COSEL

参考資料

TEST DATA OF SUTW32415

Regulated DC Power Supply
March 10, 2009

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COSEL CO.,LTD.

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Model	SUTW32415
Item	Input Current (by Input Voltage)
Object	————————

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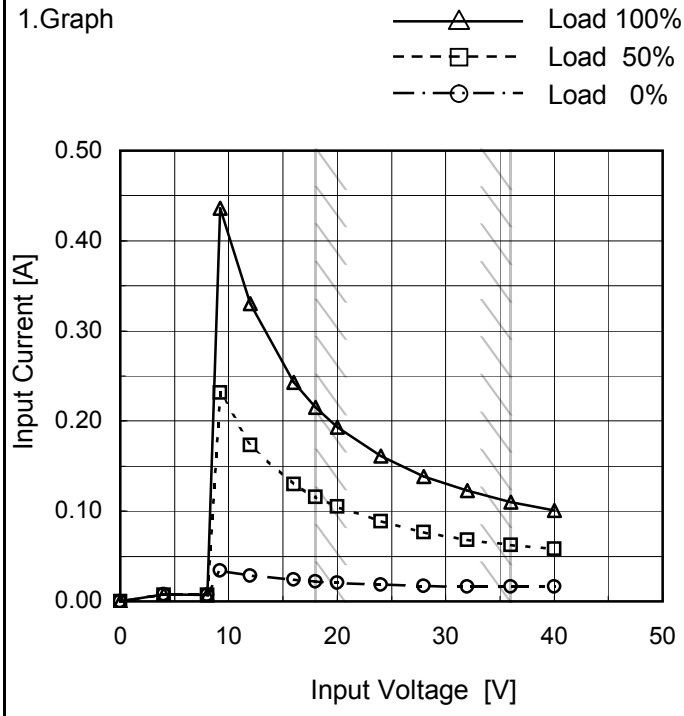


Note: Slanted line shows the range of the rated input voltage.

2.Values

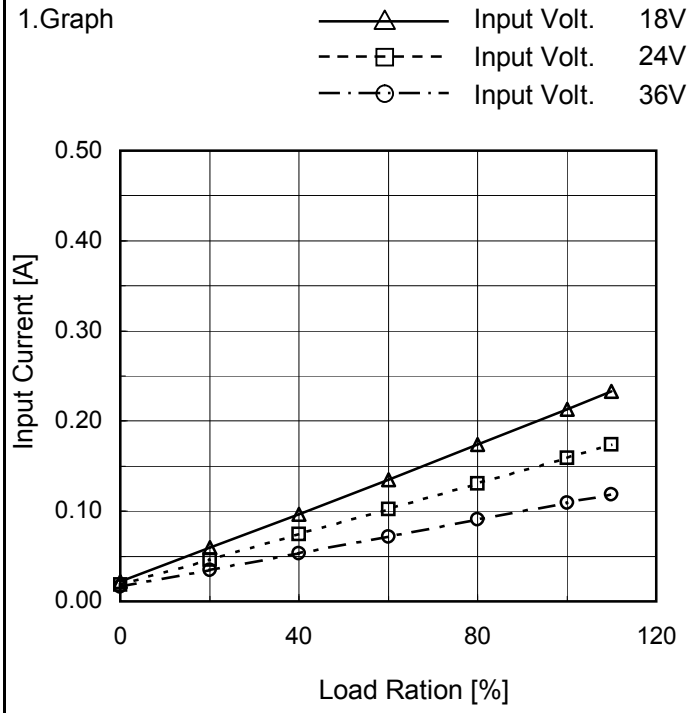
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
4.0	0.008	0.007	0.008
8.0	0.007	0.007	0.007
9.2	0.034	0.232	0.436
12.0	0.029	0.173	0.330
16.0	0.024	0.130	0.243
18.0	0.022	0.116	0.215
20.0	0.021	0.105	0.193
24.0	0.019	0.089	0.161
28.0	0.017	0.077	0.139
32.0	0.016	0.069	0.123
36.0	0.016	0.062	0.110
40.0	0.016	0.058	0.101
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW32415
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

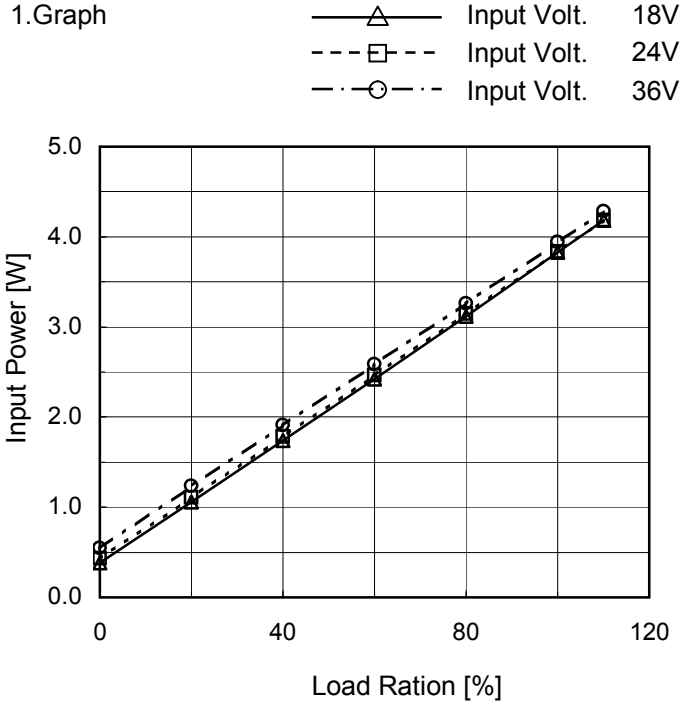
Load Ration [%]	Input Current [A] Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	0.022	0.019	0.016
20	0.059	0.047	0.035
40	0.097	0.074	0.053
60	0.135	0.102	0.072
80	0.174	0.131	0.091
100	0.213	0.159	0.109
110	0.233	0.174	0.119
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW32415
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

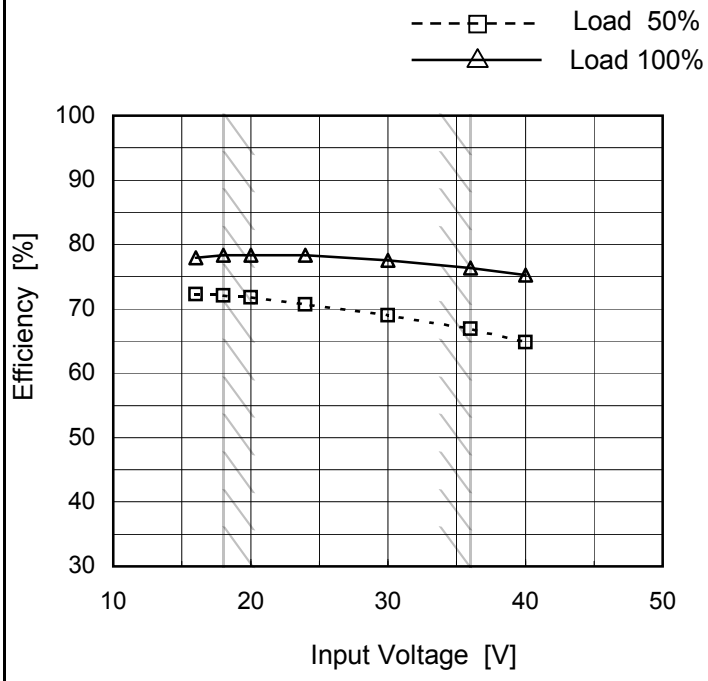
Load Ration [%]	Input Power [W]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	0.39	0.43	0.55
20	1.06	1.11	1.24
40	1.74	1.79	1.91
60	2.42	2.46	2.59
80	3.12	3.14	3.26
100	3.83	3.84	3.94
110	4.18	4.19	4.28
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW32415
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

