COSEL

参考資料

TEST DATA OF SNDHS50A12

Regulated DC Power Supply
April 8, 2012

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Tadashi Arai Design Engineer

COSEL CO.,LTD.

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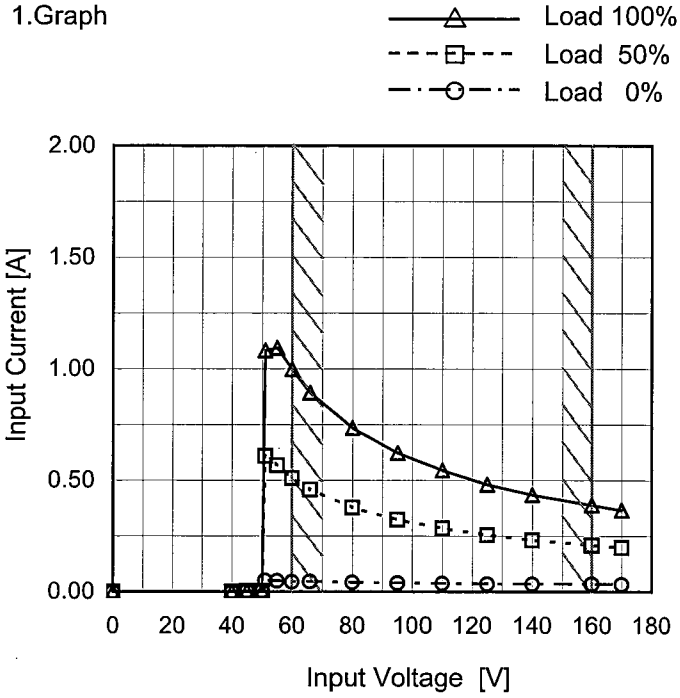
Item	Input Current (by Input Voltage)
Object	+12V4.2A

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	0.050	0.609	1.083
55	0.049	0.567	1.095
60	0.044	0.510	0.998
66	0.046	0.459	0.893
80	0.041	0.378	0.735
95	0.039	0.323	0.623
110	0.037	0.284	0.546
125	0.035	0.254	0.482
140	0.034	0.231	0.435
160	0.035	0.208	0.389
170	0.033	0.198	0.367
--	-	-	-
--	-	-	-
--	-	-	-

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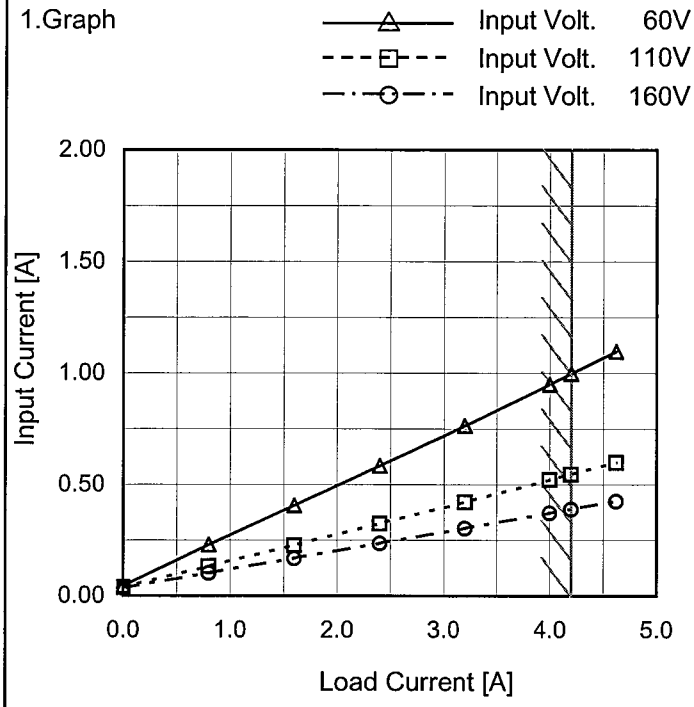
Model	SNDHS50A12
Item	Input Current (by Load Current)
Object	+12V4.2A

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	0.044	0.037	0.035
0.80	0.230	0.132	0.102
1.60	0.406	0.227	0.169
2.40	0.585	0.324	0.235
3.20	0.765	0.422	0.303
4.00	0.950	0.521	0.372
4.20	0.998	0.546	0.389
4.62	1.097	0.599	0.425
--	-	-	-
--	-	-	-
--	-	-	-

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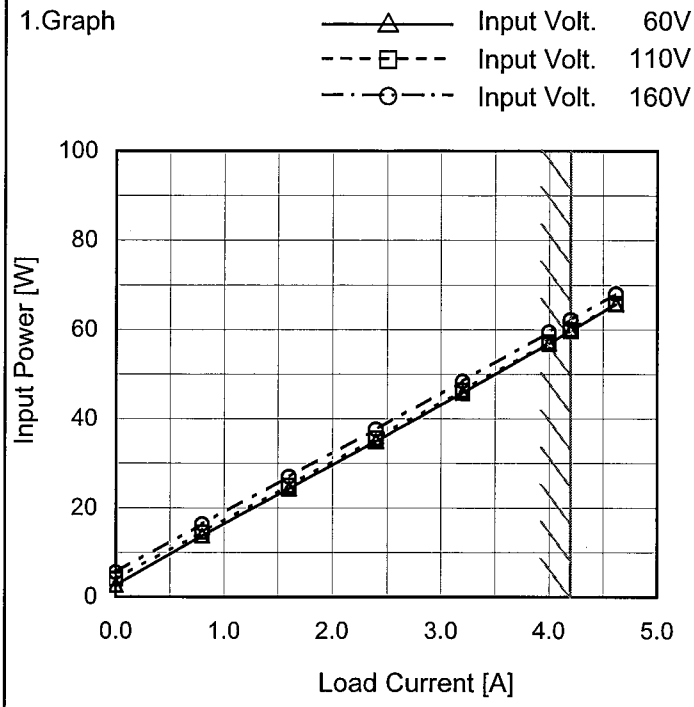
Model	SNDHS50A12
Item	Input Power (by Load Current)
Object	+12V4.2A

