参考資料

COSEL

TEST DATA OF SUCW34815

Regulated DC Power Supply
Mar 15, 2005

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Hayato Nakatsubo Design Engineer

COSEL CO.,LTD.

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CONTENTS

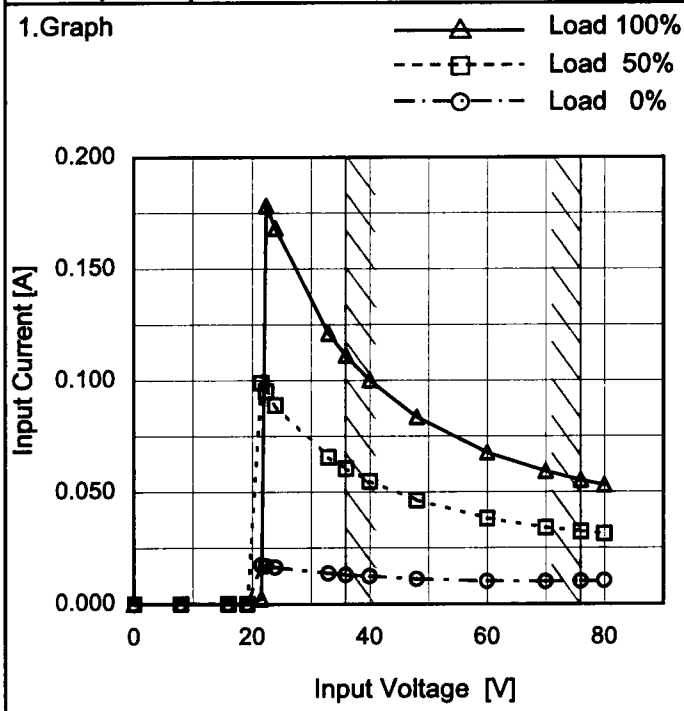
1.Input Current (by Input Voltage) 1
2.Input Current (by Load Current) 2
3.Input Power (by Load Current) 3
4.Efficiency (by Input Voltage) 4
5.Efficiency (by Load Current) 5
6.Line Regulation 6
7.Load Regulation 7
8.Dynamic Load Response 8
9.Ripple Voltage (by Load Current) 10
10.Ripple-Noise 12
11.Ripple Voltage (by Ambient Temperature) 14
12.Ambient Temperature Drift 15
13.Output Voltage Accuracy 16
14.Time Lapse Drift 17
15.Rise and Fall Time 18
16.Minimum Input Voltage for Regulated Output Voltage 20
17.Overcurrent Protection 21
18.Figure of Testing Circuitry 22
(Final Page 22)

COSEL

Model	SUCW34815
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

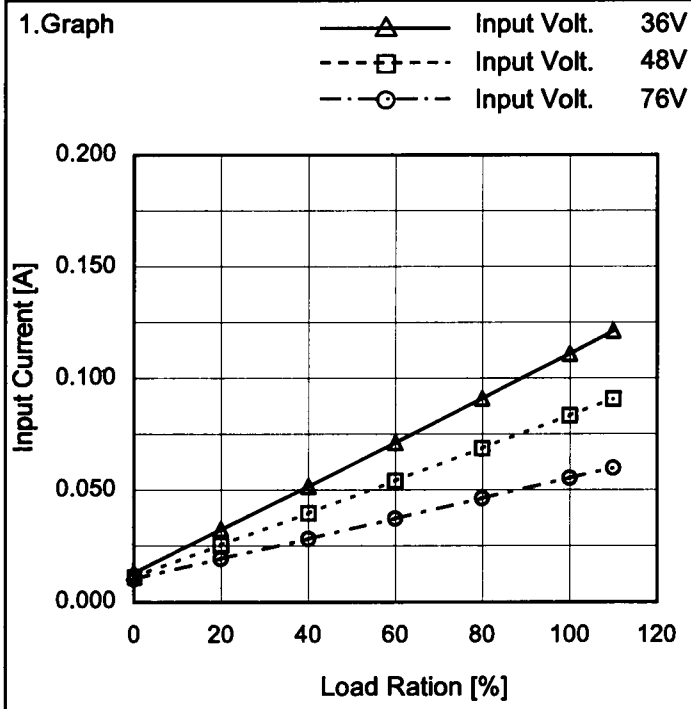
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
8.0	0.000	0.000	0.000
16.0	0.000	0.000	0.000
19.2	0.000	0.000	0.000
21.6	0.017	0.099	0.002
22.4	0.017	0.095	0.178
24.0	0.016	0.089	0.168
33.0	0.014	0.066	0.121
36.0	0.013	0.061	0.111
40.0	0.012	0.055	0.100
48.0	0.011	0.046	0.084
60.0	0.010	0.038	0.068
70.0	0.010	0.034	0.059
76.0	0.010	0.032	0.055
80.0	0.010	0.031	0.053
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUCW34815
Item	Input Current (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

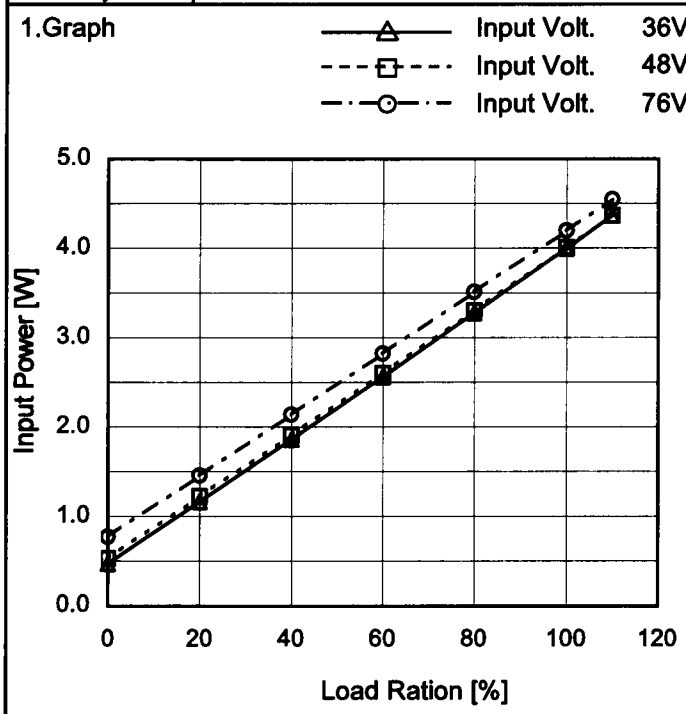
Load Ration [%]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.013	0.011	0.010
20	0.032	0.025	0.019
40	0.052	0.040	0.028
60	0.071	0.054	0.037
80	0.091	0.069	0.046
100	0.111	0.083	0.055
110	0.121	0.091	0.060
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUCW34815
Item	Input Power (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

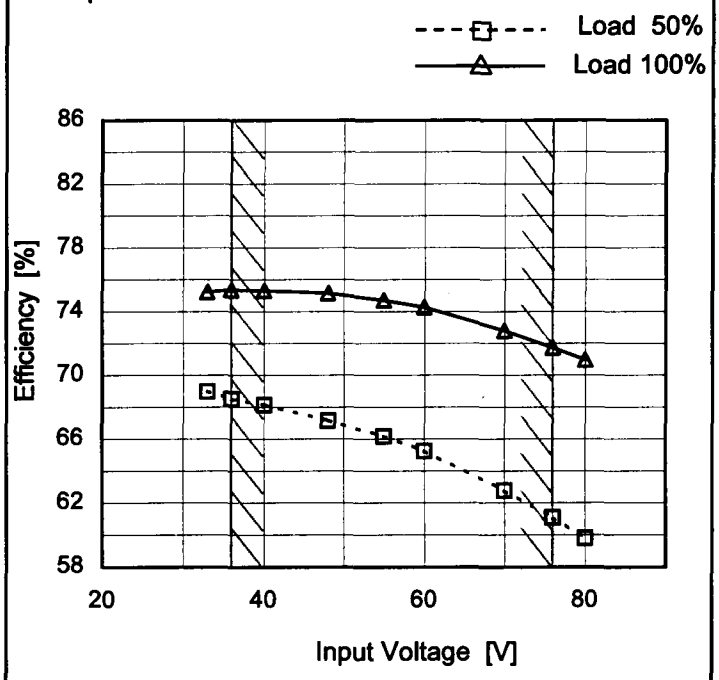
Load Ration [%]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.47	0.53	0.77
20	1.16	1.22	1.46
40	1.86	1.91	2.14
60	2.56	2.61	2.82
80	3.28	3.30	3.51
100	4.00	4.01	4.20
110	4.37	4.37	4.55
---	-	-	-
---	-	-	-
---	-	-	-
---	-	-	-

