COSEL

参考資料

TEST DATA OF SUW64812
SUCW64812

Regulated DC Power Supply
Feb 22, 2005

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Yoshikazu Mizuno Design Engineer

COSEL CO.,LTD.

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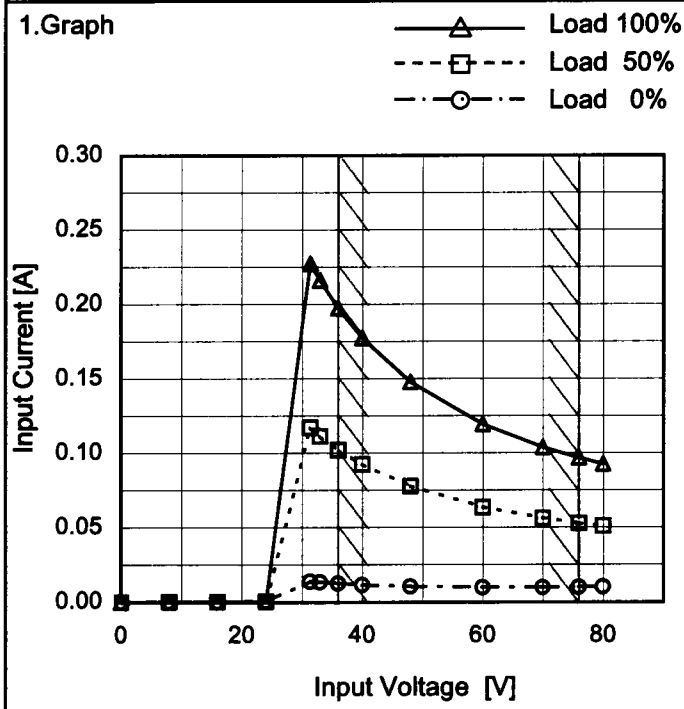
Model	SUW64812/SUCW64812
Item	Input Current (by Input Voltage)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
8.0	0.000	0.000	0.000
16.0	0.000	0.000	0.000
24.0	0.001	0.001	0.001
31.4	0.014	0.117	0.227
33.0	0.013	0.111	0.216
36.0	0.012	0.102	0.198
40.0	0.012	0.093	0.177
48.0	0.010	0.078	0.148
60.0	0.010	0.064	0.120
70.0	0.010	0.056	0.104
76.0	0.010	0.053	0.097
80.0	0.010	0.051	0.093
--	-	-	-
--	-	-	-
--	-	-	-

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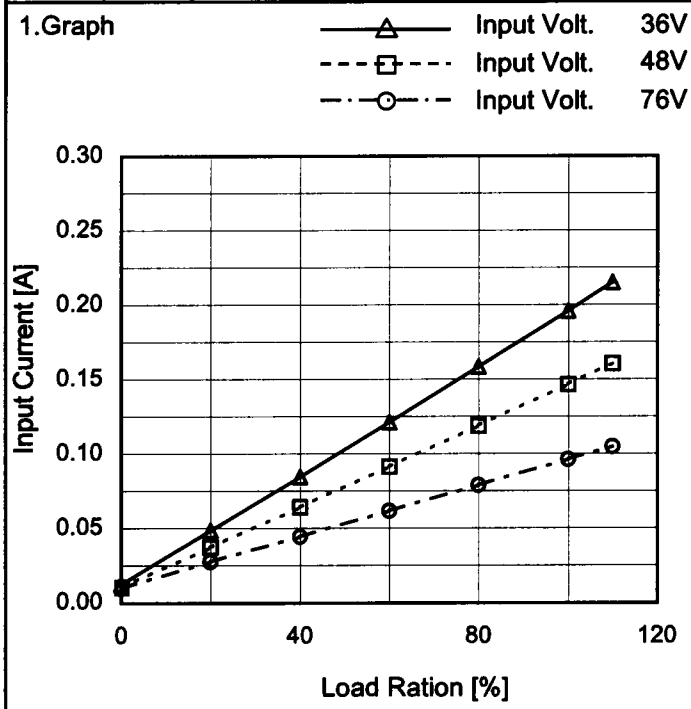
Model	SUW64812/SUCW64812
Item	Input Current (by Load Current)
Object	————————

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	0.012	0.010	0.010
20	0.048	0.037	0.028
40	0.084	0.064	0.045
60	0.121	0.091	0.062
80	0.158	0.119	0.079
100	0.196	0.147	0.096
110	0.215	0.161	0.105
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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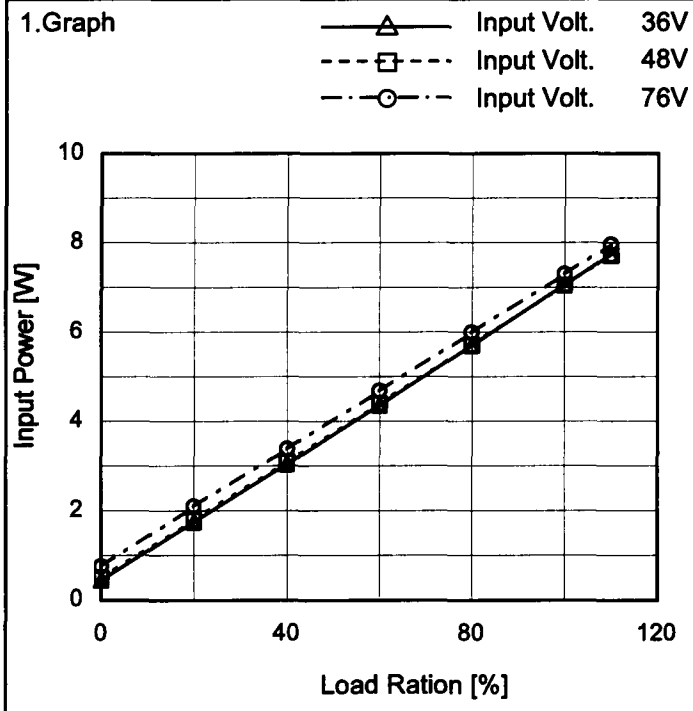
Model	SUW64812/SUCW64812
Item	Input Power (by Load Current)
Object	———————

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	0.45	0.50	0.75
20	1.74	1.79	2.10
40	3.04	3.09	3.39
60	4.36	4.40	4.68
80	5.70	5.71	5.99
100	7.05	7.05	7.30
110	7.74	7.72	7.96
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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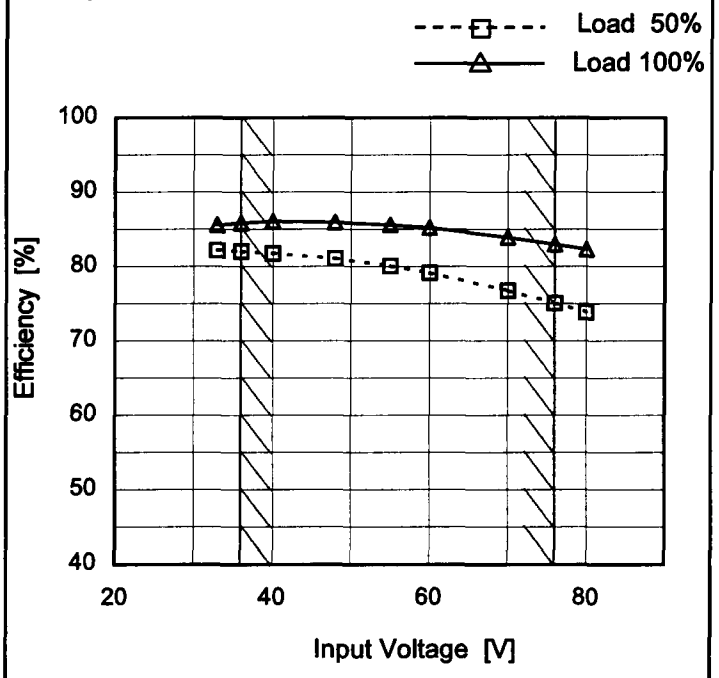
Model	SUW64812/SUCW64812
Item	Efficiency (by Input Voltage)
Object	————————

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	82.2	85.6
36	82.0	85.9
40	81.8	86.1
48	81.1	86.0
55	80.1	85.6
60	79.1	85.2
70	76.8	83.9
76	75.1	83.0
80	73.9	82.3

