COSEL

参考資料

TEST DATA OF SUCW1R54812

Regulated DC Power Supply
Sep 29, 2004

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COSEL CO.,LTD.

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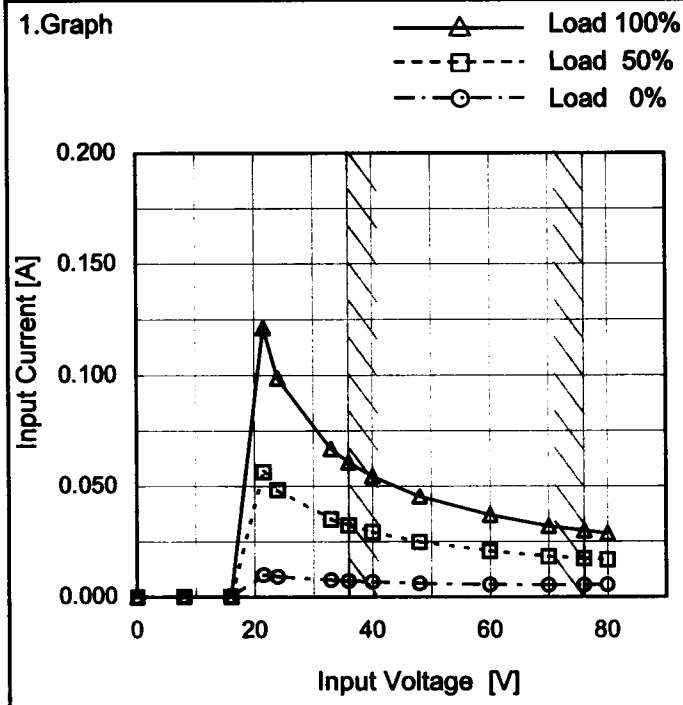
Model	SUCW1R54812
Item	Input Current (by Input Voltage)
Object	————————

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	0.000	0.000	0.000
8.0	0.000	0.000	0.000
16.0	0.000	0.000	0.000
21.6	0.010	0.056	0.121
24.0	0.009	0.048	0.099
33.0	0.008	0.035	0.067
36.0	0.007	0.032	0.061
40.0	0.007	0.029	0.055
48.0	0.006	0.025	0.045
60.0	0.006	0.021	0.037
70.0	0.005	0.018	0.032
76.0	0.005	0.017	0.030
80.0	0.005	0.017	0.029
—	-	-	-
—	-	-	-
—	-	-	-

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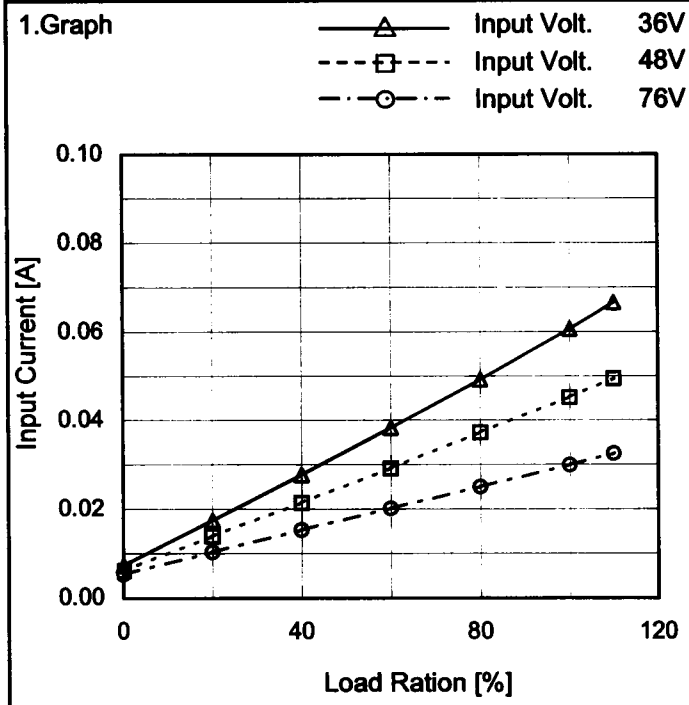
Model	SUCW1R54812
Item	Input Current (by Load Current)
Object	———————

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	0.007	0.006	0.005
20	0.017	0.014	0.010
40	0.028	0.021	0.015
60	0.038	0.029	0.020
80	0.049	0.037	0.025
100	0.061	0.045	0.030
110	0.067	0.049	0.033
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

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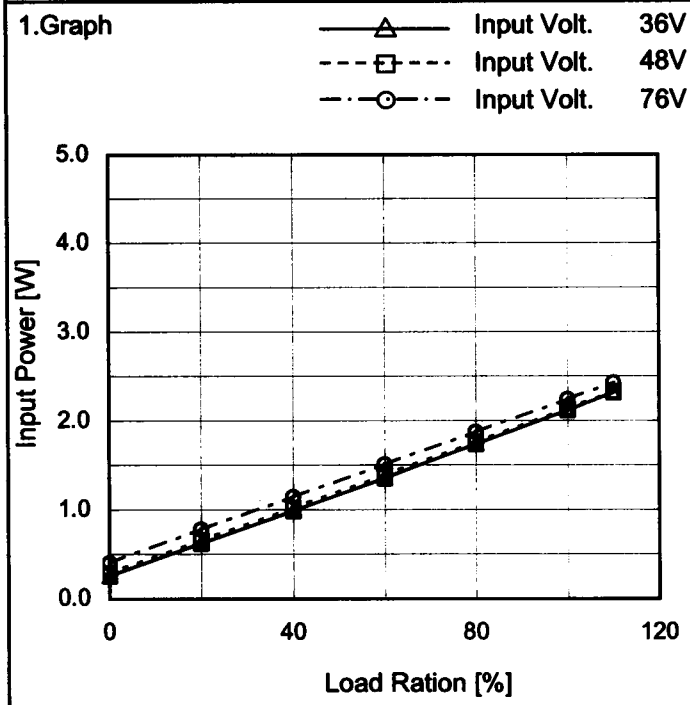
Model	SUCW1R54812
Item	Input Power (by Load Current)
Object	————————

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	0.26	0.29	0.40
20	0.62	0.66	0.78
40	0.99	1.02	1.15
60	1.36	1.39	1.51
80	1.74	1.76	1.87
100	2.12	2.14	2.24
110	2.32	2.33	2.43
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

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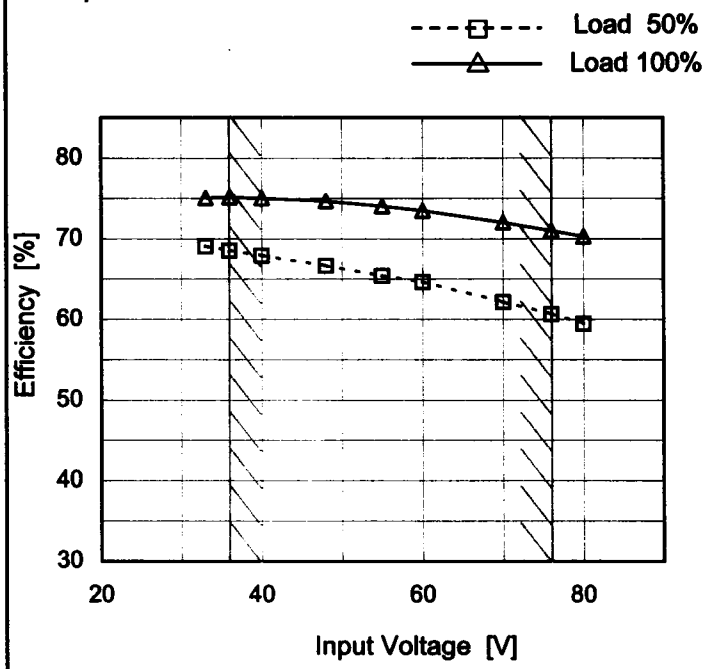
Model	SUCW1R54812
Item	Efficiency (by Input Voltage)
Object	———————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	69.1	75.1
36	68.6	75.2
40	67.9	75.0
48	66.7	74.7
55	65.4	74.1
60	64.7	73.5
70	62.1	72.0
76	60.6	71.0
80	59.5	70.3