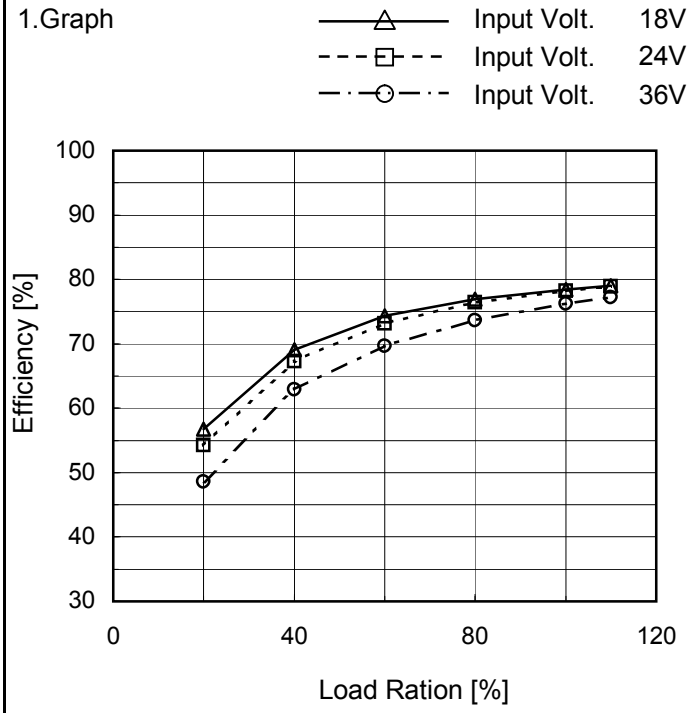
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
16	72.2	77.9
18	72.0	78.3
20	71.8	78.3
24	70.6	78.3
30	69.0	77.6
36	66.9	76.4
40	64.8	75.2
--	-	-
--	-	-

COSEL

Model	SUTW32415
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Efficiency [%] Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	-	-	-
20	56.7	54.2	48.6
40	69.1	67.3	62.9
60	74.3	73.2	69.6
80	77.0	76.4	73.7
100	78.4	78.3	76.2
110	79.0	78.9	77.2
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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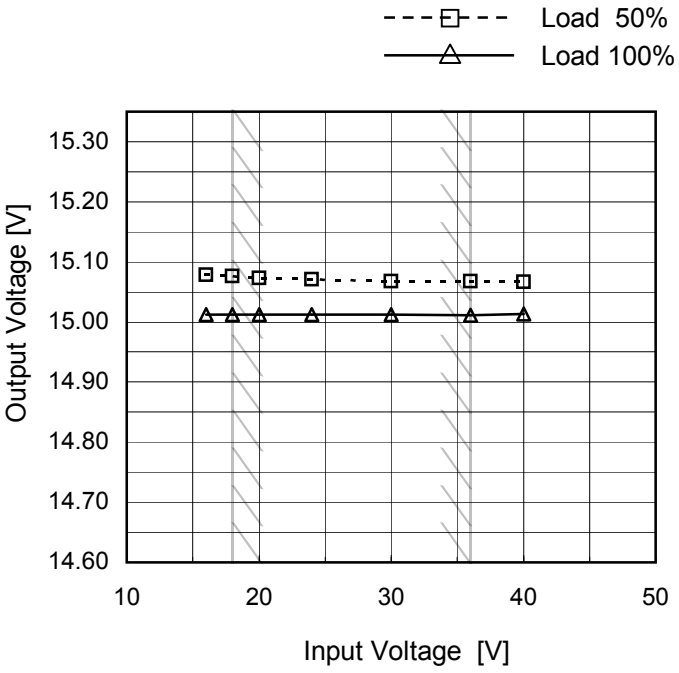
Model	SUTW32415
Item	Line Regulation

Temperature 25°C
Testing Circuitry Figure A

Object +15V0.1A

1.Graph

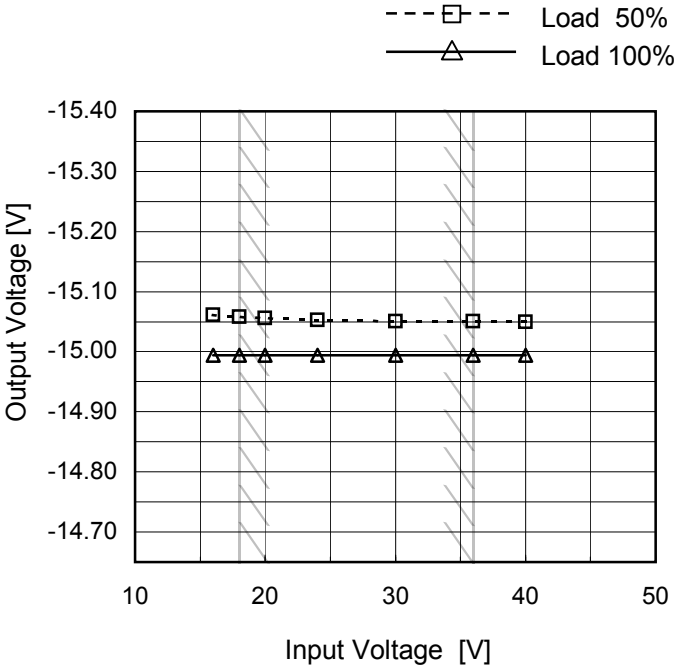


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
16	15.078	15.012
18	15.076	15.012
20	15.074	15.012
24	15.071	15.012
30	15.068	15.012
36	15.068	15.012
40	15.067	15.013
--	-	-
--	-	-

Object -15V0.1A

1.Graph



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

2.Values

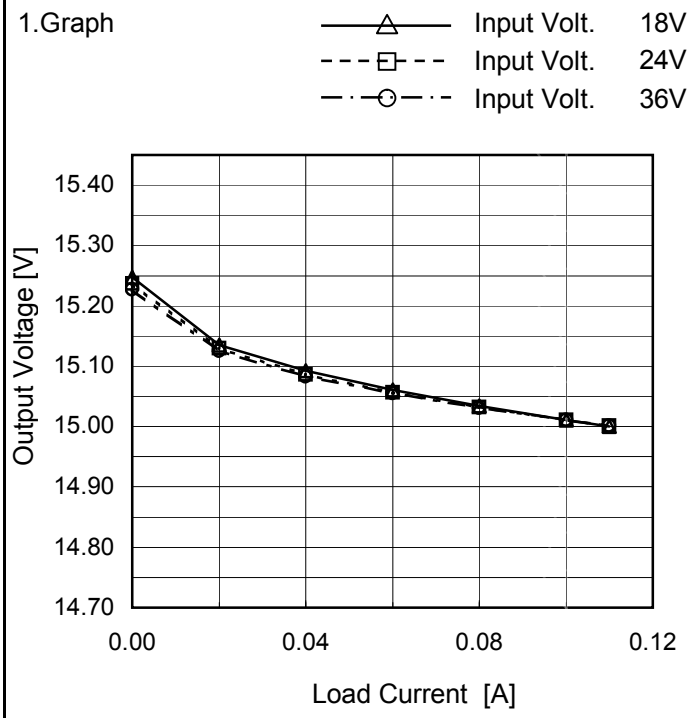
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
16	-15.061	-14.994
18	-15.058	-14.994
20	-15.056	-14.994
24	-15.053	-14.994
30	-15.051	-14.994
36	-15.050	-14.994
40	-15.049	-14.994
--	-	-
--	-	-

COSEL

Model	SUTW32415
Item	Load Regulation
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

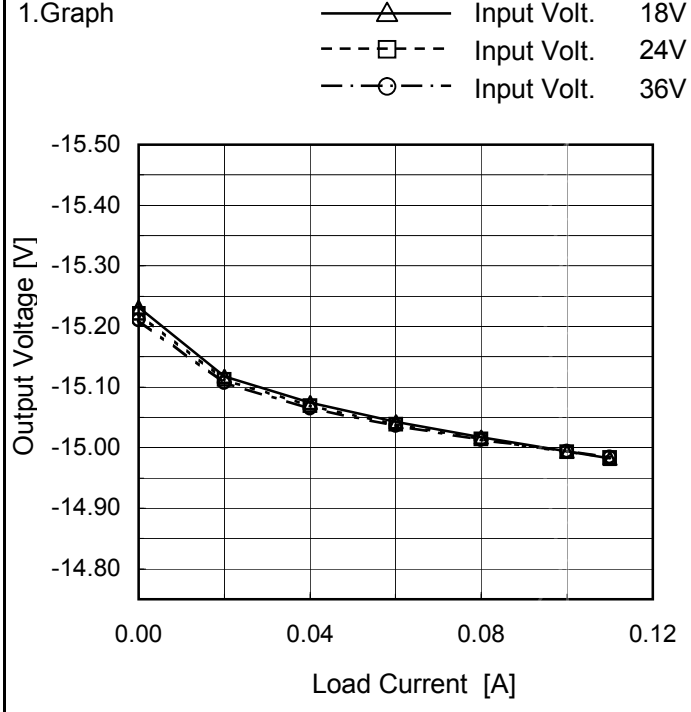


2.Values

Load Current [A]	Output Voltage [V] Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	15.247	15.237	15.227
0.02	15.135	15.130	15.125
0.04	15.093	15.086	15.083
0.06	15.061	15.057	15.055
0.08	15.034	15.032	15.031
0.10	15.011	15.011	15.011
0.11	15.000	15.001	15.002
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object	-15V0.1A

