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参考資料

TEST DATA OF SUTW64812

Regulated DC Power Supply
March 17, 2009

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COSEL CO.,LTD.

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参考資料

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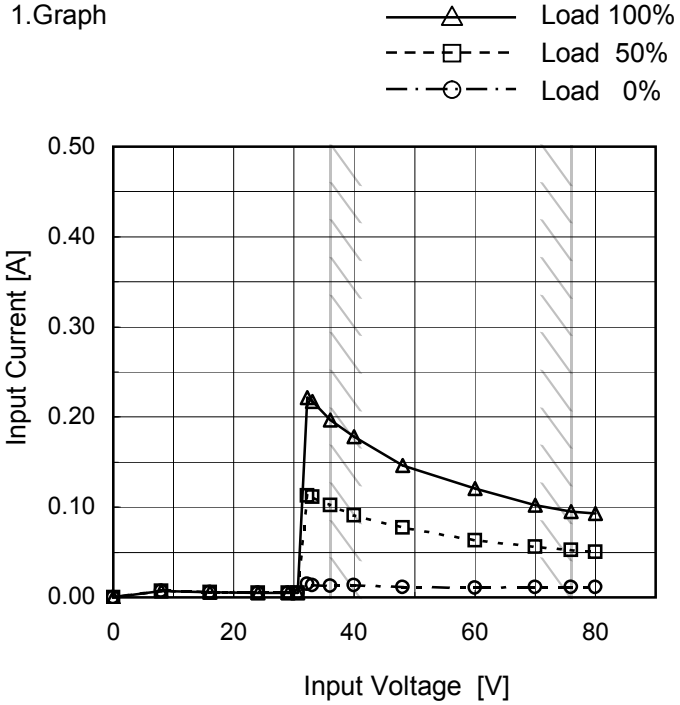
Model	SUTW64812
Item	Input Current (by Input Voltage)
Object	――――――――

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	0.007	0.007	0.007
16.0	0.005	0.006	0.006
24.0	0.005	0.005	0.005
29.0	0.005	0.005	0.005
30.6	0.005	0.005	0.005
32.2	0.015	0.113	0.221
33.0	0.013	0.112	0.217
36.0	0.013	0.102	0.197
40.0	0.013	0.091	0.178
48.0	0.012	0.077	0.147
60.0	0.011	0.063	0.121
70.0	0.011	0.056	0.103
76.0	0.012	0.052	0.095
80.0	0.012	0.051	0.093
--	-	-	-
--	-	-	-
--	-	-	-

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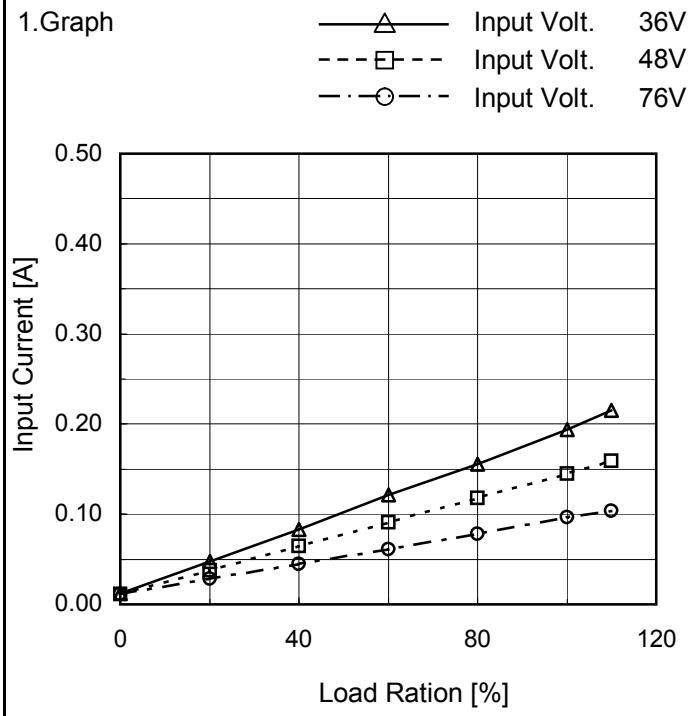
参考資料

COSEL

Model	SUTW64812
Item	Input Current (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.012	0.012	0.011
20	0.048	0.038	0.028
40	0.083	0.065	0.045
60	0.121	0.091	0.061
80	0.156	0.118	0.078
100	0.194	0.145	0.096
110	0.215	0.159	0.103
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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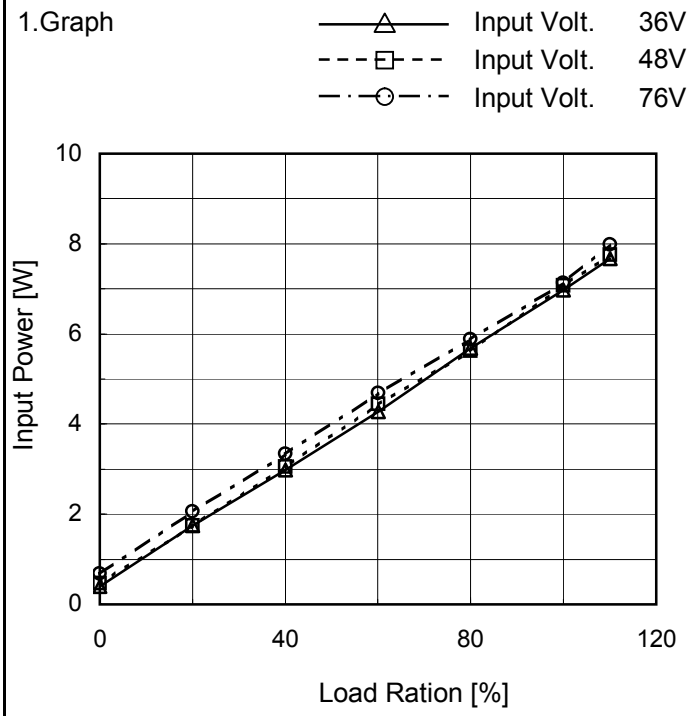
Model	SUTW64812
Item	Input Power (by Load Current)
Object	――――――

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	0.40	0.47	0.69
20	1.74	1.75	2.06
40	2.98	3.06	3.34
60	4.28	4.44	4.69
80	5.68	5.63	5.88
100	6.98	7.07	7.13
110	7.67	7.75	7.99
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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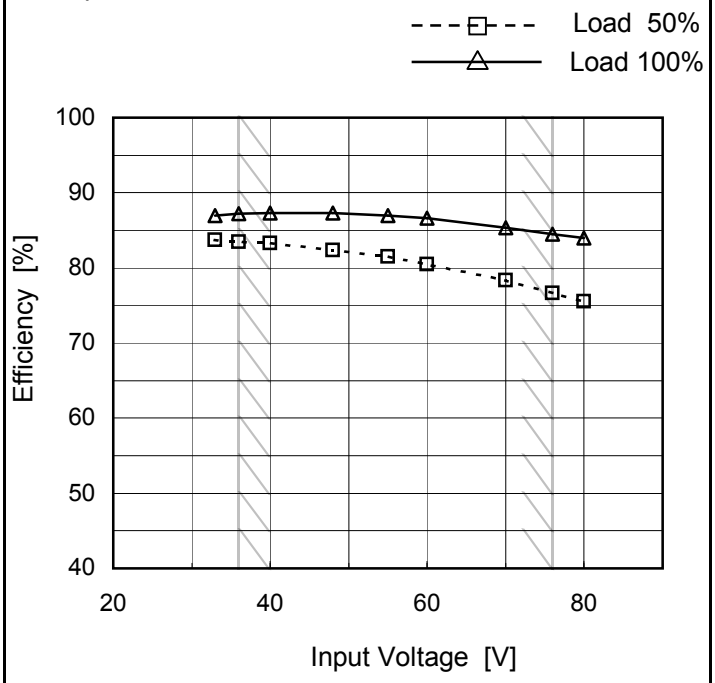
COSEL