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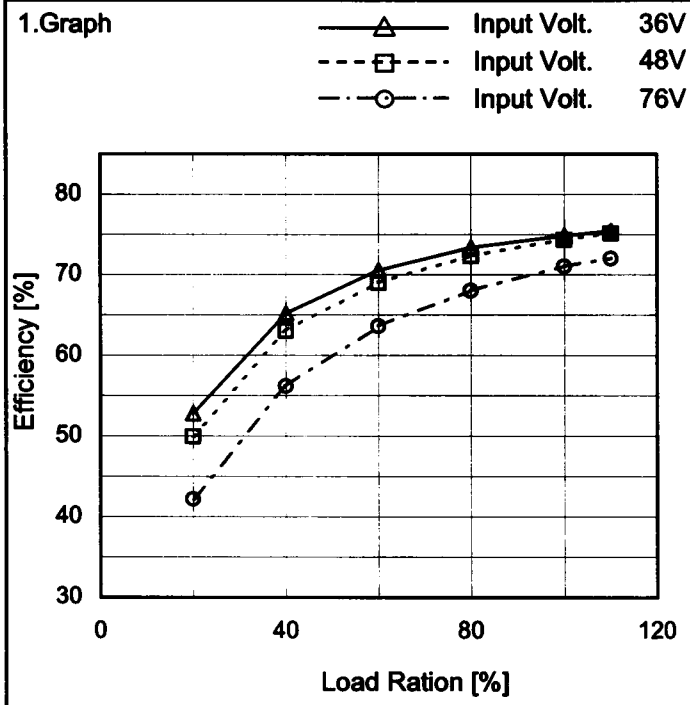
Model	SUCW1R54812
Item	Efficiency (by Load Current)
Object	————————

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	52.8	50.0	42.2
40	65.2	63.1	56.2
60	70.5	69.0	63.6
80	73.4	72.3	68.0
100	74.9	74.4	71.0
110	75.5	75.1	72.0
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

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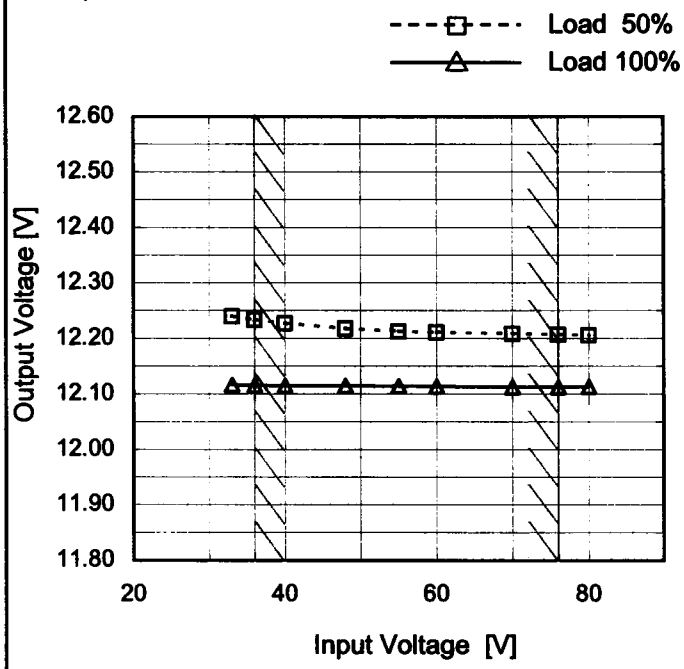
Model	SUCW1R54812
Item	Line Regulation

Temperature 25°C
Testing Circuitry Figure A

Object +12V0.065A

1.Graph

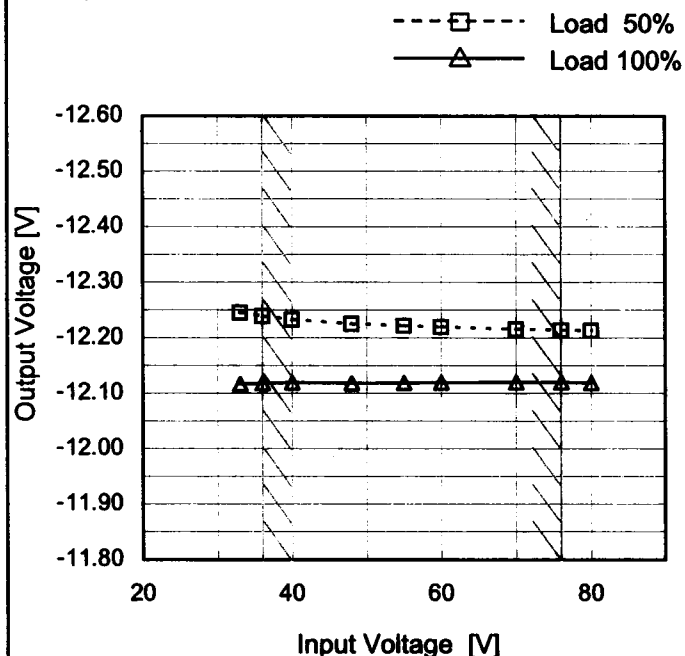


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	12.240	12.117
36	12.233	12.115
40	12.227	12.115
48	12.218	12.115
55	12.213	12.114
60	12.211	12.114
70	12.209	12.113
76	12.207	12.113
80	12.206	12.113

Object -12V0.065A

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	-12.246	-12.117
36	-12.239	-12.118
40	-12.233	-12.119
48	-12.225	-12.118
55	-12.222	-12.119
60	-12.220	-12.120
70	-12.216	-12.120
76	-12.214	-12.120
80	-12.213	-12.119

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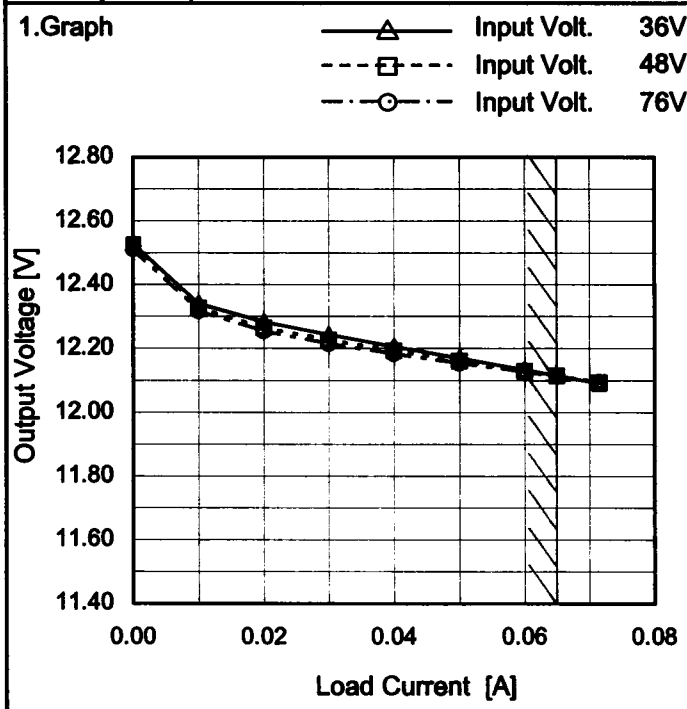
Model	SUCW1R54812
Item	Load Regulation
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

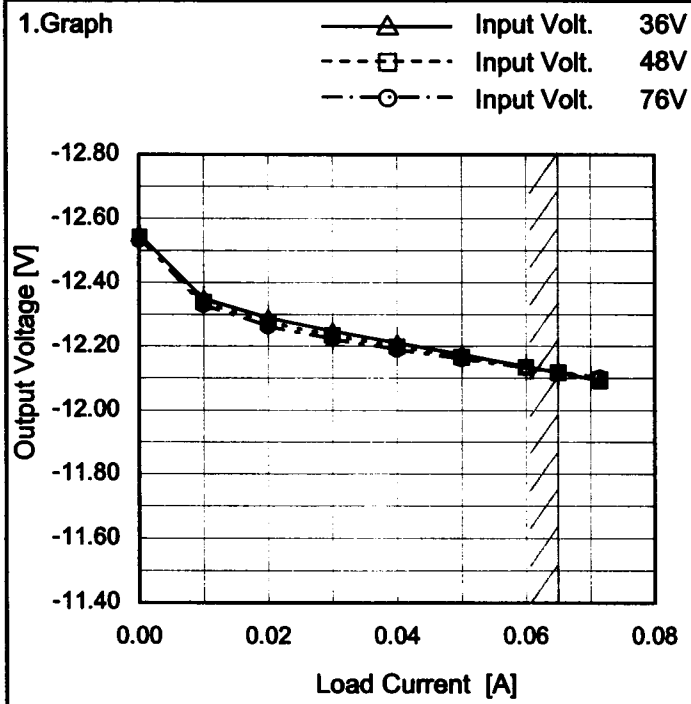


2.Values

Load Current [A]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	12.529	12.525	12.512
0.010	12.340	12.326	12.317
0.020	12.283	12.264	12.253
0.030	12.243	12.227	12.215
0.040	12.206	12.193	12.183
0.050	12.171	12.161	12.154
0.060	12.134	12.130	12.127
0.065	12.116	12.115	12.113
0.072	12.092	12.095	12.096
–	-	-	-
–	-	-	-

