COSEL

参考資料

TEST DATA OF SUTW104812

Regulated DC Power Supply
February 27, 2009

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COSEL CO.,LTD.

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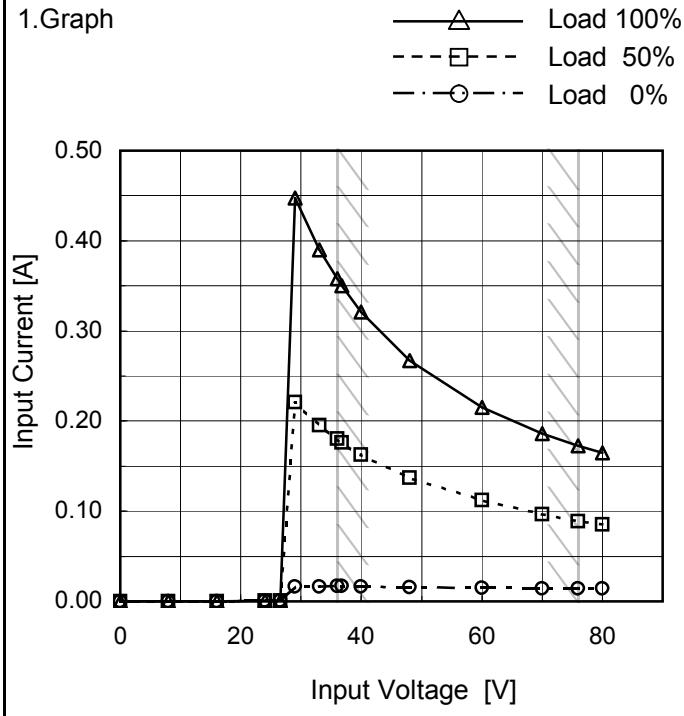
Model	SUTW104812
Item	Input Current (by Input Voltage)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

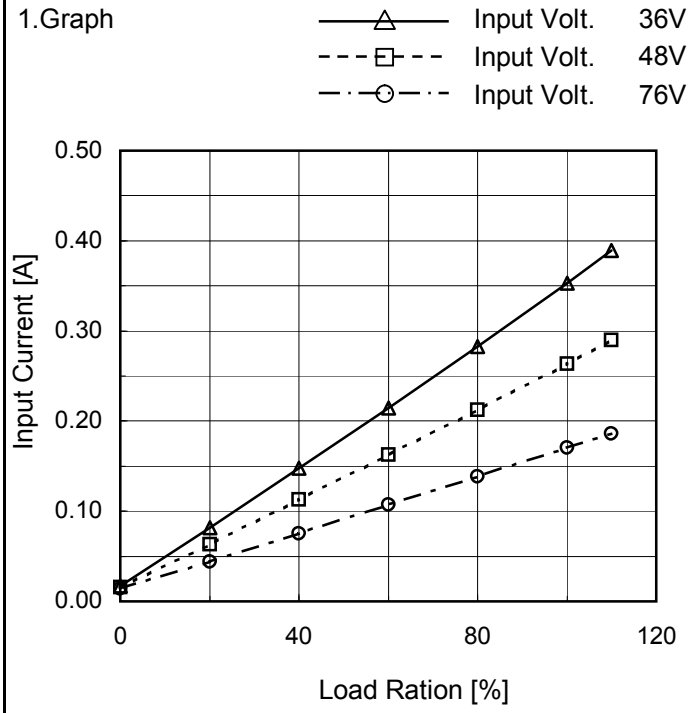
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
8.0	0.000	0.000	0.000
16.0	0.000	0.000	0.000
24.0	0.000	0.001	0.001
26.6	0.001	0.001	0.001
29.0	0.016	0.221	0.448
33.0	0.016	0.195	0.390
36.0	0.017	0.180	0.358
36.8	0.017	0.176	0.350
40.0	0.017	0.163	0.321
48.0	0.016	0.137	0.267
60.0	0.015	0.112	0.215
70.0	0.014	0.097	0.186
76.0	0.014	0.089	0.173
80.0	0.014	0.085	0.165
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW104812
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

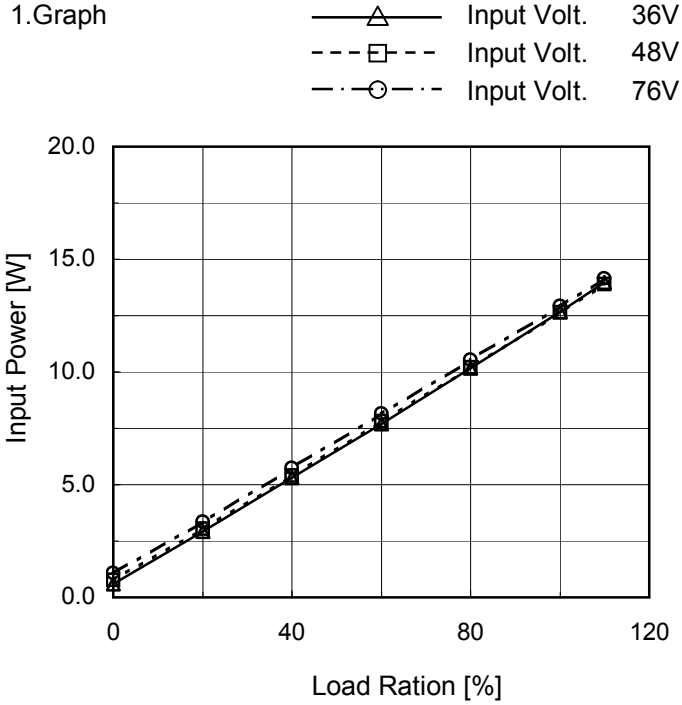
Load Ration [%]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.017	0.016	0.014
20	0.081	0.063	0.044
40	0.148	0.113	0.076
60	0.214	0.163	0.107
80	0.283	0.213	0.139
100	0.353	0.264	0.170
110	0.389	0.290	0.186
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW104812
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

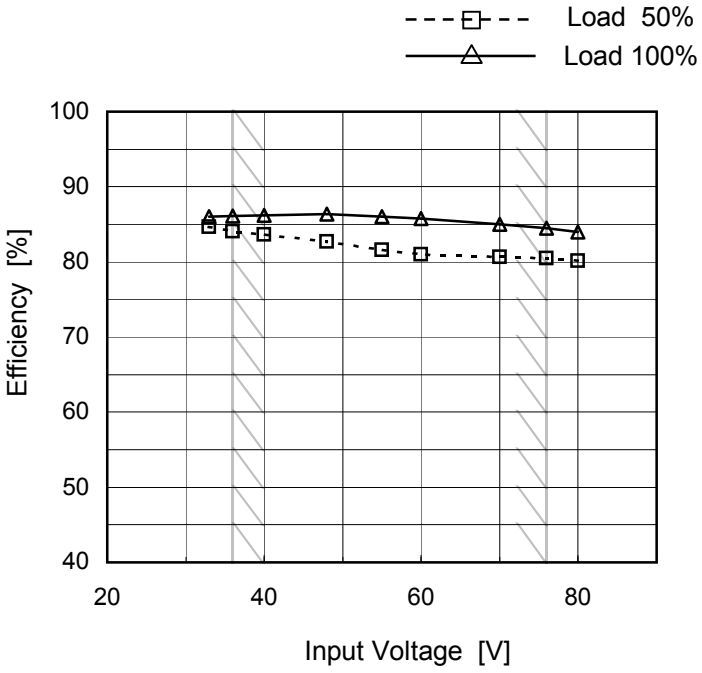
Load Ration [%]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.61	0.77	1.09
20	2.93	3.04	3.34
40	5.31	5.40	5.74
60	7.71	7.81	8.14
80	10.16	10.20	10.53
100	12.68	12.65	12.93
110	13.97	13.90	14.15
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW104812
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

