

TPS7H3301-SP Neutron Displacement Damage Characterization

ABSTRACT

This report presents the effect of neutron displacement damage (NDD) on the TPS7H3301-SP device. The results show that all devices were fully functional and within production test limits after having been irradiated up to a neutron fluence of 1×10^{13} n/cm² (1-MeV equivalent). A sample size of nine units was exposed to radiation testing per (MIL-STD-883, Method 1017 for Neutron Irradiation) and an additional unirradiated sample device was used for correlation. All devices used in the experiment were from lot date code 1729A and assembly lot 7003811. Electrical testing was performed at Texas Instruments before and after neutron irradiation using the production test program for TPS7H3301-SP.

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1 Overview

The TPS7H3301-SP is a radiation-hardened double data rate (DDR) 3-A termination regulator with built-in VTTREF buffer. The regulator is specifically design to provide a complete, compact, low-noise solution for space DDR termination applications such as single board computers, solid state recorders, and payload processing.

General device information and testing conditions are listed in [Table 1](#).

Table 1. Overview Information

TI Part Number	TPS7H3301-SP
SMD Number	5962R1422801VXC
Device Function	DDR 3-A Termination Regulator
Die Name	RTPS7H3301A1VM
Technology	LBC7
A/T Lot Number / Date Code	7003811 /1729A
Unbiased Quantity Tested	9
Exposure Facility	VPT Rad
Neutron Fluence (1-MeV equivalent)	1.0×10^{12} , 5.0×10^{12} , 1.0×10^{13} n/cm ²
Irradiation Temperature	25°C

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2 Test Procedures

The TPS7H3301-SP was electrically pre-tested using the production automated test equipment program. General test procedures were MIL-STD-883, Method 1017 for Neutron Irradiation of TPS7H3301-SP.

Table 2. Neutron Irradiation Conditions

Group	Sample Qty	Neutron Fluence (n/cm ²)	Bias
A	3	1.0×10^{12}	Unbiased
B	3	5.0×10^{12}	Unbiased
C	3	1.0×10^{13}	Unbiased



Figure 1. TPS7H3301-SP Device

3 Facility

The University of Massachusetts's Fast Neutron Irradiation (FNI) facility is an experimental facility that replaced the three beam ports that originally existed on the left side of the research reactor. It is designed to give a fast flux level $\geq 10^{11}$ n/cm²-s, with relatively low thermal fluence and gamma dose rates. Samples with a cross-sectional area as large as 30 cm (12 in) × 30 cm (12 in) and up to 15 cm (6 in) thick can be irradiated. The fast neutron flux is designed to be nearly uniform over the 30-cm (12-in) × 30-cm (12-in) area facing the core, and the fast fluence variation through the sample thickness is minimized via a single 180° rotation of the sample canister at the midpoint of the irradiation period. The FNI facility offers a significantly larger sample volume than previously available within the University of Massachusetts Lowell Research Reactor (UMLRR).

The fluences are calculated based on 1-MeV equivalences.

Detailed information of the radiation facility is available at the following link:

www.uml.edu/docs/FNI%20Brochure_tcm18-90375.pdf

4 Results

There were no functional failures at any irradiation level. All parametric measurements remained well within all data sheet (SLVSCJ5) limits for all exposure levels. All parametric measurements remained well within the production test limits which are guard-banded from the data sheet limits. The full parameter list and graphs are found in [Appendix A](#)

[Table 3](#) lists the TPS7H3301-SP specification compliance matrix.

Table 3. TPS7H3301-SP Specifications

PARAMETER	TEST CONDITION	TPS7H3301-SP				ATE Test #	
		MIN	TYP	MAX	UNIT		
V_O/V_{TT} OUTPUT							
$V_{LDOIN} - V_{TT}$	$V_{LDOIN} > V_{TT}$	VIN / VDD=2.95 V, VVDDQSNS=2.5V, VTT=VVTTRF - 50mV (DDR1), IO=0.5A		62	230	mV	26.x
		VIN / VDD=2.95 V, VVDDQSNS=2.5V, VTT=VVTTRF - 50mV (DDR1), IO=1A		129	300	mV	26.x
		VIN / VDD=2.95 V, VVDDQSNS=2.5V, VTT=VVTTRF - 50mV (DDR1), IO=2A		272	400	mV	26.x
		VIN / VDD=2.375V, VVDDQSNS=1.8V, VTT=VVTTRF - 50mV (DDR2), IO=0.5A		57	230	mV	27.x
		VIN / VDD=2.375V, VVDDQSNS=1.8V, VTT=VVTTRF - 50mV (DDR2), IO=1A		118	300	mV	27.x
		VIN / VDD=2.375V, VVDDQSNS=1.8V, VTT=VVTTRF - 50mV (DDR2), IO=2A		245	400	mV	27.x
		VIN / VDD=2.375V, VVDDQSNS=1.5V, VTT=VVTTRF - 50mV (DDR3), IO=0.5A		54	230	mV	28.x
		VIN / VDD=2.375V, VVDDQSNS=1.5V, VTT=VVTTRF - 50mV (DDR3), IO=1A		109	300	mV	28.x
		VIN / VDD=2.375V, VVDDQSNS=1.5V, VTT=VVTTRF - 50mV (DDR3), IO=2A		230	400	mV	28.x
		VIN / VDD=2.375V, VVDDQSNS=1.35V, VTT=VVTTRF - 50mV (DDR3L), IO=0.5A		53	230	mV	28.x
		VIN / VDD=2.375V, VVDDQSNS=1.35V, VTT=VVTTRF - 50mV (DDR3L), IO=1A		107	300	mV	28.x
		VIN / VDD=2.375V, VVDDQSNS=1.35V, VTT=VVTTRF - 50mV (DDR3L), IO=2A		223	400	mV	28.x
		VIN / VDD=2.375V, VVDDQSNS=1.2V, VTT=VVTTRF - 50mV (DDR4), IO=0.5A		51	230	mV	29.x
		VIN / VDD=2.375V, VVDDQSNS=1.2V, VTT=VVTTRF - 50mV (DDR4), IO=1A		105	300	mV	29.x
VIN / VDD=2.375V, VVDDQSNS=1.2V, VTT=VVTTRF - 50mV (DDR4), IO=2A		216	400	mV	29.x		
$V_{VOTOL/VTTTOL}$	Output voltage tolerance to V_{DDQSNS}	-3A < IVO < 3A, across Vin voltage range	-35	+/- 25	35	mV	20.x, 21.x, 22.x

Table 3. TPS7H3301-SP Specifications (continued)

PARAMETER		TEST CONDITION	TPS7H3301-SP				ATE Test #
			MIN	TYP	MAX	UNIT	
V_{DDQSN} AND V_{VTREF} OUTPUT							
V _{DDQSN}	Voltage range		1		3.6	V	Covered in all tests
V _{TTREF}	V _{TTREF} voltage			V _{DDQSN} /2		V	16.x, 17.x
V _{VTREF}	V _{VTREF} voltage tolerance to V _{DDQSN}	-10 mA < I _{VTREF} < 10 mA, V _{DDQSN} = 2.5 V	-15		15	mV	16.x, 17.x
		-10 mA < I _{VTREF} < 10 mA, V _{DDQSN} = 1.8 V	-15		15	mV	16.x, 17.x
		-10 mA < I _{VTREF} < 10 mA, V _{DDQSN} = 1.5 V	-15		15	mV	16.x, 17.x
		-10 mA < I _{VTREF} < 10 mA, V _{DDQSN} = 1.35 V	-15		15	mV	16.x, 17.x
		-10 mA < I _{VTREF} < 10 mA, V _{DDQSN} = 1.2 V	-15		15	mV	16.x, 17.x
UVLO / EN LOGIC THRESHOLD							
I _{ENLEAK}	Logic input leakage current	EN, TA = 25°C	-1		1	μA	2.7

Test Results

This appendix contains the detailed test results.

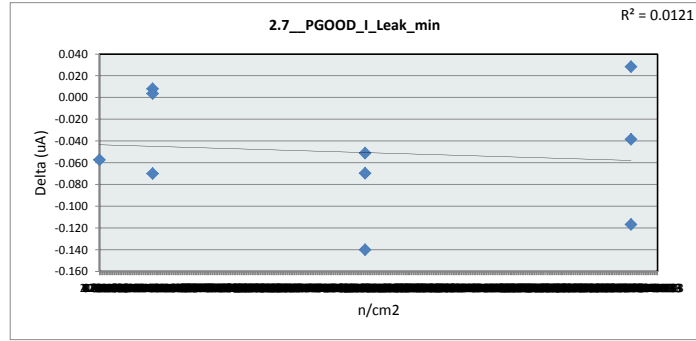
Delta Threshold 10.00%

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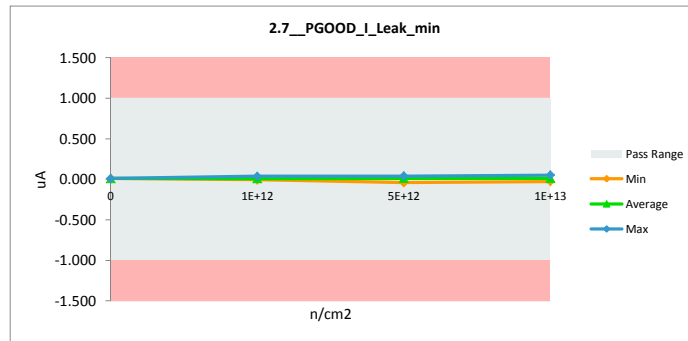
2.7_PGOOD_I_Leak_min		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	uA	uA
Max Limit	1	1
Min Limit	-1	-1

n/cm2	Serial #	Pre	Post	Delta
0	67	-0.048	0.009	-0.057
1E+12	78	0.046	0.038	0.008
1E+12	81	-0.076	-0.006	-0.070
1E+12	82	-0.003	-0.006	0.004
5E+12	75	-0.101	0.039	-0.140
5E+12	79	-0.015	0.036	-0.051
5E+12	80	-0.112	-0.042	-0.070
1E+13	68	-0.065	0.052	-0.117
1E+13	71	0.000	-0.028	0.029
1E+13	74	-0.029	0.009	-0.039
Max		0.046	0.052	0.029
Average		-0.040	0.010	-0.050
Min		-0.112	-0.042	-0.140
Std Dev		0.049	0.031	0.054



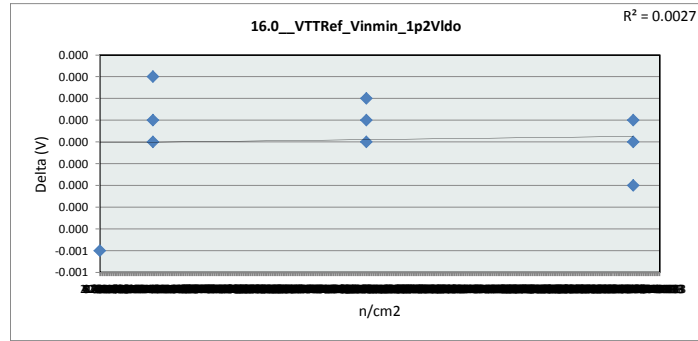
2.7_PGOOD_I_Leak_min		
Test Site	Junkins	
Tester	FETS10	
Test Number	EF636800	
Max Limit	1	uA
Min Limit	-1	uA

n/cm2	0	1E+12	5E+12	1E+13
LL	-1.000	-1.000	-1.000	-1.000
Min	0.009	-0.006	-0.042	-0.028
Average	0.009	0.008	0.011	0.011
Max	0.009	0.038	0.039	0.052
UL	1.000	1.000	1.000	1.000

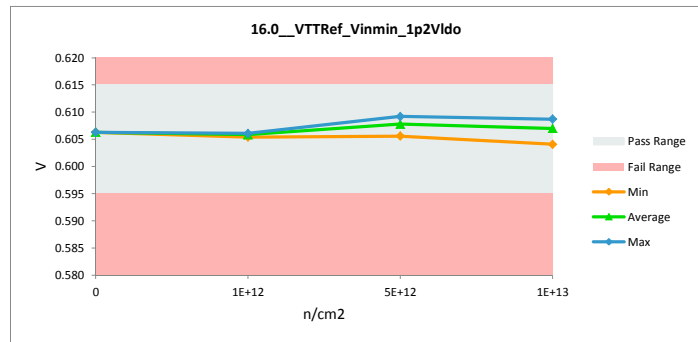


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16.0_VTTRef_Vinmin_1p2Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	V		V	
Max Limit	0.615		0.615	
Min Limit	0.595		0.595	
n/cm2	Serial #	Pre	Post	Delta
0	67	0.606	0.606	-0.001
1E+12	78	0.605	0.605	0.000
1E+12	81	0.606	0.606	0.000
1E+12	82	0.606	0.606	0.000
5E+12	75	0.609	0.609	0.000
5E+12	79	0.606	0.606	0.000
5E+12	80	0.609	0.609	0.000
1E+13	68	0.608	0.608	0.000
1E+13	71	0.604	0.604	0.000
1E+13	74	0.609	0.609	0.000
Max		0.609	0.609	0.000
Average		0.607	0.607	0.000
Min		0.604	0.604	-0.001
Std Dev		0.002	0.002	0.000

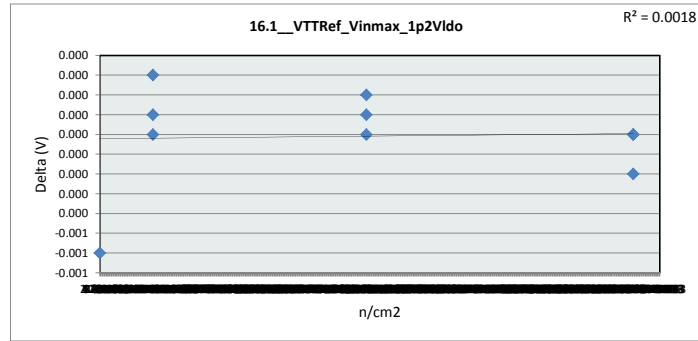


16.0_VTTRef_Vinmin_1p2Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	0.615	V		
Min Limit	0.595	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.595	0.595	0.595	0.595
Min	0.606	0.605	0.606	0.604
Average	0.606	0.606	0.608	0.607
Max	0.606	0.606	0.609	0.609
UL	0.615	0.615	0.615	0.615

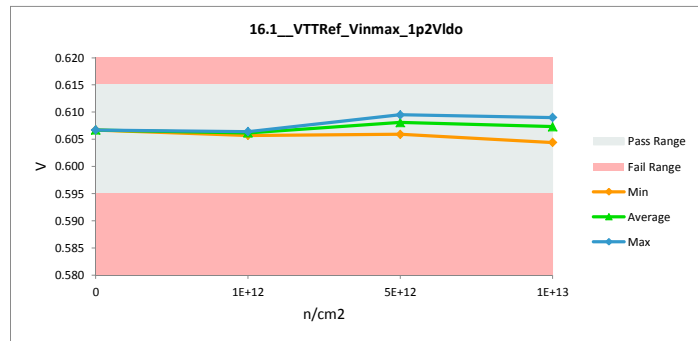


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16.1_VTTRef_Vinmax_1p2Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	V		V	
Max Limit	0.615		0.615	
Min Limit	0.595		0.595	
n/cm2	Serial #	Pre	Post	Delta
0	67	0.606	0.607	-0.001
1E+12	78	0.606	0.606	0.000
1E+12	81	0.606	0.606	0.000
1E+12	82	0.607	0.606	0.000
5E+12	75	0.609	0.609	0.000
5E+12	79	0.606	0.606	0.000
5E+12	80	0.609	0.609	0.000
1E+13	68	0.609	0.609	0.000
1E+13	71	0.604	0.604	0.000
1E+13	74	0.609	0.609	0.000
	Max	0.609	0.609	0.000
	Average	0.607	0.607	0.000
	Min	0.604	0.604	-0.001
	Std Dev	0.002	0.002	0.000



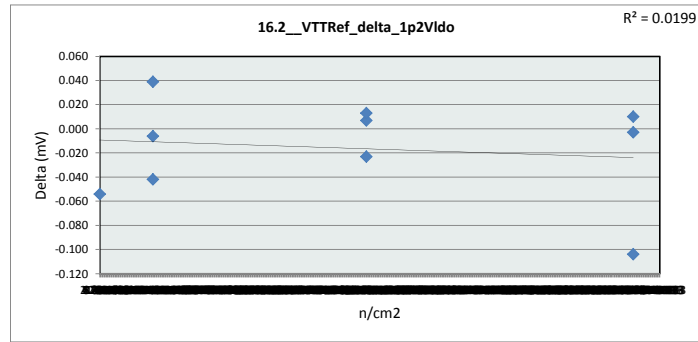
16.1_VTTRef_Vinmax_1p2Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	0.615	V		
Min Limit	0.595	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.595	0.595	0.595	0.595
Min	0.607	0.606	0.606	0.604
Average	0.607	0.606	0.608	0.607
Max	0.607	0.606	0.610	0.609
UL	0.615	0.615	0.615	0.615



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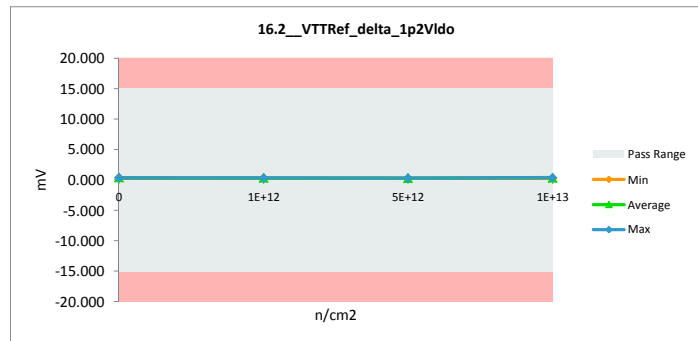
16.2_VTTRef_delta_1p2Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	14	15
Min Limit	-14	-15

n/cm2	Serial #	Pre	Post	Delta
0	67	0.314	0.368	-0.054
1E+12	78	0.300	0.342	-0.042
1E+12	81	0.359	0.320	0.039
1E+12	82	0.314	0.320	-0.006
5E+12	75	0.304	0.297	0.007
5E+12	79	0.292	0.315	-0.023
5E+12	80	0.305	0.292	0.013
1E+13	68	0.286	0.390	-0.104
1E+13	71	0.317	0.307	0.010
1E+13	74	0.292	0.295	-0.003
	Max	0.359	0.390	0.039
	Average	0.308	0.325	-0.016
	Min	0.286	0.292	-0.104
	Std Dev	0.021	0.033	0.041



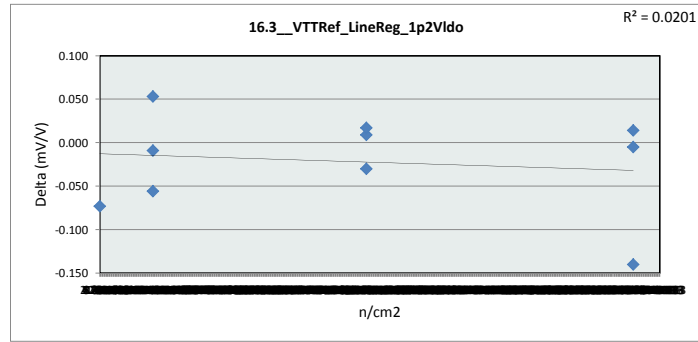
16.2_VTTRef_delta_1p2Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Max Limit	15	mV
Min Limit	-15	mV

n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.368	0.320	0.292	0.295
Average	0.368	0.327	0.301	0.331
Max	0.368	0.342	0.315	0.390
UL	15.000	15.000	15.000	15.000

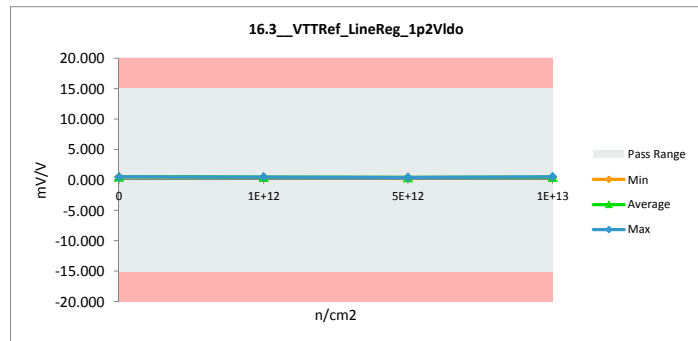


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16.3_VTTRef_LineReg_1p2Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV/V	mV/V		
Max Limit	14	15		
Min Limit	-14	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.423	0.496	-0.073
1E+12	78	0.405	0.461	-0.056
1E+12	81	0.484	0.431	0.053
1E+12	82	0.422	0.431	-0.009
5E+12	75	0.408	0.399	0.009
5E+12	79	0.394	0.424	-0.030
5E+12	80	0.408	0.391	0.017
1E+13	68	0.384	0.524	-0.140
1E+13	71	0.429	0.415	0.014
1E+13	74	0.391	0.396	-0.005
	Max	0.484	0.524	0.053
	Average	0.415	0.437	-0.022
	Min	0.384	0.391	-0.140
	Std Dev	0.028	0.044	0.055

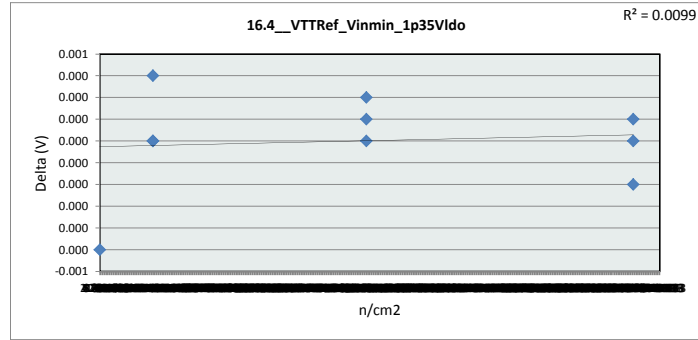


16.3_VTTRef_LineReg_1p2Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Max Limit	15	mV/V		
Min Limit	-15	mV/V		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.496	0.431	0.391	0.396
Average	0.496	0.441	0.405	0.445
Max	0.496	0.461	0.424	0.524
UL	15.000	15.000	15.000	15.000

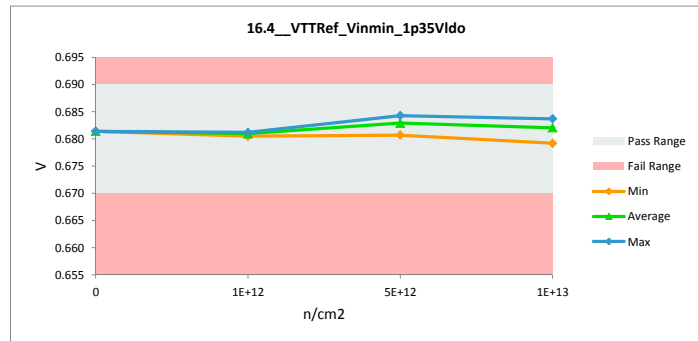


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16.4_VTTRef_Vinmin_1p35VIdo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	V		V	
Max Limit	0.69		0.69	
Min Limit	0.67		0.67	
n/cm2	Serial #	Pre	Post	Delta
0	67	0.681	0.681	0.000
1E+12	78	0.681	0.680	0.000
1E+12	81	0.681	0.681	0.000
1E+12	82	0.682	0.681	0.000
5E+12	75	0.684	0.684	0.000
5E+12	79	0.681	0.681	0.000
5E+12	80	0.684	0.684	0.000
1E+13	68	0.683	0.683	0.000
1E+13	71	0.679	0.679	0.000
1E+13	74	0.684	0.684	0.000
Max		0.684	0.684	0.000
Average		0.682	0.682	0.000
Min		0.679	0.679	0.000
Std Dev		0.002	0.002	0.000

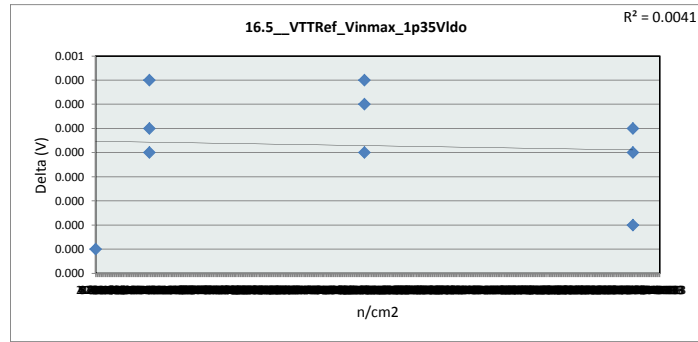


16.4_VTTRef_Vinmin_1p35VIdo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Max Limit	0.69		V	
Min Limit	0.67		V	
n/cm2	0	1E+12	5E+12	1E+13
LL	0.670	0.670	0.670	0.670
Min	0.681	0.681	0.681	0.679
Average	0.681	0.681	0.683	0.682
Max	0.681	0.681	0.684	0.684
UL	0.690	0.690	0.690	0.690

