COSEL

参考資料

TEST DATA OF SUTW34815

Regulated DC Power Supply
March 12, 2009

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COSEL CO.,LTD.

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参考資料

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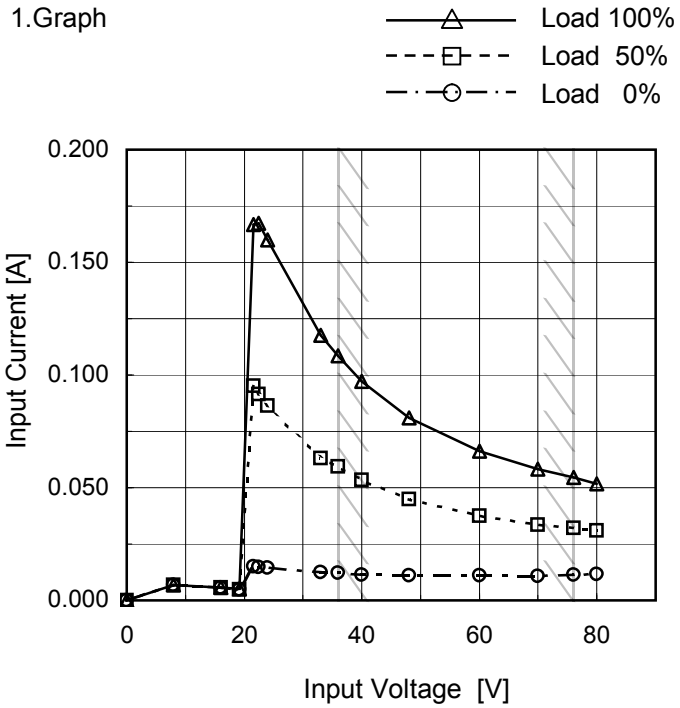
Model	SUTW34815
Item	Input Current (by Input Voltage)
Object	――――――

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
19.2	0.005	0.005	0.005
21.6	0.015	0.095	0.167
22.4	0.015	0.092	0.167
24.0	0.015	0.087	0.160
33.0	0.013	0.063	0.118
36.0	0.012	0.059	0.108
40.0	0.011	0.053	0.097
48.0	0.011	0.045	0.081
60.0	0.011	0.037	0.066
70.0	0.011	0.033	0.058
76.0	0.012	0.032	0.055
80.0	0.012	0.031	0.052
--	-	-	-
--	-	-	-
--	-	-	-

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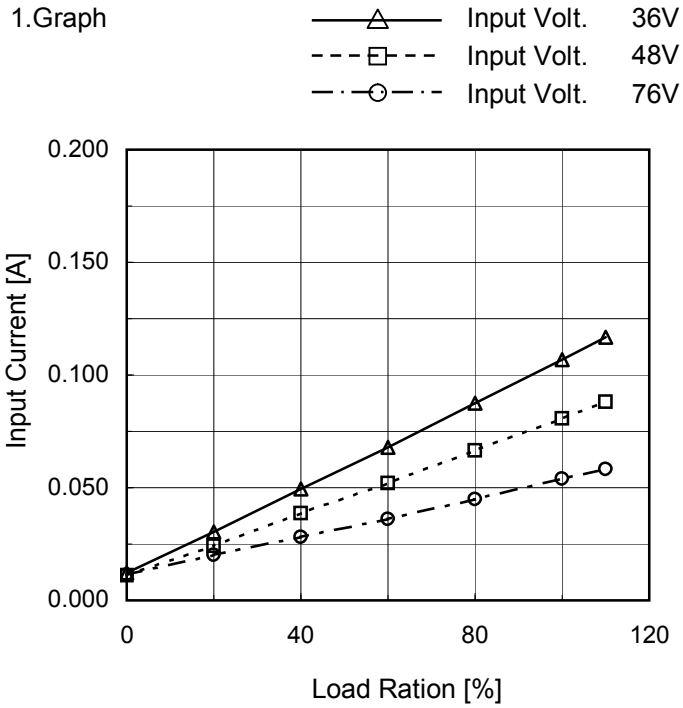
Model	SUTW34815
Item	Input Current (by Load Current)
Object	――――――

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	0.011	0.011
20	0.030	0.024	0.020
40	0.049	0.039	0.028
60	0.068	0.052	0.036
80	0.088	0.066	0.045
100	0.107	0.081	0.054
110	0.117	0.088	0.058
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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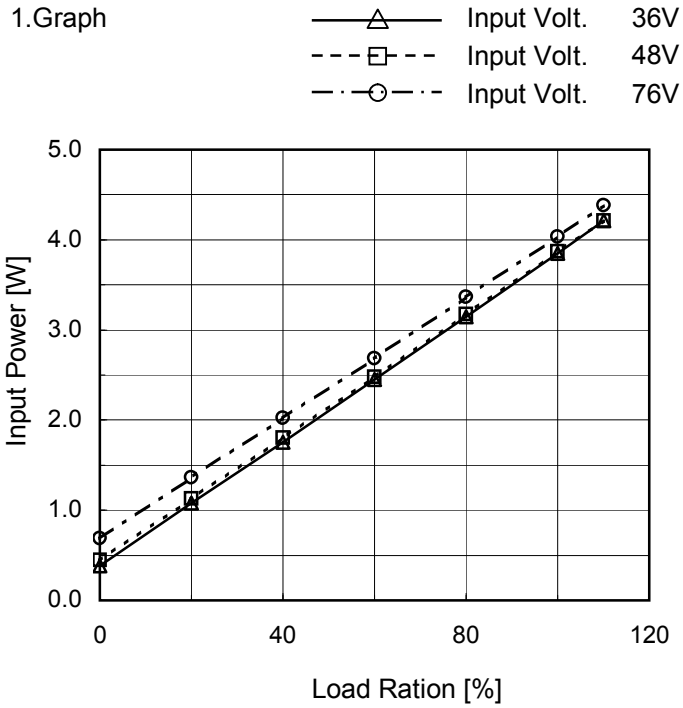
COSEL

Model	SUTW34815
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	0.39	0.45	0.69
20	1.08	1.13	1.36
40	1.75	1.81	2.02
60	2.45	2.48	2.69
80	3.14	3.17	3.37
100	3.85	3.87	4.04
110	4.21	4.22	4.38
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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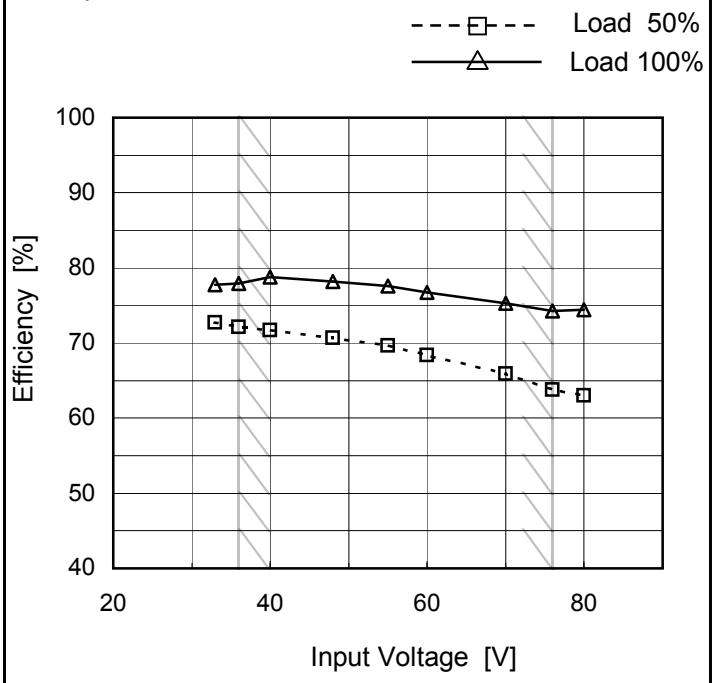
COSEL

Model	SUTW34815
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	72.7	77.8
36	72.1	77.9
40	71.7	78.8
48	70.7	78.2
55	69.6	77.5
60	68.4	76.8
70	65.9	75.3
76	63.8	74.2
80	63.0	74.4

