参考資料

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TEST DATA OF SUCW30512

Regulated DC Power Supply
Mar 17, 2005

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COSEL CO.,LTD.

参考資料

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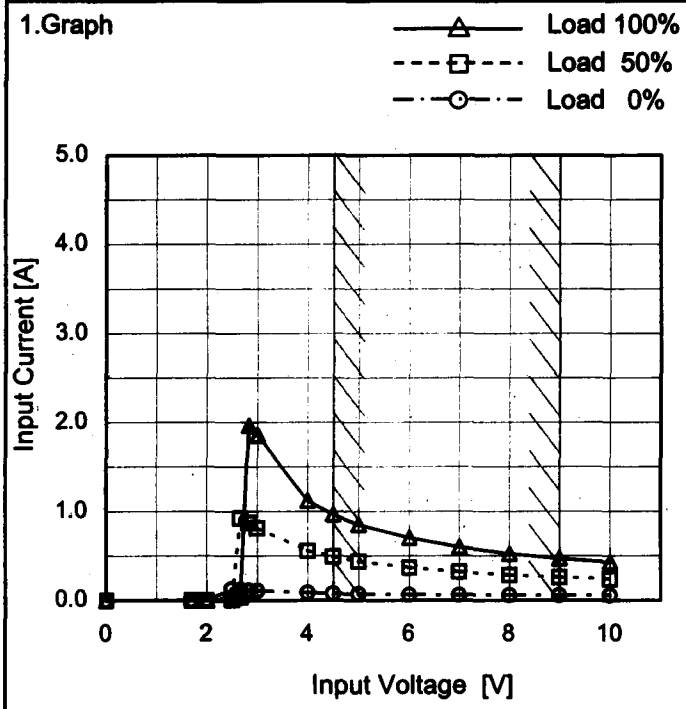
Model	SUCW30512
Item	Input Current (by Input Voltage)
Object	――――――

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%
0.00	0.000	0.000	0.000
1.70	0.000	0.000	0.000
2.00	0.000	0.000	0.000
2.49	0.126	0.024	0.009
2.66	0.117	0.922	0.039
2.83	0.110	0.874	1.970
3.00	0.107	0.812	1.855
4.00	0.085	0.556	1.120
4.50	0.077	0.491	0.966
5.00	0.071	0.439	0.850
6.00	0.062	0.367	0.703
7.00	0.058	0.319	0.599
8.00	0.056	0.283	0.524
9.00	0.055	0.257	0.470
10.00	0.055	0.237	0.427
–	-	-	-
–	-	-	-
–	-	-	-

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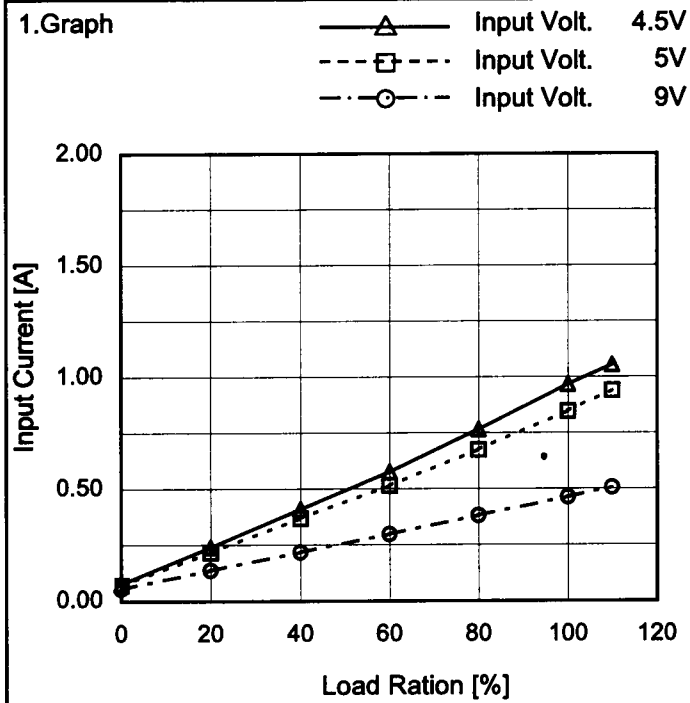
Model	SUCW30512
Item	Input Current (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Input Current [A]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0	0.076	0.070	0.055
20	0.240	0.217	0.136
40	0.410	0.369	0.217
60	0.576	0.514	0.298
80	0.765	0.676	0.380
100	0.966	0.848	0.463
110	1.054	0.939	0.506
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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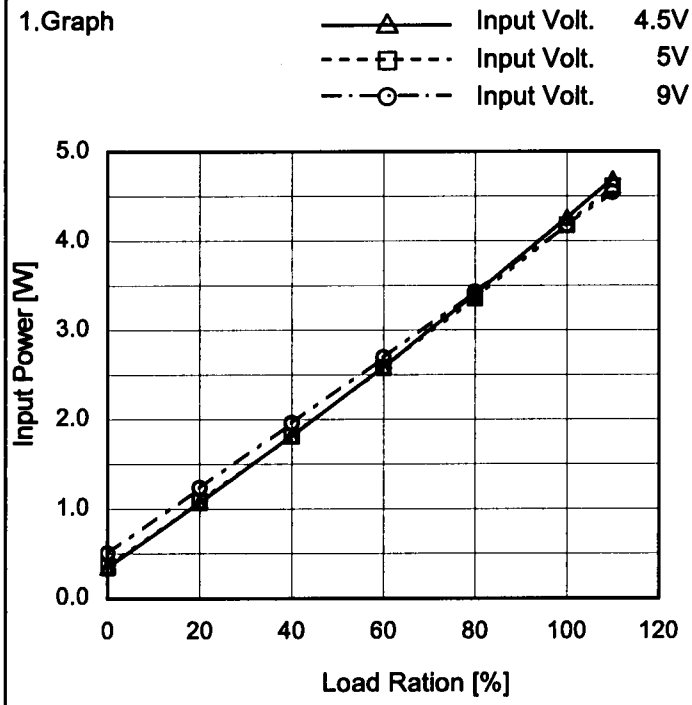
Model	SUCW30512
Item	Input Power (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

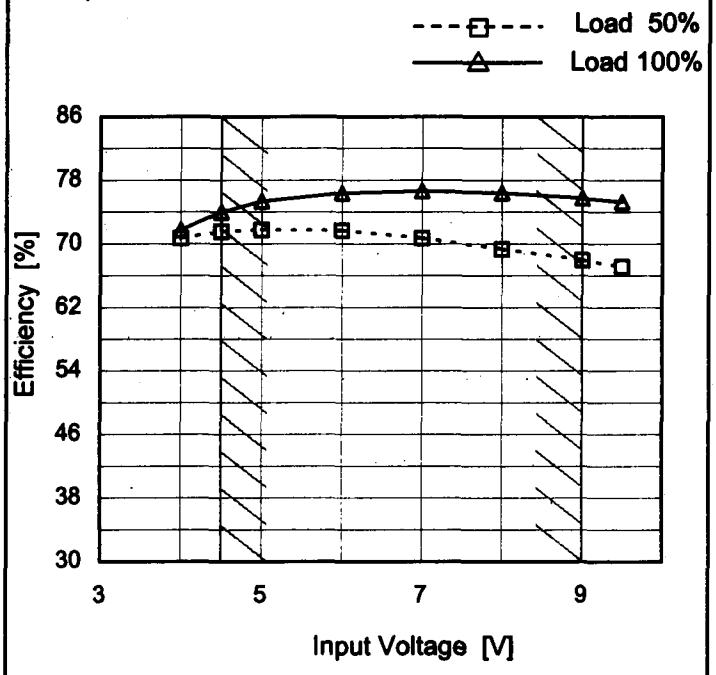
Load Ration [%]	Input Power [W]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0	0.34	0.35	0.50
20	1.07	1.08	1.24
40	1.82	1.82	1.96
60	2.59	2.58	2.69
80	3.40	3.36	3.43
100	4.26	4.18	4.17
110	4.69	4.61	4.55
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUCW30512
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%
4.0	70.7	71.8
4.5	71.5	74.0
5.0	71.8	75.4
6.0	71.7	76.4
7.0	70.7	76.7
8.0	69.4	76.4
9.0	68.0	75.8
9.5	67.1	75.3
–	-	-