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	2.66	4.05	5.55
0.80	13.80	14.49	16.38
1.60	24.32	24.99	27.00
2.40	35.01	35.61	37.65
3.20	45.82	46.32	48.45
4.00	56.90	57.20	59.45
4.20	59.80	60.00	62.24
4.62	65.70	65.80	68.04
--	-	-	-
--	-	-	-
--	-	-	-

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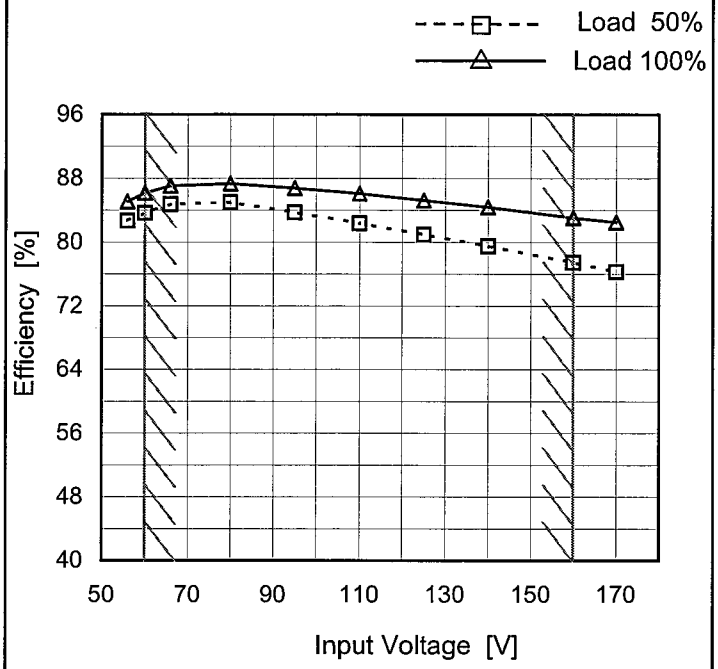
Model	SNDHS50A12
Item	Efficiency (by Input Voltage)
Object	+12V4.2A

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	82.7	85.1
60	83.7	86.2
66	84.7	87.1
80	85.0	87.4
95	83.7	86.8
110	82.4	86.1
125	81.0	85.2
140	79.5	84.4
160	77.5	83.1
170	76.3	82.5

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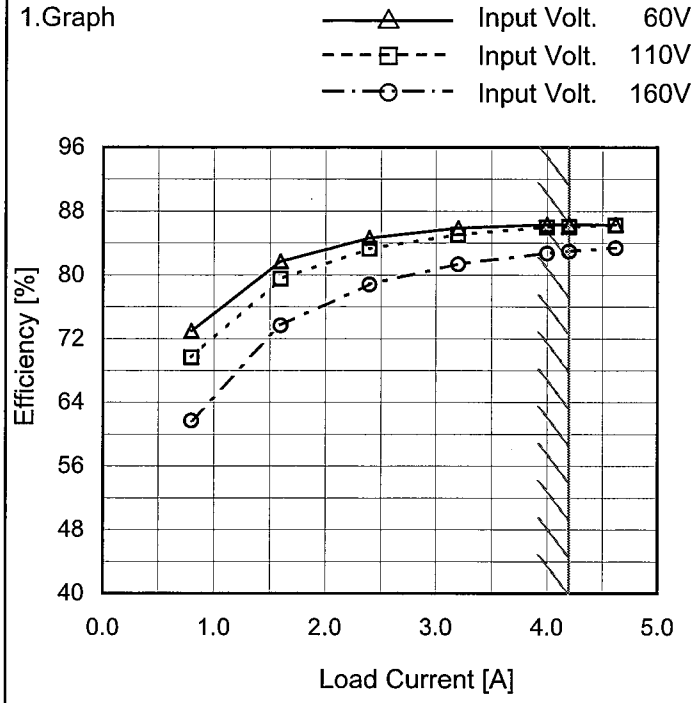
Model	SNDHS50A12
Item	Efficiency (by Load Current)
Object	+12V4.2A

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	-	-	-
0.80	73.0	69.7	61.7
1.60	81.7	79.5	73.7
2.40	84.7	83.3	78.8
3.20	85.9	85.0	81.4
4.00	86.4	86.0	82.7
4.20	86.3	86.0	83.0
4.62	86.3	86.2	83.4
--	-	-	-
--	-	-	-
--	-	-	-

