COSEL

TEST DATA OF SNDBS400B07

Regulated DC Power Supply
July 13, 2012

Approved by : *Takahiro Yoneda*

Takahiro Yoneda   Design Manager

Prepared by : *Satoshi Kinoshita*

Satoshi Kinoshita   Design Engineer

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Item	Input Current (by Input Voltage)
Object	————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

———△——— Load 100%
- - -□- - - Load 50%
—·—○—·— Load 0%

Input Current [A] vs Input Voltage [V]

Note: Slanted line shows the range of the rated
input voltage.

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0	0.000	0.000	0.000
50	0.000	0.000	0.000
100	0.000	0.000	0.000
150	0.000	0.000	0.000
165	0.025	1.446	2.694
170	0.025	1.393	2.767
180	0.024	1.302	2.612
200	0.023	1.161	2.344
250	0.020	0.924	1.855
280	0.019	0.828	1.666
300	0.019	0.776	1.552
350	0.019	0.671	1.336
400	0.018	0.594	1.174
420	0.018	0.568	1.111
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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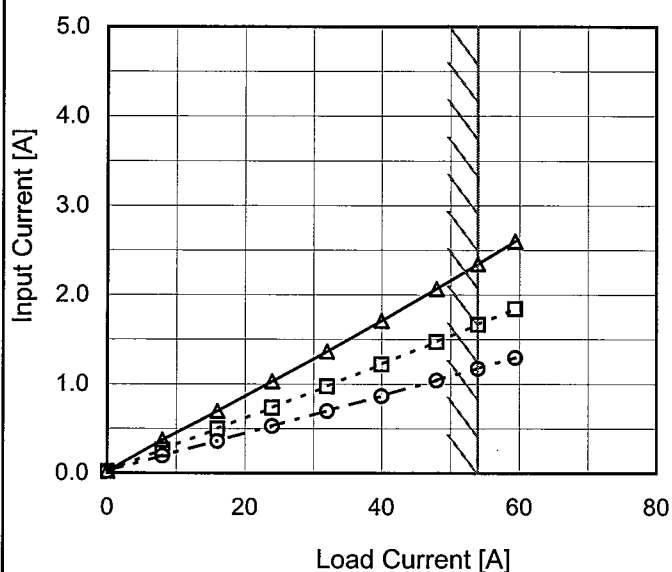
Model	SNDBS400B07
Item	Input Current (by Load Current)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 200V
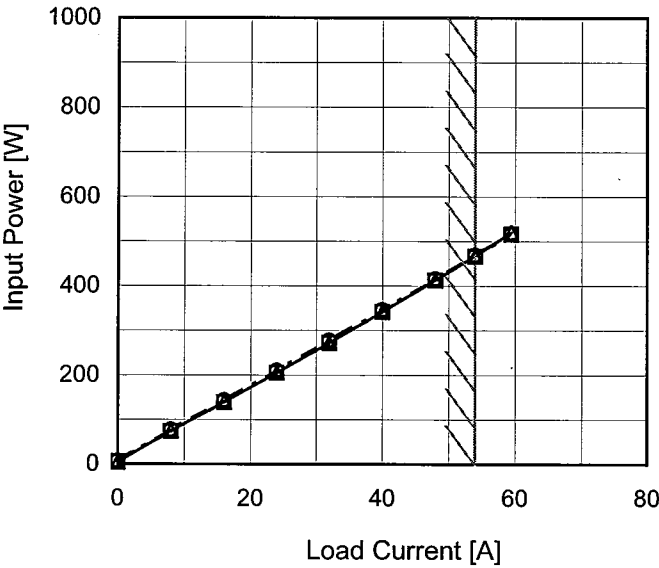- - ☐ - - Input Volt. 280V
— · ⊖ — · · Input Volt. 400V

Load Current [A]

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.0	0.023	0.019	0.018
8.0	0.375	0.261	0.195
16.0	0.698	0.494	0.360
24.0	1.030	0.733	0.527
32.0	1.365	0.974	0.696
40.0	1.710	1.222	0.867
48.0	2.070	1.473	1.041
54.0	2.344	1.666	1.174
59.4	2.602	1.842	1.295
--	-	-	-
--	-	-	-

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Model	SNDBS400B07
Item	Input Power (by Load Current)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

——△—— Input Volt.   200V
– – –⊟– – – Input Volt.   280V
—·—○—·– Input Volt.   400V

Load Current [A]

Note: Slanted line shows the range of the rated
load current.

