参考資料

COSEL

TEST DATA OF SUW104815
SUCW104815

Regulated DC Power Supply
Mar 25, 2005

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Yoshimichi Hirokawa Design Engineer

COSEL CO.,LTD.

参考資料

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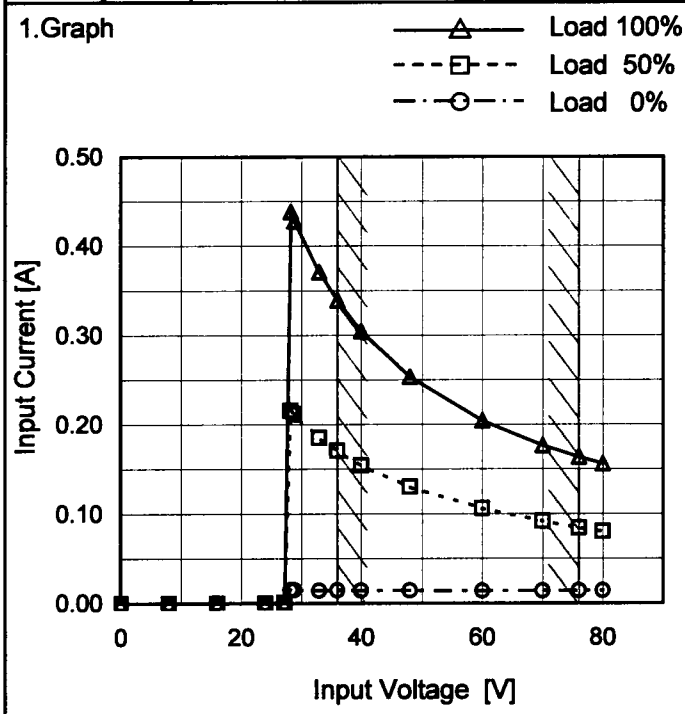
COSEL

Model	SUW104815/SUCW104815
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	0.000	0.001
27.2	0.001	0.001	0.001
28.2	0.015	0.216	0.439
28.8	0.015	0.212	0.428
33.0	0.014	0.186	0.371
36.0	0.015	0.171	0.339
40.0	0.014	0.155	0.305
48.0	0.014	0.130	0.254
60.0	0.014	0.107	0.204
70.0	0.014	0.092	0.177
76.0	0.014	0.085	0.164
80.0	0.014	0.081	0.156
–	-	-	-
–	-	-	-
–	-	-	-

BC-3815

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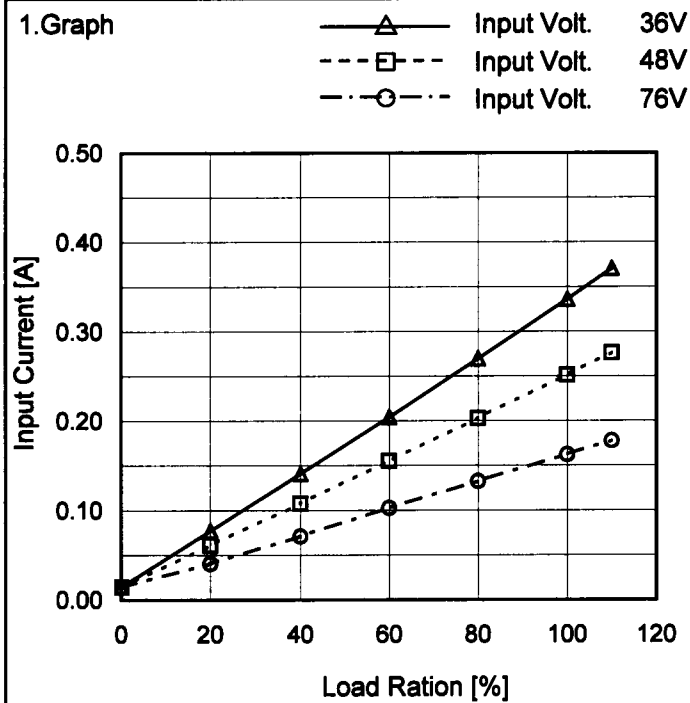
Model	SUW104815/SUCW104815
Item	Input Current (by Load Current)
Object	――――――

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	0.015	0.014	0.014
20	0.077	0.061	0.041
40	0.141	0.108	0.071
60	0.205	0.155	0.103
80	0.270	0.203	0.132
100	0.336	0.252	0.163
110	0.371	0.276	0.178
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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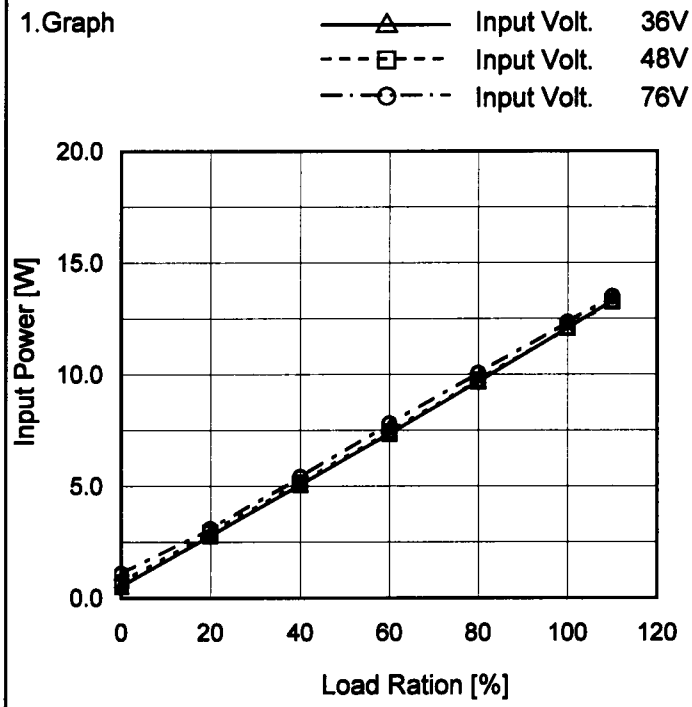
Model	SUW104815/SUCW104815
Item	Input Power (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

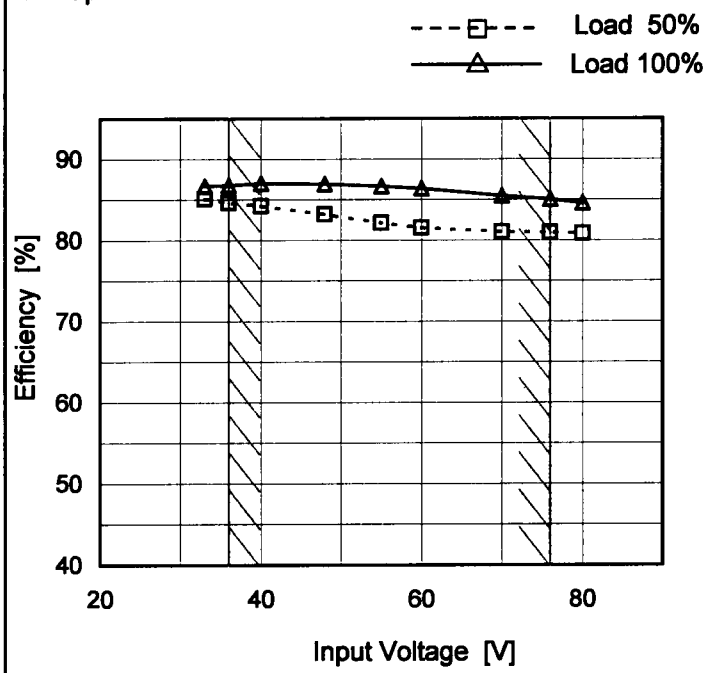
Load Ration [%]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.53	0.68	1.09
20	2.79	2.94	3.09
40	5.07	5.16	5.42
60	7.35	7.45	7.80
80	9.69	9.74	10.05
100	12.08	12.07	12.34
110	13.31	13.25	13.49
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW104815/SUCW104815
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