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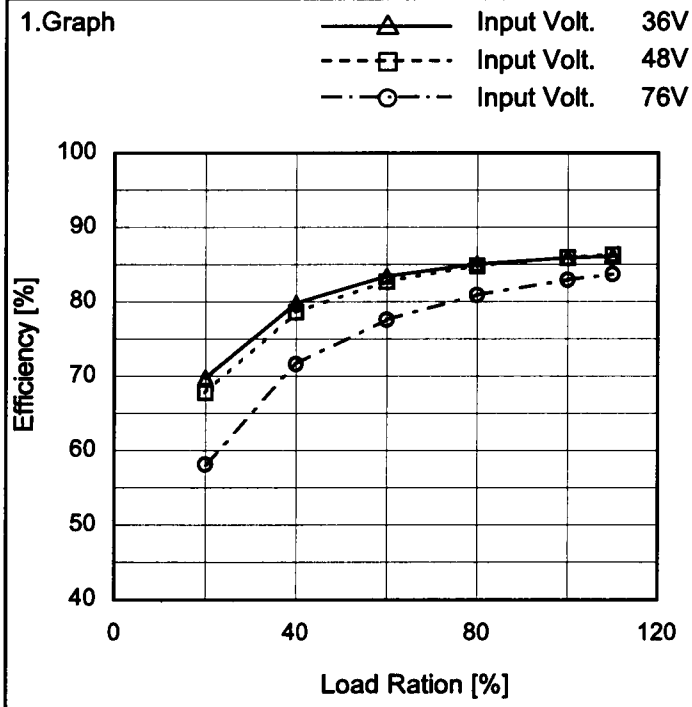
Model	SUW64812/SUCW64812
Item	Efficiency (by Load Current)
Object	———————

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	69.8	67.8	58.1
40	79.8	78.6	71.7
60	83.4	82.7	77.6
80	85.1	84.8	80.9
100	85.9	85.9	82.9
110	86.1	86.3	83.7
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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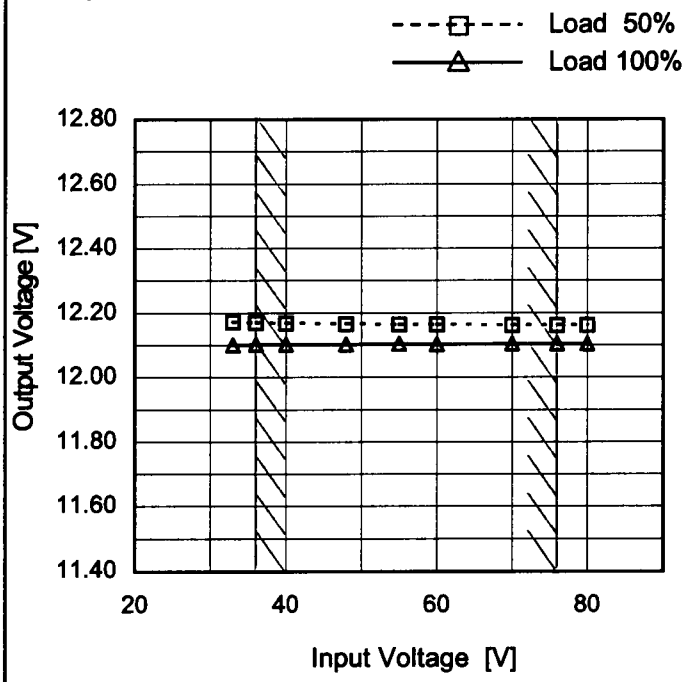
Model	SUW64812/SUCW64812
Item	Line Regulation

Temperature 25°C
Testing Circuitry Figure A

Object +12V0.25A

1.Graph

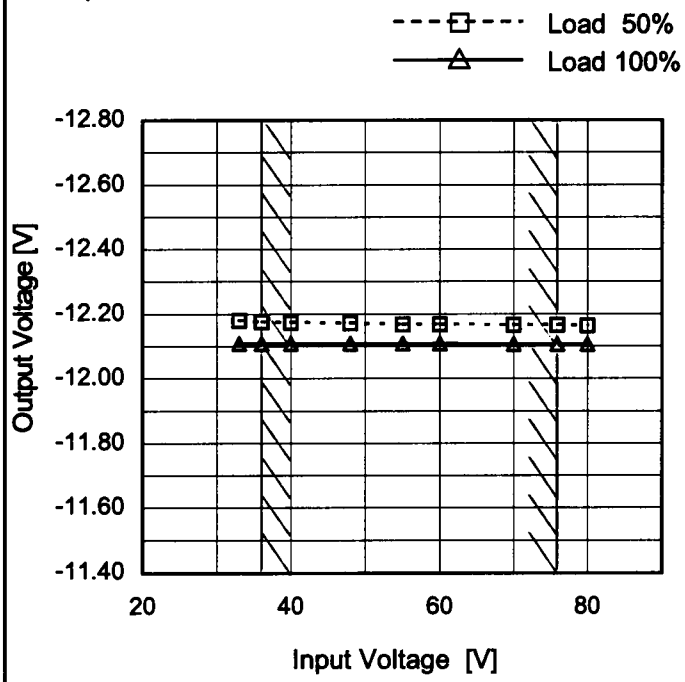


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	12.171	12.100
36	12.170	12.101
40	12.168	12.102
48	12.166	12.102
55	12.164	12.103
60	12.163	12.103
70	12.162	12.103
76	12.162	12.104
80	12.162	12.104

Object -12V0.25A

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	-12.179	-12.109
36	-12.176	-12.108
40	-12.174	-12.108
48	-12.171	-12.108
55	-12.169	-12.107
60	-12.167	-12.107
70	-12.166	-12.107
76	-12.165	-12.107
80	-12.164	-12.106

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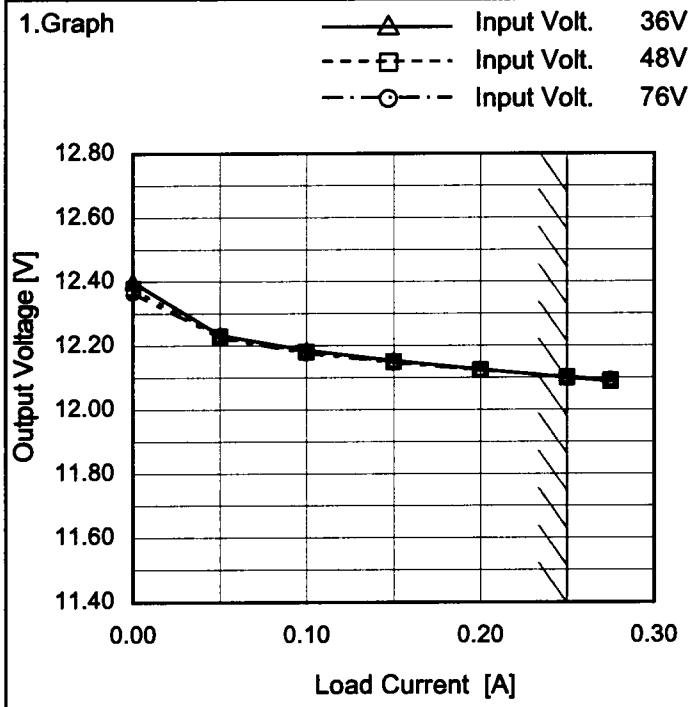
Model	SUW64812/SUCW64812
Item	Load Regulation
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

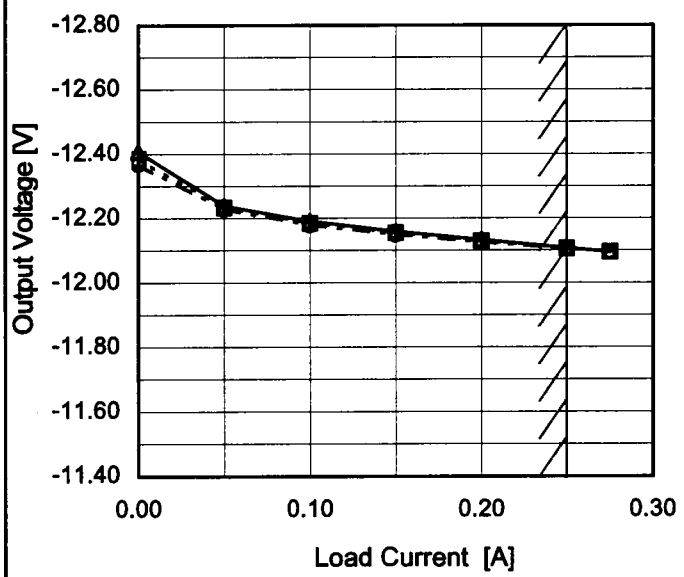


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	12.400	12.379	12.367
0.050	12.233	12.230	12.225
0.100	12.186	12.181	12.177
0.150	12.154	12.150	12.148
0.200	12.126	12.124	12.124
0.250	12.100	12.101	12.102
0.275	12.088	12.091	12.093
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V0.25A

