COSEL

参考資料

TEST DATA OF SUW64815
SUCW64815

Regulated DC Power Supply
Feb 22, 2005

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Yoshikazu Mizuno Design Engineer

COSEL CO.,LTD.

参考資料

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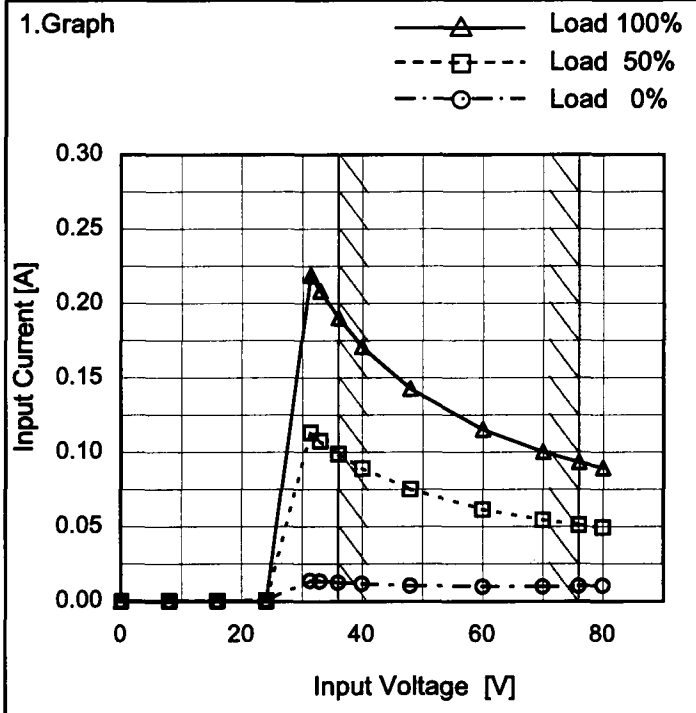
Model	SUW64815/SUCW64815
Item	Input Current (by Input Voltage)
Object	————————

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
24.0	0.001	0.001	0.000
31.4	0.014	0.113	0.219
33.0	0.013	0.108	0.208
36.0	0.013	0.099	0.190
40.0	0.012	0.089	0.171
48.0	0.010	0.075	0.143
60.0	0.010	0.062	0.115
70.0	0.010	0.055	0.100
76.0	0.010	0.051	0.093
80.0	0.010	0.050	0.090
--	-	-	-
--	-	-	-
--	-	-	-

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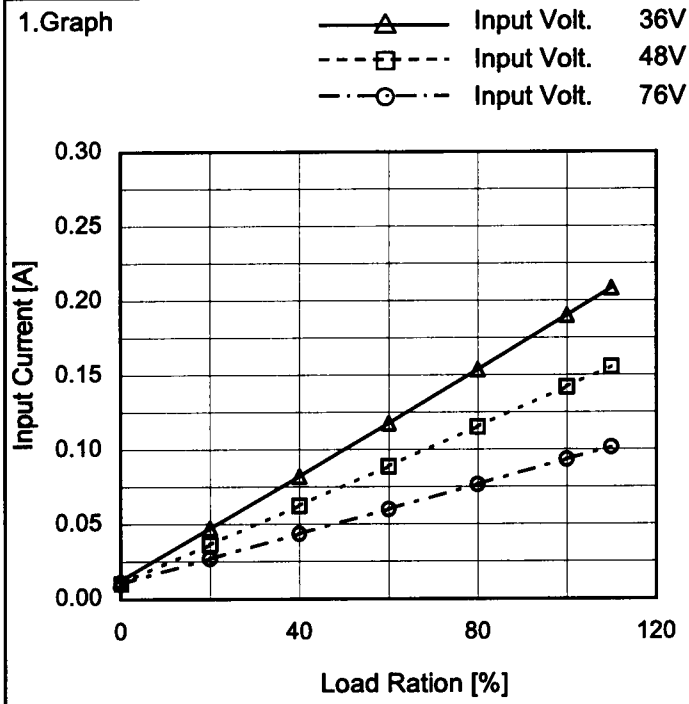
Model	SUW64815/SUCW64815
Item	Input Current (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

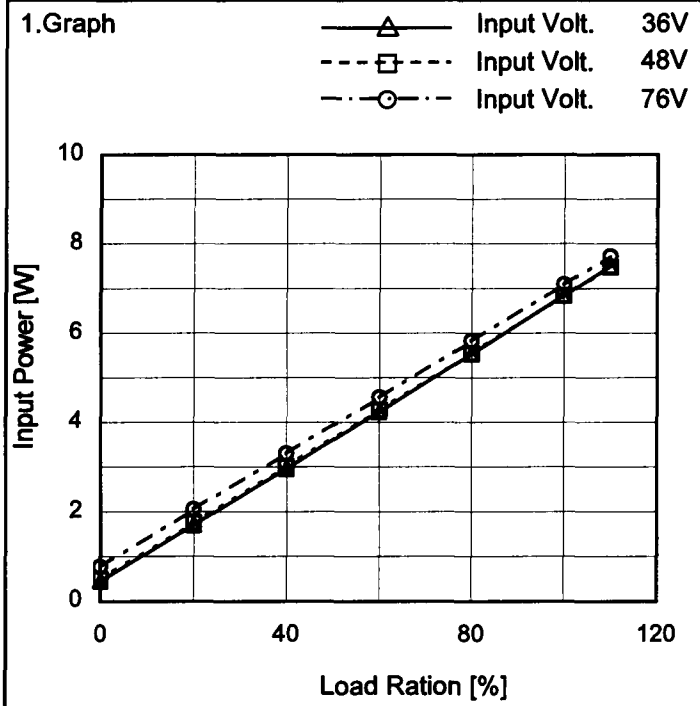
Load Ration [%]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.012	0.010	0.010
20	0.047	0.036	0.027
40	0.082	0.063	0.044
60	0.118	0.089	0.060
80	0.154	0.115	0.077
100	0.190	0.142	0.093
110	0.208	0.156	0.102
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW64815/SUCW64815
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

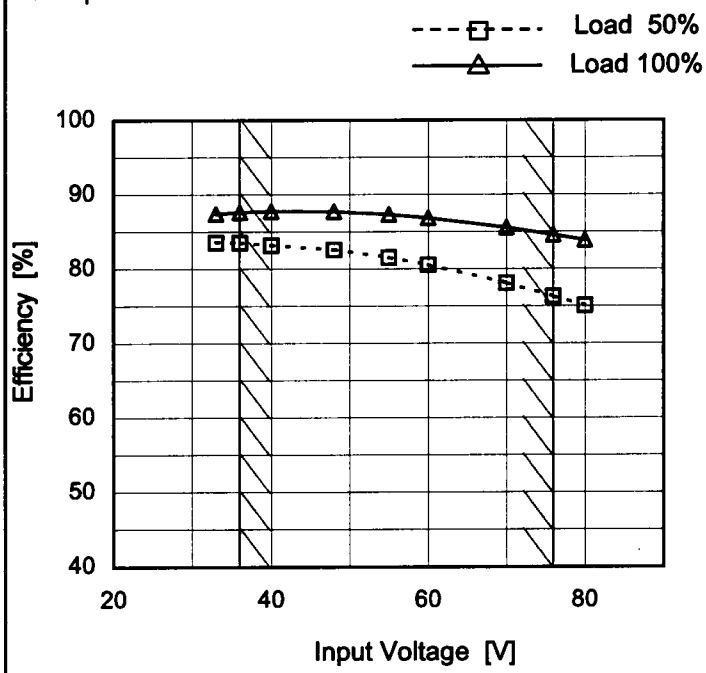
Load Ration [%]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.45	0.50	0.77
20	1.70	1.75	2.05
40	2.96	3.01	3.31
60	4.24	4.28	4.56
80	5.53	5.55	5.82
100	6.84	6.84	7.09
110	7.50	7.48	7.72
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW64815/SUCW64815
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	83.6	87.4
36	83.5	87.6
40	83.2	87.7
48	82.6	87.7
55	81.5	87.3
60	80.6	86.9
70	78.1	85.5
76	76.3	84.6
80	75.1	83.9

