COSEL

参考資料

TEST DATA OF SUTW64815

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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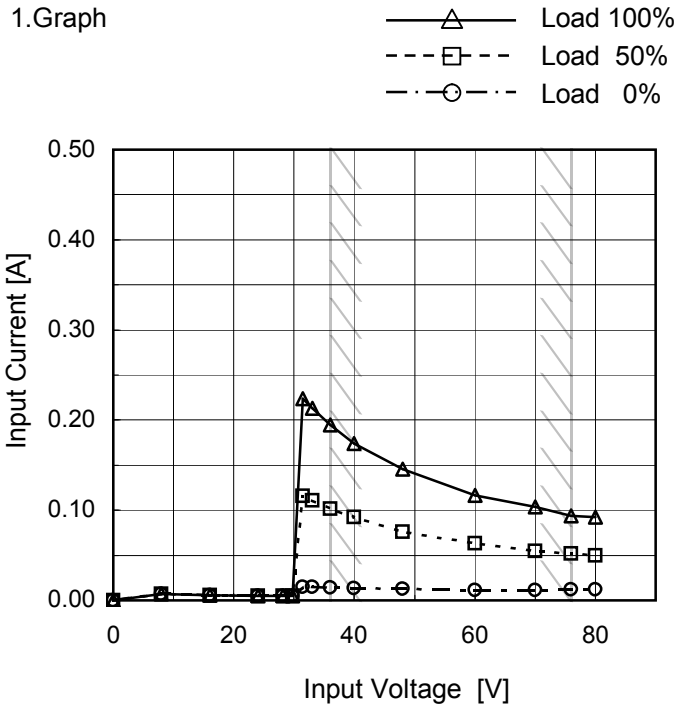
Model	SUTW64815
Item	Input Current (by Input Voltage)
Object	――――――

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	0.006	0.006	0.006
24.0	0.005	0.005	0.005
28.2	0.005	0.005	0.005
29.8	0.005	0.005	0.005
31.4	0.015	0.116	0.224
33.0	0.015	0.111	0.213
36.0	0.014	0.102	0.195
40.0	0.013	0.092	0.174
48.0	0.013	0.076	0.146
60.0	0.011	0.063	0.117
70.0	0.011	0.055	0.103
76.0	0.012	0.052	0.094
80.0	0.012	0.050	0.092
--	-	-	-
--	-	-	-
--	-	-	-

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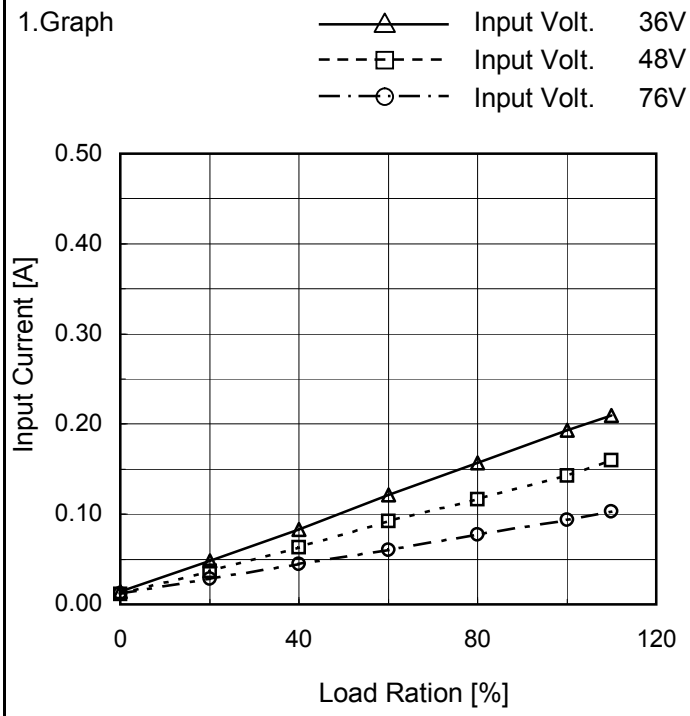
Model	SUTW64815
Item	Input Current (by Load Current)
Object	――――――

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	0.014	0.012	0.012
20	0.048	0.037	0.028
40	0.083	0.063	0.045
60	0.121	0.092	0.061
80	0.157	0.117	0.077
100	0.193	0.143	0.094
110	0.210	0.160	0.103
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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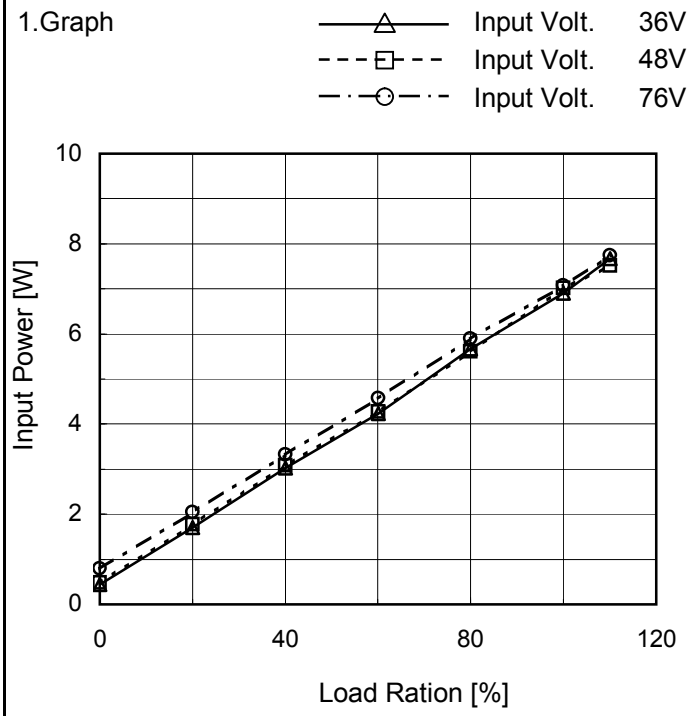
COSEL

Model	SUTW64815
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	0.45	0.49	0.80
20	1.71	1.78	2.05
40	3.03	3.09	3.33
60	4.23	4.28	4.58
80	5.67	5.61	5.89
100	6.90	7.02	7.08
110	7.67	7.52	7.74
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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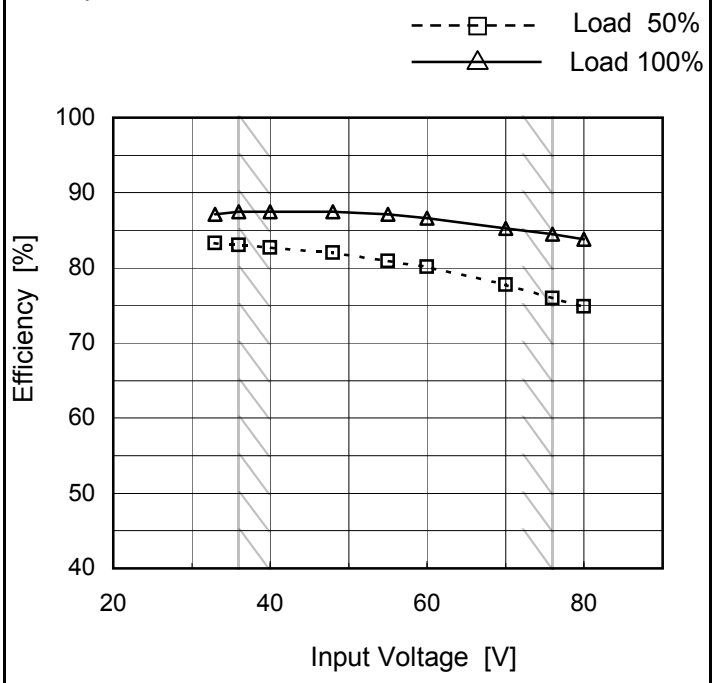
COSEL

