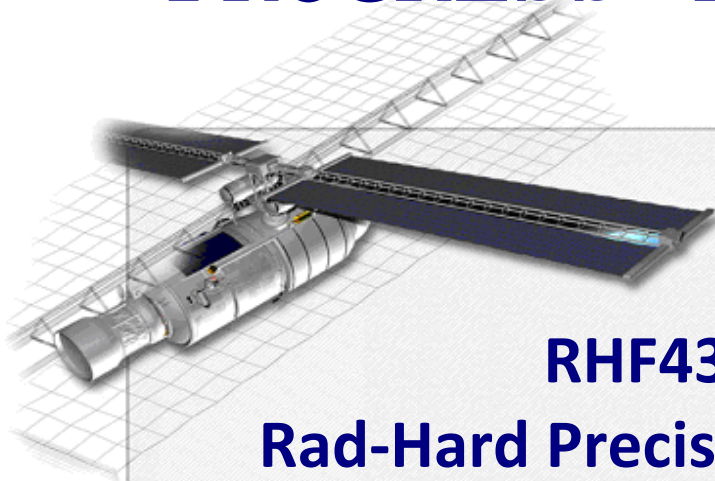




TOTAL IONIZING DOSE PROGRESS TEST REPORT



RHF43BK-01V Rad-Hard Precision Single Opamp DC1403A From STMicroelectronics

TRAD/TE/RHF43BK-01V/1403A/ESA/MV/1410		Labège, May 22 nd , 2015
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Revision: 0	Creation of the document	
Revision: 1	Addition of table of test parameters	
To: ESA Mr Christian POIVEY	Project/Program: Ref:	

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1. INTRODUCTION

This progress report describes the testing and characterization of the **RHF43BK-01V** manufactured by **STMicroelectronics**. Testing began on February 09th, 2015 and is expected to end on March 31th, 2015.

2. PART INFORMATION

Identification

Part designation	RHF43-01V
Manufacturer	STMicroelectronics
Part function	Rad-Hard Precision Single Opamp

Procurement information

Package	FP-8
Date Code	1403A
LOT ID No	33339001ZQ / 33339001ZZ
Number of tested parts	12 irradiated samples (Biased OFF) + 1 reference sample from an other lot

3. COMMENTS

The irradiation test on **12 RHF43BK-01V**, a **Rad-Hard Precision Single Opamp** from **STMicroelectronics** is using gamma rays from Cobalt 60 source, at low dose rate (210 rad(Si)/h).

For an easier result visualisation, measurements and graphs have been separated per lot.

The black curve with no drift is the DUT reference (not irradiated).

4. TEST PARAMETERS

Parameters	Symbols	Test conditions
Ta=25°C, load to Vcc/2 unless otherwise specified		
Input Offset Voltage	Vio1	Vcc=+16V; Vicm=Vcc/2
	Vio2	Vcc=+3V; Vicm=Vcc/2
Positive Input Bias Current	Iib+1	Vcc=+16V; Vicm=Vcc/2
	Iib+2	Vcc=+4V; Vicm=Vcc/2
Negative Input Bias Current	Iib-1	Vcc=+16V; Vicm=Vcc/2
	Iib-2	Vcc=+4V; Vicm=Vcc/2
Input Offset Current	Iio1	Vcc=+16V; Vicm=Vcc/2
	Iio2	Vcc=+4V; Vicm=Vcc/2
Voltage Gain	AVD1	Vcc=+16V; RL=1kΩ; 0.5V<Vout<15.5V; Vicm=Vcc/2
	AVD2	Vcc=+3V; RL=1kΩ; 0.5V<Vout<2.5V; Vicm=Vcc/2
Power Supply Current	Icc1	Vcc=+16V; no load
	Icc2	Vcc=+3V; no load
Common Mode Rejection Ratio	CMR1	Vcc=+16V; 0V<Vicm<16V
	CMR2	Vcc=+3V; 0V<Vicm<3V
High Level Output Voltage	VOH1	Vcc=+16V; RL=1kΩ
	VOH2	Vcc=+16V; RL=10kΩ
	VOH3	Vcc=+3V; RL=1kΩ
	VOH4	Vcc=+3V; RL=10kΩ
Low Level Output Voltage	VOL1	Vcc=+16V; RL=1kΩ
	VOL2	Vcc=+16V; RL=10kΩ
	VOL3	Vcc=+3V; RL=1kΩ
	VOL4	Vcc=+3V; RL=10kΩ
Slew Rate	SR+1	Vcc=+16V; RL=1kΩ
	SR-1	Vcc=+16V; RL=1kΩ
	SR+2	Vcc=+3V; RL=1kΩ
	SR-2	Vcc=+3V; RL=1kΩ

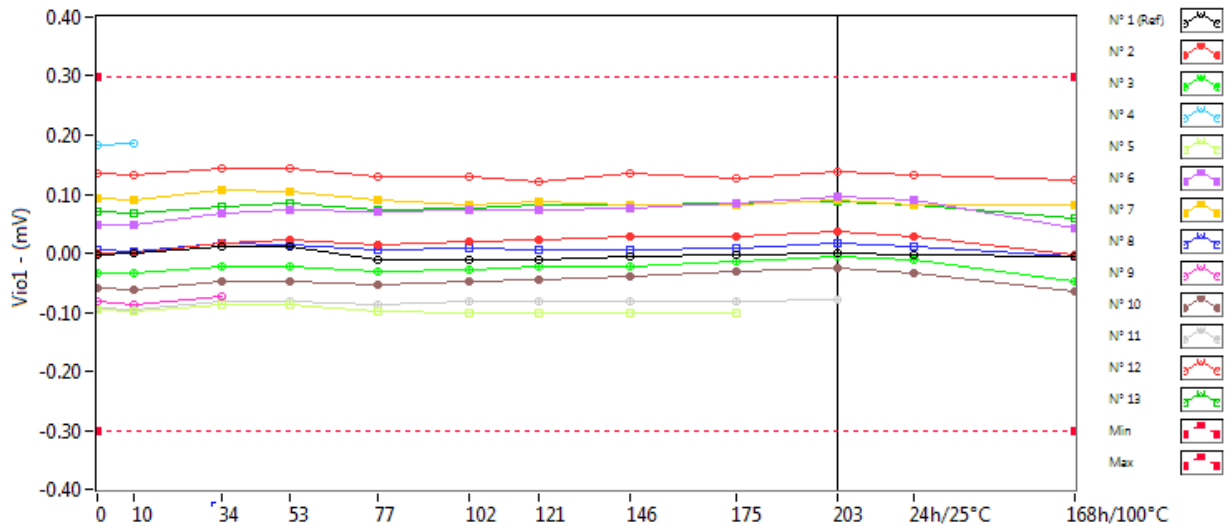
5. APPENDIX 1 MEASURED PARAMETERS

Contents :

1 Vio1	.....	A-2
2 Vio2	.....	A-3
3 lb+1	.....	A-4
4 lb+2	.....	A-5
5 lb-1	.....	A-6
6 lb-2	.....	A-7
7 lio1	.....	A-8
8 lio2	.....	A-9
9 AVD1	.....	A-10
10 AVD2	.....	A-11
11 lcc1	.....	A-12
12 lcc2	.....	A-13
13 CMR1	.....	A-14
14 CMR2	.....	A-15
15 VOH1	.....	A-16
16 VOH2	.....	A-17
17 VOH3	.....	A-18
18 VOH4	.....	A-19
19 VOL1	.....	A-20
20 VOL2	.....	A-21
21 VOL3	.....	A-22
22 VOL4	.....	A-23
23 SR+1	.....	A-24
24 SR-1	.....	A-25
25 SR+2	.....	A-26
26 SR-2	.....	A-27

1. Vio1

Ta=25°C; load to Vcc/2; Vcc=+16V; Vicm=Vcc/2

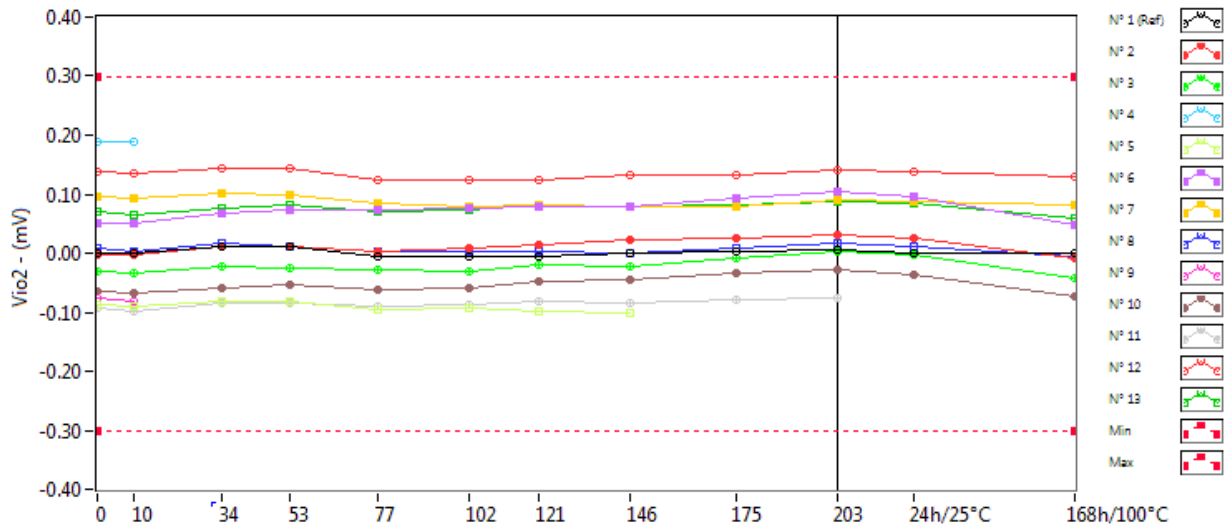


Vio1 . (mV) Min = -0.3 Max = 0.3

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	-0.002	-0.001	0.010	0.010	-0.011	-0.010	-0.012	-0.006	-0.004	0.000	-0.003	-0.005
N° 2	0.000	0.001	0.018	0.023	0.013	0.019	0.023	0.029	0.028	0.036	0.029	-0.004
N° 3	-0.034	-0.034	-0.022	-0.023	-0.030	-0.029	-0.022	-0.023	-0.015	-0.006	-0.010	-0.047
N° 4	0.182	0.186	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	-0.097	-0.098	-0.088	-0.088	-0.099	-0.101	-0.102	-0.101	-0.101	Not Measurable	Not Measurable	Not Measurable
N° 6	0.047	0.047	0.068	0.072	0.071	0.072	0.072	0.075	0.084	0.096	0.089	0.043
N° 7	0.093	0.091	0.106	0.103	0.089	0.083	0.087	0.082	0.081	0.089	0.083	0.081
N° 8	0.006	0.002	0.017	0.015	0.005	0.009	0.006	0.005	0.009	0.017	0.010	-0.006
N° 9	-0.081	-0.086	-0.073	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	-0.059	-0.063	-0.048	-0.047	-0.054	-0.048	-0.044	-0.039	-0.031	-0.025	-0.034	-0.065
N° 11	-0.093	-0.097	-0.081	-0.082	-0.087	-0.081	-0.081	-0.082	-0.082	-0.079	Not Measurable	Not Measurable
N° 12	0.134	0.131	0.145	0.145	0.130	0.129	0.122	0.135	0.128	0.137	0.132	0.125
N° 13	0.070	0.067	0.080	0.084	0.074	0.076	0.082	0.081	0.085	0.087	0.082	0.059

