参考資料

COSEL

TEST DATA OF DHS250B24

Regulated DC Power Supply
November 17, 2009

Approved by : Tatsuya Mano
Tatsuya Mano — Design Manager

Prepared by : Noriaki Nakase
Noriaki Nakase — Design Engineer

COSEL CO.,LTD.

COSEL

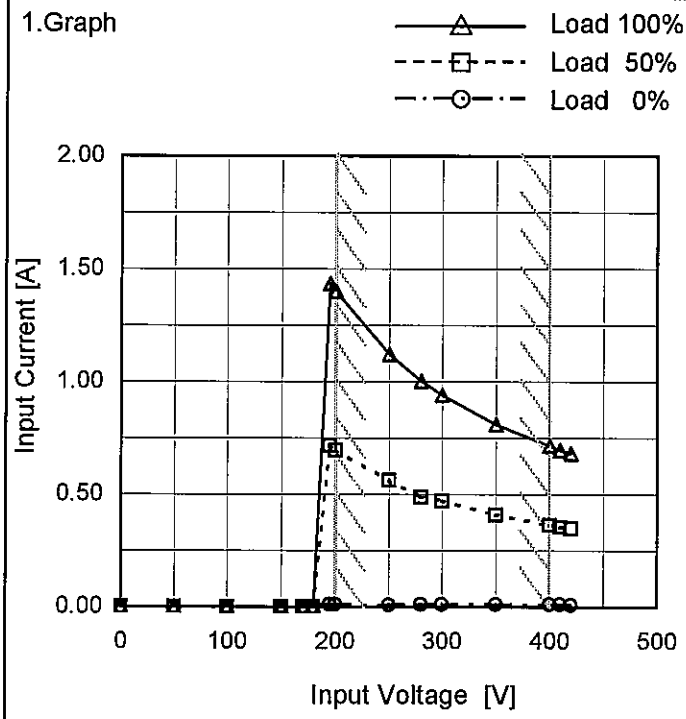
CONTENTS

COSEL

Model	DHS250B24
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	0.000	0.000	0.000
170	0.000	0.000	0.000
180	0.000	0.000	0.000
195	0.010	0.716	1.435
200	0.010	0.696	1.400
250	0.010	0.562	1.121
280	0.010	0.490	1.004
300	0.010	0.473	0.939
350	0.010	0.410	0.810
400	0.011	0.364	0.715
410	0.011	0.356	0.697
420	0.009	0.348	0.682
--	-	-	-
--	-	-	-
--	-	-	-

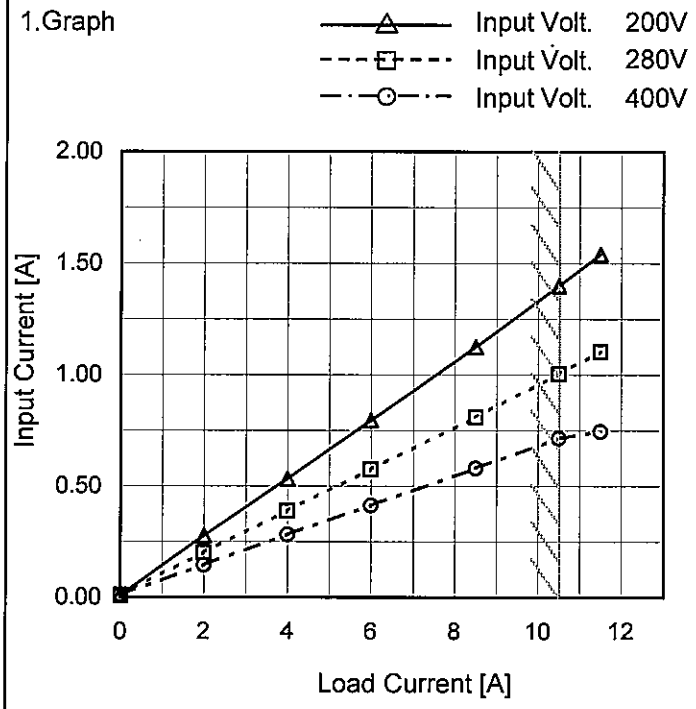
BC-10381

COSEL

Model	DHS250B24
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]
0.0	0.009	0.009	0.010
2.0	0.277	0.201	0.145
4.0	0.533	0.388	0.281
6.0	0.794	0.575	0.413
8.5	1.125	0.811	0.580
10.5	1.400	1.004	0.715
11.5	1.540	1.104	0.746
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

