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参考資料

TEST DATA OF SUW1R51212

Regulated DC Power Supply
Sep 17, 2004

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COSEL CO.,LTD.

参考資料

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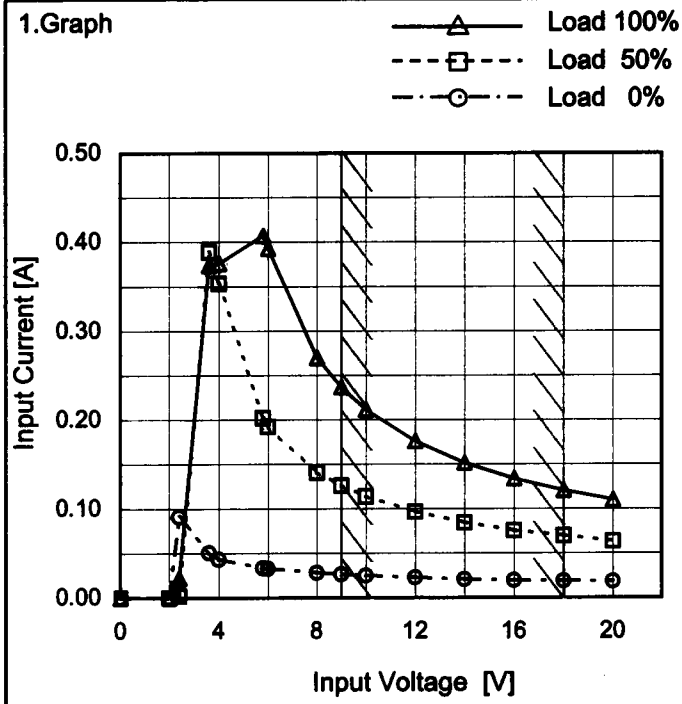
Model	SUW1R51212
Item	Input Current (by Input Voltage)
Object	――――――

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
2.0	0.000	0.000	0.000
2.4	0.091	0.002	0.022
3.6	0.051	0.389	0.374
4.0	0.043	0.354	0.376
5.8	0.033	0.202	0.407
6.0	0.033	0.192	0.393
8.0	0.028	0.141	0.270
9.0	0.026	0.126	0.237
10.0	0.025	0.114	0.212
12.0	0.023	0.097	0.176
14.0	0.021	0.084	0.152
16.0	0.019	0.075	0.134
18.0	0.019	0.070	0.121
20.0	0.018	0.063	0.110
--	-	-	-

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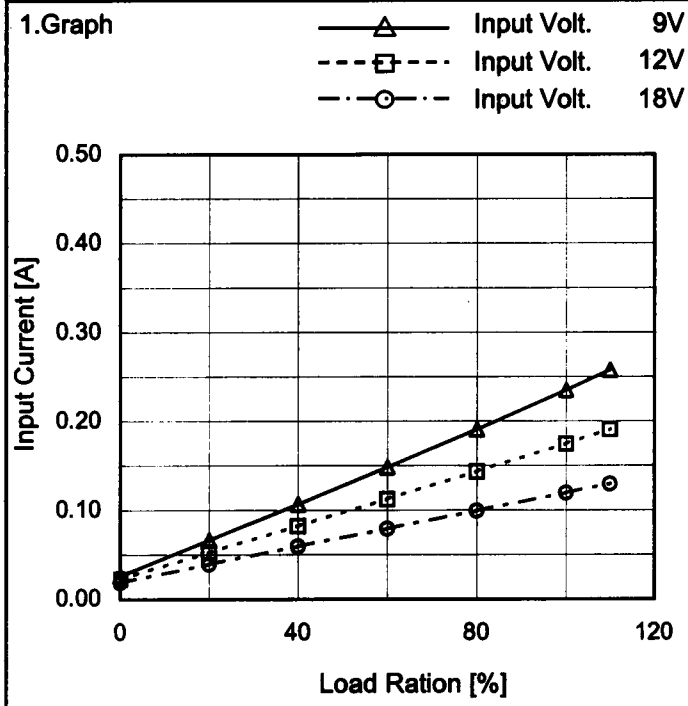
Model	SUW1R51212
Item	Input Current (by Load Current)
Object	――――――

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	0.026	0.023	0.019
20	0.066	0.053	0.039
40	0.107	0.082	0.059
60	0.148	0.113	0.079
80	0.191	0.143	0.099
100	0.235	0.175	0.119
110	0.258	0.191	0.129
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

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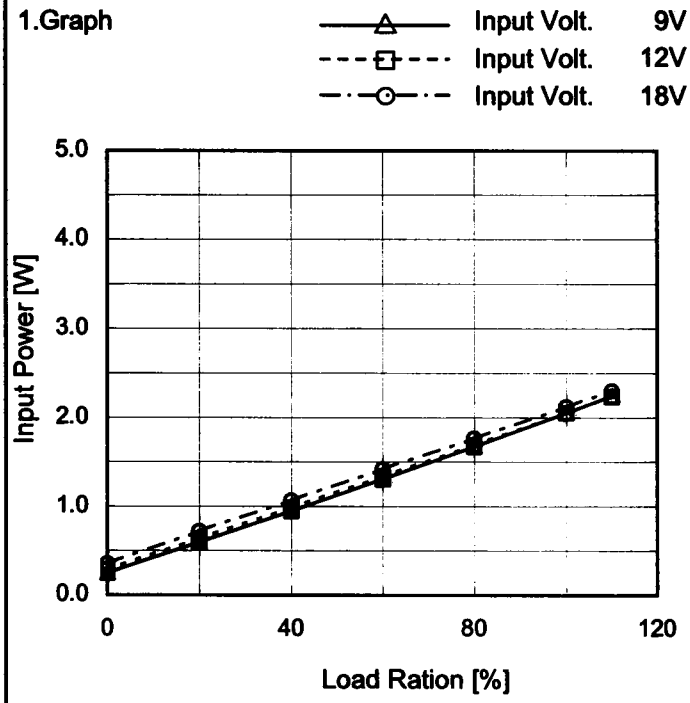
Model	SUW1R51212
Item	Input Power (by Load Current)
Object	――――――

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	0.25	0.28	0.35
20	0.60	0.63	0.72
40	0.95	0.98	1.07
60	1.31	1.33	1.42
80	1.68	1.69	1.77
100	2.05	2.06	2.12
110	2.25	2.24	2.30
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

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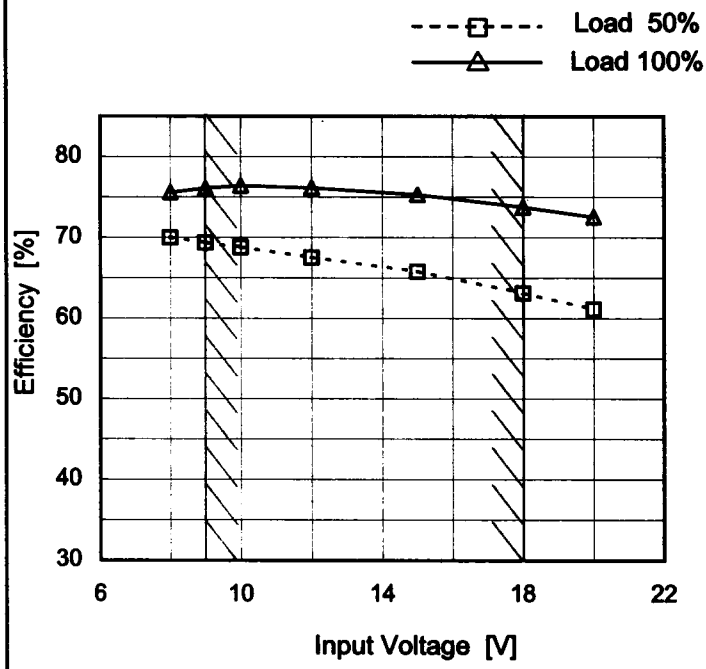
Model	SUW1R51212
Item	Efficiency (by Input Voltage)
Object	――――――――

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	70.0	75.6
9	69.3	76.1
10	68.8	76.4
12	67.5	76.2
15	65.8	75.3
18	63.2	73.8
20	61.1	72.6
--	-	-
--	-	-

