COSEL

参考資料

TEST DATA OF SNDHS50B24

Regulated DC Power Supply
June 30, 2011

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COSEL CO.,LTD.

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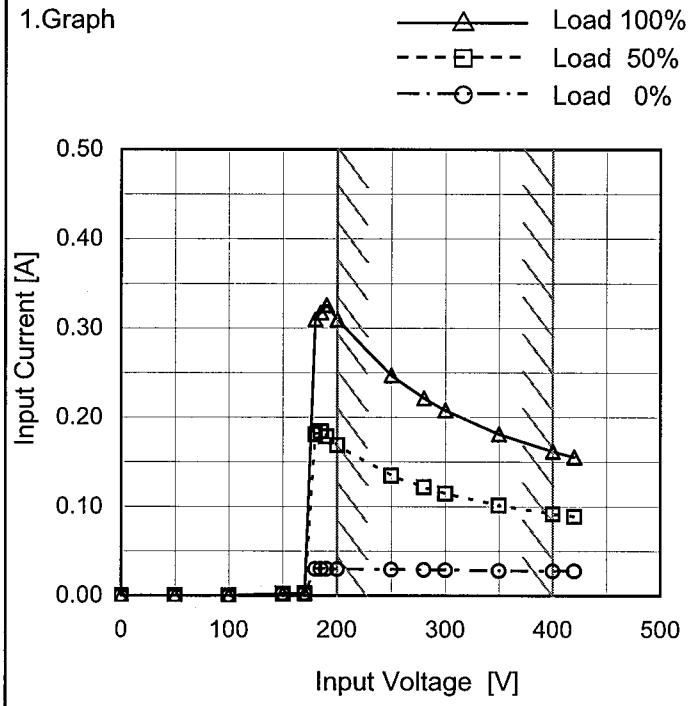
Model	SNDHS50B24
Item	Input Current (by Input Voltage)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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	0.002	0.002	0.002
170	0.003	0.003	0.003
180	0.030	0.181	0.310
185	0.030	0.184	0.318
190	0.030	0.179	0.326
200	0.030	0.169	0.310
250	0.030	0.135	0.247
280	0.029	0.122	0.222
300	0.029	0.115	0.208
350	0.028	0.101	0.181
400	0.028	0.092	0.162
420	0.028	0.089	0.156
--	-	-	-
--	-	-	-
--	-	-	-

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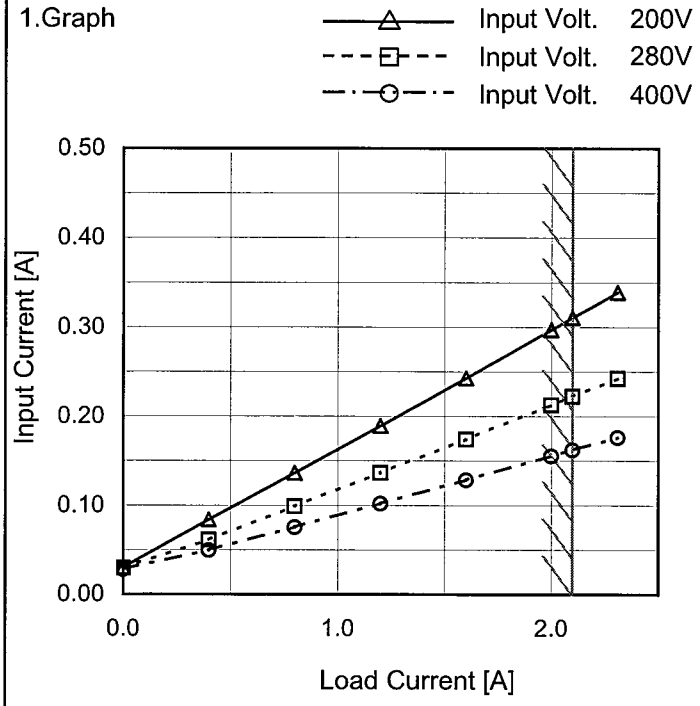
Model	SNDHS50B24
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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]
0.00	0.030	0.029	0.028
0.40	0.084	0.061	0.049
0.80	0.137	0.099	0.075
1.20	0.189	0.136	0.102
1.60	0.243	0.174	0.129
2.00	0.297	0.213	0.156
2.10	0.311	0.222	0.162
2.31	0.339	0.242	0.176
--	-	-	-
--	-	-	-
--	-	-	-