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.0	4.4	5.4	7.2
8.0	74.8	73.2	77.9
16.0	139.4	138.3	143.9
24.0	205.4	205.1	210.7
32.0	272.6	272.6	278.0
40.0	341.8	341.8	346.6
48.0	413.0	412.3	416.0
54.0	468.0	466.3	469.0
59.4	520.0	515.8	518.0
--	-	-	-
--	-	-	-

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Model	SNDBS400B07
Item	Efficiency (by Input Voltage)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph

--- ☐ --- Load 50%
——— △ ——— Load 100%
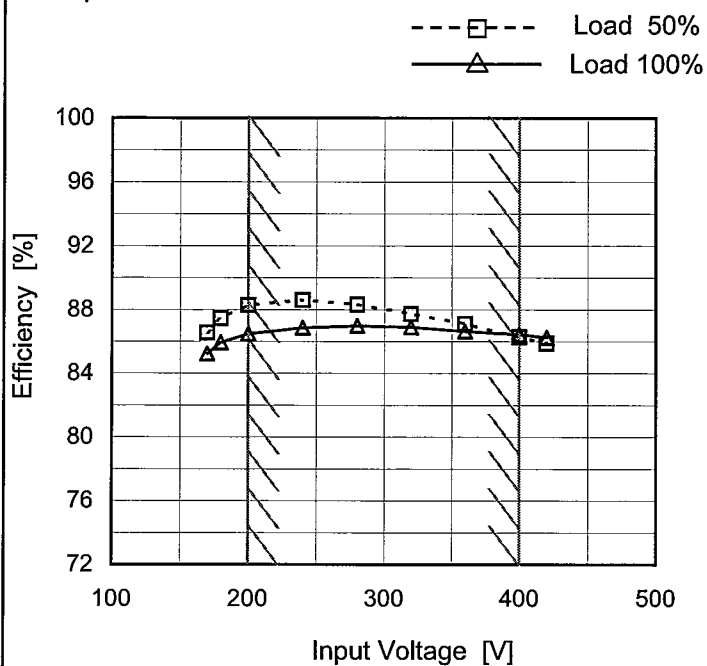
Input Voltage [V]

Note: Slanted line shows the range of the rated
input voltage.

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
170	86.5	85.2
180	87.4	85.9
200	88.3	86.5
240	88.6	86.9
280	88.3	87.0
320	87.7	86.9
360	87.1	86.6
400	86.3	86.4
420	85.9	86.3

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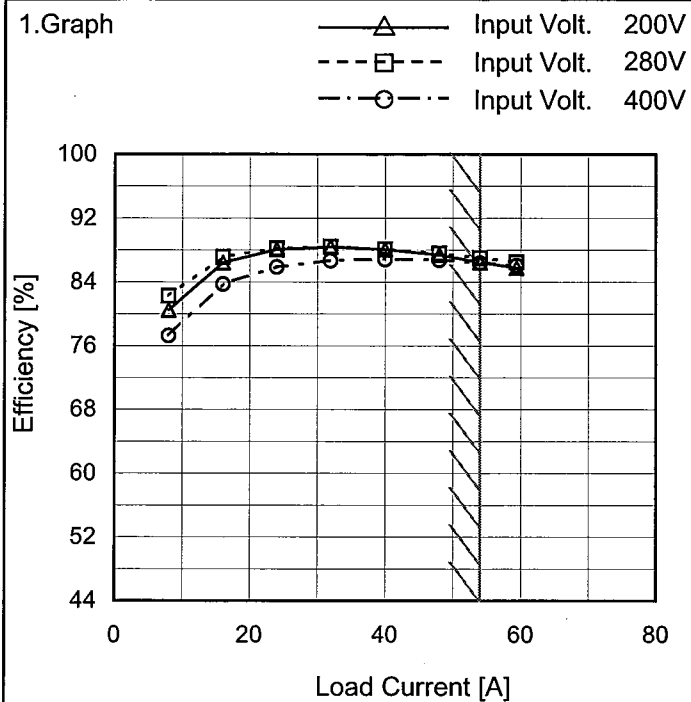
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Model	SNDBS400B07
Item	Efficiency (by Load Current)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

——△—— Input Volt.   200V
- - -▣- - - Input Volt.   280V
—·—◗—·· Input Volt.   400V

Efficiency [%] vs Load Current [A]