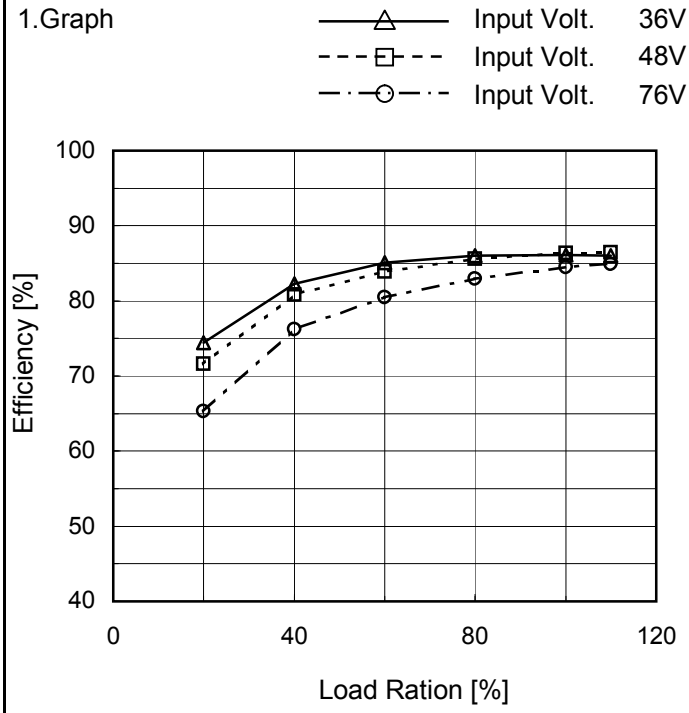
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	84.7	86.1
36	84.1	86.1
40	83.6	86.2
48	82.7	86.3
55	81.6	86.0
60	81.0	85.8
70	80.6	85.0
76	80.5	84.5
80	80.1	84.0

COSEL

Model	SUTW104812
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	74.4	71.6	65.3
40	82.2	80.9	76.2
60	85.1	83.9	80.5
80	86.0	85.6	82.9
100	86.1	86.4	84.5
110	86.0	86.4	84.9
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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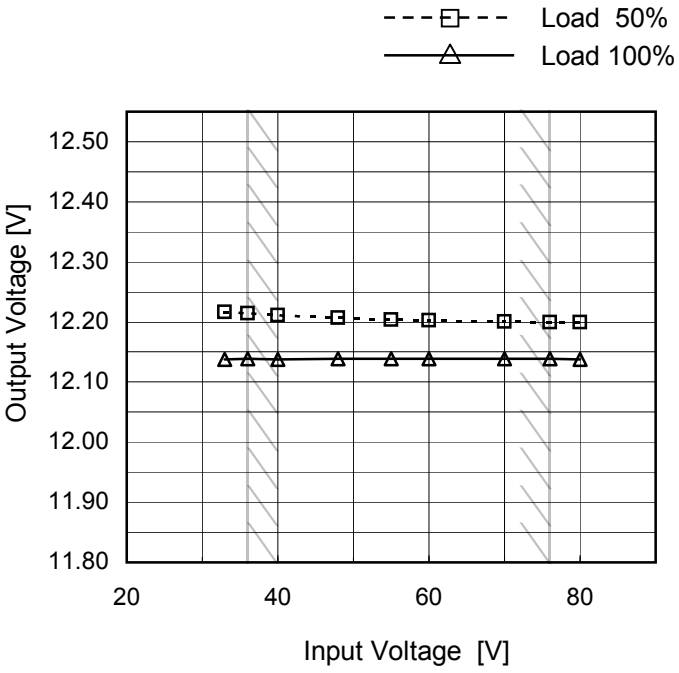
Model	SUTW104812
Item	Line Regulation

Temperature 25°C
Testing Circuitry Figure A

Object +12V0.45A

1.Graph

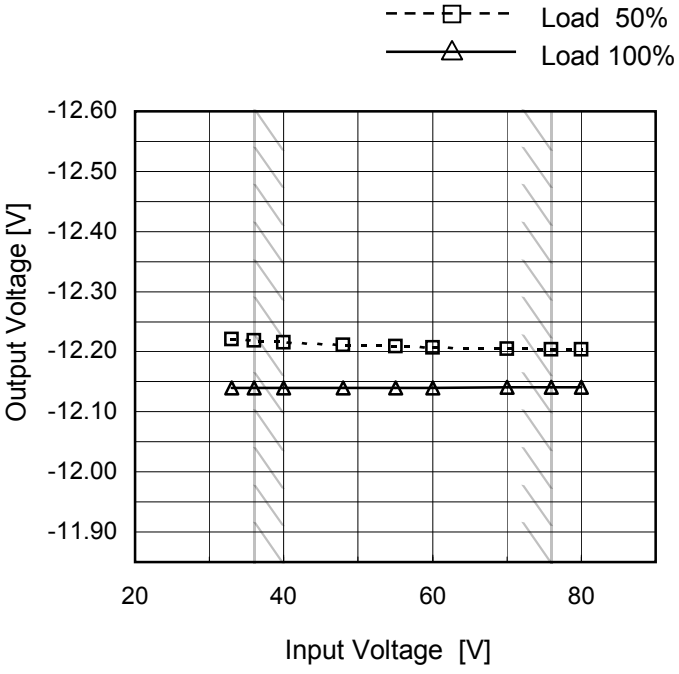


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	12.217	12.138
36	12.214	12.138
40	12.211	12.138
48	12.207	12.139
55	12.204	12.139
60	12.203	12.139
70	12.201	12.139
76	12.200	12.138
80	12.200	12.138

Object -12V0.45A

1.Graph



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

2.Values

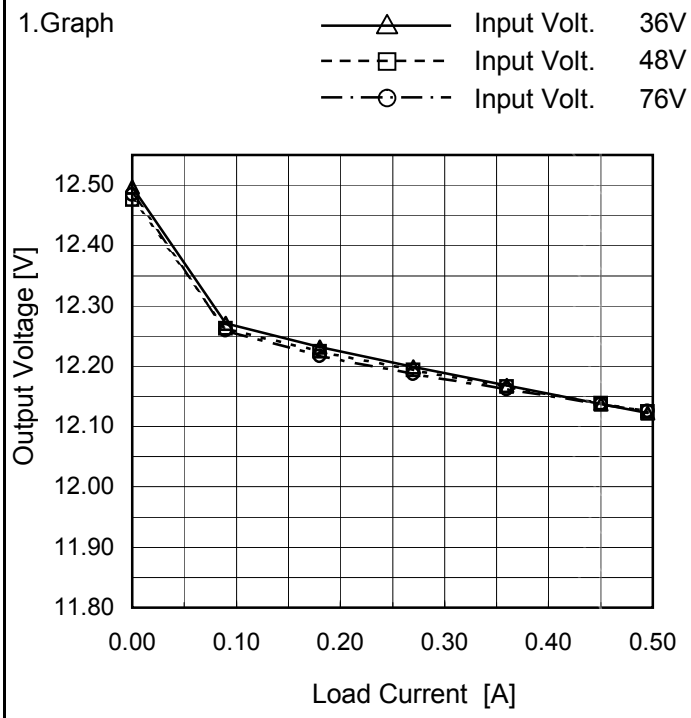
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	-12.221	-12.140
36	-12.219	-12.140
40	-12.215	-12.140
48	-12.211	-12.140
55	-12.209	-12.140
60	-12.207	-12.140
70	-12.205	-12.140
76	-12.203	-12.140
80	-12.203	-12.141

COSEL

Model	SUTW104812
Item	Load Regulation
Object	+12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

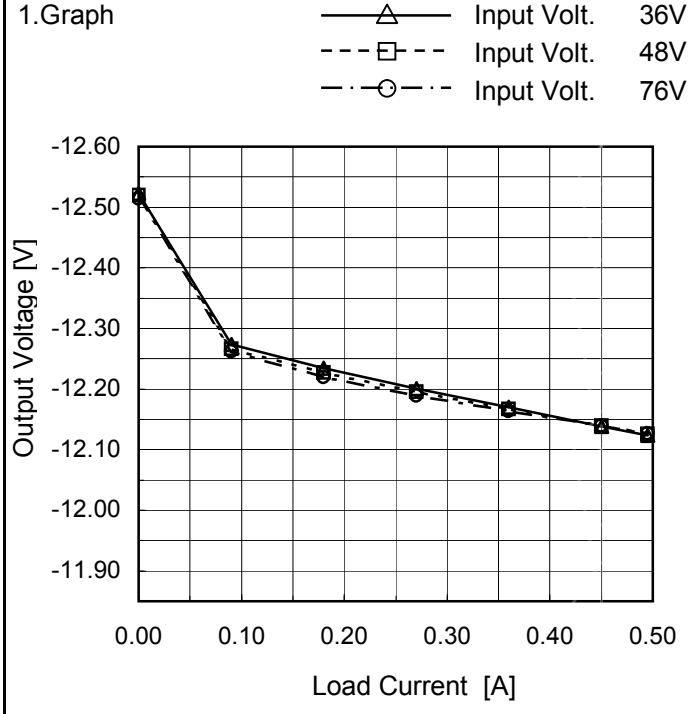


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	12.497	12.476	12.484
0.090	12.271	12.263	12.259
0.180	12.232	12.224	12.217
0.270	12.199	12.194	12.188
0.360	12.168	12.166	12.162
0.450	12.137	12.138	12.137
0.495	12.122	12.125	12.126
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V0.45A