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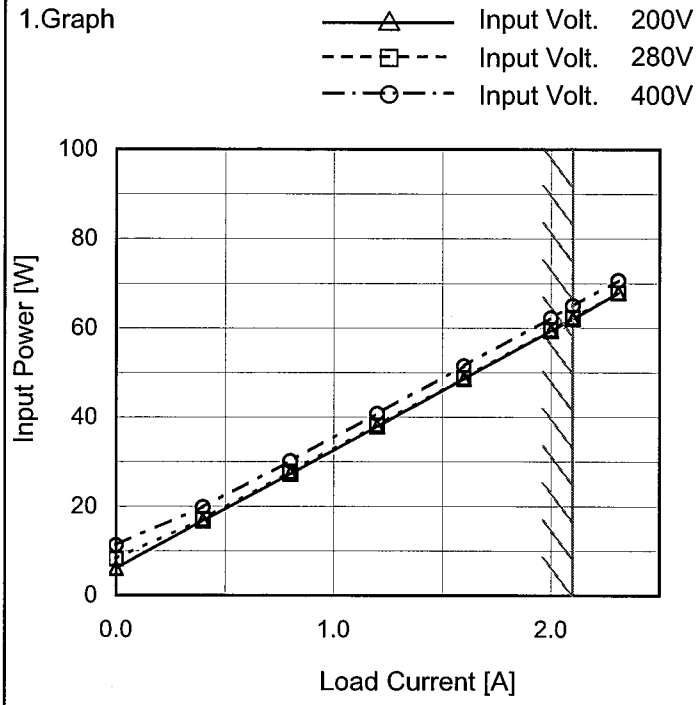
Model	SNDHS50B24
Item	Input Power (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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]
0.00	6.10	8.20	11.30
0.40	16.80	17.10	19.80
0.80	27.30	27.70	30.20
1.20	37.90	38.20	40.80
1.60	48.60	48.80	51.50
2.00	59.40	59.60	62.30
2.10	62.10	62.30	65.00
2.31	67.90	67.90	70.70
--	-	-	-
--	-	-	-
--	-	-	-

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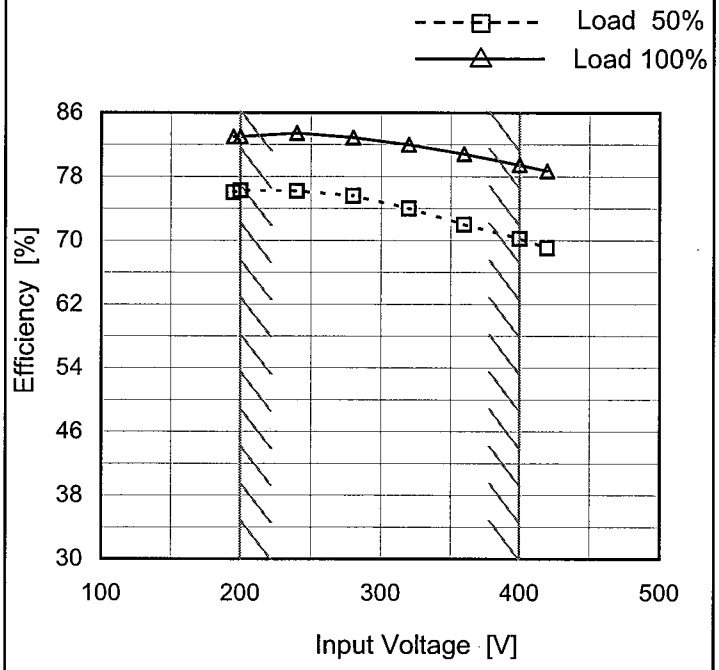
Model	SNDHS50B24
Item	Efficiency (by Input Voltage)
Object	———————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
195	76.0	83.0
200	76.3	83.0
240	76.2	83.5
280	75.6	82.9
320	74.0	82.0
360	72.0	80.8
400	70.2	79.5
420	69.1	78.7
--	-	-

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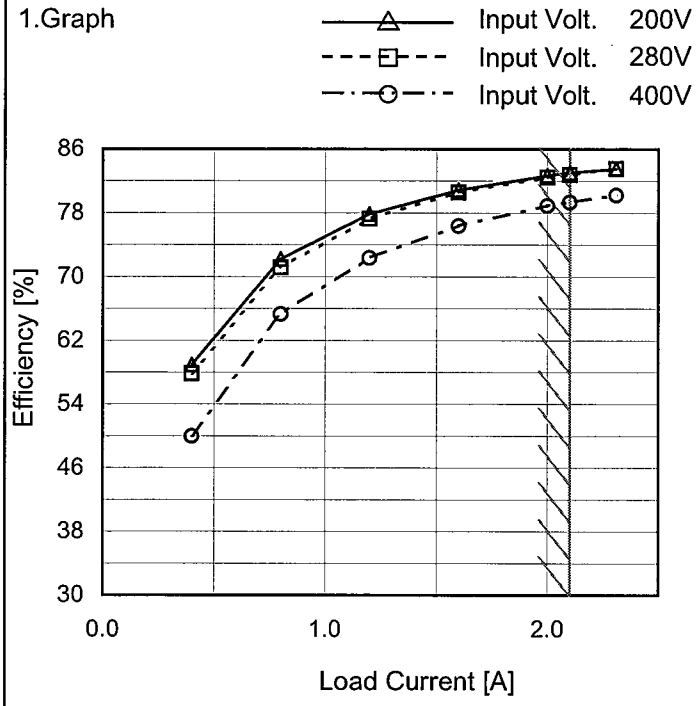
Model	SNDHS50B24
Item	Efficiency (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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]
0.00	-	-	-
0.40	59.0	57.8	50.0
0.80	72.3	71.1	65.3
1.20	77.9	77.3	72.4
1.60	80.9	80.6	76.4
2.00	82.7	82.5	78.9
2.10	83.1	82.8	79.4
2.31	83.5	83.5	80.2
--	-	-	-
--	-	-	-
--	-	-	-

