COSEL

参考資料

TEST DATA OF CQHS3504832

Regulated DC Power Supply
August 6, 2013

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COSEL CO.,LTD.

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CONTENTS

1.Input Current (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・ 1
2.Input Current (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・ 2
3.Input Power (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・ 3
4.Efficiency (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・ 4
5.Efficiency (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・ 5
6.Line Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 6
7.Load Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 7
8.Dynamic Load Response ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 8
9.Ripple Voltage (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・ 9
10.Ripple-Noise ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 10
11.Ripple Voltage (by Ambient Temperature) ・・・・・・・・・・・・・・・・・・ 11
12.Ambient Temperature Drift ・・・・・・・・・・・・・・・・・・・・・・・・・ 12
13.Output Voltage Accuracy ・・・・・・・・・・・・・・・・・・・・・・・・・・ 13
14.Time Lapse Drift ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 14
15.Rise and Fall Time ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 15
16.Minimum Input Voltage for Regulated Output Voltage ・・・・・・・・・・・・ 16
17.Overcurrent Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 17
18.Overvoltage Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 18
19.Figure of Testing Circuitry ・・・・・・・・・・・・・・・・・・・・・・・・・ 19
(Final Page 19)

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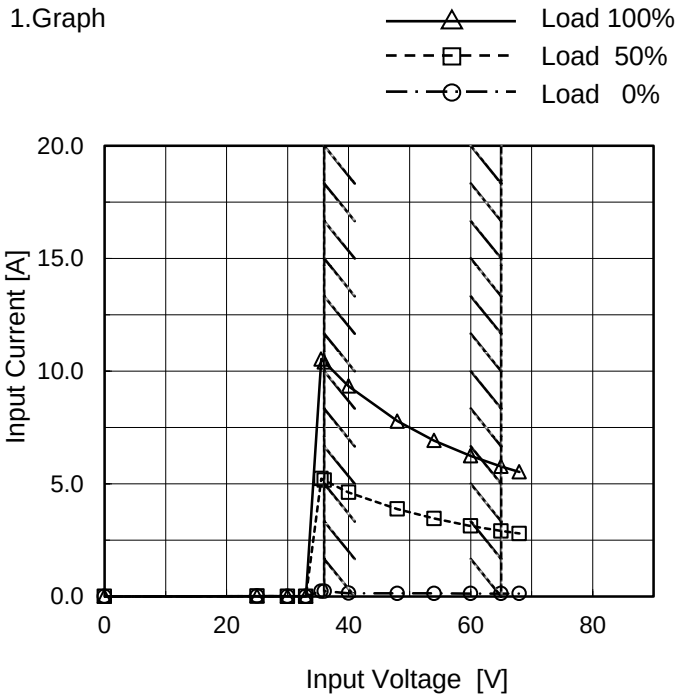
Model	CQHS3504832
Item	Input Current (by Input Voltage)
Object	――――――

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	0.000	0.000	0.000
25.0	0.012	0.012	0.012
30.0	0.009	0.009	0.008
33.0	0.009	0.009	0.009
35.5	0.235	5.230	10.540
36.0	0.233	5.160	10.410
40.0	0.142	4.620	9.340
48.0	0.135	3.878	7.780
54.0	0.133	3.462	6.920
60.0	0.131	3.130	6.240
65.0	0.130	2.905	5.770
68.0	0.129	2.792	5.530
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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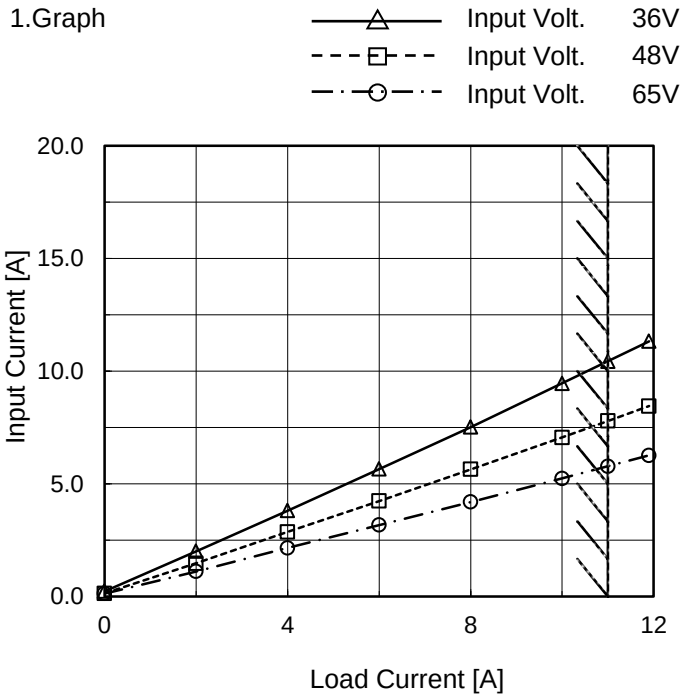
COSEL

Model	CQHS3504832
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. 36[V]	Input Volt. 48[V]	Input Volt. 65[V]
0.0	0.232	0.135	0.129
2.0	2.008	1.470	1.106
4.0	3.806	2.863	2.152
6.0	5.660	4.236	3.172
8.0	7.520	5.640	4.196
10.0	9.460	7.060	5.240
11.0	10.440	7.790	5.780
11.9	11.330	8.450	6.260
--	-	-	-
--	-	-	-
--	-	-	-

