Radiation Report

TPS73801-SEP Neutron Displacement Damage (NDD) Characterization Test Report

ABSTRACT

This report presents the effect of neutron displacement damage (NDD) on the TPS73801-SEP device. The results show that all devices were fully functional and within production test limits after having been irradiated up to 1 × 10^{12} n/cm^2. A sample size of three units was exposed to radiation testing per (MIL-STD-883, Method 1017 for Neutron Irradiation). All devices used in the experiment were from lot date code 1339A and assembly lot 3012576 MMT. Electrical testing was performed at Texas Instruments before and after neutron irradiation using the production test program for TPS73801MDCQPSEP.

Table of Contents

List of Figures

List of Tables

Trademarks

1 Overview

The TPS73801-SEP is a low-dropout (LDO) regulator optimized for fast transient response. The device can supply 1 A of output current with a dropout voltage of 300 mV. Operating quiescent current is 1 mA and drops to less than 1 µA in shutdown.

Compared to many other regulators, quiescent current is well controlled and does not rise in dropout. In addition to fast transient response, a very low output noise makes the TPS73801-SEP regulator ideal for sensitive RF supply applications.

General device information and testing conditions are listed in Table 1-1.

Table 1-1. Overview Information

TI Part Number	TPS73801MDCQPSEP
Device Function	Low-Noise Fast-Transient-Response Low-Dropout Regulator
Die Name	STLADJC1963DPS
Technology	JI1
A/T Lot Number / Lot Code	0325995HNA / 03ZGE2H
Biased Quantity Tested	0
Unbiased Quantity Tested	3
Exposure Facility	VPT Rad
Neutron Fluence (1 MeV eqv.)	1.0×10^{12} n/cm^2
Irradiation Temperature	25°C
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2 Test Procedures

The TPS73801MDCQPSEP was electrically pre-tested using the production automated test equipment program. General test procedures were IAW MIL-STD-883, Method 1017 for Neutron Irradiation of TPS73801DCQ-SEP as modified 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} n/cm^2	Unbiased

Figure 2-1. TPS73801DCQ-SEP Device

3 Facility

VPT Rad performs all neutron displacement damage irradiations in a Low-Enriched, open-pool, water moderated, thermal neutron reactor. It utilizes flat-plate type fuel, and having a maximum thermal energy output of up to 1 MW. The Fast Neutron Irradiator (FNI) faces one side of the reactor core, its design produces a geometrical planar beam of fast neutrons that is approximately uniform over an area of 12 in × 20 in. Lead and thermal neutron absorbing compounds are combined to filter out both fission gammas and thermal neutrons.

The ratio of fast-to-thermal neutrons is approximately 400:1, with a gamma exposure of less than 150 rad (Si) for a 1E12 n/cm^2 (1 MeV Si equivalent) exposure. The FNI can accommodate a sample or samples with sizes up to 30 cm in diameter and 15-cm thick including packaging materials. The minimum neutron fluence rate is 1E6 n/cm^2-s. The maximum neutron fluence rate is approximately 1.0 E11 n/cm^2-s. (both values are 1 MeV Si equivalent). The neutron fluence rate is determined using the previously-measured neutron radiation field for the FNI, performed in accordance with ASTM standards (ASTM F1190 &), and correlated to the measured reactor power level. The neutron dose is timed to meet the customer-specified fluence for the irradiation. Neutron dosimetry meeting ASTM standards (ASTM E265) is utilized to track and ensure irradiations meet the required minimum. The facility retains source-suitability with the Defense Logistics Agency (DLA) Laboratory Suitability Program for ASTM Test Method 1017. The DUTS are typically irradiation in an unbiased condition as per TM1017. If bias conditions are required, they can be maintained via dry thimbles connected to the irradiation volume.

4 Results

The device passed all parametric measurements within full temperature data sheet limits for the exposure level 1.0 × 10^{12} n/cm^2. The device marginally fails the room temperature data sheet limits for the parameters discussed in this section. These were the only parameters to experience significant drift when exposed up to 1.0 × 10^{12} n/cm^2. The data sheet parameters that were tested pre- and post-neutron radiation and their corresponding test names are included in Appendix A. Appendix B has the graphs showing the drift between pre- and post-neutron radiation for these parameters.

Dropout voltage (I_{LOAD} = 500 mA) experienced upward drift after exposure up to 1.0 × 10^{12} n/cm^2. This parameter is measured by test "50.3__DROPOUT_500MA." This parameter experienced an average upwards drift of 61 mV from an average of 211 mV to 272 mV.

FB pin voltage experienced upward drift after exposure up to 1.0 × 10^{12} n/cm^2. This parameter is measured by tests "60.1__VOUT_1MA_VINMIN," "60.2__VOUT_1MA_VINMAX," "60.3__VOUT_1mA_VINNOM," "60.4__VOUT_1A_VINNOM." These parameters experienced an average upward drift of 12 mV from an average of 1.214 V to 1.226 V.

A Test Results

Table A-1. TPS73801-SEP Data Sheet Parameters With Test Numbers

PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT	Test# or Name
V_{FB} FB pin voltage	T_J = 25°C, V_{IN} = 2.21 V, I_{LOAD} = 1 mA	1.192	1.21	1.228	V	60.1__VOUT_1MA_VINMIN
	T_J = 25°C, V_{IN} = 20 V, I_{LOAD} = 1 mA	1.174	1.21	1.246	V	60.2__VOUT_1MA_VINMAX
	T_J = 25°C, V_{IN} = 2.5 V, I_{LOAD} = 1 mA	1.174	1.21	1.246	V	60.3__VOUT_1mA_VINNOM
	T_J = 25°C, V_{IN} = 2.5 V, I_{LOAD} = 1 A	1.174	1.21	1.246	V	60.4__VOUT_1A_VINNOM
Line regulation	T_J = 25°C, ΔV_{IN} = 2.21 V to 20 V, I_{LOAD} = 1 mA		1.5	5	mV	60.5__LINE REG
Load regulation	T_J = 25°C, V_{IN} = 2.5 V, ΔI_{LOAD} = 1 mA to 1 A		2	8	mV	60.6__LOAD REG
V_{DO} Dropout voltage V_{IN} = $V_{OUT(NOMINAL)}$	T_J = 25°C, I_{LOAD} = 1 mA		0.02	0.06	V	50.1__DROPOUT_1MA
	T_J = 25°C, I_{LOAD} = 100 mA		0.1	0.17	V	50.2__DROPOUT_100MA
	T_J = 25°C, I_{LOAD} = 500 mA		0.19	0.27	V	50.3__DROPOUT_500MA
	T_J = 25°C, I_{LOAD} = 1 A		0.24	0.3	V	50.4__DROPOUT_1000MA
I_{GND} GND pin current V_{IN} = $V_{OUT(NOMINAL)}$ + 1	T_J = 25°C, I_{LOAD} = 0 mA		1	1.5	mA	55.1__GND_CURRENT_0mA
	T_J = 25°C, I_{LOAD} = 1 mA		1.1	1.6	mA	55.2__GND_CURRENT_1mA
	T_J = 25°C, I_{LOAD} = 100 mA		3.8	5.5	mA	55.3__GND_CURRENT_100mA
	T_J = 25°C, I_{LOAD} = 500 mA		15	25	mA	55.4__GND_CURRENT_500mA
	T_J = 25°C, I_{LOAD} = 1 A		35	80	mA	55.5__GND_CURRENT_1000m
I_{FB} FB pin bias current	T_J = 25°C		3	10	µA	15.5__I_FB_pin
I_{EN} EN pin current	T_J = 25°C, V_{EN} = 0 V		0.01	1	µA	15.1__I_EN_0V
	T_J = 25°C, V_{EN} = 20 V		3	30	µA	15.2__I_EN_20V
Quiescent current in shutdown	T_J = 25°C, V_{IN} = 6 V, V_{EN} = 0 V		0.01	1	µA	30.1__IQ_SHUTDOWN_VIN_6V
I_{REV} Input reverse leakage current	T_J = 25°C, V_{IN} = –20 V, V_{OUT} = 0 V			1	mA	5.1__IIL_VIN_-20V
I_{RO} Reverse output current	T_J = 25°C, V_{OUT} = 1.21 V, V_{IN} < 1.21 V		300	600	µA	4.1__IRO_VOUT_1.21_VIN_1.21V
						4.2__IRO_VOUT_1.21_VIN_0V

