

Test Data

NSP3-150-D2S

(AC85~264V And DC24V Battery Input)

NON-STOP POWER SUPPLY

Approved by : Osami Nakano

Prepared by : Naoki Yamamoto

INPUT : AC 85V ~ 264V
Battery 24V

OUTPUT : V1: 5V 15A (Peak 20A)
V2: 3.3V 5A (Peak 10A)
V3: 12V 4A (Peak 5A)
V4: -5V 0.5A
V5: -12V 0.5A
V6: 5Vs 1A

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Model	NSP3-150-D2S																
Item	Line Regulation																
V1:5V 15A																	
<p>at AC Input</p> <p>Legend: Rated Load</p>		<p>at AC Input</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Output Voltage [V]</th> <th>Fluctuation Value [%]</th> </tr> </thead> <tbody> <tr> <td>AC 85</td> <td>5.119</td> <td>2.38</td> </tr> <tr> <td>100</td> <td>5.119</td> <td>2.38</td> </tr> <tr> <td>240</td> <td>5.119</td> <td>2.38</td> </tr> <tr> <td>264</td> <td>5.119</td> <td>2.38</td> </tr> </tbody> </table>	Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]	AC 85	5.119	2.38	100	5.119	2.38	240	5.119	2.38	264	5.119	2.38
Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]															
AC 85	5.119	2.38															
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Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]															
DC 20	5.139	2.78															
24	5.139	2.78															
32	5.140	2.80															

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V2:3.3V 5A																
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Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]															
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Input Voltage [V]	Output Voltage [V]	Fluctuation Value [%]															
DC 20	-5.007	0.14															
24	-5.007	0.14															
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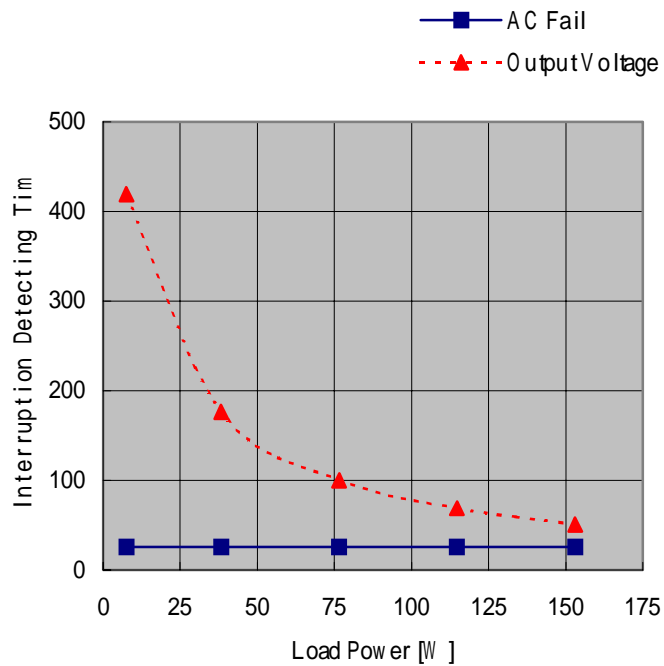
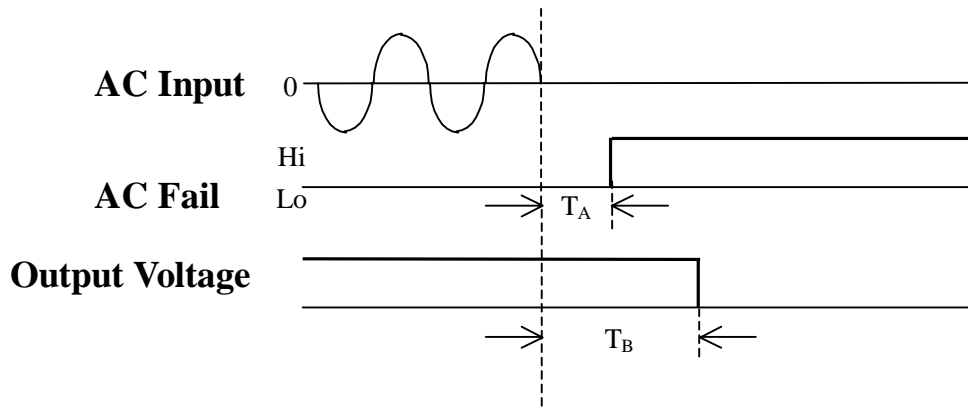
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Model	NSP3-150-D2S
Item	Instantaneous Interruption Compensation (by Load Power)