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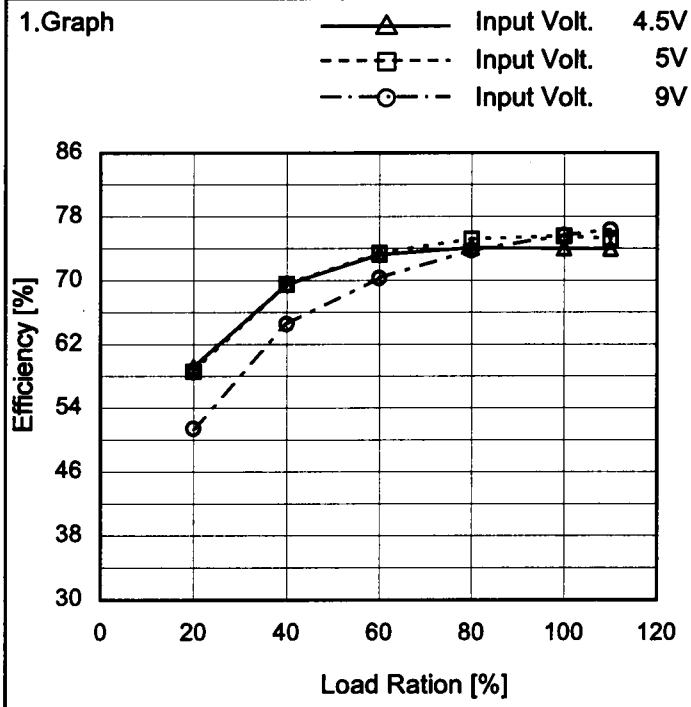
Model	SUCW30512
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Efficiency [%]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0	-	-	-
20	59.2	58.6	51.5
40	69.5	69.6	64.6
60	73.2	73.5	70.3
80	74.1	75.2	73.8
100	74.0	75.6	75.6
110	74.0	75.2	76.3
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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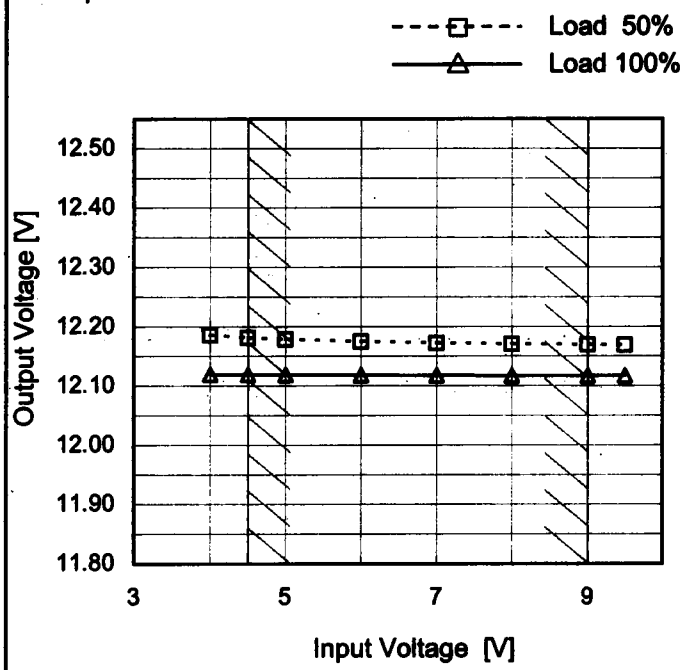
Model	SUCW30512
Item	Line Regulation
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

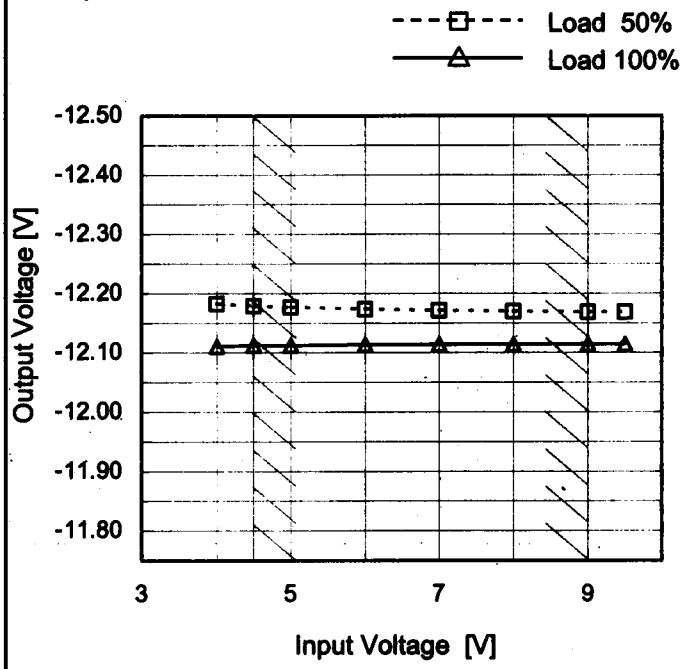


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.0	12.186	12.120
4.5	12.181	12.119
5.0	12.179	12.119
6.0	12.175	12.118
7.0	12.172	12.118
8.0	12.171	12.118
9.0	12.170	12.117
9.5	12.169	12.117
--	-	-

Object	-12V0.13A

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%
4.0	-12.182	-12.111
4.5	-12.179	-12.112
5.0	-12.177	-12.113
6.0	-12.174	-12.114
7.0	-12.171	-12.114
8.0	-12.170	-12.114
9.0	-12.169	-12.115
9.5	-12.168	-12.115
--	-	-

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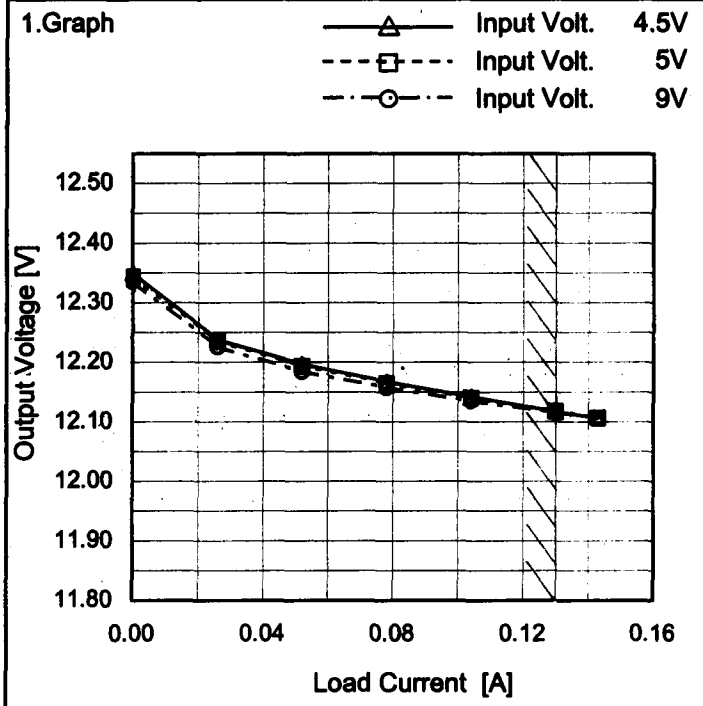
Model	SUCW30512
Item	Load Regulation
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