COSEL

Model	SUCW34815
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

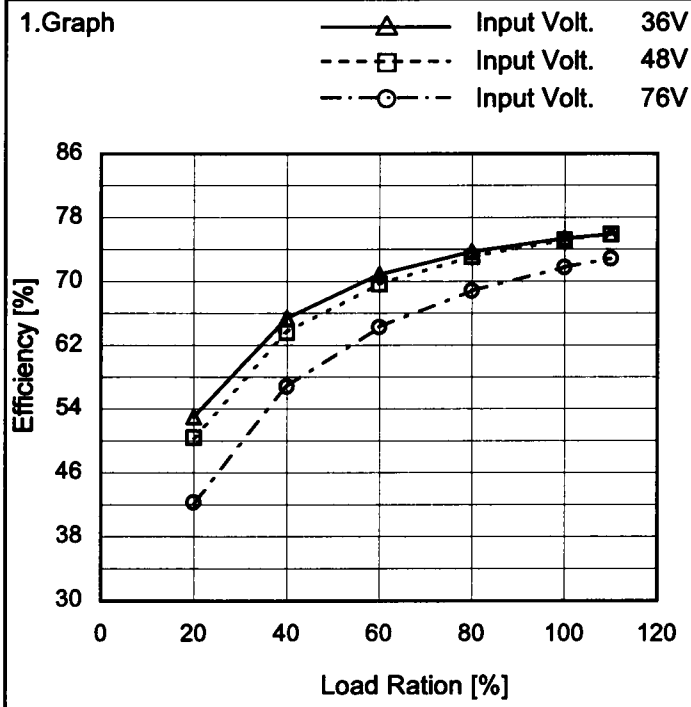
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	69.0	75.2
36	68.5	75.4
40	68.2	75.3
48	67.2	75.2
55	66.2	74.7
60	65.3	74.3
70	62.8	72.8
76	61.1	71.7
80	59.8	71.0

COSEL

Model	SUCW34815
Item	Efficiency (by Load Current)
Object	———

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

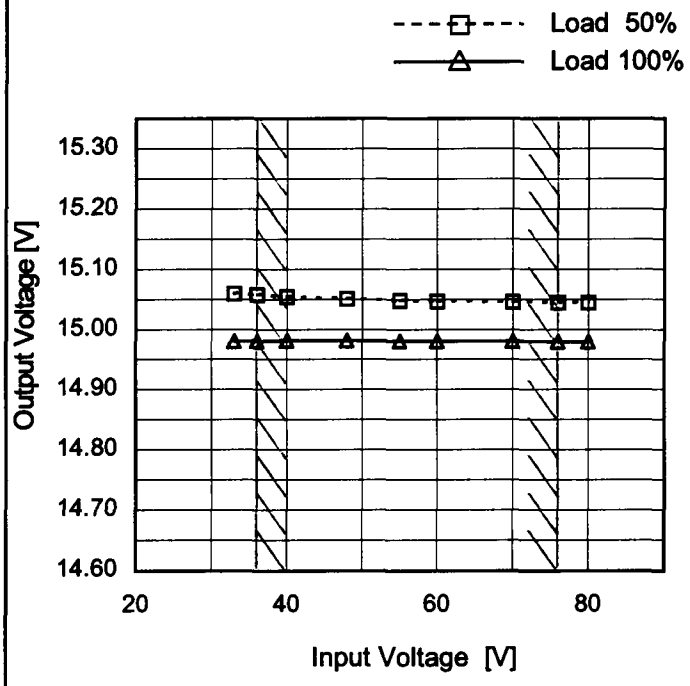
Load Ration [%]	Efficiency [%] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	-	-	-
20	53.0	50.5	42.3
40	65.4	63.6	56.8
60	70.9	69.7	64.3
80	73.7	73.1	68.8
100	75.4	75.2	71.8
110	75.9	75.9	72.8
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUCW34815
Item	Line Regulation
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

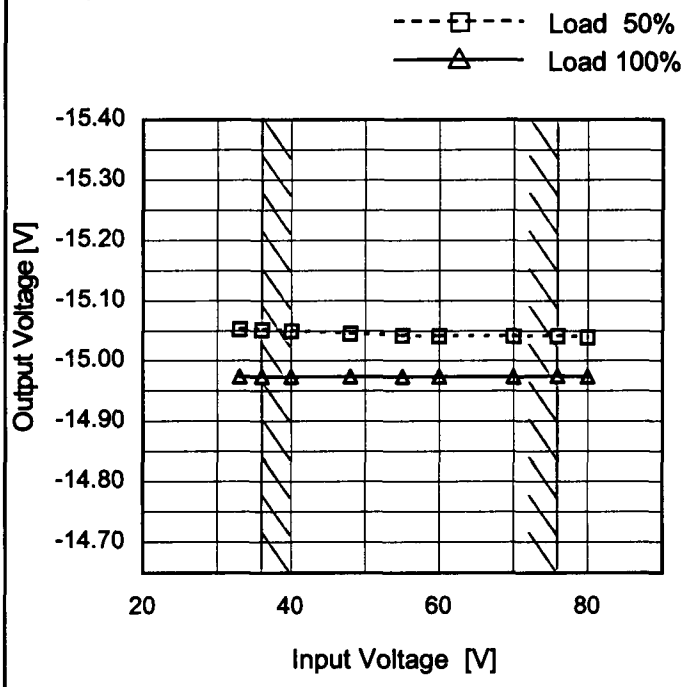


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	15.059	14.980
36	15.057	14.981
40	15.054	14.982
48	15.051	14.981
55	15.047	14.980
60	15.046	14.980
70	15.045	14.980
76	15.045	14.980
80	15.044	14.980

Object	-15V0.1A

1.Graph



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

2.Values

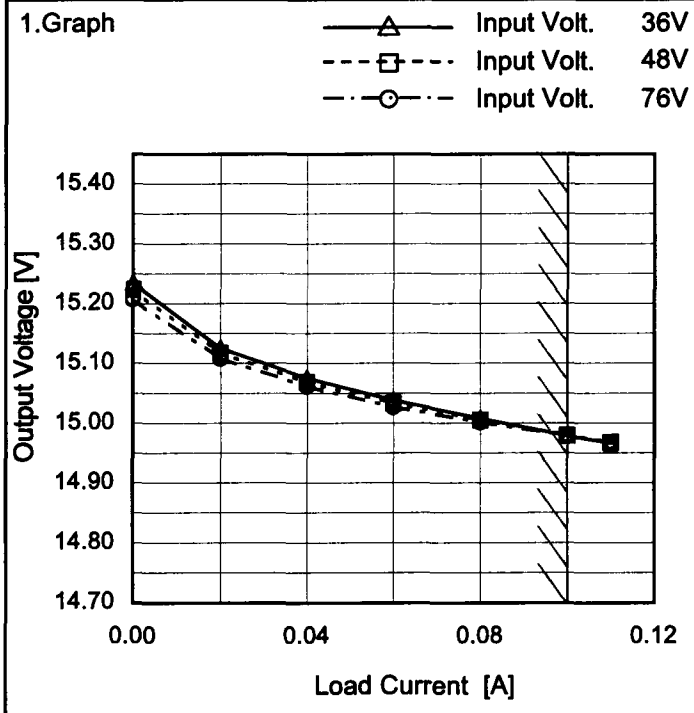
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	-15.053	-14.974
36	-15.051	-14.974
40	-15.049	-14.974
48	-15.045	-14.974
55	-15.043	-14.974
60	-15.041	-14.974
70	-15.041	-14.974
76	-15.041	-14.975
80	-15.039	-14.974

COSEL

Model	SUCW34815
Item	Load Regulation
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