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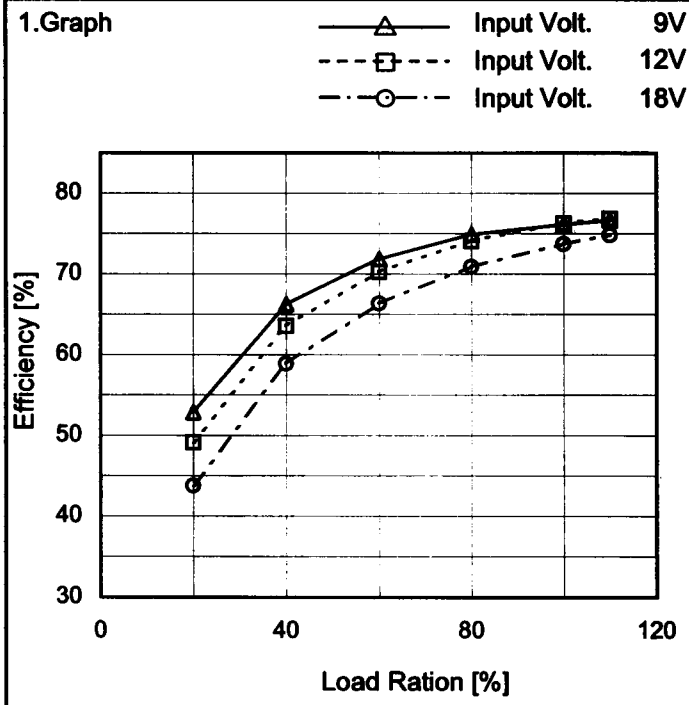
Model	SUW1R51212
Item	Efficiency (by Load Current)
Object	――――――

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	52.9	49.2	43.8
40	66.3	63.6	58.9
60	71.9	70.3	66.3
80	74.9	74.1	70.9
100	76.1	76.3	73.7
110	76.7	76.9	74.8
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

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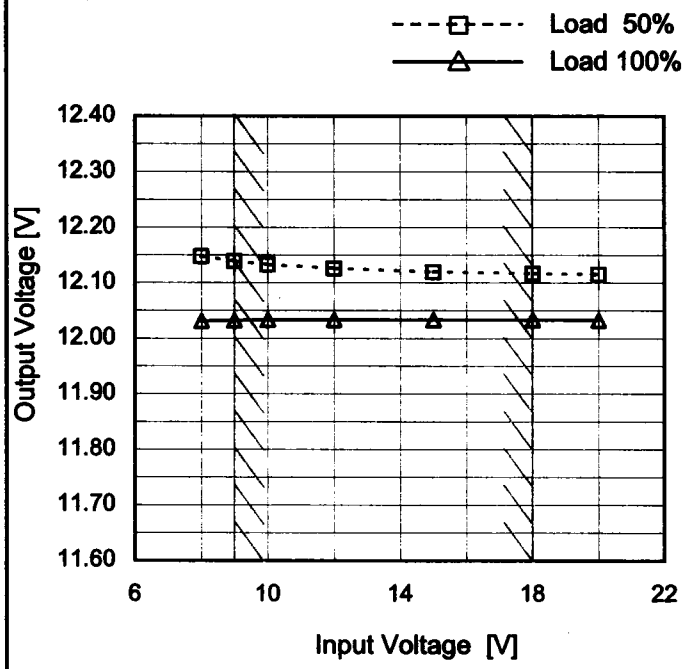
Model	SUW1R51212
Item	Line Regulation
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

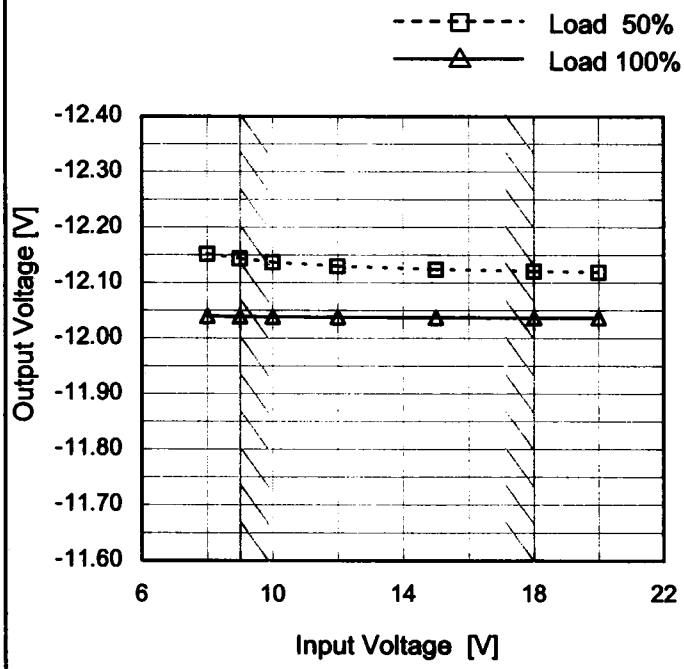


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	12.148	12.031
9	12.139	12.032
10	12.133	12.033
12	12.126	12.033
15	12.120	12.034
18	12.117	12.033
20	12.115	12.033
–	-	-
–	-	-

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%
8	-12.152	-12.040
9	-12.144	-12.039
10	-12.137	-12.039
12	-12.130	-12.038
15	-12.124	-12.037
18	-12.121	-12.037
20	-12.119	-12.037
–	-	-
–	-	-

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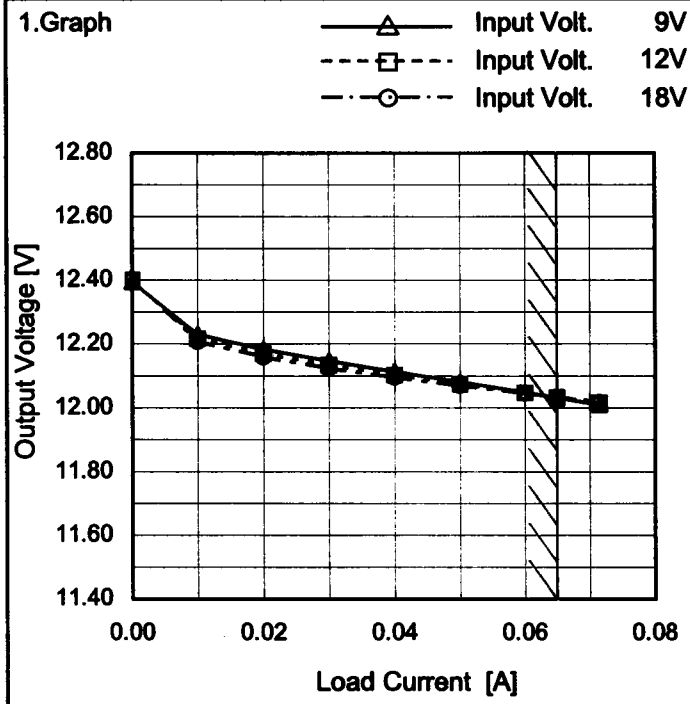
Model	SUW1R51212
Item	Load Regulation

Temperature 25°C
Testing Circuitry Figure A

Object +12V0.065A

1.Graph

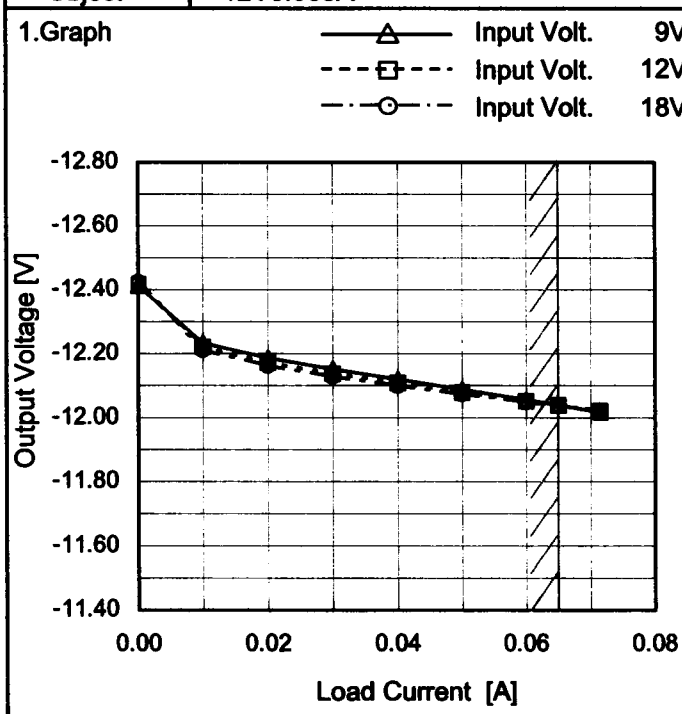


2.Values

Load Current [A]	Output Voltage [V] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	12.395	12.401	12.403
0.010	12.230	12.216	12.206
0.020	12.184	12.169	12.158
0.030	12.147	12.134	12.124
0.040	12.115	12.104	12.095
0.050	12.082	12.074	12.069
0.060	12.049	12.047	12.045
0.065	12.032	12.033	12.033
0.072	12.010	12.015	12.018
–	-	-	-
–	-	-	-