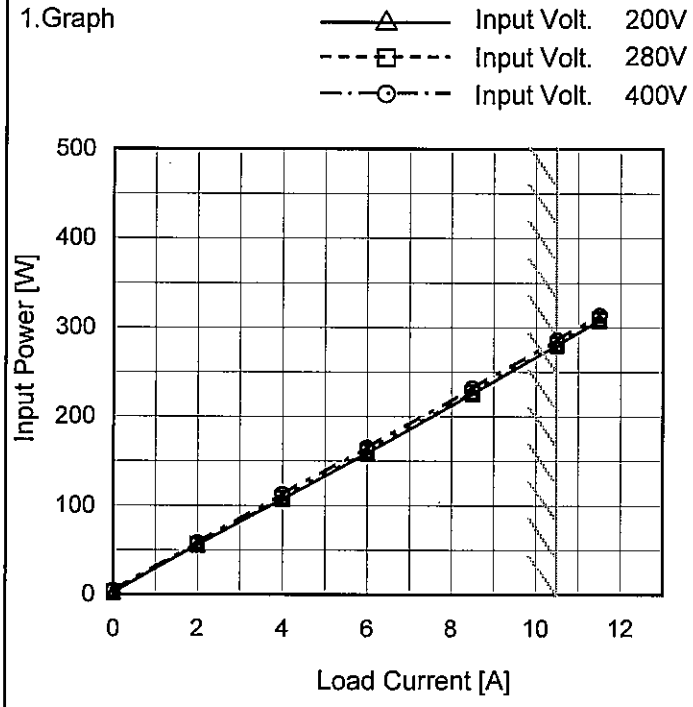
BC-10381

COSEL

Model	DHS250B24
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]
0.0	2.0	2.7	4.2
2.0	55.5	56.3	58.1
4.0	106.9	108.6	112.7
6.0	158.8	160.9	165.3
8.5	225.5	227.2	232.1
10.5	280.1	281.6	286.1
11.5	308.0	309.2	313.6
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

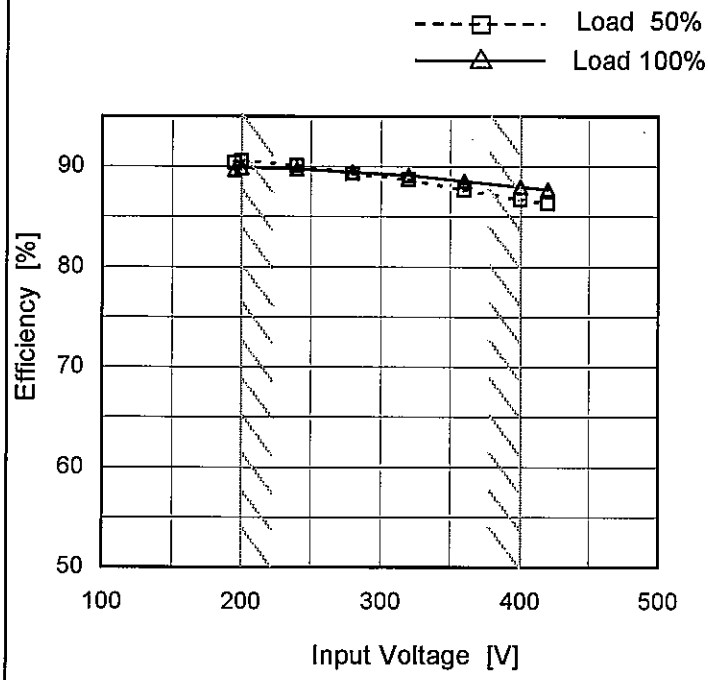
BC-10381

COSEL

Model	DHS250B24
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

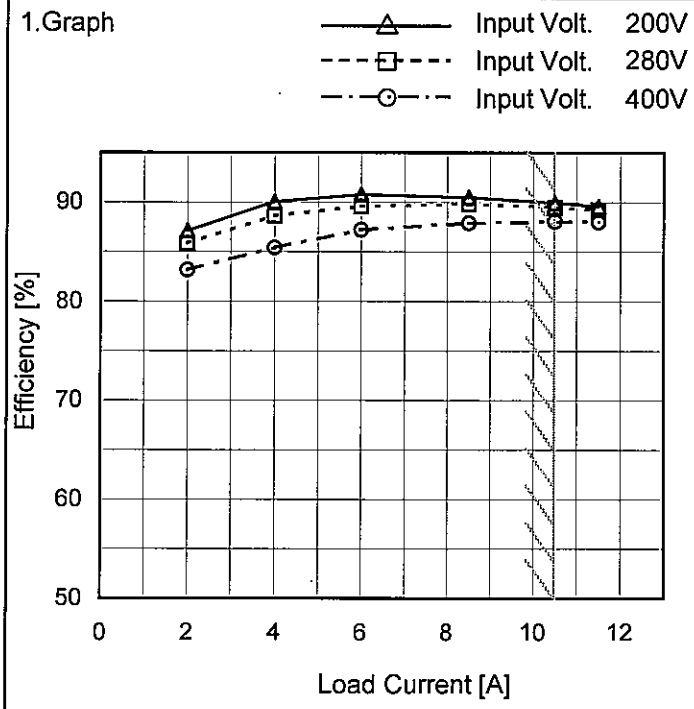
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
195	90.4	89.7
200	90.6	89.9
240	90.1	89.7
280	89.3	89.5
320	88.7	89.1
360	87.7	88.5
400	86.7	88.0
420	86.3	87.7
--	-	-

COSEL

Model	DHS250B24
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

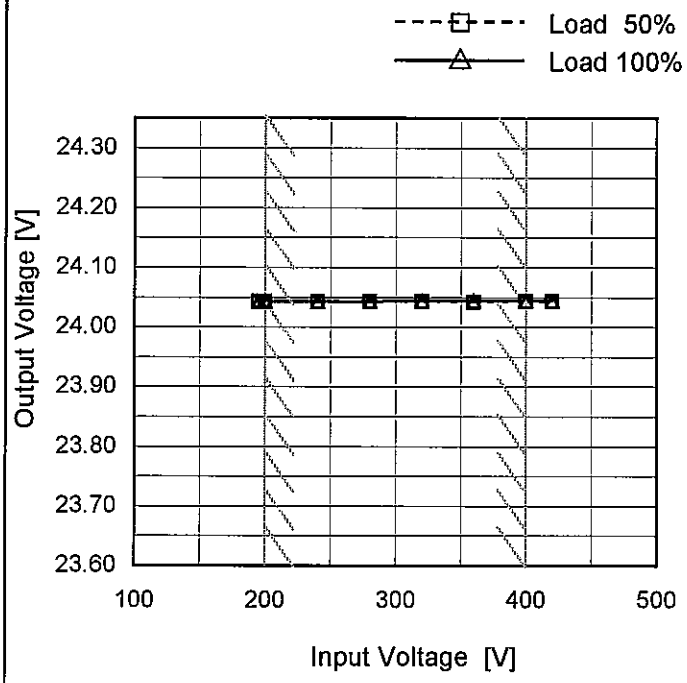
Load Current [A]	Efficiency [%]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.0	-	-	-
2.0	87.1	85.9	83.2
4.0	90.0	88.6	85.4
6.0	90.8	89.6	87.2
8.5	90.5	89.8	87.9
10.5	89.9	89.5	88.1
11.5	89.6	89.2	88.0
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	DHS250B24
Item	Line Regulation
Object	+24V10.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