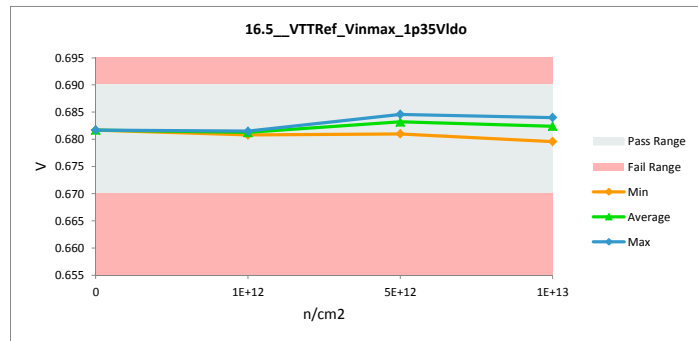


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16.5_VTTRef_Vinmax_1p35Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	V		V	
Max Limit	0.69		0.69	
Min Limit	0.67		0.67	
n/cm2	Serial #	Pre	Post	Delta
0	67	0.681	0.682	0.000
1E+12	78	0.681	0.681	0.000
1E+12	81	0.682	0.682	0.000
1E+12	82	0.682	0.682	0.000
5E+12	75	0.684	0.684	0.000
5E+12	79	0.681	0.681	0.000
5E+12	80	0.685	0.685	0.000
1E+13	68	0.684	0.684	0.000
1E+13	71	0.679	0.680	0.000
1E+13	74	0.684	0.684	0.000
Max		0.685	0.685	0.000
Average		0.682	0.682	0.000
Min		0.679	0.680	0.000
Std Dev		0.002	0.002	0.000



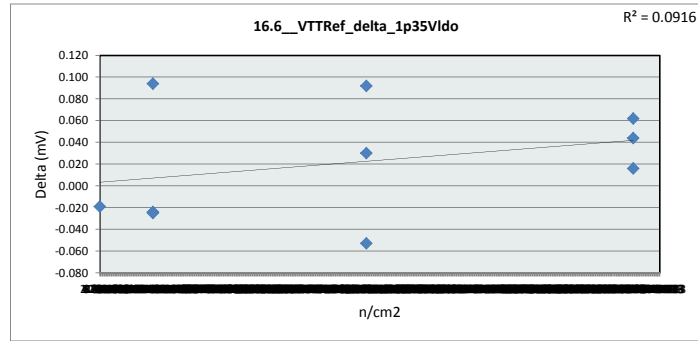
16.5_VTTRef_Vinmax_1p35Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Max Limit	0.69		V	
Min Limit	0.67		V	
n/cm2	0	1E+12	5E+12	1E+13
LL	0.670	0.670	0.670	0.670
Min	0.682	0.681	0.681	0.680
Average	0.682	0.681	0.683	0.682
Max	0.682	0.682	0.685	0.684
UL	0.690	0.690	0.690	0.690



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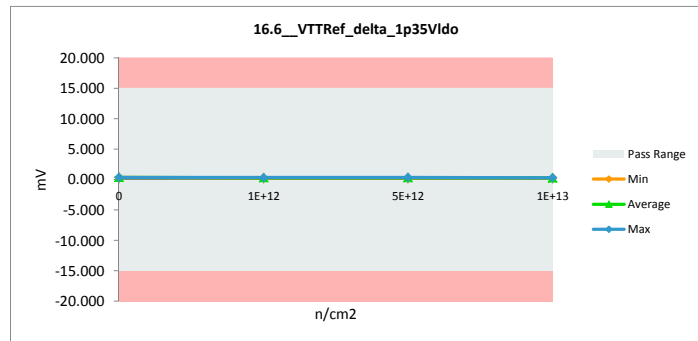
16.6_VTTRef_delta_1p35Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	14	15
Min Limit	-14	-15

n/cm2	Serial #	Pre	Post	Delta
0	67	0.343	0.362	-0.019
1E+12	78	0.387	0.293	0.094
1E+12	81	0.306	0.330	-0.024
1E+12	82	0.305	0.330	-0.025
5E+12	75	0.331	0.301	0.030
5E+12	79	0.378	0.286	0.092
5E+12	80	0.304	0.357	-0.053
1E+13	68	0.357	0.295	0.062
1E+13	71	0.329	0.313	0.016
1E+13	74	0.340	0.296	0.044
	Max	0.387	0.362	0.094
	Average	0.338	0.316	0.022
	Min	0.304	0.286	-0.053
	Std Dev	0.029	0.027	0.052



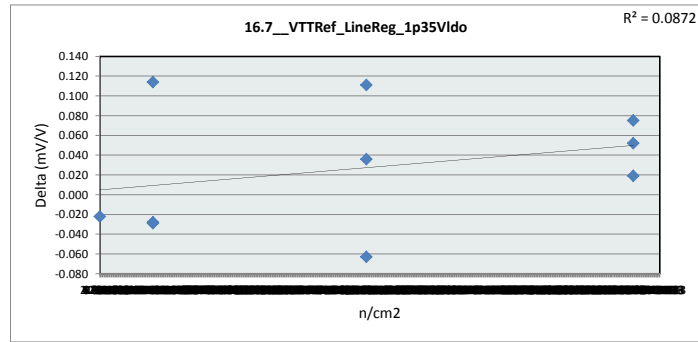
16.6_VTTRef_delta_1p35Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Max Limit	15	mV
Min Limit	-15	mV

n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.362	0.293	0.286	0.295
Average	0.362	0.318	0.315	0.301
Max	0.362	0.330	0.357	0.313
UL	15.000	15.000	15.000	15.000

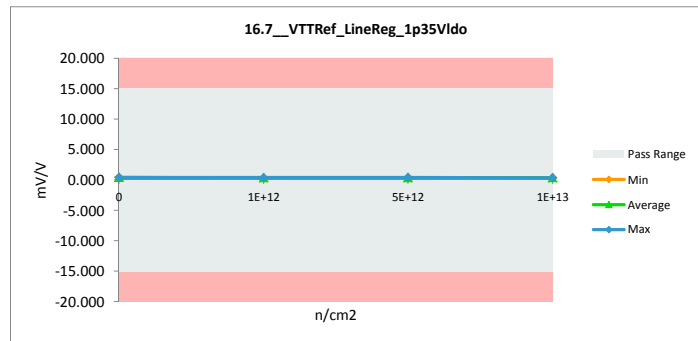


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16.7_VTTRef_LineReg_1p35Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV/V	mV/V		
Max Limit	14	15		
Min Limit	-14	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.411	0.433	-0.022
1E+12	78	0.465	0.351	0.114
1E+12	81	0.367	0.395	-0.028
1E+12	82	0.366	0.395	-0.029
5E+12	75	0.395	0.359	0.036
5E+12	79	0.454	0.343	0.111
5E+12	80	0.363	0.426	-0.063
1E+13	68	0.427	0.352	0.075
1E+13	71	0.396	0.377	0.019
1E+13	74	0.405	0.353	0.052
	Max	0.465	0.433	0.114
	Average	0.405	0.378	0.027
	Min	0.363	0.343	-0.063
	Std Dev	0.036	0.033	0.062

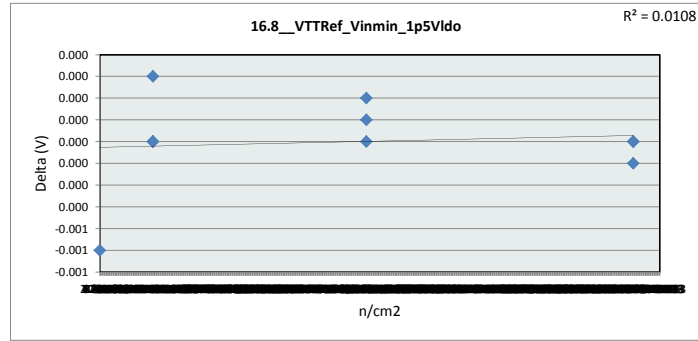


16.7_VTTRef_LineReg_1p35V				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	15	mV/V		
Min Limit	-15	mV/V		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.433	0.351	0.343	0.352
Average	0.433	0.380	0.376	0.361
Max	0.433	0.395	0.426	0.377
UL	15.000	15.000	15.000	15.000

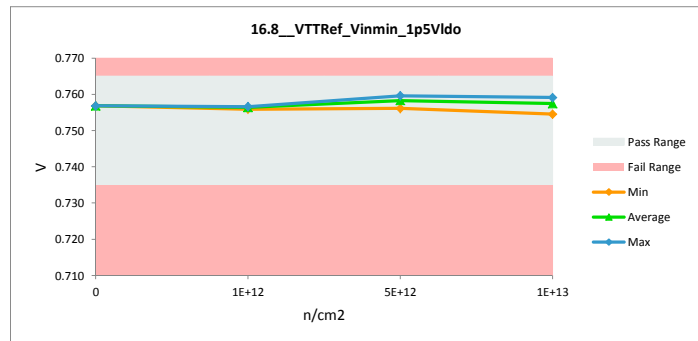


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16.8_VTTRef_Vinmin_1p5Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	V		V	
Max Limit	0.765		0.765	
Min Limit	0.735		0.735	
n/cm2	Serial #	Pre	Post	Delta
0	67	0.756	0.757	-0.001
1E+12	78	0.756	0.756	0.000
1E+12	81	0.757	0.757	0.000
1E+12	82	0.757	0.757	0.000
5E+12	75	0.759	0.759	0.000
5E+12	79	0.756	0.756	0.000
5E+12	80	0.760	0.760	0.000
1E+13	68	0.759	0.759	0.000
1E+13	71	0.754	0.754	0.000
1E+13	74	0.759	0.759	0.000
Max		0.760	0.760	0.000
Average		0.757	0.757	0.000
Min		0.754	0.754	-0.001
Std Dev		0.002	0.002	0.000

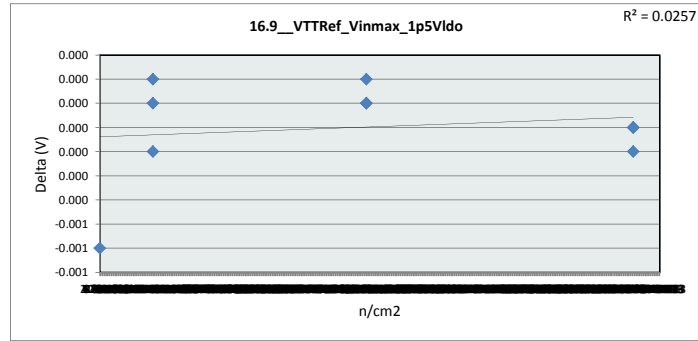


16.8_VTTRef_Vinmin_1p5Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	0.765	V		
Min Limit	0.735	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.735	0.735	0.735	0.735
Min	0.757	0.756	0.756	0.755
Average	0.757	0.756	0.758	0.757
Max	0.757	0.757	0.760	0.759
UL	0.765	0.765	0.765	0.765

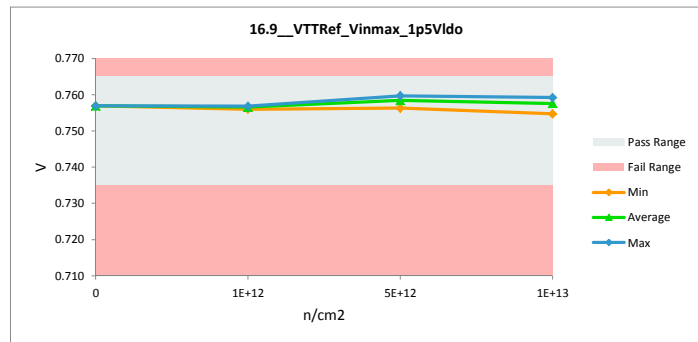


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16.9_VTTRef_Vinmax_1p5Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	V		V	
Max Limit	0.765		0.765	
Min Limit	0.735		0.735	
n/cm2	Serial #	Pre	Post	Delta
0	67	0.756	0.757	-0.001
1E+12	78	0.756	0.756	0.000
1E+12	81	0.757	0.757	0.000
1E+12	82	0.757	0.757	0.000
5E+12	75	0.759	0.759	0.000
5E+12	79	0.756	0.756	0.000
5E+12	80	0.760	0.760	0.000
1E+13	68	0.759	0.759	0.000
1E+13	71	0.754	0.755	0.000
1E+13	74	0.759	0.759	0.000
Max		0.760	0.760	0.000
Average		0.757	0.757	0.000
Min		0.754	0.755	-0.001
Std Dev		0.002	0.002	0.000



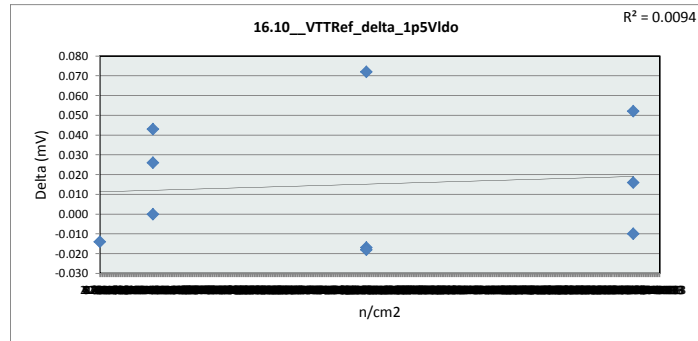
16.9_VTTRef_Vinmax_1p5Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	0.765	V		
Min Limit	0.735	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.735	0.735	0.735	0.735
Min	0.757	0.756	0.756	0.755
Average	0.757	0.757	0.758	0.758
Max	0.757	0.757	0.760	0.759
UL	0.765	0.765	0.765	0.765



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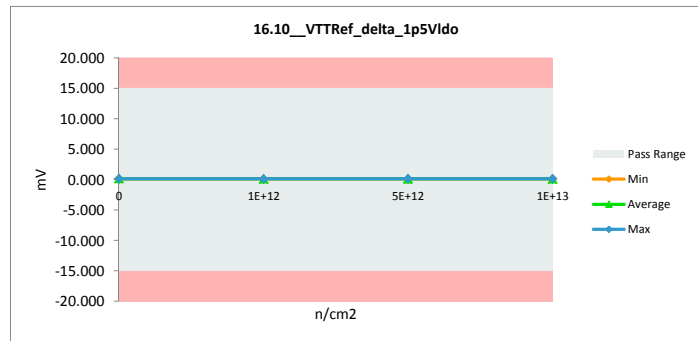
16.10_VTTRef_delta_1p5Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	14	15
Min Limit	-14	-15

n/cm2	Serial #	Pre	Post	Delta
0	67	0.141	0.155	-0.014
1E+12	78	0.131	0.131	0.000
1E+12	81	0.153	0.127	0.026
1E+12	82	0.170	0.127	0.043
5E+12	75	0.119	0.136	-0.017
5E+12	79	0.143	0.161	-0.018
5E+12	80	0.198	0.126	0.072
1E+13	68	0.131	0.141	-0.010
1E+13	71	0.207	0.155	0.052
1E+13	74	0.146	0.130	0.016
	Max	0.207	0.161	0.072
	Average	0.154	0.139	0.015
	Min	0.119	0.126	-0.018
	Std Dev	0.029	0.013	0.032



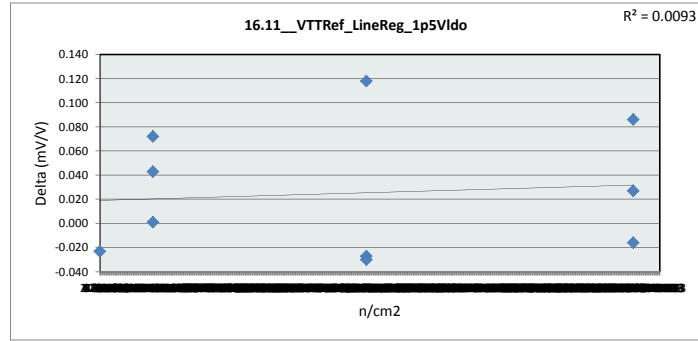
16.10_VTTRef_delta_1p5Vldo		
Test Site	Junkins	
Tester	FETS10	
Test Number	EF636800	
Max Limit	15	mV
Min Limit	-15	mV

n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.155	0.127	0.126	0.130
Average	0.155	0.128	0.141	0.142
Max	0.155	0.131	0.161	0.155
UL	15.000	15.000	15.000	15.000

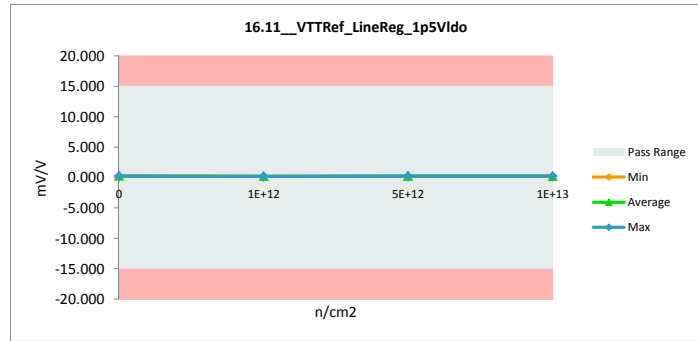


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16.11_VTTRef_LineReg_1p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV/V	mV/V		
Max Limit	14	15		
Min Limit	-14	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.233	0.256	-0.023
1E+12	78	0.217	0.216	0.001
1E+12	81	0.253	0.210	0.043
1E+12	82	0.282	0.210	0.072
5E+12	75	0.196	0.223	-0.027
5E+12	79	0.236	0.266	-0.030
5E+12	80	0.326	0.208	0.118
1E+13	68	0.217	0.233	-0.016
1E+13	71	0.343	0.257	0.086
1E+13	74	0.241	0.214	0.027
	Max	0.343	0.266	0.118
	Average	0.254	0.229	0.025
	Min	0.196	0.208	-0.030
	Std Dev	0.048	0.022	0.053

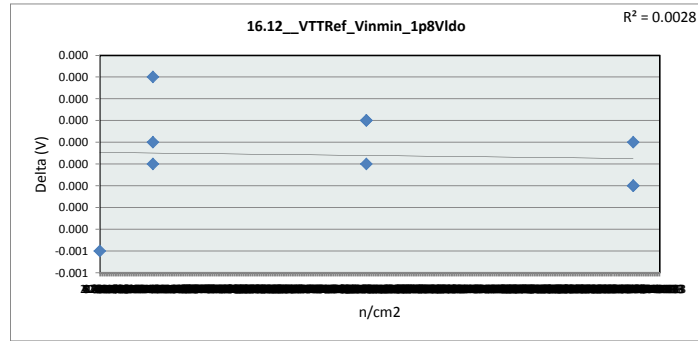


16.11_VTTRef_LineReg_1p5V				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	15	mV/V		
Min Limit	-15	mV/V		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.256	0.210	0.208	0.214
Average	0.256	0.212	0.232	0.235
Max	0.256	0.216	0.266	0.257
UL	15.000	15.000	15.000	15.000

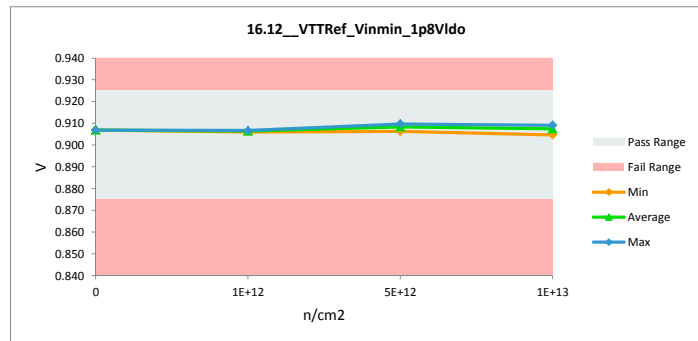


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16.12_VTTRef_Vinmin_1p8Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	V		V	
Max Limit	0.925		0.925	
Min Limit	0.875		0.875	
n/cm2	Serial #	Pre	Post	Delta
0	67	0.906	0.907	0.000
1E+12	78	0.906	0.906	0.000
1E+12	81	0.907	0.907	0.000
1E+12	82	0.907	0.907	0.000
5E+12	75	0.909	0.909	0.000
5E+12	79	0.906	0.906	0.000
5E+12	80	0.910	0.910	0.000
1E+13	68	0.909	0.909	0.000
1E+13	71	0.905	0.905	0.000
1E+13	74	0.909	0.909	0.000
Max		0.910	0.910	0.000
Average		0.907	0.907	0.000
Min		0.905	0.905	0.000
Std Dev		0.002	0.002	0.000

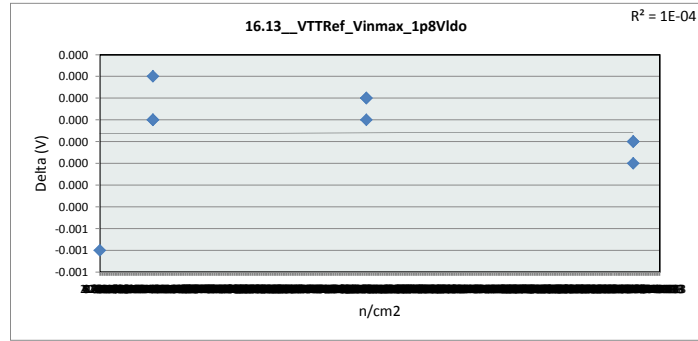


16.12_VTTRef_Vinmin_1p8Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	0.925	V		
Min Limit	0.875	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.875	0.875	0.875	0.875
Min	0.907	0.906	0.906	0.905
Average	0.907	0.906	0.908	0.908
Max	0.907	0.907	0.910	0.909
UL	0.925	0.925	0.925	0.925

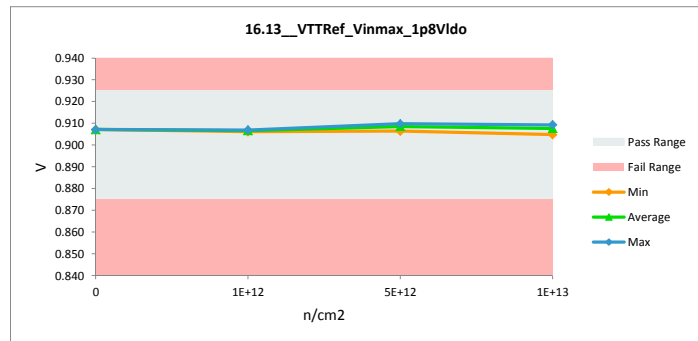


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16.13_VTTRef_Vinmax_1p8Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	V		V	
Max Limit	0.925		0.925	
Min Limit	0.875		0.875	
n/cm2	Serial #	Pre	Post	Delta
0	67	0.906	0.907	-0.001
1E+12	78	0.906	0.906	0.000
1E+12	81	0.907	0.907	0.000
1E+12	82	0.907	0.907	0.000
5E+12	75	0.910	0.909	0.000
5E+12	79	0.906	0.906	0.000
5E+12	80	0.910	0.910	0.000
1E+13	68	0.909	0.909	0.000
1E+13	71	0.905	0.905	0.000
1E+13	74	0.909	0.909	0.000
	Max	0.910	0.910	0.000
	Average	0.907	0.908	0.000
	Min	0.905	0.905	-0.001
	Std Dev	0.002	0.002	0.000

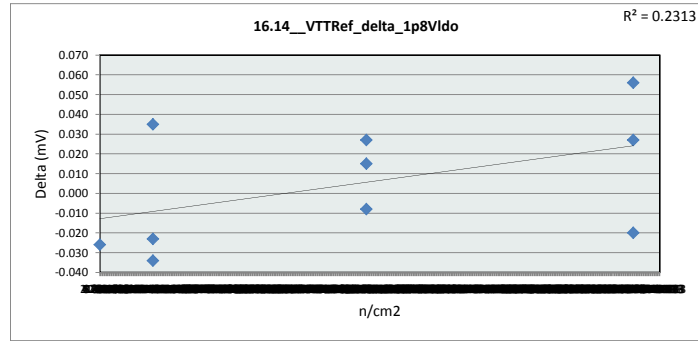


16.13_VTTRef_Vinmax_1p8Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	0.925	V		
Min Limit	0.875	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.875	0.875	0.875	0.875
Min	0.907	0.906	0.906	0.905
Average	0.907	0.907	0.909	0.908
Max	0.907	0.907	0.910	0.909
UL	0.925	0.925	0.925	0.925

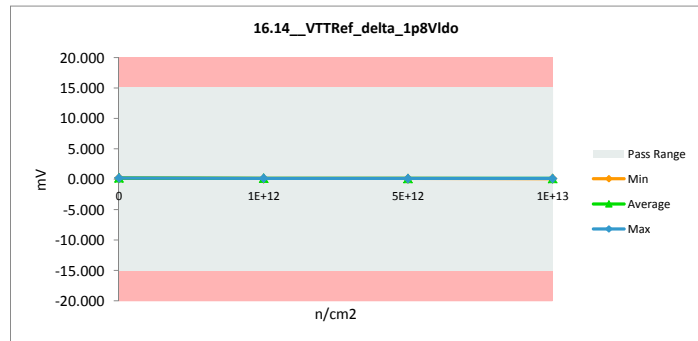


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16.14_VTTRef_delta_1p8Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	14	15		
Min Limit	-14	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.173	0.199	-0.026
1E+12	78	0.174	0.139	0.035
1E+12	81	0.147	0.170	-0.023
1E+12	82	0.136	0.170	-0.034
5E+12	75	0.145	0.130	0.015
5E+12	79	0.164	0.137	0.027
5E+12	80	0.131	0.139	-0.008
1E+13	68	0.141	0.114	0.027
1E+13	71	0.122	0.142	-0.020
1E+13	74	0.185	0.129	0.056
	Max	0.185	0.199	0.056
	Average	0.152	0.147	0.005
	Min	0.122	0.114	-0.034
	Std Dev	0.021	0.025	0.031

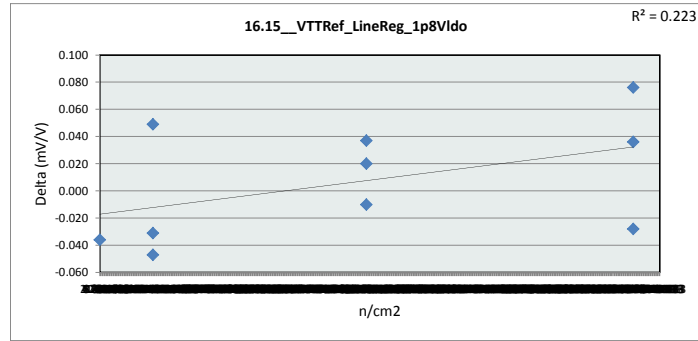


16.14_VTTRef_delta_1p8Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	15	mV		
Min Limit	-15	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.199	0.139	0.130	0.114
Average	0.199	0.160	0.135	0.128
Max	0.199	0.170	0.139	0.142
UL	15.000	15.000	15.000	15.000