Model	SUTW64812
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

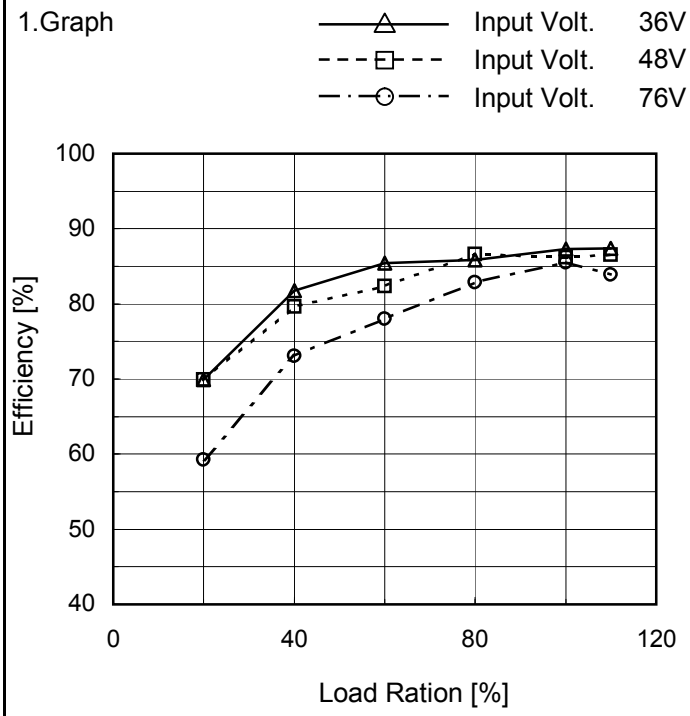
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	83.7	87.0
36	83.5	87.2
40	83.3	87.3
48	82.4	87.3
55	81.5	87.0
60	80.5	86.6
70	78.3	85.4
76	76.7	84.5
80	75.6	84.0

COSEL

Model	SUTW64812
Item	Efficiency (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	-	-	-
20	69.9	69.9	59.2
40	81.7	79.6	73.1
60	85.4	82.3	78.0
80	85.8	86.6	82.9
100	87.3	86.2	85.5
110	87.4	86.5	83.9
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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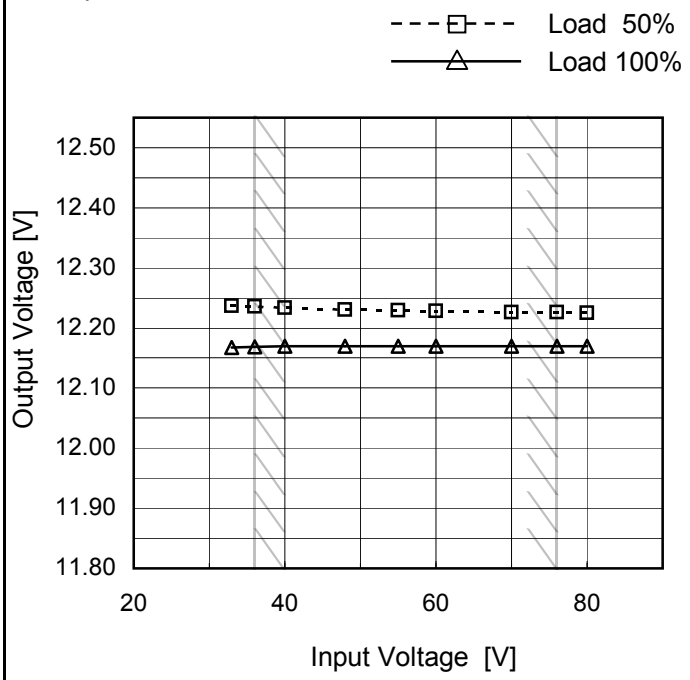
Model	SUTW64812
Item	Line Regulation
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

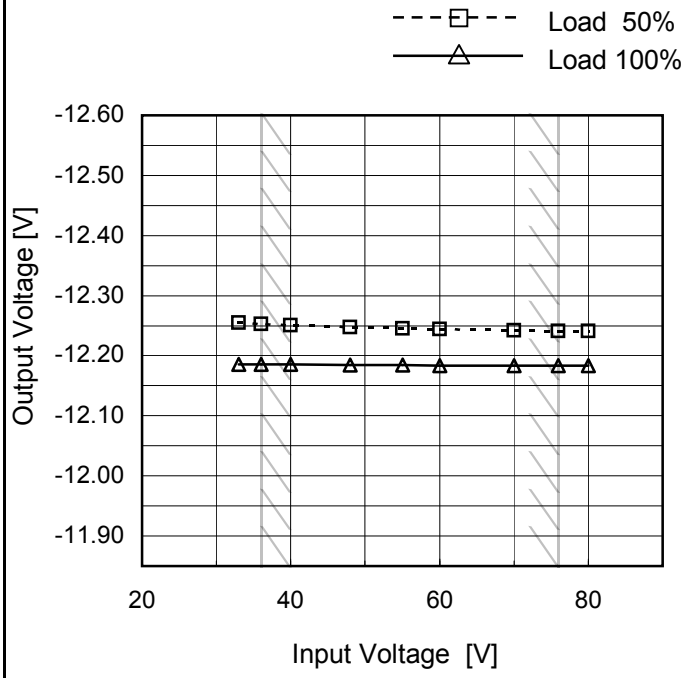


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	12.237	12.168
36	12.235	12.169
40	12.234	12.169
48	12.231	12.169
55	12.229	12.169
60	12.228	12.170
70	12.226	12.170
76	12.226	12.170
80	12.226	12.170

Object	-12V0.25A

1.Graph



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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	-12.255	-12.185
36	-12.253	-12.185
40	-12.251	-12.185
48	-12.247	-12.184
55	-12.245	-12.184
60	-12.244	-12.184
70	-12.242	-12.183
76	-12.241	-12.183
80	-12.241	-12.183

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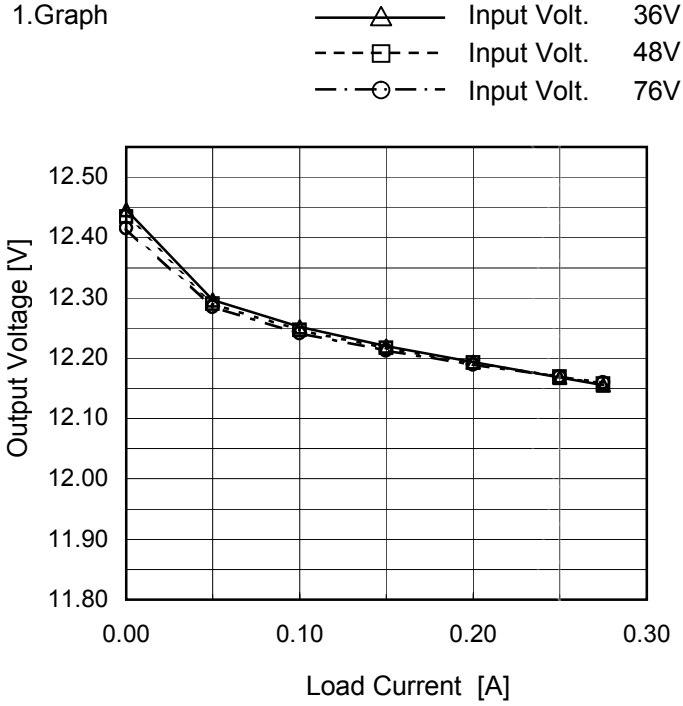
COSEL

Model	SUTW64812
Item	Load Regulation
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