1.Graph



2.Values

Load Current [A]	Output Voltage [V] Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	-15.232	-15.222	-15.210
0.02	-15.118	-15.112	-15.107
0.04	-15.074	-15.069	-15.065
0.06	-15.043	-15.039	-15.036
0.08	-15.017	-15.015	-15.013
0.10	-14.994	-14.993	-14.994
0.11	-14.982	-14.983	-14.985
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

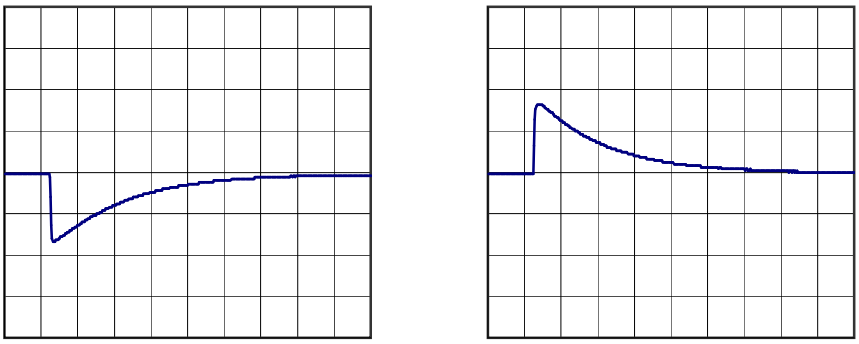
COSEL

Model	SUTW32415
Item	Dynamic Load Response
Object	+15V0.1A

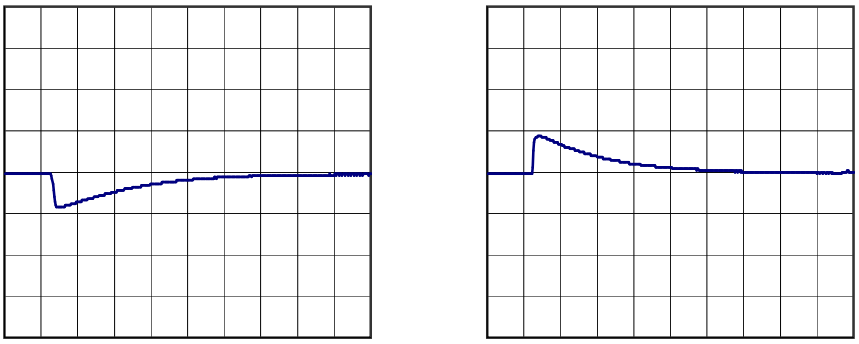
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 24 V
Cycle 100 mS

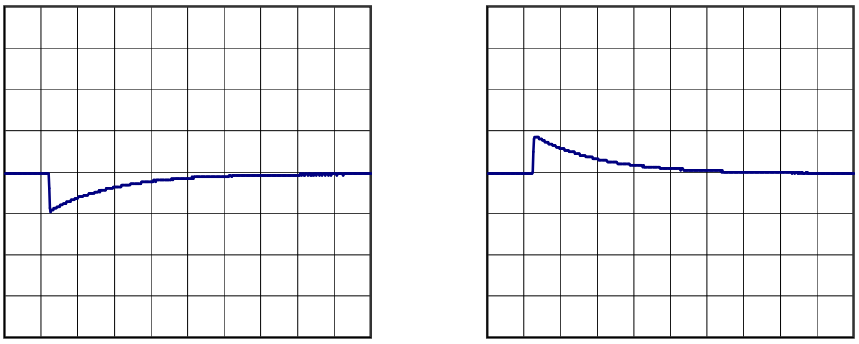
Min. Load (0A) ⟷
Load 100% (0.1A)



Min. Load (0A) ⟷
Load 50% (0.05A)



Load 50% (0.05A) ⟷
Load 100% (0.1A)



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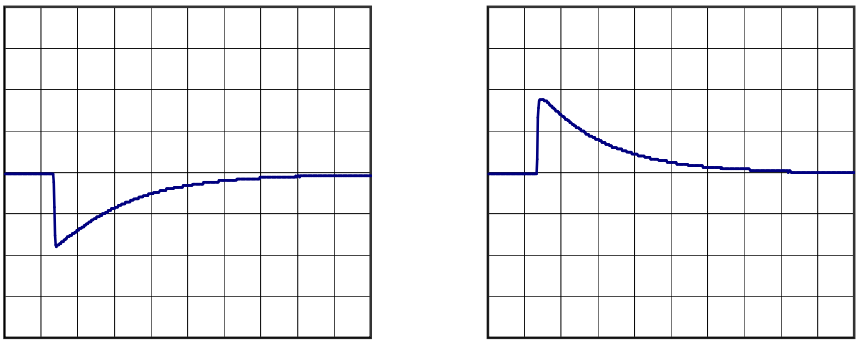
Model	SUTW32415
Item	Dynamic Load Response
Object	-15V0.1A

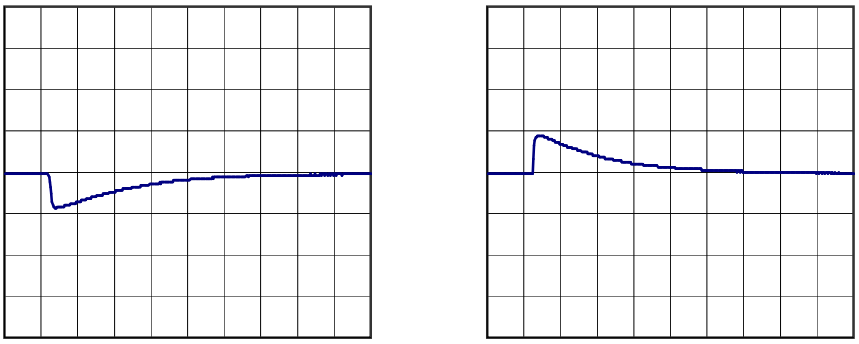
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 24 V
Cycle 100 mS

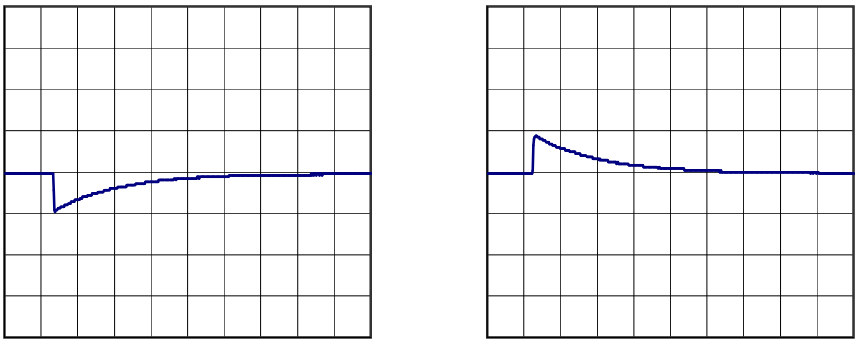
Min. Load (0A) ⟷
Load 100% (0.1A)



Min. Load (0A) ⟷
Load 50% (0.05A)



Load 50% (0.05A) ⟷
Load 100% (0.1A)