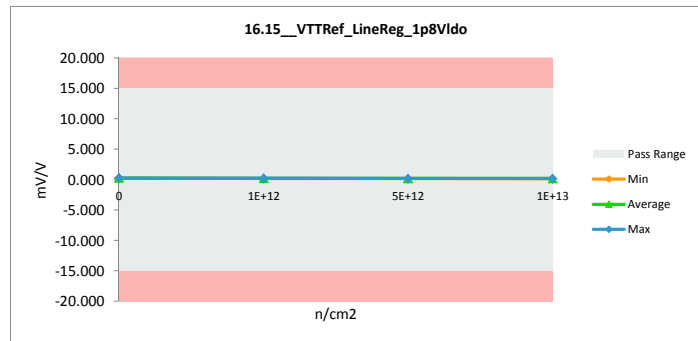


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16.15_VTTRef_LineReg_1p8Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV/V	mV/V		
Max Limit	14	15		
Min Limit	-14	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.239	0.275	-0.036
1E+12	78	0.240	0.191	0.049
1E+12	81	0.203	0.234	-0.031
1E+12	82	0.187	0.234	-0.047
5E+12	75	0.199	0.179	0.020
5E+12	79	0.226	0.189	0.037
5E+12	80	0.181	0.191	-0.010
1E+13	68	0.193	0.157	0.036
1E+13	71	0.168	0.196	-0.028
1E+13	74	0.254	0.178	0.076
	Max	0.254	0.275	0.076
	Average	0.209	0.202	0.007
	Min	0.168	0.157	-0.047
	Std Dev	0.029	0.035	0.042

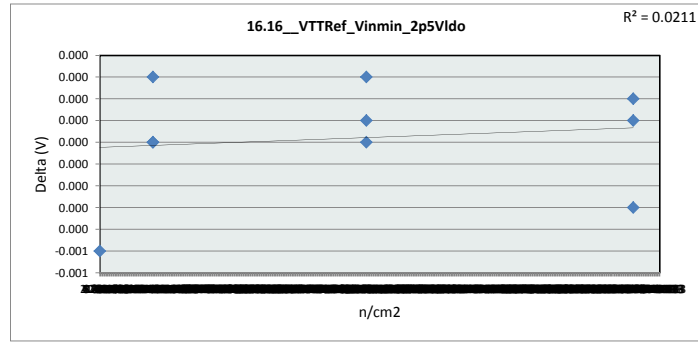


16.15_VTTRef_LineReg_1p8V				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	15	mV/V		
Min Limit	-15	mV/V		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.275	0.191	0.179	0.157
Average	0.275	0.220	0.186	0.177
Max	0.275	0.234	0.191	0.196
UL	15.000	15.000	15.000	15.000

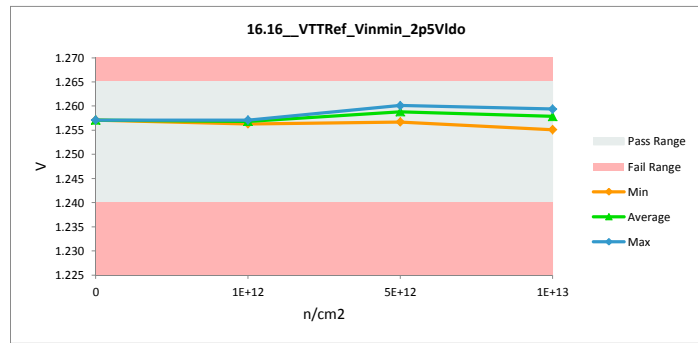


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16.16_VTTRef_Vinmin_2p5VIdo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	V		V	
Max Limit	1.265		1.265	
Min Limit	1.24		1.24	
n/cm2	Serial #	Pre	Post	Delta
0	67	1.257	1.257	0.000
1E+12	78	1.256	1.256	0.000
1E+12	81	1.257	1.257	0.000
1E+12	82	1.257	1.257	0.000
5E+12	75	1.260	1.260	0.000
5E+12	79	1.257	1.257	0.000
5E+12	80	1.260	1.260	0.000
1E+13	68	1.259	1.259	0.000
1E+13	71	1.255	1.255	0.000
1E+13	74	1.260	1.259	0.000
	Max	1.260	1.260	0.000
	Average	1.258	1.258	0.000
	Min	1.255	1.255	0.000
	Std Dev	0.002	0.002	0.000

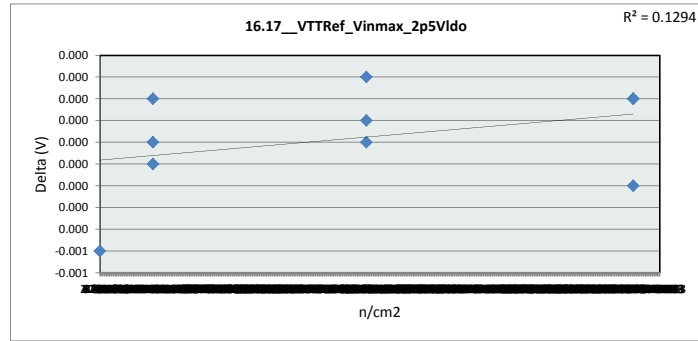


16.16_VTTRef_Vinmin_2p5VIdo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	1.265	V		
Min Limit	1.24	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	1.240	1.240	1.240	1.240
Min	1.257	1.256	1.257	1.255
Average	1.257	1.257	1.259	1.258
Max	1.257	1.257	1.260	1.259
UL	1.265	1.265	1.265	1.265

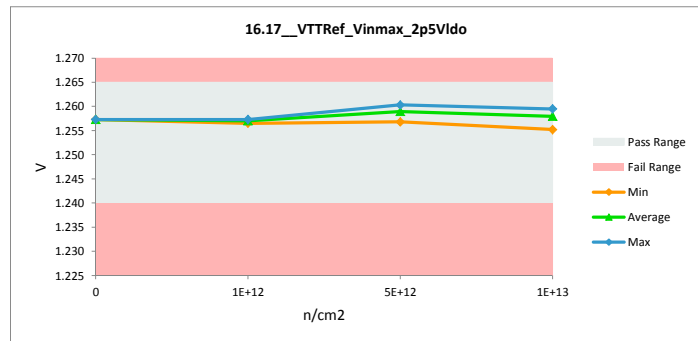


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16.17_VTTRef_Vinmax_2p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	V	V		
Max Limit	1.265	1.265		
Min Limit	1.24	1.24		
n/cm2	Serial #	Pre	Post	Delta
0	67	1.257	1.257	0.000
1E+12	78	1.257	1.257	0.000
1E+12	81	1.257	1.257	0.000
1E+12	82	1.258	1.257	0.000
5E+12	75	1.260	1.260	0.000
5E+12	79	1.257	1.257	0.000
5E+12	80	1.260	1.260	0.000
1E+13	68	1.259	1.259	0.000
1E+13	71	1.255	1.255	0.000
1E+13	74	1.260	1.260	0.000
	Max	1.260	1.260	0.000
	Average	1.258	1.258	0.000
	Min	1.255	1.255	0.000
	Std Dev	0.002	0.002	0.000

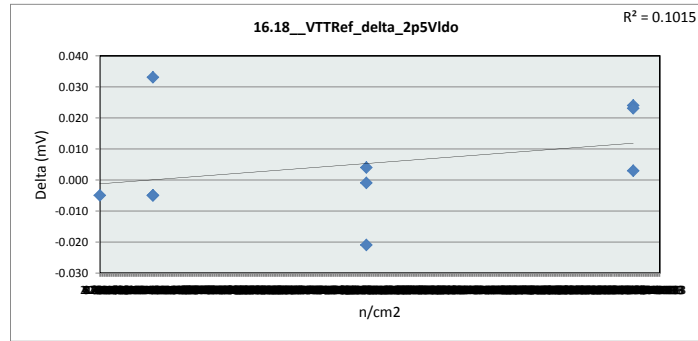


16.17_VTTRef_Vinmax_2p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Max Limit	1.265	V		
Min Limit	1.24	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	1.240	1.240	1.240	1.240
Min	1.257	1.257	1.257	1.255
Average	1.257	1.257	1.259	1.258
Max	1.257	1.257	1.260	1.260
UL	1.265	1.265	1.265	1.265

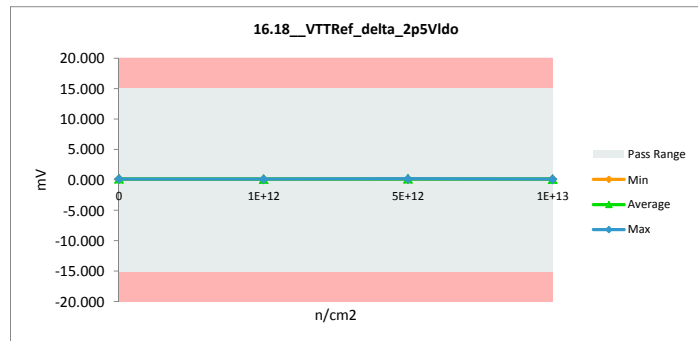


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16.18_VTTRef_delta_2p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	14	15		
Min Limit	-14	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.142	0.147	-0.005
1E+12	78	0.176	0.143	0.033
1E+12	81	0.139	0.144	-0.005
1E+12	82	0.139	0.144	-0.005
5E+12	75	0.163	0.159	0.004
5E+12	79	0.138	0.139	-0.001
5E+12	80	0.156	0.177	-0.021
1E+13	68	0.146	0.122	0.024
1E+13	71	0.136	0.133	0.003
1E+13	74	0.153	0.130	0.023
	Max	0.176	0.177	0.033
	Average	0.149	0.144	0.005
	Min	0.136	0.122	-0.021
	Std Dev	0.013	0.015	0.017

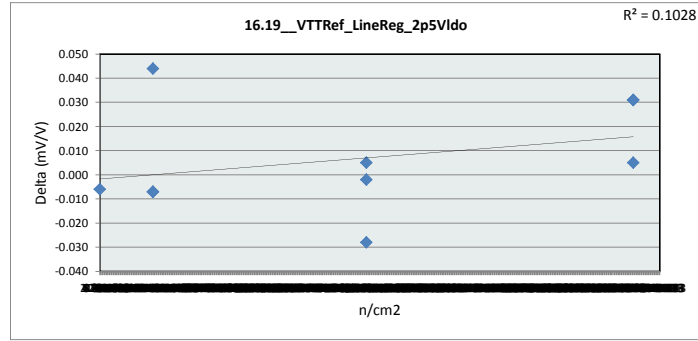


16.18_VTTRef_delta_2p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Max Limit	15	mV		
Min Limit	-15	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.147	0.143	0.139	0.122
Average	0.147	0.144	0.158	0.128
Max	0.147	0.144	0.177	0.133
UL	15.000	15.000	15.000	15.000

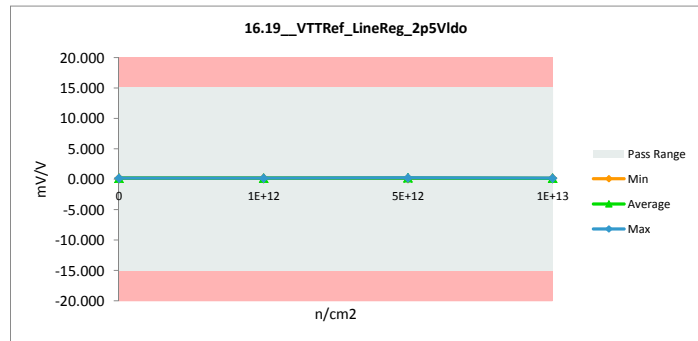


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16.19_VTTRef_LineReg_2p5Vld				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV/V	mV/V		
Max Limit	14	15		
Min Limit	-14	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.188	0.194	-0.006
1E+12	78	0.233	0.189	0.044
1E+12	81	0.184	0.191	-0.007
1E+12	82	0.184	0.191	-0.007
5E+12	75	0.215	0.210	0.005
5E+12	79	0.183	0.185	-0.002
5E+12	80	0.206	0.234	-0.028
1E+13	68	0.193	0.162	0.031
1E+13	71	0.181	0.176	0.005
1E+13	74	0.203	0.172	0.031
	Max	0.233	0.234	0.044
	Average	0.197	0.190	0.007
	Min	0.181	0.162	-0.028
	Std Dev	0.017	0.020	0.022



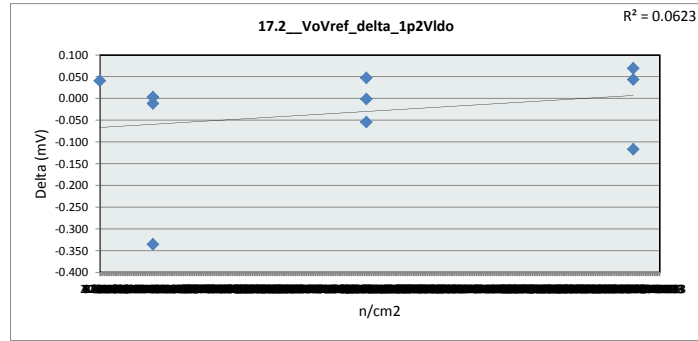
16.19_VTTRef_LineReg_2p5V				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Max Limit	15	mV/V		
Min Limit	-15	mV/V		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	0.194	0.189	0.185	0.162
Average	0.194	0.190	0.210	0.170
Max	0.194	0.191	0.234	0.176
UL	15.000	15.000	15.000	15.000



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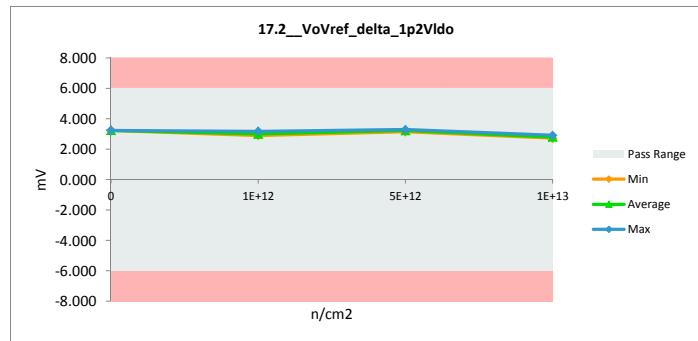
17.2_VoVref_delta_1p2Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	5.8	6
Min Limit	-5.8	-6

n/cm2	Serial #	Pre	Post	Delta
0	67	3.276	3.236	0.040
1E+12	78	3.163	3.175	-0.011
1E+12	81	2.568	2.904	-0.336
1E+12	82	2.907	2.904	0.003
5E+12	75	3.290	3.243	0.048
5E+12	79	3.144	3.145	-0.001
5E+12	80	3.234	3.289	-0.054
1E+13	68	2.831	2.762	0.069
1E+13	71	2.793	2.910	-0.117
1E+13	74	2.774	2.730	0.044
	Max	3.290	3.289	0.069
	Average	2.998	3.030	-0.031
	Min	2.568	2.730	-0.336
	Std Dev	0.254	0.210	0.120



17.2_VoVref_delta_1p2Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Max Limit	6	mV
Min Limit	-6	mV

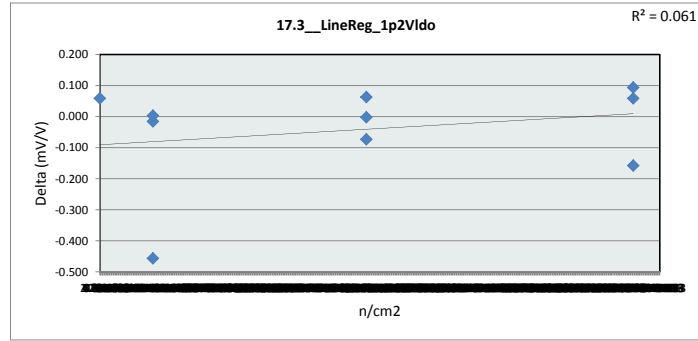
n/cm2	0	1E+12	5E+12	1E+13
LL	-6.000	-6.000	-6.000	-6.000
Min	3.236	2.904	3.145	2.730
Average	3.236	2.994	3.226	2.800
Max	3.236	3.175	3.289	2.910
UL	6.000	6.000	6.000	6.000



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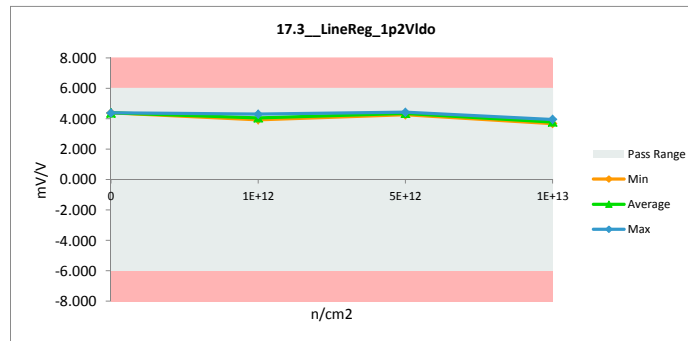
17.3_LineReg_1p2Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV/V	mV/V
Max Limit	6	6
Min Limit	-6	-6

n/cm2	Serial #	Pre	Post	Delta
0	67	4.442	4.383	0.059
1E+12	78	4.290	4.306	-0.016
1E+12	81	3.476	3.932	-0.457
1E+12	82	3.935	3.932	0.003
5E+12	75	4.438	4.375	0.063
5E+12	79	4.262	4.264	-0.003
5E+12	80	4.360	4.434	-0.074
1E+13	68	3.820	3.726	0.094
1E+13	71	3.795	3.953	-0.158
1E+13	74	3.739	3.681	0.058
	Max	4.442	4.434	0.094
	Average	4.056	4.099	-0.043
	Min	3.476	3.681	-0.457
	Std Dev	0.343	0.285	0.163



17.3_LineReg_1p2Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Max Limit	6	mV/V
Min Limit	-6	mV/V

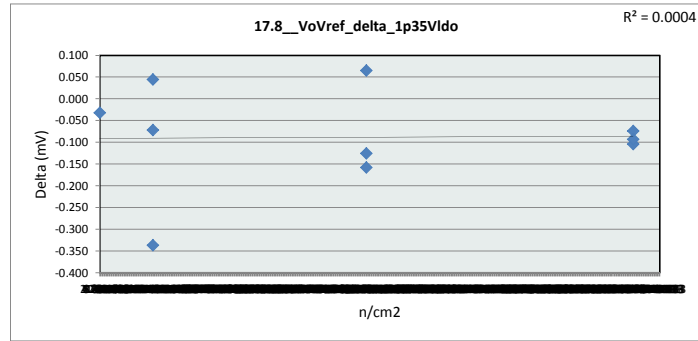
n/cm2	0	1E+12	5E+12	1E+13
LL	-6.000	-6.000	-6.000	-6.000
Min	4.383	3.932	4.264	3.681
Average	4.383	4.057	4.358	3.787
Max	4.383	4.306	4.434	3.953
UL	6.000	6.000	6.000	6.000



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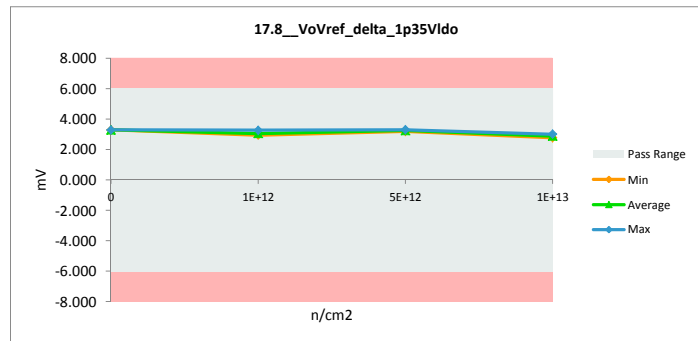
17.8_VoVref_delta_1p35VIdo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	5.8	6
Min Limit	-5.8	-6

n/cm2	Serial #	Pre	Post	Delta
0	67	3.258	3.290	-0.032
1E+12	78	3.199	3.271	-0.072
1E+12	81	2.605	2.942	-0.336
1E+12	82	2.986	2.942	0.044
5E+12	75	3.176	3.301	-0.126
5E+12	79	3.091	3.249	-0.158
5E+12	80	3.260	3.195	0.065
1E+13	68	2.791	2.865	-0.074
1E+13	71	2.899	3.004	-0.104
1E+13	74	2.687	2.780	-0.093
	Max	3.260	3.301	0.065
	Average	2.995	3.084	-0.089
	Min	2.605	2.780	-0.336
	Std Dev	0.240	0.198	0.112



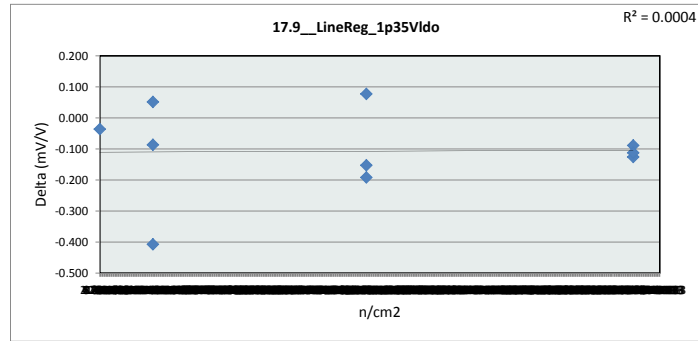
17.8_VoVref_delta_1p35VIdo		
Test Site	Junkins	
Tester	FETS10	
Test Number	EF636800	
Max Limit	6	mV
Min Limit	-6	mV

n/cm2	0	1E+12	5E+12	1E+13
LL	-6.000	-6.000	-6.000	-6.000
Min	3.290	2.942	3.195	2.781
Average	3.290	3.052	3.249	2.883
Max	3.290	3.271	3.301	3.004
UL	6.000	6.000	6.000	6.000

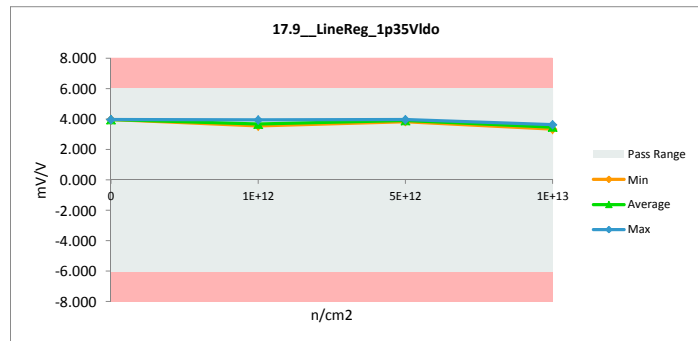


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17.9_LineReg_1p35Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV/V		mV/V	
Max Limit	6		6	
Min Limit	-6		-6	
n/cm2	Serial #	Pre	Post	Delta
0	67	3.927	3.963	-0.036
1E+12	78	3.857	3.945	-0.087
1E+12	81	3.136	3.543	-0.407
1E+12	82	3.595	3.543	0.052
5E+12	75	3.810	3.963	-0.153
5E+12	79	3.724	3.917	-0.192
5E+12	80	3.910	3.832	0.077
1E+13	68	3.349	3.439	-0.089
1E+13	71	3.502	3.628	-0.126
1E+13	74	3.223	3.336	-0.113
	Max	3.927	3.963	0.077
	Average	3.603	3.711	-0.107
	Min	3.136	3.336	-0.407
	Std Dev	0.290	0.240	0.135



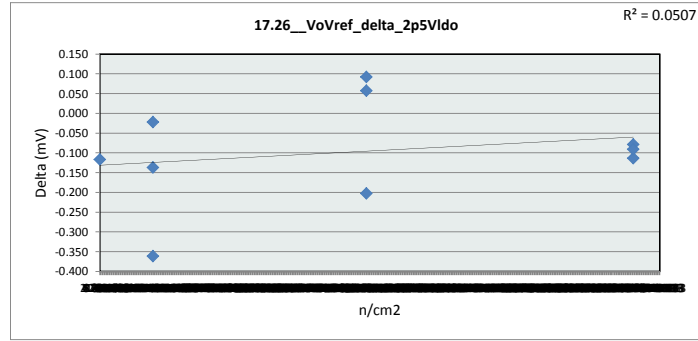
17.9_LineReg_1p35Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	6	mV/V		
Min Limit	-6	mV/V		
n/cm2	0	1E+12	5E+12	1E+13
LL	-6.000	-6.000	-6.000	-6.000
Min	3.963	3.543	3.832	3.336
Average	3.963	3.677	3.904	3.467
Max	3.963	3.945	3.963	3.628
UL	6.000	6.000	6.000	6.000