Object	-12V0.065A

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	-12.550	-12.542	-12.533
0.010	-12.350	-12.339	-12.330
0.020	-12.290	-12.275	-12.262
0.030	-12.249	-12.234	-12.223
0.040	-12.211	-12.199	-12.190
0.050	-12.174	-12.167	-12.161
0.060	-12.137	-12.134	-12.133
0.065	-12.118	-12.118	-12.120
0.072	-12.093	-12.098	-12.103
–	-	-	-
–	-	-	-

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Model	SUCW1R54812
Item	Dynamic Load Response
Object	+12V0.065A

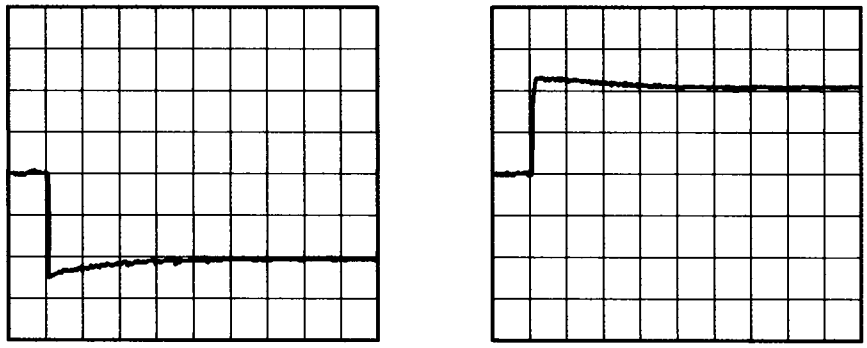
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Cycle 100 mS

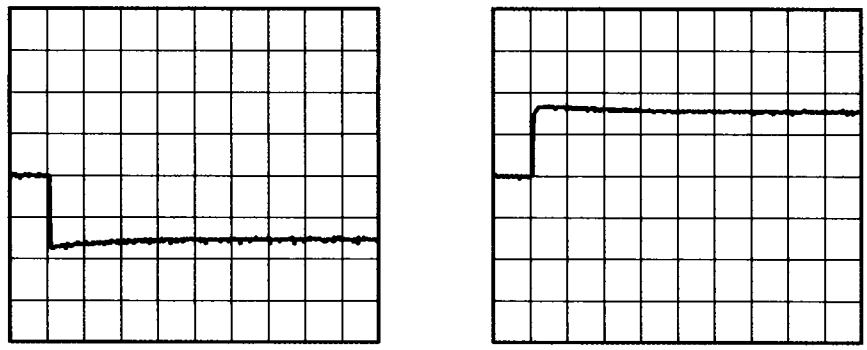
t_1、t_2 = 50μs

Load Current

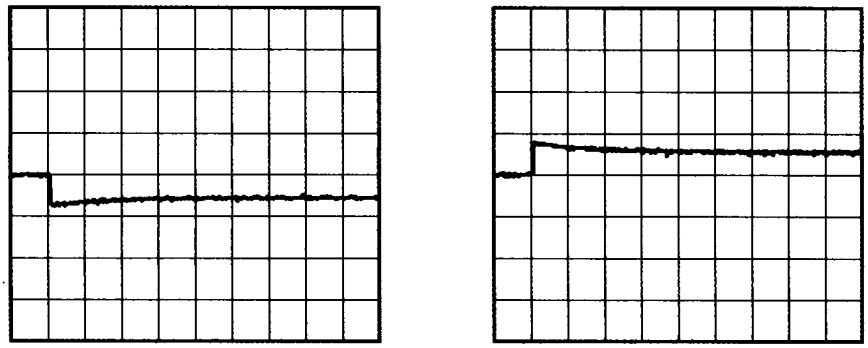
Min. Load (0A) ⟷ Load 100% (0.065A)



Min. Load (0A) ⟷ Load 50% (0.0325A)



Load 50% (0.0325A) ⟷ Load 100% (0.065A)



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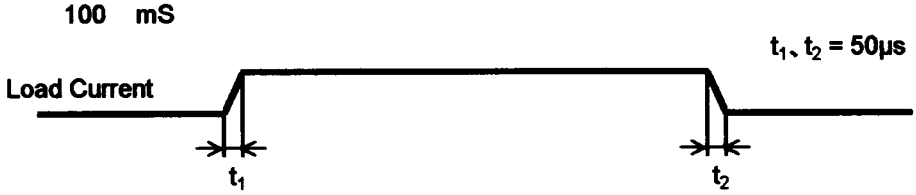
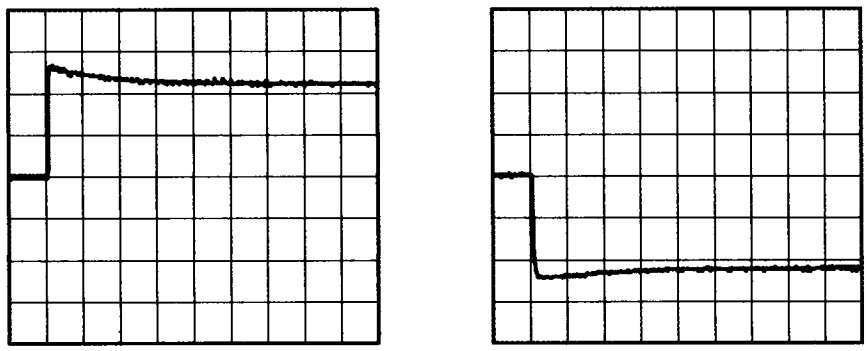
Model	SUCW1R54812	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	-12V0.065A	

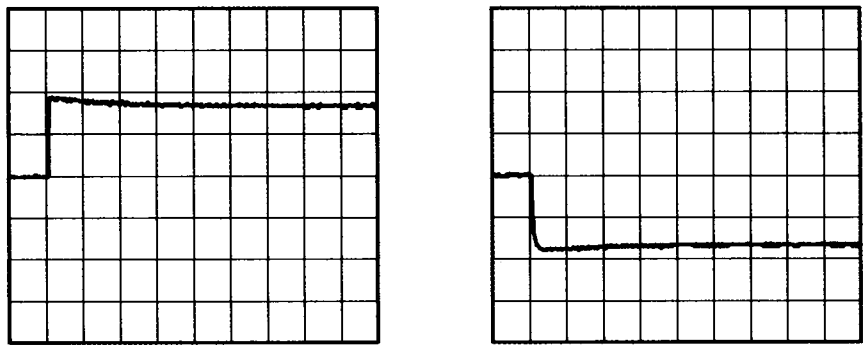
Input Volt. 48 V
Cycle 100 mS



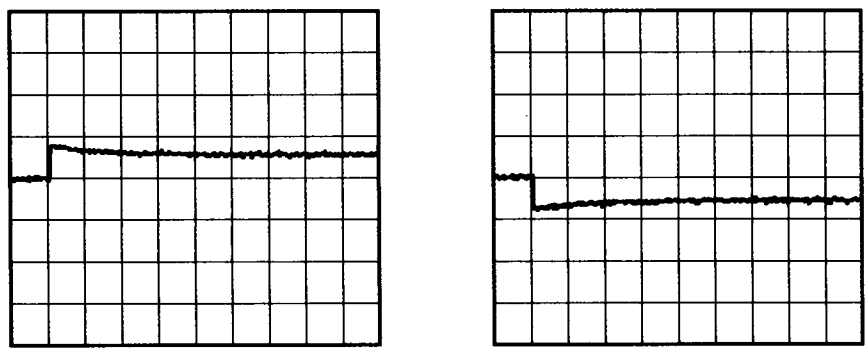
Min. Load (0A) ⟷
Load 100% (0.065A)



Min. Load (0A) ⟷
Load 50% (0.0325A)



Load 50% (0.0325A) ⟷
Load 100% (0.065A)