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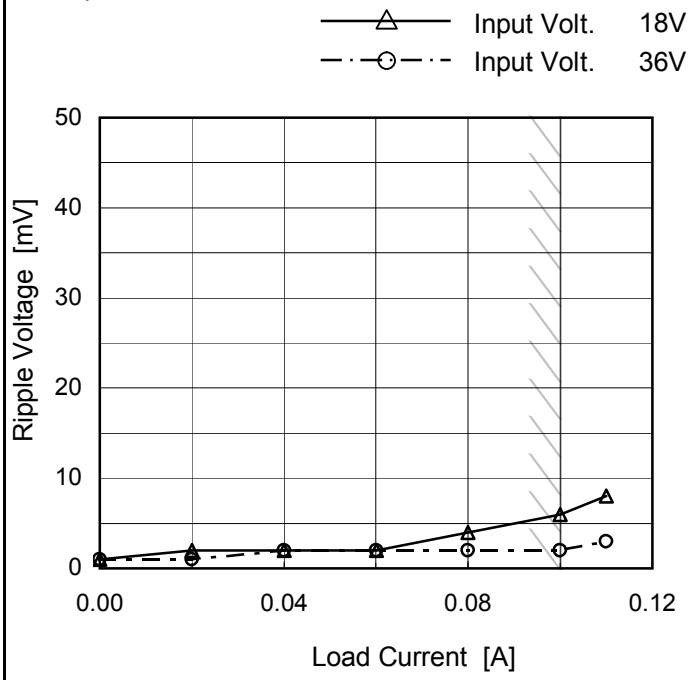
Model	SUTW32415
Item	Ripple Voltage (by Load Current)
Object	+15V0.1A

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]

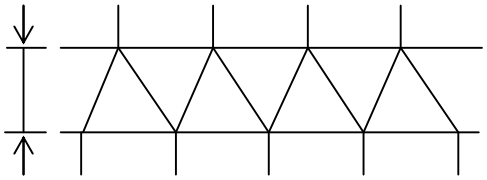


Fig.Complex Ripple Wave Form

2.Values

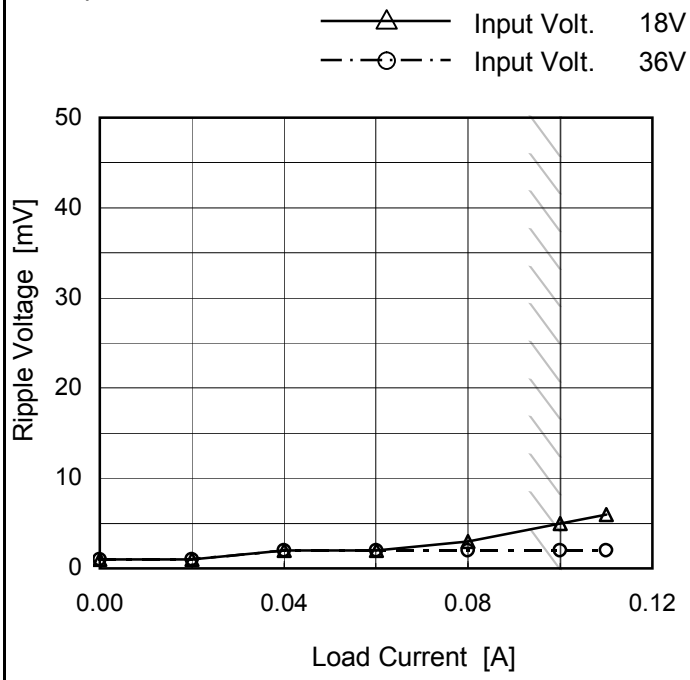
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	1	1
0.02	2	1
0.04	2	2
0.06	2	2
0.08	4	2
0.10	6	2
0.11	8	3
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW32415
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]

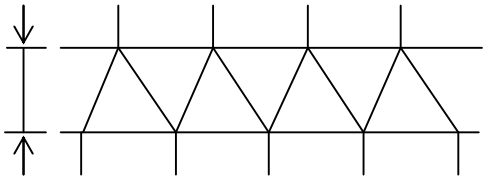


Fig.Complex Ripple Wave Form

2.Values

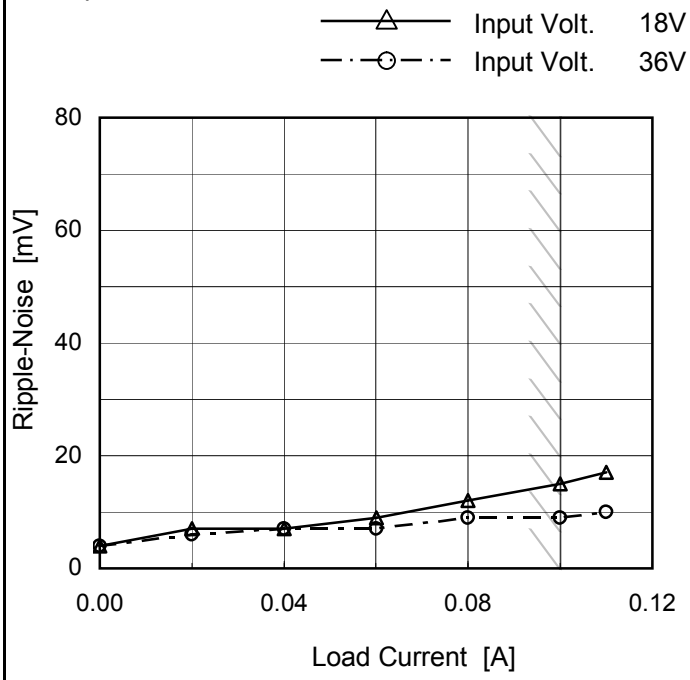
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	1	1
0.02	1	1
0.04	2	2
0.06	2	2
0.08	3	2
0.10	5	2
0.11	6	2
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW32415
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.

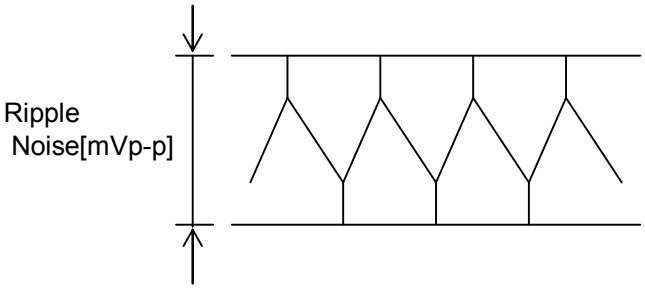


Fig.Complex Ripple Noise Wave Form

2.Values

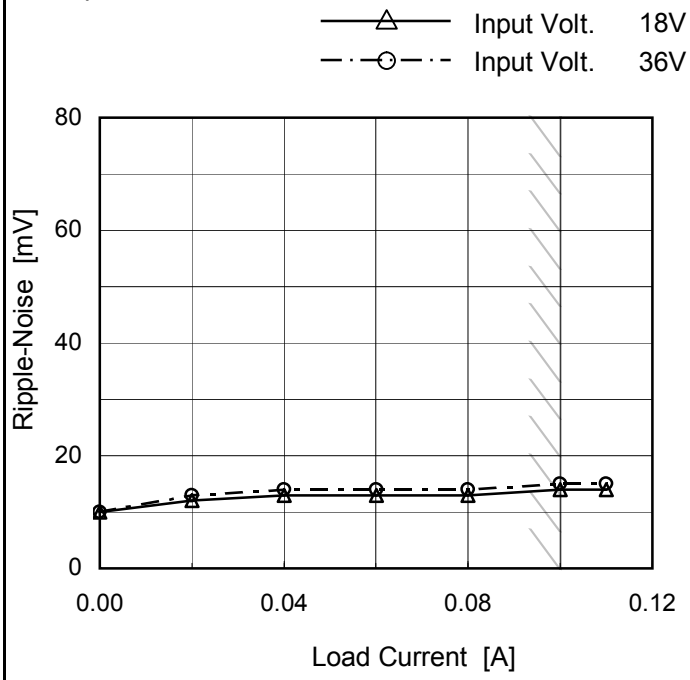
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	4	4
0.02	7	6
0.04	7	7
0.06	9	7
0.08	12	9
0.10	15	9
0.11	17	10
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW32415
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.