Model	SUTW64815
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

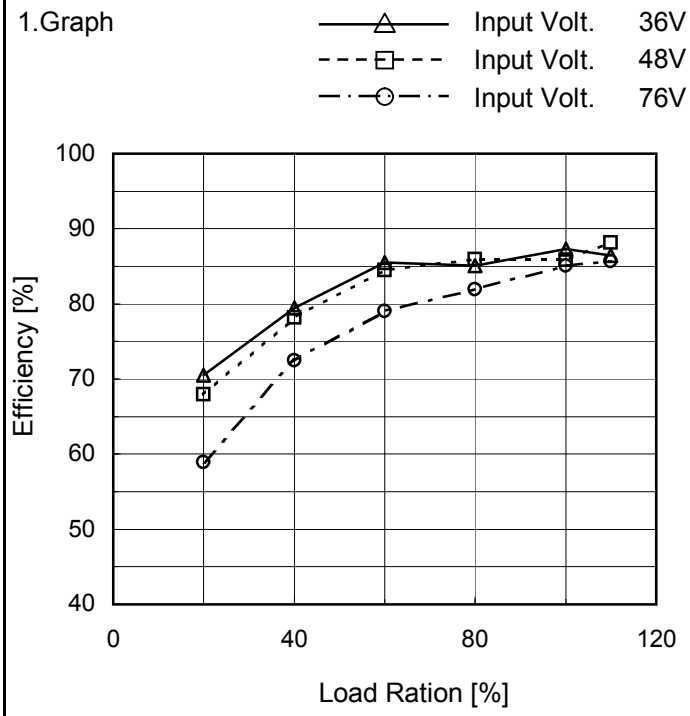
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	83.3	87.1
36	83.0	87.5
40	82.7	87.5
48	82.1	87.5
55	80.9	87.1
60	80.1	86.6
70	77.7	85.2
76	76.0	84.5
80	74.8	83.8

COSEL

Model	SUTW64815
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	70.5	67.9	58.9
40	79.5	78.2	72.5
60	85.5	84.5	79.0
80	85.1	86.0	81.9
100	87.3	85.9	85.1
110	86.5	88.2	85.7
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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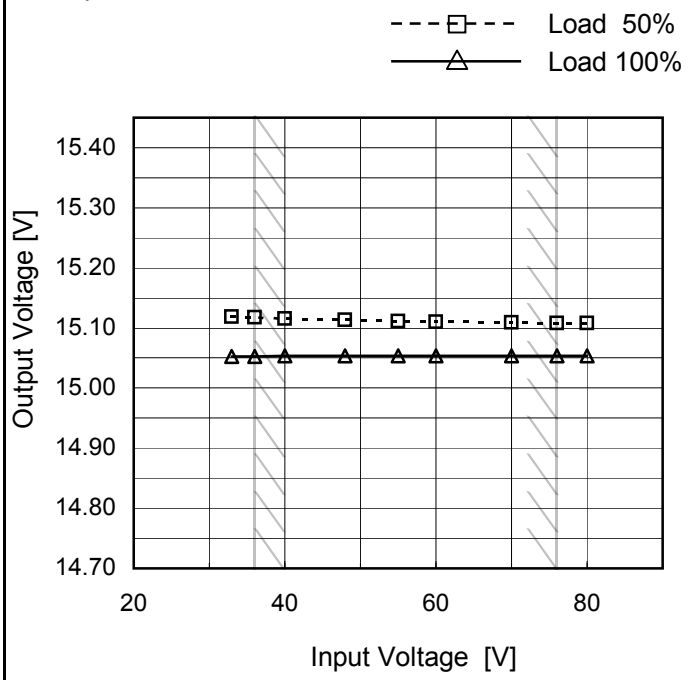
COSEL

Model	SUTW64815
Item	Line Regulation
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

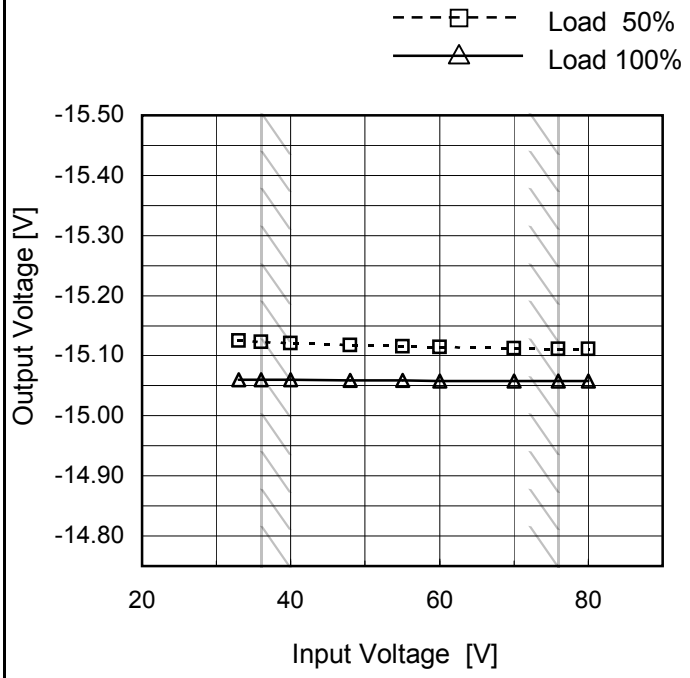


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	15.119	15.052
36	15.117	15.053
40	15.116	15.053
48	15.113	15.054
55	15.112	15.054
60	15.110	15.054
70	15.109	15.054
76	15.108	15.054
80	15.108	15.054

Object	-15V0.2A

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	-15.125	-15.060
36	-15.123	-15.060
40	-15.121	-15.060
48	-15.118	-15.059
55	-15.115	-15.059
60	-15.114	-15.058
70	-15.112	-15.058
76	-15.112	-15.058
80	-15.111	-15.058

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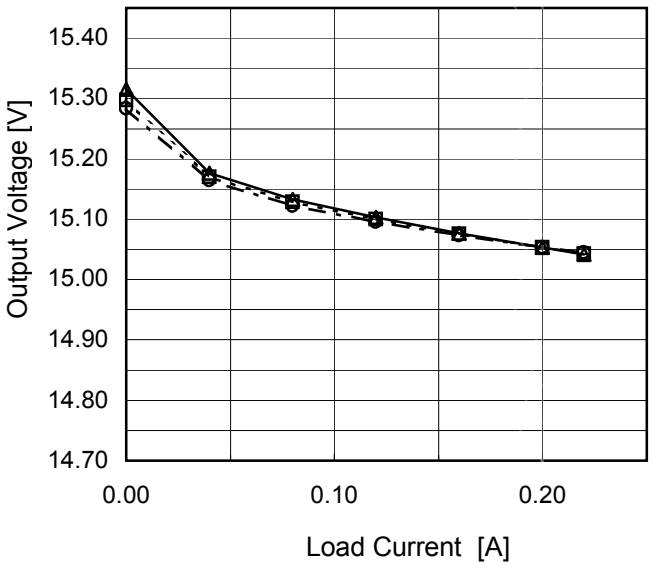
Model	SUTW64815
Item	Load Regulation
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

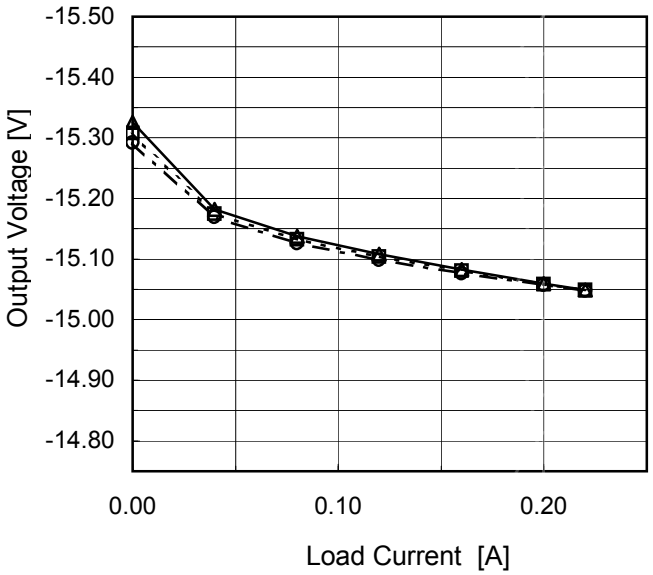


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	15.315	15.297	15.283
0.04	15.176	15.170	15.165
0.08	15.133	15.128	15.123
0.12	15.103	15.099	15.096
0.16	15.077	15.075	15.073
0.20	15.053	15.053	15.054
0.22	15.041	15.043	15.044
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-15V0.2A

