COSEL

参考資料

TEST DATA OF SUTW61212

Regulated DC Power Supply
March 17, 2009

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COSEL CO.,LTD.

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CONTENTS

1.Input Current (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・ 1
2.Input Current (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・ 2
3.Input Power (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・ 3
4.Efficiency (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・ 4
5.Efficiency (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・ 5
6.Line Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 6
7.Load Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 7
8.Dynamic Load Response ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 8
9.Ripple Voltage (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・ 10
10.Ripple-Noise ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 12
11.Ripple Voltage (by Ambient Temperature) ・・・・・・・・・・・・・・・・・ 14
12.Ambient Temperature Drift ・・・・・・・・・・・・・・・・・・・・・・・・・ 15
13.Output Voltage Accuracy ・・・・・・・・・・・・・・・・・・・・・・・・・・ 16
14.Time Lapse Drift ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 17
15.Rise and Fall Time ・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 18
16.Minimum Input Voltage for Regulated Output Voltage ・・・・・・・・・・ 20
17.Overcurrent Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・ 21
18.Figure of Testing Circuitry ・・・・・・・・・・・・・・・・・・・・・・・・ 22
(Final Page 22)

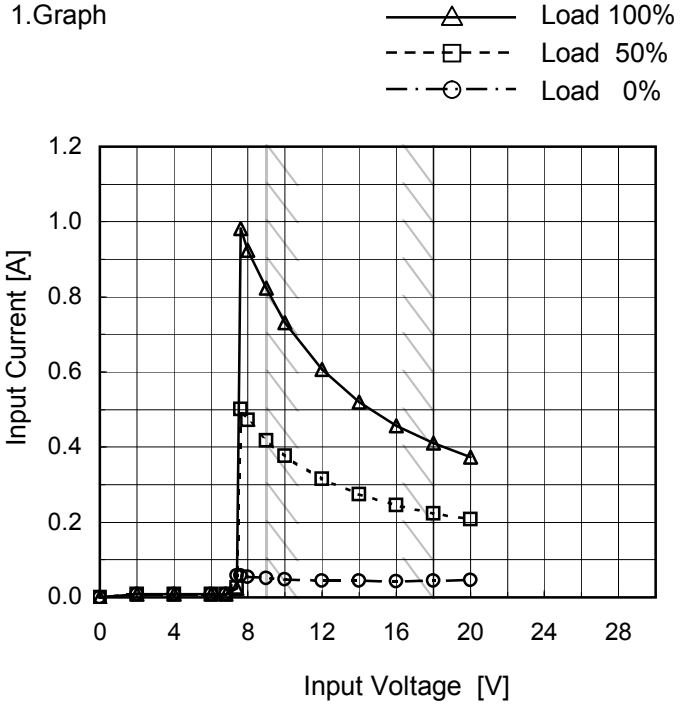
参考資料

COSEL

Model	SUTW61212
Item	Input Current (by Input Voltage)
Object	――――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
2.0	0.009	0.009	0.009
4.0	0.009	0.009	0.009
6.0	0.008	0.009	0.009
6.8	0.008	0.009	0.008
7.4	0.059	0.026	0.023
7.6	0.057	0.500	0.982
8.0	0.055	0.472	0.924
9.0	0.051	0.418	0.823
10.0	0.049	0.376	0.731
12.0	0.045	0.316	0.607
14.0	0.044	0.275	0.520
16.0	0.043	0.246	0.457
18.0	0.044	0.223	0.411
20.0	0.046	0.207	0.374
--	-	-	-
--	-	-	-
--	-	-	-

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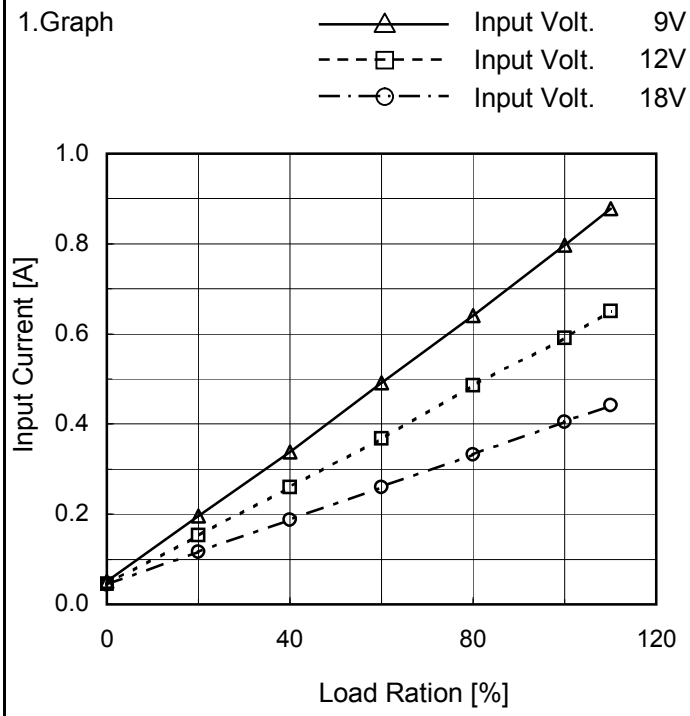
Model	SUTW61212
Item	Input Current (by Load Current)
Object	――――――

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	0.051	0.045	0.044
20	0.196	0.154	0.117
40	0.338	0.259	0.188
60	0.491	0.367	0.261
80	0.640	0.486	0.332
100	0.797	0.592	0.405
110	0.878	0.651	0.442
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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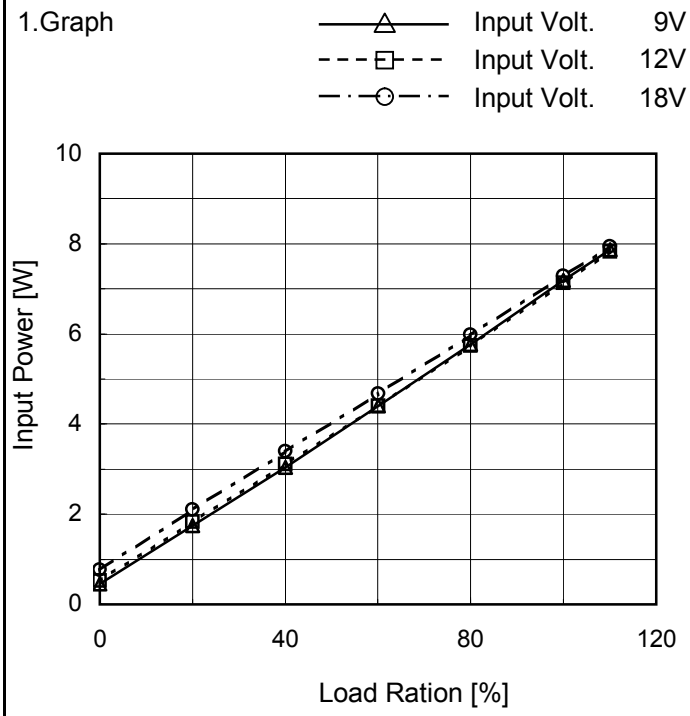
COSEL

Model	SUTW61212
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	0.45	0.53	0.77
20	1.75	1.84	2.11
40	3.05	3.11	3.39
60	4.40	4.41	4.67
80	5.76	5.74	5.98
100	7.18	7.13	7.29
110	7.88	7.83	7.94
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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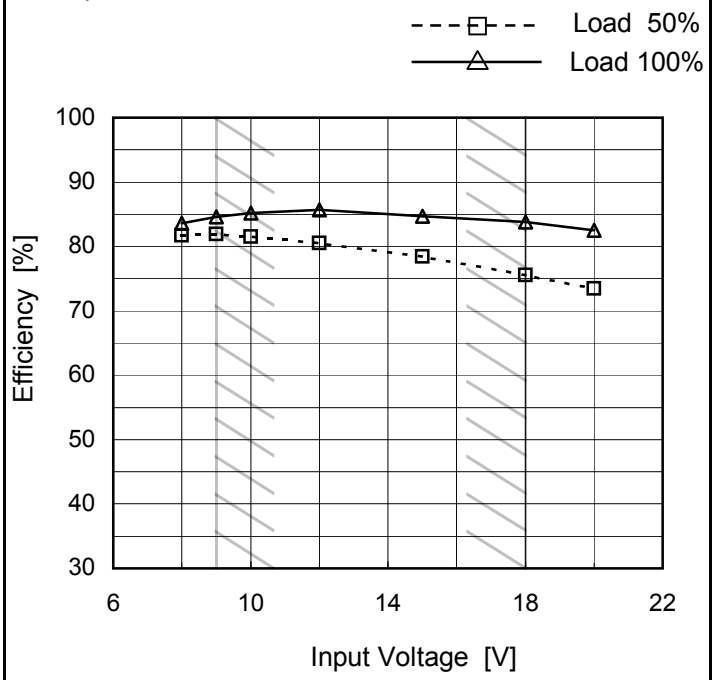
COSEL

