

TEST DATA OF SUTW62415

Regulated DC Power Supply
March 17, 2009

Approved by : Kazunari Asano
Kazunari Asano Design Manager

Prepared by : Sho Saito Sho Saito Design Engineer

COSEL CO.,LTD.

CONTENTS

1. Input Current (by Input Voltage)	1
2. Input Current (by Load Current)	2
3. Input Power (by Load Current)	3
4. Efficiency (by Input Voltage)	4
5. Efficiency (by Load Current)	5
6. Line Regulation	6
7. Load Regulation	7
8. Dynamic Load Response	8
9. Ripple Voltage (by Load Current)	10
10. Ripple-Noise	12
11. Ripple Voltage (by Ambient Temperature)	14
12. Ambient Temperature Drift	15
13. Output Voltage Accuracy	16
14. Time Lapse Drift	17
15. Rise and Fall Time	18
16. Minimum Input Voltage for Regulated Output Voltage	20
17. Overcurrent Protection	21
18. Figure of Testing Circuitry	22

(Final Page 22)

Model	SUTW62415	Temperature Testing Circuitry 25°C Figure A																																																																																		
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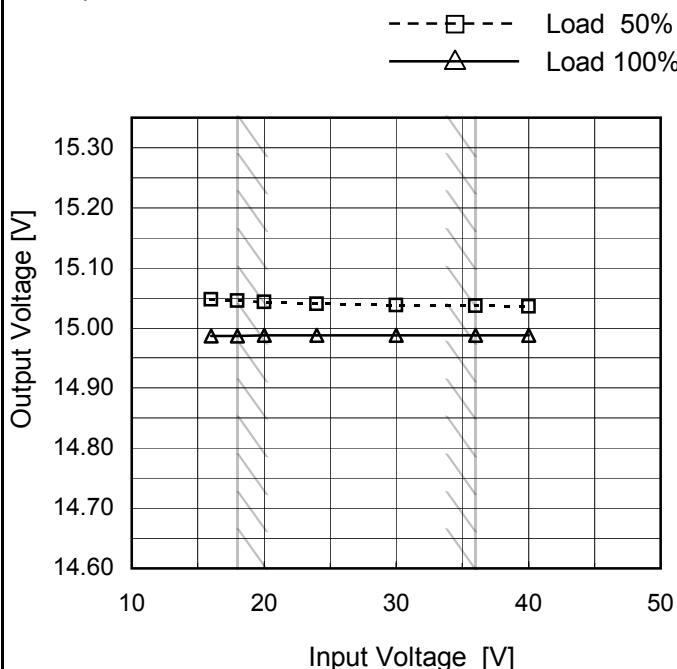
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<p>The graph plots Efficiency [%] on the y-axis (30 to 100) against Input Voltage [V] on the x-axis (10 to 50). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a general downward trend as input voltage increases. A slanted line on the graph indicates the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Efficiency Load 50% [%]</th> <th>Efficiency Load 100% [%]</th> </tr> </thead> <tbody> <tr><td>16</td><td>81.3</td><td>85.6</td></tr> <tr><td>18</td><td>81.3</td><td>86.0</td></tr> <tr><td>20</td><td>80.2</td><td>86.0</td></tr> <tr><td>24</td><td>79.5</td><td>85.7</td></tr> <tr><td>30</td><td>76.4</td><td>84.8</td></tr> <tr><td>36</td><td>73.3</td><td>83.4</td></tr> <tr><td>40</td><td>71.1</td><td>82.4</td></tr> </tbody> </table>		Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	16	81.3	85.6	18	81.3	86.0	20	80.2	86.0	24	79.5	85.7	30	76.4	84.8	36	73.3	83.4	40	71.1	82.4
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Model	SUTW62415
Item	Line Regulation
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

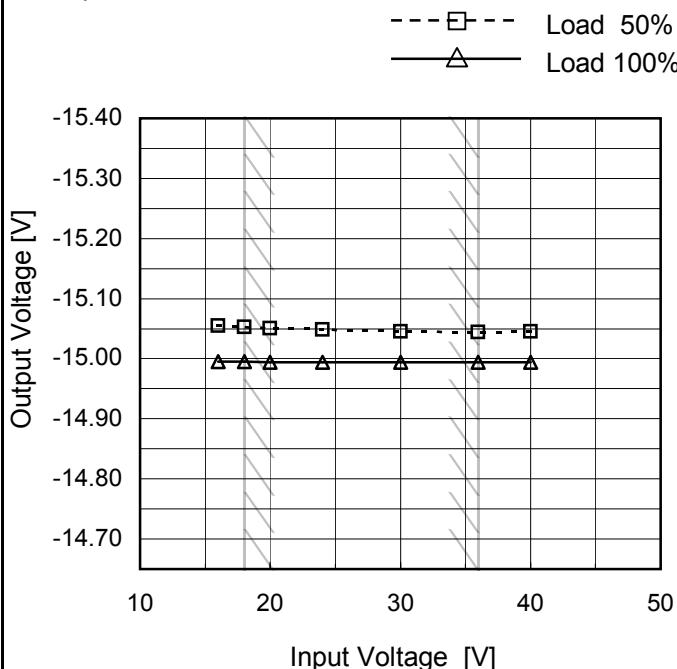


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
16	15.048	14.986
18	15.045	14.987
20	15.044	14.988
24	15.041	14.988
30	15.038	14.988
36	15.036	14.987
40	15.035	14.988
--	-	-
--	-	-