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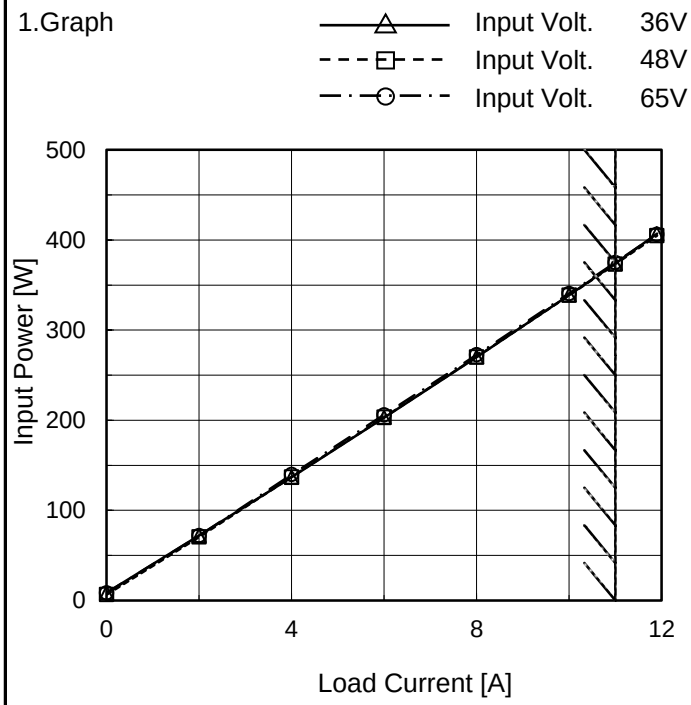
COSEL

Model	CQHS3504832
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. 36[V]	Input Volt. 48[V]	Input Volt. 65[V]
0.0	8.3	6.5	8.4
2.0	72.0	70.3	71.8
4.0	136.7	137.0	139.7
6.0	202.8	203.2	205.9
8.0	270.0	270.2	272.5
10.0	339.0	338.6	340.6
11.0	374.0	373.2	375.1
11.9	407.0	404.9	406.3
--	-	-	-
--	-	-	-
--	-	-	-

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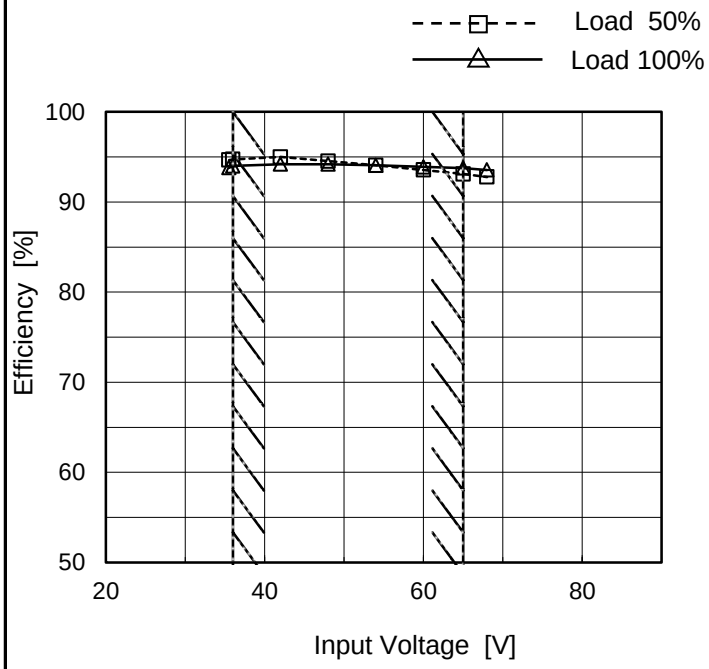
Model	CQHS3504832
Item	Efficiency (by Input Voltage)
Object	――――――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

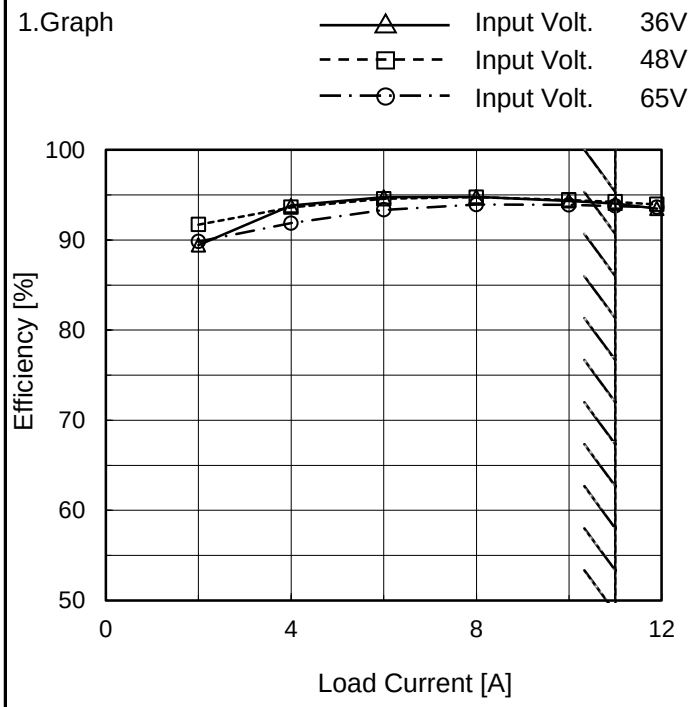
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
35.5	94.7	93.8
36.0	94.7	94.0
42.0	95.0	94.2
48.0	94.5	94.2
54.0	94.1	94.1
60.0	93.6	93.9
65.0	93.1	93.8
68.0	92.8	93.6
--	-	-