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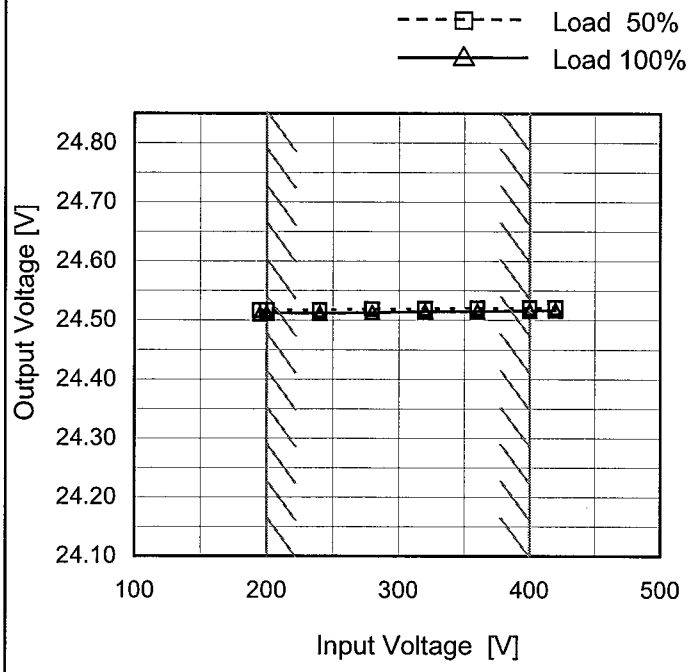
Model	SNDHS50B24
Item	Line Regulation
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
195	24.517	24.511
200	24.517	24.512
240	24.517	24.512
280	24.519	24.514
320	24.519	24.515
360	24.520	24.516
400	24.521	24.517
420	24.521	24.517
--	-	-

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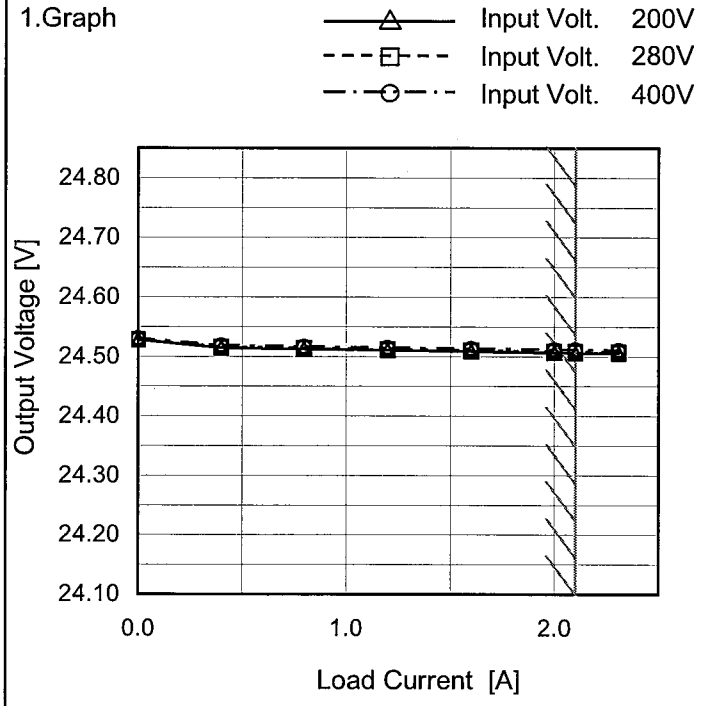
Model	SNDHS50B24
Item	Load Regulation
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.00	24.528	24.529	24.531
0.40	24.515	24.516	24.519
0.80	24.513	24.514	24.517
1.20	24.511	24.512	24.515
1.60	24.509	24.511	24.514
2.00	24.507	24.509	24.512
2.10	24.507	24.509	24.511
2.31	24.506	24.508	24.510
--	-	-	-
--	-	-	-
--	-	-	-

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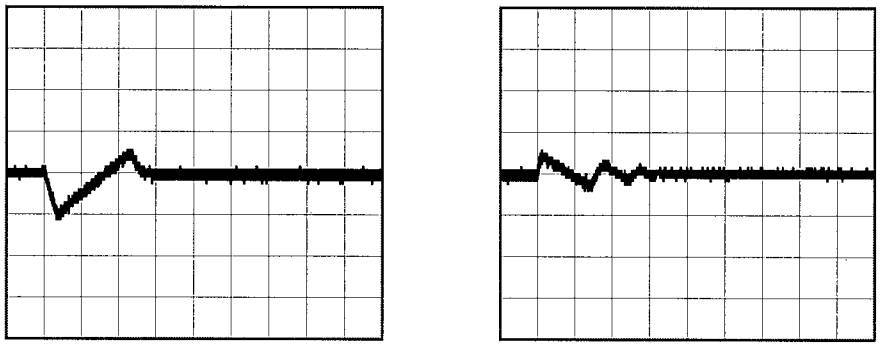
Model	SNDHS50B24
Item	Dynamic Load Response
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure A

