Radiation Report

TPS7H1210-SEP Neutron Displacement Damage (NDD) Characterization

ABSTRACT

This report presents the effect of neutron displacement damage (NDD) on the TPS7H1210-SEP device. The results show that all devices were fully functional and within production test limits after having been irradiated up to 1×10^{13} n/cm^2 (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 one device was used as a control unit and was not irradiated. All devices used in the experiment were from lot trace code 17CVHXI and assembly lot 1806182. Electrical testing was performed at Texas Instruments before and after neutron irradiation using the production test program for TPS7H1210-SEP.

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Trademarks

1 Overview

The TPS7H1210-SEP is a negative voltage linear regulator with an ultra-low noise, high PSRR regulator capable of sourcing a maximum load of 1 A. The TPS7H1210-SEP provides exceptional efficiency and output accuracy in a very small solution size.

General device information and testing conditions are listed in the TPS7H1210-SEP data sheet.

Table 1-1. Overview Information

TI Part Number	TPS7H1210-SEP
VID Number	V62/21616
Device Name	TPS7H1210MRGWSEP (Tubes), TPS7H1210MRGWTSEP (Tape and Reel)
Device Function	Negative voltage linear regulator in SEP
Die Name	RTPS7A3301ASEP
Technology	BICOM3X-HV
Assembly Lot Number / Lot Trace Code	1806182 / 17CVHXI
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	Room temp
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2 Test Procedures

The TPS7H1210-SEP was electrically pre-tested using the production automated test equipment program.

General test procedures adhered to MIL-STD-883, Method 1017 for Neutron Irradiation of TPS7H1210-SEP. Neutron irradiation conditions are listed in Table 2-1.

Table 2-1. 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 2-1. TPS7H1210-SEP Device used for NDD Characterization

3 Facility

Neutron Dosimetry Test is done in Fast Neutron Irradiation (FNI) facility of The University of Massachusetts Lowell. It is designed to give a fast flux level = 10^{11} n/cm^2–s, with relatively low thermal fluence and gamma dose rates.

The neutron fluence for this irradiation was measured utilizing ASTM E-265 - Measuring Reaction Rates and Fast Neutron Fluence by Radio-activation of Sulfur-32, and correlated to the measured reactor power level. All irradiation conditions required under ASTM 722 were met and includes neutron fluence, distribution, and uncertainty. The average integrated neutron fluence (1-MeV(Si) equivalent) reported in this document reflects these factors.

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

https://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 limits for all exposure levels (TPS7H1210-SEP data sheet). The full parameter list and graphs are found in Appendix A.

4.1 Specification Compliance Matrix

The TPS7H1210-SEP specification compliance matrix is electrical characteristics list as tabulated below.

Table 4-1. TPS7H1210-SEP Specification Compliance Matrix

Over $|V_{IN}|$ = 3 V, I_{OUT} = 1 mA, C_{IN} = 20 µF, C_{OUT} = 20 µF, C_{NR_SS} = 0 nF, FB tied to OUT, EN tied to IN, over operating temperature range (T_J = –55°C to 125°C), unless otherwise noted.(1)

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT	TEST#
POWER SUPPLIES AND CURRENTS								
V_{UVLO}	Undervoltage lockout threshold				-2		V	5.1
$\|V_{DO}\|$	Dropout voltage	V_{IN} = -4.6 V, $V_{OUT(set)}$ = -5 V, $\|V_{DO}\| = \|V_{IN} - V_{OUT(measured)}\|$, C_{IN} = 30 µF	I_{OUT} = 0.5 A		224	325	mV	2.17
			I_{OUT} = 1 A		363	500		2.16
			I_{OUT} = 1 A, T_J = 25°C		363	450		
I_{CL}	Current limit	V_{IN} = -6 V, $V_{OUT(SET)}$ = -5 V,$V_{OUT(forced)}$ = -4.5 V			2.9		A	
I_Q	Quiescent current	V_{EN} = 3 V, I_{OUT} = 0 A			210	350	µA	6.3
I_{GND}	Ground current(2)	V_{EN} = 3 V, I_{OUT} = 0.5 A			5	10	mA	6.4
$\|I_{SHDN}\|$	Shutdown current	V_{EN} = 0.4 V			1	3	µA	6.1
		V_{EN} = -0.4 V			1	3		6.2
$I_{FB(LKG)}$	Feedback leakage current(3)				14	75	nA	7.3
ACCURACY								
V_{REF}	Reference voltage	$V_{FB} = V_{REF}$		-1.199	-1.182	-1.164	V	2.1
V_{ACC}	Output voltage accuracy	$\|V_{IN}\|$ = 3 V, 1 mA ≤ I_{OUT} ≤ 1 A		-2%	±1%	2%		2.2, 2.4, 2.7, 2.8
		$\|V_{IN}\|$ = 16.5 V, 1 mA ≤ I_{OUT} ≤ 100 mA		-2%	±1%	2%		2.3, 2.5, 2.x, 2.10
		$\|V_{IN}\|$ = 16.5 V, $\|V_{OUT}\|$ = 15.5 V, I_{OUT} = 1 A		-2%	±1%	2%		
$\Delta V_{OUT}/\Delta V_{IN}$	Line regulation	3 V ≤ $\|V_{IN}\|$ ≤ 16.5 V			-.007 %		V_{OUT}/V	2.11
$\Delta V_{OUT}/\Delta I_{OUT}$	Load regulation	1 mA ≤ I_{OUT} ≤ 1 A			-0.5%		V_{OUT}/A	2.12
ENABLE								
$V_{EN(+HI)}$	Enable turn-on (positive logic)			2		10	V	4.6
$V_{EN(-HI)}$	Enable turn-on (negative logic)	V_{IN} = -16.5 V		V_{IN}		-2		4.4
$V_{EN(+LO)}$	Enable turn-off (positive logic)			0		0.4		4.7
$V_{EN(-LO)}$	Enable turn-off (negative logic)			-0.4		0		4.5
$\|I_{EN}\|$	Enable current	V_{IN} = V_{EN} = -3 V			0.48	1	µA	4.2
		V_{IN} = V_{EN} = -16.5 V			0.51	1		4.3
		V_{IN} = -16.5 V, V_{EN} = 10 V			0.5	1		4.1
$T_{SD(enter)}$	Thermal shutdown enter temperature				178		°C	
$T_{SD(exit)}$	Thermal shutdown exit temperature				152			

Table 4-1. TPS7H1210-SEP Specification Compliance Matrix (continued)

Over $|V_{IN}|$ = 3 V, I_{OUT} = 1 mA, C_{IN} = 20 µF, C_{OUT} = 20 µF, C_{NR_SS} = 0 nF, FB tied to OUT, EN tied to IN, over operating temperature range (T_J = –55°C to 125°C), unless otherwise noted.(1)

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT	TEST#
NOISE AND PSRR								
PSRR	Power-supply rejection ratio	V_{IN} = -6 V, V_{OUT} = -5 V,C_{OUT} = 50.11 µF, I_{OUT} = 1 A, C_{NR_SS} = 100 nF(4)	f = 100 Hz		61		dB	
			f = 100 kHz		61			
			f = 1 MHz		41			
V_N	Output noise rms voltage (Bandwidth from 10 Hz to 100 kHz)	V_{IN} = -3 V, V_{OUT}(nom) = V_{REF}, C_{IN} = 11.1 µF, C_{OUT} = 50.11 µF, C_{NR_SS} = 100 nF, I_{OUT} = 1 A			13.7		μV_{RMS}	

(1) At operating conditions, $V_{IN} \le 0$ V, $V_{OUT(nom)} \le V_{REF} \le 0$ V; at regulation, $V_{IN} \le V_{OUT(nom)} - |V_{DO}|$; $I_{OUT} > 0$ flows from OUT to IN.
(2) $I_{GND} = I_{IN} - I_{OUT}$
(3) $I_{FB} > 0$ flows into the device.
(4) C_{IN} is removed as part of PSRR testing. During normal operation, follow the recommended operating condition of $C_{IN} \ge 10$ µF.

A Appendix A: Test Results

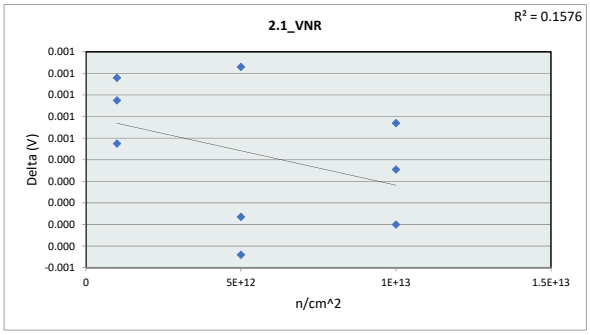
This appendix contains the detailed NDD test results.

NDD Characterization Report
TPS7H1210-SEP

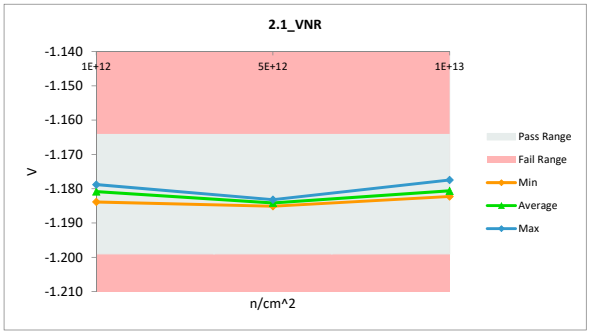
NDD Characterization Report
TPS7H1210-SEP

	2.1_VNR	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	-1.164	-1.164
Min Limit	-1.199	-1.199

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-1.180	-1.179	0.001
1E+12	2	-1.184	-1.184	0.001
1E+12	3	-1.181	-1.180	0.001
5E+12	4	-1.184	-1.183	0.001
5E+12	5	-1.185	-1.185	0.000
5E+12	6	-1.184	-1.184	0.000
1E+13	7	-1.182	-1.182	0.000
1E+13	8	-1.183	-1.182	0.001
1E+13	9	-1.177	-1.177	0.000
	Max	-1.177	-1.177	0.001
	Average	-1.182	-1.182	0.000
	Min	-1.185	-1.185	0.000
	Std Dev	0.003	0.003	0.001