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	-12.408	-12.386	-12.369
0.050	-12.240	-12.234	-12.228
0.100	-12.191	-12.185	-12.180
0.150	-12.160	-12.155	-12.150
0.200	-12.133	-12.129	-12.126
0.250	-12.108	-12.107	-12.105
0.275	-12.095	-12.096	-12.095
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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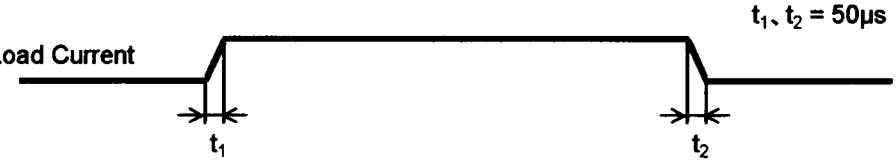
Model	SUW64812/SUCW64812
Item	Dynamic Load Response
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

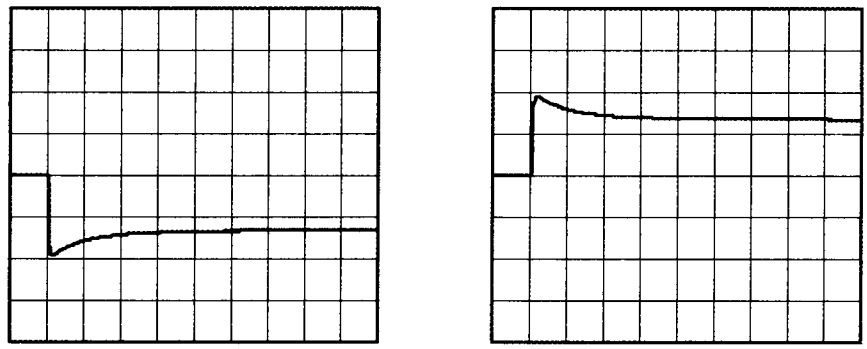
Input Volt. 48 V
Cycle 100 mS

t_1、t_2 = 50μs

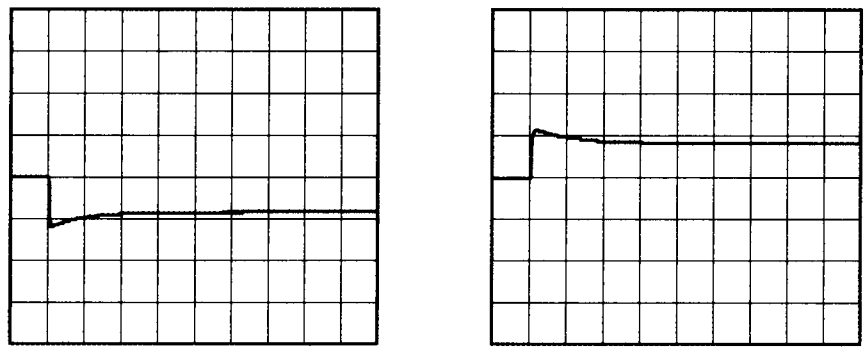
Load Current



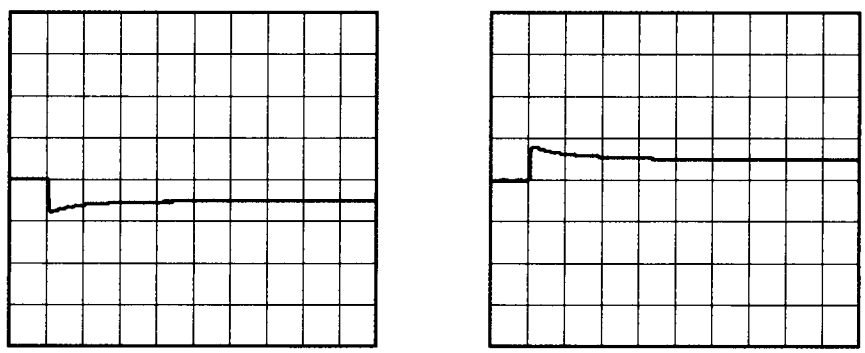
Min. Load (0A) ⟷
Load 100% (0.25A)



Min. Load (0A) ⟷
Load 50% (0.125A)



Load 50% (0.125A) ⟷
Load 100% (0.25A)



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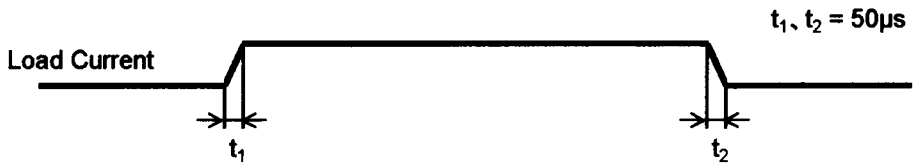
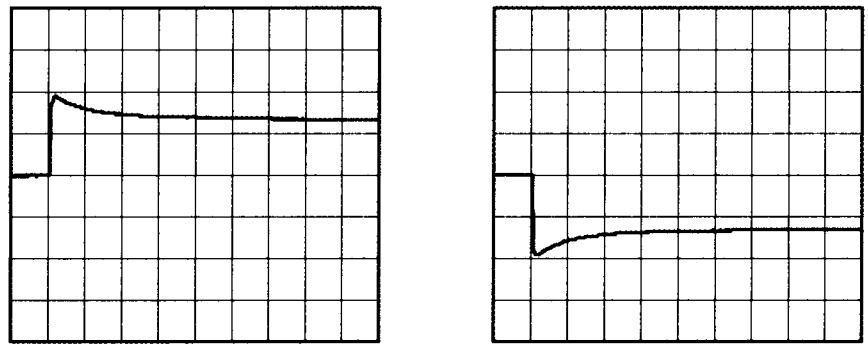
Model	SUW64812/SUCW64812	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	-12V0.25A	

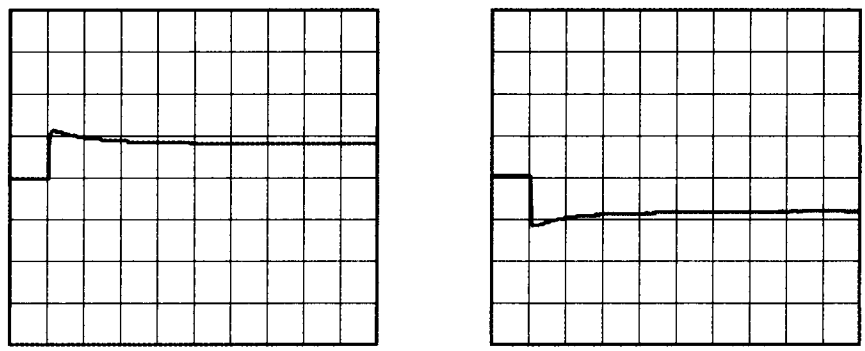
Input Volt. 48 V
Cycle 100 mS



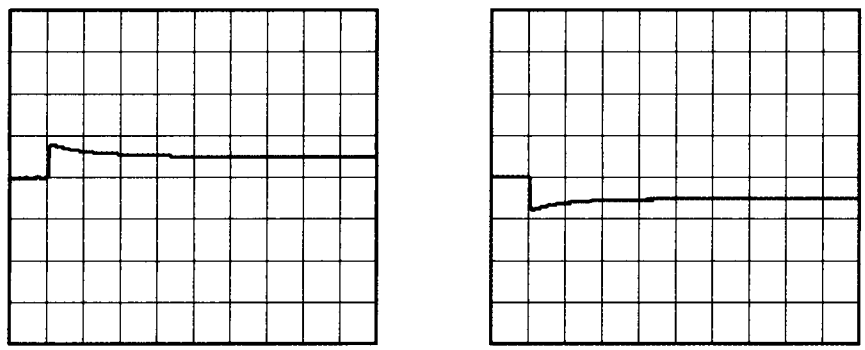
Min. Load (0A) ⟷
Load 100% (0.25A)



Min. Load (0A) ⟷
Load 50% (0.125A)



Load 50% (0.125A) ⟷
Load 100% (0.25A)