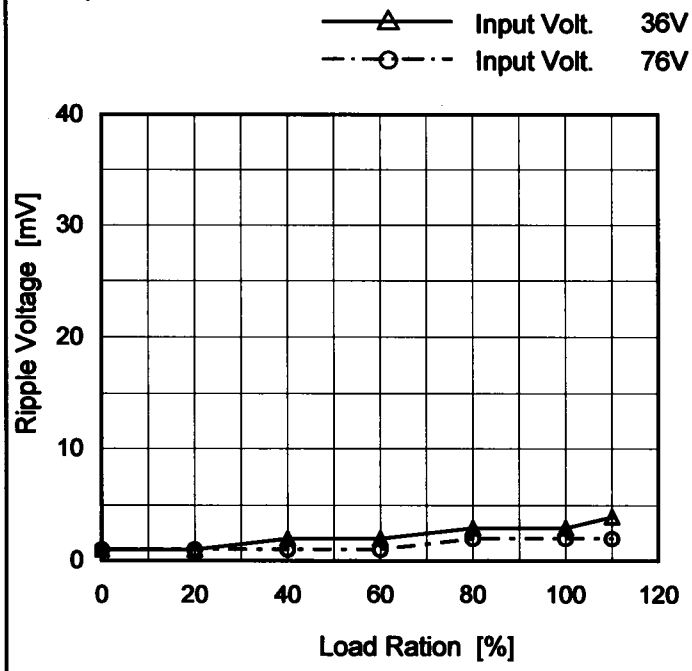


COSEL

Model	SUCW1R54812
Item	Ripple Voltage (by Load Current)
Object	+12V0.065A

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.

2.Values

Load Ration [%]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0	1	1
20	1	1
40	2	1
60	2	1
80	3	2
100	3	2
110	4	2
–	-	-
–	-	-
–	-	-
–	-	-

Ripple [mVp-p]

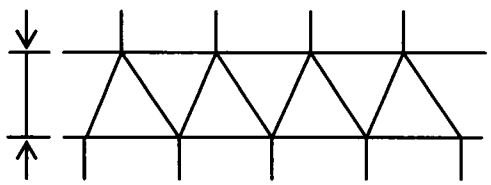


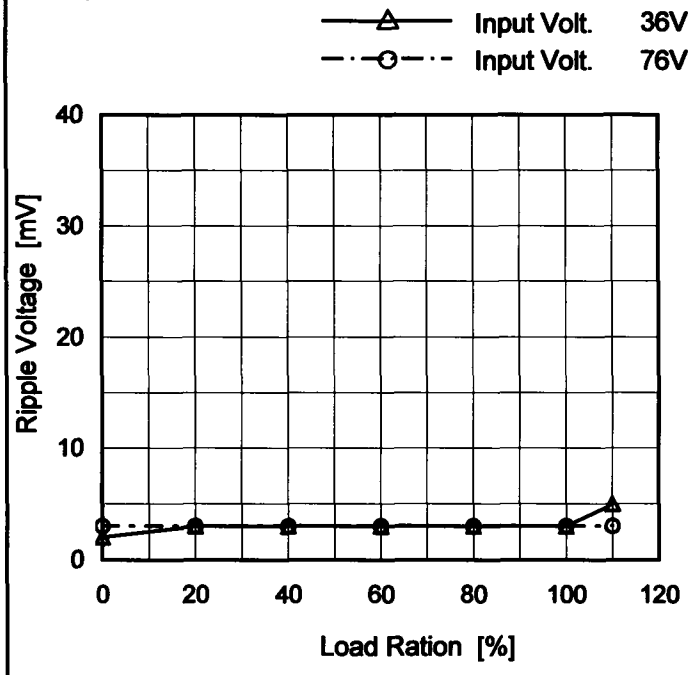
Fig.Complex Ripple Wave Form

COSEL

Model	SUCW1R54812
Item	Ripple Voltage (by Load Current)
Object	-12V0.065A

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.

Ripple [mVp-p]

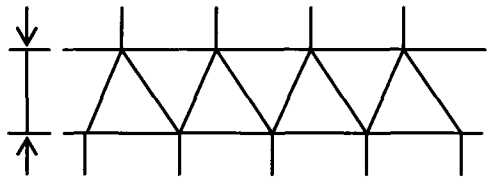


Fig.Complex Ripple Wave Form

2.Values

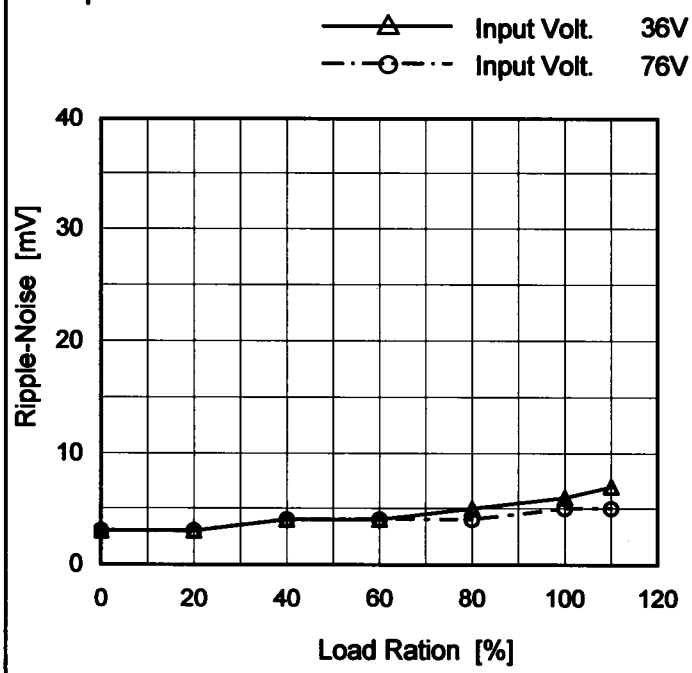
Load Ration [%]	Ripple Voltage [mV] Input Volt. 36 [V]	Input Volt. 76 [V]
0	2	3
20	3	3
40	3	3
60	3	3
80	3	3
100	3	3
110	5	3
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUCW1R54812
Item	Ripple-Noise
Object	+12V0.065A

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.

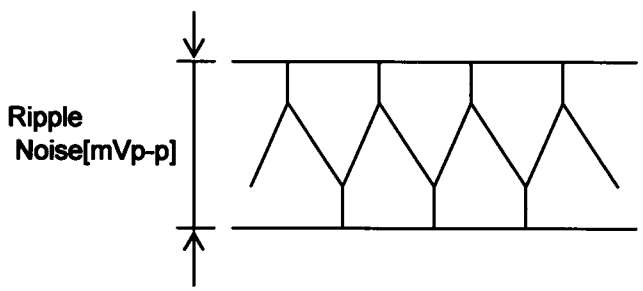


Fig.Complex Ripple Noise Wave Form

2.Values

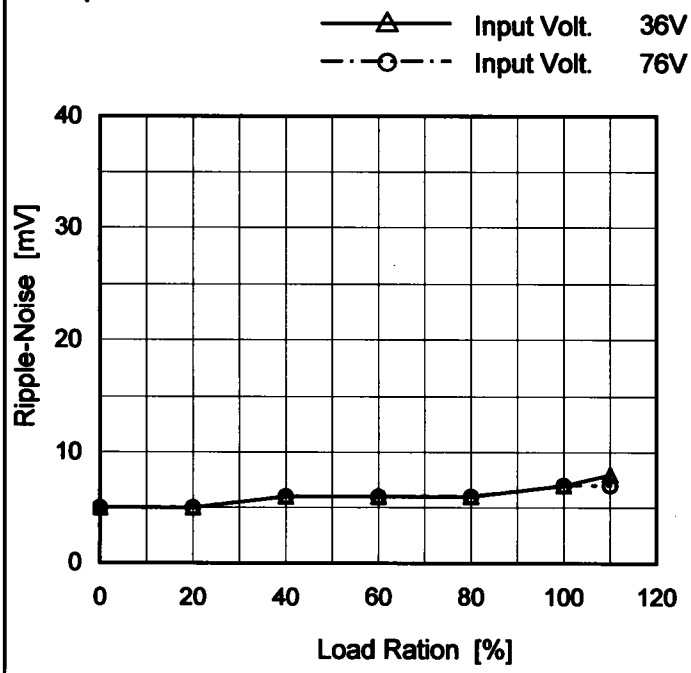
Load Ration [%]	Ripple-Noise [mV] Input Volt. 36 [V]	Ripple-Noise [mV] Input Volt. 76 [V]
0	3	3
20	3	3
40	4	4
60	4	4
80	5	4
100	6	5
110	7	5
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUCW1R54812
Item	Ripple-Noise
Object	-12V0.065A

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.