2. Vio2

Ta=25°C; load to Vcc/2; Vcc=+3V; Vicm=Vcc/2

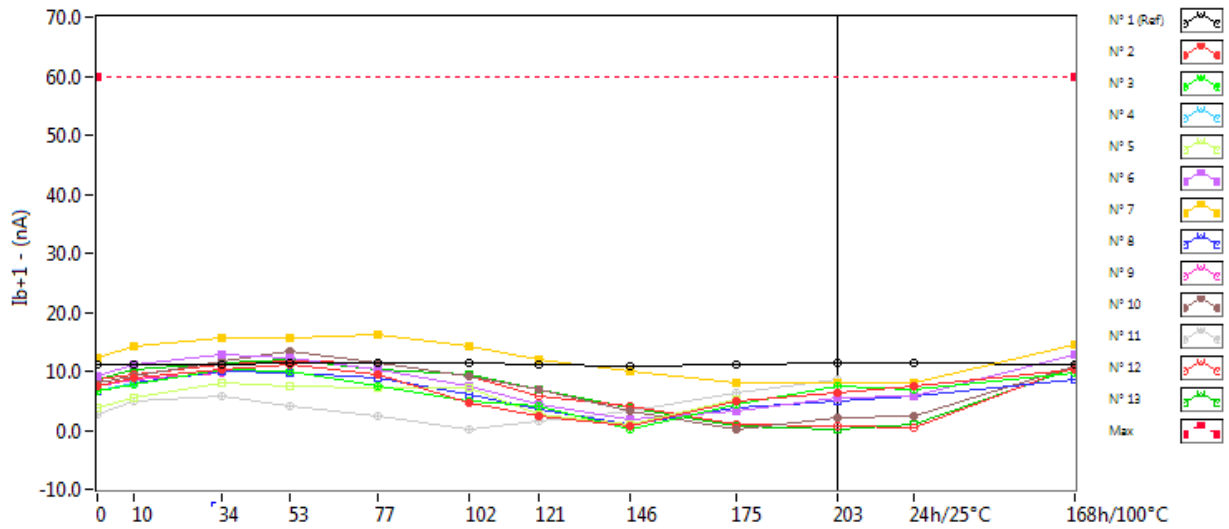


Vio2 . (mV) Min = -0.3 Max = 0.3

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	-0.001	0.000	0.012	0.012	-0.006	-0.006	-0.007	-0.001	0.002	0.005	0.001	0.000
N° 2	-0.002	-0.003	0.010	0.012	0.002	0.009	0.015	0.023	0.024	0.032	0.025	-0.009
N° 3	-0.030	-0.033	-0.023	-0.025	-0.029	-0.030	-0.020	-0.022	-0.009	0.002	-0.003	-0.043
N° 4	0.188	0.189	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	-0.088	-0.090	-0.081	-0.083	-0.095	-0.093	-0.098	-0.100	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	0.052	0.050	0.067	0.072	0.072	0.076	0.079	0.079	0.093	0.103	0.097	0.048
N° 7	0.096	0.092	0.101	0.099	0.084	0.078	0.082	0.080	0.080	0.090	0.087	0.083
N° 8	0.008	0.002	0.016	0.012	0.002	0.002	0.003	0.000	0.008	0.018	0.011	-0.006
N° 9	-0.075	-0.081	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	-0.064	-0.069	-0.058	-0.053	-0.063	-0.058	-0.047	-0.044	-0.035	-0.029	-0.037	-0.072
N° 11	-0.093	-0.099	-0.085	-0.084	-0.090	-0.086	-0.083	-0.085	-0.080	-0.075	Not Measurable	Not Measurable
N° 12	0.139	0.134	0.143	0.144	0.125	0.125	0.123	0.131	0.131	0.142	0.138	0.129
N° 13	0.070	0.066	0.075	0.081	0.070	0.074	0.081	0.080	0.083	0.086	0.084	0.059

3. Ib+1

Ta=25°C; load to Vcc/2; Vcc=+16V; Vicm=Vcc/2

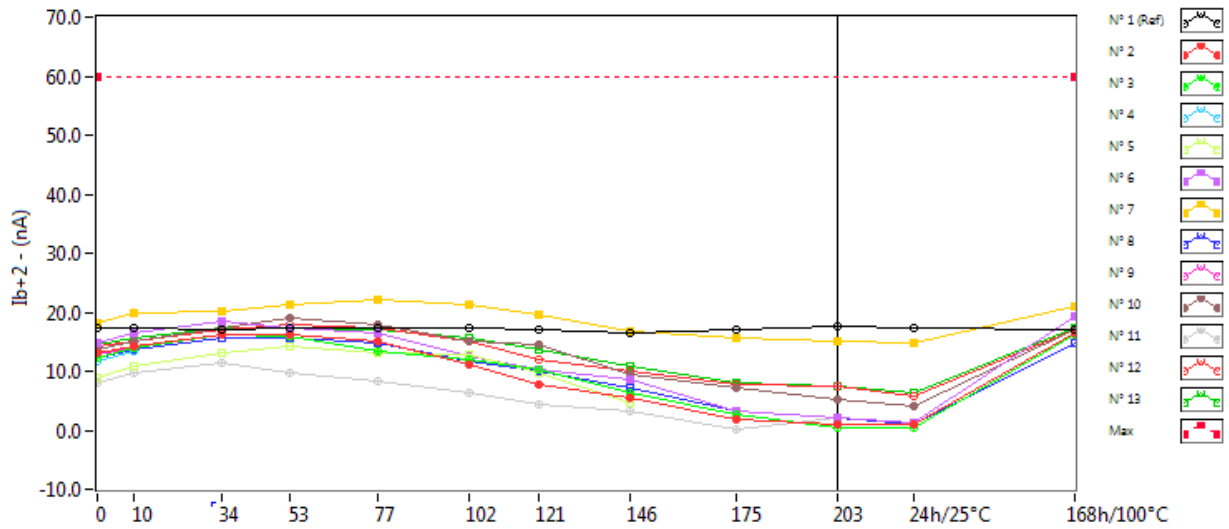


Ib+1 . (nA) Max = 60.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	11.137	11.065	11.048	11.312	11.374	11.310	11.127	10.766	11.060	11.493	11.319	11.189
N° 2	7.582	8.794	10.294	11.136	9.307	4.551	2.341	0.779	4.996	6.301	7.537	10.336
N° 3	6.552	7.620	10.294	10.078	7.573	4.827	4.049	0.039	4.431	7.441	6.923	9.660
N° 4	6.670	8.037	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	3.695	5.586	8.082	7.414	7.179	7.110	2.553	0.969	5.184	Not Measurable	Not Measurable	Not Measurable
N° 6	9.057	11.067	12.693	12.291	10.257	7.436	4.493	1.844	3.218	5.413	5.759	12.707
N° 7	12.394	14.162	15.761	15.697	16.148	14.220	11.972	10.072	8.063	8.050	7.906	14.577
N° 8	6.676	7.935	10.109	9.603	8.799	6.012	3.522	0.929	3.712	5.045	5.879	8.722
N° 9	7.537	8.548	9.708	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	8.099	9.237	11.729	13.434	11.460	9.267	6.948	3.233	0.219	1.994	2.416	10.885
N° 11	2.729	4.814	5.905	4.050	2.320	0.108	1.478	3.281	6.466	8.616	Not Measurable	Not Measurable
N° 12	8.606	9.575	11.144	11.755	11.449	9.031	5.807	4.007	1.082	0.696	0.388	10.900
N° 13	8.585	10.177	11.373	12.034	10.153	9.297	6.981	3.890	0.583	0.208	1.125	10.656

4. Ib+2

Ta=25°C; load to Vcc/2; Vcc=+4V; Vicm=Vcc/2

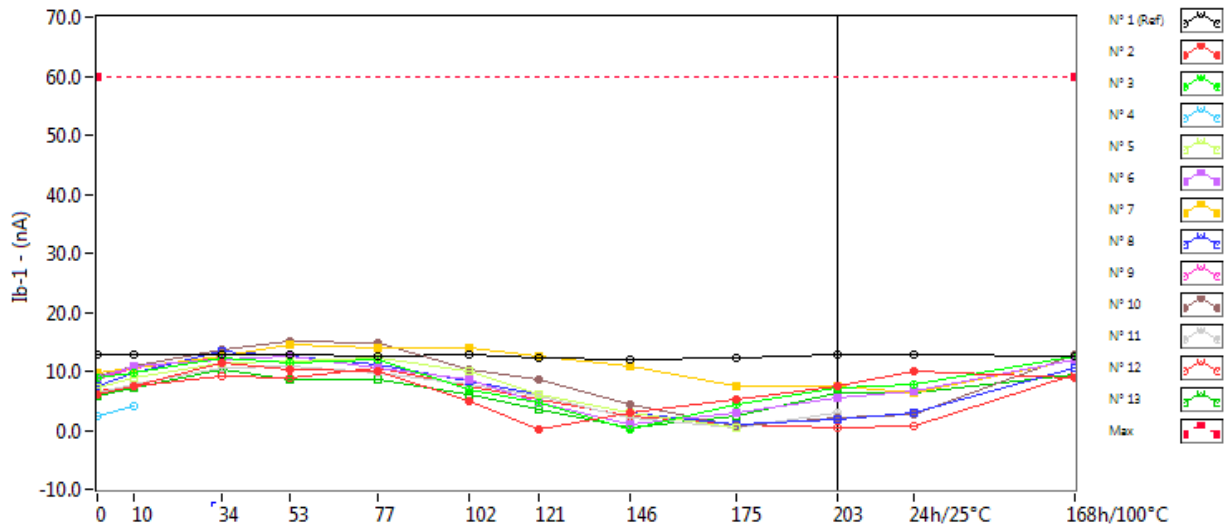


Ib+2 . (nA) Max = 60.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	17.461	17.246	16.971	17.283	17.454	17.445	17.031	16.571	16.907	17.553	17.270	17.152
N° 2	13.231	14.290	16.062	16.333	15.067	11.085	7.822	5.505	1.696	1.012	0.973	16.537
N° 3	12.281	13.808	16.278	15.785	13.426	11.983	10.365	6.375	2.778	0.393	0.421	16.140
N° 4	11.812	13.327	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	8.965	10.861	13.106	14.242	13.157	12.871	9.667	4.674	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	14.878	16.575	18.370	17.425	16.535	12.469	10.375	8.637	3.167	2.247	1.282	19.165
N° 7	18.144	19.764	20.199	21.298	22.218	21.251	19.501	16.679	15.525	15.131	14.852	20.861
N° 8	12.298	13.565	15.661	15.617	14.718	11.785	10.047	7.133	3.166	2.180	1.086	14.703
N° 9	12.715	13.952	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	13.719	14.987	17.291	18.919	17.962	15.074	14.375	9.541	7.182	5.135	4.057	16.939
N° 11	8.080	9.698	11.493	9.789	8.335	6.327	4.469	3.265	0.016	2.177	Not Measurable	Not Measurable
N° 12	14.211	15.059	17.013	17.754	17.447	14.950	12.108	10.119	7.758	7.530	5.813	17.086
N° 13	14.367	15.762	17.369	17.409	16.915	15.713	13.529	10.971	8.015	7.461	6.402	17.222

5. Ib-1

Ta=25°C; load to Vcc/2; Vcc=+16V; Vicm=Vcc/2



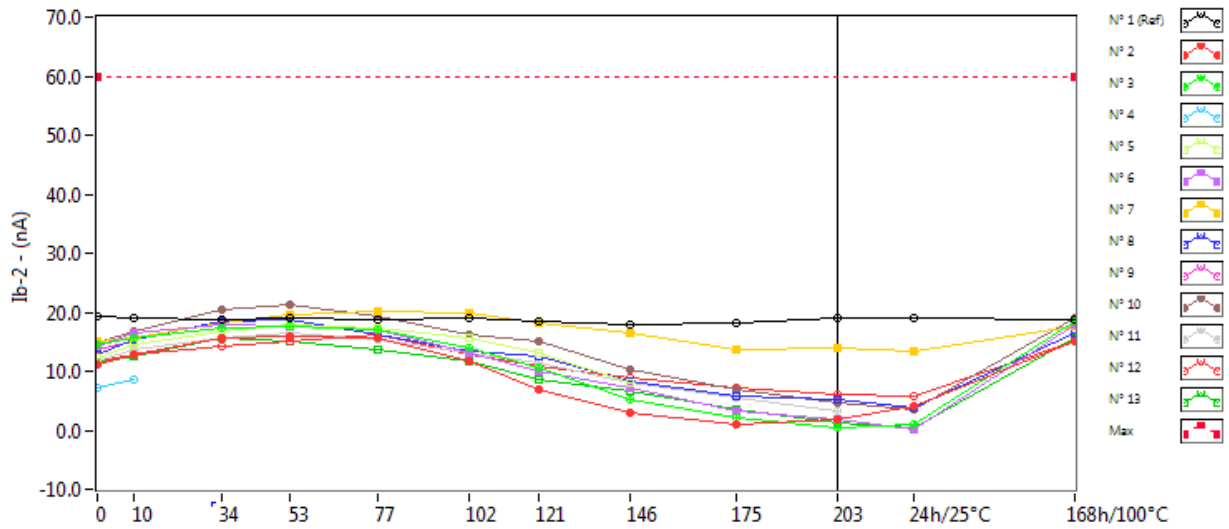
Ib-1 . (nA)