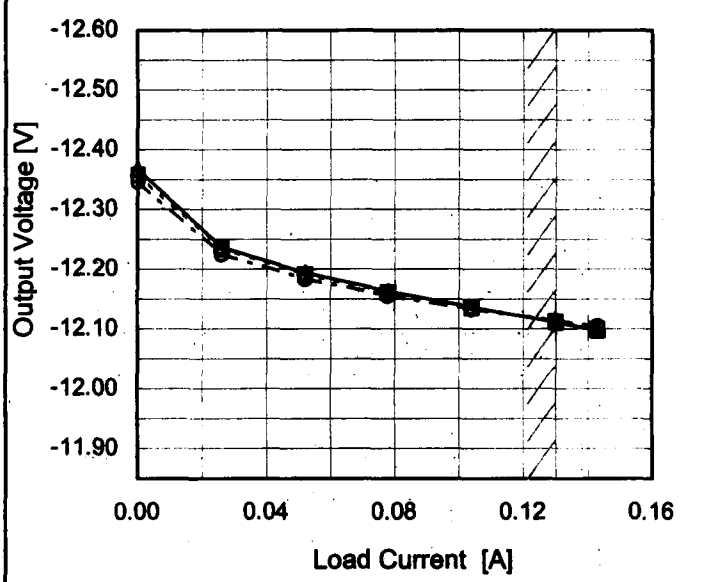


2.Values

Load Current [A]	Output Voltage [V] Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.000	12.350	12.344	12.335
0.026	12.238	12.235	12.225
0.052	12.197	12.194	12.184
0.078	12.168	12.165	12.157
0.104	12.142	12.140	12.135
0.130	12.118	12.118	12.116
0.143	12.106	12.107	12.107
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V0.13A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V] Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.000	-12.368	-12.358	-12.347
0.026	-12.237	-12.234	-12.225
0.052	-12.194	-12.191	-12.184
0.078	-12.163	-12.161	-12.155
0.104	-12.137	-12.135	-12.133
0.130	-12.111	-12.112	-12.114
0.143	-12.098	-12.100	-12.104
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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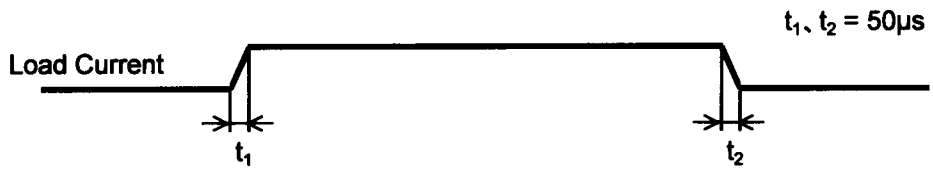
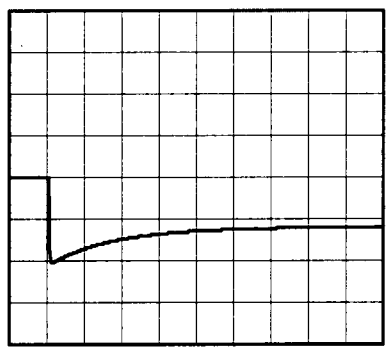
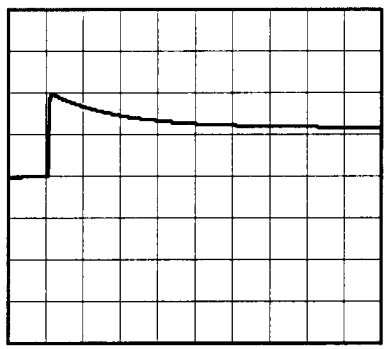
Model	SUCW30512	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	+12V0.13A	

Input Volt. 5 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.13A)

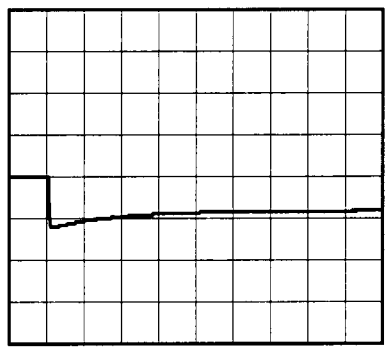


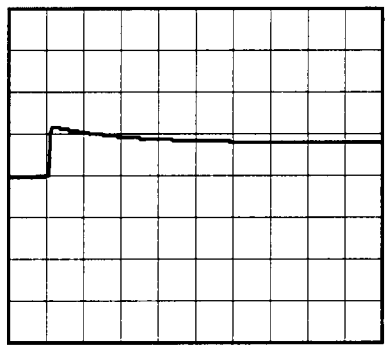


200mV/div

2ms/div 2ms/div

Min. Load (0A) ←→
Load 50% (0.065A)

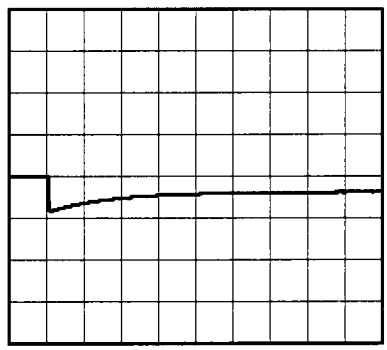


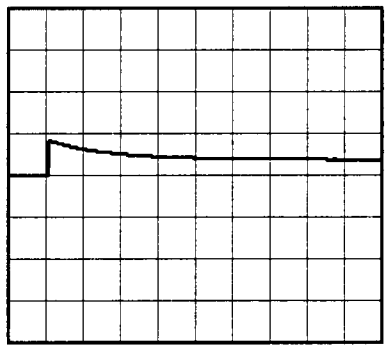


200mV/div

2ms/div 2ms/div

Load 50% (0.065A) ←→
Load 100% (0.13A)





200mV/div

2ms/div 2ms/div

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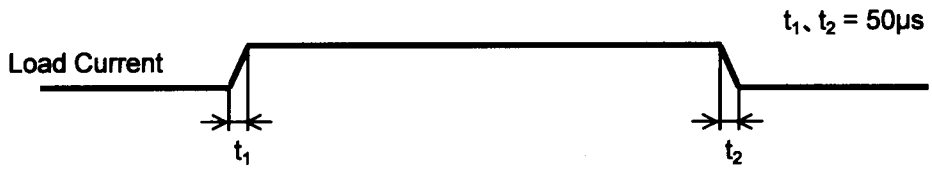
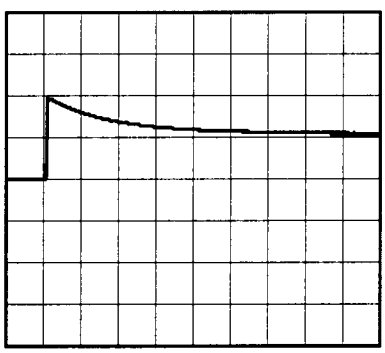
Model	SUCW30512	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	-12V0.13A	

Input Volt. 5 V
Cycle 100 mS



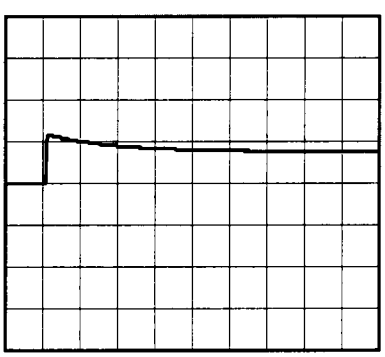
Min. Load (0A) ←→
Load 100% (0.13A)

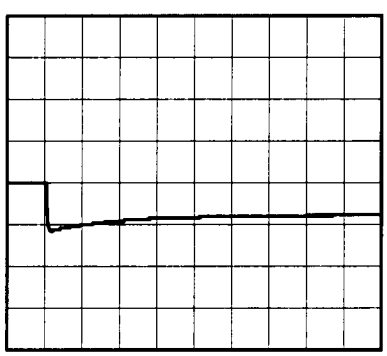


200mV/div

2ms/div 2ms/div

Min. Load (0A) ←→
Load 50% (0.065A)

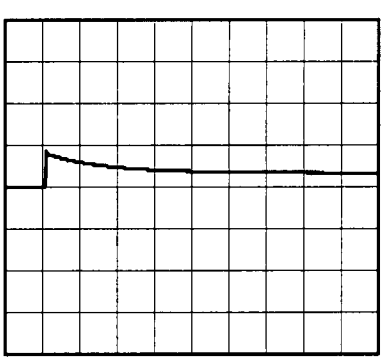


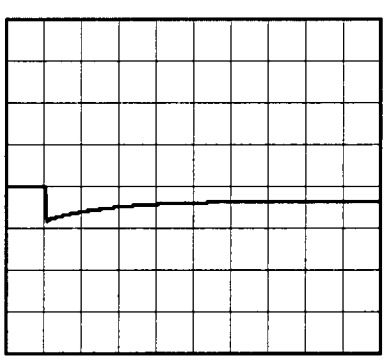


200mV/div

2ms/div 2ms/div

Load 50% (0.065A) ←→
Load 100% (0.13A)