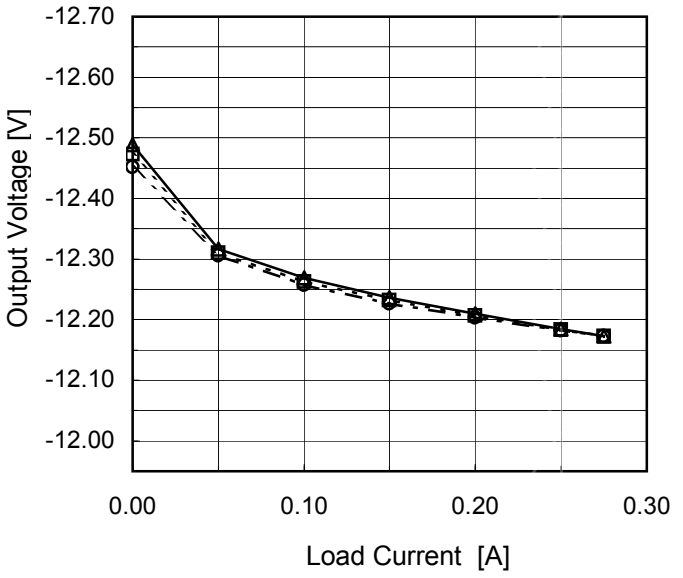


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	12.446	12.434	12.415
0.050	12.296	12.290	12.285
0.100	12.252	12.247	12.241
0.150	12.220	12.217	12.213
0.200	12.194	12.192	12.189
0.250	12.168	12.169	12.169
0.275	12.156	12.158	12.159
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V0.25A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	-12.489	-12.473	-12.452
0.050	-12.317	-12.310	-12.306
0.100	-12.269	-12.263	-12.257
0.150	-12.237	-12.232	-12.227
0.200	-12.210	-12.207	-12.203
0.250	-12.185	-12.184	-12.182
0.275	-12.173	-12.173	-12.173
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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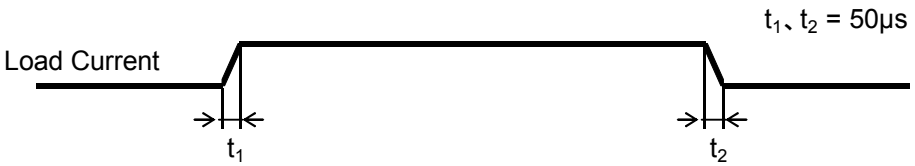
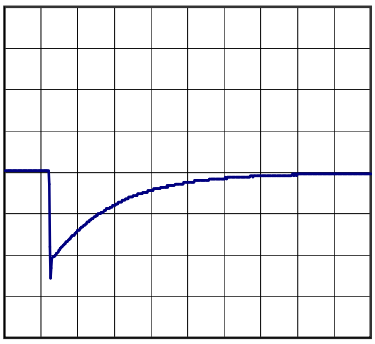
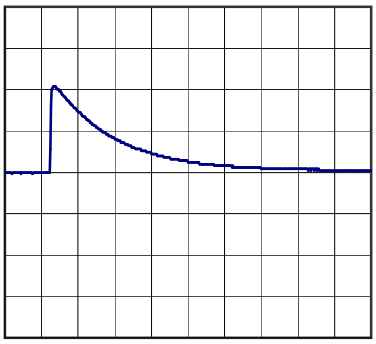
Model	SUTW64812	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	+12V0.25A	

Input Volt. 12 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.25A)

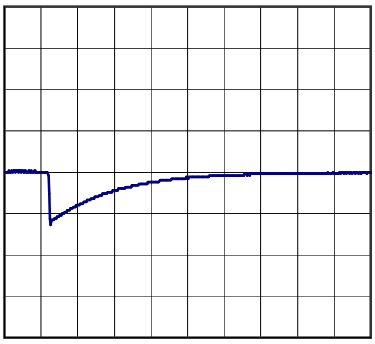


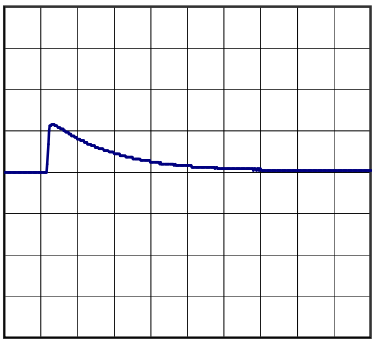


200mV/div

1ms/div 1ms/div

Min. Load (0A) ←→
Load 50% (0.125A)

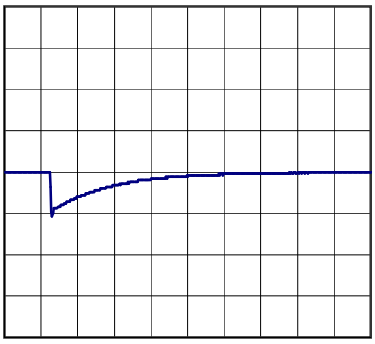


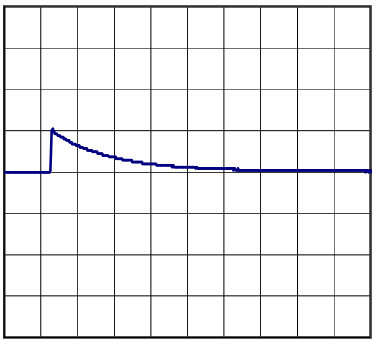


200mV/div

1ms/div 1ms/div

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





200mV/div

1ms/div 1ms/div

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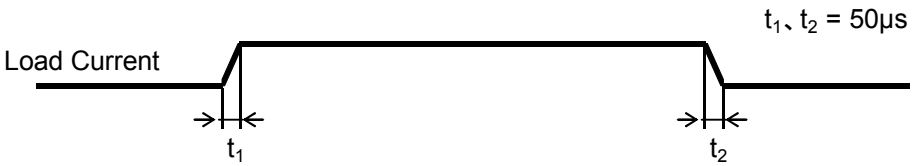
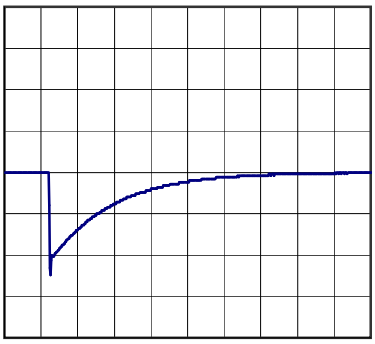
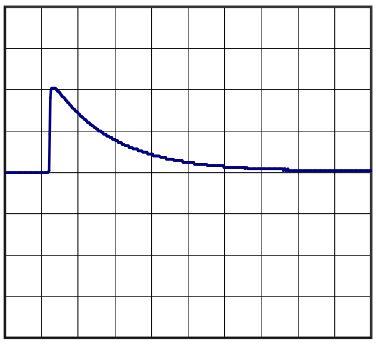
Model	SUTW64812	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	-12V0.25A	

Input Volt. 12 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.25A)

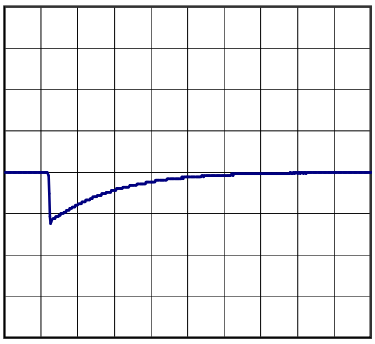


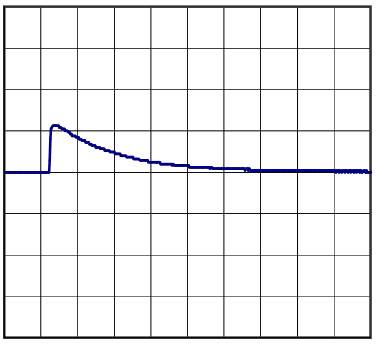


200mV/div

1ms/div 1ms/div

Min. Load (0A) ←→
Load 50% (0.125A)

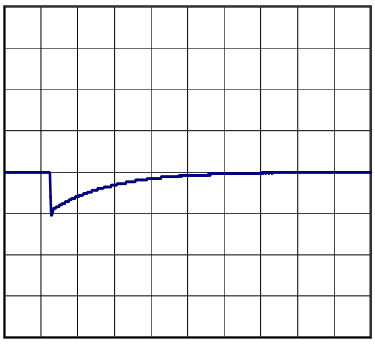


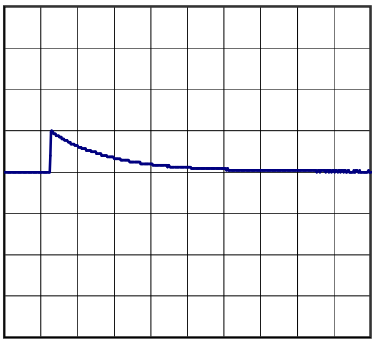


200mV/div

1ms/div 1ms/div

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





200mV/div

1ms/div 1ms/div

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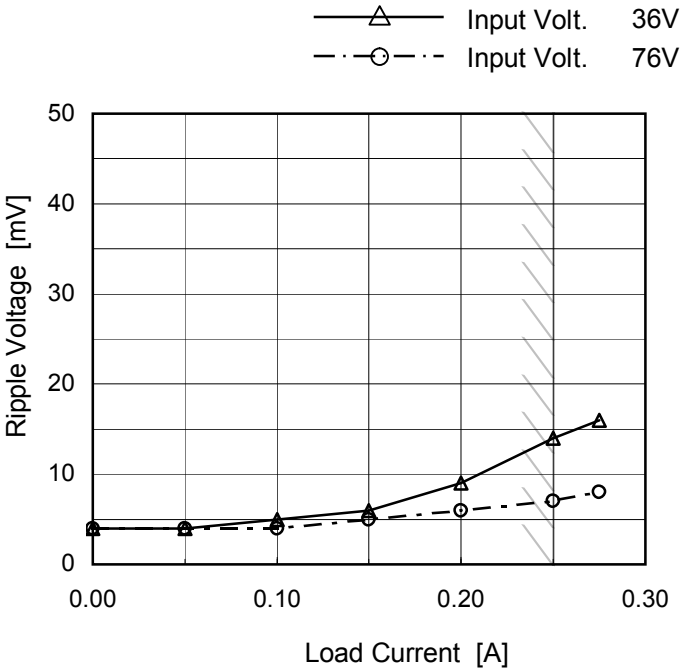
Model	SUTW64812
Item	Ripple Voltage (by Load Current)
Object	+12V0.25A

