参考資料

COSEL

TEST DATA OF SUW31215

Regulated DC Power Supply
Mar 18, 2005

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COSEL CO.,LTD.

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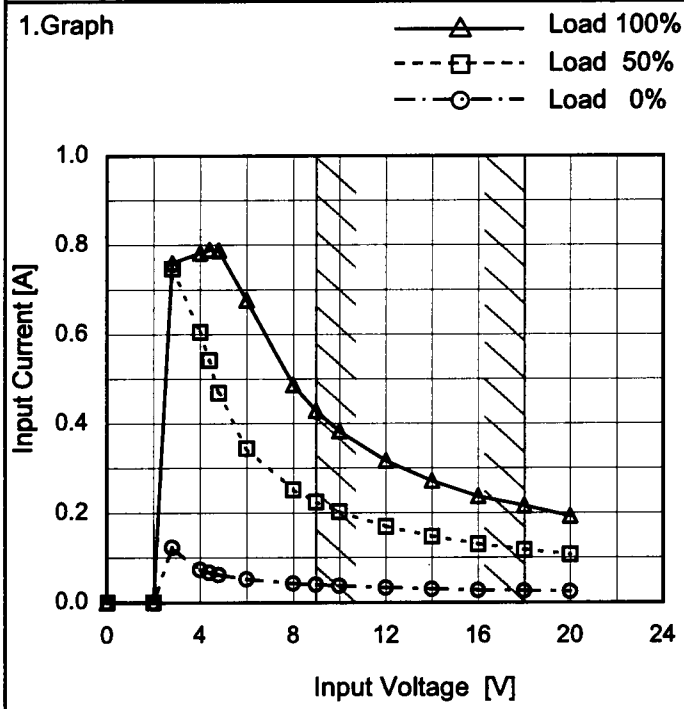
COSEL

Model	SUW31215
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

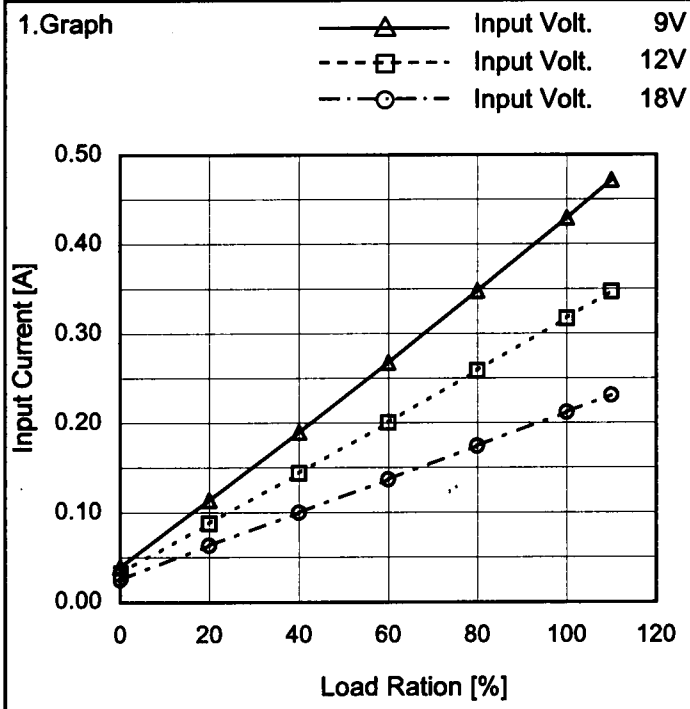
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
2.0	0.000	0.000	0.000
2.8	0.123	0.747	0.760
4.0	0.073	0.606	0.782
4.4	0.067	0.543	0.789
4.8	0.062	0.469	0.788
6.0	0.052	0.345	0.677
8.0	0.043	0.252	0.487
9.0	0.040	0.225	0.429
10.0	0.037	0.203	0.383
12.0	0.033	0.170	0.317
14.0	0.029	0.147	0.272
16.0	0.027	0.130	0.237
18.0	0.025	0.117	0.216
20.0	0.024	0.107	0.192
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW31215
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

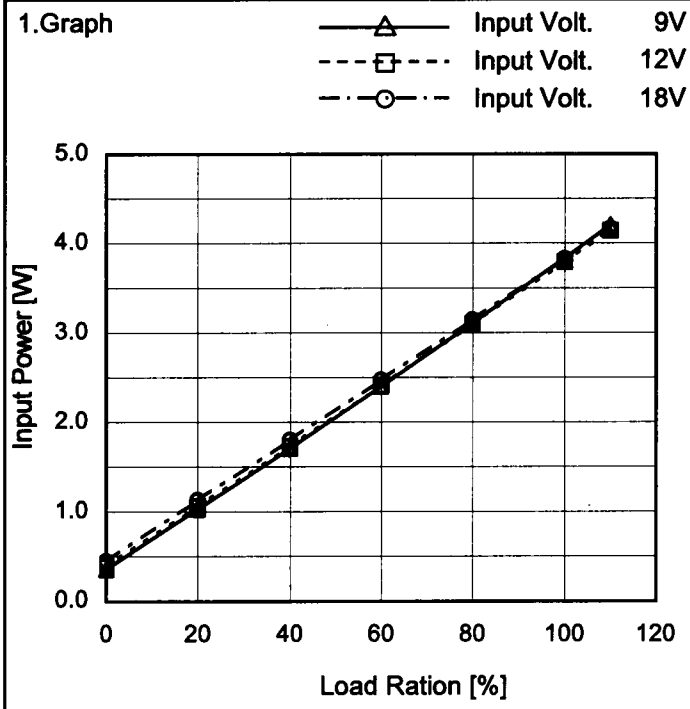
Load Ration [%]	Input Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	0.039	0.032	0.025
20	0.114	0.088	0.063
40	0.190	0.144	0.100
60	0.268	0.201	0.137
80	0.348	0.259	0.174
100	0.429	0.317	0.212
110	0.472	0.347	0.231
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW31215
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	0.36	0.39	0.45
20	1.03	1.06	1.13
40	1.71	1.73	1.80
60	2.40	2.41	2.47
80	3.11	3.10	3.15
100	3.83	3.79	3.83
110	4.21	4.15	4.17
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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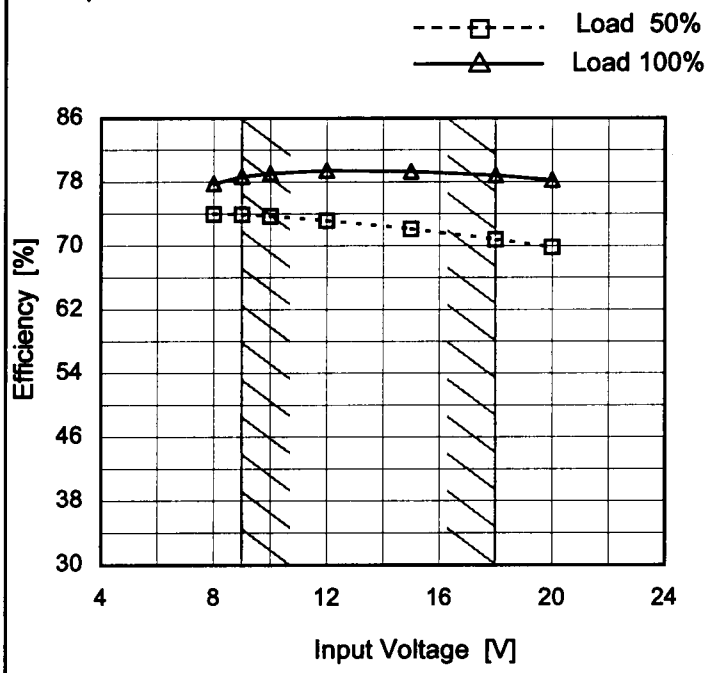
COSEL

