参考資料

COSEL

TEST DATA OF SUW101215
SUCW101215

Regulated DC Power Supply
Mar 24, 2005

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Yoshimichi Hirokawa Design Engineer

COSEL CO.,LTD.

参考資料

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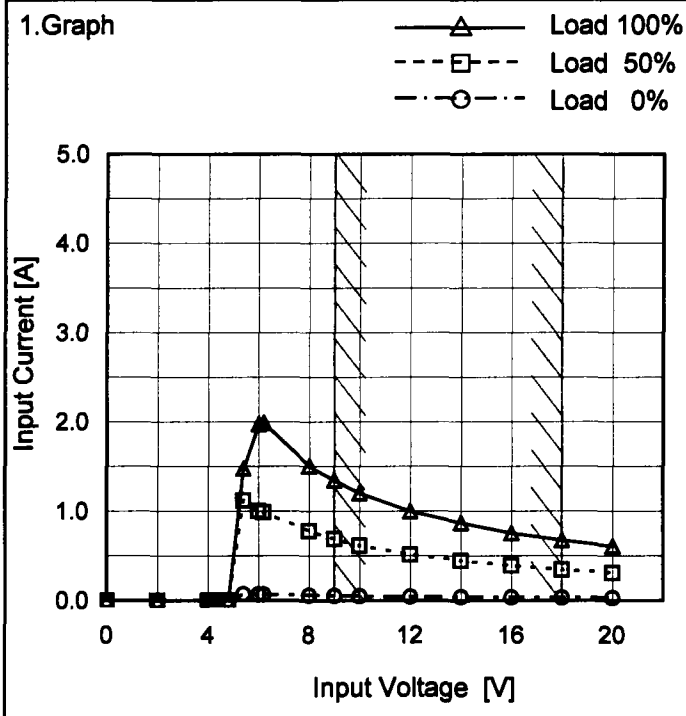
COSEL

Model	SUW101215/SUCW101215
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
2.0	0.000	0.000	0.000
4.0	0.000	0.000	0.000
4.2	0.000	0.000	0.000
4.8	0.000	0.000	0.001
5.4	0.072	1.122	1.480
6.0	0.068	1.003	1.977
6.2	0.067	0.986	1.989
8.0	0.058	0.781	1.506
9.0	0.053	0.690	1.347
10.0	0.049	0.615	1.203
12.0	0.043	0.514	0.997
14.0	0.038	0.445	0.870
16.0	0.034	0.390	0.756
18.0	0.031	0.346	0.675
20.0	0.029	0.311	0.607
--	-	-	-
--	-	-	-

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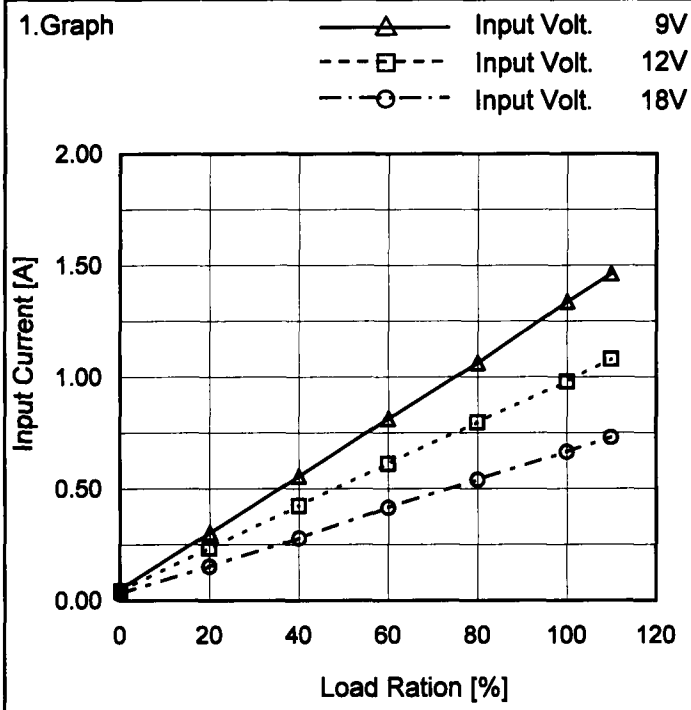
Model	SUW101215/SUCW101215
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Input Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	0.053	0.043	0.031
20	0.304	0.234	0.153
40	0.556	0.423	0.279
60	0.813	0.612	0.415
80	1.063	0.797	0.540
100	1.337	0.980	0.665
110	1.463	1.081	0.730
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

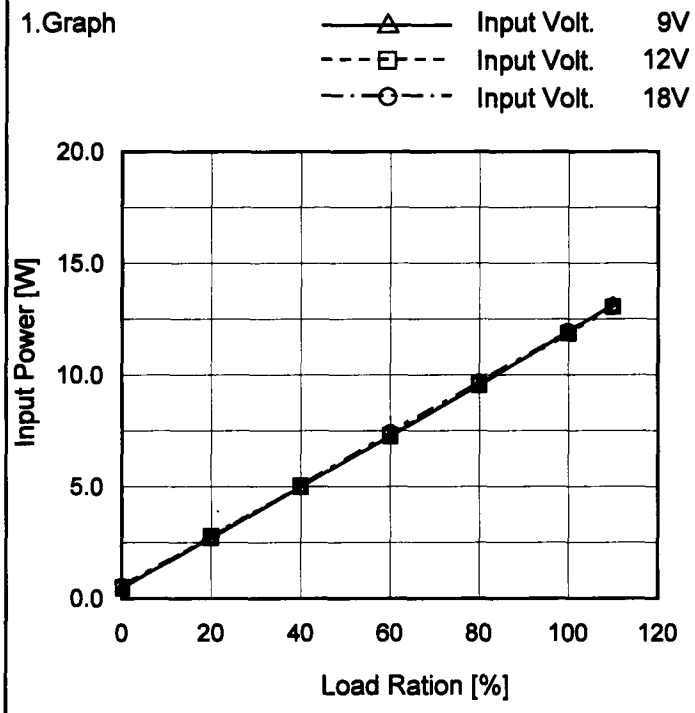
BC-3803

COSEL

Model	SUW101215/SUCW101215
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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	0.47	0.51	0.56
20	2.71	2.79	2.74
40	4.99	5.05	5.03
60	7.26	7.30	7.43
80	9.56	9.58	9.69
100	11.94	11.86	11.96
110	13.14	13.04	13.10
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