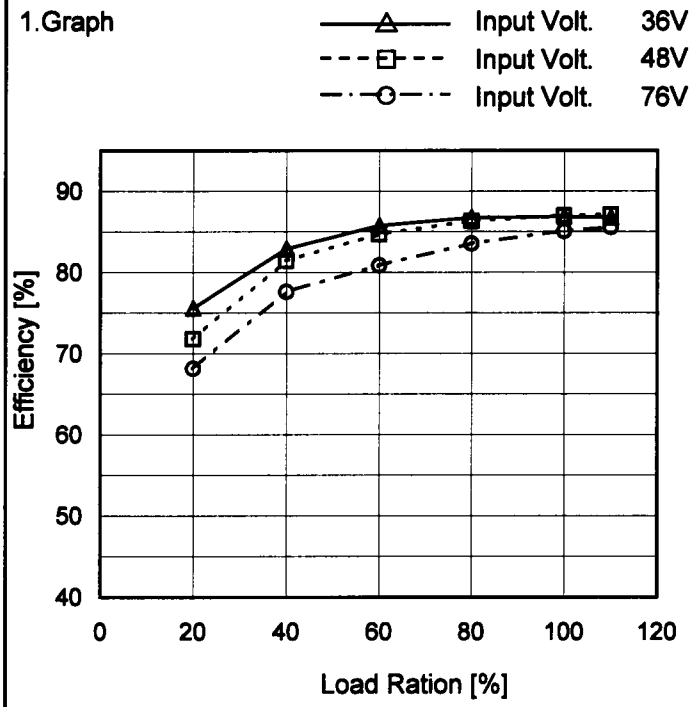
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	85.1	86.7
36	84.6	86.8
40	84.3	87.0
48	83.2	86.9
55	82.2	86.7
60	81.6	86.4
70	81.0	85.5
76	81.0	85.1
80	80.9	84.6

COSEL

Model	SUW104815/SUCW104815
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	75.6	71.8	68.2
40	82.9	81.4	77.6
60	85.8	84.7	80.9
80	86.7	86.3	83.5
100	86.9	87.0	85.1
110	86.8	87.1	85.6
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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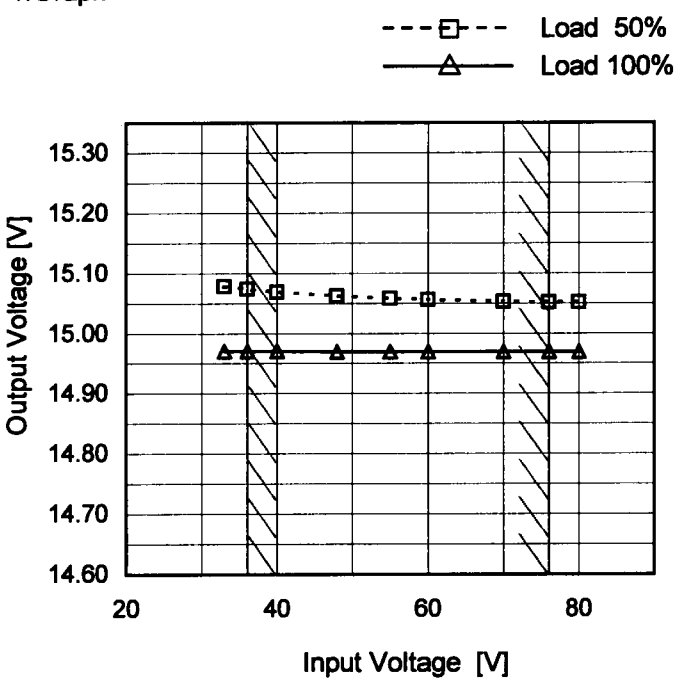
Model	SUW104815/SUCW104815
Item	Line Regulation
Object	+15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

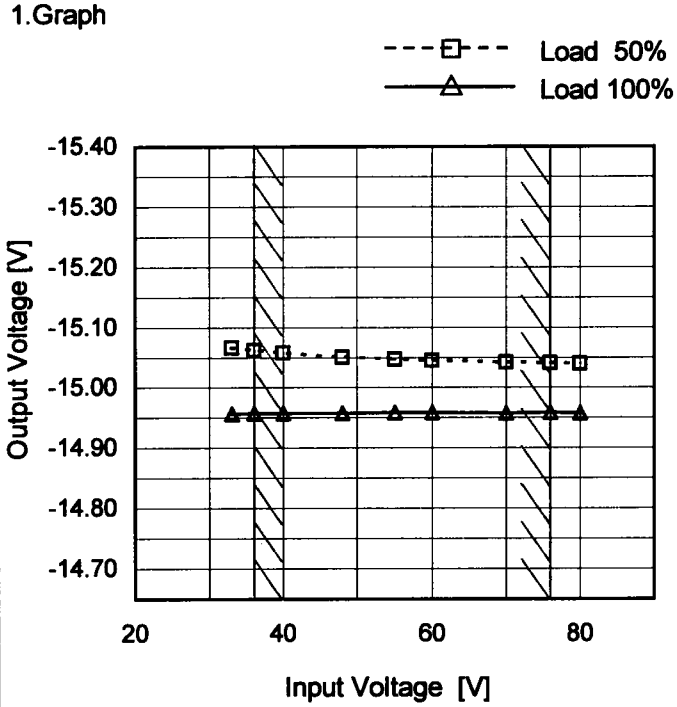


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	15.079	14.971
36	15.074	14.971
40	15.069	14.971
48	15.062	14.970
55	15.058	14.970
60	15.056	14.970
70	15.053	14.969
76	15.052	14.970
80	15.051	14.970

Object	-15V0.35A

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	-15.066	-14.957
36	-15.062	-14.957
40	-15.058	-14.958
48	-15.051	-14.958
55	-15.048	-14.959
60	-15.046	-14.959
70	-15.042	-14.958
76	-15.041	-14.959
80	-15.040	-14.958

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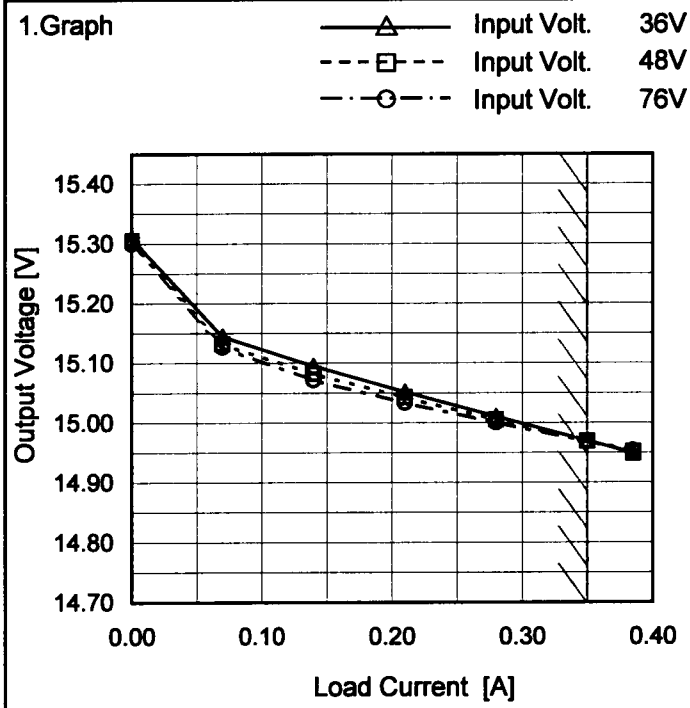
Model	SUW104815/SUCW104815
Item	Load Regulation
Object	+15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

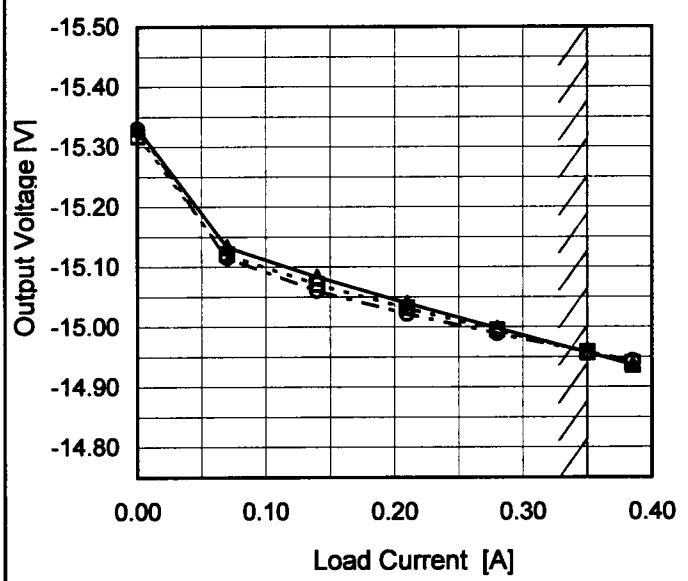


2.Values

Load Current [A]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	15.310	15.305	15.300
0.070	15.145	15.132	15.127
0.140	15.096	15.083	15.072
0.210	15.052	15.043	15.034
0.280	15.011	15.005	15.000
0.350	14.970	14.970	14.969
0.385	14.950	14.951	14.954
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