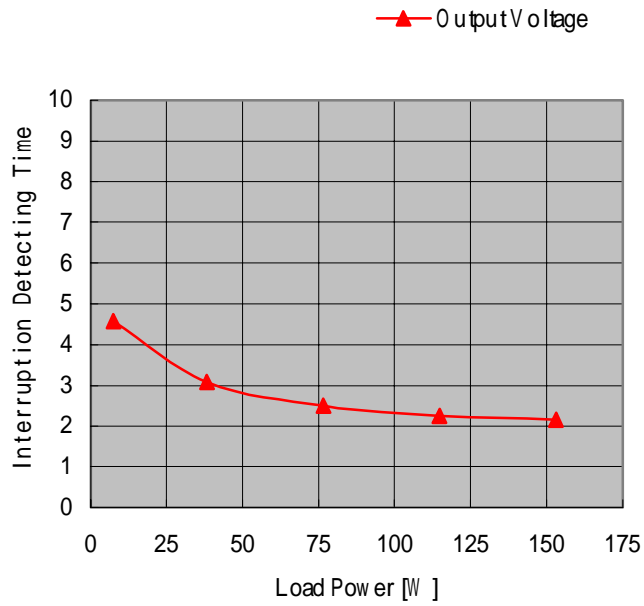
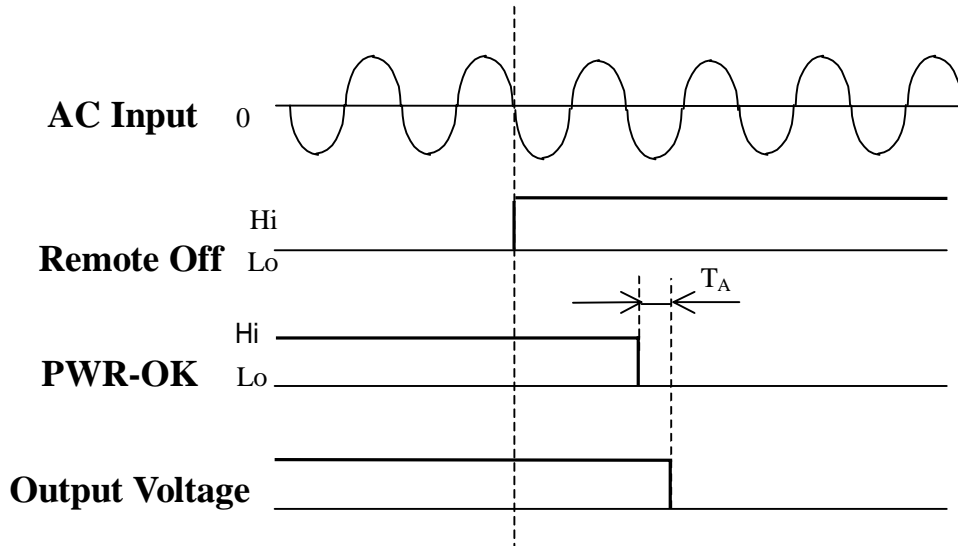
at AC Input Only (85V / 100V / 240V / 264V)



Load Power [W]	Interruption Detecting Time (ms)	
	AC Fail T_A	DC Output T_B
7.5	25.90	418.90
38.3	25.80	176.60
76.5	25.90	100.20
114.8	25.94	68.98
153	25.90	51.14

Model	NSP3-150-D2S
Item	Instantaneous Interruption Compensation (by Load Power)

at AC Input Only (85V / 100V / 240V / 264V)



Load Power [W]	Interruption Detecting Time (ms)
	T_A
7.5	4.50
38.3	3.00
76.5	2.46
114.8	2.18
153	2.10

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Item	Load Regulation
V3:12V 4A	
<p style="text-align: center;">at AC Input</p> <p style="text-align: center;">at Back up by Battery</p>	
at AC Input	
	Fluctuation Value [%]
Load Power [W]	Input Voltage AC85V Input Voltage AC100V Input Voltage AC240V Input Voltage AC264V
7.5	-1.43 -1.43 -1.43 -1.43
38.3	-1.28 -1.28 -1.28 -1.28
76.5	-0.26 -0.26 -0.26 -0.26
114.8	0.76 0.76 0.75 0.75
153	1.83 1.83 1.82 1.82
Load Condition	
	Load Current [A]
Load Power [W]	5V 3.3V 12V -5V -12V 5Vs
7.5	1.5 0 0 0 0 0
38.3	3.75 1.25 1 0.125 0.125 0.25
76.5	7.5 2.5 2 0.25 0.25 0.5
114.8	11.25 3.75 3 0.375 0.375 0.75
153	15 5 4 0.5 0.5 1
at Back up by Battery	
	Fluctuation Value [%]
Load Power [W]	Input Voltage DC20V Input Voltage DC24V Input Voltage DC32V
7.5	-1.50 -1.47 -1.42
38.3	-1.14 -1.12 -1.14
76.5	0.18 0.18 0.11
114.8	1.50 1.51 1.42
153	2.72 2.79 2.65
Load Condition	
	Load Current [A]
Load Power [W]	5V 3.3V 12V -5V -12V 5Vs
7.5	1.5 0 0 0 0 0
38.3	3.75 1.25 1 0.125 0.125 0.25
76.5	7.5 2.5 2 0.25 0.25 0.5
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76.5	-0.37	-0.37	-0.37																																														
114.8	-0.33	-0.33	-0.33																																														
153	-0.30	-0.30	-0.30																																														
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Model	NSP3-150-D2S							
Item	Ripple / Noise Voltage Test							
			V1	5V	V2	3.3V	V3	12V
Temperature	Input Voltage		Ripple (mV)	Noise (mV)	Ripple (mV)	Noise (mV)	Ripple (mV)	Noise (mV)
0	AC	85 V	15	/ 30	10	/ 45	40	/ 55
		100 V	15	/ 35	10	/ 45	40	/ 50
		240 V	15	/ 35	10	/ 45	40	/ 55
		264 V	15	/ 35	10	/ 45	45	/ 55
	DC	20 V	15	/ 20	10	/ 25	35	/ 40
		24 V	15	/ 20	10	/ 25	35	/ 40
25		32 V	15	/ 25	10	/ 35	35	/ 45
	AC	85 V	10	/ 35	10	/ 40	30	/ 55
		100 V	10	/ 35	10	/ 40	30	/ 50
		240 V	10	/ 35	10	/ 45	25	/ 50
		264 V	10	/ 35	10	/ 45	25	/ 60
	DC	20 V	10	/ 20	10	/ 25	25	/ 35
50		24 V	10	/ 15	10	/ 25	30	/ 35
		32 V	10	/ 15	10	/ 35	25	/ 40
	AC	85 V	10	/ 30	10	/ 45	25	/ 45
		100 V	10	/ 25	10	/ 40	25	/ 45
		240 V	10	/ 30	10	/ 45	25	/ 50
		264 V	10	/ 30	10	/ 45	25	/ 60
	DC	20 V	10	/ 15	10	/ 25	20	/ 30
		24 V	10	/ 15	10	/ 25	20	/ 25
		32 V	10	/ 15	10	/ 30	20	/ 25
Specification			50	/ 100	50	/ 100	150	/ 200
Judgement			Good		Good		Good	