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]
0.00	-15.326	-15.308	-15.292
0.04	-15.182	-15.175	-15.169
0.08	-15.138	-15.132	-15.126
0.12	-15.108	-15.104	-15.099
0.16	-15.083	-15.080	-15.077
0.20	-15.060	-15.059	-15.057
0.22	-15.049	-15.049	-15.048
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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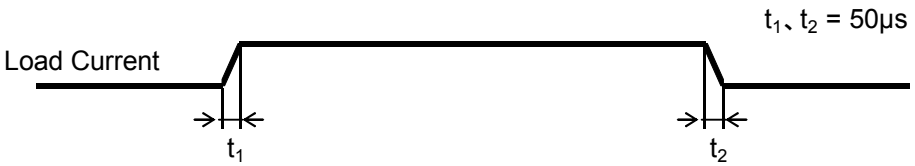
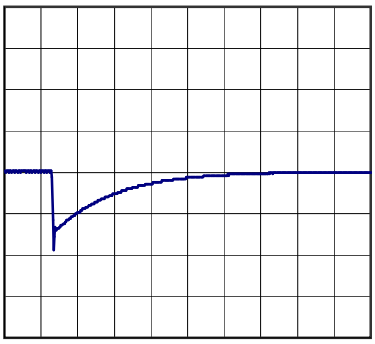
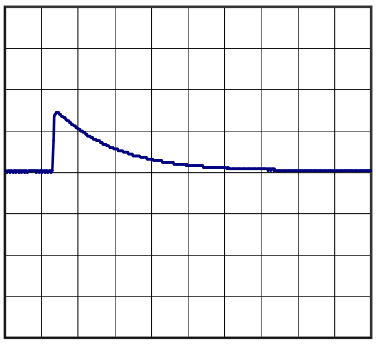
Model	SUTW64815	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+15V0.2A	

Input Volt. 12 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.2A)

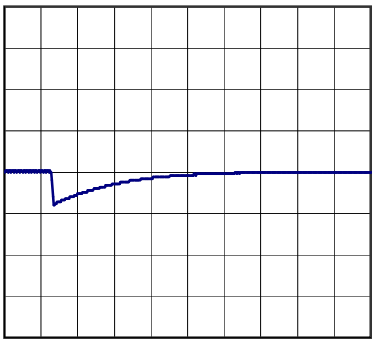


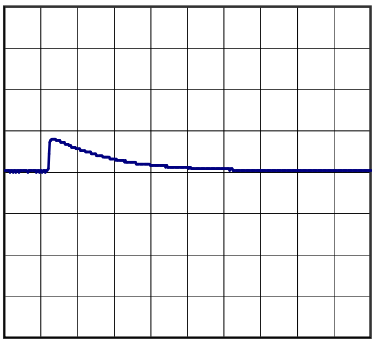


200mV/div

1ms/div 1ms/div

Min. Load (0A) ←→
Load 50% (0.1A)

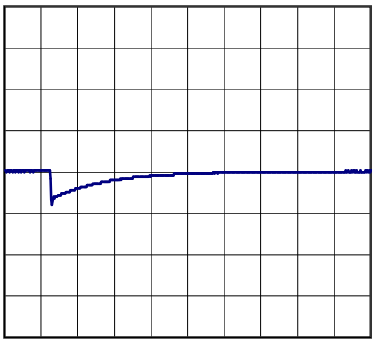


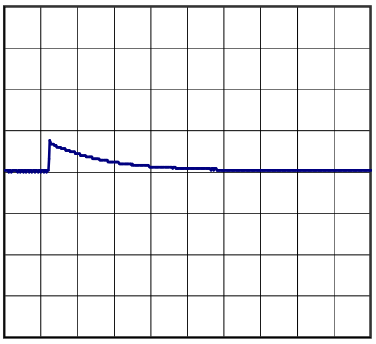


200mV/div

1ms/div 1ms/div

Load 50% (0.1A) ←→
Load 100% (0.2A)





200mV/div

1ms/div 1ms/div

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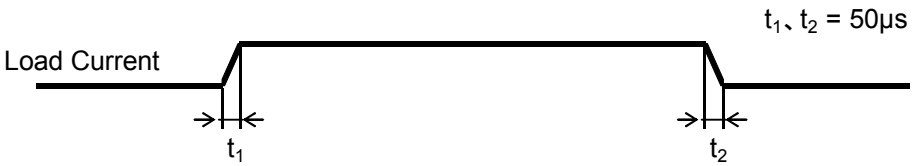
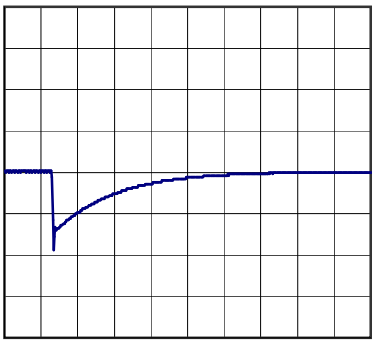
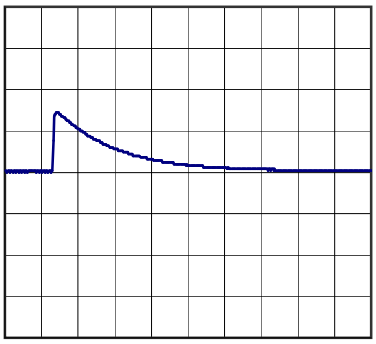
Model	SUTW64815	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	-15V0.2A	

Input Volt. 12 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.2A)

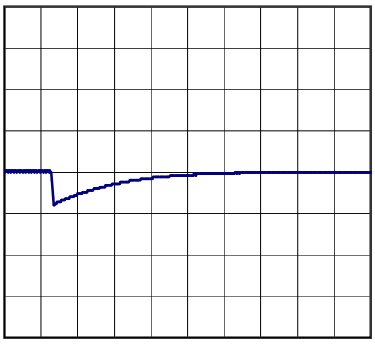


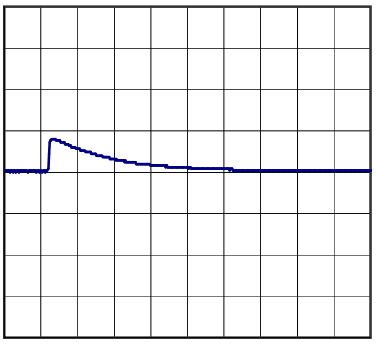


200mV/div

1ms/div 1ms/div

Min. Load (0A) ←→
Load 50% (0.1A)

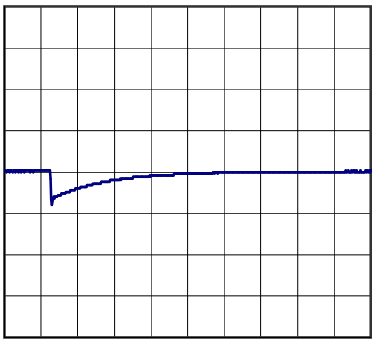


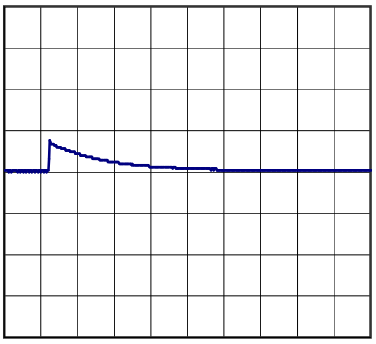


200mV/div

1ms/div 1ms/div

Load 50% (0.1A) ←→
Load 100% (0.2A)