Object -15V0.2A

1.Graph

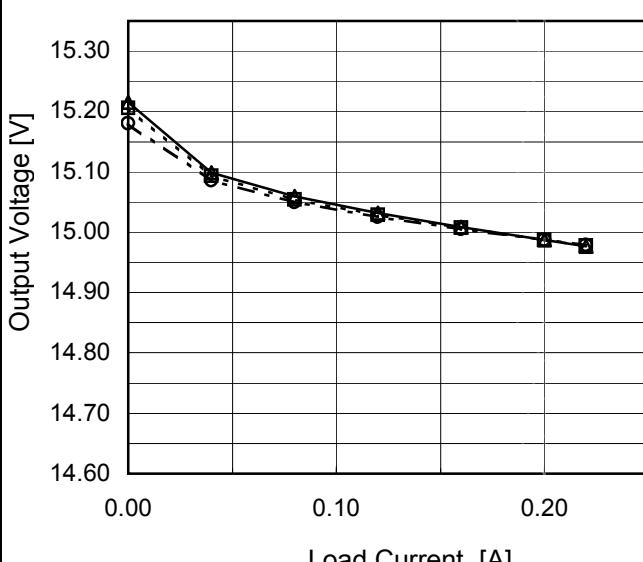
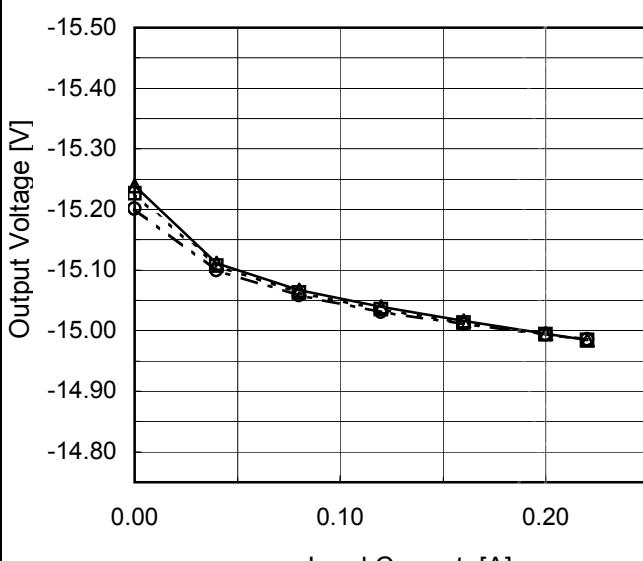


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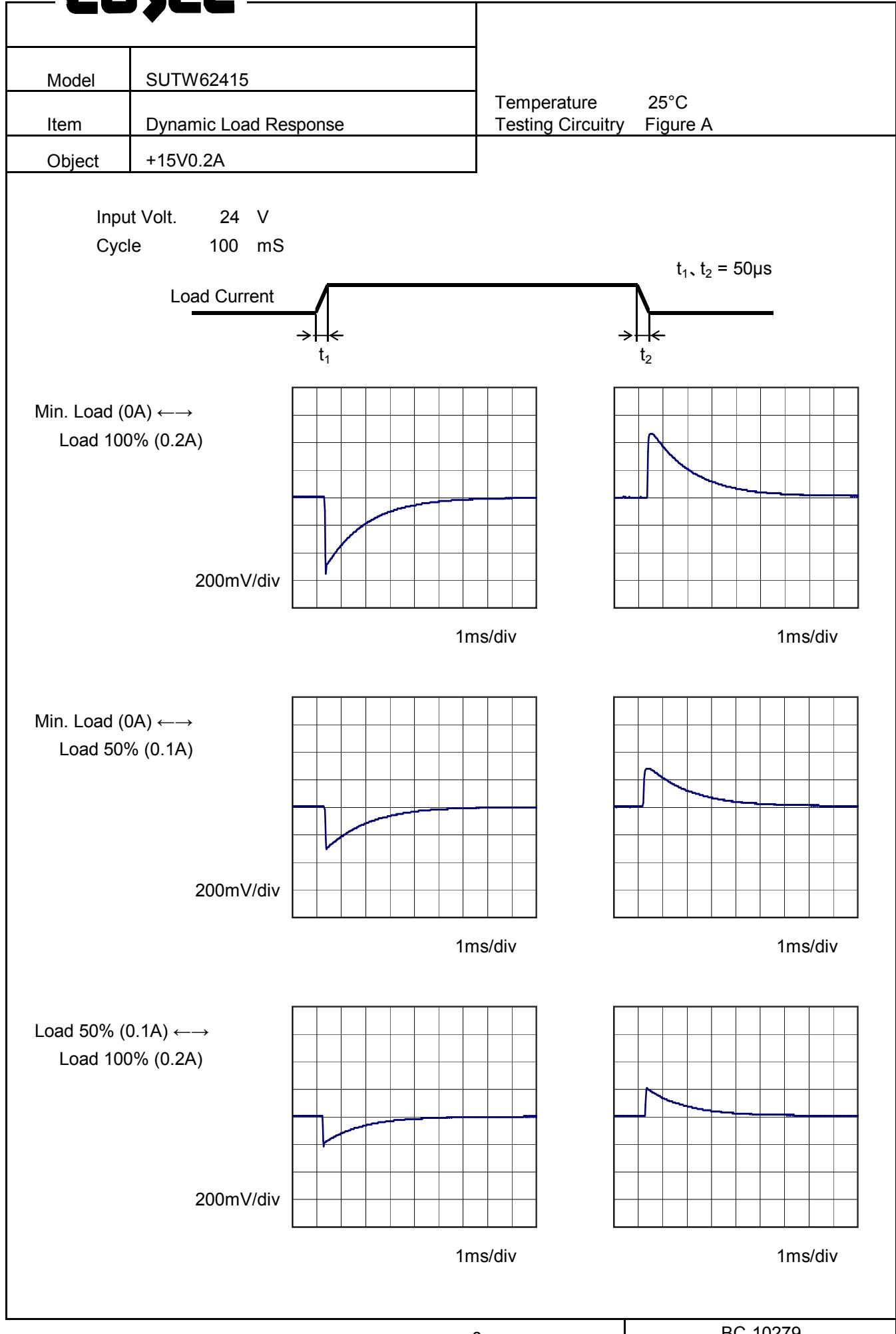
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
16	-15.055	-14.995
18	-15.053	-14.995
20	-15.051	-14.994
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Note: Slanted line shows the range of the rated input voltage.