			V4	-5V	V5	-12V	V6	5VS
Temperature	Input Voltage		Ripple (mV)	Noise (mV)	Ripple (mV)	Noise (mV)	Ripple (mV)	Noise (mV)
-5	AC	85 V	20	/ 45	20	/ 40	15	/ 35
		100 V	20	/ 45	20	/ 40	10	/ 35
		240 V	25	/ 45	20	/ 40	10	/ 35
		264 V	25	/ 45	20	/ 40	10	/ 35
	DC	20 V	20	/ 30	15	/ 30	10	/ 20
		24 V	20	/ 35	15	/ 30	10	/ 20
25		32 V	20	/ 35	15	/ 30	10	/ 20
	AC	85 V	15	/ 40	15	/ 40	10	/ 40
		100 V	15	/ 40	15	/ 35	10	/ 35
		240 V	15	/ 40	15	/ 40	10	/ 30
		264 V	15	/ 35	15	/ 35	10	/ 40
	DC	20 V	15	/ 30	10	/ 30	10	/ 15
50		24 V	15	/ 30	15	/ 25	10	/ 20
		32 V	15	/ 30	15	/ 30	10	/ 20
	AC	85 V	15	/ 35	20	/ 30	10	/ 30
		100 V	15	/ 35	15	/ 35	10	/ 35
		240 V	20	/ 35	20	/ 35	10	/ 45
		264 V	15	/ 40	20	/ 35	10	/ 40
	DC	20 V	15	/ 25	10	/ 25	10	/ 15
		24 V	15	/ 25	10	/ 25	10	/ 15
		32 V	15	/ 25	15	/ 25	10	/ 15
Specification			50	/ 100	100	/ 200	50	/ 100
Judgement			Good		Good		Good	

Model	NSP3-150-D2S				
Item	Over-Current Protection				
Temperature	Input Voltage		V1 5V	V2 3.3V	V3 12V
	0	AC 85 V	20.2 A	12.0 A	6.7 A
100 V		20.2 A	12.0 A	6.7 A	
240 V		20.2 A	12.0 A	6.7 A	
264 V		20.4 A	12.0 A	6.7 A	
DC 20 V		20.6 A	10.4 A	6.6 A	
24 V		21.0 A	12.6 A	7.0 A	
32 V		20.0 A	11.8 A	7.0 A	
25		AC 85 V	21.0 A	9.4 A	7.5 A
		100 V	21.2 A	9.4 A	7.5 A
		240 V	21.2 A	9.6 A	7.5 A
		264 V	21.2 A	9.6 A	7.5 A
		DC 20 V	19.6 A	9.4 A	6.5 A
	24 V	20.6 A	9.6 A	6.9 A	
50	32 V	20.4 A	9.6 A	7.2 A	
	AC 85 V	20.0 A	9.6 A	7.5 A	
	100 V	20.8 A	9.6 A	7.5 A	
	240 V	20.8 A	9.6 A	7.5 A	
	264 V	20.8 A	9.4 A	7.7 A	
	DC 20 V	19.0 A	8.8 A	6.2 A	
24 V	20.2 A	9.6 A	7.0 A		
32 V	20.0 A	8.6 A	6.8 A		
Specification			17A or More	8A or More	5A or More
Judgement			Good	Good	Good
Temperature	Input Voltage		V4 -5V	V5 -12V	V6 5VS
	-5	AC 85 V	1.00 A	0.96 A	2.26 A
100 V		1.00 A	0.96 A	2.28 A	
240 V		1.02 A	0.96 A	2.32 A	
264 V		1.02 A	0.96 A	2.32 A	
DC 20 V		0.78 A	0.70 A	1.62 A	
24 V		0.98 A	0.88 A	1.62 A	
32 V		1.06 A	1.00 A	1.62 A	
25		AC 85 V	0.92 A	0.86 A	2.00 A
		100 V	0.90 A	0.84 A	2.02 A
		240 V	0.90 A	0.84 A	2.08 A
		264 V	0.90 A	0.84 A	2.08 A
		DC 20 V	0.78 A	0.70 A	1.52 A
	24 V	0.96 A	0.96 A	1.52 A	
50	32 V	0.94 A	0.90 A	1.52 A	
	AC 85 V	0.84 A	0.74 A	1.84 A	
	100 V	0.82 A	0.74 A	1.88 A	
	240 V	0.82 A	0.74 A	1.88 A	
	264 V	0.82 A	0.76 A	1.88 A	
	DC 20 V	0.74 A	0.68 A	1.40 A	
24 V	0.88 A	0.84 A	1.42 A		
32 V	0.84 A	0.78 A	1.42 A		
Specification			-	-	-
Judgement			-	-	-