200mV/div

2ms/div 2ms/div

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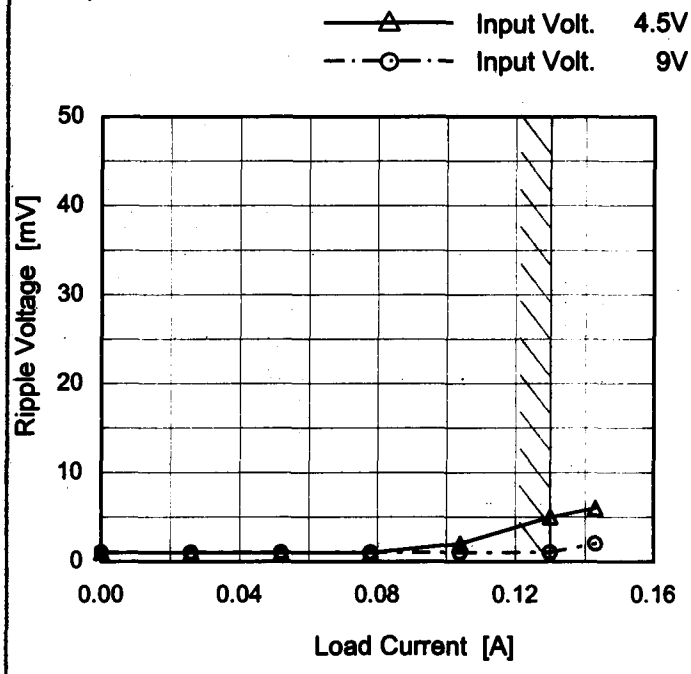
Model	SUCW30512
Item	Ripple Voltage (by Load Current)
Object	+12V0.13A

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]

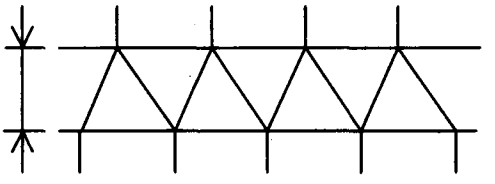


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV] Input Volt. 4.5 [V]	Ripple Voltage [mV] Input Volt. 9 [V]
0.000	1	1
0.026	1	1
0.052	1	1
0.078	1	1
0.104	2	1
0.130	5	1
0.143	6	2
–	-	-
–	-	-
–	-	-
–	-	-

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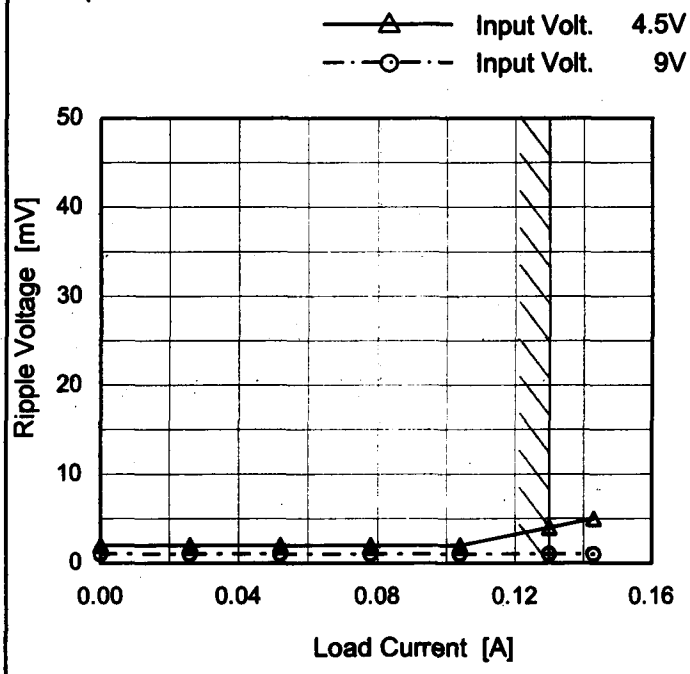
Model	SUCW30512
Item	Ripple Voltage (by Load Current)
Object	-12V0.13A

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]

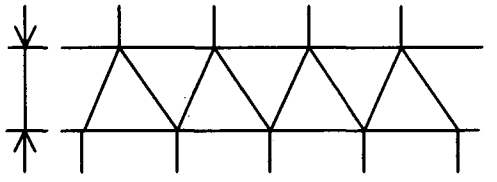


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.000	2	1
0.026	2	1
0.052	2	1
0.078	2	1
0.104	2	1
0.130	4	1
0.143	5	1
–	-	-
–	-	-
–	-	-
–	-	-

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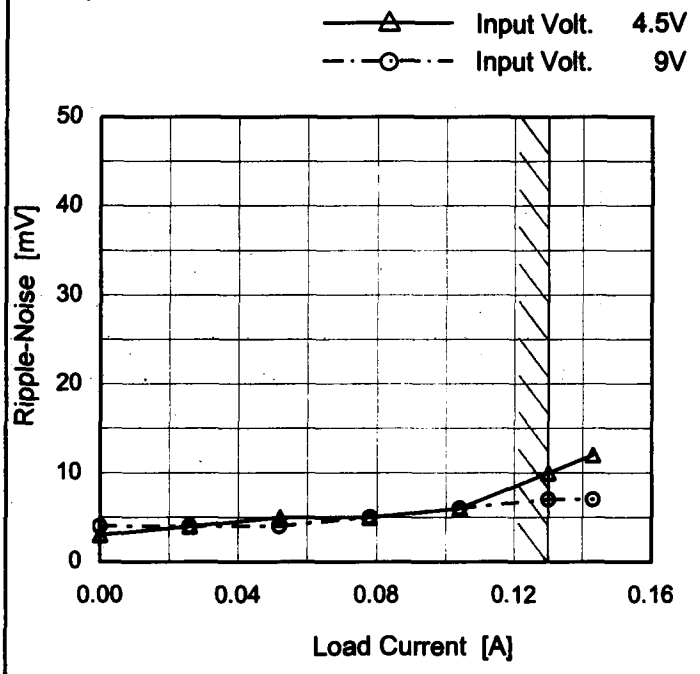
Model	SUCW30512
Item	Ripple-Noise
Object	+12V0.13A

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.

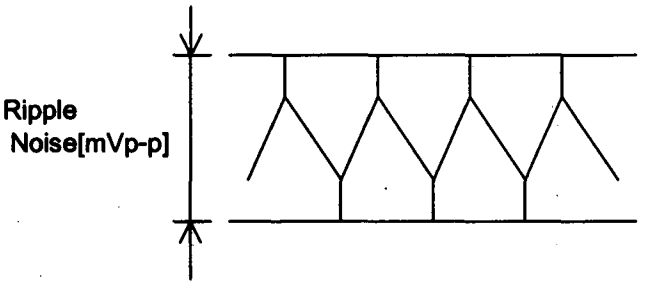


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV] Input Volt. 4.5 [V]	Ripple-Noise [mV] Input Volt. 9 [V]
0.000	3	4
0.026	4	4
0.052	5	4
0.078	5	5
0.104	6	6
0.130	10	7
0.143	12	7
–	-	-
–	-	-
–	-	-
–	-	-

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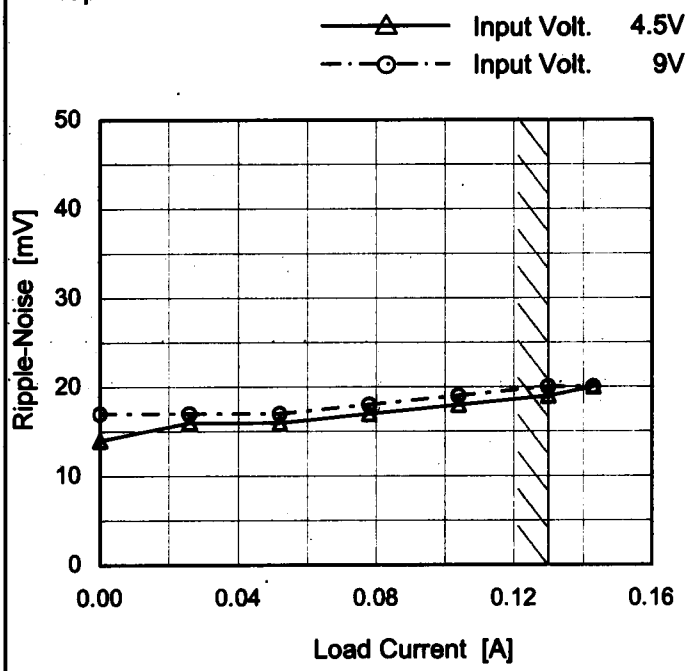
Model	SUCW30512
Item	Ripple-Noise
Object	-12V0.13A

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.