1.Graph



2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	-12.523	-12.520	-12.515
0.090	-12.274	-12.266	-12.262
0.180	-12.235	-12.227	-12.220
0.270	-12.201	-12.195	-12.190
0.360	-12.170	-12.167	-12.164
0.450	-12.139	-12.140	-12.139
0.495	-12.124	-12.126	-12.127
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

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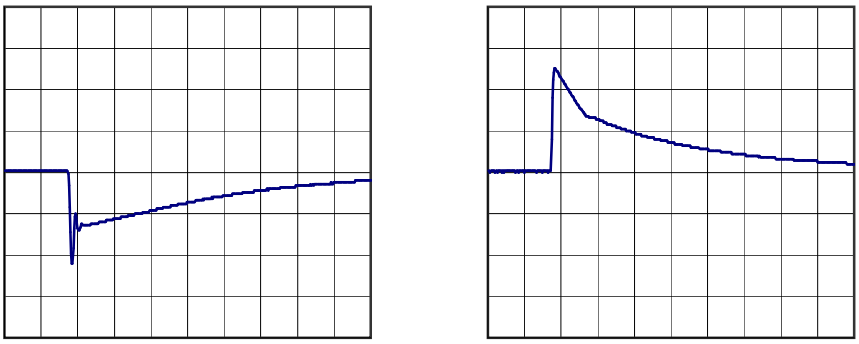
Model	SUTW104812
Item	Dynamic Load Response
Object	+12V0.45A

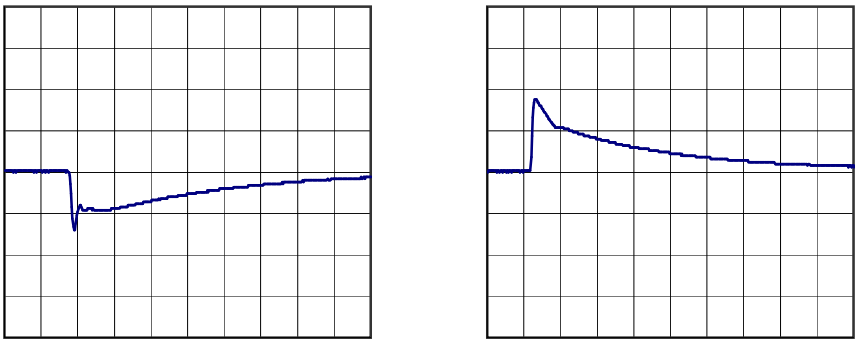
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Cycle 100 mS

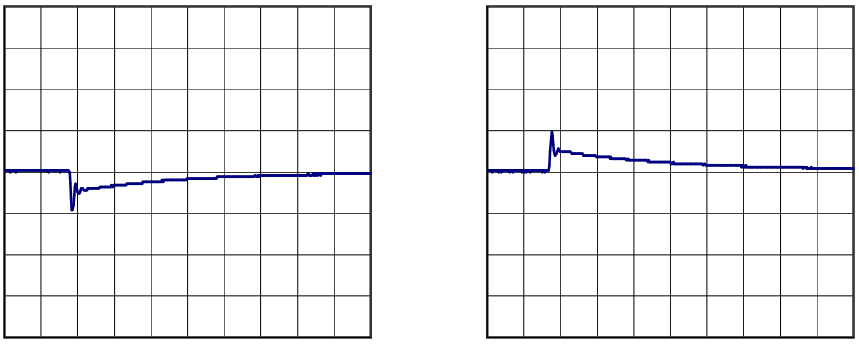
Min. Load (0A) ⟷
Load 100% (0.45A)



Min. Load (0A) ⟷
Load 50% (0.225A)



Load 50% (0.225A) ⟷
Load 100% (0.45A)



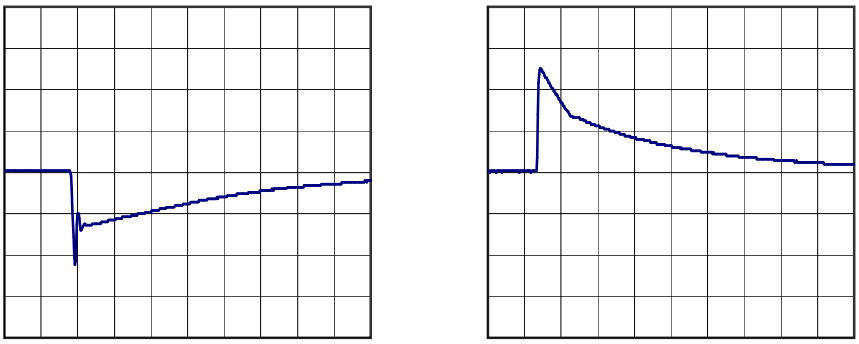
COSEL

Model	SUTW104812
Item	Dynamic Load Response
Object	-12V0.45A

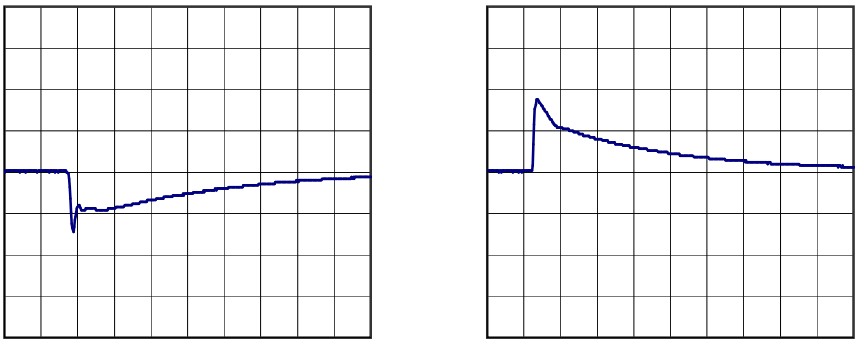
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Cycle 100 mS

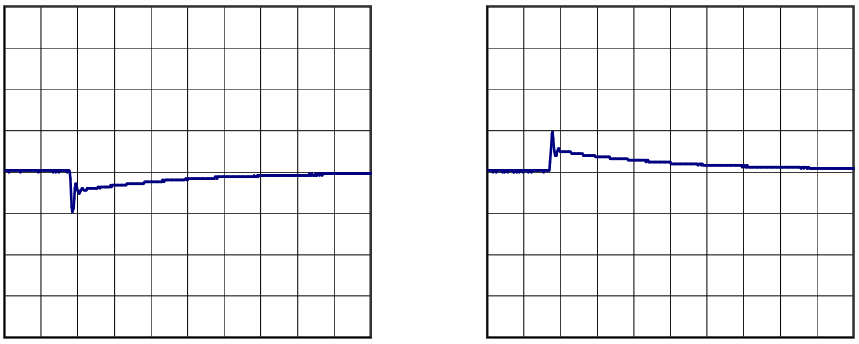
Min. Load (0A) ⟷
Load 100% (0.45A)



Min. Load (0A) ⟷
Load 50% (0.225A)



Load 50% (0.225A) ⟷
Load 100% (0.45A)

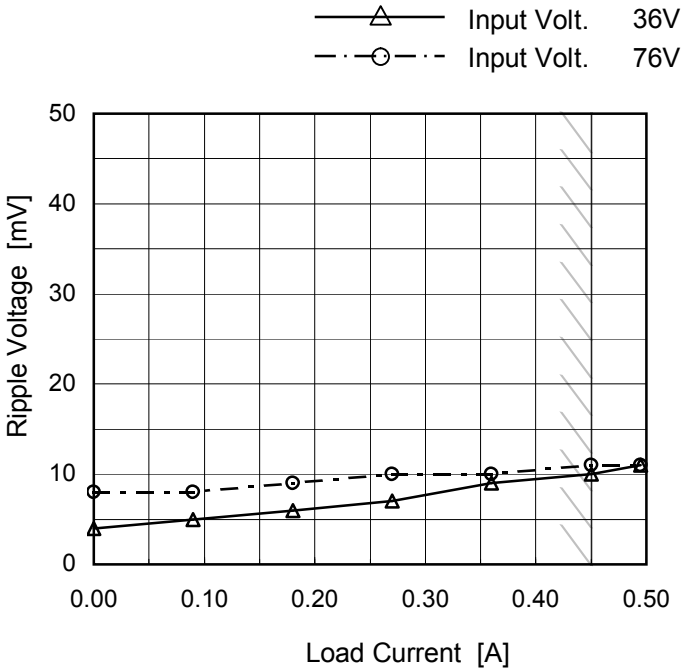


COSEL

Model	SUTW104812
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.