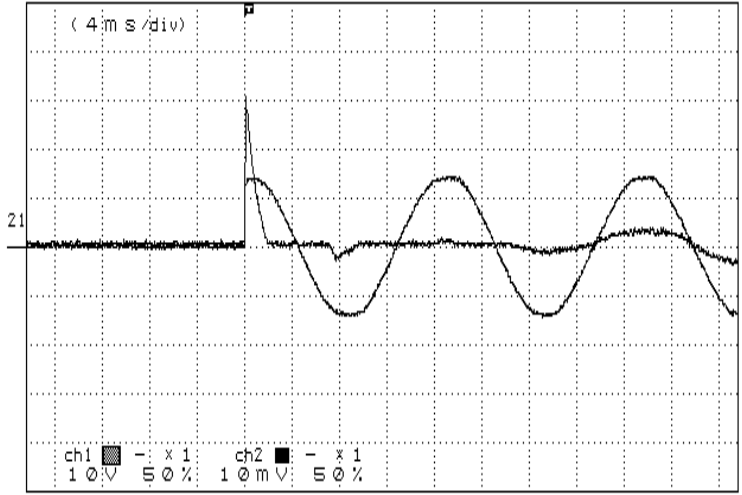
Model	NSP3-150-D2S
Item	Over-Voltage Protection

Temperature	Input Voltage	V1:5V	V2:3.3V	V3:12V
0	AC100V	6.3V	4.3V	14.8V
	AC240V	6.3V	4.3V	14.8V
	DC24V	6.3V	4.3V	14.8V
25	AC100V	6.3V	4.1V	14.9V
	AC240V	6.3V	4.1V	14.9V
	DC24V	6.4V	4.1V	14.9V
50	AC100V	6.3V	4.0V	15.1V
	AC240V	6.3V	4.0V	15.1V
	DC24V	6.4V	4.0V	15.1V
Specification		6.0 ~ 7.0V	3.8 ~ 4.3V	14 ~ 15.6V
Judgement		Good	Good	Good

Model	NSP3-150-D2S
Item	Inrush Current

Inrush Current Wave

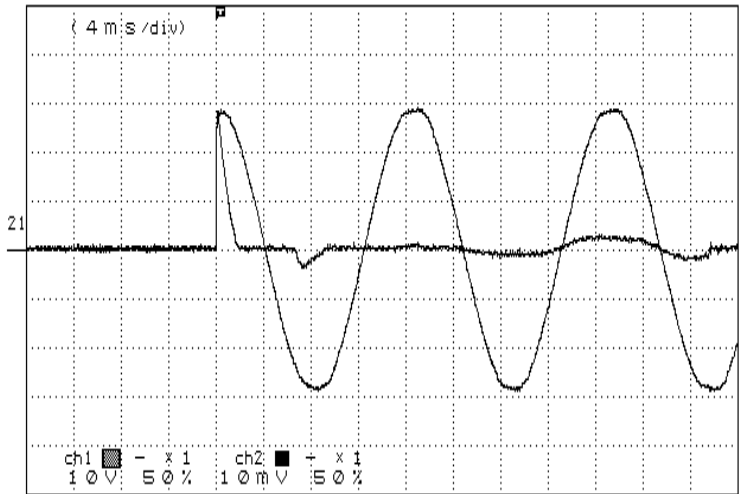
* MEM * trig: SINGLE CH1 leve ↑ 61% - 10%
 2ms x1/2 csr: OFF



OFF DARK LIGHT (scale)

Wave No1	
CH1	Measuring Point: Input Voltage Range 100V/DIV
CH2	Measuring Point: Input Current Range 10A/DIV
Time Line	4ms/DIV
Conditions	Input: AC100V 60Hz Load: Rated Load Temperature: 25
Note: Inrush Current Value: 28.0A	

* MEM * trig: SINGLE CH1 leve ↑ 61% - 10%
 2ms x1/2 csr: OFF



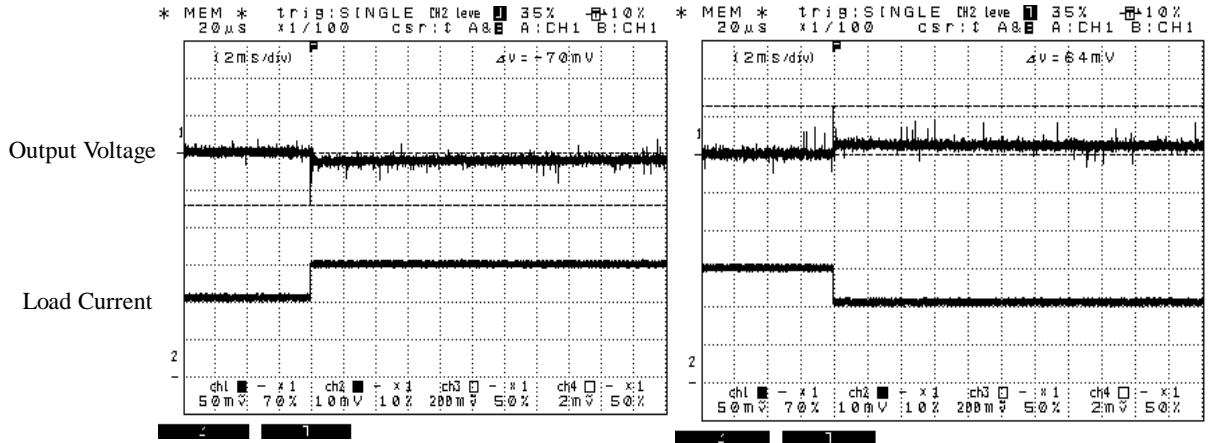
OFF DARK LIGHT (scale)

Wave No2	
CH1	Measuring Point: Input Voltage Range 100V/DIV
CH2	Measuring Point: Input Current Range 20A/DIV
Time Line	4ms/DIV
Conditions	Input: AC200V 60Hz Load: Rated Load Temperature: 25
Note: Inrush Current Value: 56.8A	