Note: Slanted line shows the range of the rated
      load current.
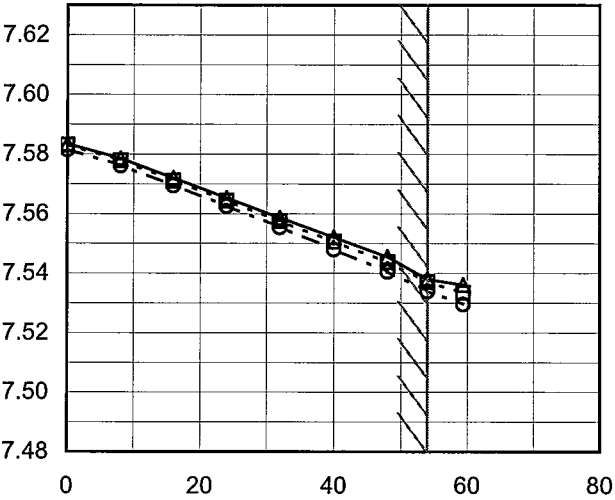
2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.0	-	-	-
8.0	80.5	82.2	77.3
16.0	86.4	87.1	83.7
24.0	88.1	88.2	85.9
32.0	88.4	88.4	86.7
40.0	88.1	88.1	86.8
48.0	87.4	87.6	86.8
54.0	86.5	87.0	86.4
59.4	85.8	86.5	86.1
--	-	-	-
--	-	-	-

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Model	SNDBS400B07
Item	Line Regulation
Object	+7.5V54A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

- - - ☐ - - - Load 50%
———△——— Load 100%

Note: Slanted line shows the range of the rated
input voltage.

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
170	7.558	7.538
180	7.558	7.538
200	7.559	7.538
240	7.560	7.538
280	7.560	7.537
320	7.560	7.536
360	7.560	7.535
400	7.559	7.534
420	7.559	7.533

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Model	SNDBS400B07
Item	Load Regulation
Object	+7.5V54A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

———△——— Input Volt. 200V
— — —☐— — — Input Volt. 280V
— ·—○—· — Input Volt. 400V

Load Current [A]

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.0	7.583	7.583	7.582
8.0	7.579	7.578	7.576
16.0	7.572	7.571	7.569
24.0	7.565	7.564	7.563
32.0	7.559	7.558	7.555
40.0	7.552	7.551	7.548
48.0	7.546	7.544	7.541
54.0	7.538	7.537	7.534
59.4	7.536	7.534	7.530
--	-	-	-
--	-	-	-

Note: Slanted line shows the range of the rated
load current.

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Model	SNDBS400B07
Item	Dynamic Load Response
Object	+7.5V54A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 280 V
Cycle 1000 ms

Load Current

54A/50μs

Min. Load (0A) ←→
Load 100% (54A)

500 mV/div

500 μs/div   10 ms/div

Min. Load (0A) ←→
Load 50% (27A)

500 mV/div

500 μs/div   10 ms/div

Load 10% (5.4A) ←→
Load 100% (54A)

500 mV/div

500 μs/div   10 ms/div

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Model	SNDBS400B07
Item	Ripple Voltage (by Load Current)
Object	+7.5V54A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

——△—— Input Volt.   200V
— · —O— · · Input Volt.   400V

Load Current [A]

