COSEL

参考資料

TEST DATA OF SUTW101212

Regulated DC Power Supply
February 23, 2009

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COSEL CO.,LTD.

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Model	SUTW101212
Item	Input Current (by Input Voltage)
Object	————————

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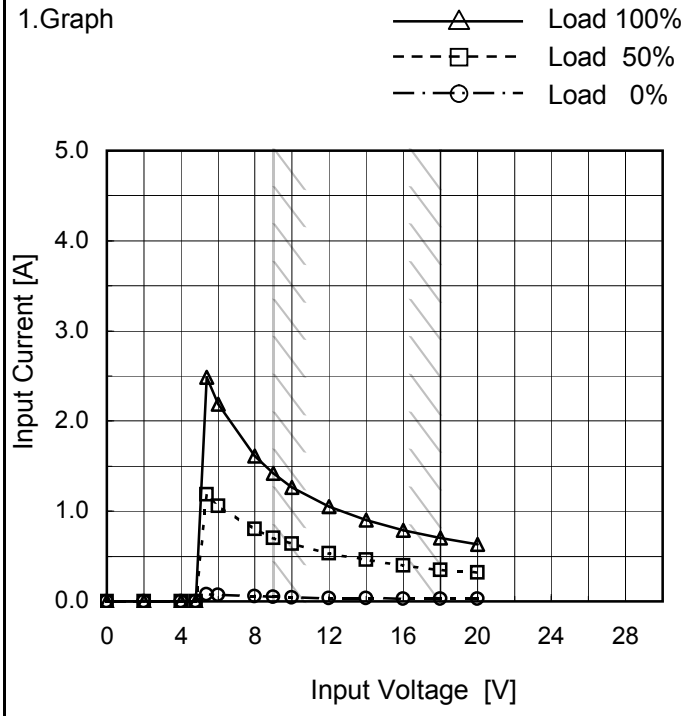


Note: Slanted line shows the range of the rated input voltage.

2.Values

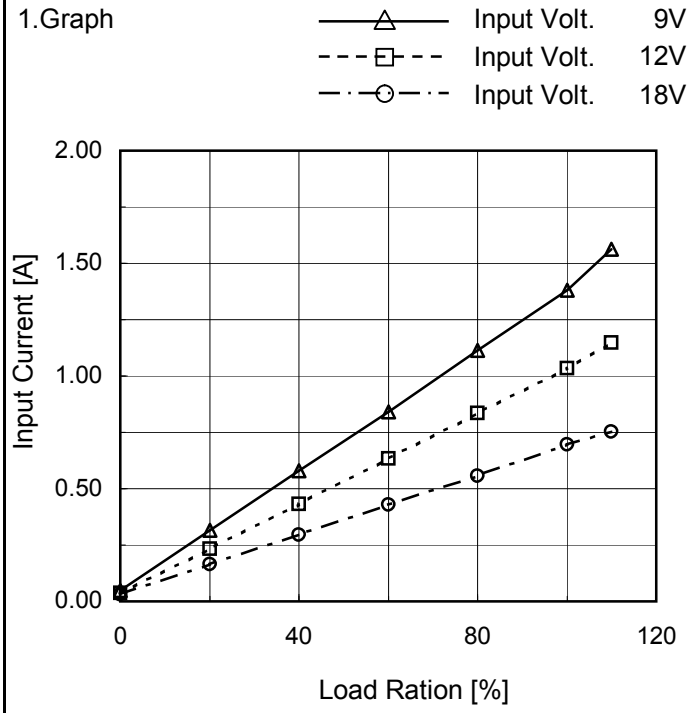
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
2.0	0.000	0.000	0.000
4.0	0.000	0.000	0.000
4.8	0.000	0.000	0.000
5.4	0.075	1.185	2.485
6.0	0.071	1.060	2.191
8.0	0.054	0.800	1.611
9.0	0.048	0.702	1.417
10.0	0.043	0.637	1.267
12.0	0.037	0.532	1.049
14.0	0.034	0.458	0.899
16.0	0.032	0.400	0.786
18.0	0.030	0.351	0.700
20.0	0.030	0.319	0.630
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW101212
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	0.048	0.037	0.031
20	0.314	0.232	0.164
40	0.579	0.433	0.295
60	0.841	0.634	0.428
80	1.114	0.836	0.557
100	1.380	1.035	0.695
110	1.562	1.148	0.754
--	-	-	-
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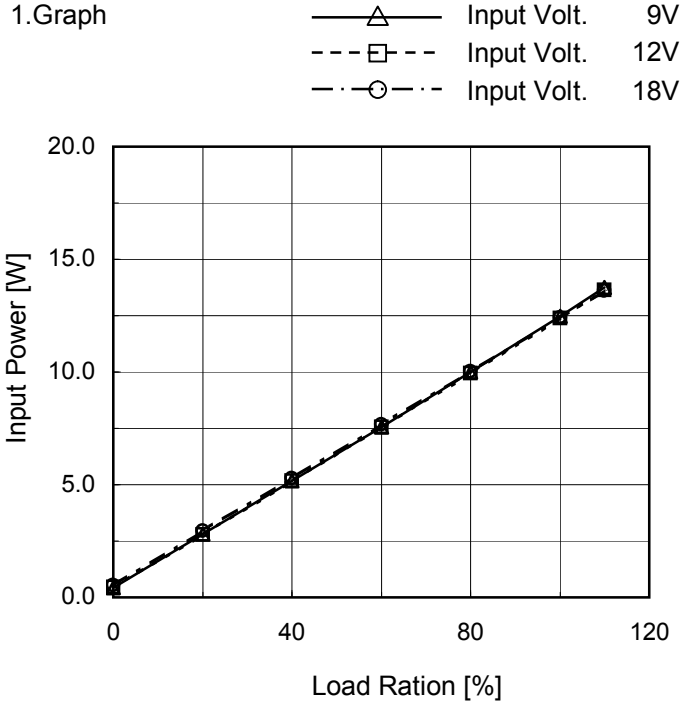
--	-	-	-
--	-	-	-

COSEL

Model	SUTW101212
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

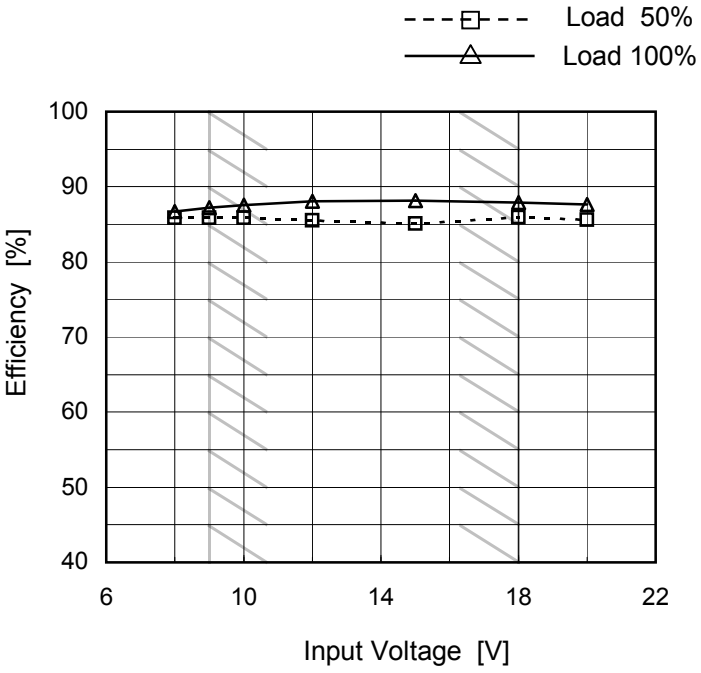
Load Ration [%]	Input Power [W] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	0.43	0.44	0.55
20	2.81	2.77	2.94
40	5.17	5.18	5.30
60	7.54	7.57	7.67
80	9.99	9.94	10.03
100	12.47	12.39	12.42
110	13.76	13.63	13.62
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW101212
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