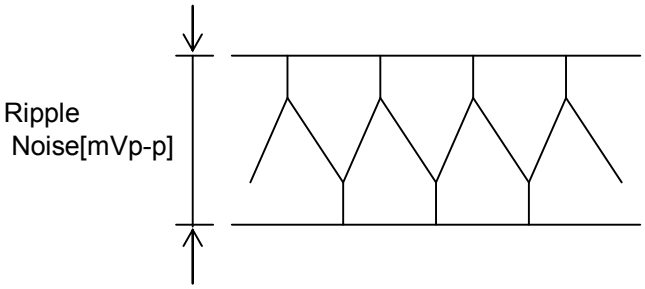


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	10	10
0.02	12	13
0.04	13	14
0.06	13	14
0.08	13	14
0.10	14	15
0.11	14	15
--	-	-
--	-	-
--	-	-
--	-	-

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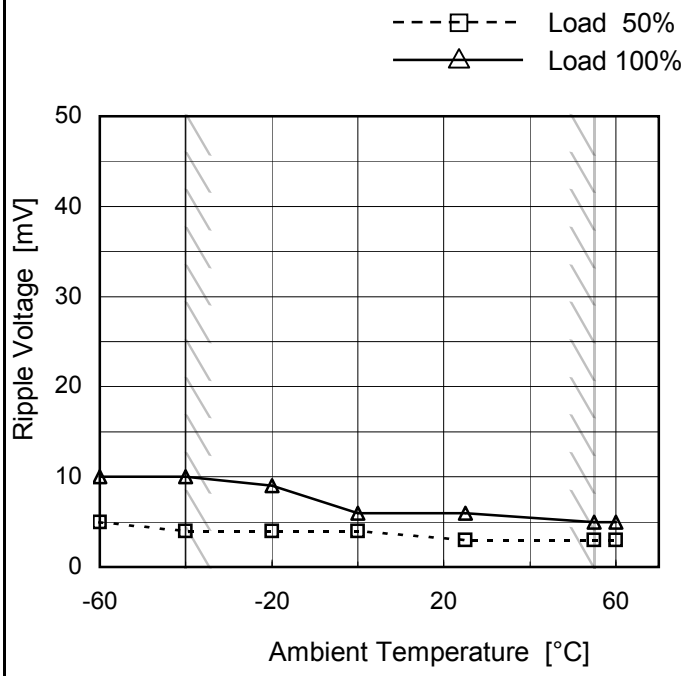
Model	SUTW32415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.1A

Testing Circuitry Figure B

1.Graph



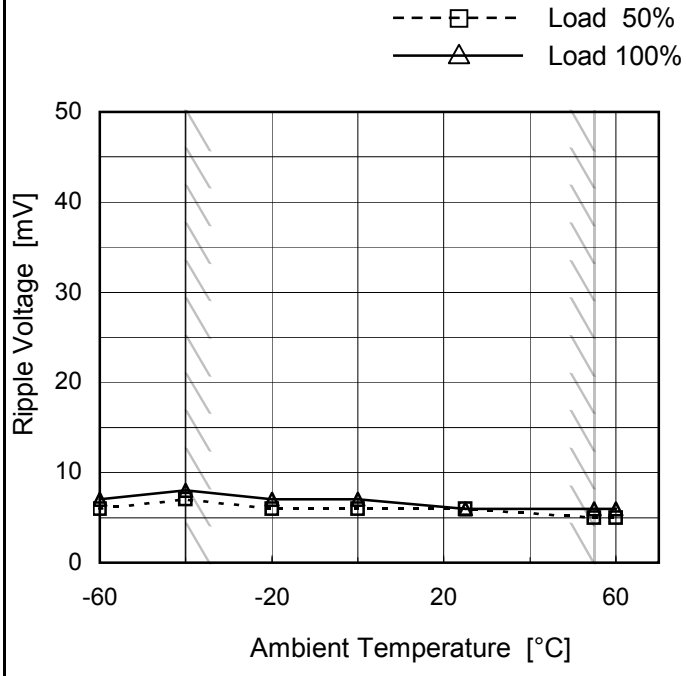
Input Volt. 24V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	5	10
-40	4	10
-20	4	9
0	4	6
25	3	6
55	3	5
60	3	5
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.1A

1.Graph



Input Volt. 24V

Measured by 100 MHz Oscilloscope.

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

2.Values

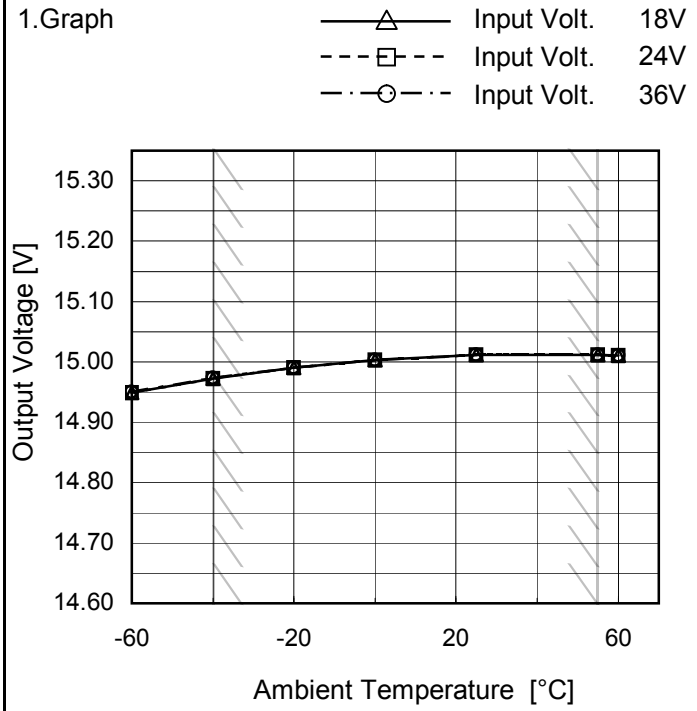
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	6	7
-40	7	8
-20	6	7
0	6	7
25	6	6
55	5	6
60	5	6
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW32415
Item	Ambient Temperature Drift
Object	+15V0.1A

Testing Circuitry Figure A

1.Graph



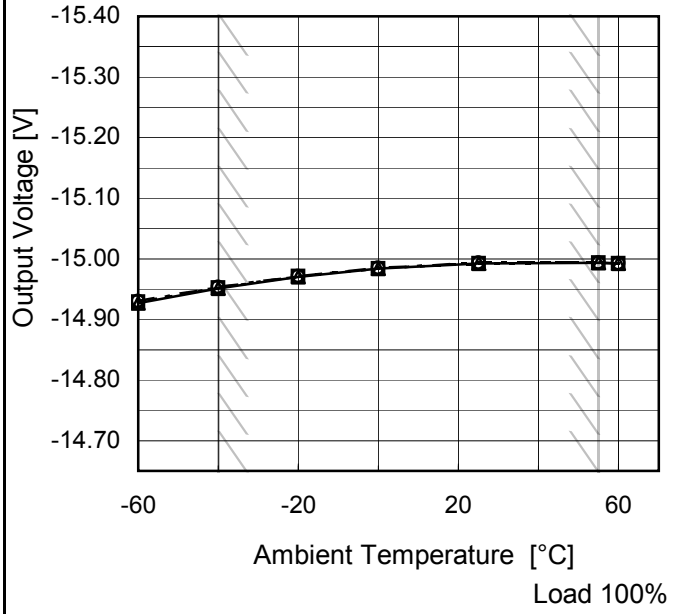
Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	14.949	14.949	14.950
-40	14.973	14.973	14.973
-20	14.990	14.990	14.991
0	15.004	15.003	15.003
25	15.012	15.011	15.011
55	15.012	15.011	15.011
60	15.011	15.010	15.010
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object -15V0.1A

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. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	-14.927	-14.929	-14.930
-40	-14.951	-14.953	-14.954
-20	-14.970	-14.971	-14.972
0	-14.984	-14.984	-14.984
25	-14.993	-14.993	-14.993
55	-14.993	-14.993	-14.993
60	-14.992	-14.992	-14.992
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUTW32415	
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 : 18 - 36V

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	18	0	15.251	±248	±1.7
Minimum Voltage	-40	18	0.1	14.755		