200mV/div

1ms/div 1ms/div

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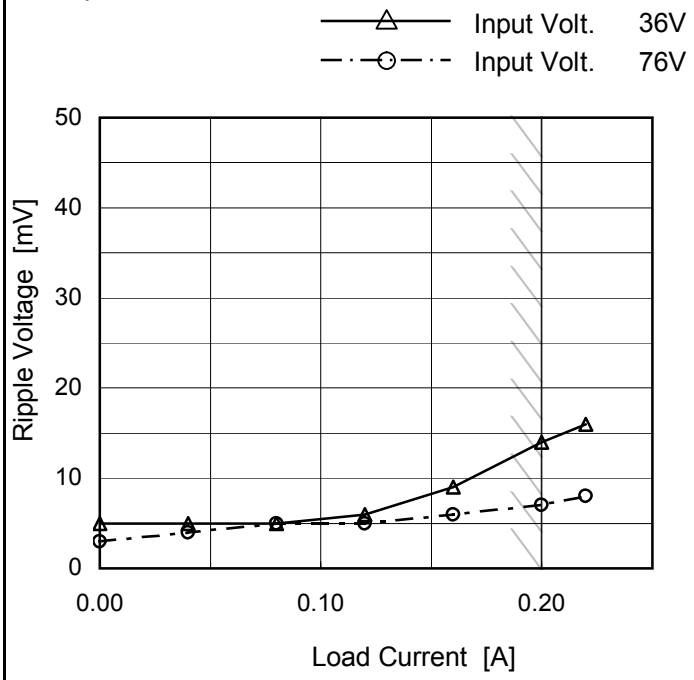
Model	SUTW64815
Item	Ripple Voltage (by Load Current)
Object	+15V0.2A

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]

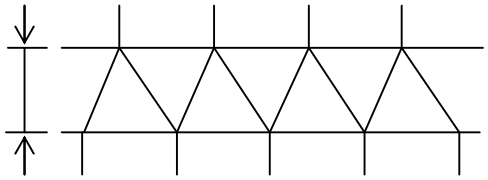


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	5	3
0.04	5	4
0.08	5	5
0.12	6	5
0.16	9	6
0.20	14	7
0.22	16	8
--	-	-
--	-	-
--	-	-
--	-	-

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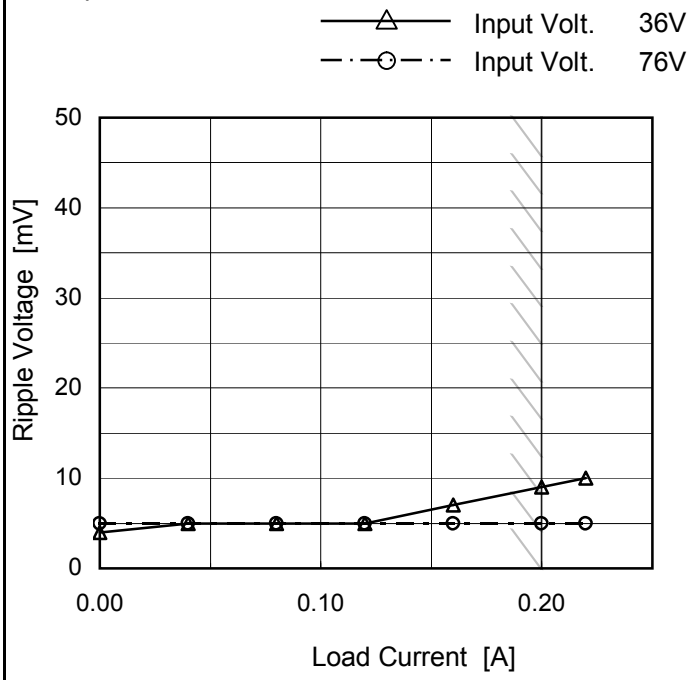
Model	SUTW64815
Item	Ripple Voltage (by Load Current)
Object	-15V0.2A

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]

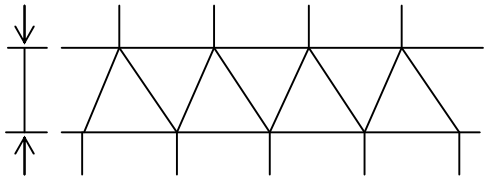


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	4	5
0.04	5	5
0.08	5	5
0.12	5	5
0.16	7	5
0.20	9	5
0.22	10	5
--	-	-
--	-	-
--	-	-
--	-	-

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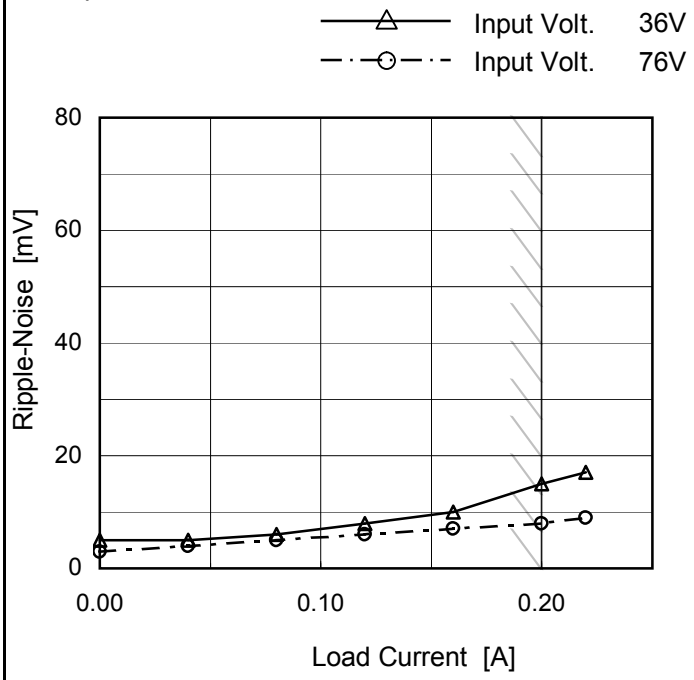
COSEL

Model	SUTW64815
Item	Ripple-Noise
Object	+15V0.2A

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.

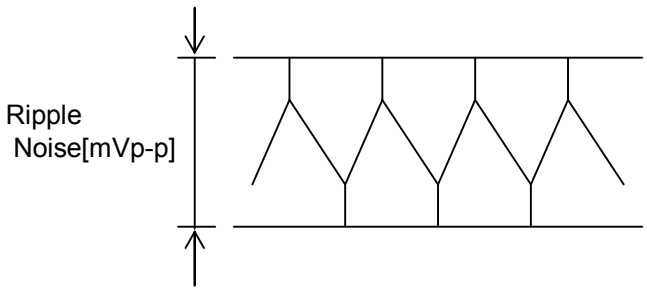


Fig.Complex Ripple Noise Wave Form

2.Values

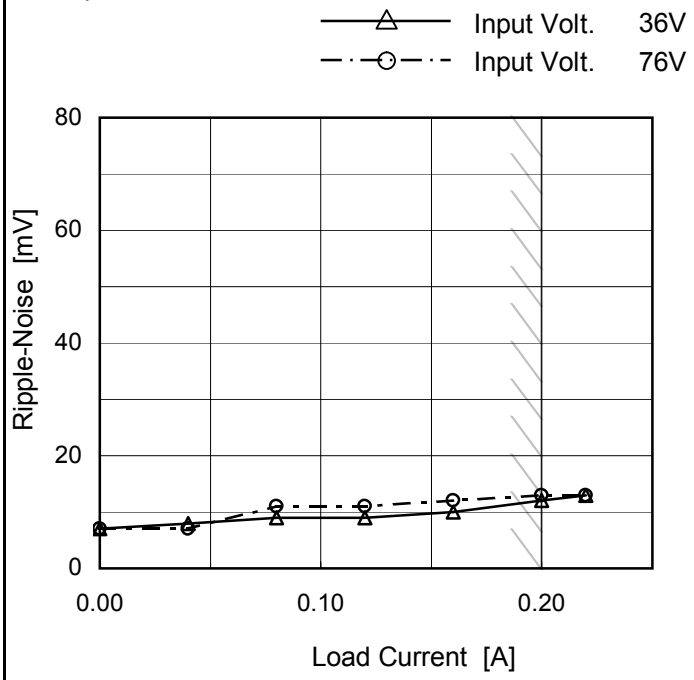
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	5	3
0.04	5	4
0.08	6	5
0.12	8	6
0.16	10	7
0.20	15	8
0.22	17	9
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW64815
Item	Ripple-Noise
Object	-15V0.2A

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.