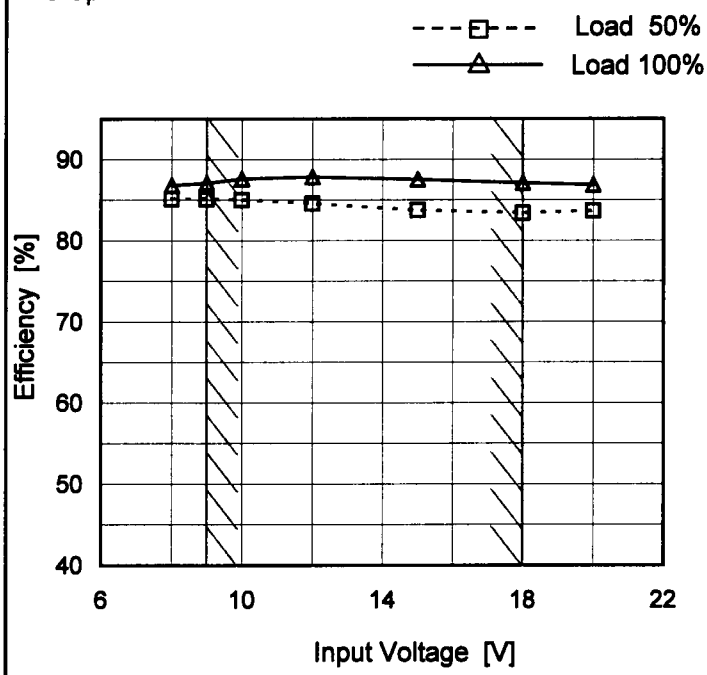
BC-3803

COSEL

Model	SUW101215/SUCW101215
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

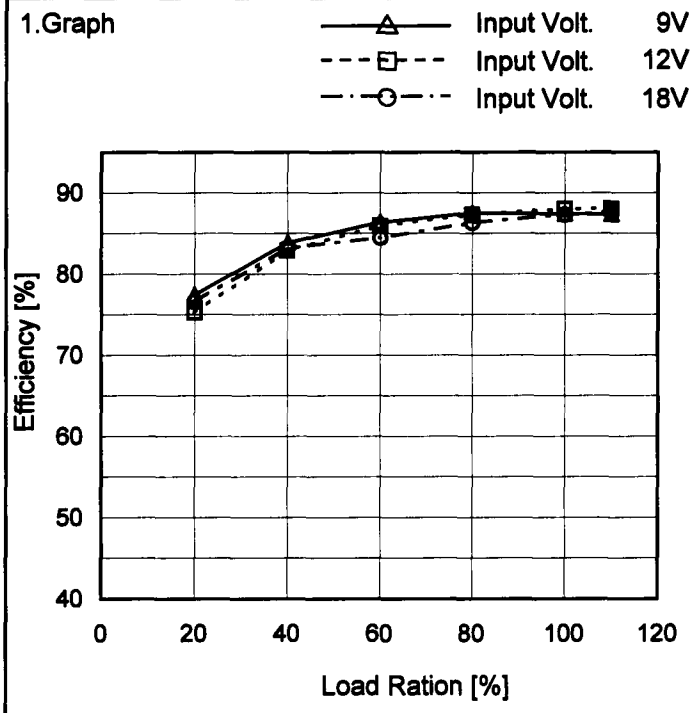
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
8	85.1	86.8
9	85.1	87.1
10	85.0	87.6
12	84.6	87.8
15	83.8	87.5
18	83.4	87.1
20	83.7	86.9
–	-	-
–	-	-

COSEL

Model	SUW101215/SUCW101215
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	-	-	-
20	77.4	75.3	76.6
40	83.9	82.9	83.2
60	86.4	86.0	84.5
80	87.5	87.3	86.3
100	87.4	88.0	87.3
110	87.4	88.1	87.6
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

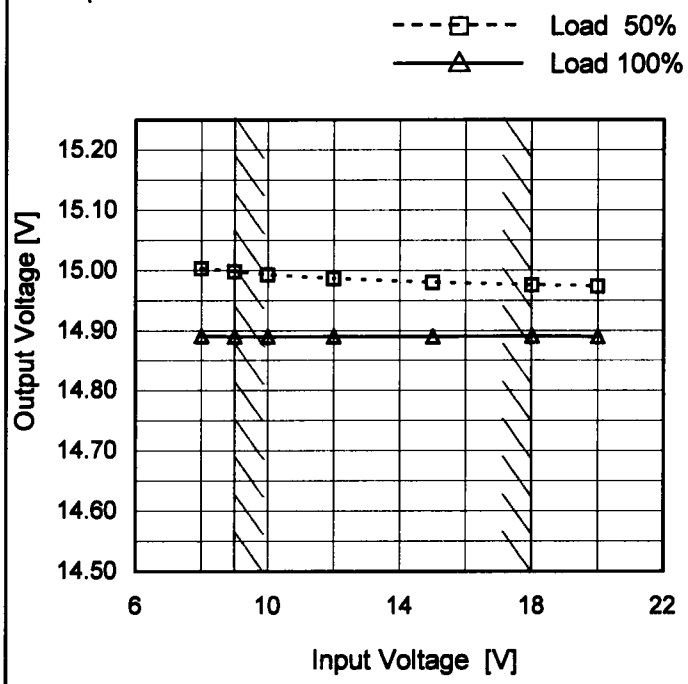
BC-3803

COSEL

Model	SUW101215/SUCW101215
Item	Line Regulation
Object	+15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

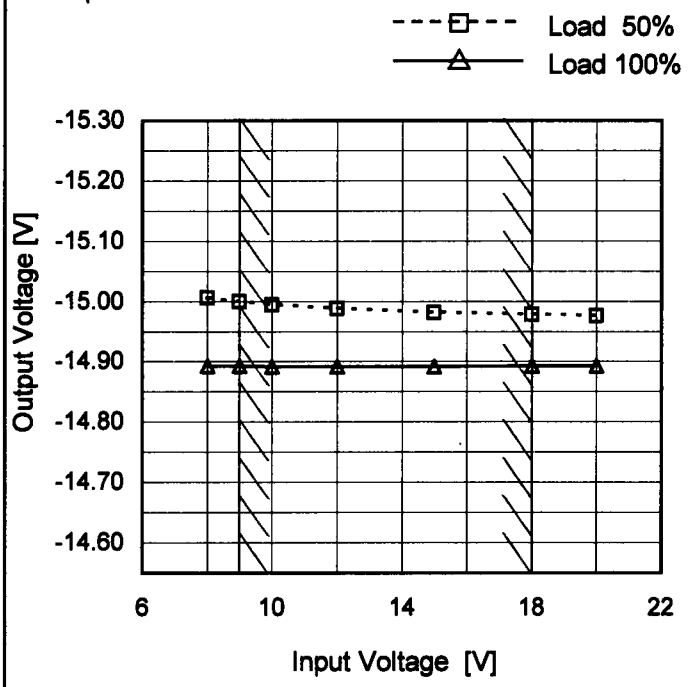


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	15.003	14.891
9	14.997	14.890
10	14.992	14.890
12	14.985	14.890
15	14.979	14.890
18	14.975	14.891
20	14.973	14.890
--	-	-
--	-	-

Object	-15V0.35A

1.Graph



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

2.Values

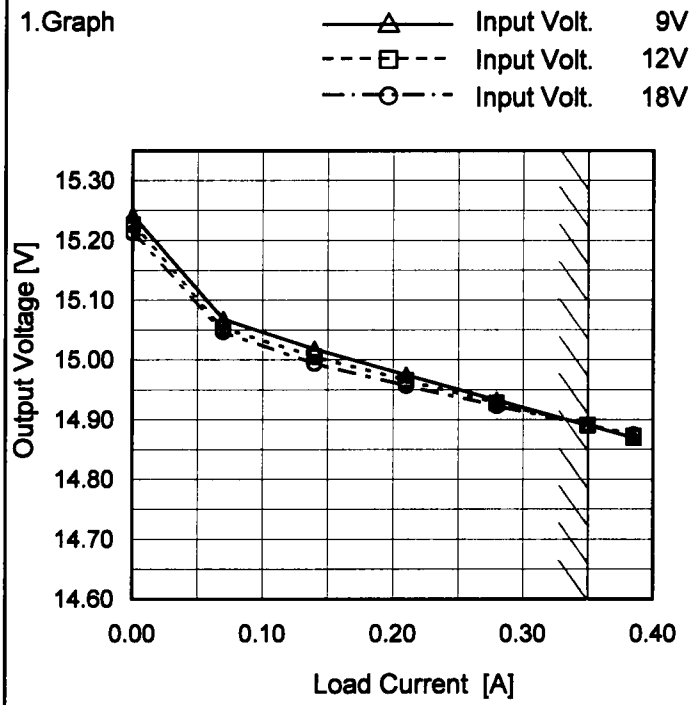
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	-15.006	-14.893
9	-15.000	-14.893
10	-14.995	-14.893
12	-14.988	-14.893
15	-14.982	-14.892
18	-14.978	-14.893
20	-14.976	-14.893
--	-	-
--	-	-

COSEL

Model	SUW101215/SUCW101215
Item	Load Regulation
Object	+15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

