COSEL

参考資料

TEST DATA OF SNDHS50A24

Regulated DC Power Supply
April 8, 2012

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COSEL CO.,LTD.

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CONTENTS

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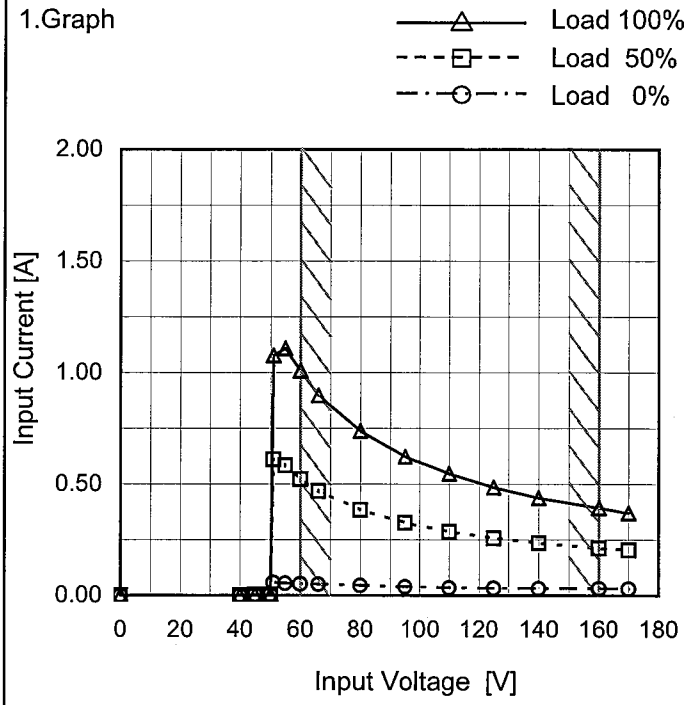
Model	SNDHS50A24
Item	Input Current (by Input Voltage)
Object	+24V2.1A

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]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0	0.000	0.000	0.000
40	0.000	0.000	0.000
45	0.002	0.002	0.002
50	0.003	0.003	0.003
51	0.058	0.610	1.078
55	0.054	0.583	1.109
60	0.052	0.522	1.009
66	0.050	0.468	0.898
80	0.044	0.384	0.738
95	0.038	0.326	0.623
110	0.034	0.286	0.548
125	0.032	0.258	0.485
140	0.031	0.235	0.439
160	0.031	0.213	0.394
170	0.031	0.203	0.371
--	-	-	-
--	-	-	-
--	-	-	-

BC-10639

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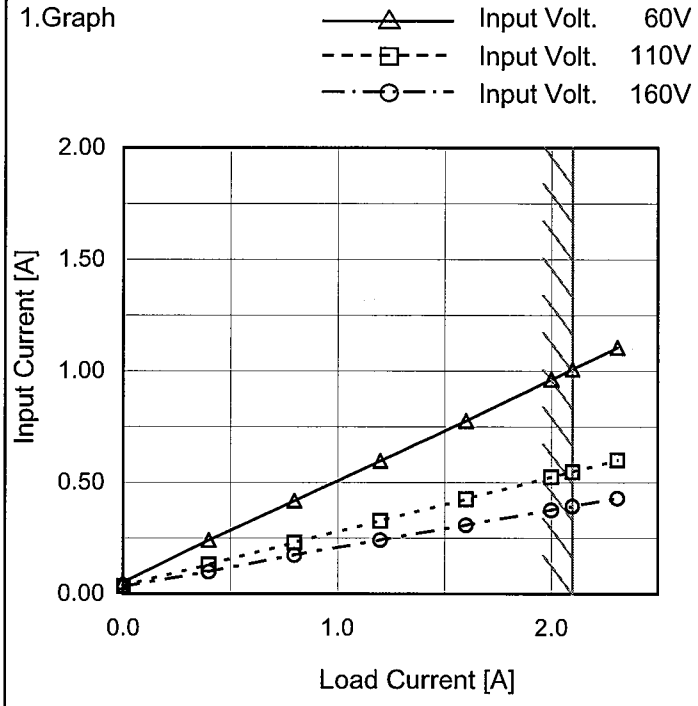
Model	SNDHS50A24
Item	Input Current (by Load Current)
Object	+24V2.1A

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]	Input Current [A]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0.00	0.052	0.034	0.031
0.40	0.241	0.131	0.100
0.80	0.419	0.230	0.173
1.20	0.598	0.327	0.241
1.60	0.778	0.425	0.309
2.00	0.963	0.524	0.377
2.10	1.009	0.548	0.394
2.31	1.107	0.600	0.430
--	-	-	-
--	-	-	-
--	-	-	-