COSEL

Model	CQHS3504832
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

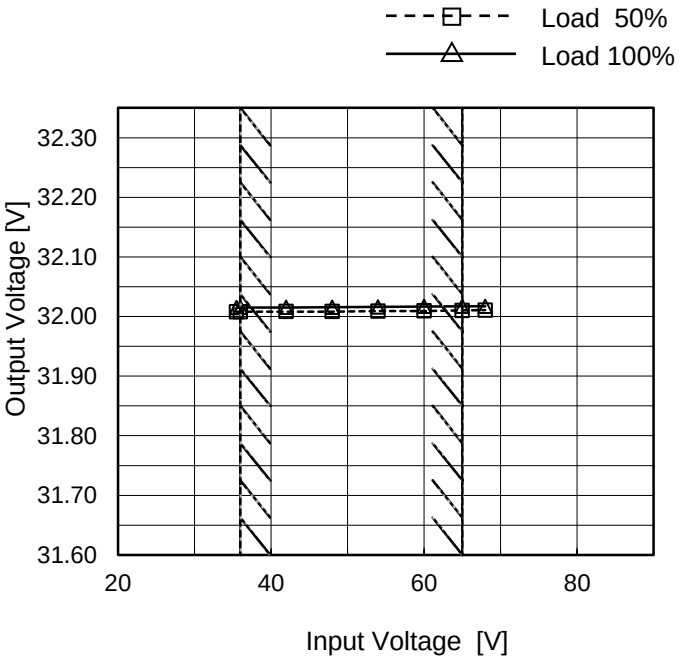
Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 65[V]
0.0	-	-	-
2.0	89.4	91.7	89.8
4.0	93.8	93.6	91.9
6.0	94.8	94.6	93.3
8.0	94.8	94.7	93.9
10.0	94.3	94.5	93.9
11.0	94.0	94.2	93.8
11.9	93.5	94.0	93.6
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	CQHS3504832
Item	Line Regulation
Object	+32V11A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

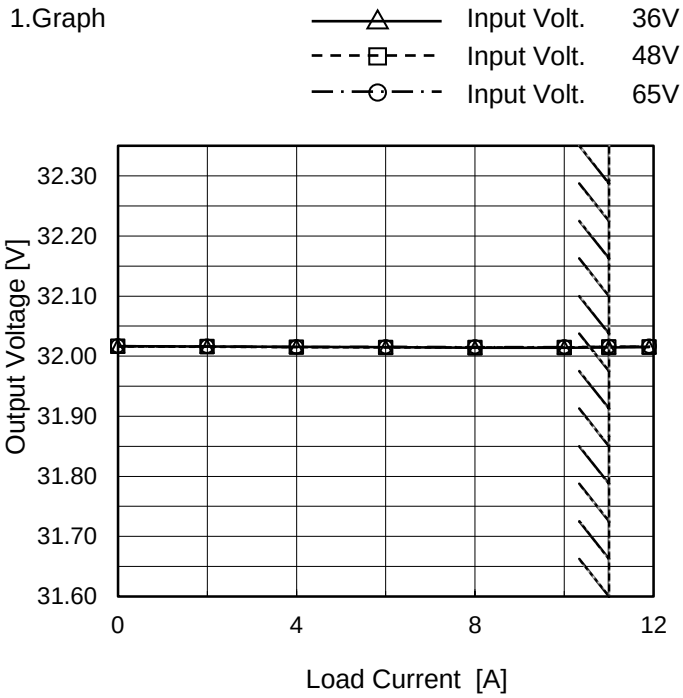
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
35.5	32.008	32.015
36.0	32.008	32.015
42.0	32.008	32.015
48.0	32.008	32.016
54.0	32.009	32.016
60.0	32.009	32.017
65.0	32.010	32.017
68.0	32.011	32.017
--	-	-

COSEL

Model	CQHS3504832
Item	Load Regulation
Object	+32V11A

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. 36[V]	Input Volt. 48[V]	Input Volt. 65[V]
0.0	32.017	32.016	32.017
2.0	32.016	32.016	32.016
4.0	32.016	32.015	32.015
6.0	32.015	32.014	32.016
8.0	32.014	32.014	32.015
10.0	32.014	32.014	32.015
11.0	32.015	32.016	32.016
11.9	32.015	32.016	32.016
--	-	-	-
--	-	-	-
--	-	-	-

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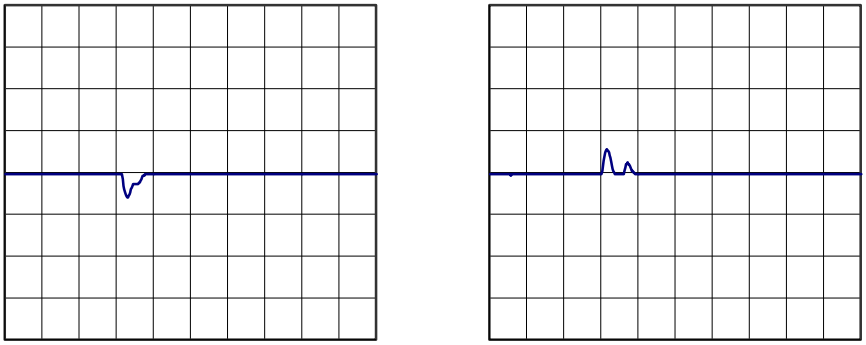
Model	CQHS3504832
Item	Dynamic Load Response
Object	+32V11A