B Test Results

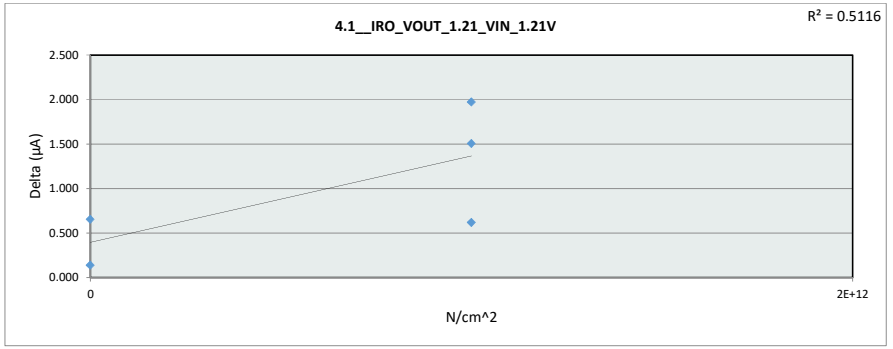
Appendix B shows the detailed test results.

NDD Report - Parametric Drift Graphs

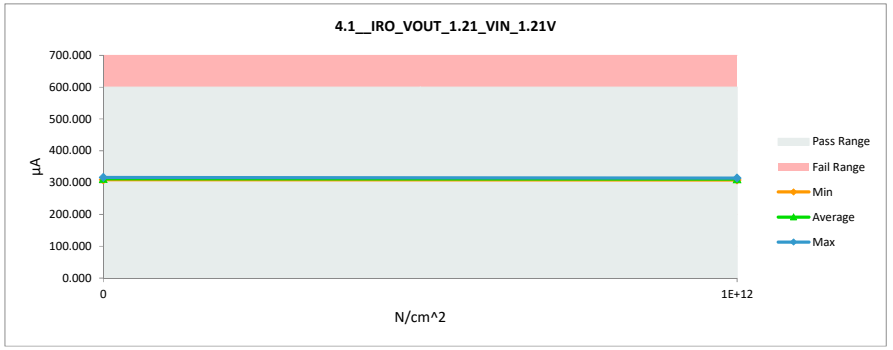
TPS73801MDCQPSEP

NDD Report - Parametric Drift Graphs
TPS73801-SEP

	4.1__IRO_VOUT_1.21_VIN_1.21V		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	µA	µA	
Max Limit	600	600	
Min Limit	0	0	
N/cm^2	Serial #	Pre	Post	Delta
0	1	308.552	308.691	0.139
0	10	315.400	316.056	0.655
1E+12	2	312.225	314.198	1.973
1E+12	4	310.877	311.497	0.620
1E+12	11	306.987	308.494	1.507
	Max	315.400	316.056	1.973
	Average	310.808	311.787	0.979
	Min	306.987	308.494	0.139
	Std Dev	3.271	3.337	0.743

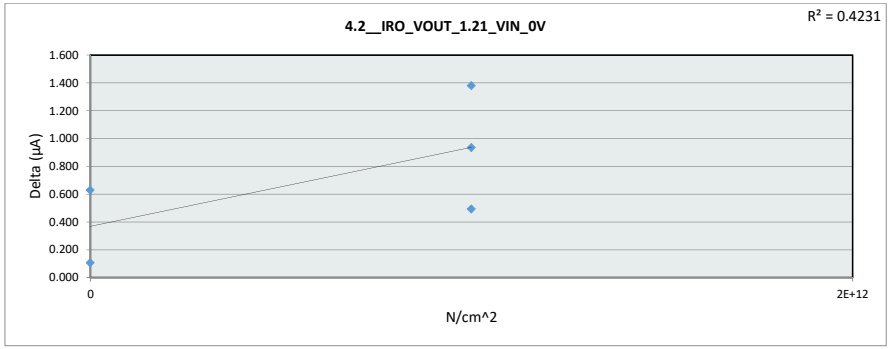


	4.1__IRO_VOUT_1.21_VIN_1.21V	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	600	µA
Min Limit	0	µA
N/cm^2	0	1E+12
LL	0.000	0.000
Min	308.691	308.494
Average	312.373	311.396
Max	316.056	314.199
UL	600.000	600.000

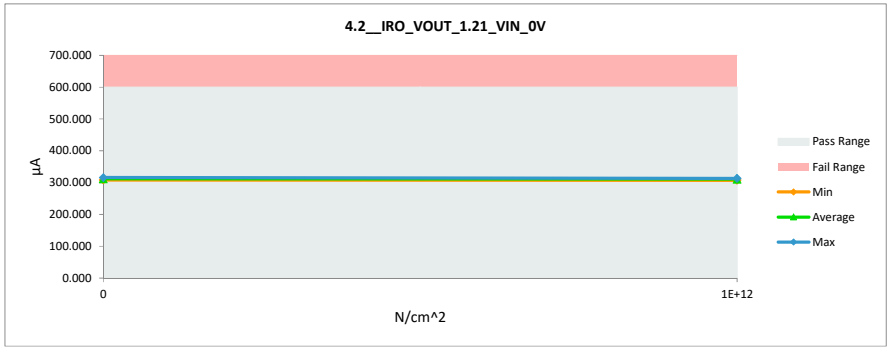


NDD Report - Parametric Drift Graphs
TPS73801-SEP

		4.2__IRO_VOUT_1.21_VIN_0V		
Test Site		Dallas	Dallas	
Tester		ETS364	ETS364	
Test Number		EB062206	EB062206	
Unit		µA	µA	
Max Limit		600	600	
Min Limit		0	0	
N/cm^2	Serial #	Pre	Post	Delta
0	1	308.186	308.294	0.108
0	10	315.118	315.747	0.629
1E+12	2	311.951	313.331	1.380
1E+12	4	310.612	311.106	0.494
1E+12	11	306.710	307.646	0.936
	Max	315.118	315.747	1.380
	Average	310.516	311.225	0.709
	Min	306.710	307.646	0.108
	Std Dev	3.285	3.402	0.478

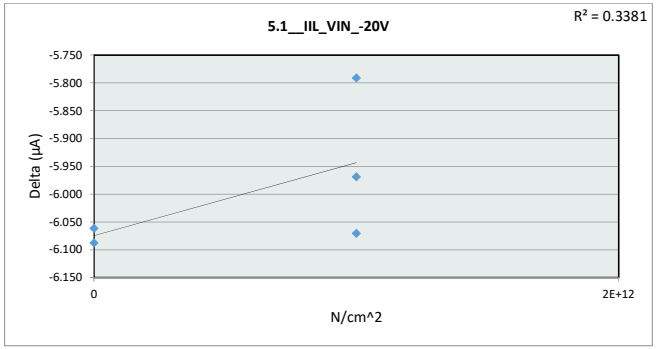


	4.2__IRO_VOUT_1.21_VIN_0V	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	600	µA
Min Limit	0	µA
N/cm^2	0	1E+12
LL	0.000	0.000
Min	308.294	307.646
Average	312.021	310.694
Max	315.748	313.331
UL	600.000	600.000

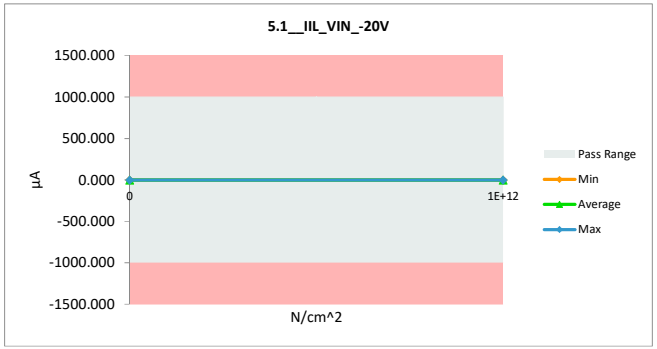


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	5.1__IIL_VIN_-20V		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	µA	µA	
Max Limit	1000	1000	
Min Limit	-1000	-1000	
N/cm^2	Serial #	Pre	Post	Delta
0	1	2.693	-3.395	-6.088
0	10	2.959	-3.102	-6.061
1E+12	2	2.607	-3.184	-5.791
1E+12	4	2.892	-3.178	-6.070
1E+12	11	3.053	-2.916	-5.969
	Max	3.053	-2.916	-5.791
	Average	2.841	-3.155	-5.996
	Min	2.607	-3.395	-6.088
	Std Dev	0.186	0.172	0.123