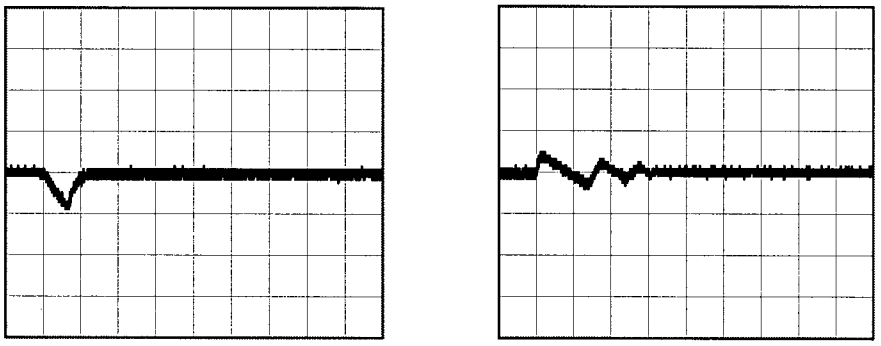
Input Volt. 280 V
Cycle 1000 ms

Load Current
2.1A/50 μs

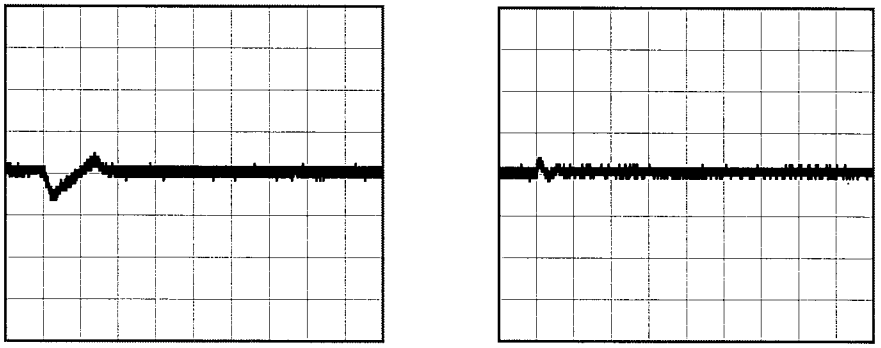
Min. Load (0A) ⟷
Load 100% (2.1A)



Min. Load (0A) ⟷
Load 50% (1.05A)



Load 10% (0.21A) ⟷
Load 100% (2.1A)



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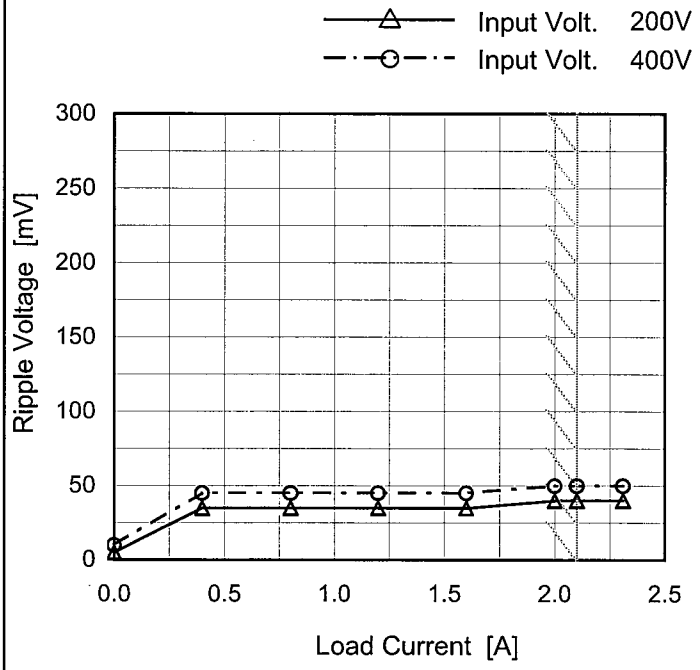
Model	SNDHS50B24
Item	Ripple Voltage (by Load Current)
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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.

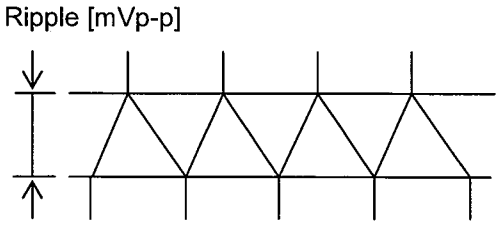


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.00	5	10
0.40	35	45
0.80	35	45
1.20	35	45
1.60	35	45
2.00	40	50
2.10	40	50
2.31	40	50
--	-	-
--	-	-
--	-	-

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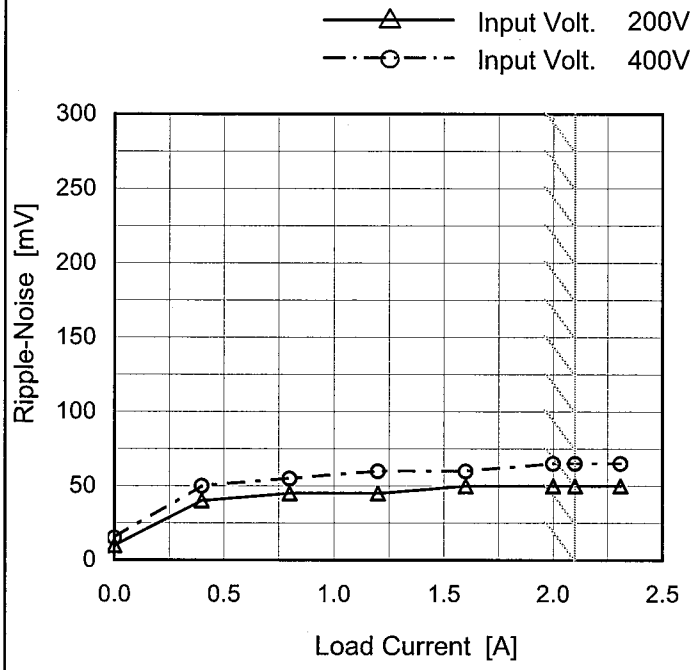
Model	SNDHS50B24
Item	Ripple-Noise
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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.