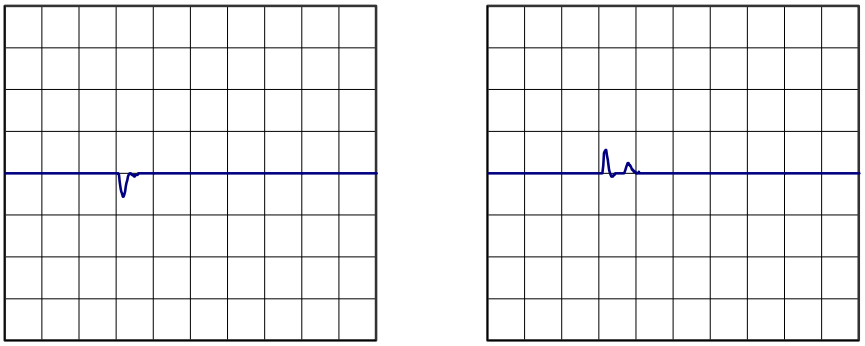
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Cycle 1000 mS

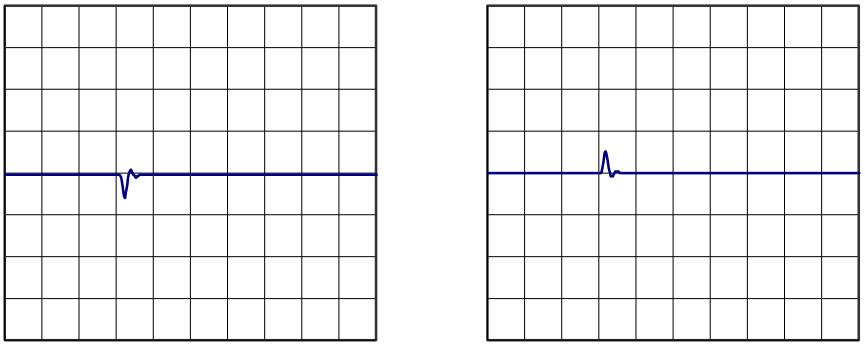
Min. Load (0A) ⟷
Load 100% (11A)



Min. Load (0A) ⟷
Load 50% (5.5A)



Load 50% (5.5A) ⟷
Load 100% (11A)



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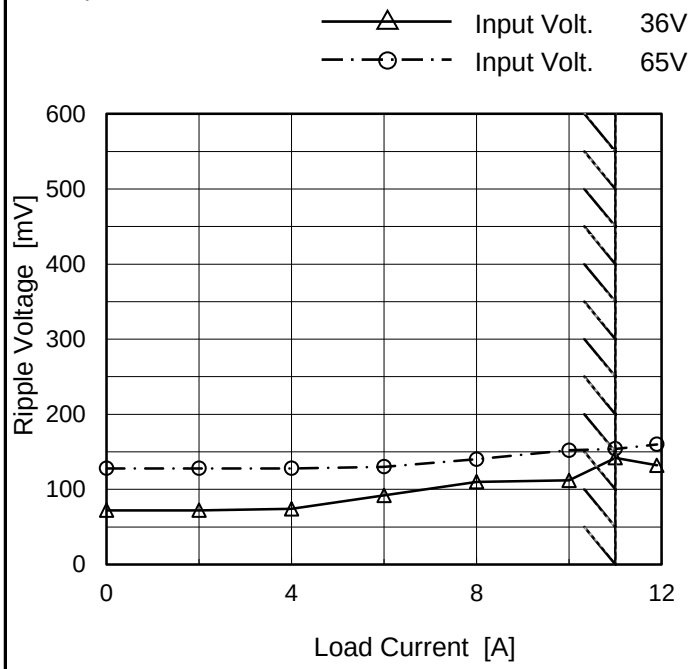
Model	CQHS3504832
Item	Ripple Voltage (by Load Current)
Object	+32V11A

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]

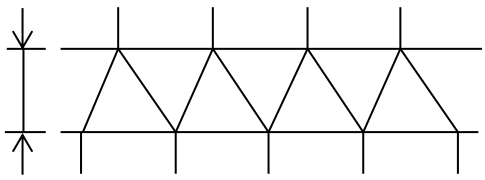


Fig.Complex Ripple Wave Form

2.Values

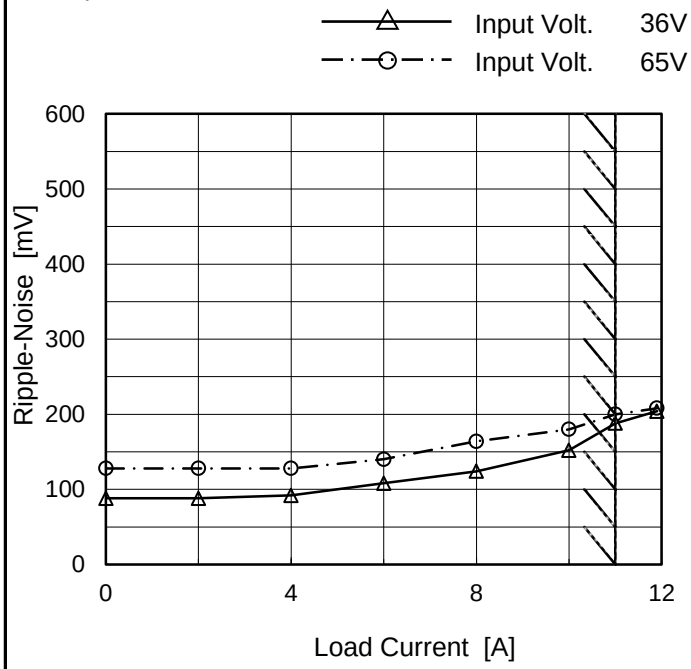
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 65 [V]
0.0	72	128
2.0	72	128
4.0	74	128
6.0	92	130
8.0	110	140
10.0	112	152
11.0	142	154
11.9	132	160
--	-	-
--	-	-
--	-	-

COSEL

Model	CQHS3504832
Item	Ripple-Noise
Object	+32V11A

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.