Model	SUTW61212
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	81.7	83.6
9	81.9	84.6
10	81.5	85.2
12	80.5	85.7
15	78.5	84.6
18	75.5	83.8
20	73.4	82.5
--	-	-
--	-	-

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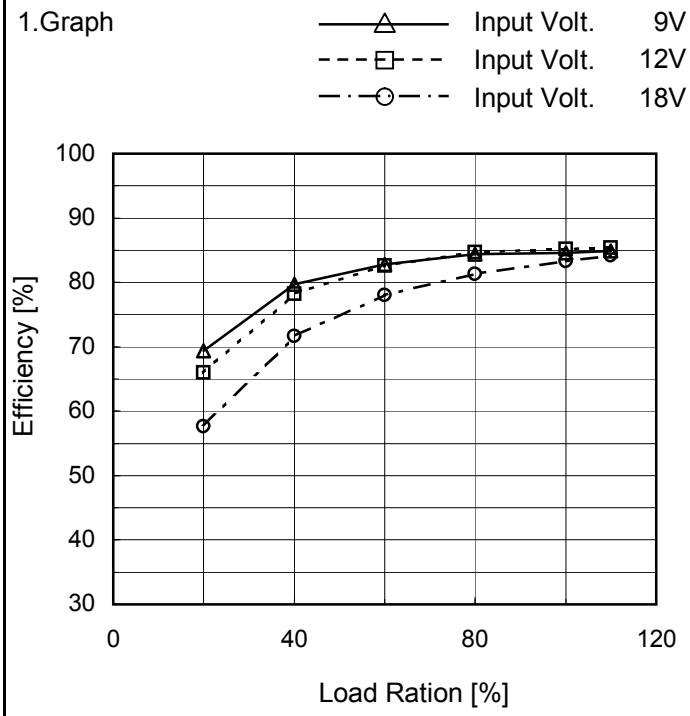
COSEL

Model	SUTW61212
Item	Efficiency (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

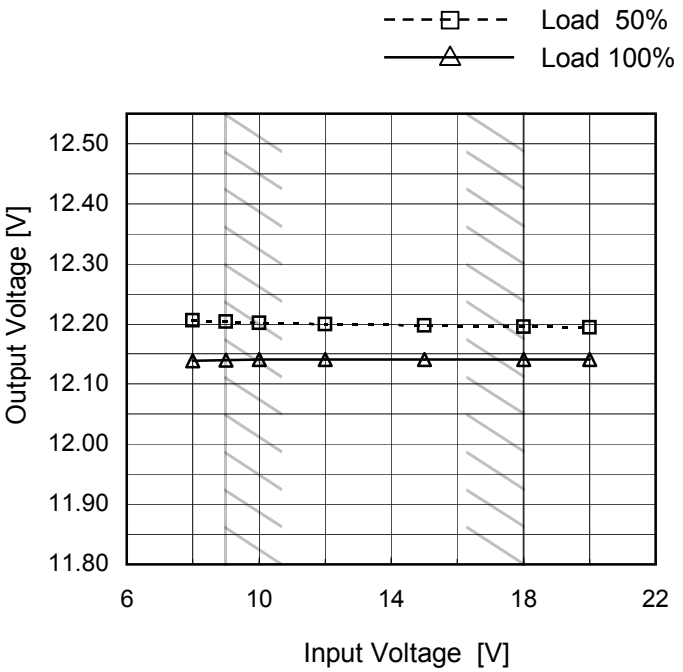
Load Ration [%]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	-	-	-
20	69.4	66.0	57.6
40	79.7	78.2	71.7
60	82.8	82.6	78.1
80	84.4	84.7	81.3
100	84.6	85.2	83.3
110	84.9	85.3	84.2
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW61212
Item	Line Regulation
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

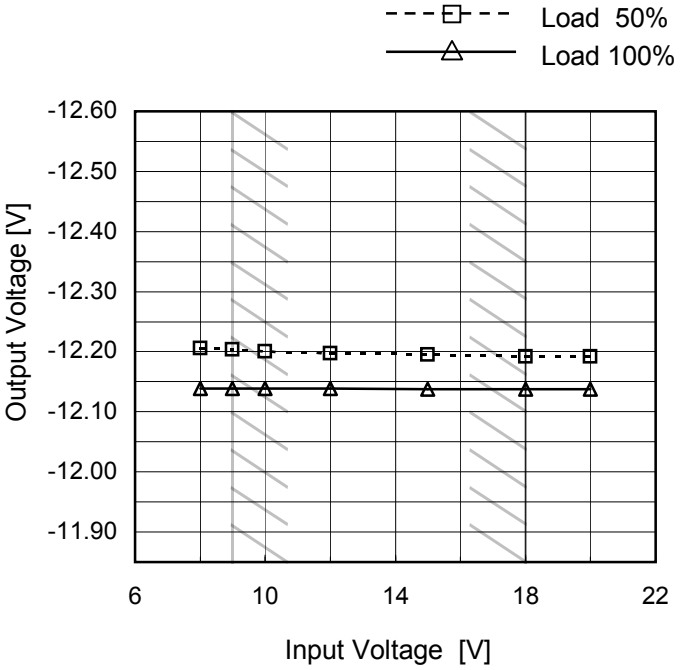


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	12.206	12.139
9	12.204	12.140
10	12.202	12.141
12	12.199	12.141
15	12.197	12.141
18	12.195	12.141
20	12.195	12.141
--	-	-
--	-	-

Object	-12V0.25A

1.Graph



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

2.Values

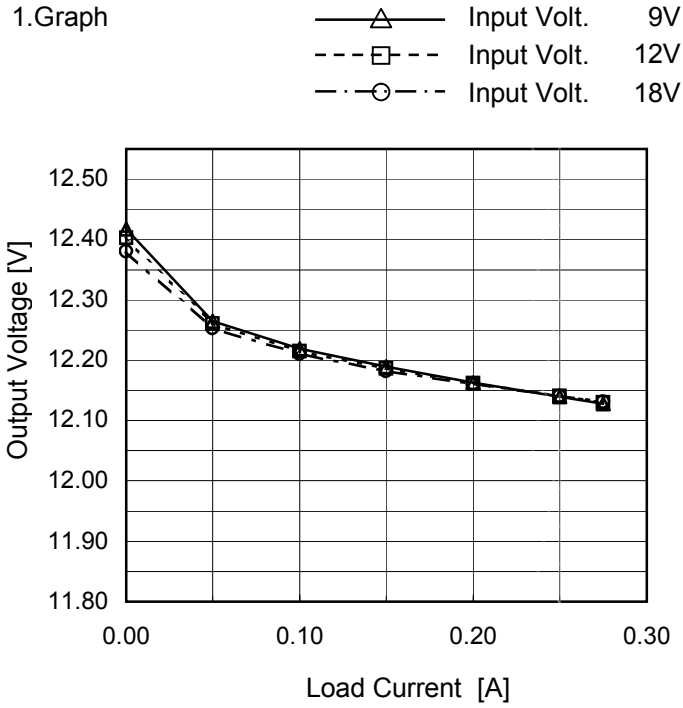
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	-12.206	-12.138
9	-12.203	-12.139
10	-12.201	-12.139
12	-12.198	-12.138
15	-12.195	-12.138
18	-12.192	-12.137
20	-12.192	-12.137
--	-	-
--	-	-

COSEL

Model	SUTW61212
Item	Load Regulation
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