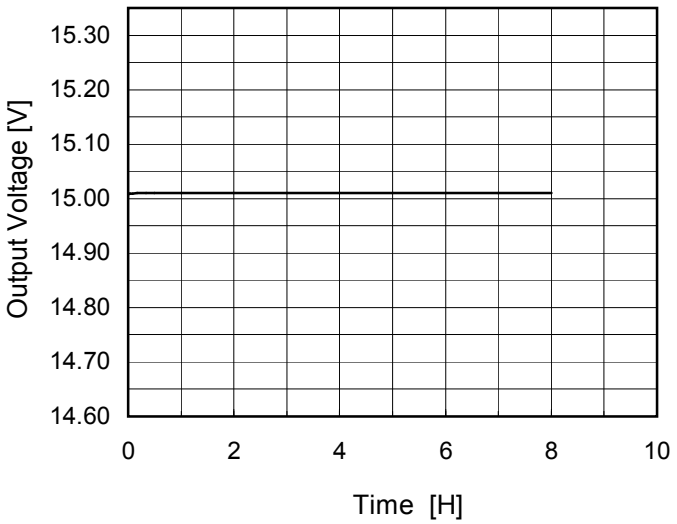
Object	-15V0.1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	18	0	-15.236	±249	±1.7
Minimum Voltage	-40	18	0.1	-14.739		

COSEL

Model	SUTW32415
Item	Time Lapse Drift
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



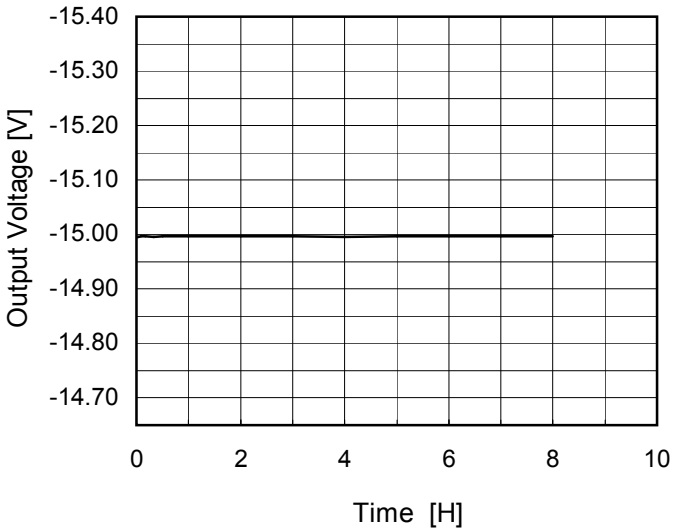
Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	15.007
0.5	15.010
1.0	15.010
2.0	15.010
3.0	15.010
4.0	15.010
5.0	15.010
6.0	15.010
7.0	15.010
8.0	15.010

Object	-15V0.1A

1.Graph



Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-14.994
0.5	-14.996
1.0	-14.996
2.0	-14.996
3.0	-14.996
4.0	-14.996
5.0	-14.996
6.0	-14.996
7.0	-14.996
8.0	-14.996

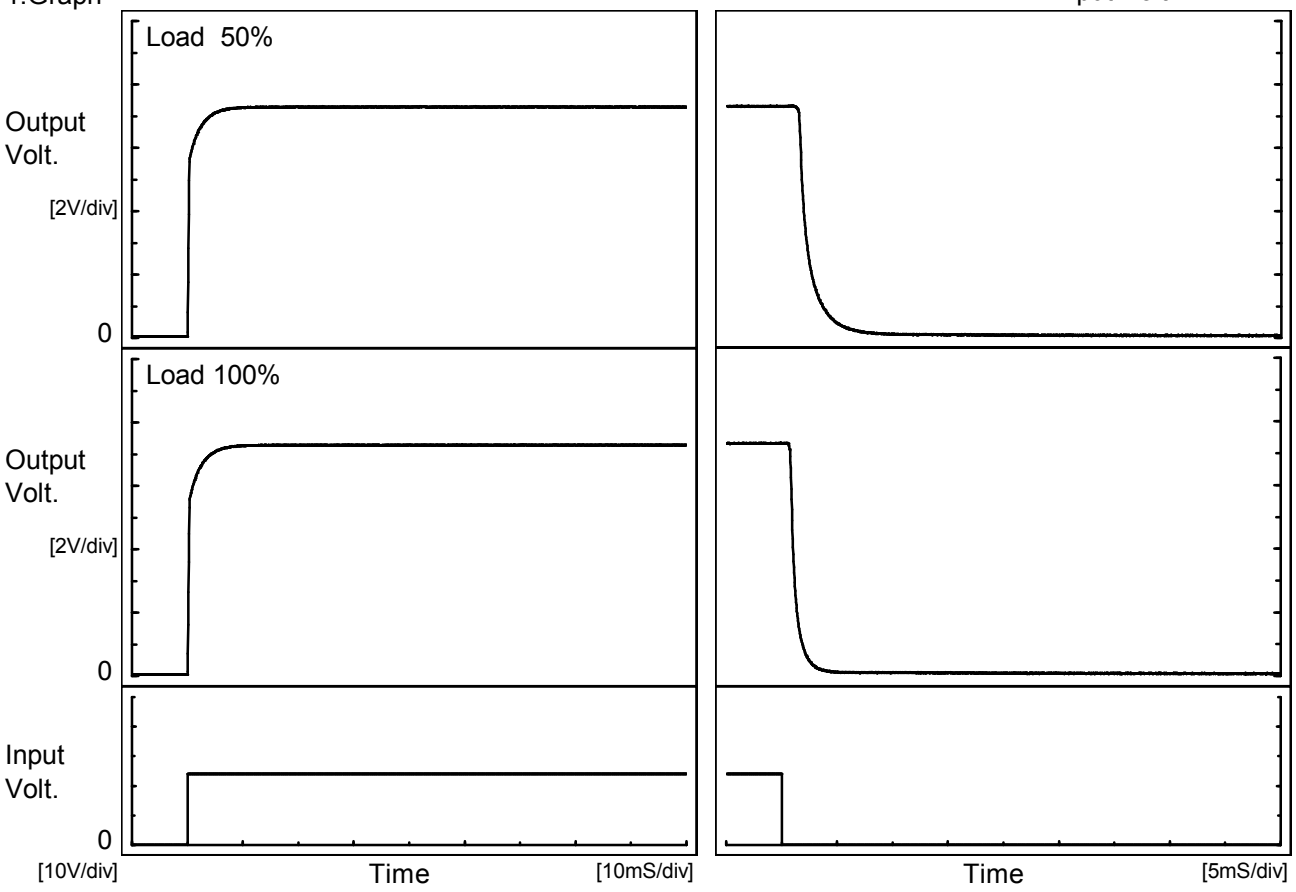
COSEL

Model	SUTW32415
Item	Rise and Fall Time
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

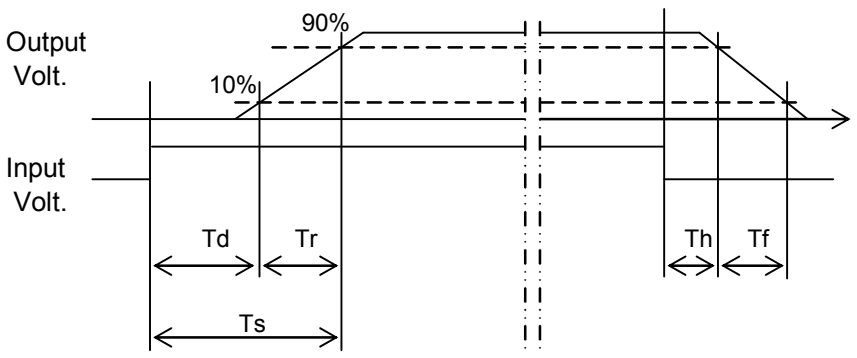
Input Volt. 24 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	2.8	2.9	1.6	2.4
100 %	0.2	2.9	3.1	0.8	1.3