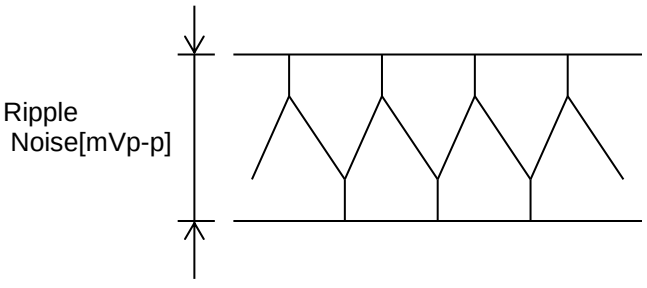


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 65 [V]
0.0	88	128
2.0	88	128
4.0	92	128
6.0	108	140
8.0	124	164
10.0	152	180
11.0	188	200
11.9	204	208
--	-	-
--	-	-
--	-	-

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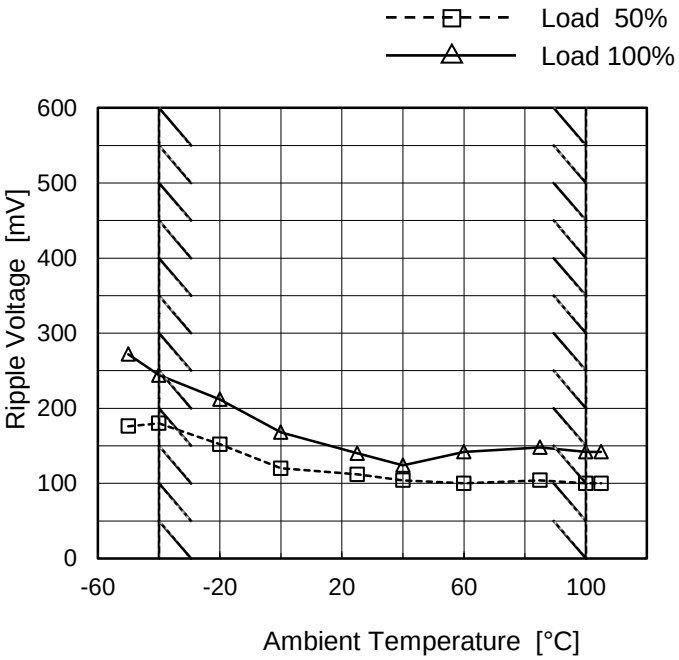
Model	CQHS3504832
Item	Ripple Voltage (by Ambient Temp.)
Object	+32V11A

Testing Circuitry Figure B

1.Graph



Input Volt. 48V

Measured by 100 MHz Oscilloscope.

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

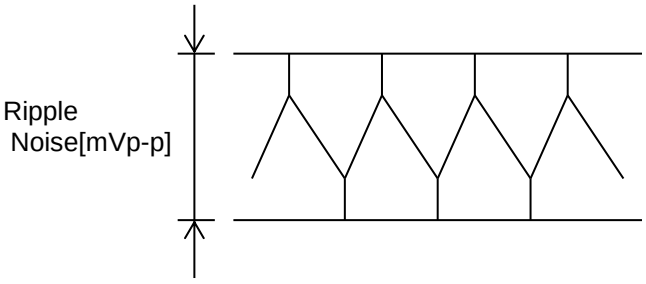


Fig.Complex Ripple Noise Wave Form

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	176	272
-40	180	244
-20	152	212
0	120	168
25	112	140
40	104	124
60	100	142
85	104	148
100	100	142
105	100	142
--	-	-

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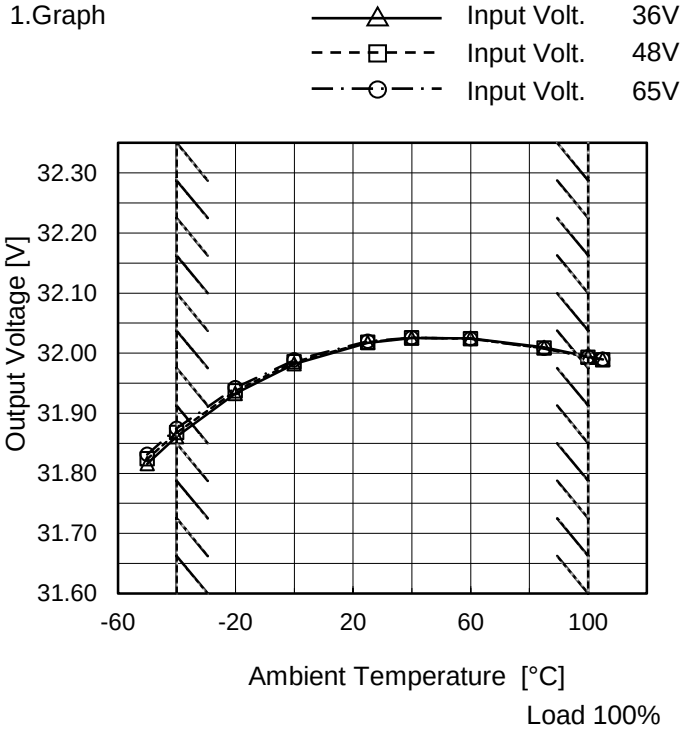
Model	CQHS3504832
Item	Ambient Temperature Drift
Object	+32V11A

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. 36[V]	Input Volt. 48[V]	Input Volt. 65[V]
-50	31.816	31.824	31.831
-40	31.861	31.868	31.875
-20	31.933	31.937	31.943
0	31.982	31.985	31.989
25	32.017	32.018	32.020
40	32.025	32.026	32.026
60	32.025	32.024	32.024
85	32.010	32.008	32.008
100	31.994	31.993	31.994
105	31.990	31.989	31.990
--	-	-	-