Object	-15V0.35A

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]
0.000	-15.332	-15.318	-15.330
0.070	-15.133	-15.121	-15.116
0.140	-15.084	-15.071	-15.061
0.210	-15.040	-15.032	-15.022
0.280	-14.998	-14.995	-14.989
0.350	-14.957	-14.958	-14.959
0.385	-14.937	-14.940	-14.944
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

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Model	SUW104815/SUCW104815
Item	Dynamic Load Response
Object	+15V0.35A

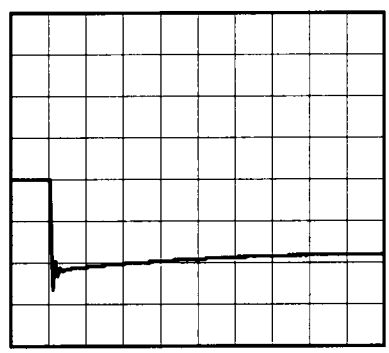
Temperature 25°C
Testing Circuitry Figure A

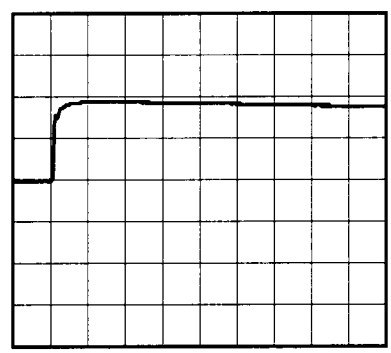
Input Volt. 48 V
Cycle 100 mS

t_1、t_2 = 50μs

Load Current

Min. Load (0A) ⟷
Load 100% (0.35A)

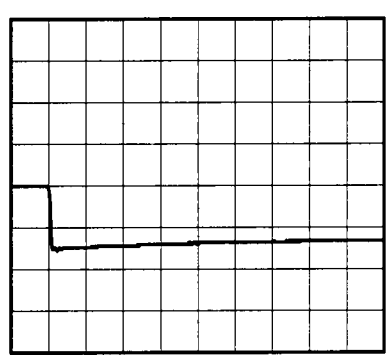


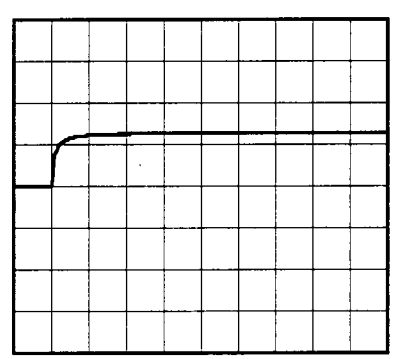


200mV/div

500μs/div 500μs/div

Min. Load (0A) ⟷
Load 50% (0.175A)

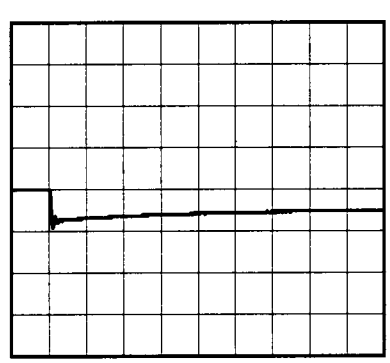


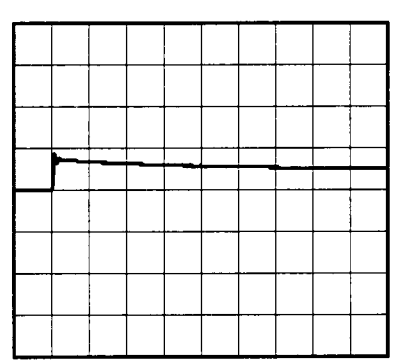


200mV/div

500μs/div 500μs/div

Load 50% (0.175A) ⟷
Load 100% (0.35A)





200mV/div

500μs/div 500μs/div

COSEL

Model	SUW104815/SUCW104815
Item	Dynamic Load Response
Object	-15V0.35A

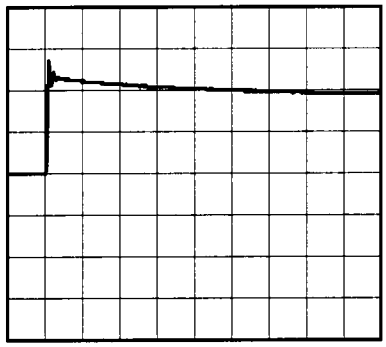
Temperature 25°C
Testing Circuitry Figure A

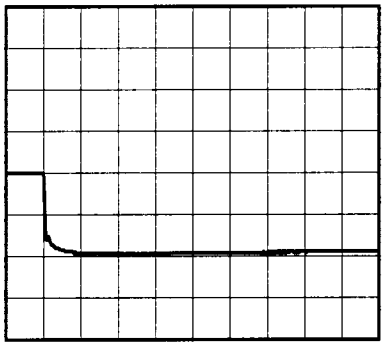
Input Volt. 48 V
Cycle 100 mS

t_1、t_2 = 50μs

Load Current

Min. Load (0A) ⟷
Load 100% (0.35A)

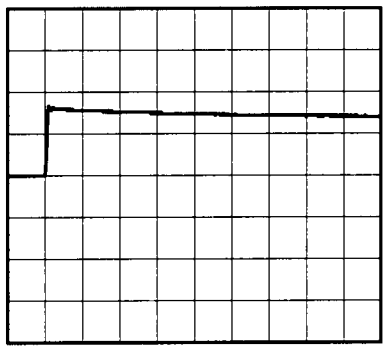


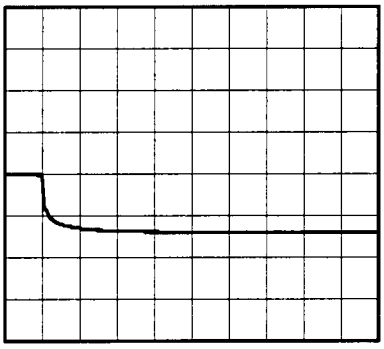


200mV/div

500μs/div 500μs/div

Min. Load (0A) ⟷
Load 50% (0.175A)

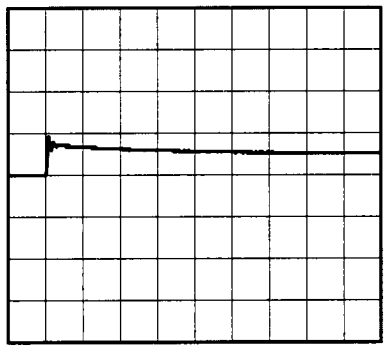


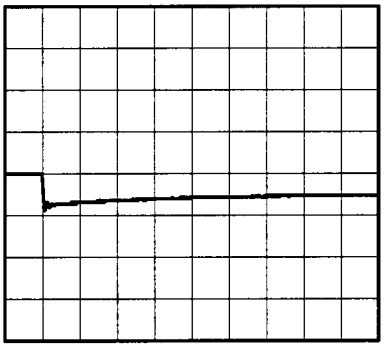


200mV/div

500μs/div 500μs/div

Load 50% (0.175A) ⟷
Load 100% (0.35A)