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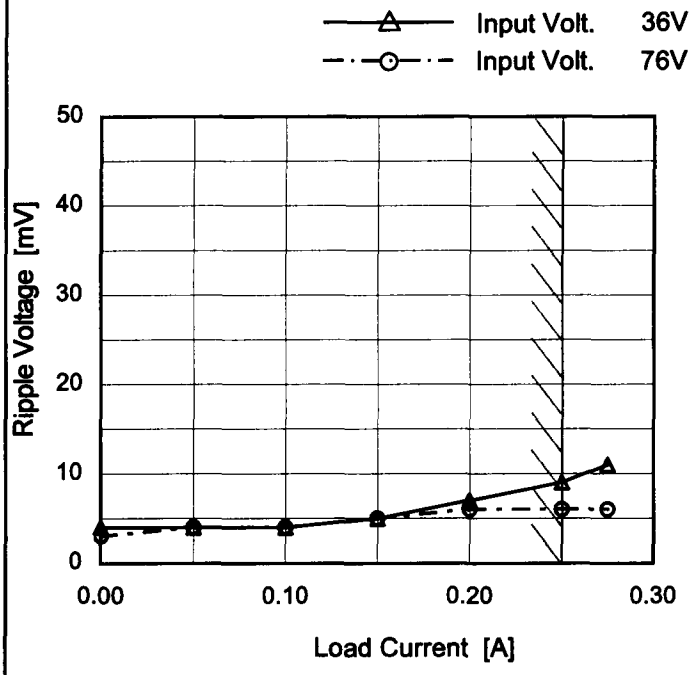
Model	SUW64812/SUCW64812
Item	Ripple Voltage (by Load Current)
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



Measured by 100 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

Ripple [mVp-p]

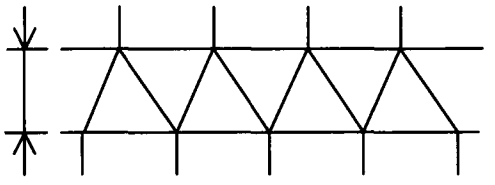


Fig.Complex Ripple Wave Form

2.Values

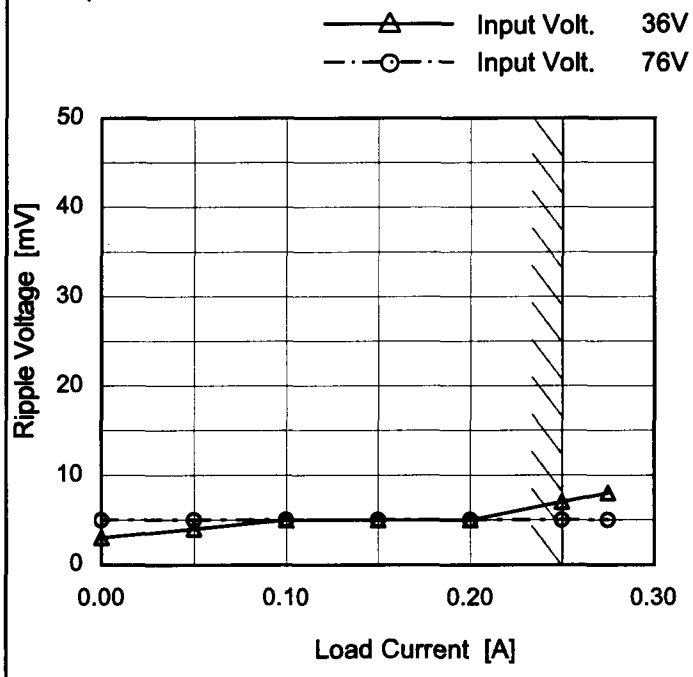
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	4	3
0.050	4	4
0.100	4	4
0.150	5	5
0.200	7	6
0.250	9	6
0.275	11	6
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW64812/SUCW64812
Item	Ripple Voltage (by Load Current)
Object	-12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



Measured by 100 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

Ripple [mVp-p]

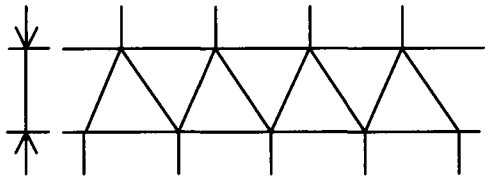


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	3	5
0.050	4	5
0.100	5	5
0.150	5	5
0.200	5	5
0.250	7	5
0.275	8	5
--	-	-
--	-	-
--	-	-
--	-	-

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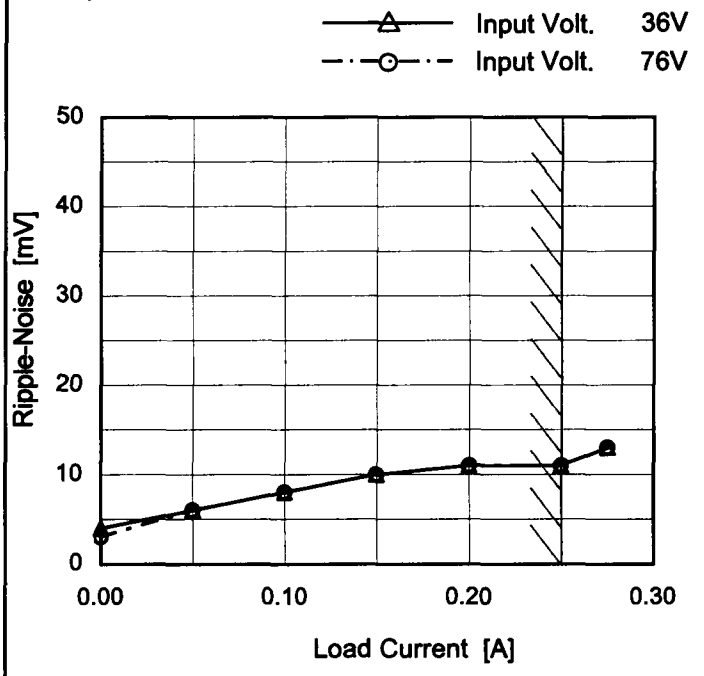
Model	SUW64812/SUCW64812
Item	Ripple-Noise
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



Measured by 100 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

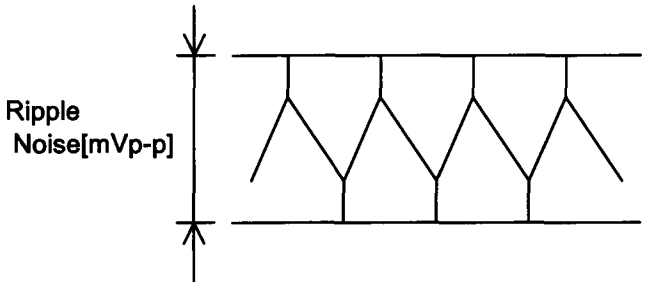


Fig.Complex Ripple Noise Wave Form

2.Values

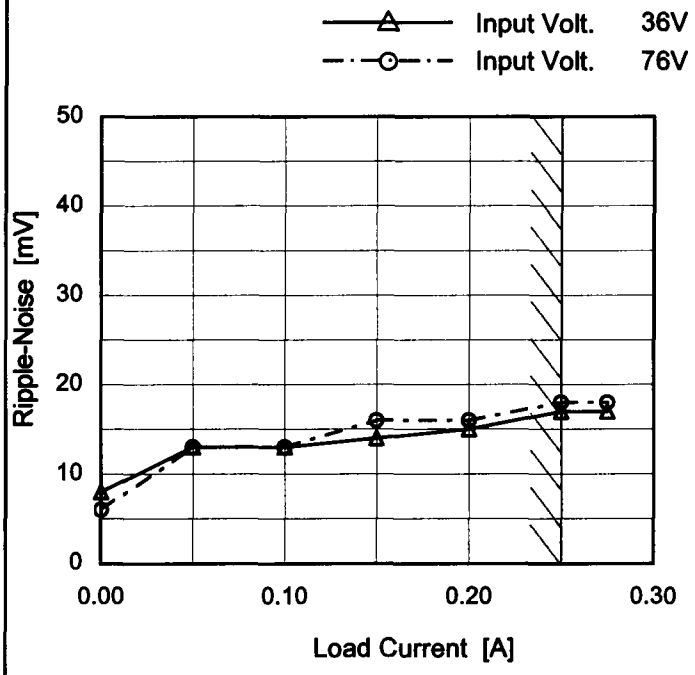
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	4	3
0.050	6	6
0.100	8	8
0.150	10	10
0.200	11	11
0.250	11	11
0.275	13	13
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW64812/SUCW64812
Item	Ripple-Noise
Object	-12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