BC-10255

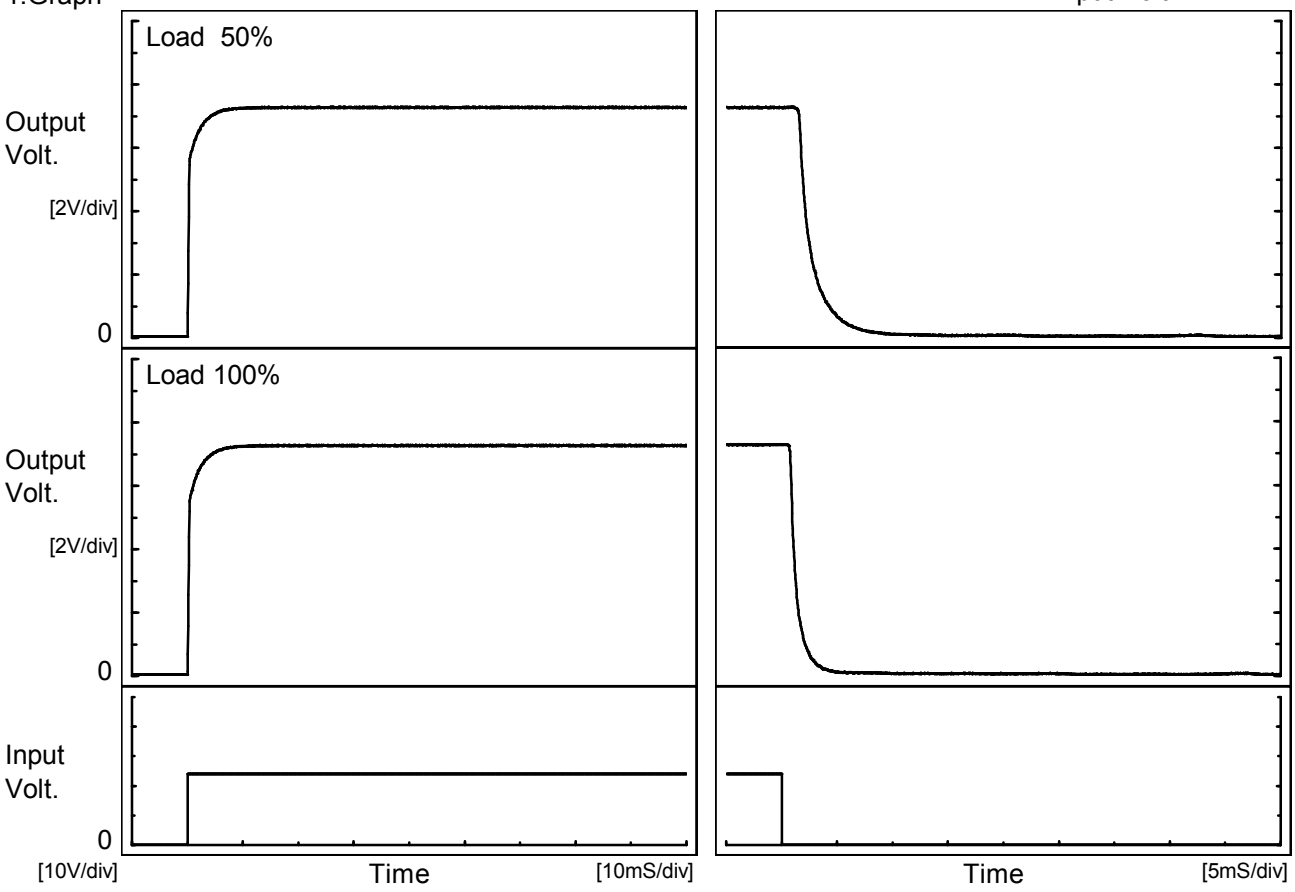
COSEL

Model	SUTW32415
Item	Rise and Fall Time
Object	-15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

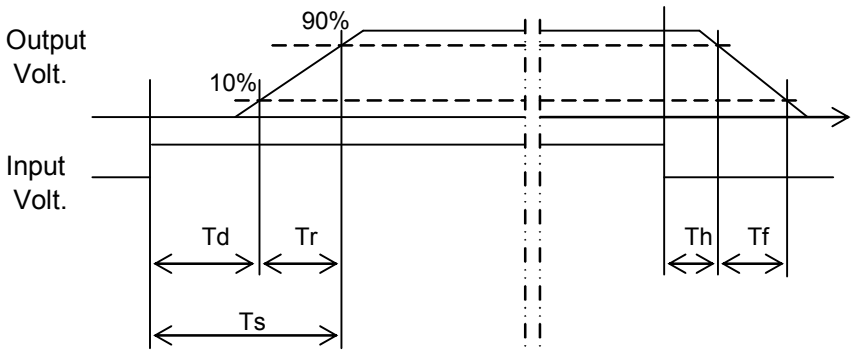
Input Volt. 24 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.2	2.8	3.0	1.6	3.1
100 %	0.2	3.0	3.2	0.8	1.6

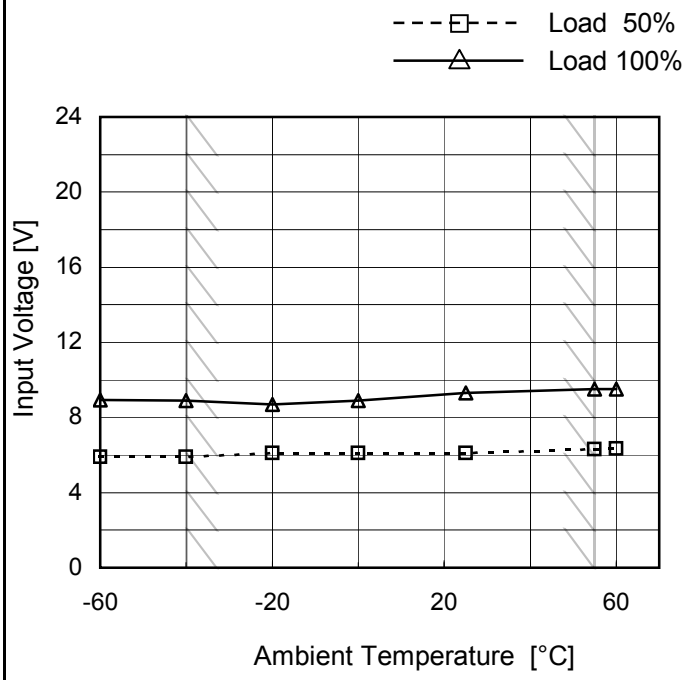


COSEL

Model	SUTW32415
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.1A

Testing Circuitry Figure A

1.Graph

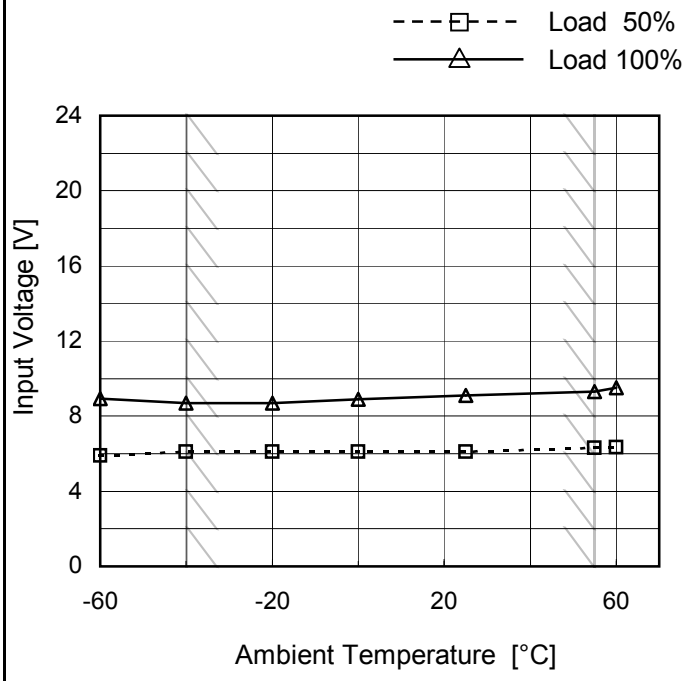


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	6.0	9.0
-40	5.9	8.9
-20	6.2	8.7
0	6.2	8.9
25	6.2	9.3
55	6.4	9.6
60	6.4	9.6
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.1A