200mV/div

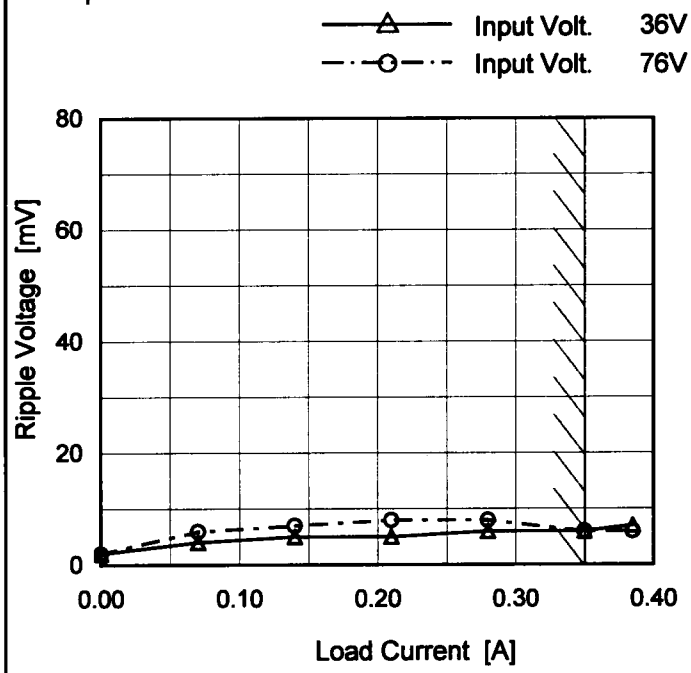
500μs/div 500μs/div

COSEL

Model	SUW104815/SUCW104815
Item	Ripple Voltage (by Load Current)
Object	+15V0.35A

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]

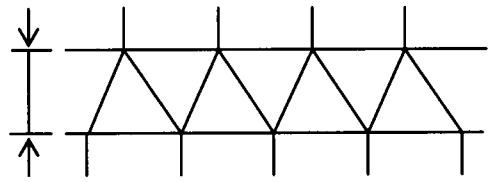


Fig.Complex Ripple Wave Form

2.Values

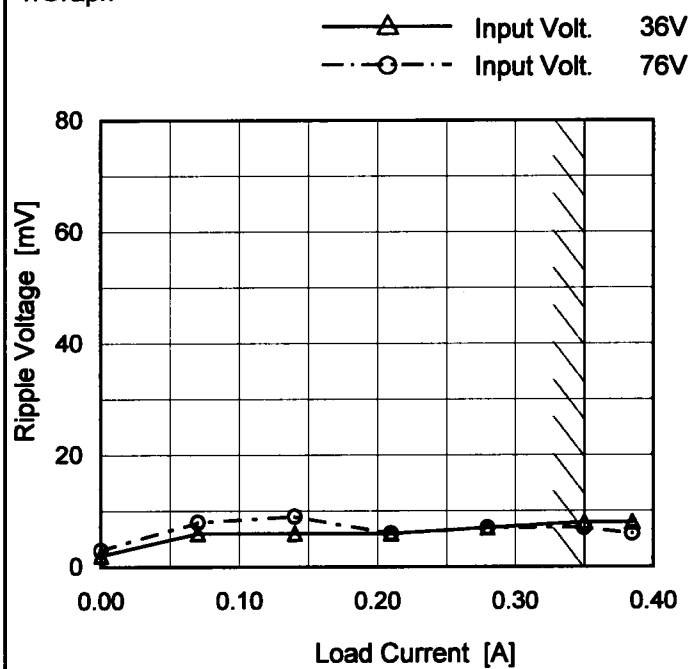
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	2	2
0.070	4	6
0.140	5	7
0.210	5	8
0.280	6	8
0.350	6	6
0.385	7	6
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUW104815/SUCW104815
Item	Ripple Voltage (by Load Current)
Object	-15V0.35A

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]

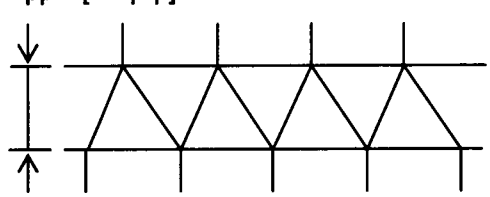


Fig.Complex Ripple Wave Form

2.Values

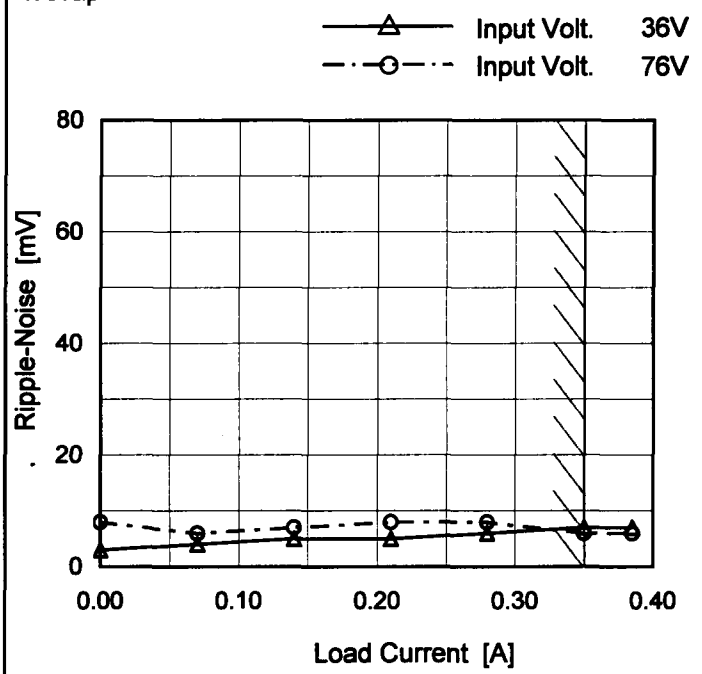
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	2	3
0.070	6	8
0.140	6	9
0.210	6	6
0.280	7	7
0.350	8	7
0.385	8	6
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUW104815/SUCW104815
Item	Ripple-Noise
Object	+15V0.35A

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.

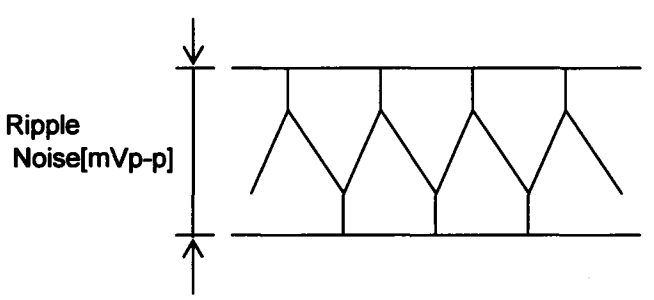


Fig.Complex Ripple Noise Wave Form

2.Values

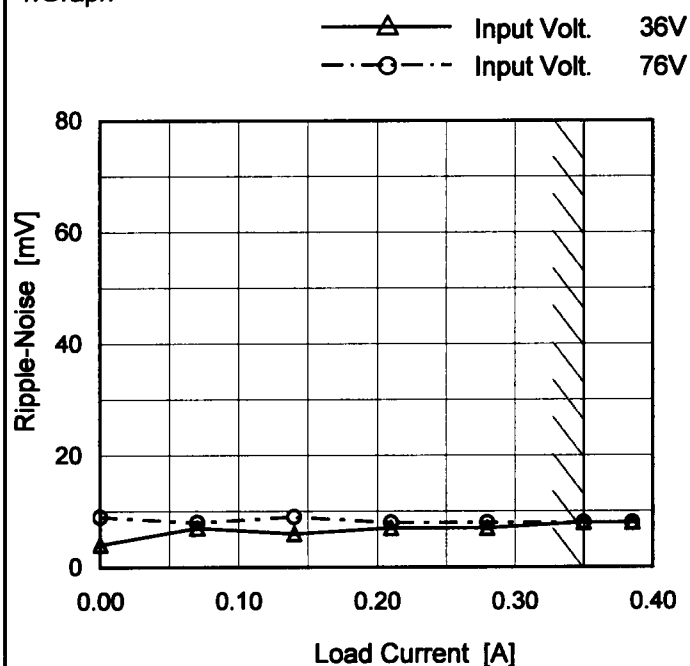
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	3	8
0.070	4	6
0.140	5	7
0.210	5	8
0.280	6	8
0.350	7	6
0.385	7	6
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUW104815/SUCW104815
Item	Ripple-Noise
Object	-15V0.35A

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.