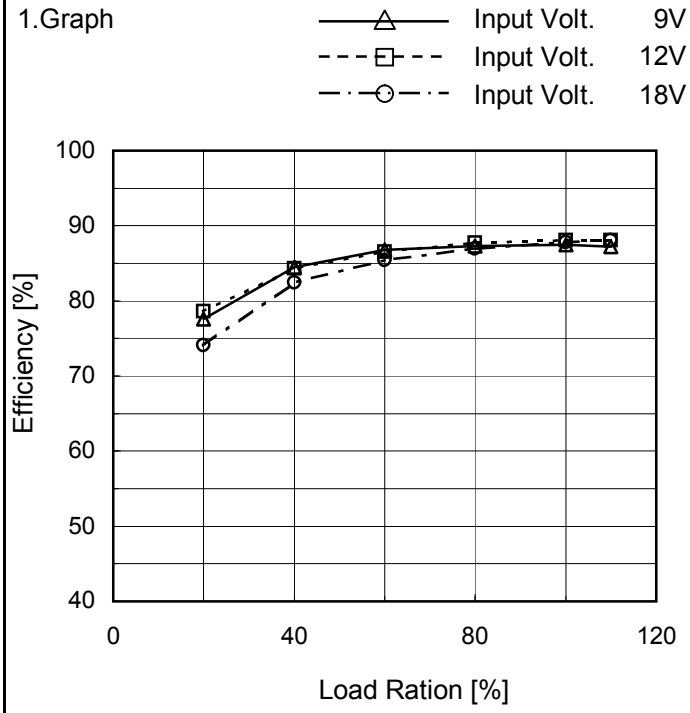
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
8	85.9	86.7
9	85.8	87.2
10	85.9	87.6
12	85.6	88.1
15	85.1	88.2
18	85.9	87.9
20	85.6	87.6
--	-	-
--	-	-

COSEL

Model	SUTW101212
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

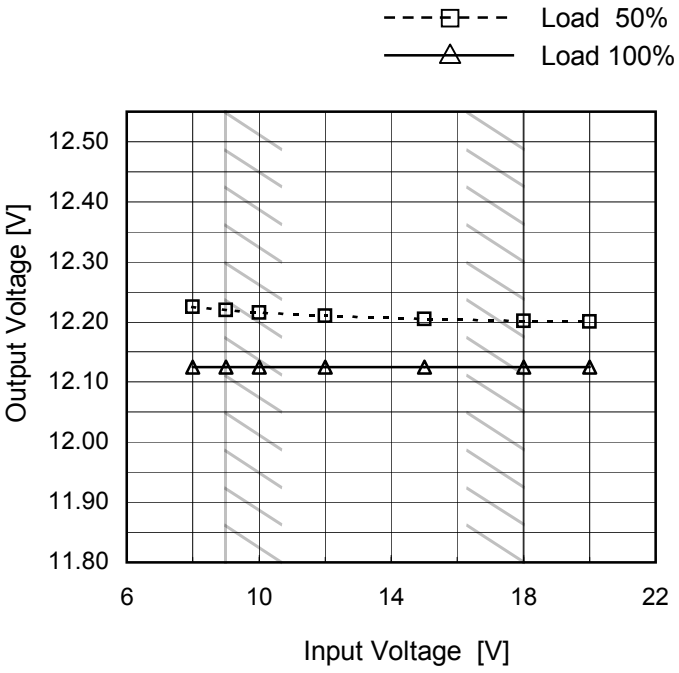
Load Ration [%]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	-	-	-
20	77.6	78.6	74.1
40	84.5	84.3	82.5
60	86.8	86.6	85.4
80	87.3	87.7	87.0
100	87.4	88.1	87.8
110	87.2	88.0	88.1
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW101212
Item	Line Regulation
Object	+12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

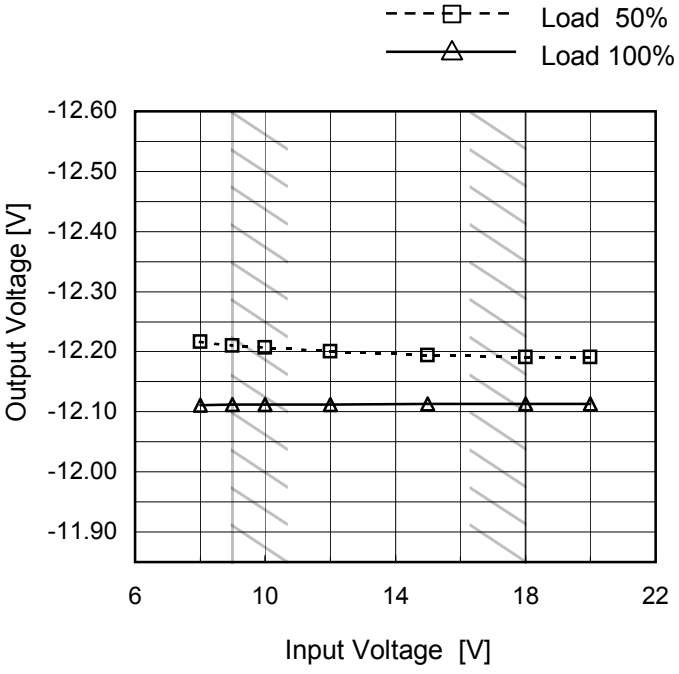


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	12.225	12.125
9	12.220	12.125
10	12.216	12.125
12	12.210	12.125
15	12.205	12.125
18	12.202	12.125
20	12.201	12.125
--	-	-
--	-	-

Object	-12V0.45A

1.Graph



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

2.Values

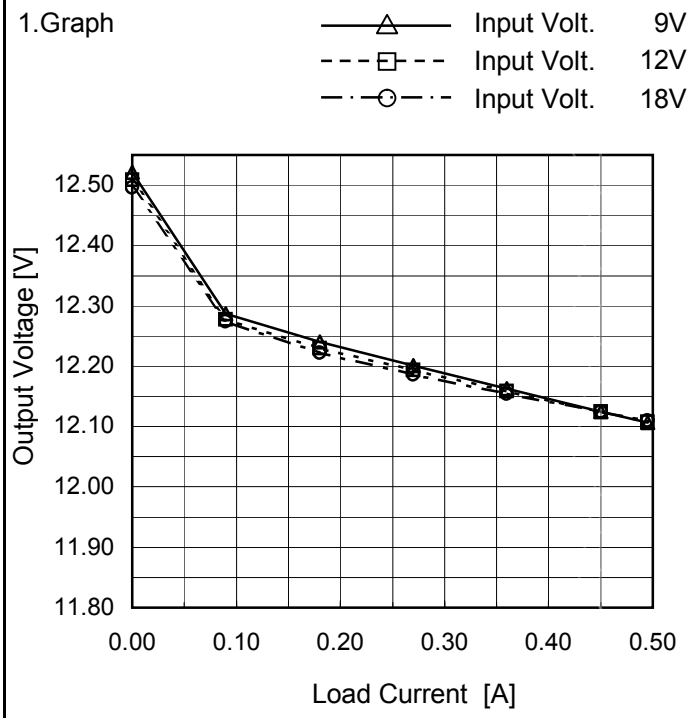
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	-12.216	-12.112
9	-12.210	-12.112
10	-12.207	-12.112
12	-12.200	-12.113
15	-12.194	-12.113
18	-12.191	-12.113
20	-12.191	-12.113
--	-	-
--	-	-

COSEL

Model	SUTW101212
Item	Load Regulation
Object	+12V0.45A

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	12.521	12.509	12.496
0.090	12.287	12.278	12.275
0.180	12.240	12.230	12.222
0.270	12.201	12.193	12.186
0.360	12.163	12.159	12.155
0.450	12.125	12.125	12.125
0.495	12.106	12.108	12.110
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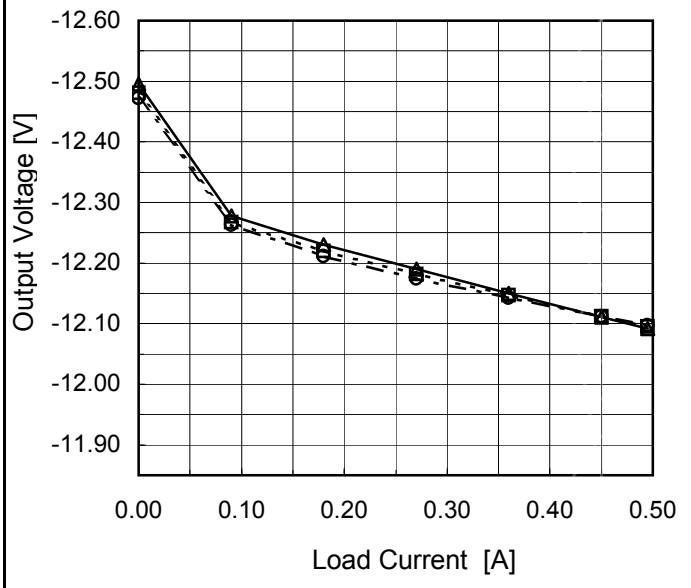
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V0.45A