Measured by 100 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

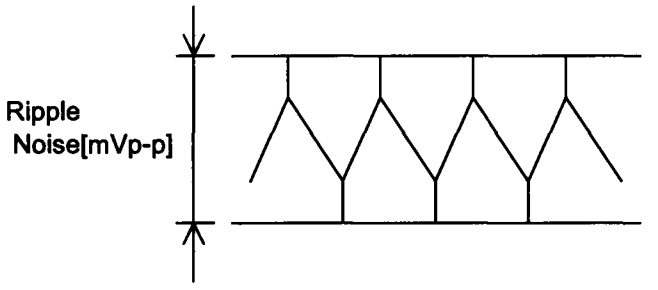


Fig.Complex Ripple Noise Wave Form

2.Values

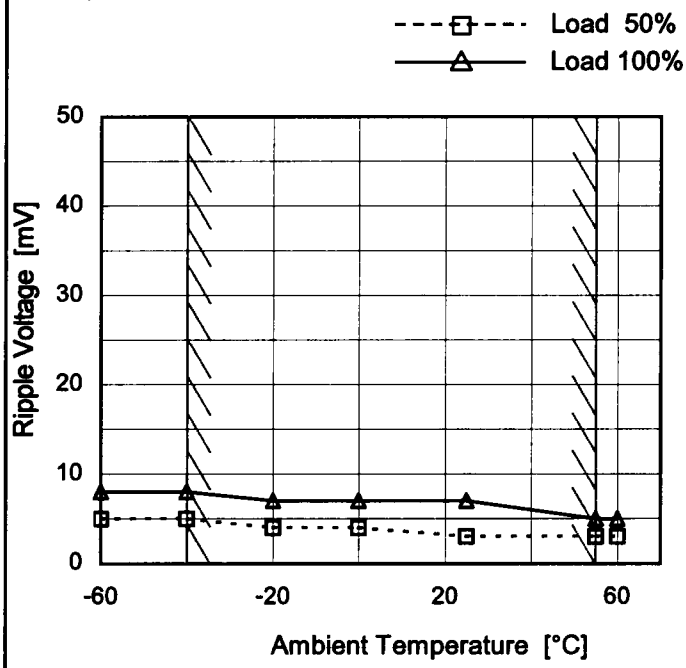
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	8	6
0.050	13	13
0.100	13	13
0.150	14	16
0.200	15	16
0.250	17	18
0.275	17	18
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW64812/SUCW64812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.25A

Testing Circuitry Figure B

1.Graph



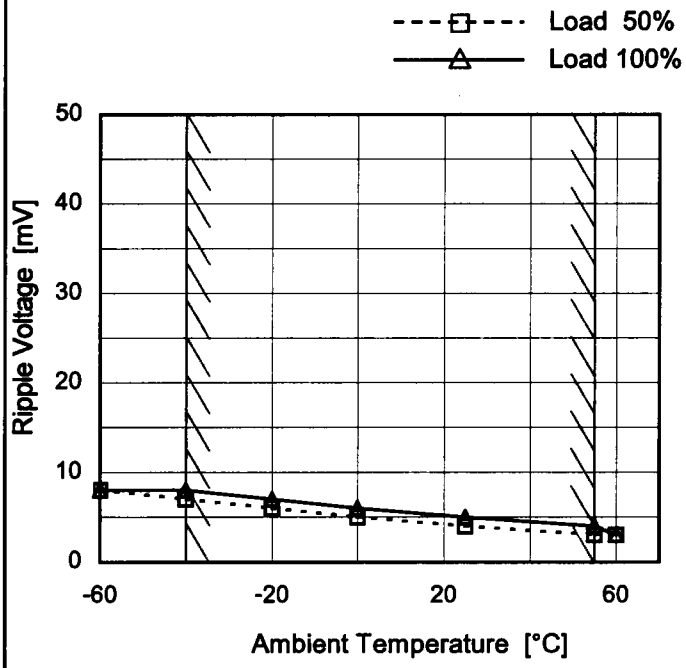
Input Volt. 48V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	5	8
-40	5	8
-20	4	7
0	4	7
25	3	7
55	3	5
60	3	5
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.25A

1.Graph



Input Volt. 48V

Measured by 100 MHz Oscilloscope.

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

2.Values

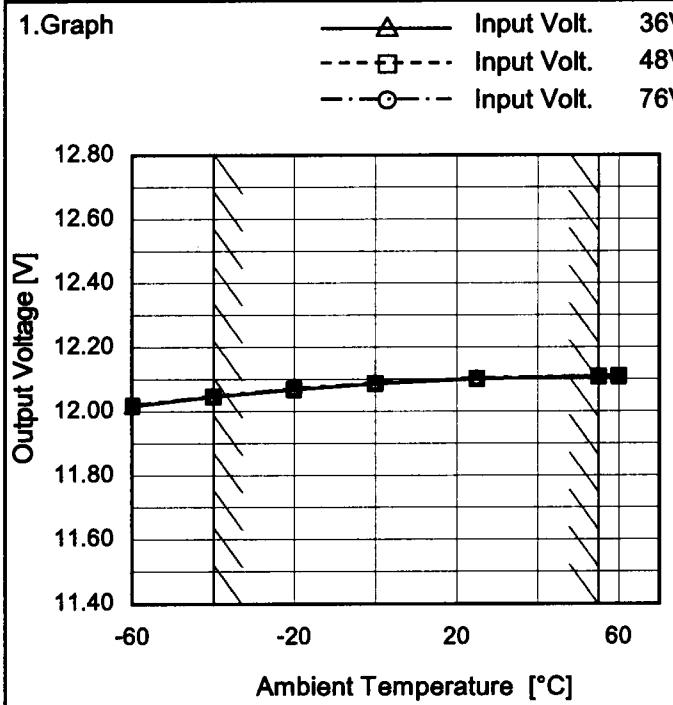
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	8	8
-40	7	8
-20	6	7
0	5	6
25	4	5
55	3	4
60	3	3
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW64812/SUCW64812
Item	Ambient Temperature Drift
Object	+12V0.25A

Testing Circuitry Figure A

1.Graph

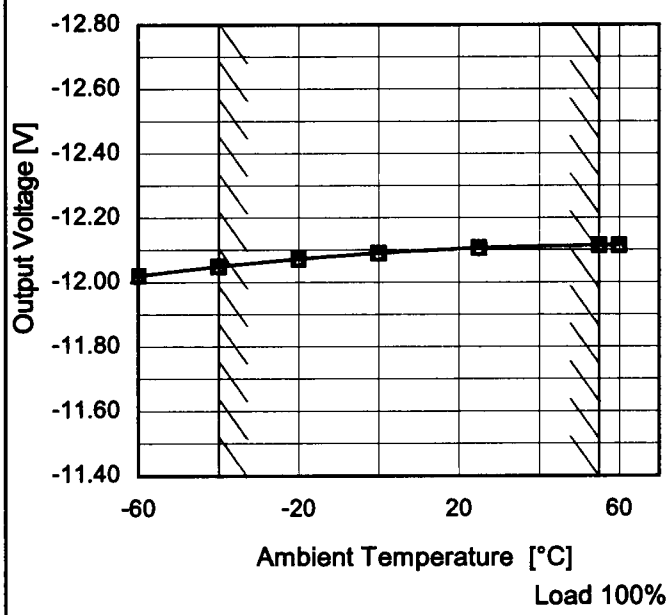


2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	12.017	12.019	12.019
-40	12.046	12.047	12.048
-20	12.068	12.069	12.071
0	12.086	12.087	12.088
25	12.101	12.102	12.103
55	12.108	12.109	12.110
60	12.108	12.110	12.110
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V0.25A

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	-12.021	-12.021	-12.020
-40	-12.050	-12.050	-12.050
-20	-12.073	-12.073	-12.073
0	-12.092	-12.091	-12.090
25	-12.107	-12.107	-12.105
55	-12.115	-12.114	-12.113
60	-12.116	-12.114	-12.113
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUW64812/SUCW64812	
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 - 0.25A (AVR 2):0 - 0.25A
* 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	+12V0.25A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	12.418	±186	±1.6
Minimum Voltage	-40	36	0.25	12.046		