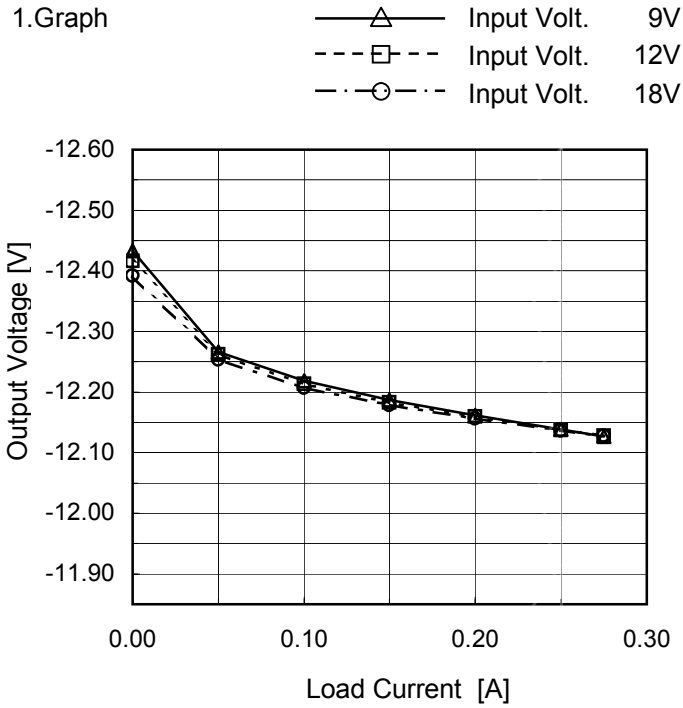


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	12.417	12.403	12.380
0.050	12.264	12.260	12.253
0.100	12.219	12.215	12.210
0.150	12.189	12.186	12.182
0.200	12.163	12.162	12.160
0.250	12.139	12.140	12.141
0.275	12.128	12.130	12.131
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	-12.433	-12.416	-12.392
0.050	-12.267	-12.262	-12.254
0.100	-12.218	-12.213	-12.207
0.150	-12.187	-12.183	-12.179
0.200	-12.162	-12.159	-12.156
0.250	-12.138	-12.138	-12.137
0.275	-12.126	-12.127	-12.127
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

BC-10272

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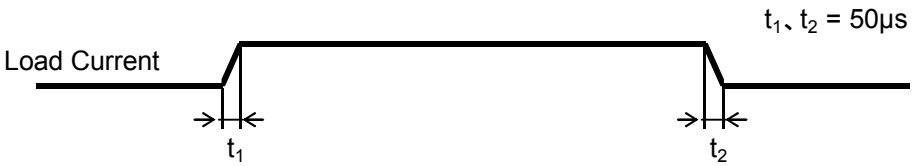
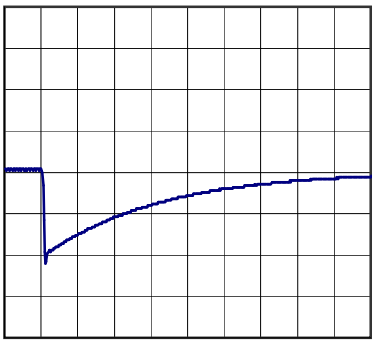
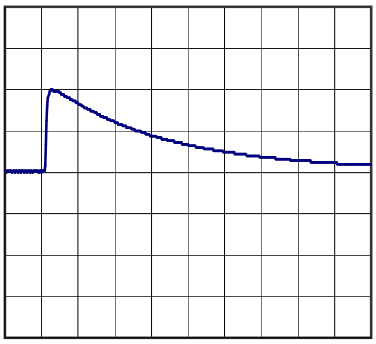
Model	SUTW61212	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	+12V0.25A	

Input Volt. 12 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.25A)

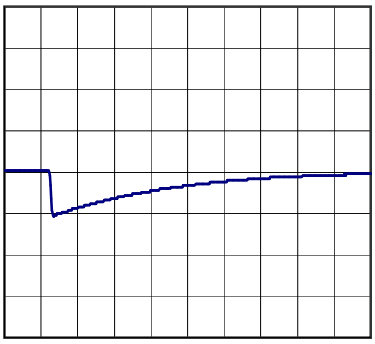


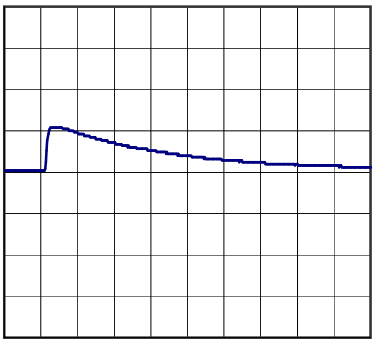


200mV/div

500μs/div 500μs/div

Min. Load (0A) ←→
Load 50% (0.125A)

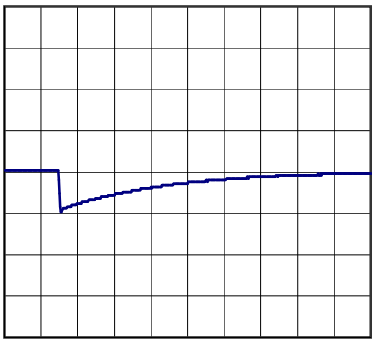


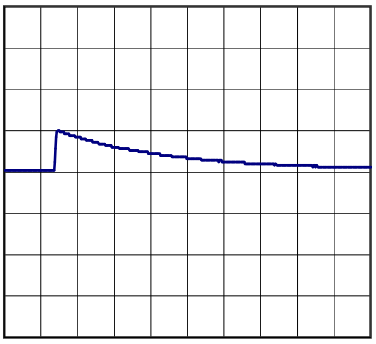


200mV/div

500μs/div 500μs/div

Load 50% (0.125A) ←→
Load 100% (0.25A)





200mV/div

500μs/div 500μs/div

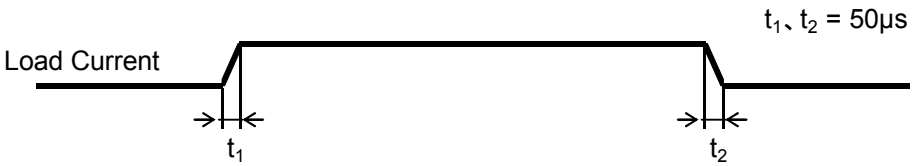
BC-10272

COSEL

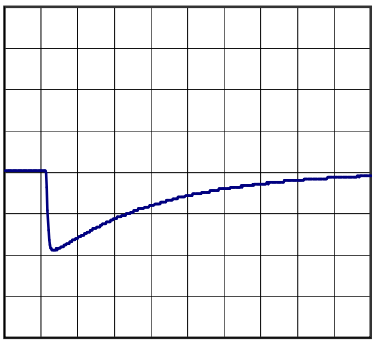
Model	SUTW61212
Item	Dynamic Load Response
Object	-12V0.25A

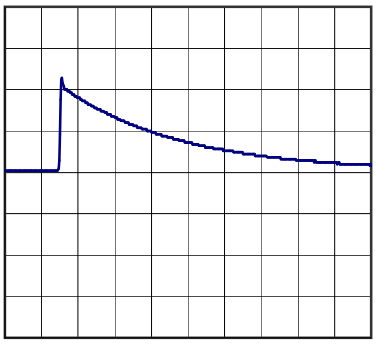
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 12 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.25A)

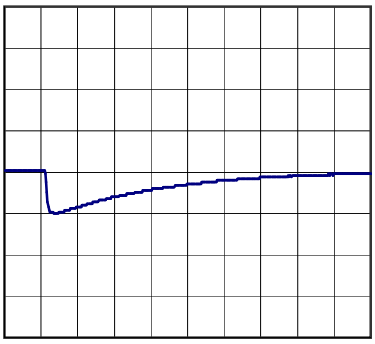


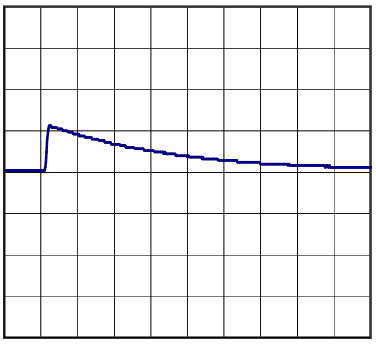


200mV/div

500μs/div 500μs/div

Min. Load (0A) ←→
Load 50% (0.125A)

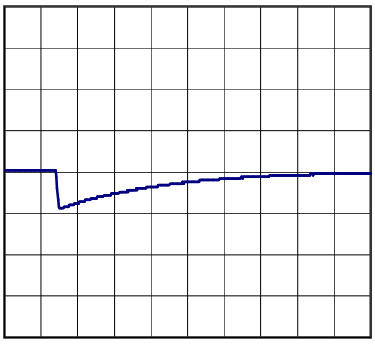


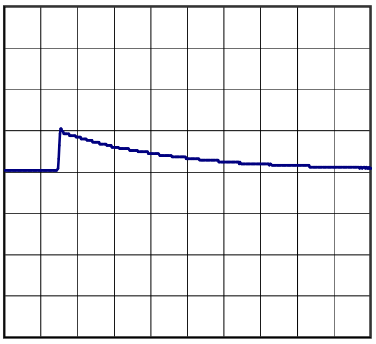


200mV/div

500μs/div 500μs/div

Load 50% (0.125A) ←→
Load 100% (0.25A)