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	-12.495	-12.480	-12.473
0.090	-12.278	-12.267	-12.264
0.180	-12.230	-12.220	-12.211
0.270	-12.190	-12.182	-12.175
0.360	-12.151	-12.147	-12.143
0.450	-12.111	-12.112	-12.112
0.495	-12.092	-12.095	-12.097
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

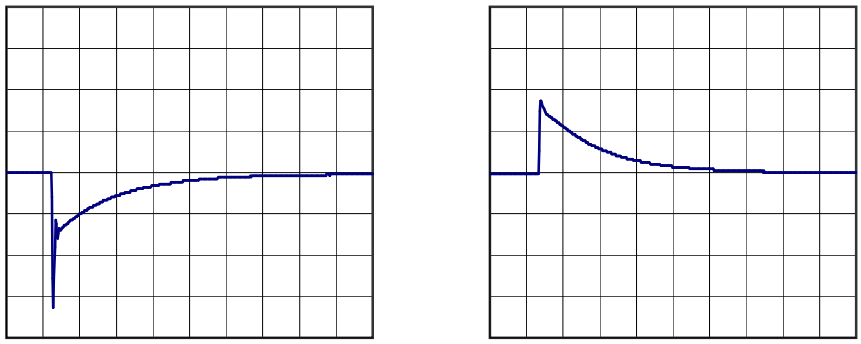
COSEL

Model	SUTW101212
Item	Dynamic Load Response
Object	+12V0.45A

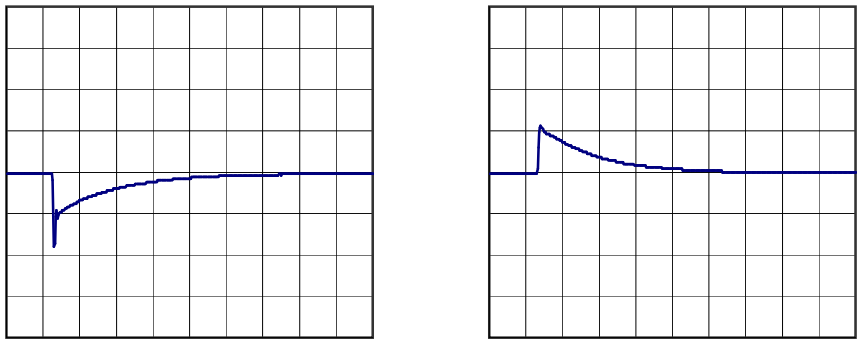
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 12 V
Cycle 100 mS

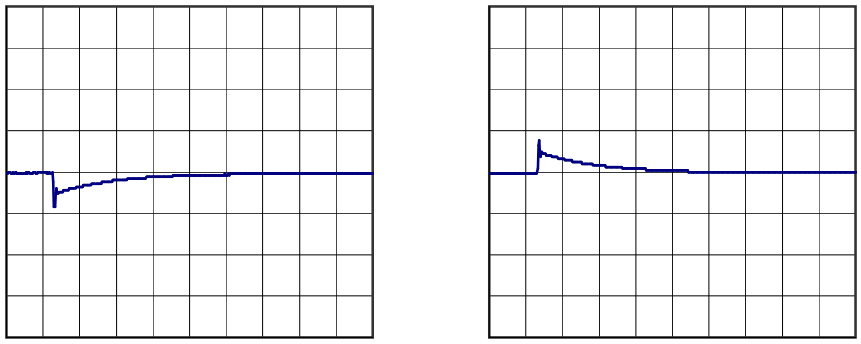
Min. Load (0A) ⟷
Load 100% (0.45A)



Min. Load (0A) ⟷
Load 50% (0.225A)



Load 50% (0.225A) ⟷
Load 100% (0.45A)



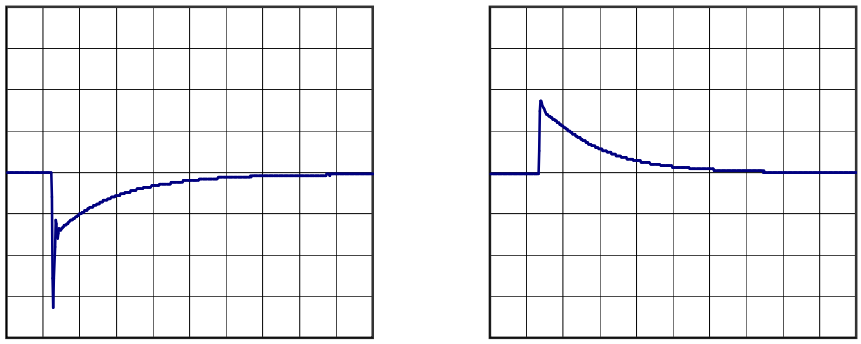
COSEL

Model	SUTW101212
Item	Dynamic Load Response
Object	-12V0.45A

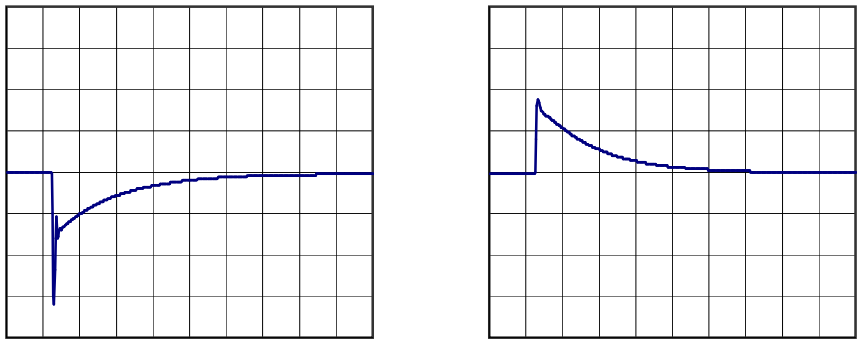
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 12 V
Cycle 100 mS

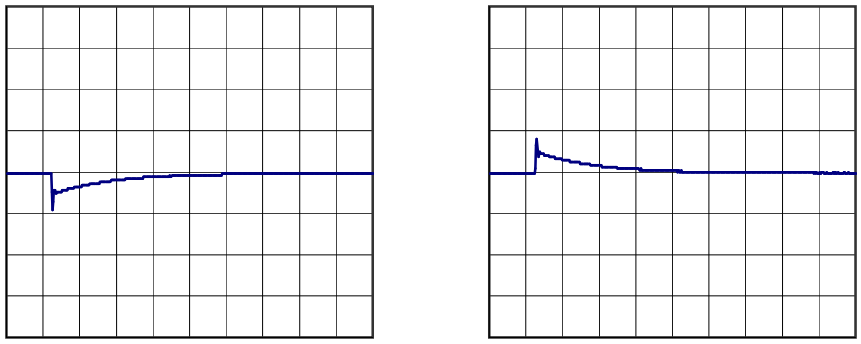
Min. Load (0A) ⟷
Load 100% (0.45A)



Min. Load (0A) ⟷
Load 50% (0.225A)



Load 50% (0.225A) ⟷
Load 100% (0.45A)