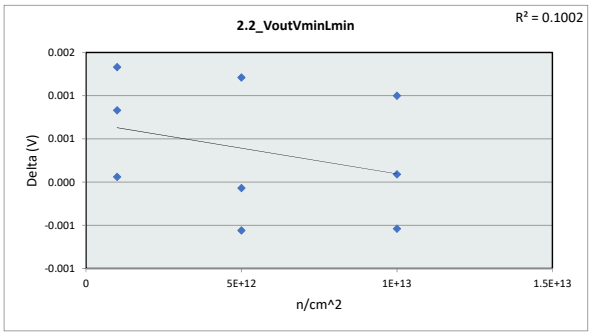


	2.1_VNR		
Test Site			
Tester			
Test Number			
Max Limit	-1.164	V	
Min Limit	-1.199	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.199	-1.199	-1.199
Min	-1.184	-1.185	-1.182
Average	-1.181	-1.184	-1.181
Max	-1.179	-1.183	-1.177
UL	-1.164	-1.164	-1.164

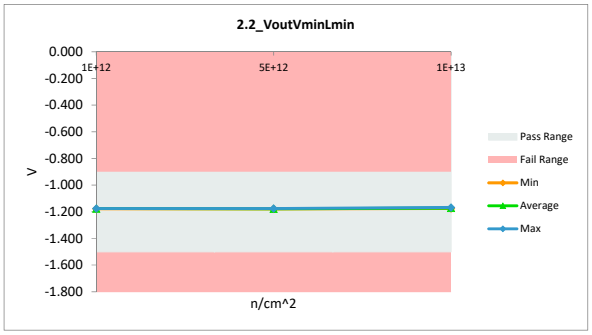


NDD Characterization Report
TPS7H1210-SEP

		2.2_VoutVminLmin		
	Test Site			
	Tester			
	Test Number			
	Unit	V	V	
	Max Limit	-0.9	-0.9	
	Min Limit	-1.5	-1.5	
n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-1.176	-1.175	0.001
1E+12	2	-1.179	-1.178	0.000
1E+12	3	-1.177	-1.175	0.001
5E+12	4	-1.177	-1.176	0.001
5E+12	5	-1.178	-1.178	-0.001
5E+12	6	-1.179	-1.179	0.000
1E+13	7	-1.175	-1.175	0.000
1E+13	8	-1.175	-1.174	0.001
1E+13	9	-1.167	-1.168	-0.001
	Max	-1.167	-1.168	0.001
	Average	-1.176	-1.175	0.000
	Min	-1.179	-1.179	-0.001
	Std Dev	0.003	0.003	0.001

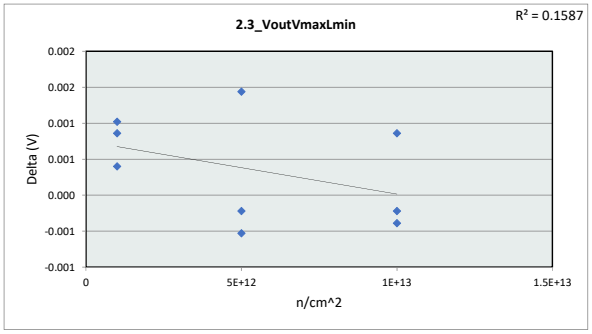


	2.2_VoutVminLmin		
Test Site			
Tester			
Test Number			
Max Limit	-0.9	V	
Min Limit	-1.5	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.500	-1.500	-1.500
Min	-1.178	-1.179	-1.175
Average	-1.176	-1.178	-1.172
Max	-1.175	-1.176	-1.168
UL	-0.900	-0.900	-0.900

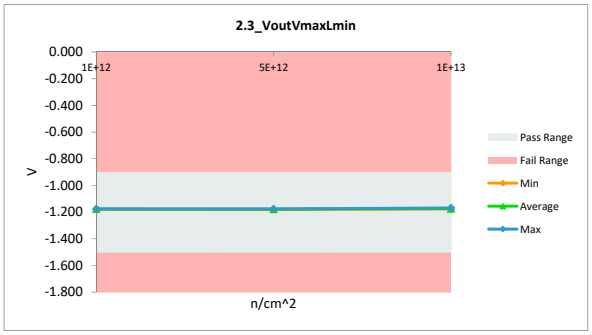


NDD Characterization Report
TPS7H1210-SEP

		2.3_VoutVmaxLmin		
	Test Site			
	Tester			
	Test Number			
	Unit	V	V	
	Max Limit	-0.9	-0.9	
	Min Limit	-1.5	-1.5	
n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-1.177	-1.176	0.001
1E+12	2	-1.180	-1.179	0.000
1E+12	3	-1.178	-1.176	0.001
5E+12	4	-1.178	-1.176	0.001
5E+12	5	-1.179	-1.179	-0.001
5E+12	6	-1.180	-1.180	0.000
1E+13	7	-1.176	-1.177	0.000
1E+13	8	-1.176	-1.175	0.001
1E+13	9	-1.168	-1.168	0.000
	Max	-1.168	-1.168	0.001
	Average	-1.177	-1.176	0.000
	Min	-1.180	-1.180	-0.001
	Std Dev	0.004	0.003	0.001

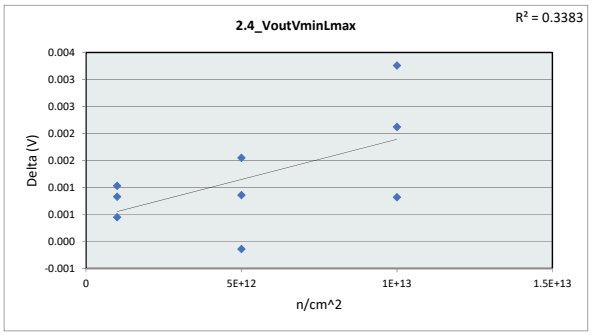


	2.3_VoutVmaxLmin		
Test Site			
Tester			
Test Number			
Max Limit	-0.9	V	
Min Limit	-1.5	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.500	-1.500	-1.500
Min	-1.179	-1.180	-1.177
Average	-1.177	-1.179	-1.173
Max	-1.176	-1.176	-1.168
UL	-0.900	-0.900	-0.900

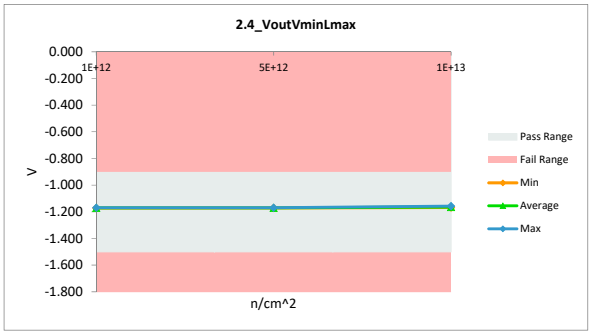


NDD Characterization Report
TPS7H1210-SEP

		2.4_VoutVminLmax	
	Test Site		
	Tester		
	Test Number		
	Unit	V	V
	Max Limit	-0.9	-0.9
	Min Limit	-1.5	-1.5
n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-1.170	-1.169	0.001
1E+12	2	-1.173	-1.172	0.000
1E+12	3	-1.170	-1.169	0.001
5E+12	4	-1.171	-1.169	0.002
5E+12	5	-1.171	-1.171	0.000
5E+12	6	-1.173	-1.172	0.001
1E+13	7	-1.170	-1.167	0.002
1E+13	8	-1.169	-1.168	0.001
1E+13	9	-1.161	-1.157	0.003
	Max	-1.161	-1.157	0.003
	Average	-1.170	-1.169	0.001
	Min	-1.173	-1.172	0.000
	Std Dev	0.004	0.005	0.001

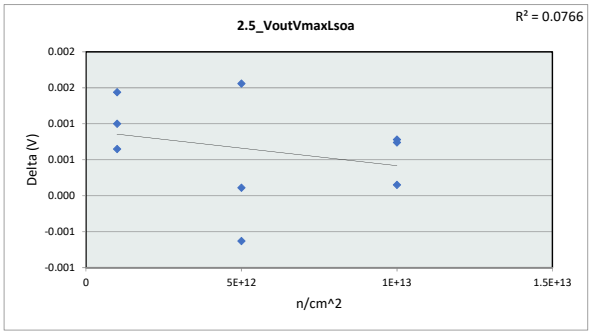


	2.4_VoutVminLmax		
Test Site			
Tester			
Test Number			
Max Limit	-0.9	V	
Min Limit	-1.5	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.500	-1.500	-1.500
Min	-1.172	-1.172	-1.168
Average	-1.170	-1.171	-1.164
Max	-1.169	-1.169	-1.157
UL	-0.900	-0.900	-0.900

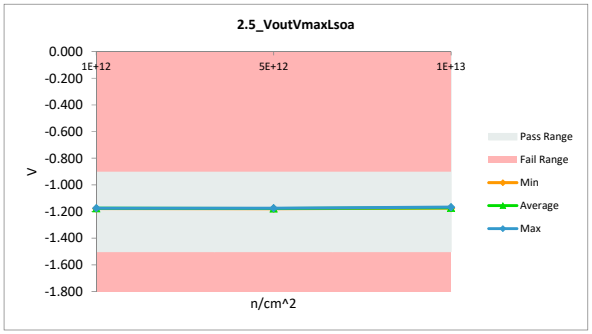


NDD Characterization Report
TPS7H1210-SEP

		2.5_VoutVmaxLsoa		
	Test Site			
	Tester			
	Test Number			
	Unit	V	V	
	Max Limit	-0.9	-0.9	
	Min Limit	-1.5	-1.5	
n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-1.176	-1.175	0.001
1E+12	2	-1.178	-1.178	0.001
1E+12	3	-1.176	-1.175	0.001
5E+12	4	-1.176	-1.175	0.002
5E+12	5	-1.177	-1.178	-0.001
5E+12	6	-1.179	-1.178	0.000
1E+13	7	-1.175	-1.174	0.001
1E+13	8	-1.175	-1.174	0.001
1E+13	9	-1.167	-1.167	0.000
	Max	-1.167	-1.167	0.002
	Average	-1.175	-1.175	0.001
	Min	-1.179	-1.178	-0.001
	Std Dev	0.004	0.004	0.001

