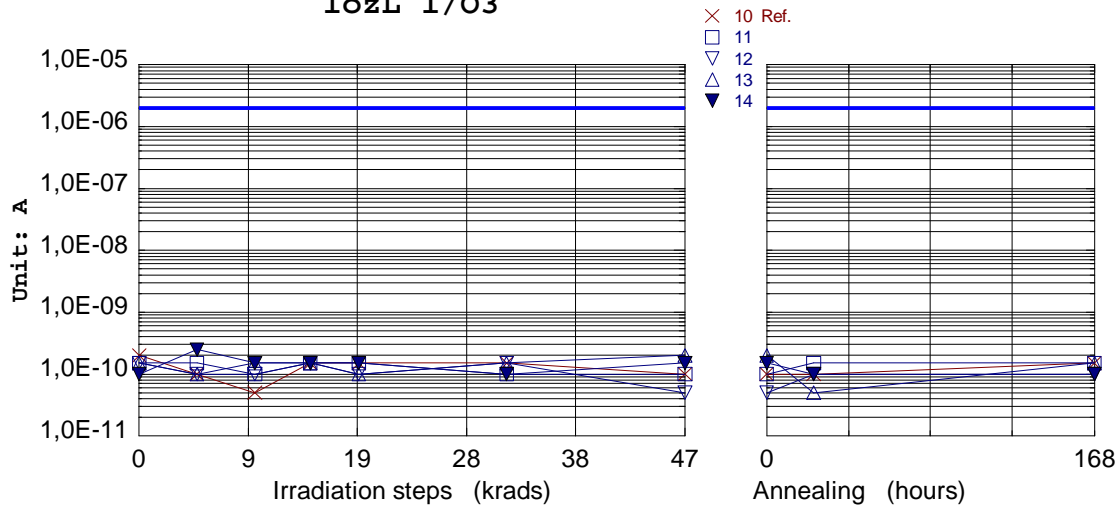
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	2,000E -10	1,000E -10	5,000E -11	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10
11	1,500E -10	1,500E -10	1,000E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10	1,500E -10
12	1,500E -10	1,000E -10	1,000E -10	1,500E -10	1,000E -10	1,500E -10	5,000E -11	1,000E -10
13	1,500E -10	1,000E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10	2,000E -10	5,000E -11
14	1,000E -10	2,500E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10	1,000E -10
Statistics								
Min	1,000E -10	1,000E -10	1,000E -10	1,500E -10	1,000E -10	1,000E -10	5,000E -11	5,000E -11
Max	1,500E -10	2,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	2,000E -10	1,500E -10
Mean	1,375E -10	1,500E -10	1,250E -10	1,500E -10	1,250E -10	1,250E -10	1,250E -10	1,000E -10
Sigma	2,500E -11	7,071E -11	2,887E -11	2,028E -19	2,887E -11	2,887E -11	6,455E -11	4,082E -11

Test Step	168 hours
Serial #	
10 Ref.	1,500E -10
11	1,500E -10
12	1,000E -10
13	1,500E -10
14	1,000E -10
Statistics	
Min	1,000E -10
Max	1,500E -10
Mean	1,250E -10
Sigma	2,887E -11

IozL I/O3



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Output Current Low Level Pin I/O2: IozL I/O2  
Vout=0V

Unit= A

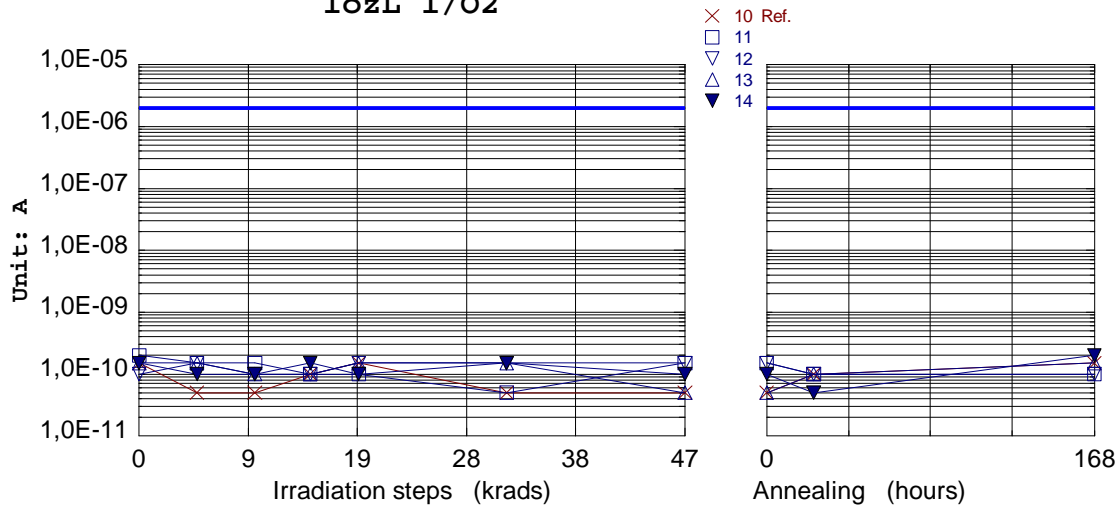
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,500E -10	5,000E -11	5,000E -11	1,000E -10	1,500E -10	5,000E -11	5,000E -11	1,000E -10
11	2,000E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10	5,000E -11	1,500E -10	1,000E -10
12	1,000E -10	1,500E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10
13	1,500E -10	1,500E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10	5,000E -11	1,000E -10
14	1,500E -10	1,000E -10	1,000E -10	1,500E -10	1,000E -10	1,500E -10	1,000E -10	5,000E -11
Statistics								
Min	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	5,000E -11	5,000E -11	5,000E -11
Max	2,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10
Mean	1,500E -10	1,375E -10	1,125E -10	1,125E -10	1,250E -10	1,250E -10	1,125E -10	8,750E -11
Sigma	4,082E -11	2,500E -11	2,500E -11	2,500E -11	2,887E -11	5,000E -11	4,787E -11	2,500E -11

Test Step	168 hours
Serial #	
10 Ref.	1,500E -10
11	1,000E -10
12	1,000E -10
13	1,500E -10
14	2,000E -10
Statistics	
Min	1,000E -10
Max	2,000E -10
Mean	1,375E -10
Sigma	4,787E -11

### IozL I/O2



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Output Current Low Level Pin I/O1: IozL I/O1  
Vout=0V

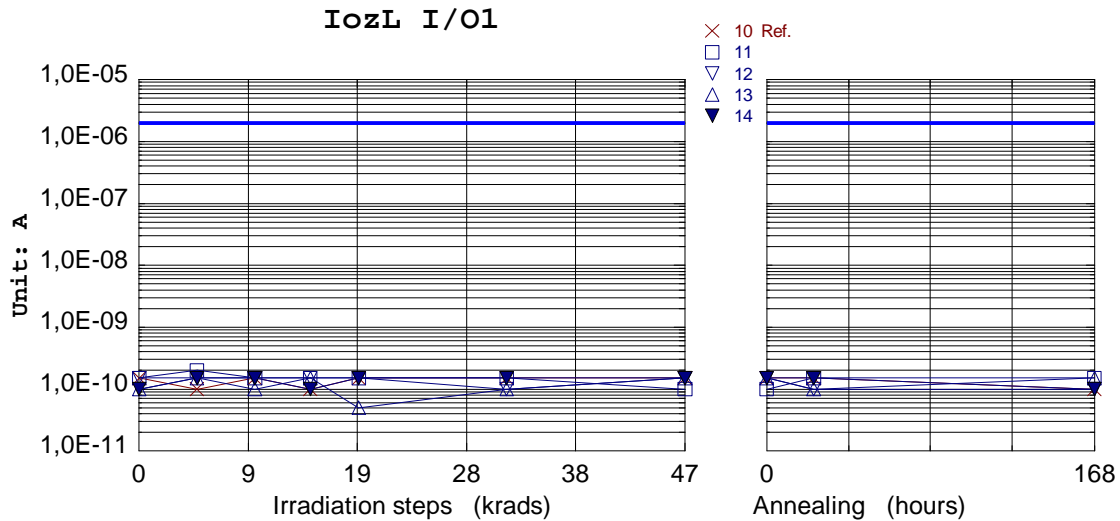
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,500E -10	1,000E -10	1,500E -10	1,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10
11	1,500E -10	2,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10
12	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10	1,000E -10
13	1,000E -10	1,500E -10	1,000E -10	1,500E -10	5,000E -11	1,000E -10	1,500E -10	1,000E -10
14	1,000E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10
Statistics								
Min	1,000E -10	1,500E -10	1,000E -10	1,000E -10	5,000E -11	1,000E -10	1,000E -10	1,000E -10
Max	1,500E -10	2,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10
Mean	1,250E -10	1,625E -10	1,375E -10	1,375E -10	1,250E -10	1,250E -10	1,375E -10	1,250E -10
Sigma	2,887E -11	2,500E -11	2,500E -11	2,500E -11	5,000E -11	2,887E -11	2,500E -11	2,887E -11

Test Step	168 hours
Serial #	
10 Ref.	1,000E -10
11	1,500E -10
12	1,000E -10
13	1,500E -10
14	1,000E -10
Statistics	
Min	1,000E -10
Max	1,500E -10
Mean	1,250E -10
Sigma	2,887E -11





HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Negative Output Current Low Level Pin I/O0: IozL I/O0  
Vout=0V

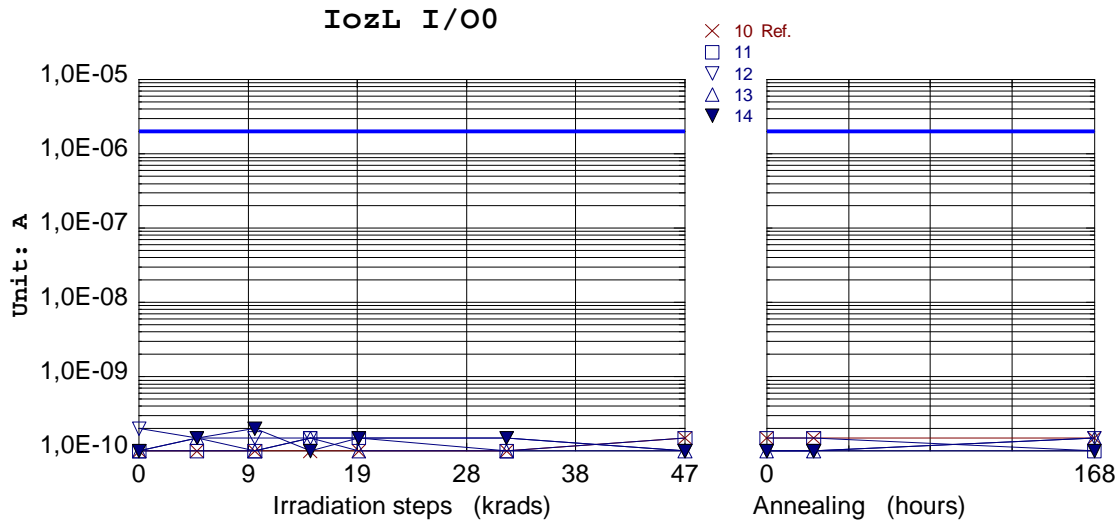
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10
11	1,000E -10	1,000E -10	1,000E -10	1,500E -10	1,500E -10	1,000E -10	1,500E -10	1,500E -10
12	2,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10
13	1,000E -10	1,500E -10	1,000E -10	1,500E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10
14	1,000E -10	1,500E -10	2,000E -10	1,000E -10	1,500E -10	1,500E -10	1,000E -10	1,000E -10
Statistics								
Min	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10
Max	2,000E -10	1,500E -10	2,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10
Mean	1,250E -10	1,375E -10	1,375E -10	1,375E -10	1,375E -10	1,250E -10	1,125E -10	1,125E -10
Sigma	5,000E -11	2,500E -11	4,787E -11	2,500E -11	2,500E -11	2,887E -11	2,500E -11	2,500E -11

Test Step	168 hours
Serial #	
10 Ref.	1,500E -10
11	1,000E -10
12	1,500E -10
13	1,500E -10
14	1,000E -10
Statistics	
Min	1,000E -10
Max	1,500E -10
Mean	1,250E -10
Sigma	2,887E -11



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Current High Level Pin I/O7: IozH I/O7

Vout=Vcc

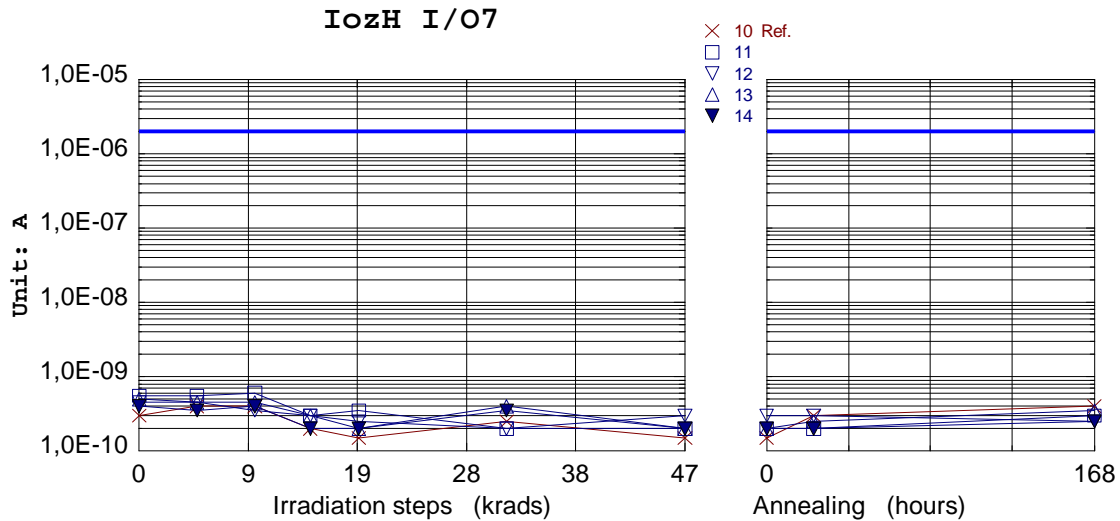
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,000E -10	4,000E -10	4,000E -10	2,000E -10	1,500E -10	2,500E -10	1,500E -10	3,000E -10
11	5,500E -10	5,500E -10	6,000E -10	3,000E -10	3,500E -10	2,000E -10	2,000E -10	2,000E -10
12	4,500E -10	4,500E -10	3,500E -10	3,000E -10	2,500E -10	2,000E -10	3,000E -10	3,000E -10
13	5,000E -10	4,500E -10	4,500E -10	3,000E -10	2,000E -10	4,000E -10	2,000E -10	2,500E -10
14	4,000E -10	3,500E -10	4,000E -10	2,000E -10	2,000E -10	3,500E -10	2,000E -10	2,000E -10
Statistics								
Min	4,000E -10	3,500E -10	3,500E -10	2,000E -10	2,000E -10	2,000E -10	2,000E -10	2,000E -10
Max	5,500E -10	5,500E -10	6,000E -10	3,000E -10	3,500E -10	4,000E -10	3,000E -10	3,000E -10
Mean	4,750E -10	4,500E -10	4,500E -10	2,750E -10	2,500E -10	2,875E -10	2,250E -10	2,375E -10
Sigma	6,455E -11	8,165E -11	1,080E -10	5,000E -11	7,071E -11	1,031E -10	5,000E -11	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	4,000E -10
11	3,000E -10
12	2,500E -10
13	3,500E -10
14	2,500E -10
Statistics	
Min	2,500E -10
Max	3,500E -10
Mean	2,875E -10
Sigma	4,787E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Current High Level Pin I/O6: IozH I/O6