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	-12.413	-12.418	-12.424
0.010	-12.234	-12.221	-12.211
0.020	-12.188	-12.173	-12.162
0.030	-12.152	-12.138	-12.128
0.040	-12.120	-12.108	-12.099
0.050	-12.088	-12.079	-12.073
0.060	-12.057	-12.052	-12.049
0.065	-12.040	-12.038	-12.037
0.072	-12.018	-12.020	-12.022
–	-	-	-
–	-	-	-

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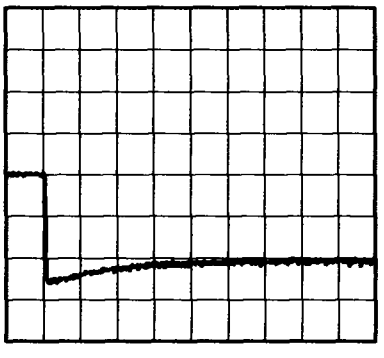
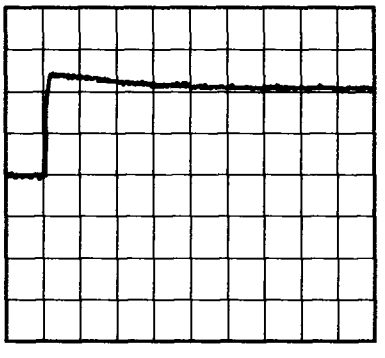
Model	SUW1R51212	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	+12V0.065A	

Input Volt. 12 V
Cycle 100 mS

Min. Load (0A) ←→
Load 100% (0.065A)

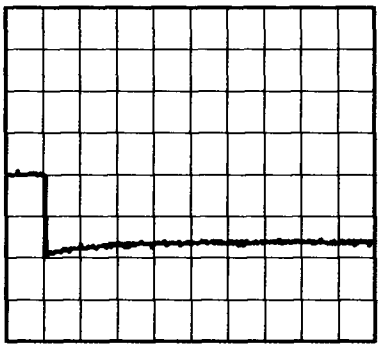


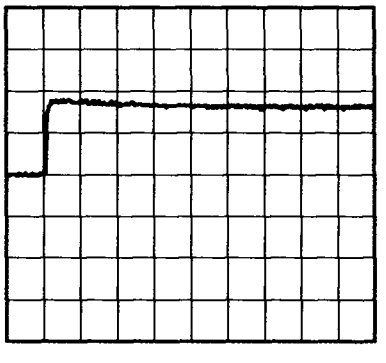


200mV/div

2ms/div 2ms/div

Min. Load (0A) ←→
Load 50% (0.0325A)

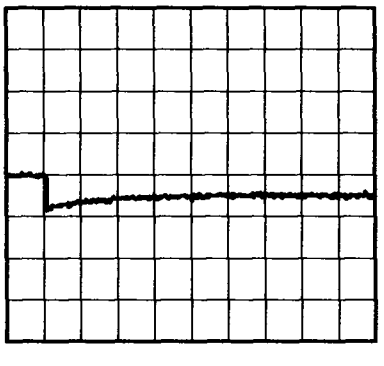


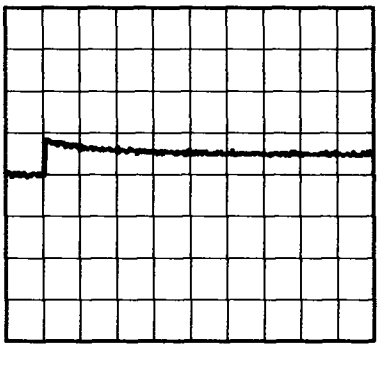


200mV/div

2ms/div 2ms/div

Load 50% (0.0325A) ←→
Load 100% (0.065A)





200mV/div

2ms/div 2ms/div

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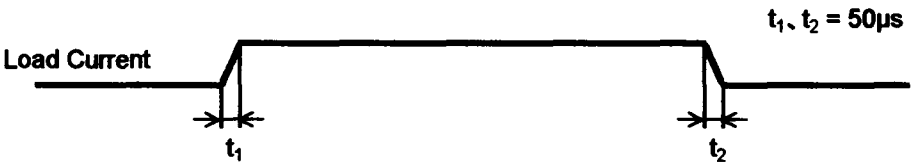
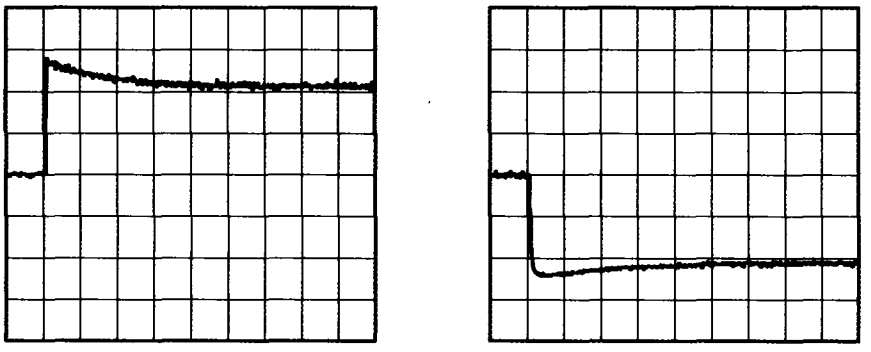
Model	SUW1R51212	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	-12V0.065A	

Input Volt. 12 V
Cycle 100 mS



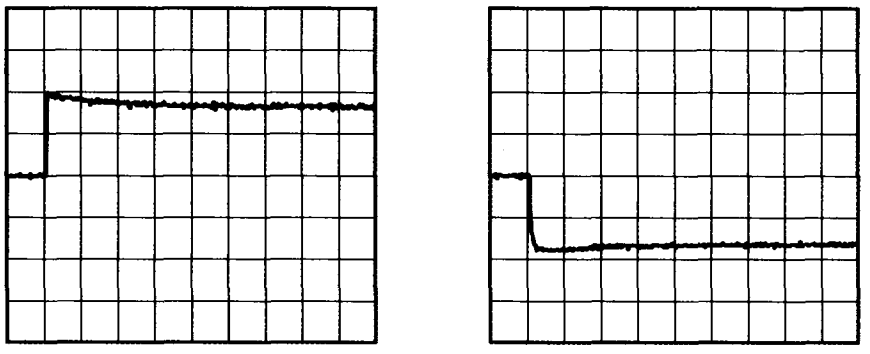
Min. Load (0A) ⟷
Load 100% (0.065A)



200mV/div

2ms/div 2ms/div

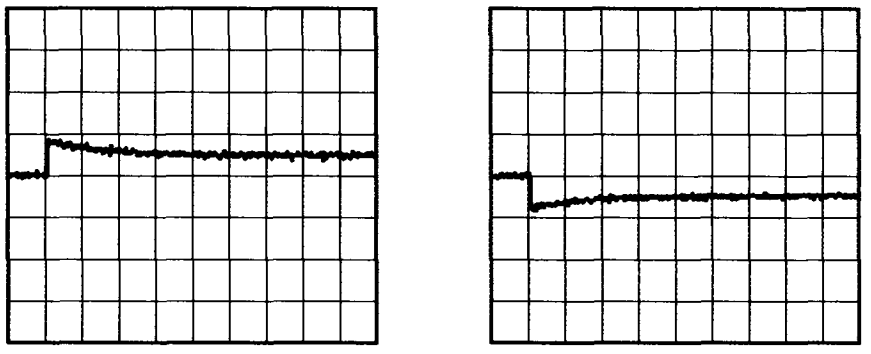
Min. Load (0A) ⟷
Load 50% (0.0325A)