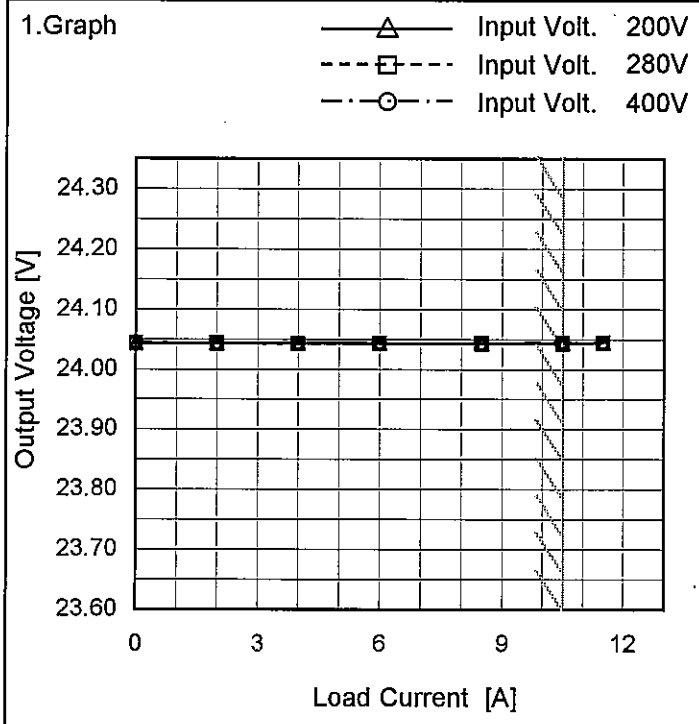
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
195	24.043	24.043
200	24.043	24.043
240	24.042	24.043
280	24.043	24.043
320	24.043	24.044
360	24.043	24.044
400	24.043	24.044
420	24.043	24.045
--	-	-

COSEL

Model	DHS250B24
Item	Load Regulation
Object	+24V10.5A

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]
0.0	24.043	24.043	24.044
2.0	24.043	24.043	24.044
4.0	24.043	24.043	24.044
6.0	24.043	24.043	24.043
8.5	24.043	24.043	24.043
10.5	24.043	24.043	24.044
11.5	24.044	24.044	24.044
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

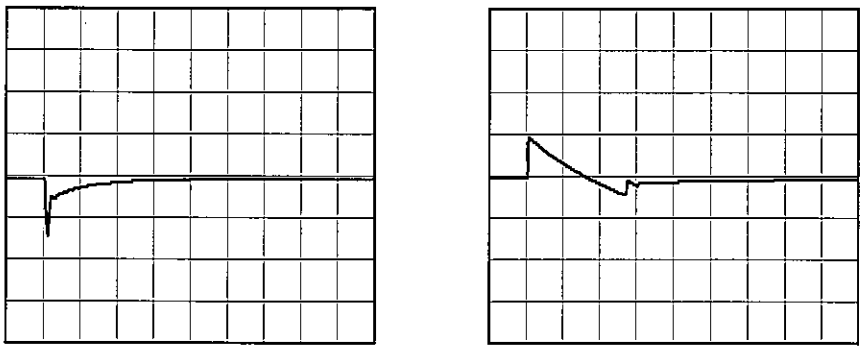
Model	DHS250B24
Item	Dynamic Load Response
Object	+24V10.5A