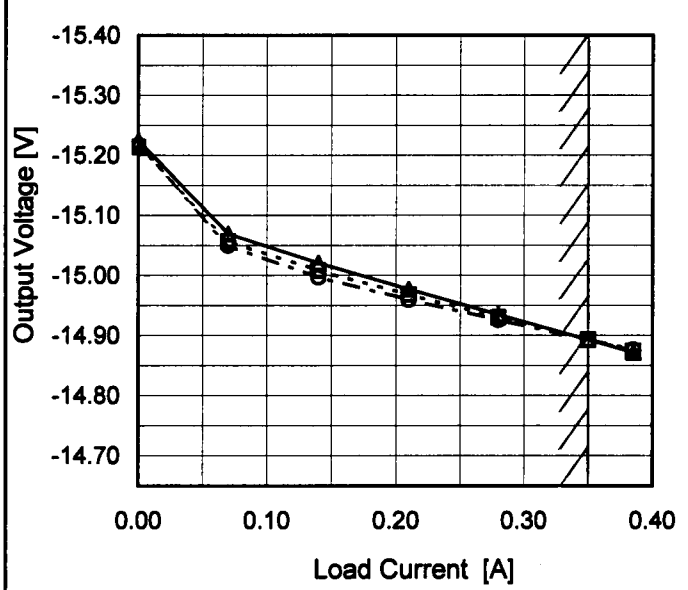


2.Values

Load Current [A]	Output Voltage [V] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	15.243	15.227	15.213
0.070	15.068	15.054	15.047
0.140	15.019	15.006	14.994
0.210	14.975	14.966	14.957
0.280	14.933	14.928	14.923
0.350	14.891	14.891	14.891
0.385	14.870	14.873	14.875
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	-15.225	-15.214	-15.217
0.070	-15.070	-15.057	-15.050
0.140	-15.021	-15.008	-14.997
0.210	-14.977	-14.968	-14.959
0.280	-14.935	-14.930	-14.926
0.350	-14.893	-14.893	-14.893
0.385	-14.872	-14.874	-14.877
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

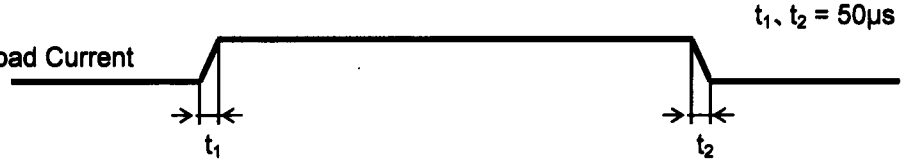
Model	SUW101215/SUCW101215
Item	Dynamic Load Response
Object	+15V0.35A

Temperature 25°C
Testing Circuitry Figure A

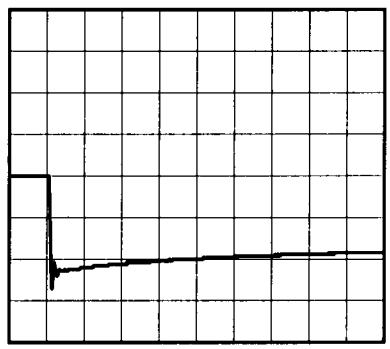
Input Volt. 12 V
Cycle 100 mS

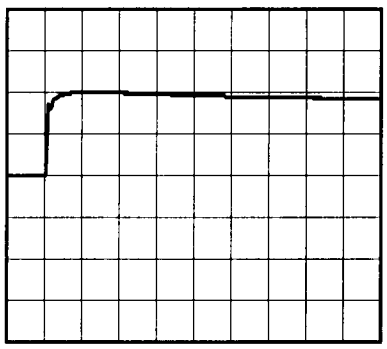
t_1、t_2 = 50μs

Load Current



Min. Load (0A) ⟷
Load 100% (0.35A)

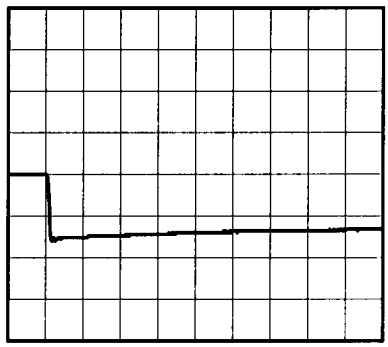


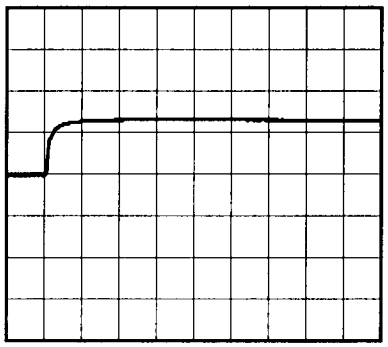


200mV/div

500μs/div 500μs/div

Min. Load (0A) ⟷
Load 50% (0.175A)

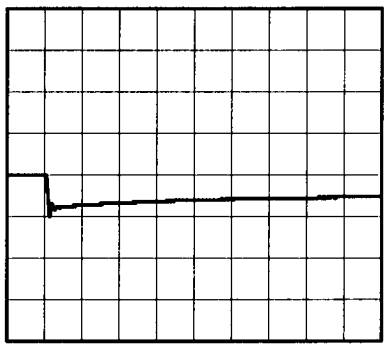


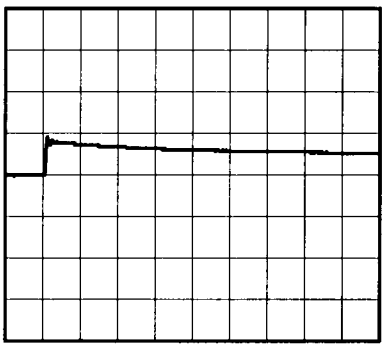


200mV/div

500μs/div 500μs/div

Load 50% (0.175A) ⟷
Load 100% (0.35A)





200mV/div

500μs/div 500μs/div

COSEL

Model	SUW101215/SUCW101215
Item	Dynamic Load Response
Object	-15V0.35A

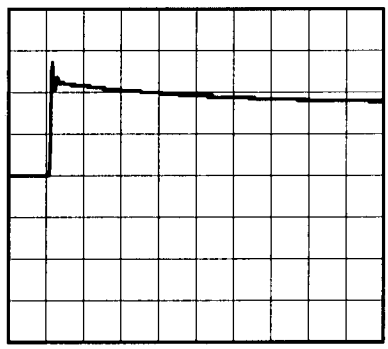
Temperature 25°C
Testing Circuitry Figure A

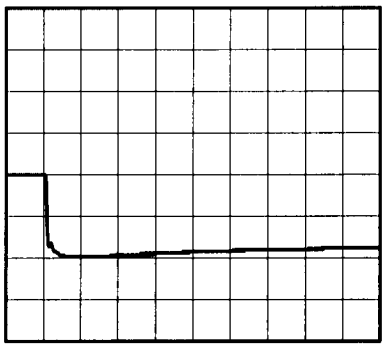
Input Volt. 12 V
Cycle 100 mS

t_1、t_2 = 50μs

Load Current

Min. Load (0A) ⟷
Load 100% (0.35A)

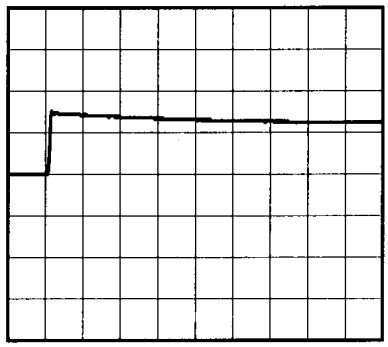


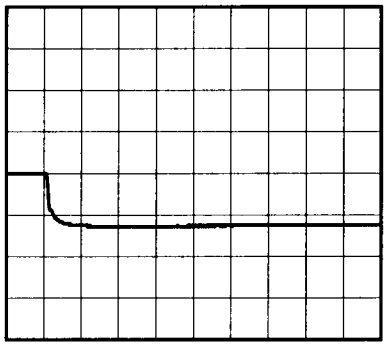


200mV/div

500μs/div 500μs/div

Min. Load (0A) ⟷
Load 50% (0.175A)

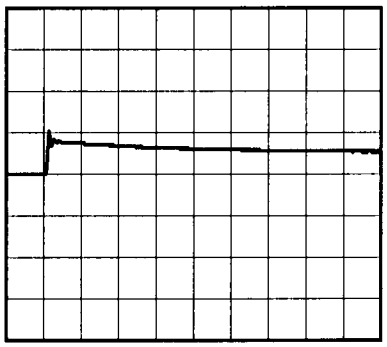


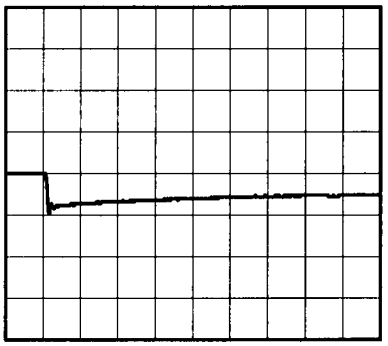


200mV/div

500μs/div 500μs/div

Load 50% (0.175A) ⟷
Load 100% (0.35A)