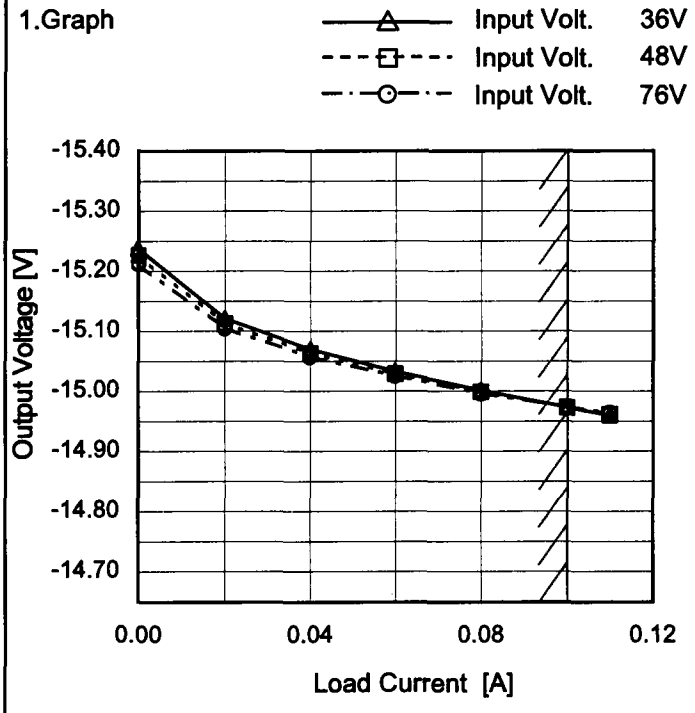


2.Values

Load Current [A]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	15.235	15.224	15.208
0.02	15.125	15.117	15.108
0.04	15.075	15.069	15.062
0.06	15.039	15.033	15.027
0.08	15.008	15.005	15.001
0.10	14.979	14.980	14.979
0.11	14.966	14.968	14.969
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-15V0.1A

1.Graph



2.Values

Load Current [A]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	-15.238	-15.226	-15.213
0.02	-15.122	-15.113	-15.105
0.04	-15.070	-15.063	-15.057
0.06	-15.033	-15.029	-15.026
0.08	-15.002	-14.999	-14.997
0.10	-14.973	-14.974	-14.974
0.11	-14.960	-14.961	-14.964
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

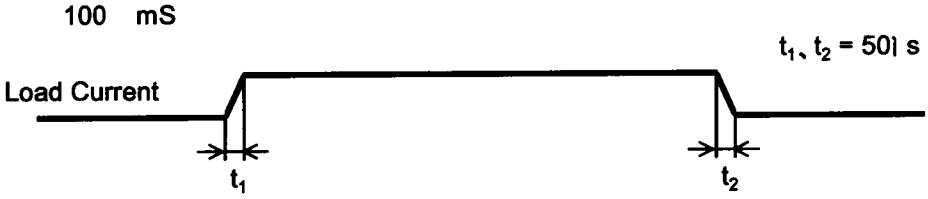
Note: Slanted line shows the range of the rated load current.

COSEL

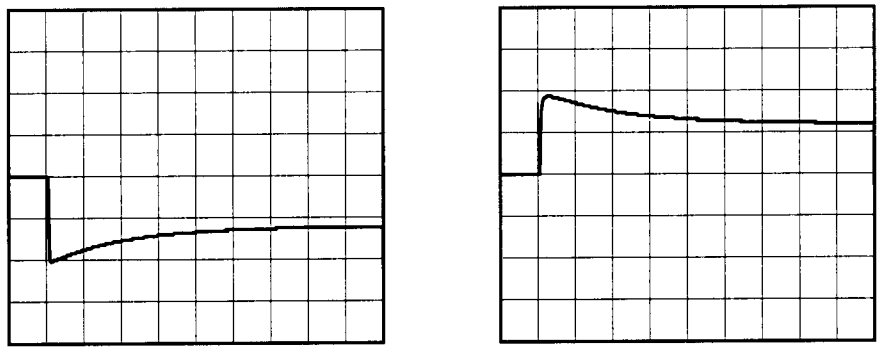
Model	SUCW34815
Item	Dynamic Load Response
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

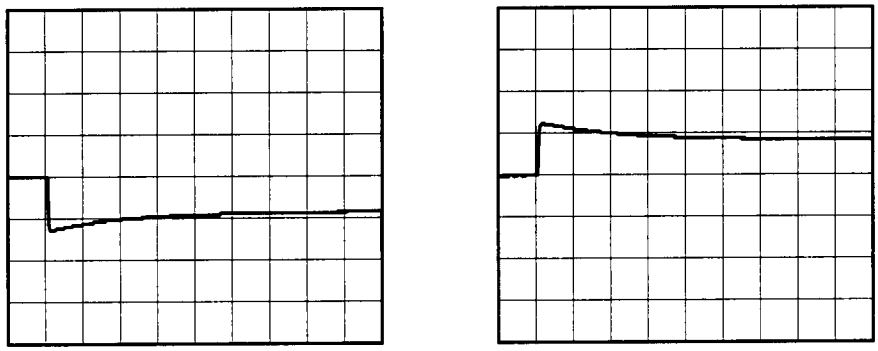
Input Volt. 48 V
Cycle 100 mS



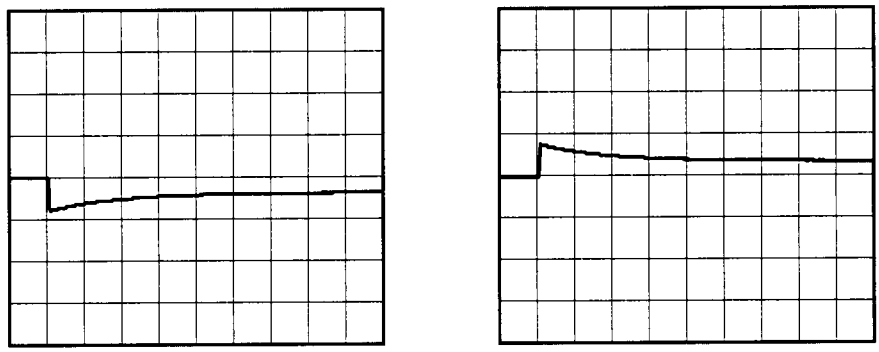
Min. Load (0A) ⟷ Load 100% (0.1A)



Min. Load (0A) ⟷ Load 50% (0.05A)



Load 50% (0.05A) ⟷ Load 100% (0.1A)

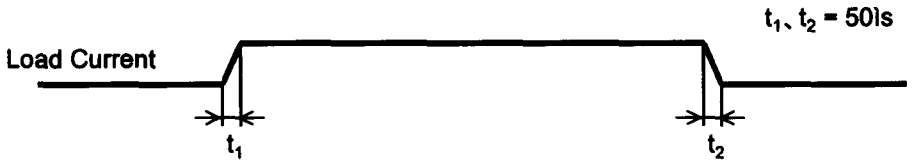


COSEL

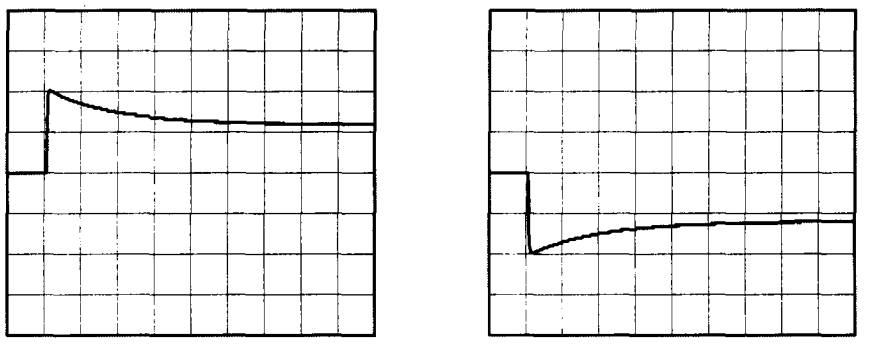
Model	SUCW34815
Item	Dynamic Load Response
Object	-15V0.1A

Temperature 25°C
Testing Circuitry Figure A

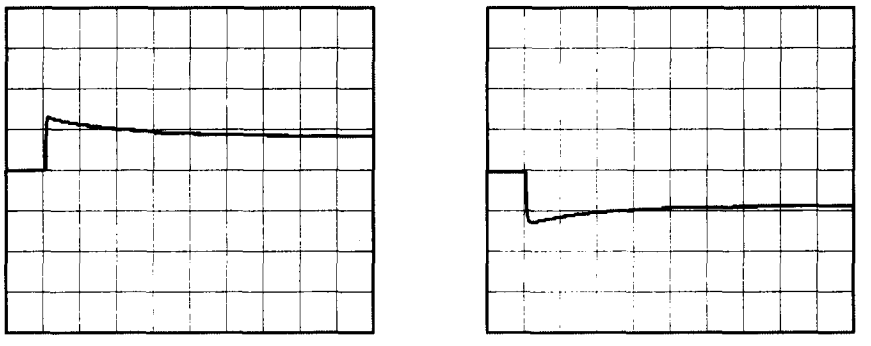
Input Volt. 48 V
Cycle 100 mS



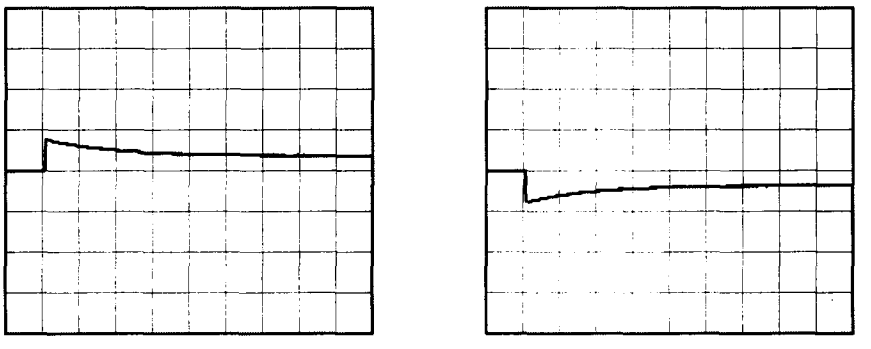
Min. Load (0A) ⟷
Load 100% (0.1A)