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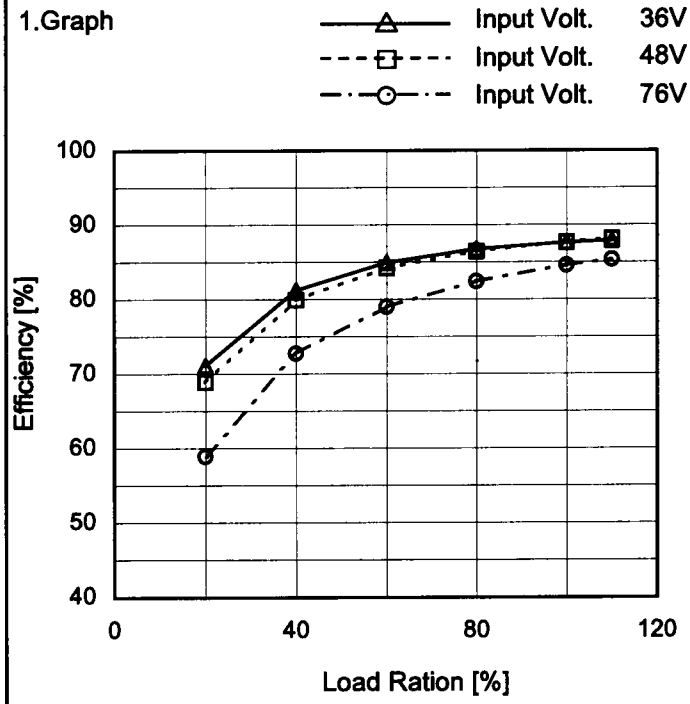
Model	SUW64815/SUCW64815
Item	Efficiency (by Load Current)
Object	――――――

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	71.1	68.9	58.9
40	81.3	80.0	72.8
60	85.0	84.2	79.0
80	86.8	86.5	82.4
100	87.6	87.7	84.6
110	87.9	88.1	85.3
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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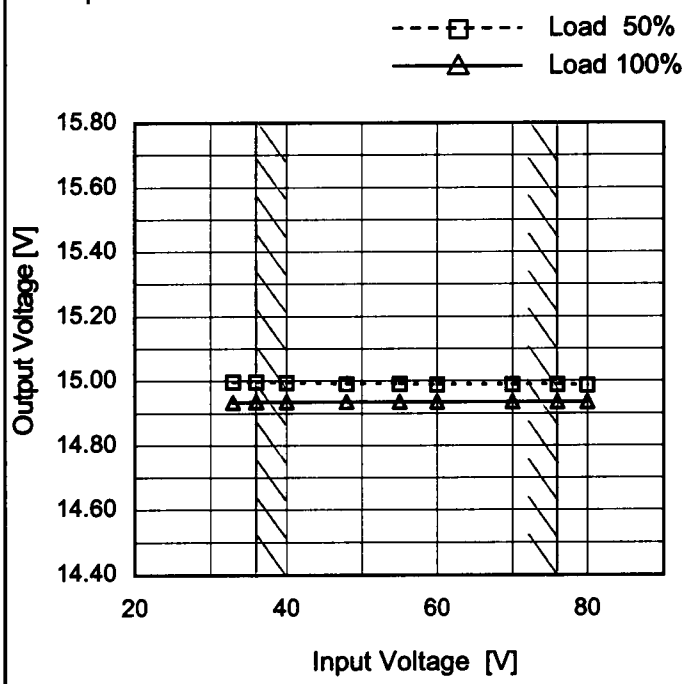
Model	SUW64815/SUCW64815
Item	Line Regulation
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

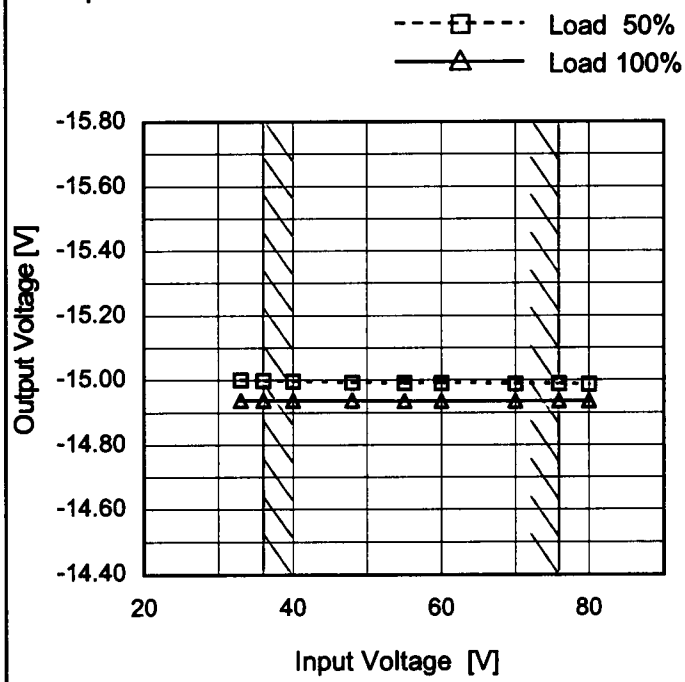


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	14.997	14.934
36	14.996	14.934
40	14.994	14.935
48	14.991	14.935
55	14.991	14.936
60	14.990	14.936
70	14.989	14.936
76	14.988	14.936
80	14.988	14.936

Object	-15V0.2A

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	-15.000	-14.937
36	-14.998	-14.938
40	-14.996	-14.937
48	-14.993	-14.937
55	-14.991	-14.936
60	-14.990	-14.936
70	-14.988	-14.936
76	-14.988	-14.936
80	-14.987	-14.935

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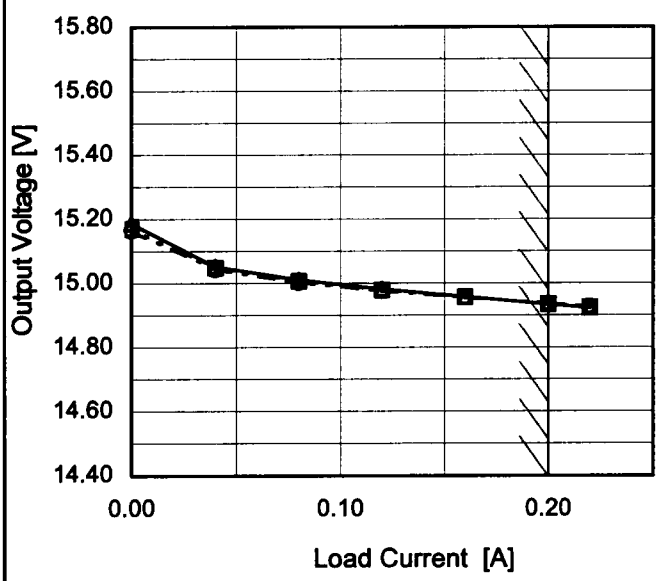
Model	SUW64815/SUCW64815
Item	Load Regulation
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

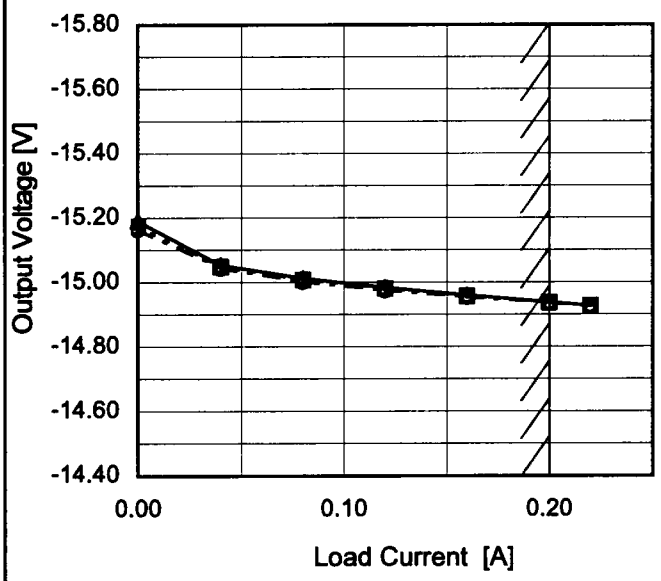


2.Values

Load Current [A]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	15.187	15.170	15.164
0.04	15.052	15.049	15.043
0.08	15.011	15.007	15.002
0.12	14.982	14.979	14.976
0.16	14.957	14.956	14.955
0.20	14.934	14.935	14.935
0.22	14.923	14.925	14.927
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-15V0.2A