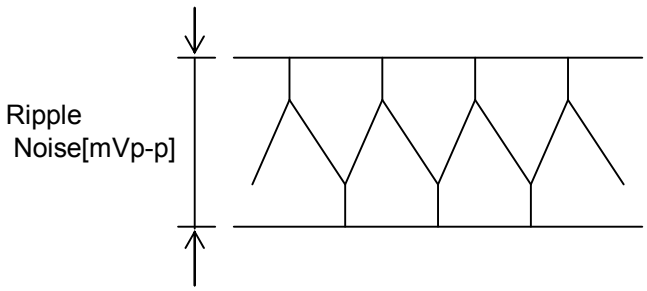


Fig.Complex Ripple Noise Wave Form

2.Values

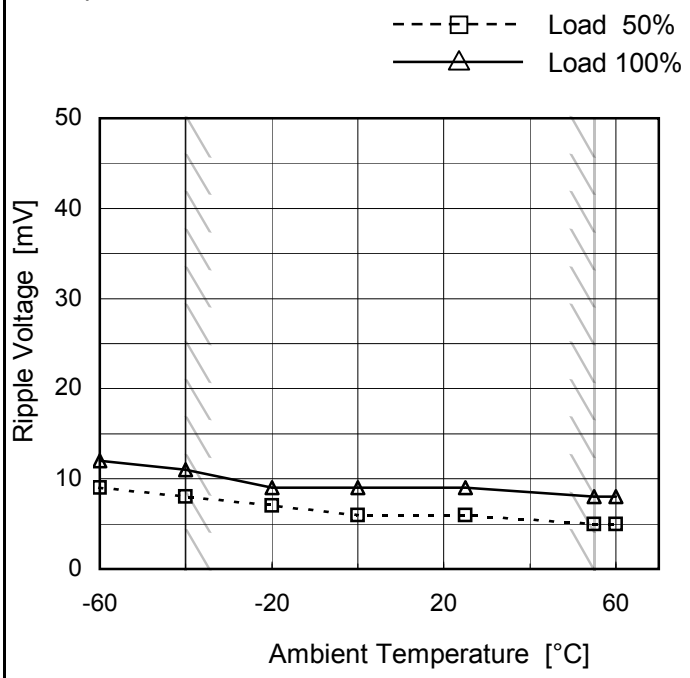
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	7	7
0.04	8	7
0.08	9	11
0.12	9	11
0.16	10	12
0.20	12	13
0.22	13	13
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW64815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.2A

Testing Circuitry Figure B

1.Graph



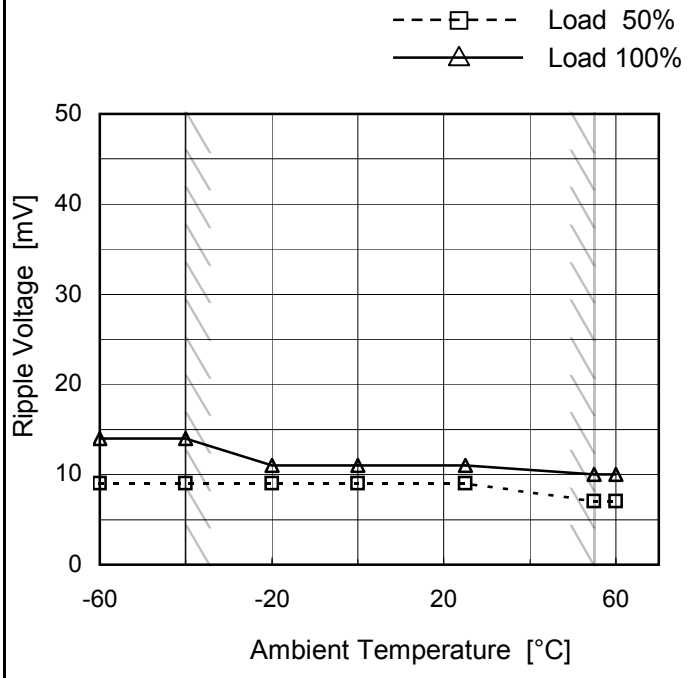
Input Volt. 48V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	9	12
-40	8	11
-20	7	9
0	6	9
25	6	9
55	5	8
60	5	8
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.2A

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	11
0	9	11
25	9	11
55	7	10
60	7	10
--	-	-
--	-	-
--	-	-
--	-	-

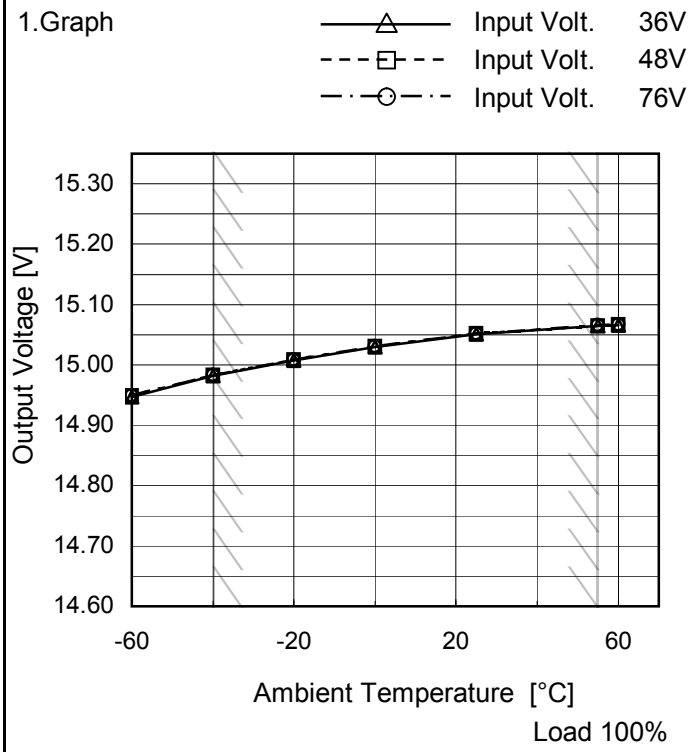
COSEL

Model	SUTW64815
Item	Ambient Temperature Drift

Testing Circuitry Figure A

Object +15V0.2A

1.Graph

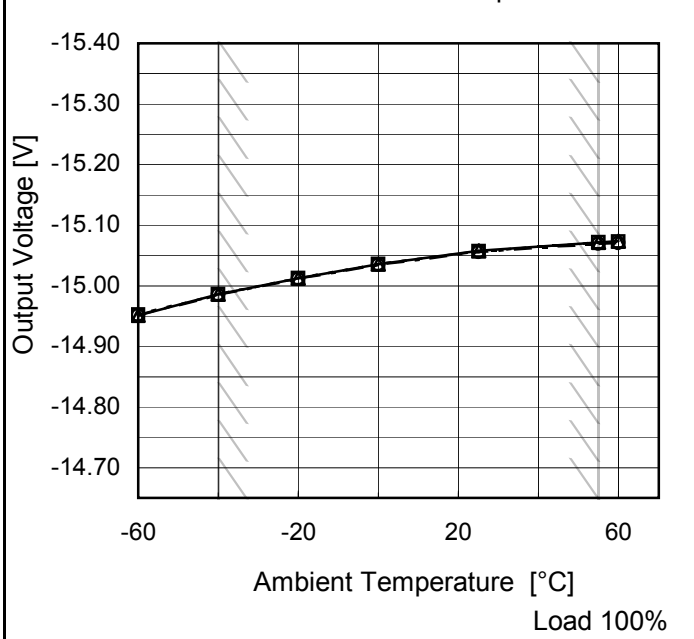


2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.947	14.949	14.949
-40	14.981	14.983	14.983
-20	15.007	15.008	15.009
0	15.030	15.031	15.031
25	15.051	15.051	15.052
55	15.064	15.065	15.066
60	15.066	15.066	15.067
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object -15V0.2A

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	-14.951	-14.952	-14.951
-40	-14.986	-14.986	-14.985
-20	-15.013	-15.012	-15.012
0	-15.036	-15.035	-15.034
25	-15.057	-15.057	-15.055
55	-15.072	-15.071	-15.070
60	-15.074	-15.072	-15.071
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW64815	
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 - 0.2A (AVR 2) : 0 - 0.2A

* 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	+15V0.2A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	15.332	±291	±1.9
Minimum Voltage	-40	36	0.2	14.751		