Model	NSP3-150-D2S
Item	Dynamic Load Response

V1: +5V 15A

70% Load 100% Load

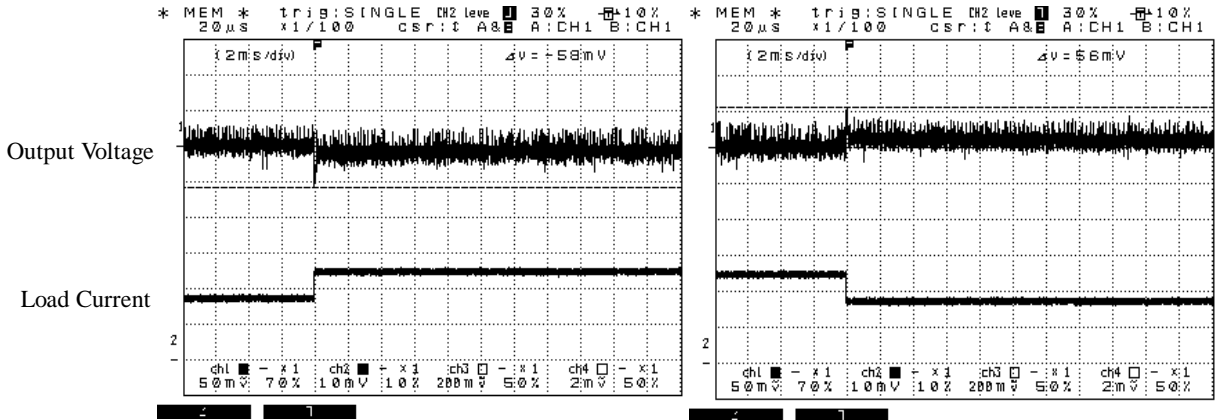


Sudden Fluctuation of Load	Fluctuation Value	ATX Specific Value	Judgement
70% Load 100% Load	- mV -70mV	± 250mV	Good
100% Load 70% Load	64mV - mV		Good

Model	NSP3-150-D2S
Item	Dynamic Load Response

V2: +3.3V 5A

70% Load 100% Load

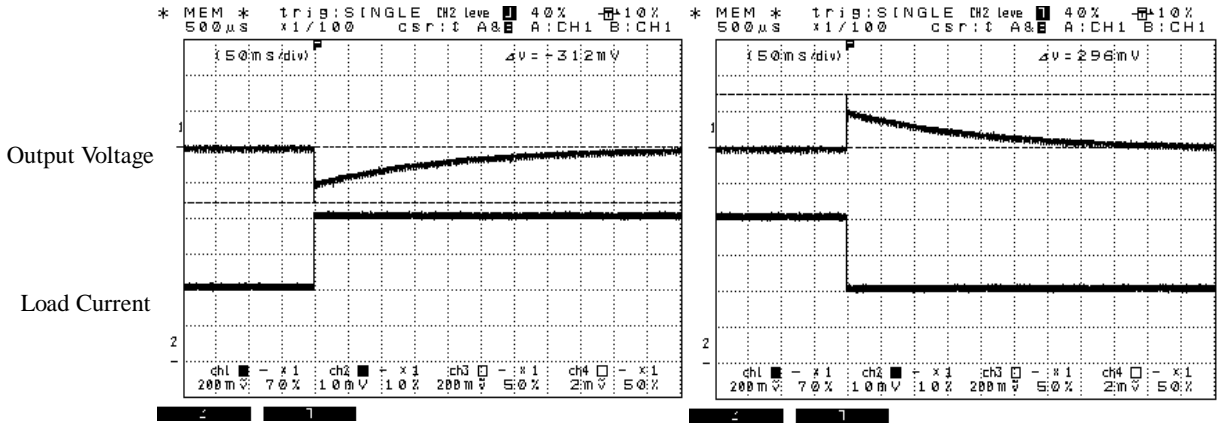


Sudden Fluctuation of Load	Fluctuation Value	ATX Specific Value	Judgement
70%Load 100% Load	- mV -58mV	± 165mV	Good
100% Load 70% Load	56mV mV		Good

Model	NSP3-150-D2S
Item	Dynamic Load Response

V3: +12V 4A

50% Load 100% Load



Sudden Fluctuation of Load	Fluctuation Value	ATX Specific Value	Judgement
50%Load 100% Load	- mV -312mV	± 600mV	Good
100% Load 50% Load	296mV - mV		Good

Model	NSP3-150-D2S
Item	12V Cross Regulation

Legend:

- 5V 1.5A (Solid blue line with square markers)
- 5V 3.75A (Dashed magenta line with diamond markers)
- 5V 7.5A (Dashed red line with triangle markers)
- 5V 11.25A (Dashed green line with circle markers)
- 5V 15A (Dashed blue line with asterisk markers)

12V Load Current	12V Voltage Value [V]				
	5V 1.5A	5V 3.75A	5V 7.5A	5V 14A	5V 15A
0A	11.937	12.084	12.274	12.418	12.670
1A	11.837	11.951	12.137	12.284	12.535
2A	11.740	11.848	12.033	12.179	12.430
3A	11.644	11.749	11.932	12.080	12.329
4A	11.550	11.654	11.839	11.982	12.231

12V Load Current	Fluctuation Value [%]				
	5V 1.5A	5V 3.75A	5V 7.5A	5V 14A	5V 15A
0A	-0.53	0.70	2.28	3.48	5.58
1A	-1.36	-0.41	1.14	2.37	4.46
2A	-2.17	-1.27	0.28	1.49	3.58
3A	-2.97	-2.09	-0.57	0.67	2.74
4A	-3.75	-2.88	-1.34	-0.15	1.93