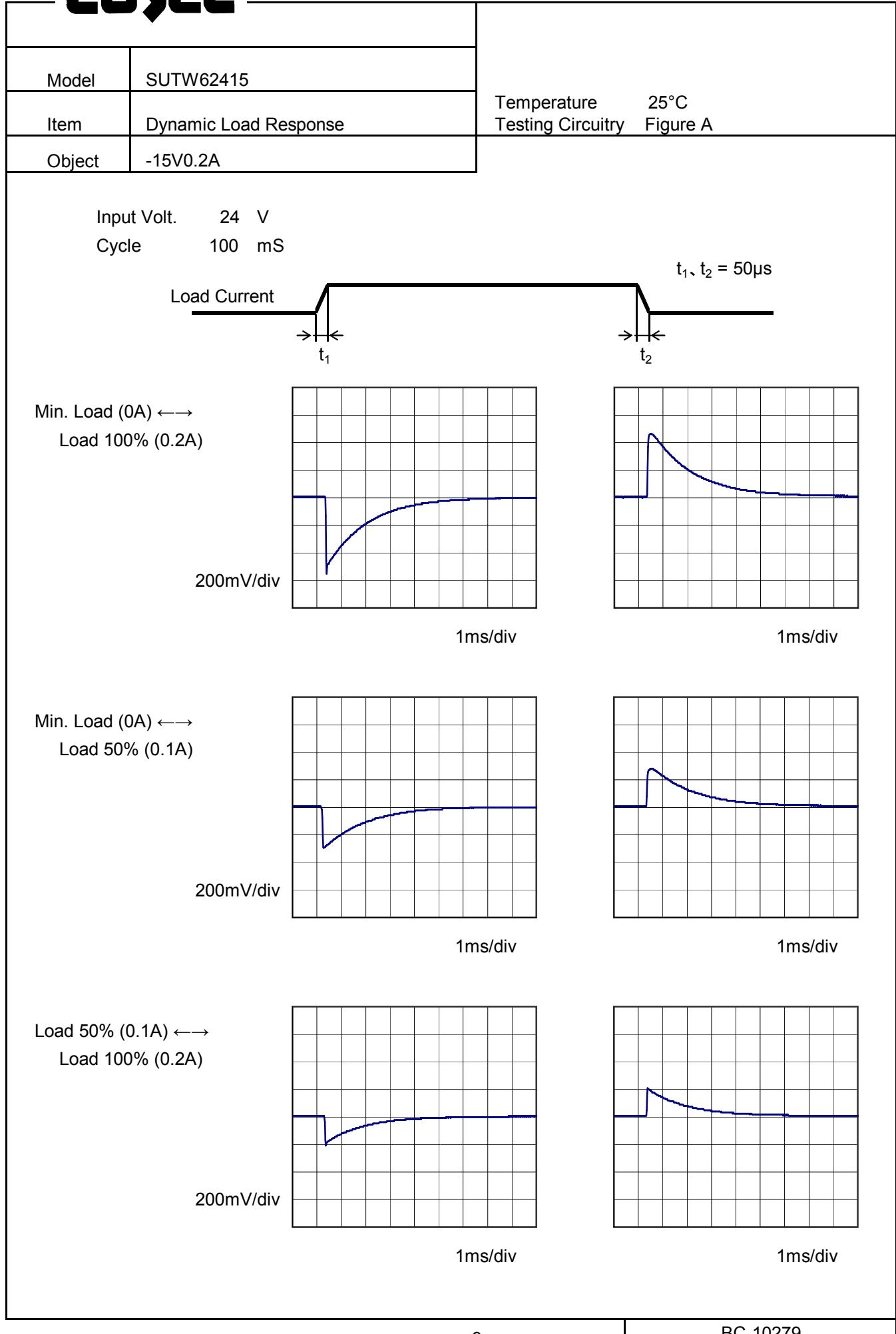
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COSEL



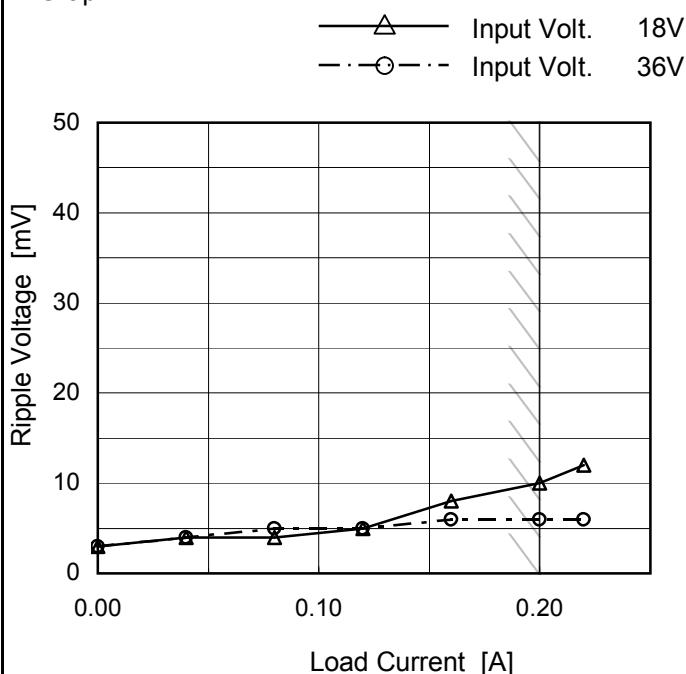
COSEL



Model	SUTW62415
Item	Ripple Voltage (by Load Current)
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure B

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	3	3
0.04	4	4
0.08	4	5
0.12	5	5
0.16	8	6
0.20	10	6
0.22	12	6
--	-	-
--	-	-
--	-	-
--	-	-

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]

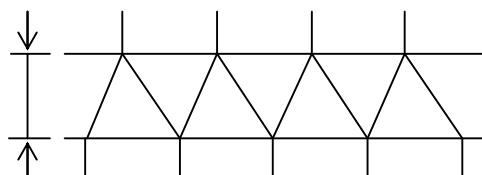
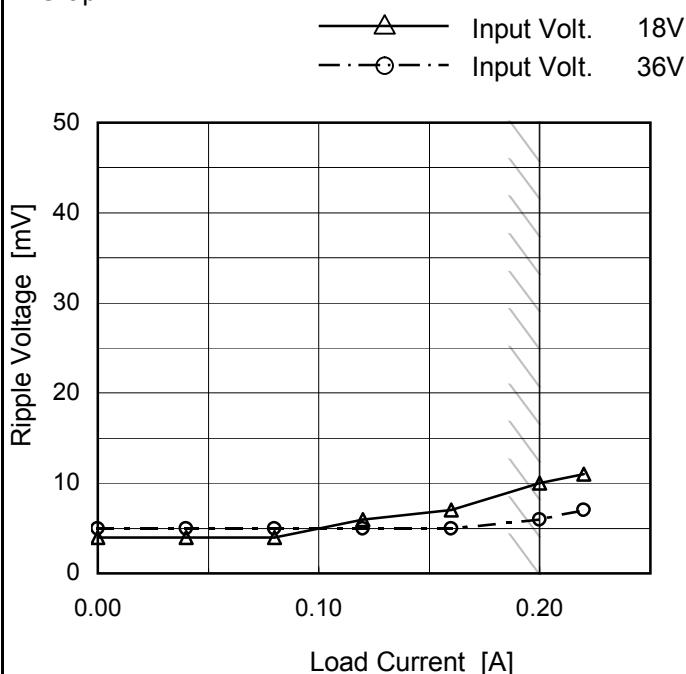