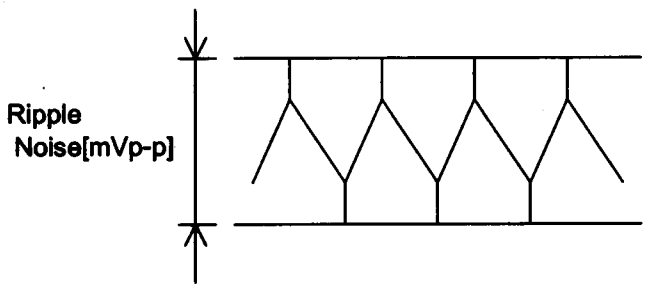


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV] Input Volt. 4.5 [V]	Ripple-Noise [mV] Input Volt. 9 [V]
0.000	14	17
0.026	16	17
0.052	16	17
0.078	17	18
0.104	18	19
0.130	19	20
0.143	20	20
--	-	-
--	-	-
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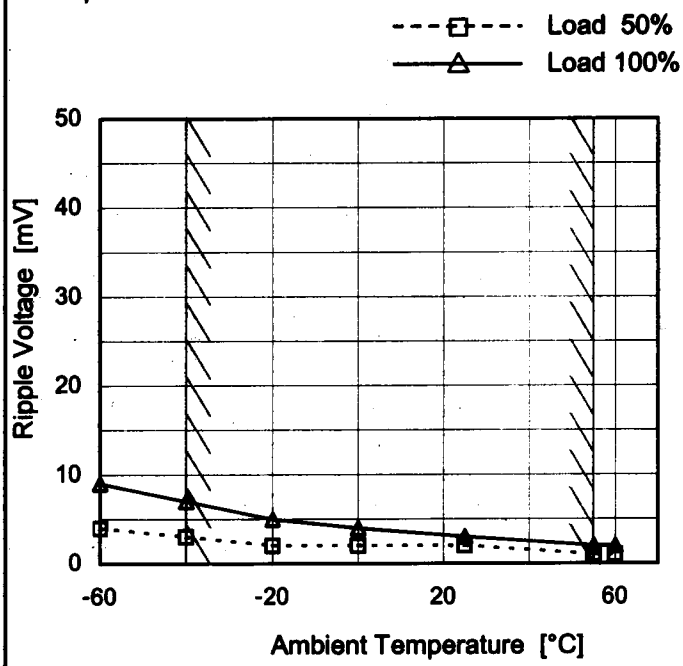
COSEL

Model	SUCW30512
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.13A

Testing Circuitry Figure B

1.Graph



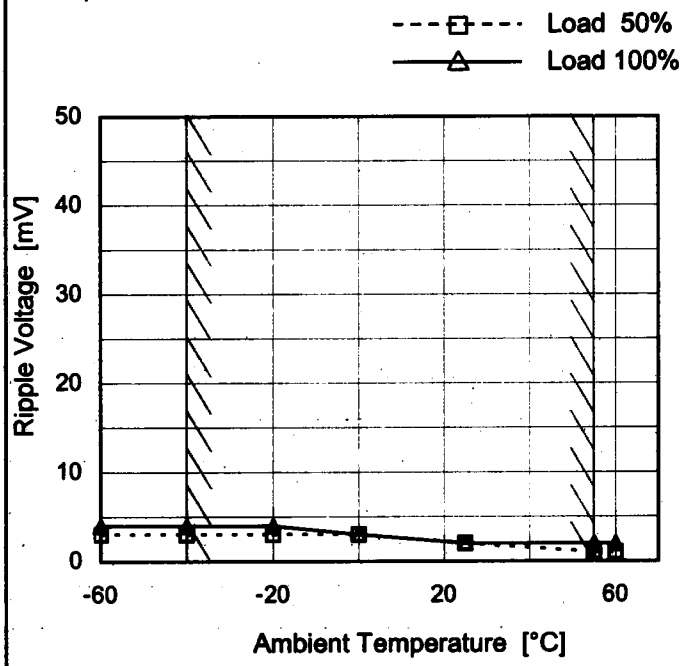
Input Volt. 5V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	4	9
-40	3	7
-20	2	5
0	2	4
25	2	3
55	1	2
60	1	2
–	-	-
–	-	-
–	-	-
–	-	-

Object	-12V0.13A

1.Graph



Input Volt. 5V

Measured by 100 MHz Oscilloscope.

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

2.Values

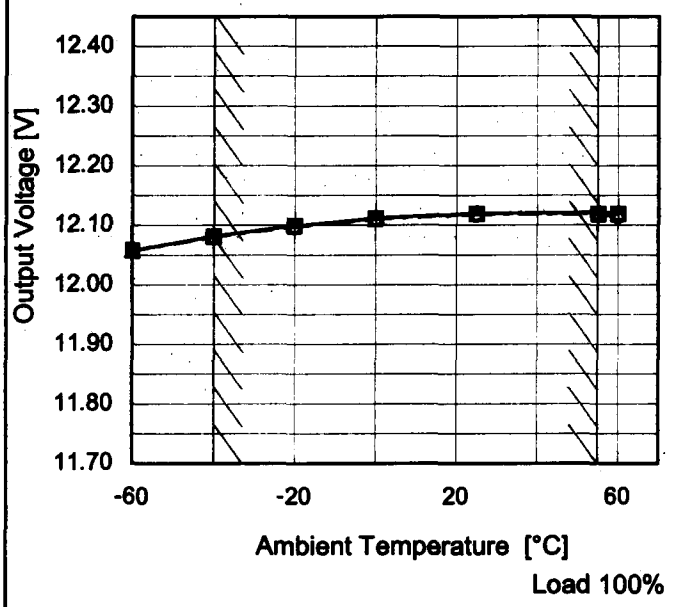
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	3	4
-40	3	4
-20	3	4
0	3	3
25	2	2
55	1	2
60	1	2
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUCW30512
Item	Ambient Temperature Drift
Object	+12V0.13A

Testing Circuitry Figure A

1.Graph



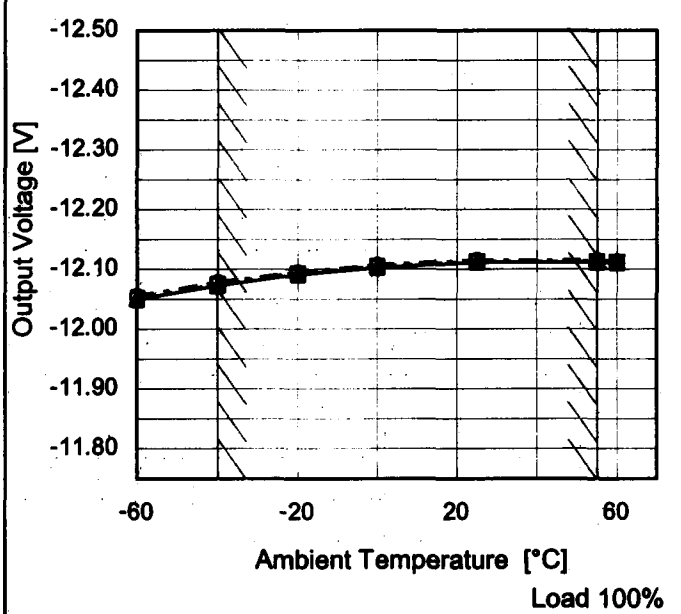
Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-60	12.058	12.058	12.057
-40	12.082	12.081	12.080
-20	12.099	12.099	12.097
0	12.112	12.111	12.110
25	12.120	12.119	12.118
55	12.121	12.119	12.118
60	12.120	12.119	12.116
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V0.13A

1.Graph



Load 100%

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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-60	-12.050	-12.052	-12.055
-40	-12.073	-12.075	-12.078
-20	-12.091	-12.093	-12.095
0	-12.103	-12.105	-12.107
25	-12.112	-12.113	-12.115
55	-12.112	-12.113	-12.115
60	-12.111	-12.112	-12.113
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUCW30512	
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 : 4.5 - 9V
Load Current (AVR 1) : 0 - 0.13A (AVR 2):0 - 0.13A