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.0	20	20
8.0	17	27
16.0	19	30
24.0	22	30
32.0	23	33
40.0	24	34
48.0	25	35
54.0	26	36
59.4	30	38
--	-	-
--	-	-
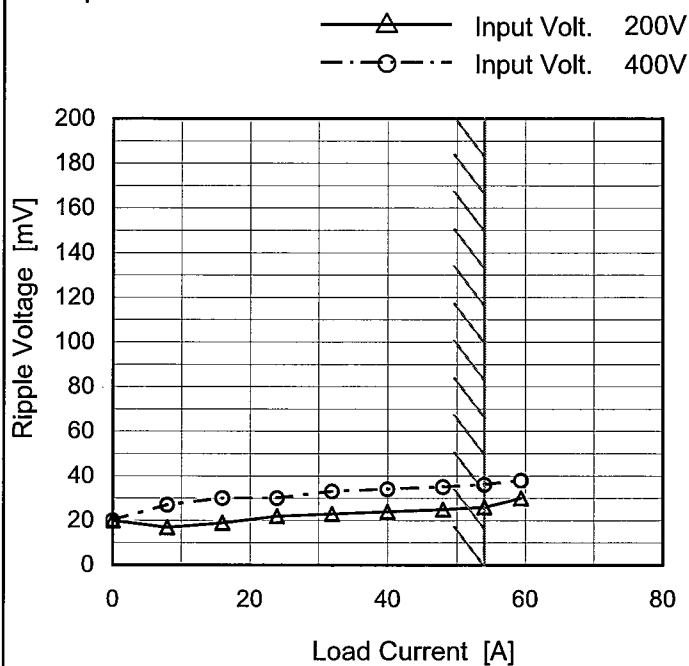
Measured by 100 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated
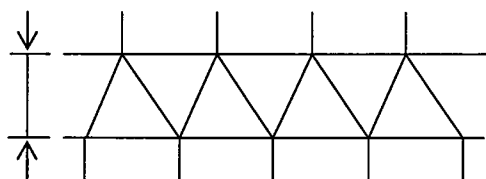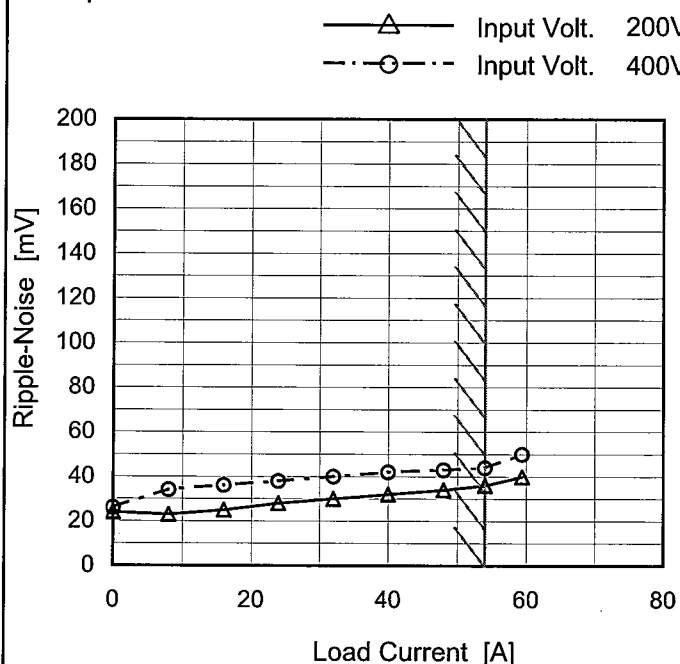   load current.

Ripple [mVp-p]

Fig.Complex Ripple Wave Form

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Model	SNDBS400B07
Item	Ripple-Noise
Object	+7.5V54A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

—△— Input Volt. 200V
—·—○—·— Input Volt. 400V

Load Current [A]

Measured by 100 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
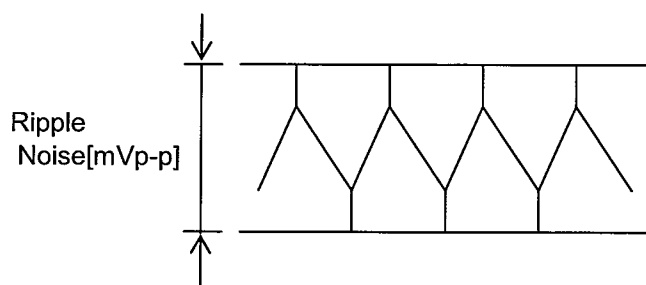Note: Slanted line shows the range of the rated
load current.

2.Values

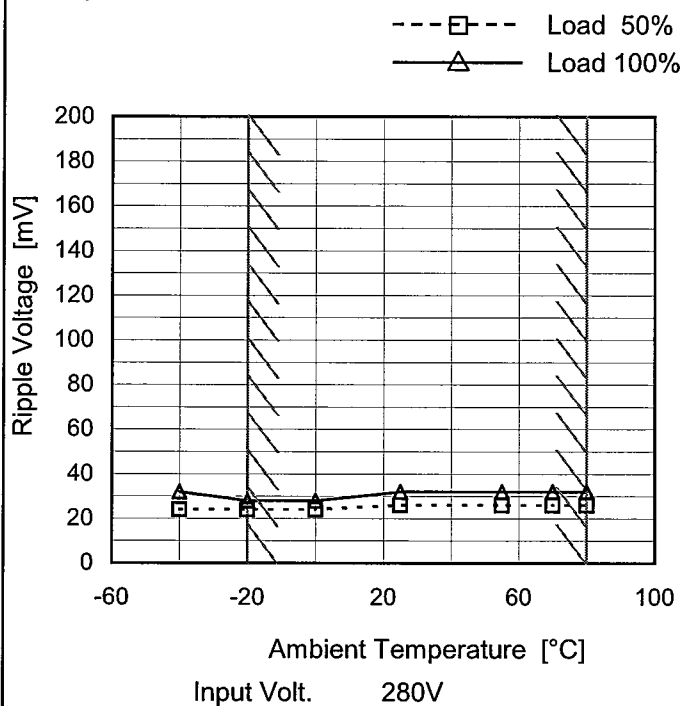| Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.0	24	26
8.0	23	34
16.0	25	36
24.0	28	38
32.0	30	40
40.0	32	42
48.0	34	43
54.0	36	44
59.4	40	50
--	-	-
--	-	-