Fig.Complex Ripple Wave Form

Model	SUTW62415
Item	Ripple Voltage (by Load Current)
Object	-15V0.2A

Temperature 25°C
Testing Circuitry Figure B

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	4	5
0.04	4	5
0.08	4	5
0.12	6	5
0.16	7	5
0.20	10	6
0.22	11	7
--	-	-
--	-	-
--	-	-
--	-	-

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]

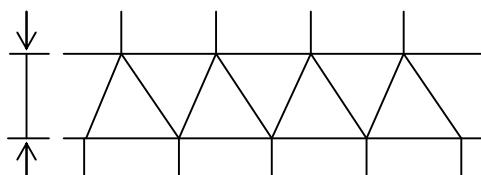


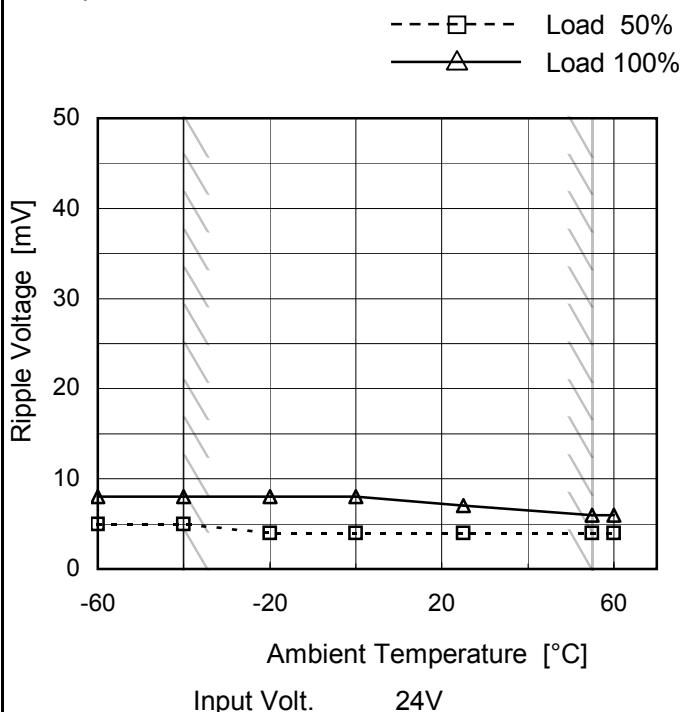
Fig.Complex Ripple Wave Form

Model	SUTW62415																																							
Item	Ripple-Noise	Temperature Testing Circuitry 25°C Figure B																																						
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<p>Graph showing Ripple-Noise [mV] vs Load Current [A]. The Y-axis ranges from 0 to 80 mV. The X-axis ranges from 0.00 to 0.20 A. Two data series are plotted: Input Volt. 18V (solid line with open triangle markers) and Input Volt. 36V (dashed line with open circle markers). Both series show a slight increase in noise as load current increases. A slanted line indicates the range of rated load current.</p>																																								
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Model	SUTW62415																																							
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Model	SUTW62415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.2A

1.Graph

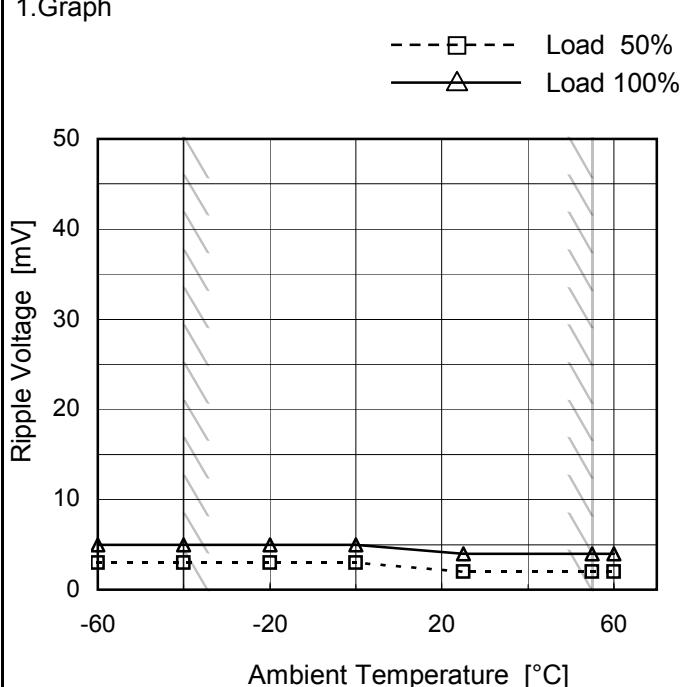


Testing Circuitry Figure B

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	5	8
-40	5	8
-20	4	8
0	4	8
25	4	7
55	4	6
60	4	6
--	-	-
--	-	-
--	-	-
--	-	-