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. 76[V]
0.00	-15.190	-15.174	-15.165
0.04	-15.054	-15.049	-15.043
0.08	-15.013	-15.007	-15.002
0.12	-14.984	-14.980	-14.975
0.16	-14.960	-14.957	-14.954
0.20	-14.938	-14.937	-14.936
0.22	-14.926	-14.927	-14.927
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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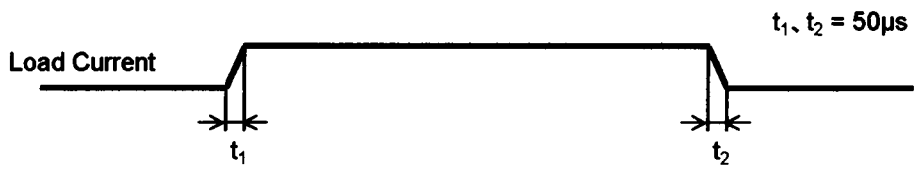
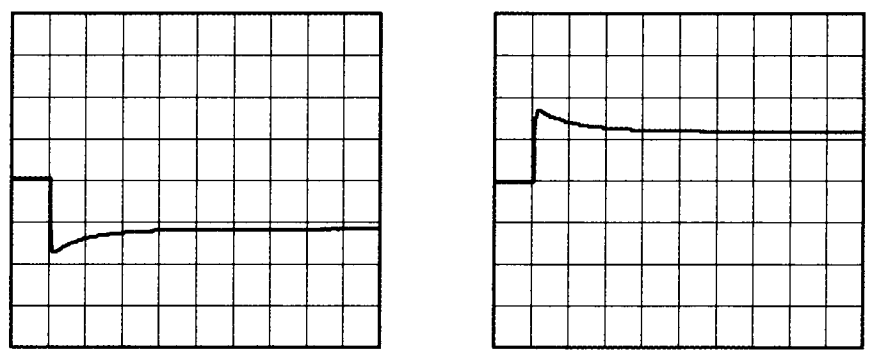
Model	SUW64815/SUCW64815	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	+15V0.2A	

Input Volt. 48 V
Cycle 100 mS



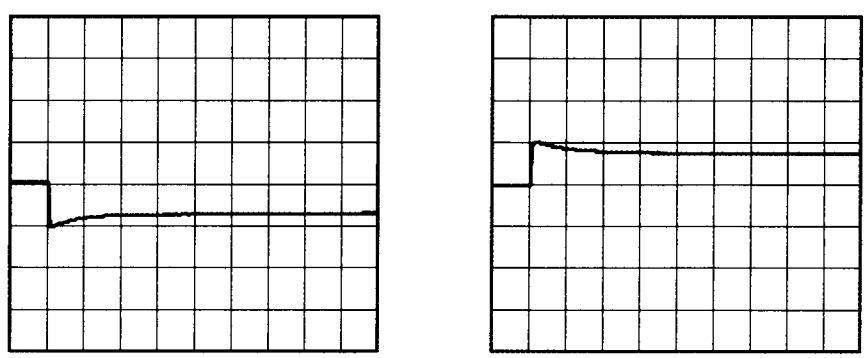
Min. Load (0A) ←→
Load 100% (0.2A)



200mV/div

2ms/div 2ms/div

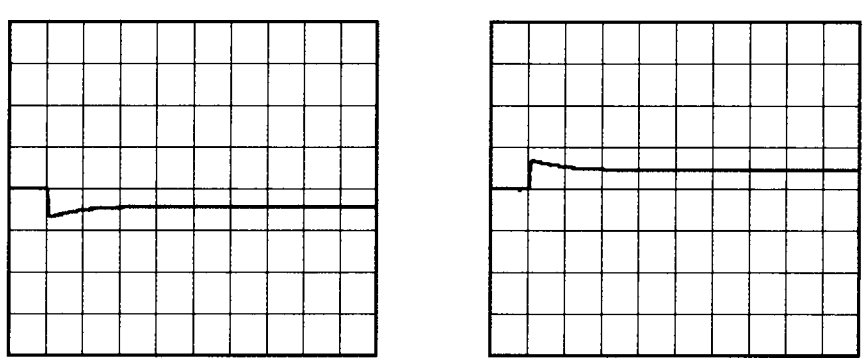
Min. Load (0A) ←→
Load 50% (0.1A)



200mV/div

2ms/div 2ms/div

Load 50% (0.1A) ←→
Load 100% (0.2A)



200mV/div

2ms/div 2ms/div

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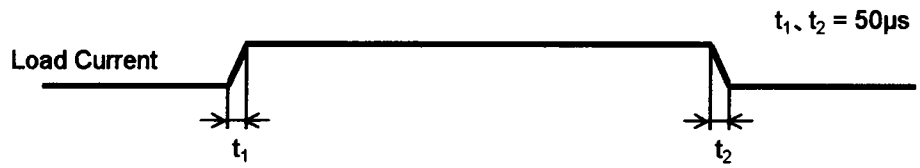
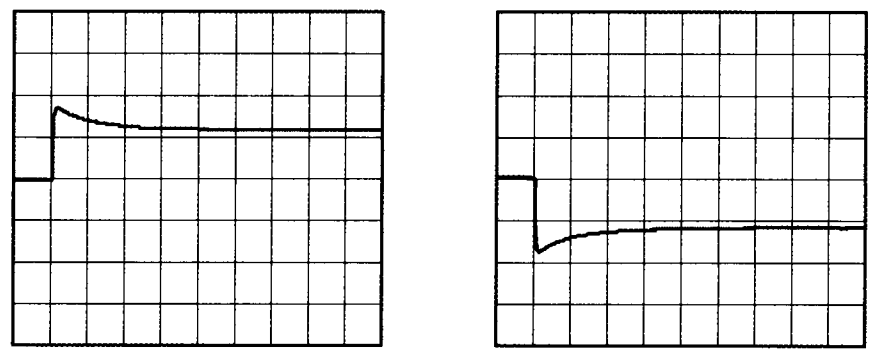
Model	SUW64815/SUCW64815	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	-15V0.2A	

Input Volt. 48 V
Cycle 100 mS



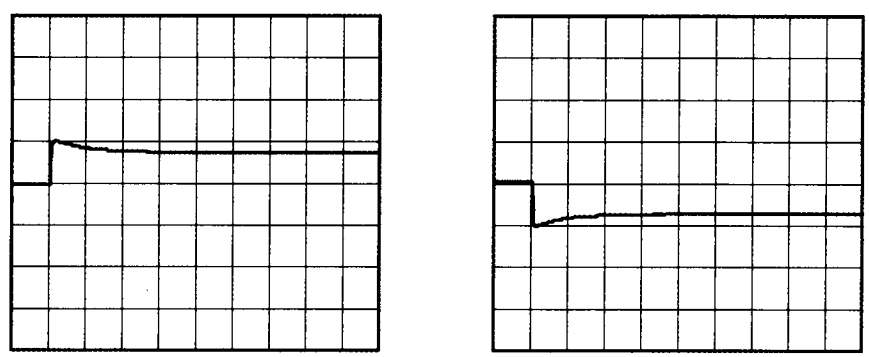
Min. Load (0A) ⟷
Load 100% (0.2A)



200mV/div

2ms/div 2ms/div

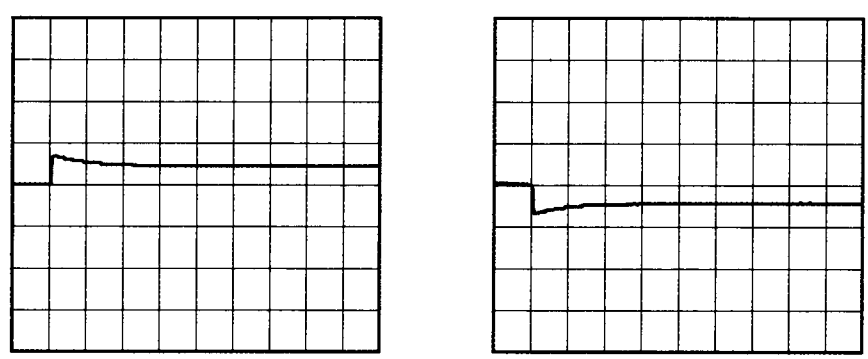
Min. Load (0A) ⟷
Load 50% (0.1A)



200mV/div

2ms/div 2ms/div

Load 50% (0.1A) ⟷
Load 100% (0.2A)