200mV/div

2ms/div 2ms/div

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



200mV/div

2ms/div 2ms/div

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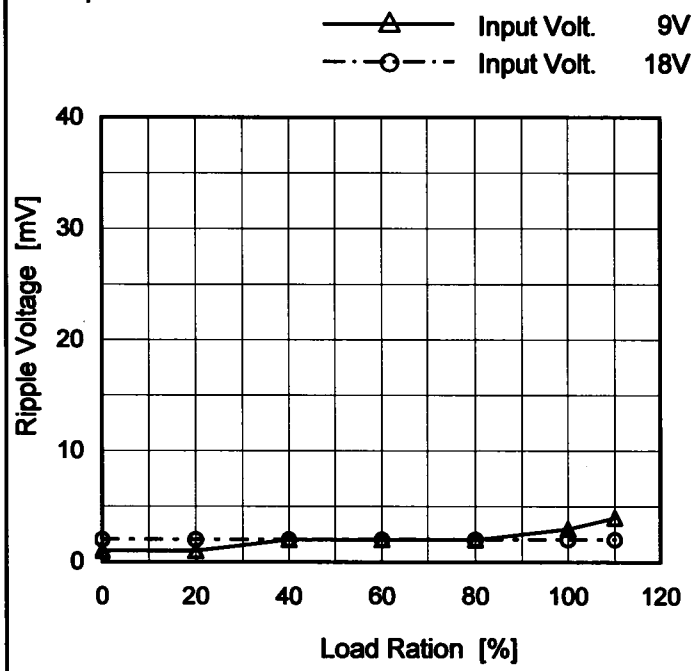
Model	SUW1R51212
Item	Ripple Voltage (by Load Current)
Object	+12V0.065A

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.

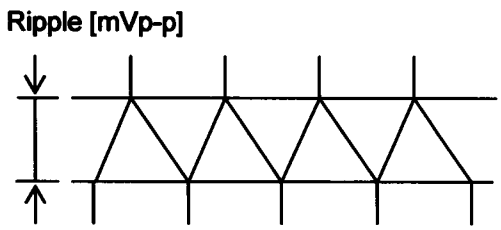


Fig.Complex Ripple Wave Form

2.Values

Load Ration [%]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0	1	2
20	1	2
40	2	2
60	2	2
80	2	2
100	3	2
110	4	2
–	-	-
–	-	-
–	-	-
–	-	-

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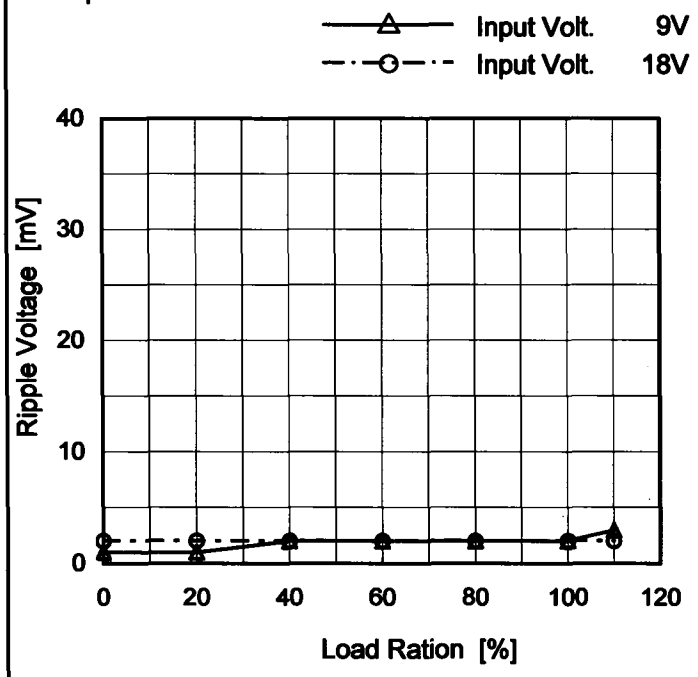
Model	SUW1R51212
Item	Ripple Voltage (by Load Current)
Object	-12V0.065A

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. 9 [V]	Input Volt. 18 [V]
0	1	2
20	1	2
40	2	2
60	2	2
80	2	2
100	2	2
110	3	2
–	-	-
–	-	-
–	-	-
–	-	-

Ripple [mVp-p]

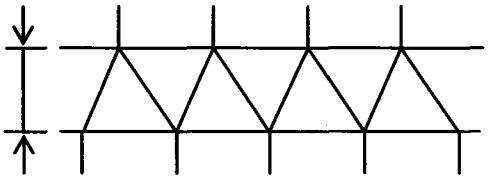


Fig.Complex Ripple Wave Form

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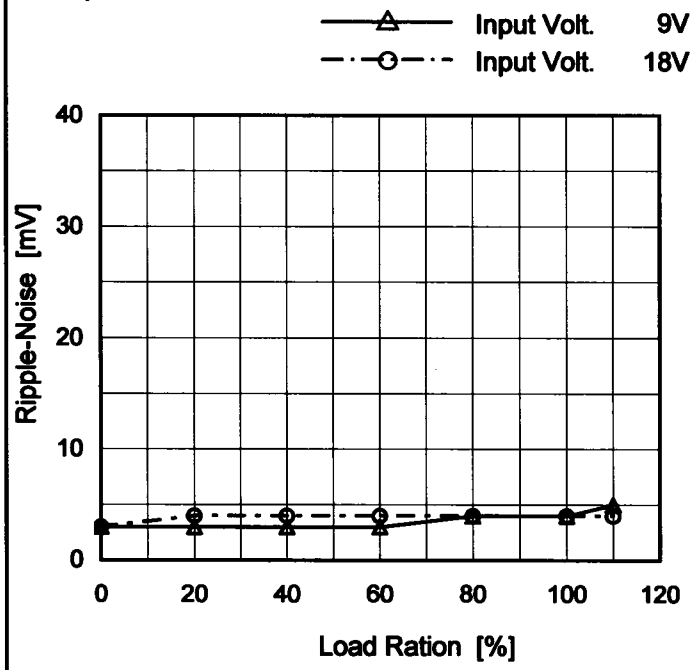
Model	SUW1R51212
Item	Ripple-Noise
Object	+12V0.065A

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.

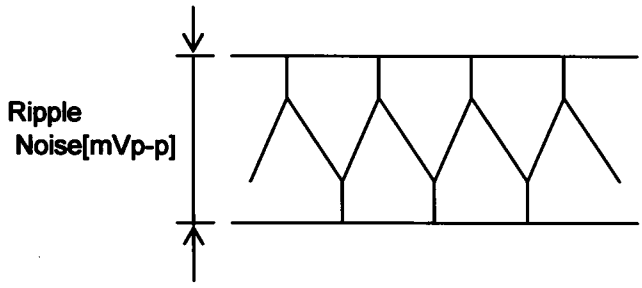


Fig.Complex Ripple Noise Wave Form

2.Values

Load Ration [%]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0	3	3
20	3	4
40	3	4
60	3	4
80	4	4
100	4	4
110	5	4
–	-	-
–	-	-
–	-	-
–	-	-

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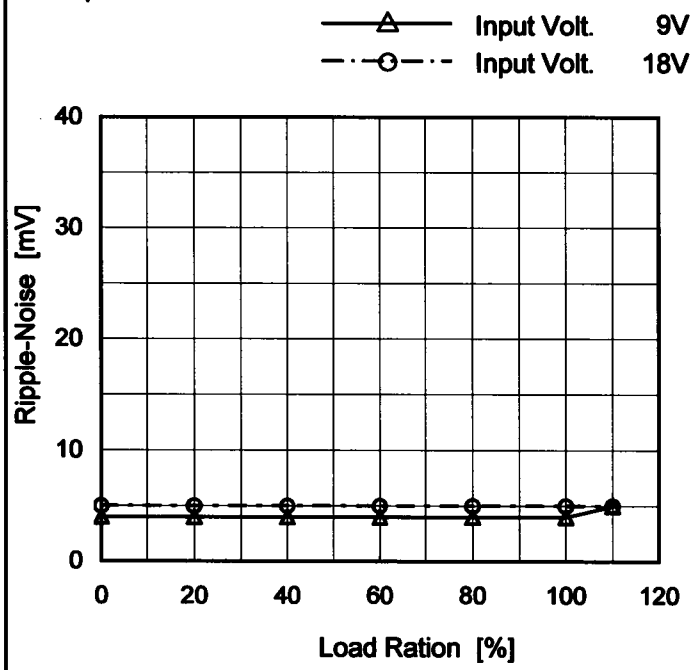
Model	SUW1R51212
Item	Ripple-Noise
Object	-12V0.065A

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.

