

Infineon technologies HiRel Discrete & MW Semiconductors	ESCC Comp. No.: 520503202R	Page: 1
	Wafer Lot: VE848399	Rep.No.: VE848399TID Issue: Iss. 1, Dec. 2020
	Total Dose Steady-State Irradiation Test Report BUY06CS80A-01(ES)	

§1 COVER SHEET

• Component and Test Identification

Comp. Type	BUY06CS80A-01(ES)
ESCC Comp. No.	520503202R
Lot Ident.	Wafer Lot No. VE848399
	Assembly Lot n.a.
	ESA Date Code n.a.
	Radiation Testing Level R: 100kRad
Test data	Test Plan TPIFX1827B
	Tested Sample Serial No.s 115-138
	Control Sample Serial No.s R133,R135-R137

• Applicable Documents

Detail Specification	ESCC 5205/032 Issue 1, Sep. 2019
Generic Specification	ESCC 5000 Issue 10, Feb. 2021
Process Identification Document	A63500-L5491-P000_Detail_PID_BUY25CS_8
Irradiation Specification	ESCC Basic Specification No. 22900 Iss. 5, June 2016

• Manufacturer / Facility

Silicon Die	Infineon Technologies Austria AG Siemensstrasse 2, 9500 Villach, Austria
Assembly & Testing	Infineon Technologies AG Am Campeon 1-15, D 85579 Neubiberg, Germany

• Report Issue, Date / Manufacturers Signatures

Iss. 1, Dec. 2020

Total Number of Pages:

11 plus Appendix

Process	Department	Name	Signatures
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Test Management	PSS RFS D HIR	D. Schwertberger	
Project Management	PSS RFS D HIR	Dr. T. Chirila	
HiRel Management	PSS RFS D HIR	Dr. B. Eisener	

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§3 SCOPE AND TEST INFORMATION

This Test Report describes Total Dose Steady-State Irradiation (TID) tests and results of radiation-hardened power MOSFETs from Infineon Technologies, types BUY06CS80A-01(ES), in accordance to Chart F2 - Production Control Para. 5.2.5 in ESCC Generic Specification 5000.

This report contains the Total Dose Steady-State Irradiation Test results of wafer lot VE848399 for type BUY06CS80A-01(ES) (ESCC detail specification No. 5205/032).

Test campaign TID 53 has been performed at the facility JS-9000 in Germany on the 16.6.2020.

The read and record data from the electrical measurements of the tested and control samples is given in §7.2 of this report.

§4 IRRADIATION FACILITY – JS-9000

The JS-9000 irradiator is a pallet facility designed to irradiate large volumes of palletized products. The irradiation source is Co60.

For irradiations in this facility the samples are placed in an aluminium-lead container as recommended in ESCC 22900 §4.1.2. The irradiation field in the container has been determined by means of dose mapping. Dose rate varies from 91.4% to 105.7% which is in the +/-10% allowed window. Samples are placed such that the dose rate variation across the field of interest is between 94.2% and 105.7%.

Total Dose performance is measured during the test with an alanine dosimeter and recorded in the test report. Irradiation takes place at room temperature.

Area: 300x315 mm

105.7%	102.8%	102.8%	100%	100%	100%	#1-20	#21-40	#41-60	#61-80	#81-100	#101-120	#121-140	#141-160	#161-180	#181-200	#201-220	#221-240	#241-260	#261-280	#281-300	#301-320	#321-340	#341-360	#361-380	#381-400
105.7%	102.8%	100%	100%	100%	100%																				
100%	100%	97.1%	97.1%	97.1%	97.1%																				
100%	97.1%	97.1%	94.2%	94.2%	94.2%																				
97.1%	97.1%	94.2%	94.2%	94.2%	91.4%																				

Fig. 1: Left: Gamma intensity within the container. Right: sample positions #1-400 with respect to the characterized irradiation plane.

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§5 DEVICES MARKINGS AND SAMPLE PREPARATION

In order to contact devices with the test sockets on bias boards, chips have been soldered with AuZn solder material and bonded with 125µm Al wires to respective 3-pin PCB-TO-adaptor boards to connect Gate/Drain/Source contacts of the MOSFETs.