200mV/div

2ms/div 2ms/div

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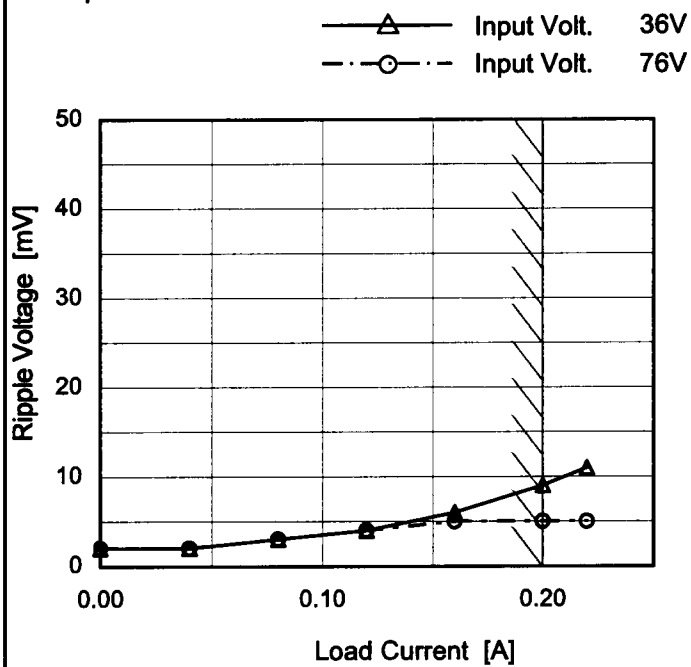
Model	SUW64815/SUCW64815
Item	Ripple Voltage (by Load Current)
Object	+15V0.2A

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]

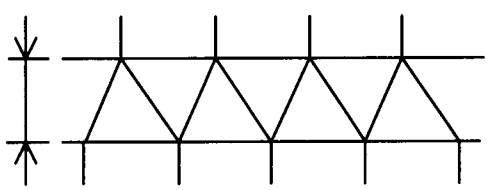


Fig.Complex Ripple Wave Form

2.Values

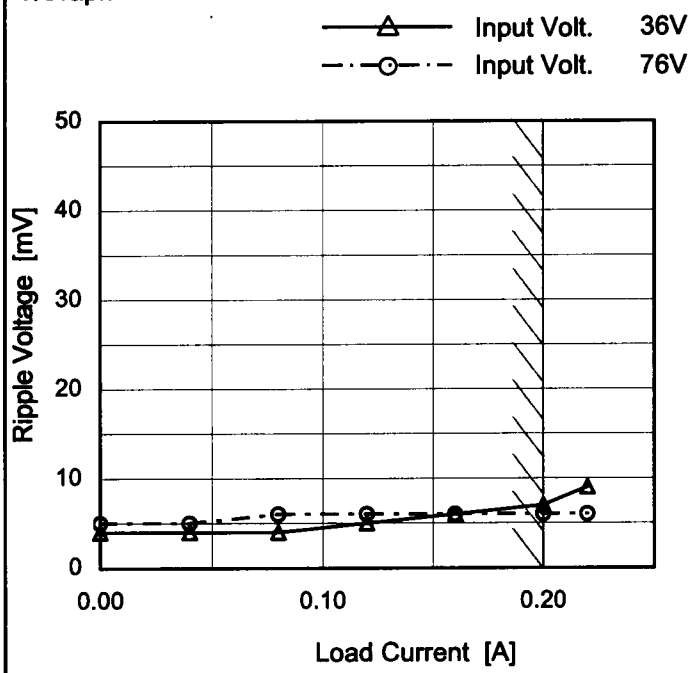
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	2	2
0.04	2	2
0.08	3	3
0.12	4	4
0.16	6	5
0.20	9	5
0.22	11	5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW64815/SUCW64815
Item	Ripple Voltage (by Load Current)
Object	-15V0.2A

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]

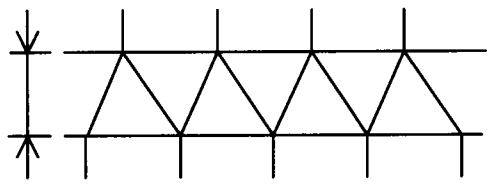


Fig.Complex Ripple Wave Form

2.Values

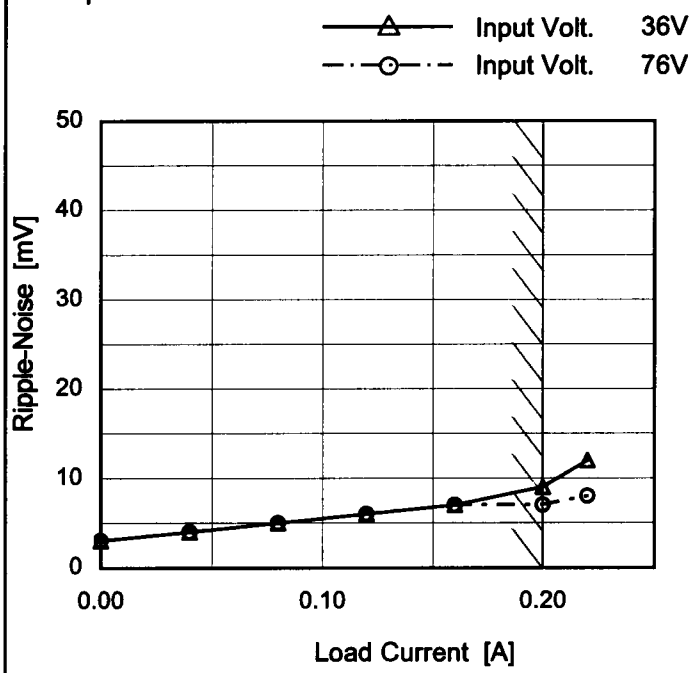
Load Current [A]	Ripple Voltage [mV] Input Volt. 36 [V]	Ripple Voltage [mV] Input Volt. 76 [V]
0.00	4	5
0.04	4	5
0.08	4	6
0.12	5	6
0.16	6	6
0.20	7	6
0.22	9	6
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW64815/SUCW64815
Item	Ripple-Noise
Object	+15V0.2A

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.

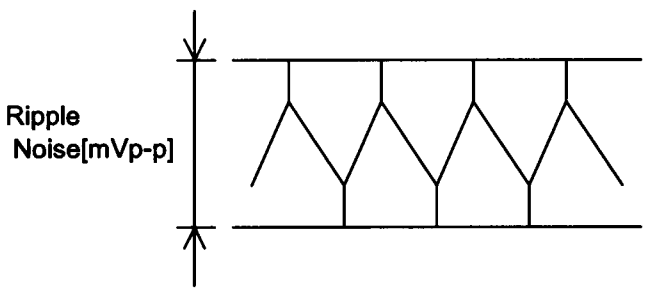


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	3	3
0.04	4	4
0.08	5	5
0.12	6	6
0.16	7	7
0.20	9	7
0.22	12	8
--	-	-
--	-	-
--	-	-
--	-	-

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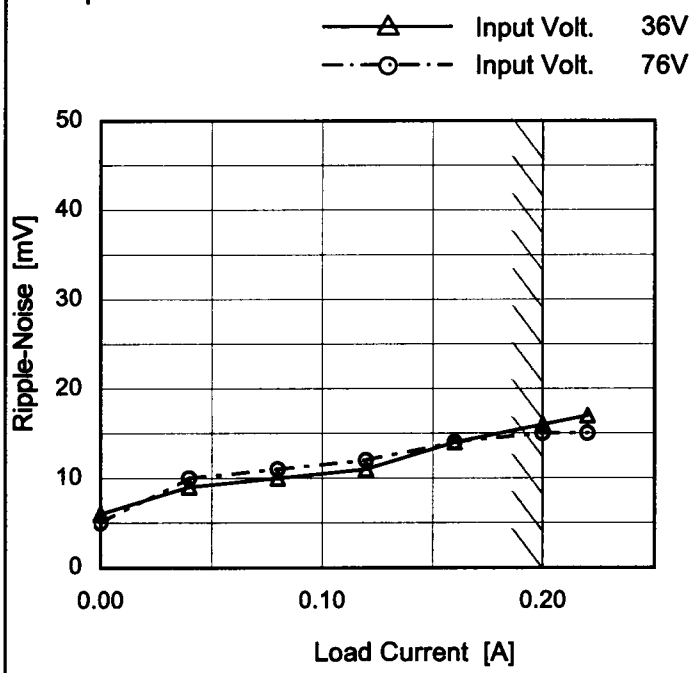
Model	SUW64815/SUCW64815
Item	Ripple-Noise
Object	-15V0.2A

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.