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]

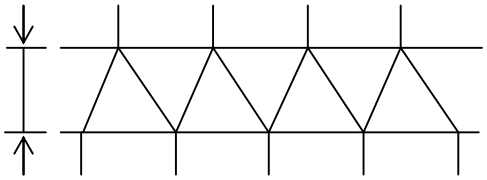


Fig.Complex Ripple Wave Form

2.Values

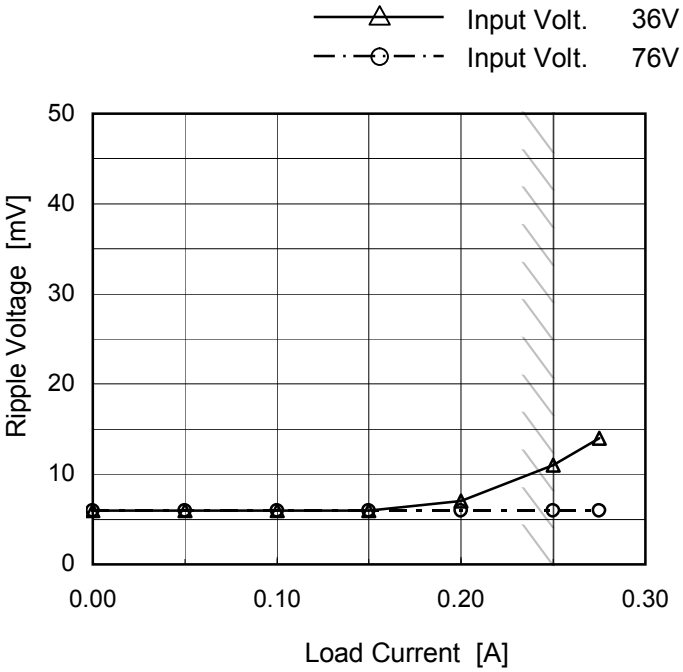
Load Current [A]	Ripple Voltage [mV] Input Volt. 36 [V]	Ripple Voltage [mV] Input Volt. 76 [V]
0.000	4	4
0.050	4	4
0.100	5	4
0.150	6	5
0.200	9	6
0.250	14	7
0.275	16	8
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW64812
Item	Ripple Voltage (by Load Current)
Object	-12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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

Ripple [mVp-p]

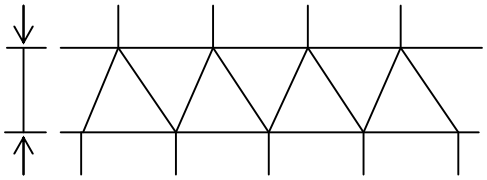


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV] Input Volt. 36 [V]	Ripple Voltage [mV] Input Volt. 76 [V]
0.000	6	6
0.050	6	6
0.100	6	6
0.150	6	6
0.200	7	6
0.250	11	6
0.275	14	6
--	-	-
--	-	-
--	-	-
--	-	-

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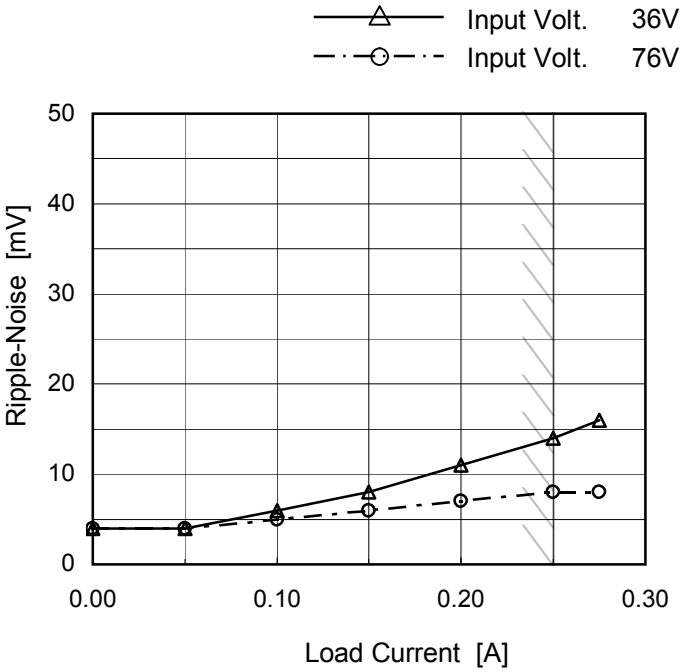
Model	SUTW64812
Item	Ripple-Noise
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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

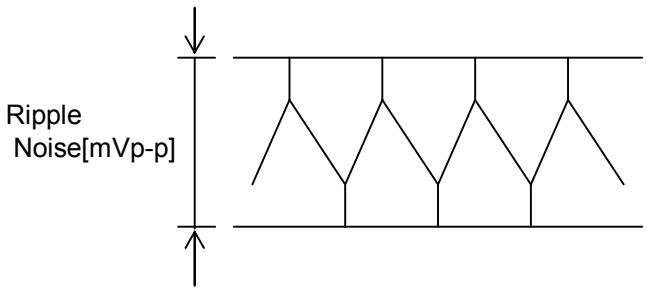


Fig.Complex Ripple Noise Wave Form

2.Values

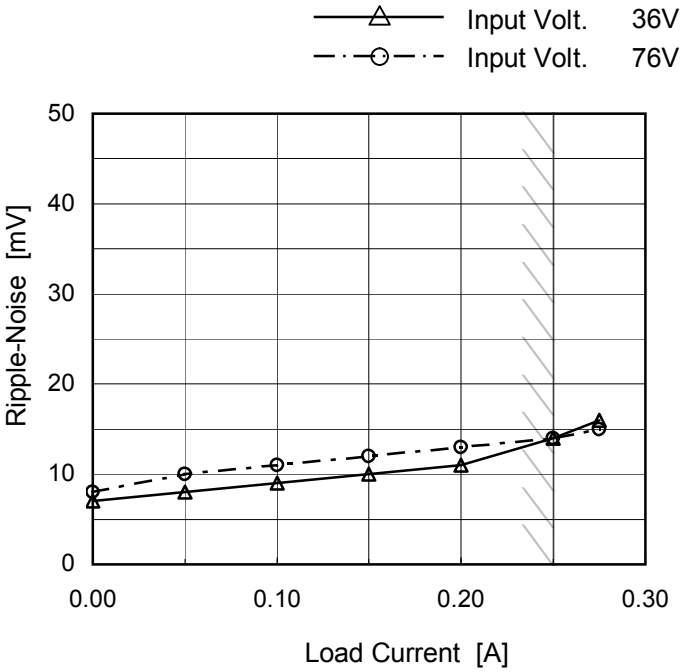
Load Current [A]	Ripple-Noise [mV] Input Volt. 36 [V]	Ripple-Noise [mV] Input Volt. 76 [V]
0.000	4	4
0.050	4	4
0.100	6	5
0.150	8	6
0.200	11	7
0.250	14	8
0.275	16	8
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW64812
Item	Ripple-Noise
Object	-12V0.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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