1.Graph

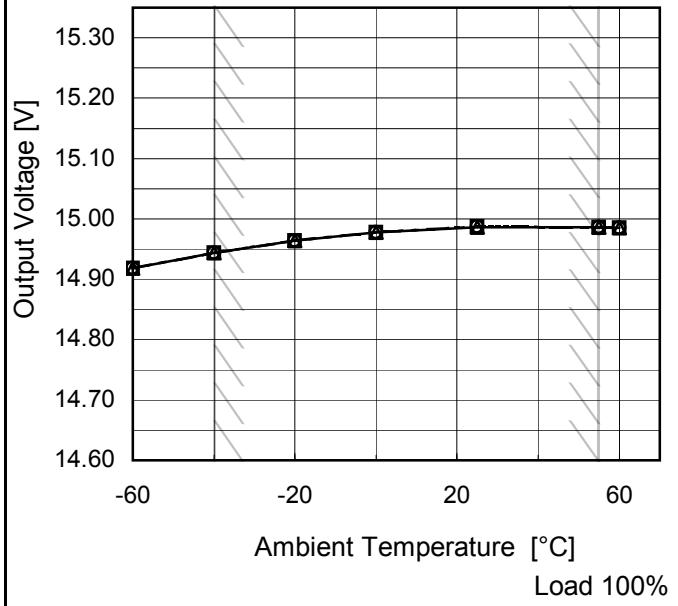
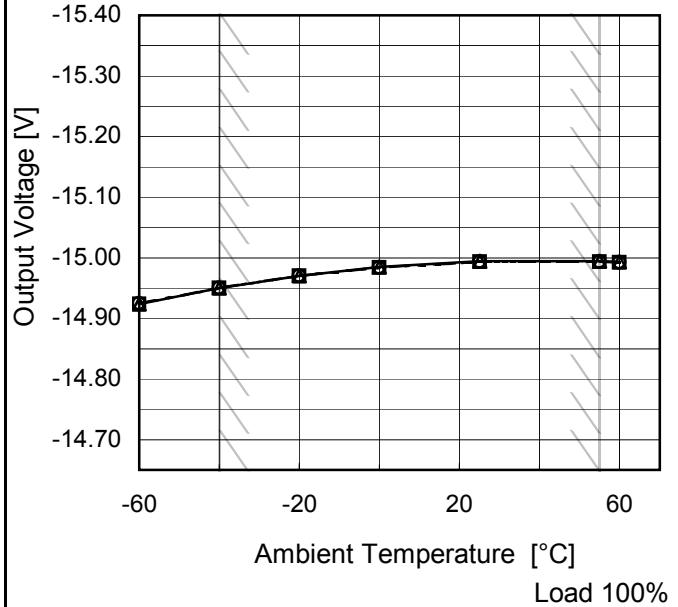


2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	3	5
-40	3	5
-20	3	5
0	3	5
25	2	4
55	2	4
60	2	4
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.

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

Model	SUTW62415	Testing Circuitry Figure A																															
Item	Ambient Temperature Drift																																
Object	+15V0.2A																																
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2.Values																																	
Note:	Slanted line shows the range of the rated ambient temperature.																																



Model	SUTW62415	Testing Circuitry Figure A
Item	Output Voltage Accuracy	

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

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

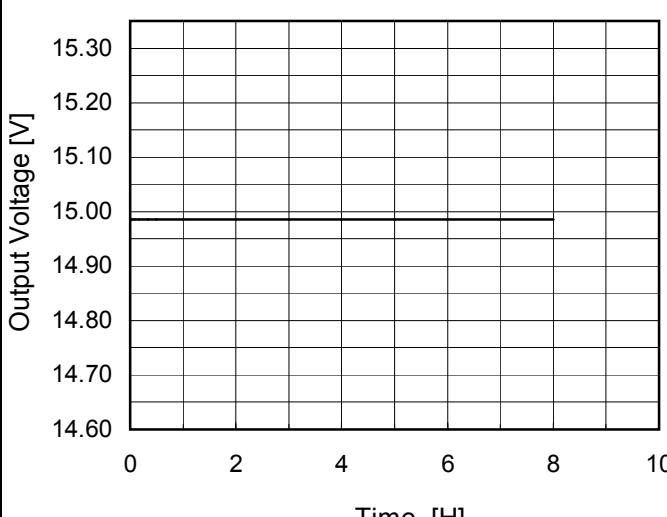
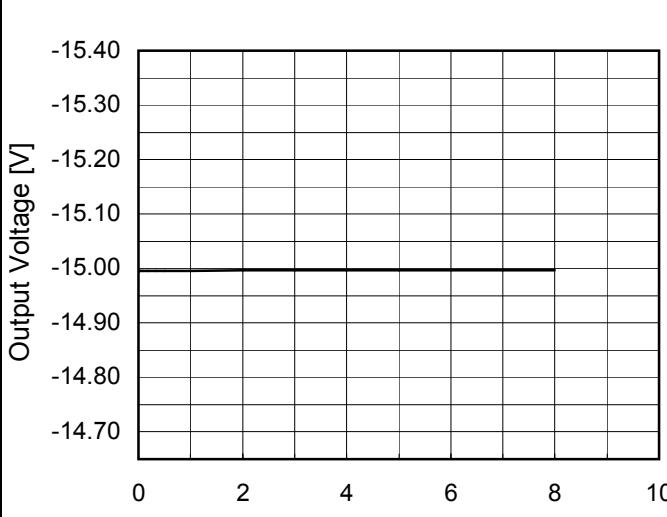
$$\text{* Output Voltage Accuracy (Ratio)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2. Values

Object	+15V0.2A		Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]	Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	18		0	15.223	
Minimum Voltage	-40	18	0.2	14.729	±247	±1.6

Object	-15V0.2A		Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]	Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	18		0	-15.247	
Minimum Voltage	-40	18	0.2	-14.757	±245	±1.6