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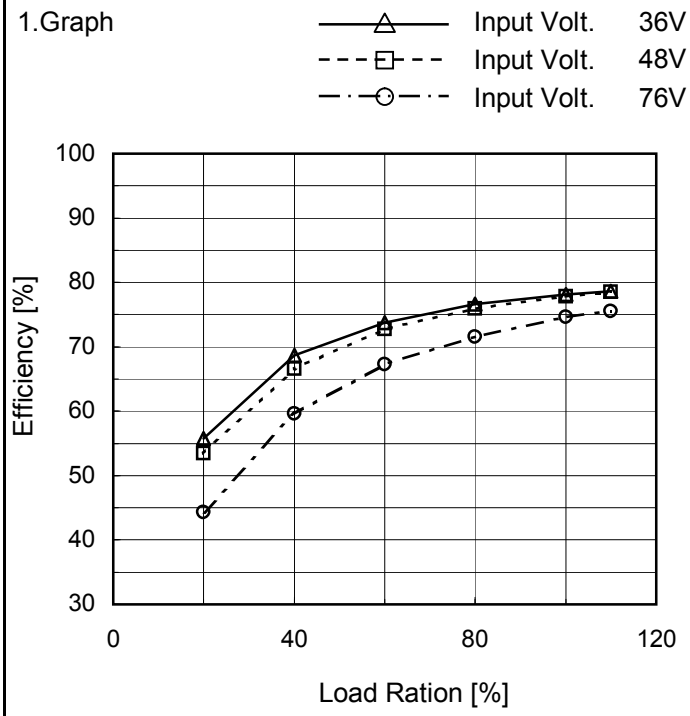
Model	SUTW34815
Item	Efficiency (by Load Current)
Object	――――――

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	55.8	53.4	44.3
40	68.7	66.6	59.6
60	73.7	72.7	67.2
80	76.6	75.9	71.5
100	78.1	77.8	74.6
110	78.6	78.5	75.6
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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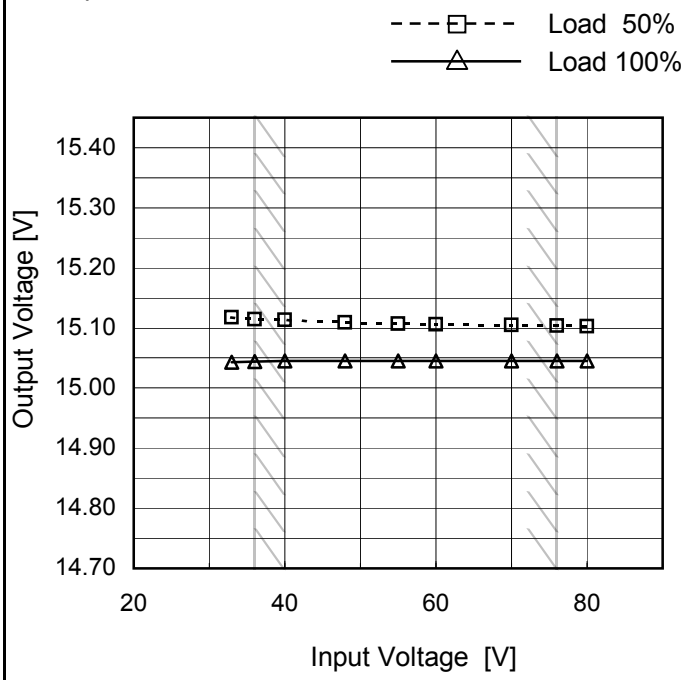
Model	SUTW34815
Item	Line Regulation
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

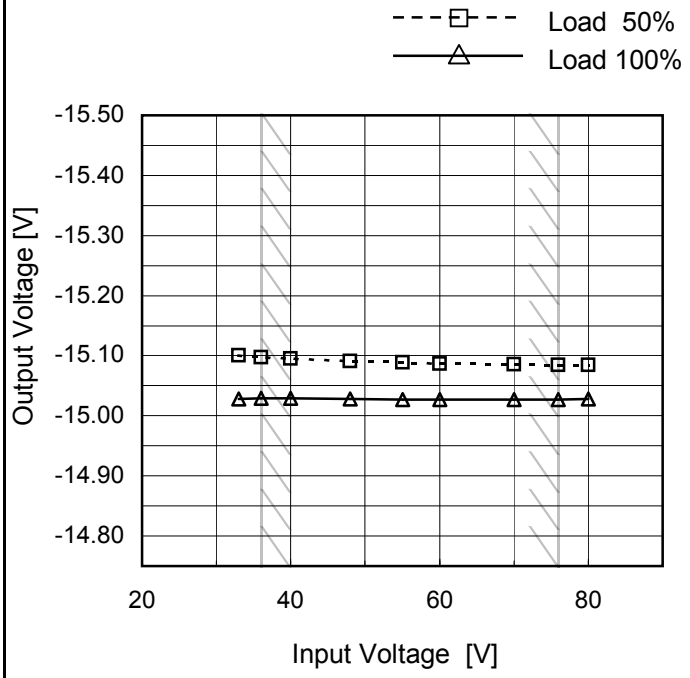


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	15.117	15.043
36	15.115	15.044
40	15.113	15.045
48	15.109	15.045
55	15.107	15.045
60	15.106	15.045
70	15.104	15.046
76	15.104	15.045
80	15.103	15.046

Object	-15V0.1A

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	-15.101	-15.029
36	-15.098	-15.029
40	-15.095	-15.029
48	-15.091	-15.028
55	-15.088	-15.027
60	-15.087	-15.027
70	-15.085	-15.027
76	-15.085	-15.027
80	-15.085	-15.028

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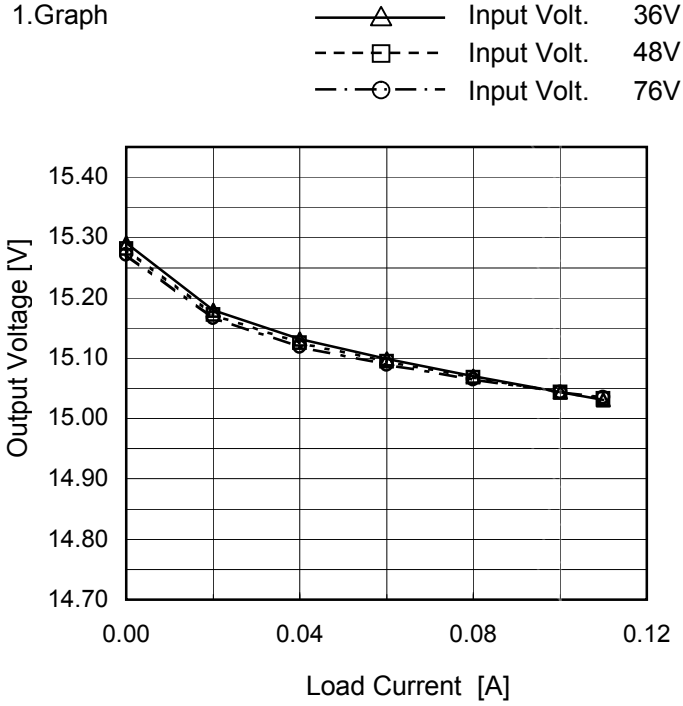
Model	SUTW34815
Item	Load Regulation
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

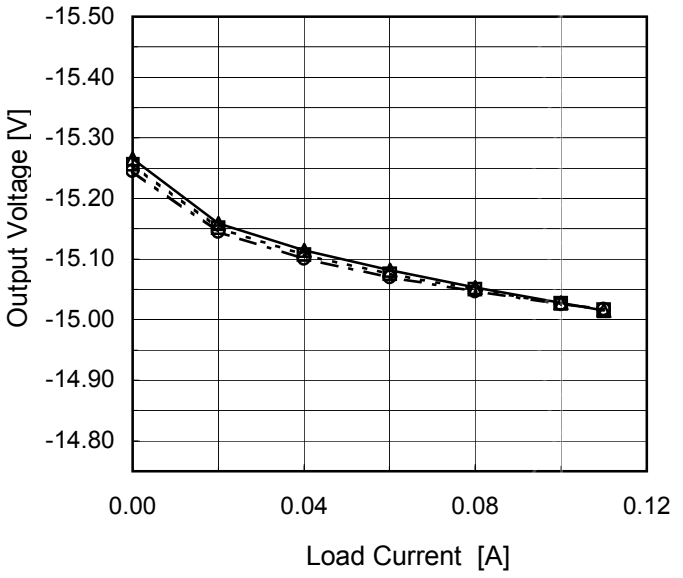


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	15.291	15.281	15.272
0.02	15.179	15.172	15.167
0.04	15.132	15.125	15.119
0.06	15.099	15.094	15.089
0.08	15.070	15.068	15.065
0.10	15.044	15.044	15.044
0.11	15.031	15.033	15.035
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-15V0.1A