Devices' numbers are written on the PCB with a permanent marker. The number correlates in the sample list to the lot and wafer number.

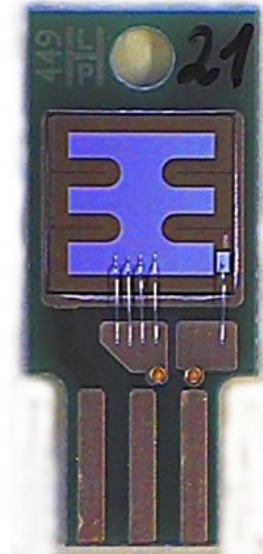


Fig. 2: Die mounted on PCB for TID testing – soldered and wire-bonded

§6 IRRADIATION CONDITIONS

The irradiation step had a duration of 5h 18 min at a dose rate of 33.5 krad/h which yields a total ionizing dose of 177 krad.

The tested devices were electrically biased according to the table below (remote test):

Electrical Bias Condition	Bias Circuit	Supply voltages		
		Gate	Drain	Source
C1	Fig. 3	+20 V	0 V	0 V
C2	Fig. 3	-20 V	0 V	0 V
C3	Fig. 3	0 V	60 V	0 V

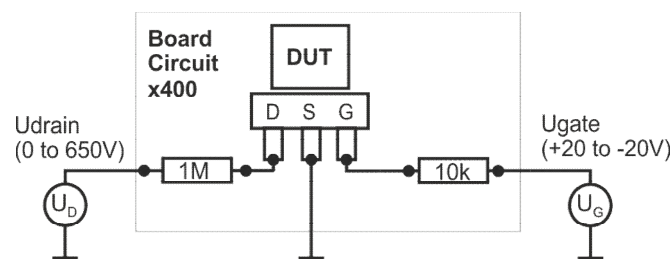


Fig. 3 Bias circuit for TID tests

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§7 IRRADIATION TEST SEQUENCE

Irradiation- anneal- and electrical measurement steps follow the FLOW CHART FOR QUALIFICATION AND LOT ACCEPTANCE TESTING of Basic Specifications ESCC22900.

The test data is documented in an Infineon internal data package. It includes a summary listing total submitted and rejected numbers of components to the performed processes and tests.

The following table certifies which tests have been actually performed and certifies the availability of data.

TID Test Overview

Process / Test	Perfor- med	Data Avail.	Remarks / Notes
Serialisation	x	x	
Initial electrical measurements – pre-TID	x	x	Acc. Table 2, DC in ESCC Det. Spec.
Irradiation in one step	x	x	Conditions specified in §6
Parameter Drift Values – post-TID	x	x	Acc. §2.10.2 in ESCC Det. Spec.
Room temperature anneal for 24 hours	x	x	Same bias as during irradiation
Parameter Drift Values – 24h@RT	x	x	Acc. §2.10.2 in ESCC Det. Spec.
Accelerated aging: 168 hours at 100°C	x	x	Same bias as during irradiation
Parameter Drift Values – 168h@100°C	x	x	Acc. §2.10.2 in ESCC Det. Spec.
Check for Lot Failure	x	x	

§7.1 ATTRIBUTES RECORD OF MEASUREMENTS, TESTS AND INSPECTIONS

The following table gives the results of the total dose steady-state irradiation tests actually performed in terms of total quantity to test, rejected quantity in test, pass quantity in test.

Attributes Record of Measurements, Tests and Inspections Performed

Process / Test	to Test	Fail.	Pass	Data	Remarks / Notes, S/Ns of Failures and WDs
Initial Measurements	28	0	28	avail.	4 control samples included
Irradiation / Drift Value	28	0	28	avail.	4 control samples included
24h @ RT anneal / Drift Value	28	0	28	avail.	4 control samples included
168h @ 100°C / Drift Value	28	0	28	avail.	4 control samples included

Sample distribution within the bias conditions

Item	Qty	Part Notation in R&R Tables	
		Subgroup	Part SG S/Ns
BUY06CS80A-01(ES) silicon chips used for C1 condition	8	C1	#115,118,121,124,127,130,133,136
BUY06CS80A-01(ES) silicon chips used for C2 condition	8	C2	#116,119,122,125,128,131,134,137
BUY06CS80A-01(ES) silicon chips used for C3 condition	8	C3	#117,120,123,126,129,132,135,138
BUY06CS80A-01(ES) silicon chips used as control samples (not irradiated, not annealed)	4	control	#R133,R135-R137

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§7.2 READ AND RECORD DATA OF ELECTRICAL MEASUREMENTS

This documentation contains the data from all tested parts and control samples.