Model	CQHS3504832	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+32V11A	

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 : 36 - 65V
Load Current : 0 - 11A

* 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	60	65	0	32.027	±85	±0.3
Minimum Voltage	-40	65	0	31.858		

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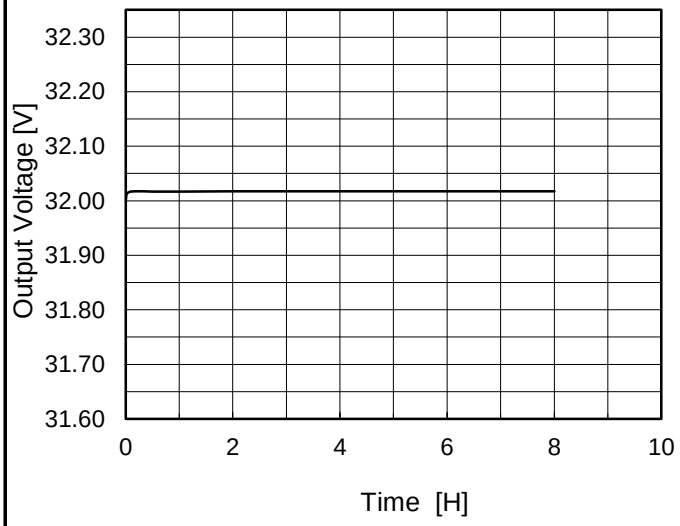
Model	CQHS3504832
Item	Time Lapse Drift
Object	+32V11A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	32.000
0.5	32.017
1.0	32.017
2.0	32.017
3.0	32.017
4.0	32.017
5.0	32.017
6.0	32.017
7.0	32.017
8.0	32.017

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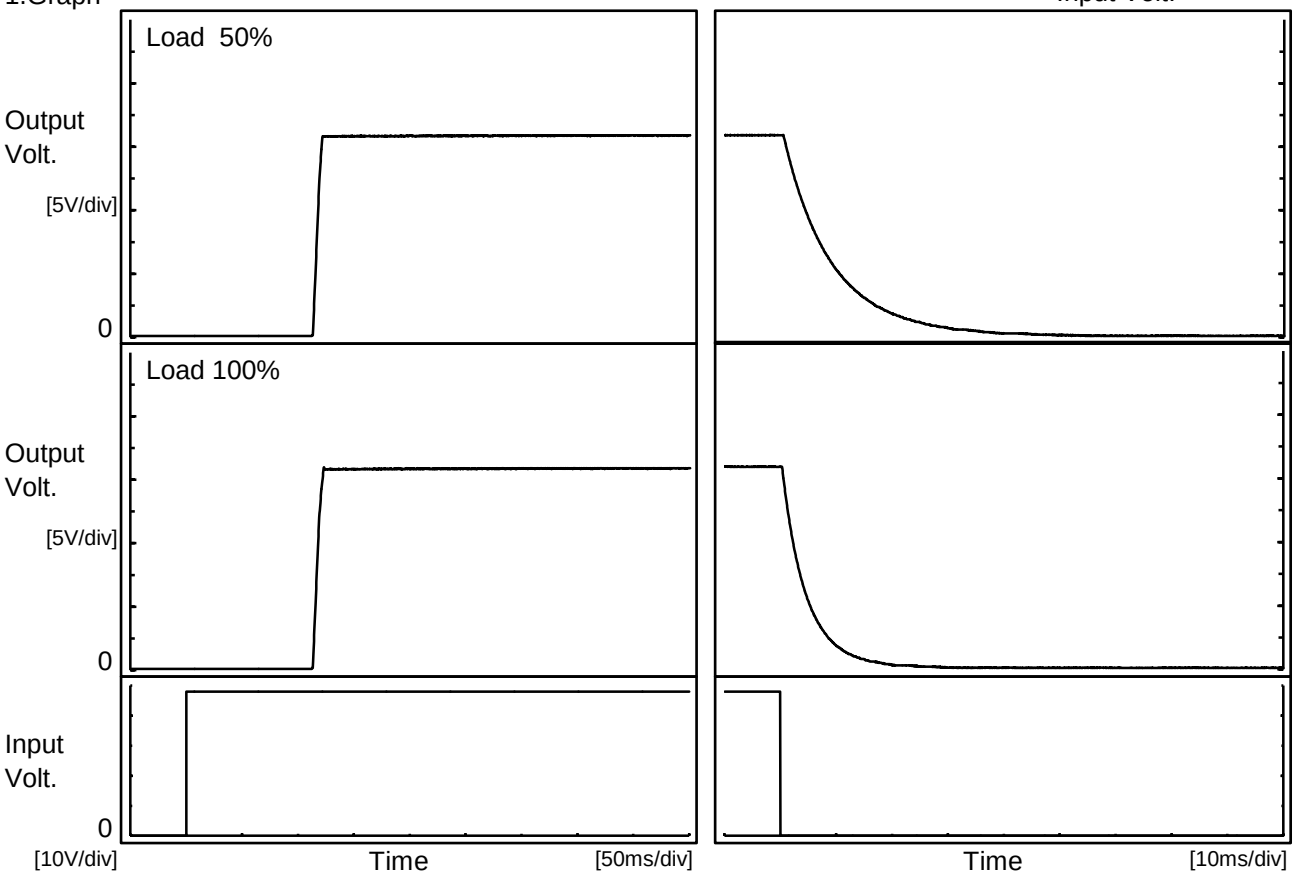
Model	CQHS3504832
Item	Rise and Fall Time
Object	+32V11A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