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	-15.266	-15.256	-15.246
0.02	-15.159	-15.151	-15.145
0.04	-15.114	-15.107	-15.100
0.06	-15.082	-15.075	-15.071
0.08	-15.054	-15.050	-15.047
0.10	-15.028	-15.027	-15.026
0.11	-15.015	-15.016	-15.017
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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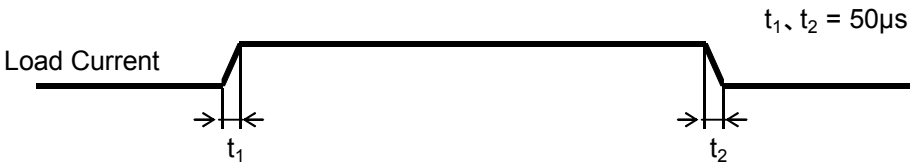
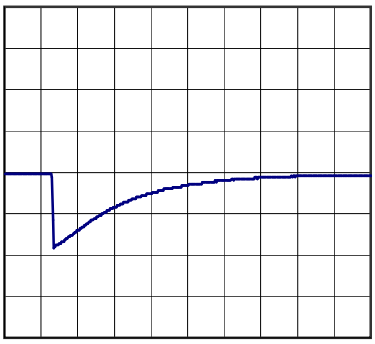
Model	SUTW34815
Item	Dynamic Load Response
Object	+15V0.1A

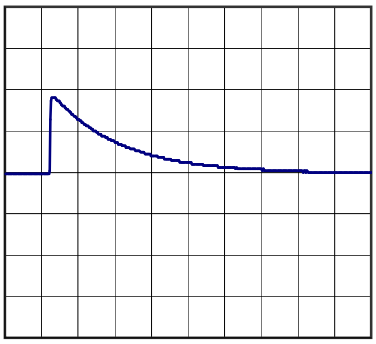
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.1A)

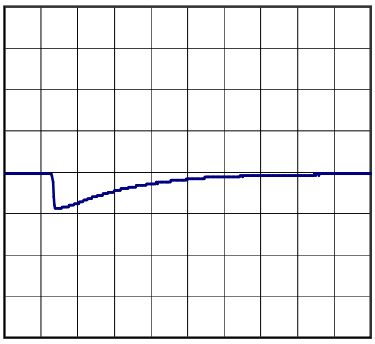


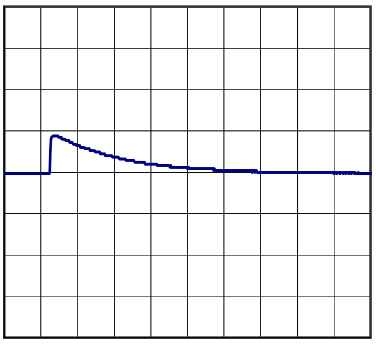


200mV/div

2ms/div 2ms/div

Min. Load (0A) ←→
Load 50% (0.05A)

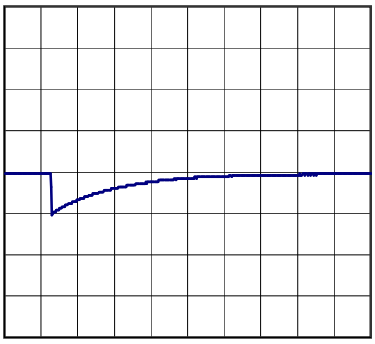


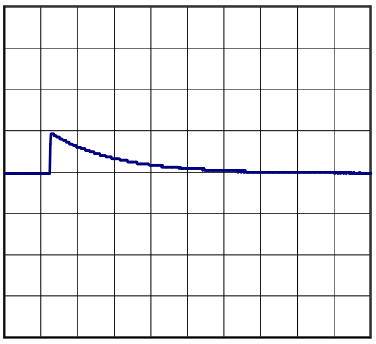


200mV/div

2ms/div 2ms/div

Load 50% (0.05A) ←→
Load 100% (0.1A)





200mV/div

2ms/div 2ms/div

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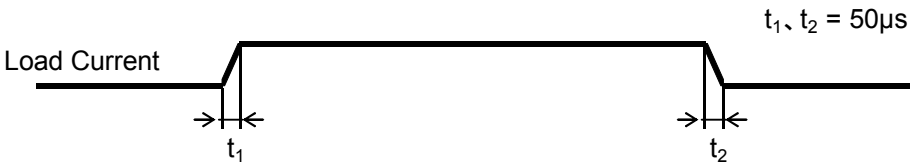
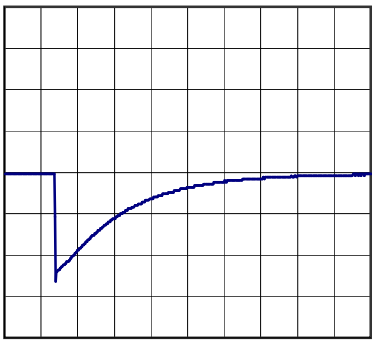
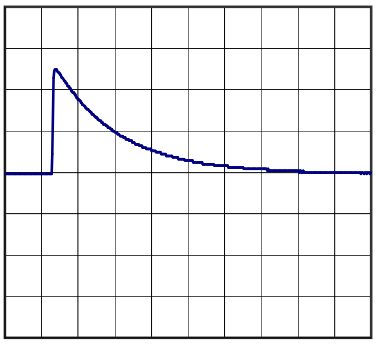
Model	SUTW34815	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	-15V0.1A	

Input Volt. 48 V
Cycle 100 mS



Min. Load (0A) ←→
Load 100% (0.1A)

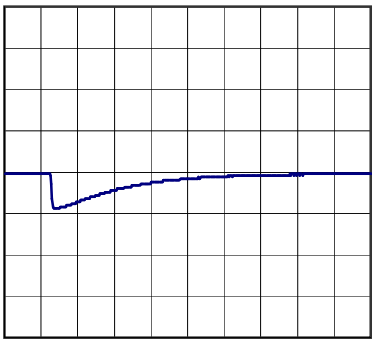


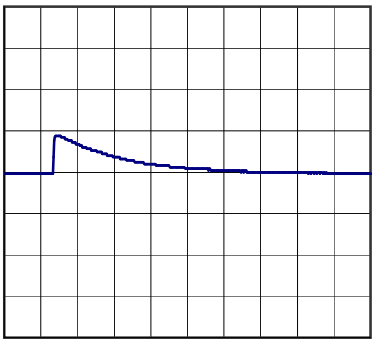


200mV/div

2ms/div 2ms/div

Min. Load (0A) ←→
Load 50% (0.05A)

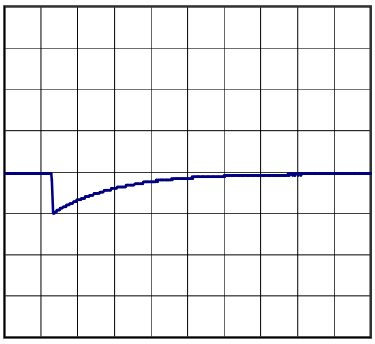


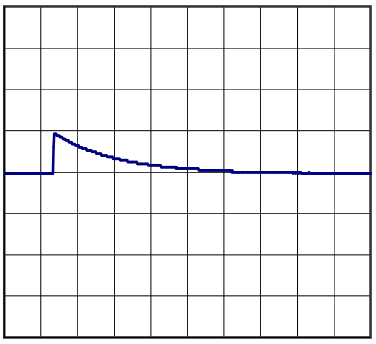


200mV/div

2ms/div 2ms/div

Load 50% (0.05A) ←→
Load 100% (0.1A)