200mV/div

500μs/div 500μs/div

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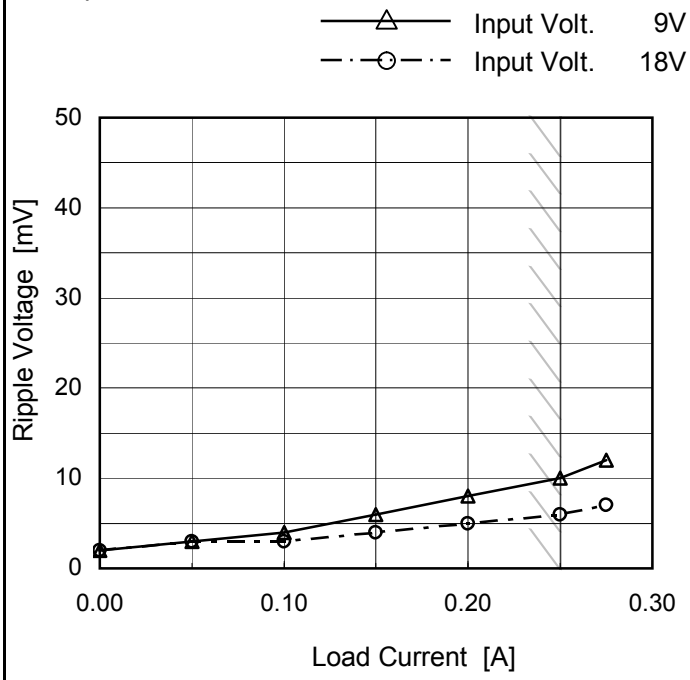
COSEL

Model	SUTW61212
Item	Ripple Voltage (by Load Current)
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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

Ripple [mVp-p]

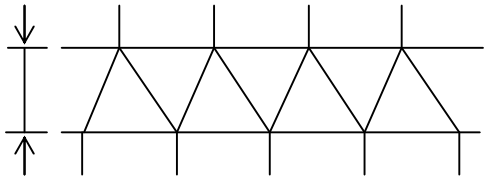


Fig.Complex Ripple Wave Form

2.Values

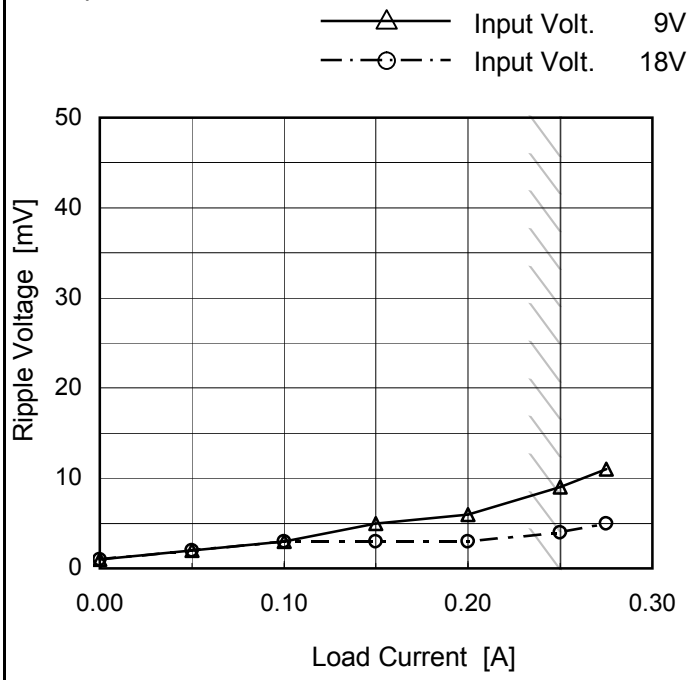
Load Current [A]	Ripple Voltage [mV] Input Volt. 9 [V]	Ripple Voltage [mV] Input Volt. 18 [V]
0.000	2	2
0.050	3	3
0.100	4	3
0.150	6	4
0.200	8	5
0.250	10	6
0.275	12	7
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW61212
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]

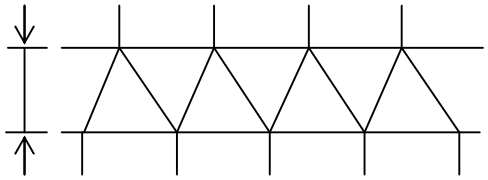


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	1	1
0.050	2	2
0.100	3	3
0.150	5	3
0.200	6	3
0.250	9	4
0.275	11	5
--	-	-
--	-	-
--	-	-
--	-	-

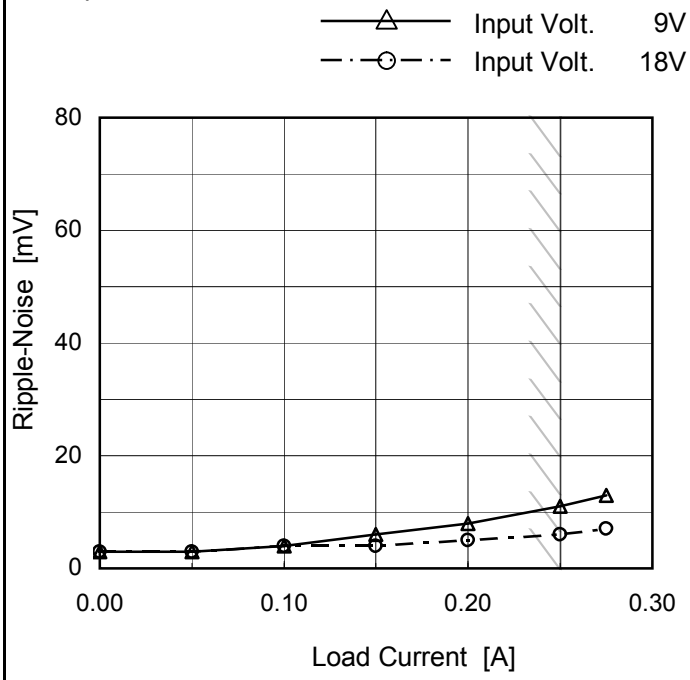
BC-10272

COSEL

Model	SUTW61212
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.

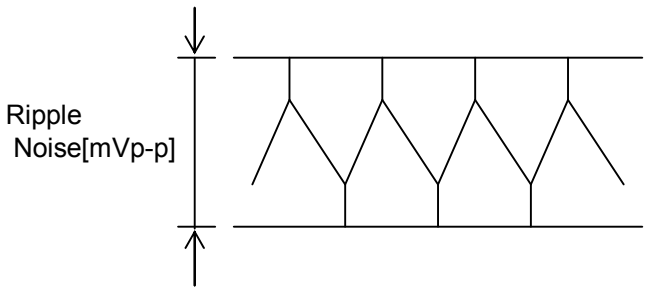


Fig.Complex Ripple Noise Wave Form

2.Values

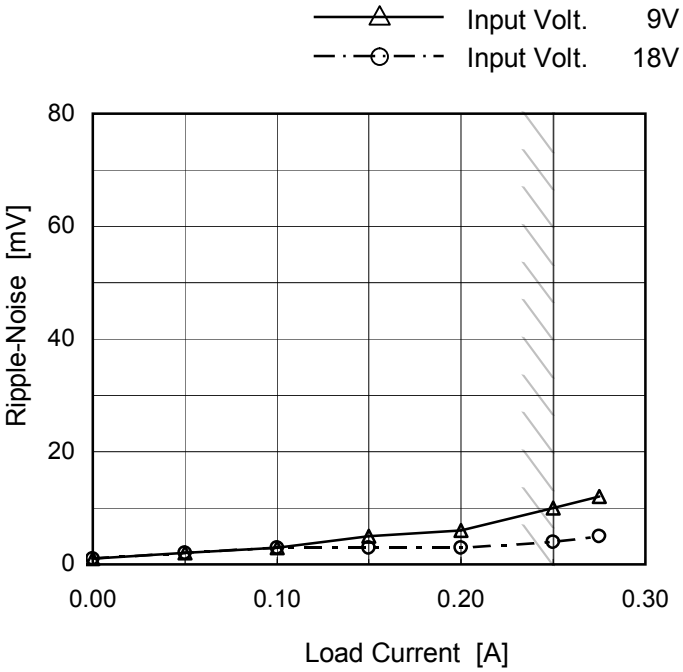
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	3	3
0.050	3	3
0.100	4	4
0.150	6	4
0.200	8	5
0.250	11	6
0.275	13	7
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW61212
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.