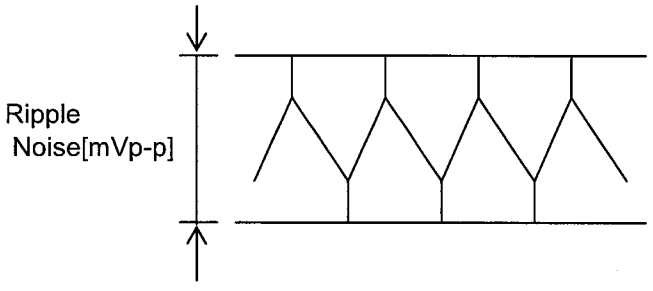


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.00	10	15
0.40	40	50
0.80	45	55
1.20	45	60
1.60	50	60
2.00	50	65
2.10	50	65
2.31	50	65
--	-	-
--	-	-
--	-	-

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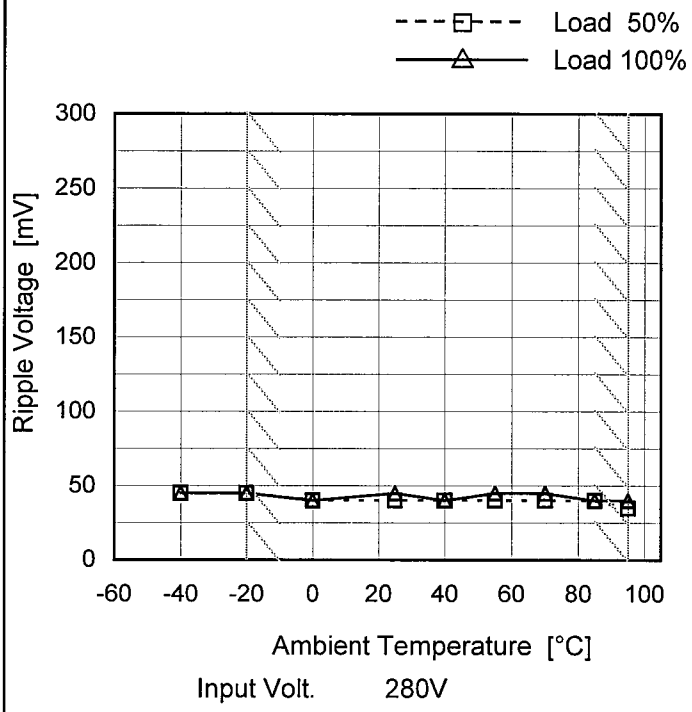
Model	SNDHS50B24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V2.1A

Testing Circuitry Figure B

1.Graph



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	45	45
-20	45	45
0	40	40
25	40	45
40	40	40
55	40	45
70	40	45
85	40	40
95	35	40
--	-	-
--	-	-

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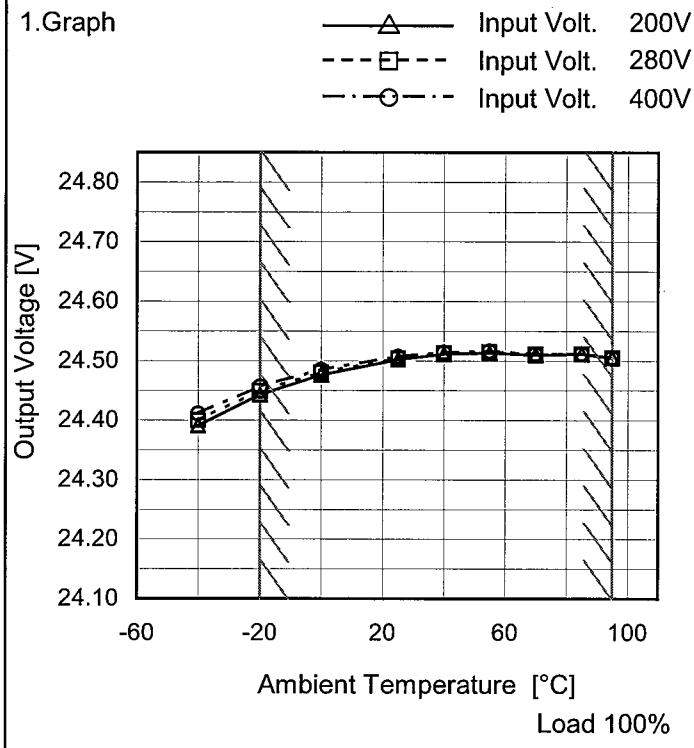
Model	SNDHS50B24
Item	Ambient Temperature Drift
Object	+24V2.1A

Testing Circuitry Figure A

1.Graph



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	24.392	24.400	24.411
-20	24.443	24.449	24.457
0	24.477	24.481	24.486
25	24.502	24.504	24.507
40	24.512	24.513	24.514
55	24.514	24.515	24.517
70	24.510	24.511	24.512
85	24.512	24.512	24.512
95	24.505	24.505	24.506
--	-	-	-
--	-	-	-

COSEL

Model	SNDHS50B24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V2.1A	

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 - 95°C
Input Voltage : 200 - 400V
Load Current : 0 - 2.1A

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

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

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	400	0	24.538	±48	±0.2
Minimum Voltage	-20	200	2.1	24.443		