Max = 60.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	12.942	12.884	12.742	12.913	12.586	12.705	12.380	12.055	12.272	12.918	12.869	12.560
N° 2	5.931	7.381	11.303	10.173	9.884	4.935	0.053	2.852	5.103	7.530	9.981	9.005
N° 3	8.983	9.677	12.151	11.521	11.942	6.933	4.756	0.201	4.464	7.073	7.813	12.477
N° 4	2.523	4.183	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	7.138	8.855	11.345	11.782	12.257	9.977	6.092	2.851	0.428	Not Measurable	Not Measurable	Not Measurable
N° 6	8.829	10.707	11.993	12.615	10.447	8.599	4.771	0.990	2.900	5.444	6.641	11.834
N° 7	9.652	10.618	12.615	14.509	14.030	13.874	12.405	10.726	7.363	7.324	6.468	11.914
N° 8	7.546	9.689	13.481	12.570	11.097	8.189	5.916	2.949	0.850	1.915	3.049	10.611
N° 9	8.713	10.522	12.245	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	9.067	10.799	13.604	15.078	14.738	10.339	8.721	4.449	0.831	2.200	2.780	12.862
N° 11	6.391	7.863	10.606	10.731	9.769	7.740	5.776	2.021	0.406	2.938	Not Measurable	Not Measurable
N° 12	6.529	7.382	9.045	8.964	10.664	7.584	5.286	2.510	0.871	0.440	0.637	9.328
N° 13	5.858	7.103	10.336	8.532	8.526	6.114	3.406	0.326	2.319	6.267	6.347	9.481

6. Ib-2

Ta=25°C; load to Vcc/2; Vcc=+4V; Vicm=Vcc/2



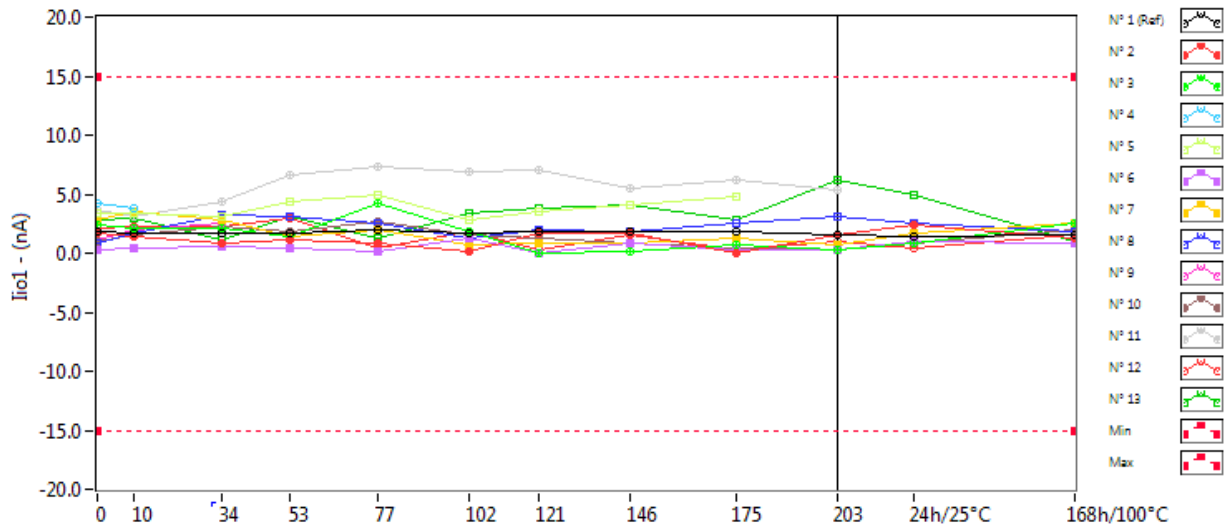
Ib-2 . (nA)

Max = 60.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	19.209	19.030	18.649	19.091	18.753	18.878	18.431	17.906	18.279	19.117	18.939	18.716
N° 2	11.246	12.892	15.677	15.880	15.613	11.612	6.815	2.870	0.997	1.886	4.081	15.059
N° 3	14.556	15.575	17.219	17.539	16.961	13.989	10.604	5.339	1.993	0.486	1.060	18.548
N° 4	7.074	8.505	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	12.299	14.398	16.795	17.909	17.409	15.741	13.036	8.104	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	14.353	16.366	17.897	17.676	17.035	12.968	10.085	7.259	3.206	1.903	0.061	17.758
N° 7	14.930	15.774	18.116	19.495	20.084	19.791	18.242	16.413	13.751	13.807	13.257	17.498
N° 8	12.931	15.292	18.527	18.721	16.187	13.329	12.487	8.313	5.756	5.283	3.783	16.591
N° 9	13.703	15.092	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	14.672	16.623	20.325	21.262	19.418	16.273	15.068	10.357	6.958	4.663	3.553	19.029
N° 11	11.760	13.573	15.568	16.526	15.414	13.139	11.390	7.909	5.357	3.209	Not Measurable	Not Measurable
N° 12	11.739	12.863	14.110	15.092	16.274	12.792	10.953	8.989	7.283	6.188	5.854	15.170
N° 13	11.285	12.610	15.731	15.128	13.680	11.627	8.688	6.522	3.617	1.261	0.383	15.517

7. Iio1

Ta=25°C; load to Vcc/2; Vcc=+16V; Vicm=Vcc/2

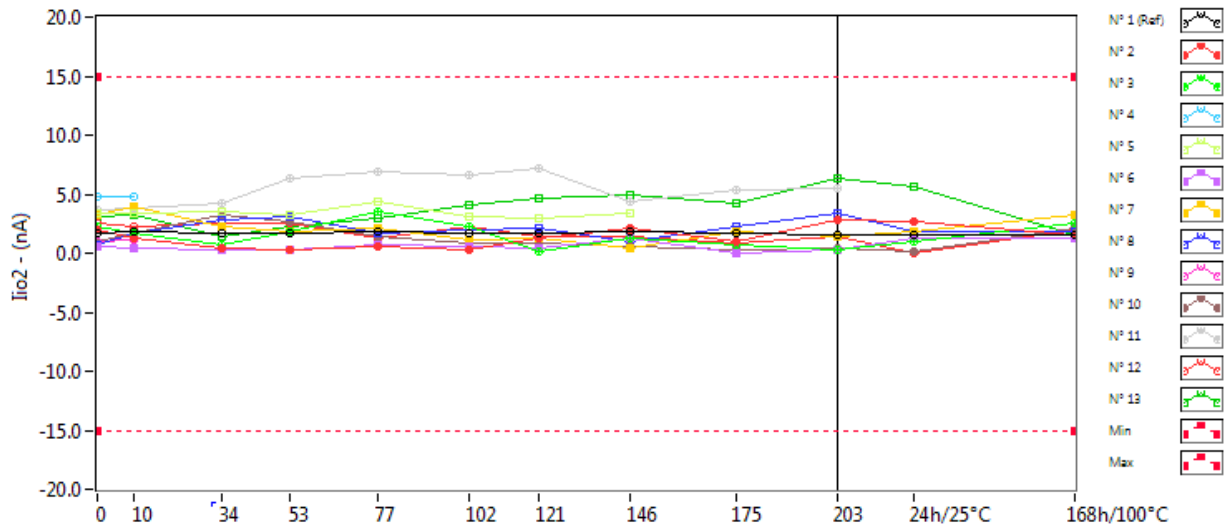


Iio1 . (nA) Min = -15.0 Max = 15.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	1.833	1.718	1.730	1.727	1.907	1.736	1.864	1.773	1.761	1.584	1.468	1.557
N° 2	1.694	1.436	0.778	1.136	0.787	0.072	1.749	1.626	0.044	1.590	2.425	1.292
N° 3	2.380	2.129	2.168	1.420	4.189	1.823	0.047	0.096	0.708	0.286	0.787	2.568
N° 4	4.184	3.873	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	3.404	3.330	3.140	4.400	4.870	2.837	3.453	4.123	4.769	Not Measurable	Not Measurable	Not Measurable
N° 6	0.281	0.397	0.507	0.439	0.102	1.252	0.021	0.799	0.290	0.245	0.949	0.821
N° 7	2.763	3.553	2.869	1.446	1.961	0.711	0.788	0.887	1.282	0.691	1.694	2.548
N° 8	0.827	1.650	3.178	3.096	2.568	1.291	1.950	1.796	2.576	3.095	2.473	1.782
N° 9	1.121	2.014	2.569	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	0.917	1.521	2.287	1.770	2.645	1.484	1.222	0.880	0.443	0.267	0.858	1.944
N° 11	3.623	3.056	4.419	6.608	7.273	6.879	7.011	5.473	6.138	5.406	Not Measurable	Not Measurable
N° 12	2.107	2.185	2.316	2.948	0.464	1.896	0.330	1.555	0.349	1.047	0.361	1.543
N° 13	2.794	2.902	1.133	3.083	1.236	3.434	3.853	4.030	2.780	6.143	4.891	1.044

8. Iio2

Ta=25°C; load to Vcc/2; Vcc=+4V; Vicm=Vcc/2

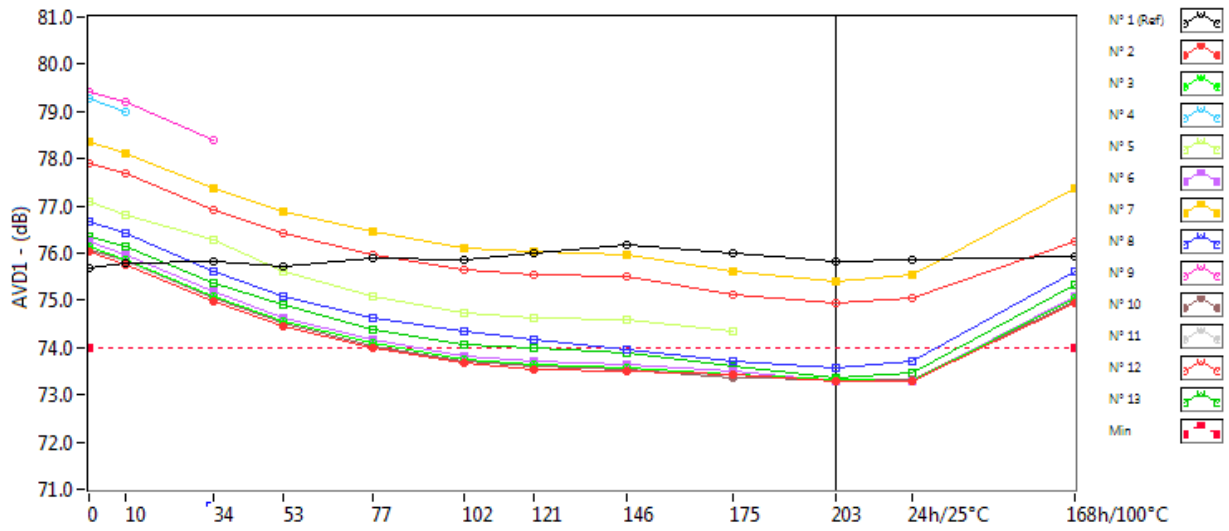


Iio2 . (nA) Min = -15.0 Max = 15.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	1.715	1.836	1.711	1.733	1.793	1.695	1.705	1.814	1.756	1.499	1.504	1.585
N° 2	1.991	1.331	0.441	0.275	0.499	0.223	1.314	2.166	1.010	2.760	2.695	1.592
N° 3	2.279	1.716	0.725	1.799	3.479	2.198	0.140	1.313	0.677	0.336	0.986	2.481
N° 4	4.741	4.847	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	3.327	3.411	3.554	3.277	4.320	3.121	2.974	3.345	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	0.548	0.414	0.352	0.290	0.655	0.585	0.410	1.334	0.026	0.348	1.314	1.274
N° 7	3.181	3.940	2.249	1.801	2.128	1.124	1.203	0.404	1.779	1.350	1.825	3.284
N° 8	0.655	1.693	2.802	3.088	1.641	1.905	2.065	0.998	2.284	3.343	1.868	1.895
N° 9	0.974	1.172	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	0.972	1.740	3.227	2.611	1.471	0.811	0.792	0.619	0.260	0.446	0.190	2.154
N° 11	3.671	3.841	4.191	6.338	6.922	6.654	7.190	4.412	5.315	5.461	Not Measurable	Not Measurable
N° 12	2.485	2.237	2.538	2.586	1.206	2.261	1.356	1.403	0.825	1.439	0.005	1.957
N° 13	3.113	3.261	1.439	2.306	2.987	4.147	4.674	4.919	4.156	6.385	5.585	1.548