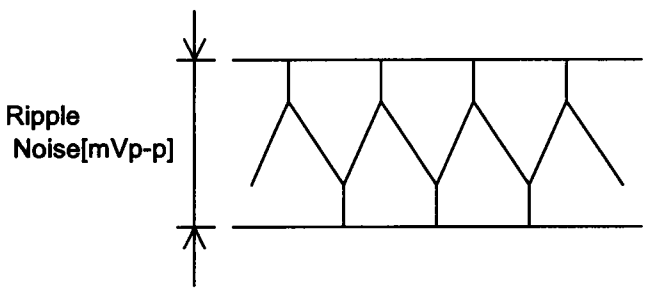


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV] Input Volt. 36 [V]	Ripple-Noise [mV] Input Volt. 76 [V]
0.00	6	5
0.04	9	10
0.08	10	11
0.12	11	12
0.16	14	14
0.20	16	15
0.22	17	15
--	-	-
--	-	-
--	-	-
--	-	-

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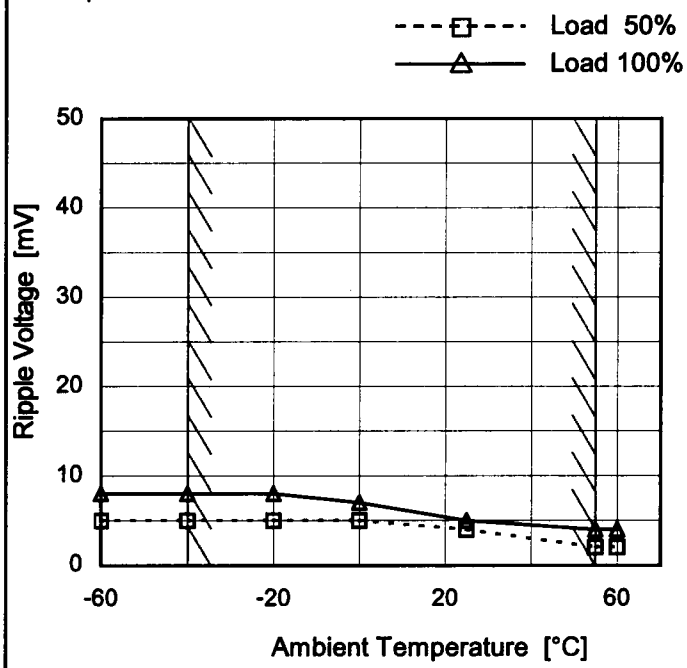
Model	SUW64815/SUCW64815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.2A

Testing Circuitry Figure B

1.Graph



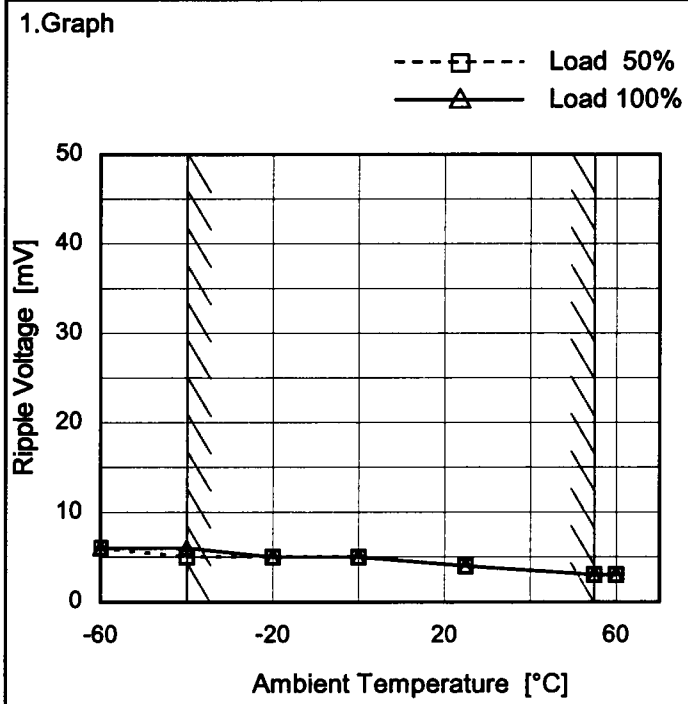
Input Volt. 48V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	5	8
-40	5	8
-20	5	8
0	5	7
25	4	5
55	2	4
60	2	4
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.2A

1.Graph



Input Volt. 48V

Measured by 100 MHz Oscilloscope.

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

2.Values

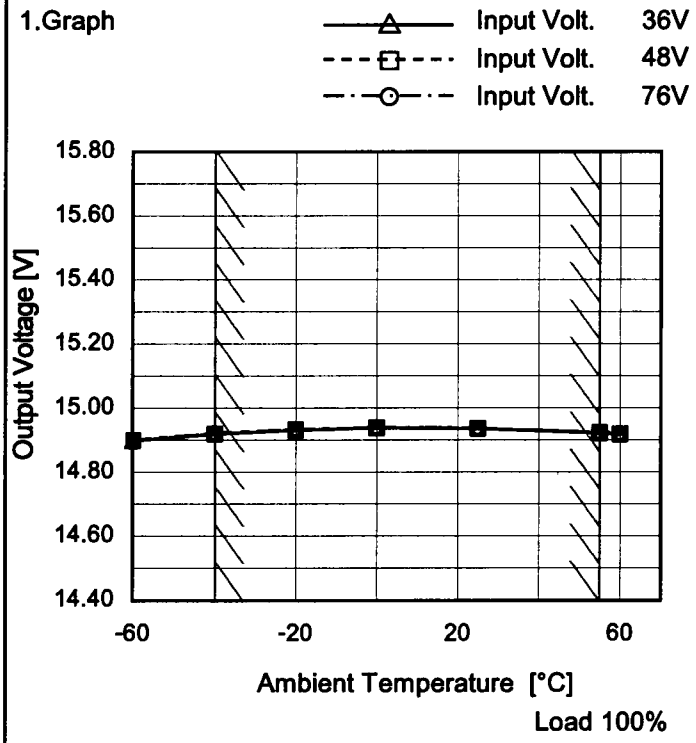
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	6	6
-40	5	6
-20	5	5
0	5	5
25	4	4
55	3	3
60	3	3
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW64815/SUCW64815
Item	Ambient Temperature Drift
Object	+15V0.2A

Testing Circuitry Figure A

1.Graph

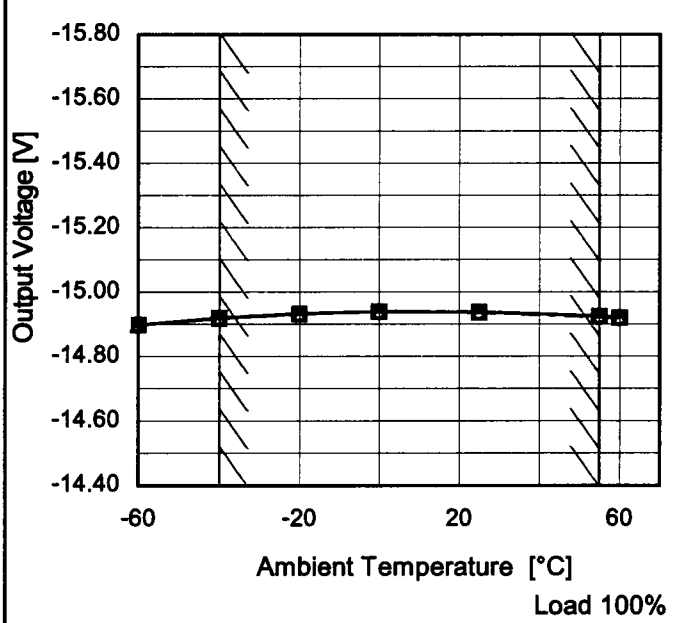


2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.898	14.899	14.900
-40	14.919	14.920	14.921
-20	14.931	14.933	14.933
0	14.938	14.939	14.939
25	14.936	14.937	14.937
55	14.922	14.923	14.923
60	14.918	14.919	14.919
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-15V0.2A

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	-14.898	-14.898	-14.897
-40	-14.919	-14.919	-14.918
-20	-14.933	-14.932	-14.931
0	-14.939	-14.939	-14.938
25	-14.938	-14.937	-14.936
55	-14.925	-14.924	-14.922
60	-14.921	-14.920	-14.919
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW64815/SUCW64815	
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 - 0.2A (AVR 2):0 - 0.2A
* Other Output : Rated Load