Vout=Vcc

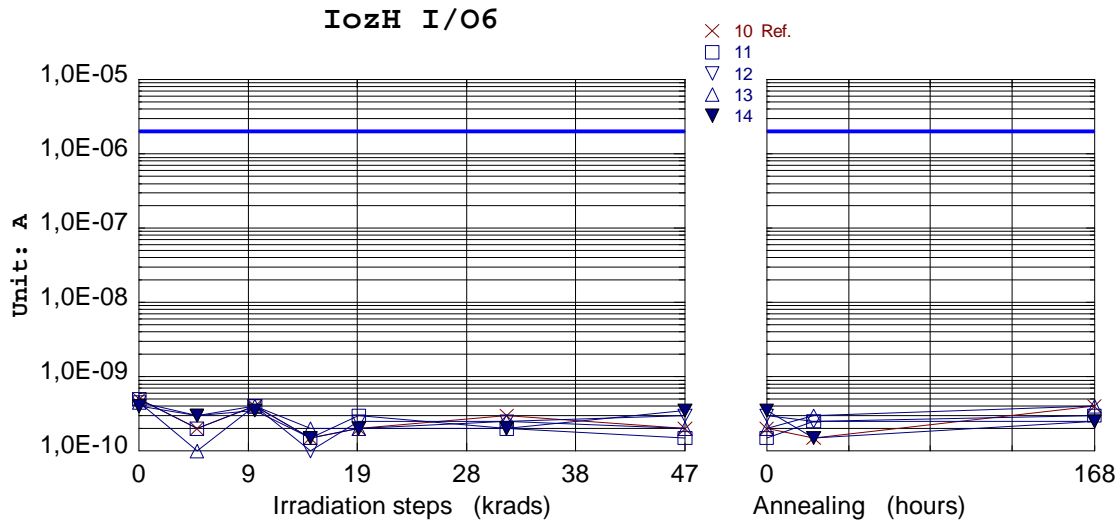
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,000E -10	2,000E -10	4,000E -10	1,500E -10	2,000E -10	3,000E -10	2,000E -10	1,500E -10
11	5,000E -10	2,000E -10	4,000E -10	1,500E -10	3,000E -10	2,000E -10	1,500E -10	2,500E -10
12	4,500E -10	3,000E -10	4,000E -10	1,000E -10	2,500E -10	2,500E -10	3,000E -10	2,500E -10
13	4,500E -10	1,000E -10	4,000E -10	2,000E -10	2,000E -10	2,500E -10	2,000E -10	3,000E -10
14	4,000E -10	3,000E -10	3,500E -10	1,500E -10	2,000E -10	2,000E -10	3,500E -10	1,500E -10
Statistics								
Min	4,000E -10	1,000E -10	3,500E -10	1,000E -10	2,000E -10	2,000E -10	1,500E -10	1,500E -10
Max	5,000E -10	3,000E -10	4,000E -10	2,000E -10	3,000E -10	2,500E -10	3,500E -10	3,000E -10
Mean	4,500E -10	2,250E -10	3,875E -10	1,500E -10	2,375E -10	2,250E -10	2,500E -10	2,375E -10
Sigma	4,082E -11	9,574E -11	2,500E -11	4,082E -11	4,787E -11	2,887E -11	9,129E -11	6,292E -11

Test Step	168 hours
Serial #	
10 Ref.	4,000E -10
11	3,000E -10
12	2,500E -10
13	4,000E -10
14	2,500E -10
Statistics	
Min	2,500E -10
Max	4,000E -10
Mean	3,000E -10
Sigma	7,071E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Current High Level Pin I/O5: IozH I/O5

Vout=Vcc

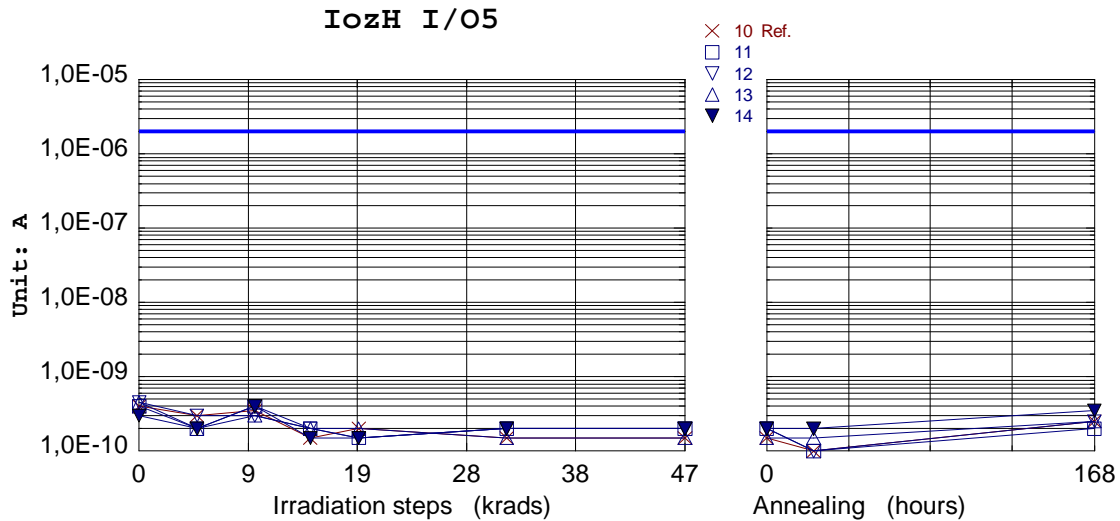
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	3,000E -10	3,500E -10	1,500E -10	2,000E -10	1,500E -10	1,500E -10	1,000E -10
11	4,000E -10	2,000E -10	4,000E -10	2,000E -10	1,500E -10	2,000E -10	2,000E -10	1,000E -10
12	4,500E -10	3,000E -10	3,000E -10	2,000E -10	1,500E -10	2,000E -10	2,000E -10	1,000E -10
13	4,500E -10	2,000E -10	3,000E -10	2,000E -10	2,000E -10	1,500E -10	1,500E -10	1,500E -10
14	3,000E -10	2,000E -10	4,000E -10	1,500E -10	1,500E -10	2,000E -10	2,000E -10	2,000E -10
Statistics								
Min	3,000E -10	2,000E -10	3,000E -10	1,500E -10	1,500E -10	1,500E -10	1,500E -10	1,000E -10
Max	4,500E -10	3,000E -10	4,000E -10	2,000E -10	2,000E -10	2,000E -10	2,000E -10	2,000E -10
Mean	4,000E -10	2,250E -10	3,500E -10	1,875E -10	1,625E -10	1,875E -10	1,875E -10	1,375E -10
Sigma	7,071E -11	5,000E -11	5,774E -11	2,500E -11	2,500E -11	2,500E -11	2,500E -11	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	2,500E -10
11	2,000E -10
12	2,500E -10
13	2,500E -10
14	3,500E -10
Statistics	
Min	2,000E -10
Max	3,500E -10
Mean	2,625E -10
Sigma	6,292E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Current High Level Pin I/O4: IozH I/O4

Vout=Vcc

Unit= A

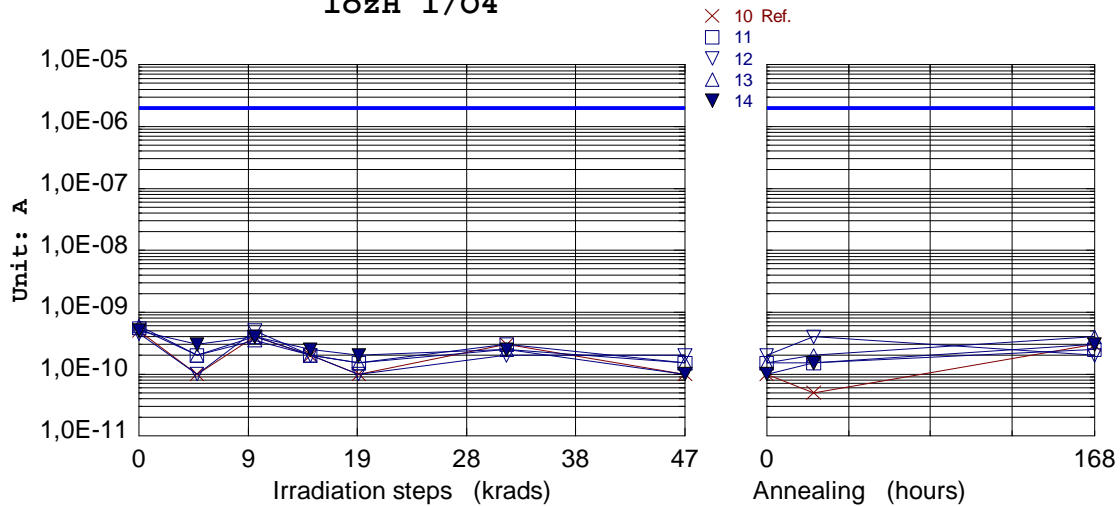
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	5,000E -10	1,000E -10	4,000E -10	2,000E -10	1,000E -10	3,000E -10	1,000E -10	5,000E -11
11	5,500E -10	2,000E -10	4,000E -10	2,000E -10	1,500E -10	3,000E -10	1,500E -10	1,500E -10
12	4,500E -10	1,000E -10	5,000E -10	2,000E -10	1,000E -10	2,000E -10	2,000E -10	4,000E -10
13	6,000E -10	2,000E -10	3,500E -10	2,000E -10	1,500E -10	2,500E -10	1,500E -10	2,000E -10
14	5,000E -10	3,000E -10	4,000E -10	2,500E -10	2,000E -10	2,500E -10	1,000E -10	1,500E -10
Statistics								
Min	4,500E -10	1,000E -10	3,500E -10	2,000E -10	1,000E -10	2,000E -10	1,000E -10	1,500E -10
Max	6,000E -10	3,000E -10	5,000E -10	2,500E -10	2,000E -10	3,000E -10	2,000E -10	4,000E -10
Mean	5,250E -10	2,000E -10	4,125E -10	2,125E -10	1,500E -10	2,500E -10	1,500E -10	2,250E -10
Sigma	6,455E -11	8,165E -11	6,292E -11	2,500E -11	4,082E -11	4,082E -11	4,082E -11	1,190E -10

Test Step	168 hours
Serial #	
10 Ref.	3,000E -10
11	2,500E -10
12	2,000E -10
13	4,000E -10
14	3,000E -10
Statistics	
Min	2,000E -10
Max	4,000E -10
Mean	2,875E -10
Sigma	8,539E -11

IozH I/O4



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Current High Level Pin I/O3: IozH I/O3

Vout=Vcc

Unit= A

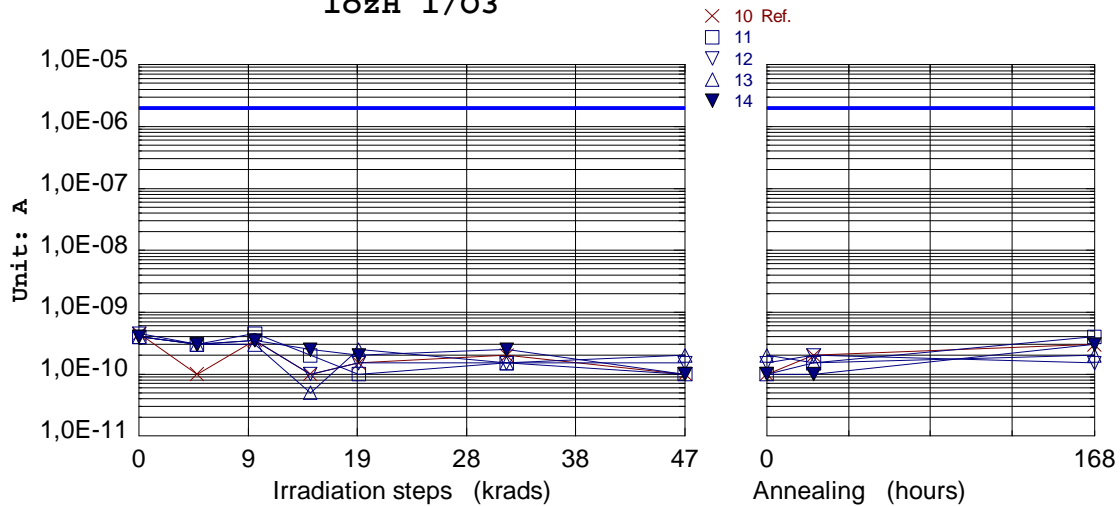
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,500E -10	1,000E -10	3,500E -10	1,000E -10	1,500E -10	2,000E -10	1,000E -10	2,000E -10
11	4,000E -10	3,000E -10	4,500E -10	2,000E -10	1,000E -10	1,500E -10	1,000E -10	1,500E -10
12	4,500E -10	3,000E -10	3,500E -10	1,000E -10	1,500E -10	1,500E -10	1,500E -10	2,000E -10
13	4,000E -10	3,000E -10	3,000E -10	5,000E -11	2,500E -10	1,500E -10	2,000E -10	1,500E -10
14	4,000E -10	3,000E -10	3,500E -10	2,500E -10	2,000E -10	2,500E -10	1,000E -10	1,000E -10
Statistics								
Min	4,000E -10	3,000E -10	3,000E -10	5,000E -11	1,000E -10	1,500E -10	1,000E -10	1,000E -10
Max	4,500E -10	3,000E -10	4,500E -10	2,500E -10	2,500E -10	2,500E -10	2,000E -10	2,000E -10
Mean	4,125E -10	3,000E -10	3,625E -10	1,500E -10	1,750E -10	1,750E -10	1,375E -10	1,500E -10
Sigma	2,500E -11	3,650E -19	6,292E -11	9,129E -11	6,455E -11	5,000E -11	4,787E -11	4,082E -11

Test Step	168 hours
Serial #	
10 Ref.	3,000E -10
11	4,000E -10
12	1,500E -10
13	2,000E -10
14	3,000E -10
Statistics	
Min	1,500E -10
Max	4,000E -10
Mean	2,625E -10
Sigma	1,109E -10

**IozH I/O3**



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Current High Level Pin I/O2: IozH I/O2