200mV/div

2ms/div 2ms/div

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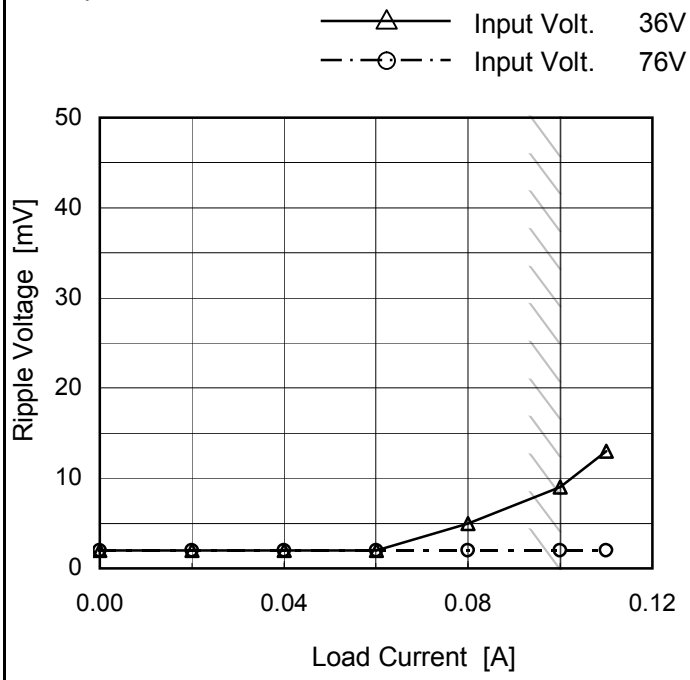
Model	SUTW34815
Item	Ripple Voltage (by Load Current)
Object	+15V0.1A

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]

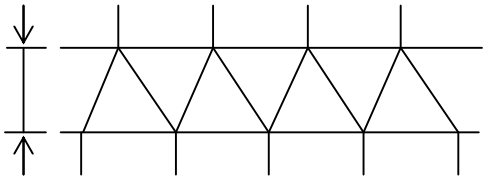


Fig.Complex Ripple Wave Form

2.Values

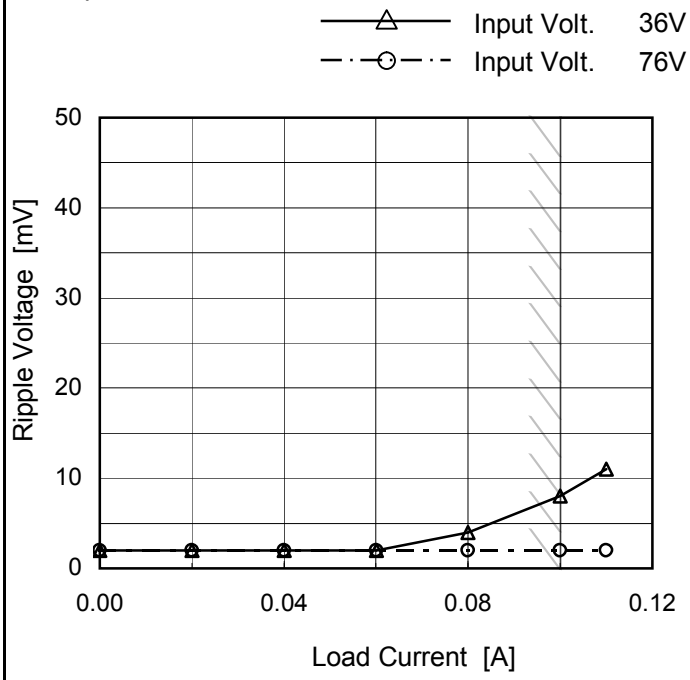
Load Current [A]	Ripple Voltage [mV] Input Volt. 36 [V]	Ripple Voltage [mV] Input Volt. 76 [V]
0.00	2	2
0.02	2	2
0.04	2	2
0.06	2	2
0.08	5	2
0.10	9	2
0.11	13	2
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW34815
Item	Ripple Voltage (by Load Current)
Object	-15V0.1A

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]

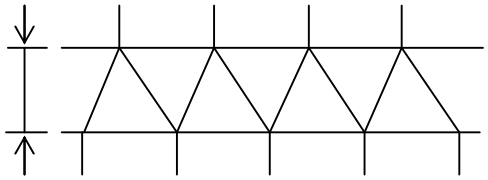


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	2	2
0.02	2	2
0.04	2	2
0.06	2	2
0.08	4	2
0.10	8	2
0.11	11	2
--	-	-
--	-	-
--	-	-
--	-	-

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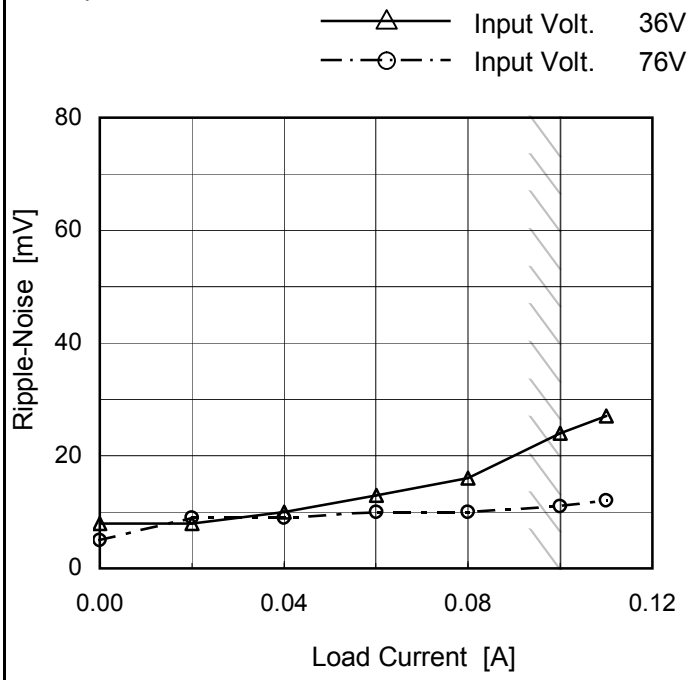
Model	SUTW34815
Item	Ripple-Noise
Object	+15V0.1A

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.

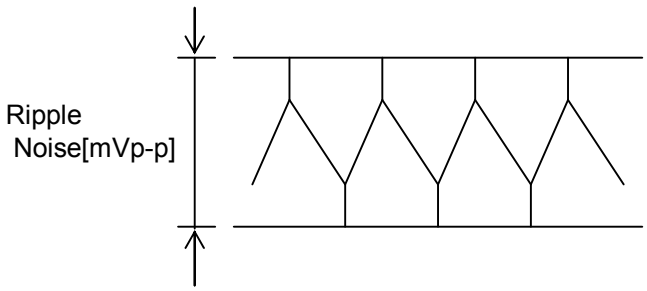


Fig.Complex Ripple Noise Wave Form

2.Values

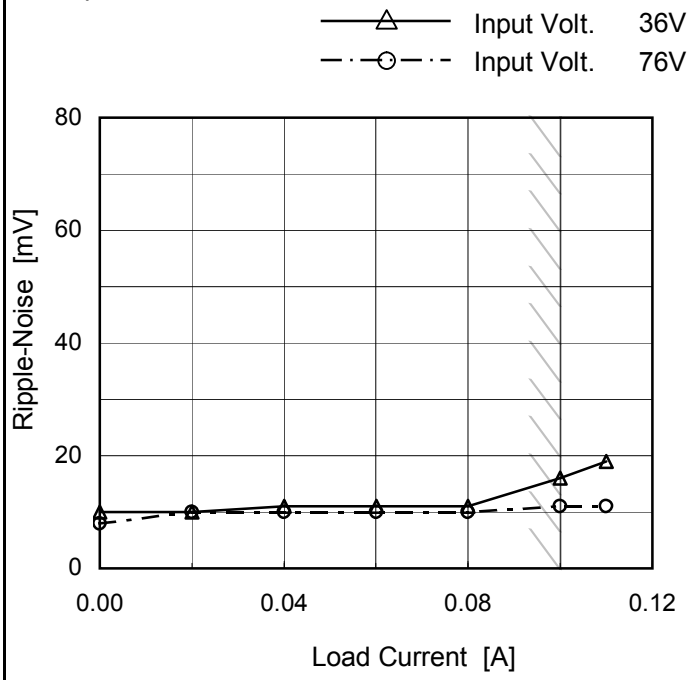
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	8	5
0.02	8	9
0.04	10	9
0.06	13	10
0.08	16	10
0.10	24	11
0.11	27	12
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW34815
Item	Ripple-Noise
Object	-15V0.1A

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.