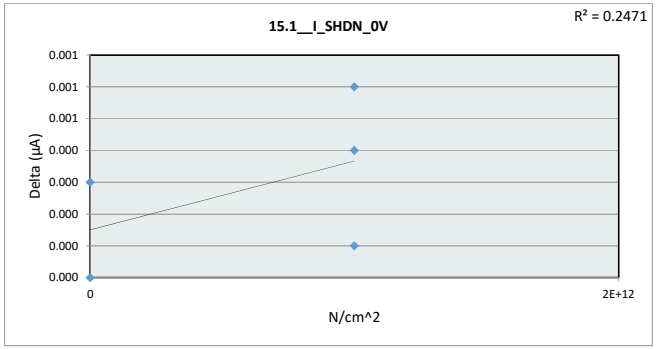
	5.1__IIL_VIN_-20V	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	1000	µA
Min Limit	-1000	µA
N/cm^2	0	1E+12
LL	-1000.000	-1000.000
Min	-3.395	-3.184
Average	-3.248	-3.093
Max	-3.102	-2.916
UL	1000.000	1000.000



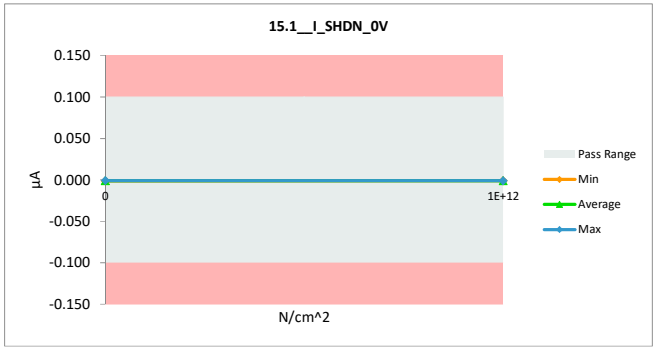
NDD Report - Parametric Drift Graphs
TPS73801-SEP

	15.1__I_SHDN_0V	
Test Site	Dallas	Dallas
Tester	ETS364	ETS364
Test Number	EB062206	EB062206
Unit	µA	µA
Max Limit	0.1	0.1
Min Limit	-0.1	-0.1

N/cm^2	Serial #	Pre	Post	Delta
0	1	-0.001	-0.001	0.000
0	10	-0.001	-0.001	0.000
1E+12	2	-0.001	-0.001	0.000
1E+12	4	-0.001	-0.001	0.000
1E+12	11	-0.002	-0.001	0.001
	Max	-0.001	-0.001	0.001
	Average	-0.001	-0.001	0.000
	Min	-0.002	-0.001	0.000
	Std Dev	0.000	0.000	0.000

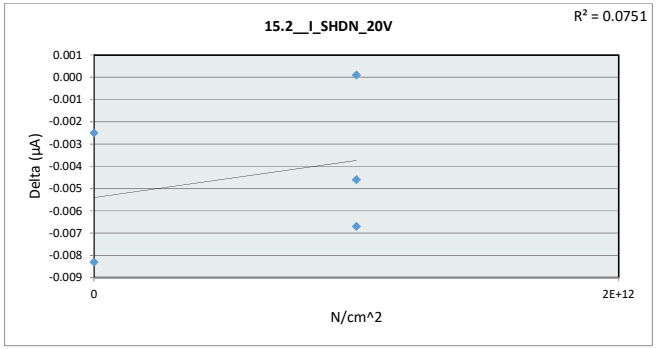


	15.1__I_SHDN_0V	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	0.1	µA
Min Limit	-0.1	µA
N/cm^2	0	1E+12
LL	-0.100	-0.100
Min	-0.001	-0.001
Average	-0.001	-0.001
Max	-0.001	-0.001
UL	0.100	0.100

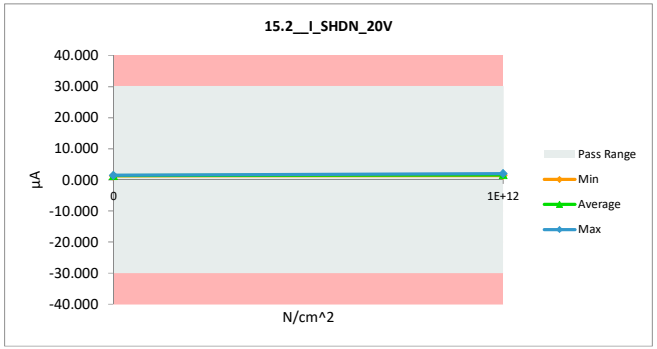


NDD Report - Parametric Drift Graphs
TPS73801-SEP

		15.2__I_SHDN_20V		
	Test Site	Dallas	Dallas	
	Tester	ETS364	ETS364	
	Test Number	EB062206	EB062206	
	Unit	µA	µA	
	Max Limit	30	30	
	Min Limit	-30	-30	
N/cm^2	Serial #	Pre	Post	Delta
0	1	1.262	1.259	-0.002
0	10	1.459	1.451	-0.008
1E+12	2	1.430	1.426	-0.005
1E+12	4	1.431	1.424	-0.007
1E+12	11	2.016	2.016	0.000
	Max	2.016	2.016	0.000
	Average	1.520	1.515	-0.004
	Min	1.262	1.259	-0.008
	Std Dev	0.288	0.290	0.003

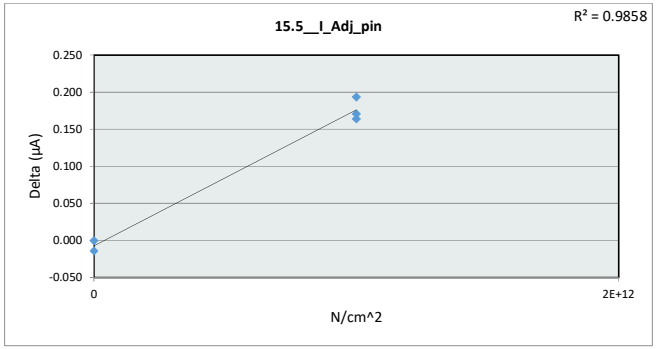


	15.2__I_SHDN_20V	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	30	µA
Min Limit	-30	µA
N/cm^2	0	1E+12
LL	-30.000	-30.000
Min	1.259	1.425
Average	1.355	1.622
Max	1.451	2.016
UL	30.000	30.000

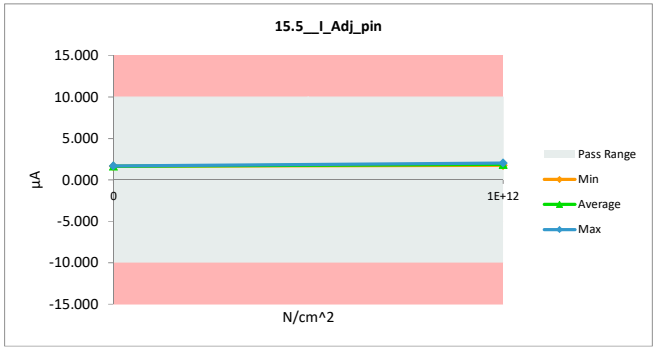


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	15.5__I_Adj_pin		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	µA	µA	
Max Limit	10	10	
Min Limit	-10	-10	
N/cm^2	Serial #	Pre	Post	Delta
0	1	1.683	1.683	0.000
0	10	1.651	1.637	-0.014
1E+12	2	1.647	1.811	0.164
1E+12	4	1.576	1.747	0.171
1E+12	11	1.820	2.014	0.194
	Max	1.820	2.014	0.194
	Average	1.675	1.778	0.103
	Min	1.576	1.637	-0.014
	Std Dev	0.090	0.147	0.101