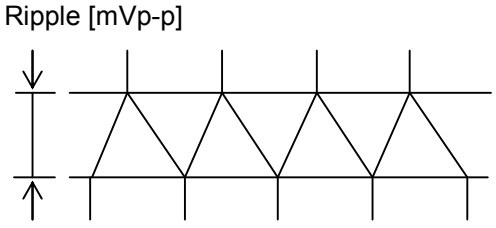


Fig.Complex Ripple Wave Form

2.Values

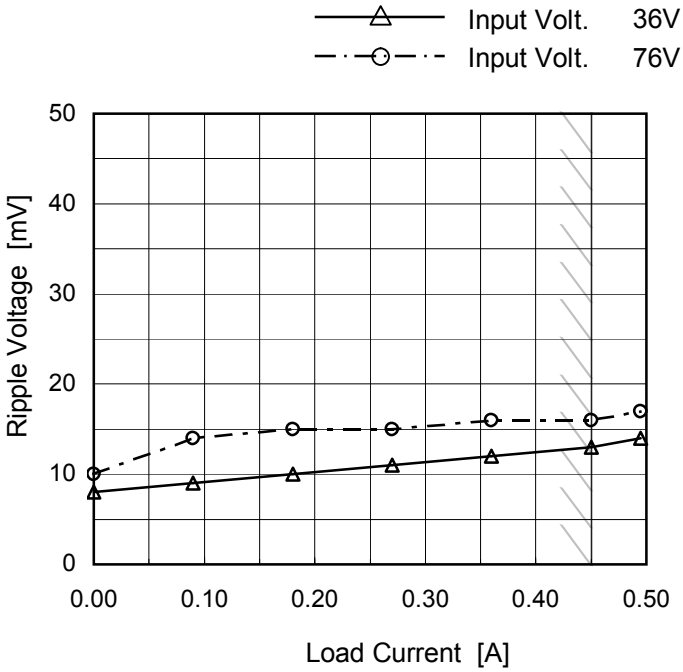
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	4	8
0.090	5	8
0.180	6	9
0.270	7	10
0.360	9	10
0.450	10	11
0.495	11	11
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW104812
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]

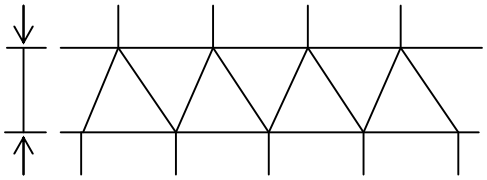


Fig.Complex Ripple Wave Form

2.Values

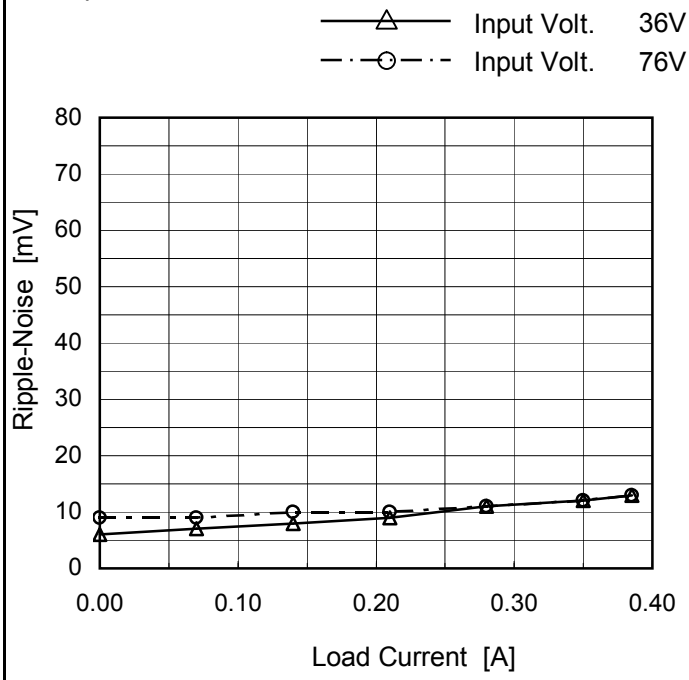
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	8	10
0.090	9	14
0.180	10	15
0.270	11	15
0.360	12	16
0.450	13	16
0.495	14	17
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW104812
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.

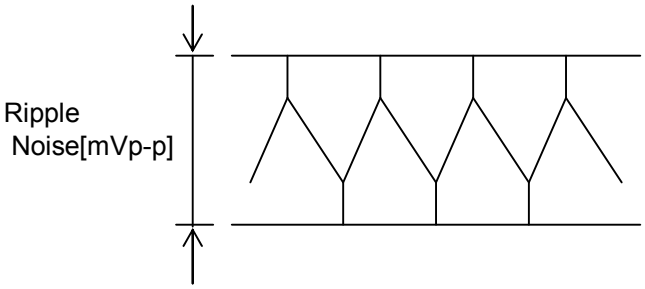


Fig.Complex Ripple Noise Wave Form

2.Values

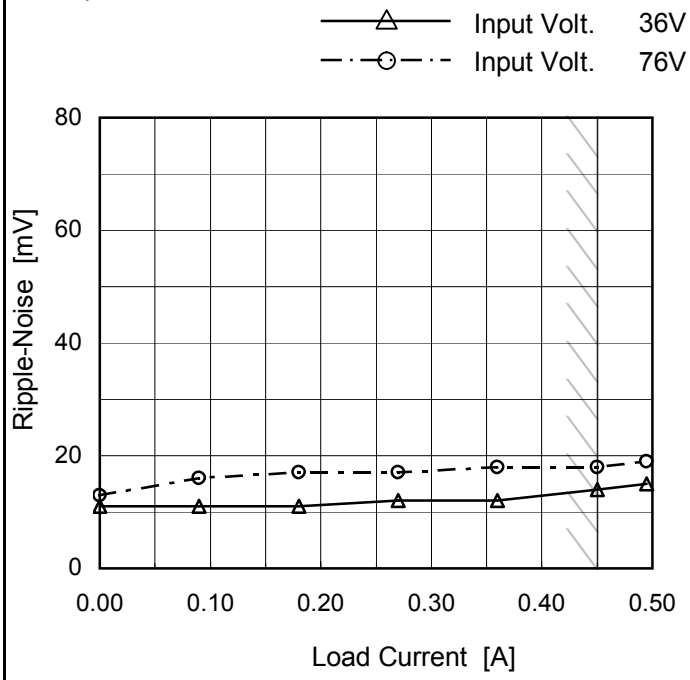
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	6	9
0.070	7	9
0.140	8	10
0.210	9	10
0.280	11	11
0.350	12	12
0.385	13	13
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW104812
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.