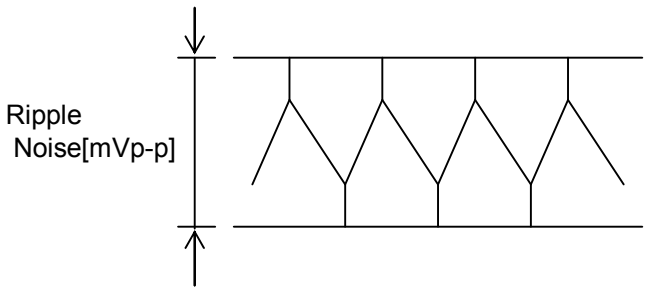


Fig.Complex Ripple Noise Wave Form

2.Values

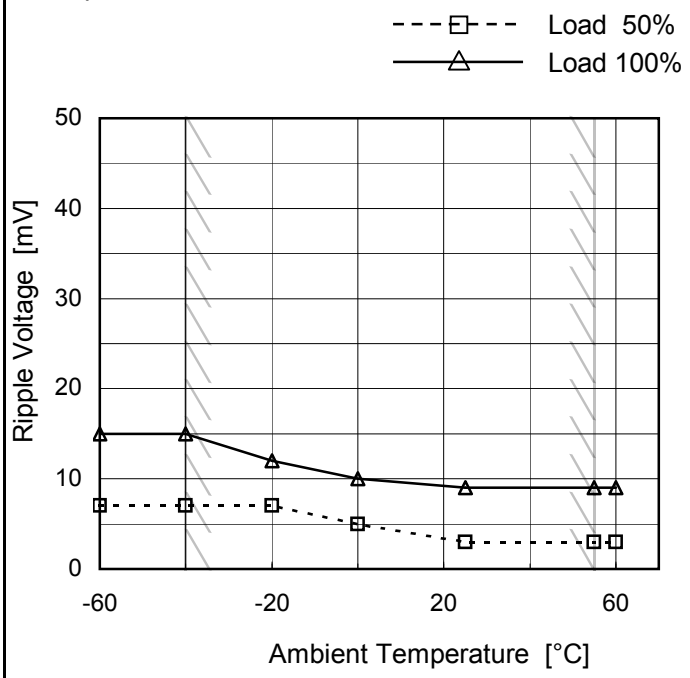
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	10	8
0.02	10	10
0.04	11	10
0.06	11	10
0.08	11	10
0.10	16	11
0.11	19	11
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW34815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.1A

Testing Circuitry Figure B

1.Graph



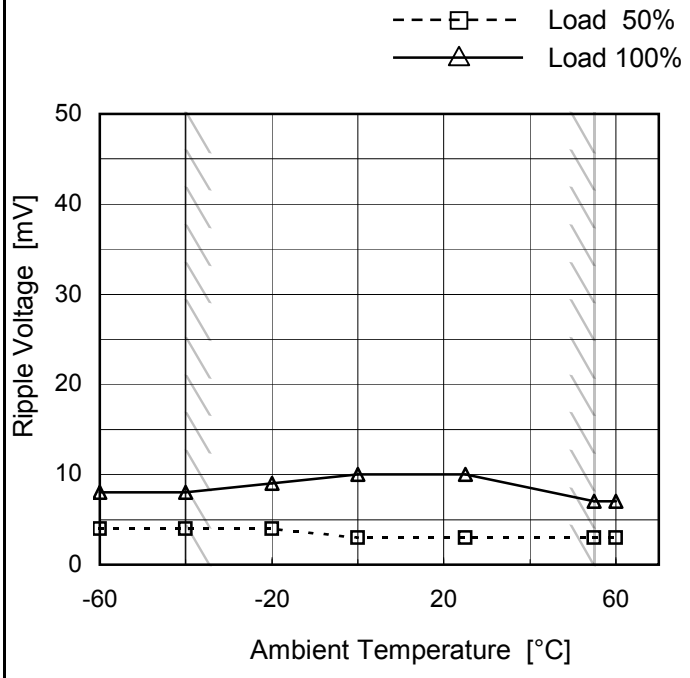
Input Volt. 48V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	7	15
-40	7	15
-20	7	12
0	5	10
25	3	9
55	3	9
60	3	9
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.1A

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	4	8
-40	4	8
-20	4	9
0	3	10
25	3	10
55	3	7
60	3	7
--	-	-
--	-	-
--	-	-
--	-	-

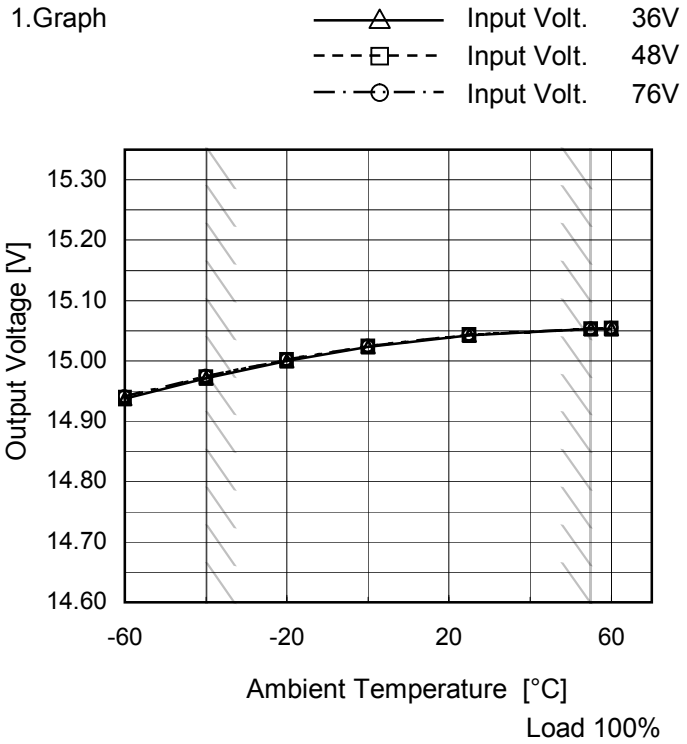
COSEL

Model	SUTW34815
Item	Ambient Temperature Drift

Testing Circuitry Figure A

Object +15V0.1A

1.Graph

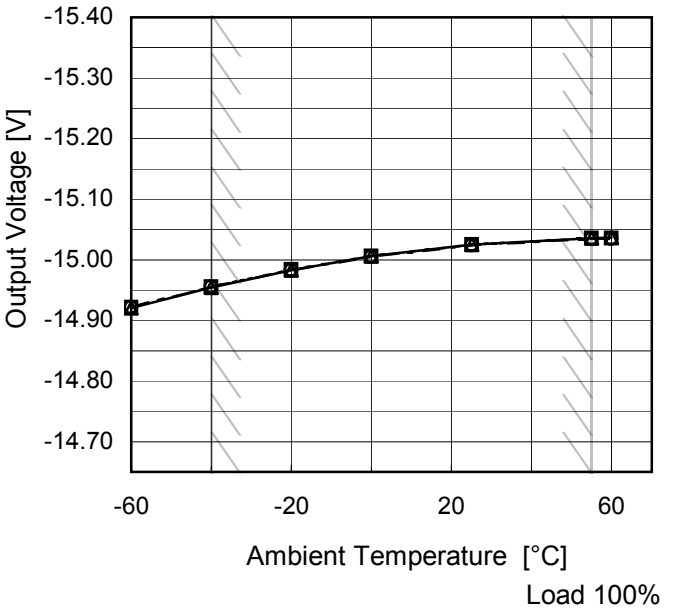


2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.937	14.939	14.941
-40	14.972	14.974	14.975
-20	15.000	15.002	15.002
0	15.023	15.024	15.025
25	15.042	15.043	15.044
55	15.053	15.053	15.053
60	15.053	15.054	15.054
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object -15V0.1A

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	-14.920	-14.921	-14.921
-40	-14.955	-14.956	-14.955
-20	-14.983	-14.983	-14.983
0	-15.006	-15.006	-15.005
25	-15.025	-15.025	-15.024
55	-15.036	-15.035	-15.034
60	-15.036	-15.036	-15.035
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW34815	
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 - 0.1A (AVR 2) : 0 - 0.1A

* 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	+15V0.1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	15.305	±273	±1.8
Minimum Voltage	-40	36	0.1	14.760		