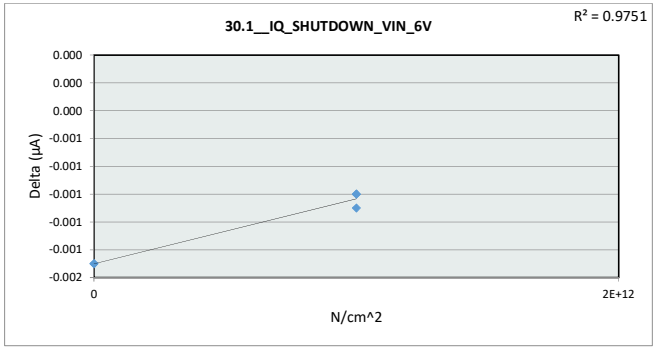


	15.5__I_Adj_pin	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	10	µA
Min Limit	-10	µA
N/cm^2	0	1E+12
LL	-10.000	-10.000
Min	1.637	1.747
Average	1.660	1.857
Max	1.683	2.014
UL	10.000	10.000

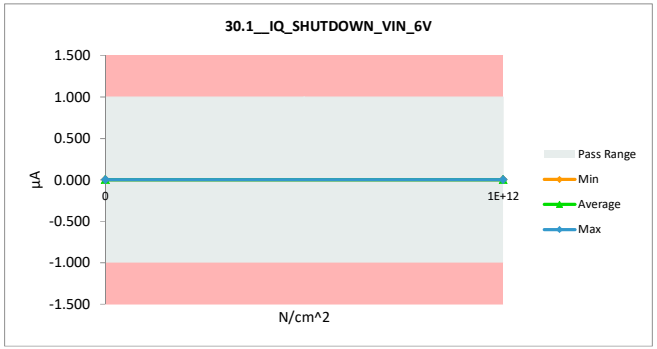


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	30.1__IQ_SHUTDOWN_VIN_6V		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	µA	µA	
Max Limit	1	1	
Min Limit	-1	-1	
N/cm^2	Serial #	Pre	Post	Delta
0	1	0.004	0.002	-0.002
0	10	0.004	0.002	-0.001
1E+12	2	0.004	0.003	-0.001
1E+12	4	0.004	0.003	-0.001
1E+12	11	0.004	0.003	-0.001
	Max	0.004	0.003	-0.001
	Average	0.004	0.003	-0.001
	Min	0.004	0.002	-0.002
	Std Dev	0.000	0.000	0.000



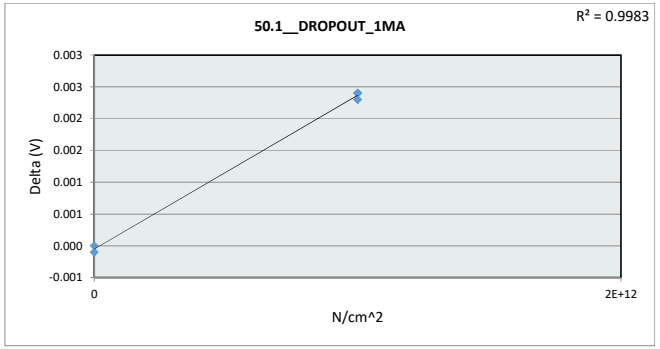
	30.1__IQ_SHUTDOWN_VIN_6V	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	1	µA
Min Limit	-1	µA
N/cm^2	0	1E+12
LL	-1.000	-1.000
Min	0.002	0.003
Average	0.002	0.003
Max	0.002	0.003
UL	1.000	1.000



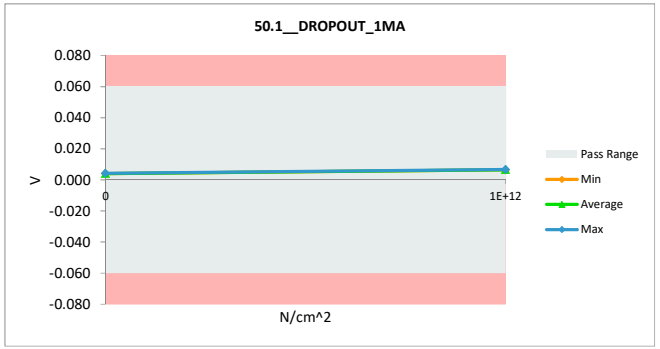
NDD Report - Parametric Drift Graphs
TPS73801-SEP

	50.1__DROPOUT_1MA	
Test Site	Dallas	Dallas
Tester	ETS364	ETS364
Test Number	EB062206	EB062206
Unit	V	V
Max Limit	0.06	0.06
Min Limit	-0.06	-0.06

N/cm^2	Serial #	Pre	Post	Delta
0	1	0.004	0.004	0.000
0	10	0.004	0.004	0.000
1E+12	2	0.004	0.007	0.002
1E+12	4	0.004	0.006	0.002
1E+12	11	0.004	0.007	0.002
Max		0.004	0.007	0.002
Average		0.004	0.006	0.001
Min		0.004	0.004	0.000
Std Dev		0.000	0.001	0.001

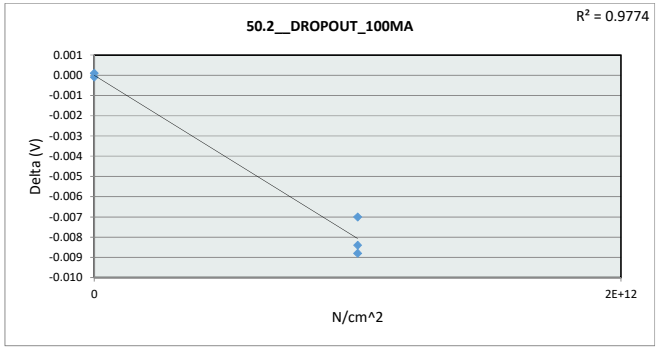


	50.1__DROPOUT_1MA	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	0.06	V
Min Limit	-0.06	V
N/cm^2	0	1E+12
LL	-0.060	-0.060
Min	0.004	0.006
Average	0.004	0.007
Max	0.004	0.007
UL	0.060	0.060

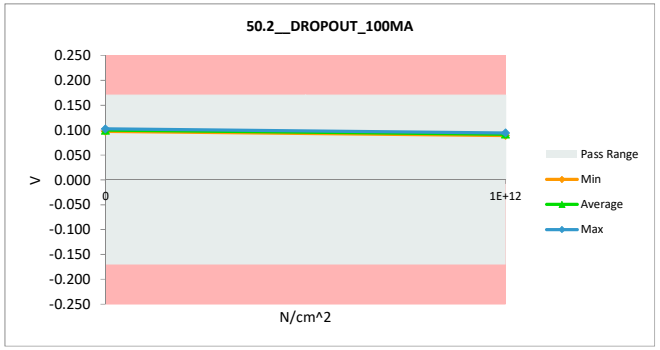


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	50.2__DROPOUT_100MA		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	V	V	
Max Limit	0.17	0.17	
Min Limit	-0.17	-0.17	
N/cm^2	Serial #	Pre	Post	Delta
0	1	0.103	0.103	0.000
0	10	0.097	0.097	0.000
1E+12	2	0.103	0.094	-0.009
1E+12	4	0.098	0.089	-0.008
1E+12	11	0.099	0.092	-0.007
	Max	0.103	0.103	0.000
	Average	0.100	0.095	-0.005
	Min	0.097	0.089	-0.009
	Std Dev	0.003	0.005	0.004

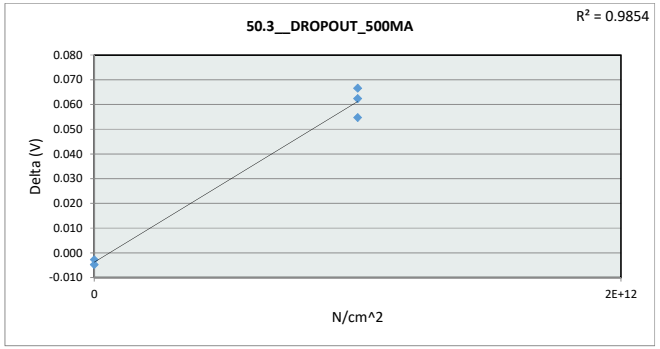


	50.2__DROPOUT_100MA	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	0.17	V
Min Limit	-0.17	V
N/cm^2	0	1E+12
LL	-0.170	-0.170
Min	0.097	0.089
Average	0.100	0.092
Max	0.103	0.095
UL	0.170	0.170