Temperature 25°C
Testing Circuitry Figure A

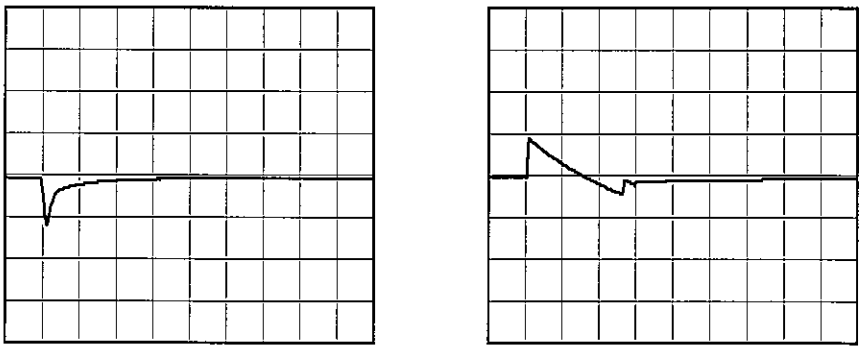
Input Volt. 280 V
Cycle 1000 mS

Load Current
10.5A/50 μs

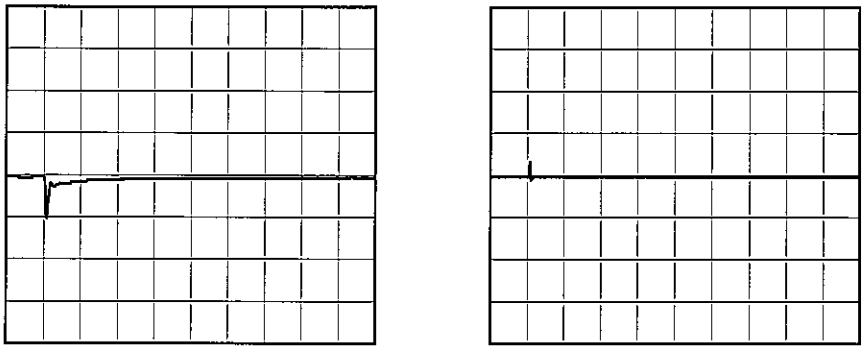
Min. Load (0A) ⟷
Load 100% (10.5A)



Min. Load (0A) ⟷
Load 50% (5.25A)



Load 10% (1.05A) ⟷
Load 100% (10.5A)



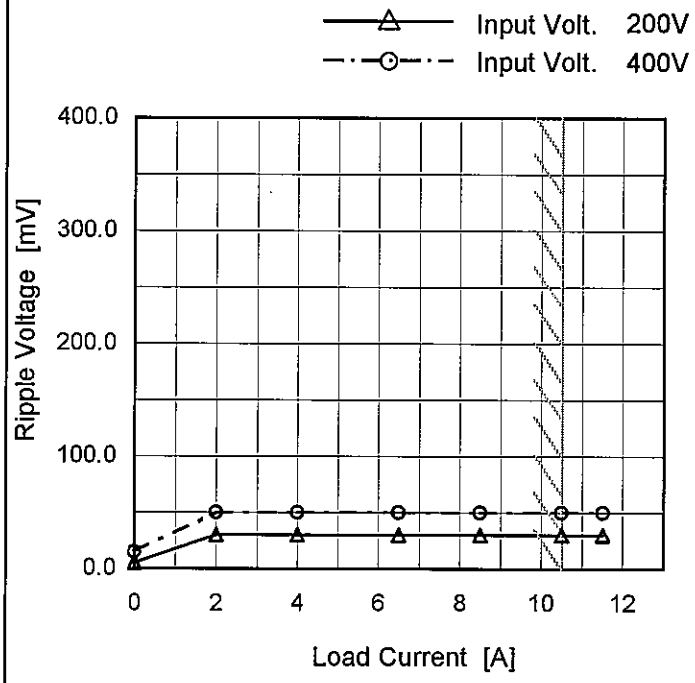
BC-10381

COSEL

Model	DHS250B24
Item	Ripple Voltage (by Load Current)
Object	+24V10.5A

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]

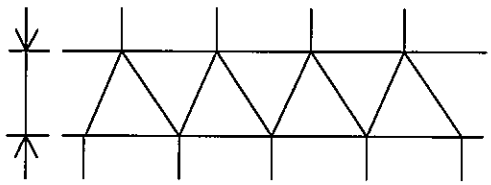


Fig.Complex Ripple Wave Form

2.Values

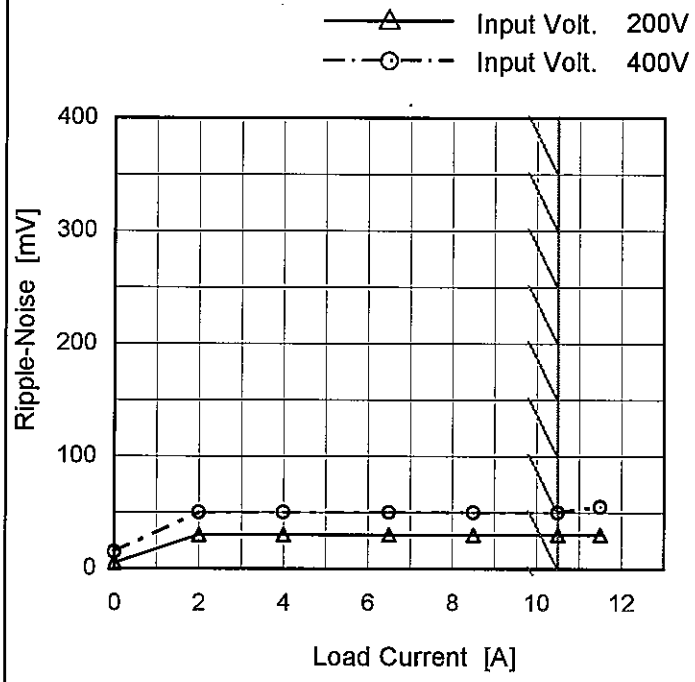
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.0	5	15
2.0	30	50
4.0	30	50
6.5	30	50
8.5	30	50
10.5	30	50
11.5	30	50
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	DHS250B24
Item	Ripple-Noise
Object	+24V10.5A

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.