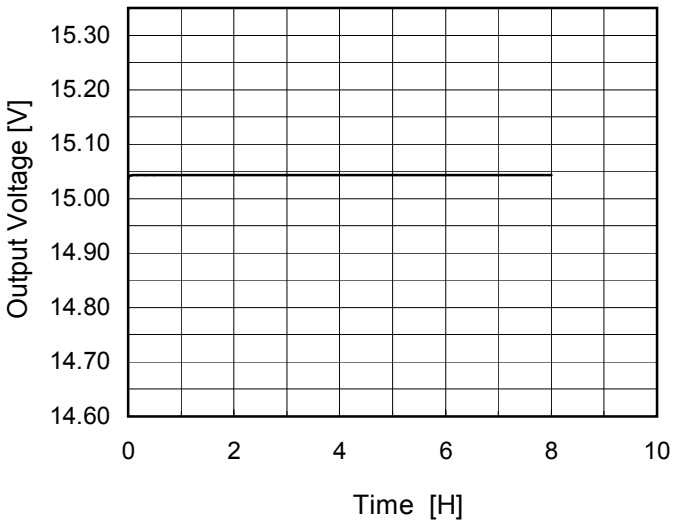
Object	-15V0.1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	0	-15.281	±275	±1.8
Minimum Voltage	-40	36	0.1	-14.732		

COSEL

Model	SUTW34815
Item	Time Lapse Drift
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



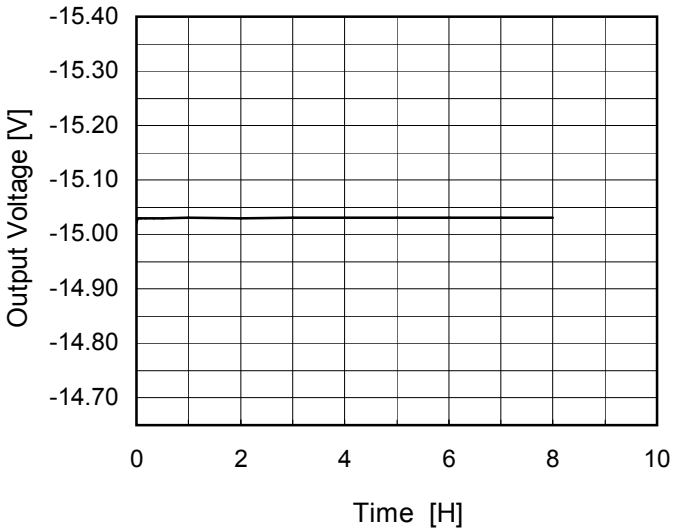
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	15.035
0.5	15.043
1.0	15.043
2.0	15.043
3.0	15.043
4.0	15.044
5.0	15.043
6.0	15.043
7.0	15.044
8.0	15.043

Object	-15V0.1A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-15.022
0.5	-15.030
1.0	-15.030
2.0	-15.030
3.0	-15.030
4.0	-15.030
5.0	-15.030
6.0	-15.030
7.0	-15.030
8.0	-15.030

BC-10261

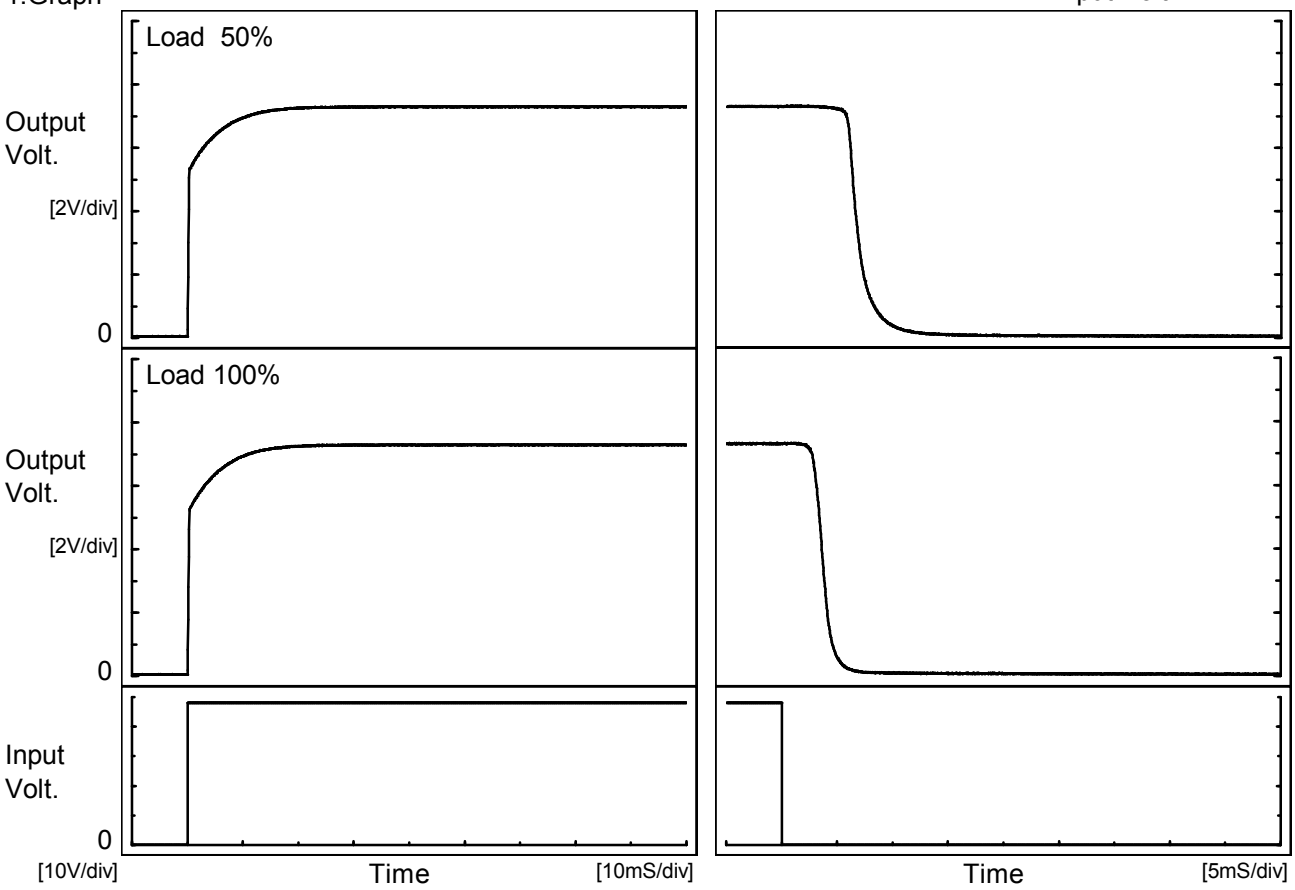
COSEL

Model	SUTW34815
Item	Rise and Fall Time
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

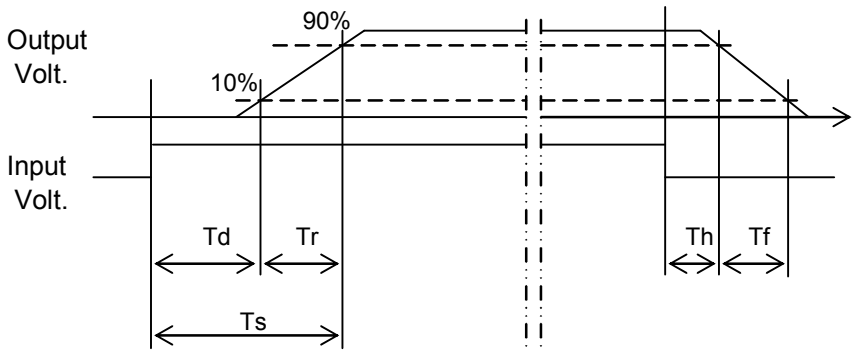
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	7.9	8.0	5.9	2.7
100 %	0.1	8.1	8.2	2.8	2.0