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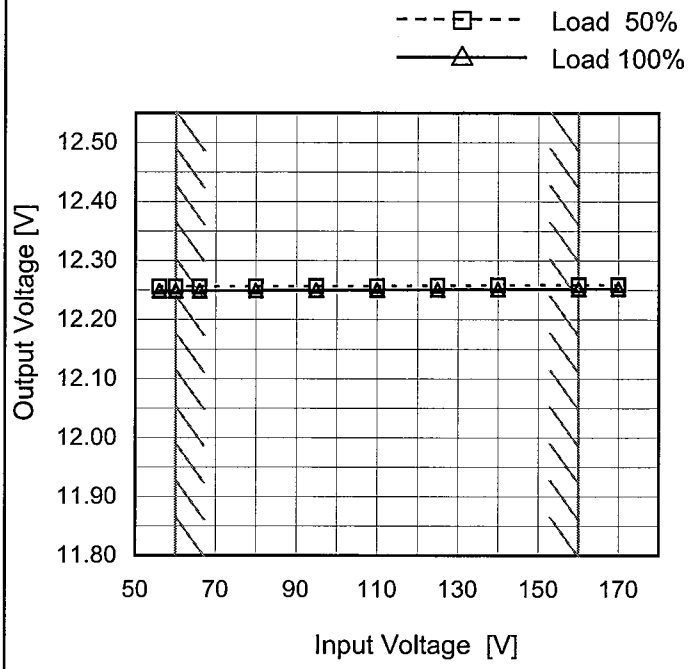
Model	SNDHS50A12
Item	Line Regulation
Object	+12V4.2A

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	12.256	12.249
60	12.256	12.249
66	12.256	12.249
80	12.256	12.250
95	12.257	12.250
110	12.257	12.251
125	12.258	12.251
140	12.258	12.252
160	12.259	12.253
170	12.259	12.253

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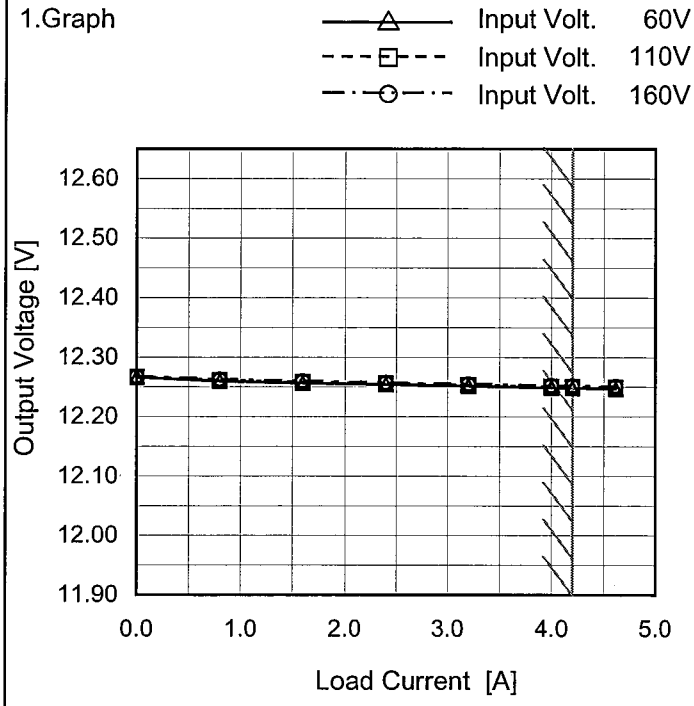
Model	SNDHS50A12
Item	Load Regulation
Object	+12V4.2A

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	12.267	12.267	12.267
0.80	12.260	12.261	12.263
1.60	12.257	12.258	12.260
2.40	12.254	12.256	12.257
3.20	12.252	12.253	12.255
4.00	12.249	12.251	12.253
4.20	12.248	12.251	12.252
4.62	12.247	12.249	12.251
--	-	-	-
--	-	-	-
--	-	-	-

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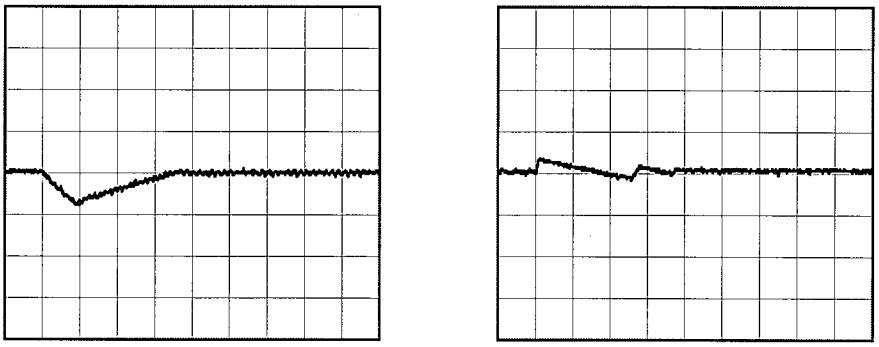
Model	SNDHS50A12
Item	Dynamic Load Response
Object	+12V4.2A