9. AVD1

Ta=25°C; load to Vcc/2; Vcc=+16V; Vicm=Vcc/2; RI=1kOhms; 0.5V<Vout<15.5V

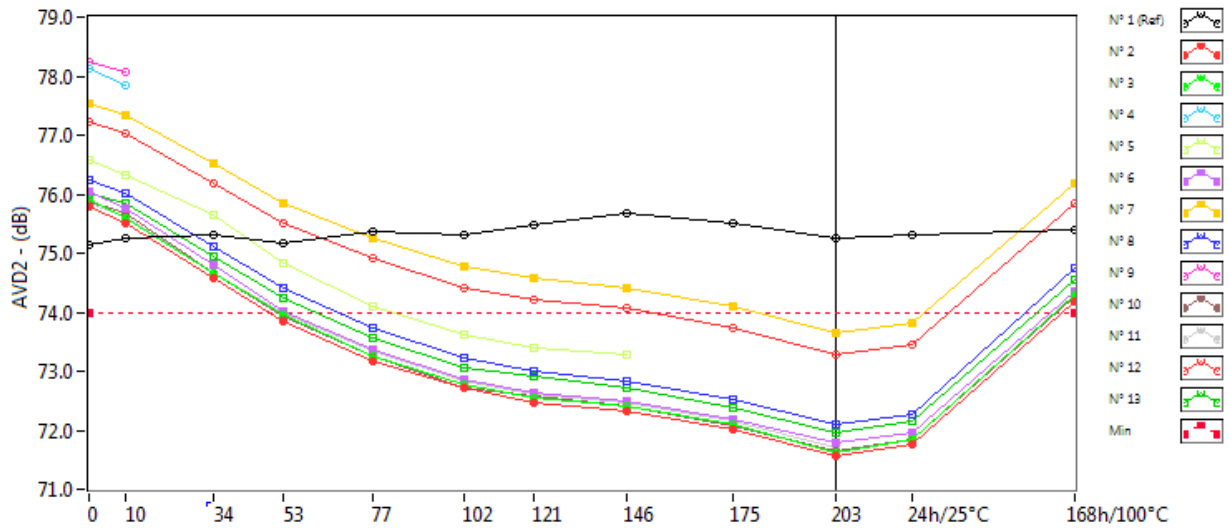


AVD1 . (dB) Min = 74.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	75.69	75.78	75.83	75.71	75.90	75.85	76.00	76.17	75.99	75.81	75.85	75.91
N° 2	76.02	75.74	74.99	74.45	73.99	73.67	73.55	73.49	73.44	73.30	73.30	74.93
N° 3	76.15	75.86	75.07	74.56	74.08	73.75	73.65	73.58	73.44	73.31	73.30	75.06
N° 4	79.27	78.98	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	77.08	76.81	76.28	75.61	75.08	74.74	74.64	74.58	74.33	Not Measurable	Not Measurable	Not Measurable
N° 6	76.25	75.96	75.18	74.62	74.16	73.83	73.72	73.66	73.51	73.29	73.28	75.10
N° 7	78.36	78.12	77.37	76.88	76.44	76.12	76.03	75.95	75.61	75.39	75.55	77.36
N° 8	76.65	76.41	75.62	75.10	74.61	74.36	74.17	73.97	73.72	73.56	73.71	75.60
N° 9	79.41	79.21	78.38	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	76.08	75.86	75.04	74.52	74.05	73.70	73.61	73.54	73.35	73.31	73.31	74.98
N° 11	76.06	75.83	75.05	74.55	74.10	73.76	73.65	73.58	73.34	73.33	Not Measurable	Not Measurable
N° 12	77.90	77.68	76.92	76.43	75.97	75.66	75.56	75.50	75.11	74.93	75.05	76.25
N° 13	76.35	76.14	75.38	74.90	74.40	74.05	74.00	73.89	73.61	73.35	73.47	75.33

10. AVD2

Ta=25°C; load to Vcc/2; Vcc=+3V; Vicm=Vcc/2; RI=1kOhms; 0.5V<Vout<2.5V

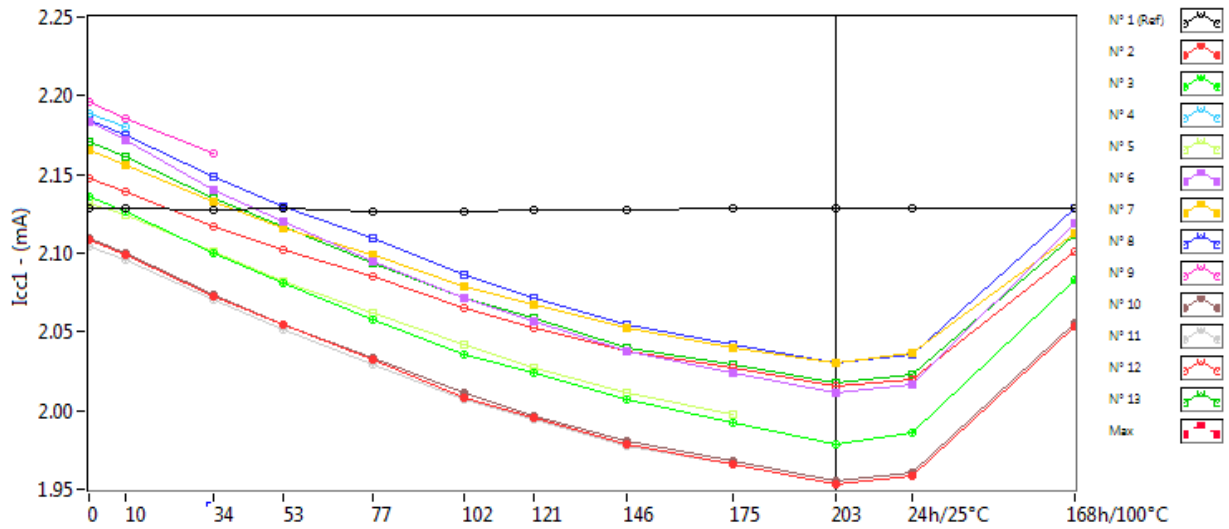


AVD2 . (dB) Min = 74.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	75.14	75.25	75.32	75.16	75.37	75.31	75.47	75.67	75.51	75.25	75.31	75.39
N° 2	75.78	75.49	74.58	73.83	73.16	72.71	72.46	72.31	72.01	71.57	71.76	74.18
N° 3	75.89	75.60	74.67	73.94	73.25	72.77	72.54	72.41	72.11	71.63	71.84	74.30
N° 4	78.11	77.85	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	76.57	76.31	75.66	74.84	74.10	73.61	73.41	73.27	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	76.03	75.76	74.79	74.03	73.36	72.86	72.64	72.51	72.18	71.78	71.97	74.37
N° 7	77.55	77.34	76.51	75.84	75.25	74.77	74.58	74.42	74.11	73.64	73.80	76.19
N° 8	76.25	76.02	75.10	74.40	73.73	73.22	73.01	72.84	72.53	72.09	72.28	74.75
N° 9	78.25	78.08	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	75.88	75.67	74.67	73.94	73.25	72.72	72.56	72.41	72.06	71.64	71.84	74.27
N° 11	75.86	75.62	74.67	73.98	73.34	72.82	72.60	72.47	72.15	71.71	Not Measurable	Not Measurable
N° 12	77.21	77.03	76.18	75.51	74.90	74.40	74.21	74.08	73.72	73.29	73.46	75.85
N° 13	76.01	75.84	74.94	74.25	73.57	73.05	72.91	72.72	72.39	71.96	72.15	74.56

11. Icc1

Ta=25°C; load to Vcc/2; Vcc=+16V; no load

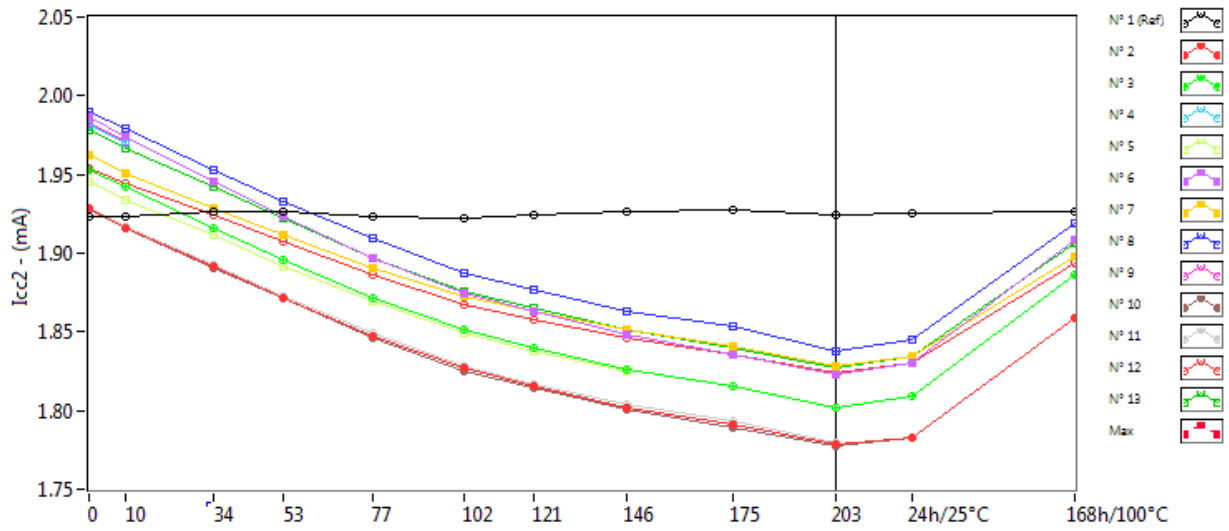


Icc1 . (mA) Max = 2.9

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	2.128	2.128	2.127	2.128	2.126	2.126	2.127	2.127	2.128	2.128	2.128	2.128
N° 2	2.108	2.099	2.073	2.055	2.032	2.008	1.995	1.978	1.966	1.953	1.958	2.054
N° 3	2.136	2.126	2.100	2.081	2.058	2.036	2.024	2.007	1.992	1.979	1.986	2.083
N° 4	2.189	2.180	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	2.132	2.124	2.101	2.082	2.062	2.042	2.027	2.011	1.998	Not Measurable	Not Measurable	Not Measurable
N° 6	2.183	2.172	2.140	2.120	2.095	2.072	2.057	2.038	2.024	2.011	2.017	2.119
N° 7	2.165	2.156	2.133	2.116	2.099	2.079	2.067	2.052	2.040	2.030	2.037	2.113
N° 8	2.185	2.175	2.149	2.130	2.109	2.086	2.072	2.055	2.042	2.030	2.036	2.129
N° 9	2.196	2.186	2.163	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	2.109	2.100	2.074	2.055	2.033	2.011	1.997	1.981	1.968	1.955	1.961	2.056
N° 11	2.104	2.096	2.070	2.051	2.029	2.007	1.994	1.977	1.966	1.953	Not Measurable	Not Measurable
N° 12	2.148	2.139	2.117	2.102	2.085	2.065	2.052	2.038	2.027	2.015	2.020	2.101
N° 13	2.171	2.161	2.135	2.117	2.094	2.072	2.059	2.040	2.029	2.018	2.023	2.112

12. Icc2

Ta=25°C; load to Vcc/2; Vcc=+3V; no load

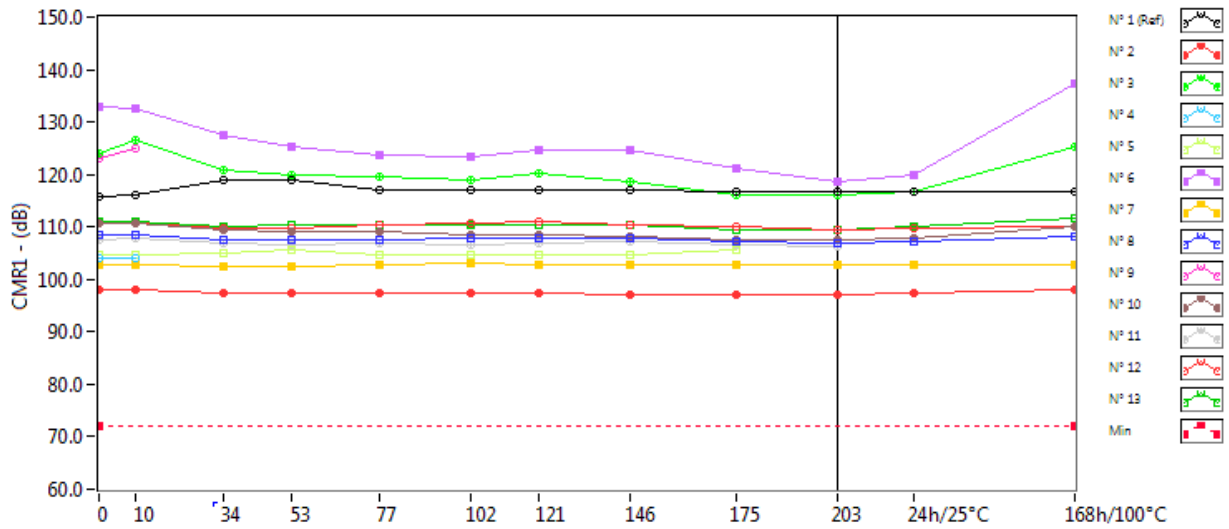


Icc2 . (mA) Max = 2.6

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	1.923	1.923	1.926	1.926	1.923	1.922	1.924	1.926	1.927	1.924	1.925	1.926
N° 2	1.928	1.916	1.892	1.871	1.847	1.827	1.815	1.802	1.791	1.778	1.783	1.859
N° 3	1.953	1.942	1.916	1.896	1.871	1.851	1.840	1.826	1.815	1.802	1.809	1.886
N° 4	1.981	1.970	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	1.945	1.934	1.912	1.892	1.869	1.849	1.838	1.825	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	1.987	1.974	1.945	1.923	1.897	1.875	1.863	1.848	1.836	1.823	1.830	1.908
N° 7	1.962	1.951	1.929	1.912	1.890	1.873	1.863	1.851	1.841	1.828	1.835	1.898
N° 8	1.990	1.979	1.953	1.933	1.909	1.887	1.877	1.863	1.853	1.838	1.845	1.919
N° 9	1.982	1.971	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	1.927	1.916	1.891	1.871	1.846	1.825	1.814	1.801	1.789	1.777	1.783	1.859
N° 11	1.928	1.917	1.893	1.873	1.849	1.828	1.817	1.804	1.793	1.780	Not Measurable	Not Measurable
N° 12	1.954	1.944	1.924	1.907	1.886	1.867	1.858	1.846	1.836	1.824	1.830	1.894
N° 13	1.978	1.967	1.942	1.922	1.897	1.876	1.865	1.851	1.840	1.827	1.834	1.906