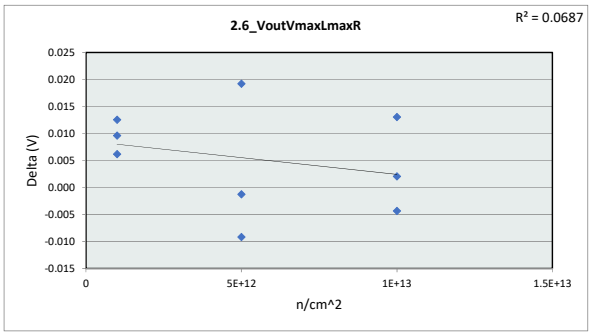


	2.5_VoutVmaxLsoa		
Test Site			
Tester			
Test Number			
Max Limit	-0.9	V	
Min Limit	-1.5	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.500	-1.500	-1.500
Min	-1.178	-1.178	-1.174
Average	-1.176	-1.177	-1.172
Max	-1.175	-1.175	-1.167
UL	-0.900	-0.900	-0.900

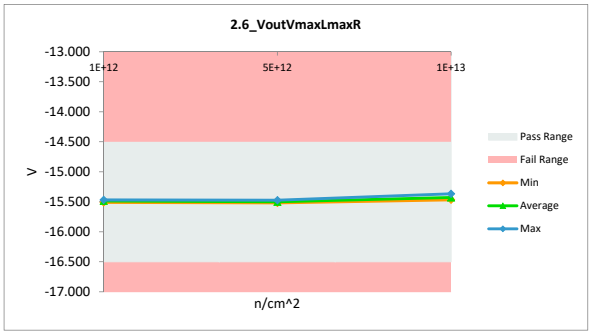


NDD Characterization Report
TPS7H1210-SEP

		2.6_VoutVmaxLmaxR		
	Test Site			
	Tester			
	Test Number			
	Unit	V	V	
	Max Limit	-14.5	-14.5	
	Min Limit	-16.5	-16.5	
n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-15.479	-15.469	0.010
1E+12	2	-15.516	-15.510	0.006
1E+12	3	-15.488	-15.475	0.013
5E+12	4	-15.492	-15.473	0.019
5E+12	5	-15.500	-15.509	-0.009
5E+12	6	-15.517	-15.519	-0.001
1E+13	7	-15.469	-15.467	0.002
1E+13	8	-15.467	-15.454	0.013
1E+13	9	-15.362	-15.366	-0.004
	Max	-15.362	-15.366	0.019
	Average	-15.477	-15.471	0.005
	Min	-15.517	-15.519	-0.009
	Std Dev	0.047	0.046	0.009



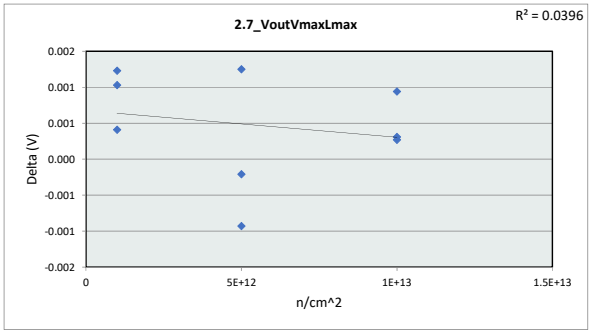
	2.6_VoutVmaxLmaxR		
Test Site			
Tester			
Test Number			
Max Limit	-14.5	V	
Min Limit	-16.5	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-16.500	-16.500	-16.500
Min	-15.510	-15.519	-15.467
Average	-15.485	-15.500	-15.429
Max	-15.469	-15.473	-15.366
UL	-14.500	-14.500	-14.500



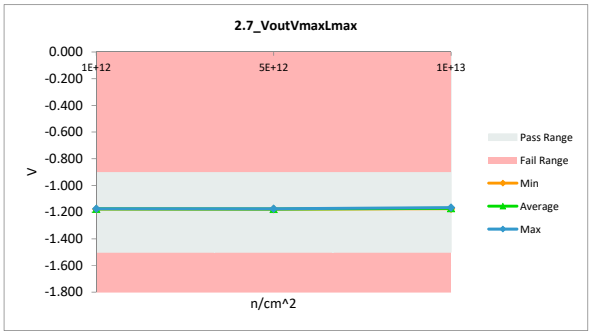
NDD Characterization Report
TPS7H1210-SEP

	2.7_VoutVmaxLmax	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	-0.9	-0.9
Min Limit	-1.5	-1.5

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-1.176	-1.175	0.001
1E+12	2	-1.178	-1.178	0.000
1E+12	3	-1.176	-1.175	0.001
5E+12	4	-1.176	-1.175	0.001
5E+12	5	-1.177	-1.178	-0.001
5E+12	6	-1.179	-1.179	0.000
1E+13	7	-1.175	-1.175	0.000
1E+13	8	-1.175	-1.174	0.001
1E+13	9	-1.167	-1.166	0.000
	Max	-1.167	-1.166	0.001
	Average	-1.175	-1.175	0.000
	Min	-1.179	-1.179	-0.001
	Std Dev	0.003	0.004	0.001

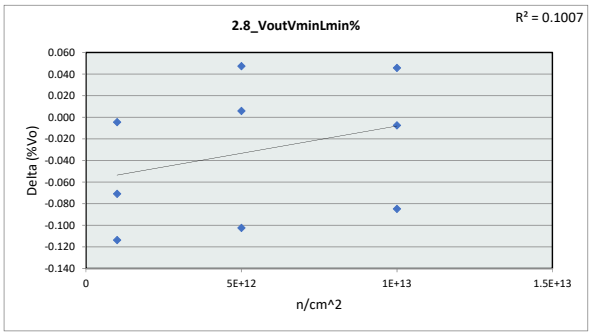


	2.7_VoutVmaxLmax		
Test Site			
Tester			
Test Number			
Max Limit	-0.9	V	
Min Limit	-1.5	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.500	-1.500	-1.500
Min	-1.178	-1.179	-1.175
Average	-1.176	-1.177	-1.172
Max	-1.175	-1.175	-1.167
UL	-0.900	-0.900	-0.900

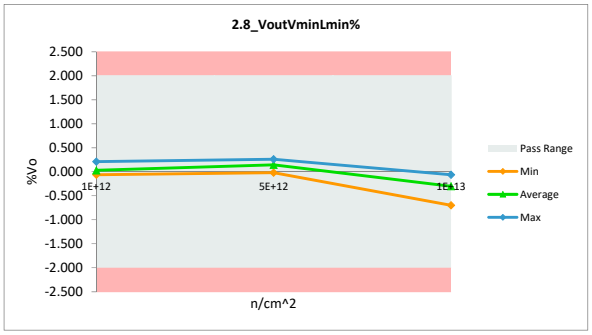


NDD Characterization Report
TPS7H1210-SEP

		2.8_VoutVminLmin%		
	Test Site			
	Tester			
	Test Number			
	Unit	%Vo	%Vo	
	Max Limit	2	2	
	Min Limit	-2	-2	
n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	0.010	-0.061	-0.071
1E+12	2	0.217	0.212	-0.004
1E+12	3	0.051	-0.062	-0.114
5E+12	4	0.084	-0.019	-0.102
5E+12	5	0.142	0.189	0.047
5E+12	6	0.256	0.262	0.006
1E+13	7	-0.054	-0.061	-0.008
1E+13	8	-0.063	-0.148	-0.085
1E+13	9	-0.745	-0.699	0.046
	Max	0.256	0.262	0.047
	Average	-0.011	-0.043	-0.032
	Min	-0.745	-0.699	-0.114
	Std Dev	0.296	0.286	0.062



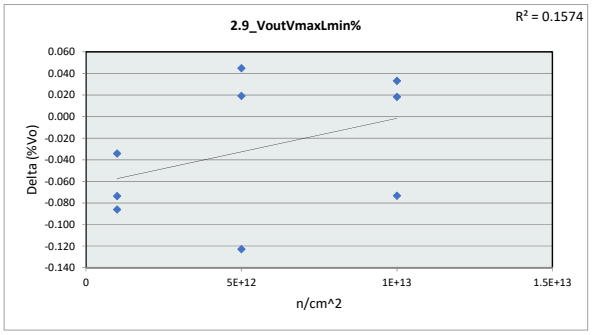
	2.8_VoutVminLmin%		
Test Site			
Tester			
Test Number			
Max Limit	2	%Vo	
Min Limit	-2	%Vo	
n/cm^2	1E+12	5E+12	1E+13
LL	-2.000	-2.000	-2.000
Min	-0.062	-0.019	-0.699
Average	0.030	0.144	-0.303
Max	0.212	0.262	-0.061
UL	2.000	2.000	2.000



NDD Characterization Report
TPS7H1210-SEP

	2.9_VoutVmaxLmin%	
Test Site		
Tester		
Test Number		
Unit	%Vo	%Vo
Max Limit	2	2
Min Limit	-2	-2

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	0.085	0.012	-0.074
1E+12	2	0.298	0.264	-0.034
1E+12	3	0.127	0.041	-0.086
5E+12	4	0.147	0.024	-0.123
5E+12	5	0.225	0.269	0.045
5E+12	6	0.327	0.347	0.019
1E+13	7	0.027	0.045	0.018
1E+13	8	0.009	-0.064	-0.073
1E+13	9	-0.678	-0.645	0.033
	Max	0.327	0.347	0.045
	Average	0.063	0.033	-0.031
	Min	-0.678	-0.645	-0.123
	Std Dev	0.299	0.291	0.061

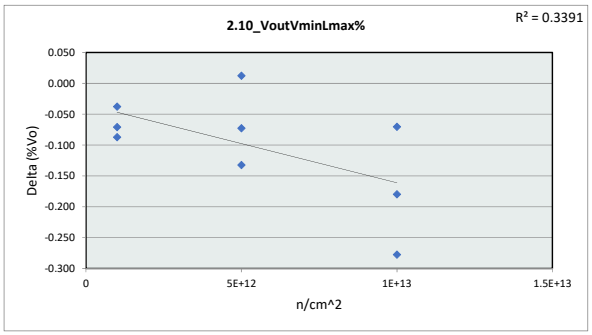


	2.9_VoutVmaxLmin%		
Test Site			
Tester			
Test Number			
Max Limit	2	%Vo	
Min Limit	-2	%Vo	
n/cm^2	1E+12	5E+12	1E+13
LL	-2.000	-2.000	-2.000
Min	0.012	0.024	-0.645
Average	0.106	0.213	-0.221
Max	0.264	0.347	0.045
UL	2.000	2.000	2.000