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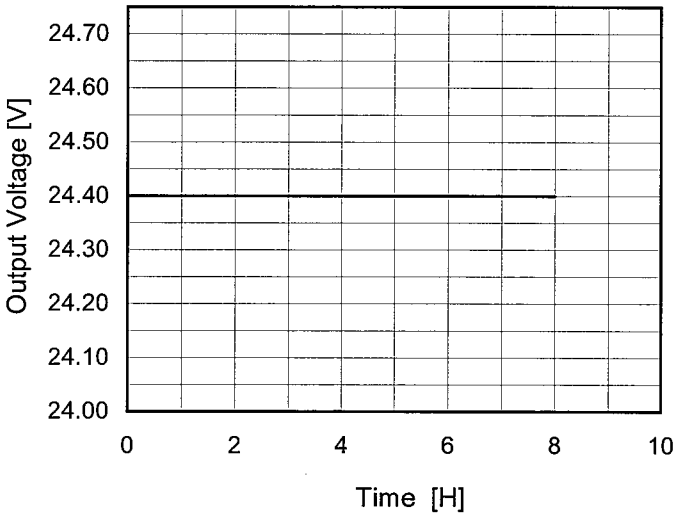
Model	SNDHS50B24
Item	Time Lapse Drift
Object	+24V2.1A

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	24.400
0.5	24.400
1.0	24.400
2.0	24.400
3.0	24.400
4.0	24.400
5.0	24.400
6.0	24.400
7.0	24.400
8.0	24.400

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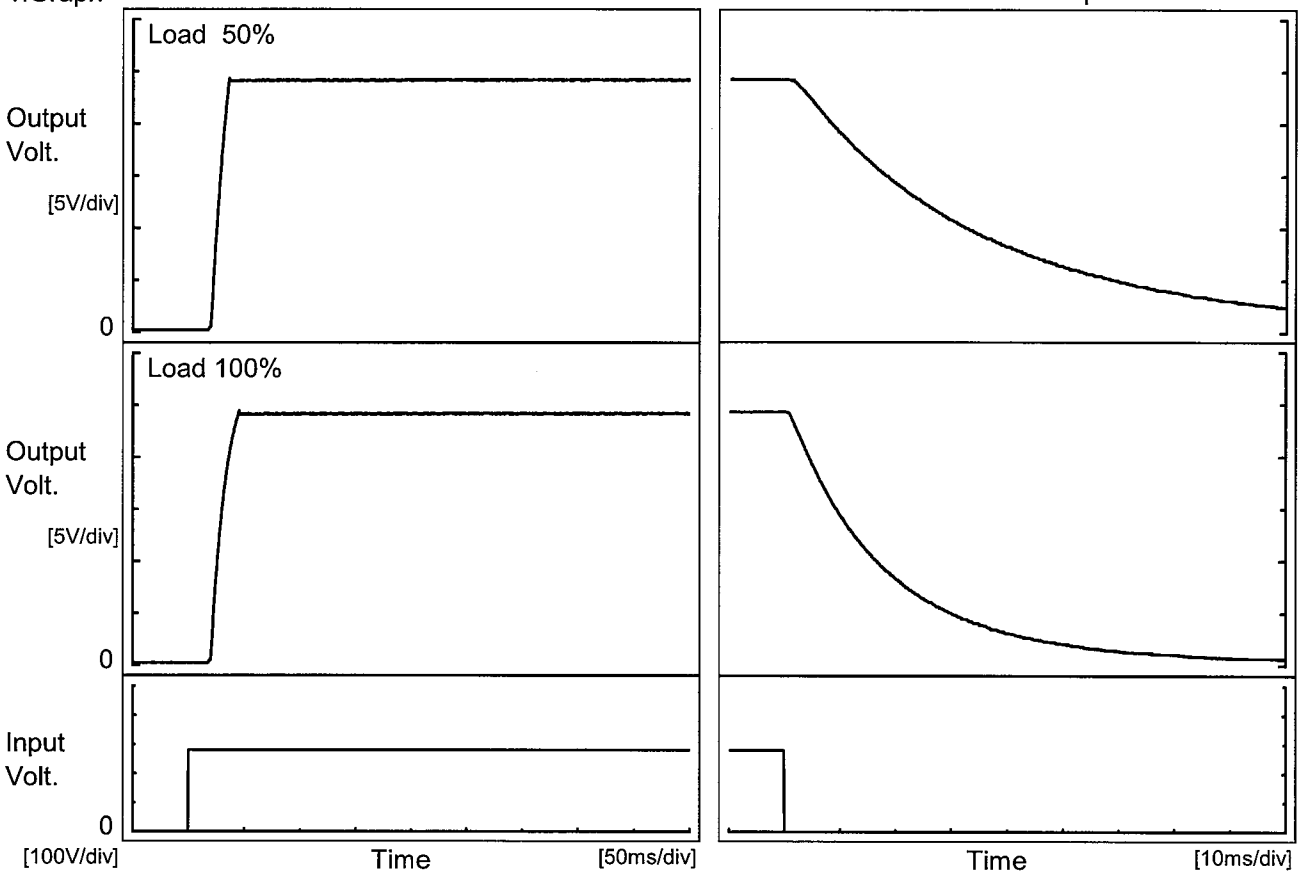
Model	SNDHS50B24
Item	Rise and Fall Time
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