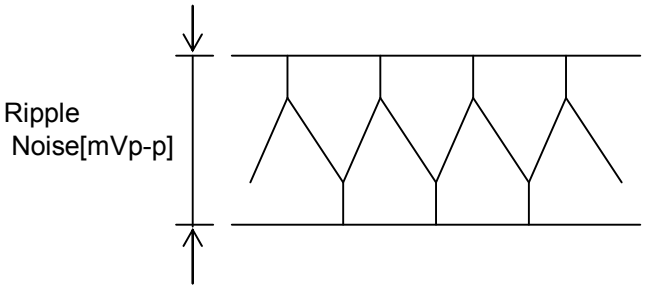


Fig.Complex Ripple Noise Wave Form

2.Values

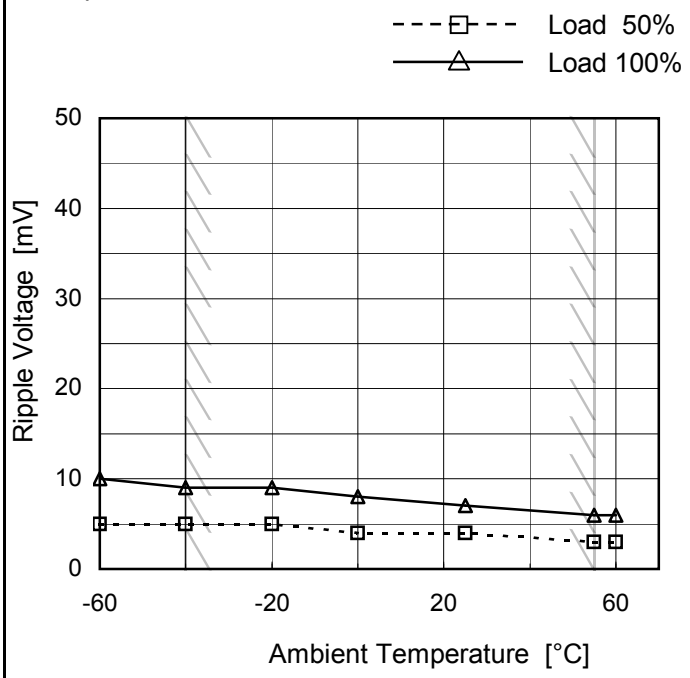
Load Current [A]	Ripple-Noise [mV] Input Volt. 9 [V]	Ripple-Noise [mV] Input Volt. 18 [V]
0.000	1	1
0.050	2	2
0.100	3	3
0.150	5	3
0.200	6	3
0.250	10	4
0.275	12	5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW61212
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.25A

Testing Circuitry Figure B

1.Graph



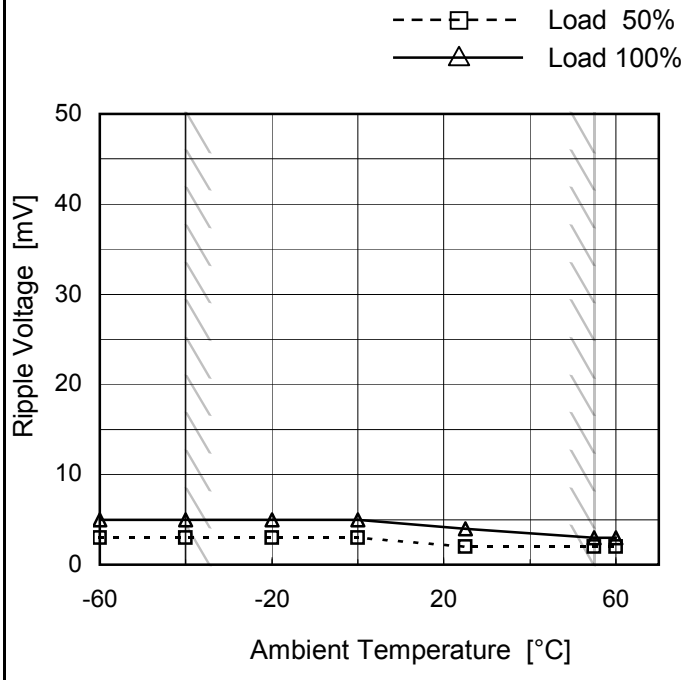
Input Volt. 12V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	5	10
-40	5	9
-20	5	9
0	4	8
25	4	7
55	3	6
60	3	6
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.25A

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	5
-40	3	5
-20	3	5
0	3	5
25	2	4
55	2	3
60	2	3
--	-	-
--	-	-
--	-	-
--	-	-

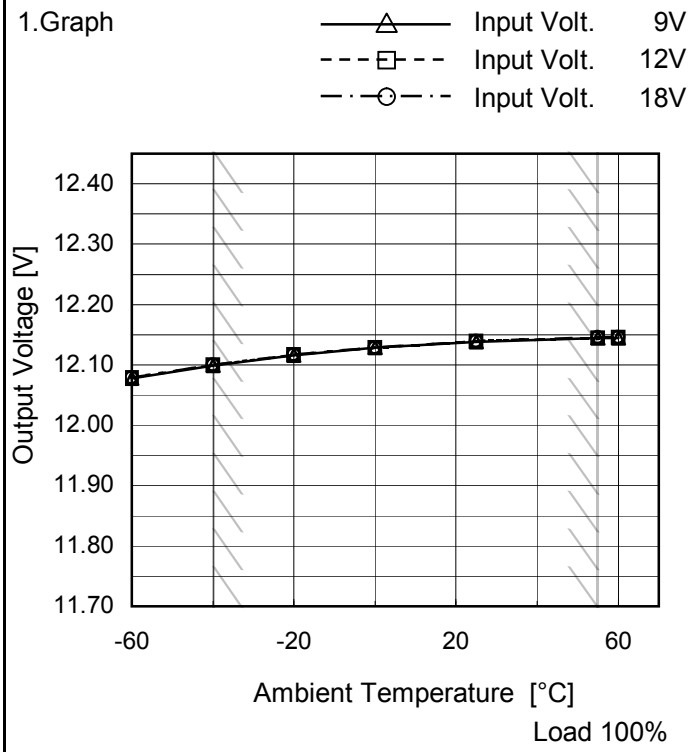
COSEL

Model	SUTW61212
Item	Ambient Temperature Drift

Testing Circuitry Figure A

Object +12V0.25A

1.Graph

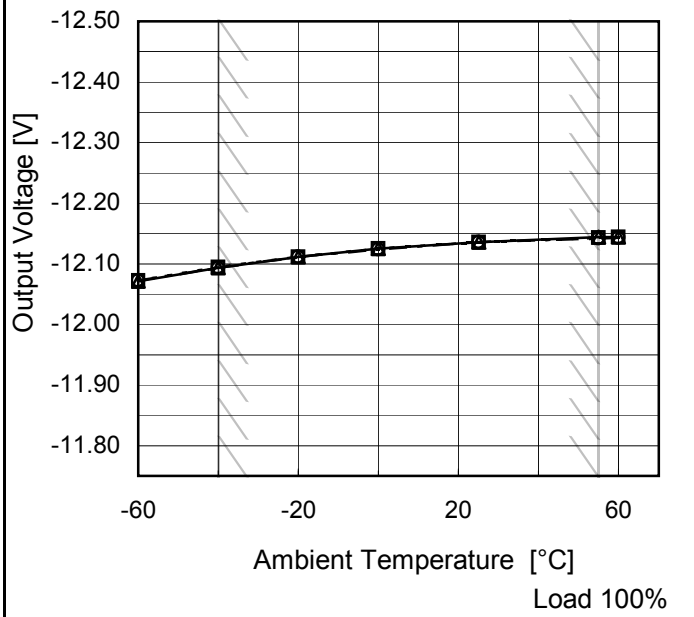


2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	12.077	12.078	12.079
-40	12.099	12.100	12.100
-20	12.116	12.117	12.117
0	12.128	12.129	12.129
25	12.139	12.140	12.140
55	12.144	12.145	12.145
60	12.145	12.145	12.145
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	-12.072	-12.072	-12.072
-40	-12.094	-12.094	-12.094
-20	-12.111	-12.112	-12.111
0	-12.125	-12.125	-12.124
25	-12.136	-12.136	-12.135
55	-12.144	-12.143	-12.142
60	-12.144	-12.144	-12.143
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW61212	
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 - 0.25A (AVR 2) : 0 - 0.25A