Due to the mounting process for these tests and very high currents, VSD (80A) and RDSon (60A, 10V) absolute values are higher than specified in the Detail Specification – see also control samples.

§7.2.1 INITIAL MEASUREMENTS (TABLE 2, DC)

S/N	V(BR)DSS [V]	VGS(th) [V]	IGSS [nA]	IGSS- [nA]	IDSS [uA]	RDS(ON) [mOhm]	VSD [V]	WaferLot/WaferNo.
min	60	2						
max		4	100	100	25	10	1.3	
115	76	3.02	0.7	2.1	0.006	9.0	1.239	VE848399 #20
116	76	3.00	0.7	1.8	0.008	9.2	1.247	VE848399 #20
117	74	3.00	0.7	1.8	0.006	9.2	1.249	VE848399 #20
118	76	3.00	0.7	1.8	0.008	9.0	1.234	VE848399 #20
119	76	3.00	0.7	1.8	0.008	9.0	1.236	VE848399 #20
120	76	3.01	0.7	1.8	0.008	9.1	1.241	VE848399 #20
121	74	3.00	0.6	1.9	0.007	9.1	1.248	VE848399 #21
122	75	3.02	0.7	2.0	0.007	9.1	1.244	VE848399 #21
123	74	3.01	0.7	1.7	0.007	9.1	1.242	VE848399 #21
124	76	3.01	0.7	2.0	0.008	9.0	1.235	VE848399 #21
125	76	3.03	0.8	2.0	0.009	9.0	1.237	VE848399 #21
126	76	3.02	0.7	2.0	0.009	9.0	1.234	VE848399 #21
127	75	3.01	0.7	1.9	0.006	9.2	1.245	VE848399 #22
128	76	3.00	0.6	1.8	0.007	9.1	1.243	VE848399 #22
129	75	3.01	0.7	1.9	0.006	9.1	1.239	VE848399 #22
130	75	3.00	0.6	1.8	0.008	9.0	1.239	VE848399 #22
131	75	3.00	0.8	1.3	0.008	9.0	1.232	VE848399 #22
132	74	3.00	0.7	1.9	0.009	9.0	1.234	VE848399 #22
133	74	3.02	0.7	1.8	0.007	9.3	1.250	VE848399 #23
134	74	2.99	0.7	1.8	0.007	9.2	1.242	VE848399 #23
135	74	3.02	0.7	1.8	0.007	9.3	1.249	VE848399 #23
136	76	3.01	0.7	1.9	0.008	9.2	1.244	VE848399 #23
137	75	3.01	0.7	1.7	0.008	9.1	1.234	VE848399 #23
138	75	3.00	0.8	2.0	0.009	9.3	1.251	VE848399 #23
R133	75	2.90	0.9	2.0	0.006	9.2	1.249	
R135	75	2.91	0.8	2.0	0.006	9.1	1.253	
R136	75	2.91	0.7	2.0	0.006	9.2	1.252	
R137	76	2.90	0.7	2.0	0.006	9.2	1.253	