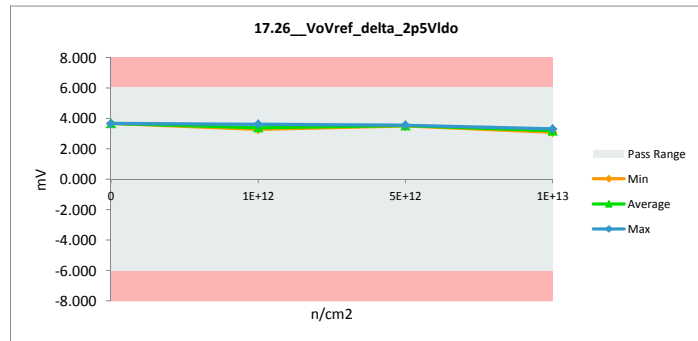
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17.26_VoVref_delta_2p5VIdo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	5.8	6
Min Limit	-5.8	-6

n/cm2	Serial #	Pre	Post	Delta
0	67	3.551	3.668	-0.117
1E+12	78	3.482	3.618	-0.137
1E+12	81	2.916	3.277	-0.361
1E+12	82	3.255	3.277	-0.022
5E+12	75	3.617	3.560	0.057
5E+12	79	3.310	3.512	-0.202
5E+12	80	3.592	3.500	0.092
1E+13	68	3.055	3.168	-0.114
1E+13	71	3.234	3.313	-0.079
1E+13	74	2.994	3.085	-0.091
	Max	3.617	3.668	0.092
	Average	3.301	3.398	-0.097
	Min	2.916	3.085	-0.361
	Std Dev	0.256	0.199	0.128

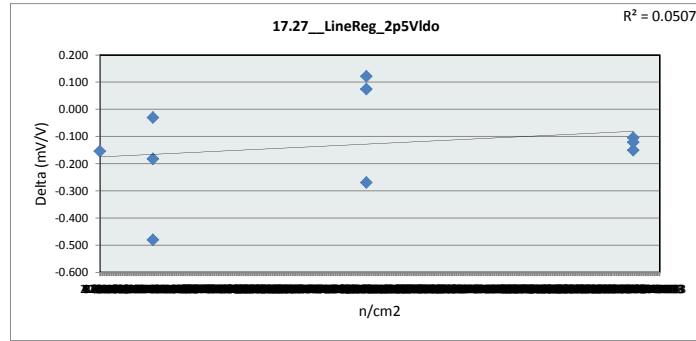


17.26_VoVref_delta_2p5VIdo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	6	mV		
Min Limit	-6	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-6.000	-6.000	-6.000	-6.000
Min	3.668	3.277	3.500	3.085
Average	3.668	3.391	3.524	3.189
Max	3.668	3.618	3.560	3.313
UL	6.000	6.000	6.000	6.000

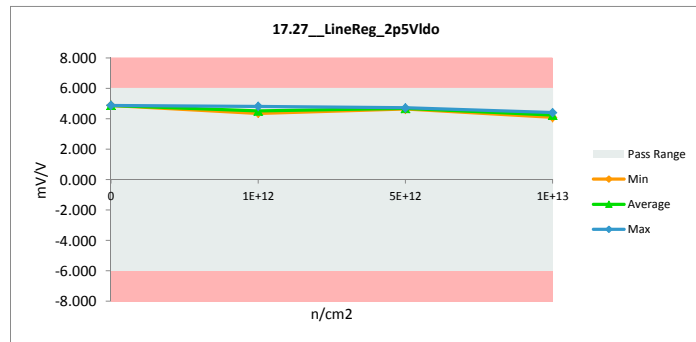


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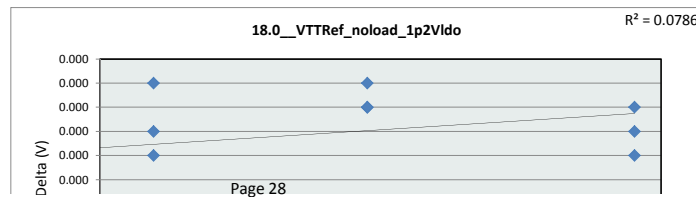
17.27_LineReg_2p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV/V	mV/V		
Max Limit	6	6		
Min Limit	-6	-6		
n/cm2	Serial #	Pre	Post	Delta
0	67	4.725	4.879	-0.154
1E+12	78	4.634	4.816	-0.182
1E+12	81	3.878	4.358	-0.481
1E+12	82	4.328	4.358	-0.030
5E+12	75	4.800	4.725	0.075
5E+12	79	4.403	4.673	-0.270
5E+12	80	4.766	4.644	0.122
1E+13	68	4.055	4.206	-0.151
1E+13	71	4.308	4.412	-0.104
1E+13	74	3.973	4.094	-0.121
	Max	4.800	4.879	0.122
	Average	4.387	4.517	-0.130
	Min	3.878	4.094	-0.481
	Std Dev	0.340	0.267	0.171



17.27_LineReg_2p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Max Limit	6	mV/V		
Min Limit	-6	mV/V		
n/cm2	0	1E+12	5E+12	1E+13
LL	-6.000	-6.000	-6.000	-6.000
Min	4.879	4.358	4.645	4.094
Average	4.879	4.511	4.681	4.238
Max	4.879	4.816	4.725	4.412
UL	6.000	6.000	6.000	6.000



18.0_VTTRef_noload_1p2Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	V	V		
Max Limit	0.625	0.625		
Min Limit	0.585	0.585		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.606	0.606	-0.001



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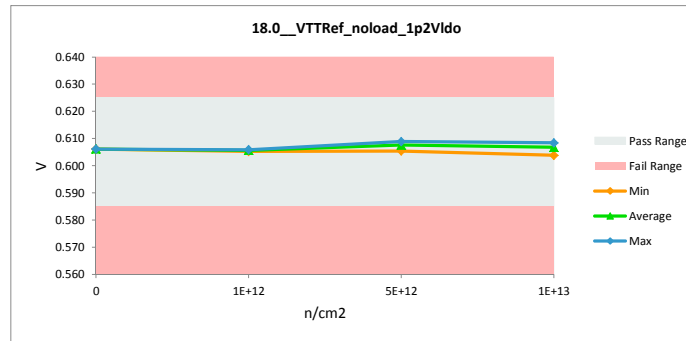
1E+12	78	0.605	0.605	0.000
1E+12	81	0.606	0.606	0.000
1E+12	82	0.606	0.606	0.000
5E+12	75	0.609	0.608	0.000
5E+12	79	0.605	0.605	0.000
5E+12	80	0.609	0.609	0.000
1E+13	68	0.608	0.608	0.000
1E+13	71	0.604	0.604	0.000
1E+13	74	0.609	0.608	0.000
Max		0.046	0.052	0.029
Average		-0.040	0.010	-0.050
Min		-0.112	-0.042	-0.140
Std Dev		0.049	0.031	0.054



18.0 VTTRef_noload_1p2Vldd

Test Site	Junkins
Tester	FETS10
Test Number	EF636800
Max Limit	0.625 V
Min Limit	0.585 V

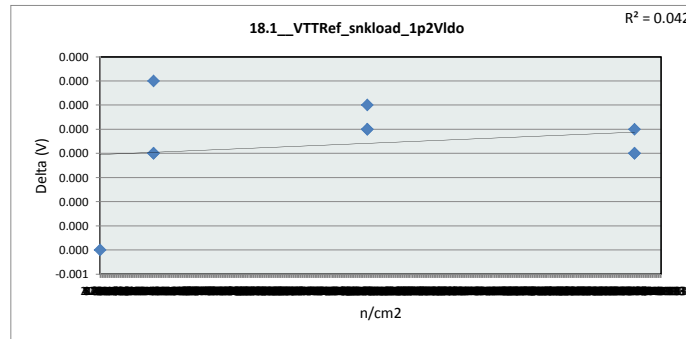
n/cm2	0	1E+12	5E+12	1E+13
LL	0.585	0.585	0.585	0.585
Min	0.606	0.605	0.605	0.604
Average	0.606	0.606	0.608	0.607
Max	0.606	0.606	0.609	0.608
UL	0.625	0.625	0.625	0.625



18.1 VTTRef_snkload_1p2Vldo

Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	V	V
Max Limit	0.625	0.625
Min Limit	0.585	0.585

n/cm2	Serial #	Pre	Post	Delta
0	67	0.604	0.604	0.000
1E+12	78	0.603	0.603	0.000
1E+12	81	0.604	0.604	0.000
1E+12	82	0.604	0.604	0.000
5E+12	75	0.606	0.606	0.000
5E+12	79	0.603	0.603	0.000
5E+12	80	0.607	0.607	0.000
1E+13	68	0.606	0.606	0.000
1E+13	71	0.602	0.602	0.000

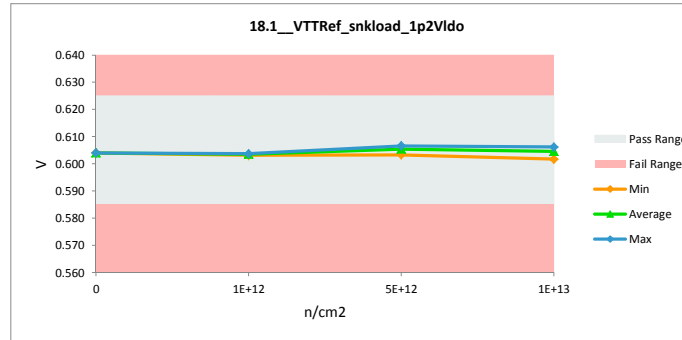


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1E+13	74	0.606	0.606	0.000
	Max	0.609	0.609	0.000
	Average	0.607	0.607	0.000
	Min	0.604	0.604	-0.001
	Std Dev	0.002	0.002	0.000

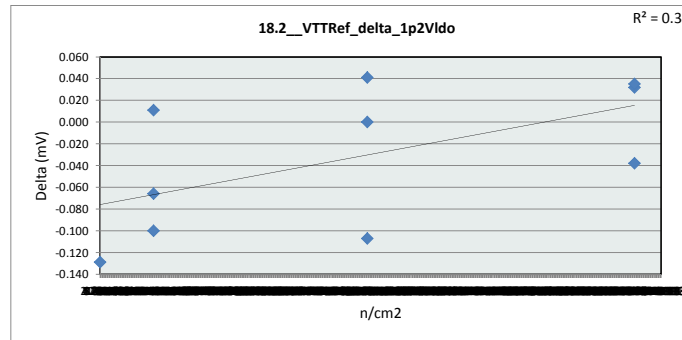
18.1_VTTRef_snkload_1p2Vldo	
Test Site	Junkins
Tester	FETS10
Test Number	EF636800
Max Limit	0.625 V
Min Limit	0.585 V

n/cm2	0	1E+12	5E+12	1E+13
LL	0.585	0.585	0.585	0.585
Min	0.604	0.603	0.603	0.602
Average	0.604	0.604	0.605	0.605
Max	0.604	0.604	0.607	0.606
UL	0.625	0.625	0.625	0.625



18.2_VTTRef_delta_1p2Vldo	
Test Site	Junkins
Tester	FETS10
Test Number	EF636800
Unit	mV
Max Limit	15
Min Limit	-14.5

n/cm2	Serial #	Pre	Post	Delta
0	67	1.970	2.099	-0.129
1E+12	78	2.115	2.104	0.011
1E+12	81	2.098	2.198	-0.100
1E+12	82	2.132	2.198	-0.066
5E+12	75	2.137	2.096	0.041
5E+12	79	2.097	2.097	0.000
5E+12	80	2.193	2.300	-0.107
1E+13	68	2.123	2.091	0.032
1E+13	71	2.034	2.072	-0.038
1E+13	74	2.220	2.185	0.035
	Max	0.609	0.609	0.000
	Average	0.607	0.607	0.000
	Min	0.604	0.604	-0.001
	Std Dev	0.002	0.002	0.000

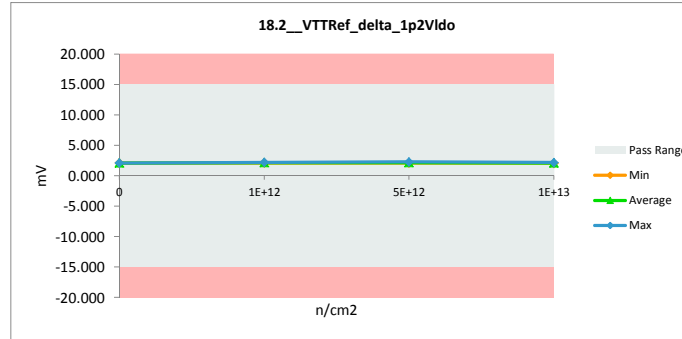


18.2_VTTRef_delta_1p2Vldo	
Test Site	Junkins
Tester	FETS10
Test Number	EF636800
Max Limit	15 mV
Min Limit	-15 mV

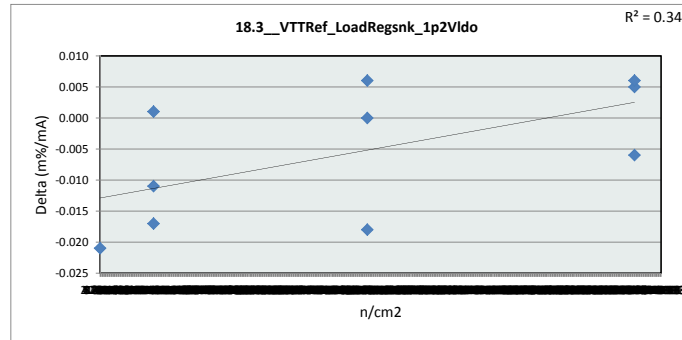
n/cm2	0	1E+12	5E+12	1E+13
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LL	-15.000	-15.000	-15.000	-15.000
Min	2.099	2.104	2.096	2.072
Average	2.099	2.167	2.164	2.116
Max	2.099	2.198	2.300	2.185
UL	15.000	15.000	15.000	15.000

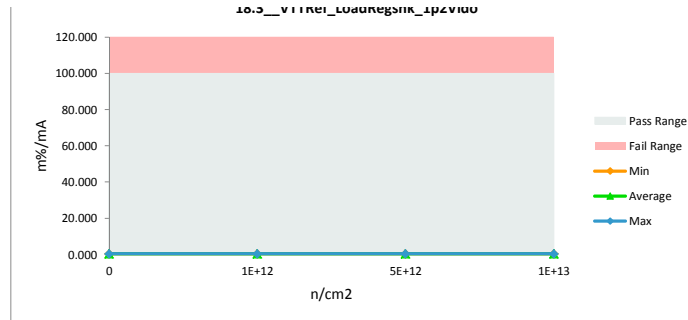


18.3_VTTRef_LoadRegs nk_1p2				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	m%/mA	m%/mA		
Max Limit	100	100		
Min Limit	0	0		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.325	0.346	-0.021
1E+12	78	0.349	0.348	0.001
1E+12	81	0.346	0.363	-0.017
1E+12	82	0.352	0.363	-0.011
5E+12	75	0.351	0.345	0.006
5E+12	79	0.346	0.346	0.000
5E+12	80	0.360	0.378	-0.018
1E+13	68	0.349	0.344	0.005
1E+13	71	0.337	0.343	-0.006
1E+13	74	0.365	0.359	0.006
	Max	0.359	0.390	0.039
	Average	0.308	0.325	-0.016
	Min	0.286	0.292	-0.104
	Std Dev	0.021	0.033	0.041

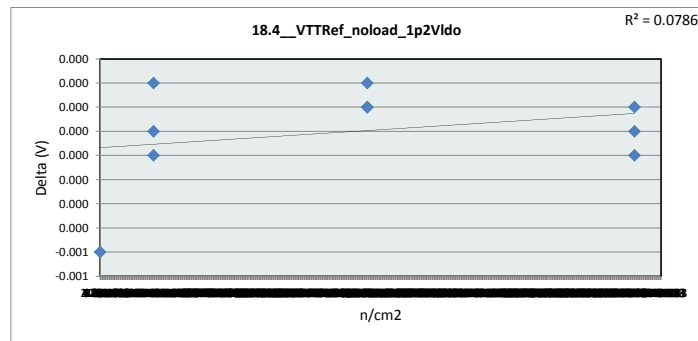


18.3_VTTRef_LoadRegs nk_1p2				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	100	m%/mA		
Min Limit	0	m%/mA		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	0.346	0.348	0.345	0.343
Average	0.346	0.358	0.356	0.349
Max	0.346	0.363	0.378	0.359
UL	100.000	100.000	100.000	100.000

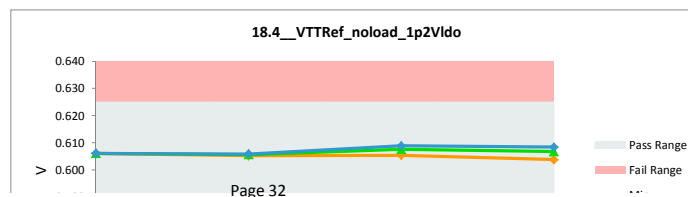
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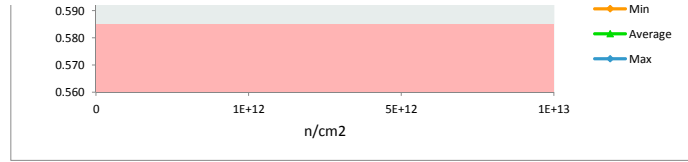
18.4_VTTRef_noload_1p2Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	V	V		
Max Limit	0.625	0.625		
Min Limit	0.585	0.585		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.606	0.606	-0.001
1E+12	78	0.605	0.605	0.000
1E+12	81	0.606	0.606	0.000
1E+12	82	0.606	0.606	0.000
5E+12	75	0.609	0.608	0.000
5E+12	79	0.605	0.605	0.000
5E+12	80	0.609	0.609	0.000
1E+13	68	0.608	0.608	0.000
1E+13	71	0.604	0.604	0.000
1E+13	74	0.609	0.608	0.000
	Max	0.484	0.524	0.053
	Average	0.415	0.437	-0.022
	Min	0.384	0.391	-0.140
	Std Dev	0.028	0.044	0.055



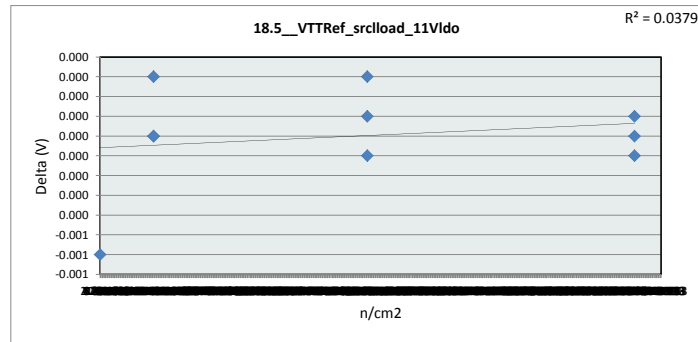
18.4_VTTRef_noload_1p2Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit		V		
Min Limit	0.585	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.585	0.585	0.585	0.585
Min	0.606	0.605	0.605	0.604
Average	0.606	0.606	0.608	0.607
Max	0.606	0.606	0.609	0.608
UL	0.625	0.625	0.625	0.625



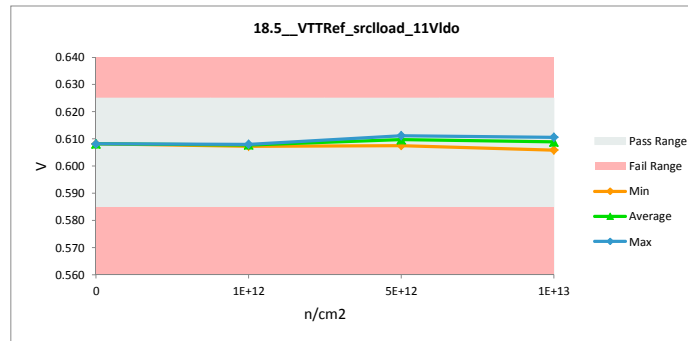
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18.5_VTTRef_srcload_11Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	V	V		
Max Limit	0.625	0.625		
Min Limit	0.585	0.585		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.608	0.608	-0.001
1E+12	78	0.607	0.607	0.000
1E+12	81	0.608	0.608	0.000
1E+12	82	0.608	0.608	0.000
5E+12	75	0.611	0.610	0.000
5E+12	79	0.608	0.608	0.000
5E+12	80	0.611	0.611	0.000
1E+13	68	0.610	0.610	0.000
1E+13	71	0.606	0.606	0.000
1E+13	74	0.611	0.611	0.000
Max		0.684	0.684	0.000
Average		0.682	0.682	0.000
Min		0.679	0.679	0.000
Std Dev		0.002	0.002	0.000

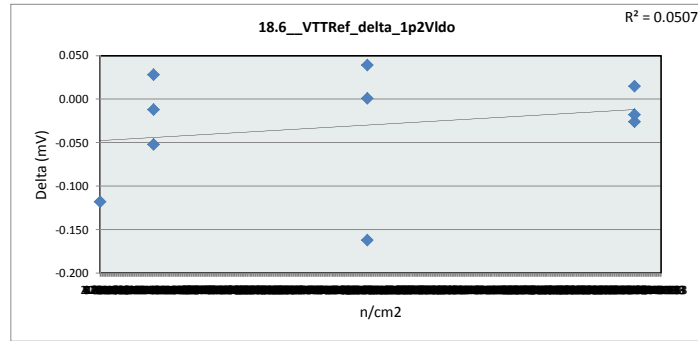


18.5_VTTRef_srcload_11Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	0.625	V		
Min Limit	0.585	V		
n/cm2	LL	Min	Average	Max
0	0.585	0.608	0.608	0.625
1E+12	0.585	0.607	0.608	0.625
5E+12	0.585	0.610	0.611	0.625
1E+13	0.585	0.606	0.609	0.625

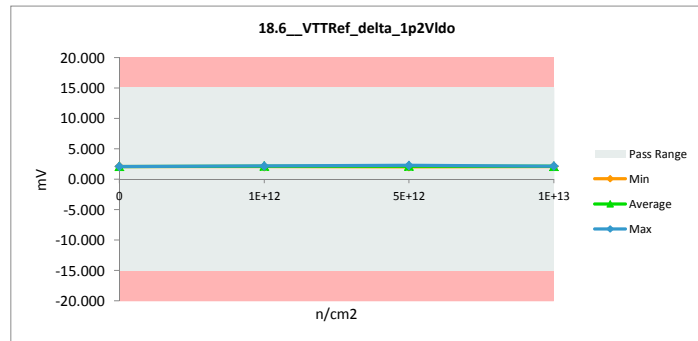


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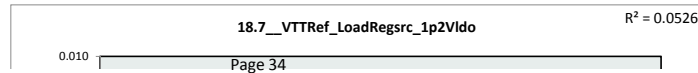
18.6_VTTRef_delta_1p2Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	14.5	15		
Min Limit	-14.5	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	1.978	2.096	-0.118
1E+12	78	2.116	2.088	0.028
1E+12	81	2.127	2.179	-0.052
1E+12	82	2.167	2.179	-0.012
5E+12	75	2.095	2.056	0.039
5E+12	79	2.109	2.108	0.001
5E+12	80	2.137	2.299	-0.162
1E+13	68	2.092	2.118	-0.026
1E+13	71	2.076	2.094	-0.018
1E+13	74	2.176	2.161	0.015
Max		0.685	0.685	0.000
Average		0.682	0.682	0.000
Min		0.679	0.680	0.000
Std Dev		0.002	0.002	0.000



18.6_VTTRef_delta_1p2Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	15	mV		
Min Limit	-15	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	2.096	2.088	2.056	2.094
Average	2.096	2.149	2.154	2.124
Max	2.096	2.179	2.299	2.161
UL	15.000	15.000	15.000	15.000



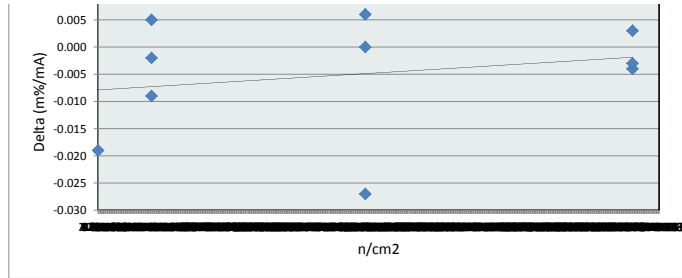
18.7_VTTRef_LoadRegrsrc_1p2Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10



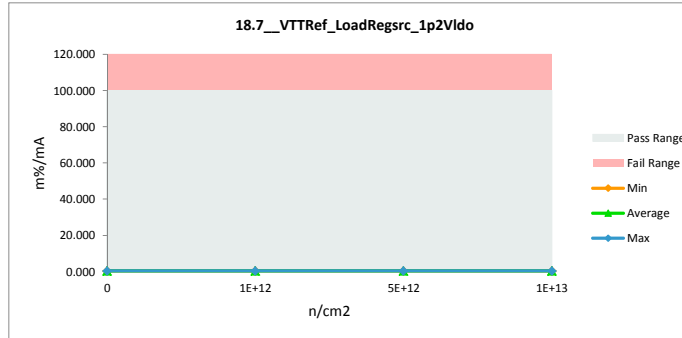
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Test Number	EF636800	EF636800
Unit	m%/mA	m%/mA
Max Limit	100	100
Min Limit	0	0

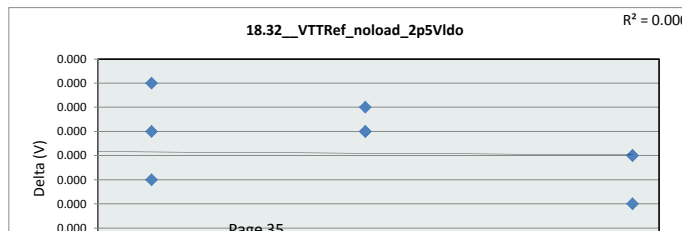
n/cm2	Serial #	Pre	Post	Delta
0	67	0.327	0.346	-0.019
1E+12	78	0.350	0.345	0.005
1E+12	81	0.351	0.360	-0.009
1E+12	82	0.358	0.360	-0.002
5E+12	75	0.344	0.338	0.006
5E+12	79	0.348	0.348	0.000
5E+12	80	0.351	0.378	-0.027
1E+13	68	0.344	0.348	-0.004
1E+13	71	0.344	0.347	-0.003
1E+13	74	0.358	0.355	0.003
Max		0.387	0.362	0.094
Average		0.338	0.316	0.022
Min		0.304	0.286	-0.053
Std Dev		0.029	0.027	0.052