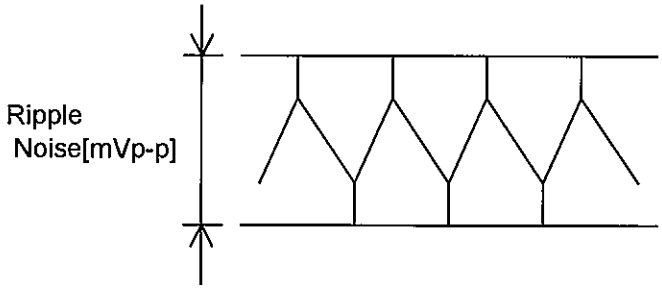


Fig.Complex Ripple Noise Wave Form

2.Values

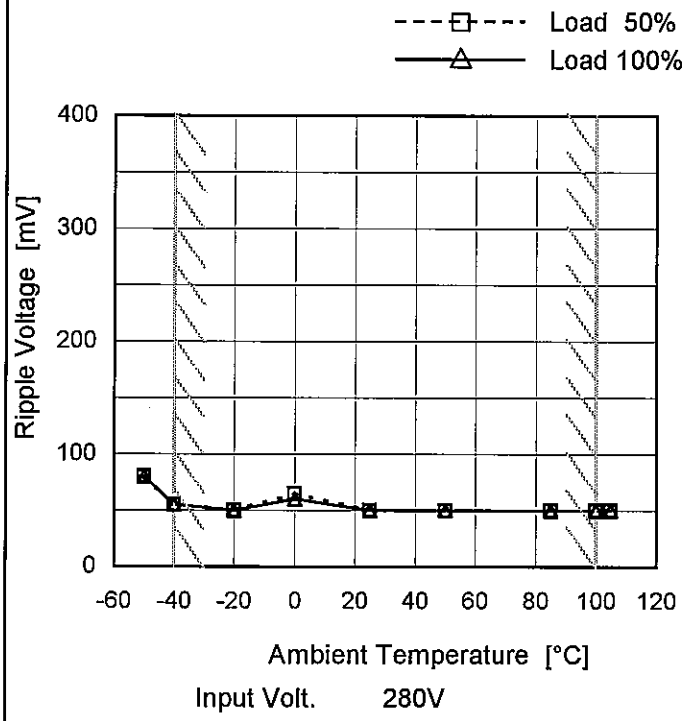
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.0	5	15
2.0	30	50
4.0	30	50
6.5	30	50
8.5	30	50
10.5	30	50
11.5	30	55
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	DHS250B24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V10.5A

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

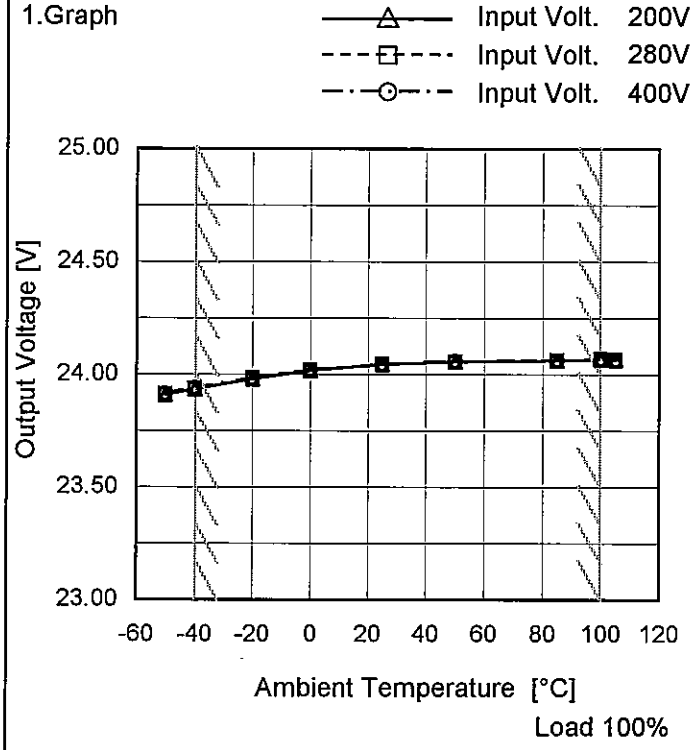
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	80	80
-40	55	55
-20	50	50
0	65	60
25	50	50
50	50	50
85	50	50
100	50	50
105	50	50
--	-	-
--	-	-

COSEL

Model	DHS250B24
Item	Ambient Temperature Drift
Object	+24V10.5A

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. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-50	23.909	23.913	23.914
-40	23.936	23.938	23.940
-20	23.979	23.982	23.983
0	24.017	24.019	24.019
25	24.044	24.045	24.046
50	24.058	24.058	24.059
85	24.063	24.063	24.063
100	24.067	24.068	24.068
105	24.066	24.066	24.066
--	-	-	-
--	-	-	-

COSEL

Model	DHS250B24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V10.5A	

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 : -40 - 100°C
Input Voltage : 200 - 400V
Load Current : 0 - 10.5A

* 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

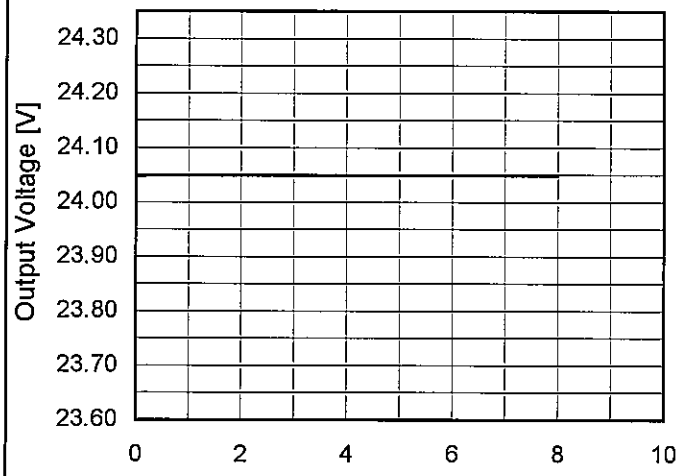
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	100	200	0	24.069	±67	±0.3
Minimum Voltage	-40	200	10.5	23.936		