Model	SUW31215
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

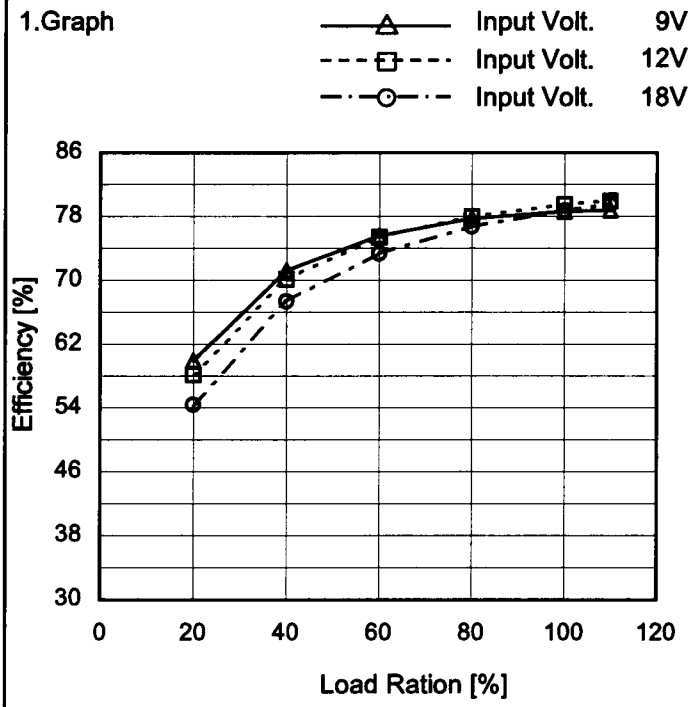
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
8	74.0	77.8
9	73.9	78.7
10	73.7	79.1
12	73.2	79.5
15	72.1	79.3
18	70.8	78.8
20	69.8	78.2
--	-	-
--	-	-

COSEL

Model	SUW31215
Item	Efficiency (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

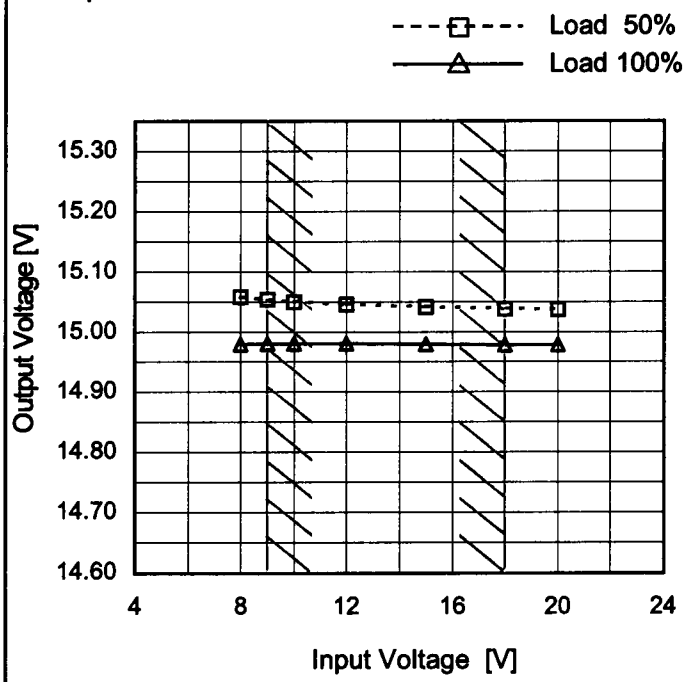
Load Ration [%]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	-	-	-
20	59.9	58.2	54.4
40	71.2	70.1	67.4
60	75.6	75.4	73.4
80	77.8	78.0	76.7
100	78.6	79.5	78.7
110	78.8	80.0	79.5
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW31215
Item	Line Regulation
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

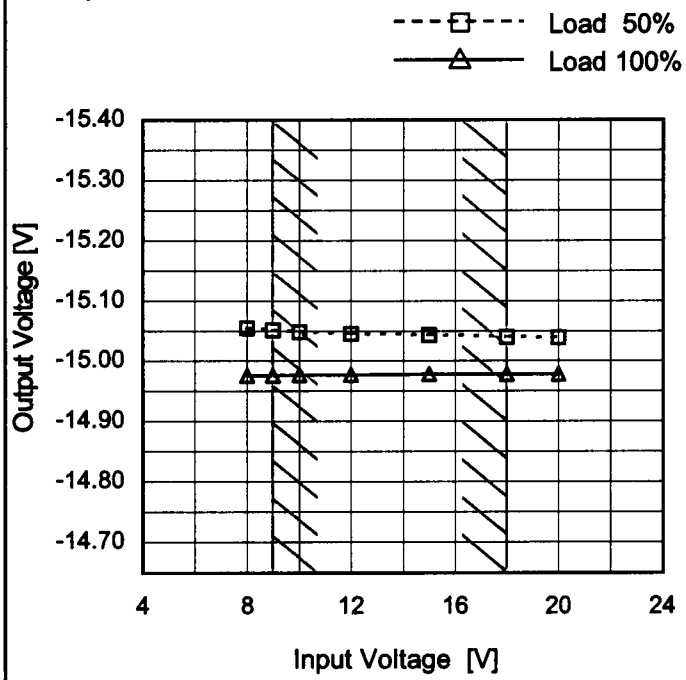


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	15.058	14.980
9	15.054	14.981
10	15.050	14.981
12	15.045	14.980
15	15.041	14.979
18	15.038	14.978
20	15.037	14.979
--	-	-
--	-	-

Object	-15V0.1A

1.Graph



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

2.Values

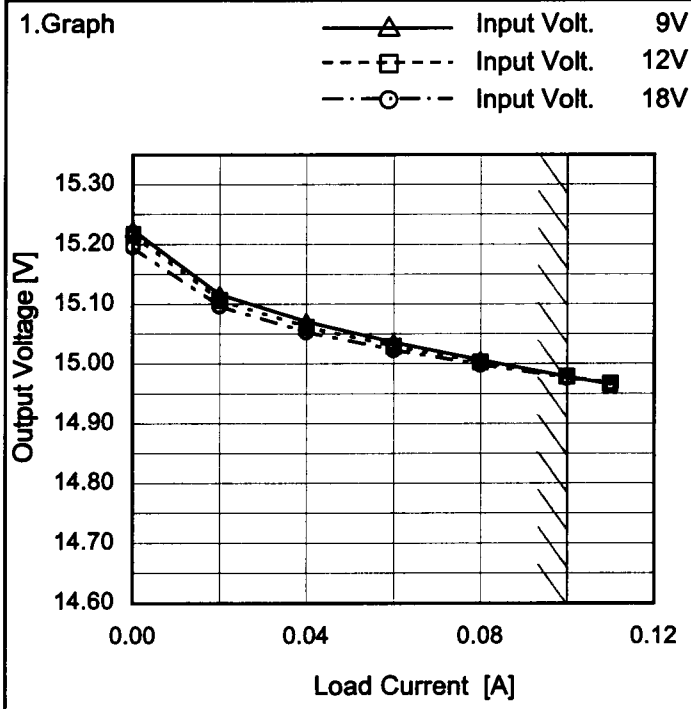
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	-15.055	-14.976
9	-15.052	-14.977
10	-15.049	-14.977
12	-15.045	-14.977
15	-15.043	-14.978
18	-15.040	-14.978
20	-15.039	-14.978
--	-	-
--	-	-

COSEL

Model	SUW31215
Item	Load Regulation
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

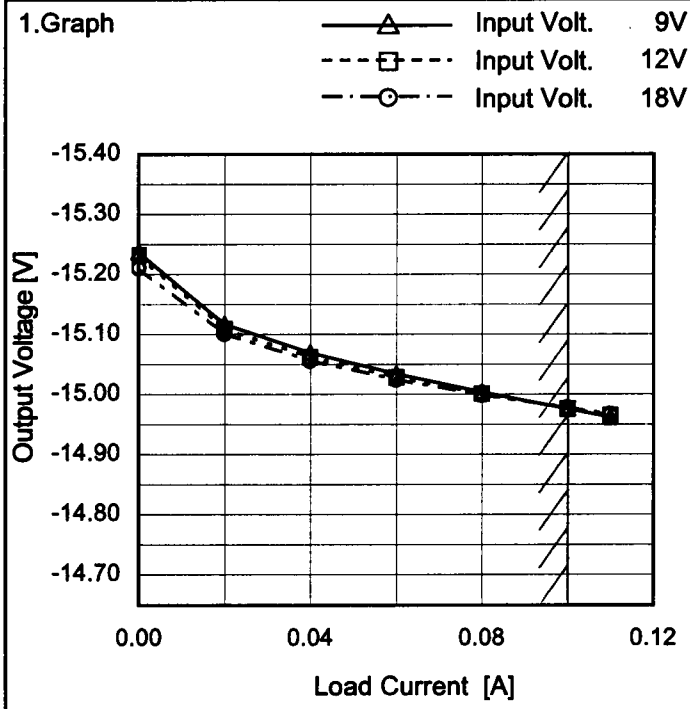


2.Values

Load Current [A]	Output Voltage [V] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	15.224	15.217	15.196
0.02	15.116	15.107	15.097
0.04	15.071	15.062	15.054
0.06	15.036	15.030	15.023
0.08	15.007	15.003	14.999
0.10	14.979	14.979	14.977
0.11	14.966	14.968	14.967
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-15V0.1A