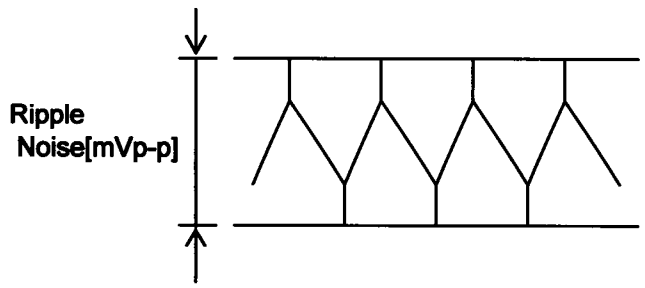


Fig.Complex Ripple Noise Wave Form

2.Values

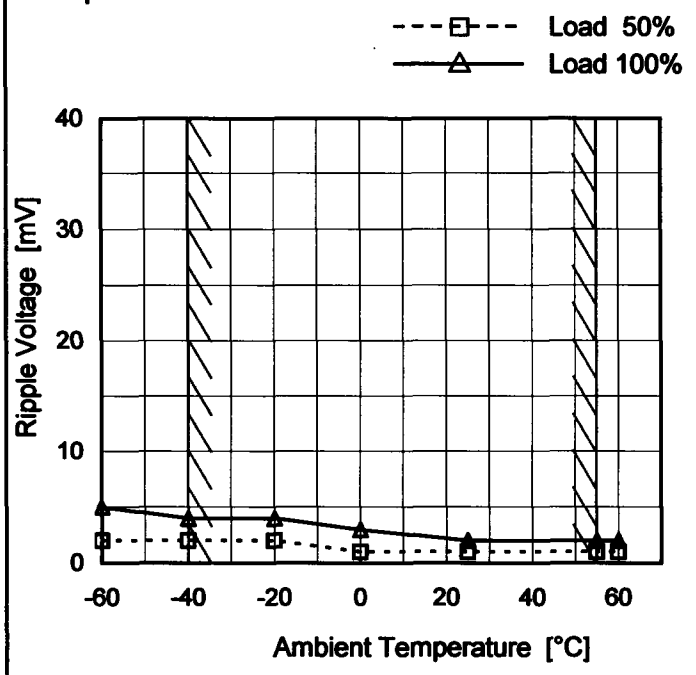
Load Ration [%]	Ripple-Noise [mV] Input Volt. 36 [V]	Ripple-Noise [mV] Input Volt. 76 [V]
0	5	5
20	5	5
40	6	6
60	6	6
80	6	6
100	7	7
110	8	7
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUCW1R54812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.065A

Testing Circuitry Figure B

1.Graph



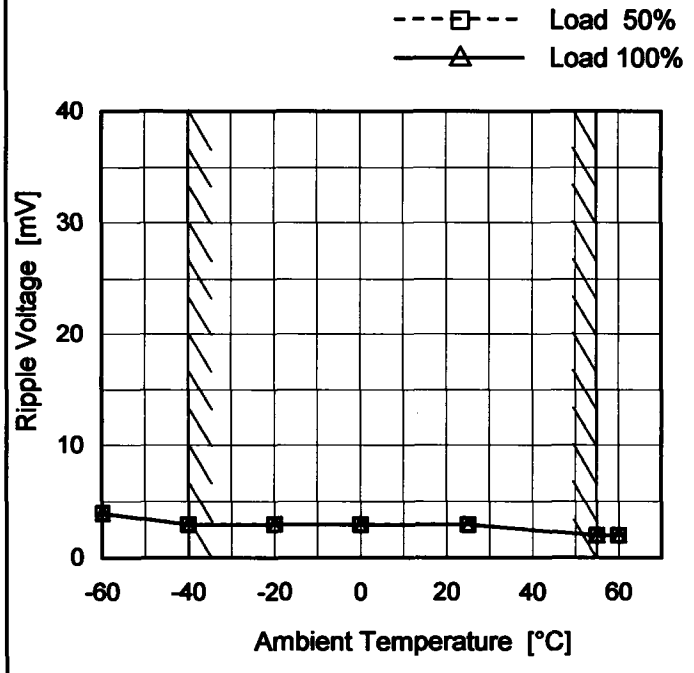
Input Volt. 48V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	2	5
-40	2	4
-20	2	4
0	1	3
25	1	2
55	1	2
60	1	2
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.065A

1.Graph



Input Volt. 48V

Measured by 100 MHz Oscilloscope.

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

2.Values

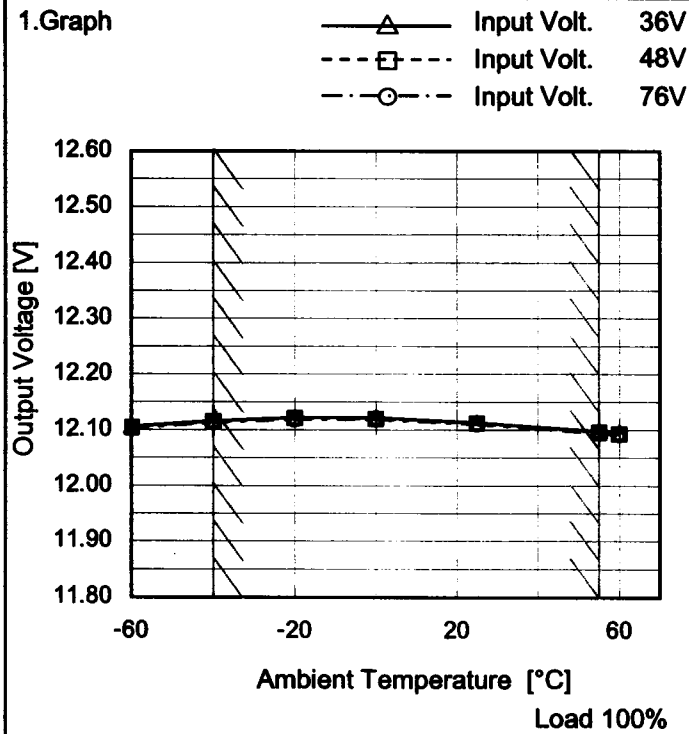
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	4	4
-40	3	3
-20	3	3
0	3	3
25	3	3
55	2	2
60	2	2
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCW1R54812
Item	Ambient Temperature Drift
Object	+12V0.065A

Testing Circuitry Figure A

1.Graph

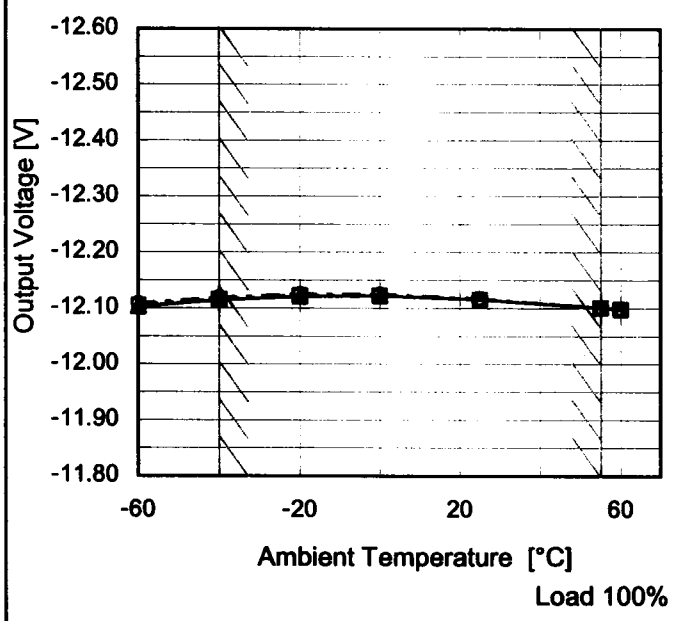


2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	12.106	12.104	12.102
-40	12.116	12.115	12.113
-20	12.122	12.121	12.118
0	12.122	12.120	12.118
25	12.113	12.112	12.110
55	12.098	12.096	12.094
60	12.095	12.093	12.091
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V0.065A

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	-12.103	-12.105	-12.108
-40	-12.115	-12.116	-12.119
-20	-12.121	-12.123	-12.125
0	-12.122	-12.123	-12.125
25	-12.116	-12.116	-12.117
55	-12.101	-12.101	-12.101
60	-12.098	-12.098	-12.099
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUCW1R54812	
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 - 0.065A (AVR 2):0 - 0.065A