Min. Load (0A) ⟷
Load 50% (0.05A)



Load 50% (0.05A) ⟷
Load 100% (0.1A)

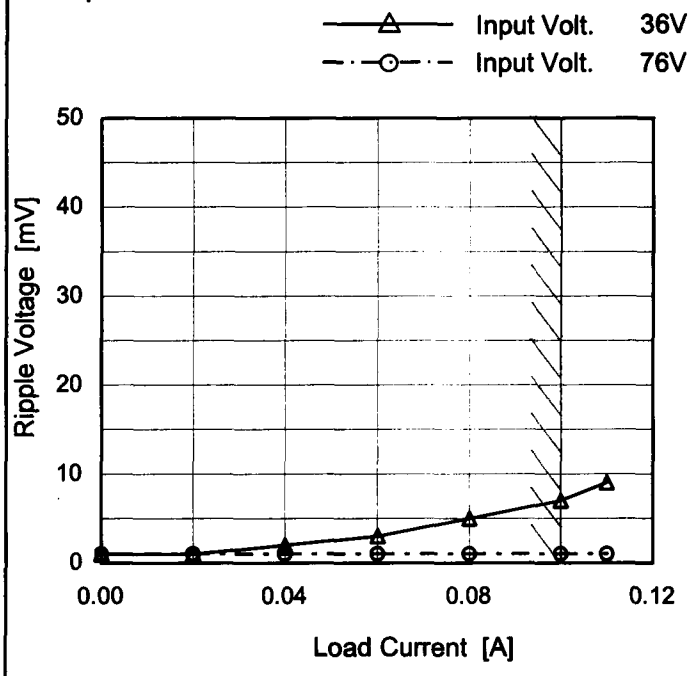


COSEL

Model	SUCW34815
Item	Ripple Voltage (by Load Current)
Object	+15V0.1A

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]

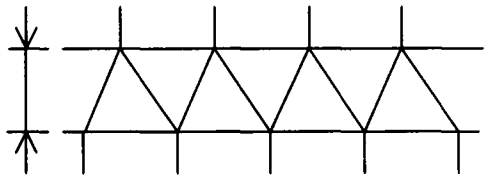


Fig.Complex Ripple Wave Form

2.Values

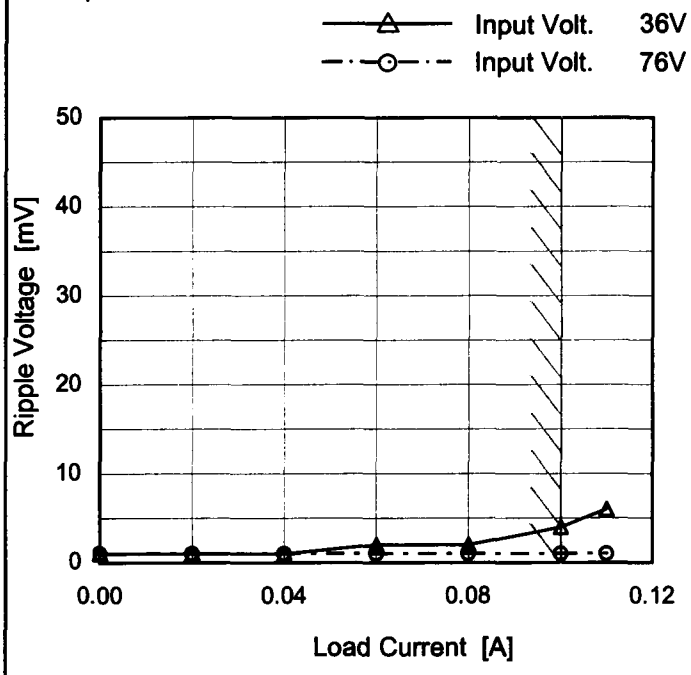
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	1	1
0.02	1	1
0.04	2	1
0.06	3	1
0.08	5	1
0.10	7	1
0.11	9	1
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCW34815
Item	Ripple Voltage (by Load Current)
Object	-15V0.1A

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]

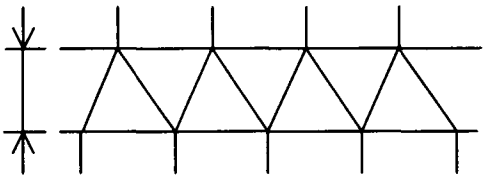


Fig.Complex Ripple Wave Form

2.Values

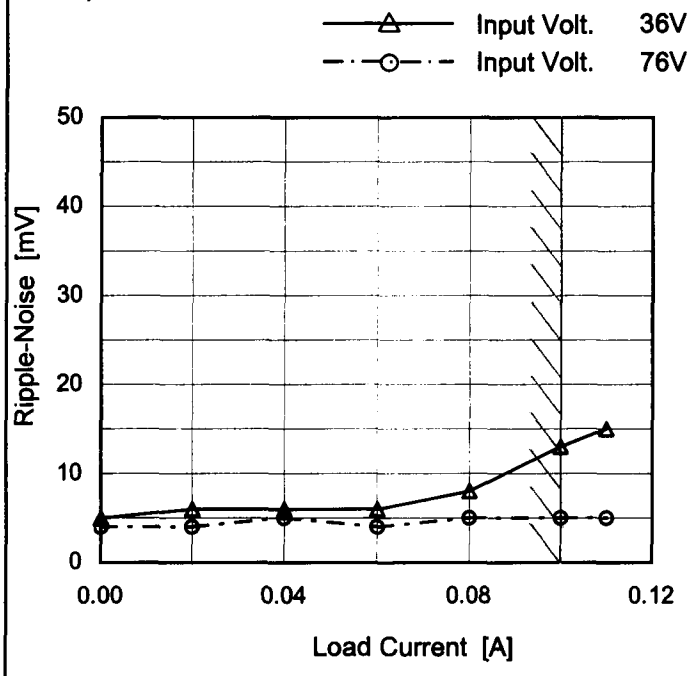
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	1	1
0.02	1	1
0.04	1	1
0.06	2	1
0.08	2	1
0.10	4	1
0.11	6	1
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCW34815
Item	Ripple-Noise
Object	+15V0.1A

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.

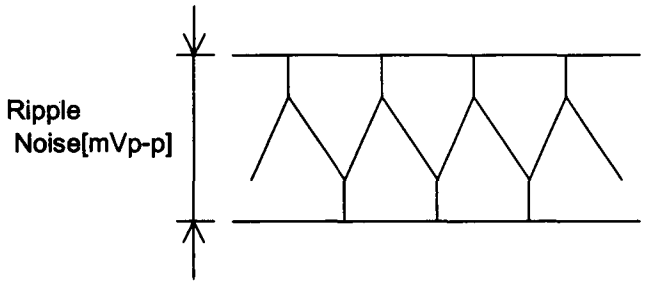


Fig.Complex Ripple Noise Wave Form

2.Values

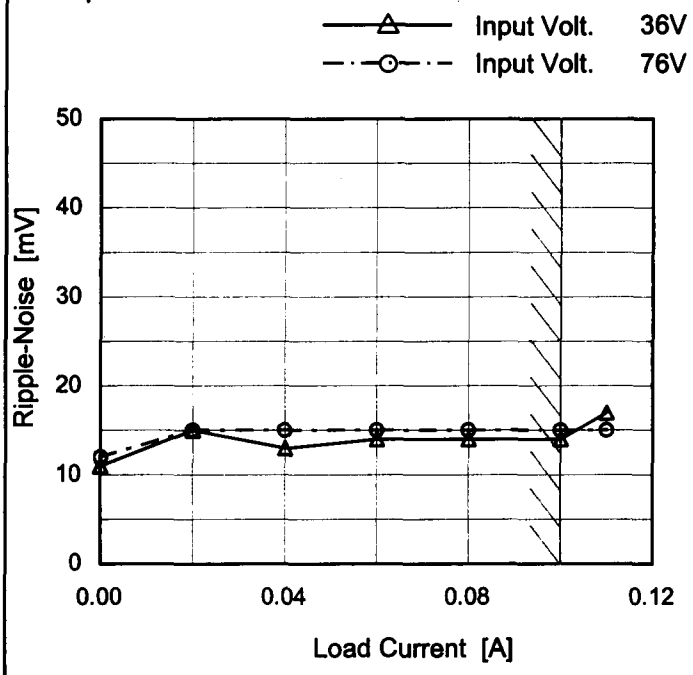
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	5	4
0.02	6	4
0.04	6	5
0.06	6	4
0.08	8	5
0.10	13	5
0.11	15	5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCW34815
Item	Ripple-Noise
Object	-15V0.1A

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.