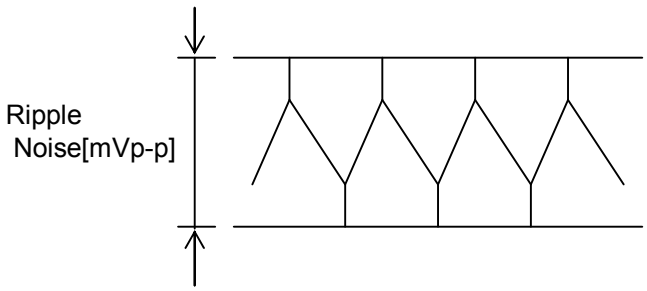


Fig.Complex Ripple Noise Wave Form

2.Values

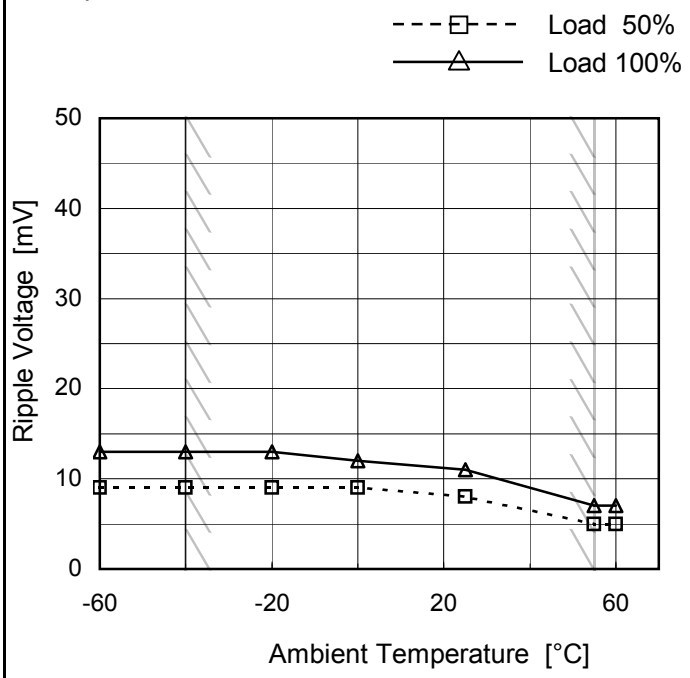
Load Current [A]	Ripple-Noise [mV] Input Volt. 36 [V]	Ripple-Noise [mV] Input Volt. 76 [V]
0.000	7	8
0.050	8	10
0.100	9	11
0.150	10	12
0.200	11	13
0.250	14	14
0.275	16	15
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW64812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.25A

Testing Circuitry Figure B

1.Graph



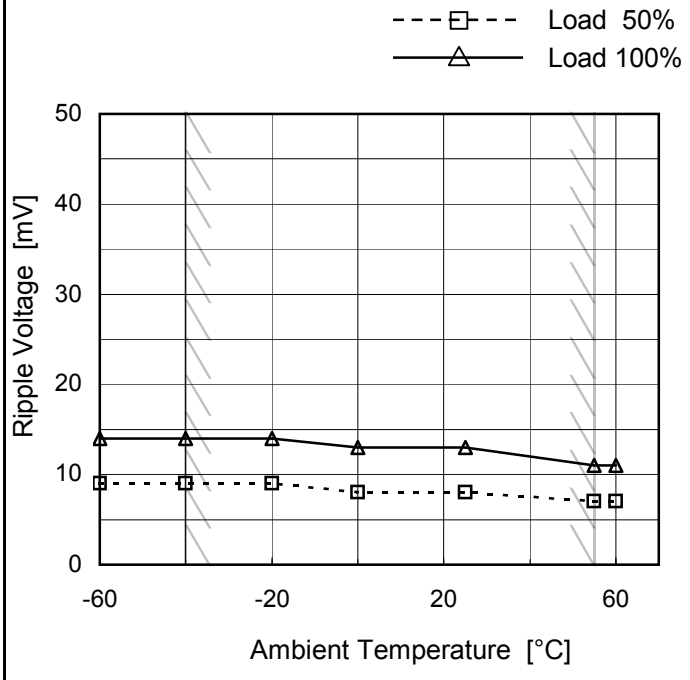
Input Volt. 48V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	9	13
-40	9	13
-20	9	13
0	9	12
25	8	11
55	5	7
60	5	7
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.25A

1.Graph



Input Volt. 48V

Measured by 100 MHz Oscilloscope.

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

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	9	14
-40	9	14
-20	9	14
0	8	13
25	8	13
55	7	11
60	7	11
--	-	-
--	-	-
--	-	-
--	-	-

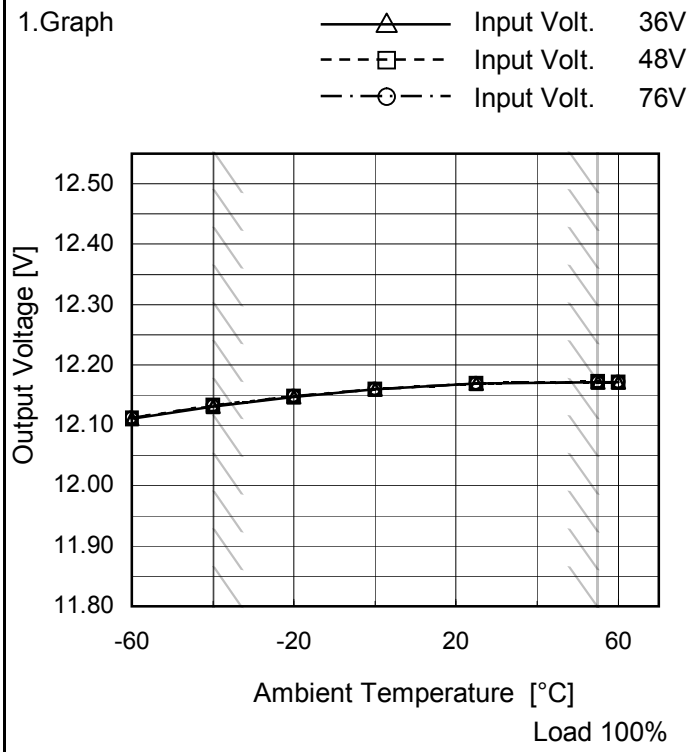
COSEL

Model	SUTW64812
Item	Ambient Temperature Drift

Testing Circuitry Figure A

Object +12V0.25A

1.Graph

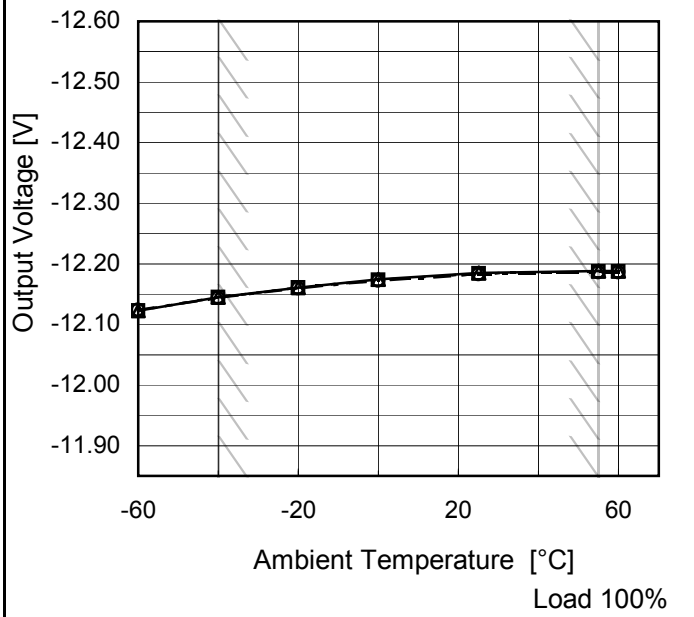


2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	12.111	12.112	12.112
-40	12.132	12.133	12.132
-20	12.147	12.148	12.148
0	12.160	12.160	12.160
25	12.169	12.169	12.169
55	12.171	12.172	12.172
60	12.171	12.172	12.171
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object -12V0.25A

1.Graph



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

2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	-12.123	-12.123	-12.123
-40	-12.144	-12.145	-12.144
-20	-12.161	-12.161	-12.160
0	-12.174	-12.174	-12.173
25	-12.185	-12.184	-12.183
55	-12.188	-12.187	-12.186
60	-12.188	-12.187	-12.185
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW64812
Item	Output Voltage Accuracy