18.7_VTTRef_LoadRegrsrc_1p				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	100	m%/mA		
Min Limit	0	m%/mA		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	0.346	0.345	0.338	0.347
Average	0.346	0.355	0.355	0.350
Max	0.346	0.360	0.378	0.355
UL	100.000	100.000	100.000	100.000

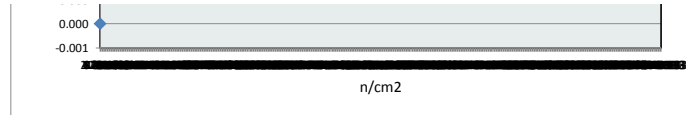


18.32_VTTRef_noload_2p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	V	V		
Max Limit	1.35	1.35		
Min Limit	1.15	1.15		
n/cm2	Serial #	Pre	Post	Delta
0	67	1.256	1.257	0.000
1E+12	78	1.256	1.256	0.000
1E+12	81	1.257	1.257	0.000

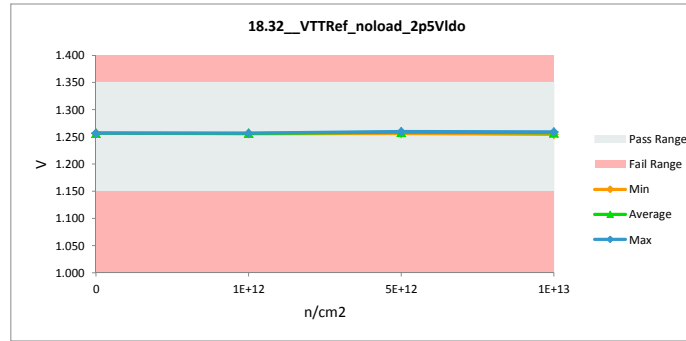


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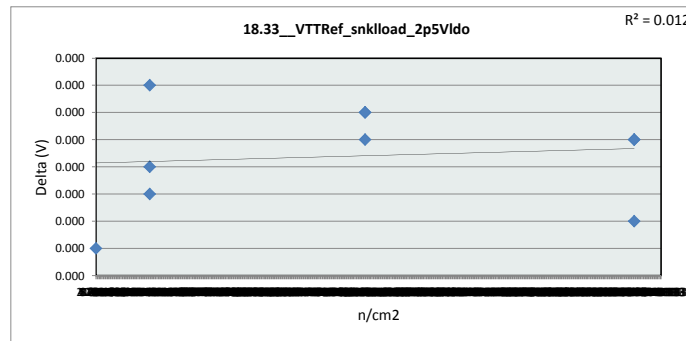
1E+12	82	1.257	1.257	0.000
5E+12	75	1.260	1.259	0.000
5E+12	79	1.256	1.256	0.000
5E+12	80	1.260	1.260	0.000
1E+13	68	1.259	1.259	0.000
1E+13	71	1.255	1.255	0.000
1E+13	74	1.259	1.259	0.000
Max		0.465	0.433	0.114
Average		0.405	0.378	0.027
Min		0.363	0.343	-0.063
Std Dev		0.036	0.033	0.062



18.32_VTTRef_noload_2p5VIdo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	1.35	V		
Min Limit	1.15	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	1.150	1.150	1.150	1.150
Min	1.257	1.256	1.256	1.255
Average	1.257	1.256	1.258	1.257
Max	1.257	1.257	1.260	1.259
UL	1.350	1.350	1.350	1.350



18.33_VTTRef_snkload_2p5VIdo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	V	V		
Max Limit	1.35	1.35		
Min Limit	1.15	1.15		
n/cm2	Serial #	Pre	Post	Delta
0	67	1.254	1.255	0.000
1E+12	78	1.254	1.254	0.000
1E+12	81	1.255	1.255	0.000
1E+12	82	1.255	1.255	0.000
5E+12	75	1.257	1.257	0.000
5E+12	79	1.254	1.254	0.000
5E+12	80	1.258	1.257	0.000
1E+13	68	1.257	1.257	0.000
1E+13	71	1.252	1.253	0.000
1E+13	74	1.257	1.257	0.000
Max		0.760	0.760	0.000

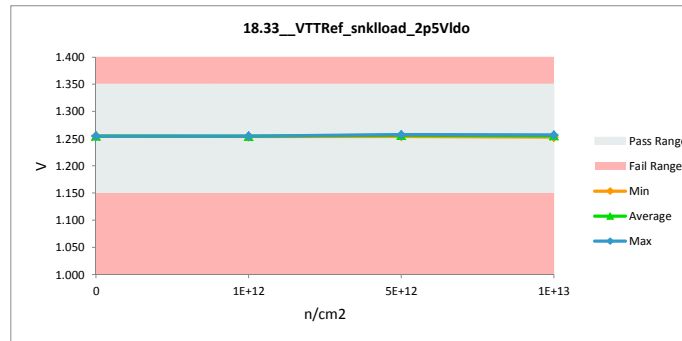


18.33_VTTRef_snkload_2p5VIdo

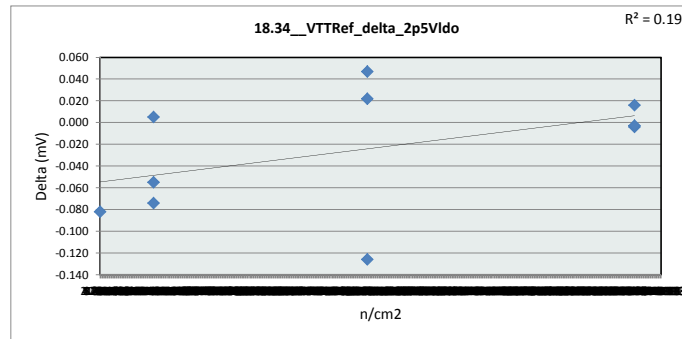
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Average	0.757	0.757	0.000
Min	0.754	0.754	-0.001
Std Dev	0.002	0.002	0.000

Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	1.35	V		
Min Limit	1.15	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	1.150	1.150	1.150	1.150
Min	1.255	1.254	1.254	1.253
Average	1.255	1.254	1.256	1.255
Max	1.255	1.255	1.257	1.257
UL	1.350	1.350	1.350	1.350



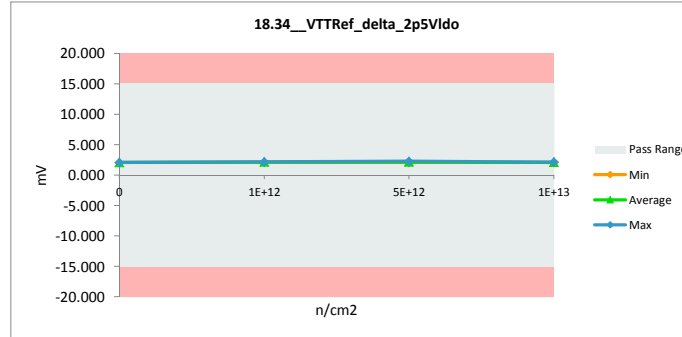
18.34_VTTRef_delta_2p5VIdo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	14.5	15		
Min Limit	-14.5	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	2.009	2.091	-0.082
1E+12	78	2.111	2.106	0.005
1E+12	81	2.098	2.172	-0.074
1E+12	82	2.117	2.172	-0.055
5E+12	75	2.123	2.076	0.047
5E+12	79	2.116	2.094	0.022
5E+12	80	2.160	2.286	-0.126
1E+13	68	2.091	2.095	-0.004
1E+13	71	2.075	2.078	-0.003
1E+13	74	2.165	2.149	0.016
Max		0.760	0.760	0.000
Average		0.757	0.757	0.000
Min		0.754	0.755	-0.001
Std Dev		0.002	0.002	0.000



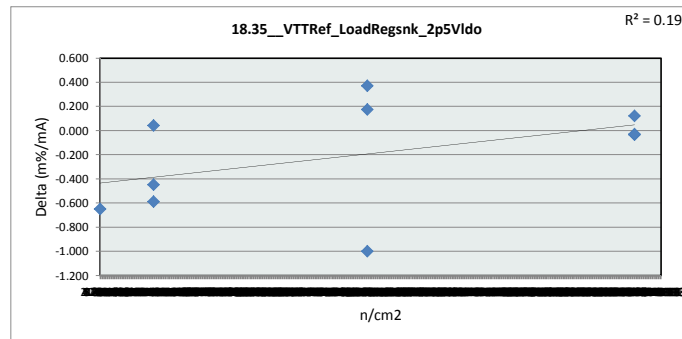
18.34_VTTRef_delta_2p5VIdo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	15	mV		
Min Limit	-15	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	2.091	2.106	2.076	2.078

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Average	2.091	2.150	2.152	2.107
Max	2.091	2.172	2.286	2.149
UL	15.000	15.000	15.000	15.000



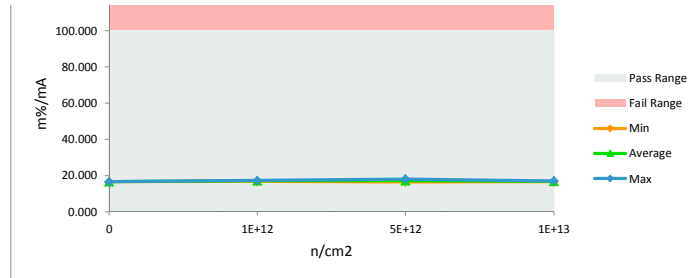
18.35_VTTRef_LoadRegsnk_2p5VIdo				
n/cm2	Serial #	Pre	Post	Delta
0	67	15.989	16.639	-0.650
1E+12	78	16.810	16.767	0.043
1E+12	81	16.698	17.287	-0.589
1E+12	82	16.838	17.287	-0.449
5E+12	75	16.853	16.483	0.370
5E+12	79	16.844	16.670	0.174
5E+12	80	17.145	18.145	-1.000
1E+13	68	16.612	16.646	-0.034
1E+13	71	16.538	16.566	-0.028
1E+13	74	17.194	17.071	0.123
Max		0.207	0.161	0.072
Average		0.154	0.139	0.015
Min		0.119	0.126	-0.018
Std Dev		0.029	0.013	0.032



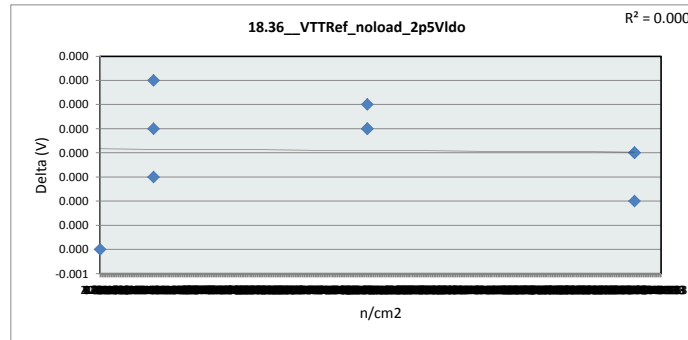
18.35_VTTRef_LoadRegsnk_2p5VIdo				
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	16.639	16.767	16.483	16.566
Average	16.639	17.114	17.099	16.761
Max	16.639	17.287	18.145	17.071
UL	100.000	100.000	100.000	100.000



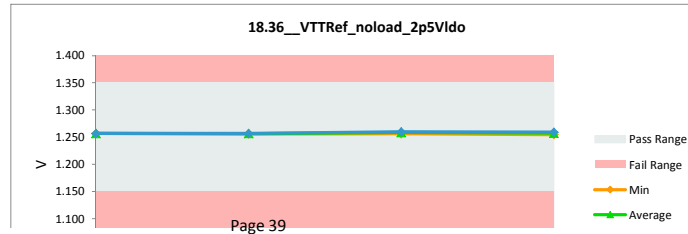
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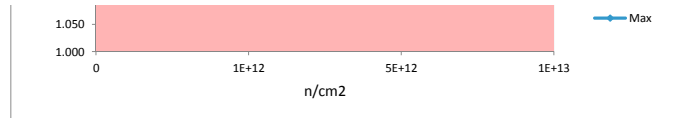
18.36_VTTRef_noload_2p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	V	V		
Max Limit	1.35	1.35		
Min Limit	1.15	1.15		
n/cm2	Serial #	Pre	Post	Delta
0	67	1.256	1.257	0.000
1E+12	78	1.256	1.256	0.000
1E+12	81	1.257	1.257	0.000
1E+12	82	1.257	1.257	0.000
5E+12	75	1.260	1.259	0.000
5E+12	79	1.256	1.256	0.000
5E+12	80	1.260	1.260	0.000
1E+13	68	1.259	1.259	0.000
1E+13	71	1.255	1.255	0.000
1E+13	74	1.259	1.259	0.000
	Max	0.343	0.266	0.118
	Average	0.254	0.229	0.025
	Min	0.196	0.208	-0.030
	Std Dev	0.048	0.022	0.053



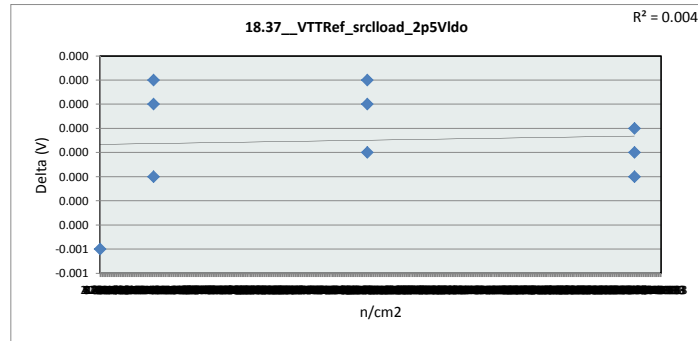
18.36_VTTRef_noload_2p5Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	1.35	V		
Min Limit	1.15	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	1.150	1.150	1.150	1.150
Min	1.257	1.256	1.256	1.255
Average	1.257	1.256	1.258	1.257
Max	1.257	1.257	1.260	1.259
UL	1.350	1.350	1.350	1.350



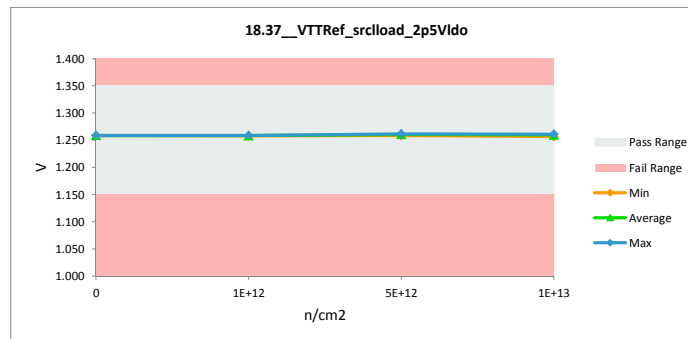
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18.37_VTTRef_srcload_2p5Vldo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	V	V		
Max Limit	1.35	1.35		
Min Limit	1.15	1.15		
n/cm2	Serial #	Pre	Post	Delta
0	67	1.258	1.259	-0.001
1E+12	78	1.258	1.258	0.000
1E+12	81	1.259	1.259	0.000
1E+12	82	1.259	1.259	0.000
5E+12	75	1.262	1.261	0.000
5E+12	79	1.258	1.258	0.000
5E+12	80	1.262	1.262	0.000
1E+13	68	1.261	1.261	0.000
1E+13	71	1.257	1.257	0.000
1E+13	74	1.261	1.261	0.000
	Max	0.910	0.910	0.000
	Average	0.907	0.907	0.000
	Min	0.905	0.905	0.000
	Std Dev	0.002	0.002	0.000

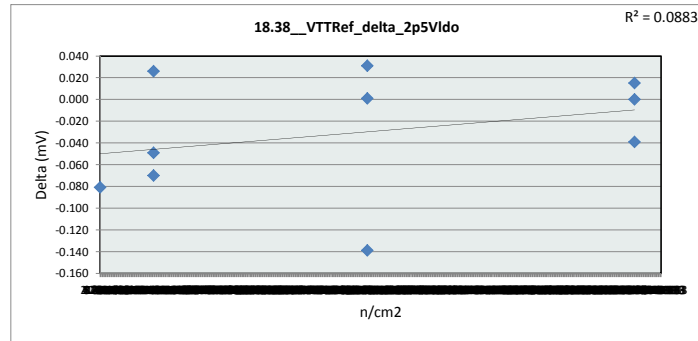


18.37_VTTRef_srcload_2p5V				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	1.35	V		
Min Limit	1.15	V		
n/cm2	0	1E+12	5E+12	1E+13
LL	1.150	1.150	1.150	1.150
Min	1.259	1.258	1.258	1.257
Average	1.259	1.259	1.261	1.260
Max	1.259	1.259	1.262	1.261
UL	1.350	1.350	1.350	1.350

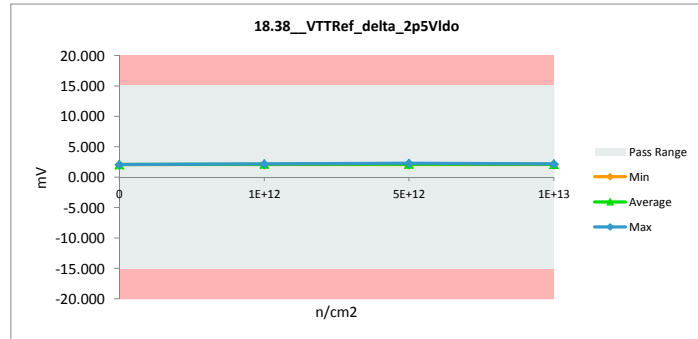


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18.38_VTTRef_delta_2p5VIdo				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	14.5	15		
Min Limit	-14.5	-15		
n/cm2	Serial #	Pre	Post	Delta
0	67	2.007	2.088	-0.081
1E+12	78	2.112	2.086	0.026
1E+12	81	2.104	2.174	-0.070
1E+12	82	2.125	2.174	-0.049
5E+12	75	2.087	2.086	0.001
5E+12	79	2.113	2.082	0.031
5E+12	80	2.145	2.284	-0.139
1E+13	68	2.091	2.130	-0.039
1E+13	71	2.073	2.073	0.000
1E+13	74	2.196	2.181	0.015
Max		0.910	0.910	0.000
Average		0.907	0.908	0.000
Min		0.905	0.905	-0.001
Std Dev		0.002	0.002	0.000



18.38_VTTRef_delta_2p5VIdo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	15	mV		
Min Limit	-15	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-15.000	-15.000	-15.000	-15.000
Min	2.088	2.086	2.082	2.073
Average	2.088	2.145	2.151	2.128
Max	2.088	2.174	2.284	2.181
UL	15.000	15.000	15.000	15.000

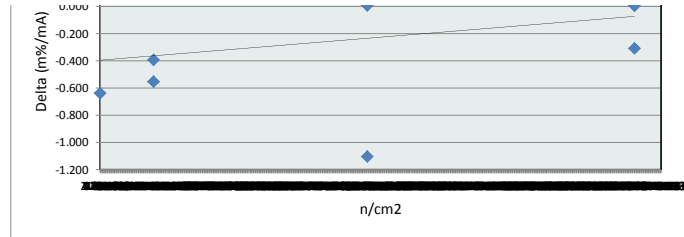


18.39_VTTRef_LoadRegsrc_2p5		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	m%/mA	m%/mA



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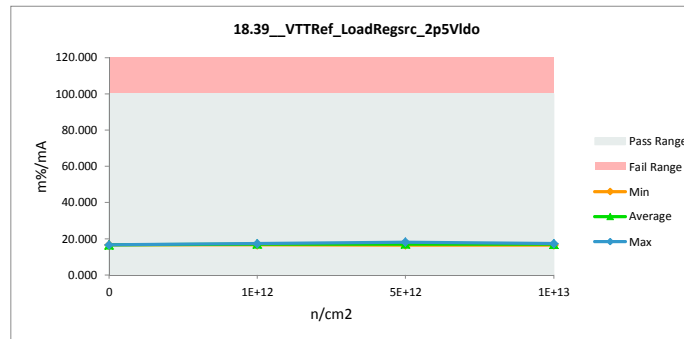
n/cm2	Serial #	Pre	Post	Delta
0	67	15.979	16.616	-0.637
1E+12	78	16.812	16.605	0.207
1E+12	81	16.746	17.298	-0.552
1E+12	82	16.906	17.298	-0.392
5E+12	75	16.572	16.565	0.007
5E+12	79	16.817	16.569	0.248
5E+12	80	17.026	18.130	-1.104
1E+13	68	16.616	16.923	-0.307
1E+13	71	16.526	16.521	0.005
1E+13	74	17.443	17.322	0.121
	Max	0.185	0.199	0.056
	Average	0.152	0.147	0.005
	Min	0.122	0.114	-0.034
	Std Dev	0.021	0.025	0.031



18.39_VTTRef_LoadRegsrc_2

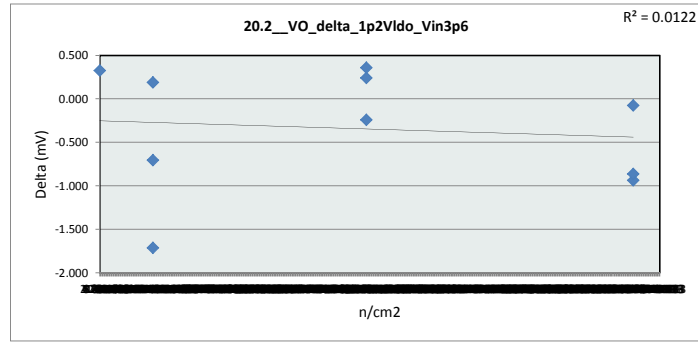
Test Site	Junkins
Tester	FETS10
Test Number	EF636800
Max Limit	100 m%/mA
Min Limit	0 m%/mA

n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	16.616	16.605	16.565	16.521
Average	16.616	17.067	17.088	16.922
Max	16.616	17.298	18.130	17.322
UL	100.000	100.000	100.000	100.000

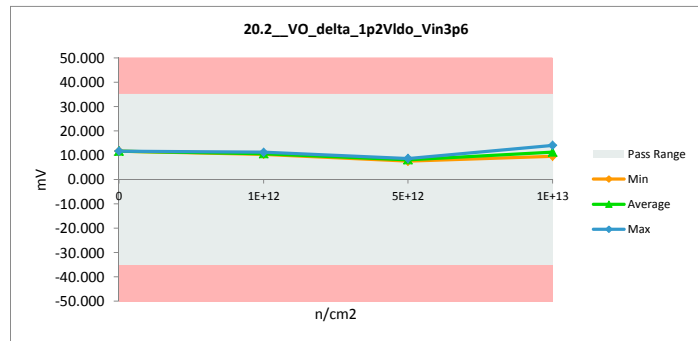


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20.2_VO_delta_1p2VIdo_Vin3p6				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	34		35	
Min Limit	-34		-35	
n/cm2	Serial #	Pre	Post	Delta
0	67	12.029	11.705	0.324
1E+12	78	11.454	11.264	0.190
1E+12	81	9.672	10.376	-0.704
1E+12	82	8.661	10.376	-1.715
5E+12	75	7.775	7.536	0.239
5E+12	79	8.458	8.699	-0.241
5E+12	80	8.598	8.240	0.358
1E+13	68	9.500	9.577	-0.077
1E+13	71	13.153	14.091	-0.938
1E+13	74	9.342	10.205	-0.863
	Max	13.153	14.091	0.358
	Average	9.864	10.207	-0.343
	Min	7.775	7.536	-1.715
	Std Dev	1.760	1.891	0.689



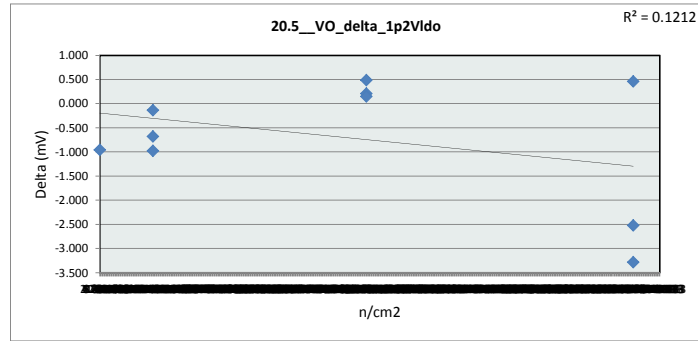
20.2_VO_delta_1p2VIdo_Vin3p6				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Max Limit	35 mV		35 mV	
Min Limit	-35 mV		-35 mV	
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	11.705	10.376	7.536	9.577
Average	11.705	10.672	8.158	11.291
Max	11.705	11.264	8.699	14.091
UL	35.000	35.000	35.000	35.000



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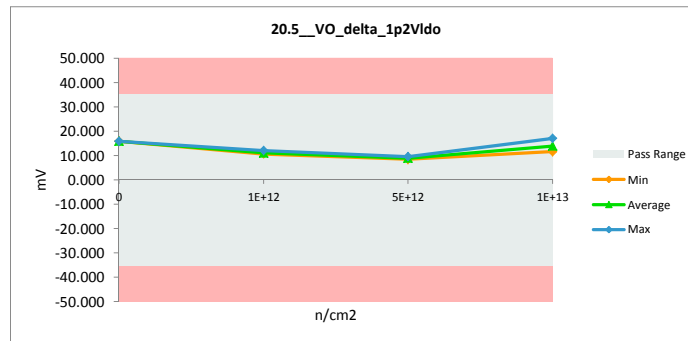
20.5_VO_delta_1p2Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	34	35
Min Limit	-34	-35

n/cm2	Serial #	Pre	Post	Delta
0	67	14.968	15.927	-0.959
1E+12	78	11.943	12.078	-0.135
1E+12	81	9.962	10.638	-0.676
1E+12	82	9.658	10.638	-0.980
5E+12	75	8.703	8.497	0.206
5E+12	79	9.755	9.606	0.149
5E+12	80	9.217	8.729	0.488
1E+13	68	9.142	11.665	-2.523
1E+13	71	17.536	17.079	0.457
1E+13	74	9.736	13.020	-3.284
	Max	17.536	17.079	0.488
	Average	11.062	11.788	-0.726
	Min	8.703	8.497	-3.284
	Std Dev	2.930	2.874	1.280