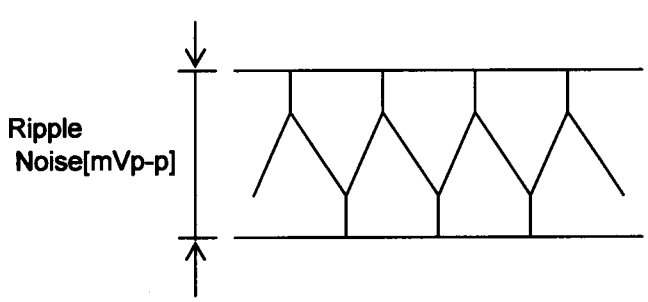


Fig.Complex Ripple Noise Wave Form

2.Values

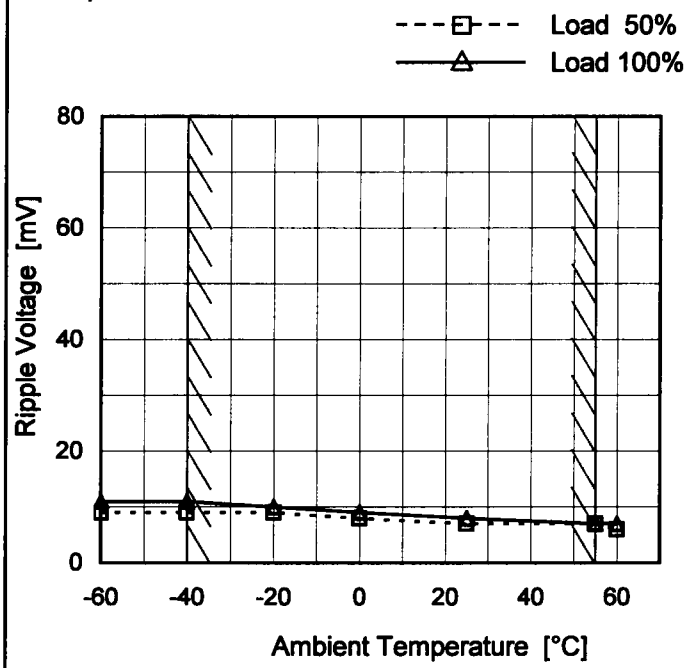
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	4	9
0.070	7	8
0.140	6	9
0.210	7	8
0.280	7	8
0.350	8	8
0.385	8	8
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUW104815/SUCW104815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.35A

Testing Circuitry Figure B

1.Graph



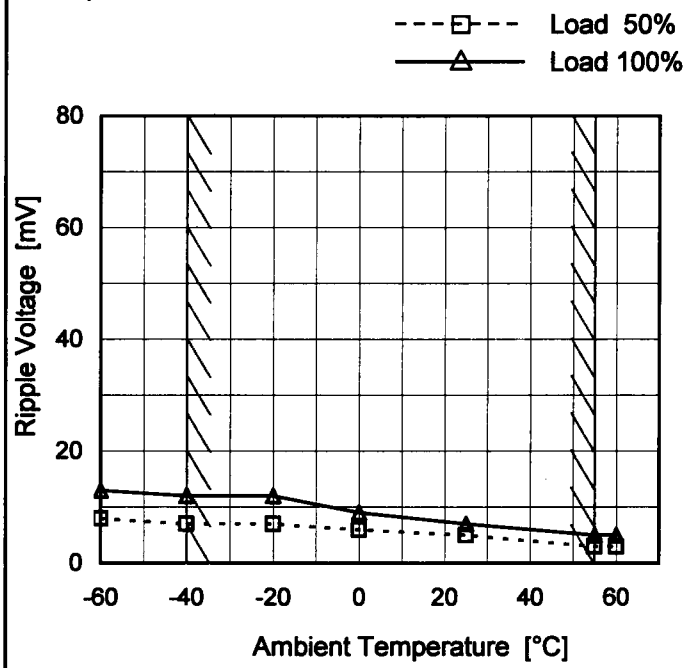
Input Volt. 48V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	9	11
-40	9	11
-20	9	10
0	8	9
25	7	8
55	7	7
60	6	7
–	-	-
–	-	-
–	-	-
–	-	-

Object	-15V0.35A

1.Graph



Input Volt. 48V

Measured by 100 MHz Oscilloscope.

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

2.Values

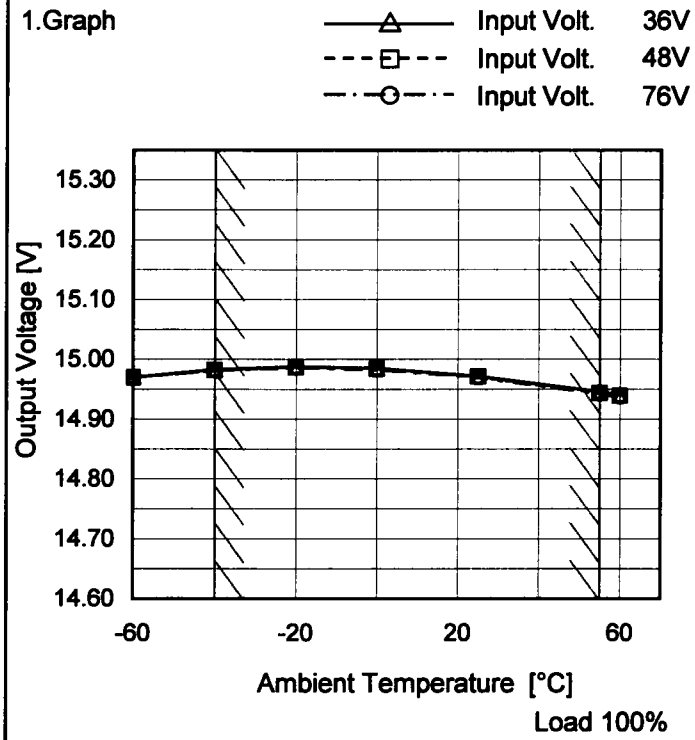
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	8	13
-40	7	12
-20	7	12
0	6	9
25	5	7
55	3	5
60	3	5
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUW104815/SUCW104815
Item	Ambient Temperature Drift
Object	+15V0.35A

Testing Circuitry Figure A

1.Graph

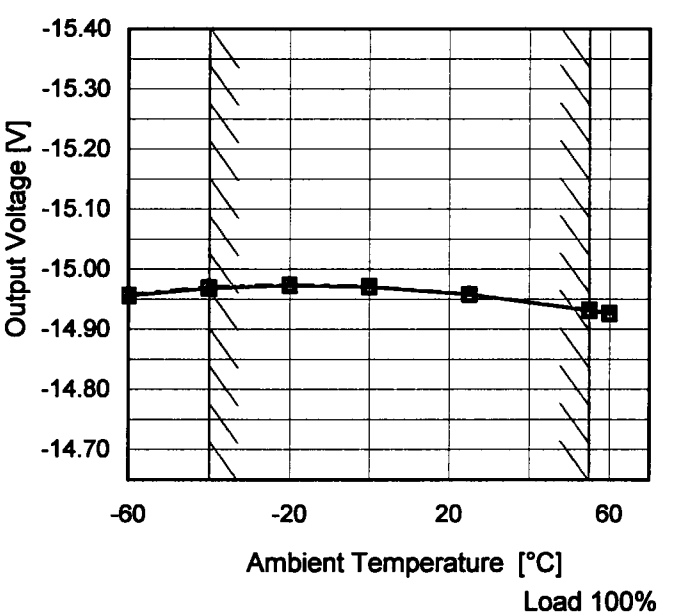


2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.970	14.970	14.970
-40	14.983	14.982	14.982
-20	14.988	14.987	14.986
0	14.985	14.984	14.983
25	14.972	14.971	14.970
55	14.946	14.944	14.943
60	14.940	14.939	14.938
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

Object	-15V0.35A

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	-14.956	-14.957	-14.958
-40	-14.968	-14.969	-14.971
-20	-14.973	-14.974	-14.975
0	-14.970	-14.972	-14.972
25	-14.958	-14.958	-14.959
55	-14.931	-14.932	-14.932
60	-14.926	-14.927	-14.927
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

COSEL

Model	SUW104815/SUCW104815	
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 - 0.35A (AVR 2) : 0 - 0.35A

* 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	+15V0.35A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	15.299	±178	±1.2
Minimum Voltage	55	76	0.35	14.943		