Testing Circuitry Figure A

1.Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -40 - 55°C

Input Voltage : 36 - 76V

Load Current (AVR 1) : 0 - 0.25A (AVR 2) : 0 - 0.25A

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

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

2.Values

Object	+12V0.25A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	12.457	±297	±2.5
Minimum Voltage	-40	36	0.25	11.863		

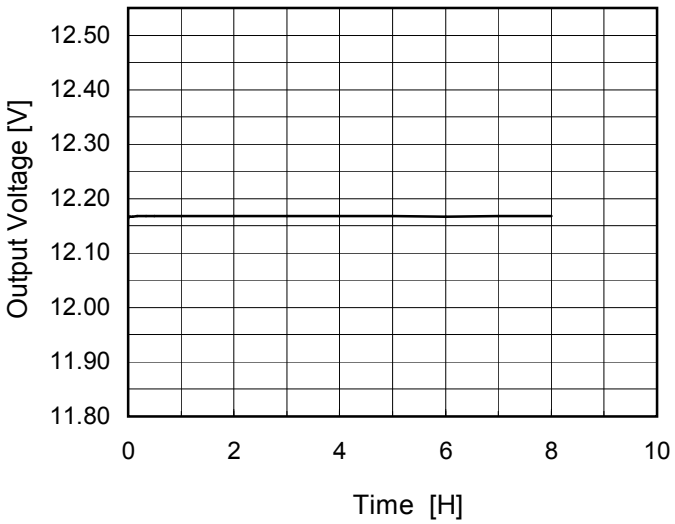
Object	-12V0.25A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	-12.497	±295	±2.5
Minimum Voltage	-40	36	0.25	-11.907		

COSEL

Model	SUTW64812
Item	Time Lapse Drift
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



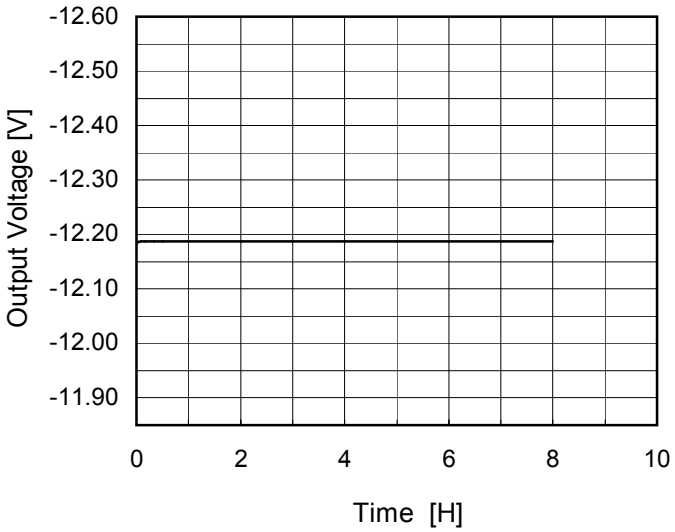
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.164
0.5	12.167
1.0	12.167
2.0	12.167
3.0	12.167
4.0	12.167
5.0	12.167
6.0	12.167
7.0	12.167
8.0	12.167

Object	-12V0.25A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.183
0.5	-12.187
1.0	-12.187
2.0	-12.187
3.0	-12.187
4.0	-12.187
5.0	-12.187
6.0	-12.187
7.0	-12.187
8.0	-12.187

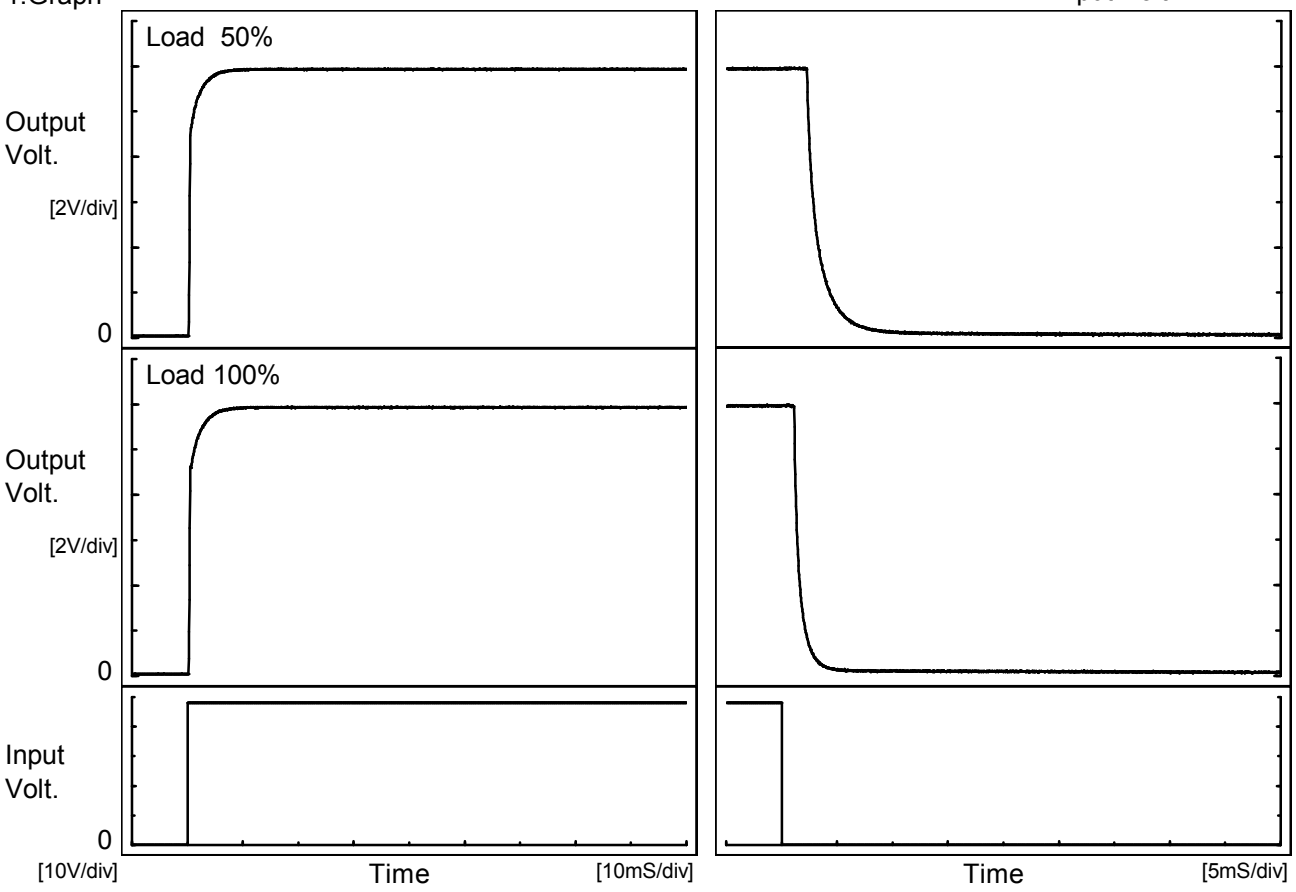
BC-10284

COSEL

Model	SUTW64812	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+12V0.25A	

1.Graph

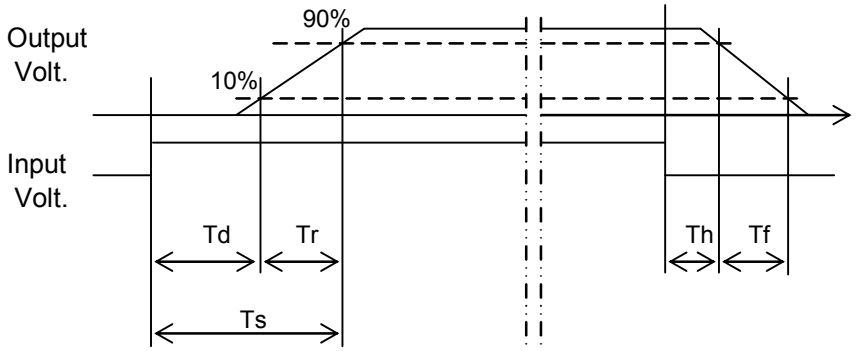
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.3	2.1	2.4	2.3	2.8
100 %	0.3	2.3	2.6	1.2	1.4