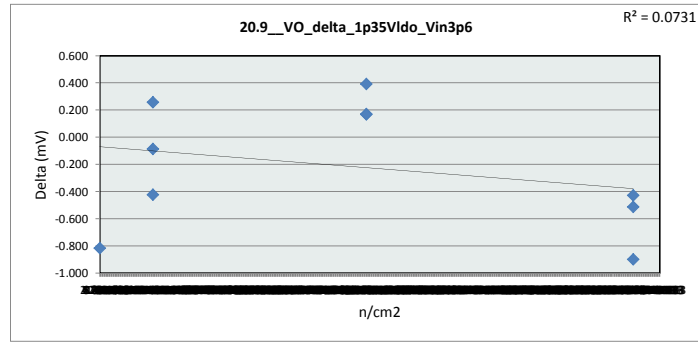
20.5_VO_delta_1p2Vldo		
Test Site	Junkins	
Tester	FETS10	
Test Number	EF636800	
Max Limit	35	mV
Min Limit	-35	mV

n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	15.927	10.638	8.497	11.665
Average	15.927	11.118	8.944	13.921
Max	15.927	12.078	9.606	17.079
UL	35.000	35.000	35.000	35.000

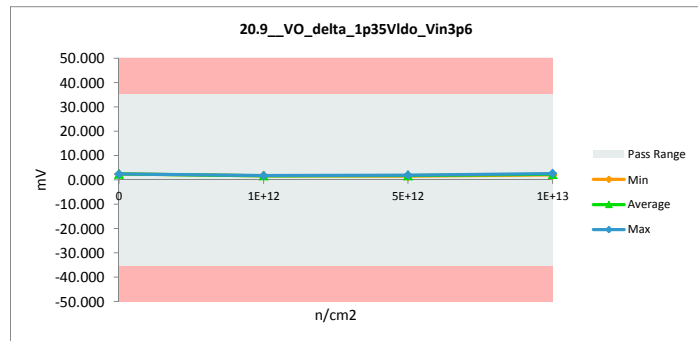


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20.9_VO_delta_1p35VIdo_Vin3p6				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	34		35	
Min Limit	-34		-35	
n/cm2	Serial #	Pre	Post	Delta
0	67	1.596	2.413	-0.817
1E+12	78	1.966	1.708	0.258
1E+12	81	1.327	1.750	-0.423
1E+12	82	1.663	1.750	-0.087
5E+12	75	2.148	1.757	0.391
5E+12	79	1.689	1.519	0.170
5E+12	80	2.132	1.965	0.167
1E+13	68	1.640	2.067	-0.427
1E+13	71	1.757	2.657	-0.900
1E+13	74	1.589	2.101	-0.512
	Max	2.148	2.657	0.391
	Average	1.751	1.969	-0.218
	Min	1.327	1.519	-0.900
	Std Dev	0.259	0.351	0.461

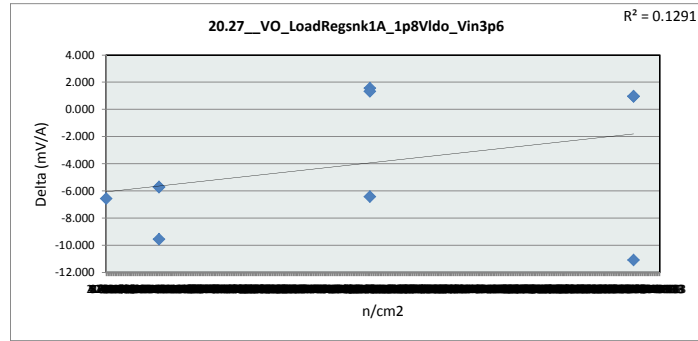


20.9_VO_delta_1p35VIdo_Vin3p6				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Max Limit	35		mV	
Min Limit	-35		mV	
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	2.413	1.708	1.519	2.067
Average	2.413	1.736	1.747	2.275
Max	2.413	1.750	1.965	2.657
UL	35.000	35.000	35.000	35.000

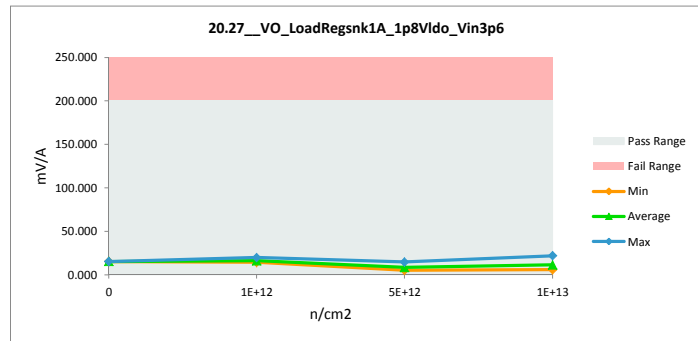


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20.27_VO_LoadRegsnk1A_1p8V				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV/A	mV/A		
Max Limit	200	200		
Min Limit	0	0		
n/cm2	Serial #	Pre	Post	Delta
0	67	8.745	15.319	-6.574
1E+12	78	10.416	19.961	-9.545
1E+12	81	8.616	14.338	-5.722
1E+12	82	8.618	14.338	-5.720
5E+12	75	6.745	5.176	1.569
5E+12	79	8.356	14.787	-6.431
5E+12	80	7.016	5.694	1.322
1E+13	68	6.797	5.854	0.943
1E+13	71	10.808	21.897	-11.089
1E+13	74	7.652	6.668	0.984
	Max	10.808	21.897	1.569
	Average	8.377	12.403	-4.026
	Min	6.745	5.176	-11.089
	Std Dev	1.409	6.164	4.808



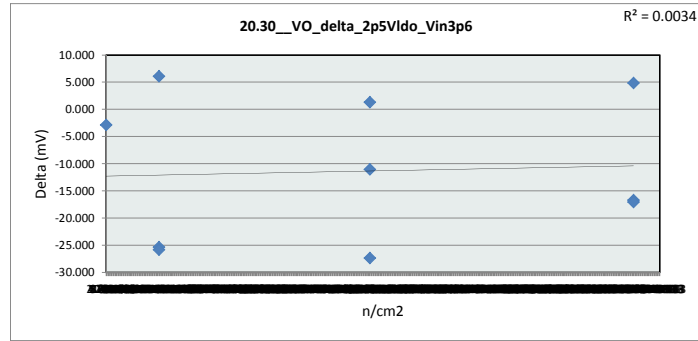
20.27_VO_LoadRegsnk1A_1p				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	200	mV/A		
Min Limit	0	mV/A		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	15.319	14.338	5.176	5.854
Average	15.319	16.212	8.552	11.473
Max	15.319	19.961	14.787	21.897
UL	200.000	200.000	200.000	200.000



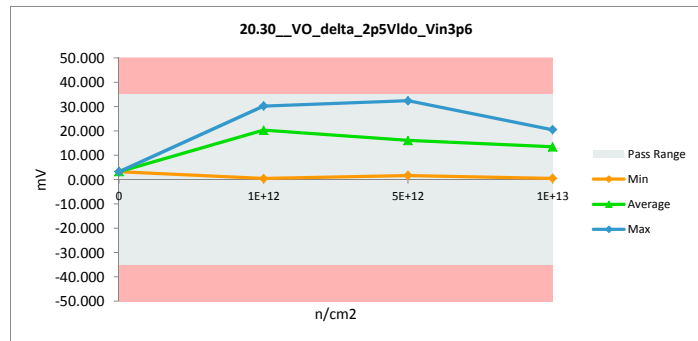
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20.30_VO_delta_2p5VIdo_Vin3p6		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	34	35
Min Limit	-34	-35

n/cm2	Serial #	Pre	Post	Delta
0	67	0.434	3.308	-2.874
1E+12	78	6.526	0.456	6.070
1E+12	81	4.886	30.256	-25.370
1E+12	82	4.396	30.256	-25.860
5E+12	75	3.228	14.302	-11.074
5E+12	79	5.065	32.409	-27.344
5E+12	80	2.994	1.680	1.314
1E+13	68	2.671	19.404	-16.733
1E+13	71	5.368	0.503	4.865
1E+13	74	3.457	20.505	-17.048
	Max	6.526	32.409	6.070
	Average	3.903	15.308	-11.405
	Min	0.434	0.456	-27.344
	Std Dev	1.720	13.139	13.009

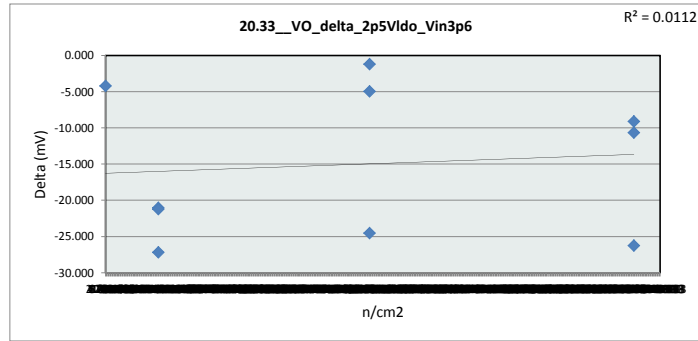


20.30_VO_delta_2p5VIdo_Vin3p6				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Max Limit	35	mV		
Min Limit	-35	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	3.308	0.456	1.680	0.503
Average	3.308	20.323	16.130	13.471
Max	3.308	30.256	32.409	20.505
UL	35.000	35.000	35.000	35.000

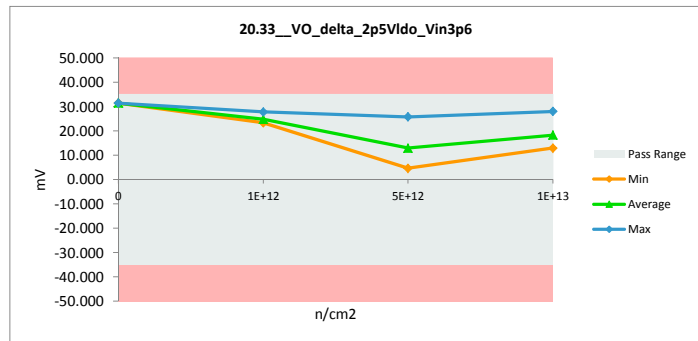


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20.33_VO_delta_2p5VIdo_Vin3p6				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	34	35		
Min Limit	-34	-35		
n/cm2	Serial #	Pre	Post	Delta
0	67	27.215	31.416	-4.201
1E+12	78	0.600	27.802	-27.202
1E+12	81	2.266	23.320	-21.054
1E+12	82	2.109	23.320	-21.211
5E+12	75	3.335	8.310	-4.975
5E+12	79	1.273	25.789	-24.516
5E+12	80	3.489	4.684	-1.195
1E+13	68	3.838	12.979	-9.141
1E+13	71	1.757	28.017	-26.260
1E+13	74	3.277	13.926	-10.649
	Max	27.215	31.416	-1.195
	Average	4.916	19.956	-15.040
	Min	0.600	4.684	-27.202
	Std Dev	7.905	9.240	10.013

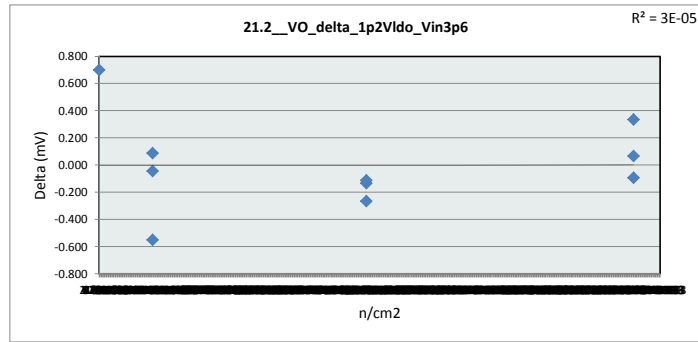


20.33_VO_delta_2p5VIdo_Vin3p6				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35	mV		
Min Limit	-35	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	31.416	23.320	4.684	12.979
Average	31.416	24.814	12.928	18.307
Max	31.416	27.802	25.789	28.017
UL	35.000	35.000	35.000	35.000

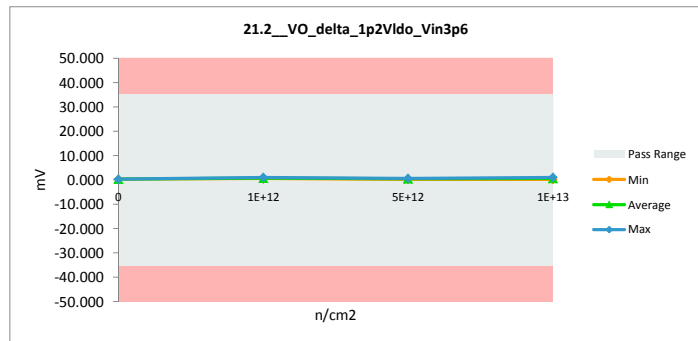


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21.2_VO_delta_1p2VIdo_Vin3p6				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	34		35	
Min Limit	-34		-35	
n/cm2	Serial #	Pre	Post	Delta
0	67	1.007	0.308	0.699
1E+12	78	0.984	1.029	-0.045
1E+12	81	0.686	0.598	0.088
1E+12	82	0.048	0.598	-0.550
5E+12	75	0.521	0.655	-0.134
5E+12	79	0.184	0.450	-0.266
5E+12	80	0.151	0.263	-0.112
1E+13	68	0.157	0.251	-0.094
1E+13	71	1.417	1.082	0.335
1E+13	74	0.516	0.450	0.066
	Max	1.417	1.082	0.699
	Average	0.567	0.568	-0.001
	Min	0.048	0.251	-0.550
	Std Dev	0.455	0.293	0.338



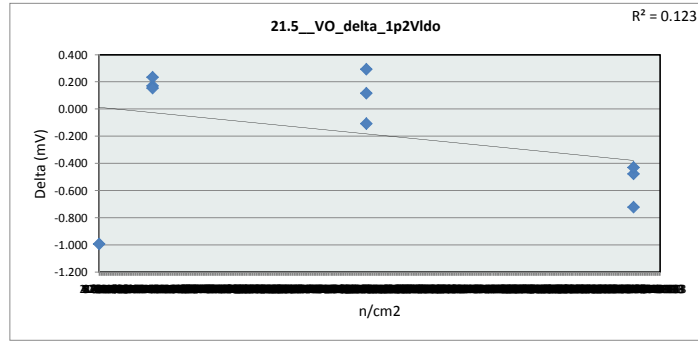
21.2_VO_delta_1p2VIdo_Vin3p6				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Max Limit	35		mV	
Min Limit	-35		mV	
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	0.308	0.598	0.263	0.251
Average	0.308	0.742	0.456	0.594
Max	0.308	1.029	0.655	1.082
UL	35.000	35.000	35.000	35.000



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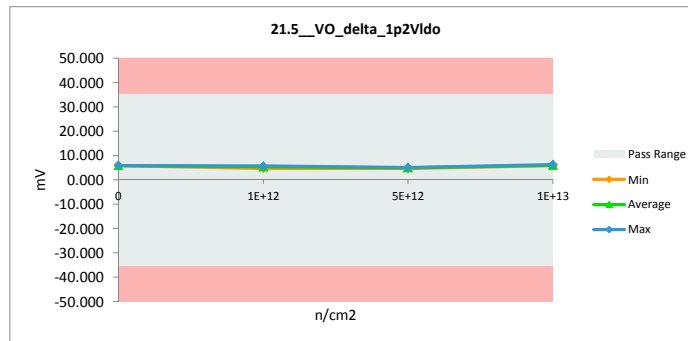
21.5_VO_delta_1p2Vldo		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	34	35
Min Limit	-34	-35

n/cm2	Serial #	Pre	Post	Delta
0	67	4.953	5.947	-0.994
1E+12	78	4.884	4.713	0.171
1E+12	81	5.932	5.698	0.234
1E+12	82	5.853	5.698	0.155
5E+12	75	5.426	5.132	0.294
5E+12	79	4.835	4.718	0.117
5E+12	80	4.987	5.095	-0.108
1E+13	68	5.501	5.978	-0.477
1E+13	71	5.560	6.282	-0.722
1E+13	74	5.453	5.883	-0.430
	Max	5.932	6.282	0.294
	Average	5.338	5.514	-0.176
	Min	4.835	4.713	-0.994
	Std Dev	0.401	0.557	0.451



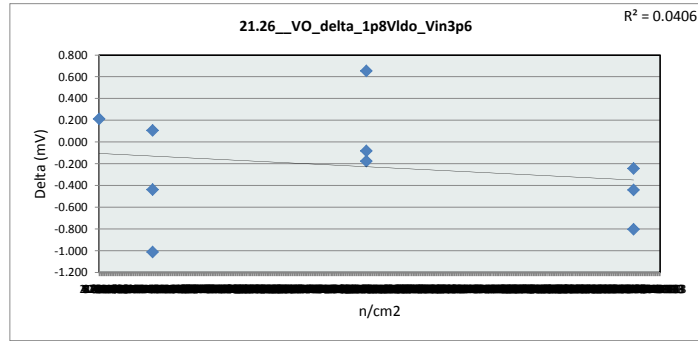
21.5_VO_delta_1p2Vldo		
Test Site	Junkins	
Tester	FETS10	
Test Number	EF636800	
Max Limit	35	mV
Min Limit	-35	mV

n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	5.947	4.713	4.718	5.883
Average	5.947	5.370	4.982	6.048
Max	5.947	5.698	5.132	6.282
UL	35.000	35.000	35.000	35.000

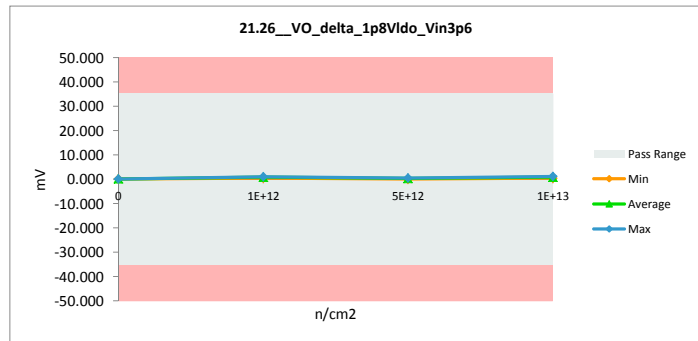


NDD Report
THS7H3301-SP

21.26_VO_delta_1p8Vldo_Vin3p6				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	34	35		
Min Limit	-34	-35		
n/cm2	Serial #	Pre	Post	Delta
0	67	0.342	0.129	0.213
1E+12	78	0.580	0.472	0.108
1E+12	81	0.635	1.072	-0.437
1E+12	82	0.060	1.072	-1.012
5E+12	75	0.334	0.510	-0.176
5E+12	79	0.747	0.092	0.655
5E+12	80	0.282	0.365	-0.083
1E+13	68	0.092	0.895	-0.803
1E+13	71	0.964	1.208	-0.244
1E+13	74	0.016	0.457	-0.441
	Max	0.964	1.208	0.655
	Average	0.405	0.627	-0.222
	Min	0.016	0.092	-1.012
	Std Dev	0.317	0.405	0.488

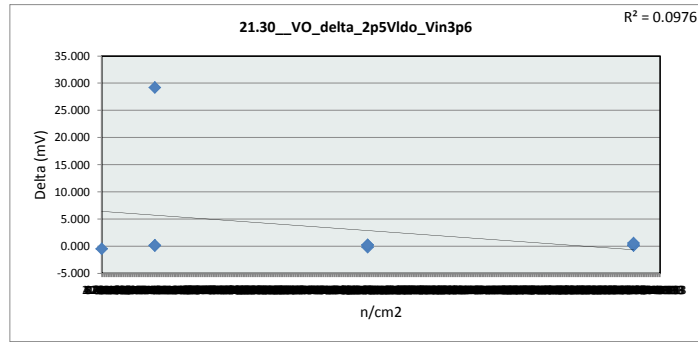


21.26_VO_delta_1p8Vldo_Vin3p6				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35	mV		
Min Limit	-35	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	0.129	0.472	0.092	0.457
Average	0.129	0.872	0.322	0.853
Max	0.129	1.072	0.510	1.208
UL	35.000	35.000	35.000	35.000

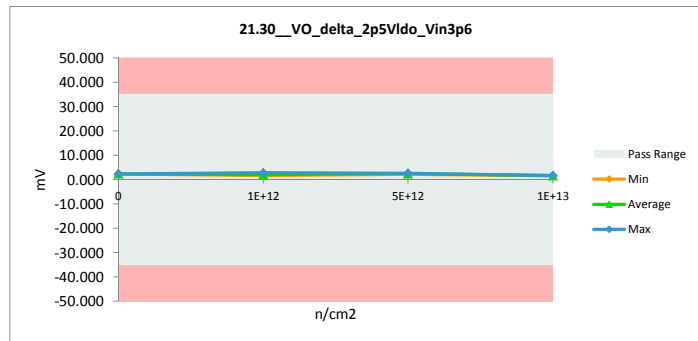


NDD Report
THS7H3301-SP

21.30_VO_delta_2p5VIdo_Vin3p6				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	34		35	
Min Limit	-34		-35	
n/cm2	Serial #	Pre	Post	Delta
0	67	1.848	2.345	-0.497
1E+12	78	32.025	2.823	29.202
1E+12	81	1.809	1.700	0.109
1E+12	82	1.897	1.700	0.197
5E+12	75	2.420	2.167	0.253
5E+12	79	2.417	2.625	-0.208
5E+12	80	2.709	2.464	0.245
1E+13	68	1.994	1.738	0.256
1E+13	71	1.653	1.527	0.126
1E+13	74	2.293	1.737	0.556
	Max	32.025	2.823	29.202
	Average	5.107	2.083	3.024
	Min	1.653	1.527	-0.497
	Std Dev	9.464	0.460	9.202

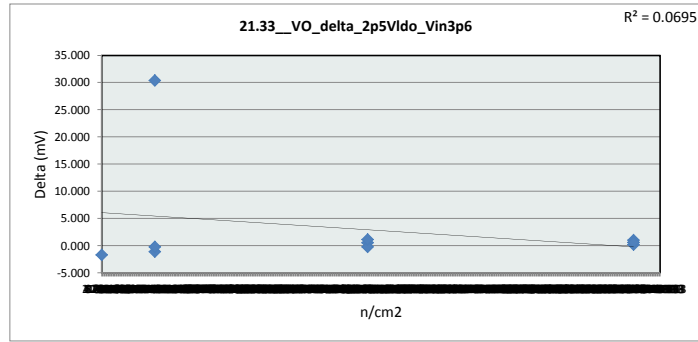


21.30_VO_delta_2p5VIdo_Vin3p6				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35		mV	
Min Limit	-35		mV	
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	2.345	1.700	2.167	1.527
Average	2.345	2.074	2.419	1.667
Max	2.345	2.823	2.625	1.738
UL	35.000	35.000	35.000	35.000

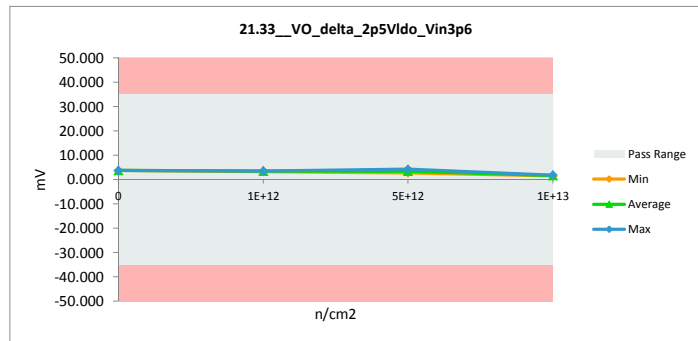


NDD Report
THS7H3301-SP

21.33_VO_delta_2p5VIdo_Vin3p6				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	34		35	
Min Limit	-34		-35	
n/cm2	Serial #	Pre	Post	Delta
0	67	2.035	3.738	-1.703
1E+12	78	33.657	3.280	30.377
1E+12	81	2.402	3.553	-1.151
1E+12	82	3.310	3.553	-0.243
5E+12	75	3.805	3.298	0.507
5E+12	79	3.996	4.264	-0.268
5E+12	80	3.881	2.758	1.123
1E+13	68	2.538	1.571	0.967
1E+13	71	1.663	1.488	0.175
1E+13	74	2.455	1.867	0.588
	Max	33.657	4.264	30.377
	Average	5.974	2.937	3.037
	Min	1.663	1.488	-1.703
	Std Dev	9.761	0.975	9.648

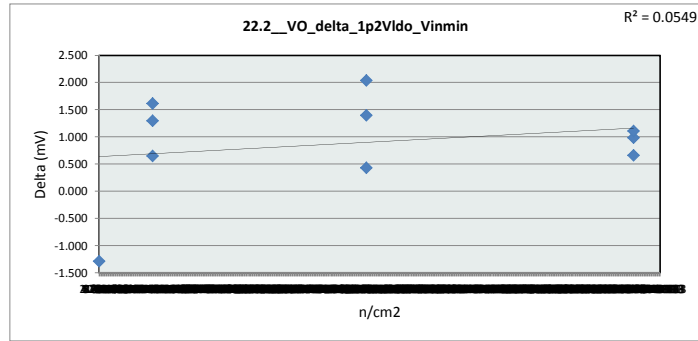


21.33_VO_delta_2p5VIdo_Vin3p6				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35		mV	
Min Limit	-35		mV	
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	3.738	3.280	2.758	1.488
Average	3.738	3.462	3.440	1.642
Max	3.738	3.553	4.264	1.867
UL	35.000	35.000	35.000	35.000