Temperature 25°C
Testing Circuitry Figure A

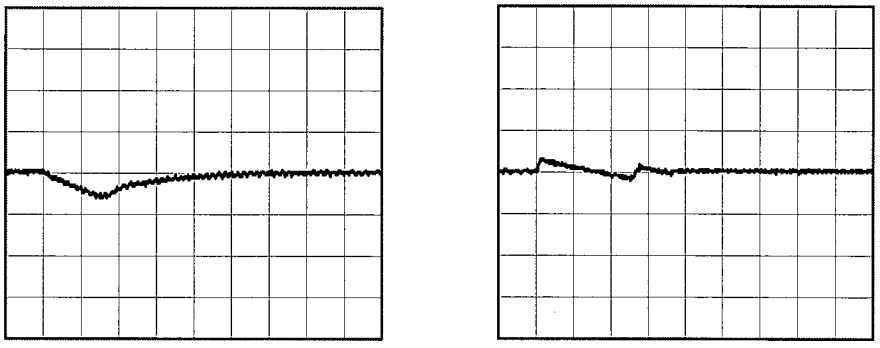
Input Volt. 110 V
Cycle 1000 ms

Load Current
4.2A/50 μ s

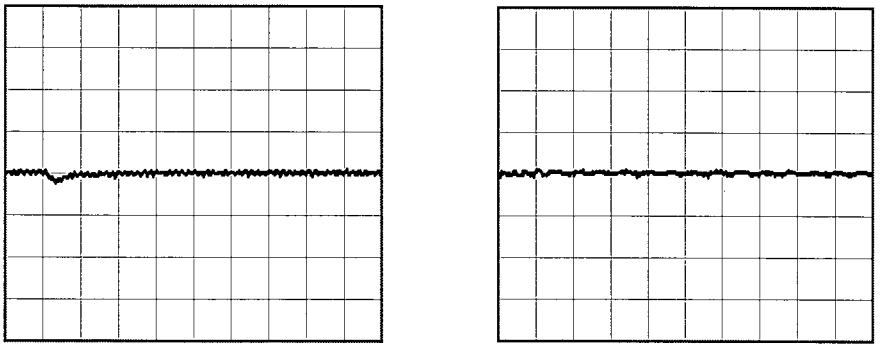
Min. Load (0A) ⟷
Load 100% (4.2A)



Min. Load (0A) ⟷
Load 50% (2.1A)



Load 10% (0.42A) ⟷
Load 100% (4.2A)



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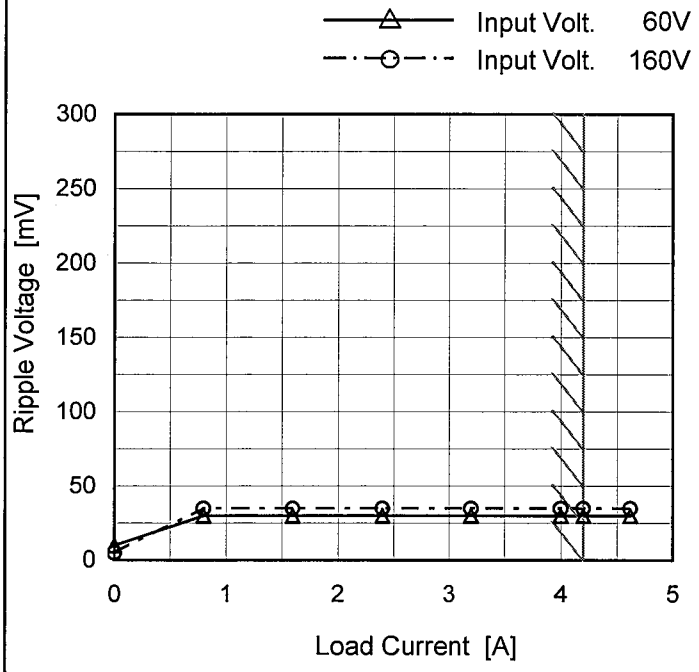
Model	SNDHS50A12
Item	Ripple Voltage (by Load Current)
Object	+12V4.2A

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]

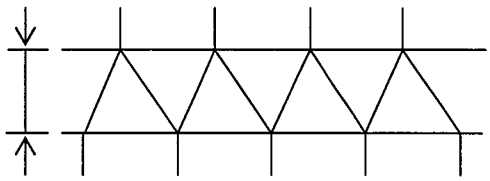


Fig.Complex Ripple Wave Form

2.Values

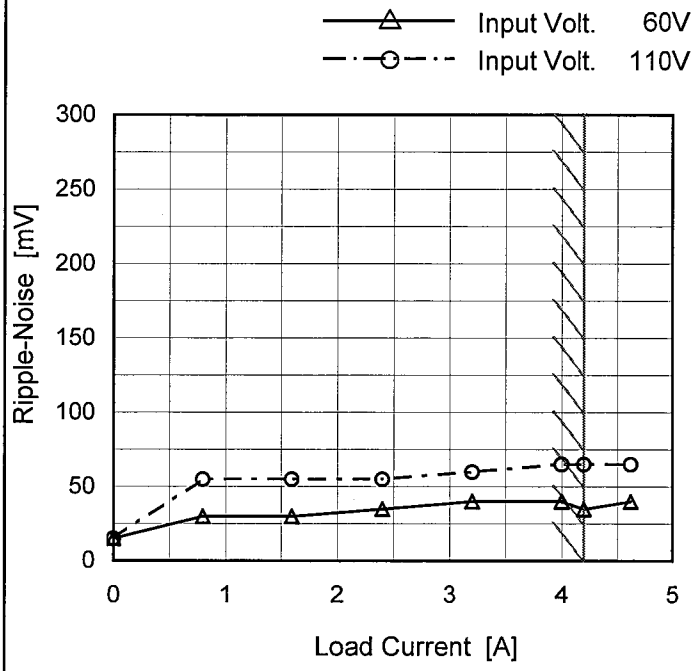
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 60 [V]	Input Volt. 160 [V]
0.00	10	5
0.80	30	35
1.60	30	35
2.40	30	35
3.20	30	35
4.00	30	35
4.20	30	35
4.62	30	35
--	-	-
--	-	-
--	-	-

COSEL

Model	SNDHS50A12
Item	Ripple-Noise
Object	+12V4.2A

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.