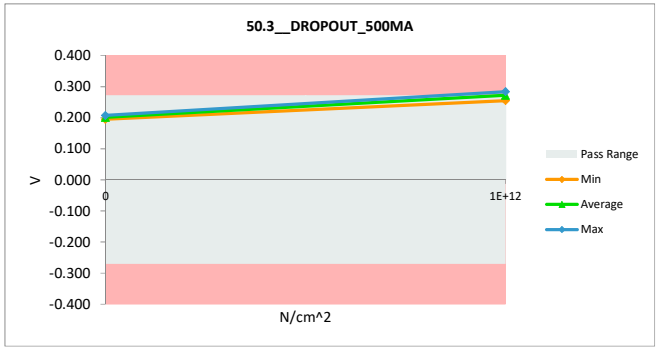


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	50.3__DROPOUT_500MA		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	V	V	
Max Limit	0.27	0.27	
Min Limit	-0.27	-0.27	
N/cm^2	Serial #	Pre	Post	Delta
0	1	0.212	0.207	-0.005
0	10	0.198	0.195	-0.003
1E+12	2	0.215	0.278	0.062
1E+12	4	0.200	0.255	0.055
1E+12	11	0.217	0.284	0.067
	Max	0.217	0.284	0.067
	Average	0.208	0.244	0.035
	Min	0.198	0.195	-0.005
	Std Dev	0.009	0.041	0.036



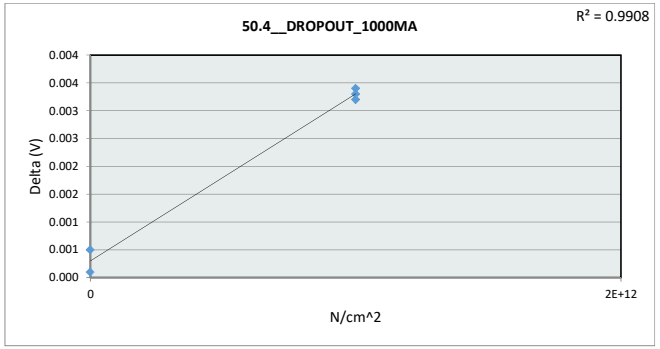
	50.3__DROPOUT_500MA	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	0.27	V
Min Limit	-0.27	V
N/cm^2	0	1E+12
LL	-0.270	-0.270
Min	0.195	0.255
Average	0.201	0.272
Max	0.207	0.284
UL	0.270	0.270



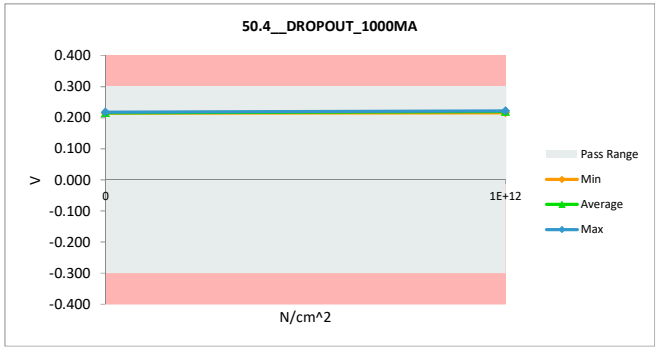
NDD Report - Parametric Drift Graphs
TPS73801-SEP

	50.4__DROPOUT_1000MA	
Test Site	Dallas	Dallas
Tester	ETS364	ETS364
Test Number	EB062206	EB062206
Unit	V	V
Max Limit	0.3	0.3
Min Limit	-0.3	-0.3

N/cm^2	Serial #	Pre	Post	Delta
0	1	0.217	0.218	0.000
0	10	0.214	0.215	0.000
1E+12	2	0.219	0.222	0.003
1E+12	4	0.213	0.216	0.003
1E+12	11	0.219	0.222	0.003
	Max	0.219	0.222	0.003
	Average	0.216	0.219	0.002
	Min	0.213	0.215	0.000
	Std Dev	0.003	0.003	0.002

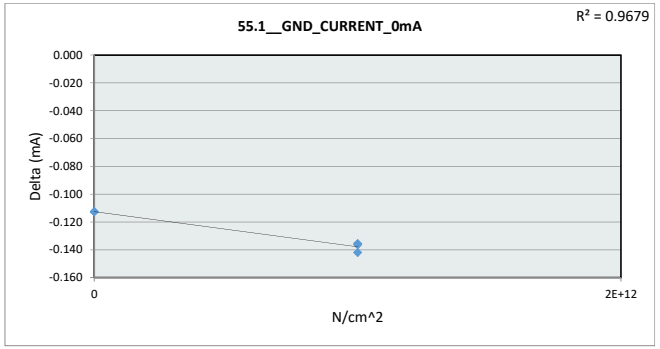


	50.4__DROPOUT_1000MA	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	0.3	V
Min Limit	-0.3	V
N/cm^2	0	1E+12
LL	-0.300	-0.300
Min	0.215	0.216
Average	0.216	0.220
Max	0.218	0.222
UL	0.300	0.300

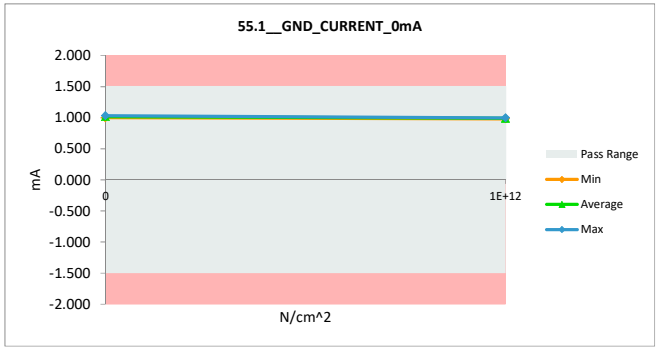


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	55.1__GND_CURRENT_0mA		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	mA	mA	
Max Limit	1.5	1.5	
Min Limit	-1.5	-1.5	
N/cm^2	Serial #	Pre	Post	Delta
0	1	1.113	1.000	-0.112
0	10	1.146	1.033	-0.113
1E+12	2	1.126	0.991	-0.135
1E+12	4	1.140	0.998	-0.142
1E+12	11	1.119	0.982	-0.136
	Max	1.146	1.033	-0.112
	Average	1.129	1.001	-0.128
	Min	1.113	0.982	-0.142
	Std Dev	0.014	0.019	0.014

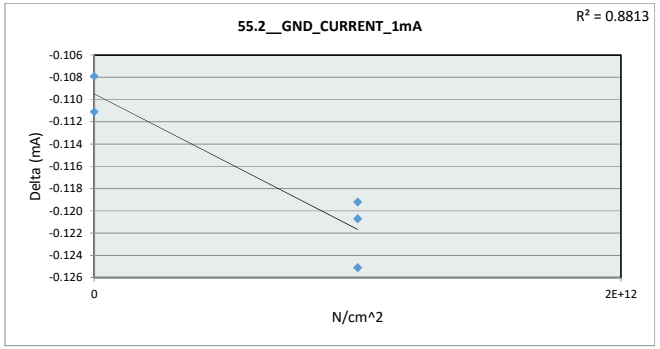


	55.1__GND_CURRENT_0mA	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	1.5	mA
Min Limit	-1.5	mA
N/cm^2	0	1E+12
LL	-1.500	-1.500
Min	1.000	0.982
Average	1.017	0.991
Max	1.033	0.999
UL	1.500	1.500