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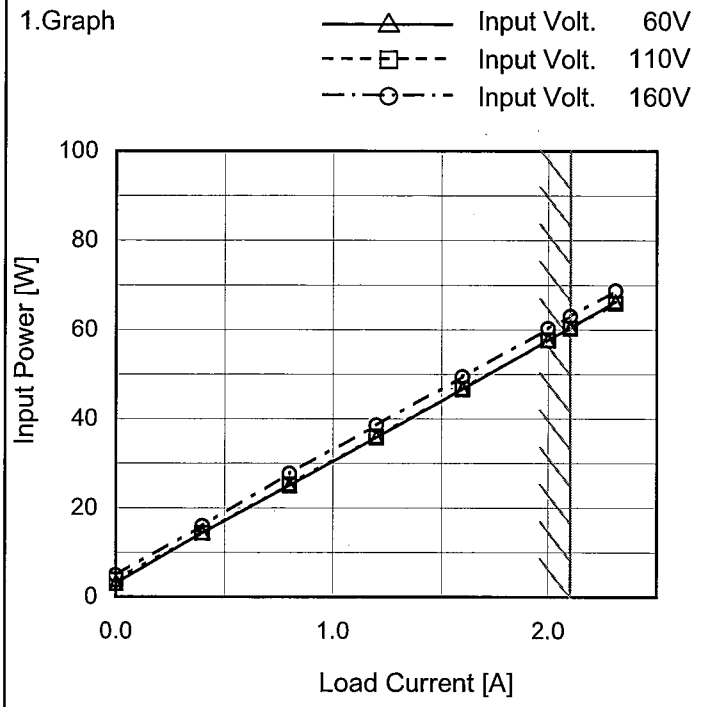
Model	SNDHS50A24
Item	Input Power (by Load Current)
Object	+24V2.1A

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]	Input Power [W]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0.00	3.11	3.78	4.92
0.40	14.45	14.40	15.96
0.80	25.08	25.32	27.72
1.20	35.83	36.00	38.55
1.60	46.68	46.74	49.41
2.00	57.70	57.60	60.30
2.10	60.50	60.30	63.03
2.31	66.30	65.90	68.75
--	-	-	-
--	-	-	-
--	-	-	-

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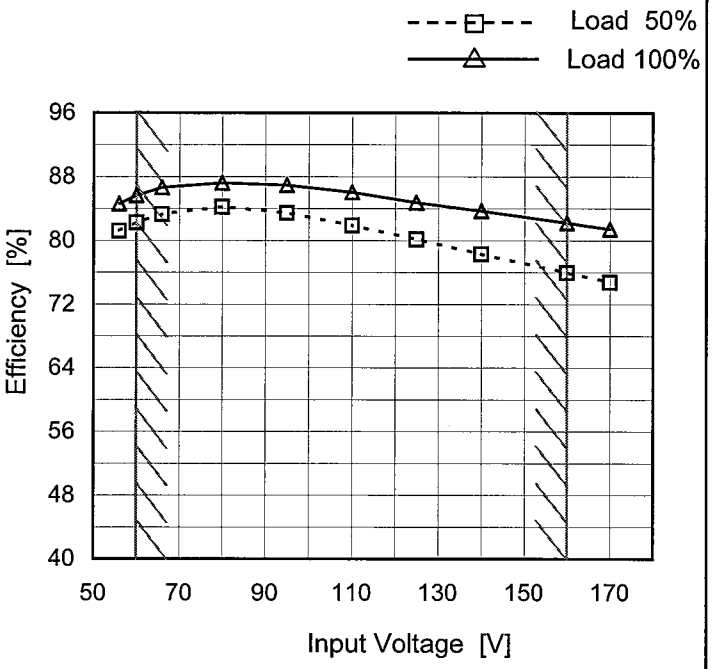
Model	SNDHS50A24
Item	Efficiency (by Input Voltage)
Object	+24V2.1A

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]	Efficiency [%]	
	Load 50%	Load 100%
56	81.2	84.6
60	82.2	85.6
66	83.3	86.6
80	84.2	87.2
95	83.4	86.9
110	81.9	86.1
125	80.1	84.8
140	78.3	83.7
160	76.0	82.3
170	74.7	81.5

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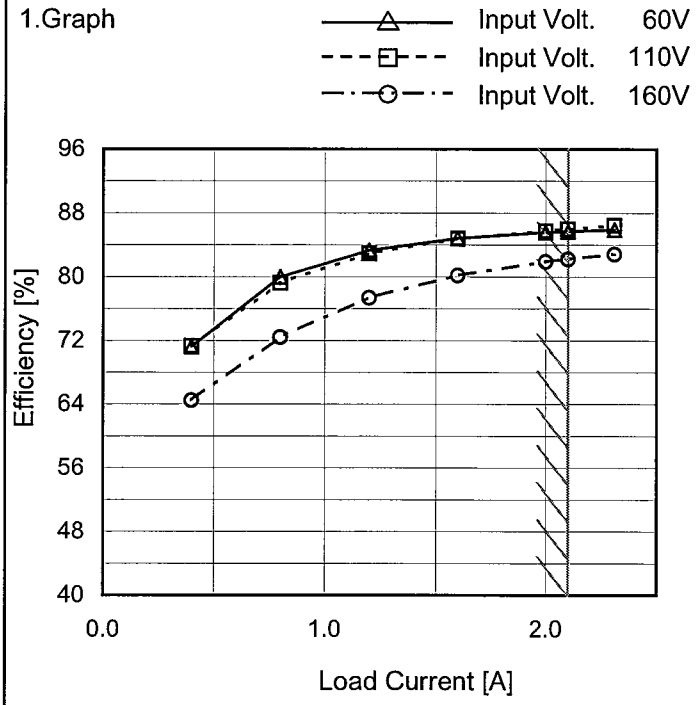
Model	SNDHS50A24
Item	Efficiency (by Load Current)
Object	+24V2.1A

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]	Efficiency [%]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0.00	-	-	-
0.40	71.3	71.3	64.5
0.80	80.0	79.2	72.4
1.20	83.3	82.9	77.4
1.60	84.9	84.8	80.2
2.00	85.6	85.7	81.9
2.10	85.7	86.0	82.3
2.31	85.9	86.4	82.9
--	-	-	-
--	-	-	-
--	-	-	-