200mV/div

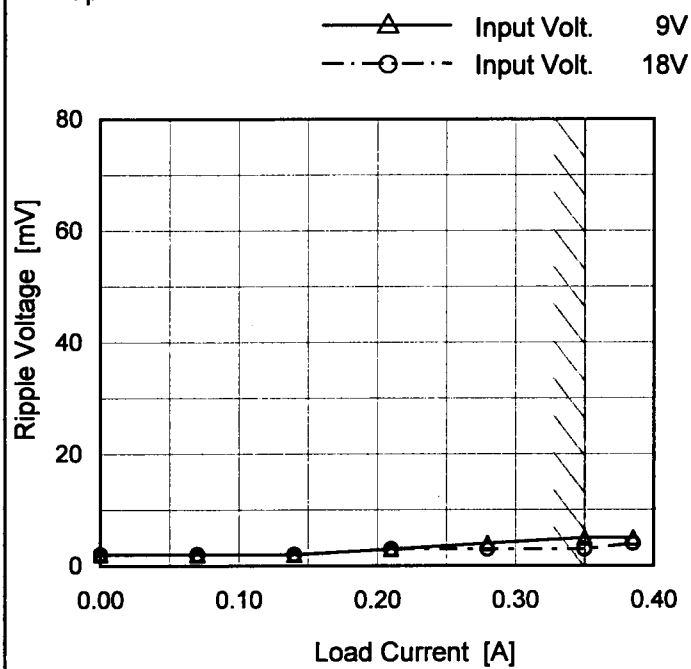
500μs/div 500μs/div

COSEL

Model	SUW101215/SUCW101215
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]

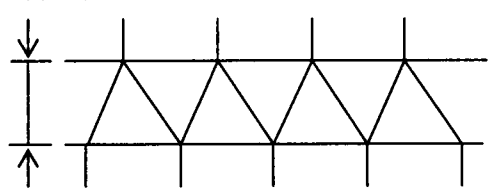


Fig.Complex Ripple Wave Form

2.Values

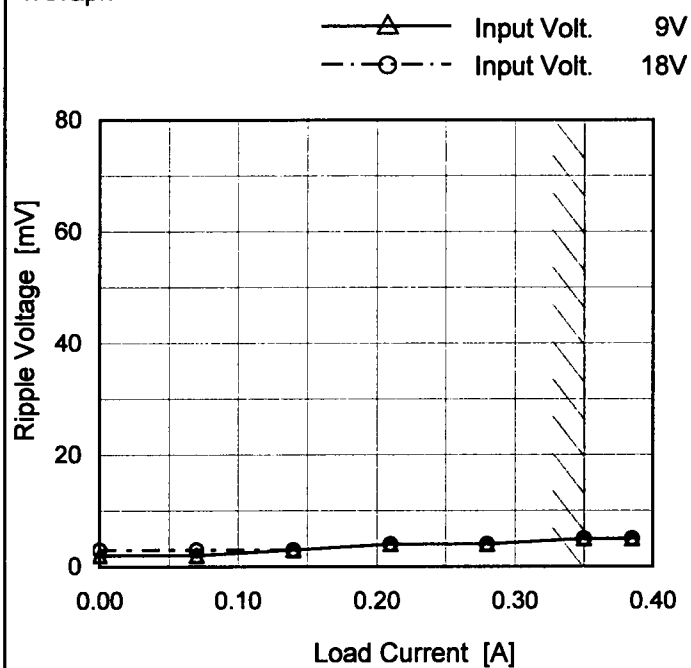
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	2	2
0.070	2	2
0.140	2	2
0.210	3	3
0.280	4	3
0.350	5	3
0.385	5	4
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW101215/SUCW101215
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]

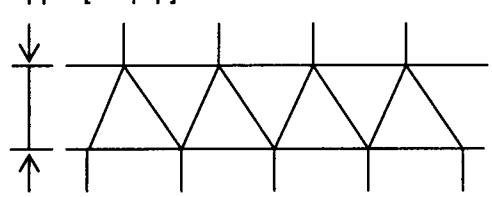


Fig.Complex Ripple Wave Form

2.Values

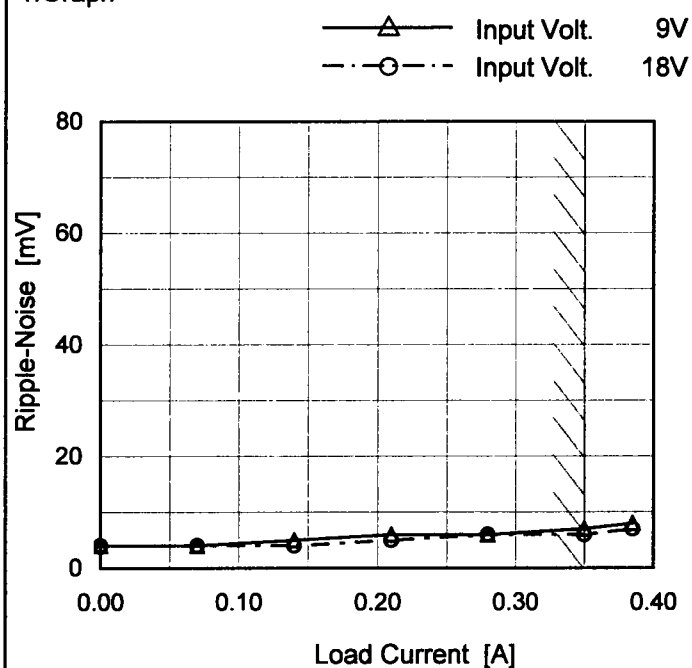
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	2	3
0.070	2	3
0.140	3	3
0.210	4	4
0.280	4	4
0.350	5	5
0.385	5	5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW101215/SUCW101215
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.

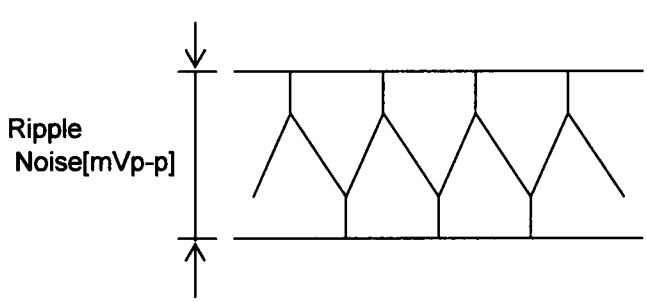


Fig.Complex Ripple Noise Wave Form

2.Values

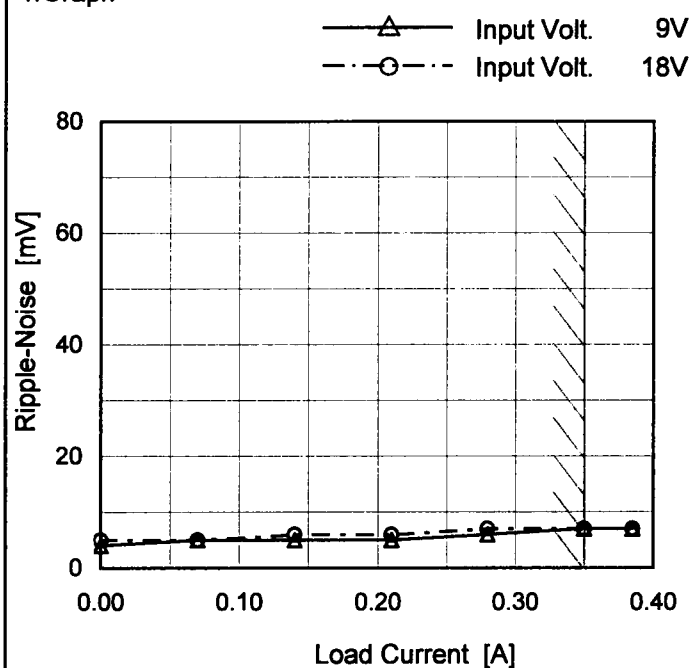
Load Current [A]	Ripple-Noise [mV] Input Volt. 9 [V]	Ripple-Noise [mV] Input Volt. 18 [V]
0.000	4	4
0.070	4	4
0.140	5	4
0.210	6	5
0.280	6	6
0.350	7	6
0.385	8	7
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW101215/SUCW101215
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.