Vout=Vcc

Unit= A

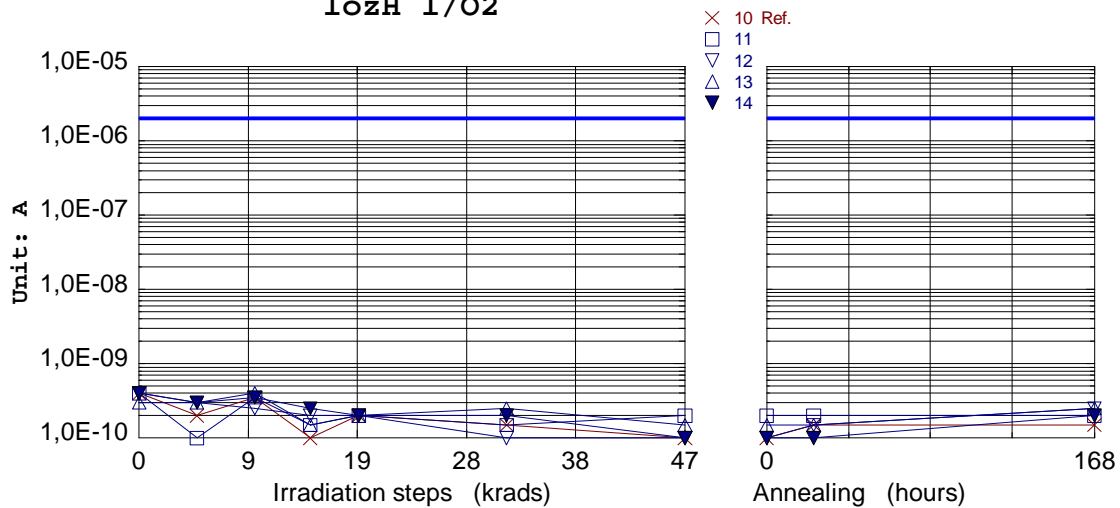
Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	2,000E -10	3,500E -10	1,000E -10	2,000E -10	1,500E -10	1,000E -10	1,500E -10
11	4,000E -10	1,000E -10	3,500E -10	1,500E -10	2,000E -10	1,500E -10	2,000E -10	2,000E -10
12	4,000E -10	3,000E -10	2,500E -10	2,000E -10	2,000E -10	1,000E -10	1,000E -10	1,500E -10
13	3,000E -10	3,000E -10	4,000E -10	1,500E -10	2,000E -10	2,500E -10	1,500E -10	1,500E -10
14	4,000E -10	3,000E -10	3,500E -10	2,500E -10	2,000E -10	2,000E -10	1,000E -10	1,000E -10
Statistics								
Min	3,000E -10	1,000E -10	2,500E -10	1,500E -10	2,000E -10	1,000E -10	1,000E -10	1,000E -10
Max	4,000E -10	3,000E -10	4,000E -10	2,500E -10	2,000E -10	2,500E -10	2,000E -10	2,000E -10
Mean	3,750E -10	2,500E -10	3,375E -10	1,875E -10	2,000E -10	1,750E -10	1,375E -10	1,500E -10
Sigma	5,000E -11	1,000E -10	6,292E -11	4,787E -11	1,878E -10	6,455E -11	4,787E -11	4,082E -11

Test Step	168 hours
Serial #	
10 Ref.	1,500E -10
11	2,000E -10
12	2,500E -10
13	2,500E -10
14	2,000E -10
Statistics	
Min	2,000E -10
Max	2,500E -10
Mean	2,250E -10
Sigma	2,887E -11

**IozH I/O2**



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Current High Level Pin I/O1: IozH I/O1

Vout=Vcc

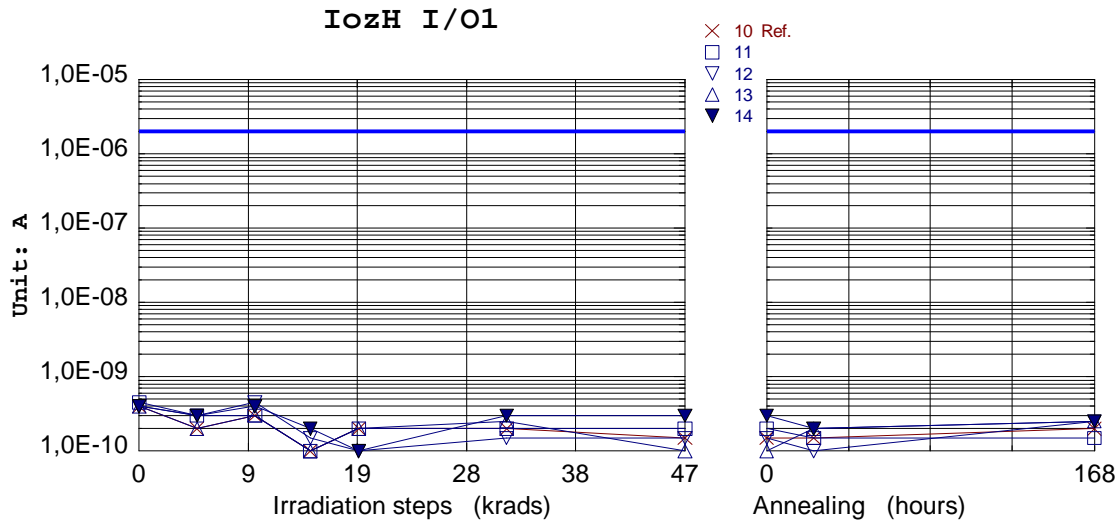
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	2,000E -10	3,000E -10	1,000E -10	2,000E -10	2,000E -10	1,500E -10	1,500E -10
11	4,500E -10	3,000E -10	3,000E -10	1,000E -10	2,000E -10	2,000E -10	2,000E -10	1,500E -10
12	4,000E -10	3,000E -10	4,500E -10	1,500E -10	1,000E -10	1,500E -10	1,500E -10	1,000E -10
13	4,000E -10	2,000E -10	3,000E -10	1,000E -10	2,000E -10	2,500E -10	1,000E -10	2,000E -10
14	4,000E -10	3,000E -10	4,000E -10	2,000E -10	1,000E -10	3,000E -10	3,000E -10	2,000E -10
Statistics								
Min	4,000E -10	2,000E -10	3,000E -10	1,000E -10	1,000E -10	1,500E -10	1,000E -10	1,000E -10
Max	4,500E -10	3,000E -10	4,500E -10	2,000E -10	2,000E -10	3,000E -10	3,000E -10	2,000E -10
Mean	4,125E -10	2,750E -10	3,625E -10	1,375E -10	1,500E -10	2,250E -10	1,875E -10	1,625E -10
Sigma	2,500E -11	5,000E -11	7,500E -11	4,787E -11	5,774E -11	6,455E -11	8,539E -11	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	2,000E -10
11	1,500E -10
12	2,500E -10
13	2,500E -10
14	2,500E -10
Statistics	
Min	1,500E -10
Max	2,500E -10
Mean	2,250E -10
Sigma	5,000E -11





<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Current High Level Pin I/O0: IozH I/O0

Vout=Vcc

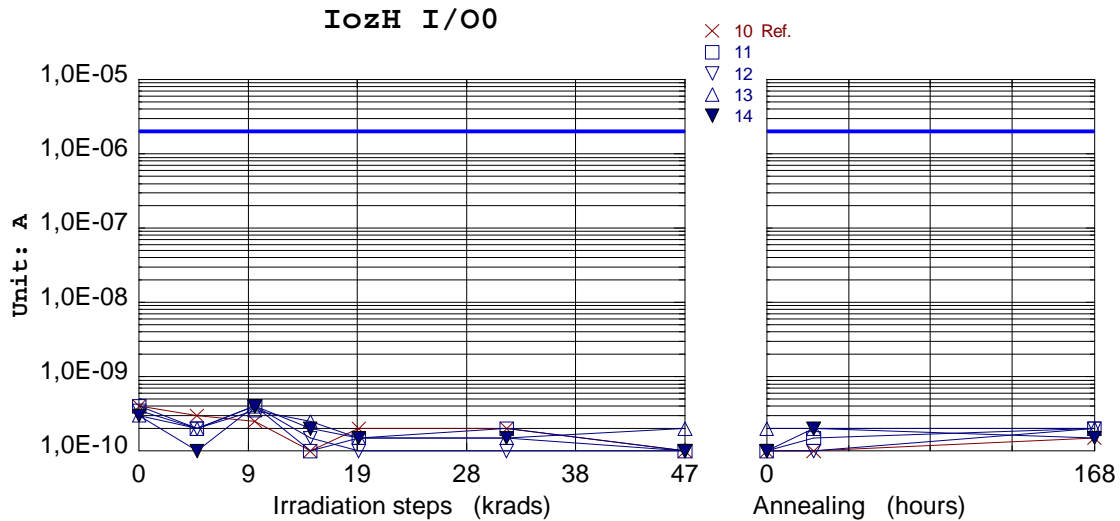
Unit= A

Spec limit max: 20,0E-7

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	4,000E -10	3,000E -10	2,500E -10	1,000E -10	2,000E -10	2,000E -10	1,000E -10	1,000E -10
11	4,000E -10	2,000E -10	4,000E -10	1,000E -10	1,500E -10	2,000E -10	1,000E -10	1,500E -10
12	3,500E -10	2,000E -10	4,000E -10	1,500E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10
13	3,000E -10	2,000E -10	3,500E -10	2,500E -10	1,500E -10	1,500E -10	2,000E -10	2,000E -10
14	3,000E -10	1,000E -10	4,000E -10	2,000E -10	1,500E -10	1,500E -10	1,000E -10	2,000E -10
Statistics								
Min	3,000E -10	1,000E -10	3,500E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10	1,000E -10
Max	4,000E -10	2,000E -10	4,000E -10	2,500E -10	1,500E -10	2,000E -10	2,000E -10	2,000E -10
Mean	3,375E -10	1,750E -10	3,875E -10	1,750E -10	1,375E -10	1,500E -10	1,250E -10	1,625E -10
Sigma	4,787E -11	5,000E -11	2,500E -11	6,455E -11	2,500E -11	4,082E -11	5,000E -11	4,787E -11

Test Step	168 hours
Serial #	
10 Ref.	1,500E -10
11	2,000E -10
12	2,000E -10
13	2,000E -10
14	1,500E -10
Statistics	
Min	1,500E -10
Max	2,000E -10
Mean	1,875E -10
Sigma	2,500E -11



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage Low Level Pin I/O7: VoL I/O7  
IOL=8mA

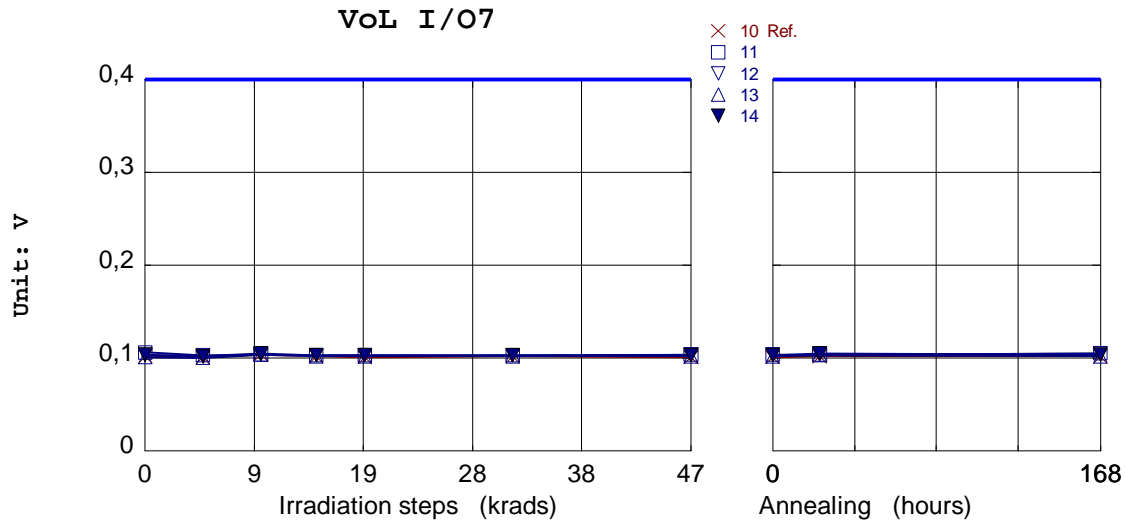
Unit= V

Spec limit max: 40,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,020E -01	1,010E -01	1,040E -01	1,020E -01	1,010E -01	1,020E -01	1,010E -01	1,020E -01
11	1,060E -01	1,030E -01	1,040E -01	1,030E -01	1,030E -01	1,020E -01	1,040E -01	1,040E -01
12	1,030E -01	1,020E -01	1,040E -01	1,030E -01	1,030E -01	1,030E -01	1,040E -01	1,040E -01
13	1,010E -01	1,000E -01	1,040E -01	1,020E -01	1,020E -01	1,030E -01	1,020E -01	1,030E -01
14	1,040E -01	1,020E -01	1,050E -01	1,030E -01	1,030E -01	1,030E -01	1,030E -01	1,050E -01
Statistics								
Min	1,010E -01	1,000E -01	1,040E -01	1,020E -01	1,020E -01	1,020E -01	1,020E -01	1,030E -01
Max	1,060E -01	1,030E -01	1,050E -01	1,030E -01	1,030E -01	1,030E -01	1,040E -01	1,050E -01
Mean	1,035E -01	1,017E -01	1,043E -01	1,027E -01	1,027E -01	1,027E -01	1,033E -01	1,040E -01
Sigma	2,082E -03	1,258E -03	5,000E -04	5,000E -04	5,000E -04	5,000E -04	9,574E -04	8,165E -04

Test Step	168 hours
Serial #	
10 Ref.	1,020E -01
11	1,050E -01
12	1,050E -01
13	1,020E -01
14	1,040E -01
Statistics	
Min	1,020E -01
Max	1,050E -01
Mean	1,040E -01
Sigma	1,414E -03



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage Low Level Pin I/O6: VoL I/O6  
IOL=8mA

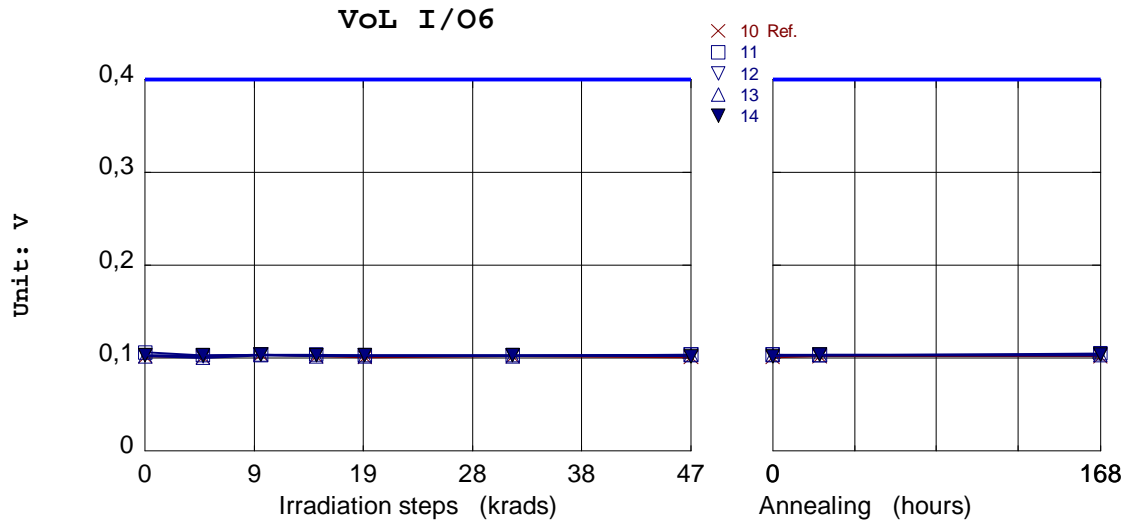
Unit= V

Spec limit max: 40,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,020E -01	1,010E -01	1,040E -01	1,020E -01	1,010E -01	1,020E -01	1,010E -01	1,020E -01
11	1,060E -01	1,030E -01	1,040E -01	1,040E -01	1,030E -01	1,030E -01	1,040E -01	1,030E -01
12	1,030E -01	1,020E -01	1,040E -01	1,030E -01	1,030E -01	1,030E -01	1,040E -01	1,040E -01
13	1,020E -01	1,000E -01	1,030E -01	1,020E -01	1,020E -01	1,020E -01	1,030E -01	1,030E -01
14	1,030E -01	1,030E -01	1,040E -01	1,030E -01	1,030E -01	1,030E -01	1,020E -01	1,040E -01
Statistics								
Min	1,020E -01	1,000E -01	1,030E -01	1,020E -01	1,020E -01	1,020E -01	1,020E -01	1,030E -01
Max	1,060E -01	1,030E -01	1,040E -01	1,040E -01	1,030E -01	1,030E -01	1,040E -01	1,040E -01
Mean	1,035E -01	1,020E -01	1,038E -01	1,030E -01	1,027E -01	1,027E -01	1,033E -01	1,035E -01
Sigma	1,732E -03	1,414E -03	5,000E -04	8,165E -04	5,000E -04	5,000E -04	9,574E -04	5,774E -04