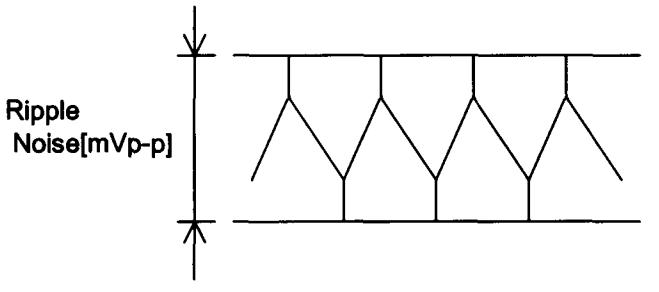


Fig.Complex Ripple Noise Wave Form

2.Values

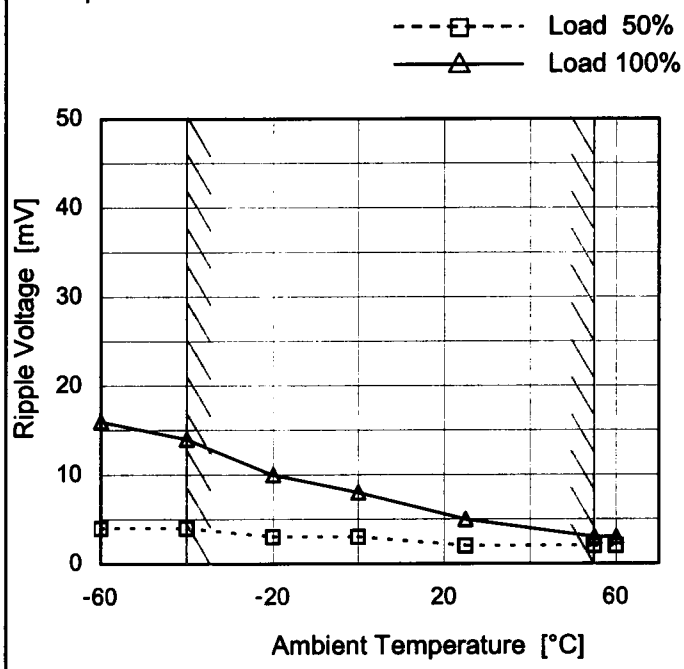
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	11	12
0.02	15	15
0.04	13	15
0.06	14	15
0.08	14	15
0.10	14	15
0.11	17	15
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCW34815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.1A

Testing Circuitry Figure B

1.Graph



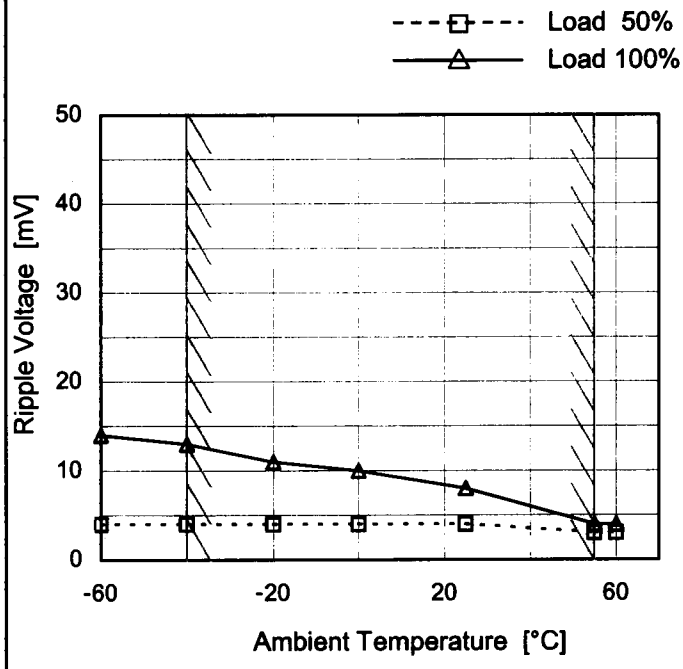
Input Volt. 48V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	4	16
-40	4	14
-20	3	10
0	3	8
25	2	5
55	2	3
60	2	3
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.1A

1.Graph



Input Volt. 48V

Measured by 100 MHz Oscilloscope.

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

2.Values

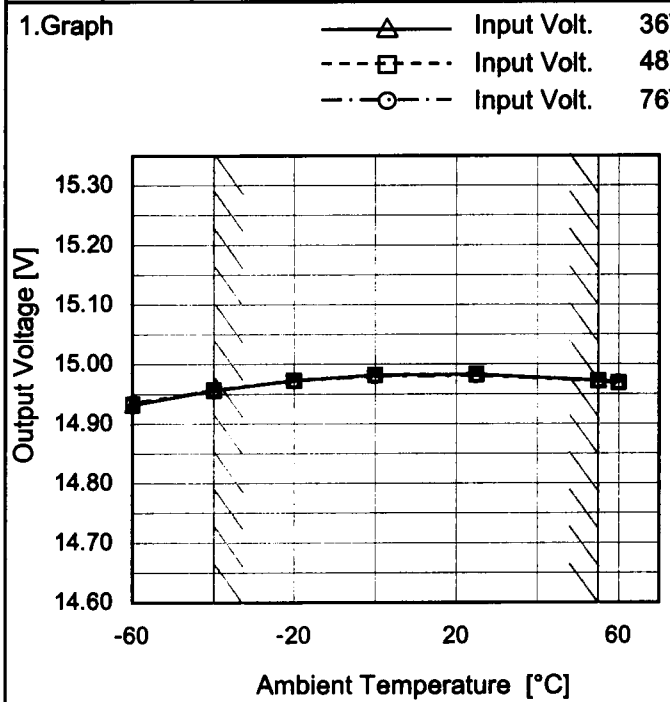
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	4	14
-40	4	13
-20	4	11
0	4	10
25	4	8
55	3	4
60	3	4
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCW34815
Item	Ambient Temperature Drift
Object	+15V0.1A

Testing Circuitry Figure A

1.Graph

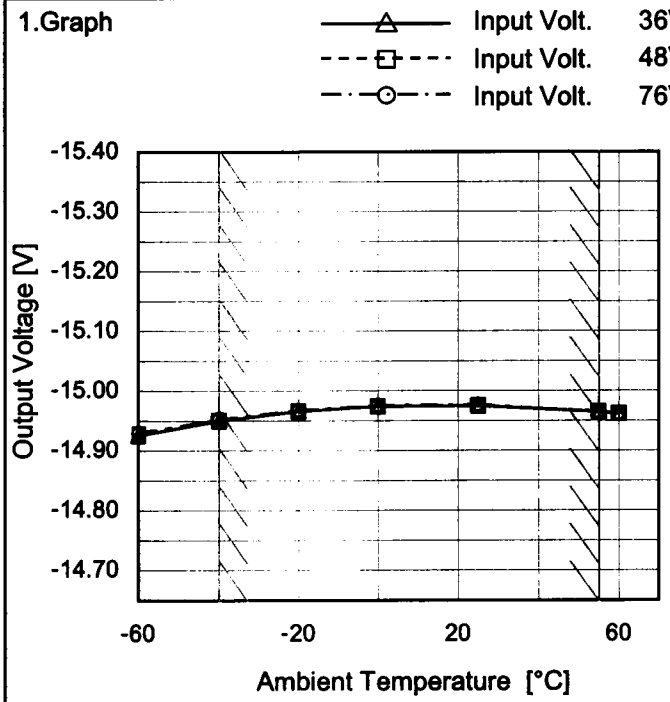


2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.932	14.933	14.934
-40	14.956	14.957	14.957
-20	14.973	14.973	14.972
0	14.982	14.982	14.980
25	14.983	14.983	14.981
55	14.973	14.972	14.971
60	14.970	14.969	14.968
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