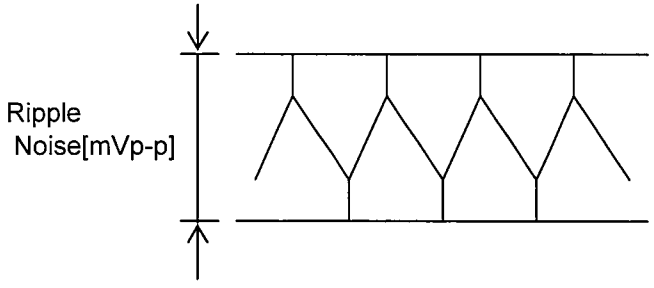


Fig.Complex Ripple Noise Wave Form

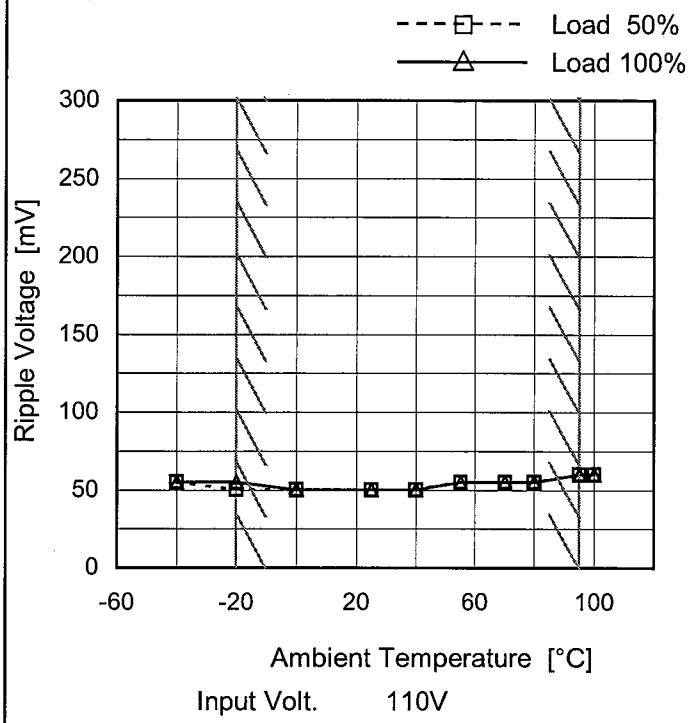
2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 60 [V]	Input Volt. 110 [V]
0.00	15	15
0.80	30	55
1.60	30	55
2.40	35	55
3.20	40	60
4.00	40	65
4.20	35	65
4.62	40	65
--	-	-
--	-	-
--	-	-

Model	SNDHS50A12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V4.2A

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]

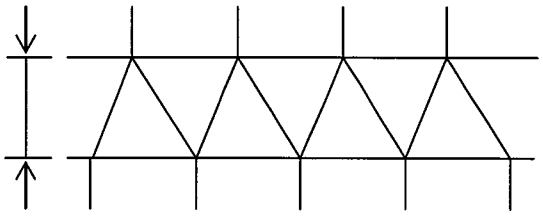


Fig.Complex Ripple Wave Form

2.Values

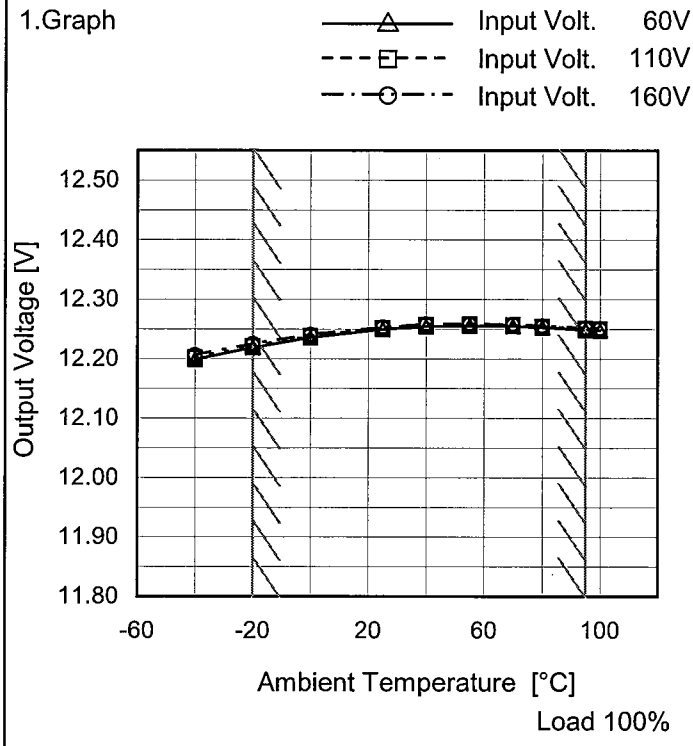
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	55	55
-20	50	55
0	50	50
25	50	50
40	50	50
55	55	55
70	55	55
80	55	55
95	60	60
100	60	60
--	-	-

COSEL

Model	SNDHS50A12
Item	Ambient Temperature Drift
Object	+12V4.2A

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	12.199	12.202	12.207
-20	12.219	12.221	12.225
0	12.236	12.238	12.241
25	12.250	12.251	12.253
40	12.255	12.257	12.259
55	12.256	12.258	12.259
70	12.255	12.257	12.258
80	12.253	12.254	12.255
95	12.249	12.251	12.252
100	12.248	12.250	12.251
--	-	-	-