13. CMR1

Ta=25°C; load to Vcc/2; Vcc=+16V; 0V<Vicm<16V

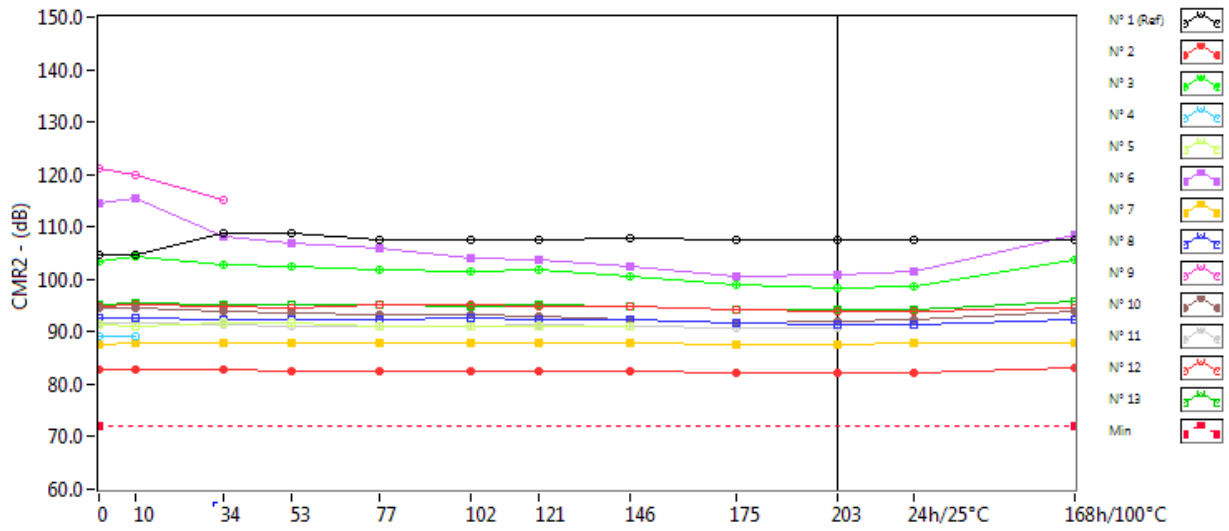


CMR1 . (dB) Min = 72.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	115.72	115.99	118.84	118.80	116.91	116.93	117.02	117.04	116.76	116.79	116.79	116.77
N° 2	97.87	97.89	97.44	97.52	97.38	97.28	97.34	97.20	97.17	97.11	97.24	98.02
N° 3	124.07	126.47	120.85	119.99	119.70	119.08	120.06	118.63	115.99	116.10	116.64	125.33
N° 4	104.08	103.99	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	104.74	104.57	105.12	105.60	104.84	104.74	104.84	104.64	105.50	Not Measurable	Not Measurable	Not Measurable
N° 6	132.78	132.44	127.37	125.18	123.83	123.46	124.58	124.61	121.05	118.49	120.03	137.30
N° 7	102.78	102.86	102.56	102.55	102.81	103.06	102.87	102.73	102.79	102.69	102.79	102.86
N° 8	108.45	108.42	107.67	107.48	107.69	107.75	107.72	107.94	107.34	106.79	107.07	108.06
N° 9	122.95	124.99	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	110.65	110.68	109.41	108.99	109.25	108.59	108.44	108.07	107.67	107.64	107.95	110.14
N° 11	107.65	107.78	106.86	106.57	106.78	106.66	106.94	107.07	106.66	106.42	Not Measurable	Not Measurable
N° 12	110.68	110.72	109.78	109.82	110.38	110.60	111.04	110.47	109.95	109.57	109.86	110.10
N° 13	111.00	110.99	110.14	110.27	110.52	110.25	110.29	110.24	109.45	109.56	110.03	111.56

14. CMR2

Ta=25°C; load to Vcc/2; Vcc=+3V; 0V<Vicm<3V

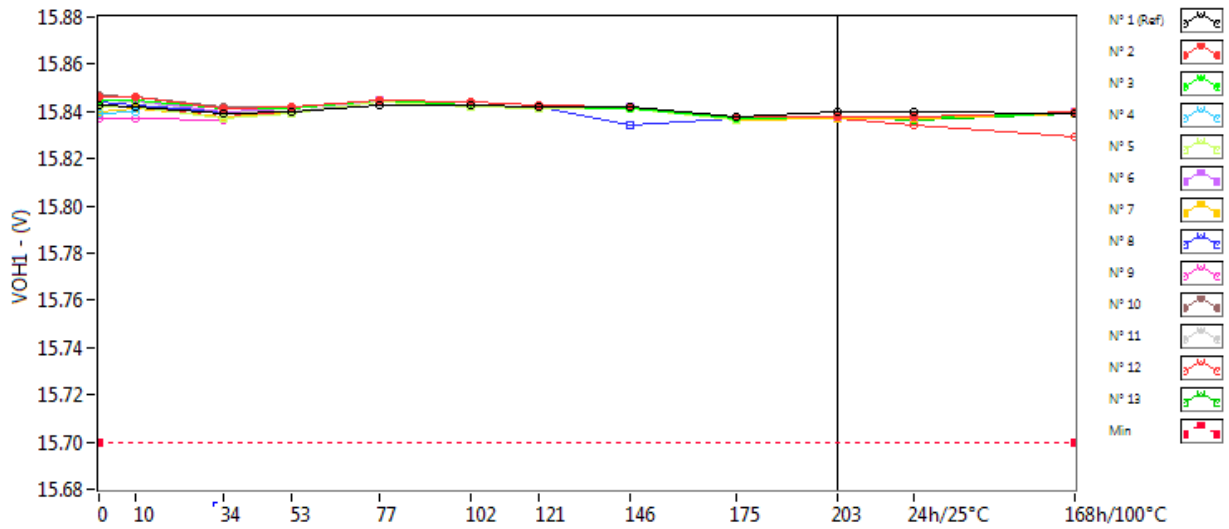


CMR2 . (dB) Min = 72.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	104.56	104.62	108.75	108.92	107.62	107.63	107.66	107.74	107.56	107.50	107.52	107.54
N° 2	82.95	82.94	82.72	82.63	82.57	82.46	82.50	82.36	82.22	82.25	82.34	83.05
N° 3	103.33	104.34	102.85	102.47	101.88	101.44	101.76	100.44	98.84	98.41	98.61	103.76
N° 4	89.26	89.28	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	91.28	91.15	91.73	91.81	91.15	91.11	91.18	90.99	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	114.54	115.37	108.21	106.89	105.87	104.03	103.75	102.52	100.71	100.79	101.38	108.52
N° 7	87.72	87.79	87.77	87.78	87.92	88.05	88.01	87.83	87.69	87.58	87.76	87.86
N° 8	92.76	92.69	92.19	92.28	92.40	92.50	92.29	92.39	91.55	91.25	91.36	92.38
N° 9	121.16	119.84	115.06	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	94.54	94.59	93.81	93.64	93.31	93.18	92.80	92.43	91.82	92.00	92.30	93.95
N° 11	91.68	91.67	91.43	91.02	91.03	91.17	91.22	91.06	90.72	90.63	Not Measurable	Not Measurable
N° 12	94.89	95.10	94.77	94.66	95.15	95.23	94.91	95.01	94.17	94.04	93.92	94.51
N° 13	95.16	95.44	95.09	95.10	95.11	94.91	95.03	94.79	94.11	94.33	94.19	95.86

15. VOH1

Ta=25°C; load to Vcc/2; Vcc=+16V; RL=1kOhms

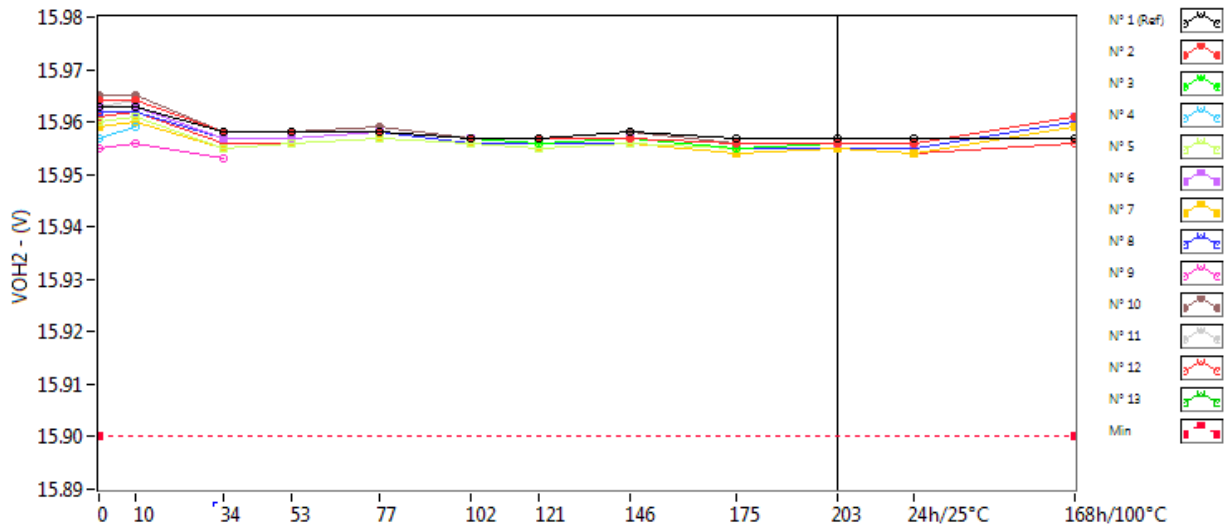


VOH1 . (V) Min = 15.7

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	15.843	15.842	15.839	15.840	15.843	15.843	15.842	15.842	15.838	15.840	15.840	15.839
N° 2	15.846	15.846	15.841	15.842	15.845	15.844	15.843	15.842	15.838	15.838	15.838	15.840
N° 3	15.845	15.845	15.841	15.841	15.845	15.843	15.842	15.841	15.837	15.838	15.838	15.839
N° 4	15.839	15.840	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	15.842	15.842	15.837	15.839	15.844	15.842	15.841	15.841	15.836	Not Measurable	Not Measurable	Not Measurable
N° 6	15.845	15.845	15.840	15.841	15.845	15.843	15.842	15.842	15.837	15.838	15.838	15.840
N° 7	15.840	15.841	15.838	15.839	15.844	15.842	15.841	15.841	15.836	15.837	15.837	15.839
N° 8	15.844	15.843	15.840	15.841	15.845	15.843	15.842	15.834	15.837	15.838	15.838	15.840
N° 9	15.837	15.837	15.836	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	15.847	15.846	15.842	15.842	15.845	15.844	15.843	15.842	15.838	15.838	15.838	15.840
N° 11	15.845	15.844	15.840	15.840	15.845	15.843	15.842	15.841	15.837	15.838	Not Measurable	Not Measurable
N° 12	15.843	15.842	15.838	15.840	15.844	15.842	15.841	15.841	15.836	15.837	15.834	15.829
N° 13	15.844	15.843	15.839	15.840	15.845	15.843	15.841	15.841	15.837	15.838	15.836	15.839