COSEL

Model	DHS250B24
Item	Time Lapse Drift
Object	+24V10.5A

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	24.041
0.5	24.049
1.0	24.049
2.0	24.049
3.0	24.049
4.0	24.049
5.0	24.049
6.0	24.049
7.0	24.049
8.0	24.049

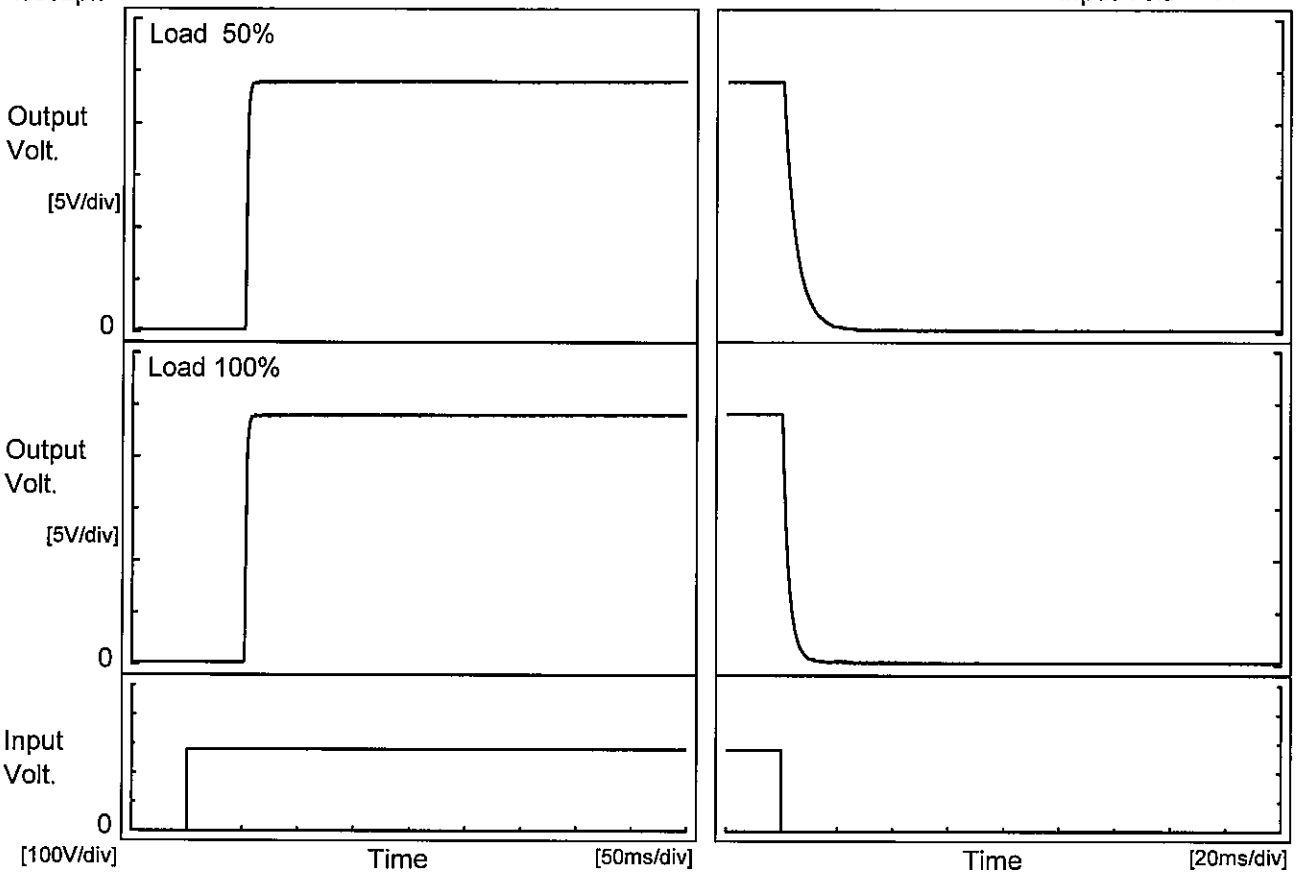
COSEL

Model	DHS250B24
Item	Rise and Fall Time
Object	+24V10.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

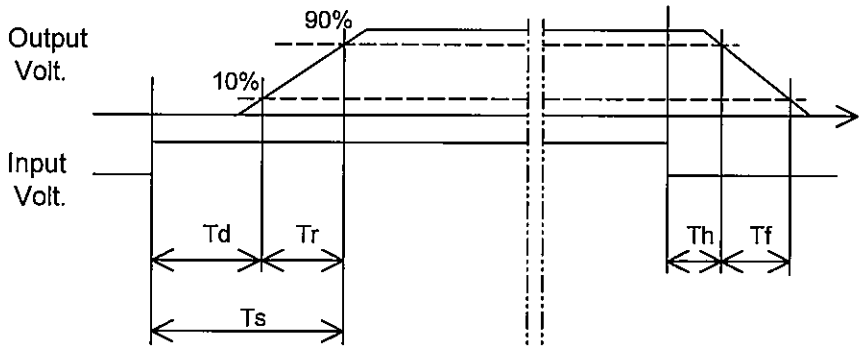
Input Volt. 280 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	52.3	2.8	55.1	0.6	9.9
100 %	52.3	2.8	55.1	0.4	5.0