§7.2.2 ELECTRICAL MEASUREMENTS AFTER IRRADIATION

S/N	Drift Deltas post irradiation						Absolute Values post irradiation							Bias Cond.
	BV(DSS) [%]	VGS(th) [%]	IGSS [nA]	IGSS- [nA]	RDS(ON) [%]	VSD [%]	BV(DSS) [V]	VGS(th) [V]	IGSS [nA]	IGSS- [nA]	IDSS [uA]	RDS(ON) [mOhm]	VSD [V]	
min	-20%	-50%	-20nA	-20nA	-20%	-10%	60	2						
max	+20%	+10%	+20nA	+20nA	+20%	+10%		4	100	100	25	10	1.3	
115	-3.4	-21.8	-0.0	0.5	-3.6	-0.5	73	2.36	0.7	2.6	0.276	8.7	1.233	C1
116	-0.3	-23.1	-0.0	3.9	-1.1	-0.1	76	2.31	0.7	5.7	0.023	9.1	1.246	C2
117	-0.3	-28.1	0.0	-0.1	-1.1	-0.6	74	2.15	0.7	1.7	0.028	9.1	1.241	C3
118	-3.5	-21.5	-0.1	0.5	-3.7	-0.5	73	2.36	0.6	2.3	0.274	8.6	1.228	C1
119	-0.3	-23.2	-0.0	3.7	-1.3	-0.3	76	2.31	0.7	5.5	0.023	8.9	1.233	C2
120	-0.3	-27.8	-0.0	0.1	-1.1	-0.6	76	2.17	0.7	1.8	0.030	9.0	1.233	C3

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	Drift Deltas post irradiation						Absolute Values post irradiation							Bias Cond.
	BV _(DSS)	VGS _(th)	IGSS	IGSS-	RDS _(ON)	V _{SD}	BV _(DSS)	VGS _(th)	IGSS	IGSS-	IDSS	RDS _(ON)	V _{SD}	
S/N	[%]	[%]	[nA]	[nA]	[%]	[%]	[V]	[V]	[nA]	[nA]	[uA]	[mOhm]	[V]	
121	-3.4	-21.9	0.0	0.9	-3.5	-0.5	72	2.35	0.6	2.8	0.280	8.8	1.241	C1
122	-0.3	-20.2	0.0	4.3	-1.1	-0.1	74	2.41	0.7	6.4	0.022	9.0	1.243	C2
123	-0.3	-27.8	0.1	0.3	-1.0	-0.6	74	2.18	0.8	2.0	0.028	9.0	1.234	C3
124	-3.5	-22.2	-0.0	0.7	-3.5	-0.5	73	2.35	0.7	2.7	0.290	8.7	1.229	C1
125	-0.3	-19.2	-0.1	3.8	-1.3	-0.1	76	2.45	0.7	5.8	0.023	8.9	1.236	C2
126	-0.3	-27.5	-0.1	-0.1	-1.0	-0.7	76	2.19	0.6	1.9	0.030	8.9	1.225	C3
127	-3.5	-22.7	-0.0	0.7	-3.8	-0.5	72	2.33	0.7	2.5	0.276	8.8	1.239	C1
128	-0.3	-18.3	0.1	4.5	-1.2	-0.1	75	2.46	0.7	6.3	0.022	9.0	1.242	C2
129	-0.3	-28.2	-0.0	-0.1	-1.1	-0.6	75	2.16	0.7	1.8	0.028	9.0	1.231	C3
130	-3.6	-22.5	0.1	0.8	-3.8	-0.6	72	2.33	0.7	2.6	0.280	8.7	1.231	C1
131	-0.3	-17.7	-0.1	4.5	-1.1	-0.0	75	2.47	0.7	5.7	0.023	8.9	1.232	C2
132	-0.3	-27.7	0.1	0.0	-1.0	-0.7	74	2.17	0.7	1.9	0.032	8.9	1.226	C3
133	-3.4	-22.1	-0.1	0.6	-3.8	-0.5	72	2.36	0.6	2.5	0.279	8.9	1.244	C1
134	-0.3	-15.4	-0.1	3.9	-1.1	-0.1	74	2.53	0.6	5.7	0.023	9.0	1.241	C2
135	-0.2	-28.4	0.1	-0.0	-1.2	-0.7	74	2.16	0.8	1.8	0.029	9.2	1.240	C3
136	-3.2	-22.0	-0.0	0.9	-3.6	-0.5	73	2.35	0.6	2.8	0.277	8.9	1.237	C1
137	-0.3	-16.5	-0.0	3.7	-1.3	-0.1	75	2.51	0.6	5.5	0.023	9.0	1.233	C2
138	-0.3	-27.6	-0.1	-0.0	-1.1	-0.6	75	2.18	0.7	1.9	0.031	9.2	1.243	C3
R133	-0.1	0.2	-0.2	0.4	-0.4	0.1	75	2.91	0.7	2.4	0.006	9.1	1.250	Control
R135	-0.1	0.3	-0.1	-0.1	-0.5	-0.1	75	2.92	0.7	1.9	0.006	9.1	1.252	Control
R136	-0.1	0.3	-0.0	-0.0	-0.4	0.0	75	2.92	0.7	2.0	0.006	9.2	1.252	Control
R137	-0.1	0.3	0.1	-0.0	-0.4	-0.0	76	2.91	0.8	1.9	0.006	9.2	1.253	Control