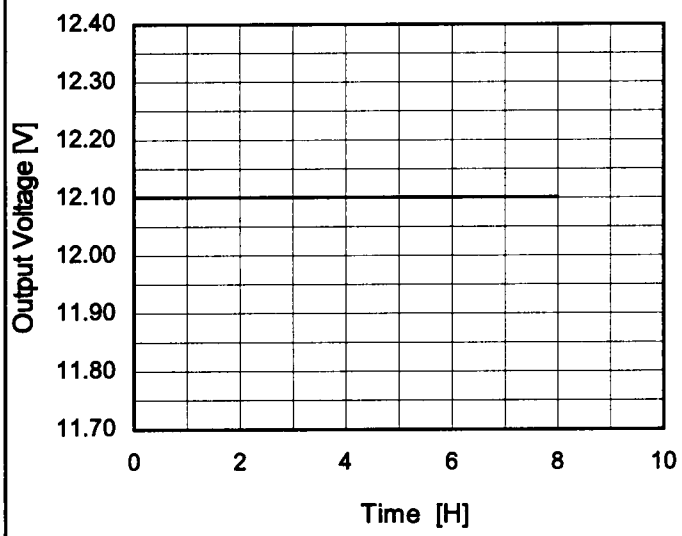
Object	-12V0.25A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	-12.427	±189	±1.6
Minimum Voltage	-40	36	0.25	-12.050		

COSEL

Model	SUW64812/SUCW64812
Item	Time Lapse Drift
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



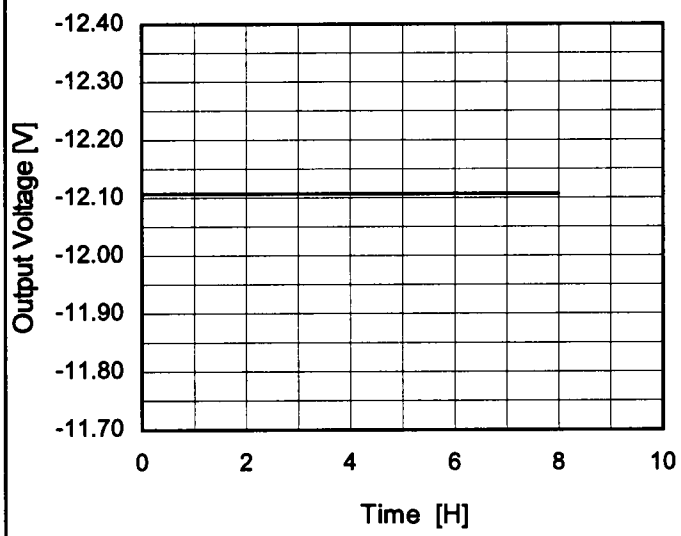
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.103
0.5	12.101
1.0	12.101
2.0	12.101
3.0	12.101
4.0	12.101
5.0	12.101
6.0	12.101
7.0	12.101
8.0	12.101

Object	-12V0.25A

1.Graph



Input Volt. 48V
Load 100%

2.Values

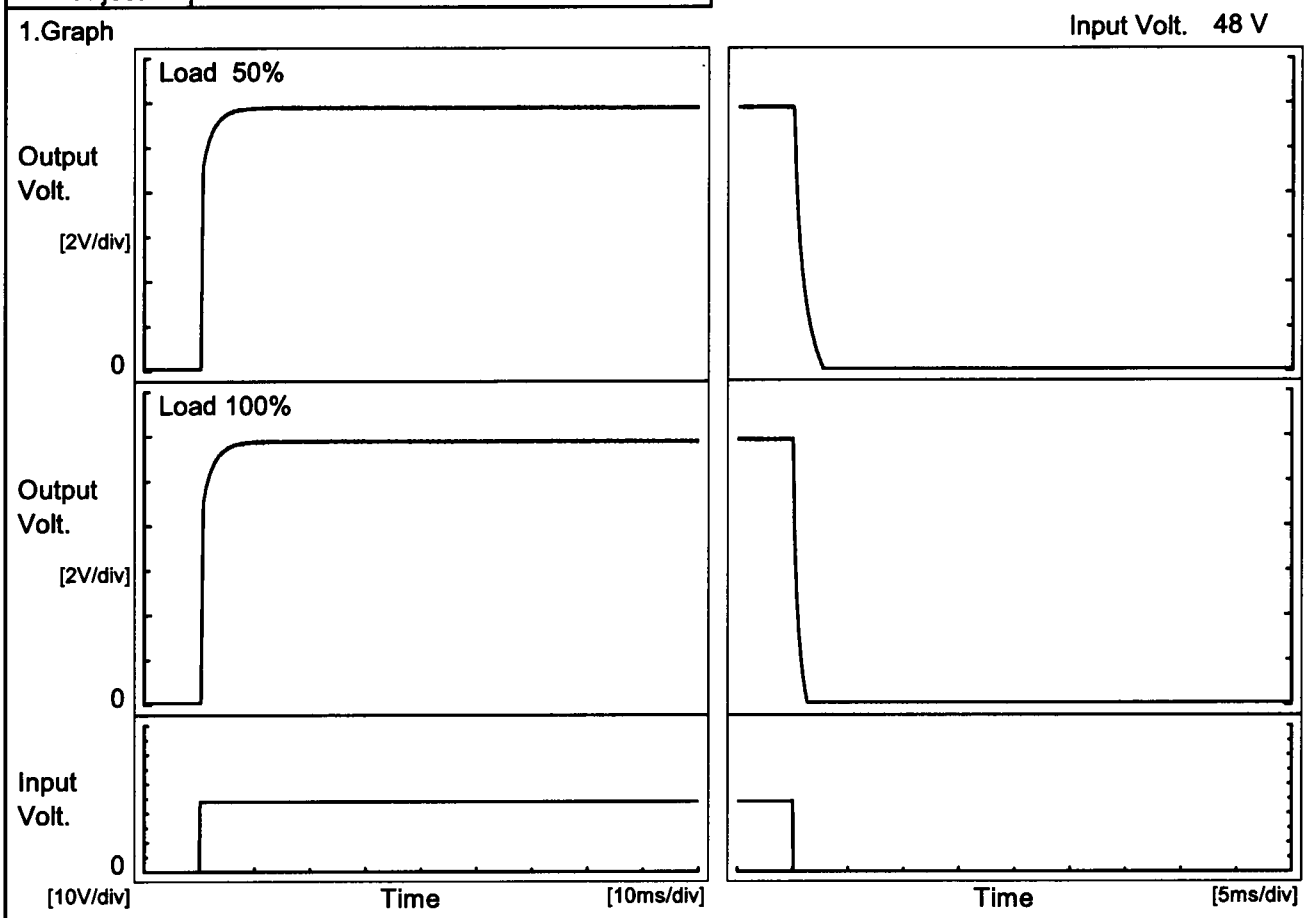
Time since start [H]	Output Voltage [V]
0.0	-12.109
0.5	-12.107
1.0	-12.107
2.0	-12.107
3.0	-12.107
4.0	-12.107
5.0	-12.107
6.0	-12.107
7.0	-12.107
8.0	-12.107

COSEL

Model	SUW64812/SUCW64812
Item	Rise and Fall Time
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

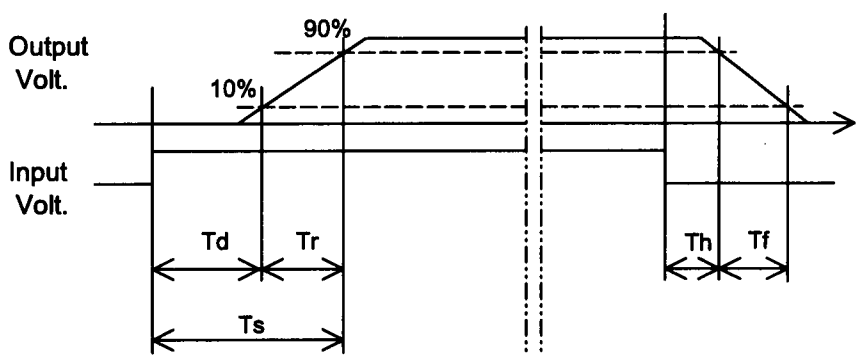
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.3	2.5	2.8	0.1	1.8
100 %	0.3	2.6	2.9	0.1	0.9