Test Step	168 hours
Serial #	
10 Ref.	1,020E -01
11	1,050E -01
12	1,040E -01
13	1,030E -01
14	1,040E -01
Statistics	
Min	1,030E -01
Max	1,050E -01
Mean	1,040E -01
Sigma	8,165E -04



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage Low Level Pin I/O5: VoL I/O5  
IOL=8mA

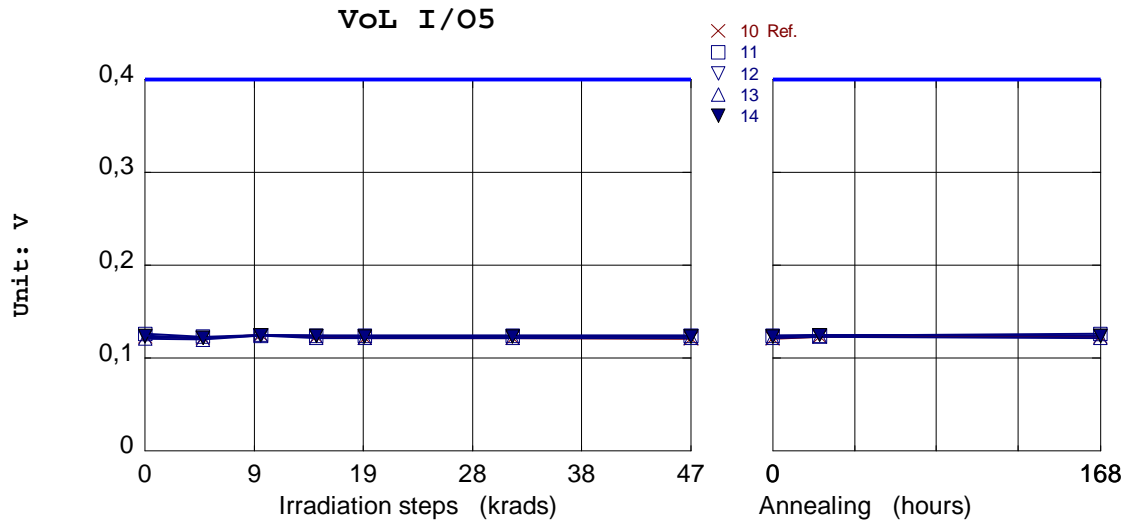
Unit= V

Spec limit max: 40,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,230E -01	1,220E -01	1,250E -01	1,230E -01	1,220E -01	1,220E -01	1,210E -01	1,230E -01
11	1,260E -01	1,230E -01	1,250E -01	1,240E -01	1,240E -01	1,240E -01	1,240E -01	1,240E -01
12	1,230E -01	1,220E -01	1,240E -01	1,240E -01	1,240E -01	1,240E -01	1,240E -01	1,250E -01
13	1,210E -01	1,200E -01	1,240E -01	1,220E -01	1,220E -01	1,220E -01	1,220E -01	1,230E -01
14	1,240E -01	1,220E -01	1,250E -01	1,240E -01	1,230E -01	1,230E -01	1,230E -01	1,250E -01
Statistics								
Min	1,210E -01	1,200E -01	1,240E -01	1,220E -01	1,220E -01	1,220E -01	1,220E -01	1,230E -01
Max	1,260E -01	1,230E -01	1,250E -01	1,240E -01	1,240E -01	1,240E -01	1,240E -01	1,250E -01
Mean	1,235E -01	1,218E -01	1,245E -01	1,235E -01	1,233E -01	1,233E -01	1,233E -01	1,243E -01
Sigma	2,082E -03	1,258E -03	5,774E -04	1,000E -03	9,574E -04	9,574E -04	9,574E -04	9,574E -04

Test Step	168 hours
Serial #	
10 Ref.	1,230E -01
11	1,260E -01
12	1,240E -01
13	1,220E -01
14	1,240E -01
Statistics	
Min	1,220E -01
Max	1,260E -01
Mean	1,240E -01
Sigma	1,633E -03



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage Low Level Pin I/O4: VoL I/O4  
IOL=8mA

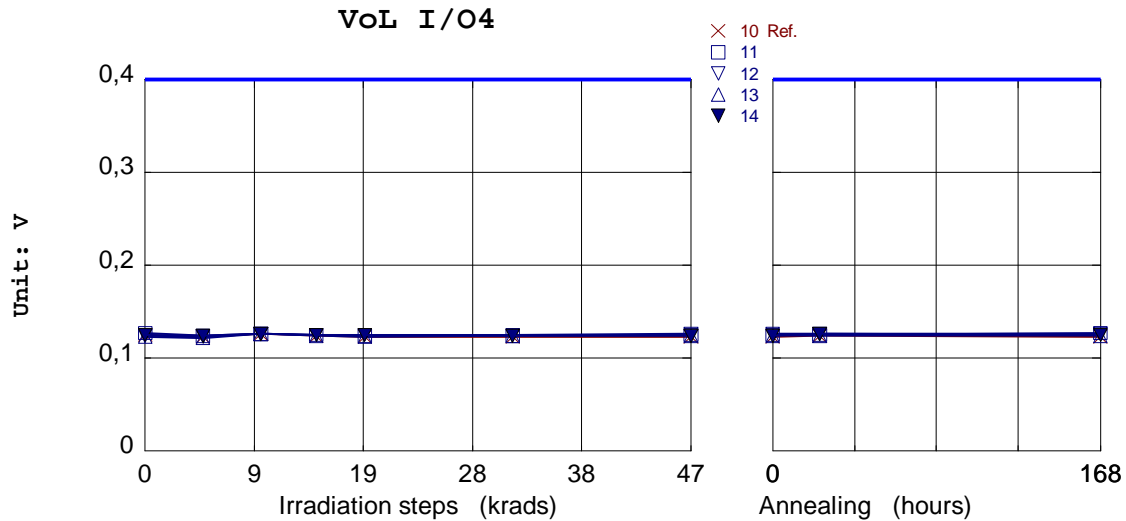
Unit= V

Spec limit max: 40,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,250E -01	1,230E -01	1,260E -01	1,240E -01	1,230E -01	1,230E -01	1,230E -01	1,240E -01
11	1,270E -01	1,240E -01	1,260E -01	1,250E -01	1,240E -01	1,240E -01	1,250E -01	1,250E -01
12	1,240E -01	1,230E -01	1,260E -01	1,250E -01	1,250E -01	1,250E -01	1,260E -01	1,260E -01
13	1,230E -01	1,220E -01	1,260E -01	1,240E -01	1,230E -01	1,240E -01	1,240E -01	1,240E -01
14	1,250E -01	1,240E -01	1,260E -01	1,250E -01	1,250E -01	1,240E -01	1,240E -01	1,260E -01
Statistics								
Min	1,230E -01	1,220E -01	1,260E -01	1,240E -01	1,230E -01	1,240E -01	1,240E -01	1,240E -01
Max	1,270E -01	1,240E -01	1,260E -01	1,250E -01	1,250E -01	1,250E -01	1,260E -01	1,260E -01
Mean	1,248E -01	1,233E -01	1,260E -01	1,247E -01	1,243E -01	1,242E -01	1,247E -01	1,253E -01
Sigma	1,708E -03	9,574E -04	6,721E -11	5,000E -04	9,574E -04	5,000E -04	9,574E -04	9,574E -04

Test Step	168 hours
Serial #	
10 Ref.	1,230E -01
11	1,270E -01
12	1,260E -01
13	1,240E -01
14	1,250E -01
Statistics	
Min	1,240E -01
Max	1,270E -01
Mean	1,255E -01
Sigma	1,291E -03



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage Low Level Pin I/O3: VoL I/O3  
IOL=8mA

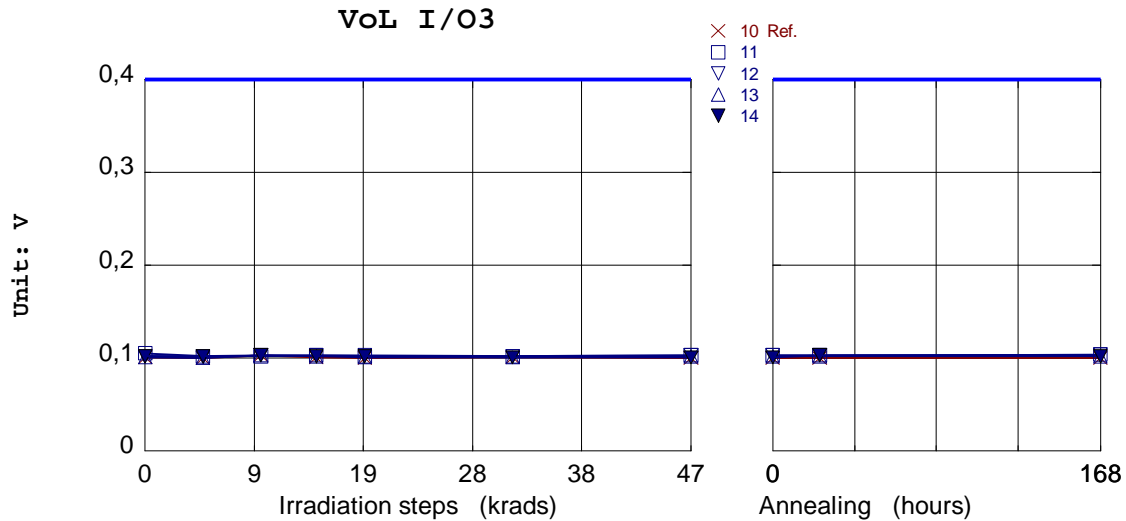
Unit= V

Spec limit max: 40,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,010E -01	1,000E -01	1,030E -01	1,010E -01	1,000E -01	1,010E -01	1,000E -01	1,000E -01
11	1,050E -01	1,020E -01	1,020E -01	1,030E -01	1,020E -01	1,020E -01	1,030E -01	1,030E -01
12	1,020E -01	1,010E -01	1,030E -01	1,030E -01	1,030E -01	1,020E -01	1,030E -01	1,030E -01
13	1,010E -01	1,000E -01	1,030E -01	1,020E -01	1,010E -01	1,010E -01	1,020E -01	1,020E -01
14	1,020E -01	1,020E -01	1,030E -01	1,020E -01	1,020E -01	1,010E -01	1,010E -01	1,030E -01
Statistics								
Min	1,010E -01	1,000E -01	1,020E -01	1,020E -01	1,010E -01	1,010E -01	1,010E -01	1,020E -01
Max	1,050E -01	1,020E -01	1,030E -01	1,030E -01	1,030E -01	1,020E -01	1,030E -01	1,030E -01
Mean	1,025E -01	1,013E -01	1,027E -01	1,025E -01	1,020E -01	1,015E -01	1,023E -01	1,027E -01
Sigma	1,732E -03	9,574E -04	5,000E -04	5,774E -04	8,165E -04	5,773E -04	9,574E -04	5,000E -04

Test Step	168 hours
Serial #	
10 Ref.	1,000E -01
11	1,040E -01
12	1,040E -01
13	1,020E -01
14	1,020E -01
Statistics	
Min	1,020E -01
Max	1,040E -01
Mean	1,030E -01
Sigma	1,155E -03



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage Low Level Pin I/O2: VoL I/O2  
IOL=8mA

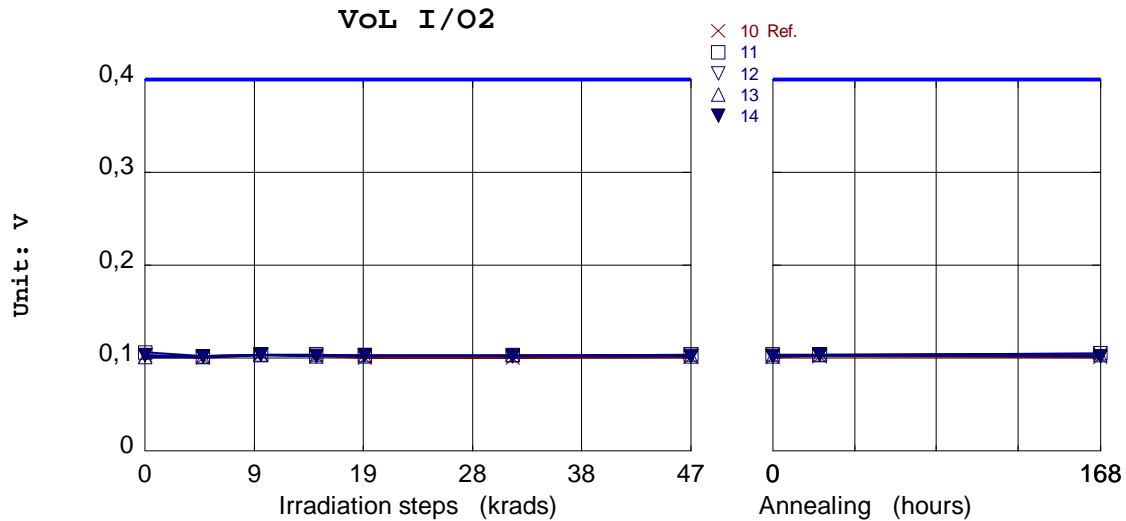
Unit= V

Spec limit max: 40,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,030E -01	1,000E -01	1,040E -01	1,020E -01	1,000E -01	1,000E -01	1,010E -01	1,020E -01
11	1,060E -01	1,020E -01	1,040E -01	1,040E -01	1,030E -01	1,030E -01	1,040E -01	1,040E -01
12	1,030E -01	1,020E -01	1,040E -01	1,040E -01	1,030E -01	1,030E -01	1,040E -01	1,040E -01
13	1,010E -01	1,010E -01	1,030E -01	1,020E -01	1,020E -01	1,030E -01	1,020E -01	1,030E -01
14	1,030E -01	1,020E -01	1,040E -01	1,020E -01	1,030E -01	1,020E -01	1,020E -01	1,040E -01
Statistics								
Min	1,010E -01	1,010E -01	1,030E -01	1,020E -01	1,020E -01	1,020E -01	1,020E -01	1,030E -01
Max	1,060E -01	1,020E -01	1,040E -01	1,040E -01	1,030E -01	1,030E -01	1,040E -01	1,040E -01
Mean	1,033E -01	1,017E -01	1,038E -01	1,030E -01	1,027E -01	1,027E -01	1,030E -01	1,038E -01
Sigma	2,062E -03	5,000E -04	5,000E -04	1,155E -03	5,000E -04	5,000E -04	1,155E -03	5,000E -04