COSEL

Model	SNDHS50A12	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V4.2A	

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 - 4.2A

* 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	70	110	0	12.277	±29	±0.2
Minimum Voltage	-20	60	4.2	12.219		

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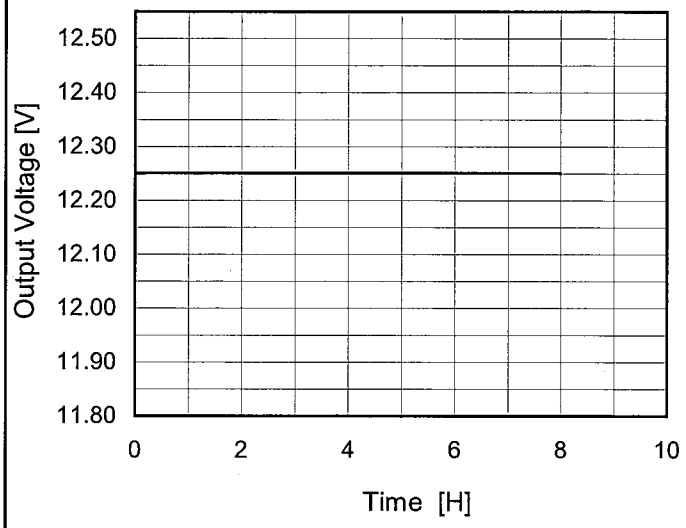
Model	SNDHS50A12
Item	Time Lapse Drift
Object	+12V4.2A

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	12.247
0.5	12.251
1.0	12.251
2.0	12.251
3.0	12.251
4.0	12.251
5.0	12.251
6.0	12.251
7.0	12.251
8.0	12.251

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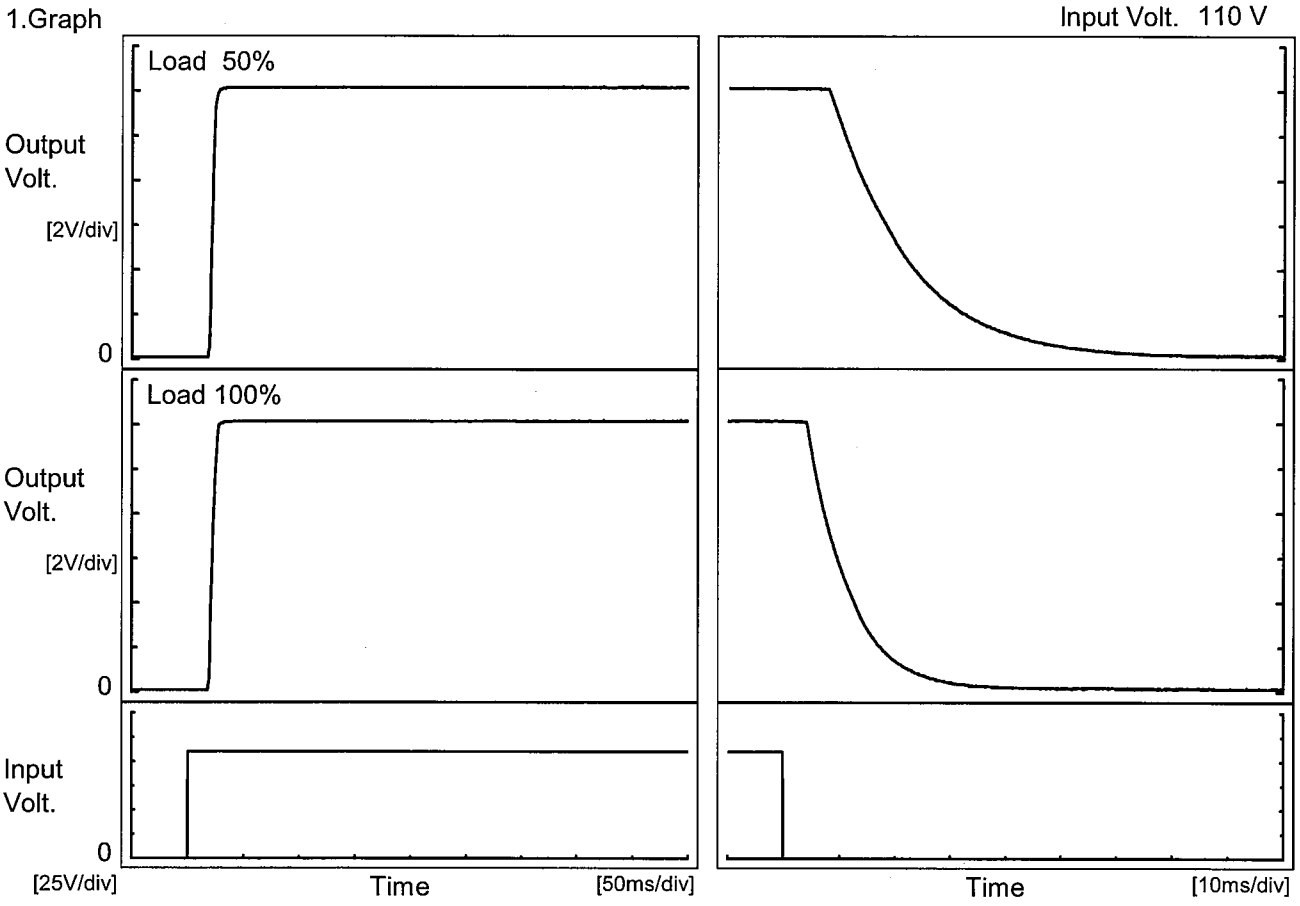
Model	SNDHS50A12	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+12V4.2A	