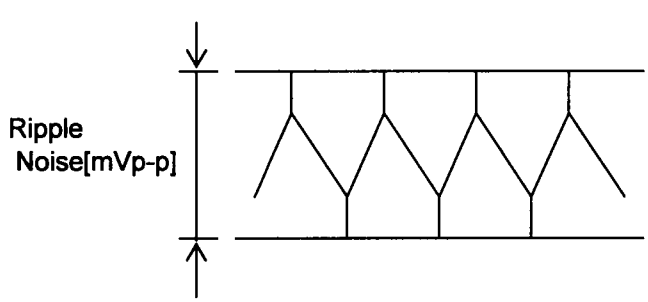


Fig.Complex Ripple Noise Wave Form

2.Values

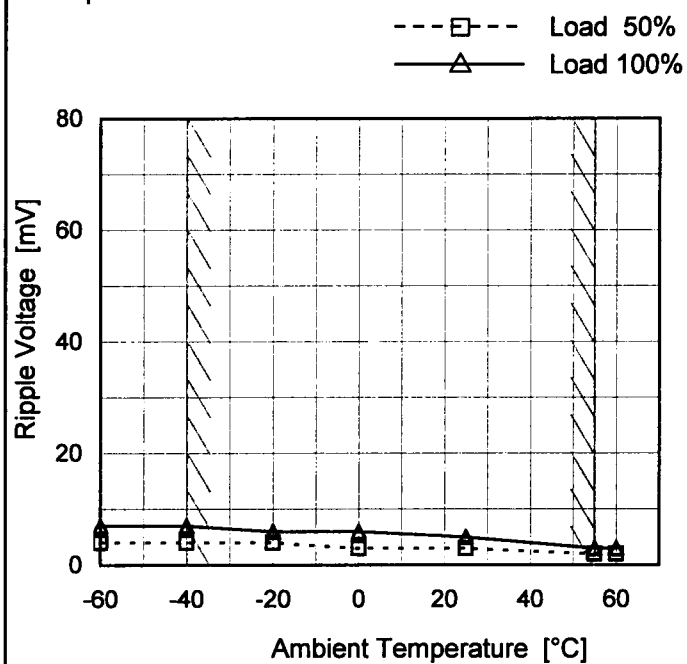
Load Current [A]	Ripple-Noise [mV] Input Volt. 9 [V]	Ripple-Noise [mV] Input Volt. 18 [V]
0.000	4	5
0.070	5	5
0.140	5	6
0.210	5	6
0.280	6	7
0.350	7	7
0.385	7	7
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW101215/SUCW101215
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.35A

Testing Circuitry Figure B

1.Graph



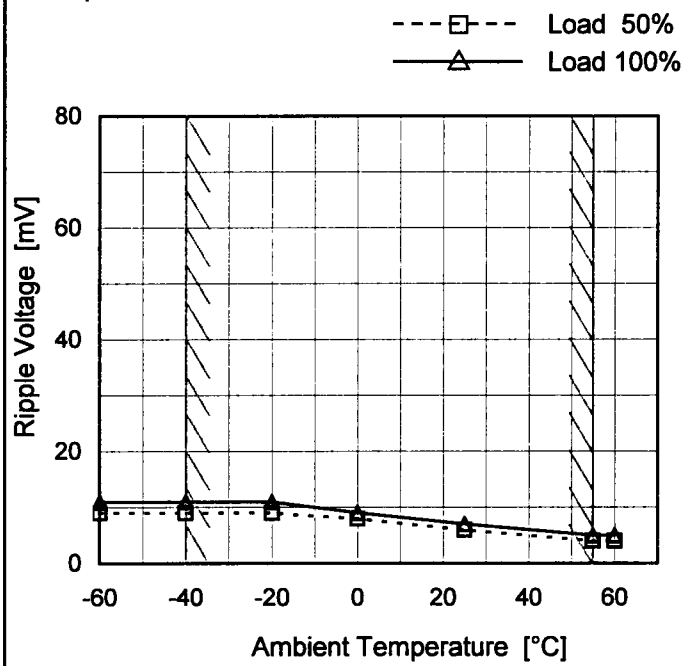
Input Volt. 12V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	4	7
-40	4	7
-20	4	6
0	3	6
25	3	5
55	2	3
60	2	3
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.35A

1.Graph



Input Volt. 12V

Measured by 100 MHz Oscilloscope.

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

2.Values

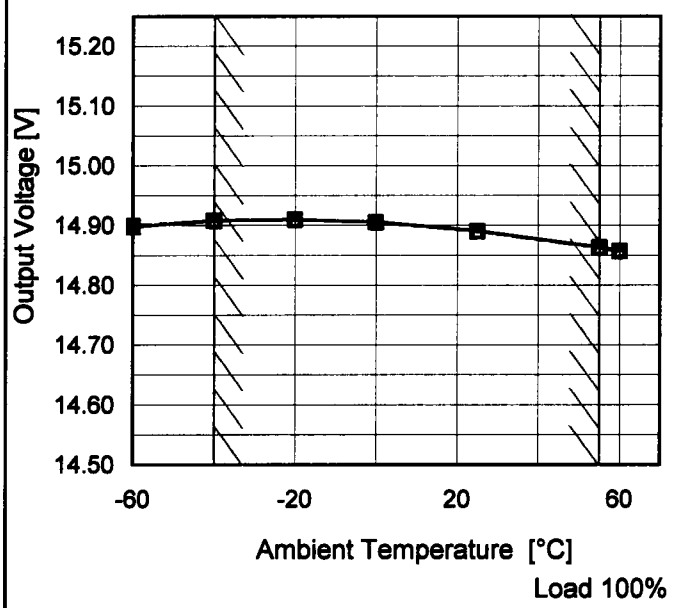
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	9	11
-40	9	11
-20	9	11
0	8	9
25	6	7
55	4	5
60	4	5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW101215/SUCW101215
Item	Ambient Temperature Drift
Object	+15V0.35A

Testing Circuitry Figure A

1.Graph

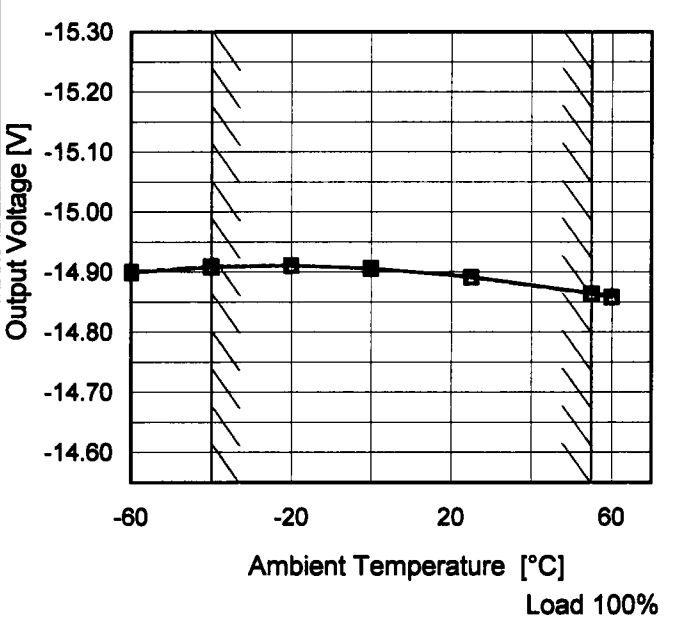


2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	14.898	14.899	14.899
-40	14.908	14.908	14.908
-20	14.910	14.910	14.910
0	14.906	14.905	14.905
25	14.891	14.890	14.890
55	14.864	14.863	14.862
60	14.858	14.857	14.857
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	-14.899	-14.900	-14.900
-40	-14.908	-14.909	-14.909
-20	-14.911	-14.911	-14.911
0	-14.906	-14.906	-14.906
25	-14.892	-14.891	-14.891
55	-14.865	-14.864	-14.863
60	-14.860	-14.858	-14.858
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW101215/SUCW101215	
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 : 9 - 18V
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	9	0	15.252	±195	±1.3
Minimum Voltage	55	18	0.35	14.862		