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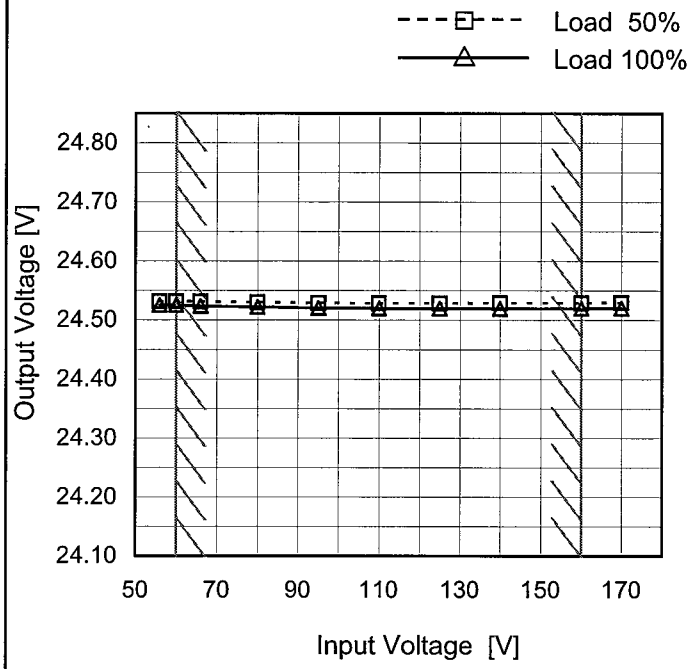
Model	SNDHS50A24
Item	Line Regulation
Object	+24V2.1A

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%
56	24.532	24.526
60	24.532	24.526
66	24.531	24.524
80	24.530	24.522
95	24.529	24.521
110	24.529	24.520
125	24.529	24.520
140	24.529	24.520
160	24.529	24.520
170	24.529	24.520

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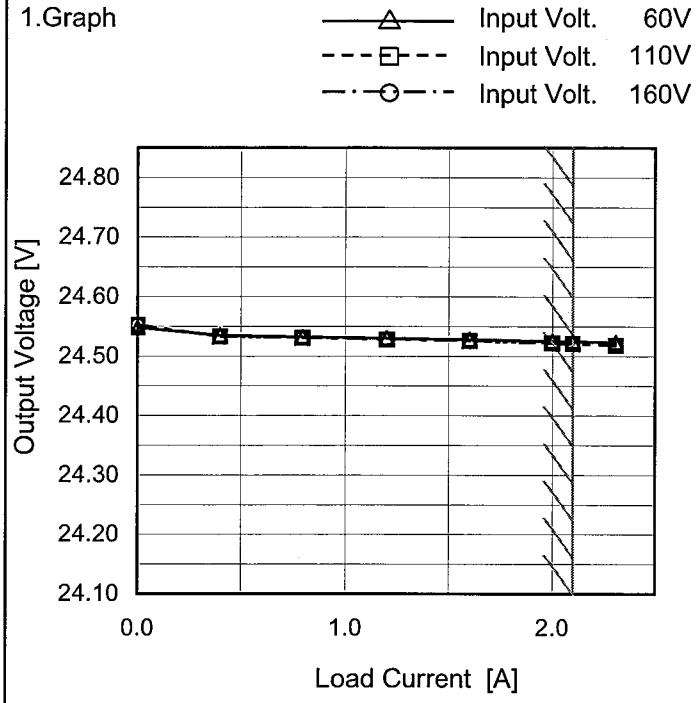
Model	SNDHS50A24
Item	Load Regulation
Object	+24V2.1A

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. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0.00	24.548	24.552	24.553
0.40	24.535	24.533	24.533
0.80	24.533	24.530	24.531
1.20	24.531	24.528	24.529
1.60	24.528	24.526	24.526
2.00	24.526	24.522	24.522
2.10	24.525	24.521	24.521
2.31	24.523	24.518	24.518
--	-	-	-
--	-	-	-
--	-	-	-

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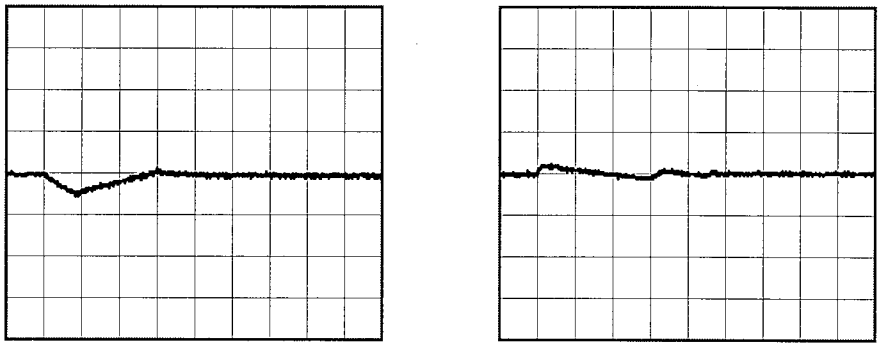
Model	SNDHS50A24
Item	Dynamic Load Response
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure A