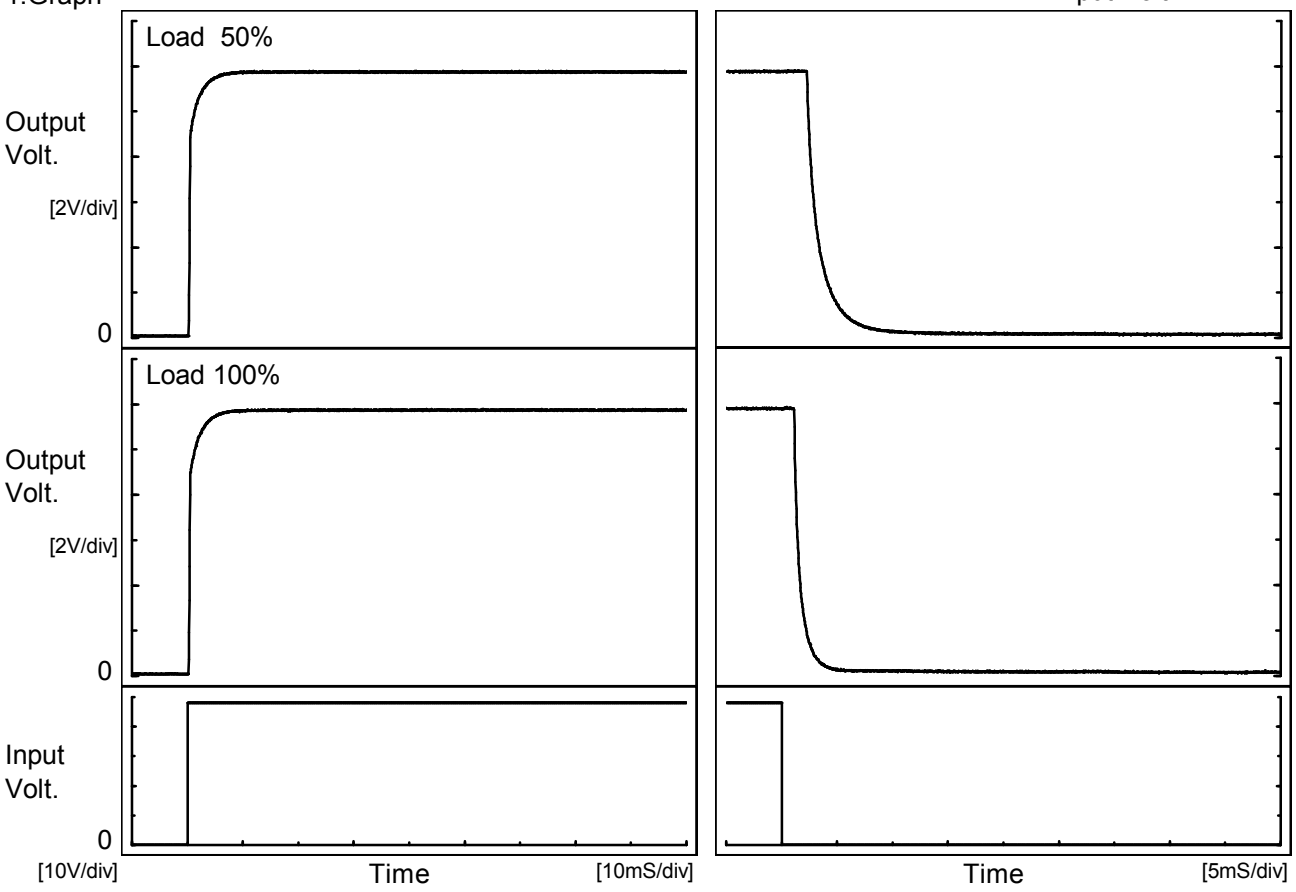


COSEL

Model	SUTW64812	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	-12V0.25A	

1.Graph

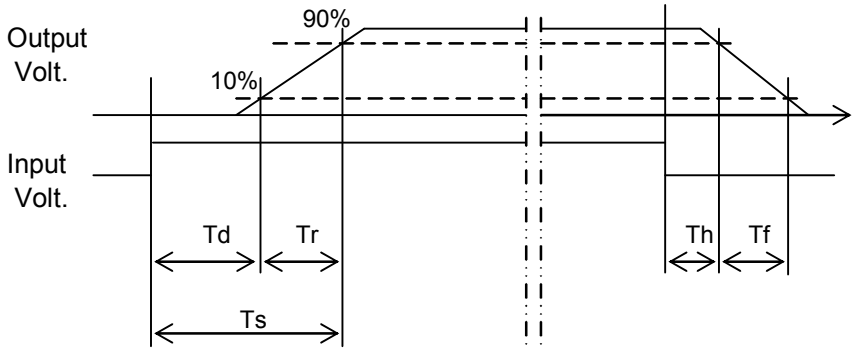
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.3	2.3	2.6	2.3	2.9
100 %	0.3	2.4	2.7	1.2	1.5



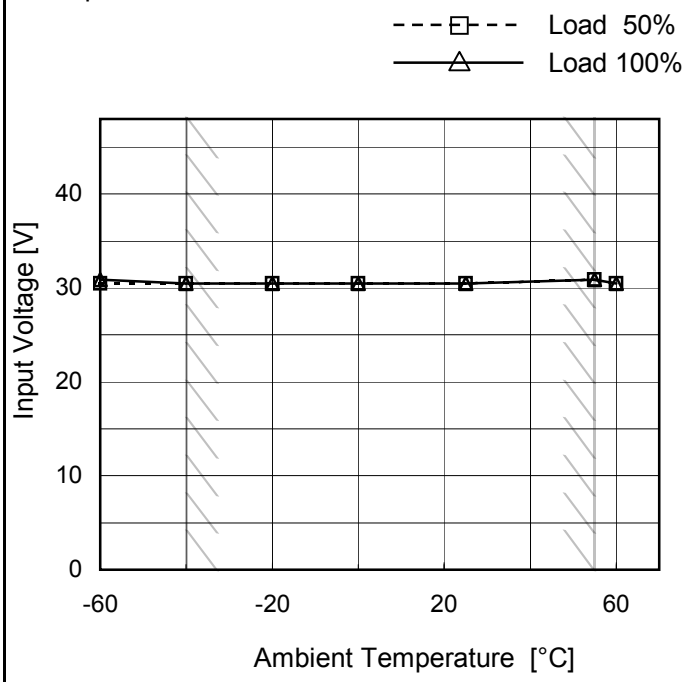
COSEL

Model	SUTW64812
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object +12V0.25A

1.Graph

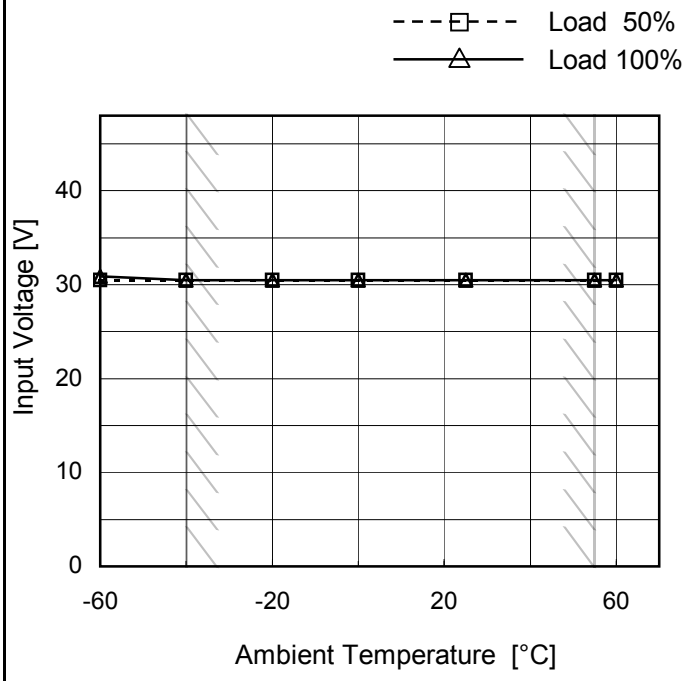


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.6	30.9
-40	30.5	30.5
-20	30.5	30.5
0	30.5	30.5
25	30.5	30.5
55	30.9	30.9
60	30.5	30.5
--	-	-
--	-	-
--	-	-
--	-	-

Object -12V0.25A

1.Graph



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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.5	30.9
-40	30.5	30.5
-20	30.5	30.5
0	30.5	30.5
25	30.5	30.5
55	30.5	30.5
60	30.5	30.5
--	-	-
--	-	-
--	-	-
--	-	-