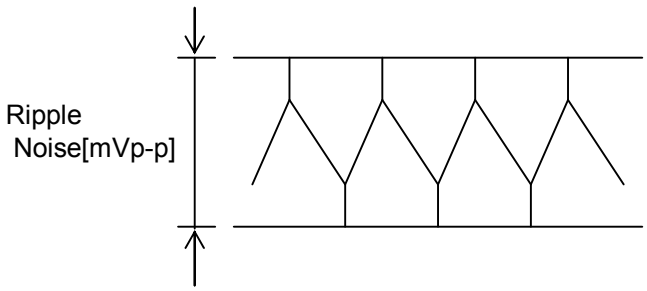


Fig.Complex Ripple Noise Wave Form

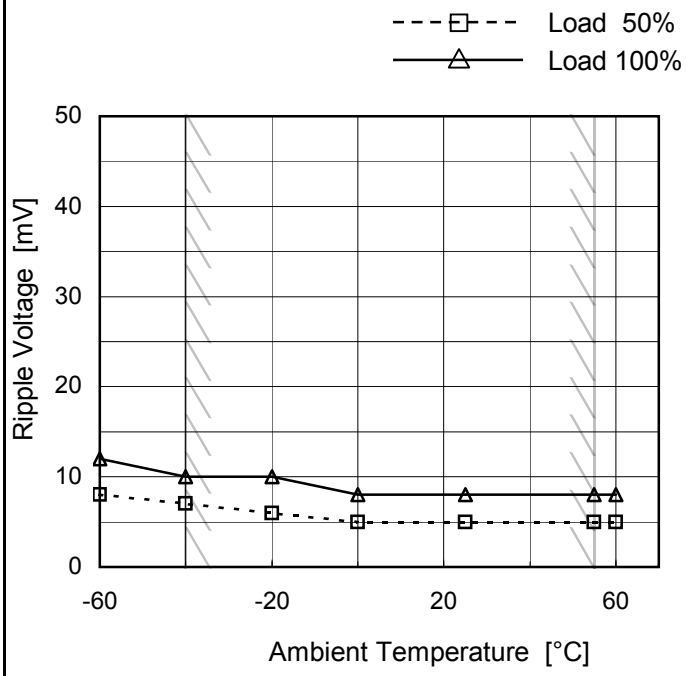
2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	11	13
0.090	11	16
0.180	11	17
0.270	12	17
0.360	12	18
0.450	14	18
0.495	15	19
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW104812	
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure B
Object	+12V0.45A	

1.Graph



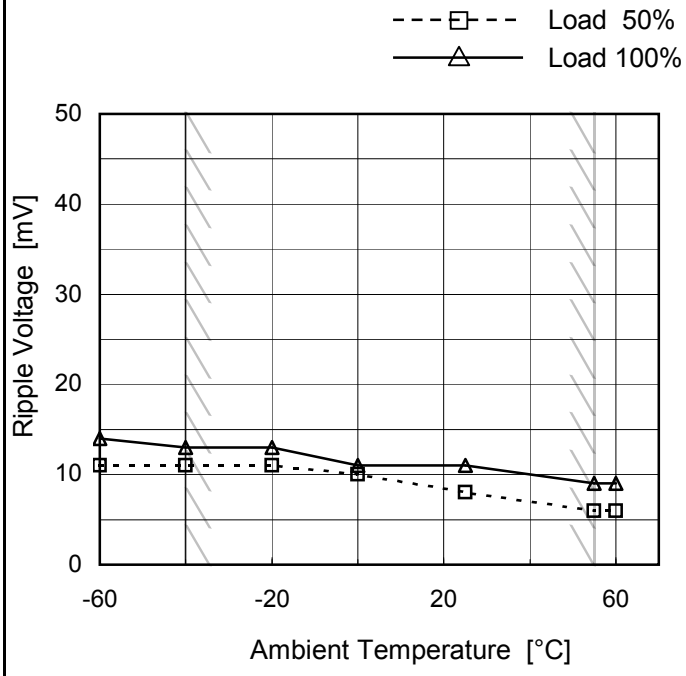
Input Volt. 48V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	8	12
-40	7	10
-20	6	10
0	5	8
25	5	8
55	5	8
60	5	8
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.45A

1.Graph



Input Volt. 48V

Measured by 100 MHz Oscilloscope.

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

2.Values

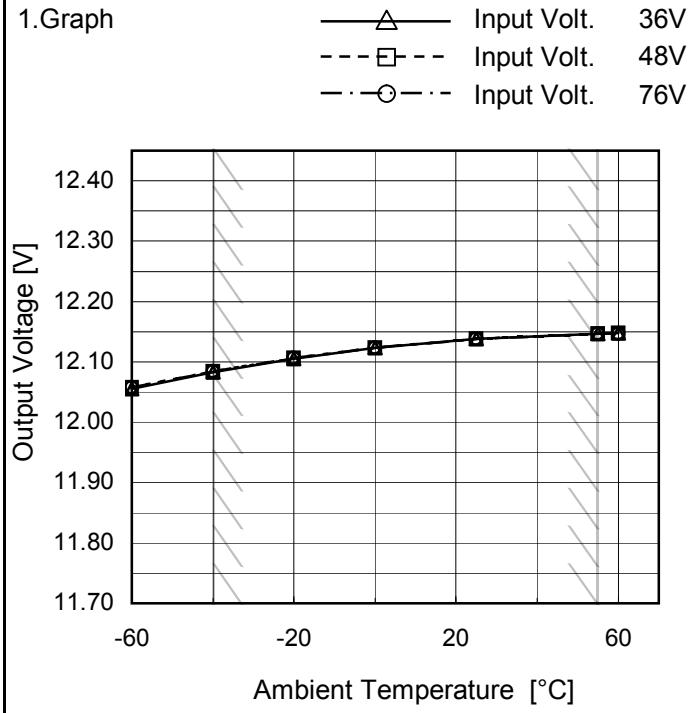
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	11	14
-40	11	13
-20	11	13
0	10	11
25	8	11
55	6	9
60	6	9
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW104812
Item	Ambient Temperature Drift
Object	+12V0.45A

Testing Circuitry Figure A

1.Graph



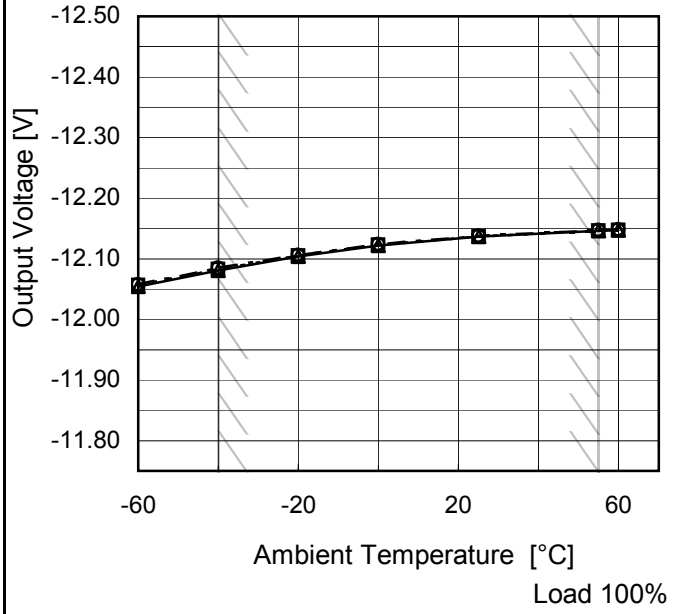
Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	12.056	12.057	12.058
-40	12.083	12.084	12.084
-20	12.106	12.106	12.106
0	12.123	12.124	12.124
25	12.138	12.138	12.138
55	12.147	12.147	12.147
60	12.147	12.148	12.147
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	-12.054	-12.056	-12.058
-40	-12.081	-12.083	-12.085
-20	-12.104	-12.105	-12.106
0	-12.122	-12.122	-12.124
25	-12.137	-12.137	-12.138
55	-12.146	-12.147	-12.147
60	-12.147	-12.147	-12.148
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW104812	
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 - 0.45A (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	36	0	12.512	±394	±3.3
Minimum Voltage	-40	36	0.45	11.724		