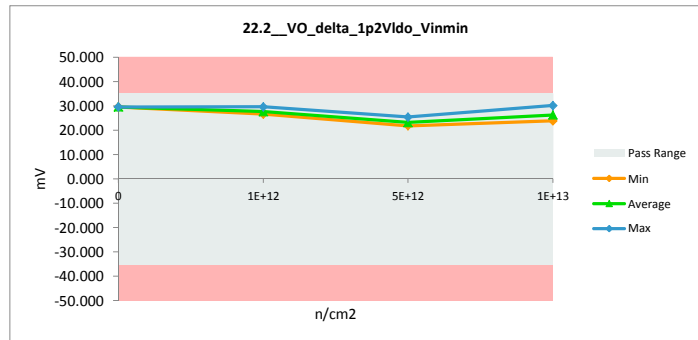


NDD Report
THS7H3301-SP

22.2_VO_delta_1p2Vldo_Vinmin				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	34		35	
Min Limit	-34		-35	
n/cm2	Serial #	Pre	Post	Delta
0	67	28.314	29.606	-1.292
1E+12	78	30.301	29.654	0.647
1E+12	81	28.271	26.656	1.615
1E+12	82	27.953	26.656	1.297
5E+12	75	23.636	22.238	1.398
5E+12	79	25.902	25.469	0.433
5E+12	80	23.869	21.829	2.040
1E+13	68	24.871	23.888	0.983
1E+13	71	30.820	30.160	0.660
1E+13	74	25.968	24.862	1.106
	Max	30.820	30.160	2.040
	Average	26.990	26.102	0.889
	Min	23.636	21.829	-1.292
	Std Dev	2.531	3.019	0.907

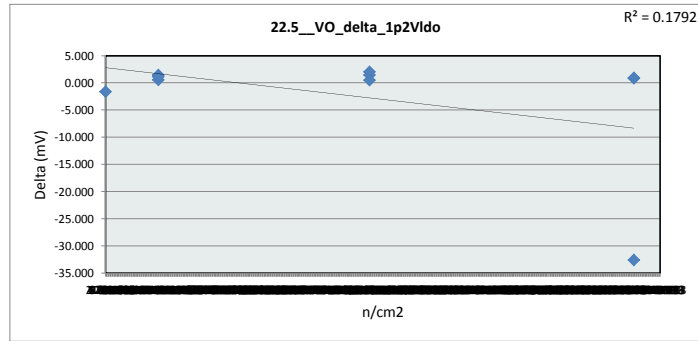


22.2_VO_delta_1p2Vldo_Vinmin				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35		mV	
Min Limit	-35		mV	
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	29.606	26.656	21.829	23.888
Average	29.606	27.655	23.179	26.303
Max	29.606	29.654	25.469	30.160
UL	35.000	35.000	35.000	35.000

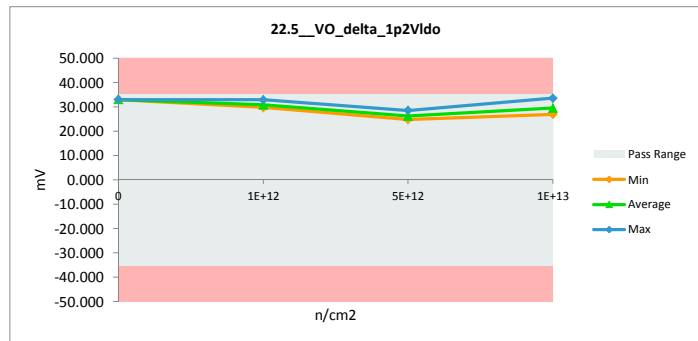


NDD Report
THS7H3301-SP

22.5_VO_delta_1p2Vldo				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	34		35	
Min Limit	-34		-35	
n/cm2	Serial #	Pre	Post	Delta
0	67	31.353	33.004	-1.651
1E+12	78	33.474	32.910	0.564
1E+12	81	31.233	29.799	1.434
1E+12	82	30.955	29.799	1.156
5E+12	75	26.781	25.368	1.413
5E+12	79	29.026	28.536	0.490
5E+12	80	26.854	24.845	2.009
1E+13	68	27.808	26.934	0.874
1E+13	71	0.962	33.569	-32.607
1E+13	74	28.894	28.003	0.891
Max		33.474	33.569	2.009
Average		26.734	29.277	-2.543
Min		0.962	24.845	-32.607
Std Dev		9.310	3.138	10.608

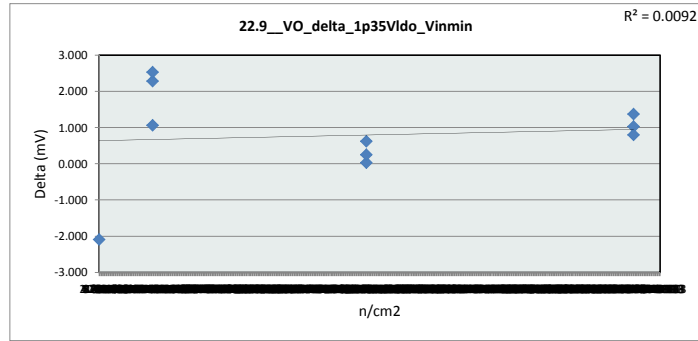


22.5_VO_delta_1p2Vldo				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35		mV	
Min Limit	-35		mV	
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	33.004	29.799	24.845	26.934
Average	33.004	30.836	26.250	29.502
Max	33.004	32.910	28.536	33.569
UL	35.000	35.000	35.000	35.000

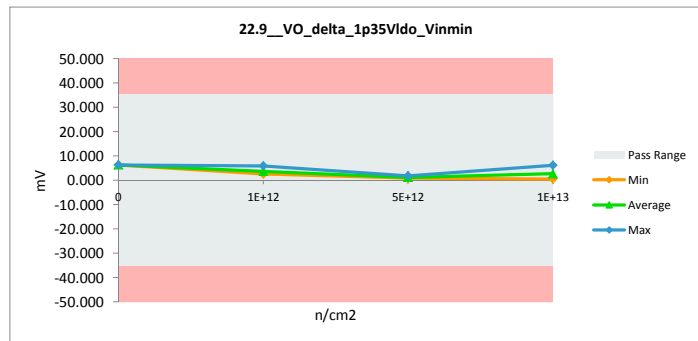


NDD Report
THS7H3301-SP

22.9_VO_delta_1p35Vldo_Vinmin				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	34	35		
Min Limit	-34	-35		
n/cm2	Serial #	Pre	Post	Delta
0	67	4.221	6.317	-2.096
1E+12	78	6.986	5.921	1.065
1E+12	81	4.867	2.584	2.283
1E+12	82	5.109	2.584	2.525
5E+12	75	0.973	0.948	0.025
5E+12	79	2.468	1.851	0.617
5E+12	80	1.084	0.831	0.253
1E+13	68	1.555	0.533	1.022
1E+13	71	6.983	6.184	0.799
1E+13	74	2.801	1.431	1.370
Max		6.986	6.317	2.525
Average		3.705	2.918	0.786
Min		0.973	0.533	-2.096
Std Dev		2.271	2.327	1.288

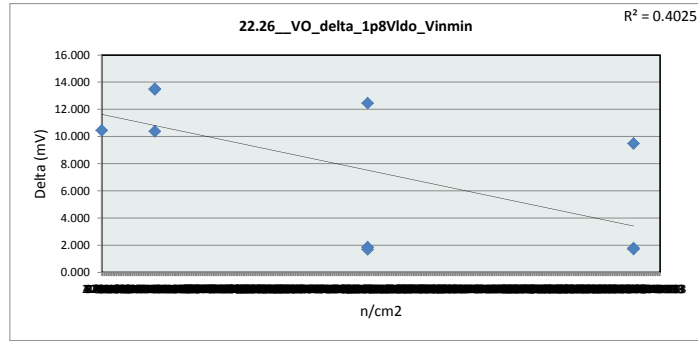


22.9_VO_delta_1p35Vldo_Vin				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35	mV		
Min Limit	-35	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	6.317	2.584	0.831	0.533
Average	6.317	3.696	1.210	2.716
Max	6.317	5.921	1.851	6.184
UL	35.000	35.000	35.000	35.000

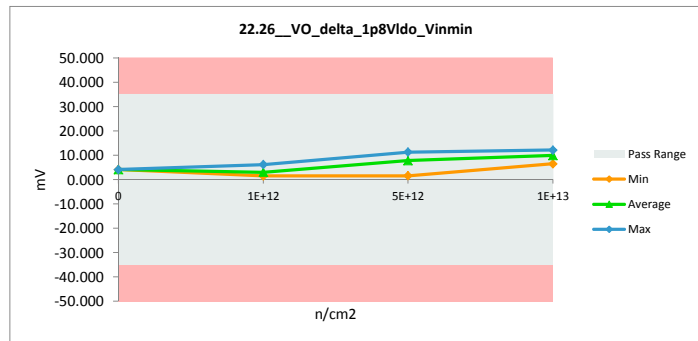


NDD Report
THS7H3301-SP

22.26_VO_delta_1p8Vldo_Vinmin				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	34		35	
Min Limit	-34		-35	
n/cm2	Serial #	Pre	Post	Delta
0	67	14.597	4.140	10.457
1E+12	78	16.548	6.154	10.394
1E+12	81	14.951	1.483	13.468
1E+12	82	15.007	1.483	13.524
5E+12	75	12.485	10.621	1.864
5E+12	79	14.032	1.582	12.450
5E+12	80	13.008	11.307	1.701
1E+13	68	13.004	11.226	1.778
1E+13	71	15.971	6.481	9.490
1E+13	74	13.853	12.145	1.708
	Max	16.548	12.145	13.524
	Average	14.346	6.662	7.683
	Min	12.485	1.483	1.701
	Std Dev	1.323	4.400	5.258

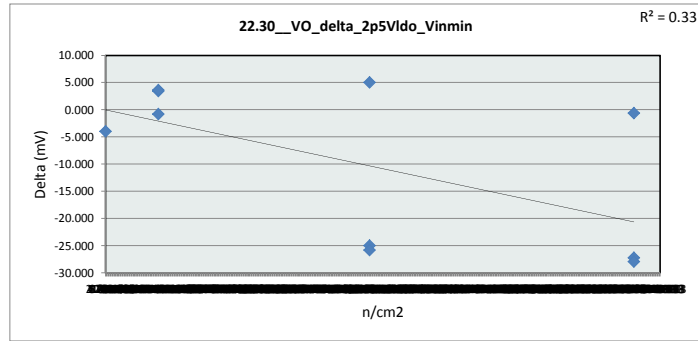


22.26_VO_delta_1p8Vldo_Vin				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35 mV			
Min Limit	-35 mV			
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	4.140	1.483	1.582	6.481
Average	4.140	3.040	7.837	9.951
Max	4.140	6.154	11.307	12.145
UL	35.000	35.000	35.000	35.000

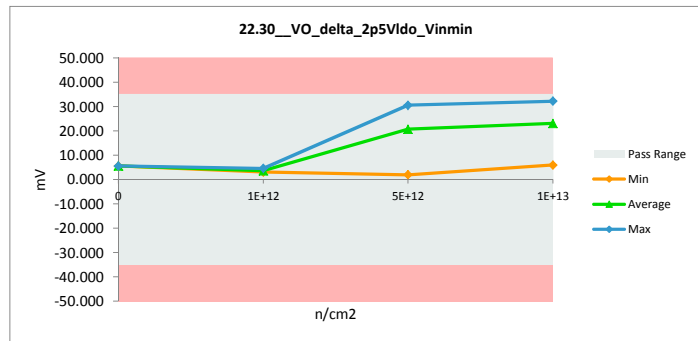


NDD Report
THS7H3301-SP

22.30_VO_delta_2p5VIdo_Vinmin				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	34	35		
Min Limit	-34	-35		
n/cm2	Serial #	Pre	Post	Delta
0	67	1.596	5.573	-3.977
1E+12	78	3.799	4.595	-0.796
1E+12	81	6.567	3.114	3.453
1E+12	82	6.699	3.114	3.585
5E+12	75	4.568	29.588	-25.020
5E+12	79	6.959	1.944	5.015
5E+12	80	4.763	30.606	-25.843
1E+13	68	3.688	30.917	-27.229
1E+13	71	5.400	6.010	-0.610
1E+13	74	4.288	32.218	-27.930
	Max	6.959	32.218	5.015
	Average	4.833	14.768	-9.935
	Min	1.596	1.944	-27.930
	Std Dev	1.652	13.891	14.511

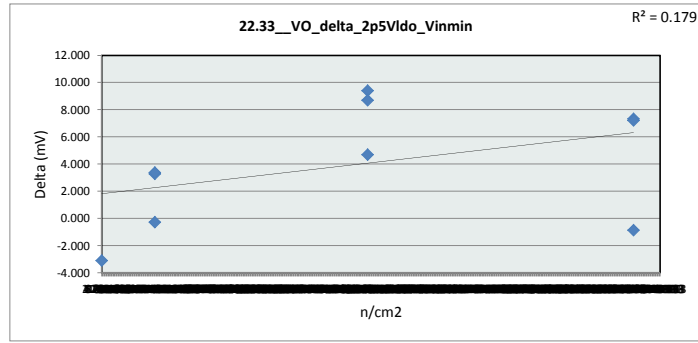


22.30_VO_delta_2p5VIdo_Vin				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35	mV		
Min Limit	-35	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	5.573	3.114	1.944	6.010
Average	5.573	3.608	20.713	23.048
Max	5.573	4.595	30.606	32.218
UL	35.000	35.000	35.000	35.000

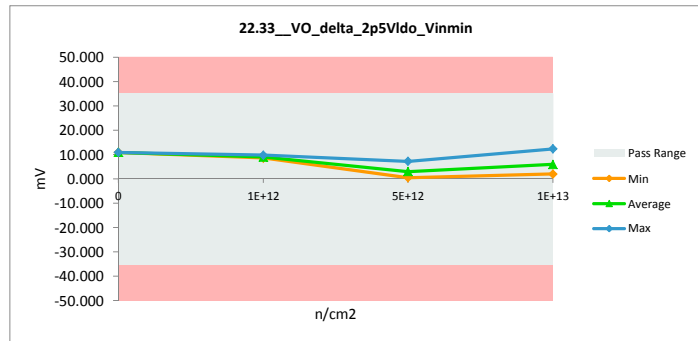


NDD Report
THS7H3301-SP

22.33_VO_delta_2p5VIdo_Vinmin				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	34	35		
Min Limit	-34	-35		
n/cm2	Serial #	Pre	Post	Delta
0	67	7.818	10.940	-3.122
1E+12	78	9.518	9.791	-0.273
1E+12	81	11.878	8.610	3.268
1E+12	82	11.980	8.610	3.370
5E+12	75	9.948	0.551	9.397
5E+12	79	11.893	7.207	4.686
5E+12	80	10.113	1.414	8.699
1E+13	68	9.394	2.065	7.329
1E+13	71	11.517	12.390	-0.873
1E+13	74	10.758	3.560	7.198
	Max	11.980	12.390	9.397
	Average	10.482	6.514	3.968
	Min	7.818	0.551	-3.122
	Std Dev	1.373	4.271	4.303

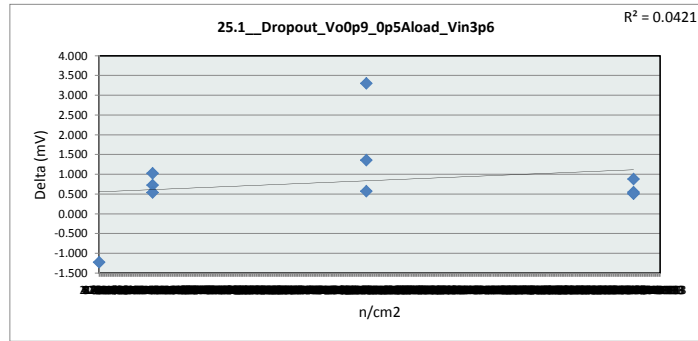


22.33_VO_delta_2p5VIdo_Vin				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	35	mV		
Min Limit	-35	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	-35.000	-35.000	-35.000	-35.000
Min	10.940	8.610	0.551	2.065
Average	10.940	9.004	3.057	6.005
Max	10.940	9.791	7.207	12.390
UL	35.000	35.000	35.000	35.000

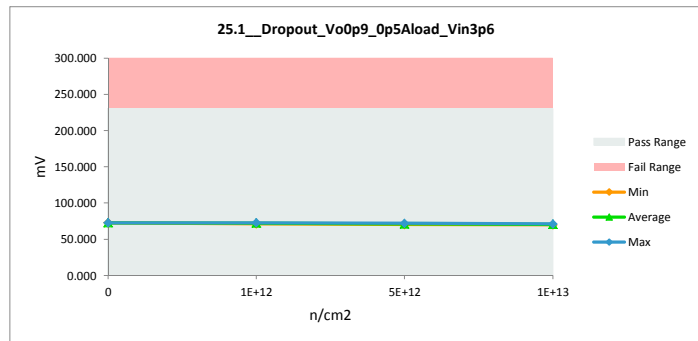


NDD Report
THS7H3301-SP

25.1 Dropout_Vo0p9_0p5Aload				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	230		230	
Min Limit	0		0	
n/cm2	Serial #	Pre	Post	Delta
0	67	71.403	72.629	-1.226
1E+12	78	71.867	71.142	0.725
1E+12	81	73.753	72.729	1.024
1E+12	82	73.270	72.729	0.541
5E+12	75	73.579	70.280	3.299
5E+12	79	71.448	70.880	0.568
5E+12	80	73.463	72.104	1.359
1E+13	68	71.631	71.085	0.546
1E+13	71	70.753	69.872	0.881
1E+13	74	71.055	70.552	0.503
	Max	73.753	72.729	3.299
	Average	72.222	71.400	0.822
	Min	70.753	69.872	-1.226
	Std Dev	1.159	1.069	1.105

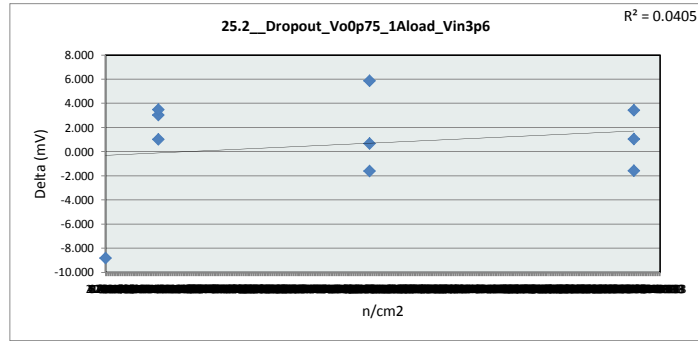


25.1 Dropout_Vo0p9_0p5Aload				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	230		mV	
Min Limit	0		mV	
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	72.629	71.142	70.280	69.872
Average	72.629	72.200	71.088	70.503
Max	72.629	72.729	72.104	71.085
UL	230.000	230.000	230.000	230.000

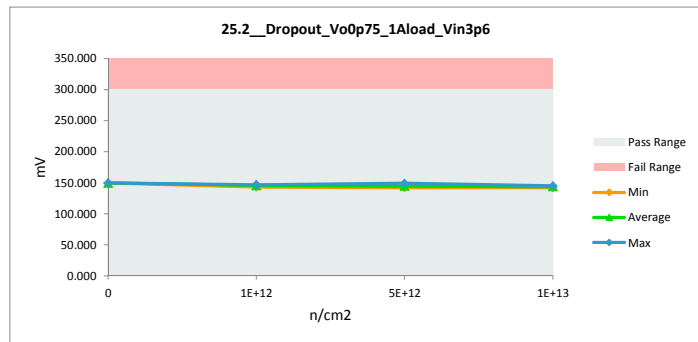


NDD Report
THS7H3301-SP

25.2_Dropout_Vo0p75_1Aload				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	300		300	
Min Limit	0		0	
n/cm2	Serial #	Pre	Post	Delta
0	67	140.567	149.378	-8.811
1E+12	78	145.946	142.914	3.032
1E+12	81	147.695	146.685	1.010
1E+12	82	150.165	146.685	3.480
5E+12	75	147.879	141.999	5.880
5E+12	79	143.273	142.592	0.681
5E+12	80	147.308	148.912	-1.604
1E+13	68	145.878	144.841	1.037
1E+13	71	142.430	143.999	-1.569
1E+13	74	145.320	141.883	3.437
Max		150.165	149.378	5.880
Average		145.646	144.989	0.657
Min		140.567	141.883	-8.811
Std Dev		2.875	2.790	4.063

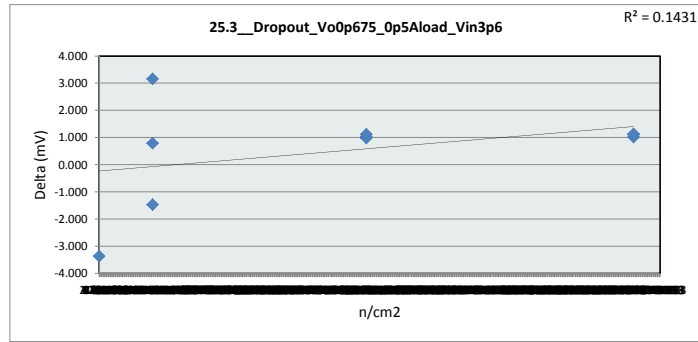


25.2_Dropout_Vo0p75_1Aload				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	300	mV		
Min Limit	0	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	149.378	142.914	141.999	141.883
Average	149.378	145.428	144.501	143.574
Max	149.378	146.685	148.912	144.841
UL	300.000	300.000	300.000	300.000

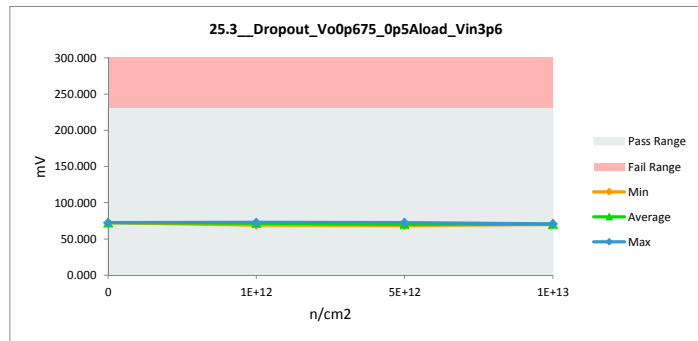


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25.3_Dropout_Vo0p675_0p5Ald				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	230		230	
Min Limit	0		0	
n/cm2	Serial #	Pre	Post	Delta
0	67	69.181	72.544	-3.363
1E+12	78	72.241	69.079	3.162
1E+12	81	71.505	72.970	-1.465
1E+12	82	73.755	72.970	0.785
5E+12	75	71.405	70.382	1.023
5E+12	79	69.348	68.369	0.979
5E+12	80	73.710	72.585	1.125
1E+13	68	72.005	70.988	1.017
1E+13	71	71.109	70.003	1.106
1E+13	74	71.665	70.535	1.130
Max		73.755	72.970	3.162
Average		71.592	71.043	0.550
Min		69.181	68.369	-3.363
Std Dev		1.523	1.661	1.759

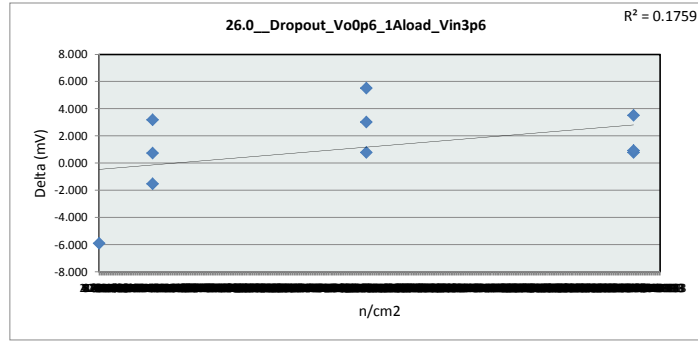


25.3_Dropout_Vo0p675_0p5Ald				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	230	mV		
Min Limit	0	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	72.544	69.079	68.369	70.003
Average	72.544	71.673	70.445	70.509
Max	72.544	72.970	72.585	70.988
UL	230.000	230.000	230.000	230.000

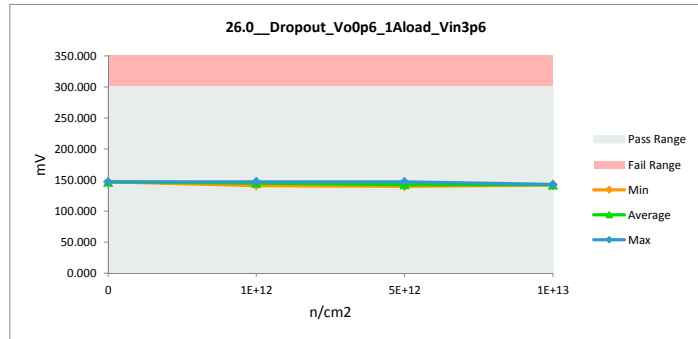


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26.0 Dropout_Vo0p6_1Aload_V				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	300	300		
Min Limit	0	0		
n/cm2	Serial #	Pre	Post	Delta
0	67	141.026	146.932	-5.906
1E+12	78	144.029	140.852	3.177
1E+12	81	145.706	147.227	-1.521
1E+12	82	147.972	147.227	0.745
5E+12	75	145.437	139.920	5.517
5E+12	79	143.380	140.359	3.021
5E+12	80	147.846	147.067	0.779
1E+13	68	143.536	142.747	0.789
1E+13	71	142.906	141.977	0.929
1E+13	74	145.724	142.222	3.502
	Max	147.972	147.227	5.517
	Average	144.756	143.653	1.103
	Min	141.026	139.920	-5.906
	Std Dev	2.197	3.096	3.155