COSEL

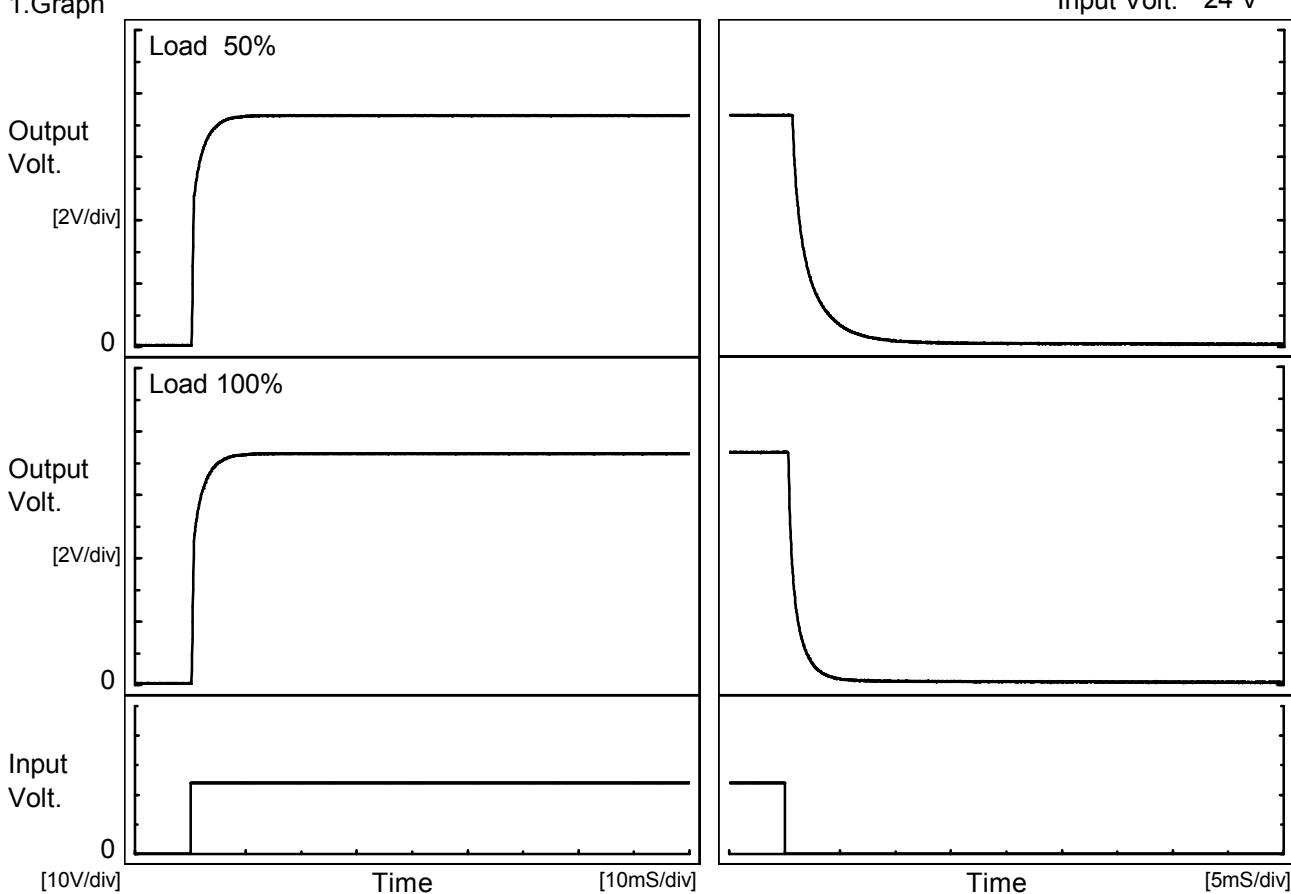
Model	SUTW62415	Temperature Testing Circuitry	25°C Figure A																						
Item	Time Lapse Drift																								
Object	+15V0.2A																								
1.Graph			2.Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 24V</p> <p>Load 100%</p>			<table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>14.983</td></tr> <tr><td>0.5</td><td>14.986</td></tr> <tr><td>1.0</td><td>14.986</td></tr> <tr><td>2.0</td><td>14.986</td></tr> <tr><td>3.0</td><td>14.986</td></tr> <tr><td>4.0</td><td>14.986</td></tr> <tr><td>5.0</td><td>14.986</td></tr> <tr><td>6.0</td><td>14.986</td></tr> <tr><td>7.0</td><td>14.986</td></tr> <tr><td>8.0</td><td>14.986</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	14.983	0.5	14.986	1.0	14.986	2.0	14.986	3.0	14.986	4.0	14.986	5.0	14.986	6.0	14.986	7.0	14.986	8.0	14.986
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Object			2.Values																						
1.Graph			<table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>-14.993</td></tr> <tr><td>0.5</td><td>-14.996</td></tr> <tr><td>1.0</td><td>-14.996</td></tr> <tr><td>2.0</td><td>-14.996</td></tr> <tr><td>3.0</td><td>-14.996</td></tr> <tr><td>4.0</td><td>-14.996</td></tr> <tr><td>5.0</td><td>-14.996</td></tr> <tr><td>6.0</td><td>-14.996</td></tr> <tr><td>7.0</td><td>-14.996</td></tr> <tr><td>8.0</td><td>-14.996</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	-14.993	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
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COSEL

Model	SUTW62415
Item	Rise and Fall Time
Object	+15V0.2A

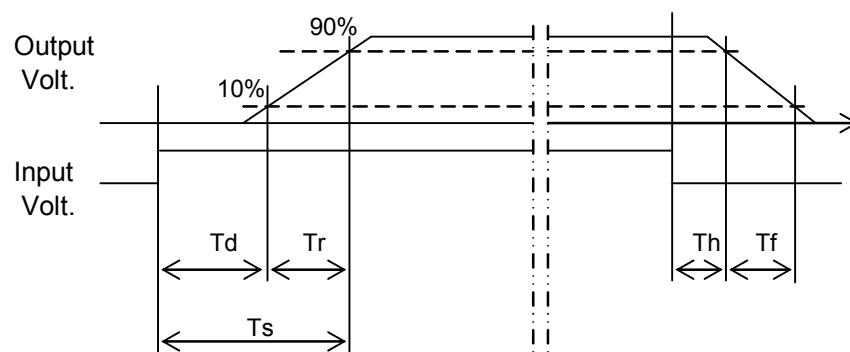
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[mS]
50 %		0.3	3.5	3.8	0.7	3.9	
100 %		0.3	3.6	3.9	0.4	1.9	