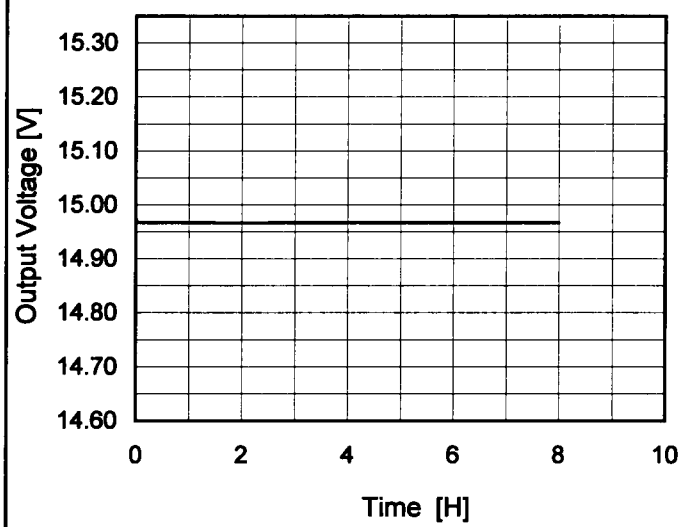
Object	-15V0.35A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	-15.325	±197	±1.3
Minimum Voltage	55	36	0.35	-14.932		

COSEL

Model	SUW104815/SUCW104815
Item	Time Lapse Drift
Object	+15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



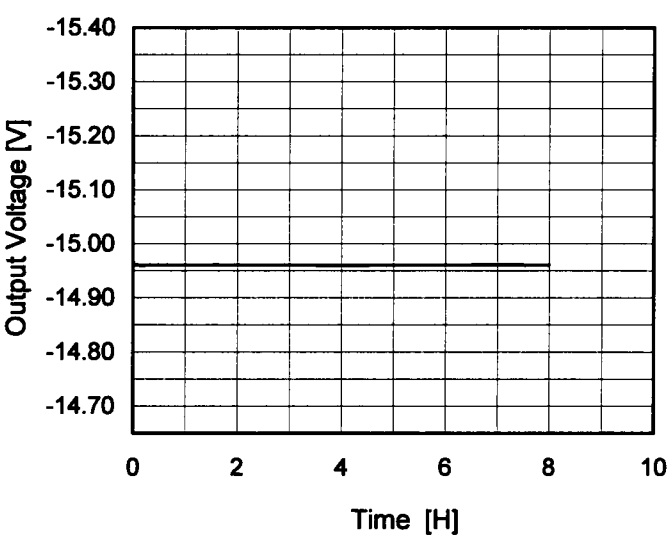
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	14.975
0.5	14.967
1.0	14.967
2.0	14.967
3.0	14.967
4.0	14.967
5.0	14.967
6.0	14.967
7.0	14.967
8.0	14.967

Object	-15V0.35A

1.Graph



Input Volt. 48V
Load 100%

2.Values

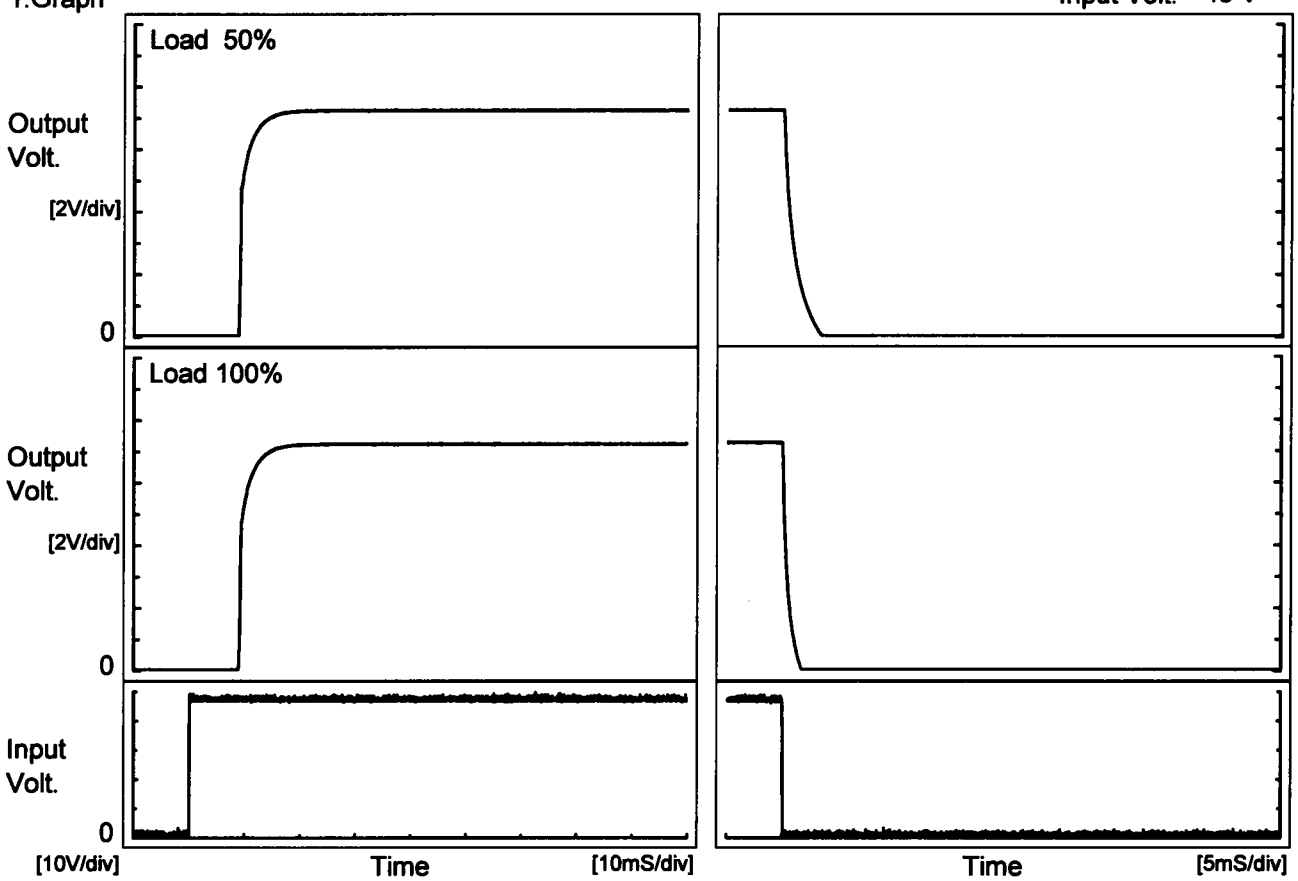
Time since start [H]	Output Voltage [V]
0.0	-14.968
0.5	-14.961
1.0	-14.961
2.0	-14.961
3.0	-14.961
4.0	-14.961
5.0	-14.961
6.0	-14.961
7.0	-14.961
8.0	-14.961

COSEL

Model	SUW104815/SUCW104815	Temperature 25°C
Item	Rise and Fall Time	Testing Circuitry Figure A
Object	+15V0.35A	

1.Graph

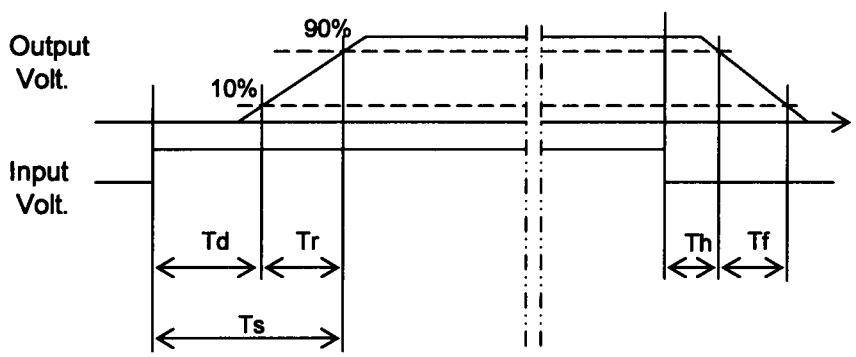
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	9.0	4.0	13.0	0.1	2.3
100 %	9.1	4.1	13.2	0.1	1.1