Ripple
Noise[mVp-p]

Fig.Complex Ripple Noise Wave Form

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Model	SNDBS400B07
Item	Ripple Voltage (by Ambient Temp.)
Object	+7.5V54A

Testing Circuitry   Figure B

1.Graph

- - -▱- - - Load 50%
———△——— Load 100%

Ambient Temperature [°C]

Input Volt.   280V

Measured by 100 MHz Oscilloscope.
Note: Slanted line shows the range of the rated
        ambient temperature.
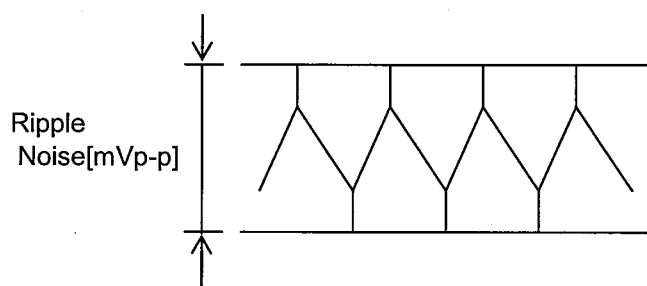
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	24	32
-20	24	28
0	24	28
25	26	32
55	26	32
70	26	32
80	26	32
--	-	-
--	-	-
--	-	-
--	-	-

Ripple
Noise[mVp-p]

Fig.Complex Ripple Noise Wave Form

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Model	SNDBS400B07
Item	Ambient Temperature Drift
Object	+7.5V54A

Testing Circuitry   Figure A

1.Graph

——△—— Input Volt.   200V
----☐---- Input Volt.   280V
—·—○—·— Input Volt.   400V

Ambient Temperature [°C]

Load 100%
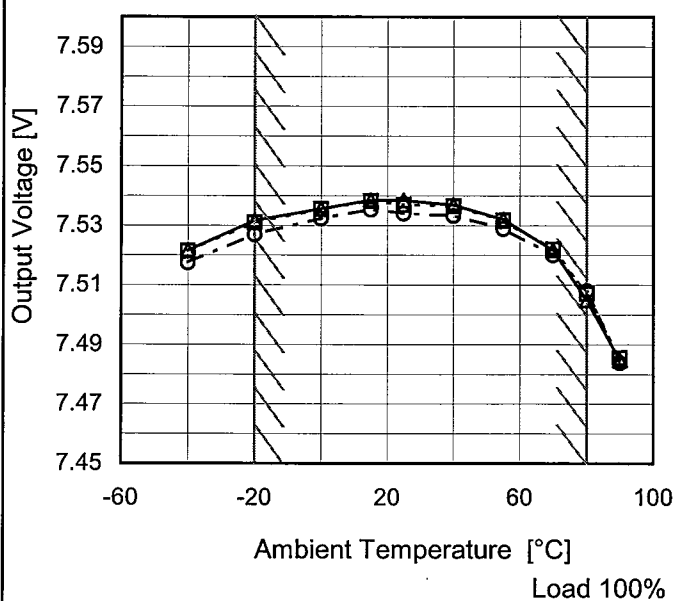
Note: Slanted line shows the range of the rated
      ambient temperature.

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-40	7.522	7.521	7.518
-20	7.532	7.531	7.527
0	7.536	7.535	7.532
15	7.539	7.538	7.535
25	7.539	7.537	7.534
40	7.537	7.537	7.533
55	7.532	7.532	7.529
70	7.522	7.522	7.520
80	7.505	7.507	7.508
90	7.485	7.485	7.484
--	-	-	-

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Model	SNDBS400B07
Item	Output Voltage Accuracy
Object	+7.5V54A

Testing Circuitry   Figure A

1.Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature　:　-20　-　80°C

Input Voltage　:　200　-　400V

Load Current　:　0　-　54A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

* Output Voltage Accuracy (Ration) = $\dfrac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output Current[A]	Output Voltage[V]	Output Voltage Accuracy Value [mV]	Output Voltage Accuracy Ration [%]
Maximum Voltage	40	400	0	7.612	±44	±0.6
Minimum Voltage	80	200	54	7.524		

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Model	SNDBS400B07
Item	Time Lapse Drift
Object	+7.5V54A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Input Volt.   280V
Load   100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	7.542
0.5	7.540
1.0	7.540
2.0	7.540
3.0	7.540
4.0	7.540
5.0	7.540
6.0	7.540
7.0	7.540
8.0	7.540

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Model	SNDBS400B07
Item	Rise and Fall Time
Object	+7.5V54A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Input Volt. 280 V

Load 50%

Output
Volt.