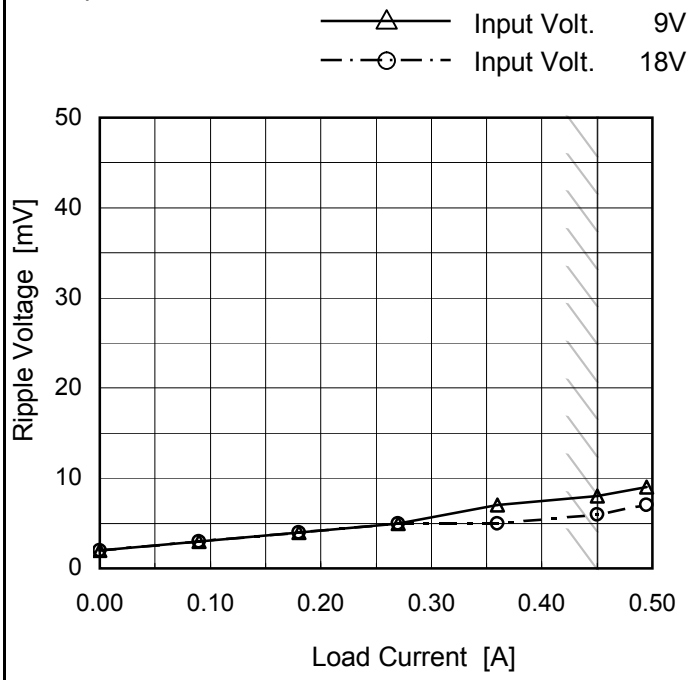


COSEL

Model	SUTW101212
Item	Ripple Voltage (by Load Current)
Object	+12V0.45A

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]

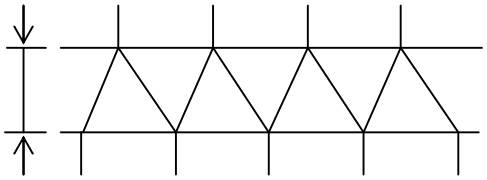


Fig.Complex Ripple Wave Form

2.Values

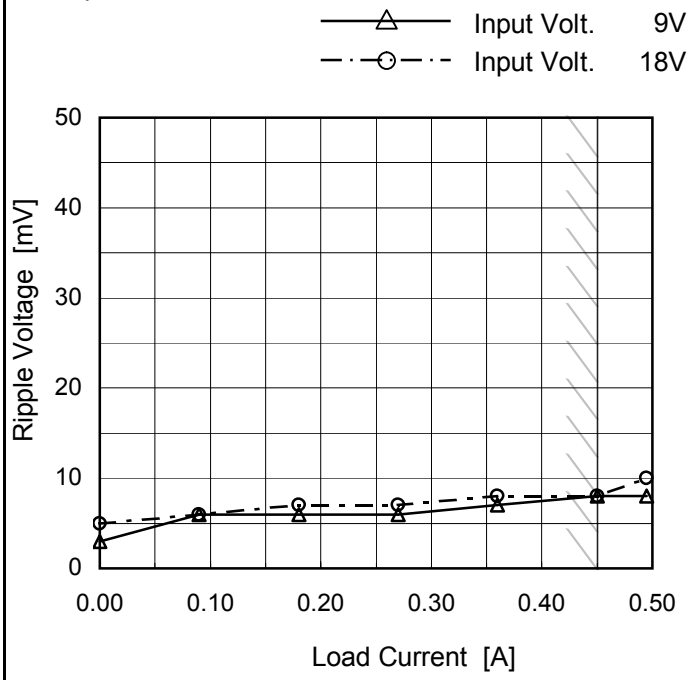
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	2	2
0.090	3	3
0.180	4	4
0.270	5	5
0.360	7	5
0.450	8	6
0.495	9	7
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW101212
Item	Ripple Voltage (by Load Current)
Object	-12V0.45A

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]

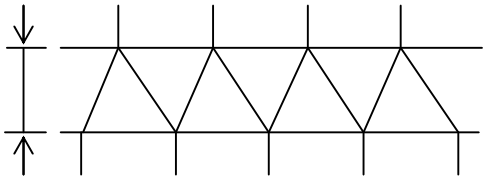


Fig.Complex Ripple Wave Form

2.Values

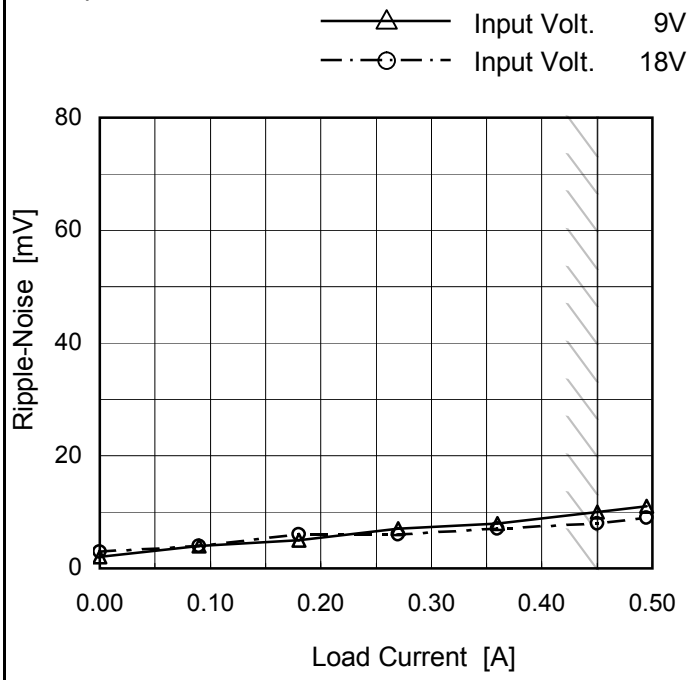
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	3	5
0.090	6	6
0.180	6	7
0.270	6	7
0.360	7	8
0.450	8	8
0.495	8	10
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW101212
Item	Ripple-Noise
Object	+12V0.45A

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.

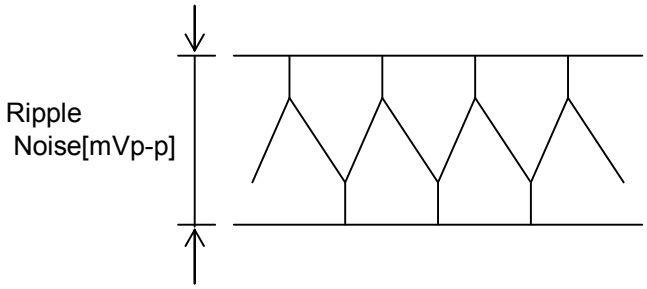


Fig.Complex Ripple Noise Wave Form

2.Values

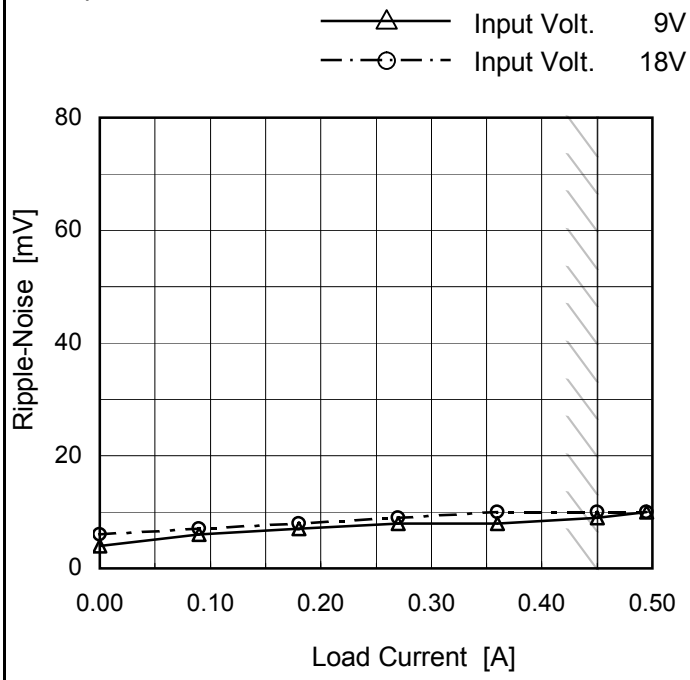
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	2	3
0.090	4	4
0.180	5	6
0.270	7	6
0.360	8	7
0.450	10	8
0.495	11	9
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW101212
Item	Ripple-Noise
Object	-12V0.45A

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.