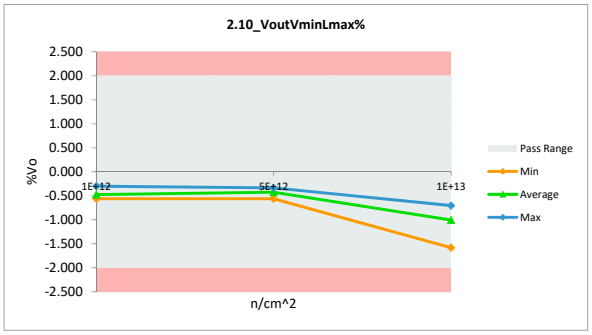
NDD Characterization Report
TPS7H1210-SEP

	2.10_VoutVminLmax%	
Test Site		
Tester		
Test Number		
Unit	%Vo	%Vo
Max Limit	2	2
Min Limit	-2	-2

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-0.485	-0.556	-0.071
1E+12	2	-0.262	-0.300	-0.038
1E+12	3	-0.475	-0.563	-0.087
5E+12	4	-0.429	-0.562	-0.132
5E+12	5	-0.395	-0.382	0.012
5E+12	6	-0.262	-0.335	-0.073
1E+13	7	-0.547	-0.727	-0.180
1E+13	8	-0.633	-0.704	-0.070
1E+13	9	-1.304	-1.582	-0.278
	Max	-0.262	-0.300	0.012
	Average	-0.533	-0.634	-0.102
	Min	-1.304	-1.582	-0.278
	Std Dev	0.314	0.386	0.085



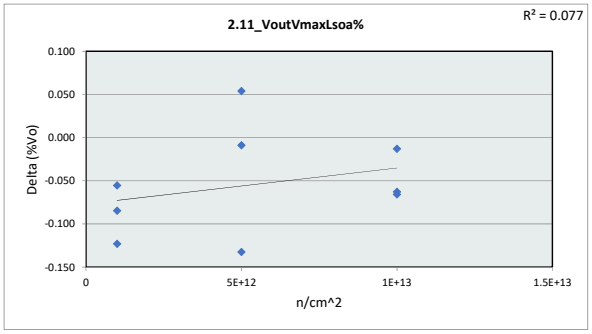
	2.10_VoutVminLmax%		
Test Site			
Tester			
Test Number			
Max Limit	2	%Vo	
Min Limit	-2	%Vo	
n/cm^2	1E+12	5E+12	1E+13
LL	-2.000	-2.000	-2.000
Min	-0.563	-0.562	-1.582
Average	-0.473	-0.426	-1.004
Max	-0.300	-0.335	-0.704
UL	2.000	2.000	2.000



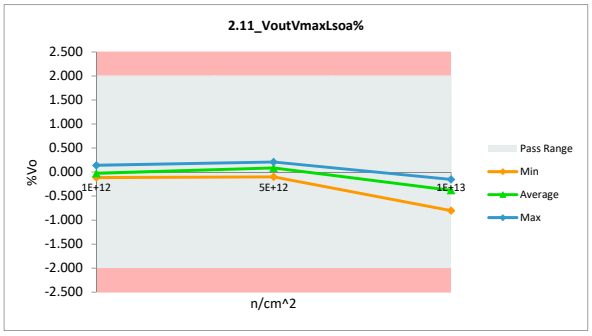
NDD Characterization Report
TPS7H1210-SEP

	2.11_VoutVmaxLsoa%	
Test Site		
Tester		
Test Number		
Unit	%Vo	%Vo
Max Limit	2	2
Min Limit	-2	-2

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-0.030	-0.115	-0.085
1E+12	2	0.196	0.141	-0.055
1E+12	3	0.021	-0.102	-0.123
5E+12	4	0.031	-0.101	-0.132
5E+12	5	0.096	0.150	0.054
5E+12	6	0.218	0.209	-0.009
1E+13	7	-0.091	-0.154	-0.063
1E+13	8	-0.118	-0.183	-0.066
1E+13	9	-0.790	-0.803	-0.013
	Max	0.218	0.209	0.054
	Average	-0.052	-0.106	-0.055
	Min	-0.790	-0.803	-0.132
	Std Dev	0.300	0.300	0.059



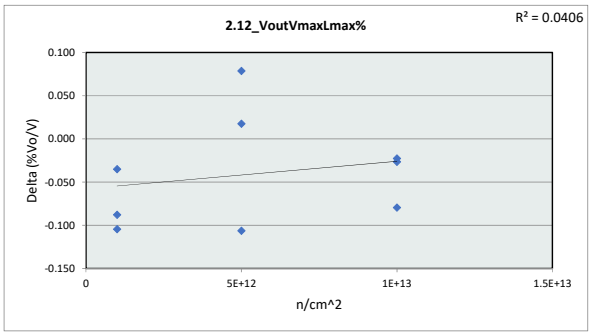
	2.11_VoutVmaxLsoa%		
Test Site			
Tester			
Test Number			
Max Limit	2	%Vo	
Min Limit	-2	%Vo	
n/cm^2	1E+12	5E+12	1E+13
LL	-2.000	-2.000	-2.000
Min	-0.115	-0.101	-0.803
Average	-0.025	0.086	-0.380
Max	0.141	0.209	-0.154
UL	2.000	2.000	2.000



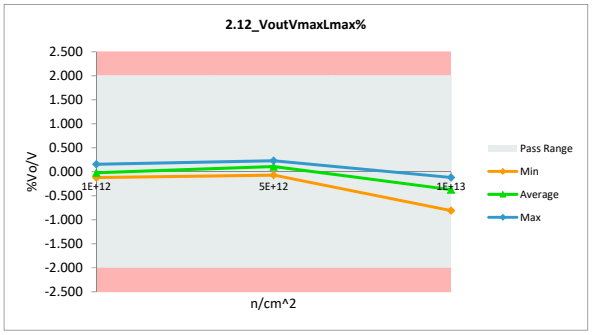
NDD Characterization Report
TPS7H1210-SEP

	2.12_VoutVmaxLmax%	
Test Site		
Tester		
Test Number		
Unit	%Vo/V	%Vo/V
Max Limit	2	2
Min Limit	-2	-2

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-0.033	-0.121	-0.088
1E+12	2	0.193	0.157	-0.035
1E+12	3	0.011	-0.093	-0.104
5E+12	4	0.037	-0.070	-0.106
5E+12	5	0.091	0.169	0.079
5E+12	6	0.213	0.230	0.017
1E+13	7	-0.092	-0.118	-0.027
1E+13	8	-0.111	-0.191	-0.080
1E+13	9	-0.785	-0.808	-0.023
	Max	0.213	0.230	0.079
	Average	-0.053	-0.094	-0.041
	Min	-0.785	-0.808	-0.106
	Std Dev	0.297	0.308	0.062



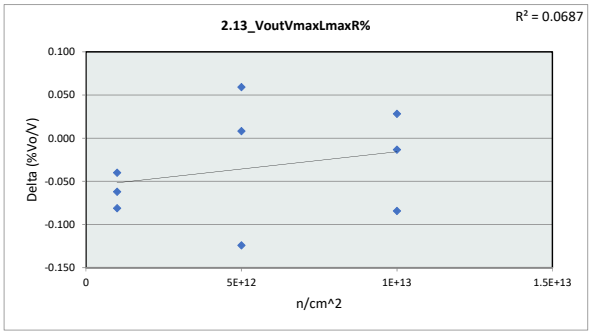
	2.12_VoutVmaxLmax%		
Test Site			
Tester			
Test Number			
Max Limit	2	%Vo/V	
Min Limit	-2	%Vo/V	
n/cm^2	1E+12	5E+12	1E+13
LL	-2.000	-2.000	-2.000
Min	-0.121	-0.070	-0.808
Average	-0.019	0.110	-0.372
Max	0.157	0.230	-0.118
UL	2.000	2.000	2.000



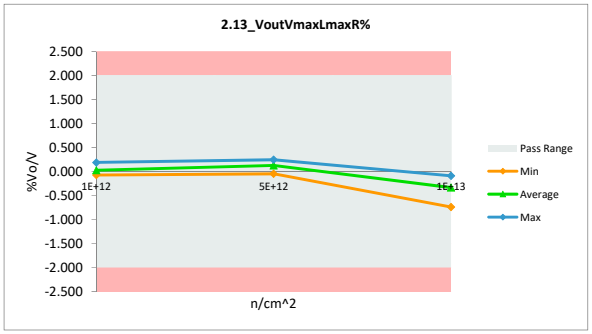
NDD Characterization Report
TPS7H1210-SEP

	2.13_VoutVmaxLmaxR%	
Test Site		
Tester		
Test Number		
Unit	%Vo/V	%Vo/V
Max Limit	2	2
Min Limit	-2	-2

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-0.011	-0.073	-0.062
1E+12	2	0.229	0.189	-0.040
1E+12	3	0.048	-0.033	-0.081
5E+12	4	0.078	-0.046	-0.124
5E+12	5	0.128	0.187	0.059
5E+12	6	0.239	0.247	0.008
1E+13	7	-0.076	-0.089	-0.013
1E+13	8	-0.088	-0.172	-0.084
1E+13	9	-0.767	-0.739	0.028
	Max	0.239	0.247	0.059
	Average	-0.024	-0.059	-0.034
	Min	-0.767	-0.739	-0.124
	Std Dev	0.302	0.294	0.060



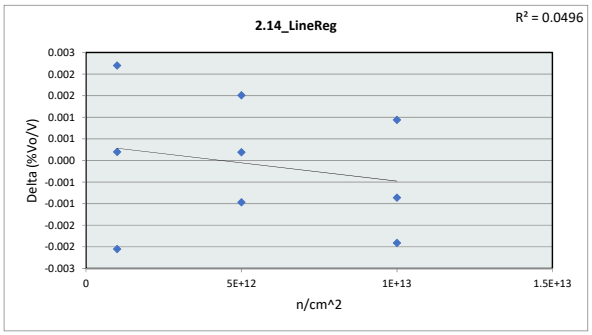
	2.13_VoutVmaxLmaxR%		
Test Site			
Tester			
Test Number			
Max Limit	2	%Vo/V	
Min Limit	-2	%Vo/V	
n/cm^2	1E+12	5E+12	1E+13
LL	-2.000	-2.000	-2.000
Min	-0.073	-0.046	-0.739
Average	0.028	0.129	-0.333
Max	0.189	0.247	-0.089
UL	2.000	2.000	2.000