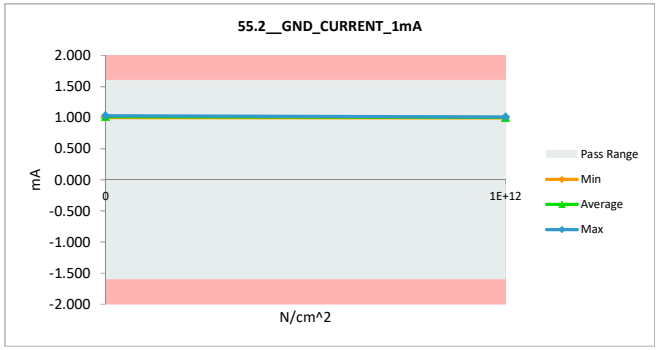


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	55.2__GND_CURRENT_1mA		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	mA	mA	
Max Limit	1.6	1.6	
Min Limit	-1.6	-1.6	
N/cm^2	Serial #	Pre	Post	Delta
0	1	1.110	1.002	-0.108
0	10	1.145	1.033	-0.111
1E+12	2	1.124	1.003	-0.121
1E+12	4	1.138	1.013	-0.125
1E+12	11	1.118	0.999	-0.119
	Max	1.145	1.033	-0.108
	Average	1.127	1.010	-0.117
	Min	1.110	0.999	-0.125
	Std Dev	0.014	0.014	0.007

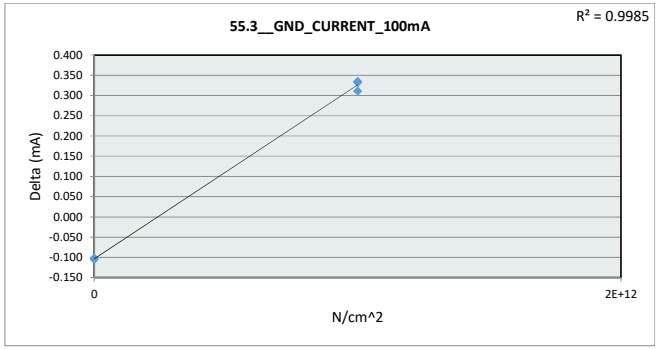


	55.2__GND_CURRENT_1mA	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	1.6	mA
Min Limit	-1.6	mA
N/cm^2	0	1E+12
LL	-1.600	-1.600
Min	1.002	0.999
Average	1.018	1.005
Max	1.034	1.013
UL	1.600	1.600

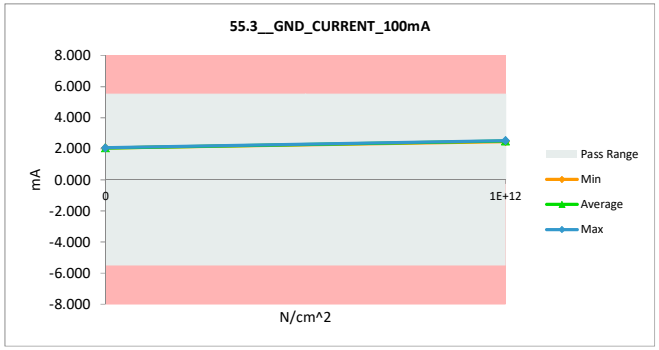


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	55.3__GND_CURRENT_100mA		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	mA	mA	
Max Limit	5.5	5.5	
Min Limit	-5.5	-5.5	
N/cm^2	Serial #	Pre	Post	Delta
0	1	2.163	2.061	-0.102
0	10	2.161	2.056	-0.105
1E+12	2	2.173	2.504	0.332
1E+12	4	2.153	2.464	0.311
1E+12	11	2.195	2.530	0.335
	Max	2.195	2.530	0.335
	Average	2.169	2.323	0.154
	Min	2.153	2.056	-0.105
	Std Dev	0.016	0.243	0.235

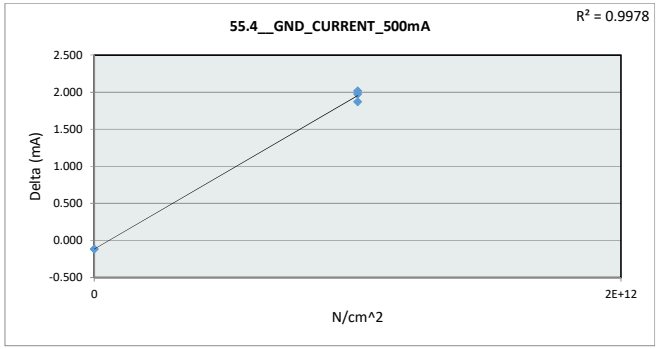


	55.3__GND_CURRENT_100mA	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	5.5	mA
Min Limit	-5.5	mA
N/cm^2	0	1E+12
LL	-5.500	-5.500
Min	2.056	2.464
Average	2.058	2.499
Max	2.061	2.530
UL	5.500	5.500

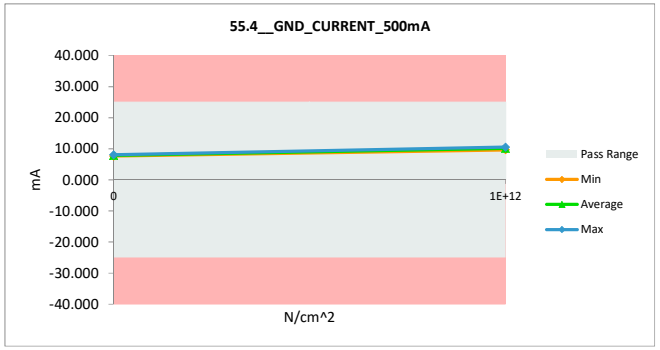


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	55.4__GND_CURRENT_500mA		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	mA	mA	
Max Limit	25	25	
Min Limit	-25	-25	
N/cm^2	Serial #	Pre	Post	Delta
0	1	8.169	8.053	-0.116
0	10	7.743	7.626	-0.116
1E+12	2	8.198	10.171	1.973
1E+12	4	7.779	9.649	1.870
1E+12	11	8.515	10.531	2.016
	Max	8.515	10.531	2.016
	Average	8.081	9.206	1.125
	Min	7.743	7.626	-0.116
	Std Dev	0.322	1.295	1.135

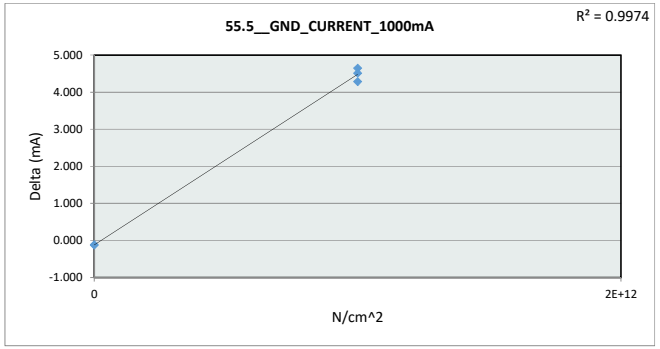


	55.4__GND_CURRENT_500mA	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	25	mA
Min Limit	-25	mA
N/cm^2	0	1E+12
LL	-25.000	-25.000
Min	7.626	9.649
Average	7.840	10.117
Max	8.053	10.531
UL	25.000	25.000

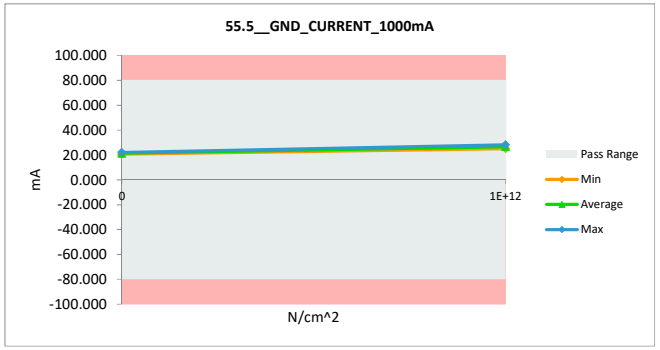


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	55.5__GND_CURRENT_1000mA		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	mA	mA	
Max Limit	80	80	
Min Limit	-80	-80	
N/cm^2	Serial #	Pre	Post	Delta
0	1	22.252	22.128	-0.124
0	10	20.783	20.673	-0.110
1E+12	2	22.377	26.890	4.513
1E+12	4	20.910	25.190	4.281
1E+12	11	23.472	28.114	4.642
	Max	23.472	28.114	4.642
	Average	21.959	24.599	2.640
	Min	20.783	20.673	-0.124
	Std Dev	1.122	3.142	2.520