1.Graph



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

2.Values

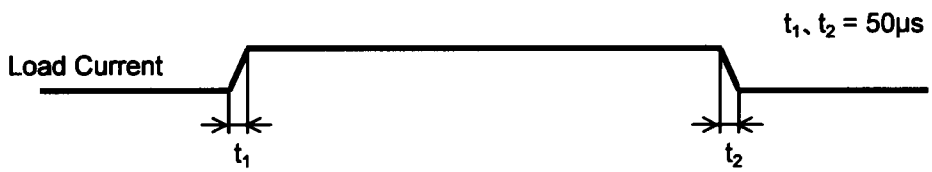
Load Current [A]	Output Voltage [V] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.00	-15.237	-15.232	-15.211
0.02	-15.117	-15.109	-15.101
0.04	-15.069	-15.062	-15.056
0.06	-15.034	-15.029	-15.025
0.08	-15.004	-15.001	-14.999
0.10	-14.976	-14.976	-14.978
0.11	-14.962	-14.965	-14.967
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

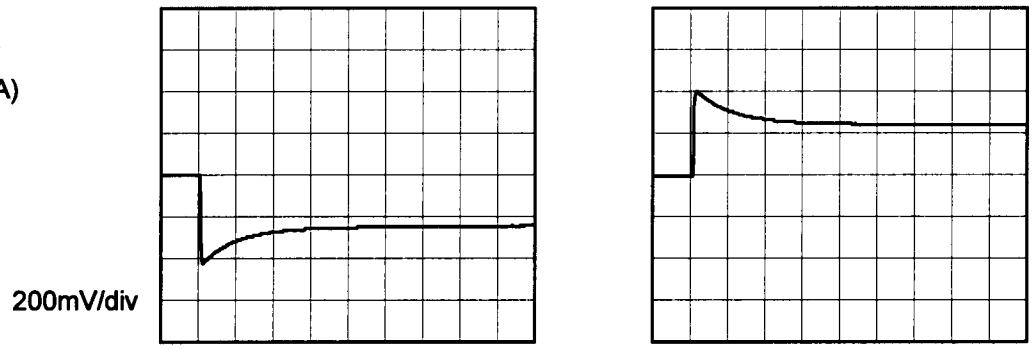
Model	SUW31215
Item	Dynamic Load Response
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

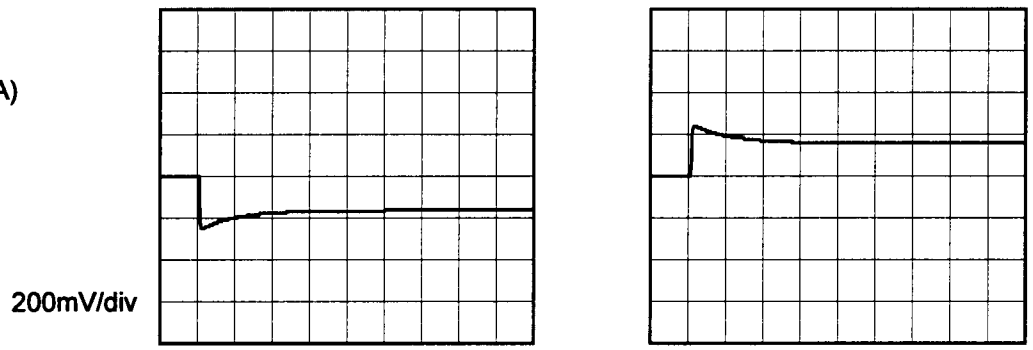
Input Volt. 12 V
Cycle 100 mS



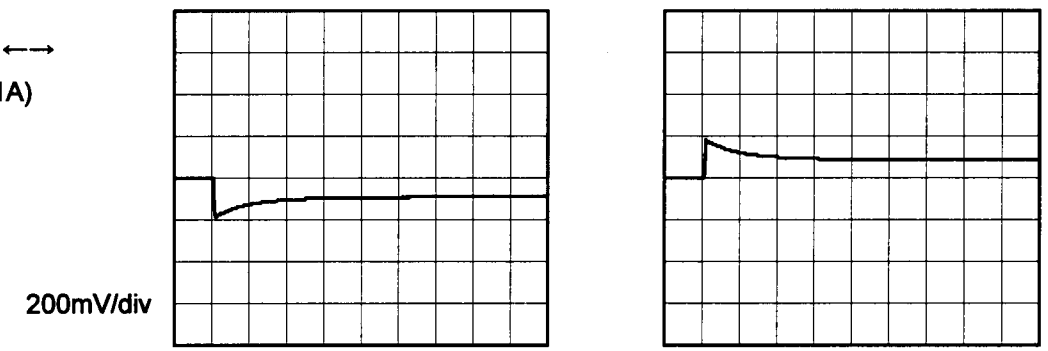
Min. Load (0A) ⟷ Load 100% (0.1A)



Min. Load (0A) ⟷ Load 50% (0.05A)



Load 50% (0.05A) ⟷ Load 100% (0.1A)

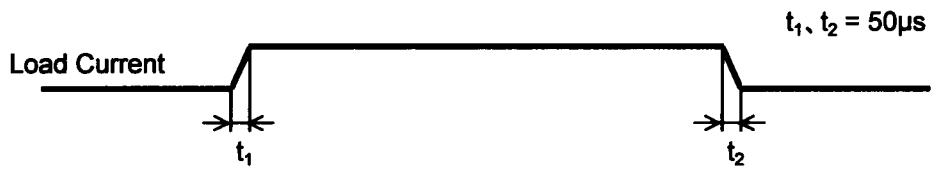


COSEL

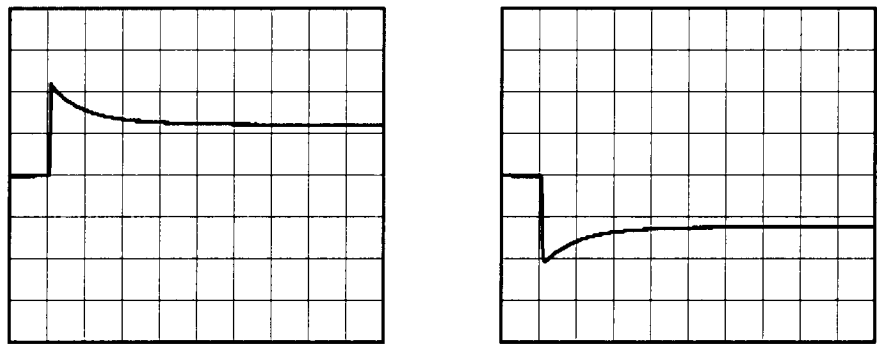
Model	SUW31215
Item	Dynamic Load Response
Object	-15V0.1A

Temperature 25°C
Testing Circuitry Figure A

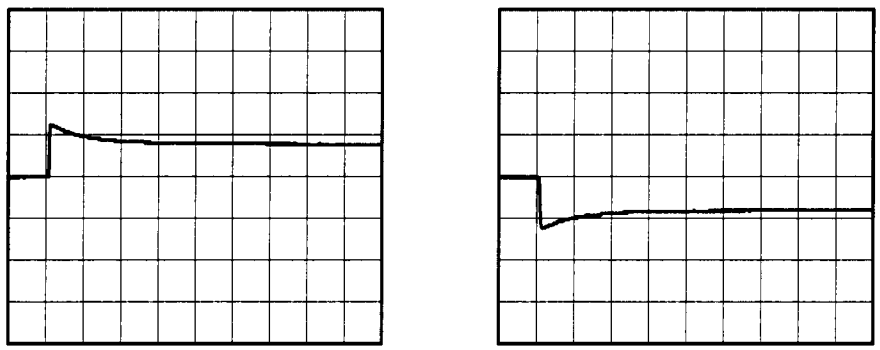
Input Volt. 12 V
Cycle 100 mS



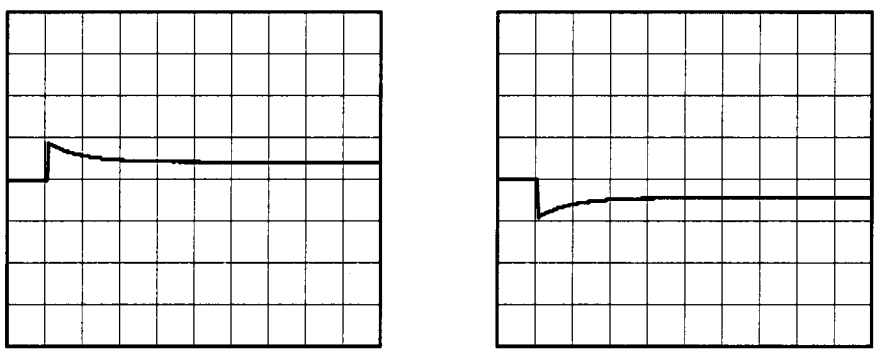
Min. Load (0A) ⟷
Load 100% (0.1A)