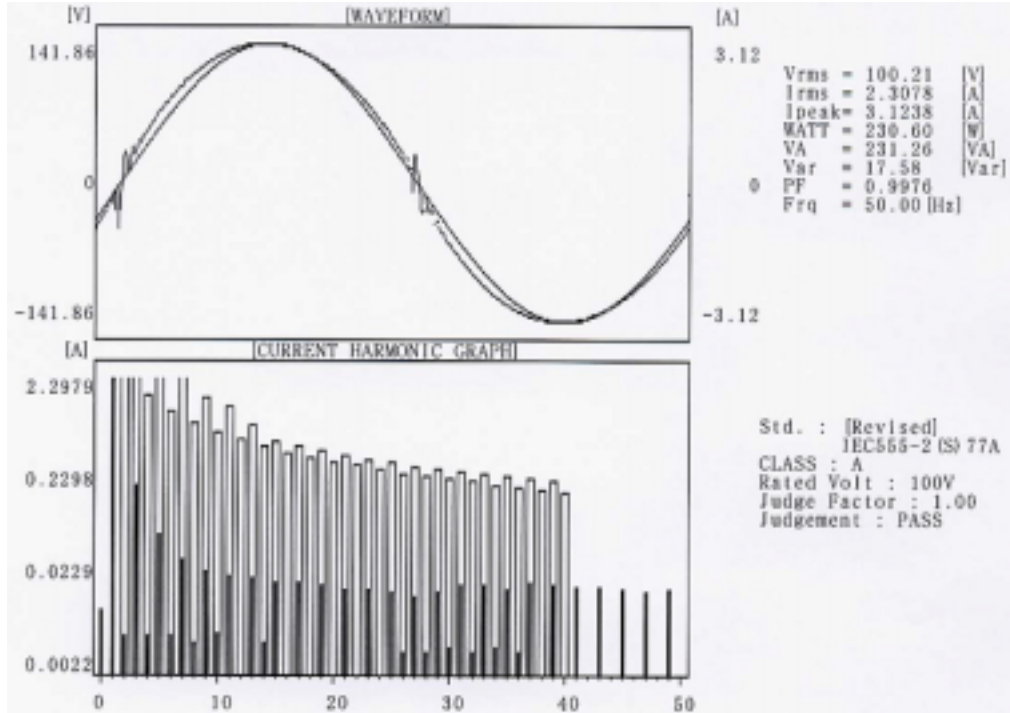
Model	NSP3-150-D2S			
Item	Ambient Temperature Drift			
V1:5V 15A				
at AC Input				
Output Voltage [V]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	5.065	5.064	5.064	5.065
25	5.018	5.018	5.018	5.019
50	4.999	4.998	4.998	4.998
Fluctuation Value [%]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	1.30	1.28	1.28	1.30
25	0.36	0.36	0.36	0.38
50	-0.02	-0.04	-0.04	-0.04
V2:3.3V 5A				
at AC Input				
Output Voltage [V]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	3.264	3.263	3.264	3.263
25	3.237	3.238	3.238	3.239
50	3.225	3.224	3.224	3.223
Fluctuation Value [%]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	-1.09	-1.12	-1.09	-1.12
25	-1.12	-1.88	-1.88	-1.85
50	-2.27	-2.30	-2.30	-2.33

Model	NSP3-150-D2S			
Item	Ambient Temperature Drift			
V3: 12V 4A				
at AC Input				
Output Voltage [V]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	12.269	12.267	12.264	12.262
25	12.276	12.271	12.269	12.265
50	12.278	12.279	12.280	12.281
Fluctuation Value [%]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	2.24	2.22	2.20	2.18
25	2.30	2.26	2.24	2.21
50	2.32	2.33	2.33	2.34
V4: -5V 0.5A				
at AC Input				
Output Voltage [V]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	-4.978	-4.978	-4.978	-4.978
25	-4.917	-4.918	-4.918	-4.917
50	-4.909	-4.909	-4.909	-4.910
Fluctuation Value [%]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	-0.44	-0.44	-0.44	-0.44
25	-1.66	-1.64	-1.64	-1.66
50	-1.82	-1.82	-1.82	-1.80

Model	NSP3-150-D2S			
Item	Ambient Temperature Drift			
V5: -12V 0.5A				
at AC Input				
Output Voltage [V]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	-11.742	-11.743	-11.743	-11.743
25	-11.825	-11.825	-11.825	-11.824
50	-11.836	-11.837	-11.837	-11.836
Fluctuation Value [%]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	-2.15	-2.14	-2.14	-2.14
25	-1.46	-1.46	-1.46	-1.47
50	-1.37	-1.36	-1.36	-1.37
V6: 5Vs 1A				
at AC Input				
Output Voltage [V]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	4.920	4.919	4.920	4.919
25	4.907	4.906	4.906	4.906
50	4.891	4.891	4.890	4.890
Fluctuation Value [%]				
Temperature ()	Input Voltage AC85V	Input Voltage AC100V	Input Voltage AC240V	Input Voltage AC264V
0	-1.60	-1.62	-1.60	-1.62
25	-1.86	-1.88	-1.88	-1.88
50	-1.62	-2.18	-2.20	-2.20

Model	NSP3-150-D2S
Item	Harmonic Current

Measuring Instrument : MP701(Keisoku Giken)