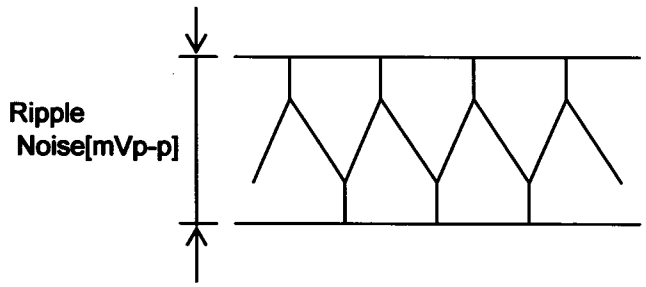


Fig.Complex Ripple Noise Wave Form

2.Values

Load Ration [%]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0	4	5
20	4	5
40	4	5
60	4	5
80	4	5
100	4	5
110	5	5
–	-	-
–	-	-
–	-	-
–	-	-

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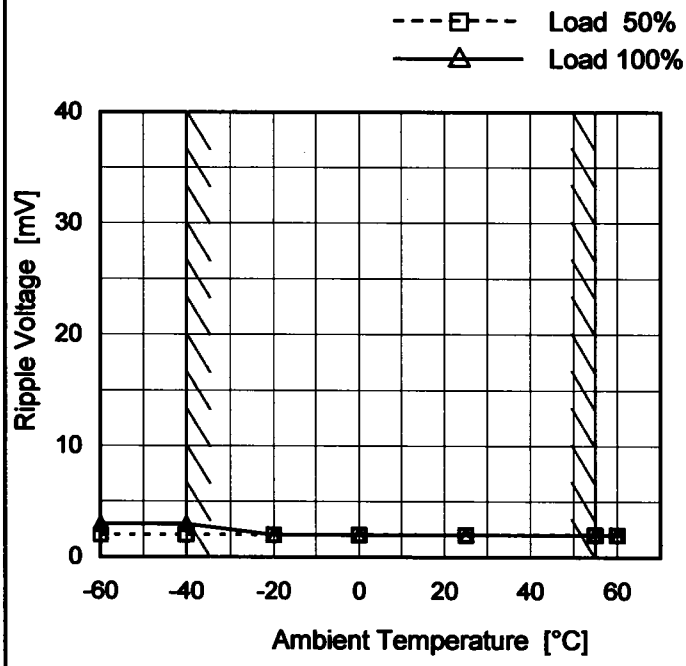
Model	SUW1R51212
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.065A

Testing Circuitry Figure B

1.Graph



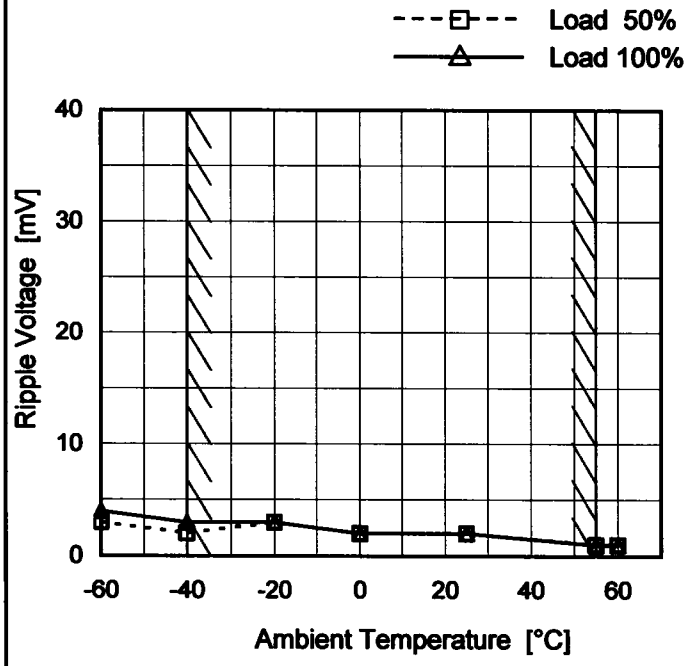
Input Volt. 12V

2.Values

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

Object	-12V0.065A

1.Graph



Input Volt. 12V

Measured by 100 MHz Oscilloscope.

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

2.Values

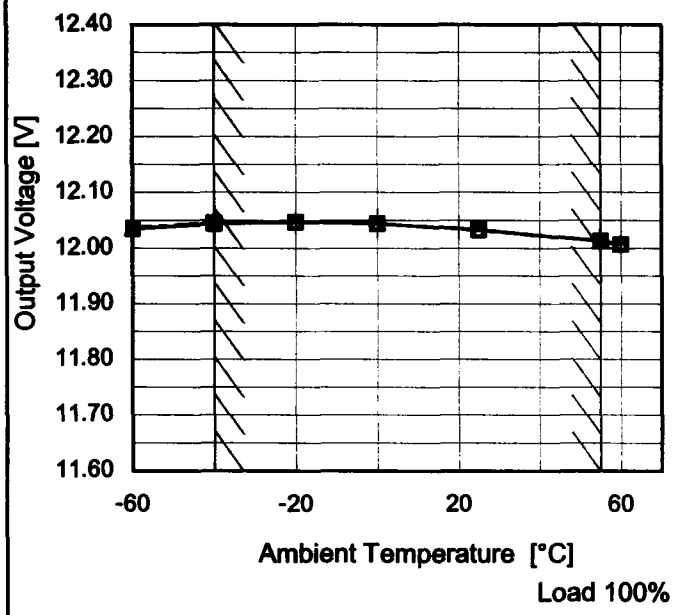
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	3	4
-40	2	3
-20	3	3
0	2	2
25	2	2
55	1	1
60	1	1
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUW1R51212
Item	Ambient Temperature Drift
Object	+12V0.065A

Testing Circuitry Figure A

1.Graph

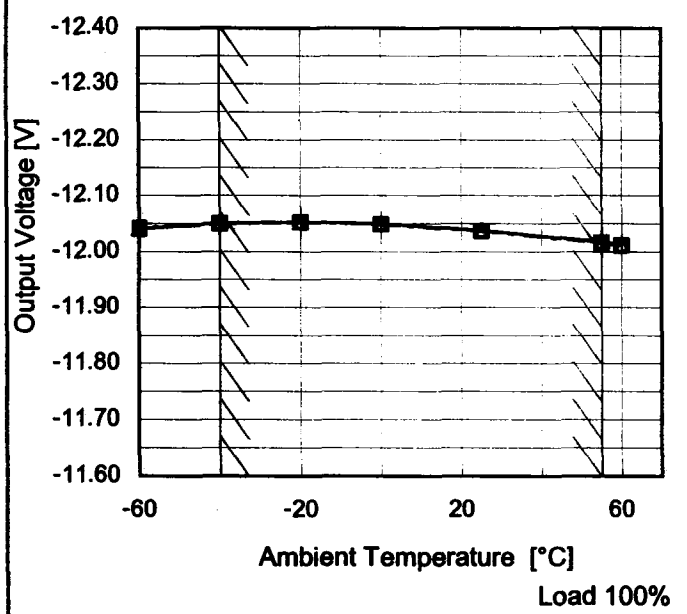


2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	12.035	12.036	12.036
-40	12.044	12.045	12.046
-20	12.047	12.047	12.047
0	12.044	12.044	12.044
25	12.033	12.033	12.032
55	12.013	12.013	12.012
60	12.008	12.007	12.006
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	-12.041	-12.042	-12.040
-40	-12.051	-12.050	-12.049
-20	-12.053	-12.052	-12.052
0	-12.050	-12.049	-12.048
25	-12.038	-12.037	-12.036
55	-12.018	-12.016	-12.015
60	-12.013	-12.011	-12.010
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