Min. Load (0A) ⟷
Load 50% (0.05A)



Load 50% (0.05A) ⟷
Load 100% (0.1A)

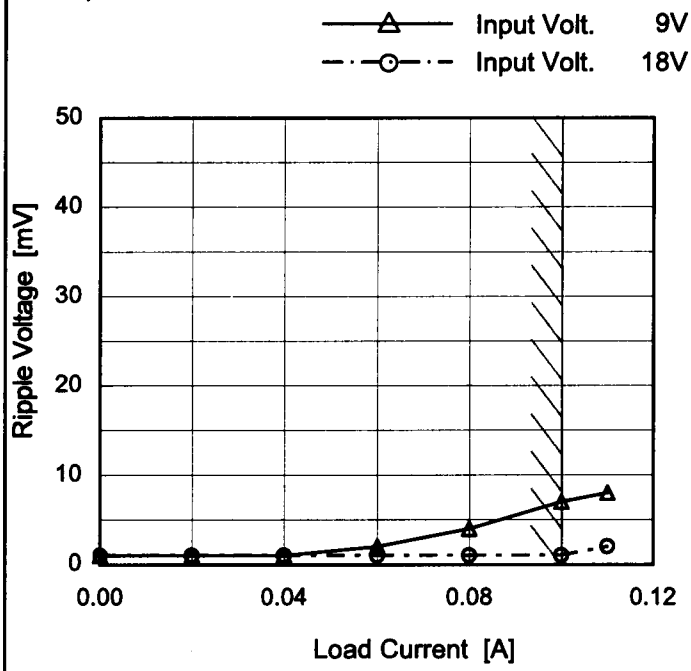


COSEL

Model	SUW31215
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]

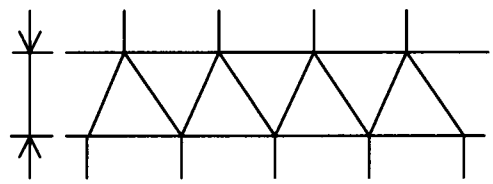


Fig.Complex Ripple Wave Form

2.Values

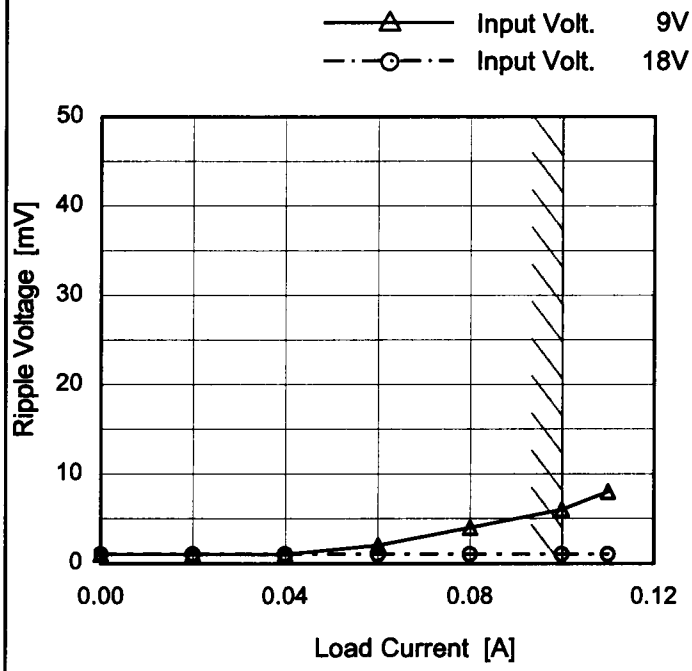
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.00	1	1
0.02	1	1
0.04	1	1
0.06	2	1
0.08	4	1
0.10	7	1
0.11	8	2
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW31215
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]

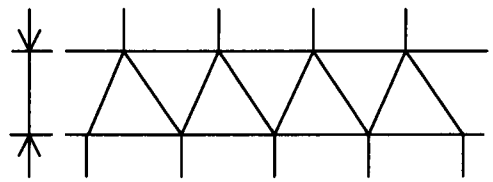


Fig.Complex Ripple Wave Form

2.Values

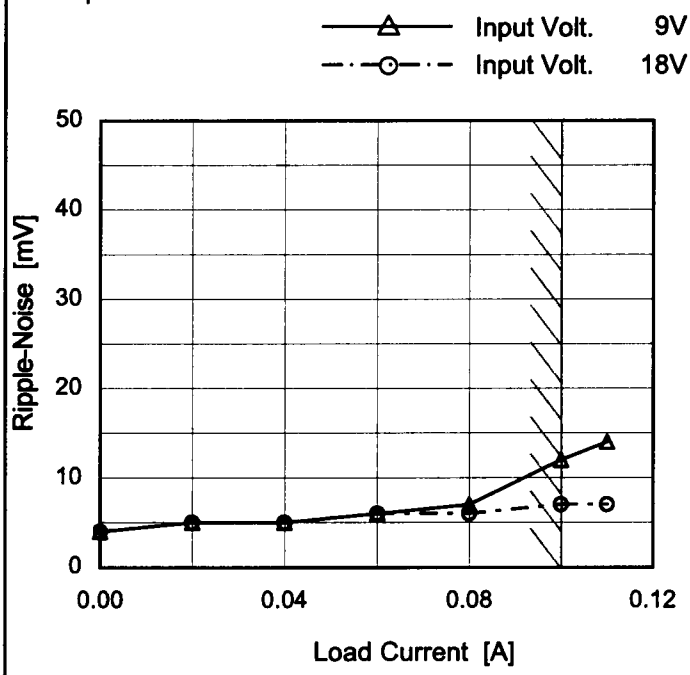
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.00	1	1
0.02	1	1
0.04	1	1
0.06	2	1
0.08	4	1
0.10	6	1
0.11	8	1
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW31215
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.

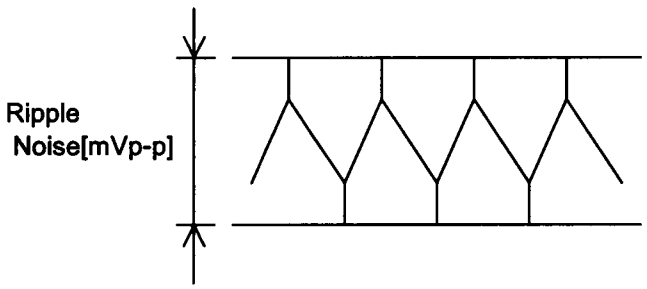


Fig.Complex Ripple Noise Wave Form

2.Values

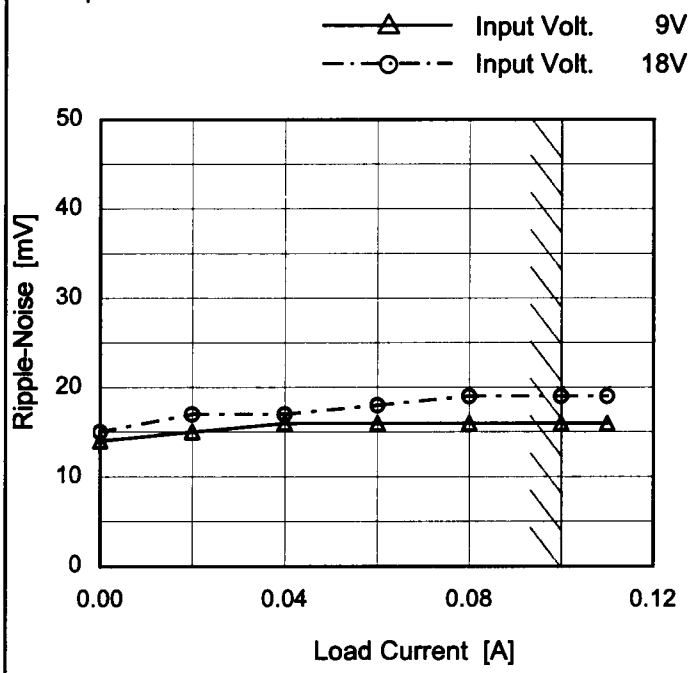
Load Current [A]	Ripple-Noise [mV] Input Volt. 9 [V]	Ripple-Noise [mV] Input Volt. 18 [V]
0.00	4	4
0.02	5	5
0.04	5	5
0.06	6	6
0.08	7	6
0.10	12	7
0.11	14	7
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW31215
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.