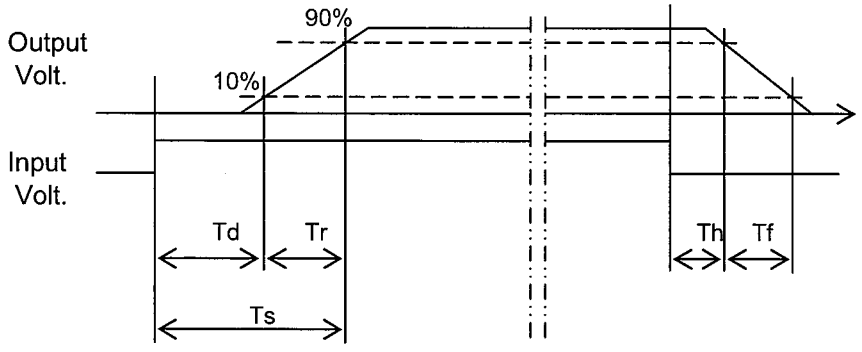
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	19.5	4.5	24.0	9.9	30.3
100 %	19.8	6.0	25.8	5.1	16.5



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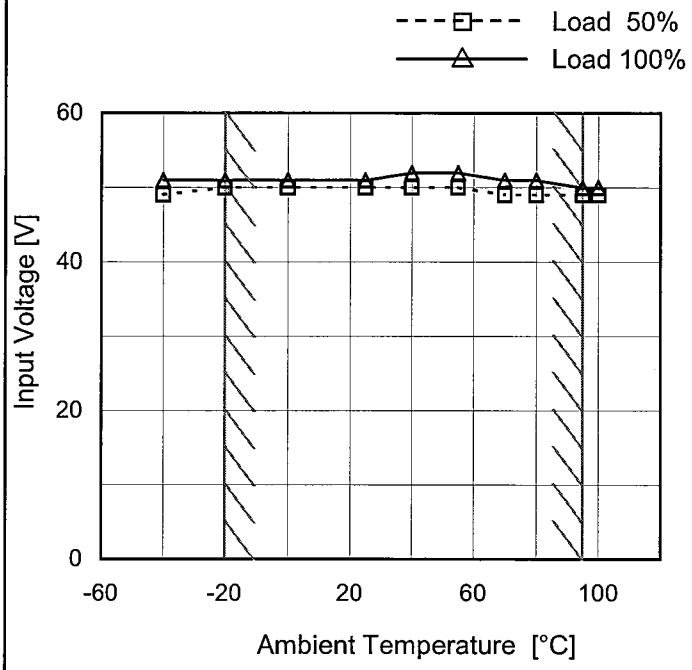
Model	SNDHS50A12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V4.2A

Testing Circuitry Figure A

1.Graph



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

2.Values

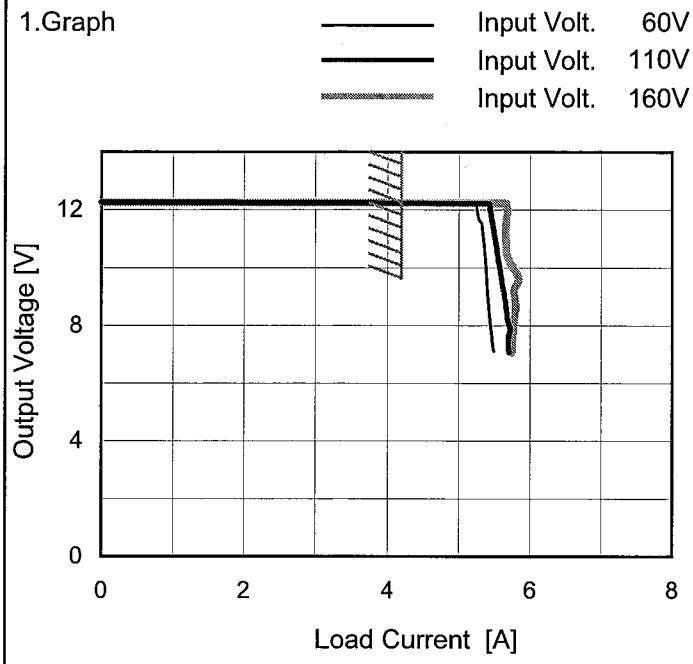
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	49	51
-20	50	51
0	50	51
25	50	51
40	50	52
55	50	52
70	49	51
80	49	51
95	49	50
100	49	50
--	-	-

COSEL

Model	SNDHS50A12
Item	Overcurrent Protection
Object	+12V4.2A

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 7V to 0V.