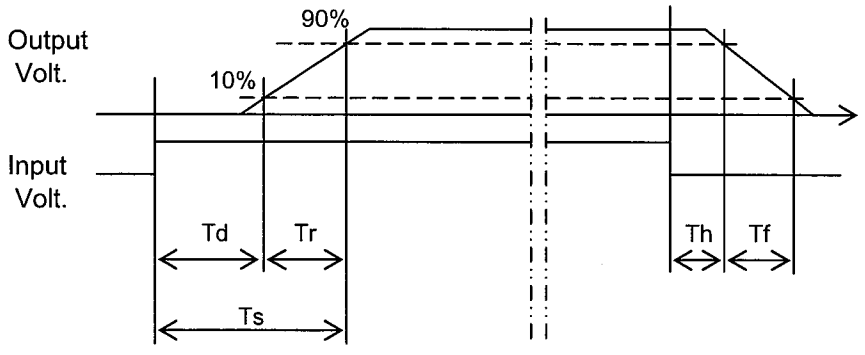
Input Volt. 280 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	21.3	12.8	34.1	5.6	82.0
100 %	21.5	17.8	39.3	2.9	41.6



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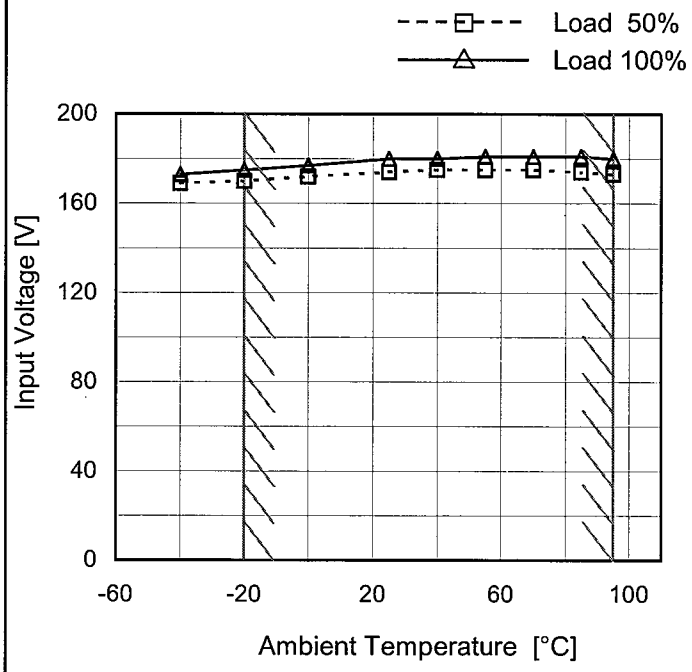
Model	SNDHS50B24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V2.1A

Testing Circuitry Figure A

1.Graph



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

2.Values

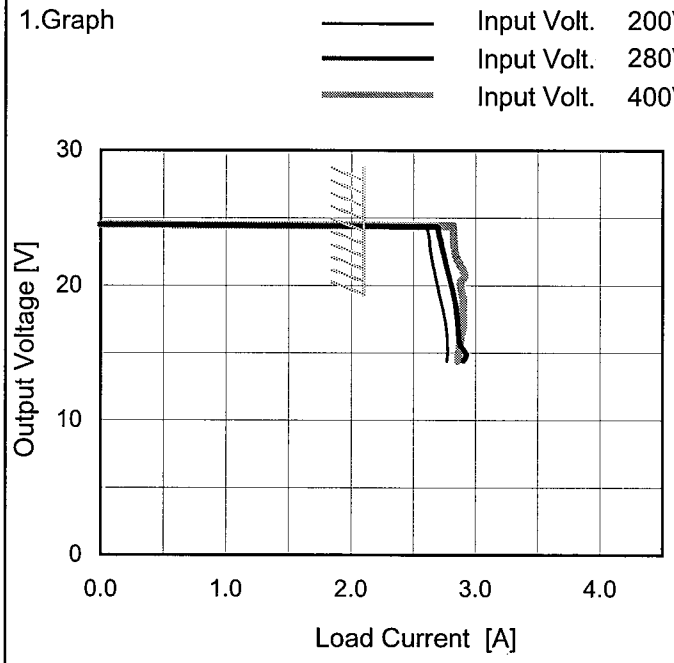
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	169	173
-20	170	175
0	172	177
25	174	180
40	175	180
55	175	181
70	175	181
85	174	181
95	173	180
--	-	-
--	-	-

COSEL

Model	SNDHS50B24
Item	Overcurrent Protection
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Intermittent operation occurs when the output voltage is from 14.4V to 0V.