Object	-15V0.1A

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. 76[V]
-60	-14.926	-14.928	-14.929
-40	-14.950	-14.951	-14.952
-20	-14.966	-14.966	-14.967
0	-14.974	-14.974	-14.975
25	-14.975	-14.975	-14.976
55	-14.965	-14.965	-14.964
60	-14.962	-14.962	-14.961
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

COSEL

Model	SUCW34815	
Item	Output Voltage Accuracy	Testing Circuitry Figure A

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 - 55°C
Input Voltage : 36 - 76V
Load Current (AVR 1) : 0 - 0.1A (AVR 2):0 - 0.1A
* Other Output : Rated Load

* 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

Object	+15V0.1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	15.233	±139	±0.9
Minimum Voltage	55	36	0.1	14.956		

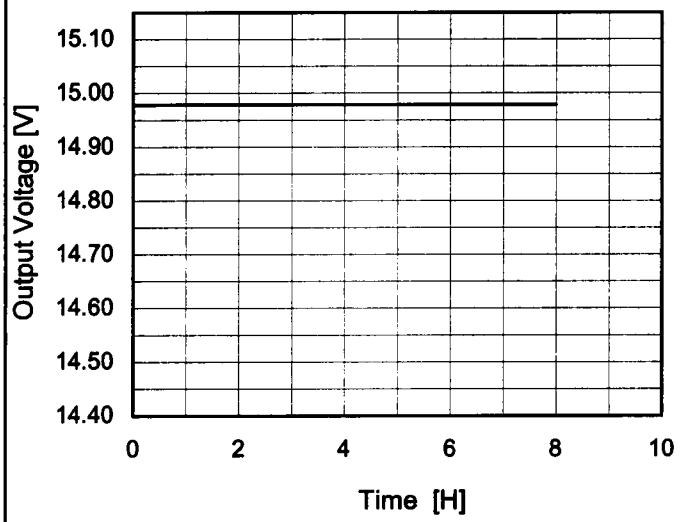
Object	-15V0.1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	-15.238	±144	±1.0
Minimum Voltage	55	36	0.1	-14.950		

COSEL

Model	SUCW34815
Item	Time Lapse Drift
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



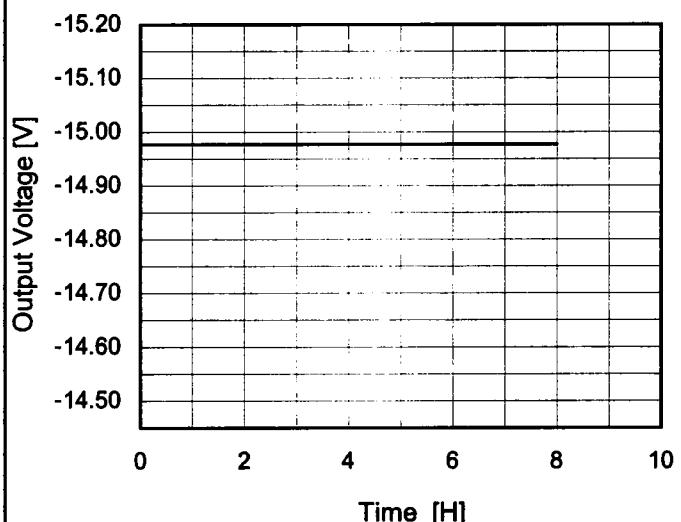
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	14.980
0.5	14.979
1.0	14.979
2.0	14.979
3.0	14.979
4.0	14.979
5.0	14.979
6.0	14.979
7.0	14.979
8.0	14.979

Object	-15V0.1A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-14.979
0.5	-14.977
1.0	-14.977
2.0	-14.977
3.0	-14.977
4.0	-14.977
5.0	-14.977
6.0	-14.977
7.0	-14.977
8.0	-14.977

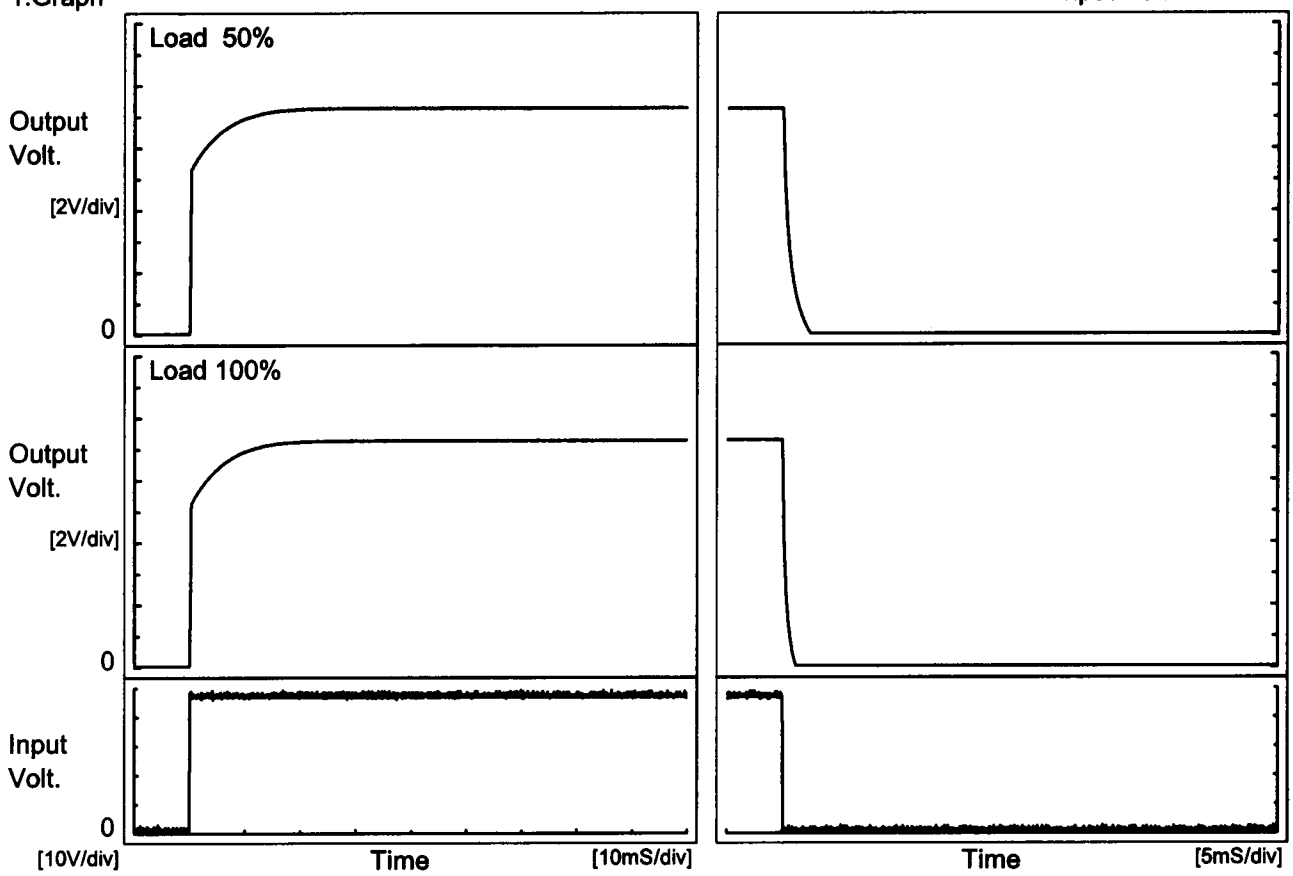
COSEL

Model	SUCW34815
Item	Rise and Fall Time
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

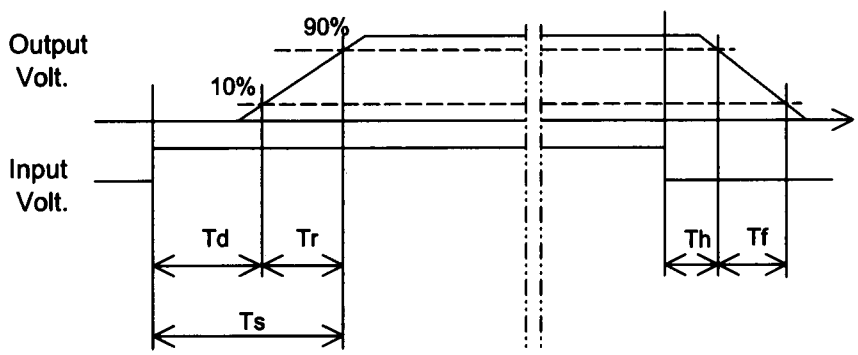
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	8.1	8.2	0.1	1.5
100 %	0.1	8.3	8.4	0.1	0.8