* 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	9	0	12.432	±297	±2.5
Minimum Voltage	-40	9	0.25	11.839		

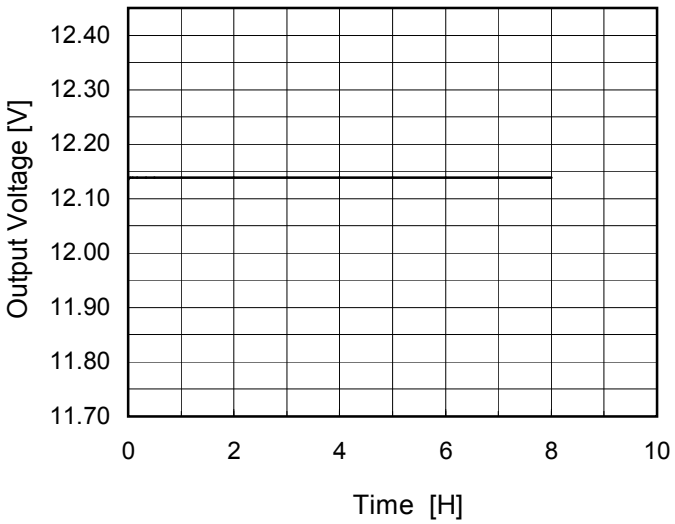
Object	-12V0.25A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	9	0	-12.448	±296	±2.5
Minimum Voltage	-40	9	0.25	-11.857		

COSEL

Model	SUTW61212
Item	Time Lapse Drift
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



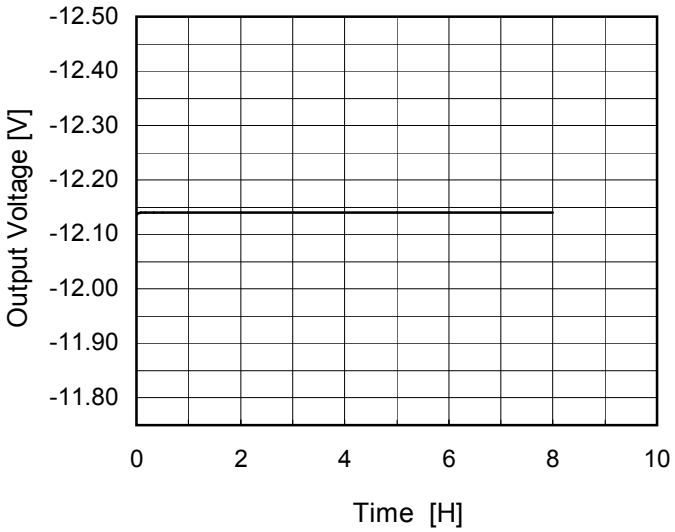
Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.134
0.5	12.139
1.0	12.139
2.0	12.139
3.0	12.138
4.0	12.138
5.0	12.138
6.0	12.138
7.0	12.138
8.0	12.138

Object	-12V0.25A

1.Graph



Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.135
0.5	-12.140
1.0	-12.141
2.0	-12.141
3.0	-12.141
4.0	-12.141
5.0	-12.140
6.0	-12.140
7.0	-12.141
8.0	-12.140

BC-10272

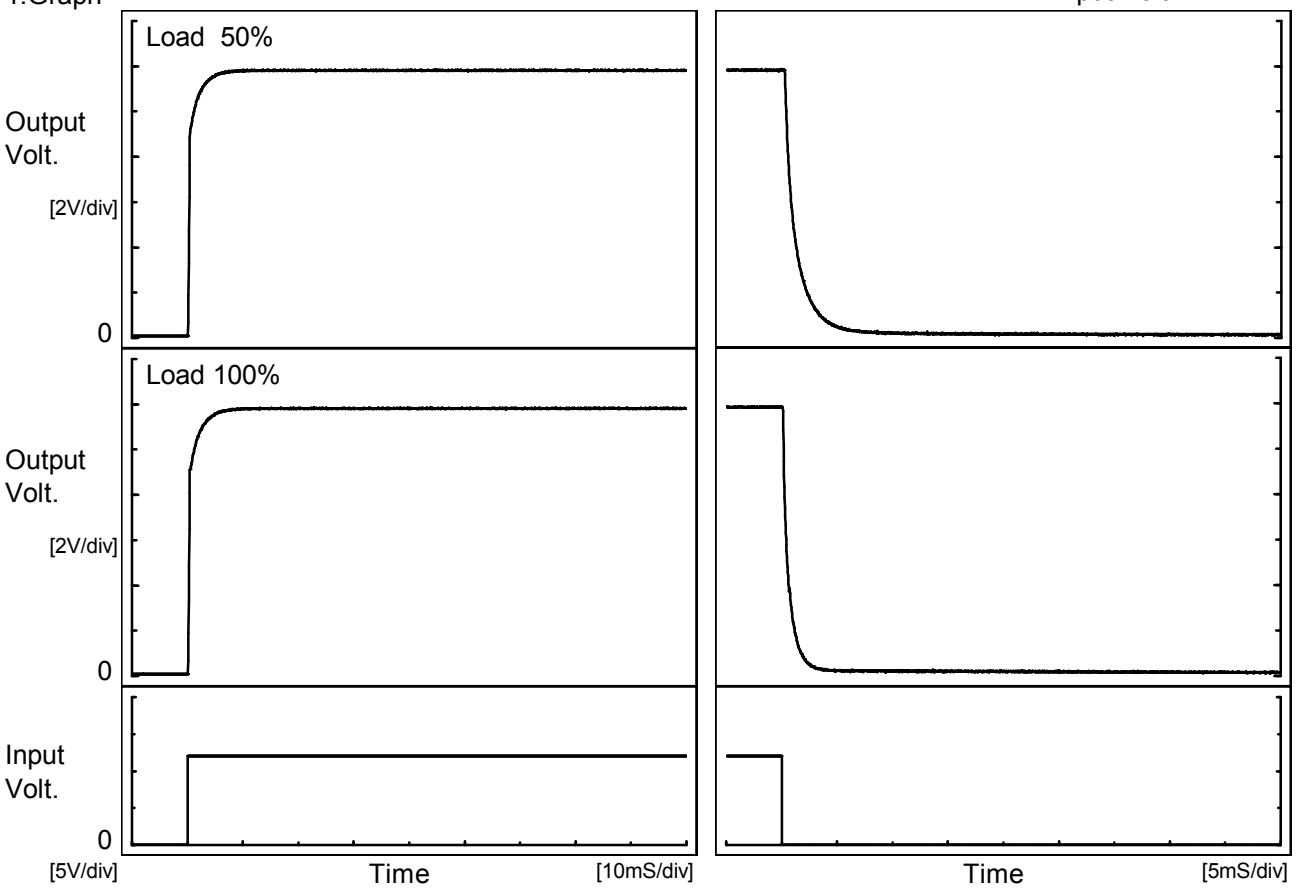
COSEL

Model	SUTW61212
Item	Rise and Fall Time
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

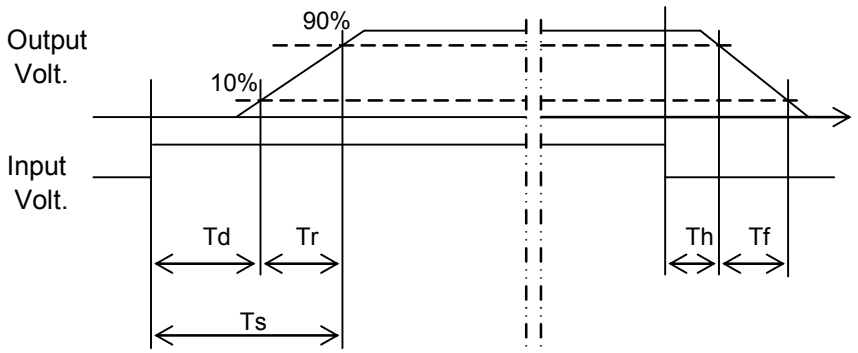
Input Volt. 12 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.2	2.2	2.4	0.3	2.7
100 %	0.2	2.3	2.5	0.1	1.4