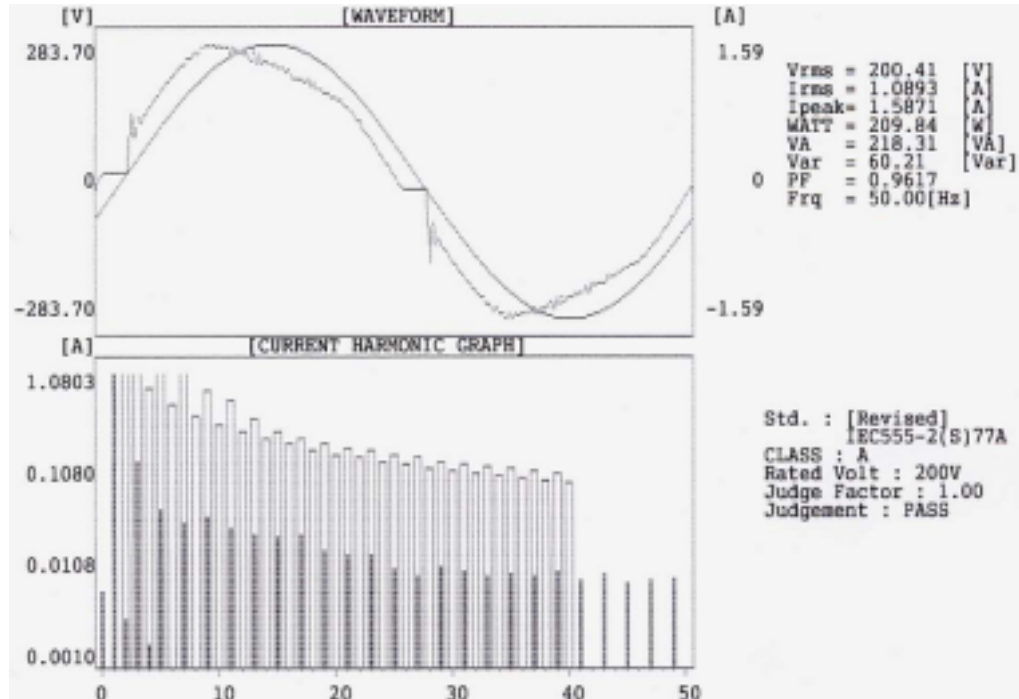


[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0067	13	0.0146	26	0.0025	39	0.0128
01	2.2979	14	0.0033	27	0.0098	40	0.0018
02	0.0038	15	0.0131	28	0.0025	41	0.0121
03	0.1295	16	0.0022	29	0.0106	42	0.0022
04	0.0038	17	0.0129	30	0.0028	43	0.0121
05	0.0414	18	0.0015	31	0.0124	44	0.0000
06	0.0038	19	0.0125	32	0.0025	45	0.0115
07	0.0230	20	0.0007	33	0.0128	46	0.0015
08	0.0031	21	0.0115	34	0.0028	47	0.0106
09	0.0169	22	0.0007	35	0.0113	48	0.0022
10	0.0041	23	0.0113	36	0.0025	49	0.0111
11	0.0152	24	0.0018	37	0.0131		
12	0.0018	25	0.0105	38	0.0015		

Model	NSP3-150-D2S
Item	Harmonic Current

Measuring Instrument : MP701(Keisoku Giken)



[CURRENT HARMONIC DATA]

No	(A)	No	(A)	No	(A)	No	(A)
00	0.0042	13	0.0163	26	0.0007	39	0.0071
01	1.0803	14	0.0010	27	0.0062	40	0.0000
02	0.0022	15	0.0157	28	0.0009	41	0.0056
03	0.0930	16	0.0009	29	0.0077	42	0.0004
04	0.0012	17	0.0164	30	0.0004	43	0.0064
05	0.0306	18	0.0009	31	0.0070	44	0.0006
06	0.0008	19	0.0111	32	0.0003	45	0.0051
07	0.0215	20	0.0007	33	0.0062	46	0.0005
08	0.0004	21	0.0103	34	0.0008	47	0.0056
09	0.0255	22	0.0005	35	0.0065	48	0.0008
10	0.0007	23	0.0101	36	0.0006	49	0.0060
11	0.0197	24	0.0005	37	0.0061		
12	0.0009	25	0.0072	38	0.0008		

Model	NSP3-150-D2S
Item	Leakage Current Test

Temperature Room Temperature
 Input AC100V, 240V
 Load Rated Load , Minimum Load

Input Voltage (V)	at Rated Load (mA)	at Minimum Load (mA)
100V	0.33	0.31
240V	0.78	0.78

Measuring Instrument : YEW.TYPE3226 Applicable Products (Range : 1K)

Model	NSP3-150-D2S
Item	Line Noise Tolerance

Temperature	Room Temperature
Input	AC264V,60Hz
Load	Rated Load
Noise Impressed Voltage	± 2000V
Repeat Cycle	10 ~ 35ms
Pulse Width	100,800ns

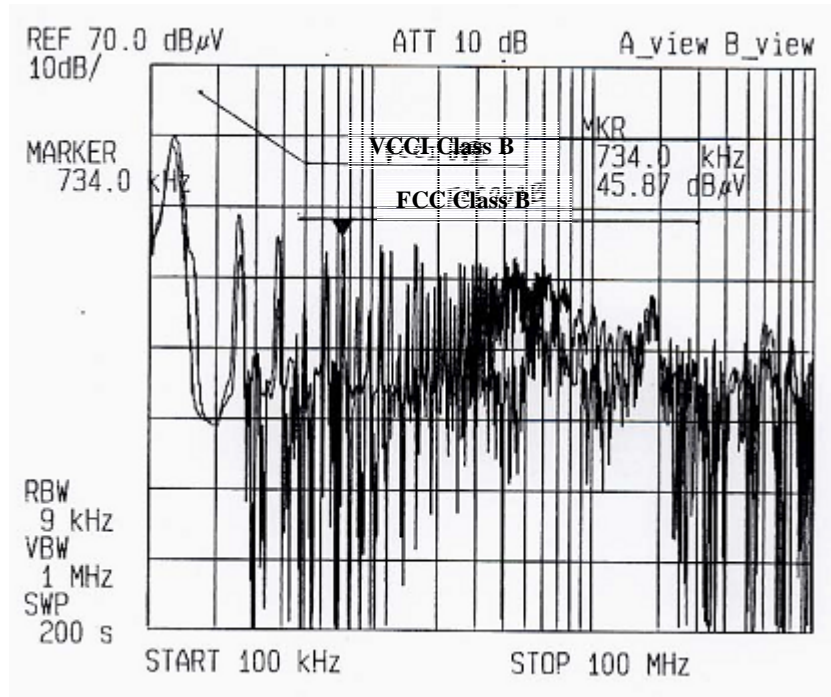
Normal	Pulse Impressed Mode			
	100ns		800ns	
	Polarity +	Polarity -	Polarity +	Polarity -
Common R Phase	Pulse Impressed Mode			
	100ns		800ns	
	Polarity +	Polarity -	Polarity +	Polarity -
Common S Phase	Pulse Impressed Mode			
	100ns		800ns	
	Polarity +	Polarity -	Polarity +	Polarity -