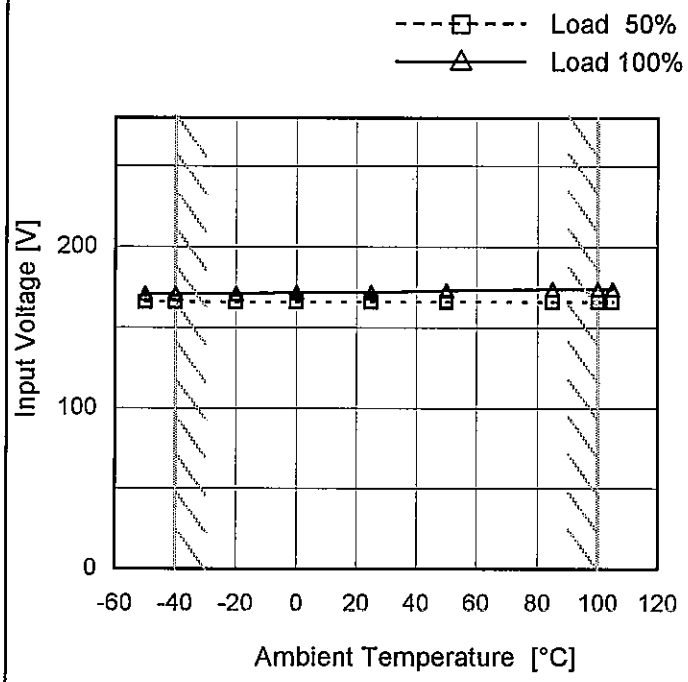


COSEL

Model	DHS250B24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V10.5A

Testing Circuitry Figure A

1.Graph



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

2.Values

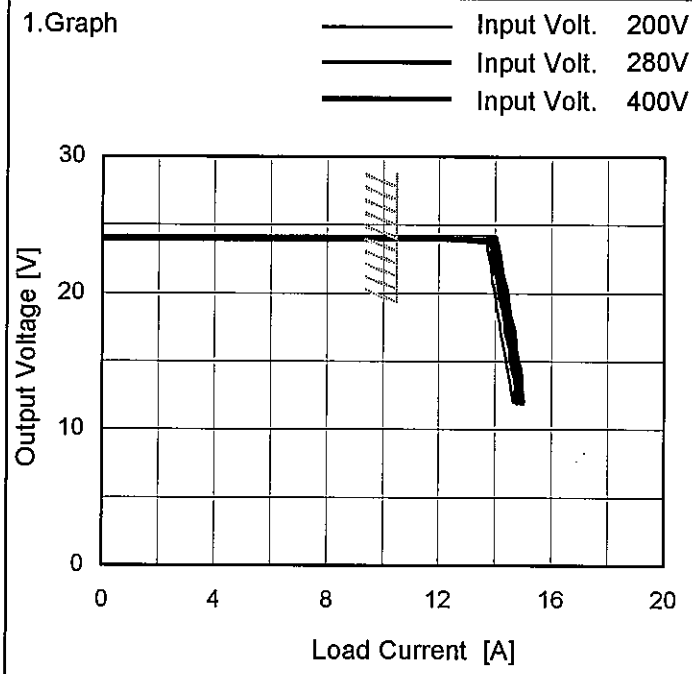
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-50	166	171
-40	166	171
-20	166	171
0	166	172
25	166	172
50	166	173
85	166	174
100	166	174
105	166	174
--	-	-
--	-	-

COSEL

Model	DHS250B24
Item	Overcurrent Protection
Object	+24V10.5A

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 12V to 0V.

2.Values

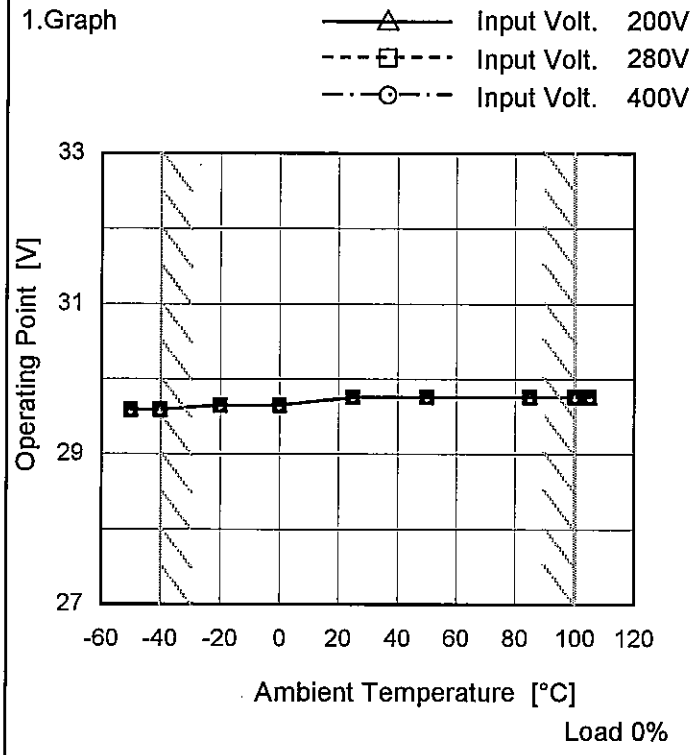
Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
24.0	10.59	10.57	10.59
22.8	13.76	13.92	14.10
21.6	13.86	14.01	14.17
19.2	14.03	14.21	14.41
16.8	14.23	14.43	14.65
14.4	14.42	14.63	14.85
12.0	14.64	14.80	14.95
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	DHS250B24
Item	Overvoltage Protection
Object	+24V10.5A