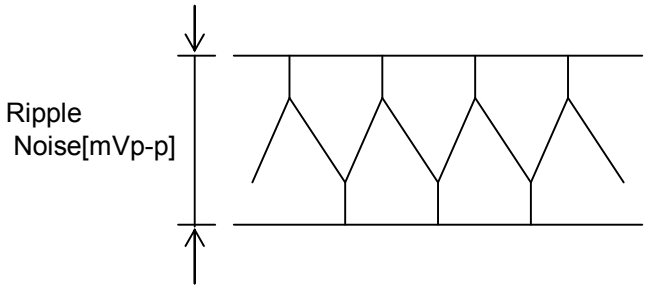


Fig.Complex Ripple Noise Wave Form

2.Values

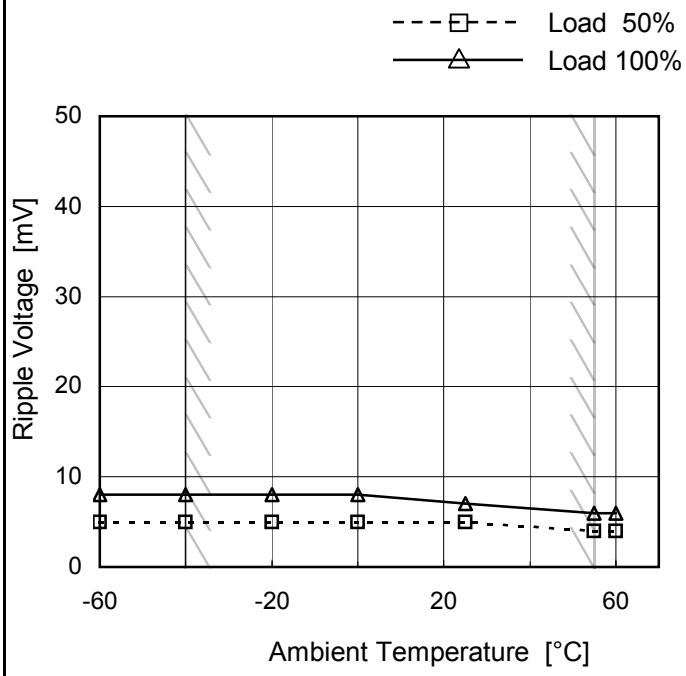
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	4	6
0.090	6	7
0.180	7	8
0.270	8	9
0.360	8	10
0.450	9	10
0.495	10	10
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW101212
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.45A

Testing Circuitry Figure B

1.Graph



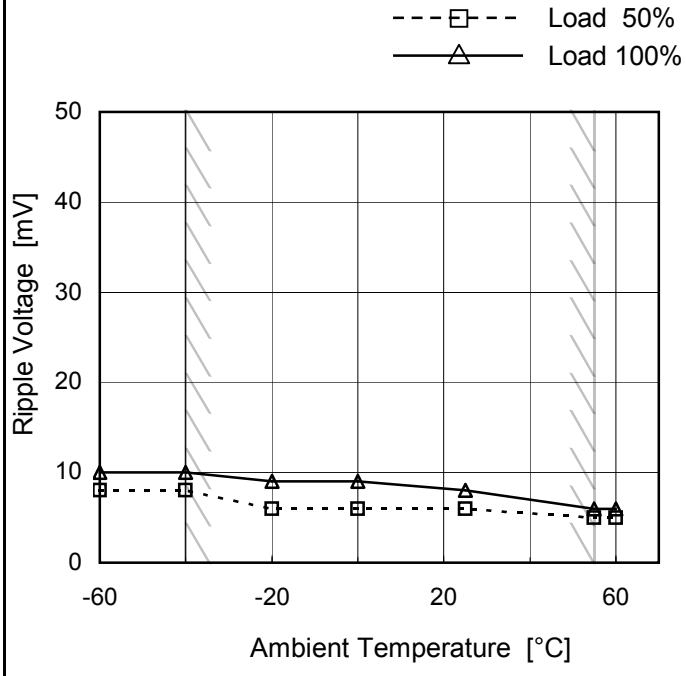
Input Volt. 12V

2.Values

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

Object	-12V0.45A

1.Graph



Input Volt. 12V

Measured by 100 MHz Oscilloscope.

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

2.Values

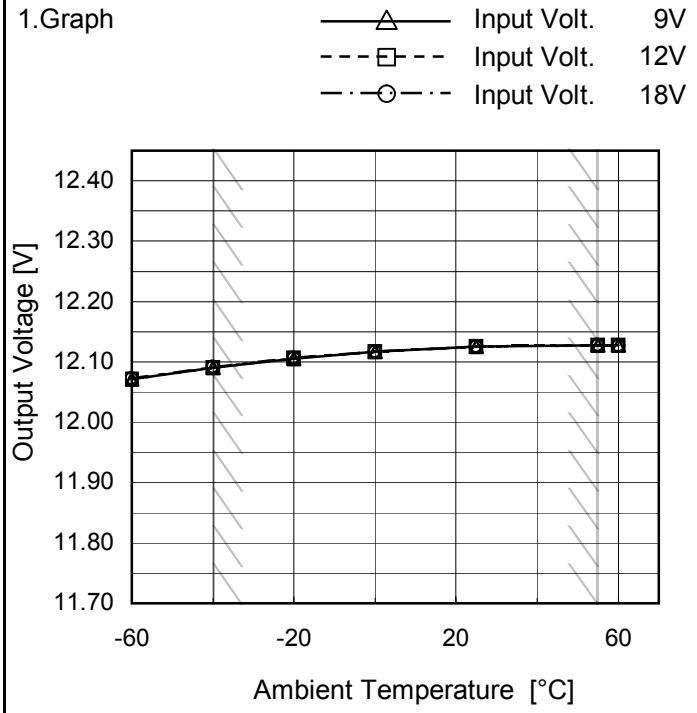
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	8	10
-40	8	10
-20	6	9
0	6	9
25	6	8
55	5	6
60	5	6
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW101212
Item	Ambient Temperature Drift
Object	+12V0.45A

Testing Circuitry Figure A

1.Graph



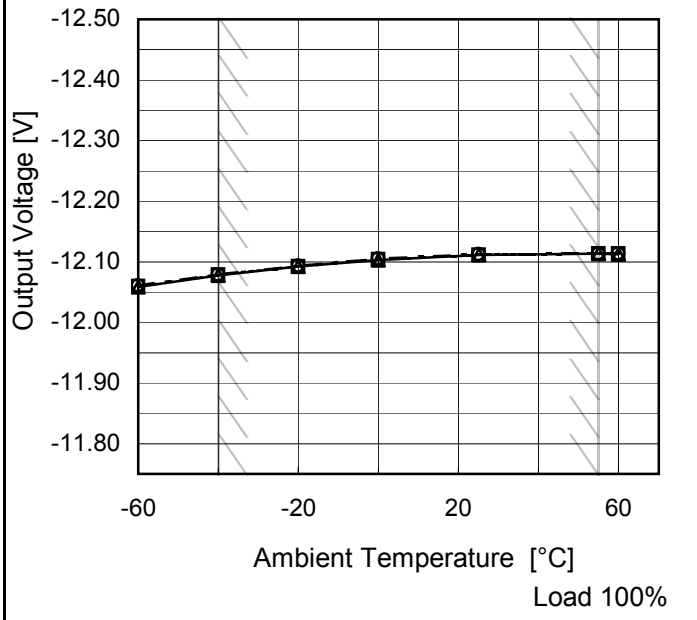
Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	12.071	12.072	12.072
-40	12.090	12.091	12.091
-20	12.105	12.106	12.106
0	12.117	12.117	12.117
25	12.125	12.125	12.125
55	12.128	12.128	12.127
60	12.128	12.128	12.127
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V0.45A

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	-12.058	-12.060	-12.061
-40	-12.077	-12.078	-12.079
-20	-12.092	-12.093	-12.094
0	-12.103	-12.104	-12.105
25	-12.111	-12.111	-12.112
55	-12.113	-12.114	-12.114
60	-12.113	-12.113	-12.114
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW101212	
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 - 0.45A (AVR 2) : 0 - 0.45A

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

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

2.Values

Object	+12V0.45A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	9	0	12.537	±401	±3.3
Minimum Voltage	55	9	0.45	11.735		