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

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

2.Values

Object	+12V0.065A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	12.525	±216	±1.8
Minimum Voltage	55	76	0.065	12.094		

Object	-12V0.065A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	-12.546	±223	±1.9
Minimum Voltage	55	76	0.065	-12.101		

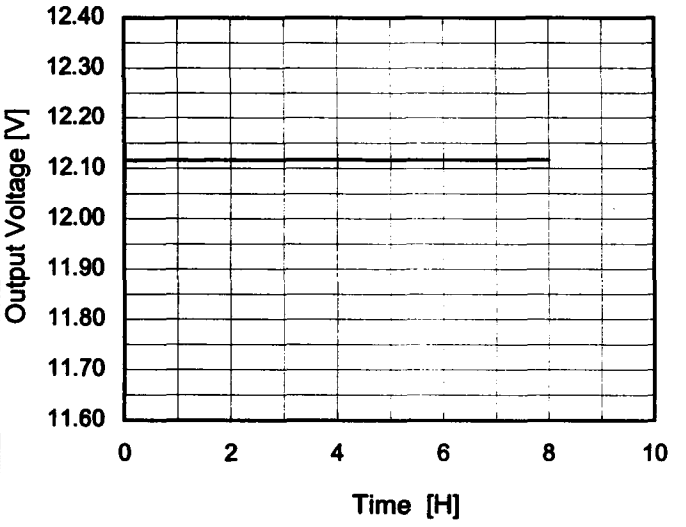
COSEL

Model	SUCW1R54812
Item	Time Lapse Drift

Temperature 25°C
Testing Circuitry Figure A

Object +12V0.065A

1.Graph



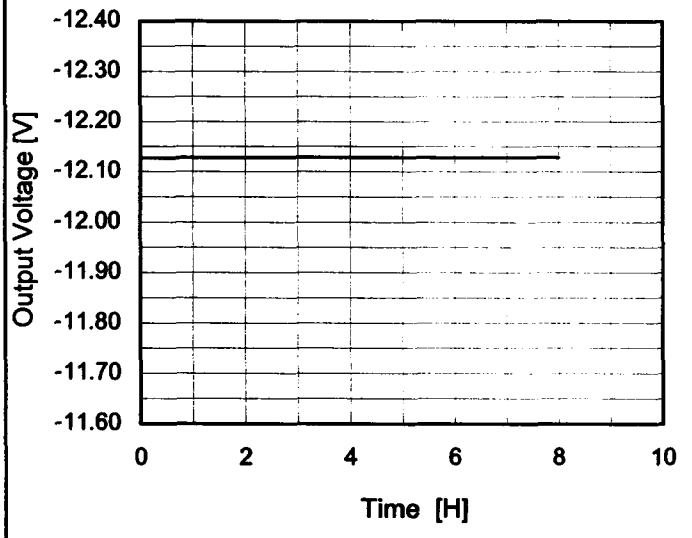
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.122
0.5	12.117
1.0	12.117
2.0	12.117
3.0	12.117
4.0	12.118
5.0	12.118
6.0	12.117
7.0	12.117
8.0	12.117

Object -12V0.065A

1.Graph



Input Volt. 48V
Load 100%

2.Values

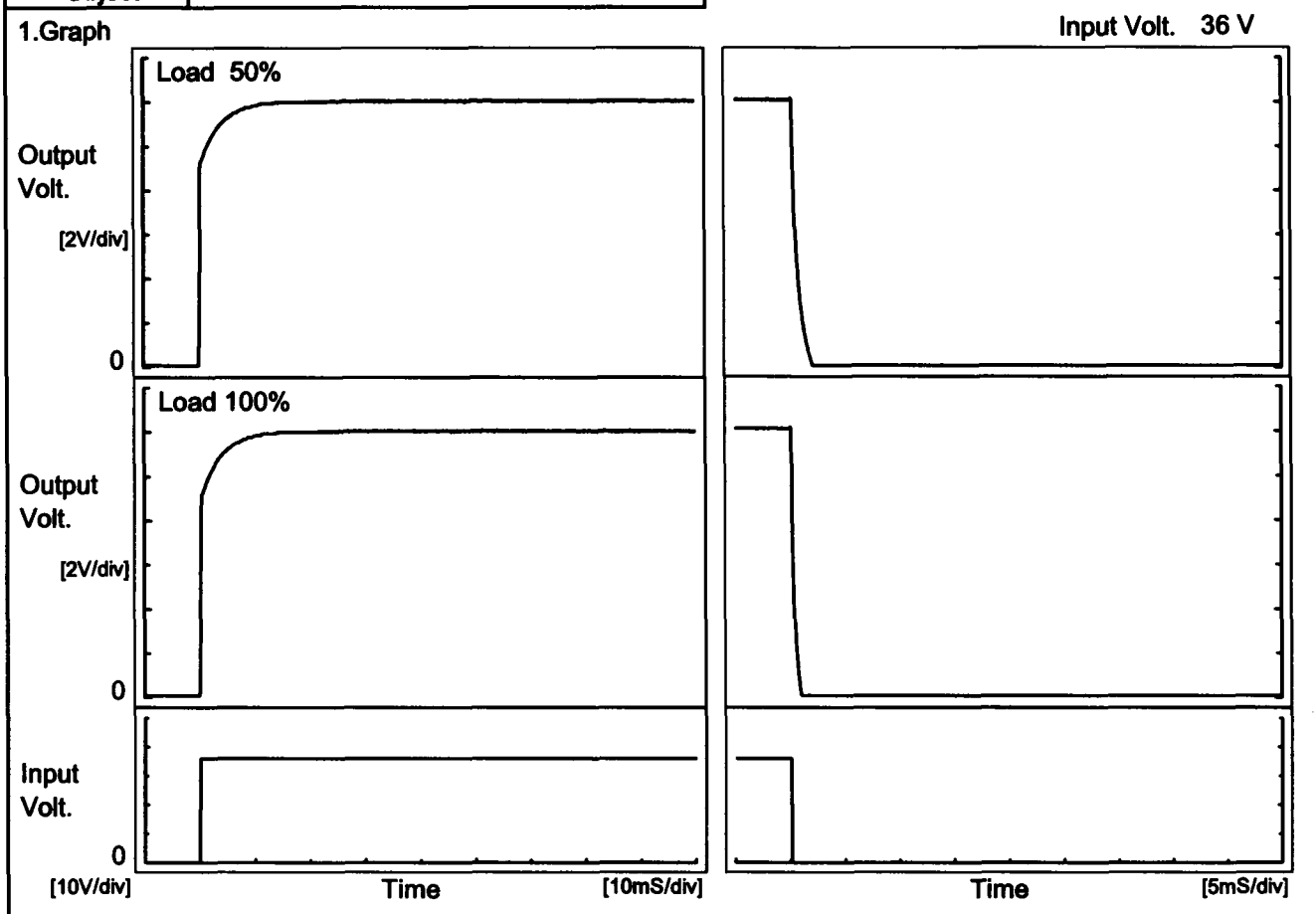
Time since start [H]	Output Voltage [V]
0.0	-12.133
0.5	-12.128
1.0	-12.128
2.0	-12.128
3.0	-12.128
4.0	-12.129
5.0	-12.128
6.0	-12.128
7.0	-12.129
8.0	-12.129

COSEL

Model	SUCW1R54812
Item	Rise and Fall Time
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

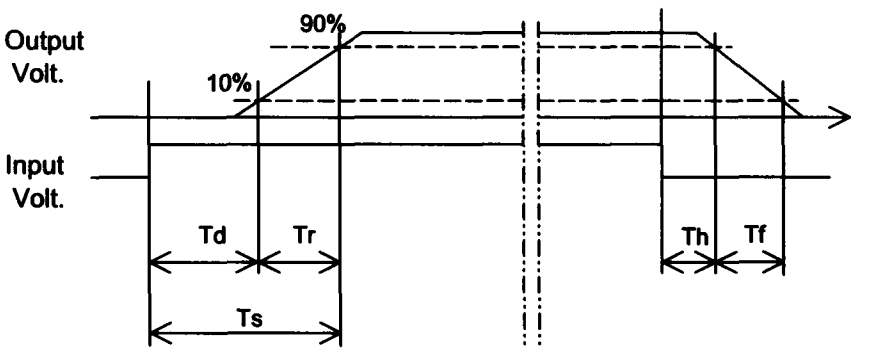
1.Graph



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	3.5	3.6	0.2	1.3
100 %	0.1	3.7	3.8	0.1	0.6