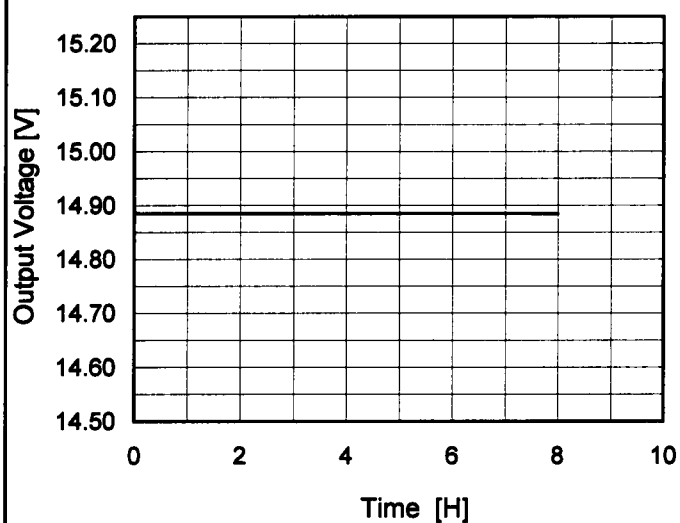
Object	-15V0.35A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	9	0	-15.233	±185	±1.2
Minimum Voltage	55	18	0.35	-14.863		

COSEL

Model	SUW101215/SUCW101215
Item	Time Lapse Drift
Object	+15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



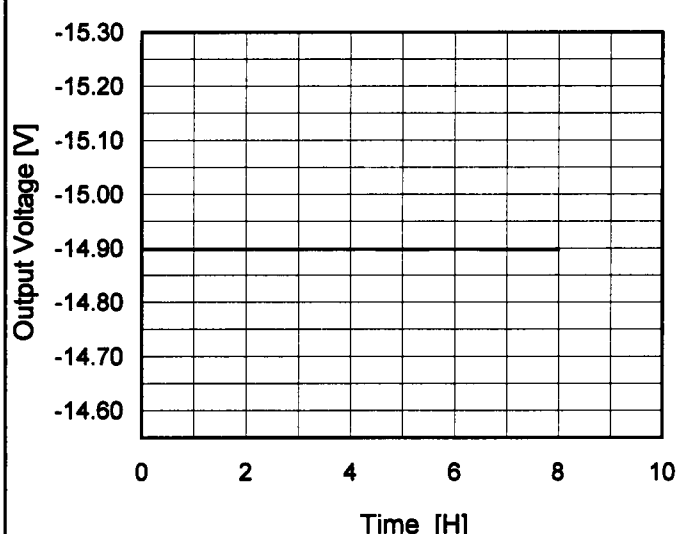
Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	14.894
0.5	14.885
1.0	14.885
2.0	14.885
3.0	14.885
4.0	14.885
5.0	14.885
6.0	14.885
7.0	14.885
8.0	14.885

Object	-15V0.35A

1.Graph



Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-14.904
0.5	-14.898
1.0	-14.898
2.0	-14.898
3.0	-14.898
4.0	-14.898
5.0	-14.898
6.0	-14.898
7.0	-14.898
8.0	-14.898

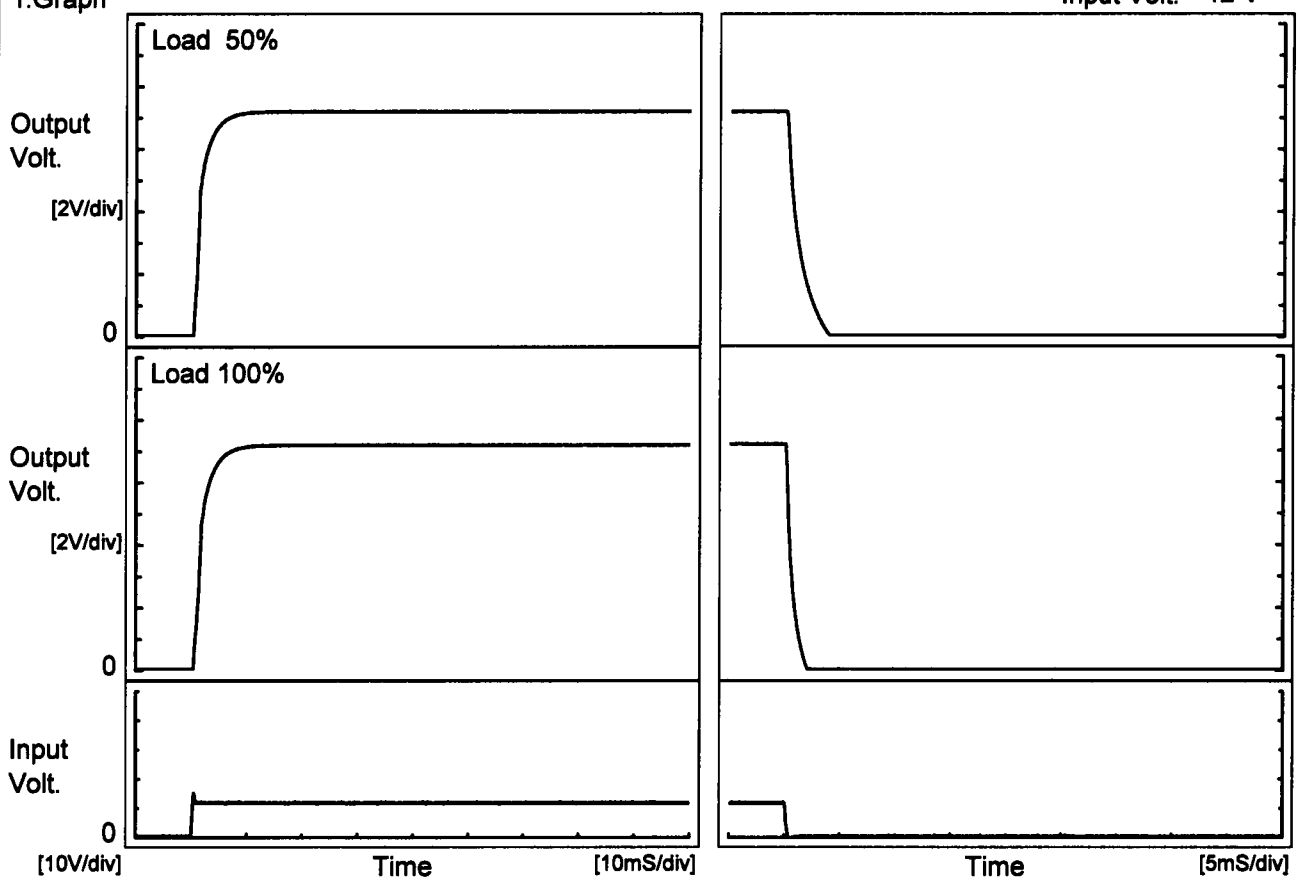
COSEL

Model	SUW101215/SUCW101215
Item	Rise and Fall Time
Object	+15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

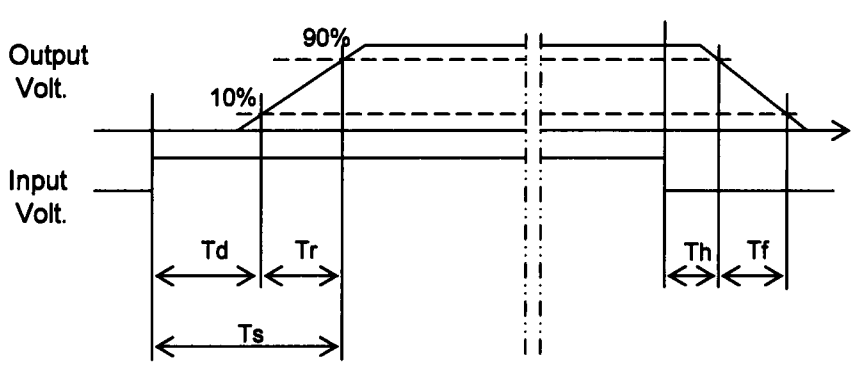
Input Volt. 12 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.5	4.8	5.3	0.2	2.6
100 %	0.6	5.1	5.7	0.2	1.3