Test Step	168 hours
Serial #	
10 Ref.	1,010E -01
11	1,050E -01
12	1,050E -01
13	1,030E -01
14	1,020E -01
Statistics	
Min	1,020E -01
Max	1,050E -01
Mean	1,037E -01
Sigma	1,500E -03



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage Low Level Pin I/O1: VoL I/O1  
IOL=8mA

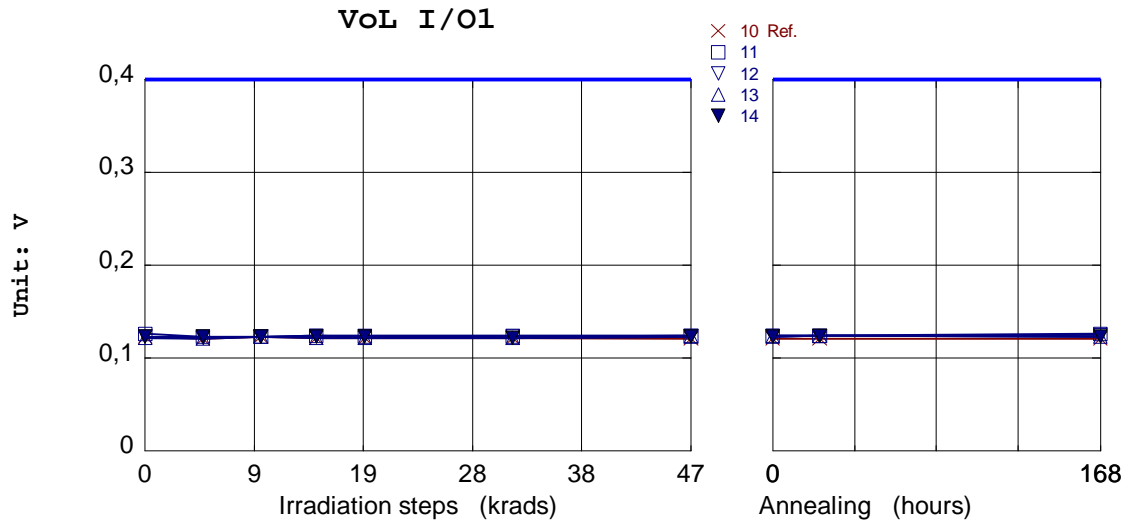
Unit= V

Spec limit max: 40,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,230E -01	1,210E -01	1,230E -01	1,220E -01	1,220E -01	1,220E -01	1,210E -01	1,210E -01
11	1,260E -01	1,230E -01	1,230E -01	1,240E -01	1,230E -01	1,230E -01	1,240E -01	1,240E -01
12	1,230E -01	1,220E -01	1,230E -01	1,240E -01	1,240E -01	1,240E -01	1,240E -01	1,240E -01
13	1,220E -01	1,210E -01	1,230E -01	1,220E -01	1,220E -01	1,220E -01	1,230E -01	1,240E -01
14	1,230E -01	1,230E -01	1,230E -01	1,230E -01	1,230E -01	1,220E -01	1,230E -01	1,240E -01
Statistics								
Min	1,220E -01	1,210E -01	1,230E -01	1,220E -01	1,220E -01	1,220E -01	1,230E -01	1,240E -01
Max	1,260E -01	1,230E -01	1,230E -01	1,240E -01	1,240E -01	1,240E -01	1,240E -01	1,240E -01
Mean	1,235E -01	1,223E -01	1,230E -01	1,233E -01	1,230E -01	1,228E -01	1,235E -01	1,240E -01
Sigma	1,732E -03	9,574E -04	4,753E -11	9,574E -04	8,165E -04	9,574E -04	5,773E -04	5,821E -11

Test Step	168 hours
Serial #	
10 Ref.	1,210E -01
11	1,260E -01
12	1,250E -01
13	1,230E -01
14	1,230E -01
Statistics	
Min	1,230E -01
Max	1,260E -01
Mean	1,243E -01
Sigma	1,500E -03





HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage Low Level Pin I/O0: VoL I/O0  
IOL=8mA

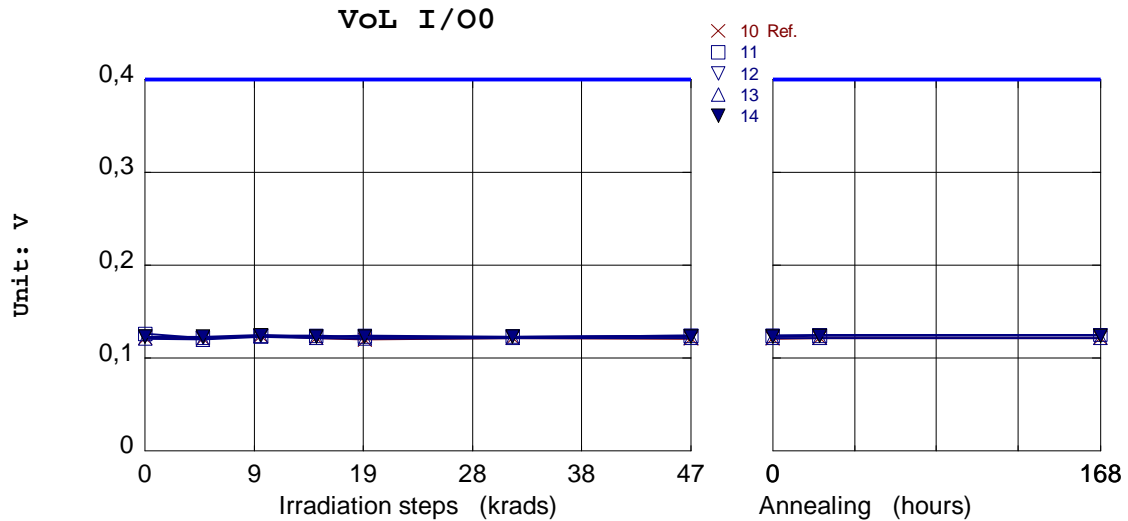
Unit= V

Spec limit max: 40,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,220E -01	1,210E -01	1,240E -01	1,220E -01	1,200E -01	1,220E -01	1,210E -01	1,220E -01
11	1,260E -01	1,220E -01	1,240E -01	1,240E -01	1,230E -01	1,230E -01	1,240E -01	1,240E -01
12	1,230E -01	1,220E -01	1,240E -01	1,230E -01	1,240E -01	1,230E -01	1,240E -01	1,250E -01
13	1,210E -01	1,200E -01	1,230E -01	1,220E -01	1,210E -01	1,220E -01	1,220E -01	1,220E -01
14	1,230E -01	1,230E -01	1,250E -01	1,230E -01	1,230E -01	1,230E -01	1,230E -01	1,240E -01
Statistics								
Min	1,210E -01	1,200E -01	1,230E -01	1,220E -01	1,210E -01	1,220E -01	1,220E -01	1,220E -01
Max	1,260E -01	1,230E -01	1,250E -01	1,240E -01	1,240E -01	1,230E -01	1,240E -01	1,250E -01
Mean	1,233E -01	1,218E -01	1,240E -01	1,230E -01	1,228E -01	1,228E -01	1,233E -01	1,237E -01
Sigma	2,062E -03	1,258E -03	8,165E -04	8,165E -04	1,258E -03	5,000E -04	9,574E -04	1,258E -03

Test Step	168 hours
Serial #	
10 Ref.	1,220E -01
11	1,250E -01
12	1,250E -01
13	1,220E -01
14	1,240E -01
Statistics	
Min	1,220E -01
Max	1,250E -01
Mean	1,240E -01
Sigma	1,414E -03



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : Output Voltage High Level Pin I/O7: VoH I/O7  
IOH=-4mA**

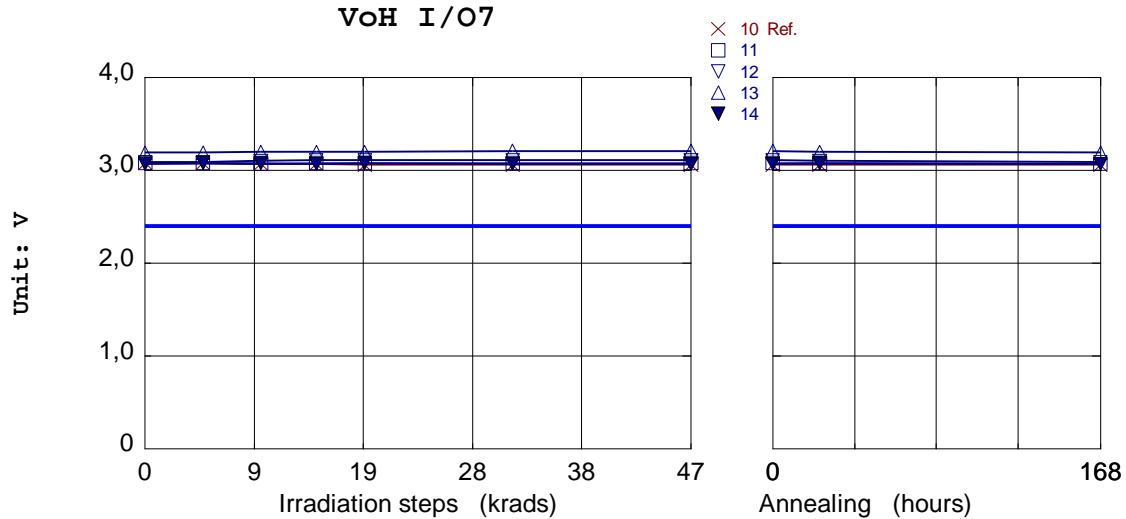
Unit= V

Spec limit min: 240,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,080E +00	3,080E +00	3,070E +00	3,070E +00	3,060E +00	3,060E +00	3,060E +00	3,060E +00
11	3,080E +00	3,080E +00	3,070E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00
12	3,090E +00	3,090E +00	3,100E +00	3,110E +00	3,110E +00	3,110E +00	3,110E +00	3,100E +00
13	3,190E +00	3,190E +00	3,200E +00	3,200E +00	3,200E +00	3,210E +00	3,210E +00	3,200E +00
14	3,070E +00	3,080E +00	3,080E +00	3,070E +00	3,080E +00	3,070E +00	3,070E +00	3,080E +00
Statistics								
Min	3,070E +00	3,080E +00	3,070E +00	3,070E +00	3,080E +00	3,070E +00	3,070E +00	3,080E +00
Max	3,190E +00	3,190E +00	3,200E +00	3,200E +00	3,200E +00	3,210E +00	3,210E +00	3,200E +00
Mean	3,107E +00	3,110E +00	3,112E +00	3,115E +00	3,117E +00	3,117E +00	3,117E +00	3,115E +00
Sigma	5,560E -02	5,354E -02	5,965E -02	5,916E -02	5,679E -02	6,397E -02	6,397E -02	5,745E -02

Test Step	168 hours
Serial #	
10 Ref.	3,060E +00
11	3,070E +00
12	3,090E +00
13	3,190E +00
14	3,070E +00
Statistics	
Min	3,070E +00
Max	3,190E +00
Mean	3,105E +00
Sigma	5,745E -02



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage High Level Pin I/O6: VoH I/O6  
IOH=-4mA

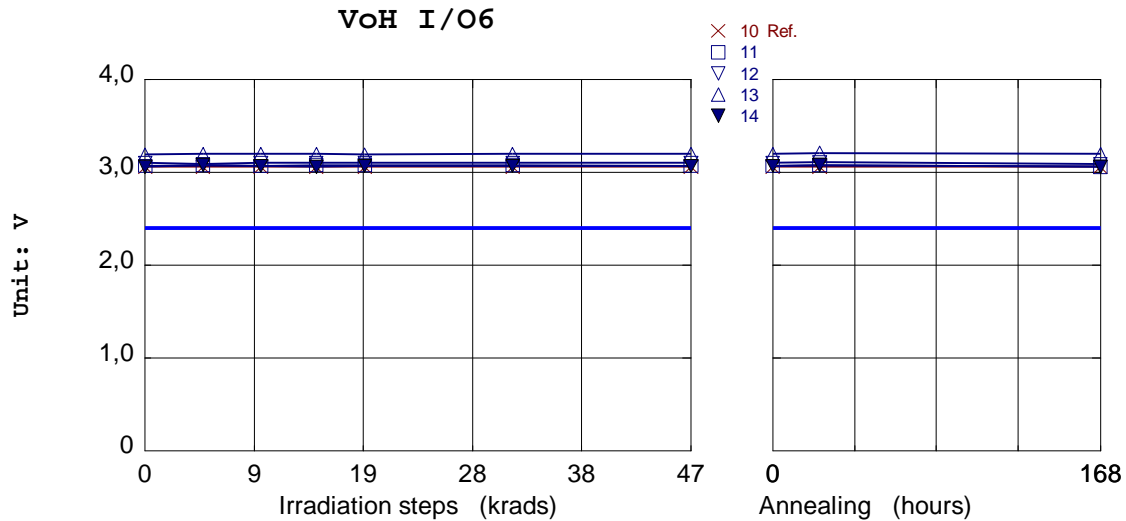
Unit= V

Spec limit min: 240,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,060E +00	3,060E +00	3,060E +00	3,060E +00	3,060E +00	3,060E +00	3,060E +00	3,060E +00
11	3,070E +00	3,080E +00	3,070E +00	3,080E +00	3,080E +00	3,080E +00	3,070E +00	3,080E +00
12	3,100E +00	3,090E +00	3,100E +00	3,100E +00	3,100E +00	3,100E +00	3,100E +00	3,110E +00
13	3,190E +00	3,200E +00	3,200E +00	3,200E +00	3,190E +00	3,200E +00	3,200E +00	3,210E +00
14	3,060E +00	3,080E +00	3,070E +00	3,060E +00	3,070E +00	3,070E +00	3,070E +00	3,080E +00
Statistics								
Min	3,060E +00	3,080E +00	3,070E +00	3,060E +00	3,070E +00	3,070E +00	3,070E +00	3,080E +00
Max	3,190E +00	3,200E +00	3,200E +00	3,200E +00	3,190E +00	3,200E +00	3,200E +00	3,210E +00
Mean	3,105E +00	3,112E +00	3,110E +00	3,110E +00	3,110E +00	3,112E +00	3,110E +00	3,120E +00
Sigma	5,916E -02	5,852E -02	6,164E -02	6,218E -02	5,477E -02	5,965E -02	6,164E -02	6,164E -02

Test Step	168 hours
Serial #	
10 Ref.	3,060E +00
11	3,060E +00
12	3,090E +00
13	3,200E +00
14	3,060E +00
Statistics	
Min	3,060E +00
Max	3,200E +00
Mean	3,102E +00
Sigma	6,652E -02



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : Output Voltage High Level Pin I/O5: VoH I/O5  
IOH=-4mA**