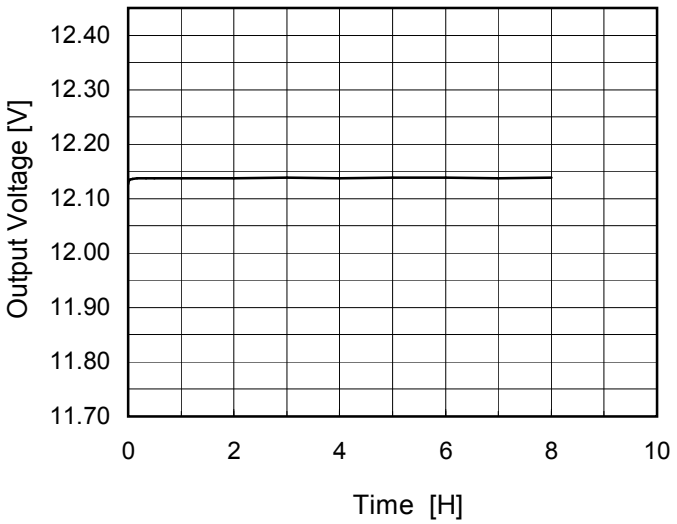
Object	-12V0.45A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	-12.538	±395	±3.3
Minimum Voltage	-40	36	0.45	-11.749		

COSEL

Model	SUTW104812
Item	Time Lapse Drift
Object	+12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



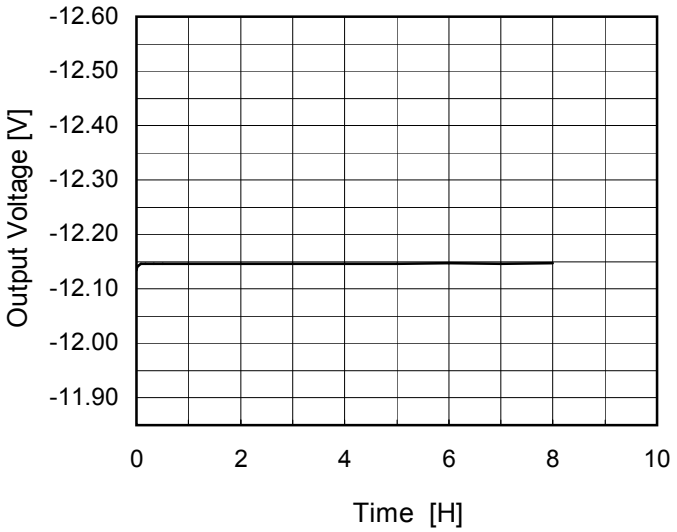
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.127
0.5	12.138
1.0	12.137
2.0	12.138
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	-12V0.45A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.134
0.5	-12.146
1.0	-12.146
2.0	-12.147
3.0	-12.147
4.0	-12.147
5.0	-12.147
6.0	-12.147
7.0	-12.147
8.0	-12.147

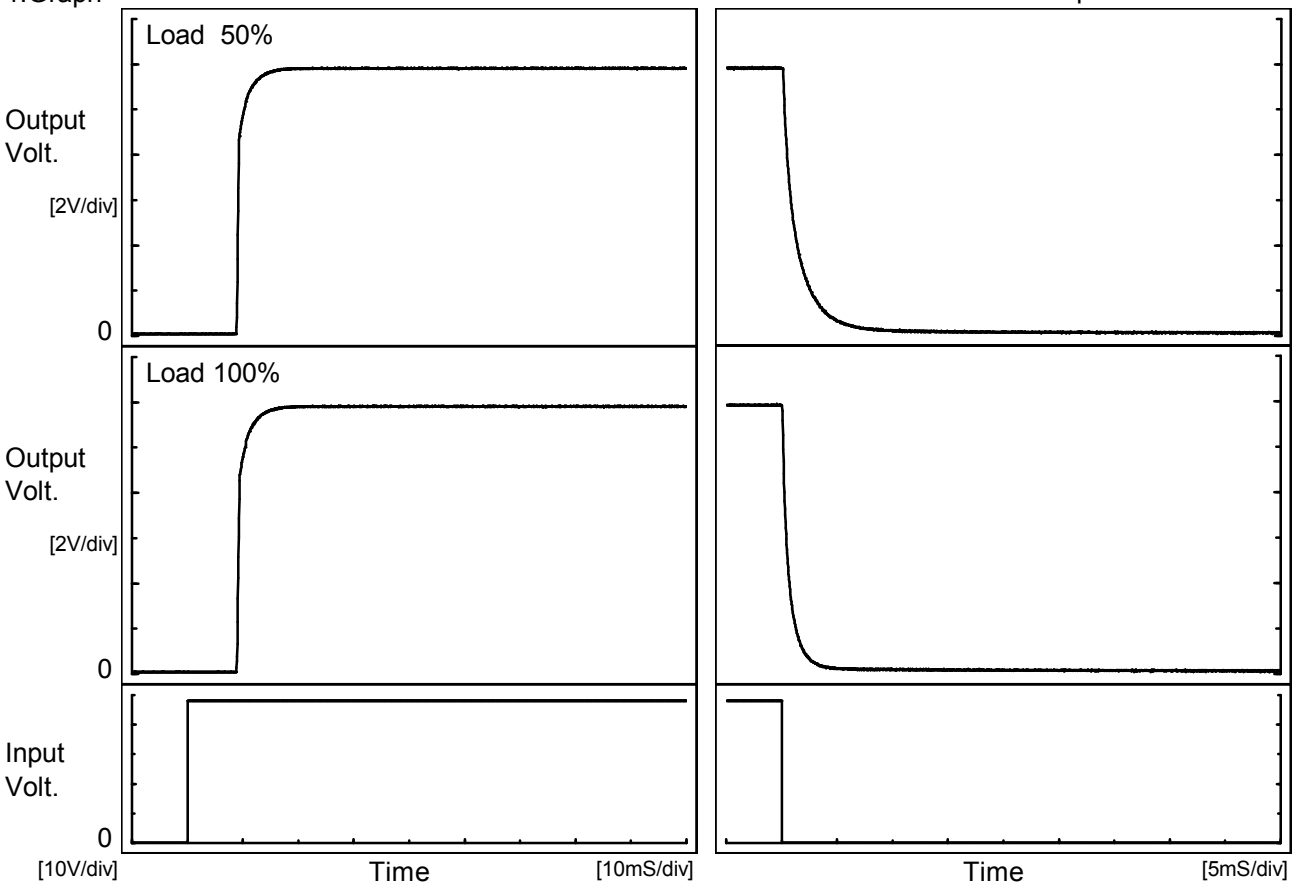
COSEL

Model	SUTW104812
Item	Rise and Fall Time
Object	+12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

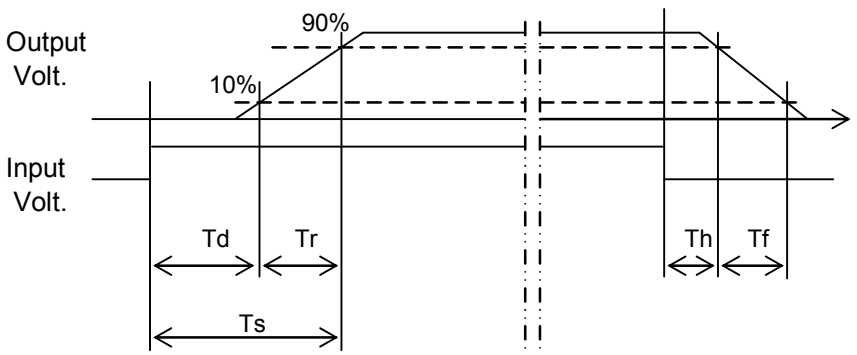
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	9.0	2.5	11.5	0.1	3.3
100 %	9.0	2.6	11.6	0.1	1.6