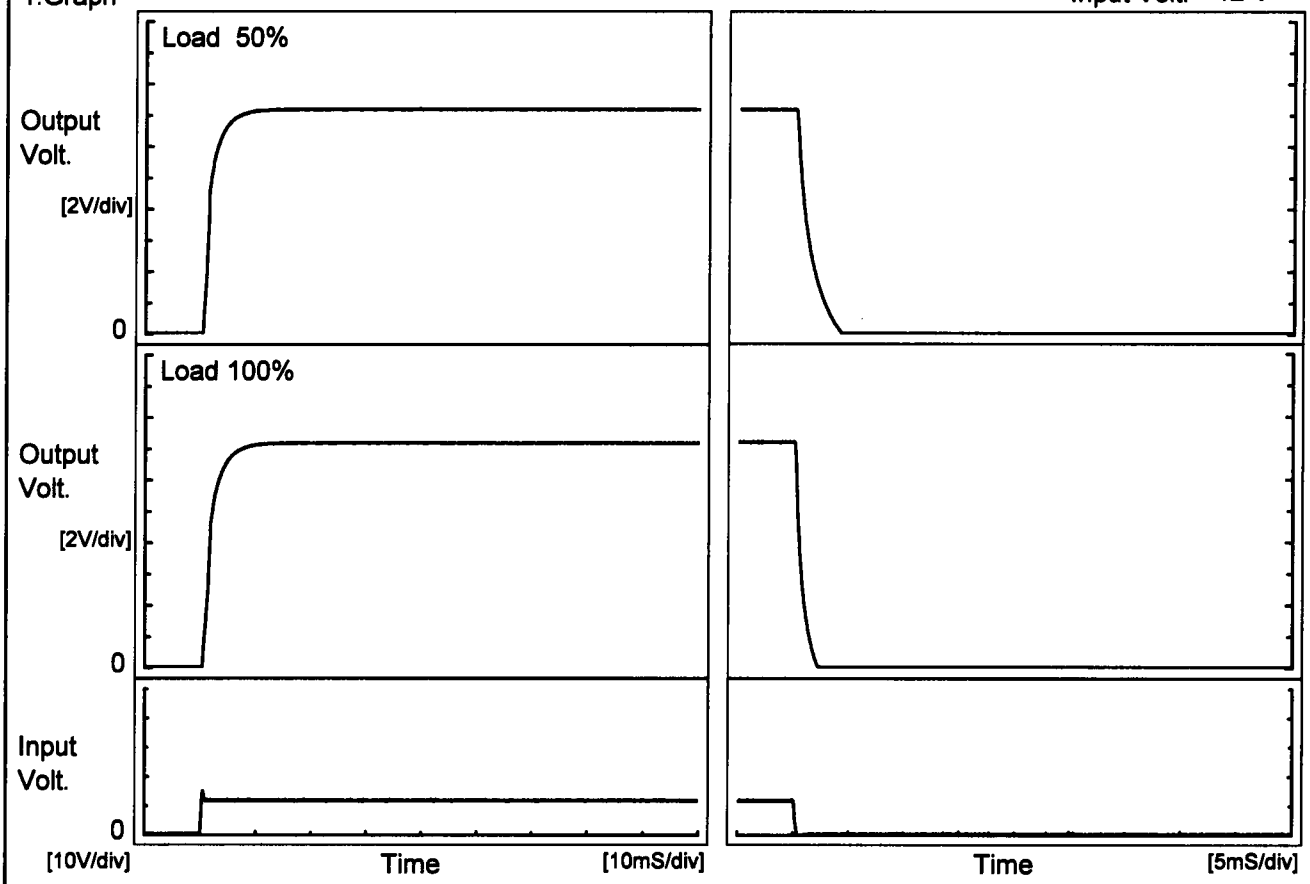
COSEL

Model	SUW101215/SUCW101215
Item	Rise and Fall Time
Object	-15V0.35A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

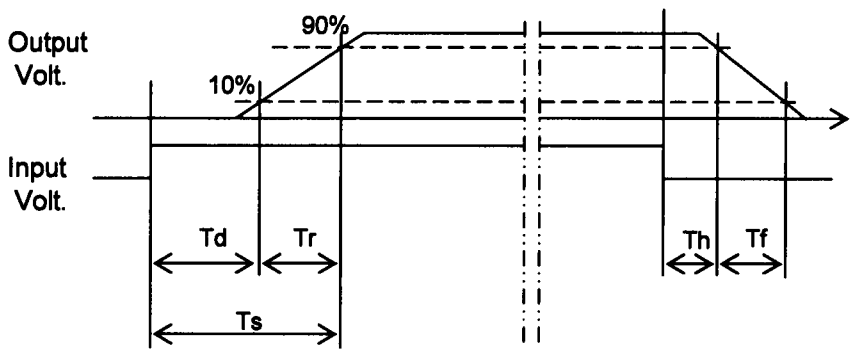
Input Volt. 12 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.5	4.8	5.3	0.2	2.8
100 %	0.6	5.1	5.7	0.2	1.4

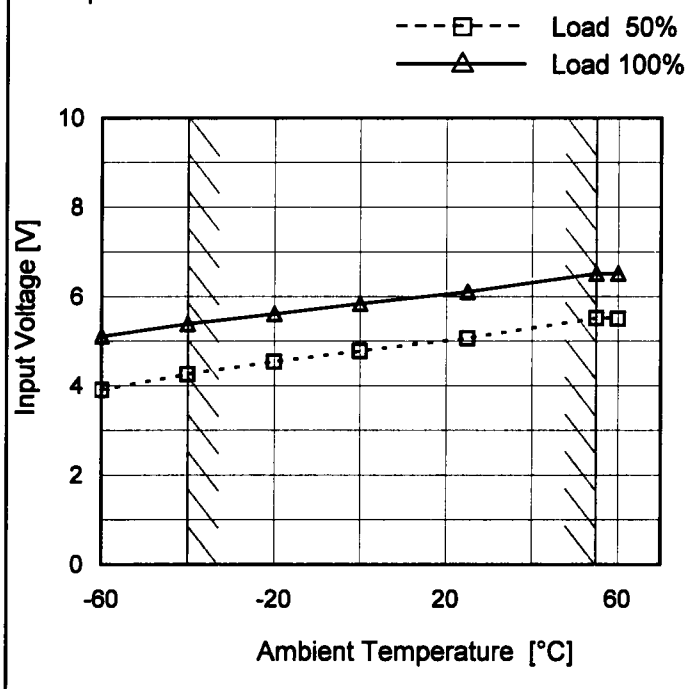


COSEL

Model	SUW101215/SUCW101215
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.35A

Testing Circuitry Figure A

1.Graph

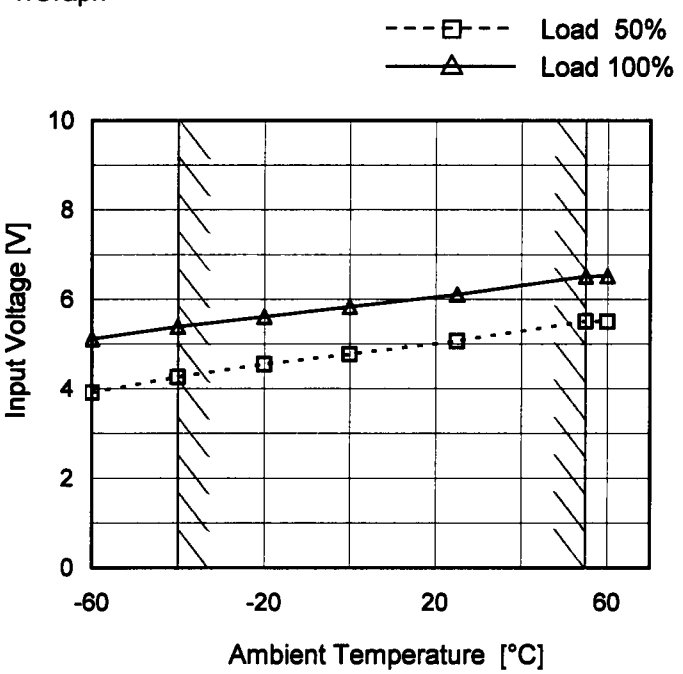


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	4.0	5.2
-40	4.3	5.4
-20	4.6	5.7
0	4.8	5.9
25	5.1	6.1
55	5.6	6.6
60	5.5	6.6
0	-	-
--	-	-
--	-	-
--	-	-