§7.2.3 ELECTRICAL MEASUREMENTS AFTER 24 HOURS ANNEAL AT ROOM TEMPERATURE

	Drift Deltas post 24h anneal at RT						Absolute Values post 24h anneal at RT							Bias Cond.
S/N	BV _(DSS) [%]	VGS _(th) [%]	IGSS [nA]	IGSS- [nA]	RDS _(ON) [%]	V _{SD} [%]	BV _(DSS) [V]	VGS _(th) [V]	IGSS [nA]	IGSS- [nA]	IDSS [uA]	RDS _(ON) [mOhm]	V _{SD} [V]	
min	-20%	-50%	-20nA	-20nA	-20%	-10%	60	2						
max	+20%	+10%	+20nA	+20nA	+20%	+10%		4	100	100	25	10	1.3	
115	-3.1	-16.5	-0.0	0.2	-3.6	-0.3	73	2.52	0.7	2.3	0.213	8.7	1.236	C1
116	-0.4	-9.2	-0.0	0.0	-1.5	-0.1	76	2.72	0.7	1.9	0.020	9.1	1.246	C2
117	-0.3	-24.3	0.0	0.0	-1.1	-0.5	74	2.27	0.7	1.8	0.024	9.1	1.243	C3
118	-3.1	-16.3	-0.0	-0.0	-3.6	-0.3	73	2.51	0.7	1.8	0.218	8.6	1.230	C1
119	-0.3	-9.4	0.0	0.3	-1.5	-0.2	76	2.72	0.7	2.1	0.020	8.9	1.234	C2
120	-0.3	-24.2	0.0	-0.0	-1.3	-0.4	76	2.28	0.7	1.8	0.026	9.0	1.235	C3
121	-3.0	-16.5	0.2	0.4	-3.4	-0.3	72	2.51	0.8	2.3	0.220	8.8	1.244	C1
122	-0.3	-17.9	0.1	-0.2	-1.4	-0.0	74	2.48	0.8	1.8	0.020	9.0	1.244	C2
123	-0.3	-23.9	0.0	0.1	-1.2	-0.5	74	2.29	0.7	1.8	0.024	9.0	1.236	C3
124	-3.1	-16.7	0.0	0.4	-3.5	-0.3	74	2.51	0.7	2.3	0.221	8.7	1.231	C1
125	-0.3	-17.0	-0.0	-0.1	-1.3	-0.1	76	2.51	0.8	1.9	0.021	8.9	1.236	C2
126	-0.4	-23.7	0.2	-0.3	-1.2	-0.5	76	2.31	0.8	1.7	0.025	8.9	1.228	C3
127	-3.1	-17.2	0.0	0.4	-3.6	-0.3	73	2.49	0.7	2.3	0.217	8.8	1.241	C1
128	-0.3	-16.0	0.1	0.0	-1.4	-0.0	75	2.52	0.7	1.8	0.019	9.0	1.242	C2
129	-0.3	-24.3	0.1	-0.1	-1.1	-0.5	75	2.28	0.8	1.9	0.023	9.0	1.234	C3
130	-3.2	-17.0	-0.0	0.4	-3.7	-0.4	73	2.49	0.6	2.2	0.219	8.7	1.233	C1
131	-0.3	-15.5	-0.1	0.6	-1.3	0.0	75	2.54	0.7	1.9	0.020	8.8	1.232	C2
132	-0.3	-23.8	0.2	-0.0	-1.2	-0.6	74	2.29	0.9	1.8	0.027	8.8	1.227	C3
133	-3.0	-16.7	0.0	0.3	-3.6	-0.3	72	2.52	0.7	2.2	0.221	8.9	1.246	C1
134	-0.3	-13.5	0.1	0.1	-1.3	0.0	74	2.59	0.8	1.9	0.020	9.0	1.242	C2
135	-0.3	-24.4	-0.0	0.2	-1.2	-0.5	74	2.28	0.7	2.0	0.024	9.2	1.243	C3
136	-2.8	-16.7	-0.0	0.4	-3.6	-0.3	73	2.51	0.7	2.3	0.217	8.9	1.240	C1
137	-0.3	-14.4	0.0	-0.1	-1.4	-0.1	75	2.58	0.7	1.6	0.020	9.0	1.234	C2
138	-0.4	-23.8	-0.1	-0.0	-1.3	-0.3	75	2.29	0.6	2.0	0.026	9.2	1.247	C3