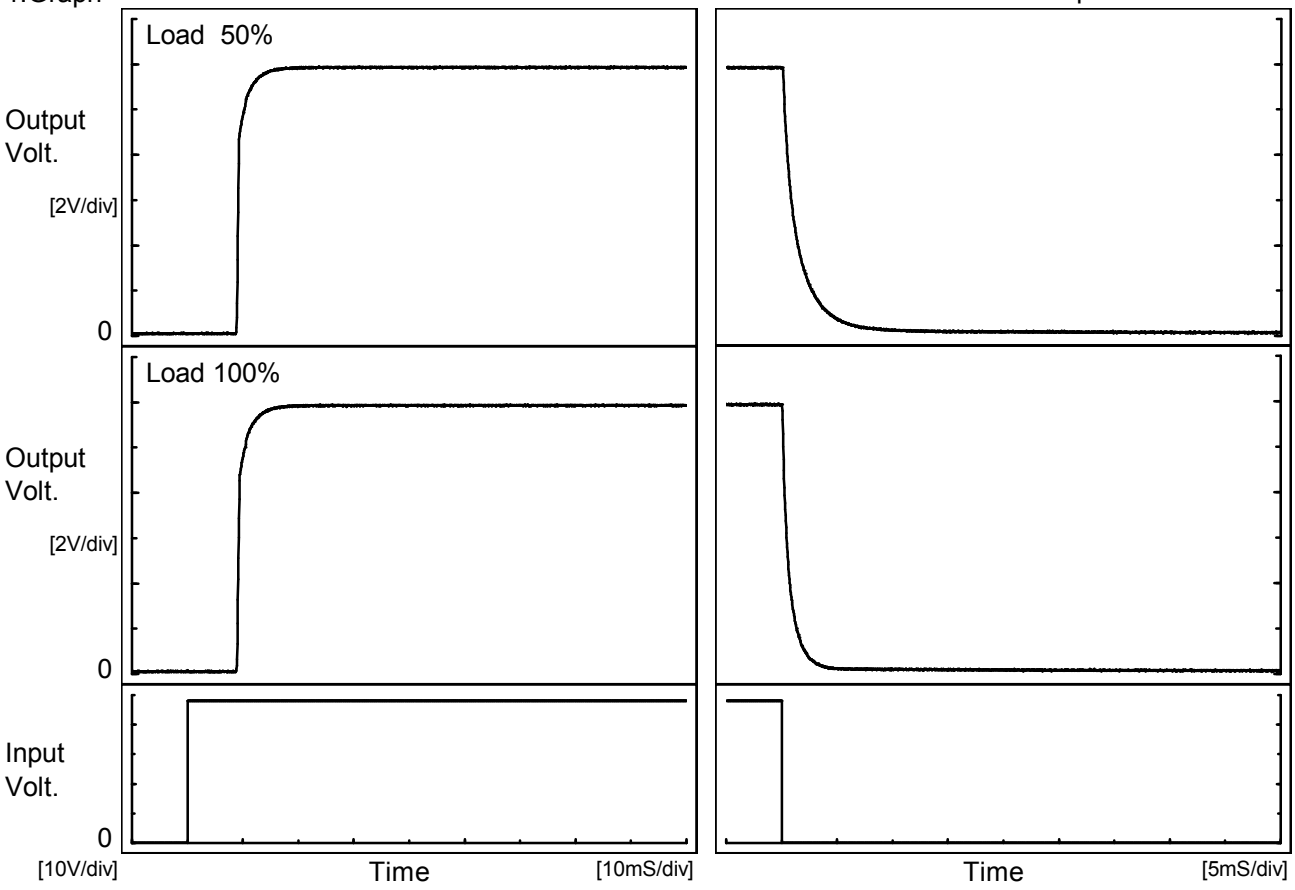
COSEL

Model	SUTW104812
Item	Rise and Fall Time
Object	-12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

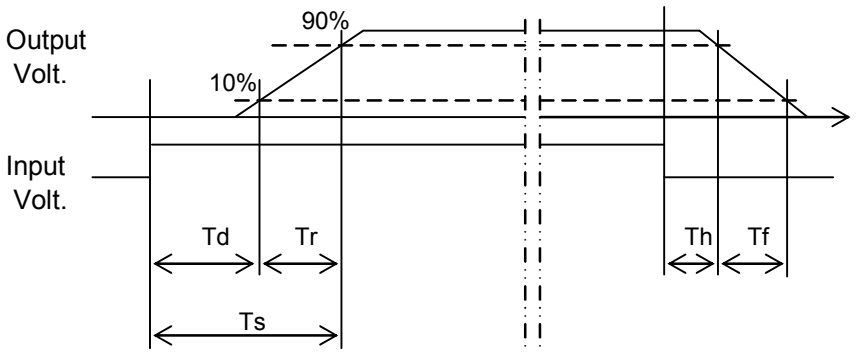
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	9.0	2.4	11.4	0.1	3.5
100 %	9.0	2.5	11.5	0.1	1.7



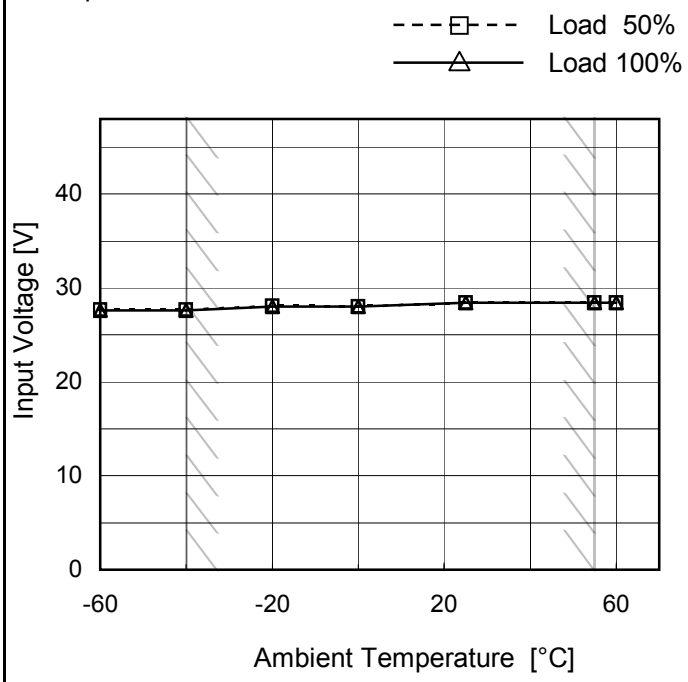
BC-10308

COSEL

Model	SUTW104812
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.45A

Testing Circuitry Figure A

1.Graph

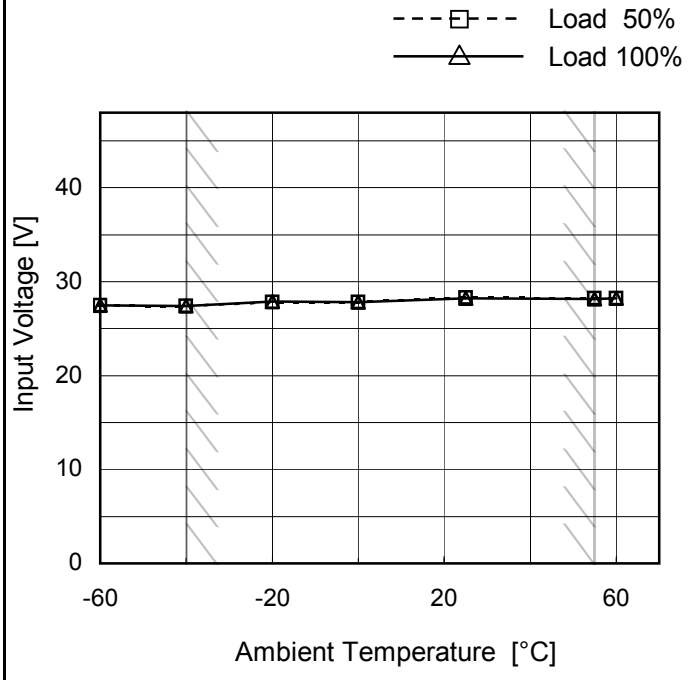


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	27.7	27.7
-40	27.7	27.7
-20	28.1	28.1
0	28.1	28.1
25	28.5	28.4
55	28.5	28.5
60	28.5	28.5
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.45A