* 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	+12V0.13A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	4.5	0	12.354	±137	±1.1
Minimum Voltage	-40	9	0.13	12.080		

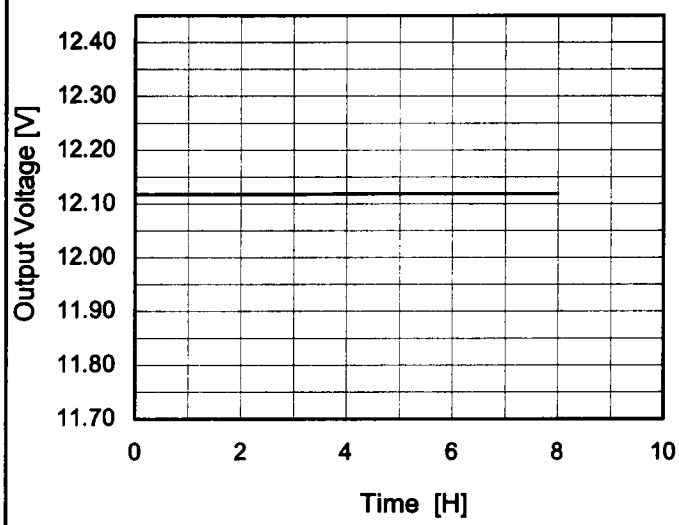
Object	-12V0.13A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	4.5	0	-12.369	±146	±1.2
Minimum Voltage	-40	9	0.13	-12.078		

COSEL

Model	SUCW30512
Item	Time Lapse Drift
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



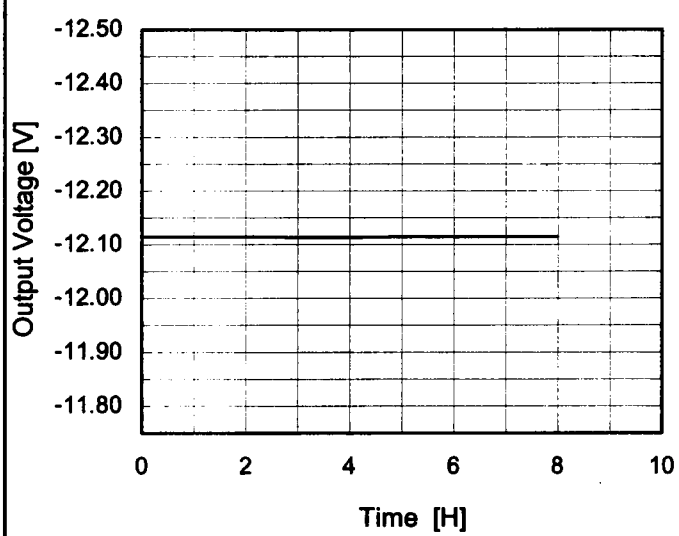
Input Volt. 5V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.119
0.5	12.118
1.0	12.118
2.0	12.118
3.0	12.118
4.0	12.119
5.0	12.119
6.0	12.119
7.0	12.119
8.0	12.119

Object	-12V0.13A

1.Graph



Input Volt. 5V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.113
0.5	-12.115
1.0	-12.115
2.0	-12.115
3.0	-12.114
4.0	-12.114
5.0	-12.115
6.0	-12.115
7.0	-12.115
8.0	-12.115

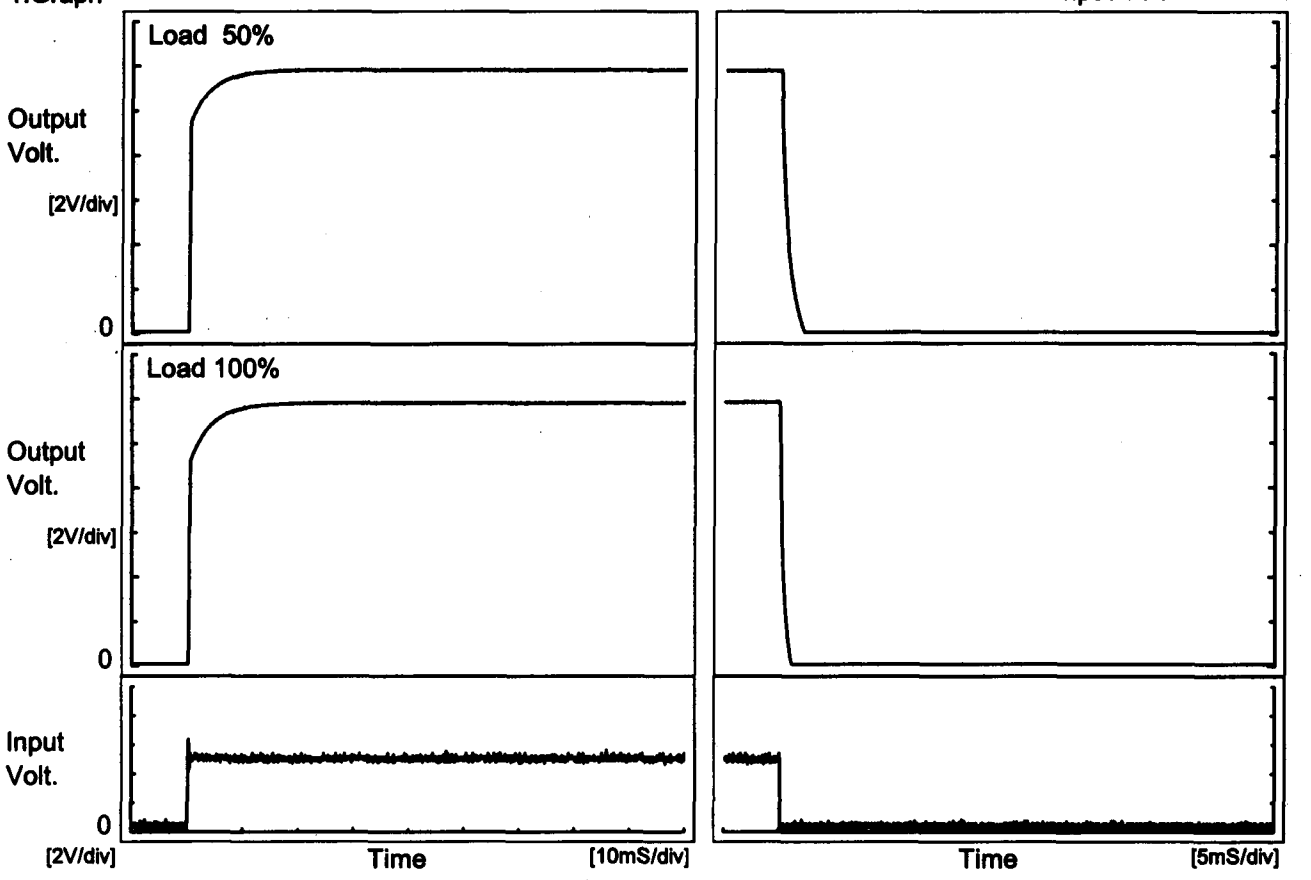
COSEL

Model	SUCW30512
Item	Rise and Fall Time
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

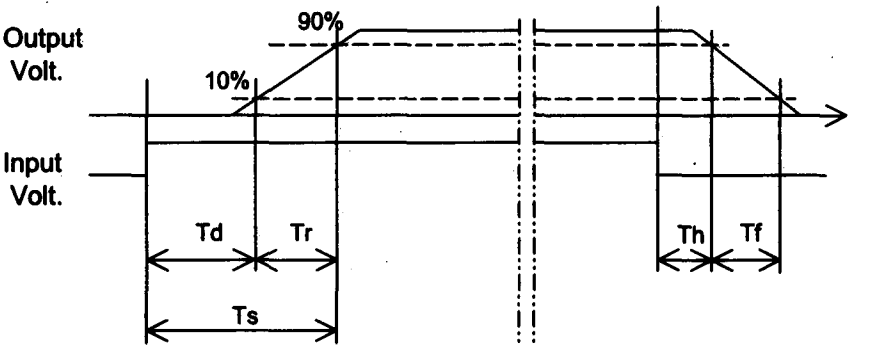
Input Volt. 5 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.2	3.6	3.8	0.1	1.4
100 %	0.2	4.1	4.3	0.1	0.7