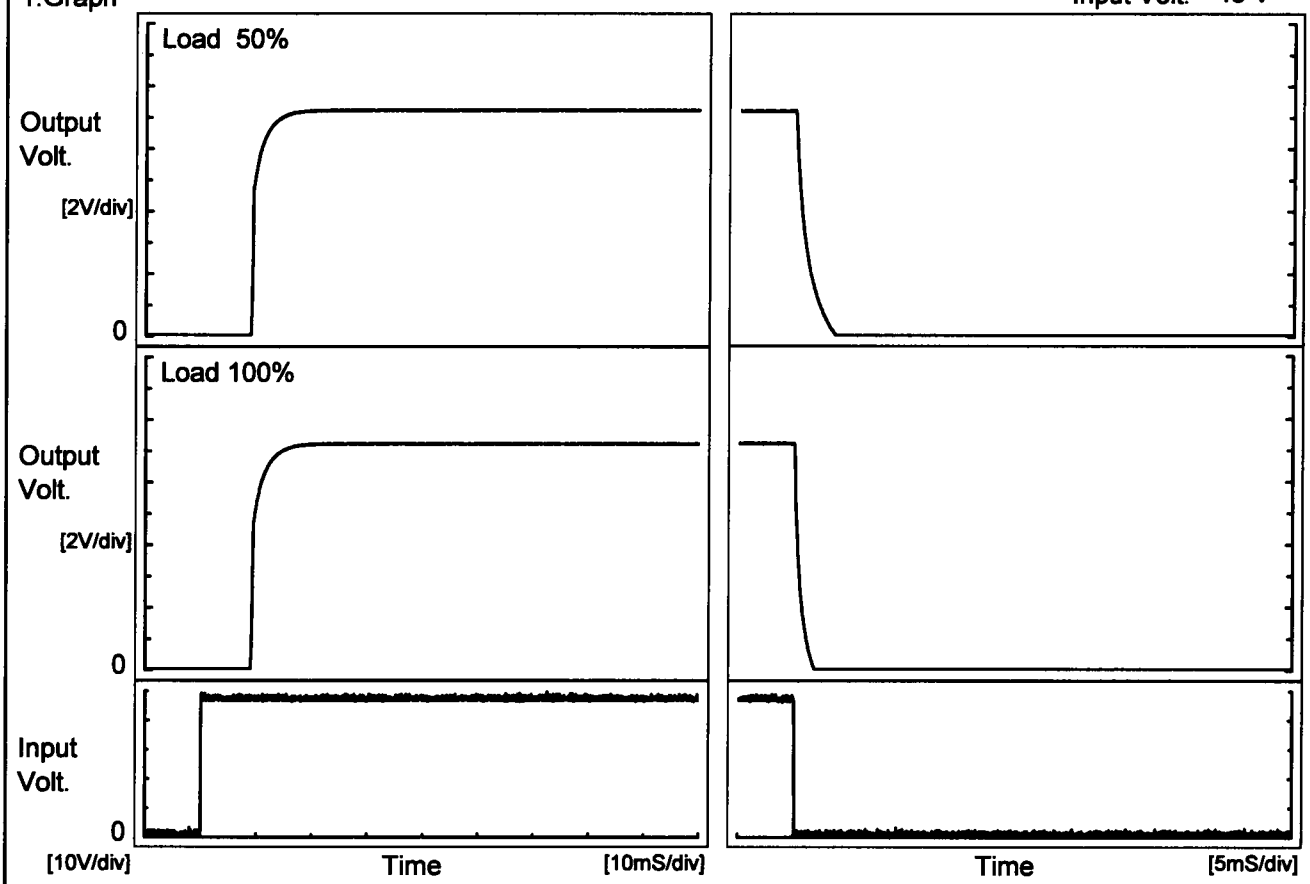
COSEL

Model	SUW104815/SUCW104815
Item	Rise and Fall Time
Object	-15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

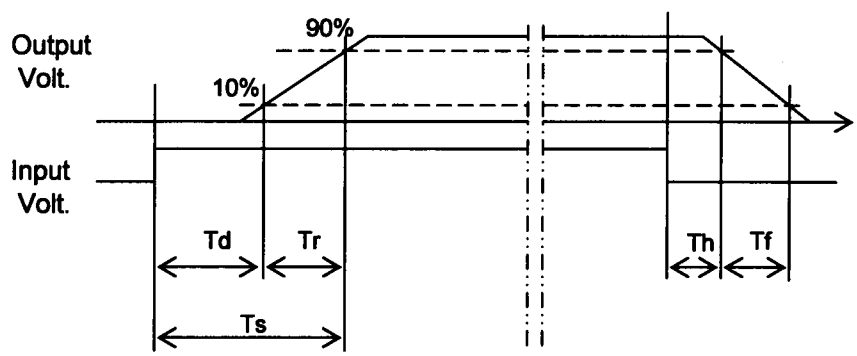
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	9.0	4.1	13.1	0.1	2.4
100 %	9.1	4.1	13.2	0.1	1.2

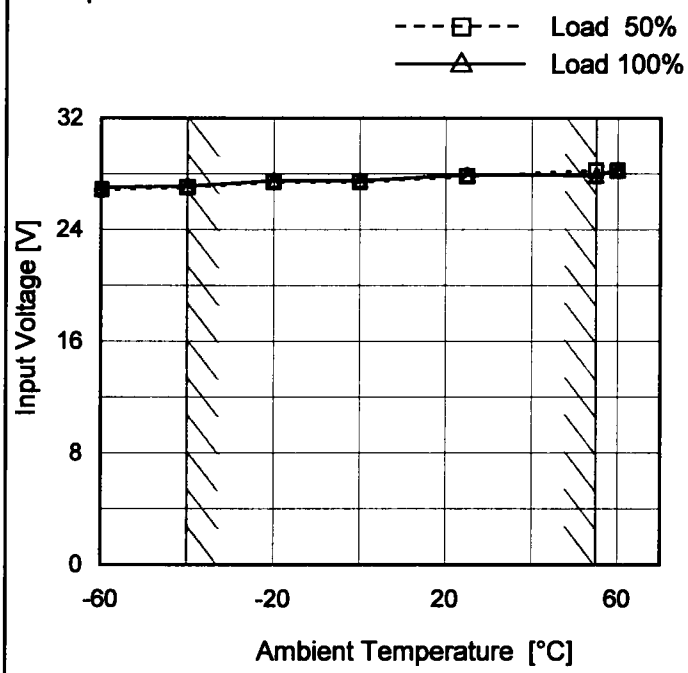


COSEL

Model	SUW104815/SUCW104815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.35A

Testing Circuitry Figure A

1.Graph

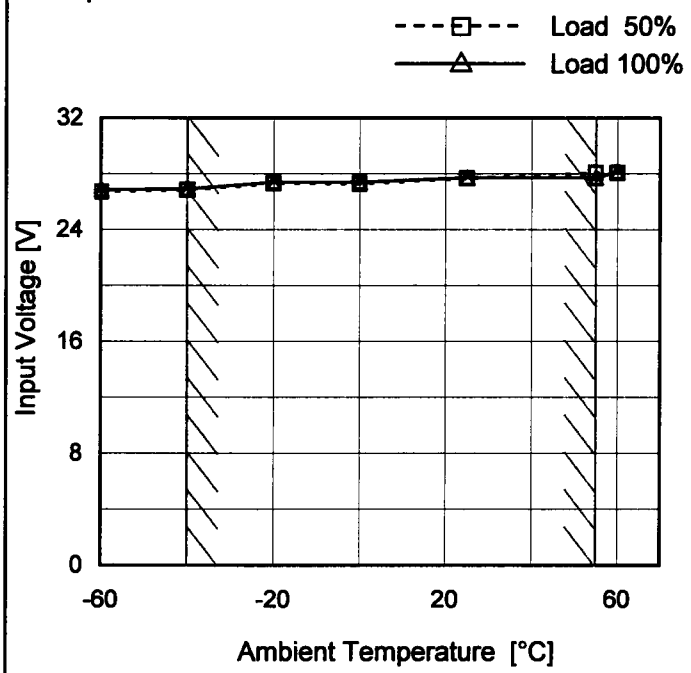


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	26.9	27.1
-40	27.1	27.2
-20	27.5	27.6
0	27.5	27.6
25	27.9	28.0
55	28.3	27.9
60	28.3	28.4
–	-	-
–	-	-
–	-	-
–	-	-