1.Graph



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

2.Values

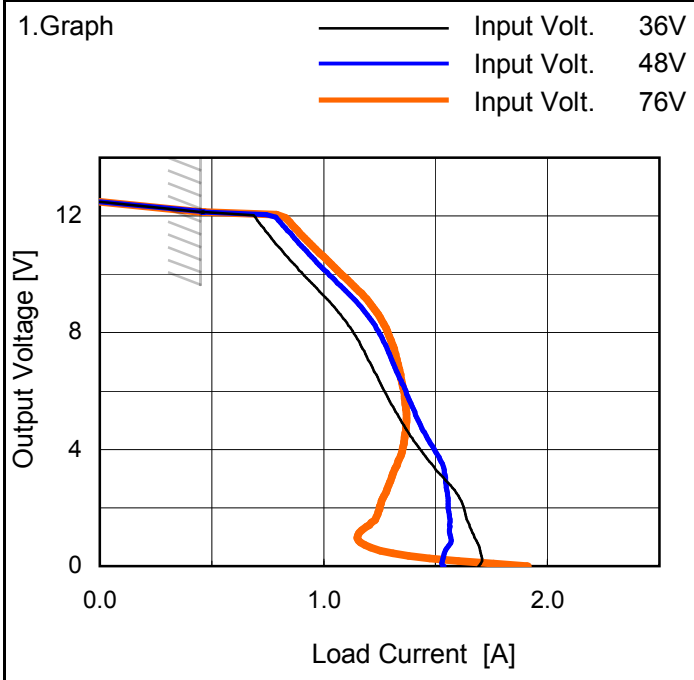
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	27.5	27.5
-40	27.5	27.5
-20	27.9	27.9
0	27.9	27.9
25	28.3	28.3
55	28.3	28.2
60	28.3	28.3
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW104812
Item	Overcurrent Protection
Object	+12V0.45A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

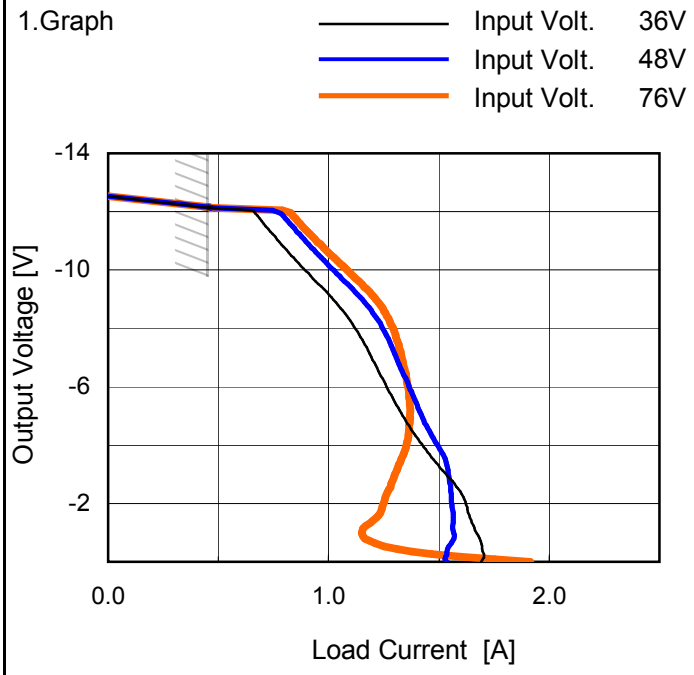


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
12.0	0.45	0.45	0.45
11.4	0.75	0.85	0.89
10.8	0.81	0.91	0.97
9.6	0.96	1.08	1.12
8.4	1.10	1.21	1.26
7.2	1.19	1.29	1.32
6.0	1.27	1.37	1.36
4.8	1.36	1.43	1.37
3.6	1.46	1.52	1.34
2.4	1.60	1.55	1.27
1.2	1.66	1.56	1.17
0.0	1.69	1.53	1.91

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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-12.0	0.46	0.46	0.46
-11.4	0.72	0.84	0.89
-10.8	0.79	0.91	0.96
-9.6	0.94	1.07	1.14
-8.4	1.08	1.21	1.26
-7.2	1.18	1.29	1.32
-6.0	1.26	1.36	1.36
-4.8	1.35	1.43	1.37
-3.6	1.46	1.52	1.34
-2.4	1.60	1.55	1.27
-1.2	1.66	1.56	1.17
0.0	1.69	1.53	1.91

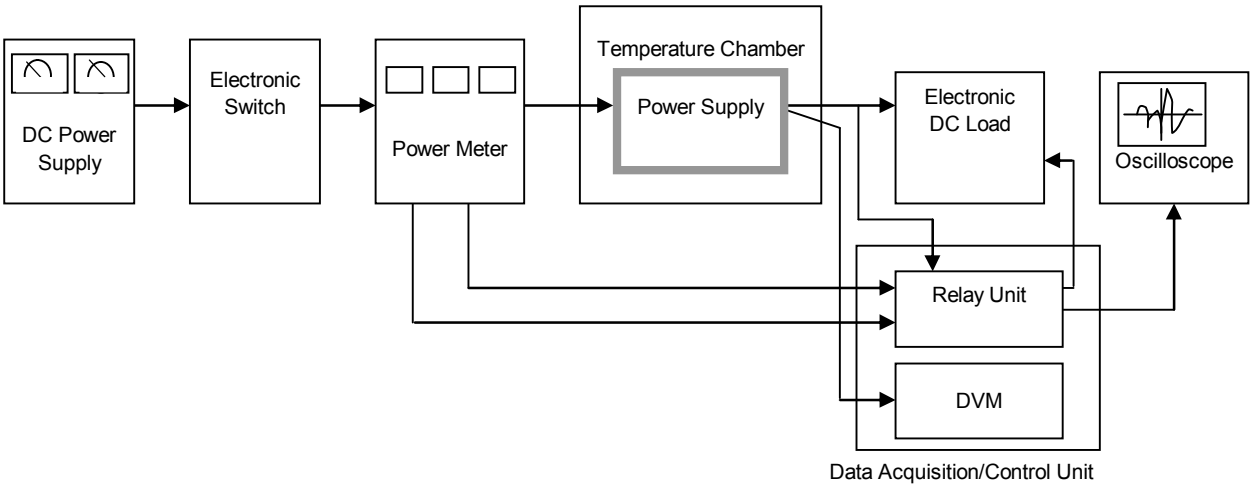


Figure A

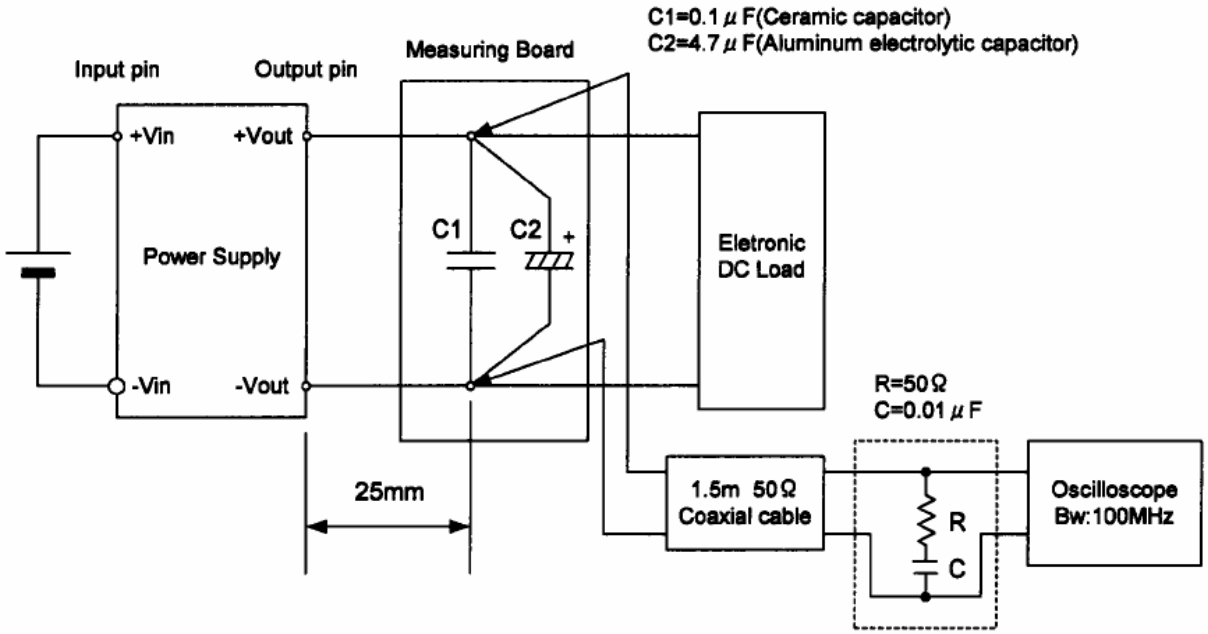


Figure B (Ripple and Ripple noise Characteristic)