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	Drift Deltas post 24h anneal at RT						Absolute Values post 24h anneal at RT							Bias Cond.
S/N	BV _(DSS) [%]	VGS _(th) [%]	IGSS [nA]	IGSS- [nA]	RDS _(ON) [%]	V _{SD} [%]	BV _(DSS) [V]	VGS _(th) [V]	IGSS [nA]	IGSS- [nA]	IDSS [uA]	RDS _(ON) [mOhm]	V _{SD} [V]	
R133	0.2	-0.4	-0.2	0.2	0.6	0.1	75	2.89	0.7	2.2	0.006	9.2	1.250	Control
R135	-0.0	0.1	-0.0	-0.2	-0.1	-0.1	75	2.91	0.7	1.8	0.006	9.1	1.252	Control
R136	-0.0	0.1	-0.0	0.1	0.1	-0.1	75	2.91	0.7	2.1	0.005	9.2	1.251	Control
R137	-0.1	0.1	-0.0	0.0	-0.2	0.0	76	2.90	0.7	2.0	0.005	9.2	1.253	Control

§7.2.4 ELECTRICAL MEASUREMENTS AFTER 168 HOURS ANNEAL AT 100°C

	Drift Deltas post 168h anneal at 100°C						Absolute Values post 168h anneal at 100°C							Bias Cond.
S/N	BV _(DSS) [%]	VGS _(th) [%]	IGSS [nA]	IGSS- [nA]	RDS _(ON) [%]	V _{SD} [%]	BV _(DSS) [V]	VGS _(th) [V]	IGSS [nA]	IGSS- [nA]	IDSS [uA]	RDS _(ON) [mOhm]	V _{SD} [V]	
min	-20%	-50%	-20nA	-20nA	-20%	-10%	60	2						
max	+20%	+10%	+20nA	+20nA	+20%	+10%		4	100	100	25	10	1.3	
115	-2.2	-13.4	0.2	0.0	-2.8	-0.4	74	2.62	0.9	2.1	0.212	8.8	1.234	C1
116	-0.2	-8.3	0.1	0.0	-1.3	-0.3	76	2.75	0.8	1.8	0.018	9.1	1.244	C2
117	-0.1	-20.4	0.2	0.2	-1.1	-0.6	74	2.38	0.9	2.0	0.015	9.1	1.241	C3
118	-2.3	-13.2	0.1	0.3	-2.9	-0.4	74	2.61	0.7	2.1	0.204	8.7	1.229	C1
119	-0.2	-8.4	0.1	0.2	-1.4	-0.4	76	2.75	0.8	2.1	0.018	8.9	1.231	C2
120	-0.1	-20.2	0.2	0.1	-1.2	-0.6	76	2.40	0.9	1.9	0.016	9.0	1.233	C3