BC-3788

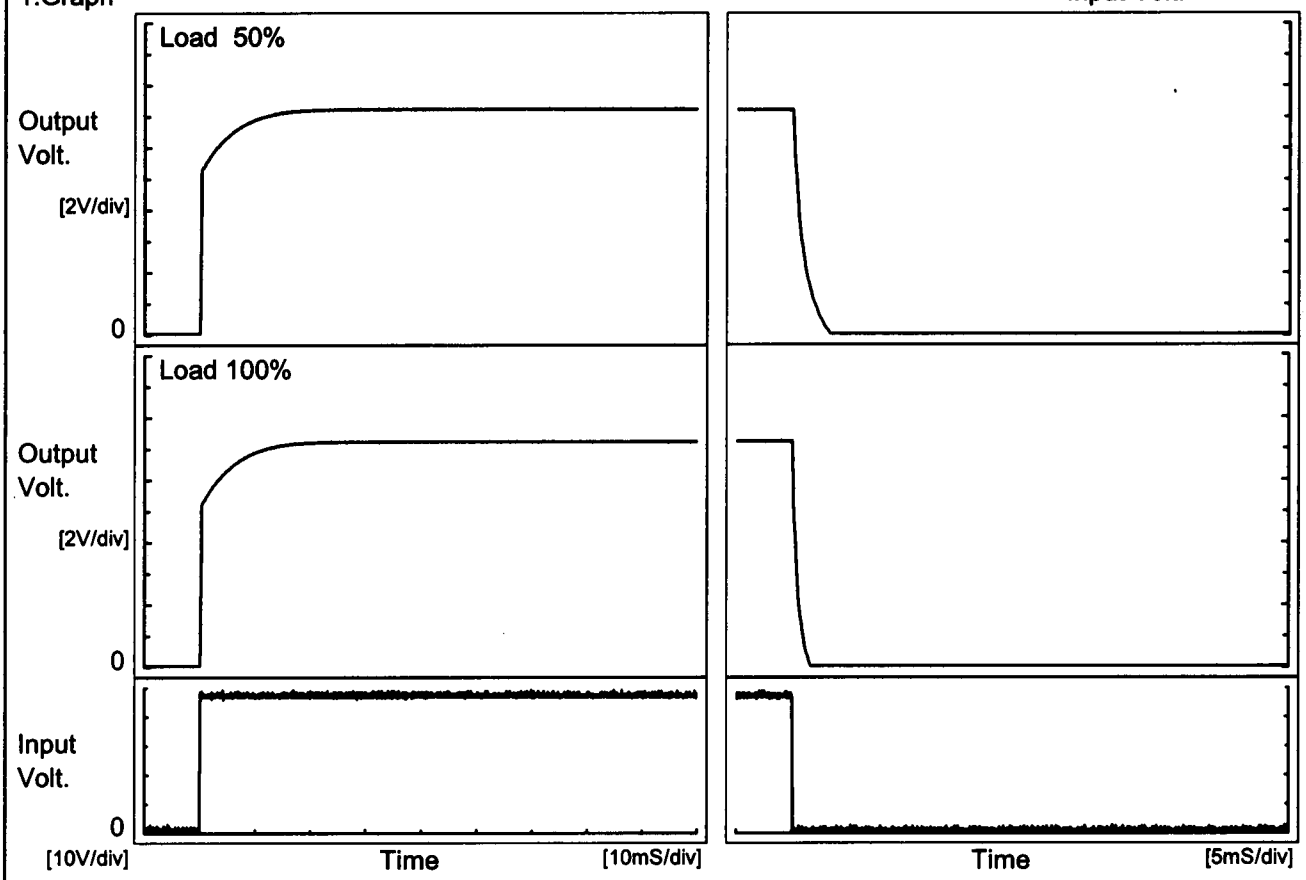
COSEL

Model	SUCW34815
Item	Rise and Fall Time
Object	-15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

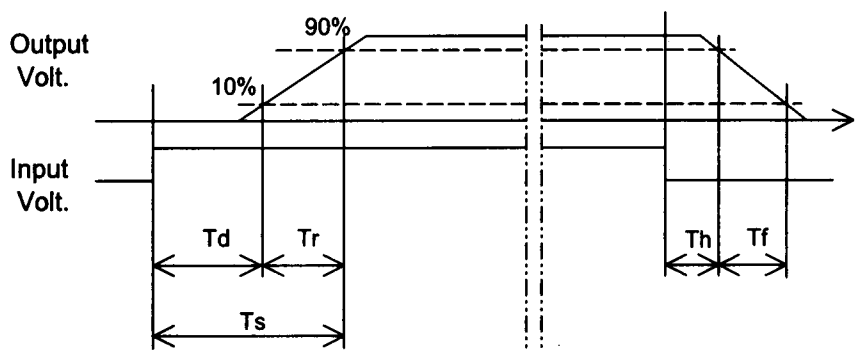
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	8.6	8.7	0.1	2.2
100 %	0.1	8.6	8.7	0.1	1.1

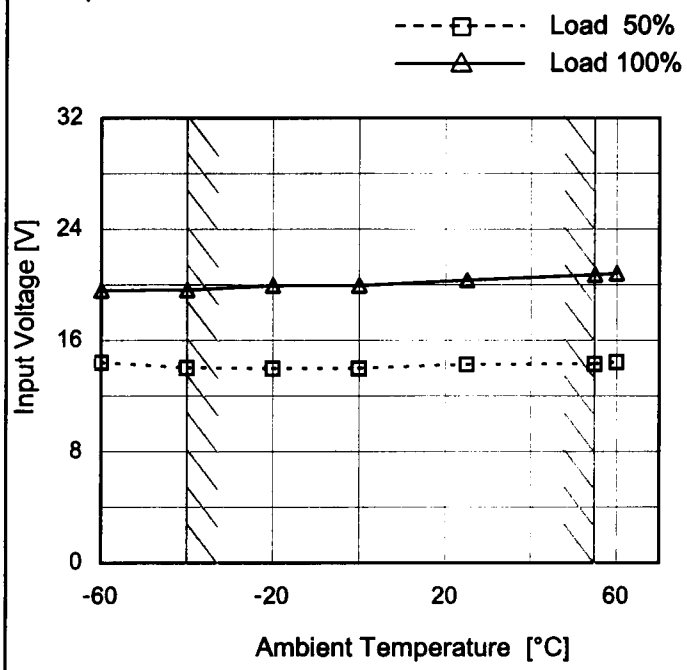


COSEL

Model	SUCW34815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.1A

Testing Circuitry Figure A

1.Graph

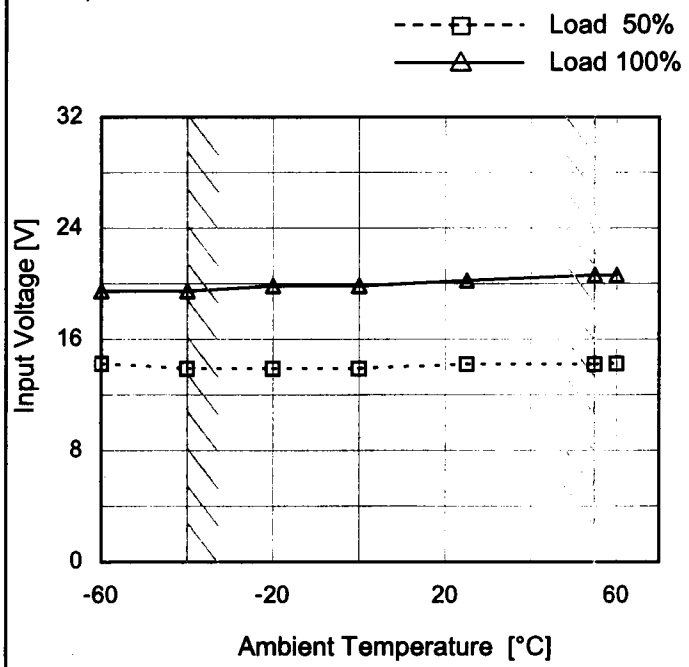


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	14.5	19.7
-40	14.1	19.7
-20	14.0	20.0
0	14.0	20.0
25	14.3	20.4
55	14.4	20.8
60	14.5	20.9
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.1A