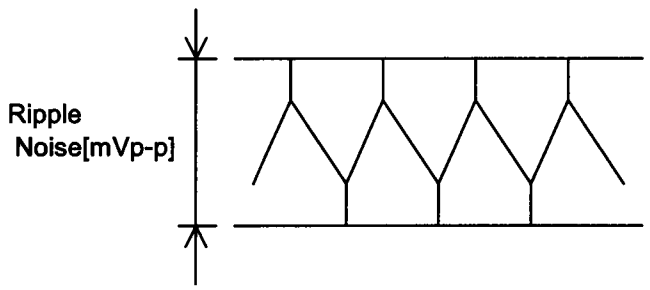


Fig.Complex Ripple Noise Wave Form

2.Values

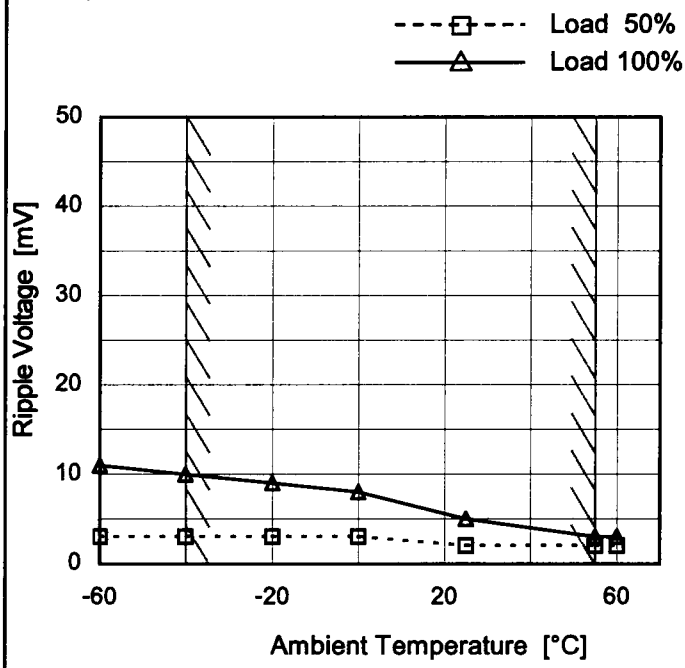
Load Current [A]	Ripple-Noise [mV] Input Volt. 9 [V]	Ripple-Noise [mV] Input Volt. 18 [V]
0.00	14	15
0.02	15	17
0.04	16	17
0.06	16	18
0.08	16	19
0.10	16	19
0.11	16	19
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW31215
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.1A

Testing Circuitry Figure B

1.Graph



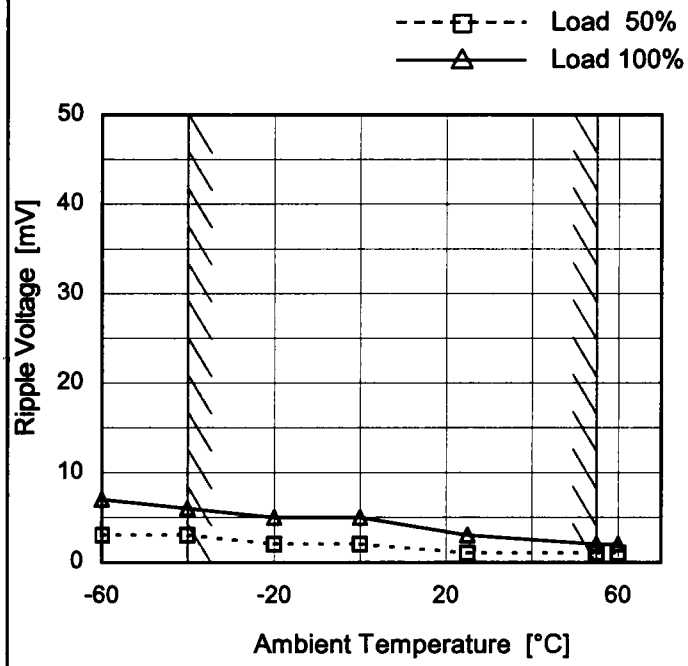
Input Volt. 12V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	3	11
-40	3	10
-20	3	9
0	3	8
25	2	5
55	2	3
60	2	3
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.1A

1.Graph



Input Volt. 12V

Measured by 100 MHz Oscilloscope.

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

2.Values

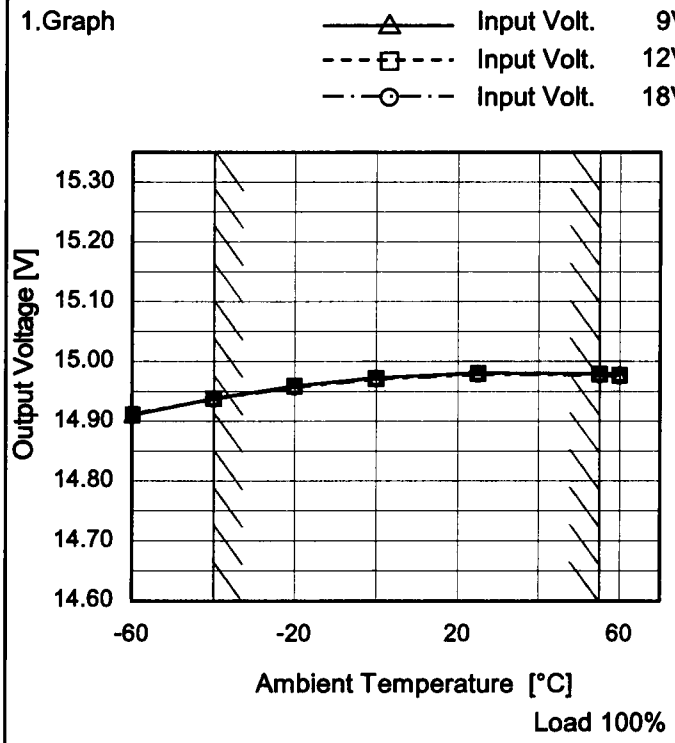
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	3	7
-40	3	6
-20	2	5
0	2	5
25	1	3
55	1	2
60	1	2
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW31215
Item	Ambient Temperature Drift
Object	+15V0.1A

Testing Circuitry Figure A

1.Graph

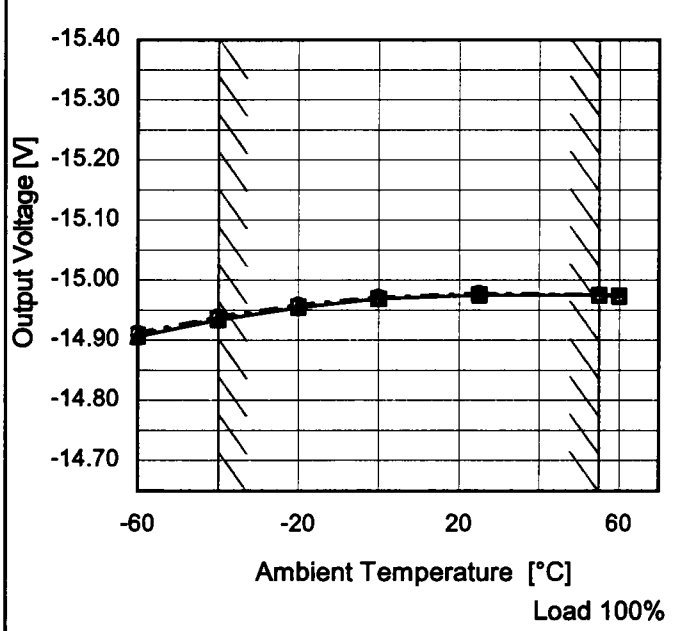


2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	14.910	14.911	14.911
-40	14.938	14.938	14.937
-20	14.959	14.959	14.957
0	14.973	14.972	14.970
25	14.981	14.980	14.978
55	14.980	14.979	14.977
60	14.979	14.977	14.975
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	-14.906	-14.909	-14.912
-40	-14.934	-14.936	-14.939
-20	-14.954	-14.956	-14.959
0	-14.969	-14.969	-14.972
25	-14.975	-14.976	-14.978
55	-14.975	-14.975	-14.976
60	-14.973	-14.974	-14.974
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW31215	
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 - 0.1A (AVR 2):0 - 0.1A
* 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	+15V0.1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	9	0	15.230	±147	±1.0
Minimum Voltage	-40	18	0.1	14.937		