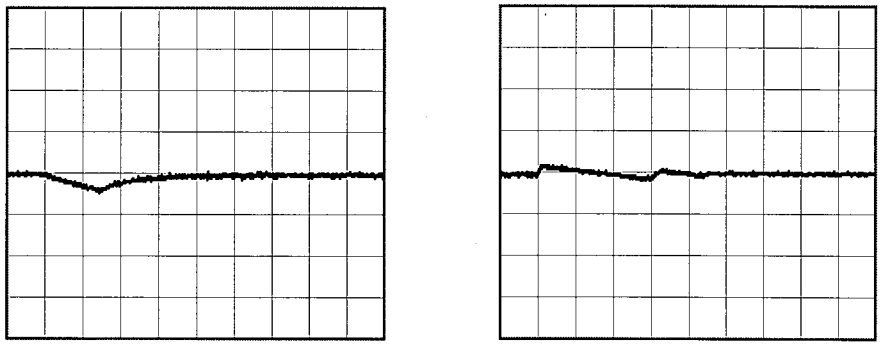
Input Volt. 110 V
Cycle 1000 ms

Load Current
2.1A/50 μ s

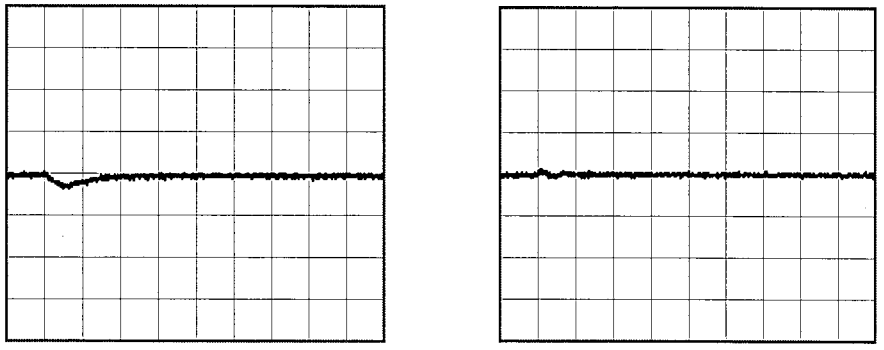
Min. Load (0A) ⟷
Load 100% (2.1A)



Min. Load (0A) ⟷
Load 50% (1.05A)



Load 10% (0.21A) ⟷
Load 100% (2.1A)



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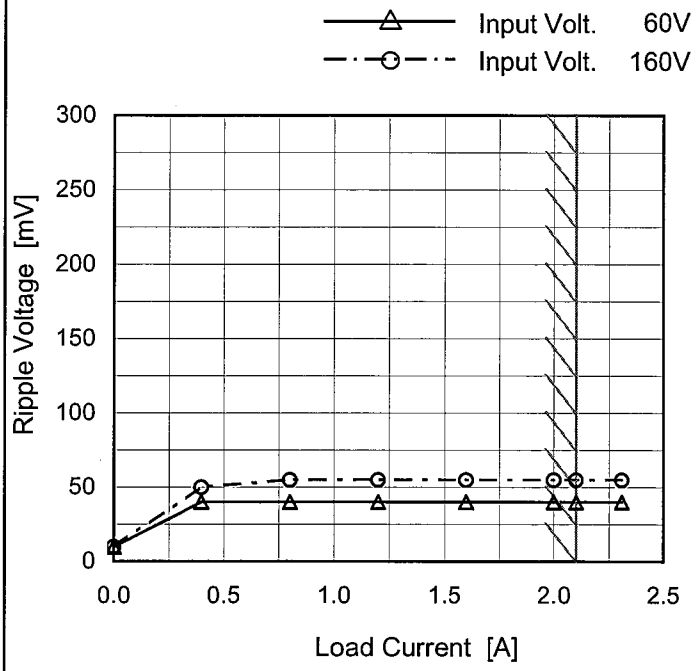
Model	SNDHS50A24
Item	Ripple Voltage (by Load Current)
Object	+24V2.1A

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.

Ripple [mVp-p]

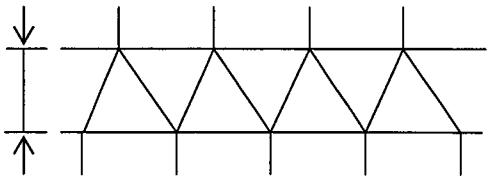


Fig.Complex Ripple Wave Form

2.Values

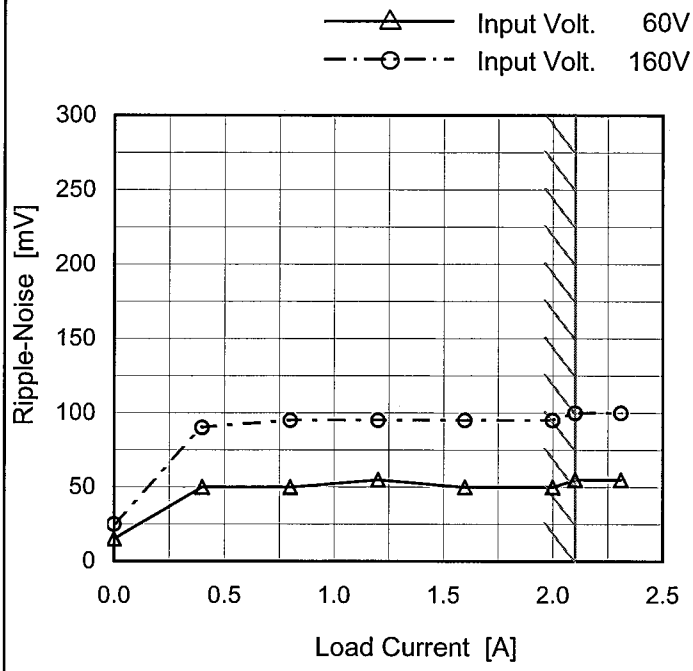
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 60 [V]	Input Volt. 160 [V]
0.00	10	10
0.40	40	50
0.80	40	55
1.20	40	55
1.60	40	55
2.00	40	55
2.10	40	55
2.31	40	55
--	-	-
--	-	-
--	-	-

COSEL

Model	SNDHS50A24
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.