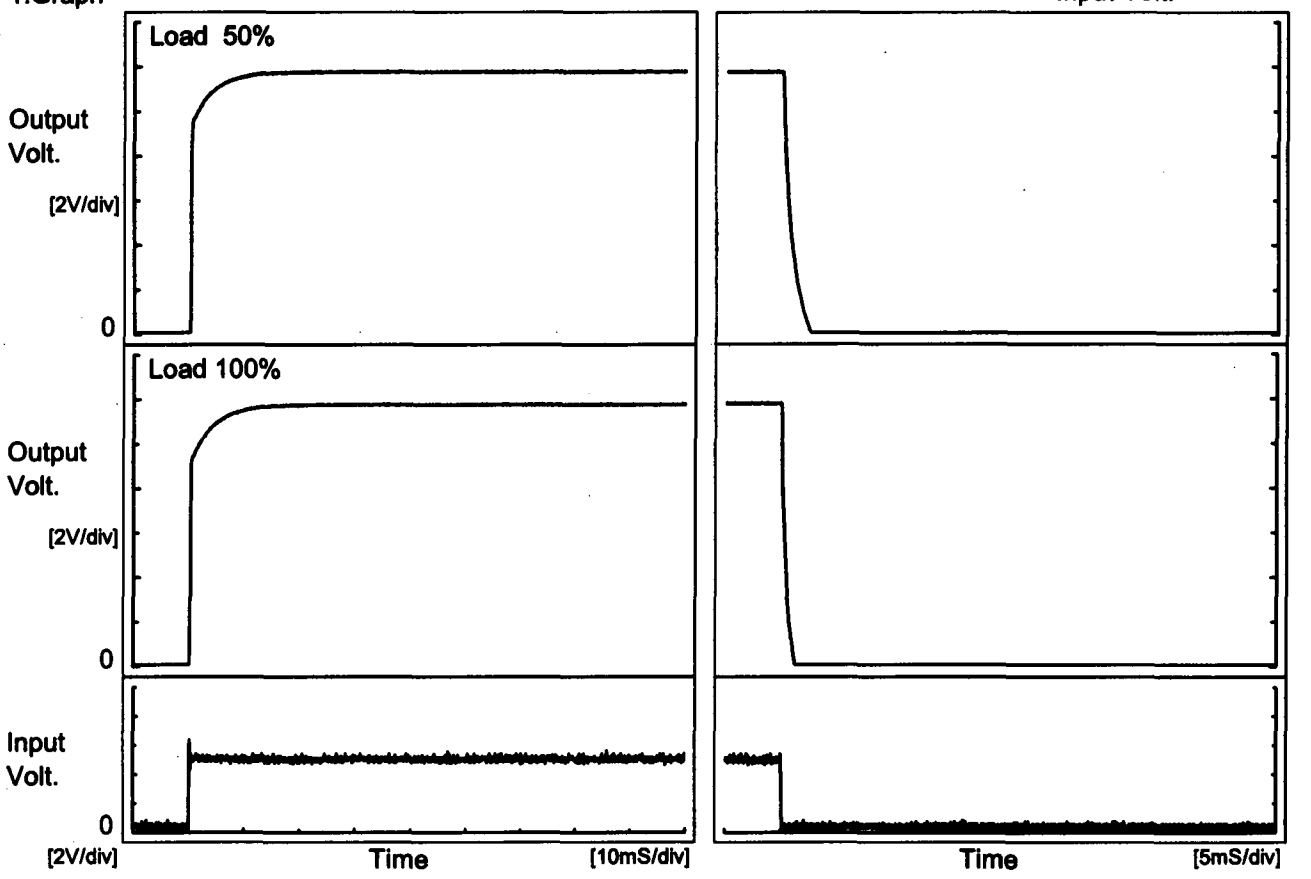
COSEL

Model	SUCW30512
Item	Rise and Fall Time
Object	-12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

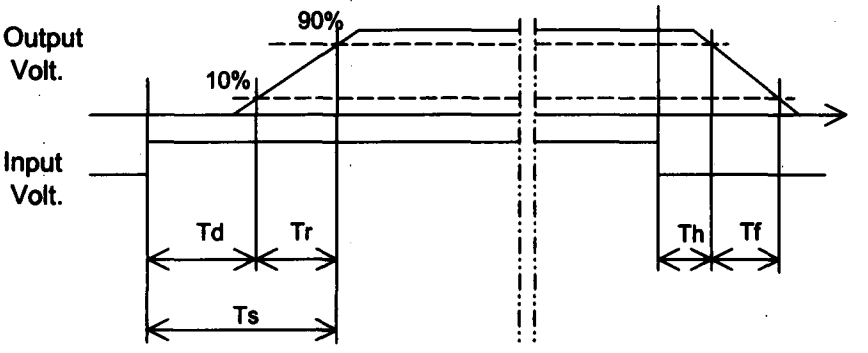
Input Volt. 5 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.2	4.0	4.2	0.1	1.7
100 %	0.2	4.5	4.7	0.1	0.9

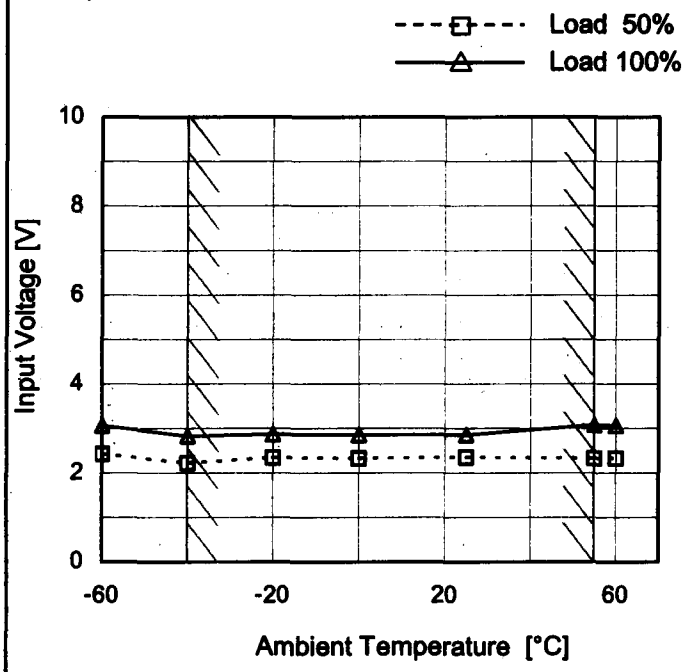


COSEL

Model	SUCW30512
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.13A

Testing Circuitry Figure A

1.Graph

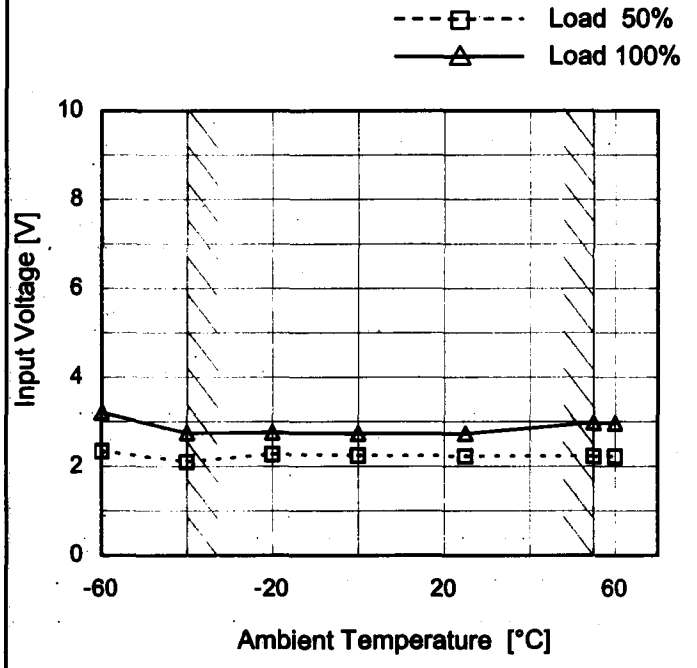


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	2.5	3.1
-40	2.3	2.9
-20	2.4	2.9
0	2.4	2.9
25	2.4	2.9
55	2.4	3.1
60	2.4	3.1
–	-	-
–	-	-
–	-	-
–	-	-