COSEL

Model	SUW1R51212	
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 - 0.065A (AVR 2) : 0 - 0.065A

* 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	+12V0.065A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	18	0	12.424	±206	±1.7
Minimum Voltage	55	18	0.065	12.012		

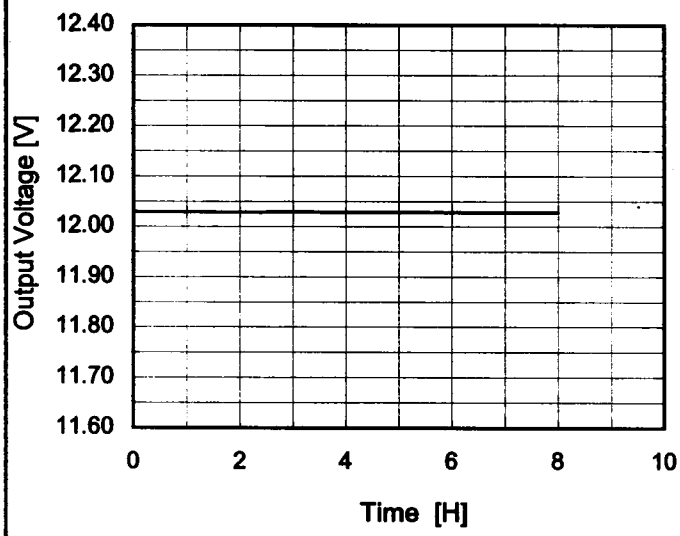
Object	-12V0.065A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	18	0	-12.450	±218	±1.8
Minimum Voltage	55	18	0.065	-12.015		

COSEL

Model	SUW1R51212
Item	Time Lapse Drift
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



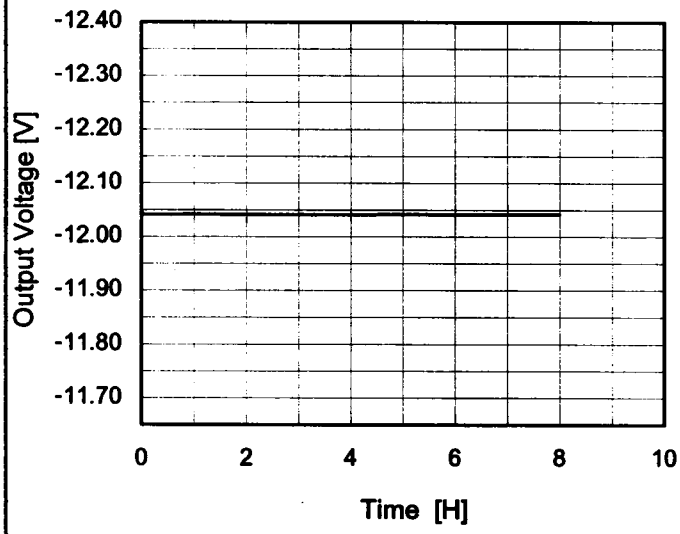
Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.036
0.5	12.029
1.0	12.029
2.0	12.029
3.0	12.029
4.0	12.029
5.0	12.028
6.0	12.029
7.0	12.029
8.0	12.029

Object	-12V0.065A

1.Graph



Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.048
0.5	-12.042
1.0	-12.042
2.0	-12.042
3.0	-12.042
4.0	-12.042
5.0	-12.042
6.0	-12.042
7.0	-12.042
8.0	-12.042

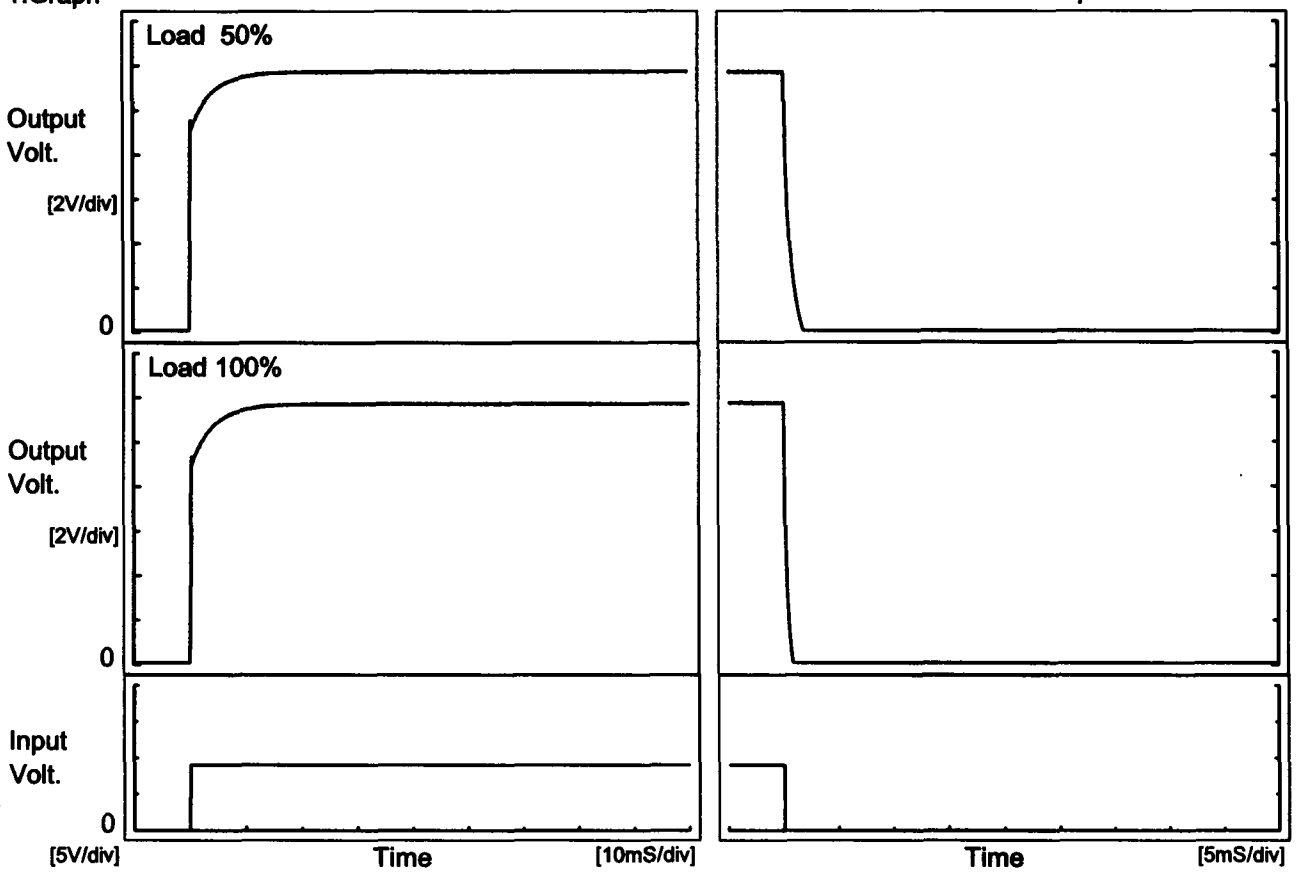
COSEL

Model	SUW1R51212
Item	Rise and Fall Time
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

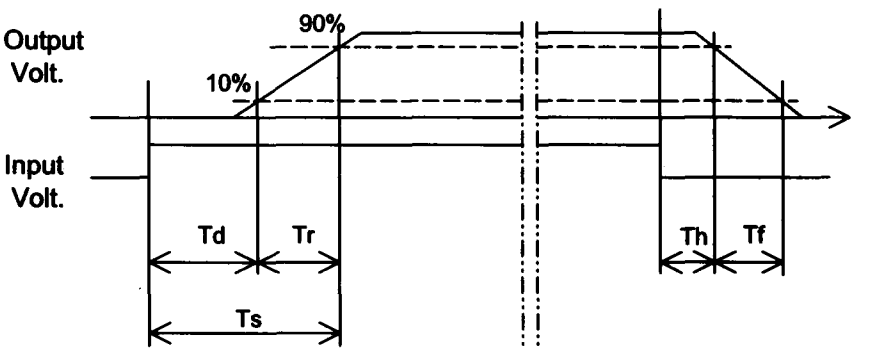
Input Volt. 9 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	4.6	4.7	0.1	1.2
100 %	0.1	4.9	5.0	0.1	0.6