121	-2.2	-13.4	0.2	0.3	-3.0	-0.3	72	2.60	0.8	2.2	0.194	8.8	1.244	C1
122	-0.3	-15.8	0.2	-0.2	-1.5	-0.3	74	2.54	0.9	1.8	0.016	9.0	1.241	C2
123	-0.1	-20.2	0.2	0.3	-1.0	-0.6	74	2.40	0.9	2.0	0.014	9.0	1.234	C3
124	-2.2	-13.5	0.2	-0.1	-2.9	-0.3	74	2.61	0.9	1.8	0.201	8.7	1.231	C1
125	-0.2	-15.1	0.1	0.1	-1.3	-0.2	76	2.57	0.9	2.1	0.017	8.9	1.234	C2
126	-0.2	-19.9	0.1	0.0	-1.1	-0.7	76	2.42	0.8	2.0	0.016	8.9	1.226	C3
127	-2.2	-14.0	0.1	0.1	-3.0	-0.4	73	2.59	0.8	2.0	0.202	8.9	1.239	C1
128	-0.2	-14.5	0.1	0.2	-1.2	-0.2	76	2.57	0.7	1.9	0.016	9.0	1.240	C2
129	-0.1	-20.7	0.1	0.0	-1.1	-0.7	75	2.39	0.8	1.9	0.014	9.0	1.231	C3
130	-2.3	-13.8	0.2	0.3	-3.1	-0.5	73	2.59	0.8	2.1	0.202	8.7	1.232	C1
131	-0.2	-13.9	0.1	0.8	-1.2	-0.2	75	2.58	0.9	2.0	0.017	8.8	1.230	C2
132	-0.2	-20.1	0.3	0.1	-1.2	-0.6	74	2.40	1.0	2.0	0.017	8.8	1.226	C3
133	-2.2	-13.7	0.2	0.1	-2.8	-0.4	73	2.61	0.9	2.0	0.214	9.0	1.245	C1
134	-0.2	-11.8	0.1	0.1	-1.1	-0.2	74	2.64	0.8	1.9	0.017	9.1	1.240	C2
135	-0.1	-20.6	0.1	0.1	-1.1	-0.6	74	2.40	0.8	1.9	0.015	9.2	1.241	C3
136	-1.9	-14.0	0.2	0.1	-2.5	-0.4	74	2.59	0.9	2.0	0.219	9.0	1.239	C1
137	-0.2	-12.8	0.1	0.4	-1.3	-0.2	75	2.63	0.8	2.1	0.018	9.0	1.232	C2
138	-0.2	-20.0	0.0	0.1	-1.2	-0.6	75	2.40	0.8	2.1	0.016	9.2	1.243	C3
R133	0.1	-0.4	0.0	0.1	0.4	0.0	75	2.89	0.9	2.1	0.006	9.2	1.250	Control
R135	0.0	-0.2	0.1	0.1	0.2	-0.1	75	2.90	0.8	2.0	0.006	9.2	1.253	Control
R136	-0.0	-0.1	0.1	0.0	-0.1	0.1	75	2.90	0.8	2.1	0.006	9.2	1.252	Control
R137	-0.0	-0.1	0.2	-0.2	-0.1	0.0	76	2.90	0.9	1.8	0.005	9.2	1.253	Control