Object	-15V0.35A

1.Graph



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

2.Values

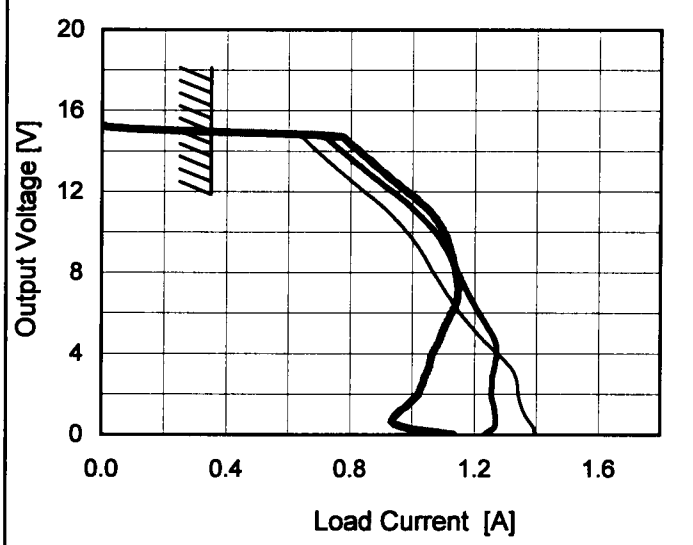
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	26.8	26.9
-40	26.9	27.0
-20	27.3	27.4
0	27.3	27.5
25	27.7	27.8
55	28.1	27.8
60	28.1	28.2
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUW104815/SUCW104815
Item	Overcurrent Protection
Object	+15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

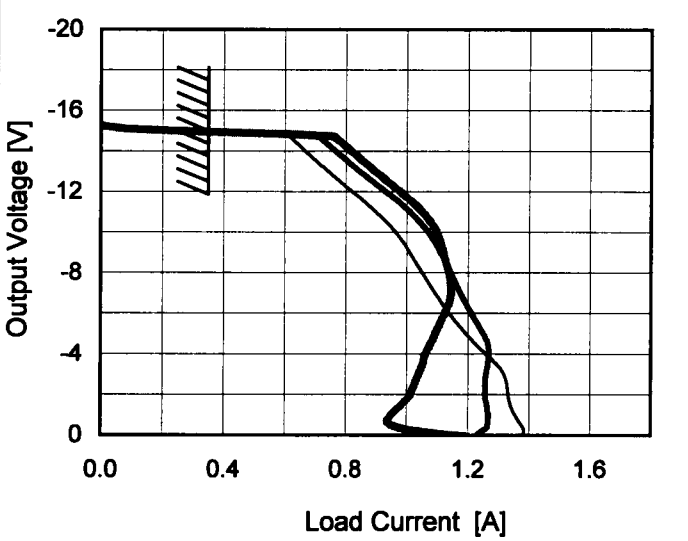


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
15.0	0.43	0.39	0.39
14.3	0.68	0.75	0.81
13.5	0.73	0.82	0.87
12.0	0.84	0.94	0.98
10.5	0.95	1.05	1.08
9.0	1.03	1.11	1.13
7.5	1.09	1.16	1.15
6.0	1.15	1.21	1.13
4.5	1.24	1.27	1.08
3.0	1.33	1.26	1.04
1.5	1.35	1.26	0.99
0.0	1.40	1.24	1.14

Object	-15V0.35A

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	0.41	0.43	0.43
-14.25	0.65	0.75	0.80
-13.50	0.71	0.81	0.86
-12.00	0.83	0.94	0.98
-10.50	0.93	1.05	1.08
-9.00	1.01	1.11	1.12
-7.50	1.07	1.16	1.14
-6.00	1.14	1.21	1.12
-4.50	1.22	1.27	1.08
-3.00	1.32	1.26	1.04
-1.50	1.34	1.26	0.98
0.00	1.39	1.23	1.20

COSEL

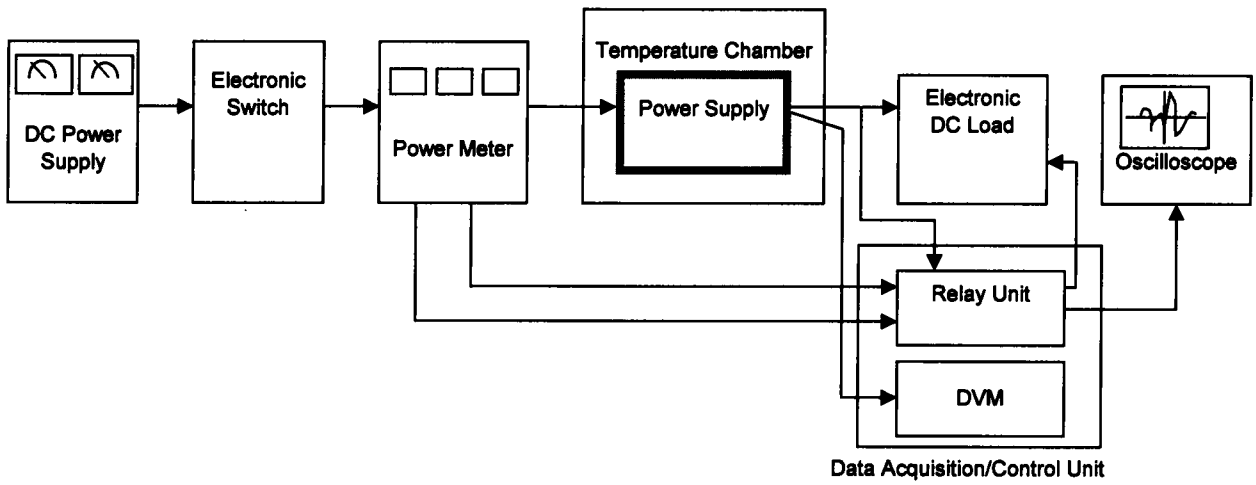


Figure A

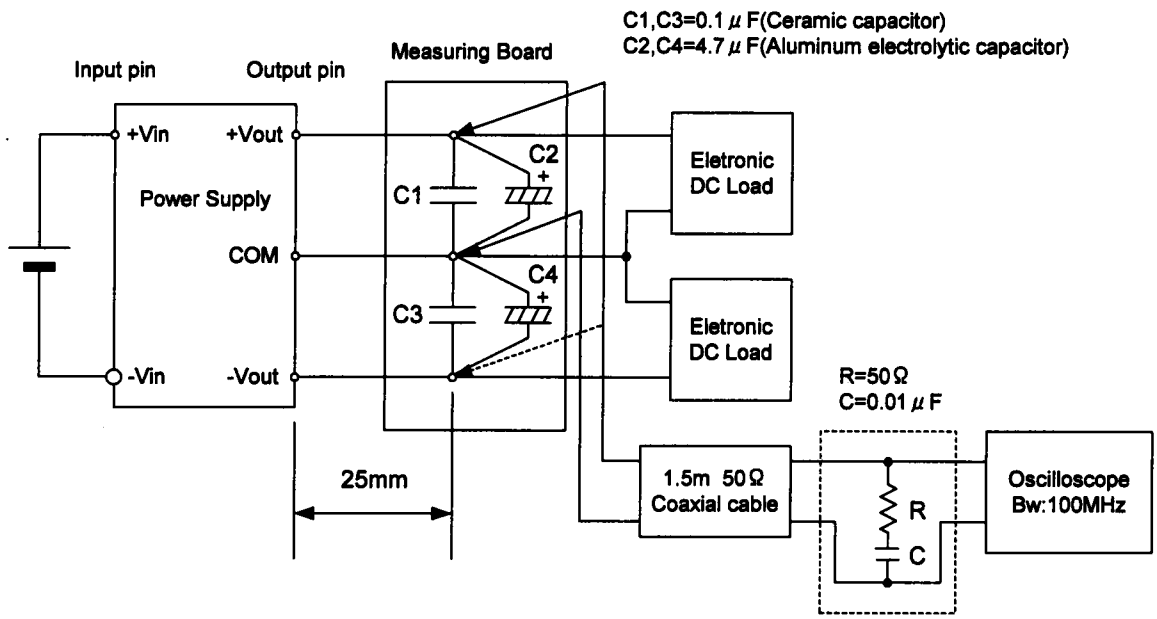


Figure B (Ripple and Ripple noise Characteristic)