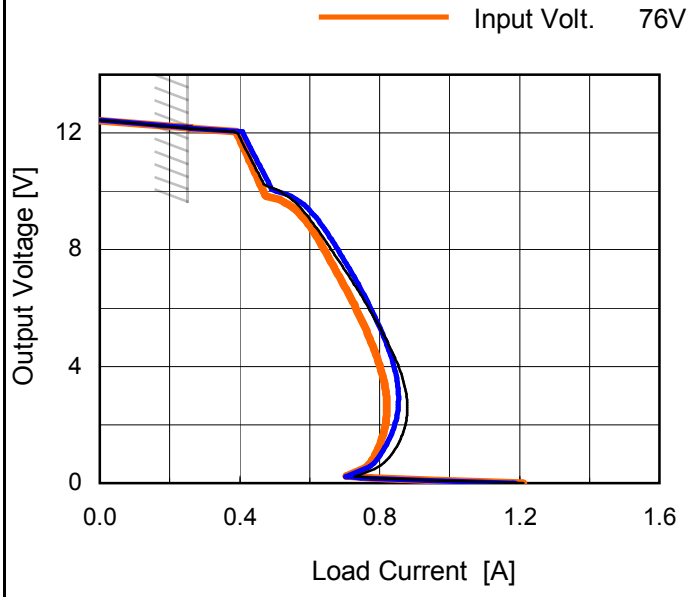
BC-10284

COSEL

Model	SUTW64812
Item	Overcurrent Protection
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

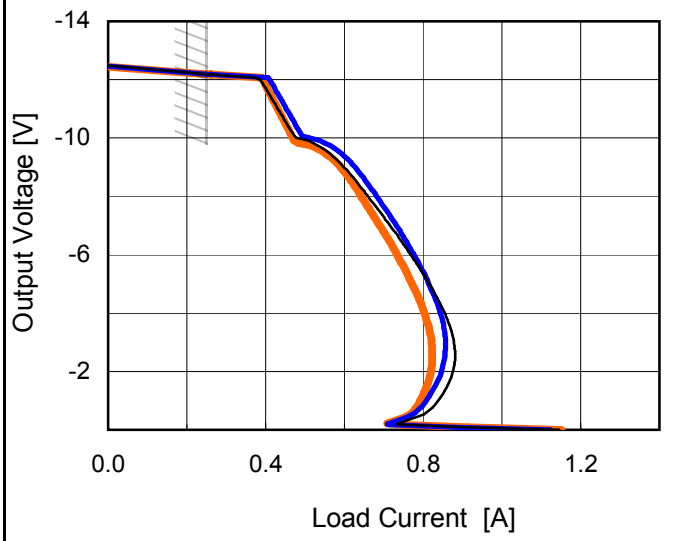


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
12.0	0.26	0.26	0.26
11.4	0.42	0.43	0.41
10.8	0.45	0.46	0.44
9.6	0.56	0.57	0.53
8.4	0.64	0.66	0.62
7.2	0.70	0.72	0.68
6.0	0.76	0.77	0.73
4.8	0.82	0.82	0.78
3.6	0.86	0.85	0.81
2.4	0.88	0.85	0.82
1.2	0.85	0.82	0.80
0.0	1.21	1.19	1.21

Object	-12V0.25A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-12.0	0.26	0.26	0.26
-11.4	0.41	0.43	0.41
-10.8	0.44	0.46	0.43
-9.6	0.55	0.57	0.53
-8.4	0.63	0.66	0.62
-7.2	0.70	0.72	0.68
-6.0	0.77	0.78	0.73
-4.8	0.82	0.82	0.78
-3.6	0.87	0.85	0.81
-2.4	0.88	0.85	0.82
-1.2	0.85	0.82	0.80
0.0	1.14	1.12	1.15

COSEL

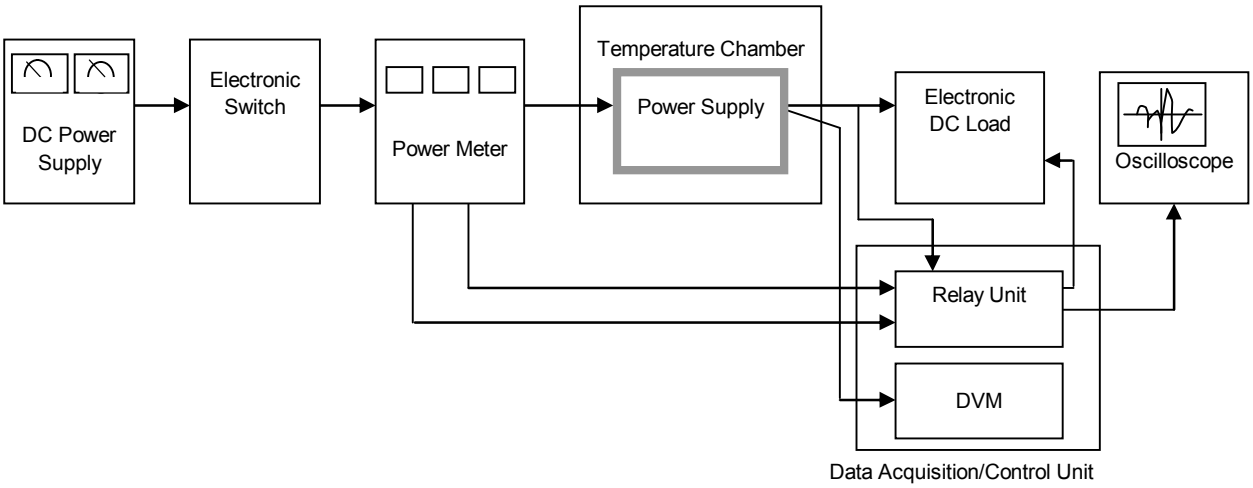


Figure A

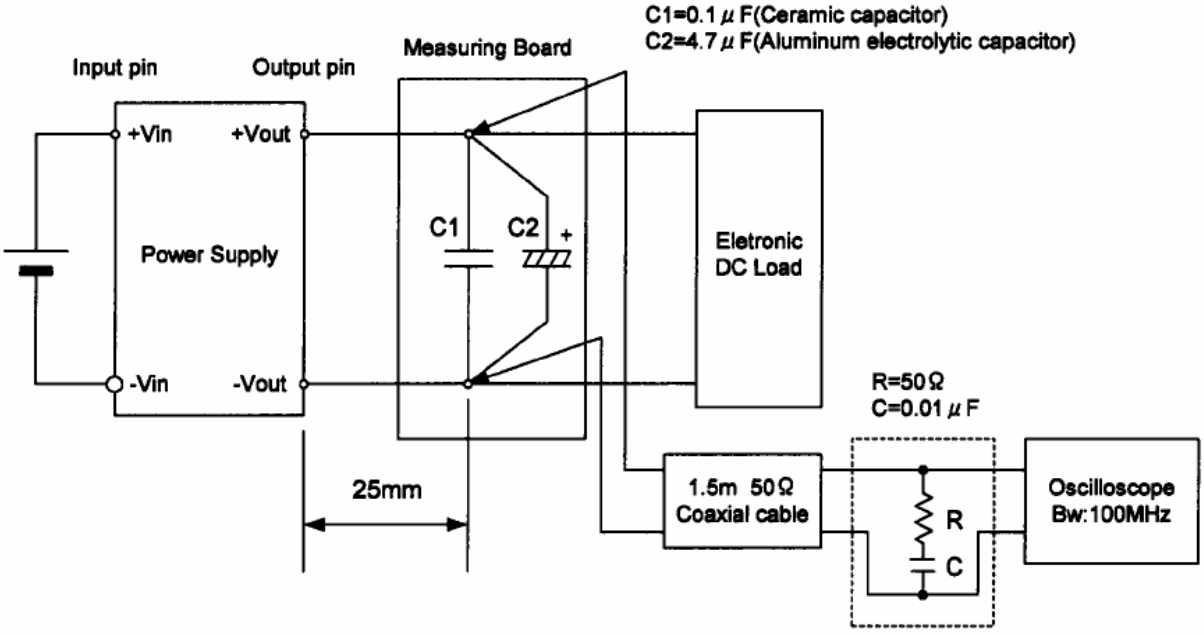


Figure B (Ripple and Ripple noise Characteristic)