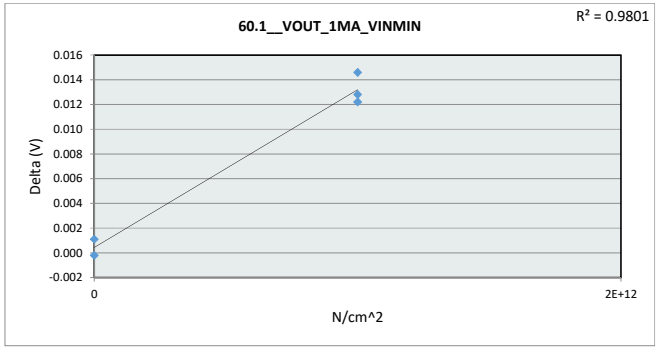


	55.5__GND_CURRENT_1000mA	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	80	mA
Min Limit	-80	mA
N/cm^2	0	1E+12
LL	-80.000	-80.000
Min	20.673	25.190
Average	21.400	26.731
Max	22.128	28.114
UL	80.000	80.000

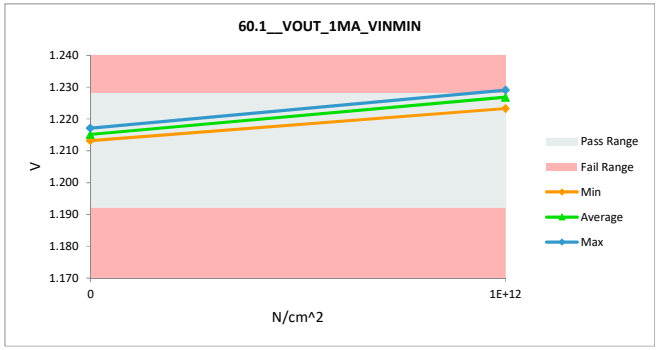


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	60.1__VOUT_1MA_VINMIN		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	V	V	
Max Limit	1.228	1.228	
Min Limit	1.192	1.192	
N/cm^2	Serial #	Pre	Post	Delta
0	1	1.212	1.213	0.001
0	10	1.217	1.217	0.000
1E+12	2	1.211	1.223	0.013
1E+12	4	1.216	1.228	0.012
1E+12	11	1.214	1.229	0.015
	Max	1.217	1.229	0.015
	Average	1.214	1.222	0.008
	Min	1.211	1.213	0.000
	Std Dev	0.003	0.007	0.007

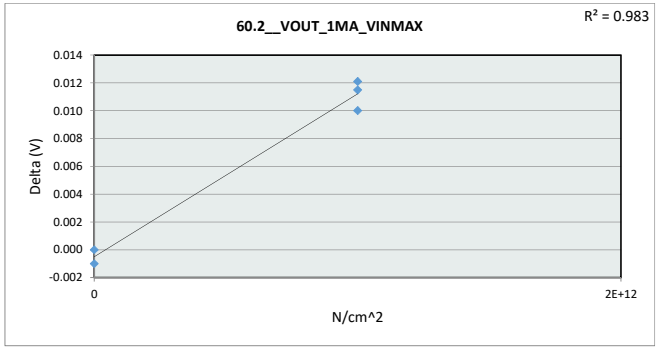


	60.1__VOUT_1MA_VINMIN	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	1.228	V
Min Limit	1.192	V
N/cm^2	0	1E+12
LL	1.192	1.192
Min	1.213	1.223
Average	1.215	1.227
Max	1.217	1.229
UL	1.228	1.228

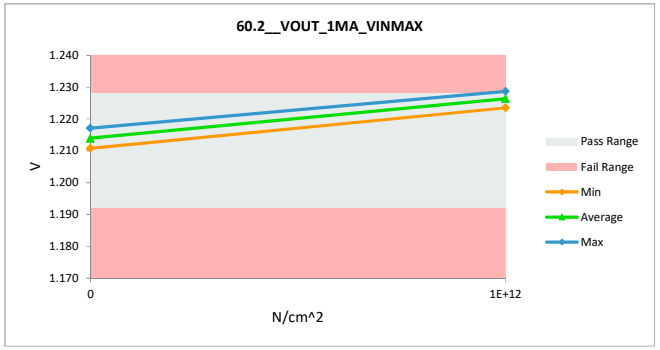


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	60.2__VOUT_1MA_VINMAX		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	V	V	
Max Limit	1.228	1.228	
Min Limit	1.192	1.192	
N/cm^2	Serial #	Pre	Post	Delta
0	1	1.212	1.211	-0.001
0	10	1.217	1.217	0.000
1E+12	2	1.212	1.224	0.012
1E+12	4	1.217	1.227	0.010
1E+12	11	1.217	1.229	0.012
Max		1.217	1.229	0.012
Average		1.215	1.221	0.007
Min		1.212	1.211	-0.001
Std Dev		0.003	0.007	0.006

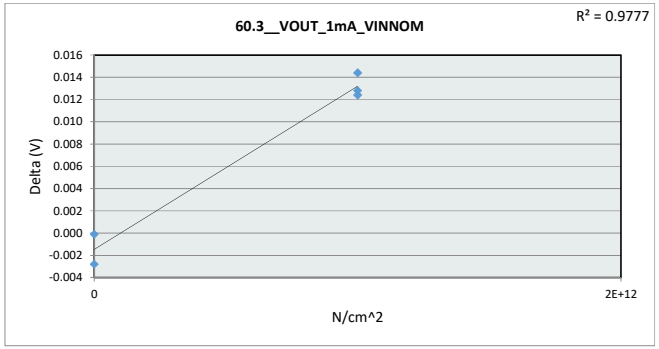


	60.2__VOUT_1MA_VINMAX	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	1.228	V
Min Limit	1.192	V
N/cm^2	0	1E+12
LL	1.192	1.192
Min	1.211	1.224
Average	1.214	1.226
Max	1.217	1.229
UL	1.228	1.228

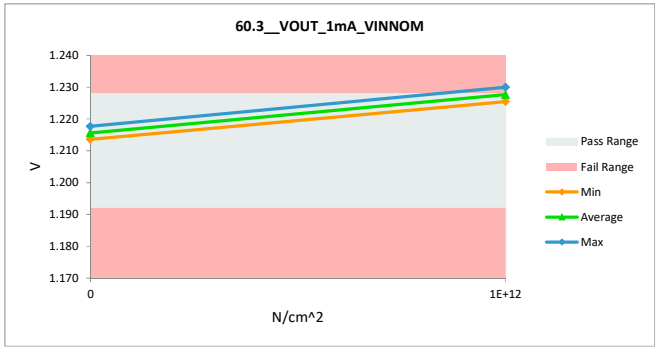


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	60.3__VOUT_1mA_VINNOM		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	V	V	
Max Limit	1.228	1.228	
Min Limit	1.192	1.192	
N/cm^2	Serial #	Pre	Post	Delta
0	1	1.214	1.214	0.000
0	10	1.220	1.218	-0.003
1E+12	2	1.211	1.225	0.014
1E+12	4	1.218	1.230	0.012
1E+12	11	1.215	1.228	0.013
	Max	1.220	1.230	0.014
	Average	1.216	1.223	0.007
	Min	1.211	1.214	-0.003
	Std Dev	0.004	0.007	0.008



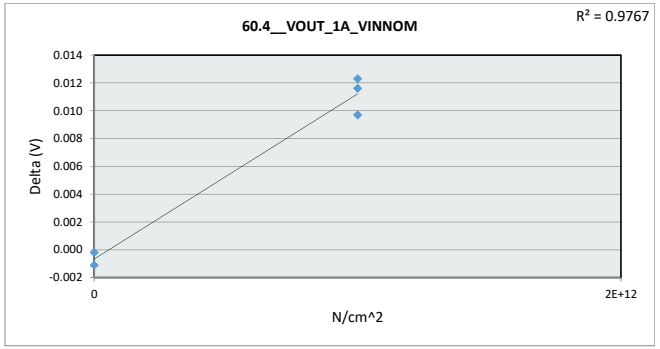
	60.3__VOUT_1mA_VINNOM		
Test Site	Dallas		
Tester	ETS364		
Test Number	EB062206		
Max Limit	1.228	V	
Min Limit	1.192	V	
N/cm^2	0	1E+12	
LL	1.192	1.192	
Min	1.214	1.226	
Average	1.216	1.228	
Max	1.218	1.230	
UL	1.228	1.228	