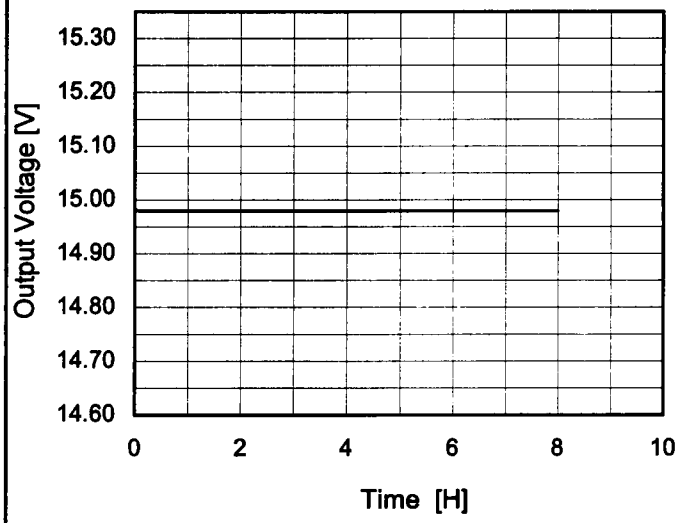
Object	-15V0.1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	9	0	-15.241	±154	±1.0
Minimum Voltage	-40	9	0.1	-14.934		

COSEL

Model	SUW31215
Item	Time Lapse Drift
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



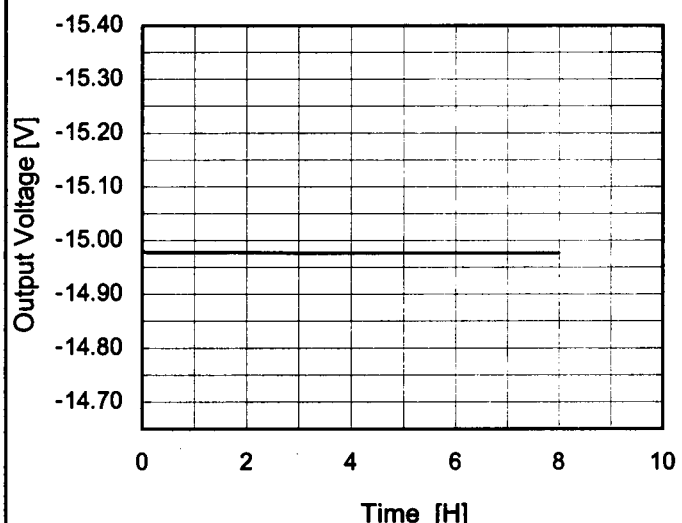
Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	14.981
0.5	14.980
1.0	14.980
2.0	14.980
3.0	14.980
4.0	14.980
5.0	14.980
6.0	14.980
7.0	14.980
8.0	14.980

Object	-15V0.1A

1.Graph



Input Volt. 12V
Load 100%

2.Values

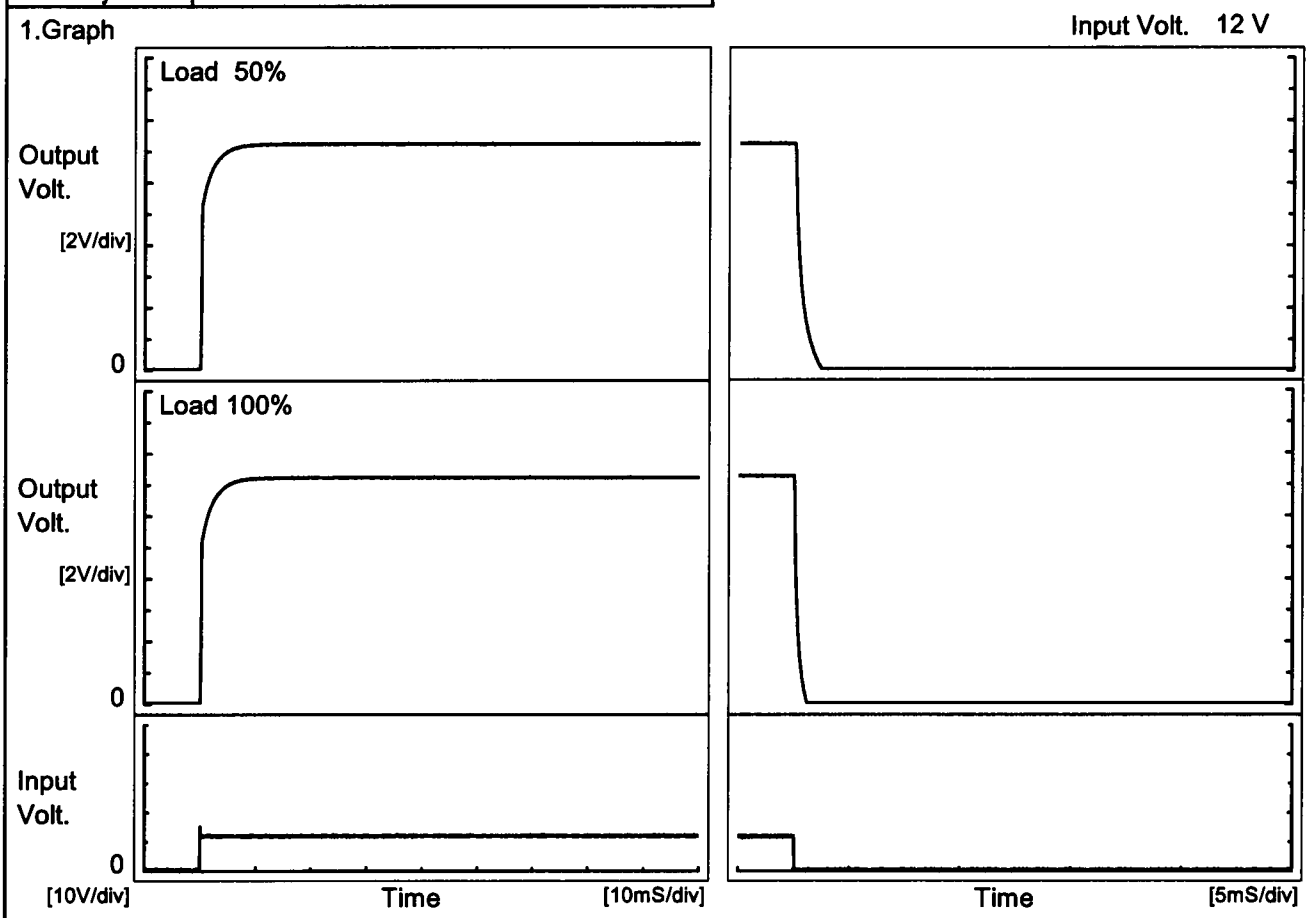
Time since start [H]	Output Voltage [V]
0.0	-14.979
0.5	-14.978
1.0	-14.978
2.0	-14.978
3.0	-14.977
4.0	-14.977
5.0	-14.977
6.0	-14.977
7.0	-14.977
8.0	-14.977

COSEL

Model	SUW31215
Item	Rise and Fall Time
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

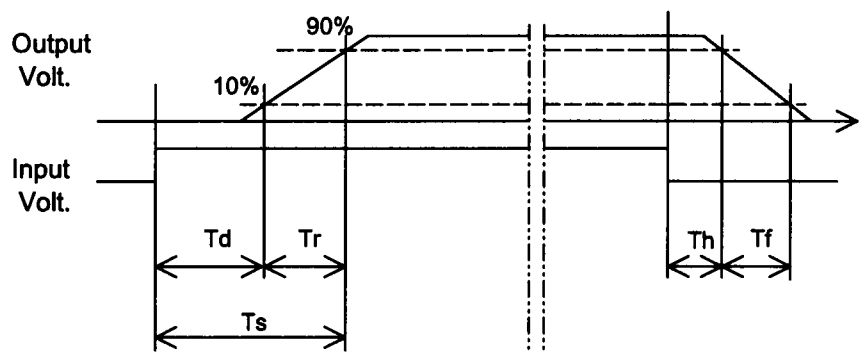
1.Graph



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	3.4	3.5	0.1	1.5
100 %	0.1	3.5	3.6	0.1	0.7