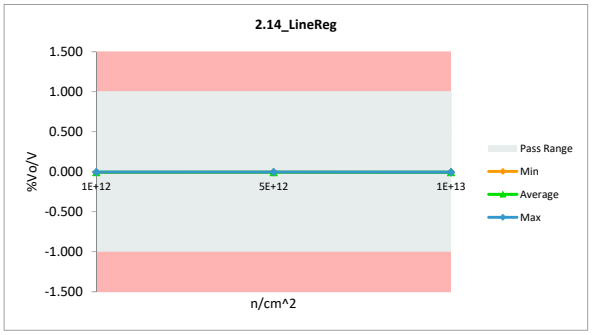
NDD Characterization Report
TPS7H1210-SEP

	2.14_LineReg	
Test Site		
Tester		
Test Number		
Unit	%Vo/V	%Vo/V
Max Limit	1	1
Min Limit	-1	-1

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-0.006	-0.005	0.000
1E+12	2	-0.006	-0.004	0.002
1E+12	3	-0.006	-0.008	-0.002
5E+12	4	-0.005	-0.003	0.002
5E+12	5	-0.006	-0.006	0.000
5E+12	6	-0.005	-0.006	-0.001
1E+13	7	-0.006	-0.008	-0.002
1E+13	8	-0.005	-0.006	-0.001
1E+13	9	-0.005	-0.004	0.001
	Max	-0.005	-0.003	0.002
	Average	-0.006	-0.006	0.000
	Min	-0.006	-0.008	-0.002
	Std Dev	0.000	0.002	0.001



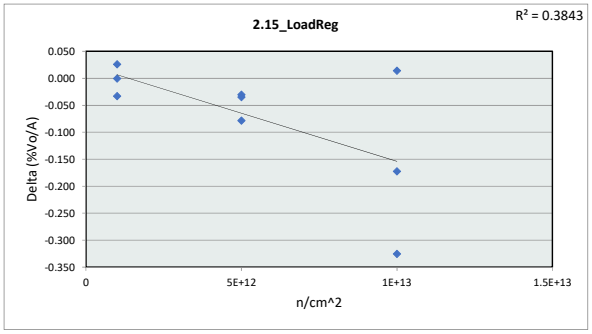
	2.14_LineReg		
Test Site			
Tester			
Test Number			
Max Limit	1	%Vo/V	
Min Limit	-1	%Vo/V	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.000	-1.000	-1.000
Min	-0.008	-0.006	-0.008
Average	-0.006	-0.005	-0.006
Max	-0.004	-0.003	-0.004
UL	1.000	1.000	1.000



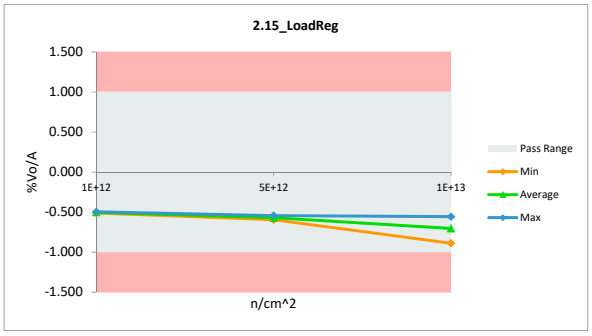
NDD Characterization Report
TPS7H1210-SEP

	2.15_LoadReg	
Test Site		
Tester		
Test Number		
Unit	%Vo/A	%Vo/A
Max Limit	1	1
Min Limit	-1	-1

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-0.495	-0.496	0.000
1E+12	2	-0.478	-0.511	-0.033
1E+12	3	-0.527	-0.501	0.026
5E+12	4	-0.513	-0.544	-0.030
5E+12	5	-0.536	-0.571	-0.035
5E+12	6	-0.517	-0.596	-0.079
1E+13	7	-0.494	-0.667	-0.173
1E+13	8	-0.571	-0.557	0.014
1E+13	9	-0.564	-0.890	-0.326
	Max	-0.478	-0.496	0.026
	Average	-0.522	-0.592	-0.071
	Min	-0.571	-0.890	-0.326
	Std Dev	0.031	0.124	0.112



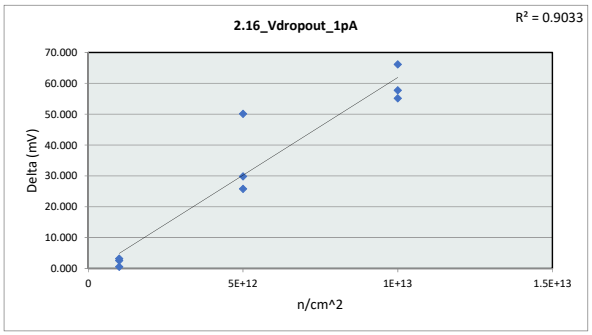
	2.15_LoadReg		
Test Site			
Tester			
Test Number			
Max Limit	1	%Vo/A	
Min Limit	-1	%Vo/A	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.000	-1.000	-1.000
Min	-0.511	-0.596	-0.890
Average	-0.503	-0.570	-0.705
Max	-0.496	-0.544	-0.557
UL	1.000	1.000	1.000



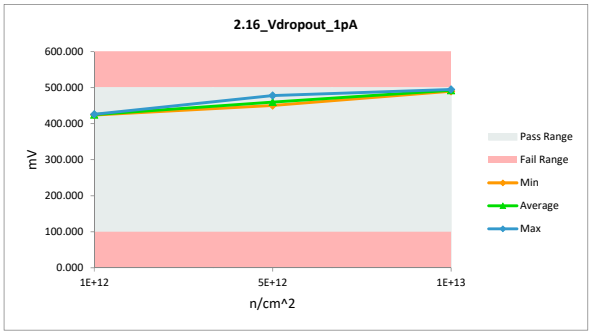
NDD Characterization Report
TPS7H1210-SEP

	2.16_Vdropout_1pA	
Test Site		
Tester		
Test Number		
Unit	mV	mV
Max Limit	475	500
Min Limit	100	100

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	425.690	426.230	0.540
1E+12	2	421.030	424.200	3.170
1E+12	3	423.040	425.620	2.580
5E+12	4	422.210	452.030	29.820
5E+12	5	427.910	478.050	50.140
5E+12	6	424.920	450.720	25.800
1E+13	7	427.310	493.450	66.140
1E+13	8	434.860	490.030	55.170
1E+13	9	437.430	495.160	57.730
	Max	437.430	495.160	66.140
	Average	427.156	459.499	32.343
	Min	421.030	424.200	0.540
	Std Dev	5.608	30.278	26.034



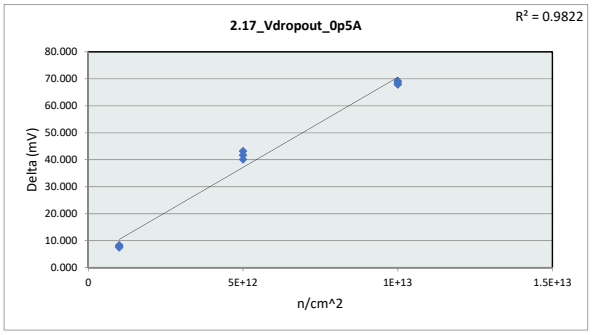
	2.16_Vdropout_1pA		
Test Site			
Tester			
Test Number			
Max Limit	500	mV	
Min Limit	100	mV	
n/cm^2	1E+12	5E+12	1E+13
LL	100.000	100.000	100.000
Min	424.200	450.720	490.030
Average	425.350	460.267	492.880
Max	426.230	478.050	495.160
UL	500.000	500.000	500.000



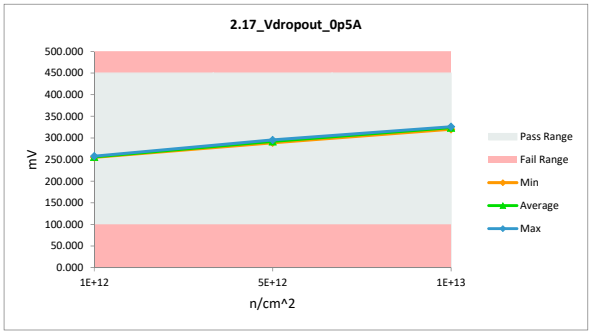
NDD Characterization Report
TPS7H1210-SEP

	2.17_Vdropout_0p5A	
Test Site		
Tester		
Test Number		
Unit	mV	mV
Max Limit	450	450
Min Limit	100	100

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	250.410	257.920	7.510
1E+12	2	246.770	255.100	8.330
1E+12	3	247.020	255.030	8.010
5E+12	4	248.690	288.840	40.150
5E+12	5	252.160	295.370	43.210
5E+12	6	249.860	291.590	41.730
1E+13	7	250.830	320.090	69.260
1E+13	8	257.380	325.240	67.860
1E+13	9	257.440	325.950	68.510
	Max	257.440	325.950	69.260
	Average	251.173	290.570	39.397
	Min	246.770	255.030	7.510
	Std Dev	3.937	29.452	26.309



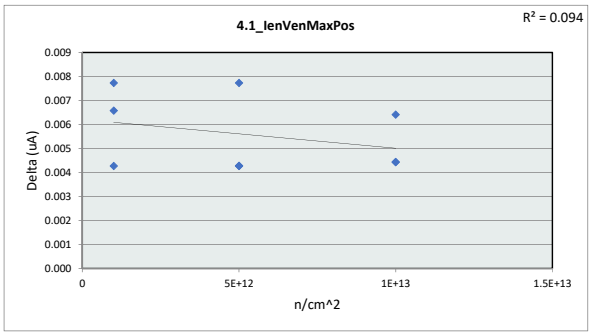
	2.17_Vdropout_0p5A		
Test Site			
Tester			
Test Number			
Max Limit	450	mV	
Min Limit	100	mV	
n/cm^2	1E+12	5E+12	1E+13
LL	100.000	100.000	100.000
Min	255.030	288.840	320.090
Average	256.017	291.933	323.760
Max	257.920	295.370	325.950
UL	450.000	450.000	450.000



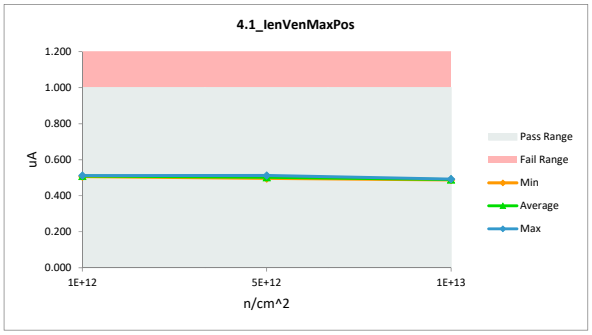
NDD Characterization Report
TPS7H1210-SEP