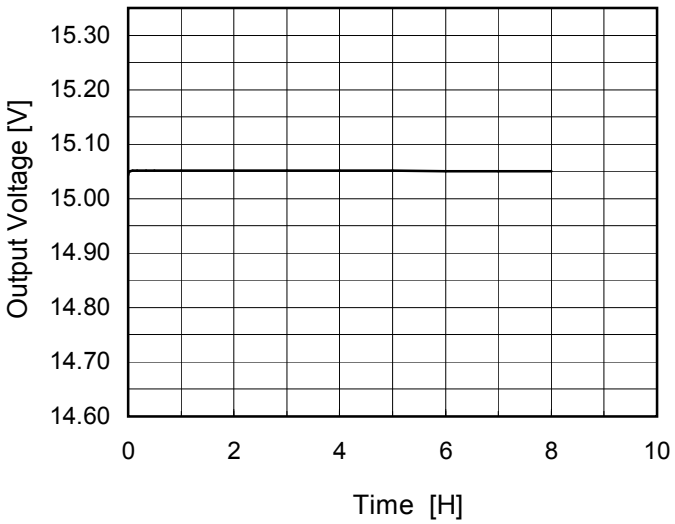
Object	-15V0.2A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	-15.345	±291	±1.9
Minimum Voltage	-40	36	0.2	-14.764		

COSEL

Model	SUTW64815
Item	Time Lapse Drift
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



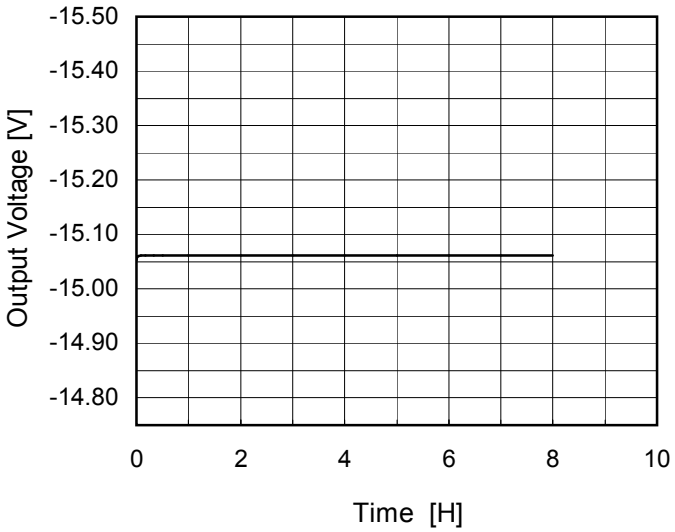
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	15.043
0.5	15.051
1.0	15.051
2.0	15.051
3.0	15.051
4.0	15.051
5.0	15.051
6.0	15.051
7.0	15.051
8.0	15.051

Object	-15V0.2A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-15.053
0.5	-15.061
1.0	-15.061
2.0	-15.061
3.0	-15.061
4.0	-15.062
5.0	-15.061
6.0	-15.061
7.0	-15.061
8.0	-15.061

BC-10285

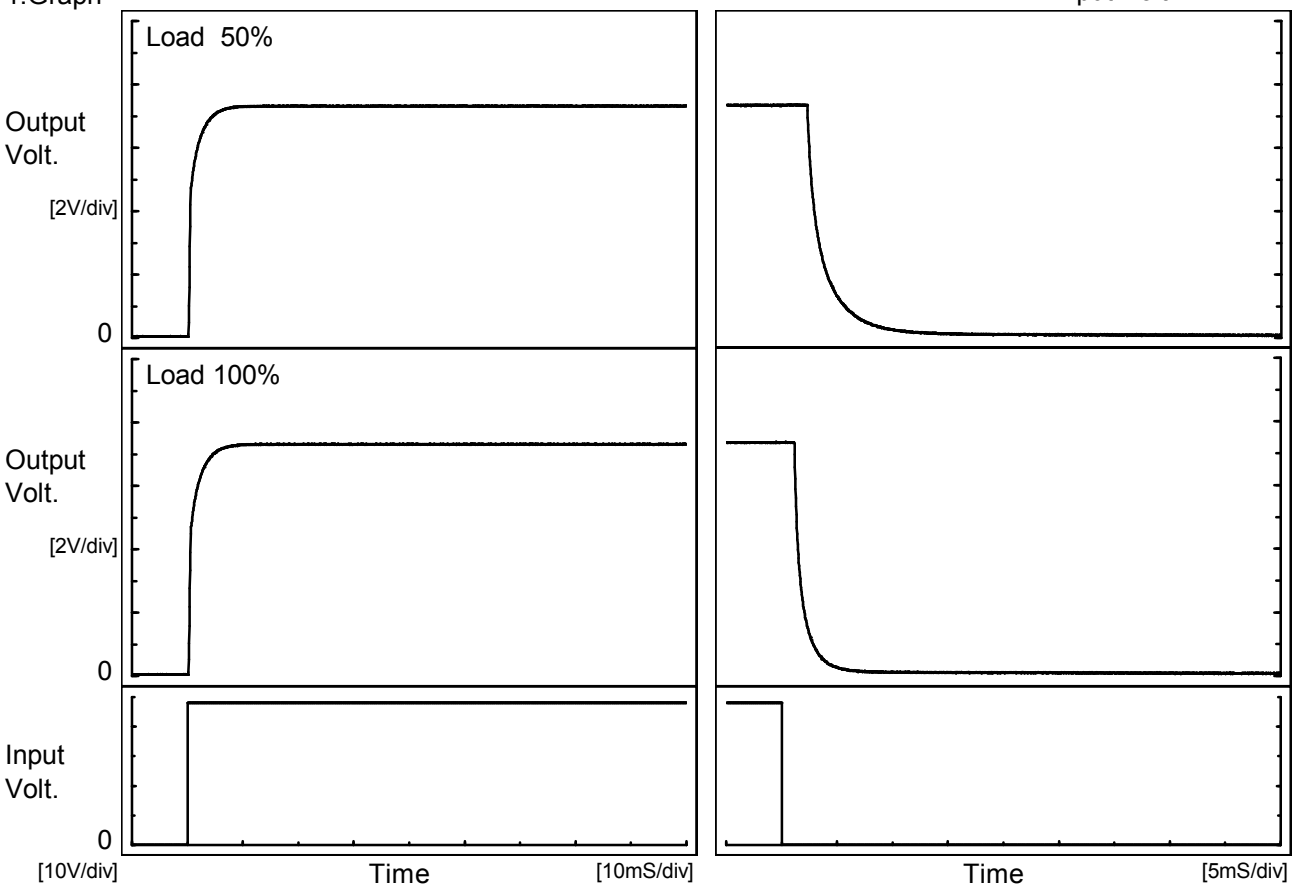
COSEL

Model	SUTW64815
Item	Rise and Fall Time
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

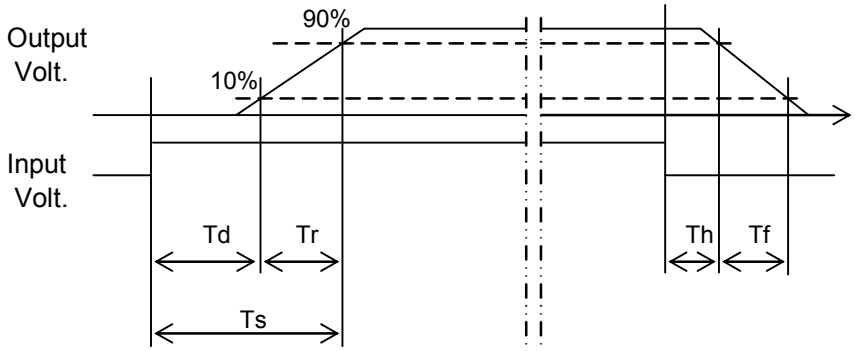
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.3	3.3	3.6	2.3	4.0
100 %	0.3	3.4	3.7	1.2	2.0