[1V/div]

0

Load 100%

Output
Volt.

[1V/div]

0

Input
Volt.

0

[100V/div]

Time   [50ms/div]

Time   [10ms/div]
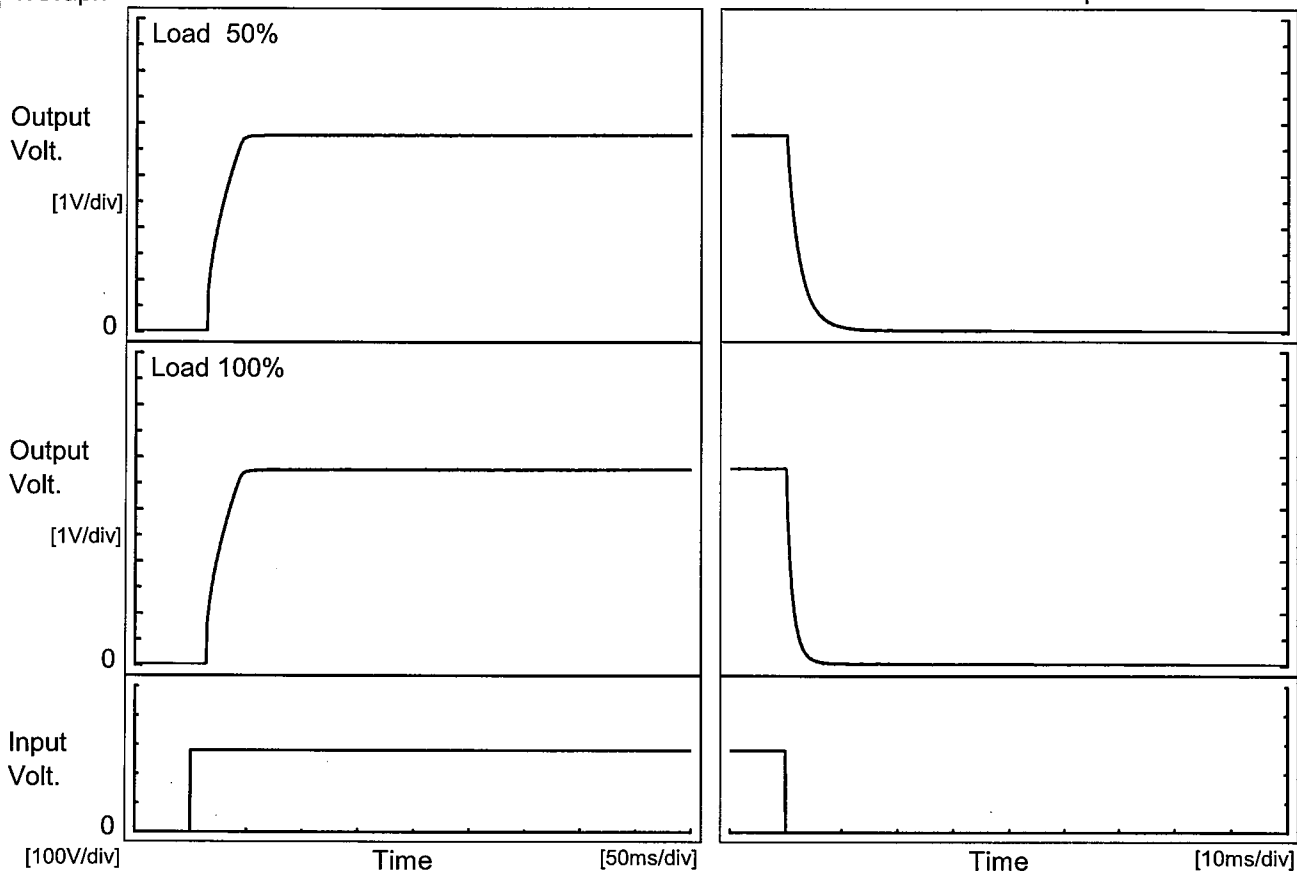
2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	14.5	25.8	40.3	0.3	5.3
100 %	14.5	25.8	40.3	0.1	2.7

Output
Volt.

90%

10%

Input
Volt.