BC-10261

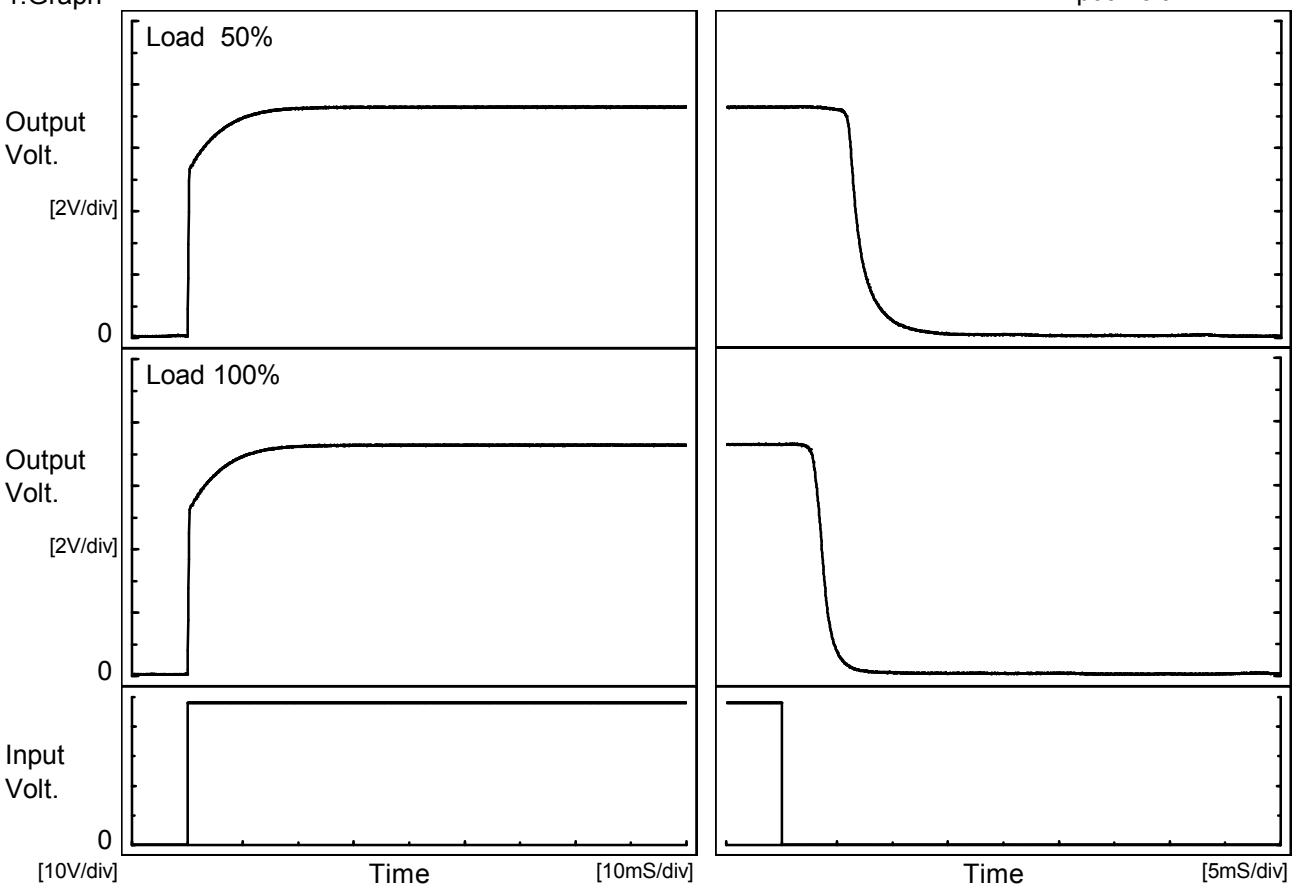
COSEL

Model	SUTW34815
Item	Rise and Fall Time
Object	-15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

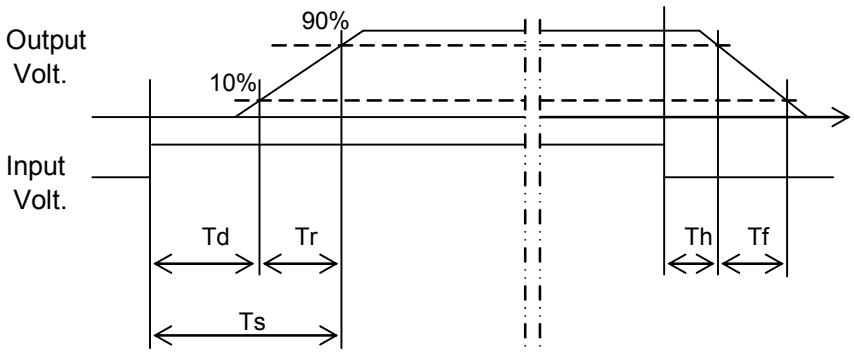
Input Volt. 48 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	8.0	8.1	5.9	3.2
100 %	0.1	8.2	8.3	2.8	2.2



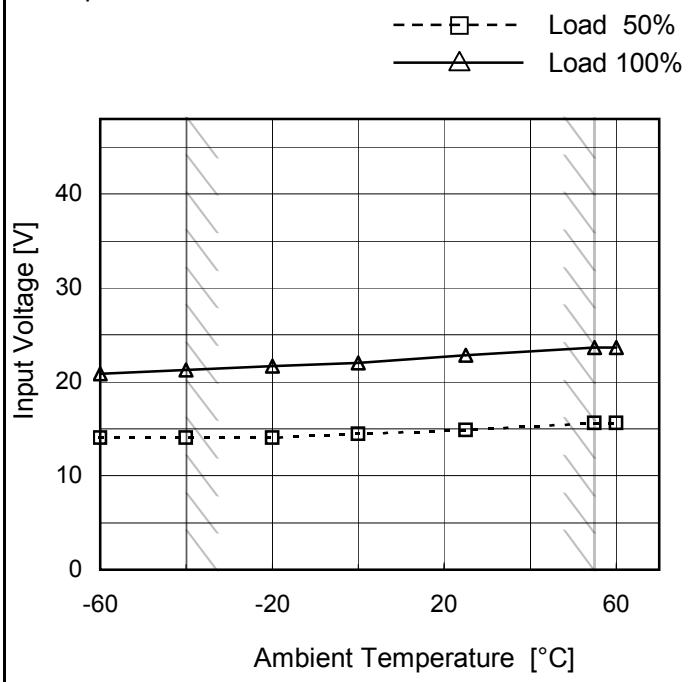
COSEL

Model	SUTW34815
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object +15V0.1A

1.Graph

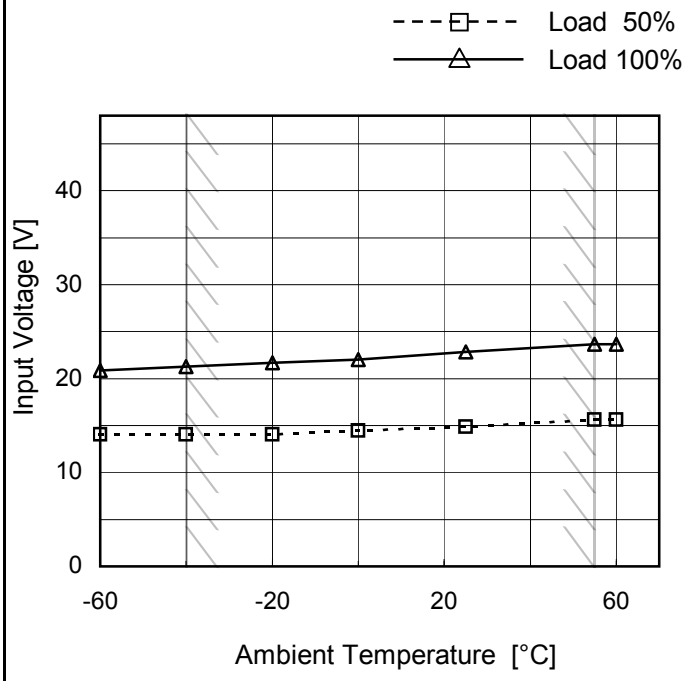


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	14.1	20.9
-40	14.1	21.3
-20	14.1	21.7
0	14.5	22.1
25	14.9	22.9
55	15.7	23.7
60	15.7	23.7
--	-	-
--	-	-
--	-	-
--	-	-

Object -15V0.1A

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	14.1	20.9
-40	14.1	21.3
-20	14.1	21.7
0	14.5	22.1
25	14.9	22.9
55	15.7	23.7
60	15.7	23.7
--	-	-
--	-	-
--	-	-
--	-	-