	4.1_IenVenMaxPos	
Test Site		
Tester		
Test Number		
Unit	uA	uA
Max Limit	1	1
Min Limit	0	0

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	0.501	0.506	0.004
1E+12	2	0.504	0.511	0.008
1E+12	3	0.506	0.512	0.007
5E+12	4	0.508	0.512	0.004
5E+12	5	0.494	0.499	0.004
5E+12	6	0.488	0.496	0.008
1E+13	7	0.485	0.490	0.004
1E+13	8	0.488	0.493	0.004
1E+13	9	0.481	0.488	0.006
	Max	0.508	0.512	0.008
	Average	0.495	0.501	0.006
	Min	0.481	0.488	0.004
	Std Dev	0.010	0.010	0.002

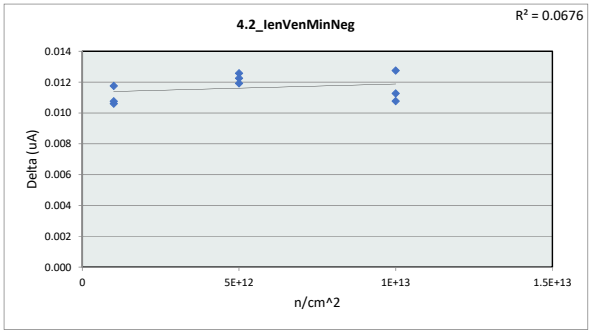


	4.1_IenVenMaxPos		
Test Site			
Tester			
Test Number			
Max Limit	1	uA	
Min Limit	0	uA	
n/cm^2	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000
Min	0.506	0.496	0.488
Average	0.510	0.502	0.490
Max	0.512	0.513	0.493
UL	1.000	1.000	1.000

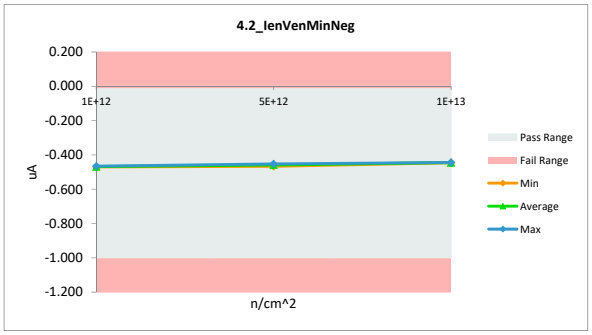


NDD Characterization Report
TPS7H1210-SEP

		4.2_IenVenMinNeg	
Test Site			
Tester			
Test Number			
Unit		uA	uA
Max Limit		-0.01	-0.01
Min Limit		-1	-1
n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-0.477	-0.466	0.012
1E+12	2	-0.481	-0.470	0.011
1E+12	3	-0.479	-0.468	0.011
5E+12	4	-0.478	-0.466	0.012
5E+12	5	-0.465	-0.453	0.012
5E+12	6	-0.471	-0.459	0.013
1E+13	7	-0.457	-0.445	0.011
1E+13	8	-0.457	-0.445	0.013
1E+13	9	-0.455	-0.444	0.011
	Max	-0.455	-0.444	0.013
	Average	-0.469	-0.457	0.012
	Min	-0.481	-0.470	0.011
	Std Dev	0.011	0.011	0.001



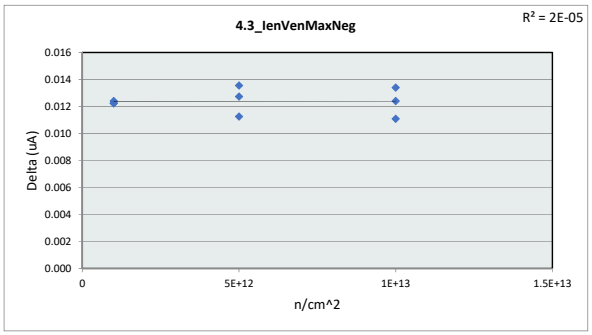
	4.2_IenVenMinNeg		
Test Site			
Tester			
Test Number			
Max Limit	-0.01	uA	
Min Limit	-1	uA	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.000	-1.000	-1.000
Min	-0.470	-0.466	-0.445
Average	-0.468	-0.459	-0.445
Max	-0.466	-0.453	-0.444
UL	-0.010	-0.010	-0.010



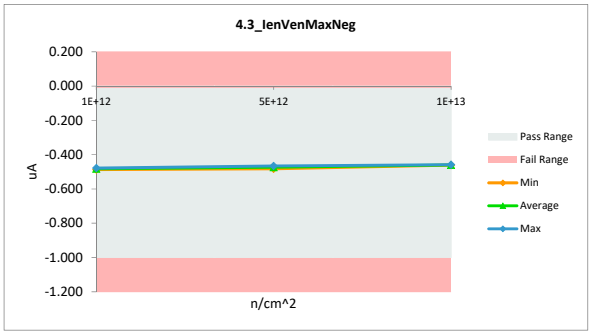
NDD Characterization Report
TPS7H1210-SEP

	4.3_IenVenMaxNeg	
Test Site		
Tester		
Test Number		
Unit	uA	uA
Max Limit	-0.01	-0.01
Min Limit	-1	-1

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-0.491	-0.479	0.012
1E+12	2	-0.499	-0.487	0.012
1E+12	3	-0.494	-0.481	0.012
5E+12	4	-0.494	-0.483	0.011
5E+12	5	-0.479	-0.466	0.013
5E+12	6	-0.485	-0.472	0.014
1E+13	7	-0.472	-0.459	0.013
1E+13	8	-0.473	-0.461	0.012
1E+13	9	-0.472	-0.461	0.011
	Max	-0.472	-0.459	0.014
	Average	-0.484	-0.472	0.012
	Min	-0.499	-0.487	0.011
	Std Dev	0.011	0.011	0.001



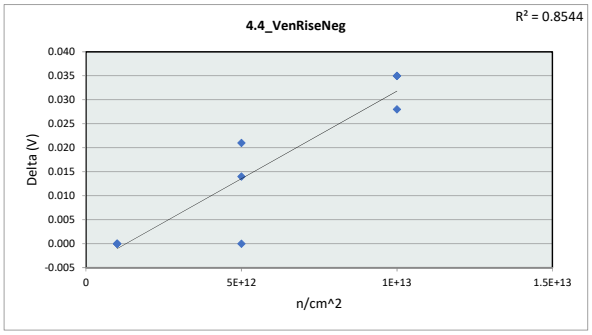
	4.3_IenVenMaxNeg		
Test Site			
Tester			
Test Number			
Max Limit	-0.01	uA	
Min Limit	-1	uA	
n/cm^2	1E+12	5E+12	1E+13
LL	-1.000	-1.000	-1.000
Min	-0.487	-0.483	-0.461
Average	-0.482	-0.474	-0.460
Max	-0.479	-0.466	-0.459
UL	-0.010	-0.010	-0.010



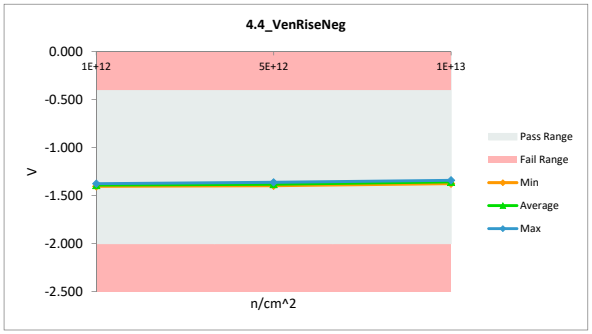
NDD Characterization Report
TPS7H1210-SEP

	4.4_VenRiseNeg	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	-0.4	-0.4
Min Limit	-2	-2

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-1.377	-1.377	0.000
1E+12	2	-1.405	-1.405	0.000
1E+12	3	-1.390	-1.390	0.000
5E+12	4	-1.411	-1.398	0.014
5E+12	5	-1.383	-1.383	0.000
5E+12	6	-1.383	-1.362	0.021
1E+13	7	-1.390	-1.355	0.035
1E+13	8	-1.405	-1.377	0.028
1E+13	9	-1.377	-1.342	0.035
	Max	-1.377	-1.342	0.035
	Average	-1.391	-1.376	0.015
	Min	-1.411	-1.405	0.000
	Std Dev	0.013	0.020	0.015



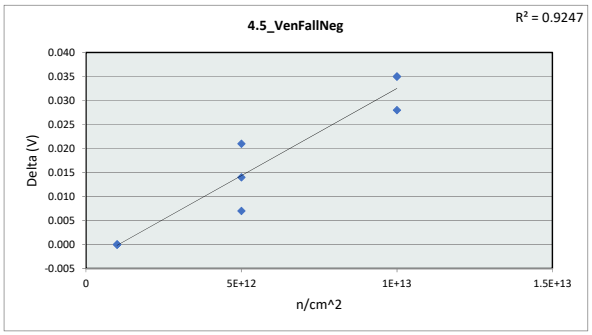
	4.4_VenRiseNeg		
Test Site			
Tester			
Test Number			
Max Limit	-0.4	V	
Min Limit	-2	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-2.000	-2.000	-2.000
Min	-1.405	-1.398	-1.377
Average	-1.391	-1.381	-1.358
Max	-1.377	-1.363	-1.342
UL	-0.400	-0.400	-0.400



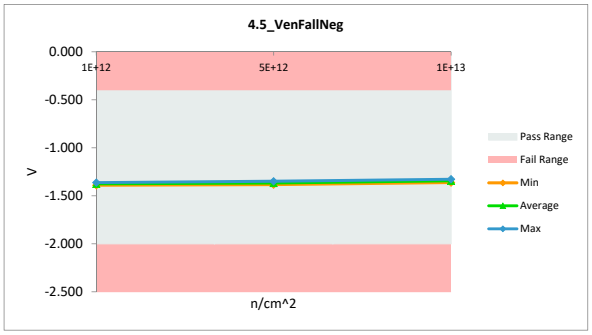
NDD Characterization Report
TPS7H1210-SEP

	4.5_VenFallNeg	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	-0.4	-0.4
Min Limit	-2	-2