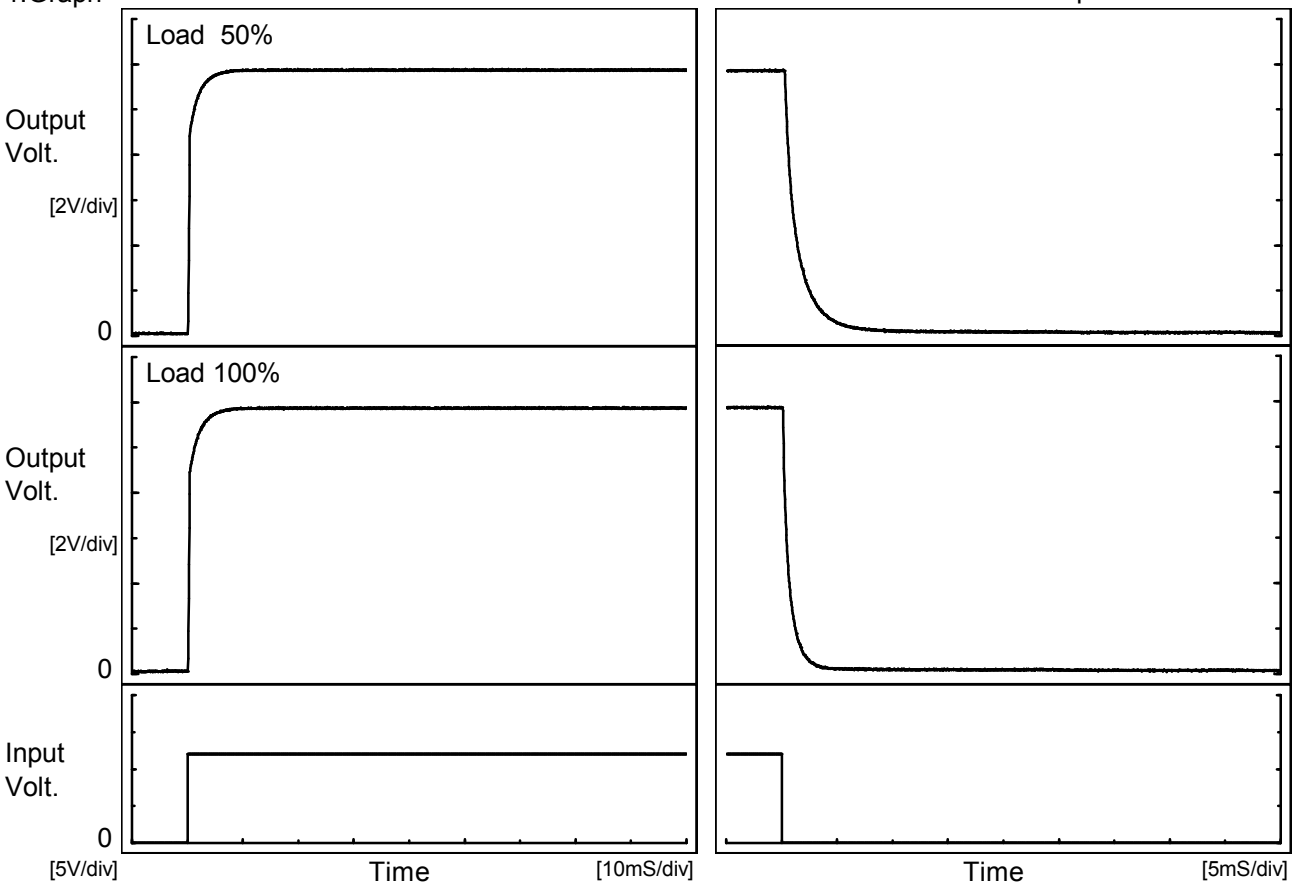


COSEL

Model	SUTW61212	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	-12V0.25A	

1.Graph

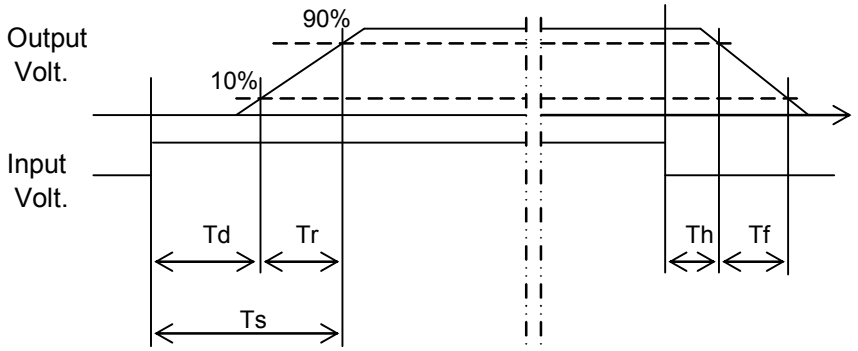
Input Volt. 12 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.2	2.3	2.5	0.3	2.9
100 %	0.2	2.4	2.6	0.1	1.5

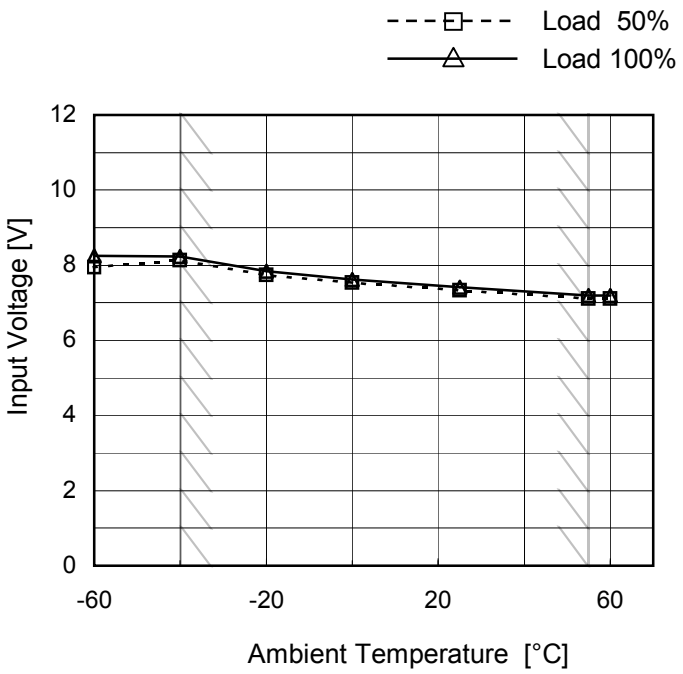


COSEL

Model	SUTW61212
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.25A

Testing Circuitry Figure A

1.Graph

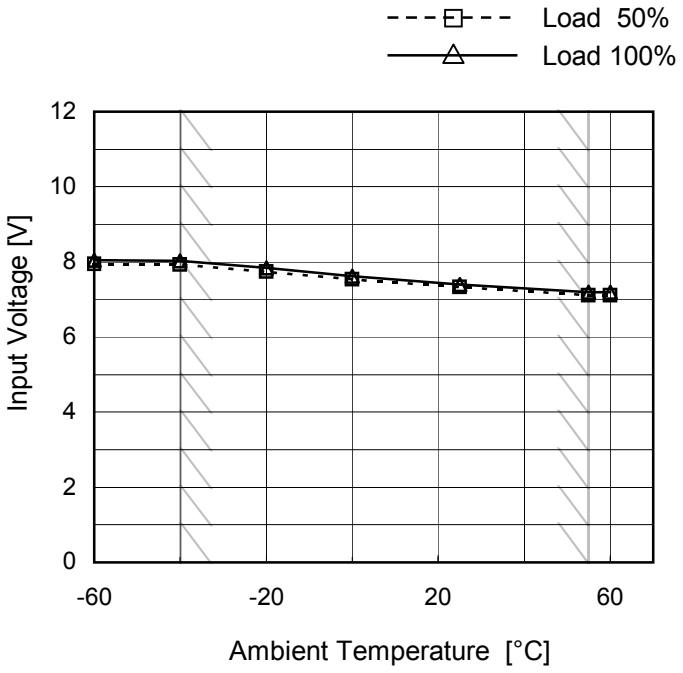


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	8.0	8.3
-40	8.2	8.3
-20	7.8	7.9
0	7.6	7.7
25	7.4	7.4
55	7.2	7.2
60	7.2	7.2
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.25A