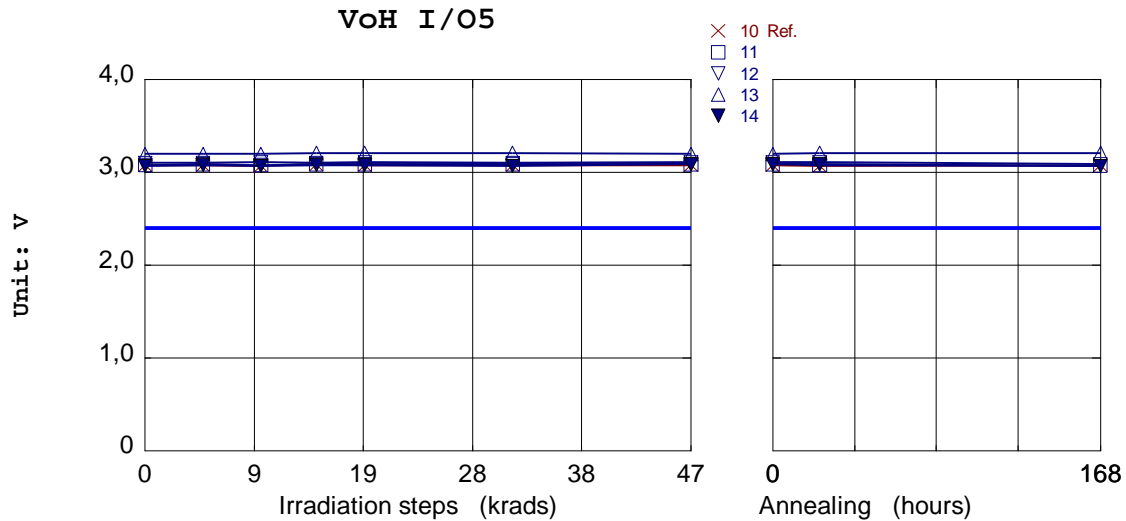
Unit= V

Spec limit min: 240,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,080E +00	3,080E +00	3,070E +00	3,090E +00	3,080E +00	3,080E +00	3,080E +00	3,070E +00
11	3,080E +00	3,090E +00	3,080E +00	3,090E +00	3,090E +00	3,090E +00	3,090E +00	3,080E +00
12	3,100E +00	3,100E +00	3,110E +00	3,100E +00	3,110E +00	3,100E +00	3,110E +00	3,110E +00
13	3,200E +00	3,200E +00	3,200E +00	3,210E +00	3,210E +00	3,210E +00	3,200E +00	3,210E +00
14	3,070E +00	3,080E +00	3,070E +00	3,080E +00	3,080E +00	3,070E +00	3,090E +00	3,090E +00
Statistics								
Min	3,070E +00	3,080E +00	3,070E +00	3,080E +00	3,080E +00	3,070E +00	3,090E +00	3,080E +00
Max	3,200E +00	3,200E +00	3,200E +00	3,210E +00	3,210E +00	3,210E +00	3,200E +00	3,210E +00
Mean	3,112E +00	3,117E +00	3,115E +00	3,120E +00	3,122E +00	3,117E +00	3,122E +00	3,122E +00
Sigma	5,965E -02	5,560E -02	5,916E -02	6,055E -02	5,965E -02	6,292E -02	5,252E -02	5,965E -02

Test Step	168 hours
Serial #	
10 Ref.	3,080E +00
11	3,070E +00
12	3,090E +00
13	3,210E +00
14	3,070E +00
Statistics	
Min	3,070E +00
Max	3,210E +00
Mean	3,110E +00
Sigma	6,733E -02



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage High Level Pin I/O4: VoH I/O4  
IOH=-4mA

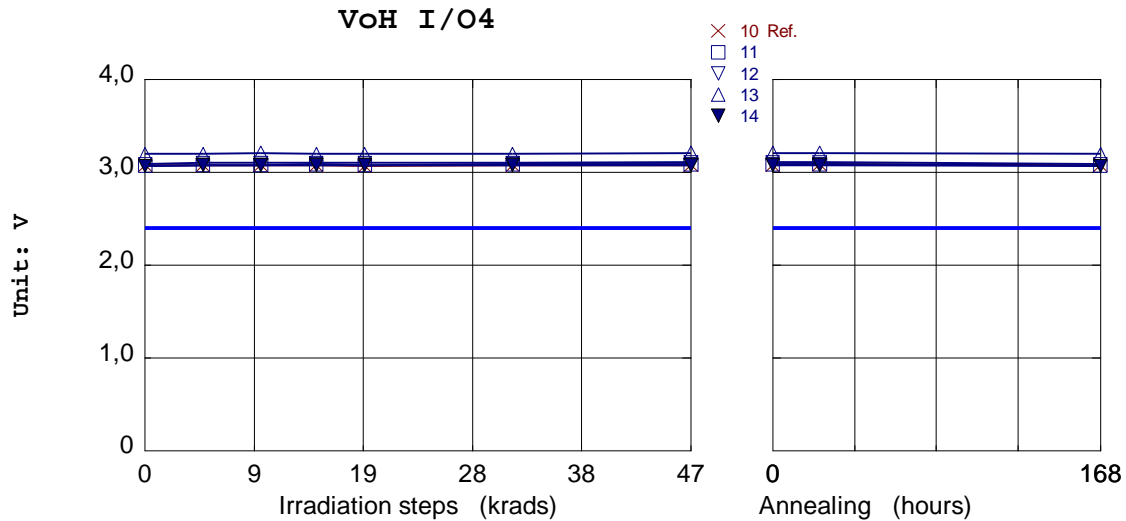
Unit= V

Spec limit min: 240,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,080E +00	3,080E +00	3,080E +00	3,080E +00	3,070E +00	3,080E +00	3,080E +00	3,090E +00
11	3,070E +00	3,080E +00	3,080E +00	3,090E +00	3,080E +00	3,090E +00	3,090E +00	3,090E +00
12	3,090E +00	3,100E +00	3,100E +00	3,100E +00	3,100E +00	3,100E +00	3,110E +00	3,110E +00
13	3,200E +00	3,200E +00	3,210E +00	3,200E +00	3,200E +00	3,200E +00	3,210E +00	3,210E +00
14	3,070E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00
Statistics								
Min	3,070E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00	3,080E +00
Max	3,200E +00	3,200E +00	3,210E +00	3,200E +00	3,200E +00	3,200E +00	3,210E +00	3,210E +00
Mean	3,107E +00	3,115E +00	3,117E +00	3,117E +00	3,115E +00	3,117E +00	3,122E +00	3,122E +00
Sigma	6,238E -02	5,745E -02	6,238E -02	5,560E -02	5,745E -02	5,560E -02	5,965E -02	5,965E -02

Test Step	168 hours
Serial #	
10 Ref.	3,080E +00
11	3,070E +00
12	3,090E +00
13	3,200E +00
14	3,070E +00
Statistics	
Min	3,070E +00
Max	3,200E +00
Mean	3,107E +00
Sigma	6,238E -02



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage High Level Pin I/O3: VoH I/O3  
IOH=-4mA

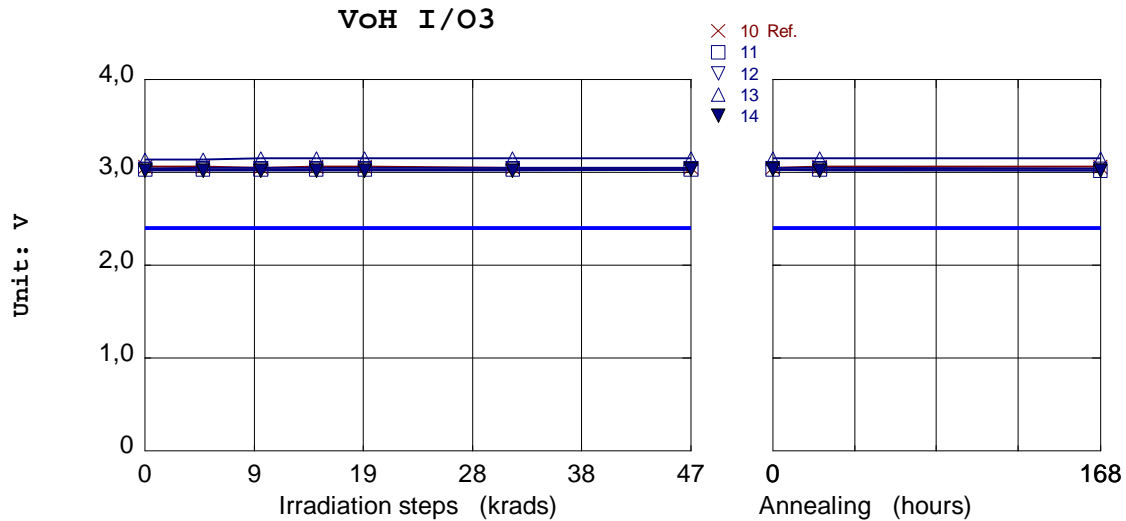
Unit= V

Spec limit min: 240,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,060E +00	3,060E +00	3,050E +00	3,060E +00	3,060E +00	3,050E +00	3,050E +00	3,060E +00
11	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00
12	3,040E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00
13	3,140E +00	3,140E +00	3,150E +00	3,150E +00	3,150E +00	3,150E +00	3,150E +00	3,150E +00
14	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,030E +00	3,020E +00
Statistics								
Min	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,030E +00	3,020E +00
Max	3,140E +00	3,140E +00	3,150E +00	3,150E +00	3,150E +00	3,150E +00	3,150E +00	3,150E +00
Mean	3,058E +00	3,060E +00	3,063E +00	3,063E +00	3,063E +00	3,063E +00	3,065E +00	3,063E +00
Sigma	5,560E -02	5,477E -02	5,965E -02	5,965E -02	5,965E -02	5,965E -02	5,745E -02	5,965E -02

Test Step	168 hours
Serial #	
10 Ref.	3,060E +00
11	3,020E +00
12	3,040E +00
13	3,150E +00
14	3,020E +00
Statistics	
Min	3,020E +00
Max	3,150E +00
Mean	3,058E +00
Sigma	6,238E -02



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage High Level Pin I/O2: VoH I/O2  
IOH=-4mA

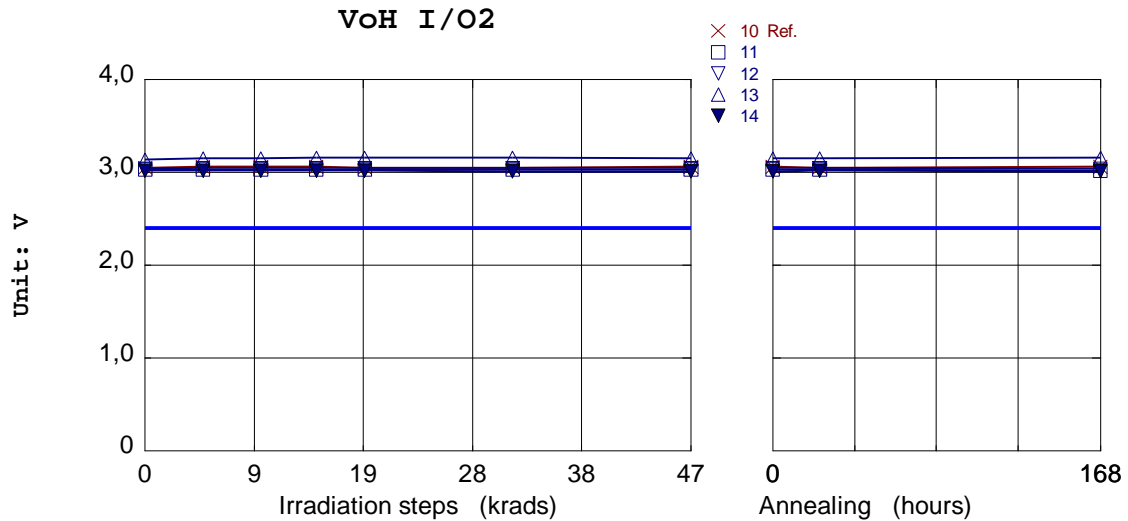
Unit= V

Spec limit min: 240,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,050E +00	3,060E +00	3,060E +00	3,060E +00	3,050E +00	3,050E +00	3,060E +00	3,050E +00
11	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00
12	3,040E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00
13	3,140E +00	3,150E +00	3,150E +00	3,160E +00	3,160E +00	3,160E +00	3,150E +00	3,150E +00
14	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,010E +00	3,010E +00	3,020E +00
Statistics								
Min	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,010E +00	3,010E +00	3,020E +00
Max	3,140E +00	3,150E +00	3,150E +00	3,160E +00	3,160E +00	3,160E +00	3,150E +00	3,150E +00
Mean	3,058E +00	3,063E +00	3,063E +00	3,065E +00	3,065E +00	3,063E +00	3,060E +00	3,063E +00
Sigma	5,560E -02	5,965E -02	5,965E -02	6,455E -02	6,455E -02	6,702E -02	6,218E -02	5,965E -02

Test Step	168 hours
Serial #	
10 Ref.	3,060E +00
11	3,020E +00
12	3,040E +00
13	3,160E +00
14	3,010E +00
Statistics	
Min	3,010E +00
Max	3,160E +00
Mean	3,058E +00
Sigma	6,946E -02



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage High Level Pin I/O1: VoH I/O1  
IOH=-4mA

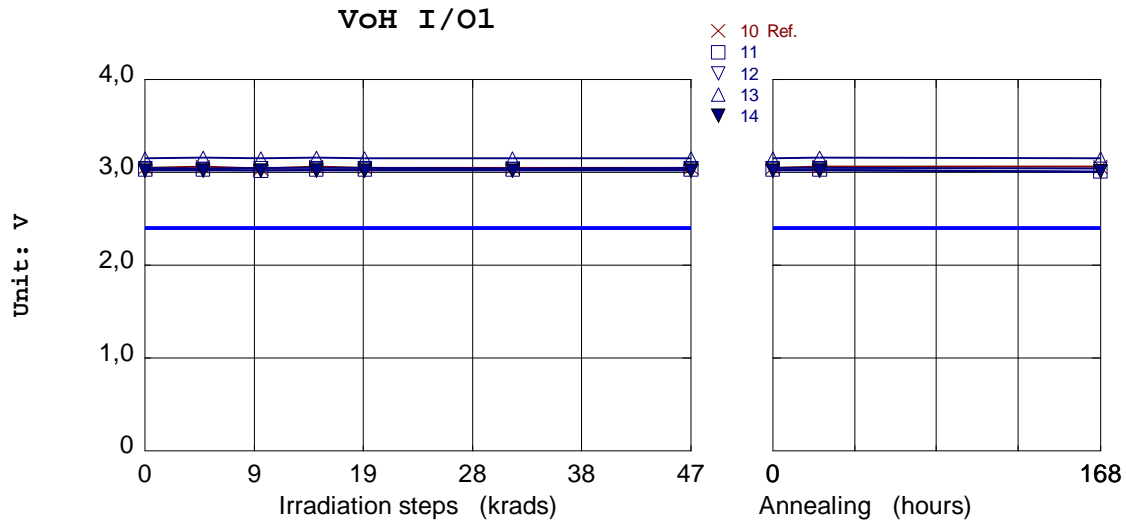
Unit= V

Spec limit min: 240,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,050E +00	3,060E +00	3,040E +00	3,060E +00	3,050E +00	3,050E +00	3,050E +00	3,060E +00
11	3,030E +00	3,030E +00	3,020E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00
12	3,050E +00	3,040E +00	3,050E +00	3,050E +00	3,050E +00	3,040E +00	3,050E +00	3,050E +00
13	3,150E +00	3,160E +00	3,150E +00	3,160E +00	3,150E +00	3,150E +00	3,150E +00	3,160E +00
14	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00
Statistics								
Min	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00	3,020E +00
Max	3,150E +00	3,160E +00	3,150E +00	3,160E +00	3,150E +00	3,150E +00	3,150E +00	3,160E +00
Mean	3,063E +00	3,063E +00	3,060E +00	3,065E +00	3,063E +00	3,060E +00	3,063E +00	3,065E +00
Sigma	5,965E -02	6,551E -02	6,164E -02	6,455E -02	5,965E -02	6,055E -02	5,965E -02	6,455E -02