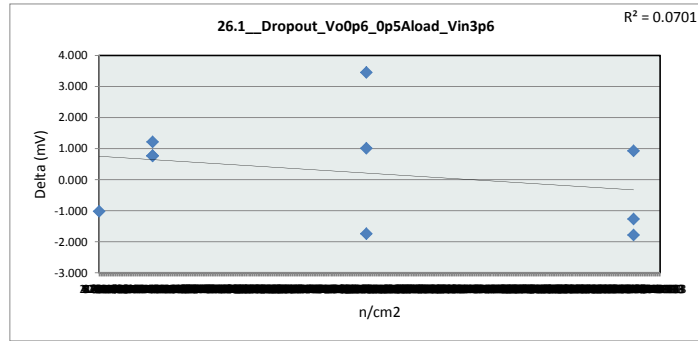


26.0 Dropout_Vo0p6_1Aload_V				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Max Limit	300	mV		
Min Limit	0	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	146.932	140.852	139.920	141.977
Average	146.932	145.102	142.449	142.315
Max	146.932	147.227	147.067	142.747
UL	300.000	300.000	300.000	300.000

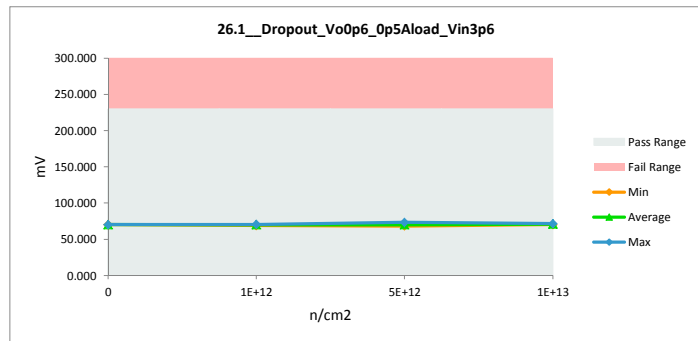


NDD Report
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26.1_Dropout_Vo0p6_0p5Aload				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	230	230		
Min Limit	0	0		
n/cm2	Serial #	Pre	Post	Delta
0	67	69.285	70.313	-1.028
1E+12	78	69.752	68.979	0.773
1E+12	81	71.765	70.554	1.211
1E+12	82	71.312	70.554	0.758
5E+12	75	71.682	68.228	3.454
5E+12	79	69.718	68.714	1.004
5E+12	80	71.468	73.217	-1.749
1E+13	68	69.708	71.492	-1.784
1E+13	71	68.906	70.175	-1.269
1E+13	74	71.896	70.974	0.922
	Max	71.896	73.217	3.454
	Average	70.549	70.320	0.229
	Min	68.906	68.228	-1.784
	Std Dev	1.171	1.456	1.660



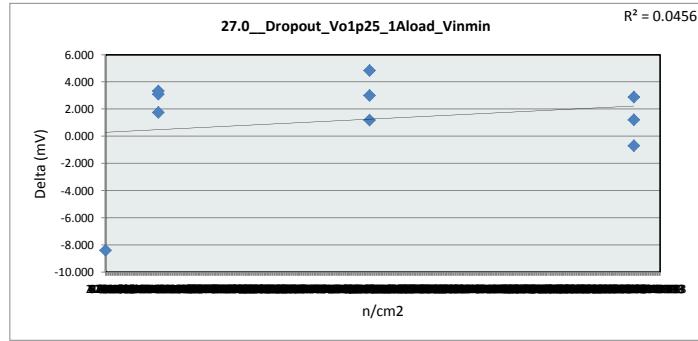
26.1_Dropout_Vo0p6_0p5Aload				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Max Limit	230	mV		
Min Limit	0	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	70.313	68.979	68.228	70.175
Average	70.313	70.029	70.053	70.880
Max	70.313	70.554	73.217	71.492
UL	230.000	230.000	230.000	230.000



NDD Report
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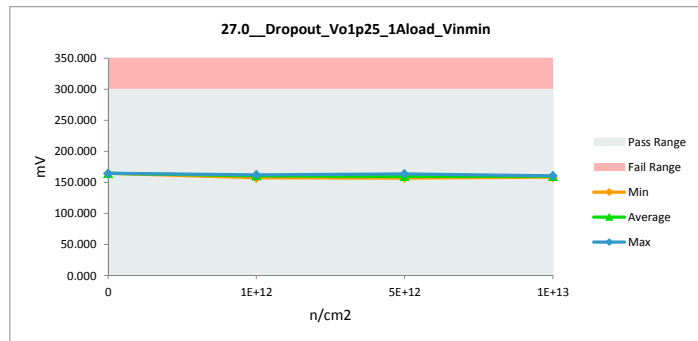
27.0 Dropout_Vo1p25_1Aload		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	300	300
Min Limit	0	0

n/cm2	Serial #	Pre	Post	Delta
0	67	155.982	164.379	-8.397
1E+12	78	160.352	157.267	3.085
1E+12	81	163.706	161.967	1.739
1E+12	82	165.283	161.967	3.316
5E+12	75	162.632	157.800	4.832
5E+12	79	159.919	156.918	3.001
5E+12	80	164.716	163.530	1.186
1E+13	68	161.449	160.248	1.201
1E+13	71	159.819	160.517	-0.698
1E+13	74	161.013	158.128	2.885
	Max	165.283	164.379	4.832
	Average	161.487	160.272	1.215
	Min	155.982	156.918	-8.397
	Std Dev	2.751	2.672	3.701



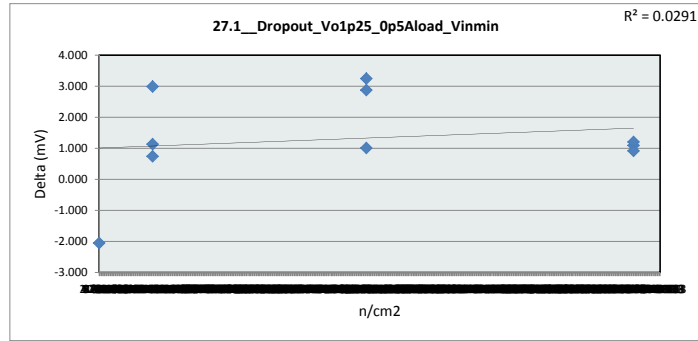
27.0 Dropout_Vo1p25_1Aload		
Test Site	Junkins	
Tester	FETS10	
Test Number	EF636800	
Max Limit	300	mV
Min Limit	0	mV

n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	164.379	157.267	156.918	158.128
Average	164.379	160.400	159.416	159.631
Max	164.379	161.967	163.530	160.517
UL	300.000	300.000	300.000	300.000

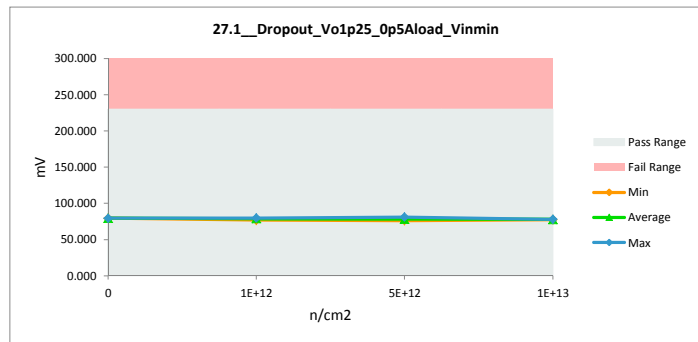


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27.1_Dropout_Vo1p25_0p5Aload_Vinmin				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	230	230		
Min Limit	0	0		
n/cm2	Serial #	Pre	Post	Delta
0	67	77.391	79.442	-2.051
1E+12	78	79.956	76.966	2.990
1E+12	81	80.919	79.791	1.128
1E+12	82	80.528	79.791	0.737
5E+12	75	80.025	77.157	2.868
5E+12	79	79.455	76.213	3.242
5E+12	80	82.058	81.054	1.004
1E+13	68	78.892	77.799	1.093
1E+13	71	79.137	77.938	1.199
1E+13	74	78.392	77.479	0.913
	Max	82.058	81.054	3.242
	Average	79.675	78.363	1.312
	Min	77.391	76.213	-2.051
	Std Dev	1.332	1.556	1.526

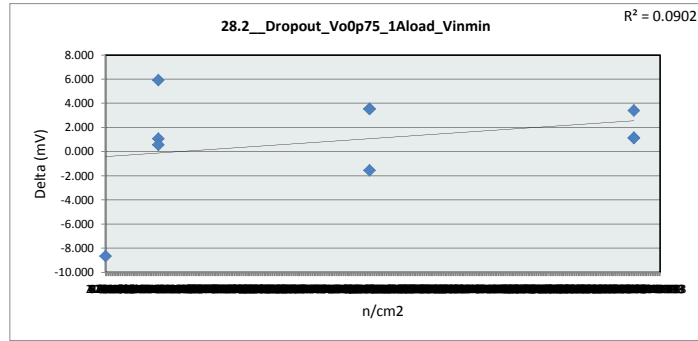


27.1_Dropout_Vo1p25_0p5Aload_Vinmin				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	230	mV		
Min Limit	0	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	79.442	76.966	76.213	77.479
Average	79.442	78.849	78.141	77.739
Max	79.442	79.791	81.054	77.938
UL	230.000	230.000	230.000	230.000

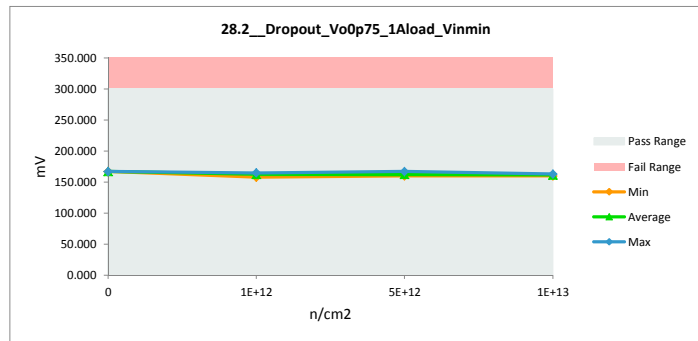


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28.2_Dropout_Vo0p75_1Aload				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	300	300		
Min Limit	0	0		
n/cm2	Serial #	Pre	Post	Delta
0	67	158.407	167.070	-8.663
1E+12	78	163.717	157.796	5.921
1E+12	81	165.773	164.704	1.069
1E+12	82	165.271	164.704	0.567
5E+12	75	163.144	159.620	3.524
5E+12	79	163.387	159.863	3.524
5E+12	80	165.368	166.928	-1.560
1E+13	68	163.869	162.710	1.159
1E+13	71	162.518	161.387	1.131
1E+13	74	163.153	159.739	3.414
	Max	165.773	167.070	5.921
	Average	163.461	162.452	1.009
	Min	158.407	157.796	-8.663
	Std Dev	2.085	3.274	3.985

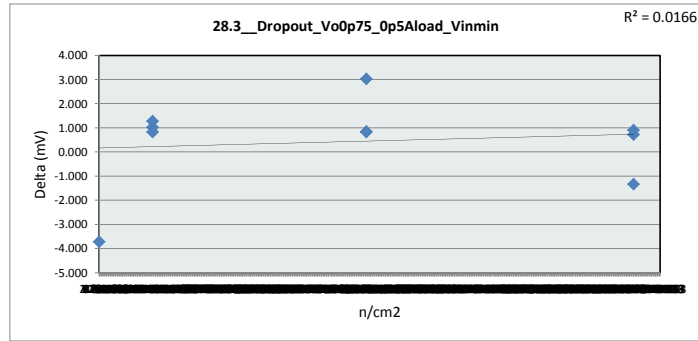


28.2_Dropout_Vo0p75_1Aload				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	300	mV		
Min Limit	0	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	167.070	157.796	159.620	159.739
Average	167.070	162.401	162.137	161.279
Max	167.070	164.704	166.928	162.710
UL	300.000	300.000	300.000	300.000

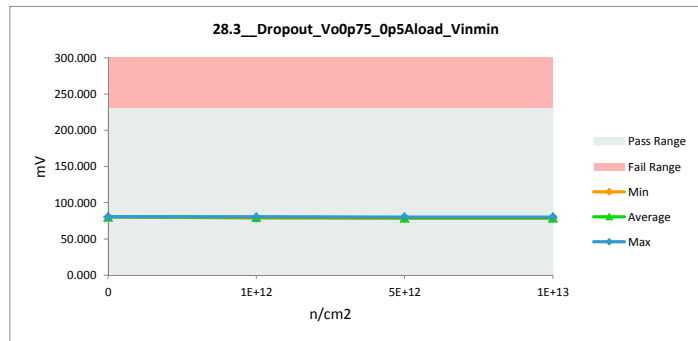


NDD Report
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28.3_Dropout_Vo0p75_0p5Aload				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	230		230	
Min Limit	0		0	
n/cm2	Serial #	Pre	Post	Delta
0	67	76.707	80.429	-3.722
1E+12	78	79.923	78.896	1.027
1E+12	81	81.709	80.429	1.280
1E+12	82	81.259	80.429	0.830
5E+12	75	81.208	78.186	3.022
5E+12	79	79.593	78.761	0.832
5E+12	80	80.949	80.108	0.841
1E+13	68	79.512	78.602	0.910
1E+13	71	78.729	80.063	-1.334
1E+13	74	79.072	78.354	0.718
Max		81.709	80.429	3.022
Average		79.866	79.426	0.440
Min		76.707	78.186	-3.722
Std Dev		1.506	0.942	1.794

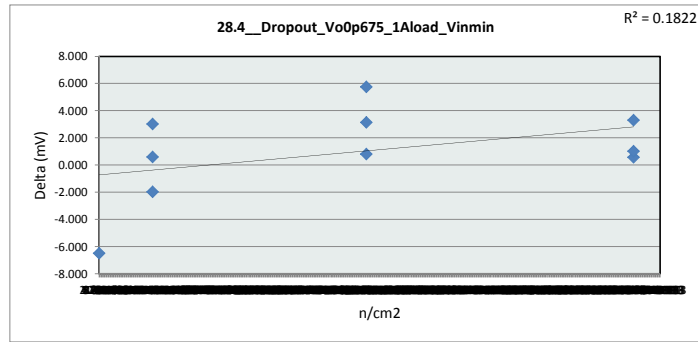


28.3_Dropout_Vo0p75_0p5Aload				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	230	mV		
Min Limit	0	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	80.429	78.896	78.186	78.354
Average	80.429	79.918	79.018	79.006
Max	80.429	80.429	80.108	80.063
UL	230.000	230.000	230.000	230.000

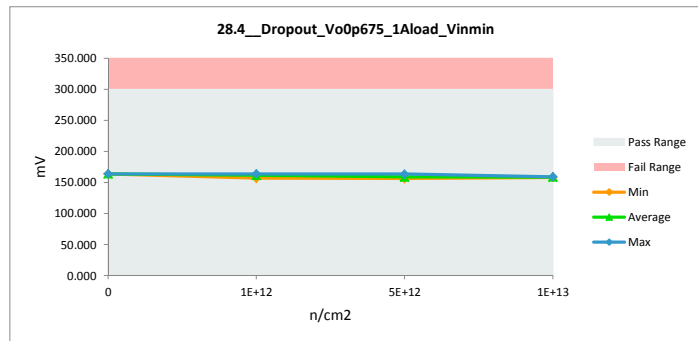


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28.4_Dropout_Vo0p675_1Aload				
Test Site	Junkins	Junkins		
Tester	FETS10	FETS10		
Test Number	EF636800	EF636800		
Unit	mV	mV		
Max Limit	300	300		
Min Limit	0	0		
n/cm2	Serial #	Pre	Post	Delta
0	67	157.050	163.541	-6.491
1E+12	78	159.659	156.637	3.022
1E+12	81	161.601	163.583	-1.982
1E+12	82	164.168	163.583	0.585
5E+12	75	161.773	156.024	5.749
5E+12	79	159.561	156.414	3.147
5E+12	80	164.140	163.334	0.806
1E+13	68	159.634	159.075	0.559
1E+13	71	158.918	157.890	1.028
1E+13	74	161.948	158.641	3.307
	Max	164.168	163.583	5.749
	Average	160.845	159.872	0.973
	Min	157.050	156.024	-6.491
	Std Dev	2.290	3.271	3.366

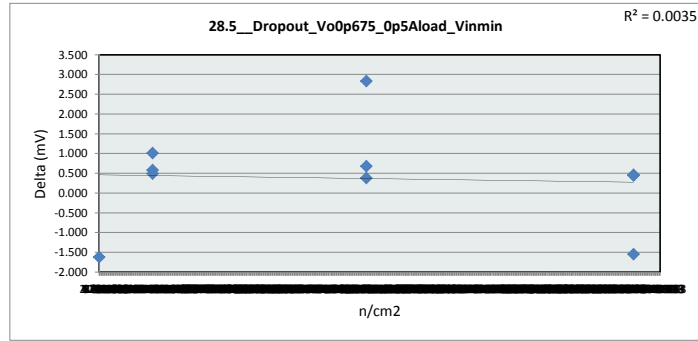


28.4_Dropout_Vo0p675_1Aload				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	300	mV		
Min Limit	0	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	163.541	156.637	156.024	157.890
Average	163.541	161.268	158.591	158.535
Max	163.541	163.583	163.334	159.075
UL	300.000	300.000	300.000	300.000

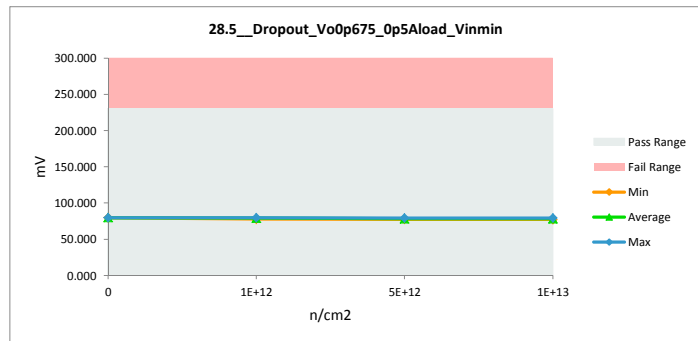


NDD Report
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28.5 Dropout_Vo0p675_0p5Aload_Vinmin				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	230		230	
Min Limit	0		0	
n/cm2	Serial #	Pre	Post	Delta
0	67	78.005	79.624	-1.619
1E+12	78	78.744	77.735	1.009
1E+12	81	80.352	79.768	0.584
1E+12	82	80.258	79.768	0.490
5E+12	75	80.242	77.413	2.829
5E+12	79	78.423	77.741	0.682
5E+12	80	79.554	79.177	0.377
1E+13	68	78.328	77.867	0.461
1E+13	71	77.670	79.219	-1.549
1E+13	74	77.768	77.321	0.447
Max		80.352	79.768	2.829
Average		78.934	78.563	0.371
Min		77.670	77.321	-1.619
Std Dev		1.072	1.030	1.259



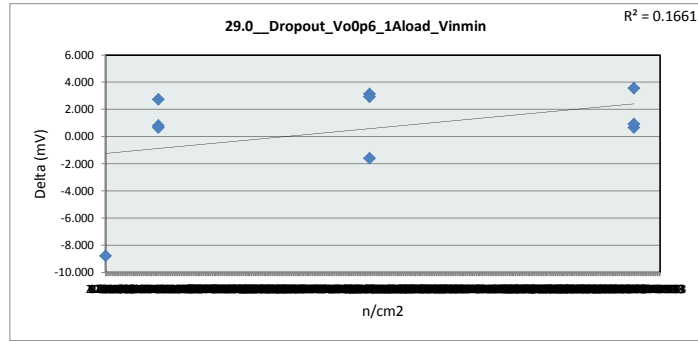
28.5 Dropout_Vo0p675_0p5Aload_Vinmin				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	230		mV	
Min Limit	0		mV	
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	79.624	77.735	77.413	77.321
Average	79.624	79.090	78.110	78.136
Max	79.624	79.768	79.177	79.219
UL	230.000	230.000	230.000	230.000



NDD Report
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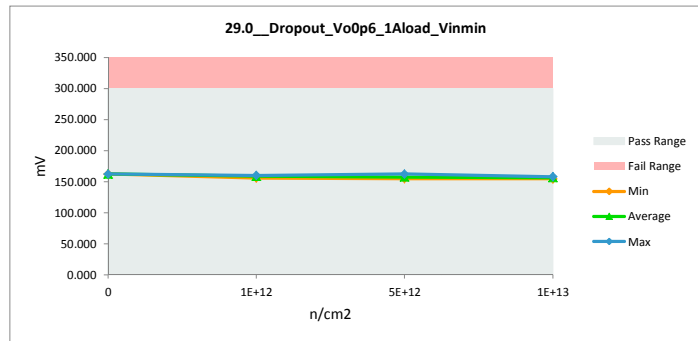
29.0 Dropout_Vo0p6_1Aload_V		
Test Site	Junkins	Junkins
Tester	FETS10	FETS10
Test Number	EF636800	EF636800
Unit	mV	mV
Max Limit	300	300
Min Limit	0	0

n/cm2	Serial #	Pre	Post	Delta
0	67	153.579	162.350	-8.771
1E+12	78	158.682	155.941	2.741
1E+12	81	160.763	159.958	0.805
1E+12	82	160.625	159.958	0.667
5E+12	75	157.988	154.845	3.143
5E+12	79	158.452	155.522	2.930
5E+12	80	160.605	162.200	-1.595
1E+13	68	158.555	157.884	0.671
1E+13	71	157.854	156.931	0.923
1E+13	74	158.266	154.708	3.558
	Max	160.763	162.350	3.558
	Average	158.537	158.030	0.507
	Min	153.579	154.708	-8.771
	Std Dev	2.083	2.916	3.620



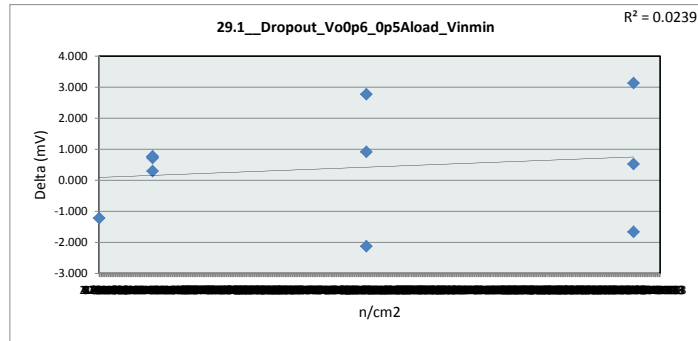
29.0 Dropout_Vo0p6_1Aload_V		
Test Site	Junkins	
Tester	FETS10	
Test Number	EF636800	
Max Limit	300	mV
Min Limit	0	mV

n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	162.350	155.941	154.845	154.708
Average	162.350	158.619	157.522	156.508
Max	162.350	159.958	162.200	157.884
UL	300.000	300.000	300.000	300.000

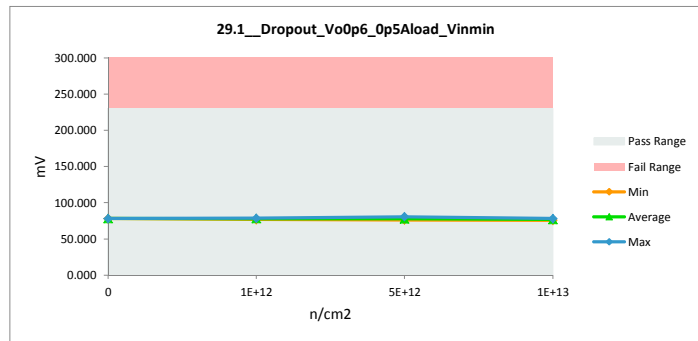


NDD Report
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29.1_Dropout_Vo0p6_0p5Aload				
Test Site	Junkins		Junkins	
Tester	FETS10		FETS10	
Test Number	EF636800		EF636800	
Unit	mV		mV	
Max Limit	230		230	
Min Limit	0		0	
n/cm2	Serial #	Pre	Post	Delta
0	67	76.966	78.185	-1.219
1E+12	78	77.486	76.770	0.716
1E+12	81	79.395	78.630	0.765
1E+12	82	78.925	78.630	0.295
5E+12	75	79.056	76.284	2.772
5E+12	79	77.255	76.346	0.909
5E+12	80	78.397	80.527	-2.130
1E+13	68	77.071	76.553	0.518
1E+13	71	76.487	78.148	-1.661
1E+13	74	78.942	75.813	3.129
Max		79.395	80.527	3.129
Average		77.998	77.589	0.409
Min		76.487	75.813	-2.130
Std Dev		1.054	1.476	1.728



29.1_Dropout_Vo0p6_0p5Aload				
Test Site	Junkins			
Tester	FETS10			
Test Number	EF636800			
Max Limit	230	mV		
Min Limit	0	mV		
n/cm2	0	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000	0.000
Min	78.185	76.770	76.284	75.813
Average	78.185	78.010	77.719	76.838
Max	78.185	78.630	80.527	78.148
UL	230.000	230.000	230.000	230.000



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