1.Graph



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

2.Values

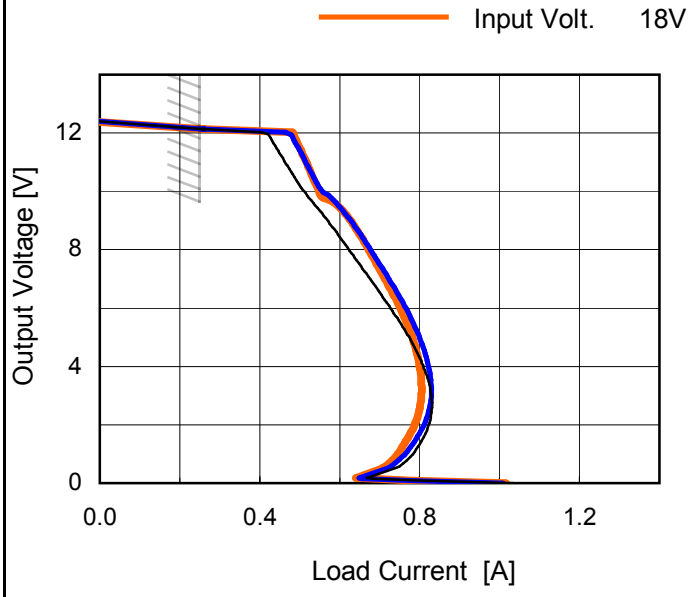
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	8.0	8.1
-40	8.0	8.1
-20	7.8	7.9
0	7.6	7.7
25	7.4	7.4
55	7.2	7.2
60	7.2	7.2
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW61212
Item	Overcurrent Protection
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

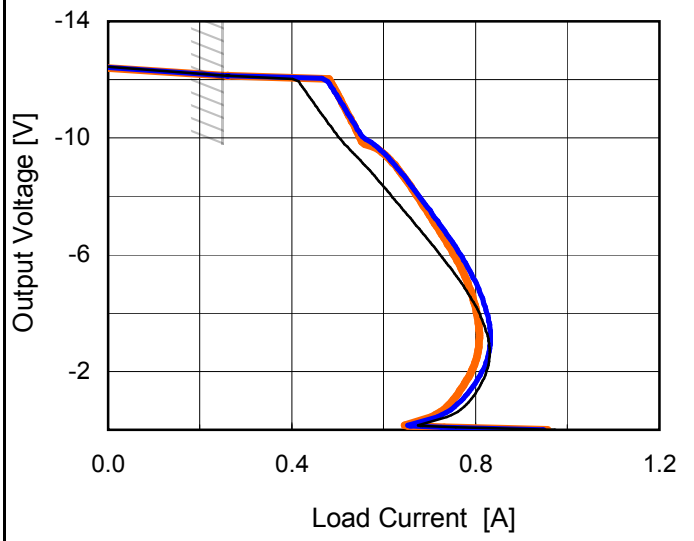


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
12.0	0.26	0.26	0.26
11.4	0.45	0.50	0.50
10.8	0.47	0.52	0.52
9.6	0.53	0.59	0.59
8.4	0.60	0.66	0.65
7.2	0.66	0.71	0.70
6.0	0.72	0.76	0.75
4.8	0.78	0.80	0.79
3.6	0.82	0.83	0.80
2.4	0.83	0.82	0.80
1.2	0.80	0.78	0.76
0.0	1.03	1.01	1.01

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-12.0	0.26	0.26	0.26
-11.4	0.44	0.50	0.50
-10.8	0.46	0.52	0.52
-9.6	0.52	0.59	0.59
-8.4	0.59	0.66	0.65
-7.2	0.66	0.71	0.70
-6.0	0.72	0.77	0.75
-4.8	0.78	0.81	0.79
-3.6	0.82	0.83	0.81
-2.4	0.83	0.83	0.80
-1.2	0.80	0.78	0.76
0.0	0.97	0.95	0.96

COSEL

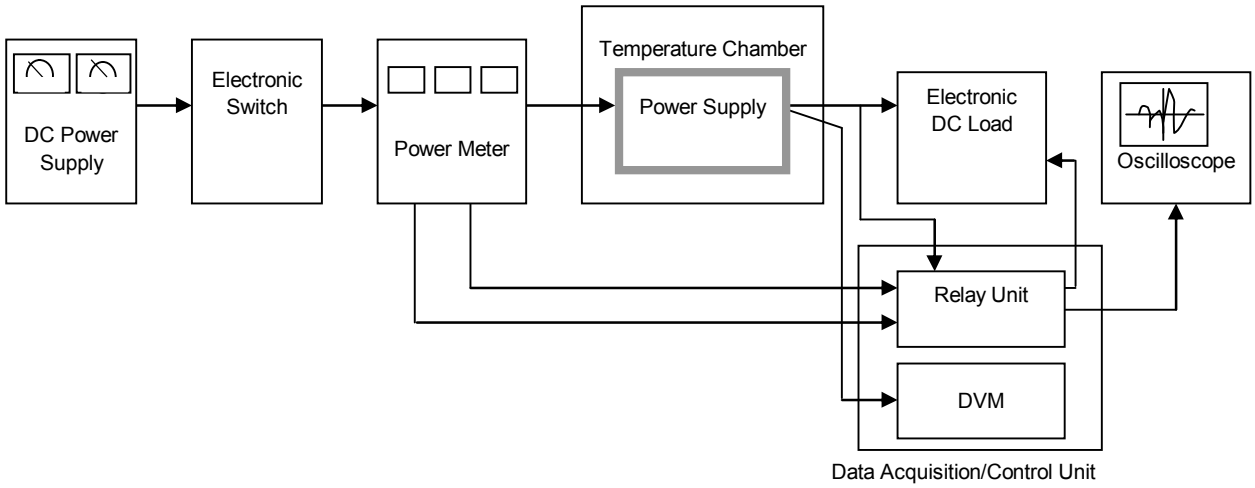


Figure A

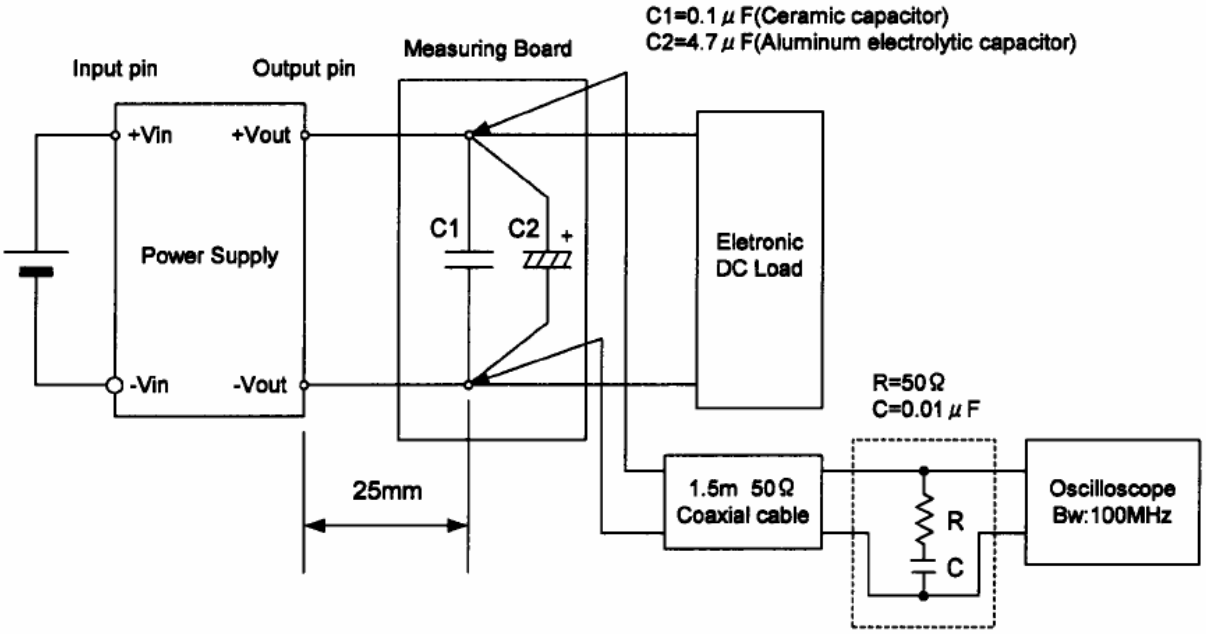


Figure B (Ripple and Ripple noise Characteristic)