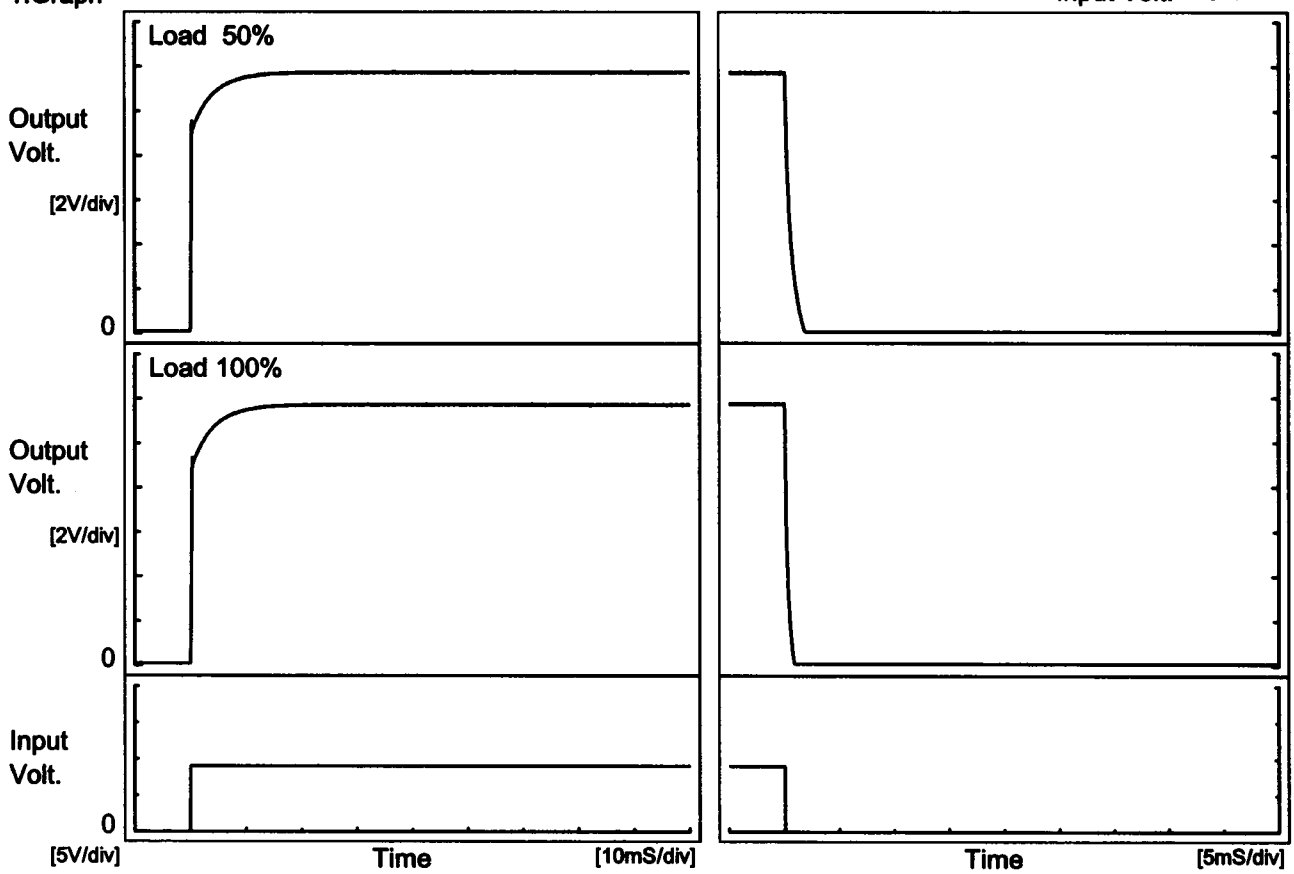
COSEL

Model	SUW1R51212
Item	Rise and Fall Time
Object	-12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

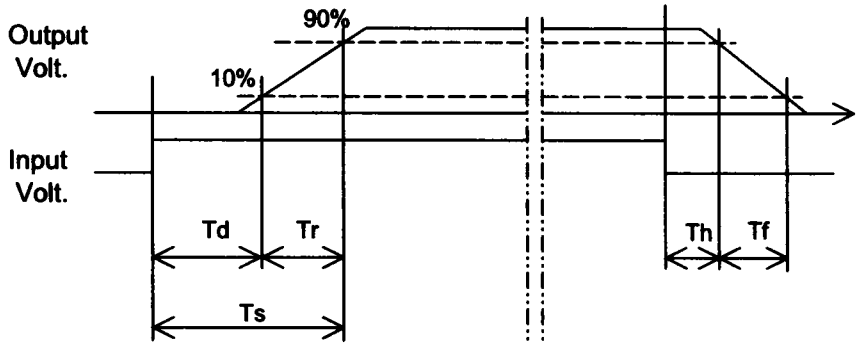
Input Volt. 9 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	4.6	4.7	0.1	1.2
100 %	0.1	4.9	5.0	0.1	0.6

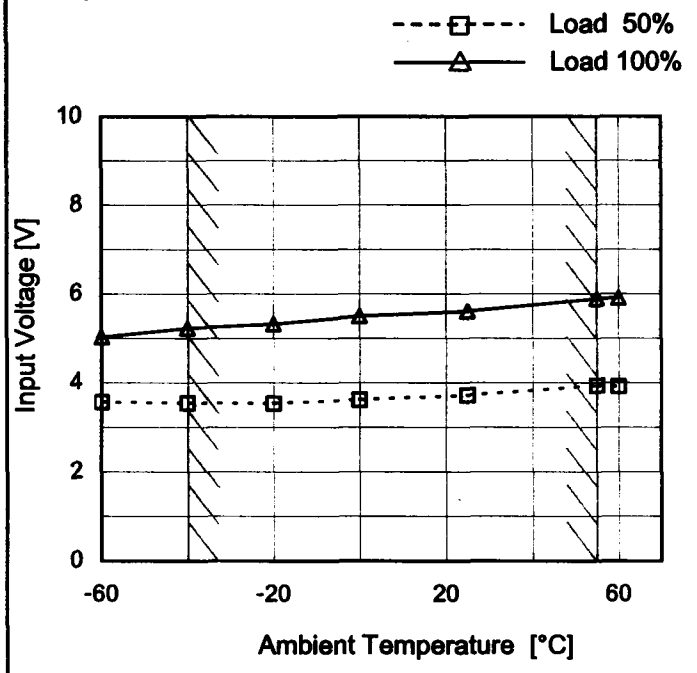


COSEL

Model	SUW1R51212
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.065A

Testing Circuitry Figure A

1.Graph

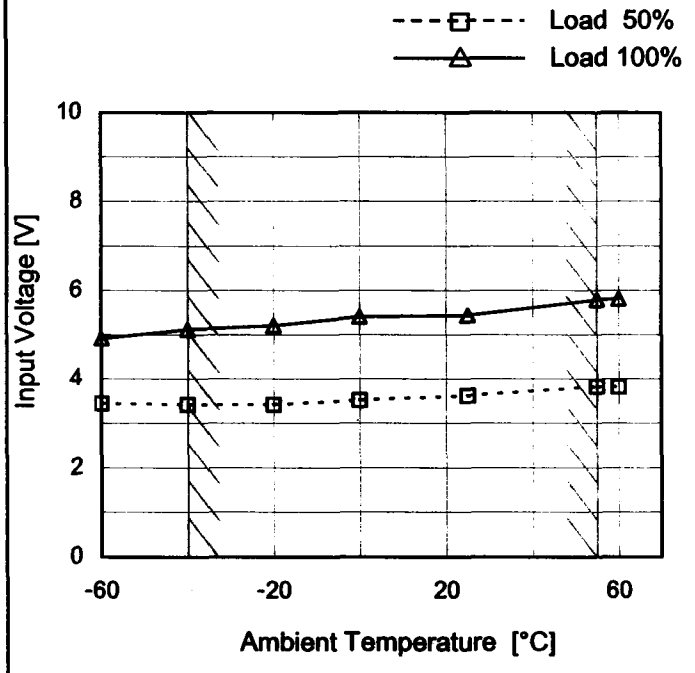


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.6	5.1
-40	3.6	5.3
-20	3.6	5.4
0	3.7	5.5
25	3.8	5.7
55	4.0	5.9
60	4.0	6.0
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.065A