Td   Tr

Ts

Th   Tf

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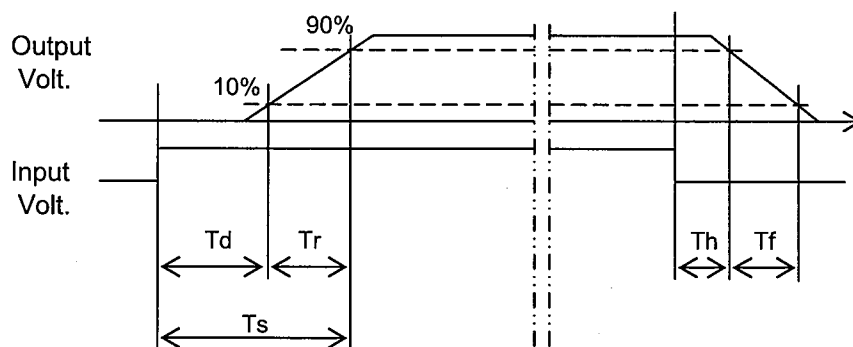
Model	SNDBS400B07
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+7.5V54A

Testing Circuitry   Figure A
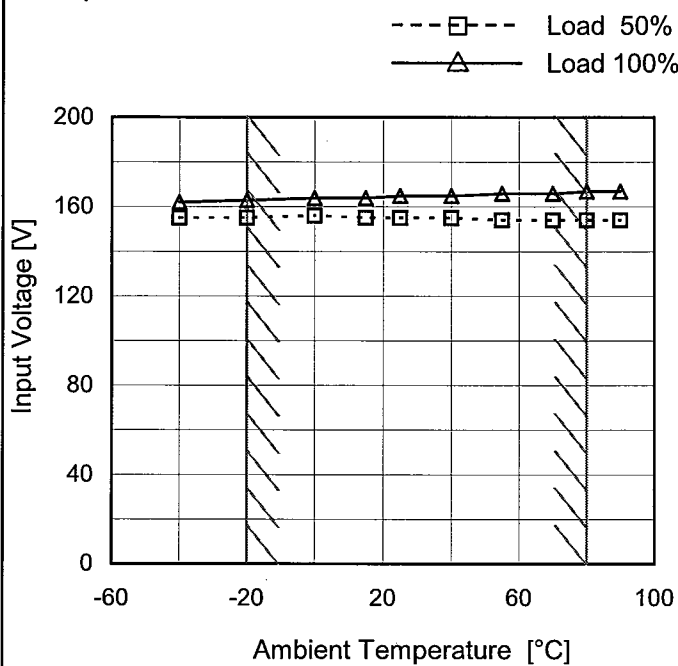
1.Graph

--- ⊟ --- Load 50%
——— △ ——— Load 100%

Ambient Temperature [°C]

Note: Slanted line shows the range of the rated
ambient temperature.

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	155	162
-20	155	163
0	156	164
15	155	164
25	155	165
40	155	165
55	154	166
70	154	166
80	154	167
90	154	167
--	-	-

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Model	SNDBS400B07
Item	Overcurrent Protection
Object	+7.5V54A

1.Graph

——— Input Volt. 200V
——— Input Volt. 280V
▬▬▬▬ Input Volt. 400V

Load Current [A]

Note: Slanted line shows the range of the rated load current.

Intermittent operation occurs when the output voltage is from 6V to 0V.

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
7.13	63.75	64.09	65.63
6.75	63.85	64.30	65.81
6.00	64.22	64.44	66.00
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SNDBS400B07
Item	Overvoltage Protection
Object	+7.5V54A
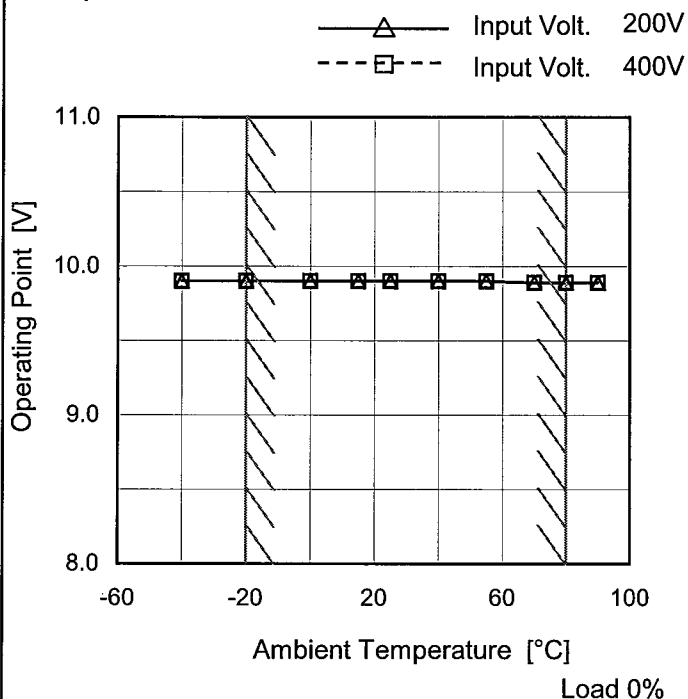
1.Graph

— △ — Input Volt. 200V
--- ☐ --- Input Volt. 400V

Ambient Temperature [°C]

Load 0%

Note: Slanted line shows the range of the rated
ambient temperature.