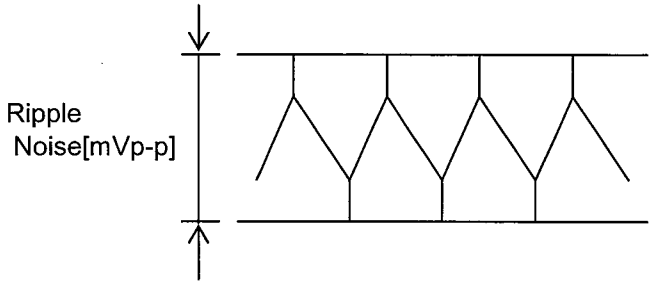


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 60 [V]	Input Volt. 160 [V]
0.00	15	25
0.40	50	90
0.80	50	95
1.20	55	95
1.60	50	95
2.00	50	95
2.10	55	100
2.31	55	100
--	-	-
--	-	-
--	-	-

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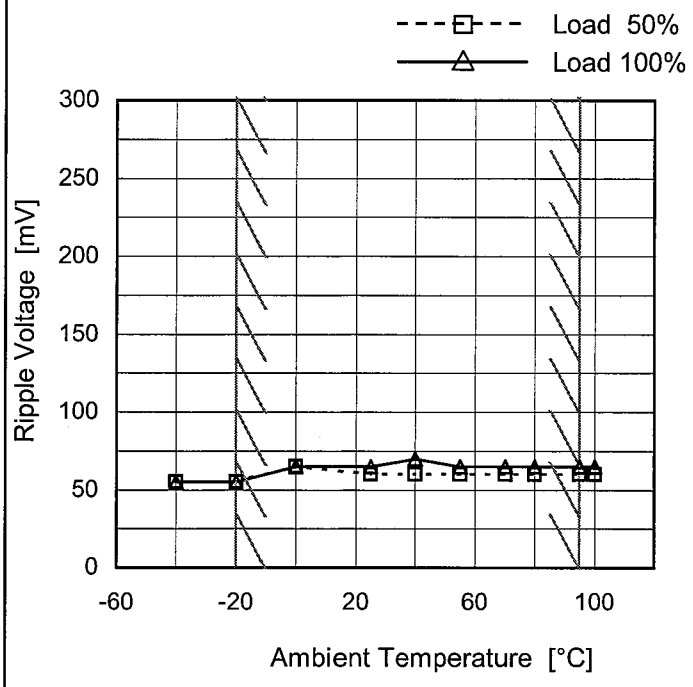
Model	SNDHS50A24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V2.1A

Testing Circuitry Figure B

1.Graph



Input Volt. 110V

Measured by 100 MHz Oscilloscope.

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

Ripple [mVp-p]

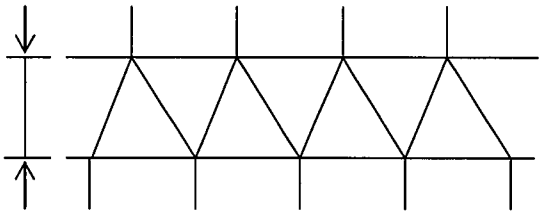


Fig.Complex Ripple Wave Form

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	55	55
-20	55	55
0	65	65
25	60	65
40	60	70
55	60	65
70	60	65
80	60	65
95	60	65
100	60	65
--	-	-

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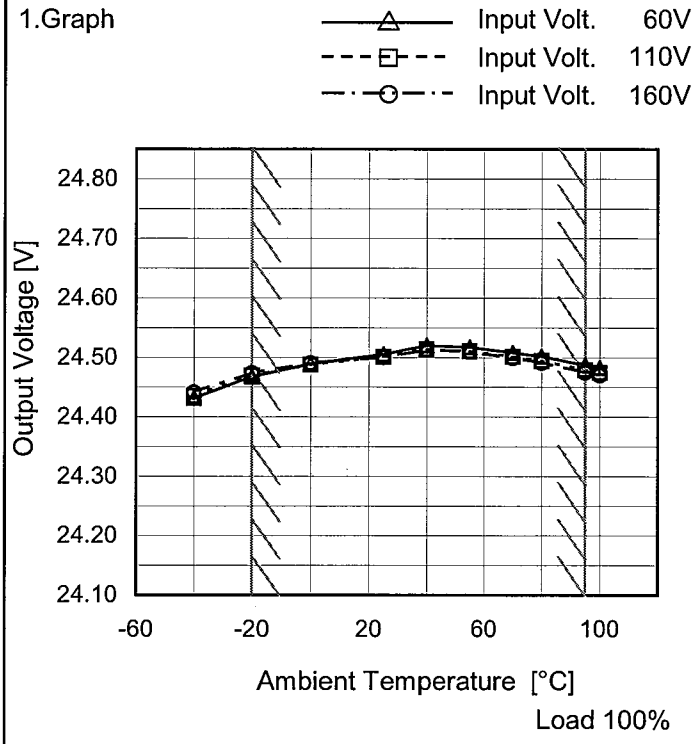
Model	SNDHS50A24
Item	Ambient Temperature Drift
Object	+24V2.1A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
-40	24.432	24.435	24.442
-20	24.468	24.469	24.474
0	24.490	24.488	24.491
25	24.506	24.501	24.501
40	24.520	24.514	24.513
55	24.517	24.511	24.509
70	24.508	24.501	24.499
80	24.502	24.494	24.491
95	24.488	24.479	24.475
100	24.483	24.474	24.470
--	-	-	-