16. VOH2

Ta=25°C; load to Vcc/2; Vcc=+16V; RL=10kOhms

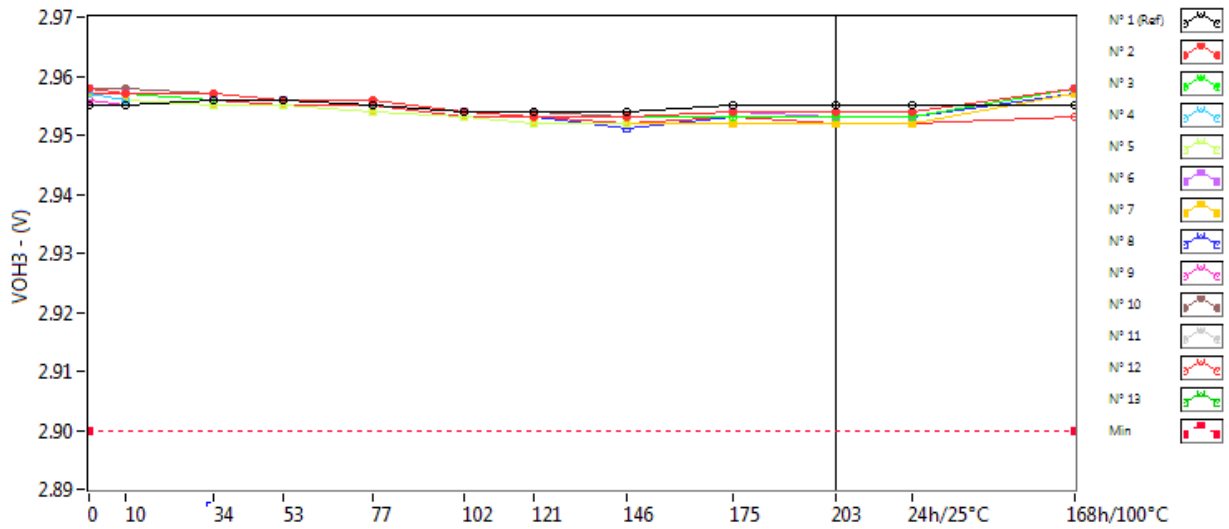


VOH2 . (V) Min = 15.9

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	15.963	15.963	15.958	15.958	15.958	15.957	15.957	15.958	15.957	15.957	15.957	15.957
N° 2	15.964	15.964	15.958	15.958	15.958	15.957	15.957	15.957	15.956	15.956	15.956	15.961
N° 3	15.964	15.964	15.958	15.958	15.958	15.957	15.956	15.957	15.955	15.956	15.956	15.961
N° 4	15.957	15.959	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	15.960	15.961	15.955	15.956	15.957	15.956	15.955	15.956	15.955	Not Measurable	Not Measurable	Not Measurable
N° 6	15.963	15.963	15.957	15.957	15.958	15.957	15.956	15.957	15.956	15.956	15.956	15.961
N° 7	15.959	15.960	15.955	15.956	15.957	15.956	15.955	15.956	15.954	15.955	15.954	15.959
N° 8	15.962	15.962	15.957	15.957	15.958	15.956	15.956	15.956	15.955	15.955	15.955	15.960
N° 9	15.955	15.956	15.953	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	15.965	15.965	15.958	15.958	15.959	15.957	15.957	15.958	15.956	15.956	15.956	15.961
N° 11	15.963	15.964	15.958	15.958	15.958	15.957	15.956	15.957	15.956	15.956	Not Measurable	Not Measurable
N° 12	15.961	15.962	15.956	15.956	15.957	15.956	15.956	15.956	15.955	15.955	15.954	15.956
N° 13	15.962	15.962	15.957	15.957	15.958	15.956	15.956	15.957	15.955	15.955	15.955	15.960

17. VOH3

Ta=25°C; load to Vcc/2; Vcc=+3V; RL=1kOhms

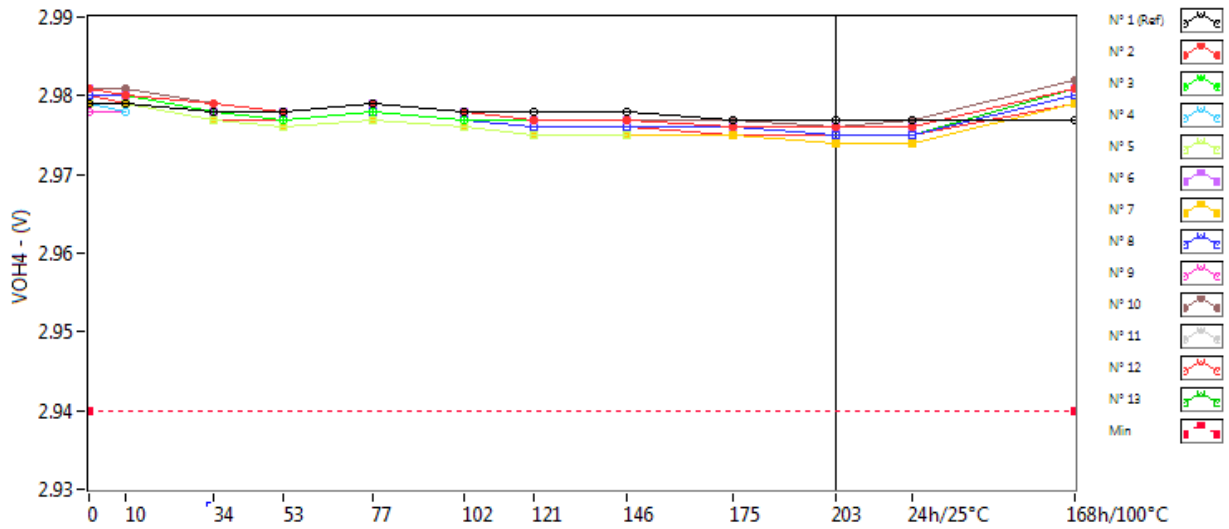


VOH3 . (V) Min = 2.9

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	2.955	2.955	2.956	2.956	2.955	2.954	2.954	2.954	2.955	2.955	2.955	2.955
N° 2	2.958	2.957	2.957	2.956	2.956	2.954	2.953	2.953	2.954	2.954	2.954	2.958
N° 3	2.958	2.957	2.956	2.956	2.955	2.954	2.953	2.953	2.953	2.953	2.953	2.958
N° 4	2.957	2.956	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	2.957	2.956	2.955	2.955	2.954	2.953	2.952	2.952	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	2.958	2.957	2.956	2.956	2.955	2.954	2.953	2.953	2.954	2.953	2.953	2.958
N° 7	2.957	2.956	2.955	2.955	2.954	2.953	2.952	2.952	2.952	2.952	2.952	2.957
N° 8	2.958	2.957	2.956	2.956	2.955	2.954	2.953	2.951	2.953	2.953	2.953	2.957
N° 9	2.956	2.955	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	2.958	2.958	2.957	2.956	2.956	2.954	2.954	2.953	2.954	2.954	2.954	2.958
N° 11	2.958	2.957	2.956	2.956	2.955	2.954	2.953	2.953	2.954	2.953	Not Measurable	Not Measurable
N° 12	2.957	2.957	2.956	2.955	2.955	2.953	2.953	2.952	2.953	2.952	2.952	2.953
N° 13	2.957	2.957	2.956	2.955	2.955	2.954	2.953	2.953	2.953	2.953	2.953	2.957

18. VOH4

Ta=25°C; load to Vcc/2; Vcc=+3V; RL=10kOhms

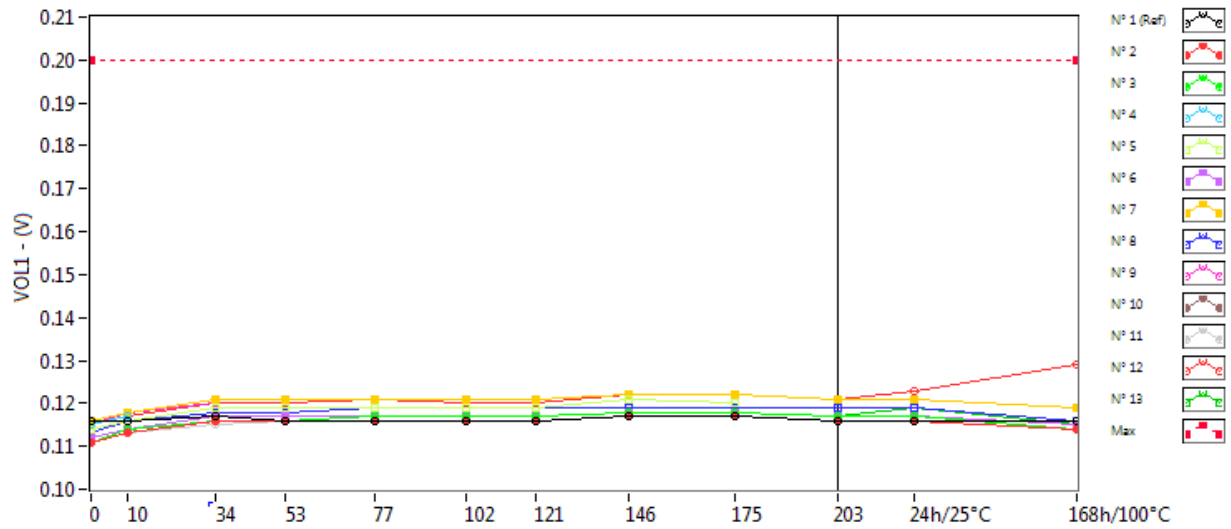


VOH4 . (V) Min = 2.94

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	2.979	2.979	2.978	2.978	2.979	2.978	2.978	2.978	2.977	2.977	2.977	2.977
N° 2	2.981	2.980	2.979	2.978	2.979	2.978	2.977	2.977	2.976	2.976	2.976	2.981
N° 3	2.981	2.980	2.978	2.977	2.978	2.977	2.977	2.977	2.976	2.976	2.976	2.981
N° 4	2.979	2.978	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	2.979	2.979	2.977	2.976	2.977	2.976	2.975	2.975	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	2.981	2.980	2.978	2.978	2.979	2.978	2.977	2.977	2.976	2.976	2.976	2.981
N° 7	2.979	2.979	2.977	2.976	2.977	2.976	2.975	2.975	2.975	2.974	2.974	2.979
N° 8	2.980	2.980	2.978	2.977	2.978	2.977	2.976	2.976	2.976	2.975	2.975	2.980
N° 9	2.978	2.978	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	2.981	2.981	2.979	2.978	2.979	2.978	2.977	2.977	2.977	2.976	2.977	2.982
N° 11	2.981	2.980	2.978	2.978	2.979	2.978	2.977	2.977	2.976	2.976	Not Measurable	Not Measurable
N° 12	2.980	2.979	2.977	2.977	2.978	2.977	2.976	2.976	2.975	2.975	2.975	2.979
N° 13	2.980	2.980	2.978	2.977	2.978	2.977	2.976	2.976	2.976	2.975	2.975	2.981

19. VOL1

Ta=25°C; load to Vcc/2; Vcc=+16V; RL=1kOhms



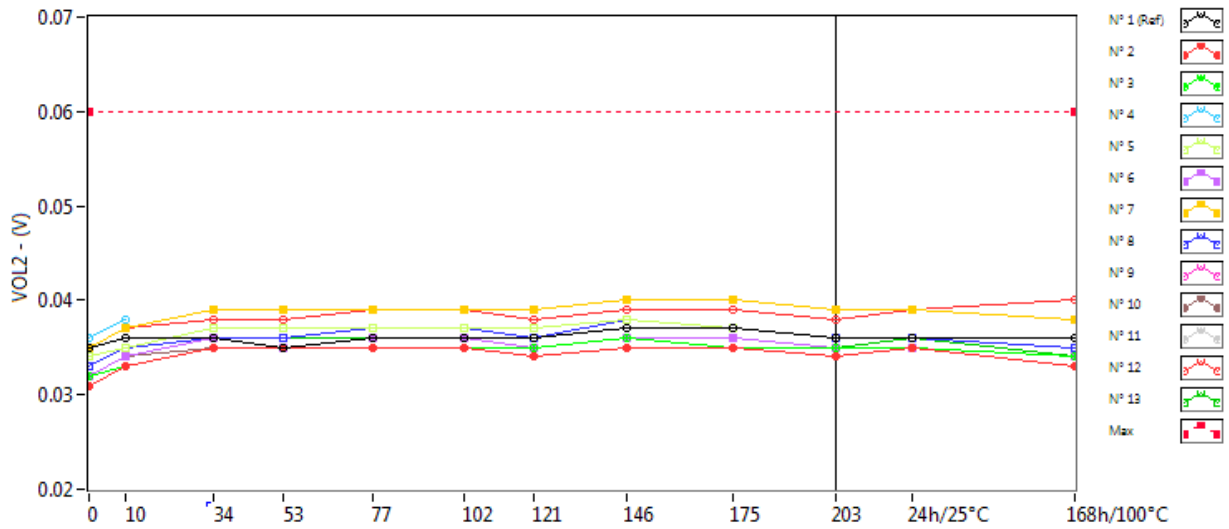
VOL1 . (V)