Test Step	168 hours
Serial #	
10 Ref.	3,060E +00
11	3,010E +00
12	3,040E +00
13	3,150E +00
14	3,010E +00
Statistics	
Min	3,010E +00
Max	3,150E +00
Mean	3,053E +00
Sigma	6,652E -02





HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Output Voltage High Level Pin I/O0: VoH I/O0  
IOH=-4mA

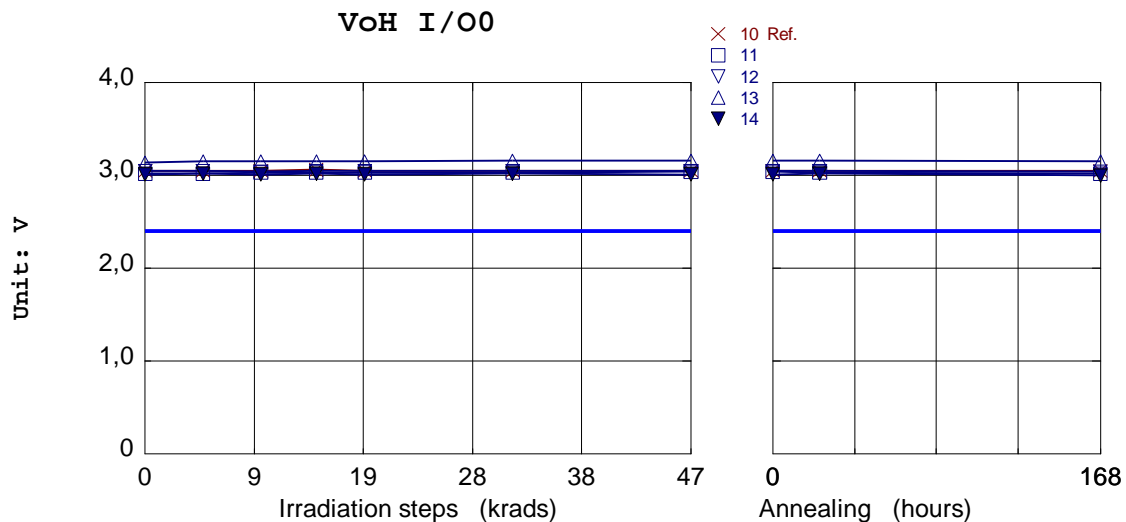
Unit= V

Spec limit min: 240,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,050E +00	3,050E +00	3,050E +00	3,060E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00
11	3,020E +00	3,020E +00	3,030E +00	3,030E +00	3,030E +00	3,030E +00	3,040E +00	3,030E +00
12	3,050E +00	3,050E +00	3,040E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00	3,050E +00
13	3,140E +00	3,150E +00	3,150E +00	3,150E +00	3,150E +00	3,160E +00	3,160E +00	3,160E +00
14	3,010E +00	3,020E +00	3,010E +00	3,020E +00	3,010E +00	3,020E +00	3,010E +00	3,020E +00
Statistics								
Min	3,010E +00	3,020E +00	3,010E +00	3,020E +00	3,010E +00	3,020E +00	3,010E +00	3,020E +00
Max	3,140E +00	3,150E +00	3,150E +00	3,150E +00	3,150E +00	3,160E +00	3,160E +00	3,160E +00
Mean	3,055E +00	3,060E +00	3,058E +00	3,063E +00	3,060E +00	3,065E +00	3,065E +00	3,065E +00
Sigma	5,916E -02	6,164E -02	6,292E -02	5,965E -02	6,218E -02	6,455E -02	6,557E -02	6,455E -02

Test Step	168 hours
Serial #	
10 Ref.	3,050E +00
11	3,020E +00
12	3,040E +00
13	3,150E +00
14	3,000E +00
Statistics	
Min	3,000E +00
Max	3,150E +00
Mean	3,053E +00
Sigma	6,702E -02



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : Standby Power Supply Current: ISB\_CMOS  
CMOS Input Level**

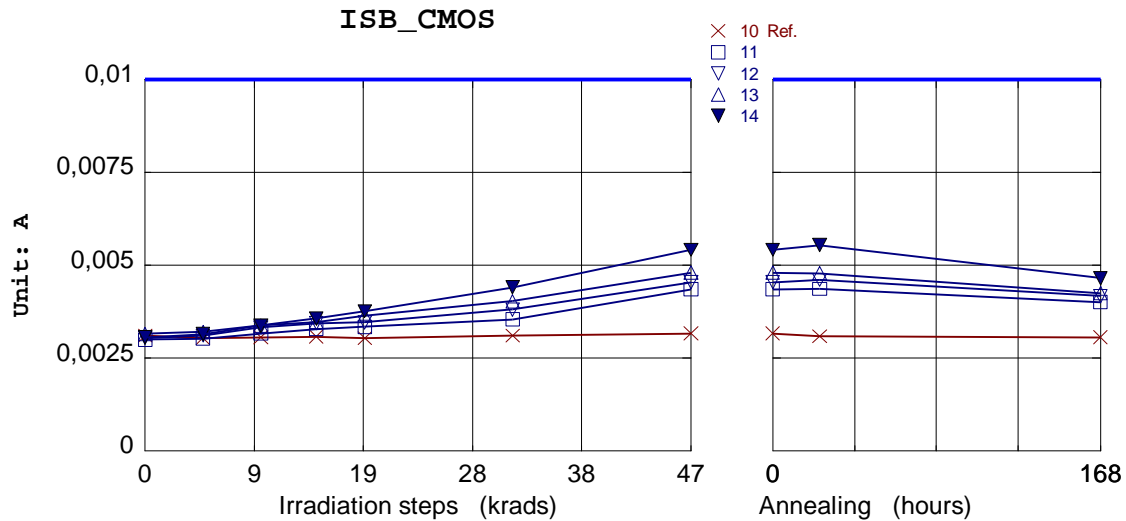
Unit= A

Spec limit max: 10,0E-3

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	3,102E -03	3,050E -03	3,060E -03	3,077E -03	3,039E -03	3,105E -03	3,161E -03	3,086E -03
11	2,995E -03	3,025E -03	3,164E -03	3,288E -03	3,345E -03	3,538E -03	4,349E -03	4,361E -03
12	3,048E -03	3,108E -03	3,329E -03	3,433E -03	3,463E -03	3,810E -03	4,545E -03	4,606E -03
13	3,155E -03	3,216E -03	3,379E -03	3,474E -03	3,646E -03	4,029E -03	4,798E -03	4,782E -03
14	3,057E -03	3,145E -03	3,380E -03	3,565E -03	3,760E -03	4,405E -03	5,419E -03	5,543E -03
Statistics								
Min	2,995E -03	3,025E -03	3,164E -03	3,288E -03	3,345E -03	3,538E -03	4,349E -03	4,361E -03
Max	3,155E -03	3,216E -03	3,380E -03	3,565E -03	3,760E -03	4,405E -03	5,419E -03	5,543E -03
Mean	3,064E -03	3,123E -03	3,313E -03	3,440E -03	3,554E -03	3,945E -03	4,778E -03	4,823E -03
Sigma	6,670E -05	7,950E -05	1,021E -04	1,154E -04	1,852E -04	3,663E -04	4,653E -04	5,101E -04

Test Step	168 hours
Serial #	
10 Ref.	3,065E -03
11	4,008E -03
12	4,165E -03
13	4,245E -03
14	4,653E -03
Statistics	
Min	4,008E -03
Max	4,653E -03
Mean	4,268E -03
Sigma	2,751E -04



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Operating Power Supply Current: ICC  
CS=VIL, VIN=VIH or VIL, IOU=0mA ; F=80MHz

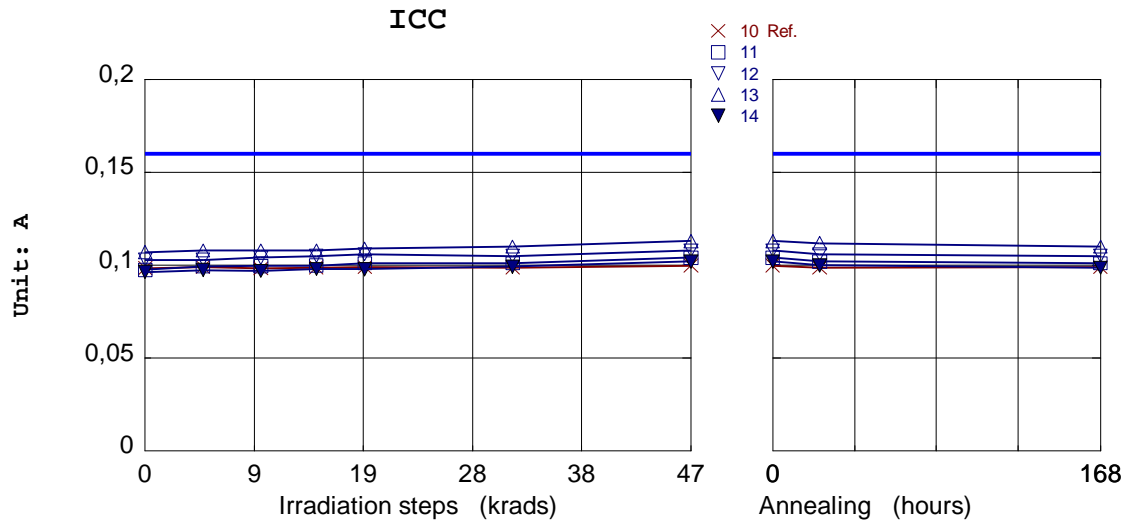
Unit= A

Spec limit max: 16,0E-2

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	9,840E -02	9,890E -02	9,830E -02	9,880E -02	9,900E -02	9,870E -02	9,980E -02	9,860E -02
11	9,760E -02	9,940E -02	9,950E -02	9,980E -02	1,010E -01	1,010E -01	1,040E -01	1,020E -01
12	1,030E -01	1,030E -01	1,040E -01	1,050E -01	1,060E -01	1,050E -01	1,080E -01	1,060E -01
13	1,070E -01	1,080E -01	1,080E -01	1,080E -01	1,090E -01	1,100E -01	1,130E -01	1,120E -01
14	9,640E -02	9,740E -02	9,700E -02	9,800E -02	9,790E -02	9,920E -02	1,020E -01	1,000E -01
Statistics								
Min	9,640E -02	9,740E -02	9,700E -02	9,800E -02	9,790E -02	9,920E -02	1,020E -01	1,000E -01
Max	1,070E -01	1,080E -01	1,080E -01	1,080E -01	1,090E -01	1,100E -01	1,130E -01	1,120E -01
Mean	1,010E -01	1,020E -01	1,021E -01	1,027E -01	1,035E -01	1,038E -01	1,068E -01	1,050E -01
Sigma	4,923E -03	4,652E -03	4,871E -03	4,614E -03	4,970E -03	4,792E -03	4,856E -03	5,292E -03

Test Step	168 hours
Serial #	
10 Ref.	9,900E -02
11	1,010E -01
12	1,050E -01
13	1,100E -01
14	9,860E -02
Statistics	
Min	9,860E -02
Max	1,100E -01
Mean	1,036E -01
Sigma	4,989E -03



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Address Access Time Low to High Level: taaL->H  
F=80Mhz

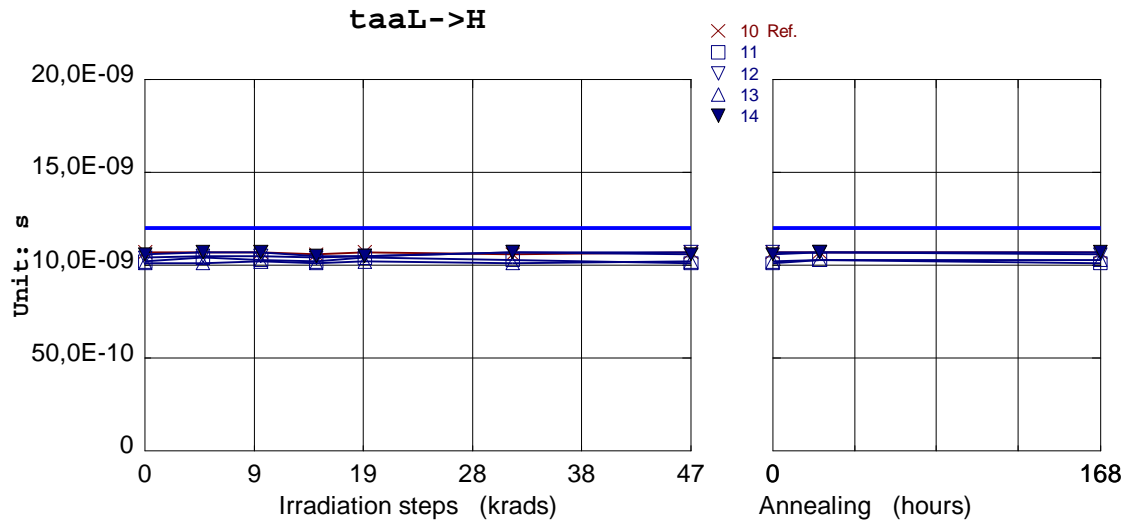
Unit= s

Spec limit max: 12,0E-9

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,070E -08	1,070E -08	1,070E -08	1,060E -08	1,070E -08	1,060E -08	1,070E -08	1,070E -08
11	1,020E -08	1,040E -08	1,030E -08	1,020E -08	1,040E -08	1,030E -08	1,010E -08	1,030E -08
12	1,040E -08	1,050E -08	1,050E -08	1,040E -08	1,050E -08	1,070E -08	1,070E -08	1,070E -08
13	1,010E -08	1,010E -08	1,020E -08	1,010E -08	1,020E -08	1,010E -08	1,020E -08	1,030E -08
14	1,060E -08	1,070E -08	1,070E -08	1,050E -08	1,050E -08	1,070E -08	1,060E -08	1,070E -08
Statistics								
Min	1,010E -08	1,010E -08	1,020E -08	1,010E -08	1,020E -08	1,010E -08	1,010E -08	1,030E -08
Max	1,060E -08	1,070E -08	1,070E -08	1,050E -08	1,050E -08	1,070E -08	1,070E -08	1,070E -08
Mean	1,032E -08	1,042E -08	1,042E -08	1,030E -08	1,040E -08	1,045E -08	1,040E -08	1,050E -08
Sigma	2,217E -10	2,500E -10	2,217E -10	1,826E -10	1,414E -10	3,000E -10	2,944E -10	2,309E -10