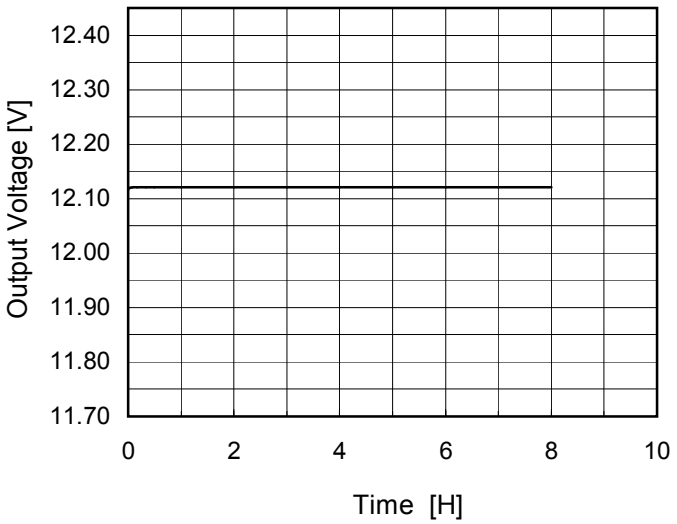
Object	-12V0.45A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	9	0	-12.511	±401	±3.3
Minimum Voltage	55	9	0.45	-11.710		

COSEL

Model	SUTW101212
Item	Time Lapse Drift
Object	+12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



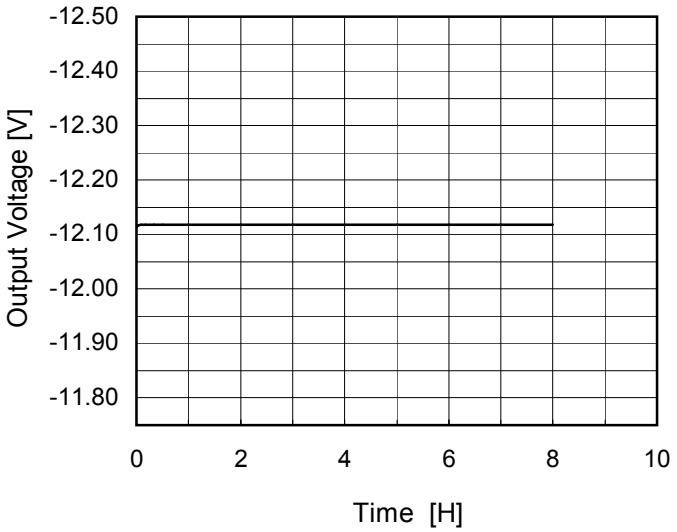
Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.117
0.5	12.121
1.0	12.121
2.0	12.121
3.0	12.121
4.0	12.121
5.0	12.121
6.0	12.121
7.0	12.121
8.0	12.121

Object	-12V0.45A

1.Graph



Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.113
0.5	-12.118
1.0	-12.118
2.0	-12.118
3.0	-12.118
4.0	-12.118
5.0	-12.118
6.0	-12.118
7.0	-12.118
8.0	-12.118

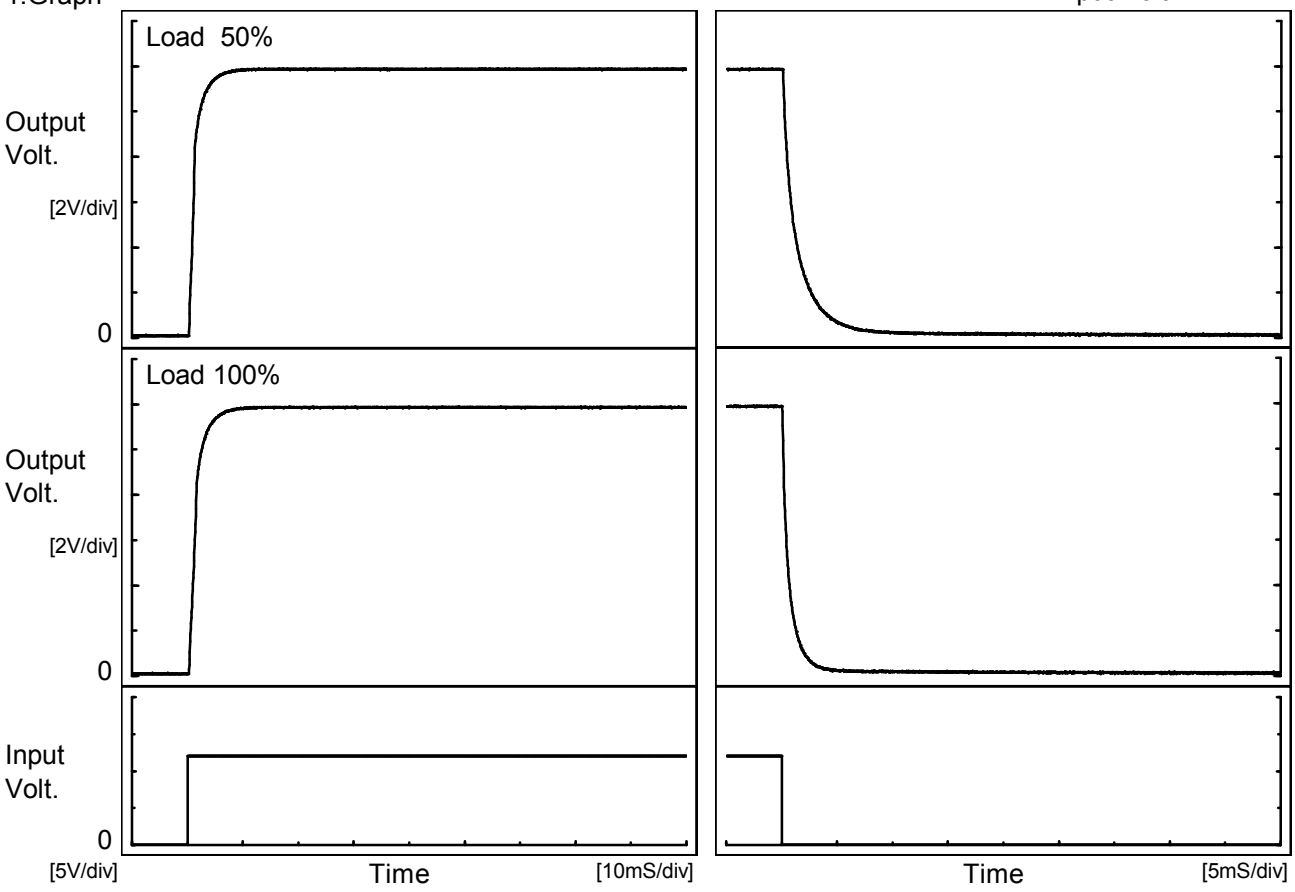
COSEL

Model	SUTW101212
Item	Rise and Fall Time
Object	+12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

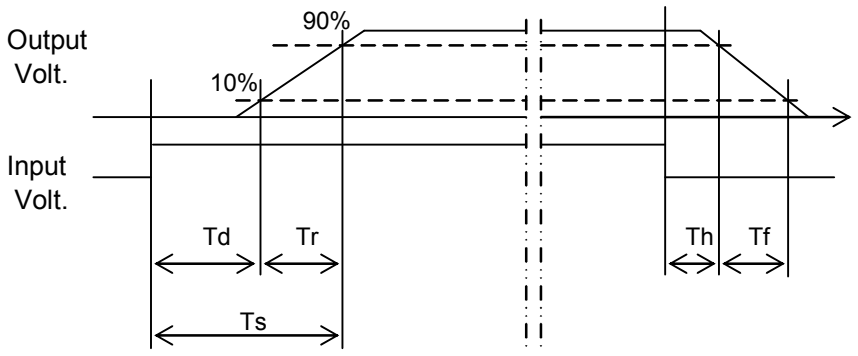
Input Volt. 12 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.5	2.9	3.4	0.1	3.3
100 %	0.5	3.2	3.7	0.1	1.6