BC-10285

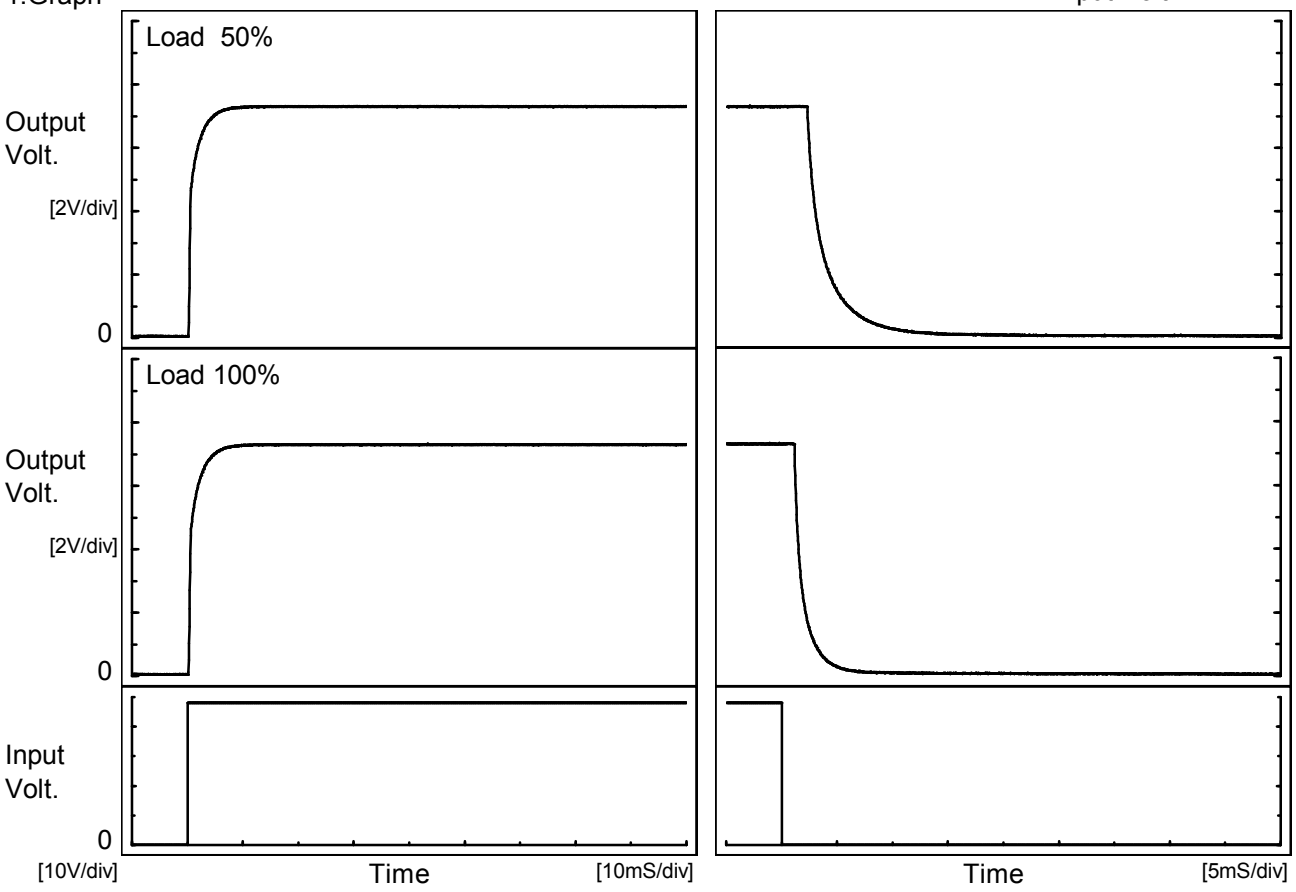
COSEL

Model	SUTW64815
Item	Rise and Fall Time
Object	-15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

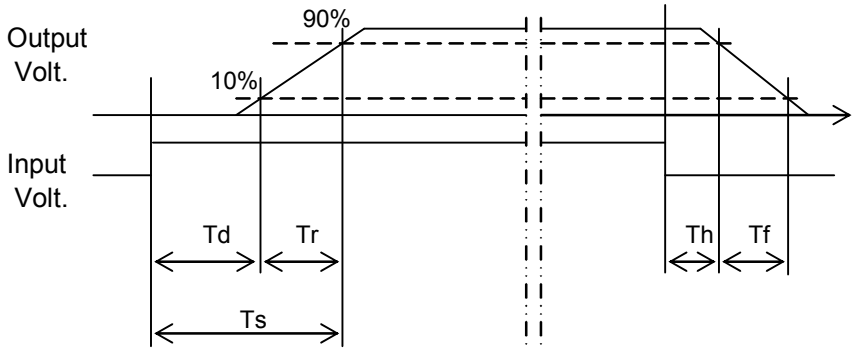
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.3	3.4	3.7	2.3	4.3
100 %	0.3	3.5	3.8	1.2	2.2



BC-10285

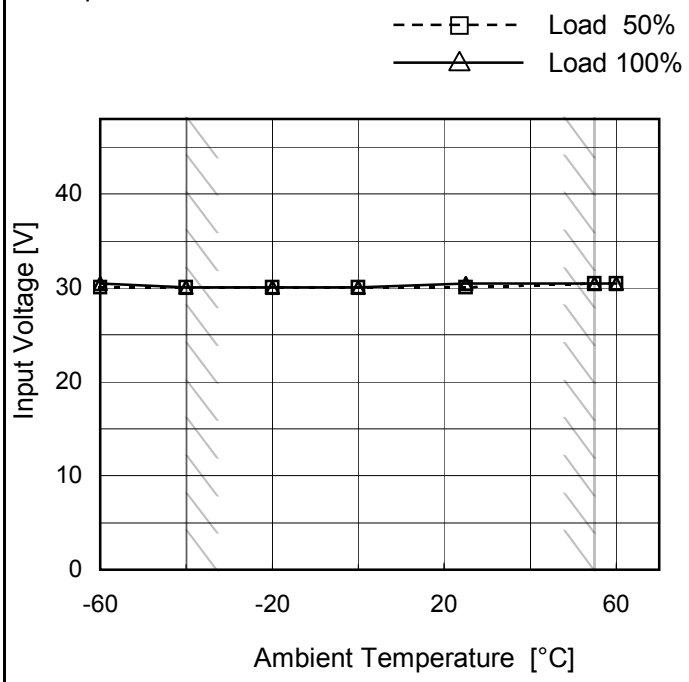
COSEL

Model	SUTW64815
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object: +15V0.2A

1.Graph

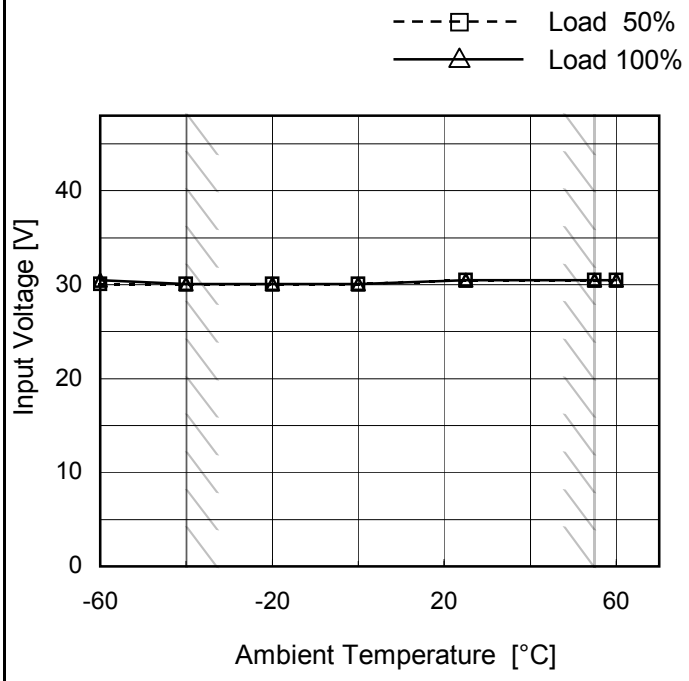


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.1	30.5
-40	30.1	30.1
-20	30.1	30.1
0	30.1	30.1
25	30.1	30.5
55	30.5	30.5
60	30.5	30.5
--	-	-
--	-	-
--	-	-
--	-	-