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-1.362	-1.362	0.000
1E+12	2	-1.390	-1.390	0.000
1E+12	3	-1.377	-1.377	0.000
5E+12	4	-1.398	-1.383	0.014
5E+12	5	-1.377	-1.370	0.007
5E+12	6	-1.370	-1.349	0.021
1E+13	7	-1.377	-1.342	0.035
1E+13	8	-1.390	-1.362	0.028
1E+13	9	-1.362	-1.327	0.035
	Max	-1.362	-1.327	0.035
	Average	-1.378	-1.362	0.016
	Min	-1.398	-1.390	0.000
	Std Dev	0.013	0.020	0.015



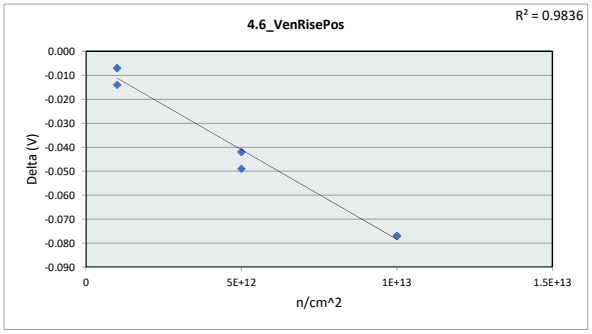
	4.5_VenFallNeg		
Test Site			
Tester			
Test Number			
Max Limit	-0.4	V	
Min Limit	-2	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-2.000	-2.000	-2.000
Min	-1.391	-1.384	-1.363
Average	-1.377	-1.367	-1.344
Max	-1.363	-1.349	-1.328
UL	-0.400	-0.400	-0.400



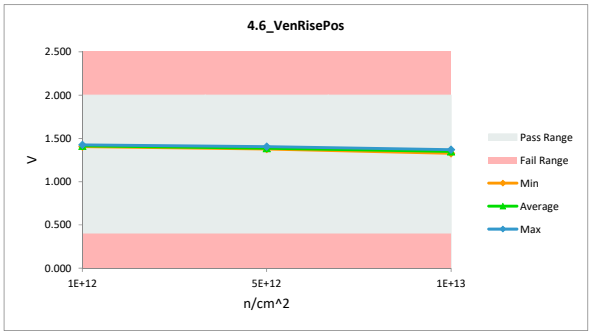
NDD Characterization Report
TPS7H1210-SEP

	4.6_VenRisePos	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	2	2
Min Limit	0.4	0.4

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	1.411	1.405	-0.007
1E+12	2	1.433	1.426	-0.007
1E+12	3	1.426	1.411	-0.014
5E+12	4	1.446	1.405	-0.042
5E+12	5	1.426	1.377	-0.049
5E+12	6	1.418	1.377	-0.042
1E+13	7	1.426	1.349	-0.077
1E+13	8	1.446	1.370	-0.077
1E+13	9	1.405	1.327	-0.077
	Max	1.446	1.426	-0.007
	Average	1.426	1.383	-0.044
	Min	1.405	1.327	-0.077
	Std Dev	0.014	0.032	0.029



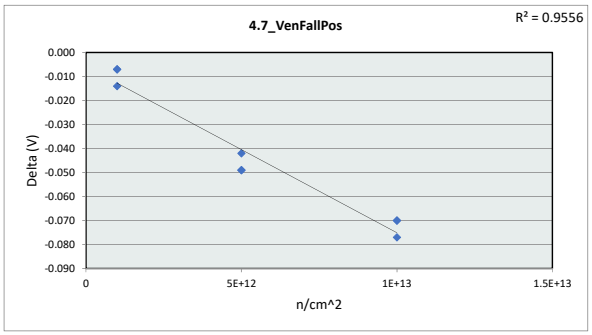
	4.6_VenRisePos		
Test Site			
Tester			
Test Number			
Max Limit	2	V	
Min Limit	0.4	V	
n/cm^2	1E+12	5E+12	1E+13
LL	0.400	0.400	0.400
Min	1.405	1.377	1.328
Average	1.414	1.386	1.349
Max	1.426	1.405	1.370
UL	2.000	2.000	2.000



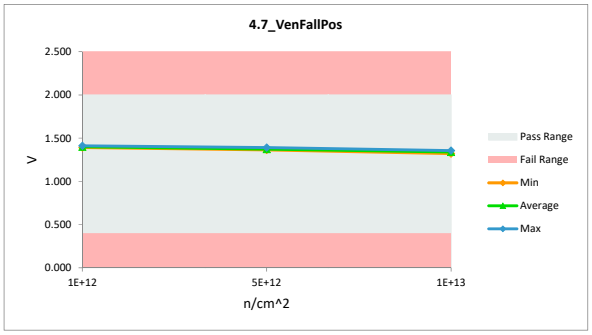
NDD Characterization Report
TPS7H1210-SEP

	4.7_VenFallPos	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	2	2
Min Limit	0.4	0.4

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	1.398	1.390	-0.007
1E+12	2	1.418	1.411	-0.007
1E+12	3	1.411	1.398	-0.014
5E+12	4	1.433	1.390	-0.042
5E+12	5	1.411	1.362	-0.049
5E+12	6	1.411	1.362	-0.049
1E+13	7	1.411	1.342	-0.070
1E+13	8	1.433	1.355	-0.077
1E+13	9	1.390	1.321	-0.070
	Max	1.433	1.411	-0.007
	Average	1.413	1.370	-0.043
	Min	1.390	1.321	-0.077
	Std Dev	0.014	0.029	0.028



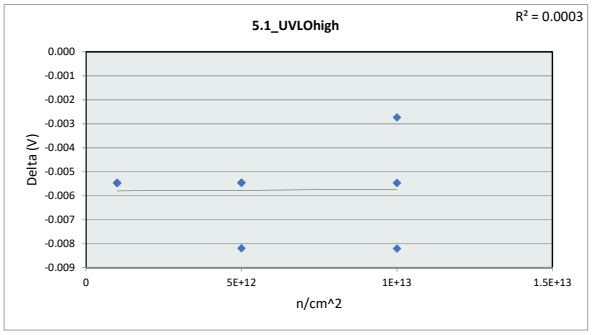
	4.7_VenFallPos		
Test Site			
Tester			
Test Number			
Max Limit	2	V	
Min Limit	0.4	V	
n/cm^2	1E+12	5E+12	1E+13
LL	0.400	0.400	0.400
Min	1.391	1.363	1.321
Average	1.400	1.372	1.339
Max	1.412	1.391	1.356
UL	2.000	2.000	2.000



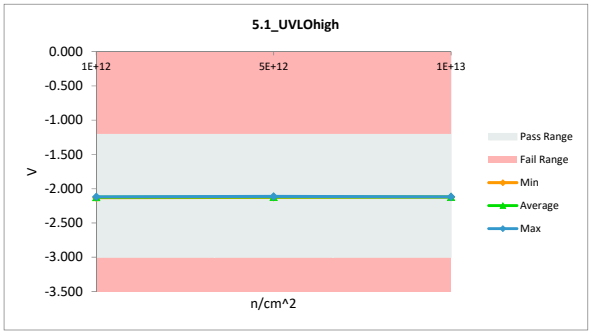
NDD Characterization Report
TPS7H1210-SEP

	5.1_UVLOhigh	
Test Site		
Tester		
Test Number		
Unit	V	V
Max Limit	-1.2	-1.2
Min Limit	-3	-3

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-2.115	-2.120	-0.005
1E+12	2	-2.126	-2.131	-0.005
1E+12	3	-2.112	-2.117	-0.005
5E+12	4	-2.104	-2.112	-0.008
5E+12	5	-2.120	-2.126	-0.005
5E+12	6	-2.117	-2.123	-0.005
1E+13	7	-2.115	-2.120	-0.005
1E+13	8	-2.120	-2.123	-0.003
1E+13	9	-2.109	-2.117	-0.008
	Max	-2.104	-2.112	-0.003
	Average	-2.115	-2.121	-0.006
	Min	-2.126	-2.131	-0.008
	Std Dev	0.007	0.005	0.002



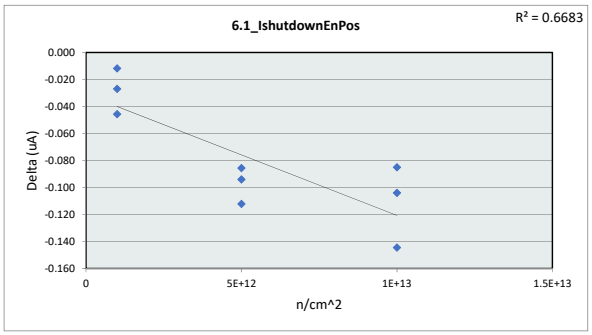
	5.1_UVLOhigh		
Test Site			
Tester			
Test Number			
Max Limit	-1.2	V	
Min Limit	-3	V	
n/cm^2	1E+12	5E+12	1E+13
LL	-3.000	-3.000	-3.000
Min	-2.131	-2.126	-2.123
Average	-2.123	-2.120	-2.120
Max	-2.117	-2.112	-2.117
UL	-1.200	-1.200	-1.200



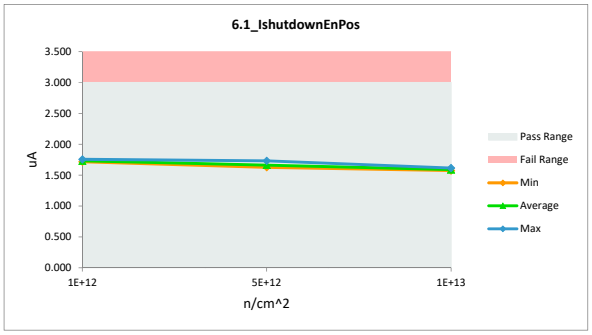
NDD Characterization Report
TPS7H1210-SEP

	6.1_IshutdownEnPos	
Test Site		
Tester		
Test Number		
Unit	uA	uA
Max Limit	3	3
Min Limit	0	0

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	1.739	1.727	-0.012
1E+12	2	1.802	1.757	-0.046
1E+12	3	1.743	1.716	-0.027
5E+12	4	1.827	1.733	-0.094
5E+12	5	1.717	1.631	-0.086
5E+12	6	1.740	1.628	-0.112
1E+13	7	1.719	1.615	-0.104
1E+13	8	1.726	1.582	-0.145
1E+13	9	1.660	1.575	-0.085
	Max	1.827	1.757	-0.012
	Average	1.741	1.663	-0.079
	Min	1.660	1.575	-0.145
	Std Dev	0.049	0.070	0.043