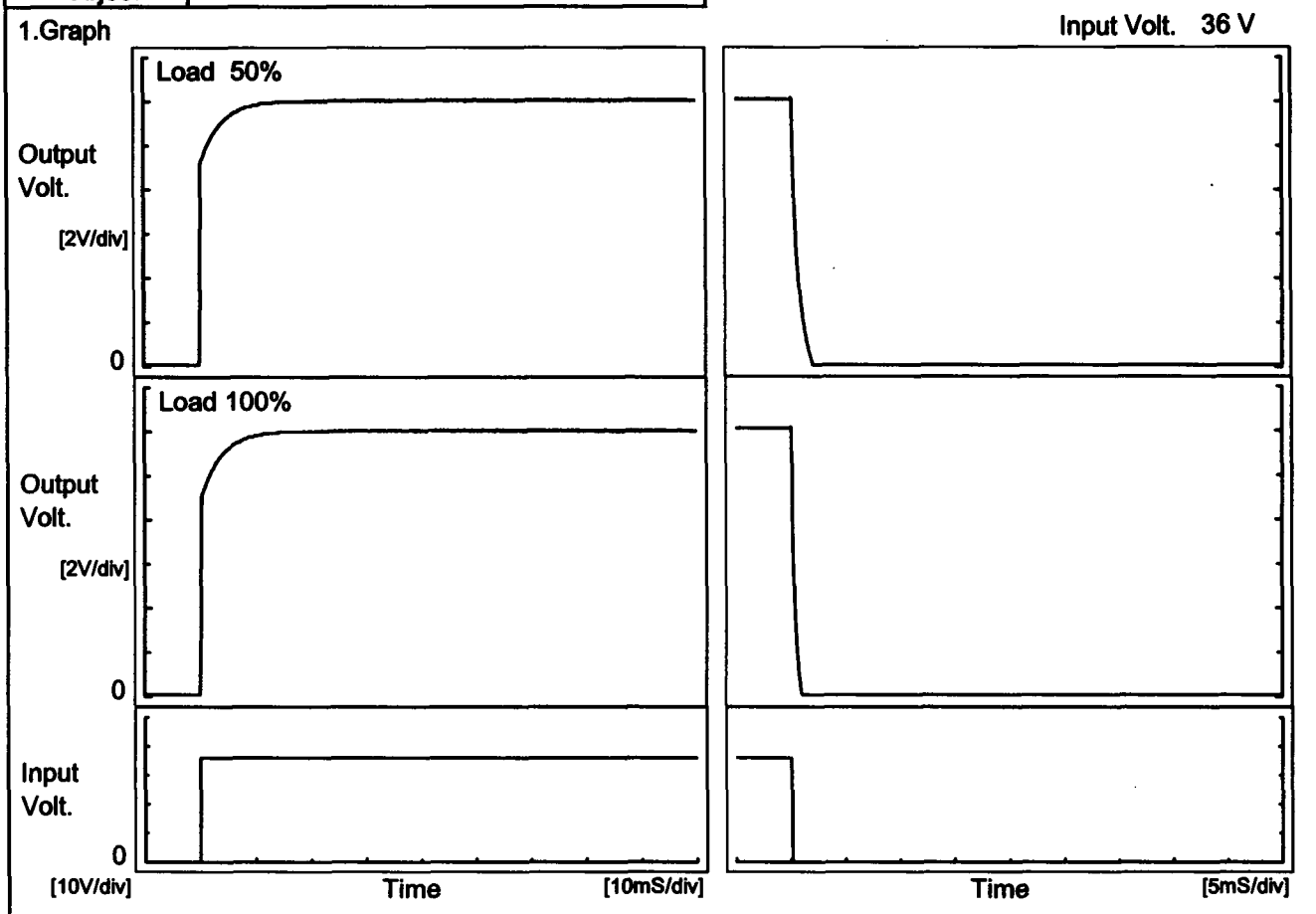


COSEL

Model	SUCW1R54812
Item	Rise and Fall Time
Object	-12V0.065A

Temperature 25°C
Testing Circuitry Figure A

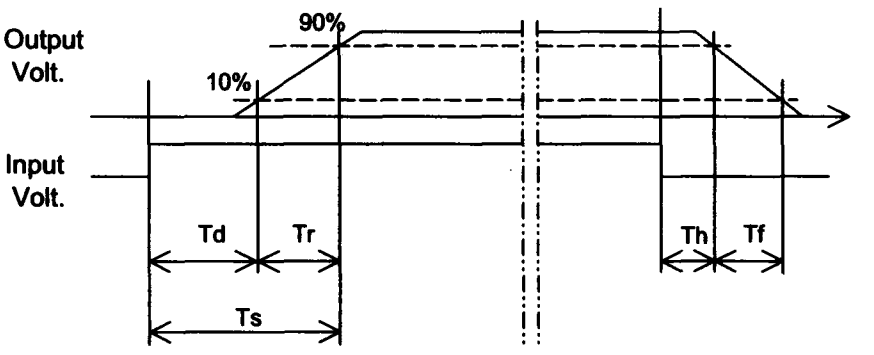
1.Graph



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	3.5	3.6	0.2	1.3
100 %	0.1	3.7	3.8	0.1	0.6

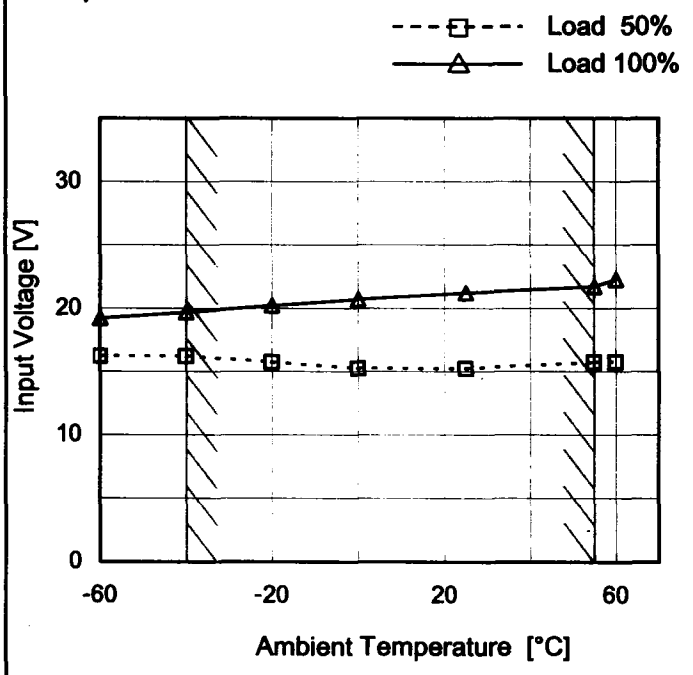


COSEL

Model	SUCW1R54812
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.065A

Testing Circuitry Figure A

1.Graph

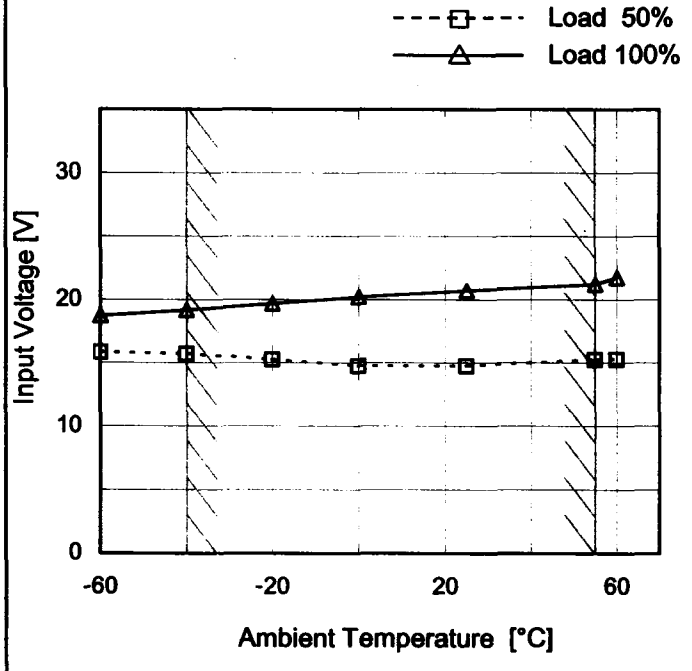


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	16.3	19.3
-40	16.3	19.7
-20	15.8	20.3
0	15.3	20.8
25	15.3	21.3
55	15.8	21.8
60	15.8	22.3
–	-	-
–	-	-
–	-	-
–	-	-