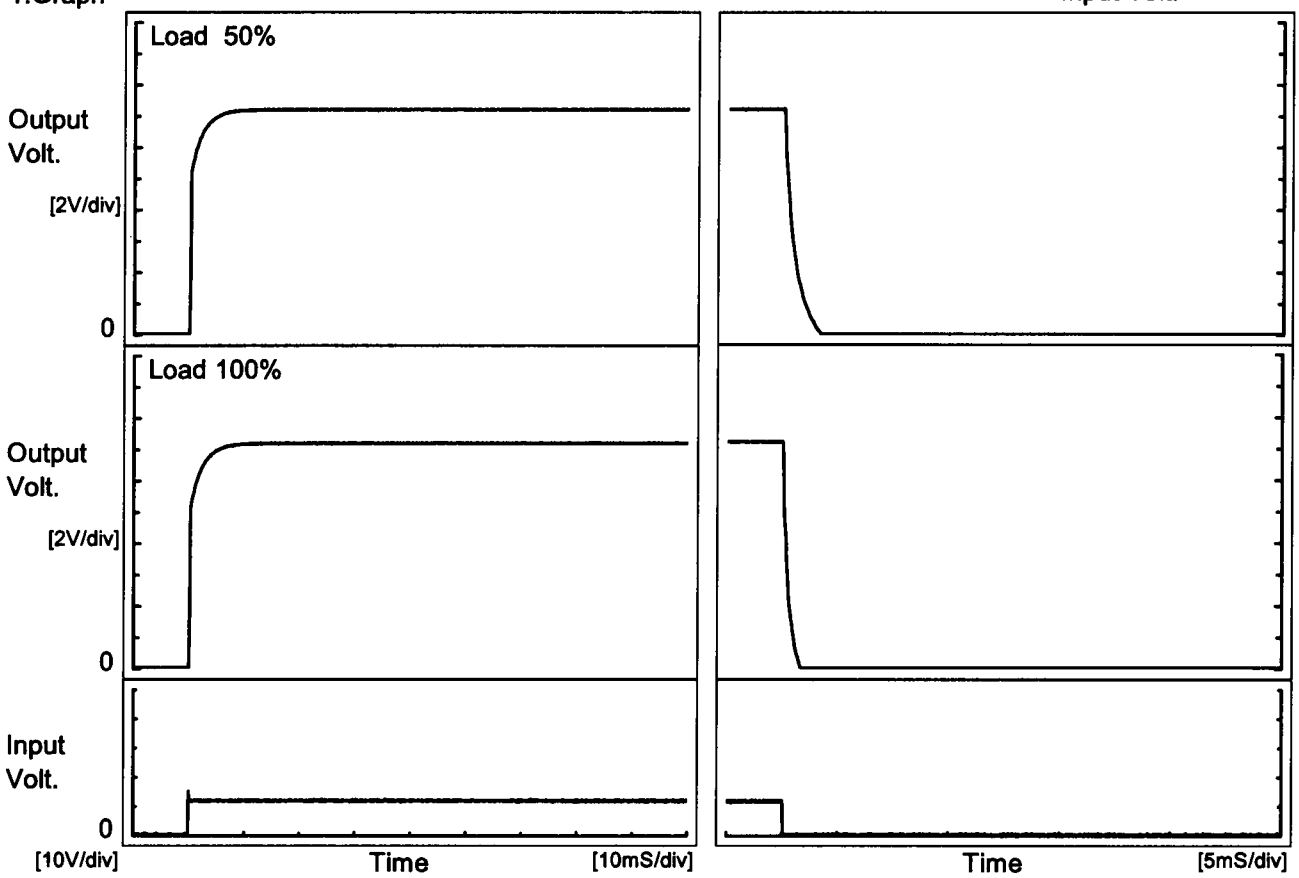
COSEL

Model	SUW31215
Item	Rise and Fall Time
Object	-15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

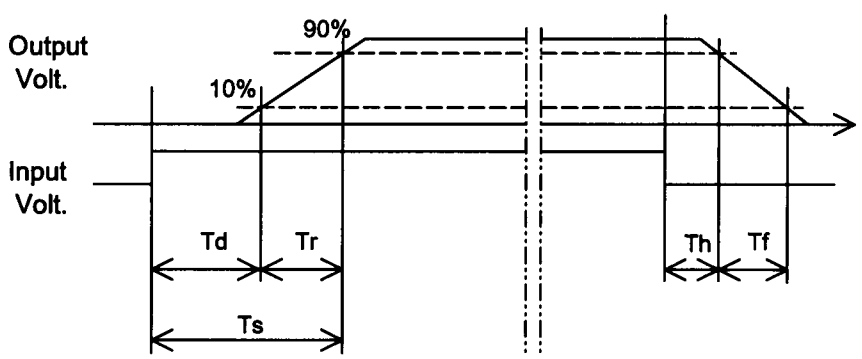
Input Volt. 12 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	3.5	3.6	0.1	2.1
100 %	0.1	3.7	3.8	0.1	1.1

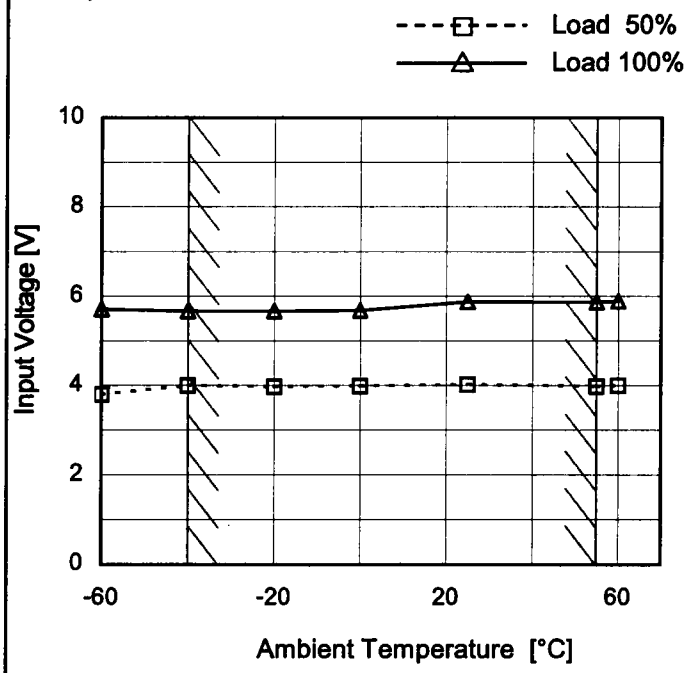


COSEL

Model	SUW31215
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.1A

Testing Circuitry Figure A

1.Graph

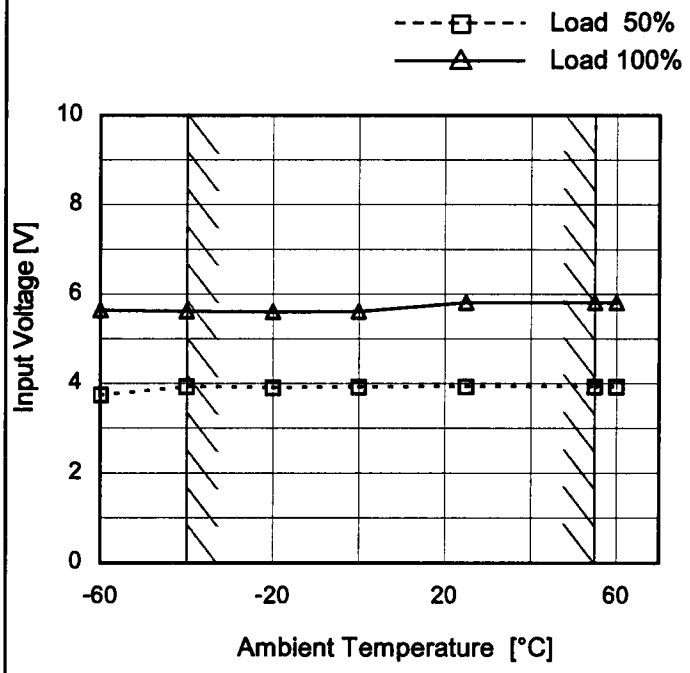


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.8	5.8
-40	4.0	5.7
-20	4.0	5.7
0	4.0	5.7
25	4.1	5.9
55	4.0	5.9
60	4.0	5.9
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.1A