Max = 0.2

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	0.116	0.116	0.117	0.116	0.116	0.116	0.116	0.117	0.117	0.116	0.116	0.116
N° 2	0.111	0.113	0.116	0.116	0.116	0.116	0.116	0.117	0.117	0.116	0.116	0.114
N° 3	0.111	0.114	0.116	0.116	0.117	0.117	0.117	0.118	0.118	0.117	0.117	0.114
N° 4	0.115	0.117	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	0.114	0.116	0.119	0.119	0.119	0.119	0.119	0.121	0.120	Not Measurable	Not Measurable	Not Measurable
N° 6	0.112	0.114	0.117	0.117	0.117	0.117	0.117	0.118	0.118	0.117	0.117	0.115
N° 7	0.116	0.118	0.121	0.121	0.121	0.121	0.121	0.122	0.122	0.121	0.121	0.119
N° 8	0.113	0.116	0.118	0.118	0.119	0.119	0.119	0.119	0.119	0.119	0.119	0.116
N° 9	0.115	0.118	0.120	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	0.111	0.114	0.116	0.116	0.117	0.117	0.117	0.118	0.118	0.117	0.117	0.114
N° 11	0.111	0.113	0.115	0.116	0.116	0.116	0.116	0.117	0.117	0.116	Not Measurable	Not Measurable
N° 12	0.115	0.117	0.120	0.120	0.121	0.120	0.120	0.122	0.122	0.121	0.123	0.129
N° 13	0.112	0.114	0.117	0.117	0.117	0.117	0.117	0.118	0.118	0.117	0.119	0.115

20. VOL2

Ta=25°C; load to Vcc/2; Vcc=+16V; RL=10kOhms

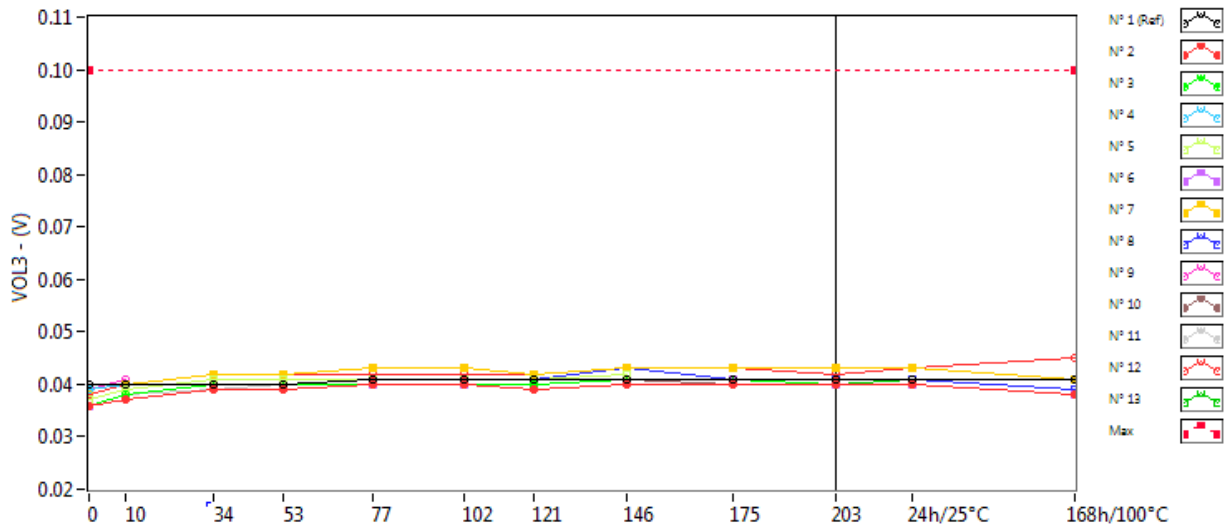


VOL2 . (V) Max = 0.06

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	0.035	0.036	0.036	0.035	0.036	0.036	0.036	0.037	0.037	0.036	0.036	0.036
N° 2	0.031	0.033	0.035	0.035	0.035	0.035	0.035	0.034	0.035	0.035	0.034	0.035
N° 3	0.032	0.033	0.035	0.035	0.035	0.035	0.035	0.035	0.036	0.035	0.035	0.035
N° 4	0.036	0.038	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	0.034	0.035	0.037	0.037	0.037	0.037	0.037	0.037	0.038	0.037	Not Measurable	Not Measurable
N° 6	0.032	0.034	0.036	0.035	0.036	0.036	0.035	0.036	0.036	0.036	0.035	0.035
N° 7	0.035	0.037	0.039	0.039	0.039	0.039	0.039	0.039	0.040	0.040	0.039	0.039
N° 8	0.033	0.035	0.036	0.036	0.037	0.037	0.037	0.036	0.038	0.037	0.036	0.036
N° 9	0.036	0.038	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	0.032	0.034	0.035	0.035	0.035	0.035	0.035	0.035	0.036	0.035	0.035	0.035
N° 11	0.031	0.033	0.035	0.035	0.035	0.035	0.035	0.034	0.035	0.035	0.034	Not Measurable
N° 12	0.035	0.037	0.038	0.038	0.039	0.039	0.039	0.038	0.039	0.039	0.038	0.039
N° 13	0.032	0.034	0.036	0.036	0.036	0.036	0.036	0.035	0.036	0.036	0.035	0.036

21. VOL3

Ta=25°C; load to Vcc/2; Vcc=+3V; RL=1kOhms



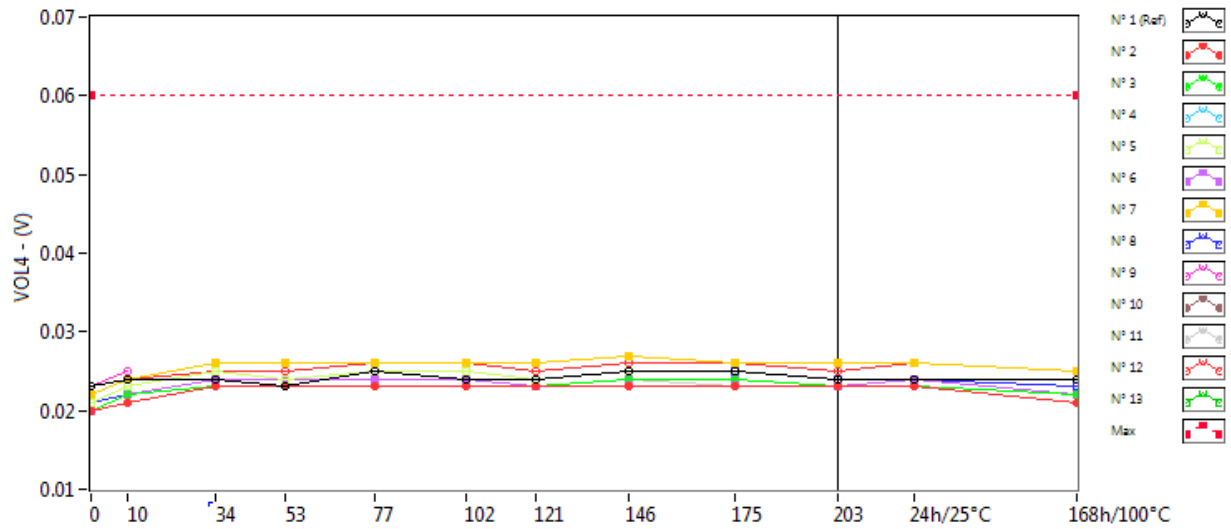
VOL3 . (V)

Max = 0.1

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	0.040	0.040	0.040	0.040	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
N° 2	0.036	0.037	0.039	0.039	0.040	0.040	0.039	0.040	0.040	0.040	0.040	0.038
N° 3	0.036	0.038	0.040	0.040	0.040	0.040	0.040	0.041	0.041	0.040	0.040	0.038
N° 4	0.039	0.040	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	0.037	0.039	0.041	0.041	0.041	0.041	0.041	0.042	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	0.036	0.038	0.040	0.040	0.040	0.040	0.040	0.041	0.041	0.040	0.040	0.038
N° 7	0.039	0.040	0.042	0.042	0.043	0.043	0.042	0.043	0.043	0.043	0.043	0.041
N° 8	0.037	0.039	0.041	0.041	0.041	0.041	0.041	0.043	0.041	0.041	0.041	0.039
N° 9	0.039	0.041	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	0.036	0.038	0.040	0.040	0.040	0.040	0.040	0.041	0.040	0.040	0.040	0.038
N° 11	0.036	0.038	0.039	0.040	0.040	0.040	0.039	0.040	0.040	0.040	Not Measurable	Not Measurable
N° 12	0.038	0.040	0.042	0.042	0.042	0.042	0.042	0.043	0.043	0.042	0.043	0.045
N° 13	0.036	0.038	0.040	0.040	0.040	0.040	0.040	0.041	0.041	0.040	0.041	0.039

22. VOL4

Ta=25°C; load to Vcc/2; Vcc=+3V; RL=10kOhms



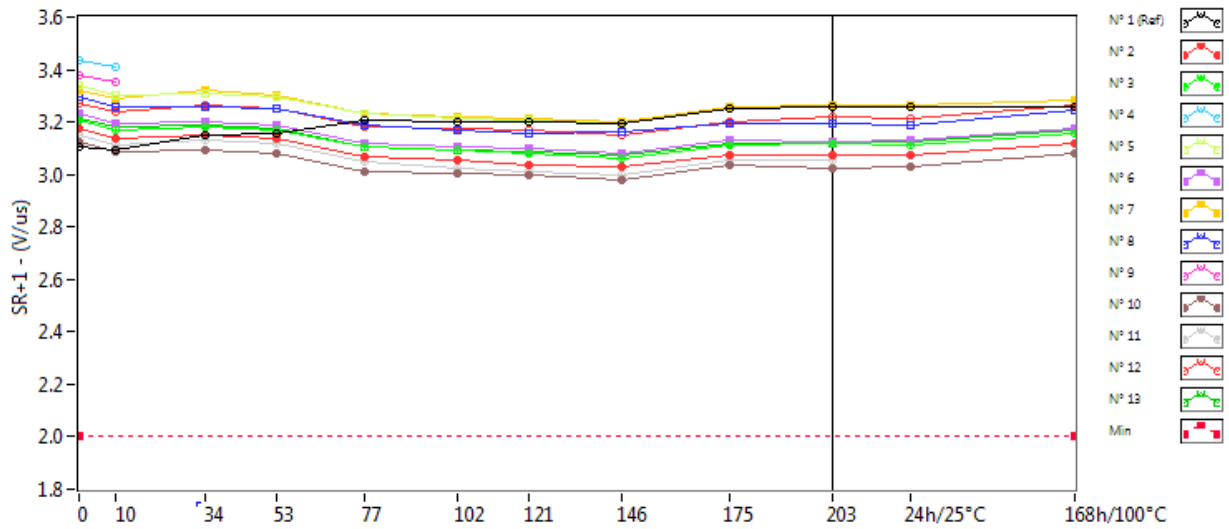
VOL4 . (V)

Max = 0.06

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	0.023	0.024	0.024	0.023	0.025	0.024	0.024	0.025	0.025	0.024	0.024	0.024
N° 2	0.020	0.021	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.021
N° 3	0.020	0.022	0.023	0.023	0.023	0.023	0.023	0.023	0.024	0.024	0.023	0.022
N° 4	0.023	0.024	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	0.021	0.023	0.025	0.024	0.025	0.025	0.024	0.025	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	0.020	0.022	0.024	0.024	0.024	0.024	0.023	0.024	0.024	0.023	0.024	0.022
N° 7	0.022	0.024	0.026	0.026	0.026	0.026	0.026	0.027	0.026	0.026	0.026	0.025
N° 8	0.021	0.022	0.024	0.024	0.024	0.024	0.024	0.025	0.025	0.024	0.024	0.023
N° 9	0.023	0.025	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	0.020	0.022	0.023	0.023	0.023	0.023	0.023	0.024	0.024	0.023	0.023	0.022
N° 11	0.020	0.021	0.023	0.023	0.023	0.023	0.023	0.024	0.023	0.023	Not Measurable	Not Measurable
N° 12	0.022	0.024	0.025	0.025	0.026	0.026	0.025	0.026	0.026	0.025	0.026	0.025
N° 13	0.020	0.022	0.024	0.024	0.024	0.024	0.023	0.024	0.024	0.023	0.024	0.022