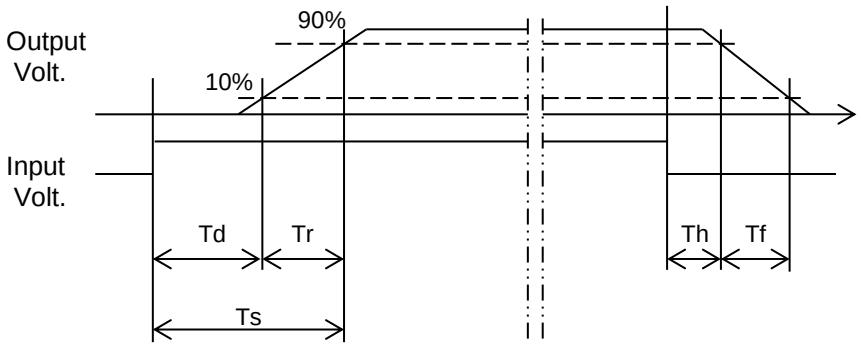
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	113.8	6.8	120.6	1.3	19.9
100 %	113.8	7.5	121.3	0.7	9.9



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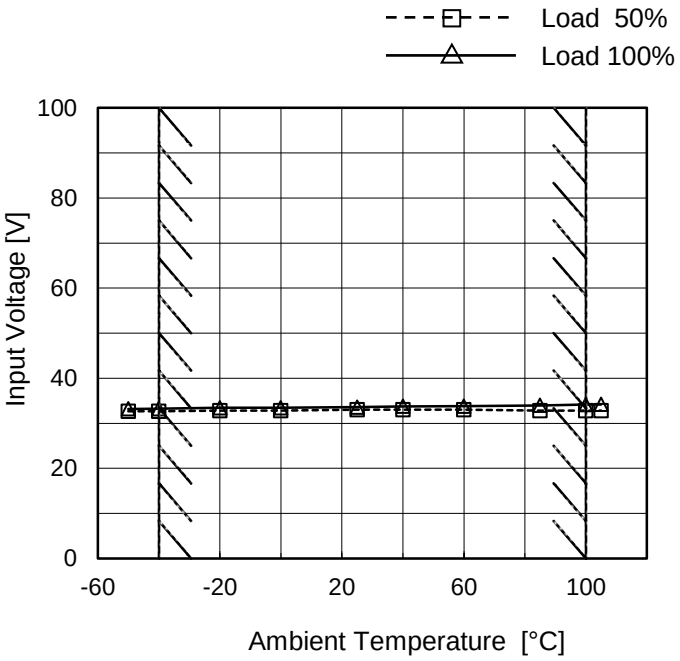
Model	CQHS3504832
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+32V11A

Testing Circuitry Figure A

1.Graph



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

2.Values

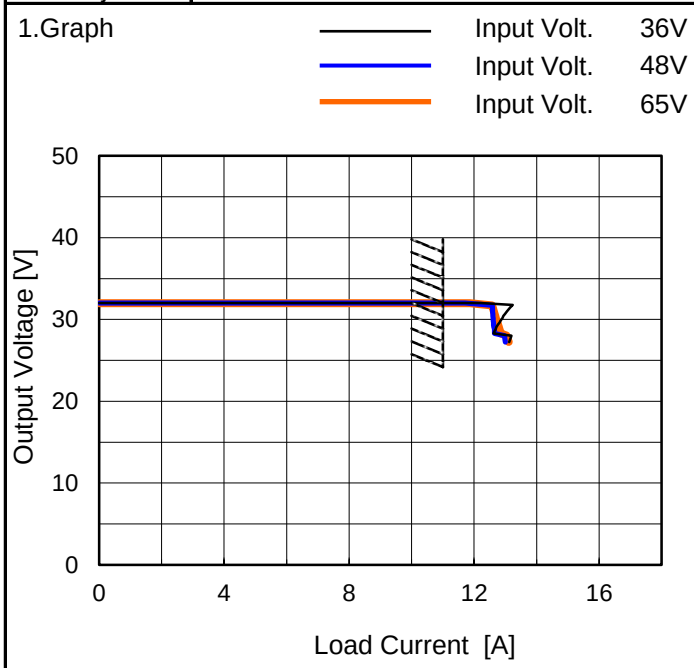
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-50	32.7	33.2
-40	32.7	33.3
-20	32.9	33.5
0	32.8	33.5
25	33.0	33.6
40	33.1	33.8
60	33.0	33.8
85	32.8	34.0
100	32.8	34.2
105	32.9	34.2
--	-	-

COSEL

Model	CQHS3504832
Item	Overcurrent Protection
Object	+32V11A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

When the output voltage fell to less than 26.88V ,the unit shuts off the output by operating low voltage protection.

2.Values

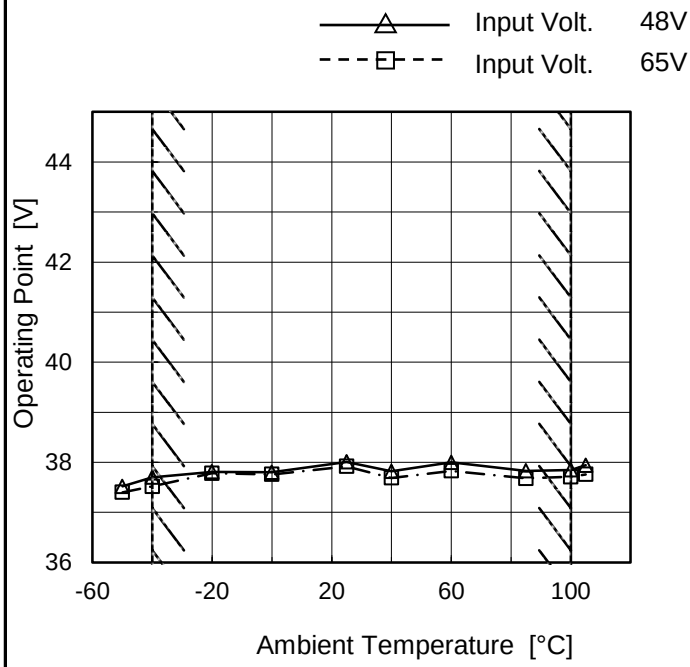
Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 65[V]
30.4	12.94	12.60	12.67
27.2	13.12	13.00	13.11
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	CQHS3504832
Item	Overvoltage Protection
Object	+32V11A