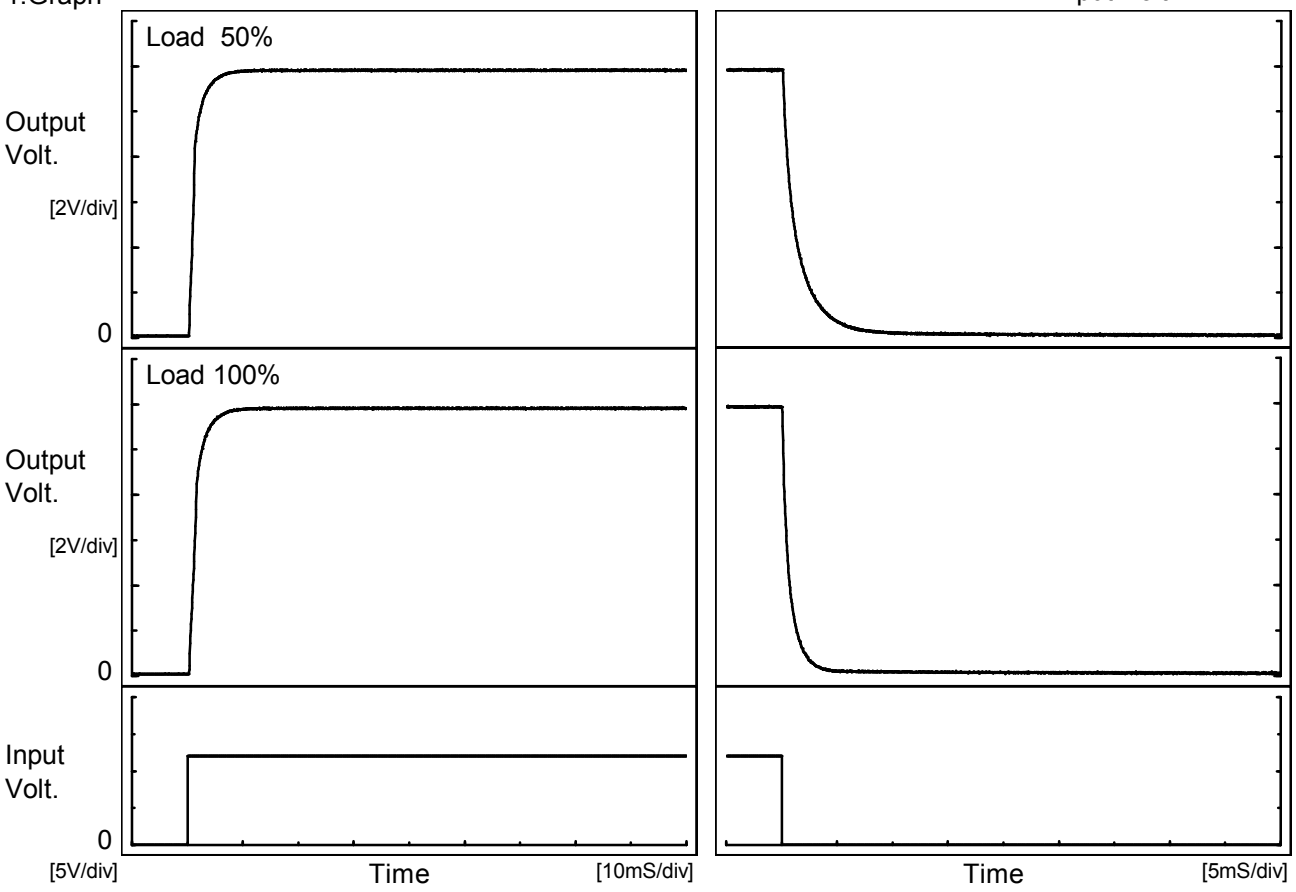
COSEL

Model	SUTW101212
Item	Rise and Fall Time
Object	-12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

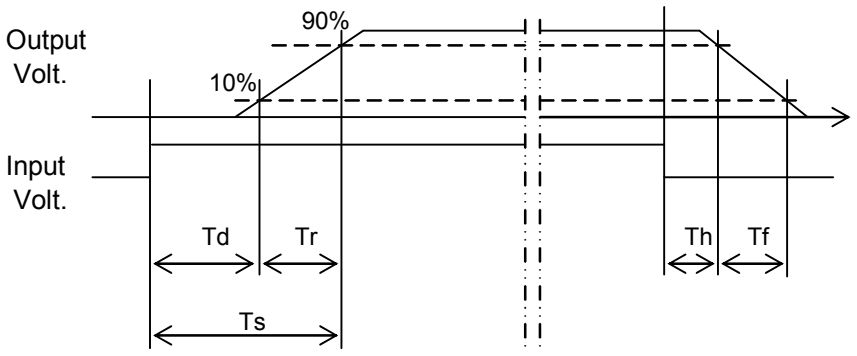
Input Volt. 12 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.5	3.0	3.5	0.1	3.5
100 %	0.5	3.3	3.8	0.1	1.7

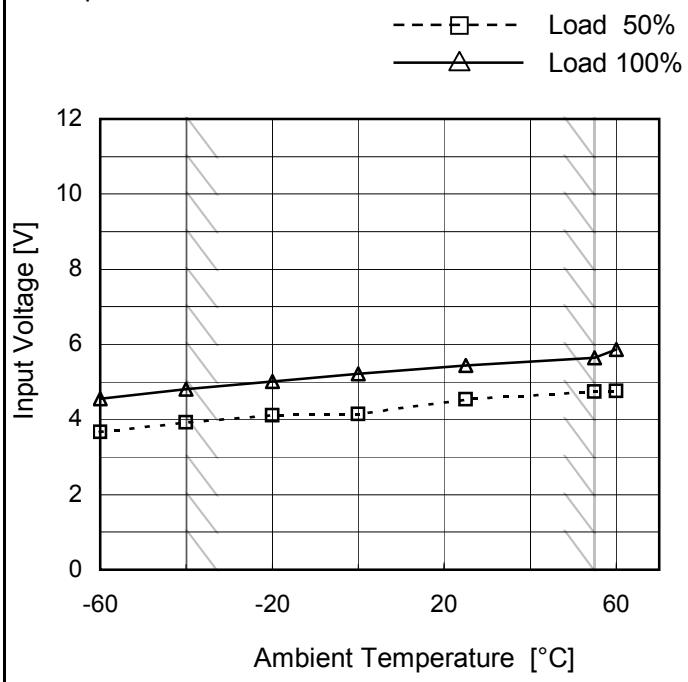


COSEL

Model	SUTW101212
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.45A

Testing Circuitry Figure A

1.Graph

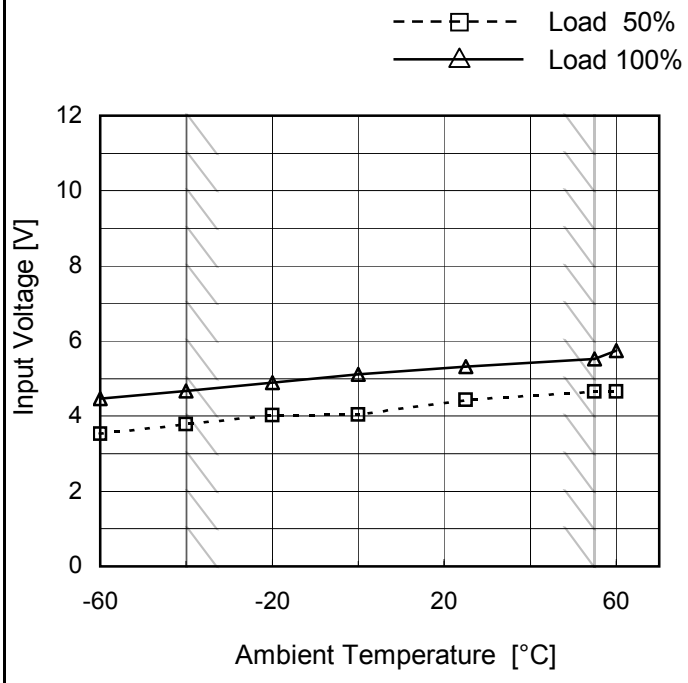


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.7	4.6
-40	4.0	4.8
-20	4.2	5.1
0	4.2	5.3
25	4.6	5.5
55	4.8	5.7
60	4.8	5.9
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.45A