Object: -15V0.2A

1.Graph



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

2.Values

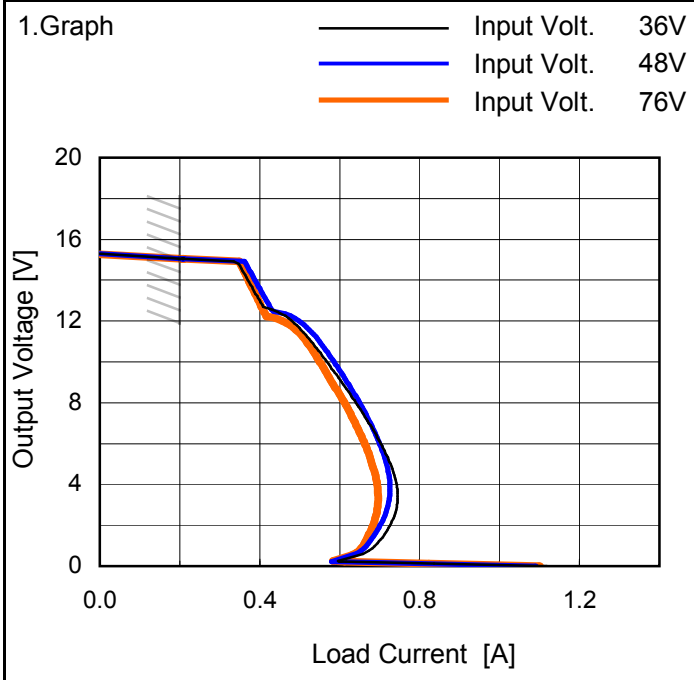
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.1	30.5
-40	30.1	30.1
-20	30.1	30.1
0	30.1	30.1
25	30.5	30.5
55	30.5	30.5
60	30.5	30.5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW64815
Item	Overcurrent Protection
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

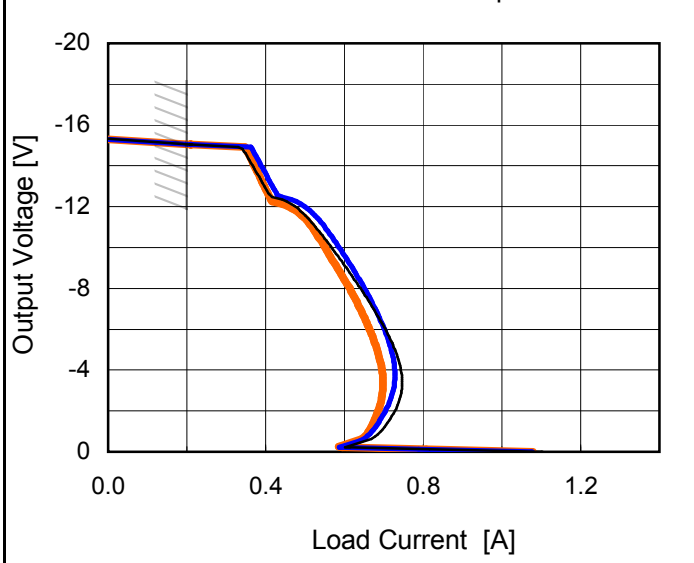


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
15.0	0.21	0.21	0.21
14.3	0.36	0.38	0.37
13.5	0.38	0.40	0.38
12.0	0.48	0.50	0.46
10.5	0.55	0.57	0.53
9.0	0.60	0.62	0.58
7.5	0.66	0.66	0.62
6.0	0.70	0.70	0.66
4.5	0.74	0.72	0.69
3.0	0.74	0.72	0.70
1.5	0.71	0.69	0.67
0.0	1.12	1.09	1.10

Object	-15V0.2A

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]
-15.00	0.21	0.21	0.21
-14.25	0.36	0.38	0.37
-13.50	0.38	0.40	0.38
-12.00	0.47	0.50	0.46
-10.50	0.54	0.57	0.53
-9.00	0.60	0.62	0.58
-7.50	0.66	0.66	0.63
-6.00	0.70	0.70	0.66
-4.50	0.74	0.72	0.69
-3.00	0.75	0.73	0.70
-1.50	0.71	0.69	0.68
0.00	1.10	1.08	1.08

COSEL

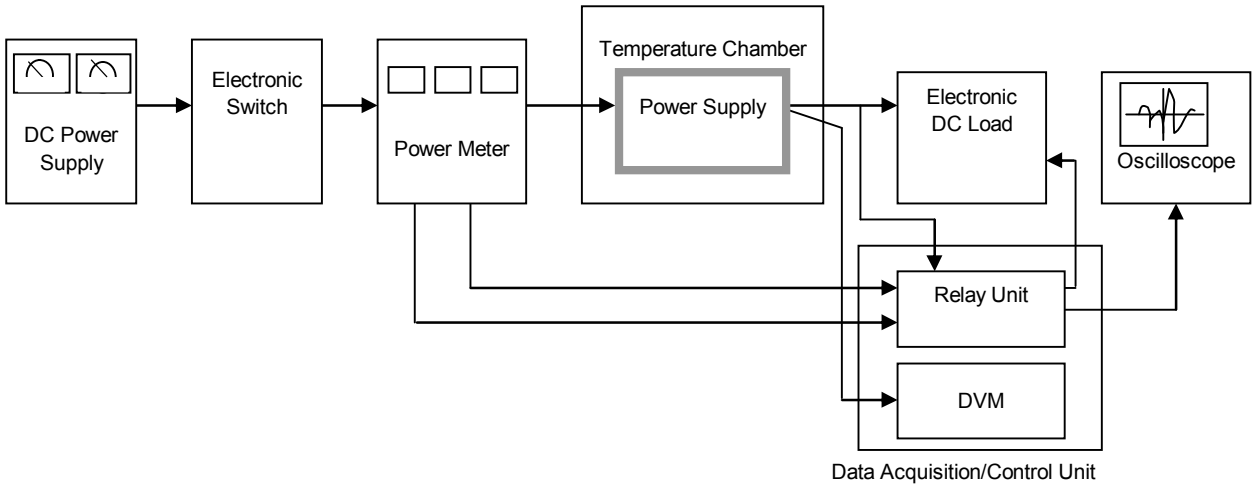


Figure A

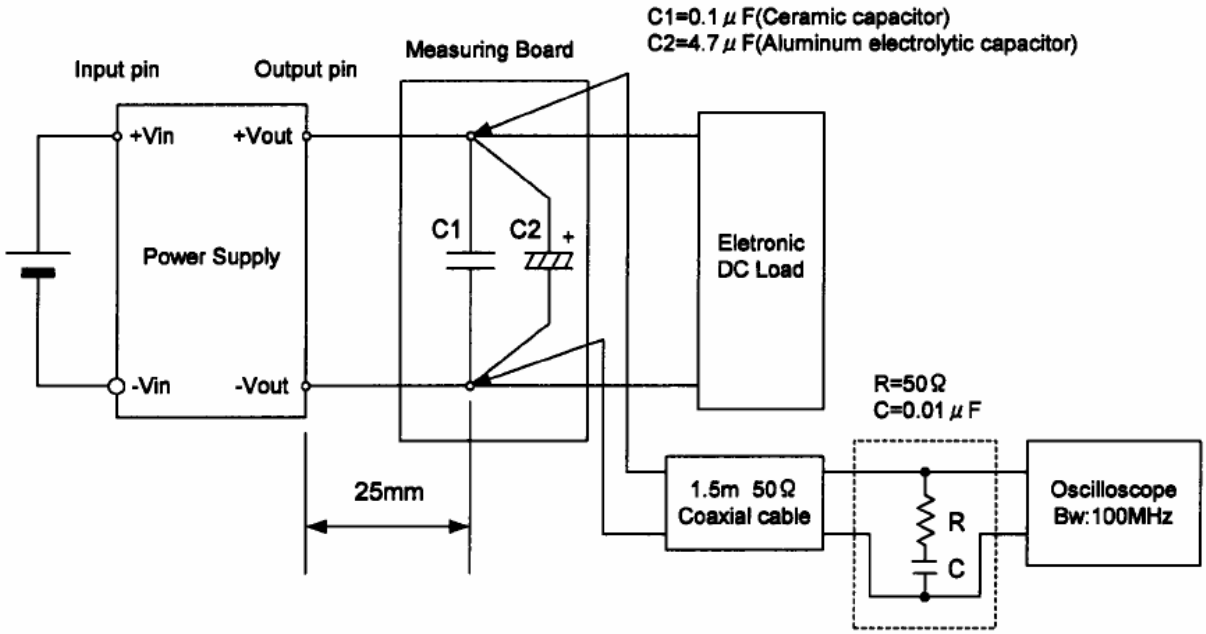


Figure B (Ripple and Ripple noise Characteristic)