1.Graph



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

2.Values

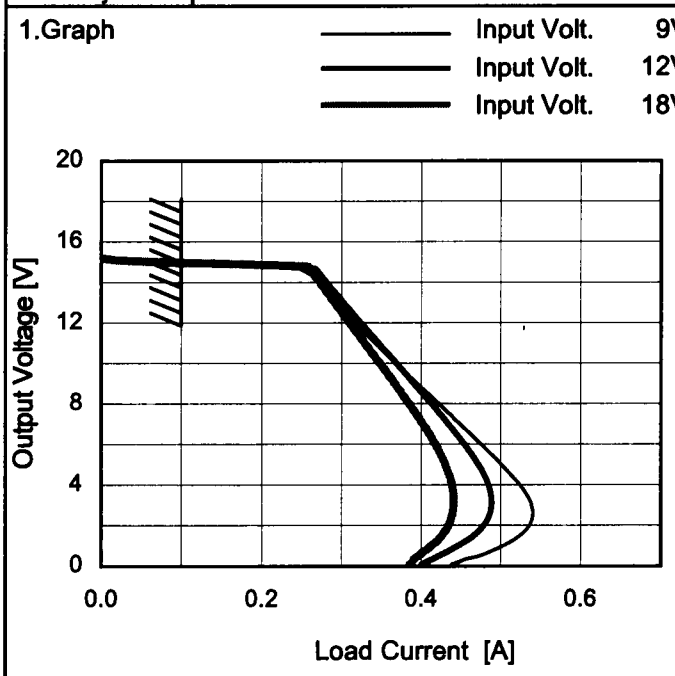
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.8	5.7
-40	4.0	5.7
-20	4.0	5.6
0	4.0	5.7
25	4.0	5.9
55	4.0	5.9
60	4.0	5.9
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW31215
Item	Overcurrent Protection
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

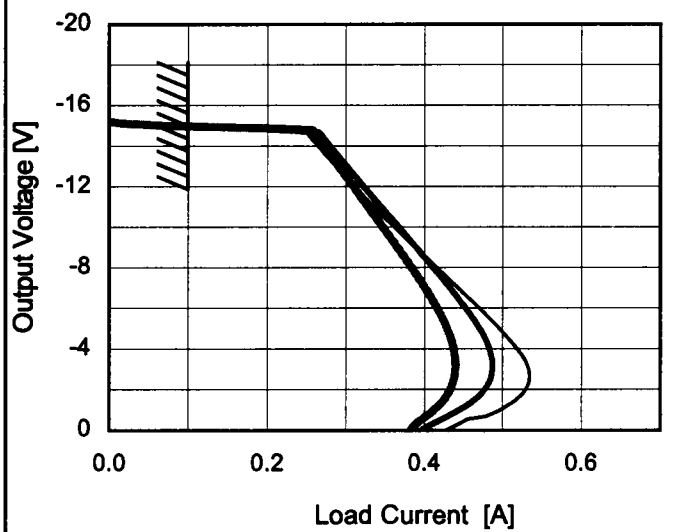


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
15.0	0.15	0.16	0.19
14.3	0.25	0.28	0.27
13.5	0.28	0.29	0.28
12.0	0.32	0.32	0.31
10.5	0.35	0.36	0.34
9.0	0.39	0.39	0.37
7.5	0.44	0.42	0.39
6.0	0.48	0.45	0.42
4.5	0.51	0.48	0.44
3.0	0.54	0.49	0.44
1.5	0.52	0.47	0.43
0.0	0.44	0.40	0.39

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-15.0	0.15	0.16	0.19
-14.3	0.25	0.27	0.27
-13.5	0.28	0.29	0.28
-12.0	0.31	0.32	0.31
-10.5	0.35	0.36	0.34
-9.0	0.39	0.39	0.37
-7.5	0.43	0.42	0.39
-6.0	0.47	0.45	0.42
-4.5	0.51	0.48	0.43
-3.0	0.53	0.49	0.44
-1.5	0.52	0.47	0.43
0.0	0.44	0.40	0.39

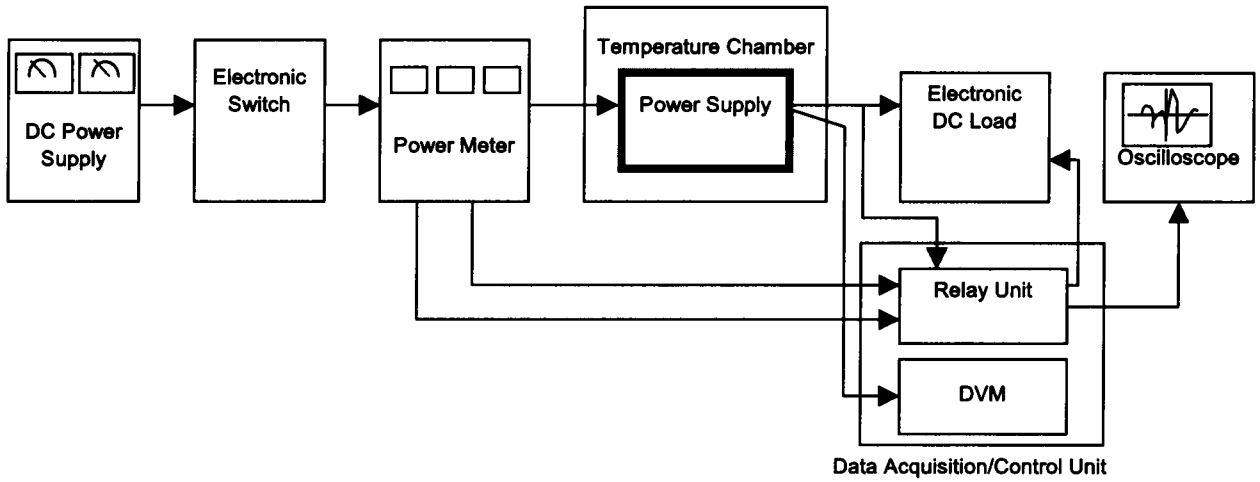


Figure A

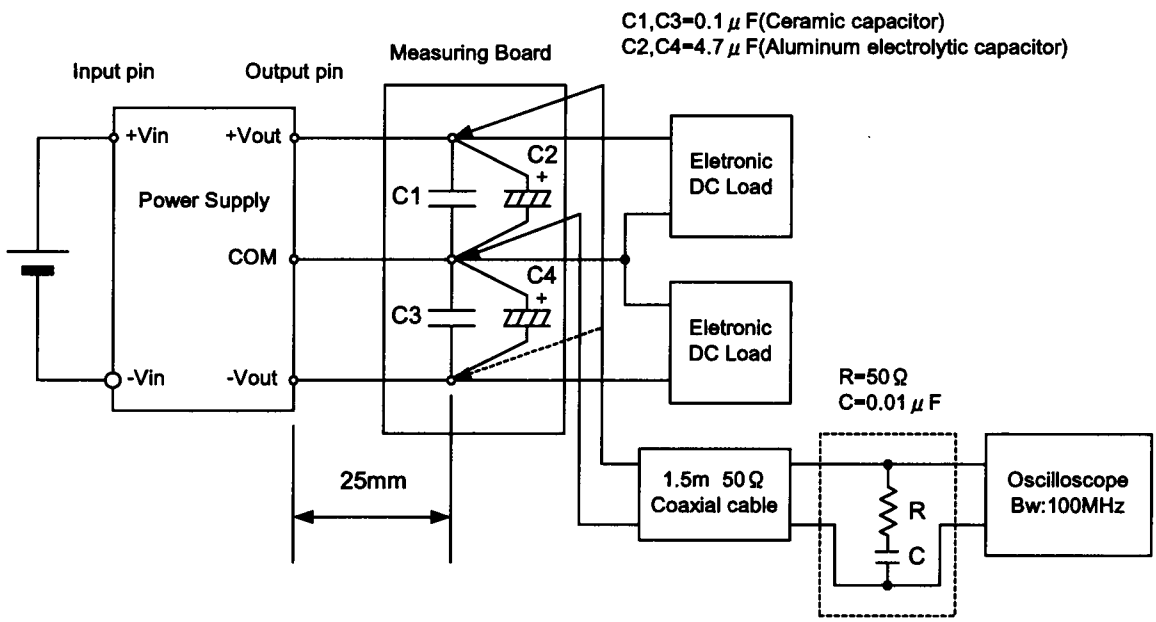


Figure B (Ripple and Ripple noise Characteristic)