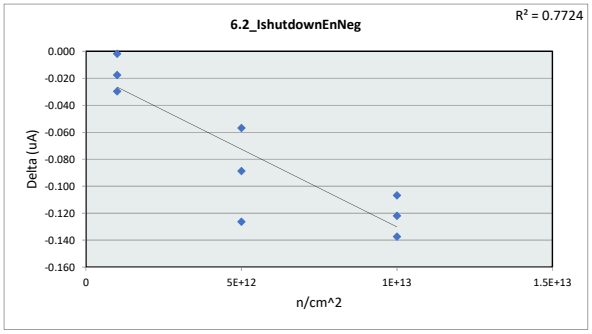
	6.1_IshutdownEnPos		
Test Site			
Tester			
Test Number			
Max Limit	3	uA	
Min Limit	0	uA	
n/cm^2	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000
Min	1.716	1.628	1.575
Average	1.733	1.664	1.591
Max	1.757	1.733	1.615
UL	3.000	3.000	3.000



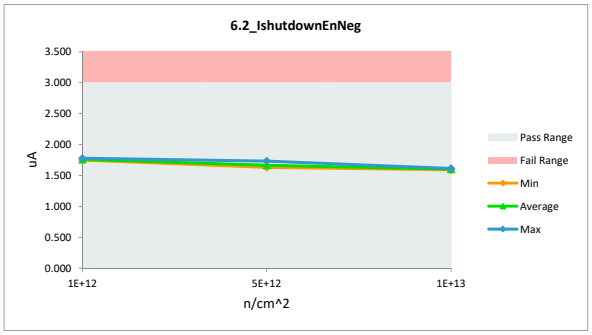
NDD Characterization Report
TPS7H1210-SEP

	6.2_IshutdownEnNeg	
Test Site		
Tester		
Test Number		
Unit	uA	uA
Max Limit	3	3
Min Limit	0	0

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	1.752	1.750	-0.002
1E+12	2	1.808	1.778	-0.030
1E+12	3	1.768	1.751	-0.018
5E+12	4	1.790	1.733	-0.057
5E+12	5	1.722	1.633	-0.089
5E+12	6	1.757	1.631	-0.126
1E+13	7	1.736	1.614	-0.122
1E+13	8	1.738	1.601	-0.137
1E+13	9	1.698	1.591	-0.107
	Max	1.808	1.778	-0.002
	Average	1.752	1.676	-0.076
	Min	1.698	1.591	-0.137
	Std Dev	0.034	0.075	0.051



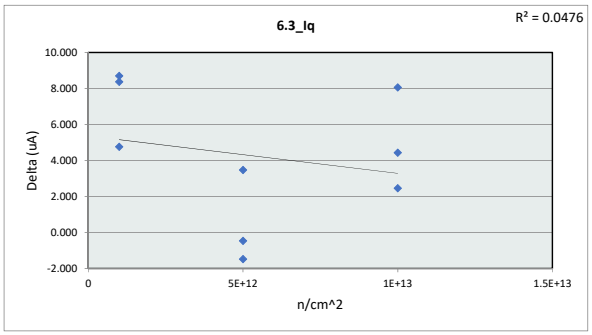
	6.2_IshutdownEnNeg		
Test Site			
Tester			
Test Number			
Max Limit	3	uA	
Min Limit	0	uA	
n/cm^2	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000
Min	1.750	1.631	1.591
Average	1.760	1.666	1.602
Max	1.778	1.733	1.614
UL	3.000	3.000	3.000



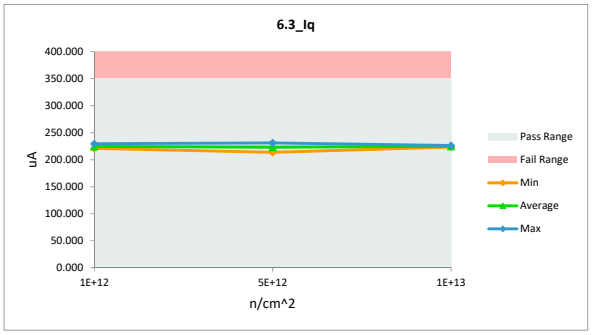
NDD Characterization Report
TPS7H1210-SEP

	6.3_Iq	
Test Site		
Tester		
Test Number		
Unit	uA	uA
Max Limit	350	350
Min Limit	0	0

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	218.498	223.256	4.758
1E+12	2	212.279	220.980	8.701
1E+12	3	221.104	229.476	8.372
5E+12	4	227.663	231.136	3.473
5E+12	5	225.359	224.889	-0.470
5E+12	6	215.206	213.726	-1.480
1E+13	7	223.733	226.187	2.454
1E+13	8	216.822	224.885	8.063
1E+13	9	219.120	223.554	4.434
	Max	227.663	231.136	8.701
	Average	219.976	224.232	4.256
	Min	212.279	213.726	-1.480
	Std Dev	4.979	5.028	3.718



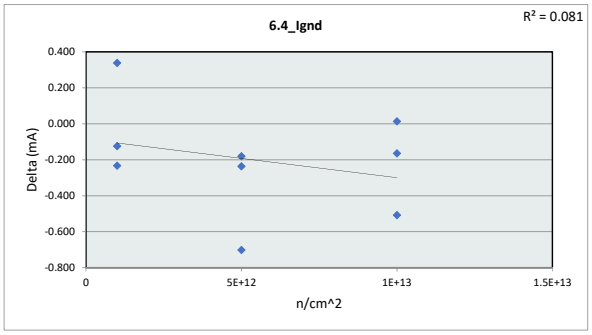
	6.3_Iq		
Test Site			
Tester			
Test Number			
Max Limit	350	uA	
Min Limit	0	uA	
n/cm^2	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000
Min	220.980	213.726	223.554
Average	224.571	223.250	224.875
Max	229.476	231.136	226.187
UL	350.000	350.000	350.000



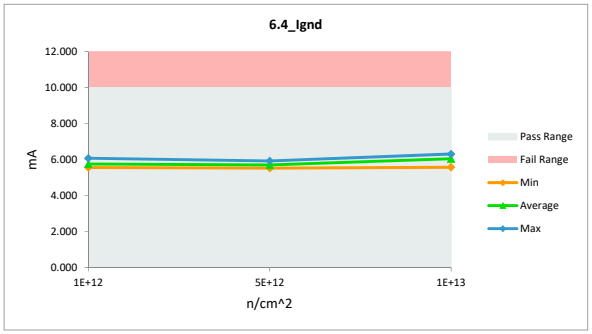
NDD Characterization Report
TPS7H1210-SEP

	6.4_Igndd	
Test Site		
Tester		
Test Number		
Unit	mA	mA
Max Limit	10	10
Min Limit	0	0

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	5.216	5.554	0.338
1E+12	2	5.869	5.636	-0.233
1E+12	3	6.197	6.073	-0.124
5E+12	4	6.220	5.518	-0.702
5E+12	5	6.099	5.919	-0.180
5E+12	6	5.889	5.653	-0.236
1E+13	7	6.079	5.571	-0.508
1E+13	8	6.250	6.264	0.014
1E+13	9	6.470	6.306	-0.164
	Max	6.470	6.306	0.338
	Average	6.032	5.833	-0.199
	Min	5.216	5.518	-0.702
	Std Dev	0.357	0.315	0.294



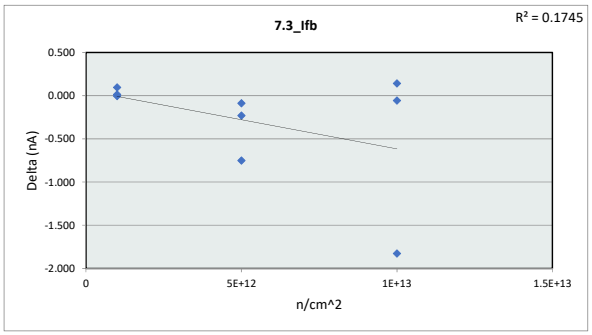
	6.4_Igndd		
Test Site			
Tester			
Test Number			
Max Limit	10	mA	
Min Limit	0	mA	
n/cm^2	1E+12	5E+12	1E+13
LL	0.000	0.000	0.000
Min	5.554	5.518	5.571
Average	5.754	5.697	6.047
Max	6.073	5.919	6.306
UL	10.000	10.000	10.000



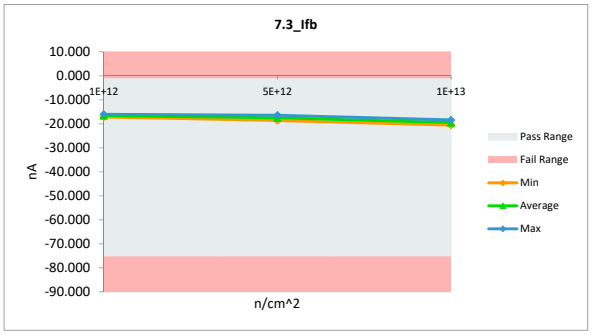
NDD Characterization Report
TPS7H1210-SEP

	7.3_Ifb	
Test Site		
Tester		
Test Number		
Unit	nA	nA
Max Limit	-1	-1
Min Limit	-75	-75

n/cm^2	Serial #	Pre_NDD	Post_NDD	Delta
1E+12	1	-16.063	-16.049	0.014
1E+12	2	-17.143	-17.148	-0.005
1E+12	3	-16.628	-16.533	0.096
5E+12	4	-16.736	-17.487	-0.751
5E+12	5	-18.385	-18.616	-0.231
5E+12	6	-16.375	-16.462	-0.087
1E+13	7	-18.352	-18.409	-0.057
1E+13	8	-18.738	-20.565	-1.827
1E+13	9	-19.702	-19.561	0.141
	Max	-16.063	-16.049	0.141
	Average	-17.569	-17.870	-0.301
	Min	-19.702	-20.565	-1.827
	Std Dev	1.257	1.530	0.630



	7.3_Ifb		
Test Site			
Tester			
Test Number			
Max Limit	-1	nA	
Min Limit	-75	nA	
n/cm^2	1E+12	5E+12	1E+13
LL	-75.000	-75.000	-75.000
Min	-17.148	-18.616	-20.565
Average	-16.577	-17.522	-19.512
Max	-16.049	-16.462	-18.409
UL	-1.000	-1.000	-1.000



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