COSEL

Model	SNDHS50A24	
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 : 60 - 160V
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	40	110	0	24.550	±41	±0.2
Minimum Voltage	-20	60	2.1	24.468		

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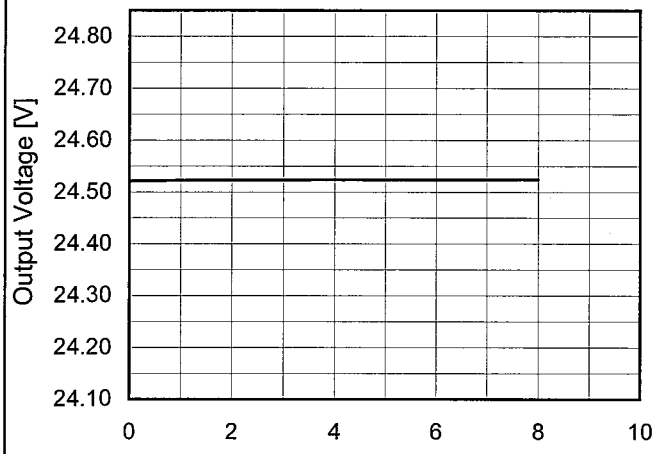
Model	SNDHS50A24
Item	Time Lapse Drift
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 110V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	24.518
0.5	24.522
1.0	24.522
2.0	24.523
3.0	24.523
4.0	24.524
5.0	24.524
6.0	24.524
7.0	24.524
8.0	24.524

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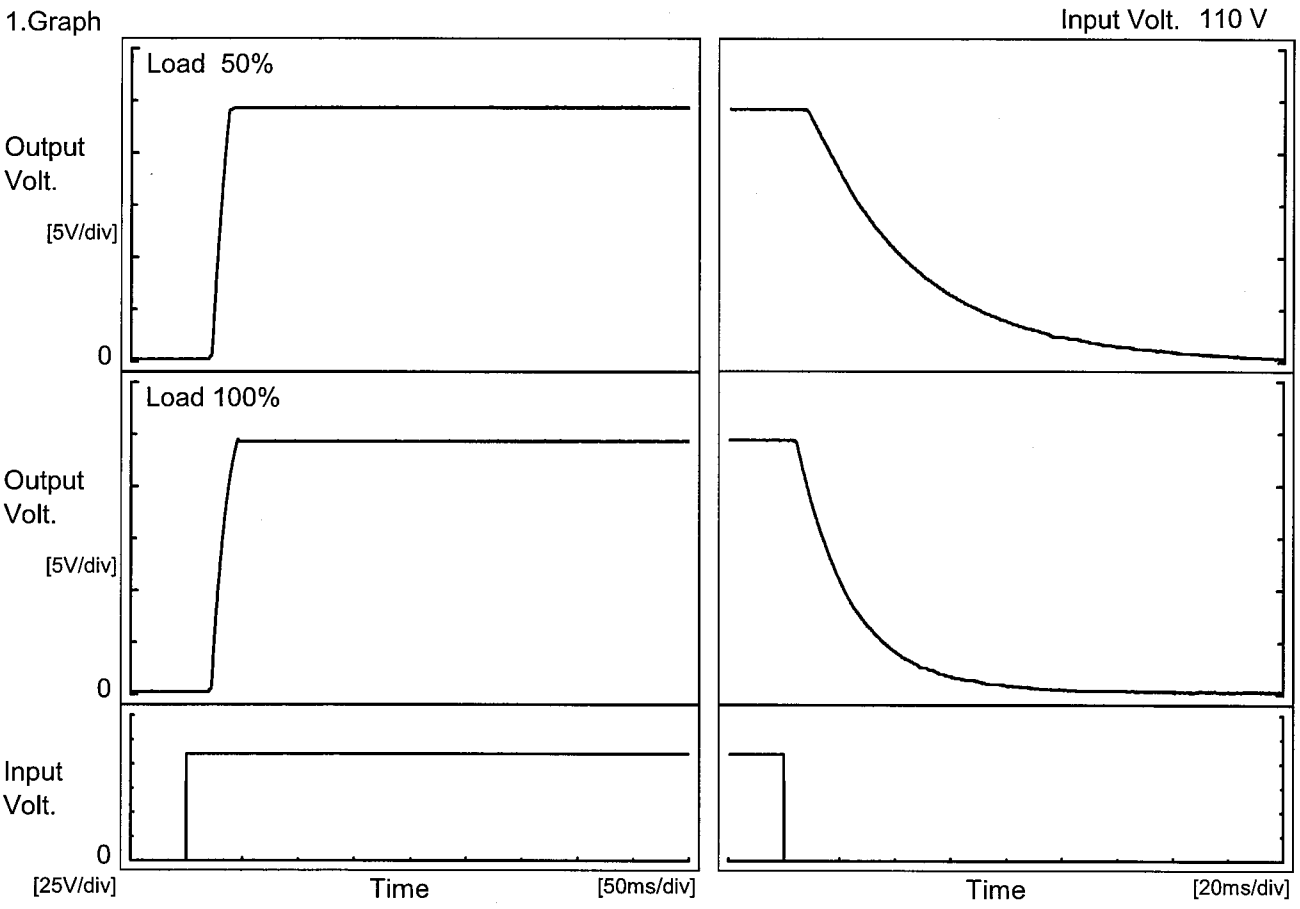
Model	SNDHS50A24
Item	Rise and Fall Time
Object	+24V2.1A