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
11.4	5.33	5.48	5.66
10.8	5.36	5.52	5.66
9.6	5.39	5.60	5.85
8.4	5.43	5.67	5.79
7.2	5.48	5.69	5.75
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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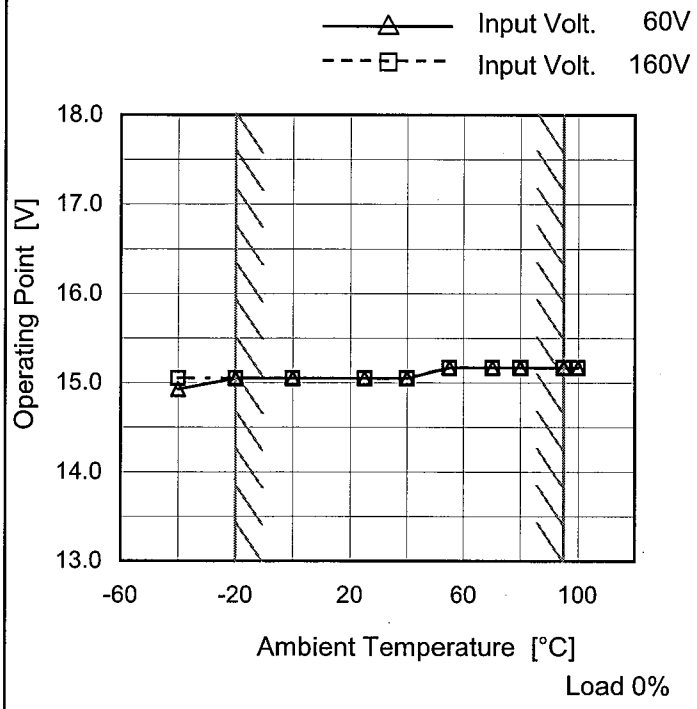
Model	SNDHS50A12
Item	Overvoltage Protection
Object	+12V4.2A

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	14.93	15.05
-20	15.05	15.05
0	15.05	15.05
25	15.05	15.05
40	15.05	15.05
55	15.17	15.17
70	15.17	15.17
80	15.17	15.17
95	15.17	15.17
100	15.17	15.17
--	-	-

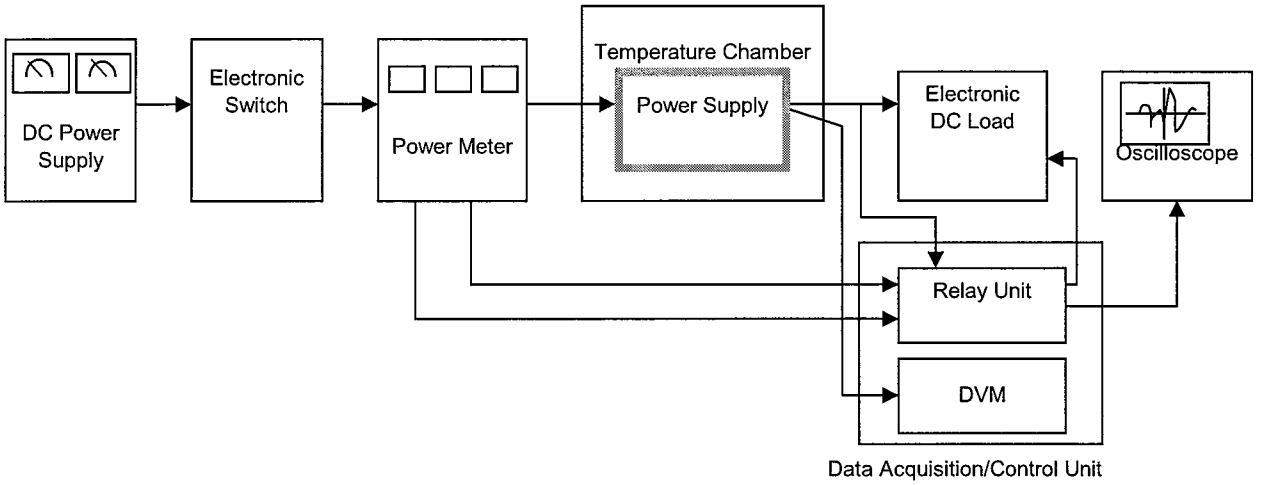


Figure A

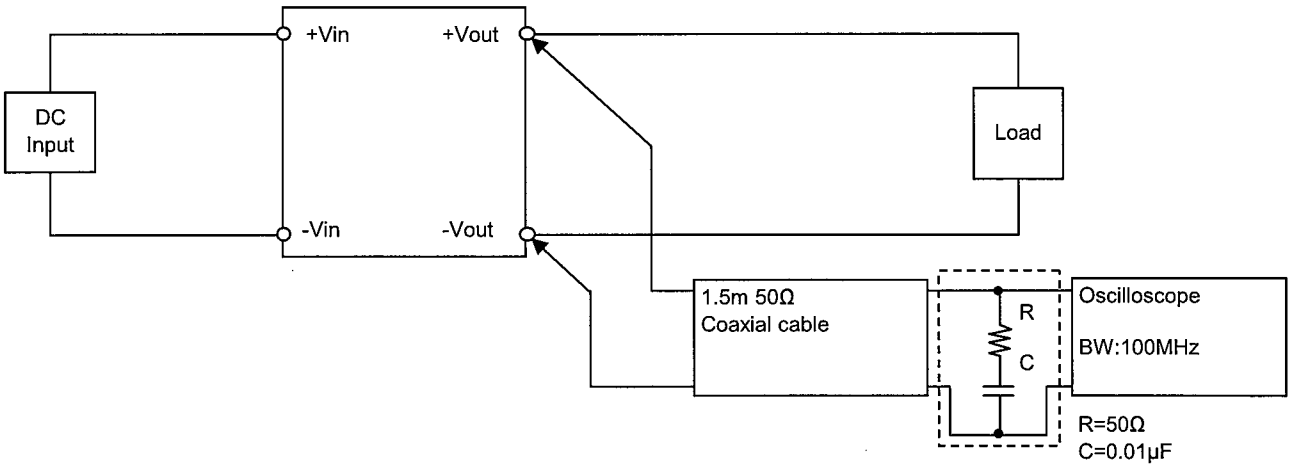


Figure B (Ripple and Ripple noise Characteristic)