1.Graph



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

2.Values

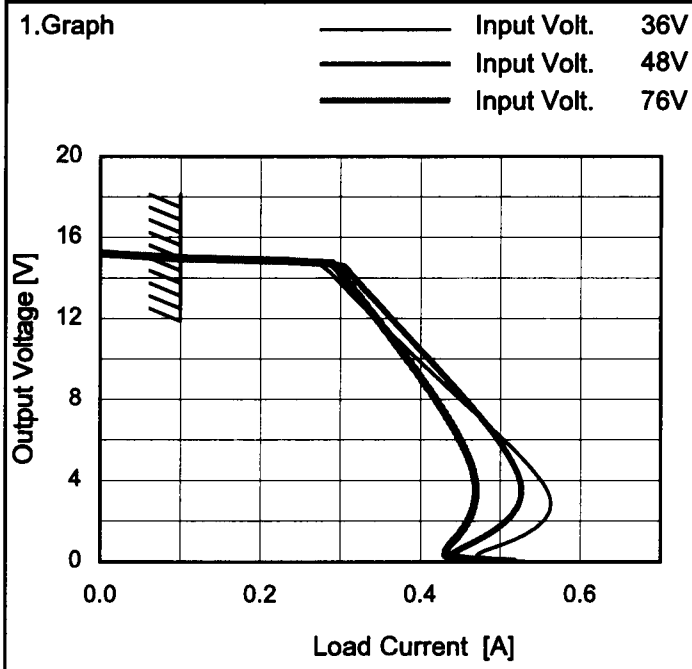
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	14.3	19.5
-40	13.9	19.5
-20	13.9	19.9
0	13.9	19.9
25	14.2	20.3
55	14.2	20.7
60	14.3	20.7
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCW34815
Item	Overcurrent Protection
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

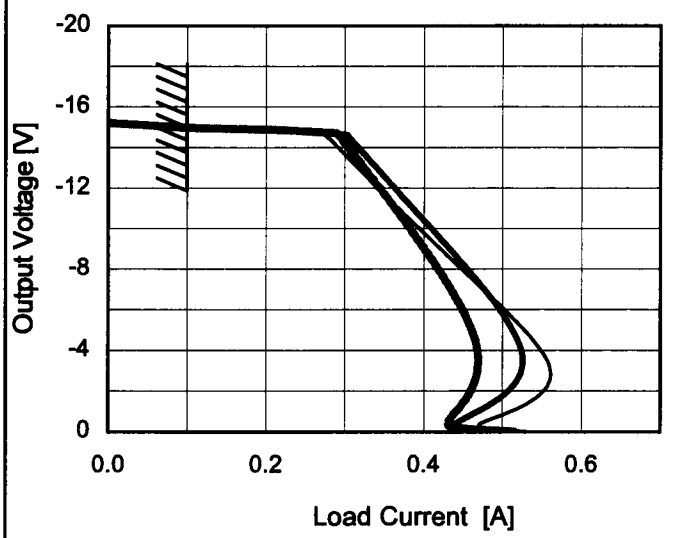


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
15.0	0.10	0.10	0.10
14.3	0.29	0.31	0.30
13.5	0.31	0.33	0.31
12.0	0.34	0.36	0.34
10.5	0.38	0.40	0.37
9.0	0.42	0.43	0.40
7.5	0.46	0.47	0.43
6.0	0.51	0.50	0.45
4.5	0.54	0.52	0.47
3.0	0.56	0.52	0.47
1.5	0.54	0.49	0.45
0.0	0.53	0.50	0.52

Object	-15V0.1A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-15.0	0.10	0.10	0.10
-14.3	0.29	0.31	0.30
-13.5	0.30	0.33	0.31
-12.0	0.34	0.36	0.35
-10.5	0.38	0.40	0.37
-9.0	0.42	0.43	0.40
-7.5	0.46	0.47	0.43
-6.0	0.50	0.50	0.45
-4.5	0.54	0.52	0.47
-3.0	0.56	0.52	0.47
-1.5	0.54	0.49	0.45
0.0	0.53	0.49	0.52

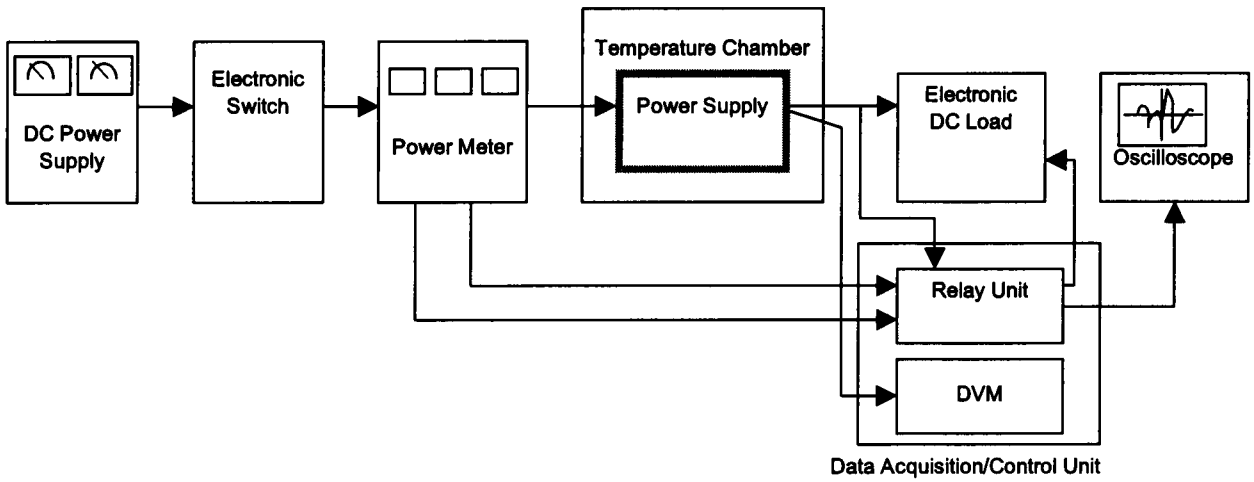


Figure A

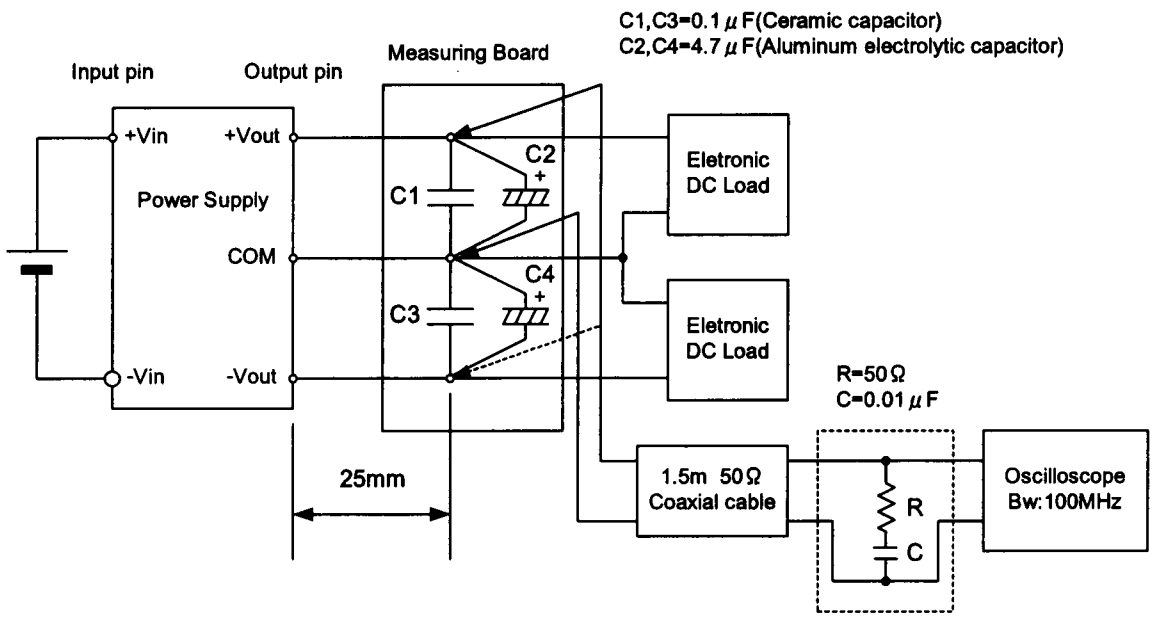


Figure B (Ripple and Ripple noise Characteristic)