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. 280[V]	Input Volt. 400[V]
-50	29.59	29.59	29.59
-40	29.59	29.59	29.59
-20	29.65	29.65	29.65
0	29.65	29.65	29.65
25	29.76	29.76	29.76
50	29.76	29.76	29.76
85	29.76	29.76	29.76
100	29.76	29.76	29.76
105	29.76	29.76	29.76
--	-	-	-
--	-	-	-

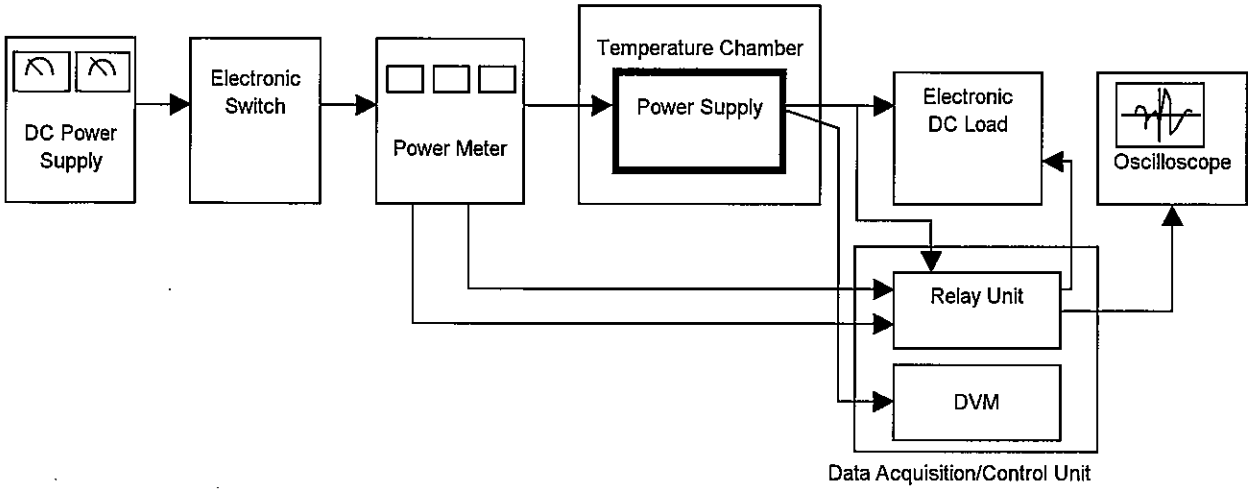
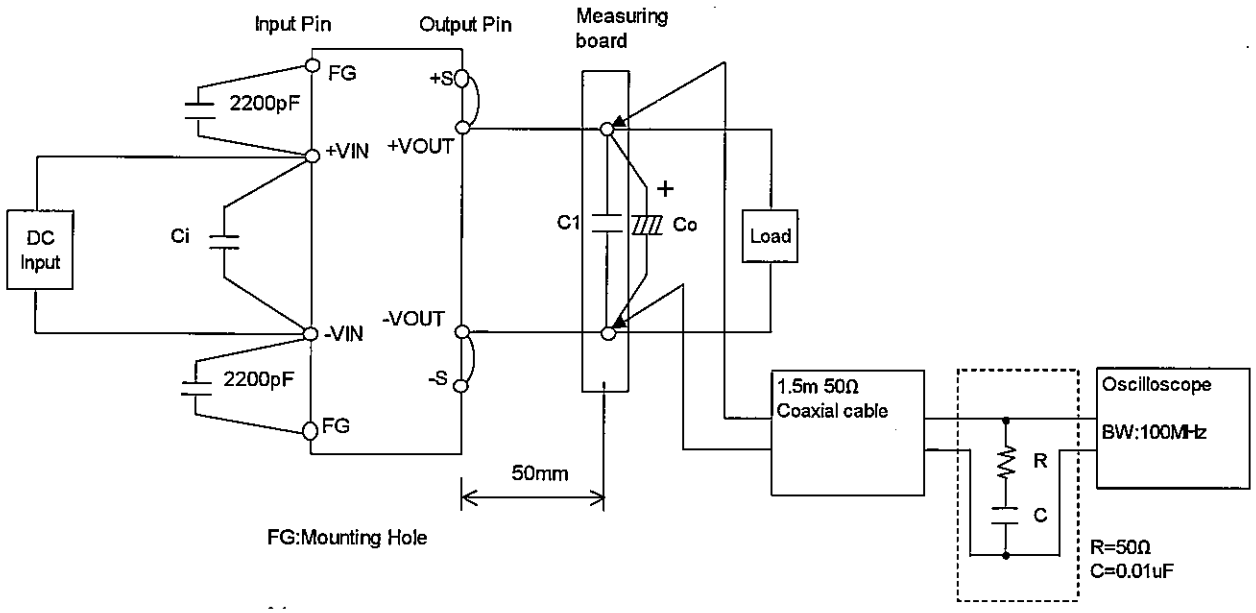


Figure A



C1	
DHS250B24	4.7μF
DHS250B28	4.7μF
DHS250B48	2.2μF
Others	10μF

Co	
DHS250B03	2200μF
DHS250B05	2200μF
DHS250B07	2200μF
DHS250B12	1000μF
DHS250B15	1000μF
DHS250B24	470μF
DHS250B28	470μF
DHS250B48	330μF

Figure B