§7.3 GRAPHICAL REPRESENTATION OF ELECTRICAL MEASUREMENTS

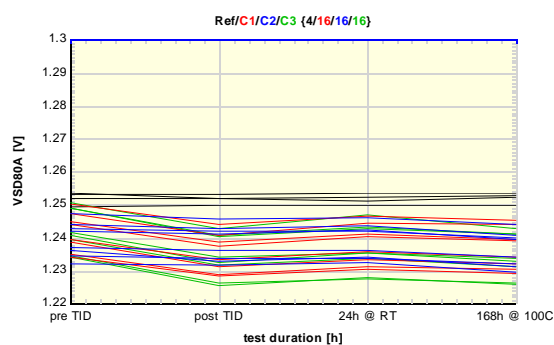
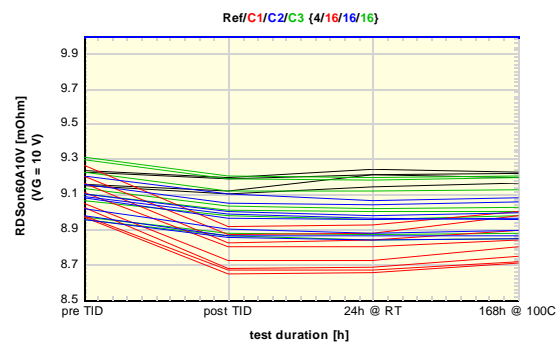
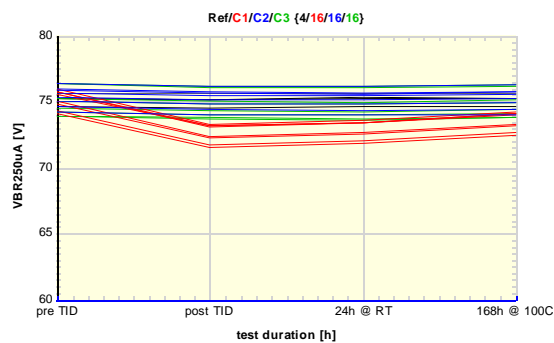
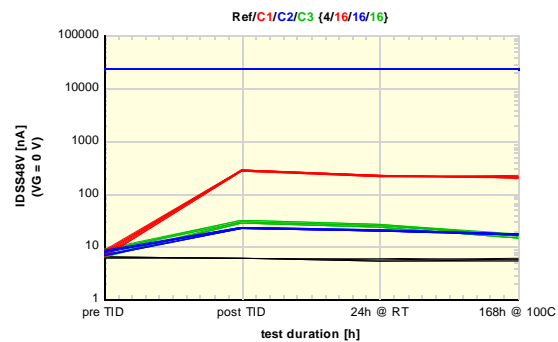
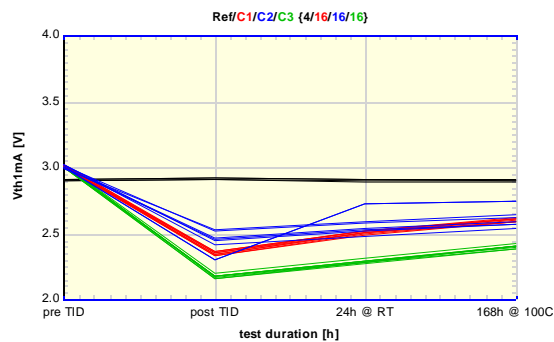
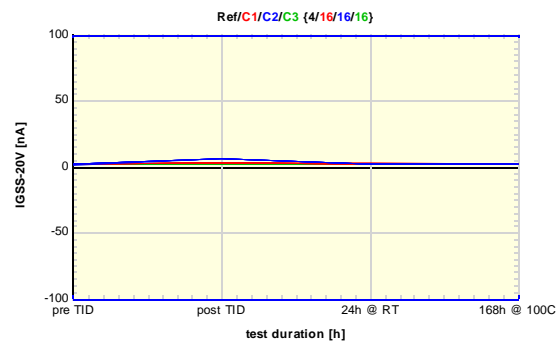
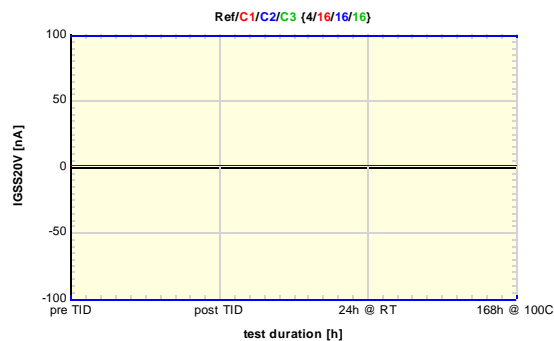
In the following, the electrical parameters listed in §7.2 are plotted for four points of the testing sequence, i.e.

1. Prior to irradiation (pre-TID),
2. Post-irradiation (post-TID),
3. Posterior to room-temperature anneal of 24 hours (24h@RT),
4. Posterior to 168 hours of anneal at 100°C (168h@100°C) .

Four groups of samples are given coded by line-color:

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1. Unirradiated control (reference) devices (legend: Ref in BLACK)
2. Irradiated devices Bias Condition C1 (legend: C1 in RED)
3. Irradiated devices Bias Condition C2 (legend: C2 in BLUE)
4. Irradiated devices Bias Condition C3 (legend: C3 in GREEN)



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§8 TOTAL IONIZING DOSE TESTING RESULT SUMMARY / CHECK FOR LOT FAILURE

TID Bias Condition	Minimum Required	Total to Condition	Failures Allowed	Failures Occurred	Condition Passed
C1	5	8	0	0	yes
C2	5	8	0	0	yes
C3	5	8	0	0	yes
Complete TID Tests					passed

The Wafer Lot passed the Total Dose Steady-State Irradiation Test.