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	4.0	5.2
-40	4.3	5.4
-20	4.6	5.6
0	4.8	5.9
25	5.1	6.1
55	5.6	6.6
60	5.5	6.6
0	-	-
--	-	-
--	-	-
--	-	-

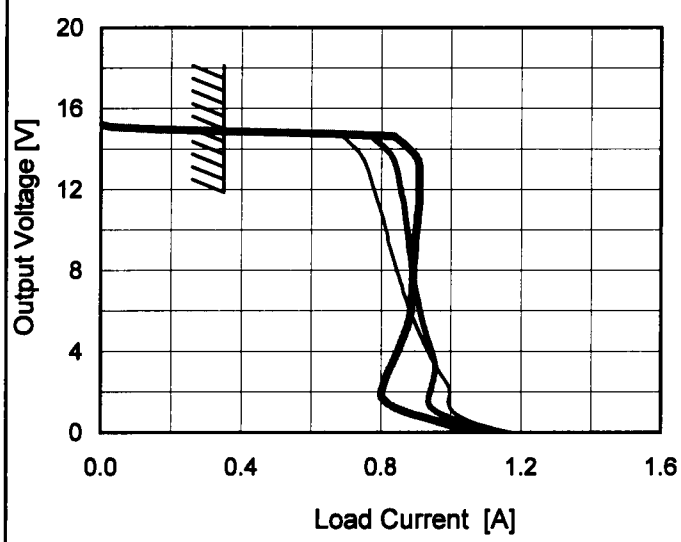
COSEL

Model	SUW101215/SUCW101215
Item	Overcurrent Protection

Temperature 25°C
Testing Circuitry Figure A

Object +15V0.35A

1.Graph

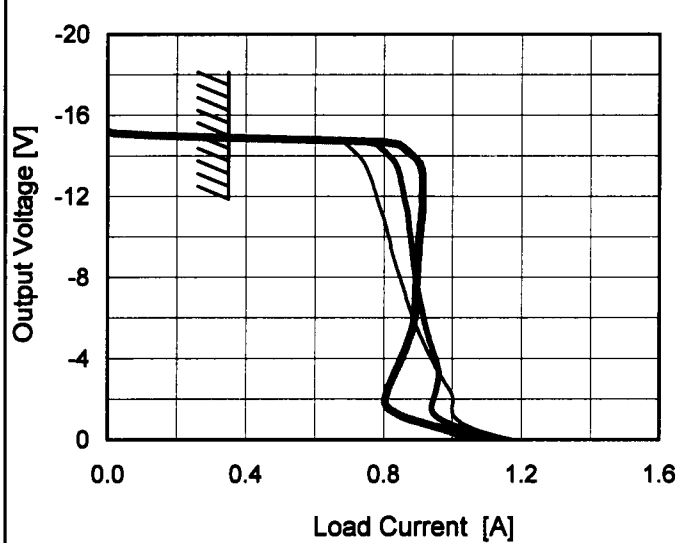


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
15.0	0.46	0.49	0.52
14.3	0.71	0.80	0.86
13.5	0.75	0.84	0.90
12.0	0.78	0.86	0.91
10.5	0.81	0.87	0.90
9.0	0.83	0.88	0.90
7.5	0.85	0.89	0.89
6.0	0.88	0.91	0.89
4.5	0.92	0.94	0.86
3.0	0.97	0.96	0.82
1.5	0.99	0.94	0.82
0.0	1.18	1.17	1.10

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-15.00	0.51	0.55	0.57
-14.25	0.71	0.80	0.87
-13.50	0.75	0.84	0.91
-12.00	0.78	0.86	0.91
-10.50	0.81	0.87	0.91
-9.00	0.83	0.89	0.90
-7.50	0.86	0.90	0.89
-6.00	0.89	0.92	0.89
-4.50	0.93	0.94	0.86
-3.00	0.97	0.96	0.83
-1.50	1.00	0.94	0.82
0.00	1.19	1.18	1.11

COSEL

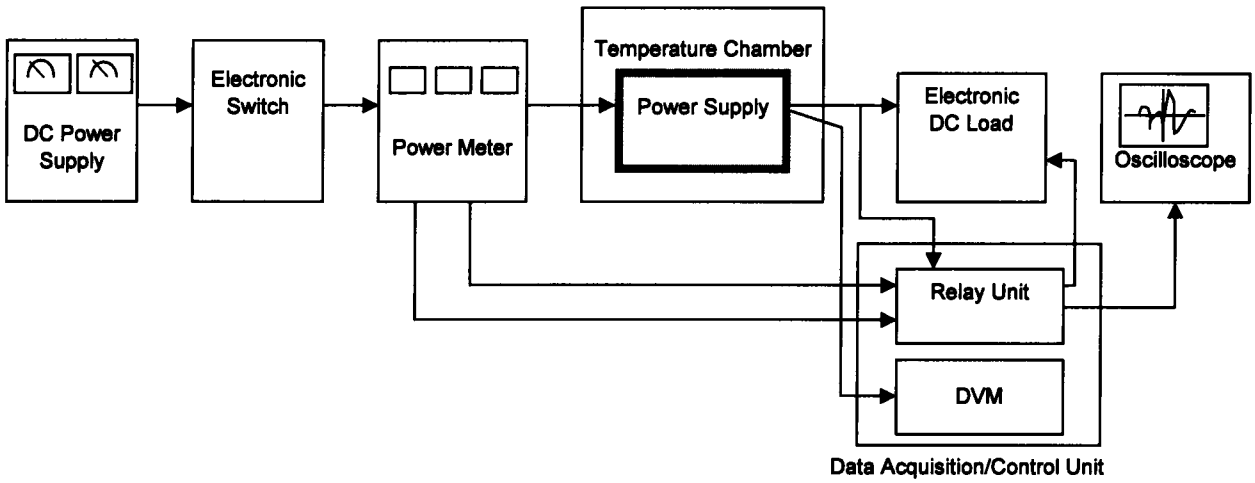


Figure A

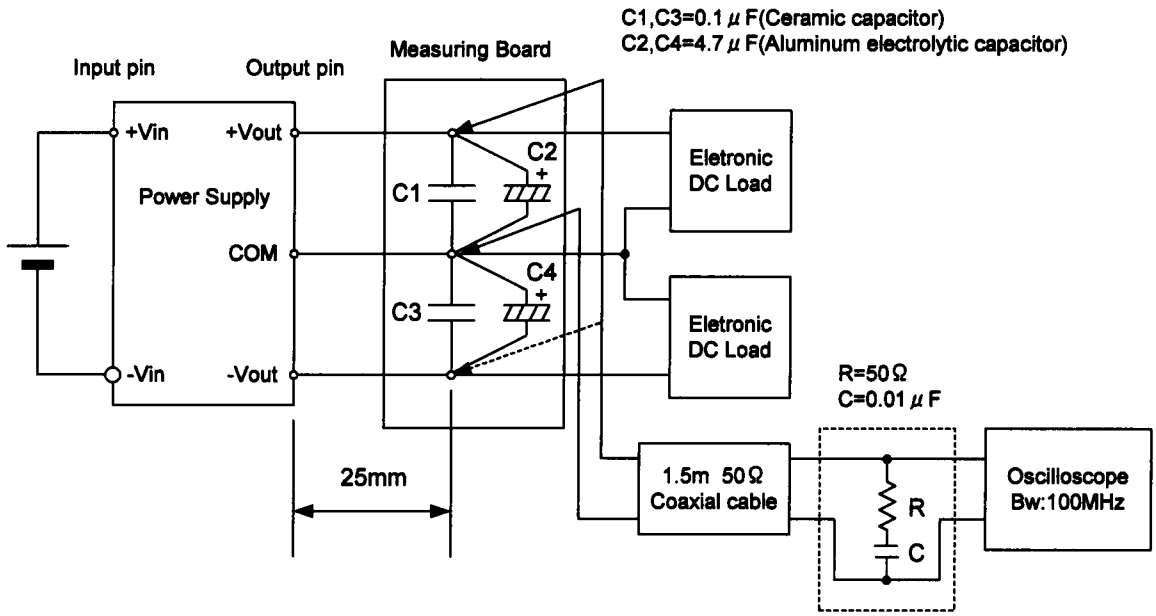


Figure B (Ripple and Ripple noise Characteristic)