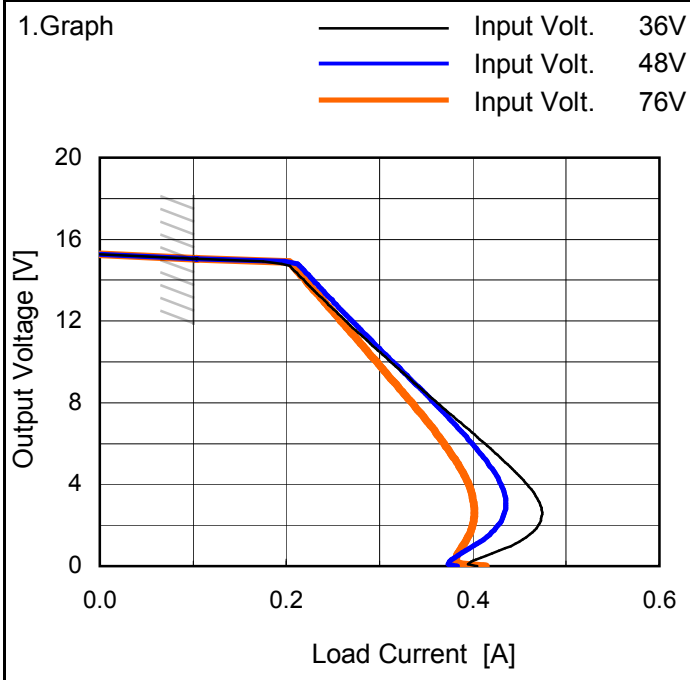
COSEL

Model	SUTW34815
Item	Overcurrent Protection

Temperature 25°C
Testing Circuitry Figure A

Object +15V0.1A

1.Graph

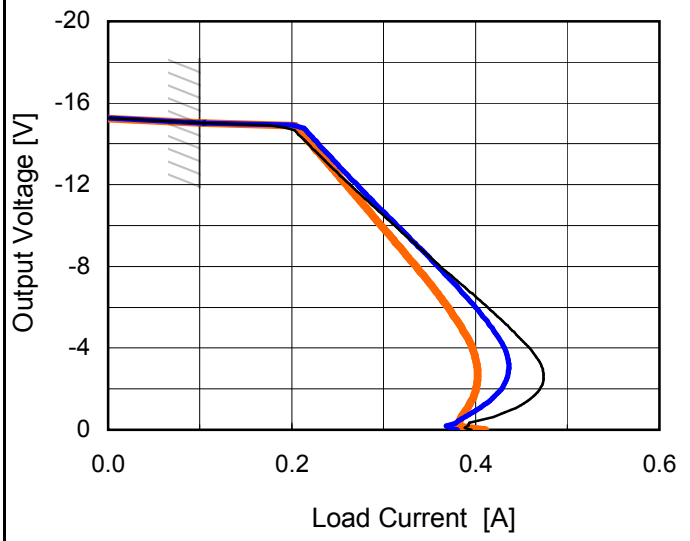


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
15.0	0.10	0.10	0.10
14.3	0.21	0.22	0.22
13.5	0.23	0.24	0.23
12.0	0.26	0.27	0.26
10.5	0.30	0.30	0.29
9.0	0.33	0.33	0.31
7.5	0.37	0.37	0.34
6.0	0.41	0.40	0.37
4.5	0.45	0.42	0.39
3.0	0.47	0.44	0.40
1.5	0.46	0.42	0.40
0.0	0.40	0.38	0.41

Object -15V0.1A

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	0.10	0.10	0.10
-14.25	0.21	0.22	0.22
-13.50	0.23	0.24	0.23
-12.00	0.26	0.27	0.26
-10.50	0.30	0.30	0.29
-9.00	0.33	0.33	0.31
-7.50	0.37	0.37	0.34
-6.00	0.41	0.40	0.37
-4.50	0.45	0.42	0.39
-3.00	0.47	0.44	0.40
-1.50	0.46	0.42	0.40
0.00	0.39	0.38	0.41

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COSEL

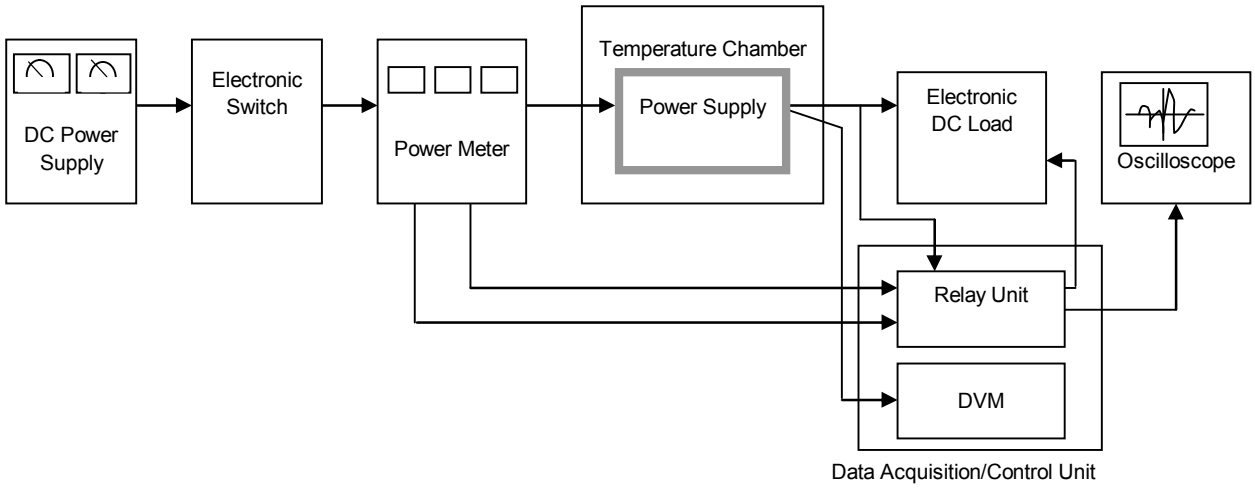

Figure A

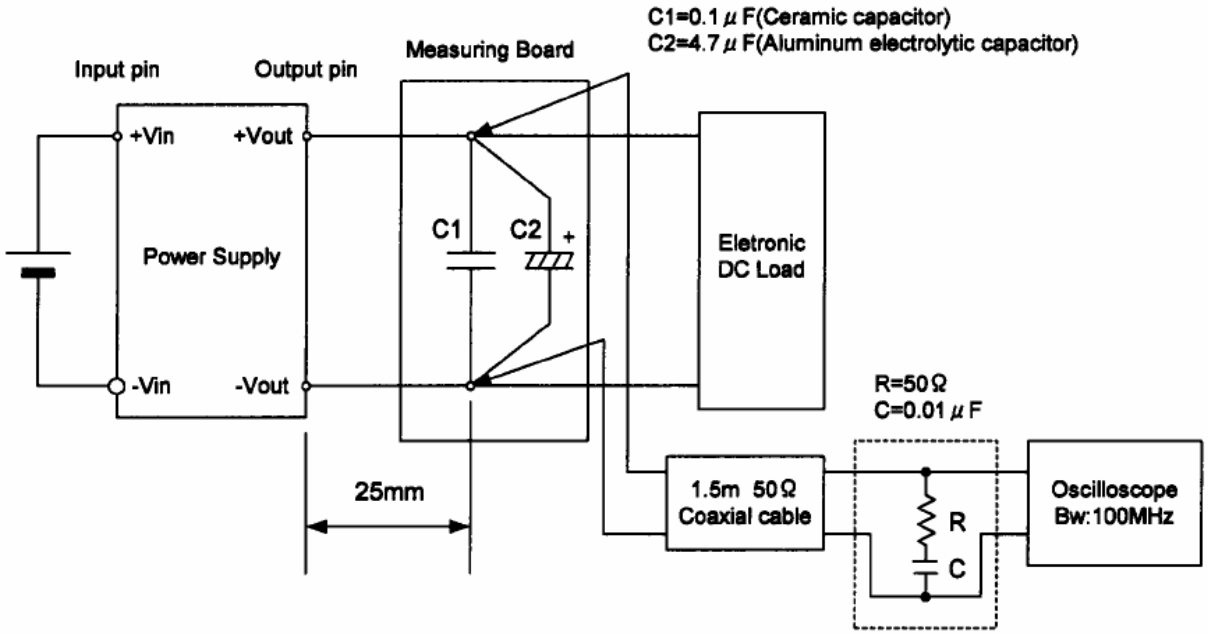

Figure B (Ripple and Ripple noise Characteristic)