Temperature 25°C
Testing Circuitry Figure A

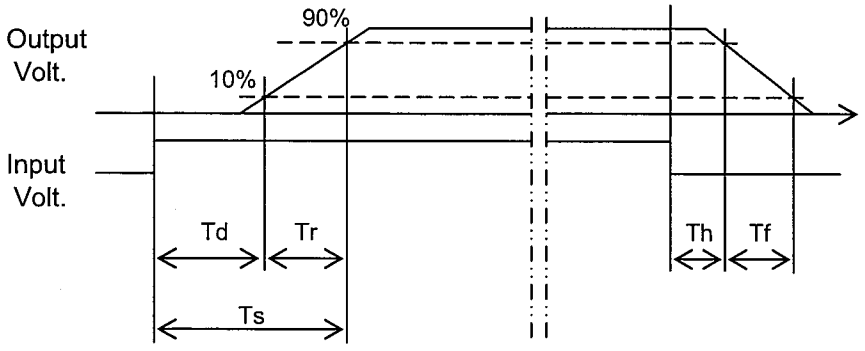
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	23.5	12.3	35.8	13.0	88.8
100 %	23.8	16.8	40.6	6.5	45.2



BC-10639

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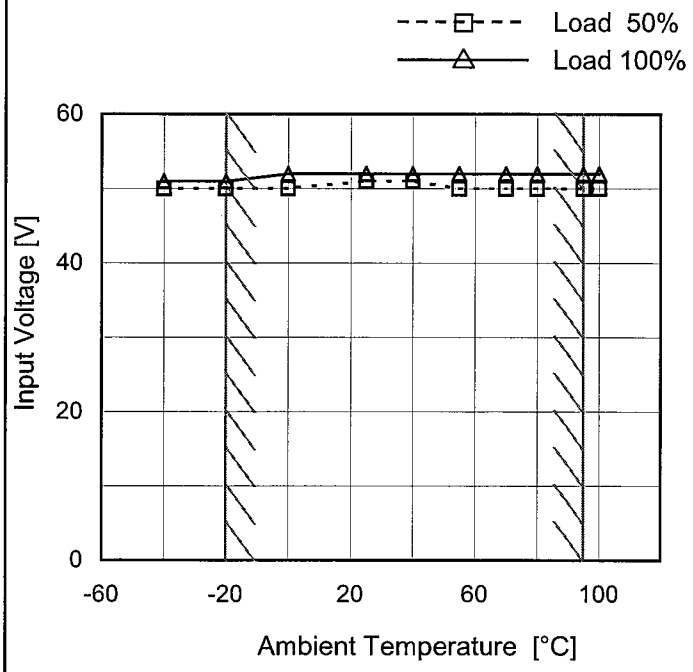
Model	SNDHS50A24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V2.1A

Testing Circuitry Figure A

1.Graph



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

2.Values

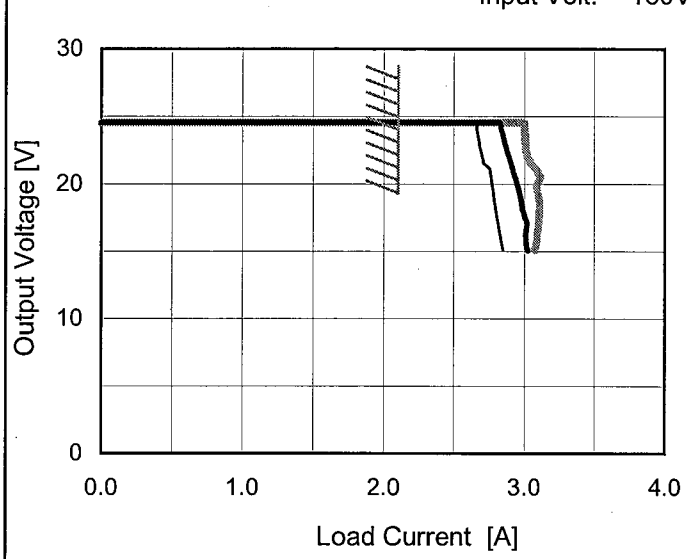
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	50	51
-20	50	51
0	50	52
25	51	52
40	51	52
55	50	52
70	50	52
80	50	52
95	50	52
100	50	52
--	-	-

COSEL

Model	SNDHS50A24
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 overcurrent protection is activated.

Intermittent operation occurs when the output voltage is from 15V to 0V.

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
22.8	2.68	2.87	3.01
21.6	2.71	2.91	3.03
19.2	2.78	2.97	3.10
16.8	2.82	3.02	3.10
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