1.Graph



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

2.Values

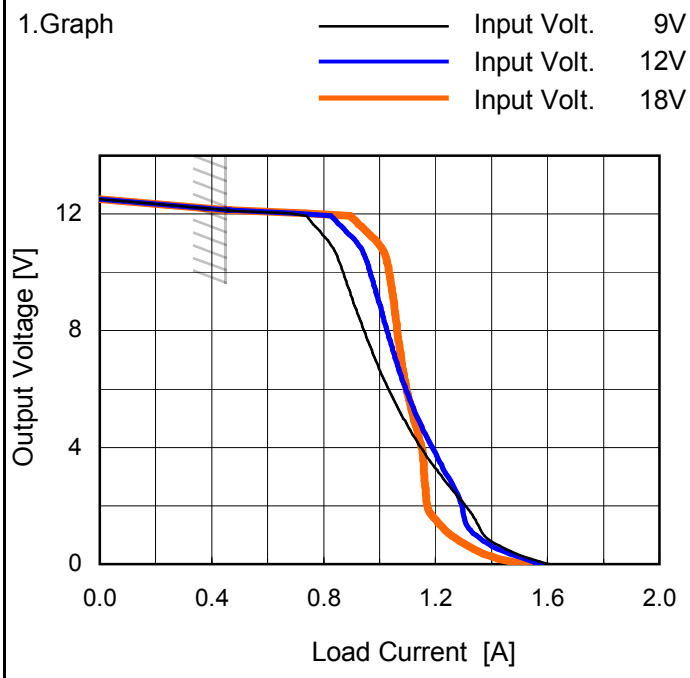
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.6	4.5
-40	3.8	4.7
-20	4.1	4.9
0	4.1	5.2
25	4.5	5.4
55	4.7	5.6
60	4.7	5.8
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW101212
Item	Overcurrent Protection
Object	+12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

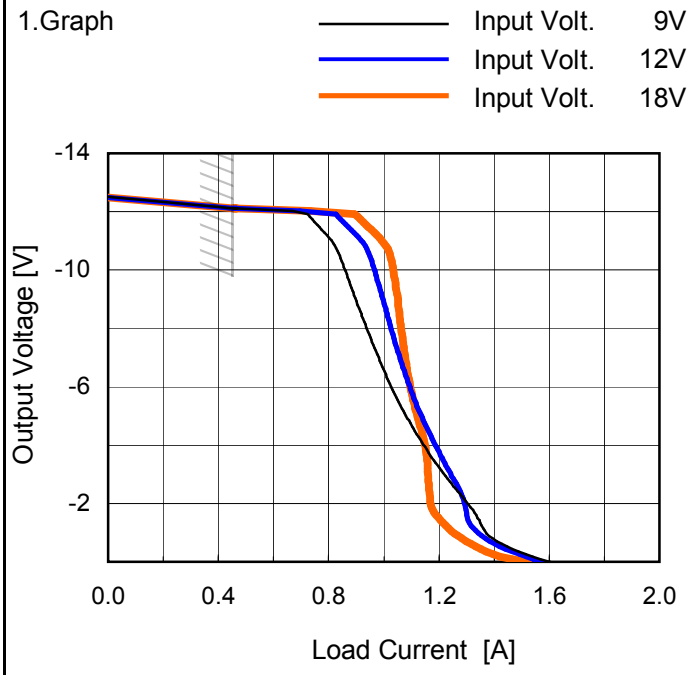


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
12.0	0.45	0.45	0.45
11.4	0.79	0.88	0.95
10.8	0.84	0.93	1.01
9.6	0.88	0.98	1.04
8.4	0.93	1.01	1.06
7.2	0.98	1.05	1.07
6.0	1.03	1.09	1.09
4.8	1.10	1.15	1.13
3.6	1.17	1.21	1.16
2.4	1.27	1.28	1.17
1.2	1.36	1.32	1.23
0.0	1.60	1.57	1.53

Object	-12V0.45A

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	0.45	0.45	0.45
-11.4	0.77	0.88	0.95
-10.8	0.82	0.93	1.01
-9.6	0.87	0.98	1.04
-8.4	0.92	1.01	1.06
-7.2	0.97	1.05	1.07
-6.0	1.02	1.09	1.09
-4.8	1.09	1.14	1.13
-3.6	1.17	1.21	1.16
-2.4	1.27	1.28	1.16
-1.2	1.35	1.32	1.23
0.0	1.60	1.57	1.52

BC-10296

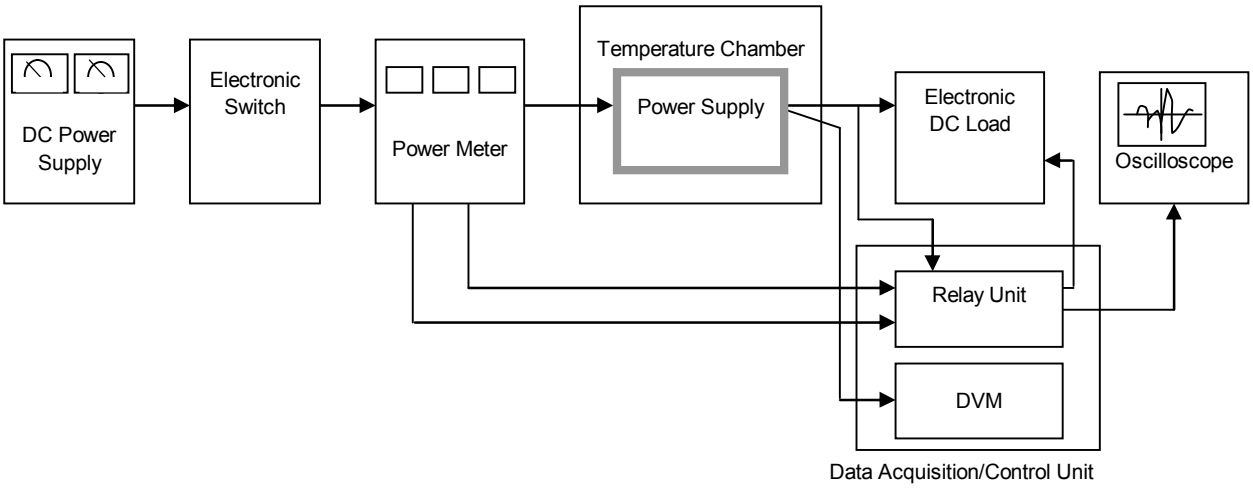


Figure A

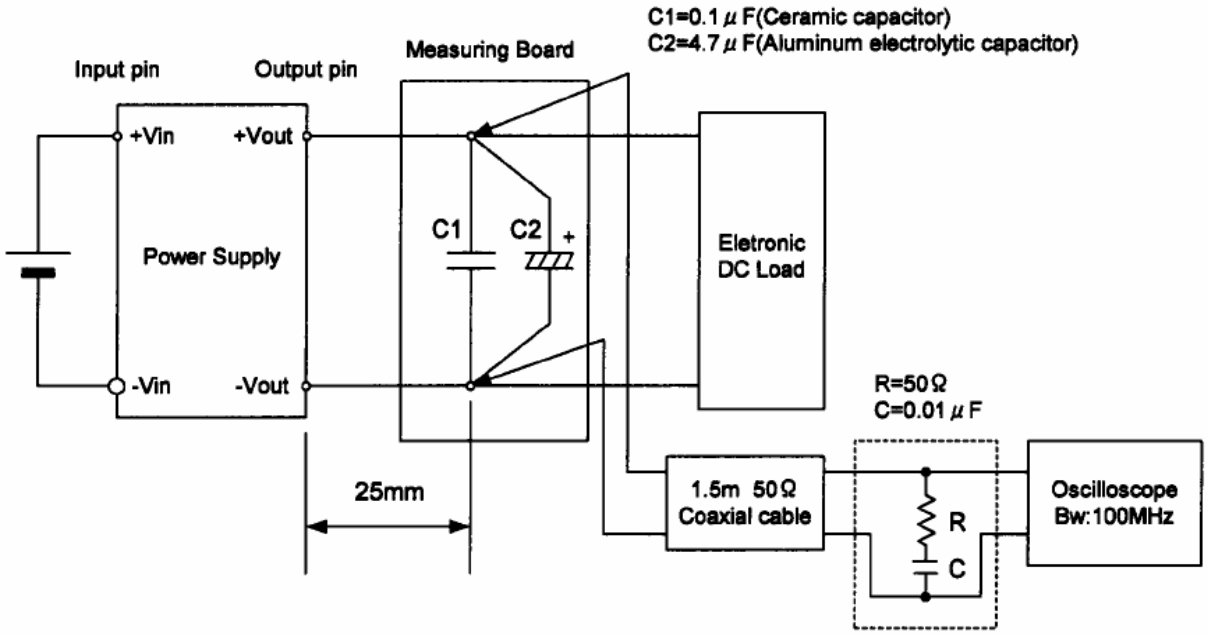


Figure B (Ripple and Ripple noise Characteristic)