Object	-12V0.13A

1.Graph



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

2.Values

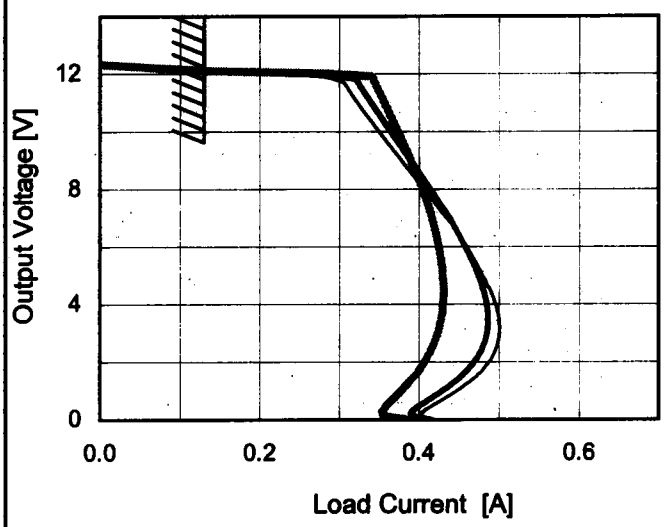
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	2.4	3.3
-40	2.1	2.8
-20	2.3	2.8
0	2.3	2.8
25	2.3	2.8
55	2.3	3.0
60	2.3	3.0
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUCW30512
Item	Overcurrent Protection
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

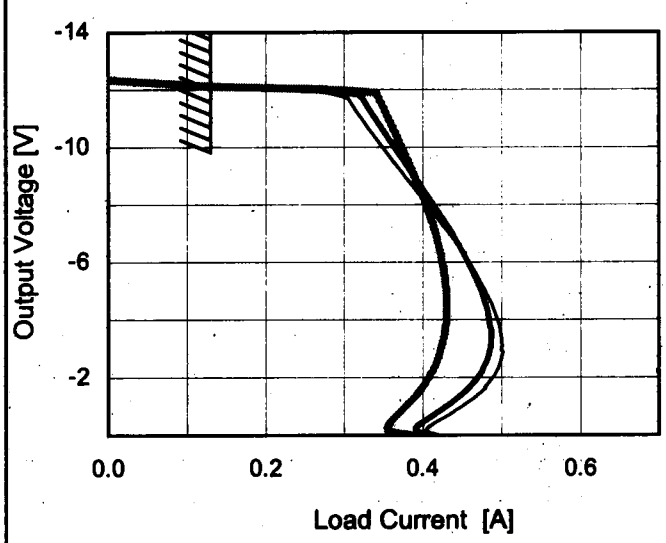


2.Values

Output Voltage [V]	Load Current [A] Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
12.0	0.13	0.13	0.13
11.4	0.31	0.33	0.35
10.8	0.33	0.35	0.36
9.6	0.36	0.37	0.38
8.4	0.40	0.40	0.40
7.2	0.43	0.43	0.41
6.0	0.46	0.46	0.42
4.8	0.48	0.48	0.43
3.6	0.50	0.49	0.43
2.4	0.50	0.48	0.41
1.2	0.46	0.44	0.39
0.0	0.42	0.42	0.39

Object	-12V0.13A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A] Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-12.0	0.13	0.13	0.13
-11.4	0.31	0.33	0.35
-10.8	0.33	0.34	0.36
-9.6	0.36	0.37	0.38
-8.4	0.39	0.40	0.40
-7.2	0.43	0.43	0.41
-6.0	0.46	0.46	0.42
-4.8	0.48	0.48	0.43
-3.6	0.50	0.49	0.43
-2.4	0.50	0.48	0.42
-1.2	0.46	0.44	0.39
0.0	0.42	0.42	0.39

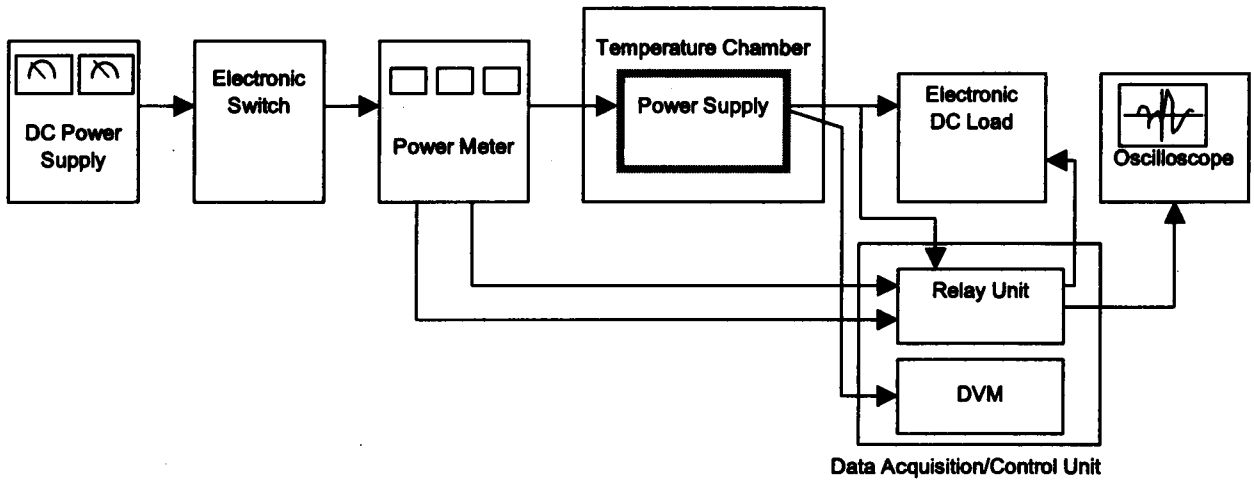


Figure A

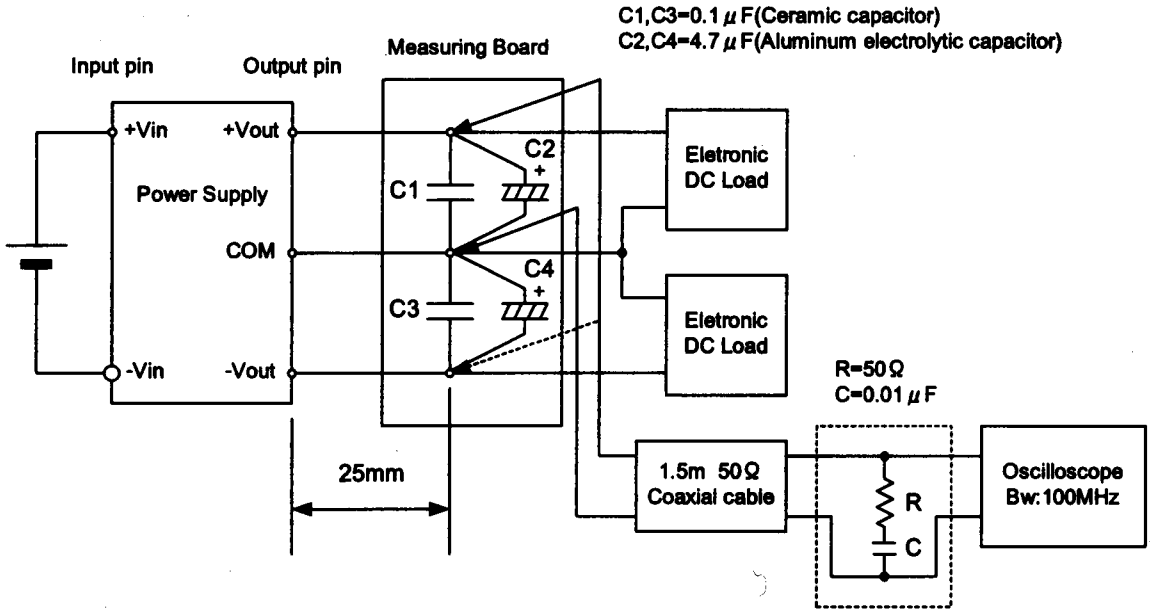


Figure B (Ripple and Ripple noise Characteristic)