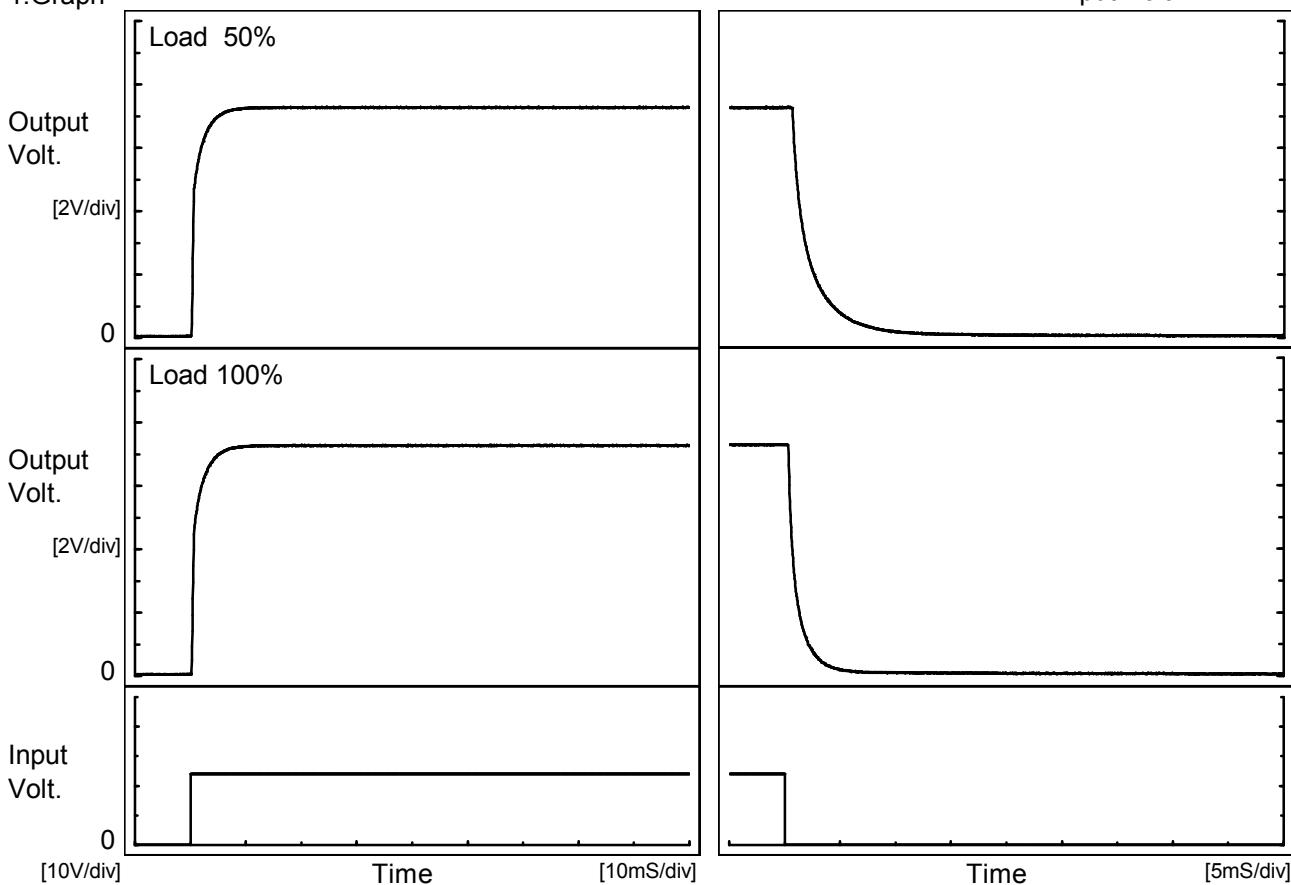


COSEL

Model	SUTW62415
Item	Rise and Fall Time
Object	-15V0.2A

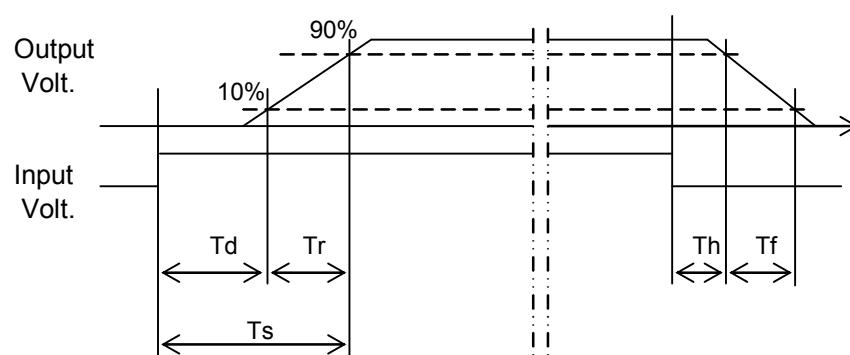
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf
50 %		0.3	3.6	3.9	0.7	4.2
100 %		0.3	3.7	4.0	0.4	2.2