Object	-12V0.065A

1.Graph



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

2.Values

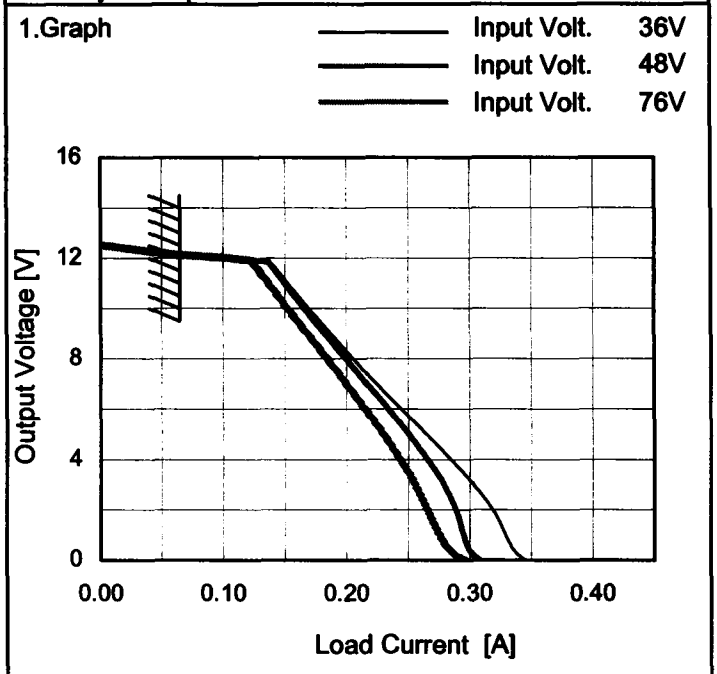
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.9	18.8
-40	15.8	19.2
-20	15.3	19.7
0	14.8	20.3
25	14.8	20.8
55	15.3	21.3
60	15.3	21.8
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUCW1R54812
Item	Overcurrent Protection
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

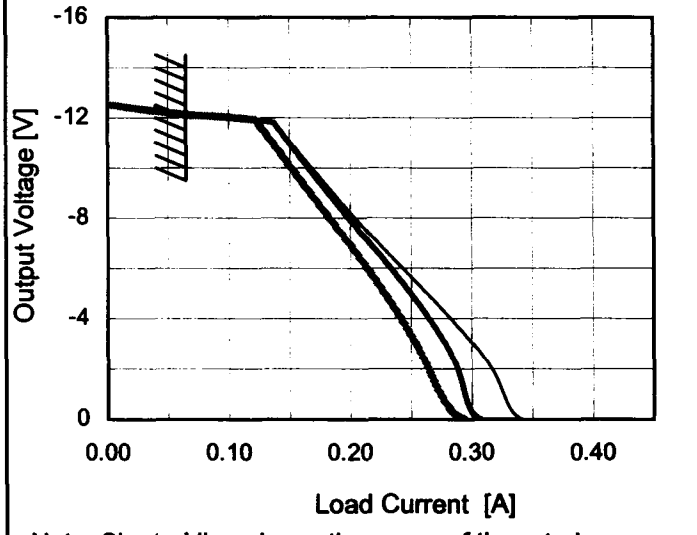


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
12.0	0.07	0.07	0.07
11.4	0.15	0.14	0.13
10.8	0.15	0.15	0.14
9.6	0.18	0.17	0.16
8.4	0.20	0.19	0.18
7.2	0.22	0.21	0.20
6.0	0.24	0.23	0.22
4.8	0.27	0.25	0.23
3.6	0.29	0.27	0.25
2.4	0.31	0.29	0.26
1.2	0.33	0.29	0.27
0.0	0.35	0.31	0.30

Object	-12V0.065A

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]
-12.0	0.07	0.07	0.07
-11.4	0.15	0.14	0.13
-10.8	0.15	0.15	0.14
-9.6	0.18	0.17	0.16
-8.4	0.20	0.19	0.18
-7.2	0.22	0.21	0.20
-6.0	0.24	0.23	0.21
-4.8	0.27	0.25	0.23
-3.6	0.29	0.27	0.25
-2.4	0.31	0.29	0.26
-1.2	0.32	0.29	0.27
0.0	0.34	0.31	0.29

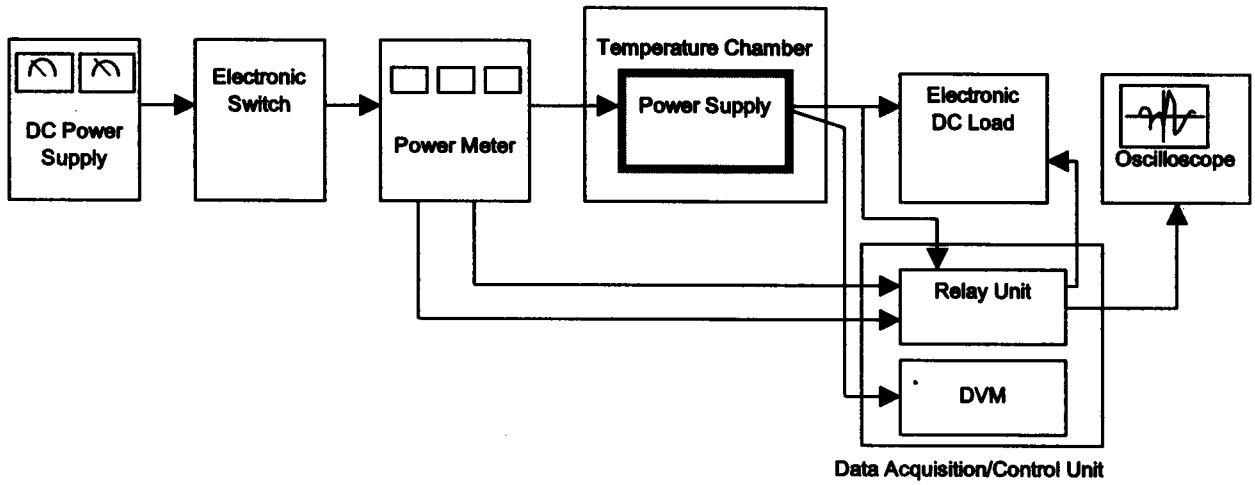


Figure A

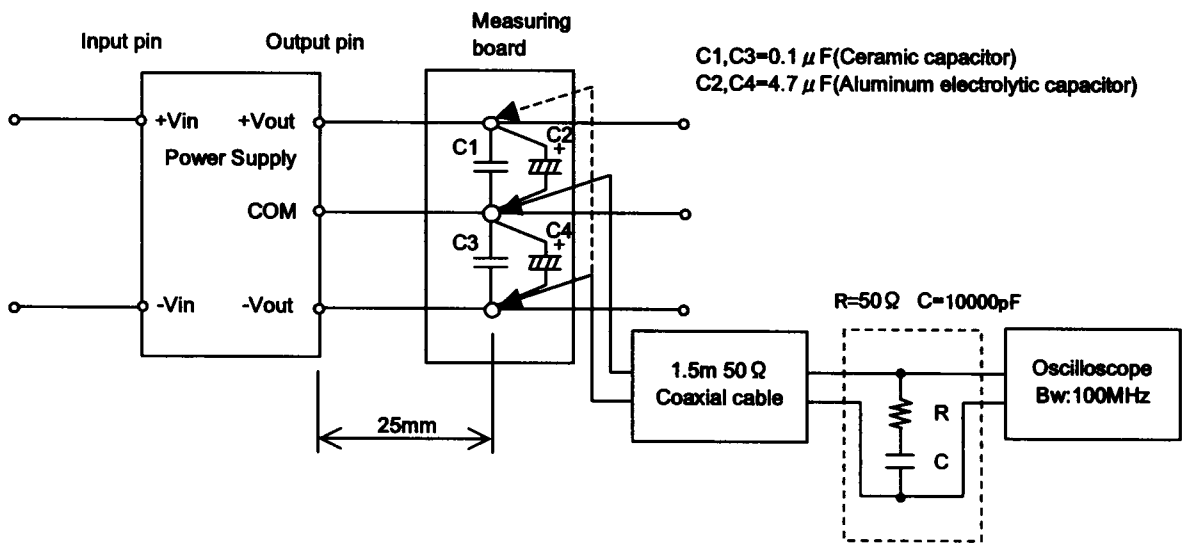


Figure B (Ripple and Ripple noise Characteristic)