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

* Output Voltage Accuracy (Ration) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2.Values

Object	+15V0.2A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	15.183	±131	±0.9
Minimum Voltage	55	36	0.2	14.922		

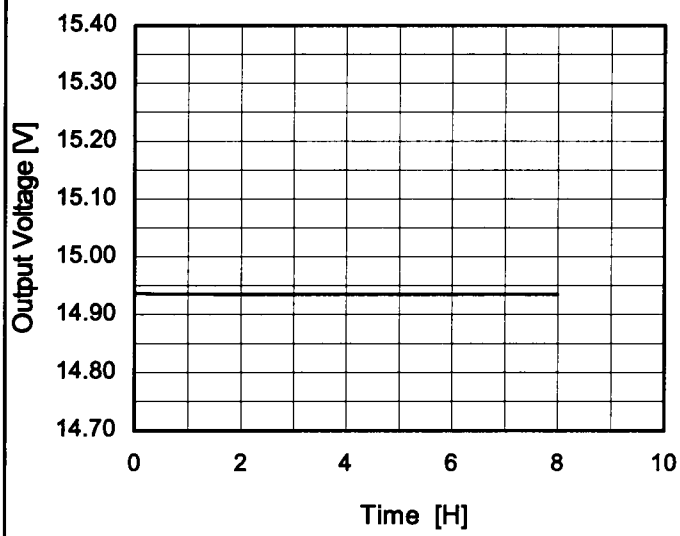
Object	-15V0.2A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	-15.188	±133	±0.9
Minimum Voltage	55	76	0.2	-14.922		

COSEL

Model	SUW64815/SUCW64815
Item	Time Lapse Drift
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



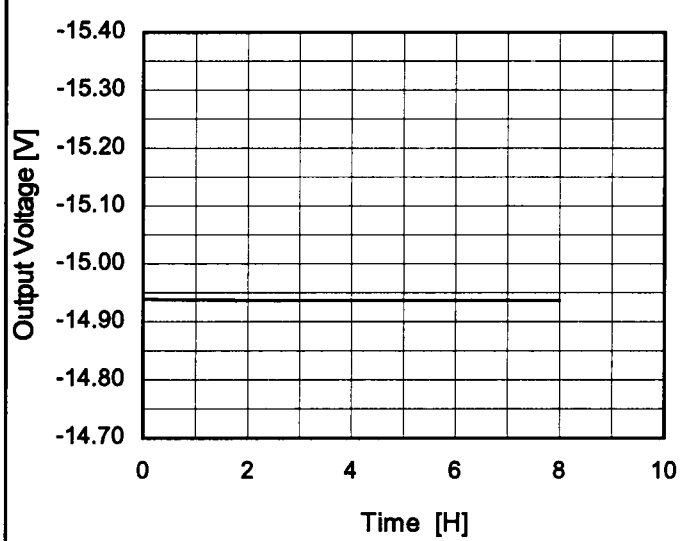
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	14.937
0.5	14.936
1.0	14.936
2.0	14.935
3.0	14.935
4.0	14.935
5.0	14.935
6.0	14.935
7.0	14.935
8.0	14.935

Object	-15V0.2A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-14.939
0.5	-14.938
1.0	-14.938
2.0	-14.937
3.0	-14.937
4.0	-14.937
5.0	-14.937
6.0	-14.937
7.0	-14.937
8.0	-14.937

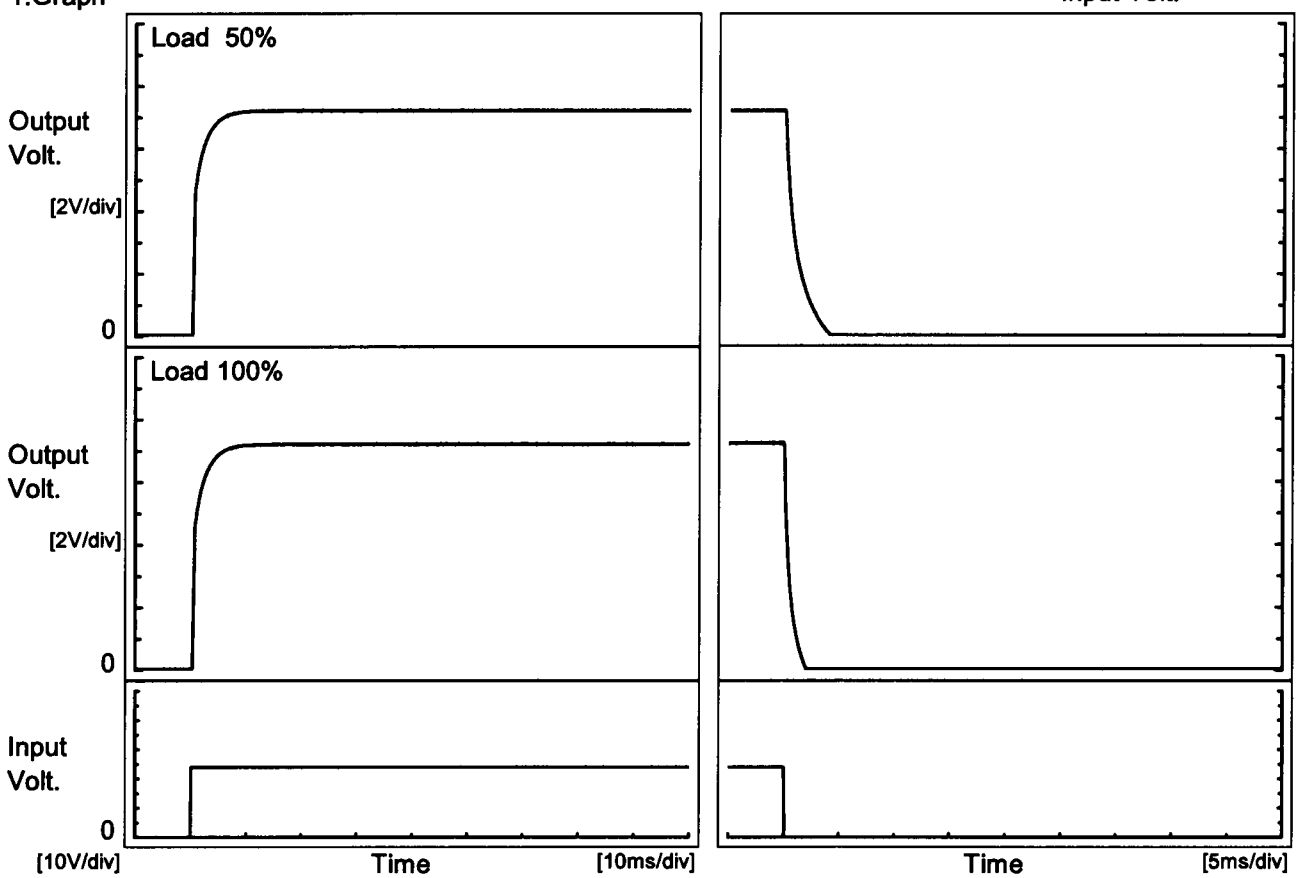
COSEL

Model	SUW64815/SUCW64815
Item	Rise and Fall Time
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

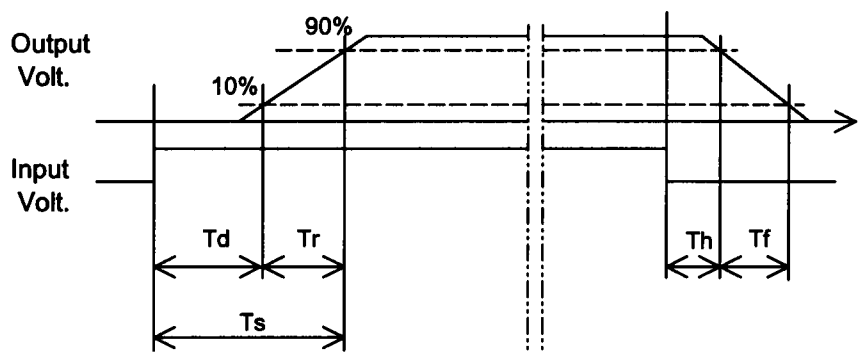
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.3	4.0	4.3	0.1	2.6
100 %	0.4	4.2	4.6	0.1	1.3