- No Trouble
- Faulty Operation of Over-Voltage and so on
- × Power Supply Breakdown

Measuring Instrument : INS420 (Noise Laboratory Co.,Ltd.)

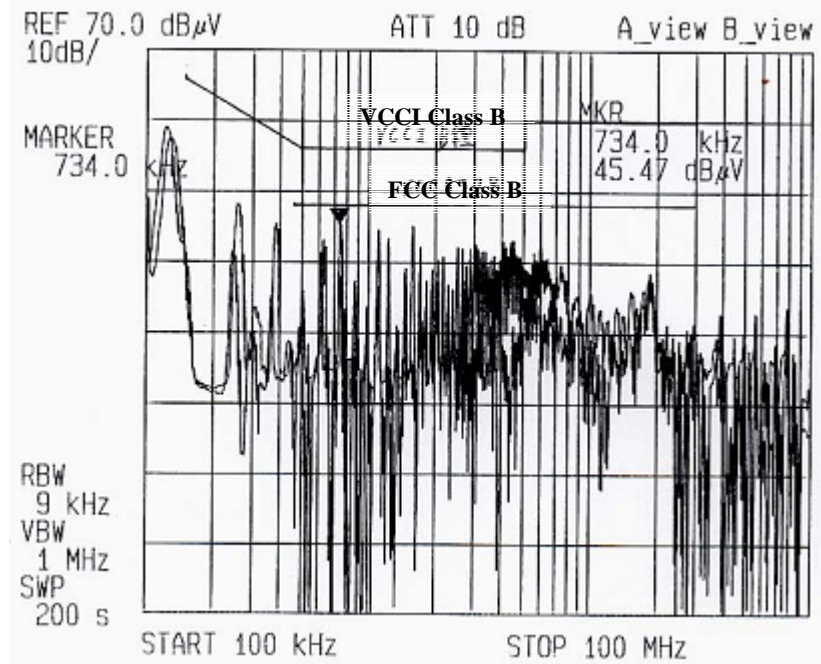
Model	NSP3-150-D2S
Item	Conduction Emission

Temperature	Room Temperature
Input	AC100V
Load	Actual Load
Mesearing Point	L-FG
Measuring Instrument	R3261A (Advantest)



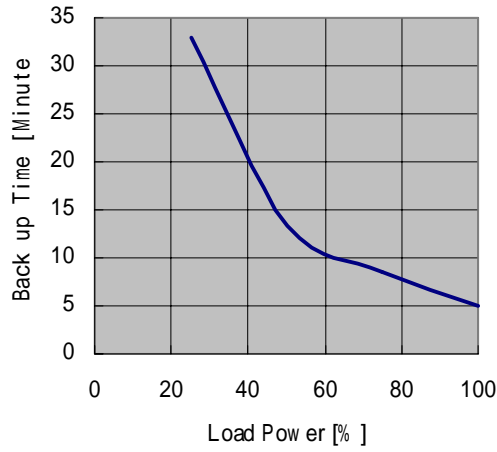
Model	NSP3-150-D2S
Item	Conduction Emission

Temperature	Room Temperature
Input	AC240V
Load	Actual Load
Measuring Point	L-FG, N-FG
Measuring Instrument	R3261A (Advantest)



Model	NSP3-150-D2S
Item	Battery Discharge

Back up Time

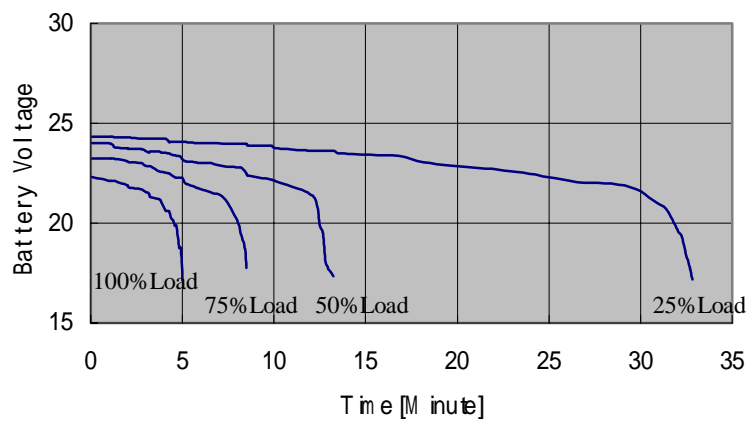


At Room Temperature (25)

Load Power [%]	Back up Time [Minute]
25	32.84
50	13.30
75	8.52
100	5.02

100%Load = 153W

Battery Voltage



Battery : PS2538L(Lead-Acid Battery)