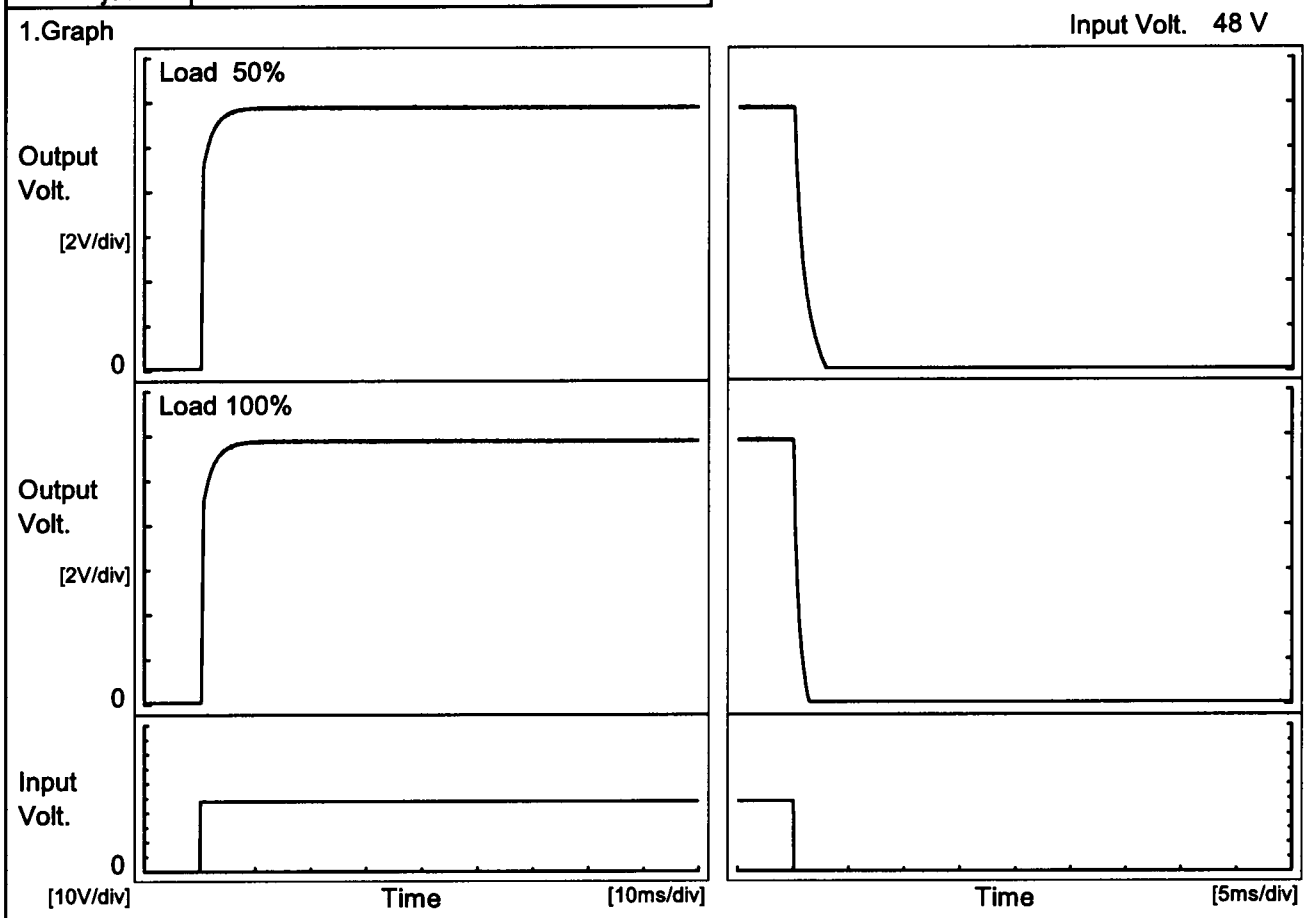


COSEL

Model	SUW64812/SUCW64812
Item	Rise and Fall Time
Object	-12V0.25A

Temperature 25°C
Testing Circuitry Figure A

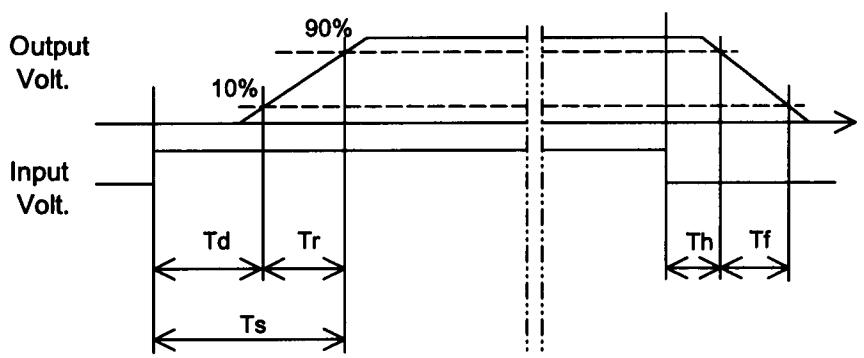
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.3	2.5	2.8	0.1	2.0
100 %	0.3	2.5	2.8	0.1	1.0



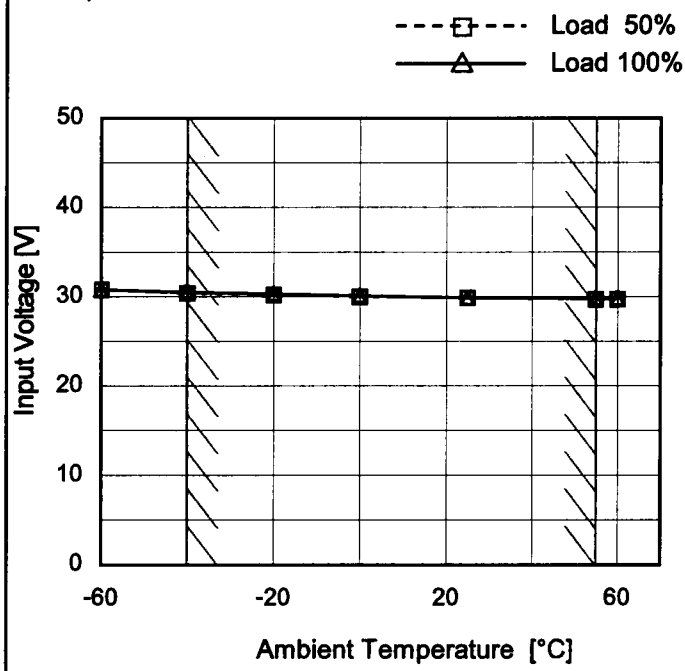
COSEL

Model	SUW64812/SUCW64812
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object +12V0.25A

1.Graph

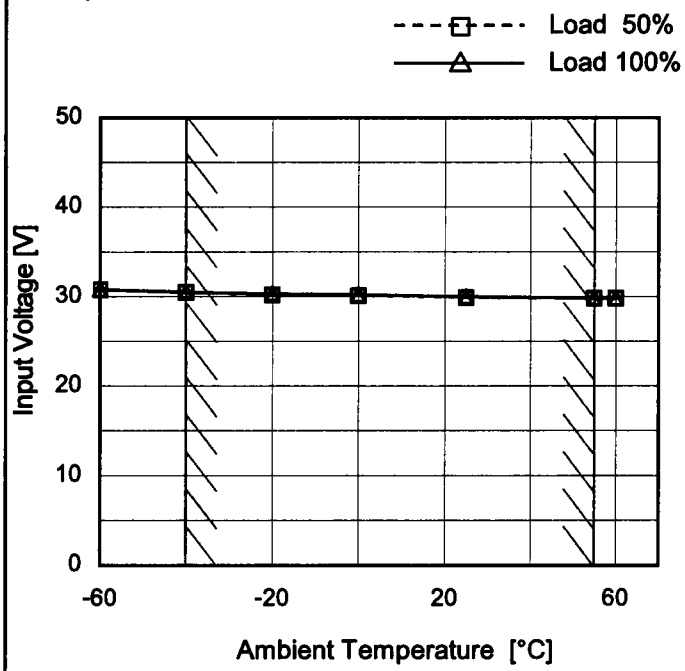


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.8	30.8
-40	30.4	30.5
-20	30.2	30.3
0	30.0	30.1
25	29.9	29.9
55	29.7	29.8
60	29.7	29.8
--	-	-
--	-	-
--	-	-
--	-	-