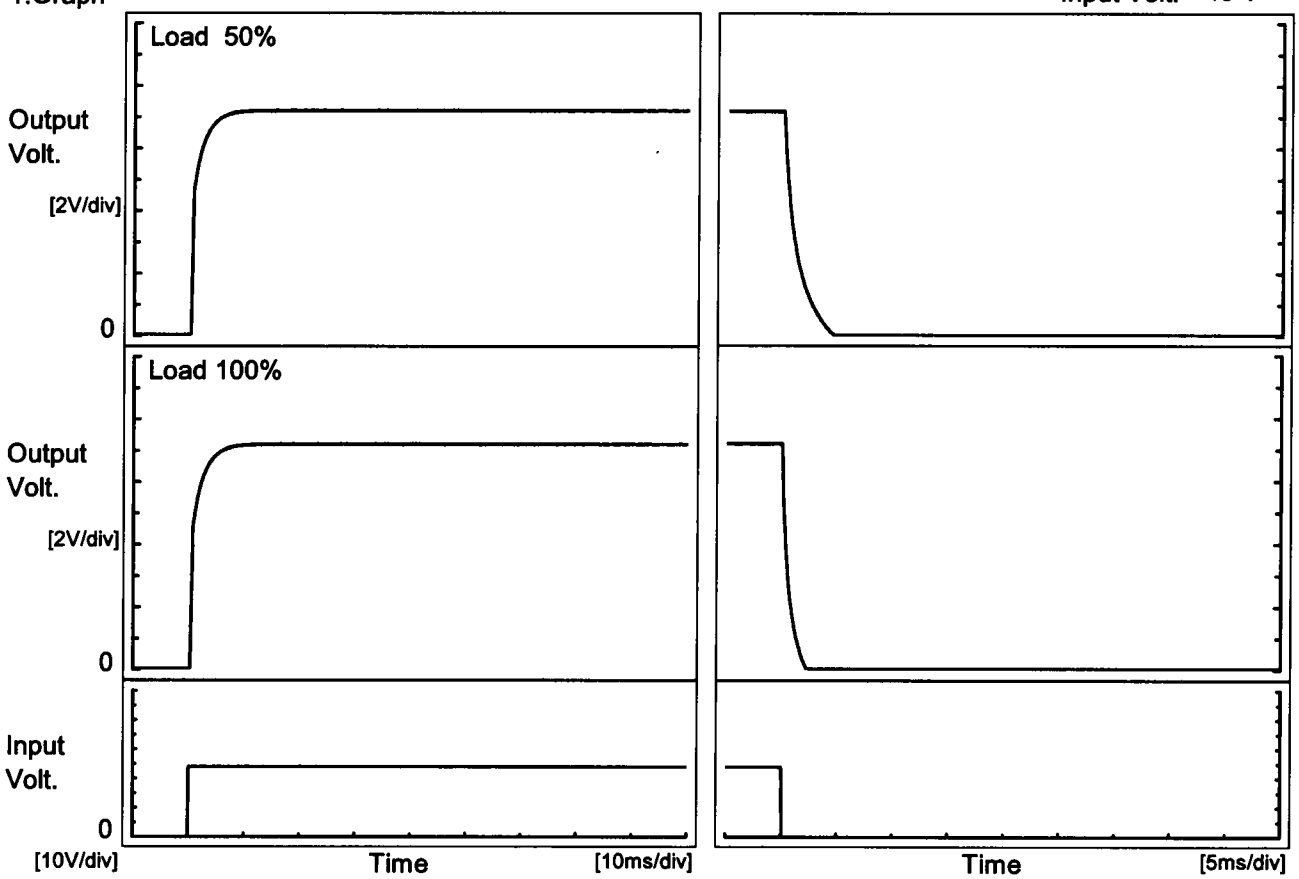
COSEL

Model	SUW64815/SUCW64815
Item	Rise and Fall Time
Object	-15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

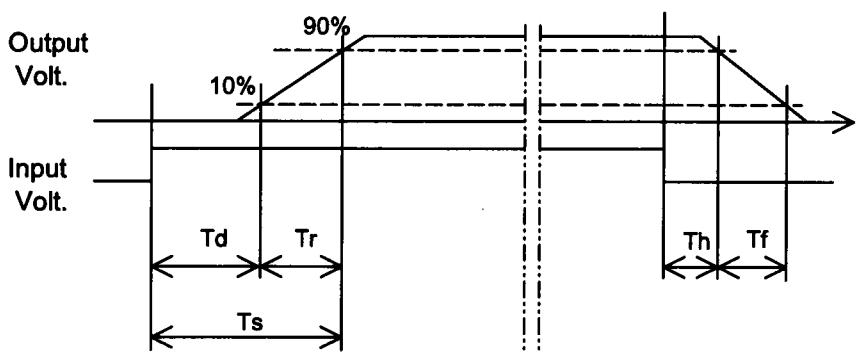
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.3	4.1	4.4	0.1	2.9
100 %	0.4	4.2	4.6	0.1	1.5



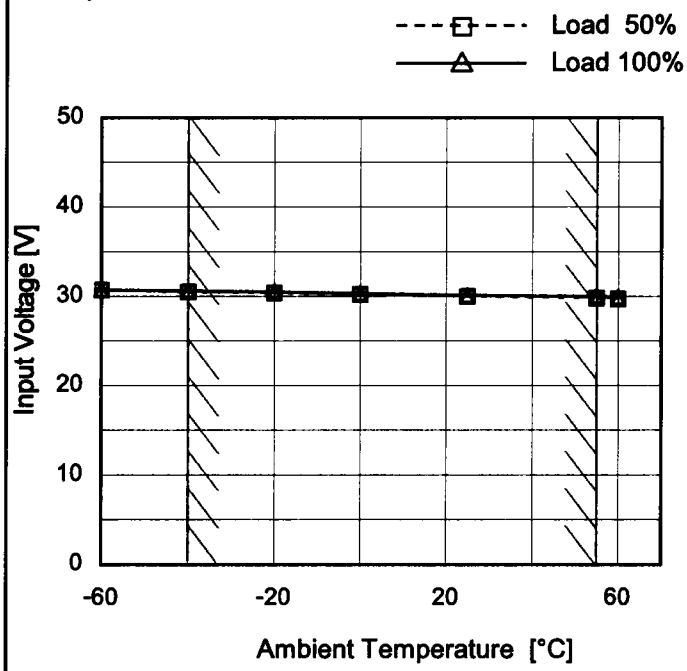
COSEL

Model	SUW64815/SUCW64815
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object: +15V0.2A

1.Graph

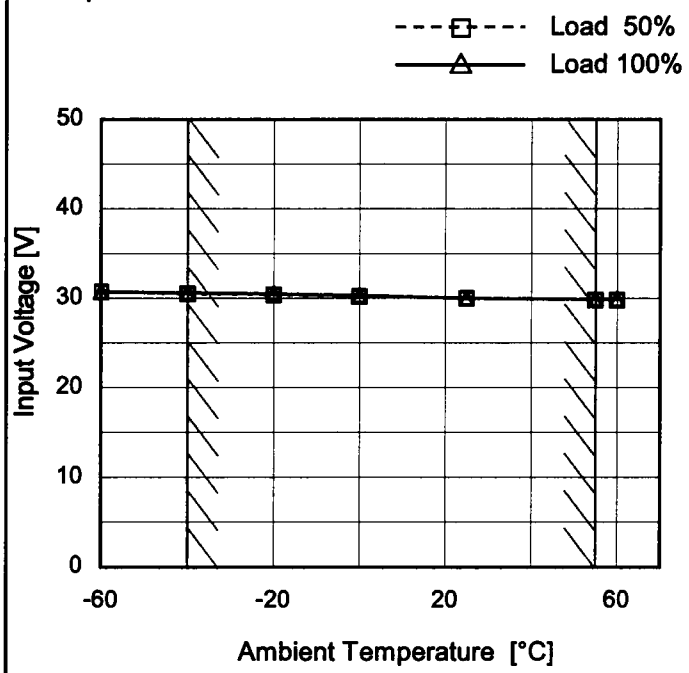


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.7	30.7
-40	30.5	30.6
-20	30.4	30.5
0	30.2	30.3
25	30.0	30.1
55	29.8	30.0
60	29.7	29.9
--	-	-
--	-	-
--	-	-
--	-	-