BC-10639

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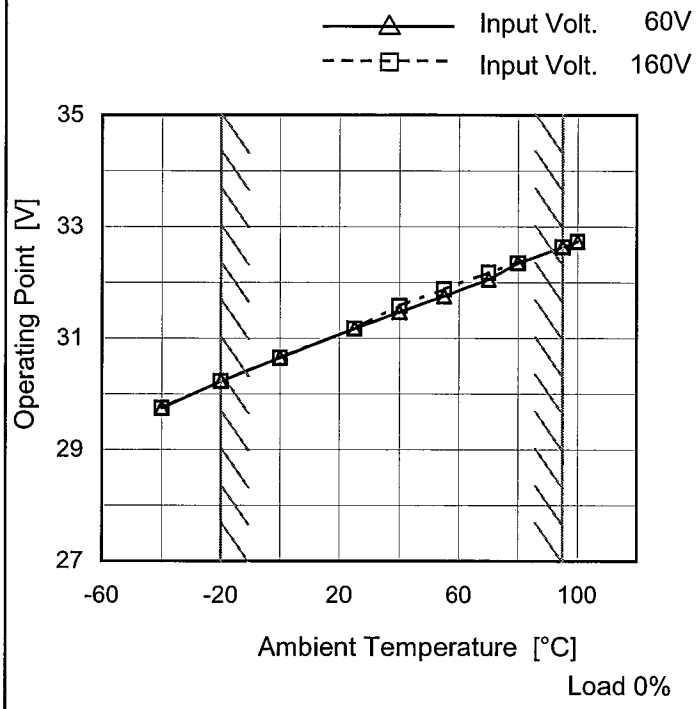
Model	SNDHS50A24
Item	Overvoltage Protection
Object	+24V2.1A

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. 60[V]	Input Volt. 160[V]
-40	29.75	29.75
-20	30.23	30.23
0	30.65	30.65
25	31.17	31.17
40	31.47	31.58
55	31.76	31.88
70	32.06	32.18
80	32.35	32.35
95	32.64	32.64
100	32.74	32.74
--	-	-

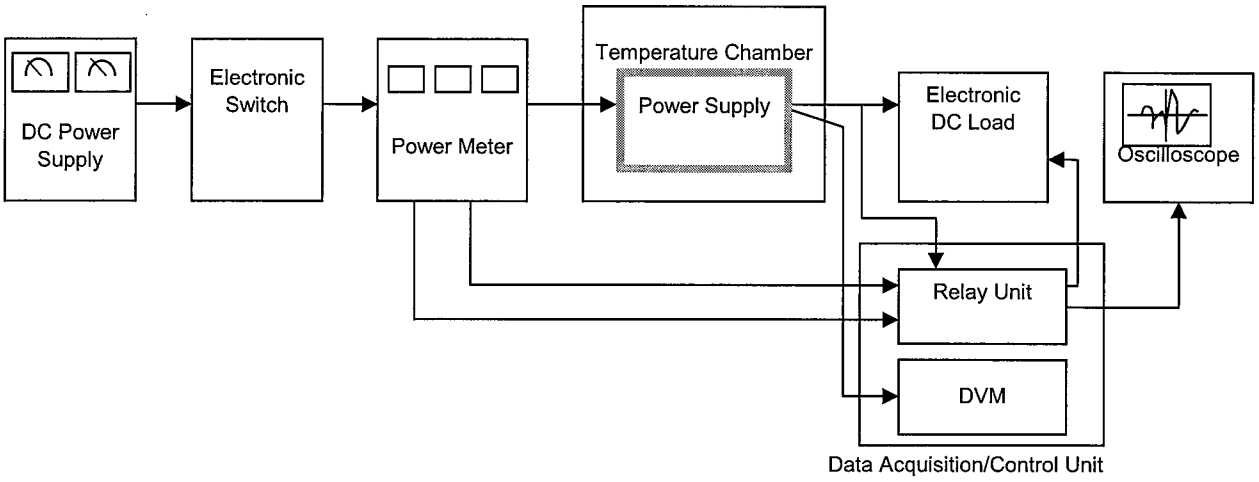


Figure A

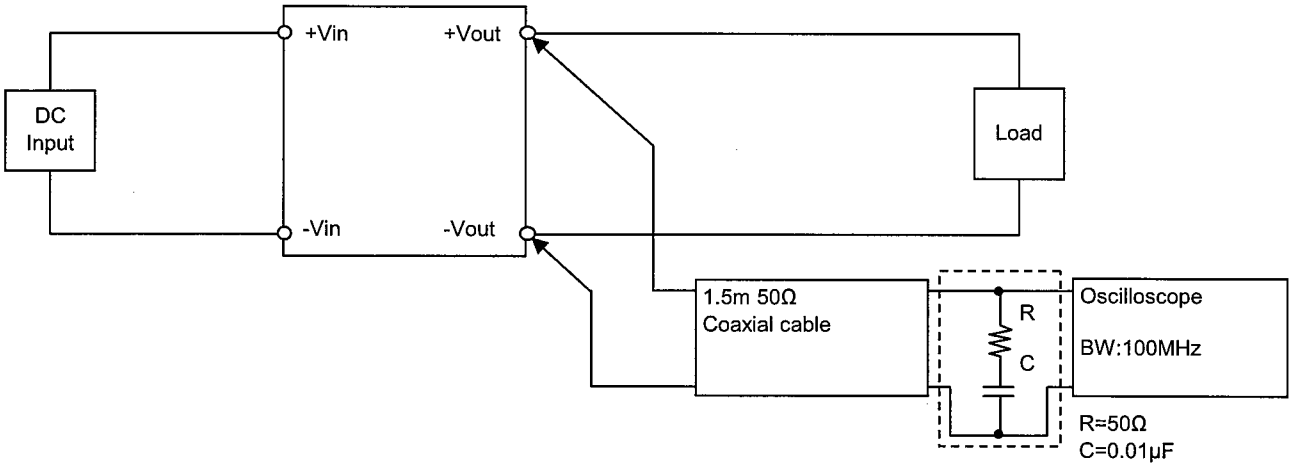


Figure B（Ripple and Ripple noise Characteristic）