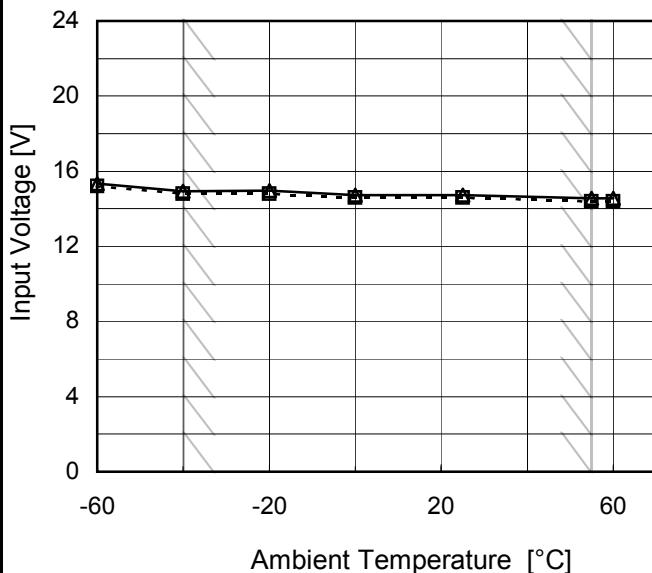


COSEL

Model	SUTW62415
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.2A

1.Graph

---□--- Load 50%
—△— Load 100%



Testing Circuitry Figure A

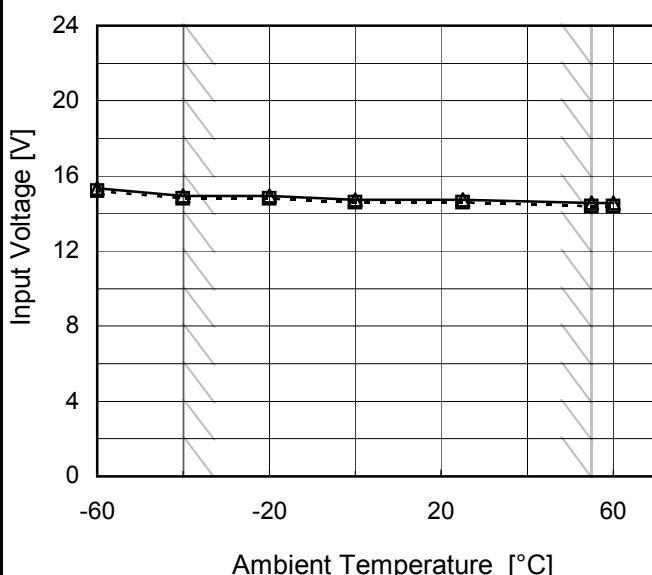
2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.2	15.4
-40	14.8	15.0
-20	14.8	15.0
0	14.6	14.8
25	14.6	14.8
55	14.4	14.6
60	14.4	14.6
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.2A
--------	----------

1.Graph

---□--- Load 50%
—△— Load 100%



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.2	15.4
-40	14.8	15.0
-20	14.8	15.0
0	14.6	14.8
25	14.6	14.8
55	14.4	14.6
60	14.4	14.6
--	-	-
--	-	-
--	-	-
--	-	-

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

Model	SUTW62415																																																										
Item	Overcurrent Protection	Temperature Testing Circuitry																																																									
Object	+15V0.2A	25°C Figure A																																																									
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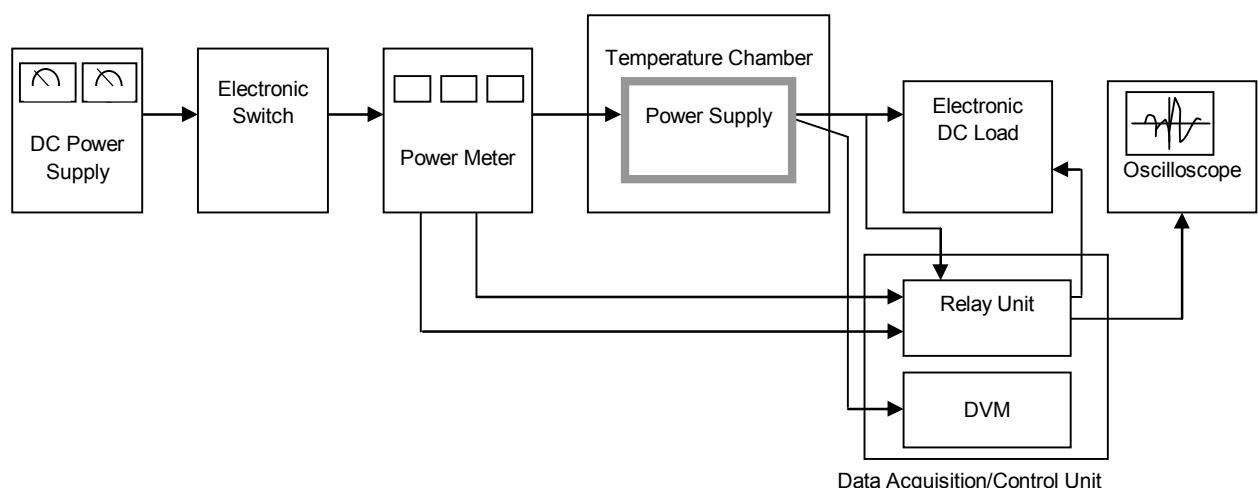


Figure A

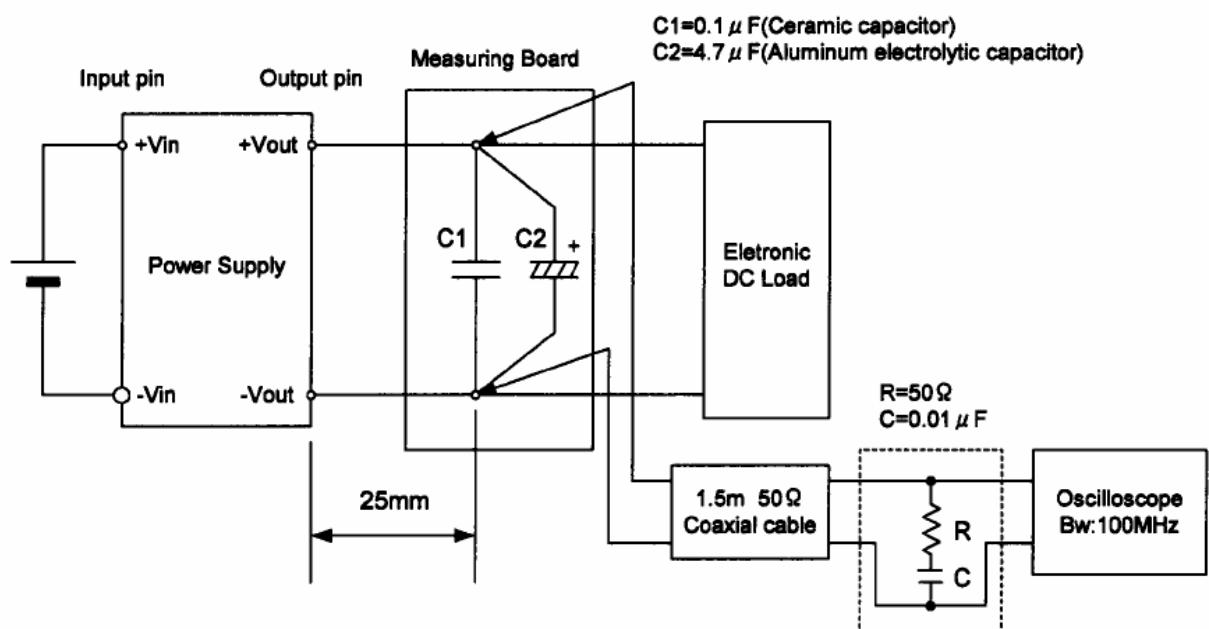


Figure B (Ripple and Ripple noise Characteristic)