2.Values

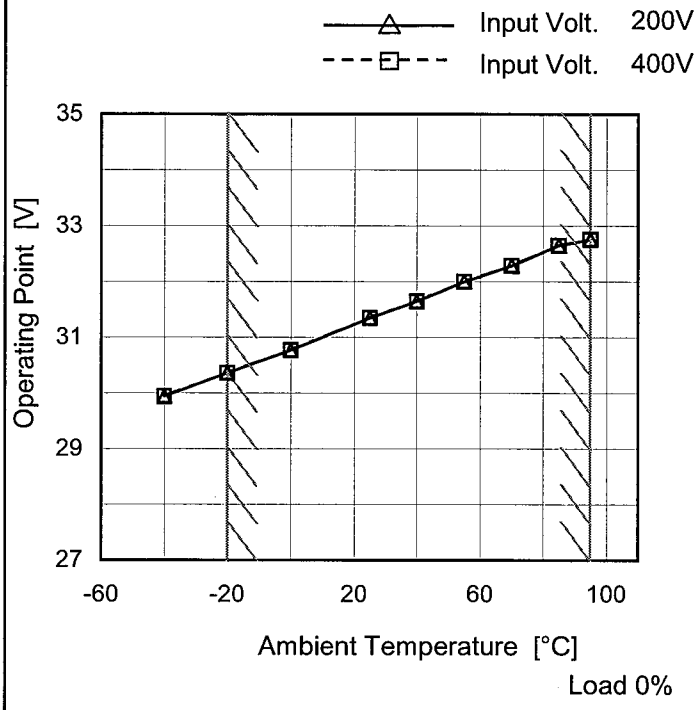
Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
22.8	2.64	2.73	2.83
21.6	2.65	2.76	2.86
19.2	2.71	2.82	2.90
16.8	2.76	2.86	2.90
14.4	2.77	2.90	2.86
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SNDHS50B24
Item	Overvoltage Protection
Object	+24V2.1A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 200[V]	Input Volt. 400[V]
-40	29.94	29.94
-20	30.36	30.36
0	30.77	30.77
25	31.35	31.35
40	31.65	31.65
55	32.00	32.00
70	32.29	32.29
85	32.65	32.65
95	32.76	32.76
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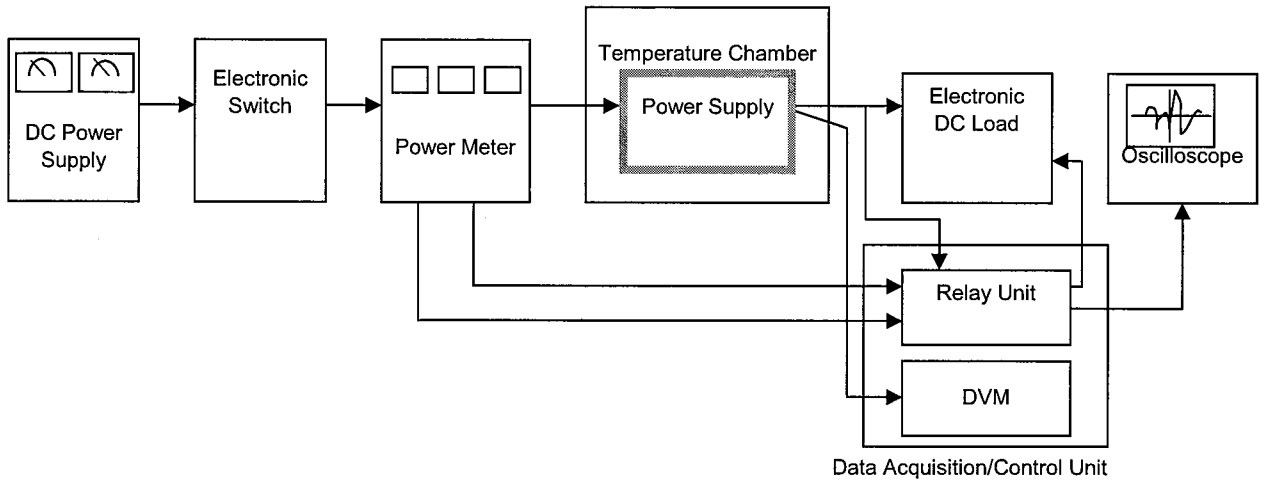

Figure A

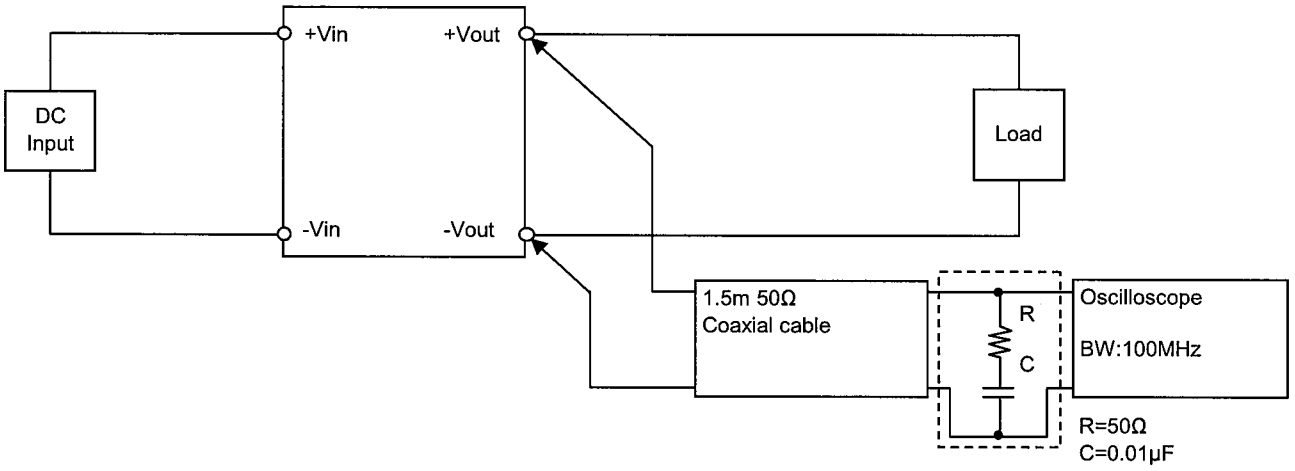

Figure B（Ripple and Ripple noise Characteristic）