1.Graph



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

2.Values

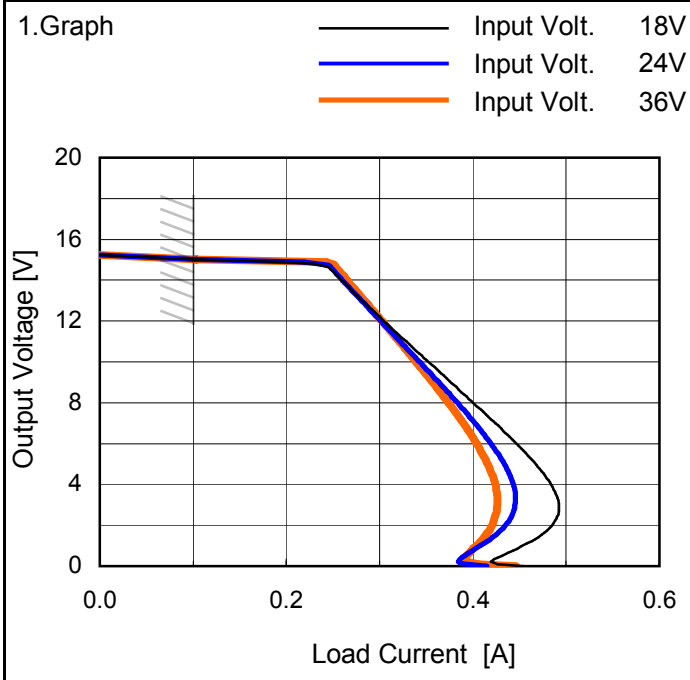
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	6.0	9.0
-40	6.1	8.7
-20	6.2	8.7
0	6.2	8.9
25	6.2	9.1
55	6.4	9.4
60	6.4	9.6
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUTW32415
Item	Overcurrent Protection
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

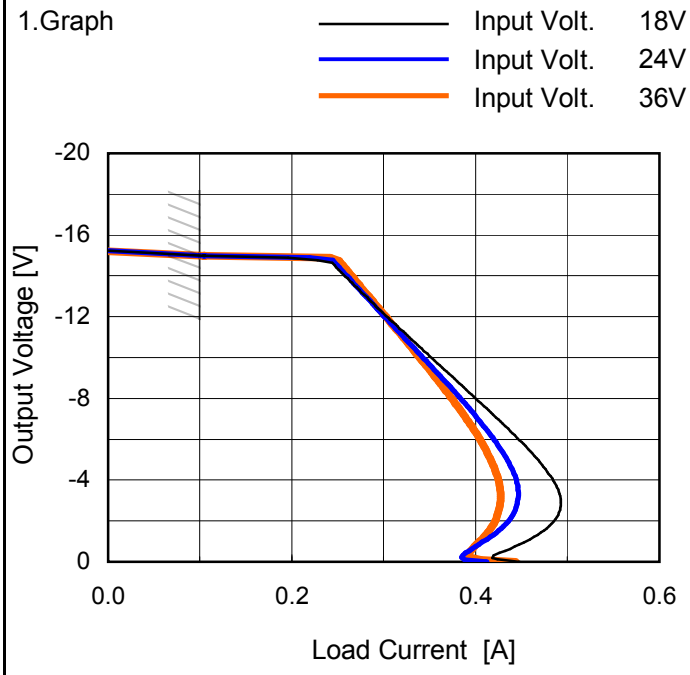


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
15.0	0.10	0.10	0.10
14.3	0.25	0.26	0.26
13.5	0.27	0.27	0.27
12.0	0.30	0.30	0.30
10.5	0.34	0.33	0.33
9.0	0.37	0.36	0.36
7.5	0.41	0.39	0.38
6.0	0.44	0.42	0.40
4.5	0.48	0.44	0.42
3.0	0.49	0.45	0.43
1.5	0.47	0.42	0.41
0.0	0.45	0.41	0.45

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. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-15.00	0.10	0.10	0.10
-14.25	0.25	0.25	0.26
-13.50	0.27	0.27	0.27
-12.00	0.30	0.30	0.30
-10.50	0.34	0.33	0.33
-9.00	0.37	0.36	0.36
-7.50	0.41	0.39	0.38
-6.00	0.45	0.42	0.40
-4.50	0.48	0.44	0.42
-3.00	0.49	0.45	0.43
-1.50	0.47	0.43	0.41
0.00	0.45	0.41	0.44

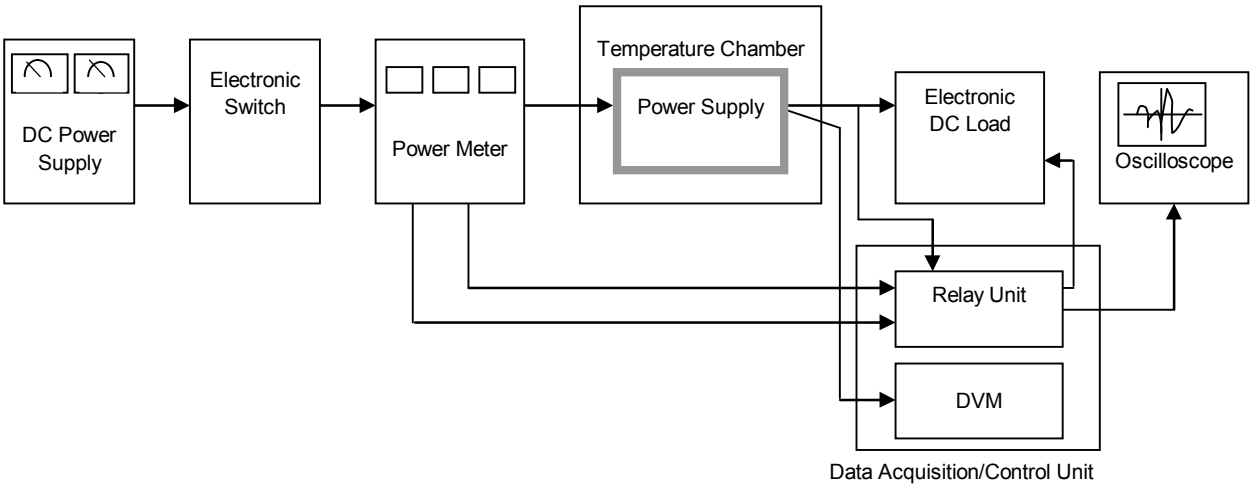


Figure A

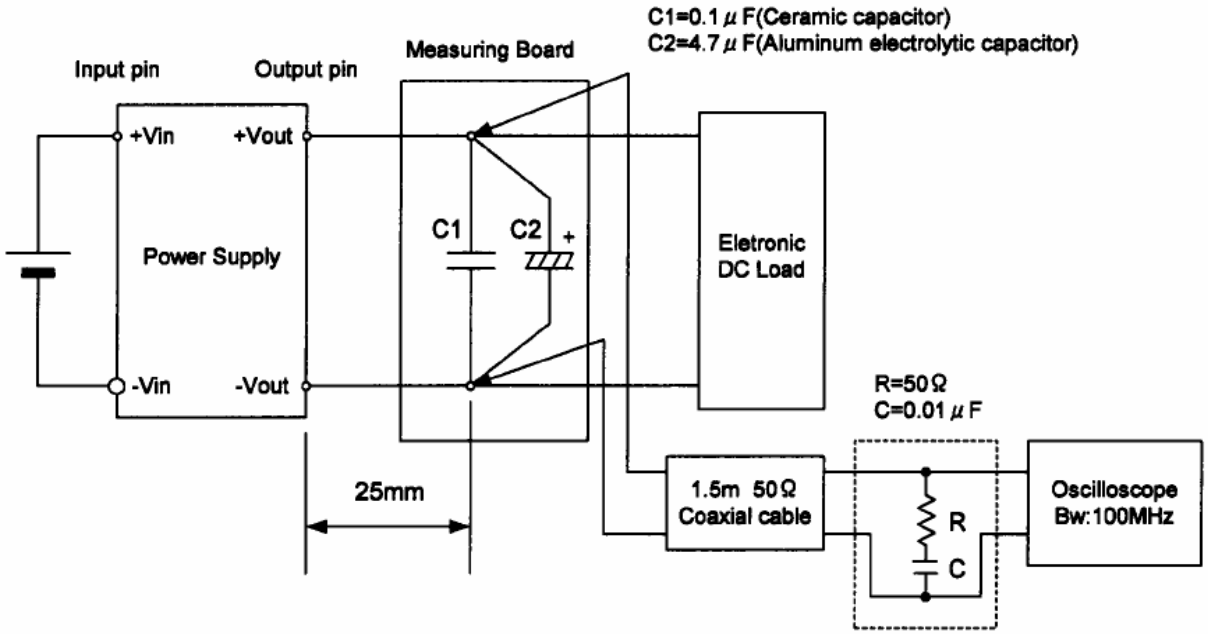


Figure B (Ripple and Ripple noise Characteristic)