Test Step	168 hours
Serial #	
10 Ref.	1,070E -08
11	1,010E -08
12	1,060E -08
13	1,030E -08
14	1,070E -08
Statistics	
Min	1,010E -08
Max	1,070E -08
Mean	1,042E -08
Sigma	2,754E -10



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Address Access Time High to Low Level: taaH->L  
F=80Mhz

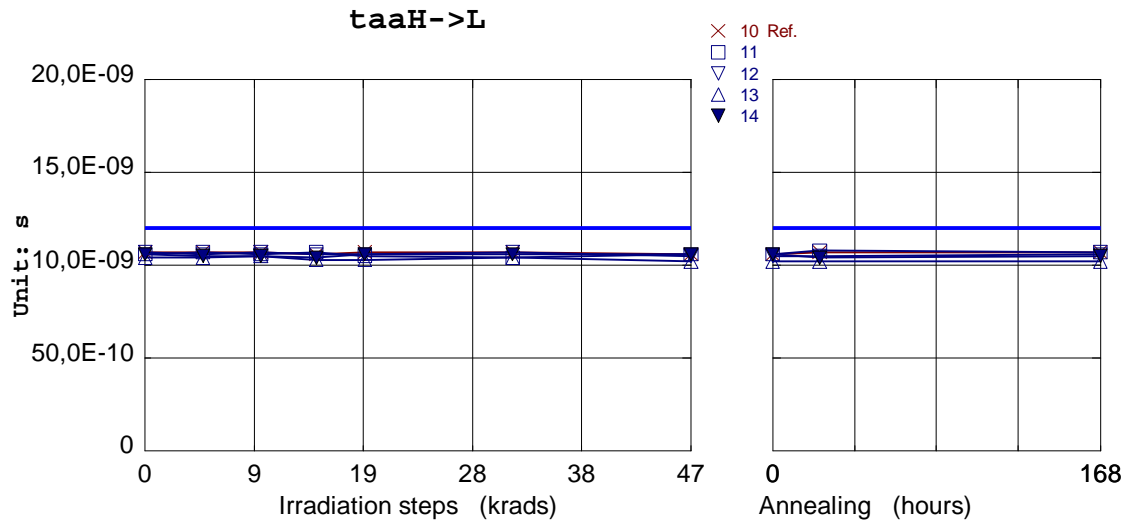
Unit= s

Spec limit max: 12,0E-9

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	1,070E -08	1,070E -08	1,070E -08	1,060E -08	1,070E -08	1,070E -08	1,060E -08	1,070E -08
11	1,060E -08	1,070E -08	1,060E -08	1,070E -08	1,050E -08	1,040E -08	1,060E -08	1,080E -08
12	1,070E -08	1,060E -08	1,070E -08	1,060E -08	1,060E -08	1,070E -08	1,050E -08	1,050E -08
13	1,040E -08	1,040E -08	1,050E -08	1,030E -08	1,030E -08	1,040E -08	1,020E -08	1,020E -08
14	1,060E -08	1,050E -08	1,050E -08	1,040E -08	1,060E -08	1,060E -08	1,060E -08	1,040E -08
Statistics								
Min	1,040E -08	1,040E -08	1,050E -08	1,030E -08	1,030E -08	1,040E -08	1,020E -08	1,020E -08
Max	1,070E -08	1,070E -08	1,070E -08	1,070E -08	1,060E -08	1,070E -08	1,060E -08	1,080E -08
Mean	1,057E -08	1,055E -08	1,057E -08	1,050E -08	1,050E -08	1,052E -08	1,047E -08	1,047E -08
Sigma	1,258E -10	1,291E -10	9,574E -11	1,826E -10	1,414E -10	1,500E -10	1,893E -10	2,500E -10

Test Step	168 hours
Serial #	
10 Ref.	1,070E -08
11	1,070E -08
12	1,060E -08
13	1,020E -08
14	1,050E -08
Statistics	
Min	1,020E -08
Max	1,070E -08
Mean	1,050E -08
Sigma	2,160E -10



HIREX Engineering	Total Dose Test Report			Réf. : HRX/TID/0074
				Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Address Set-up time: tas  
F=80Mhz

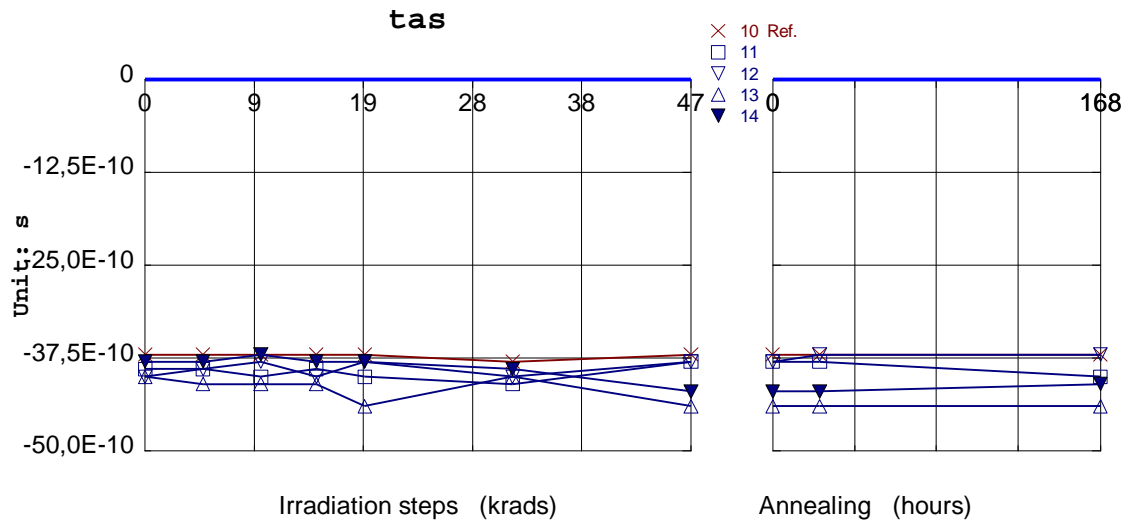
Unit= s

Spec limit min: 000,0E+0

Spec limits are represented in bold lines on the graphic.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	-3,700E -09	-3,700E -09	-3,700E -09	-3,700E -09	-3,700E -09	-3,800E -09	-3,700E -09	-3,700E -09
11	-3,900E -09	-3,900E -09	-4,000E -09	-3,900E -09	-4,000E -09	-4,100E -09	-3,800E -09	-3,800E -09
12	-4,000E -09	-3,900E -09	-3,800E -09	-4,000E -09	-3,800E -09	-4,000E -09	-3,800E -09	-3,700E -09
13	-4,000E -09	-4,100E -09	-4,100E -09	-4,100E -09	-4,400E -09	-4,000E -09	-4,400E -09	-4,400E -09
14	-3,800E -09	-3,800E -09	-3,700E -09	-3,800E -09	-3,800E -09	-3,900E -09	-4,200E -09	-4,200E -09
Statistics								
Min	-4,000E -09	-4,100E -09	-4,100E -09	-4,100E -09	-4,400E -09	-4,100E -09	-4,400E -09	-4,400E -09
Max	-3,800E -09	-3,800E -09	-3,700E -09	-3,800E -09	-3,800E -09	-3,900E -09	-3,800E -09	-3,700E -09
Mean	-3,925E -09	-3,925E -09	-3,900E -09	-3,950E -09	-4,000E -09	-4,000E -09	-4,050E -09	-4,025E -09
Sigma	9,574E -11	1,258E -10	1,826E -10	1,291E -10	2,828E -10	8,165E -11	3,000E -10	3,304E -10

Test Step	168 hours
Serial #	
10 Ref.	-3,700E -09
11	-4,000E -09
12	-3,700E -09
13	-4,400E -09
14	-4,100E -09
Statistics	
Min	-4,400E -09
Max	-3,700E -09
Mean	-4,050E -09
Sigma	2,887E -10



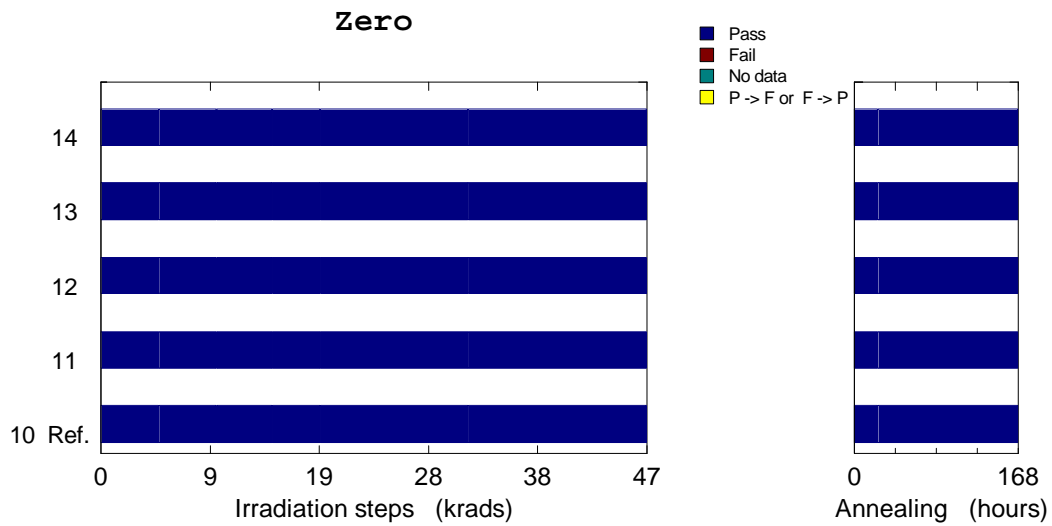
<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Functional Test : Zero Pattern: Zero  
F=80Mhz

No spec limit specified.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	P	P	P	P	P	P	P	P
11	P	P	P	P	P	P	P	P
12	P	P	P	P	P	P	P	P
13	P	P	P	P	P	P	P	P
14	P	P	P	P	P	P	P	P

Test Step	168 hours
Serial #	
10 Ref.	P
11	P
12	P
13	P
14	P



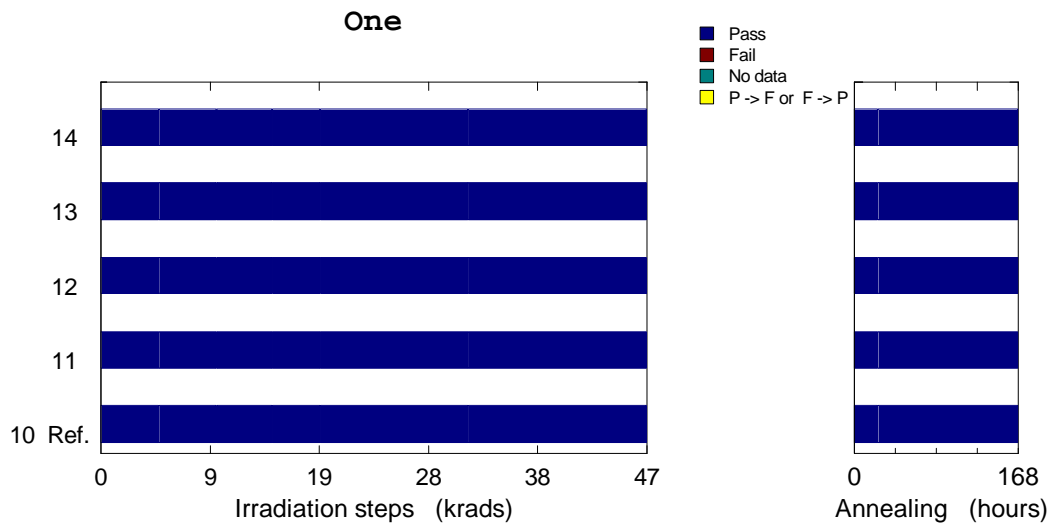
<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

Parameter : Functional Test : One Pattern: One  
F=80Mhz

No spec limit specified.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	P	P	P	P	P	P	P	P
11	P	P	P	P	P	P	P	P
12	P	P	P	P	P	P	P	P
13	P	P	P	P	P	P	P	P
14	P	P	P	P	P	P	P	P

Test Step	168 hours
Serial #	
10 Ref.	P
11	P
12	P
13	P
14	P





<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

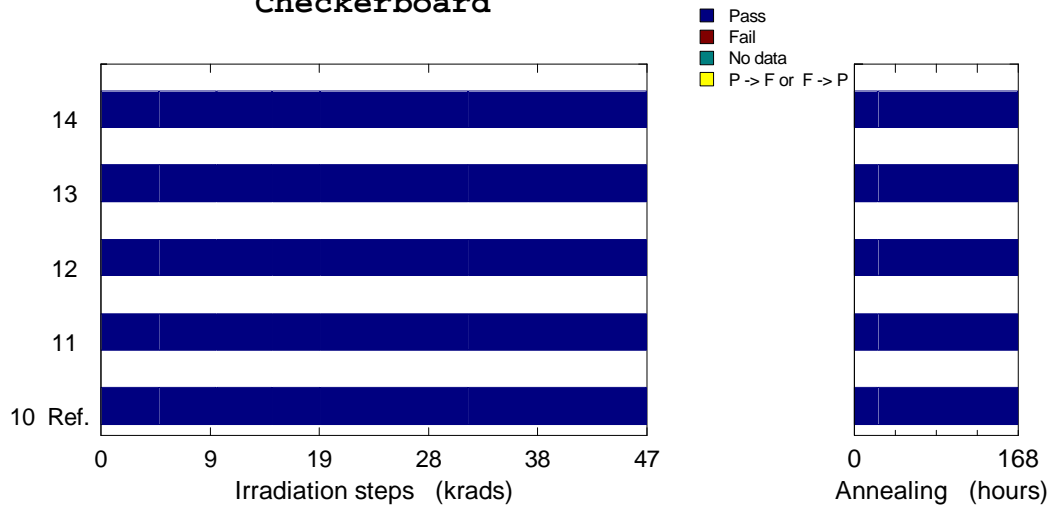
**Parameter : Functional Test : CheckBoard Pattern: Checkerboard**  
**F=80Mhz**

No spec limit specified.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	P	P	P	P	P	P	P	P
11	P	P	P	P	P	P	P	P
12	P	P	P	P	P	P	P	P
13	P	P	P	P	P	P	P	P
14	P	P	P	P	P	P	P	P

Test Step	168 hours
Serial #	
10 Ref.	P
11	P
12	P
13	P
14	P

### Checkerboard



<b>HIREX Engineering</b>	<b>Total Dose Test Report</b>			Réf. : HRX/TID/0074 Issue : 01
Part Type :	K6R4008C1C	Manufacturer :	Samsung	

**Parameter : Functional Test : Complementary CheckBoard Pattern: \*Checkerboard  
F=80Mhz**

No spec limit specified.

Test Step	Initial	5 krad	10 krad	14,8 krad	19 krad	31,8 krad	47,2 krad	24 hours
Serial #								
10 Ref.	P	P	P	P	P	P	P	P
11	P	P	P	P	P	P	P	P
12	P	P	P	P	P	P	P	P
13	P	P	P	P	P	P	P	P
14	P	P	P	P	P	P	P	P

Test Step	168 hours
Serial #	
10 Ref.	P
11	P
12	P
13	P
14	P

**\*Checkerboard**