1.Graph



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

2.Values

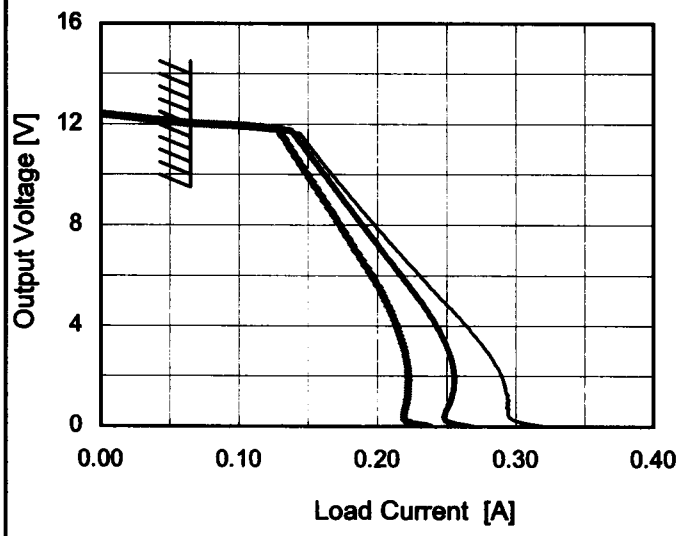
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.5	5.0
-40	3.5	5.2
-20	3.5	5.3
0	3.6	5.5
25	3.7	5.5
55	3.9	5.8
60	3.9	5.9
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUW1R51212
Item	Overcurrent Protection
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

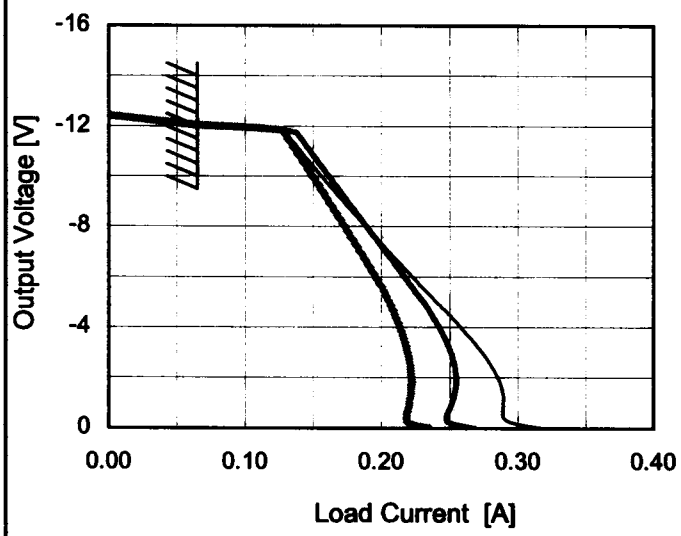


2.Values

Output Voltage [V]	Load Current [A] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
12.0	0.07	0.07	0.07
11.4	0.15	0.14	0.13
10.8	0.16	0.15	0.14
9.6	0.17	0.17	0.15
8.4	0.19	0.18	0.17
7.2	0.21	0.20	0.18
6.0	0.23	0.22	0.20
4.8	0.25	0.23	0.21
3.6	0.27	0.25	0.22
2.4	0.29	0.25	0.22
1.2	0.29	0.25	0.22
0.0	0.32	0.27	0.24

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-12.0	0.07	0.07	0.07
-11.4	0.13	0.14	0.13
-10.8	0.14	0.15	0.14
-9.6	0.16	0.17	0.15
-8.4	0.18	0.18	0.17
-7.2	0.20	0.20	0.18
-6.0	0.22	0.22	0.20
-4.8	0.24	0.23	0.21
-3.6	0.27	0.25	0.22
-2.4	0.28	0.25	0.22
-1.2	0.29	0.25	0.22
0.0	0.32	0.27	0.24

COSEL

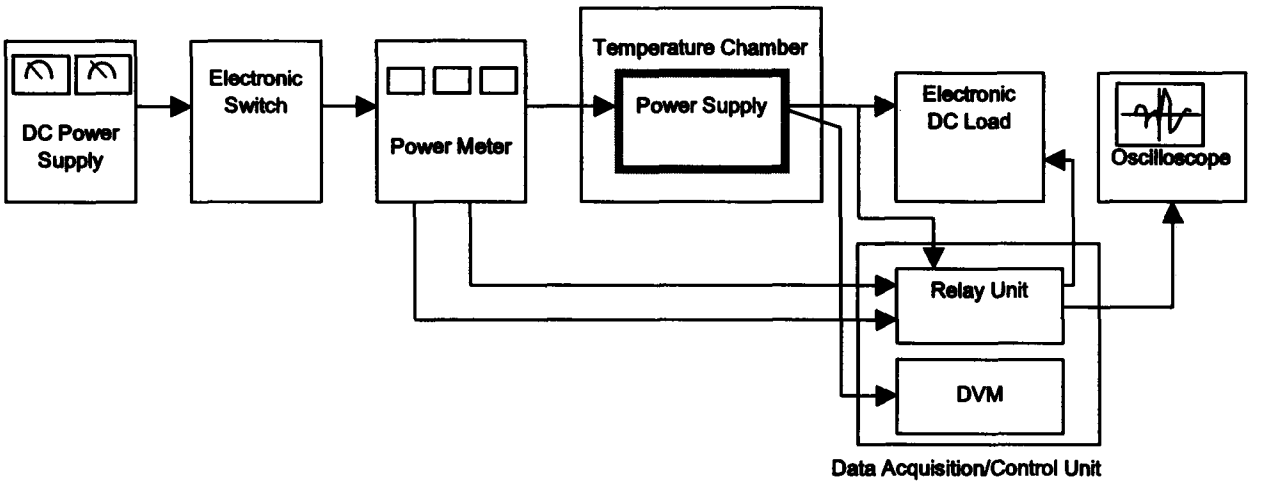


Figure A

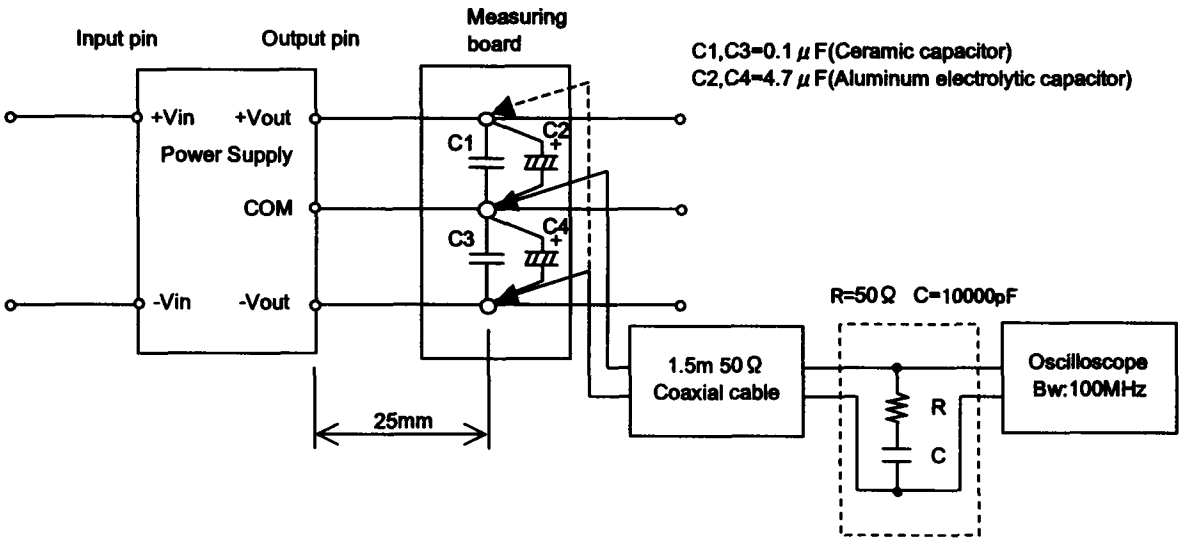


Figure B (Ripple and Ripple noise Characteristic)