Testing Circuitry   Figure A

2.Values

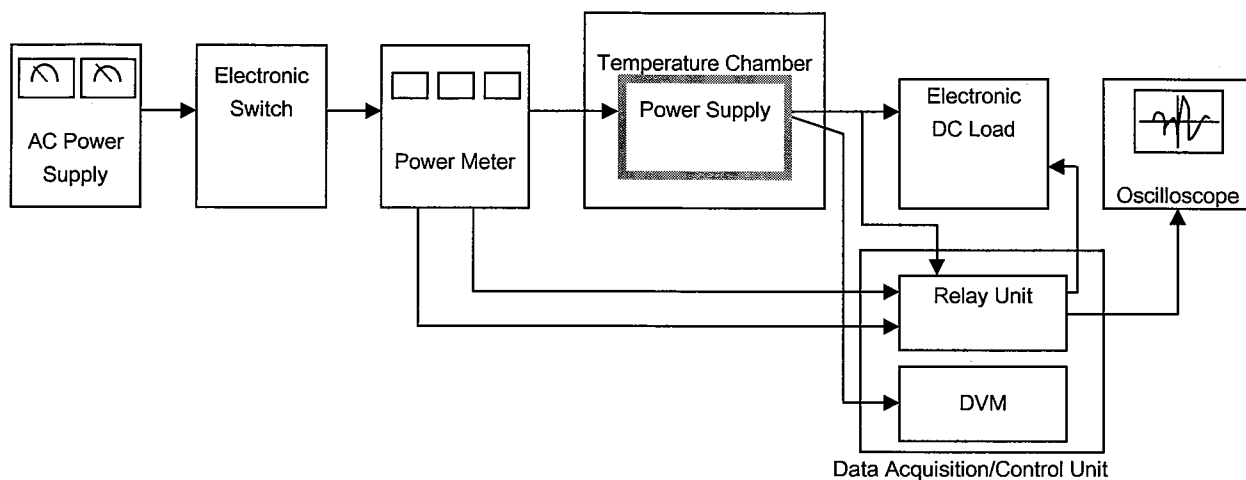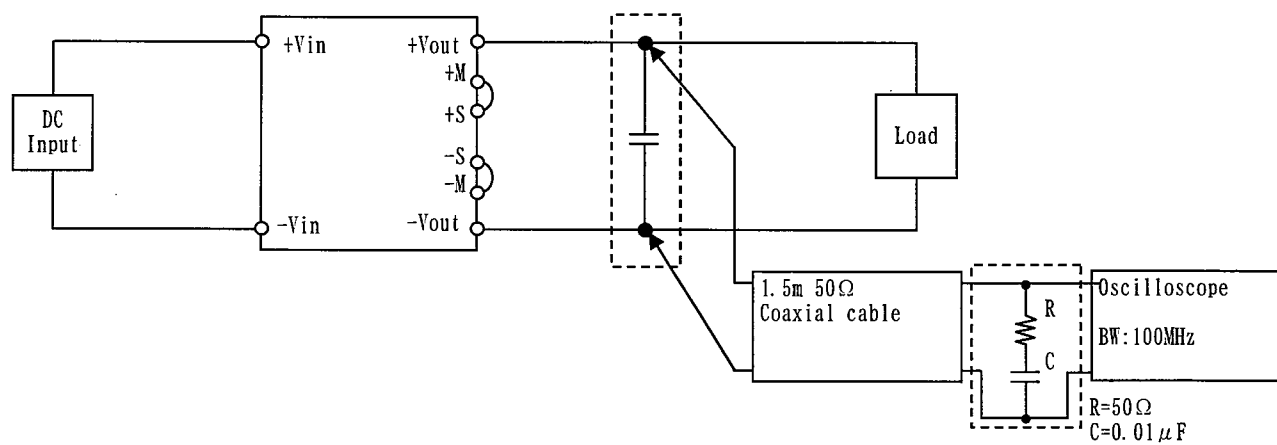| Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 200[V]	Input Volt. 400[V]
-40	9.90	9.90
-20	9.90	9.90
0	9.90	9.90
15	9.90	9.90
25	9.90	9.90
40	9.90	9.90
55	9.90	9.90
70	9.89	9.89
80	9.89	9.89
90	9.89	9.89
--	-	-

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Figure A

Figure B (Ripple and Ripple noise Characteristic)

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