23. SR+1

Ta=25°C; load to Vcc/2; Vcc=+16V; RL=1kOhms



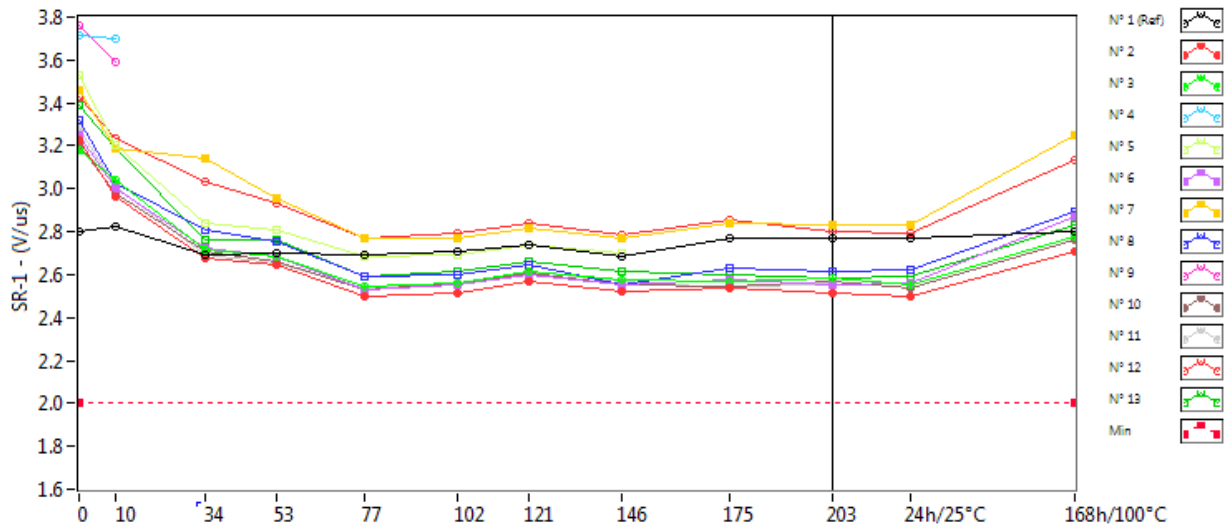
SR+1 . (V/us)

Min = 2.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	3.104	3.093	3.148	3.157	3.204	3.202	3.198	3.194	3.251	3.257	3.260	3.258
N° 2	3.176	3.140	3.149	3.137	3.066	3.053	3.039	3.027	3.075	3.072	3.073	3.121
N° 3	3.208	3.171	3.181	3.168	3.104	3.090	3.078	3.060	3.110	3.116	3.110	3.159
N° 4	3.438	3.410	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	3.342	3.304	3.307	3.294	3.231	3.212	3.205	3.192	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	3.233	3.192	3.202	3.185	3.121	3.106	3.098	3.079	3.128	3.126	3.133	3.178
N° 7	3.320	3.291	3.321	3.302	3.234	3.221	3.213	3.200	3.255	3.263	3.266	3.286
N° 8	3.295	3.255	3.260	3.254	3.186	3.171	3.159	3.163	3.194	3.196	3.187	3.242
N° 9	3.381	3.354	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	3.122	3.088	3.093	3.083	3.011	3.006	2.999	2.982	3.034	3.026	3.028	3.078
N° 11	3.150	3.115	3.131	3.118	3.046	3.024	3.013	2.998	3.052	3.055	Not Measurable	Not Measurable
N° 12	3.269	3.241	3.266	3.253	3.184	3.174	3.166	3.152	3.202	3.218	3.212	3.265
N° 13	3.215	3.179	3.190	3.175	3.107	3.096	3.084	3.072	3.117	3.119	3.123	3.171

24. SR-1

Ta=25°C; load to Vcc/2; Vcc=+16V; RL=1kOhms

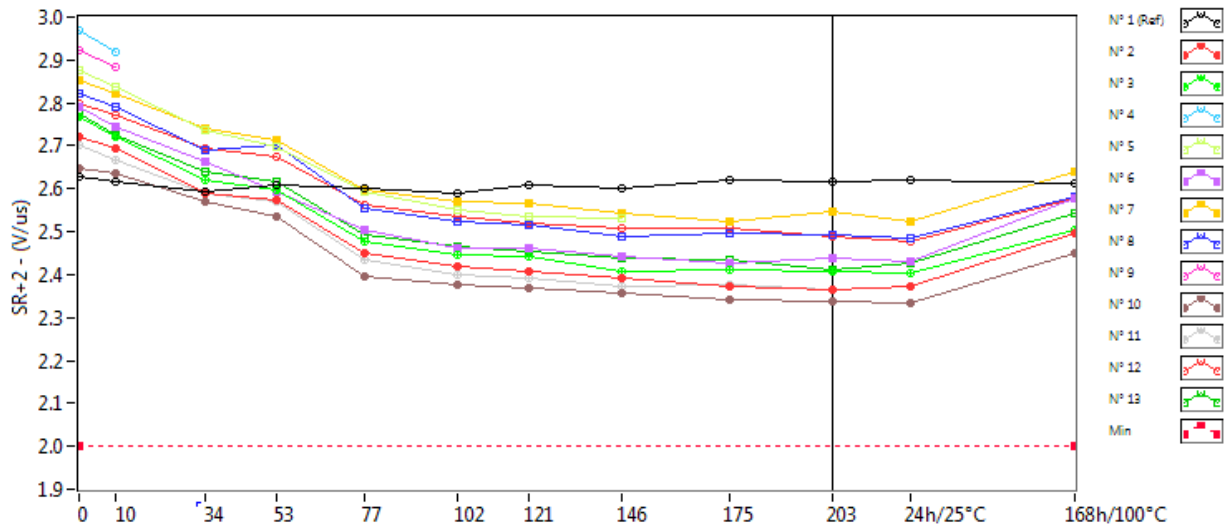


SR-1 . (V/us) Min = 2.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	2.797	2.822	2.693	2.699	2.691	2.704	2.739	2.686	2.769	2.766	2.769	2.798
N° 2	3.226	2.963	2.677	2.644	2.495	2.516	2.565	2.523	2.541	2.512	2.501	2.711
N° 3	3.177	3.042	2.719	2.687	2.543	2.559	2.613	2.574	2.566	2.585	2.554	2.776
N° 4	3.718	3.699	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	3.532	3.206	2.838	2.805	2.683	2.692	2.741	2.697	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	3.247	3.002	2.725	2.687	2.532	2.550	2.599	2.551	2.573	2.552	2.563	2.873
N° 7	3.459	3.190	3.140	2.959	2.768	2.772	2.816	2.772	2.842	2.830	2.830	3.251
N° 8	3.316	3.025	2.806	2.757	2.590	2.600	2.644	2.556	2.632	2.614	2.623	2.893
N° 9	3.762	3.587	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	3.204	2.980	2.707	2.664	2.529	2.560	2.607	2.556	2.546	2.566	2.535	2.763
N° 11	3.280	3.011	2.695	2.654	2.537	2.563	2.612	2.565	2.538	2.563	Not Measurable	Not Measurable
N° 12	3.432	3.238	3.032	2.931	2.766	2.791	2.836	2.782	2.852	2.798	2.796	3.134
N° 13	3.388	3.189	2.762	2.761	2.593	2.617	2.659	2.612	2.600	2.581	2.590	2.835

25. SR+2

Ta=25°C; load to Vcc/2; Vcc=+3V; RL=1kOhms

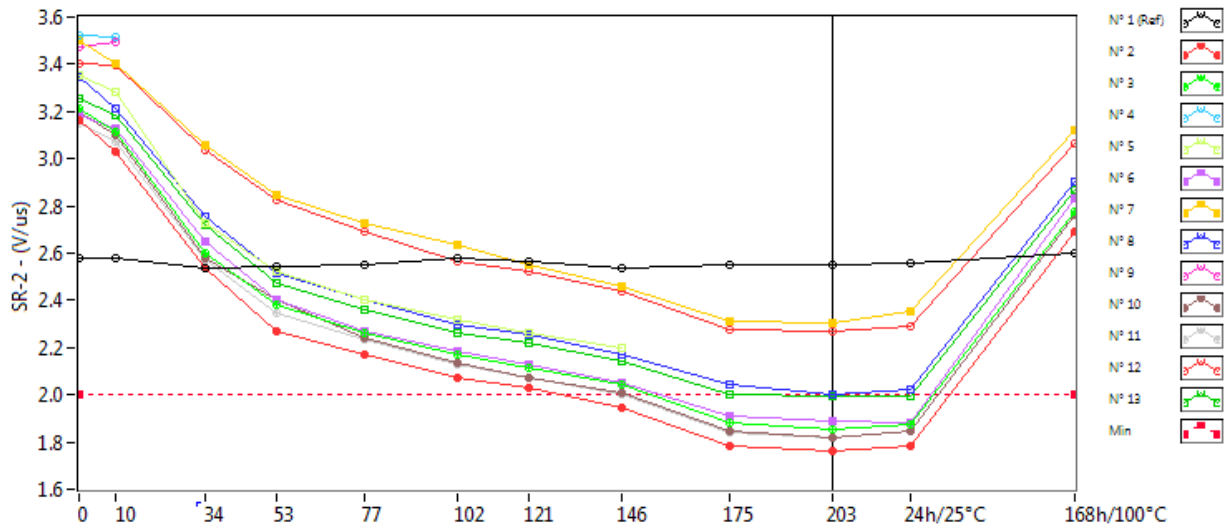


SR+2 . (V/us) Min = 2.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	2.628	2.618	2.595	2.609	2.602	2.591	2.609	2.602	2.619	2.615	2.619	2.612
N° 2	2.723	2.695	2.591	2.574	2.451	2.418	2.409	2.391	2.371	2.365	2.371	2.498
N° 3	2.766	2.723	2.619	2.598	2.476	2.448	2.442	2.406	2.412	2.406	2.402	2.504
N° 4	2.970	2.920	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	2.876	2.837	2.737	2.699	2.595	2.551	2.537	2.531	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	2.792	2.744	2.662	2.595	2.505	2.461	2.461	2.442	2.425	2.438	2.431	2.578
N° 7	2.852	2.822	2.741	2.714	2.598	2.571	2.567	2.544	2.525	2.546	2.525	2.638
N° 8	2.822	2.792	2.692	2.703	2.554	2.524	2.515	2.489	2.498	2.491	2.484	2.582
N° 9	2.924	2.884	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	2.647	2.637	2.571	2.534	2.394	2.377	2.368	2.356	2.341	2.338	2.332	2.451
N° 11	2.702	2.667	2.588	2.571	2.433	2.400	2.391	2.374	2.377	2.365	Not Measurable	Not Measurable
N° 12	2.799	2.773	2.695	2.673	2.561	2.537	2.521	2.508	2.508	2.487	2.477	2.578
N° 13	2.777	2.726	2.640	2.616	2.492	2.464	2.454	2.439	2.435	2.412	2.428	2.543

26. SR-2

Ta=25°C; load to Vcc/2; Vcc=+3V; RL=1kOhms



SR-2 . (V/us) Min = 2.0

	0krad(Si)	10krad(Si)	34krad(Si)	53krad(Si)	77krad(Si)	102krad(Si)	121krad(Si)	146krad(Si)	175krad(Si)	203krad(Si)	24h/25°C	168h/100°C
N° 1 (Ref)	2.578	2.578	2.534	2.544	2.551	2.580	2.562	2.537	2.551	2.554	2.557	2.602
N° 2	3.163	3.030	2.534	2.266	2.173	2.073	2.028	1.943	1.785	1.759	1.780	2.692
N° 3	3.210	3.113	2.598	2.385	2.263	2.168	2.114	2.041	1.881	1.856	1.872	2.776
N° 4	3.523	3.517	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 5	3.353	3.286	2.725	2.521	2.400	2.315	2.261	2.197	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 6	3.184	3.128	2.648	2.403	2.266	2.182	2.128	2.054	1.909	1.892	1.885	2.832
N° 7	3.504	3.400	3.059	2.845	2.725	2.637	2.551	2.457	2.312	2.306	2.351	3.122
N° 8	3.348	3.210	2.752	2.515	2.406	2.298	2.256	2.168	2.047	2.003	2.024	2.904
N° 9	3.473	3.491	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
N° 10	3.199	3.098	2.578	2.400	2.240	2.132	2.073	2.007	1.849	1.820	1.846	2.764
N° 11	3.148	3.073	2.574	2.345	2.232	2.130	2.071	2.003	1.840	1.820	Not Measurable	Not Measurable
N° 12	3.406	3.394	3.040	2.824	2.695	2.567	2.524	2.439	2.279	2.269	2.287	3.064
N° 13	3.258	3.184	2.722	2.470	2.359	2.263	2.220	2.139	2.003	1.997	1.993	2.870