Object -12V0.25A

1.Graph



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

2.Values

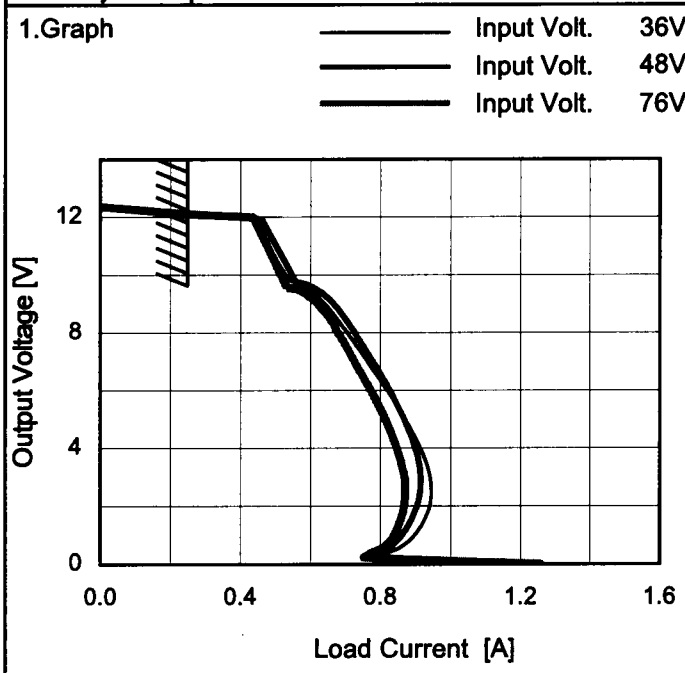
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.8	30.8
-40	30.5	30.5
-20	30.2	30.3
0	30.1	30.2
25	29.9	30.0
55	29.8	29.8
60	29.8	29.8
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW64812/SUCW64812
Item	Overcurrent Protection
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

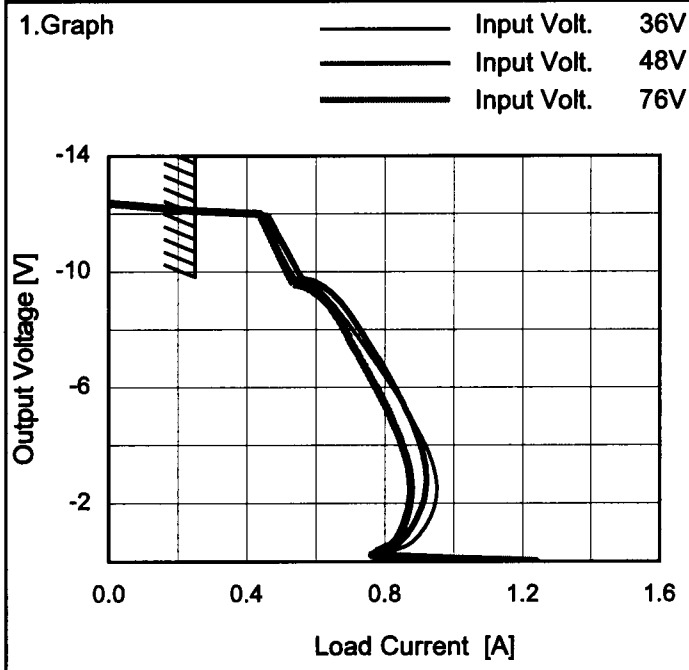


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
12.0	0.25	0.25	0.25
11.4	0.46	0.49	0.46
10.8	0.49	0.51	0.48
9.6	0.58	0.61	0.53
8.4	0.68	0.71	0.66
7.2	0.75	0.77	0.72
6.0	0.82	0.83	0.77
4.8	0.88	0.87	0.82
3.6	0.93	0.91	0.86
2.4	0.95	0.91	0.87
1.2	0.91	0.87	0.85
0.0	1.27	1.25	1.26

Object	-12V0.25A

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	0.25	0.25	0.25
-11.4	0.46	0.49	0.46
-10.8	0.49	0.51	0.48
-9.6	0.58	0.61	0.54
-8.4	0.68	0.71	0.66
-7.2	0.76	0.77	0.72
-6.0	0.82	0.83	0.78
-4.8	0.88	0.88	0.82
-3.6	0.93	0.91	0.86
-2.4	0.95	0.92	0.88
-1.2	0.92	0.88	0.86
0.0	1.25	1.23	1.24

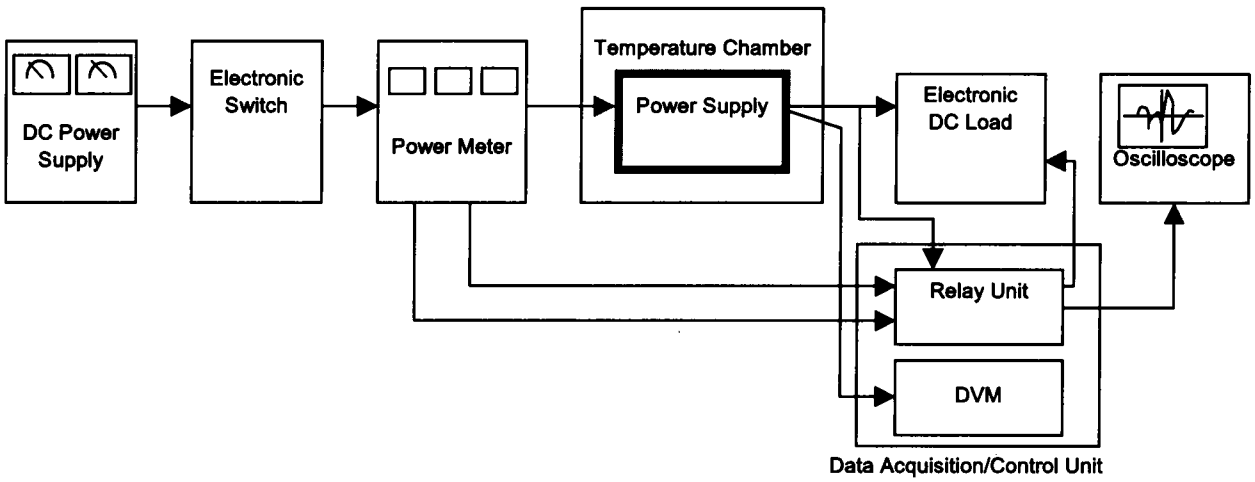


Figure A

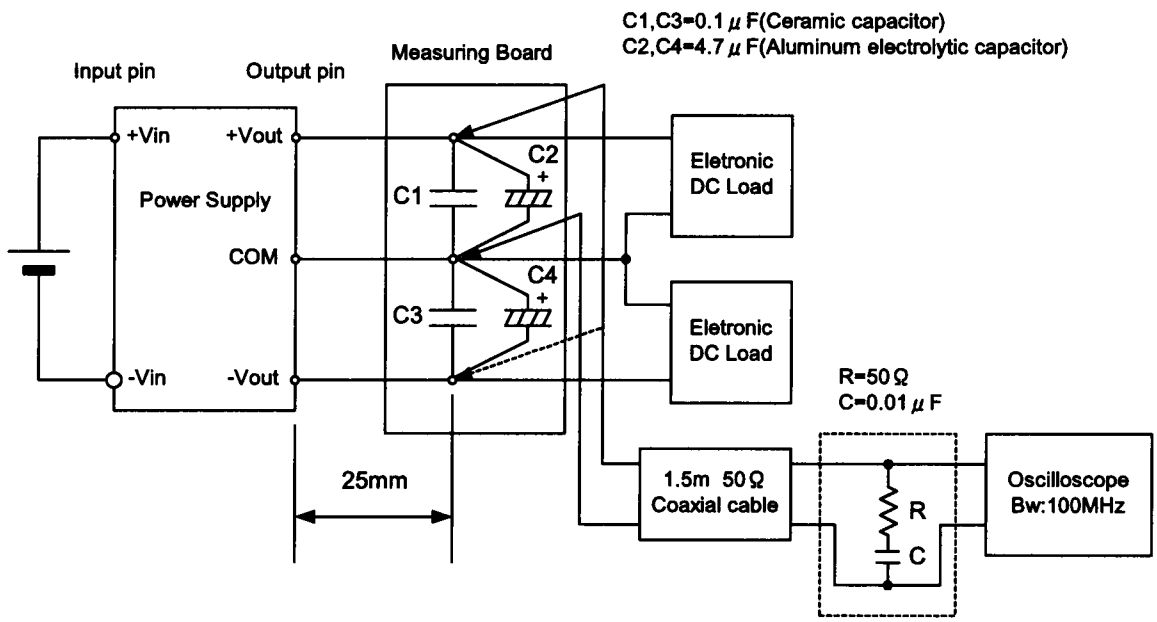


Figure B (Ripple and Ripple noise Characteristic)