Testing Circuitry Figure A

1.Graph



Load 0%

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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 48[V]	Input Volt. 65[V]
-50	37.52	37.40
-40	37.70	37.52
-20	37.81	37.78
0	37.80	37.76
25	38.01	37.92
40	37.82	37.69
60	38.00	37.83
85	37.83	37.68
100	37.85	37.71
105	37.94	37.76
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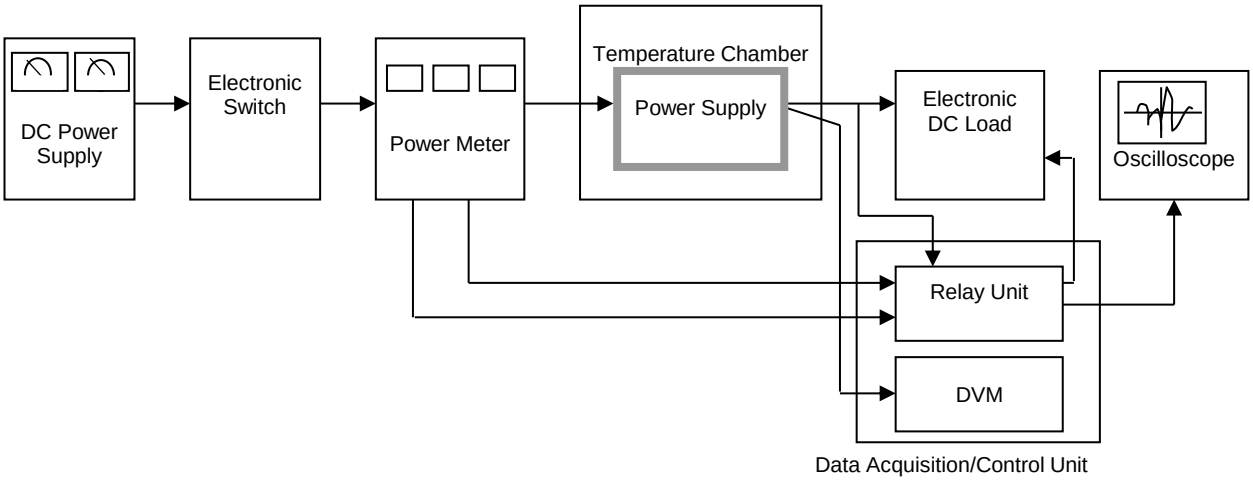
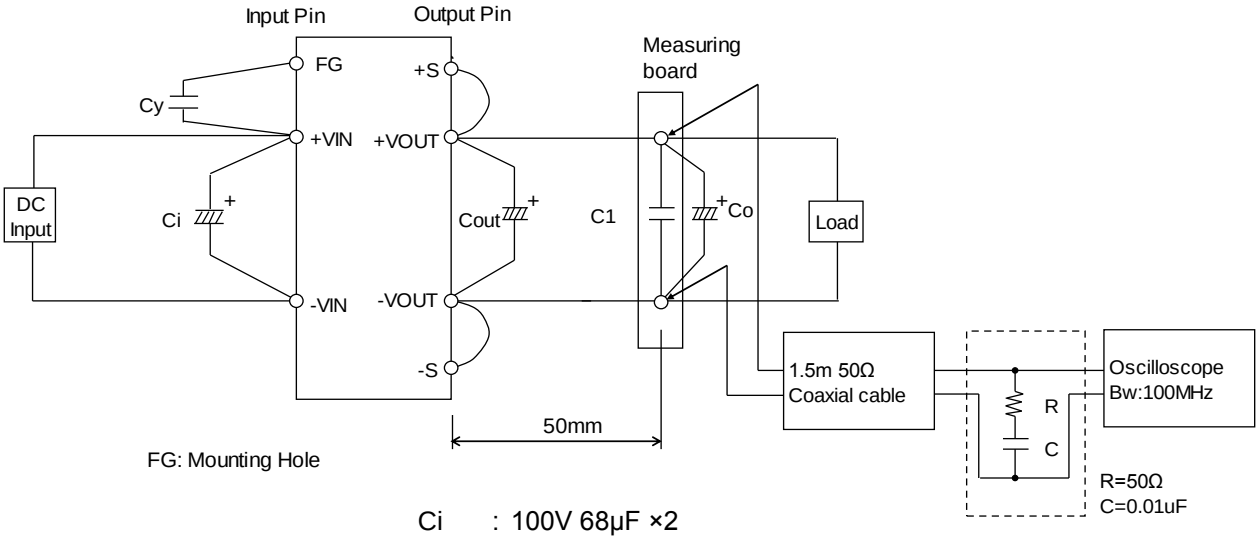


Figure A



Ci : 100V 68μF ×2
Cy : 4700pF
C1 : 100V 0.1μF
Co : 50V 470μF
Cout : 50V 470μF ×2（-40℃≦T_B≦0℃）
: 50V 470μF （0℃＜T_B≦100℃）
T_B : Base Plate Temp.

Figure B（Ripple and Ripple noise Characteristic）