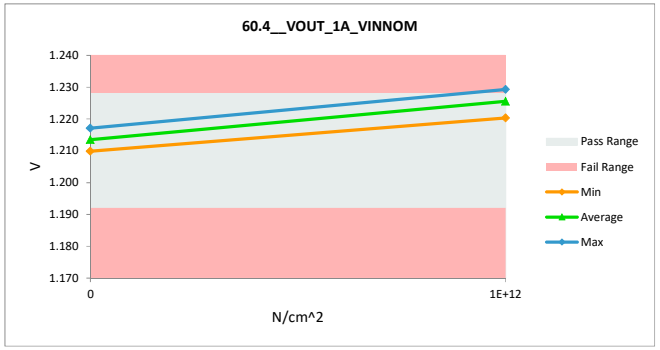
NDD Report - Parametric Drift Graphs
TPS73801-SEP

	60.4__VOUT_1A_VINNOM	
Test Site	Dallas	Dallas
Tester	ETS364	ETS364
Test Number	EB062206	EB062206
Unit	V	V
Max Limit	1.228	1.228
Min Limit	1.192	1.192

N/cm^2	Serial #	Pre	Post	Delta
0	1	1.210	1.210	0.000
0	10	1.218	1.217	-0.001
1E+12	2	1.211	1.220	0.010
1E+12	4	1.217	1.229	0.012
1E+12	11	1.215	1.227	0.012
	Max	1.218	1.229	0.012
	Average	1.214	1.221	0.006
	Min	1.210	1.210	-0.001
	Std Dev	0.004	0.008	0.007

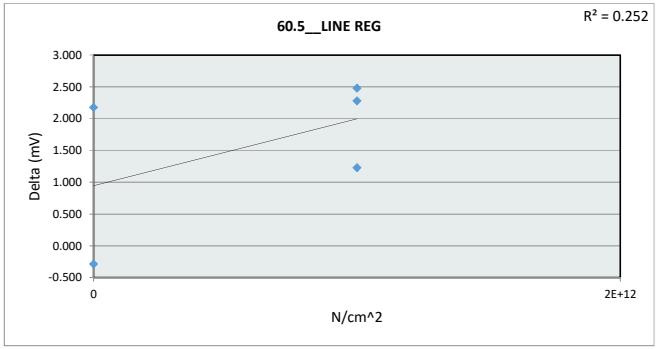


	60.4__VOUT_1A_VINNOM	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	1.228	V
Min Limit	1.192	V
N/cm^2	0	1E+12
LL	1.192	1.192
Min	1.210	1.220
Average	1.214	1.226
Max	1.217	1.229
UL	1.228	1.228

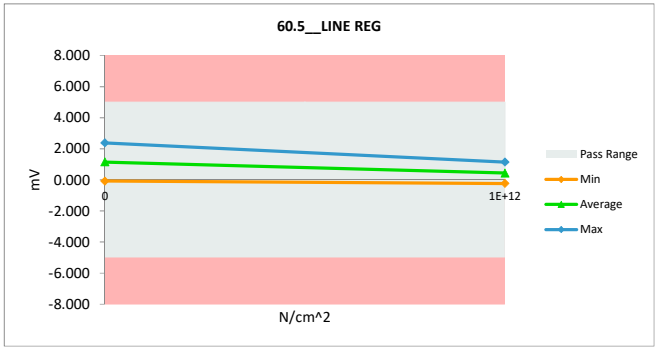


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	60.5__LINE REG		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	mV	mV	
Max Limit	5	5	
Min Limit	-5	-5	
N/cm^2	Serial #	Pre	Post	Delta
0	1	0.207	2.383	2.176
0	10	0.209	-0.079	-0.287
1E+12	2	-1.454	-0.226	1.228
1E+12	4	-1.141	1.140	2.280
1E+12	11	-2.086	0.394	2.480
	Max	0.209	2.383	2.480
	Average	-0.853	0.722	1.575
	Min	-2.086	-0.226	-0.287
	Std Dev	1.027	1.070	1.147

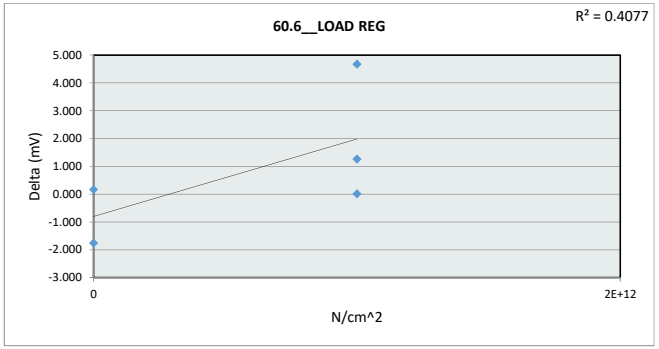


	60.5__LINE REG	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	5	mV
Min Limit	-5	mV
N/cm^2	0	1E+12
LL	-5.000	-5.000
Min	-0.079	-0.226
Average	1.152	0.436
Max	2.383	1.140
UL	5.000	5.000

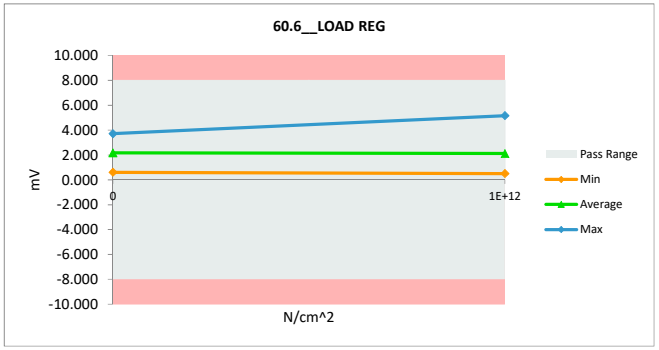


NDD Report - Parametric Drift Graphs
TPS73801-SEP

	60.6__LOAD REG		
Test Site	Dallas	Dallas	
Tester	ETS364	ETS364	
Test Number	EB062206	EB062206	
Unit	mV	mV	
Max Limit	8	8	
Min Limit	-8	-8	
N/cm^2	Serial #	Pre	Post	Delta
0	1	3.555	3.720	0.165
0	10	2.375	0.614	-1.762
1E+12	2	0.497	5.168	4.670
1E+12	4	0.657	0.672	0.015
1E+12	11	-0.761	0.498	1.259
	Max	3.555	5.168	4.670
	Average	1.265	2.134	0.870
	Min	-0.761	0.498	-1.762
	Std Dev	1.699	2.170	2.385



	60.6__LOAD REG	
Test Site	Dallas	
Tester	ETS364	
Test Number	EB062206	
Max Limit	8	mV
Min Limit	-8	mV
N/cm^2	0	1E+12
LL	-8.000	-8.000
Min	0.614	0.498
Average	2.167	2.113
Max	3.720	5.168
UL	8.000	8.000



C Specifications Requiring Clarification

Table C-1. Specifications Requiring Clarification - Set #1

Data sheet specifications and input condition for which there is no parametric data and, therefore, not in the NDD report. Functionality is assured by ATE testing.

PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
V_{IN} Input voltage	T_J = 25°C	2.2	1.9	20	V
V_{EN} Shutdown threshold	V_{OUT} = OFF to ON		0.9	2	V
	V_{OUT} = ON to OFF	0.15	0.75		V

Table C-2. Specifications Requiring Clarification - Set #2

Data sheet specifications for which no data is available in NDD report as specification was verified through bench testing. NDD testing is by ATE.

PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
V_N Output voltage noise	Tj = 25°C, C_{OUT} = 10 µF, I_{LOAD} = 1 A, BW = 10 Hz to 100 kHz		45		μV_{RMS}
PSRR Ripple rejection	Tj = 25°C, $V_{IN} – V_{OUT}$ = 1.5 V (avg), V_{RIPPLE} = 0.5 V_{P-P} f_{RIPPLE} = 120 Hz, I_{LOAD} = 0.75 A	55	63		dB
I_{CL} Current limit	Tj = 25°C, V_{IN} = 7 V, V_{OUT} = 0 V		2		A
	T_A = –55°C to 125°C, V_{IN} = $VOUT_{(NOMINAL)}$ + 1	1.6			A

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