Object: -15V0.2A

1.Graph



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.7	30.7
-40	30.5	30.6
-20	30.4	30.5
0	30.2	30.3
25	30.0	30.0
55	29.8	29.9
60	29.8	29.9
--	-	-
--	-	-
--	-	-
--	-	-

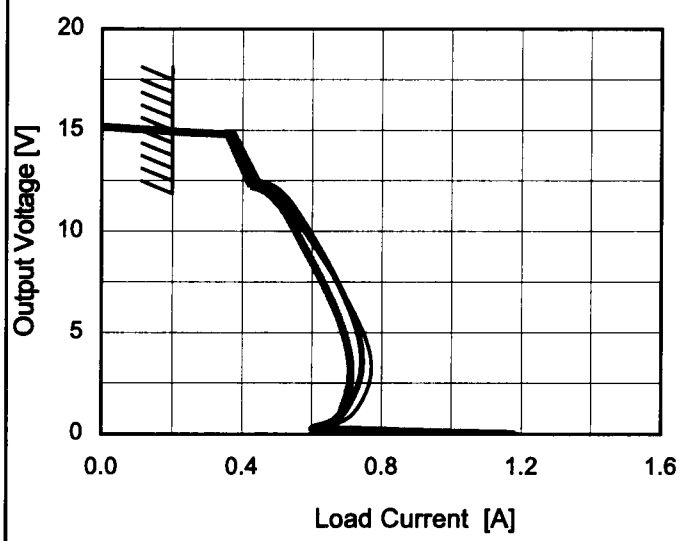
Note: Slanted line shows the range of the rated ambient temperature.

COSEL

Model	SUW64815/SUCW64815
Item	Overcurrent Protection
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

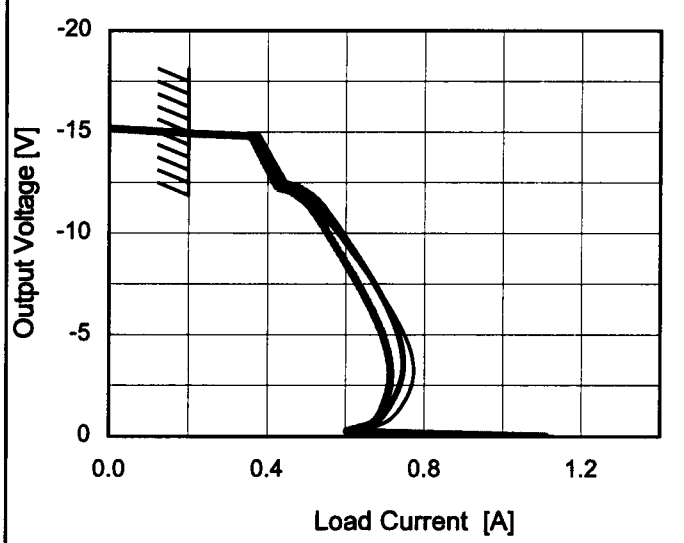


2.Values

Output Voltage [V]	Load Current [A] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
15.0	0.20	0.20	0.20
14.3	0.38	0.39	0.37
13.5	0.40	0.42	0.39
12.0	0.48	0.50	0.46
10.5	0.56	0.57	0.54
9.0	0.62	0.63	0.59
7.5	0.67	0.67	0.63
6.0	0.72	0.71	0.67
4.5	0.76	0.74	0.70
3.0	0.77	0.74	0.71
1.5	0.74	0.71	0.69
0.0	1.19	1.17	1.18

Object	-15V0.2A

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]
-15.00	0.20	0.20	0.20
-14.25	0.38	0.39	0.37
-13.50	0.40	0.42	0.39
-12.00	0.48	0.50	0.46
-10.50	0.56	0.57	0.54
-9.00	0.61	0.63	0.58
-7.50	0.67	0.67	0.63
-6.00	0.72	0.72	0.67
-4.50	0.76	0.74	0.70
-3.00	0.77	0.74	0.71
-1.50	0.75	0.71	0.70
0.00	1.13	1.10	1.11

COSEL

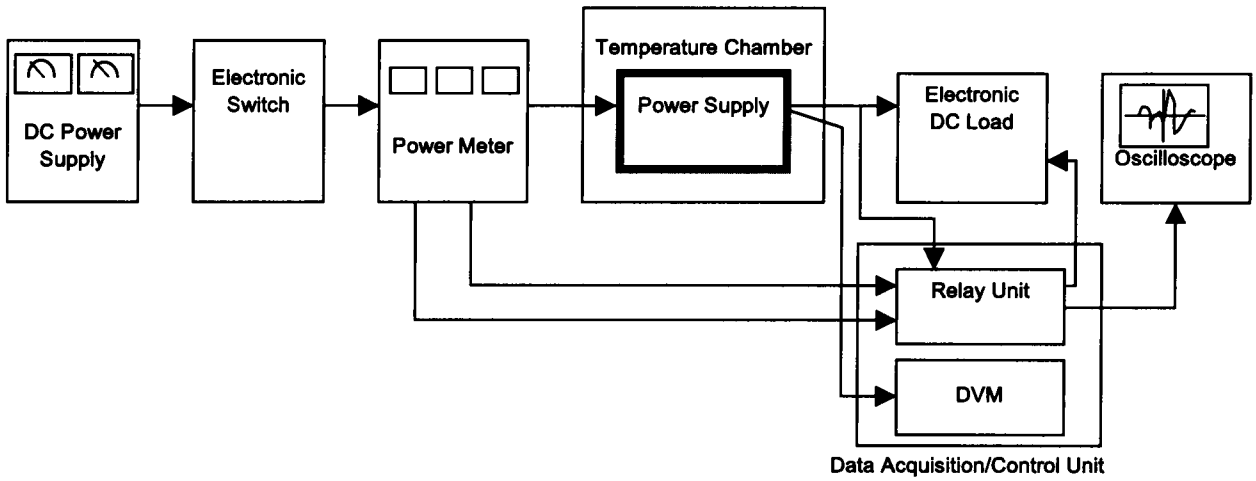


Figure A

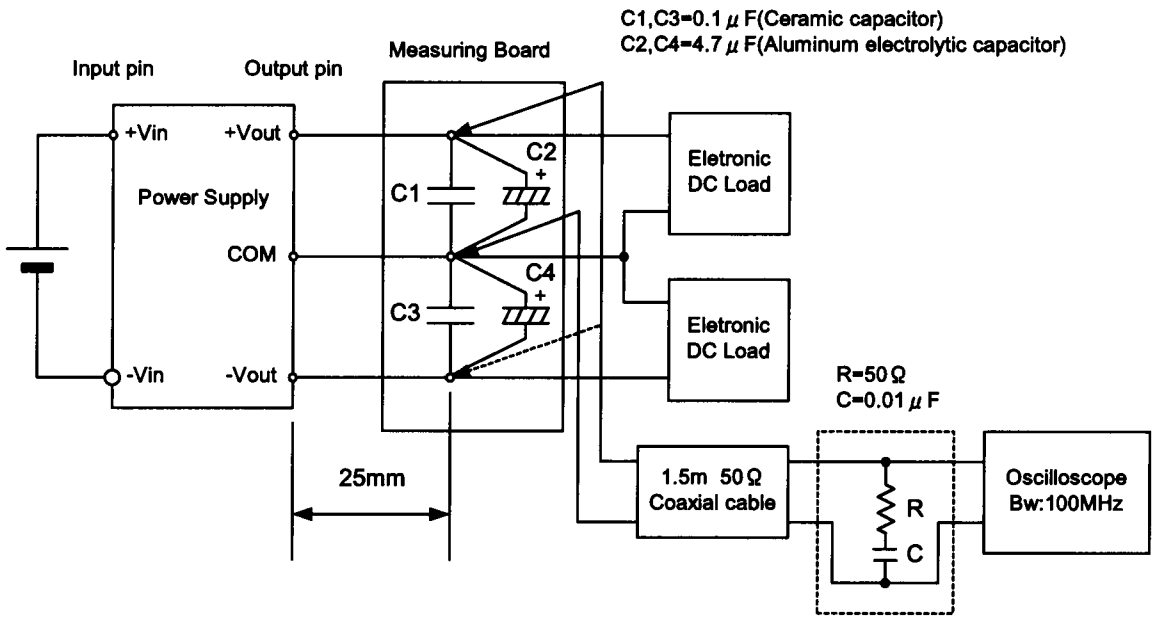


Figure B (Ripple and Ripple noise Characteristic)