

TEST DATA OF MGS154815

Regulated DC Power Supply
September 8, 2010

Approved by : Kazunari Asano
Kazunari Asano Design Manager

Prepared by : Hidetaka Kobayashi
Hidetaka Kobayashi Design Engineer

COSEL CO.,LTD.

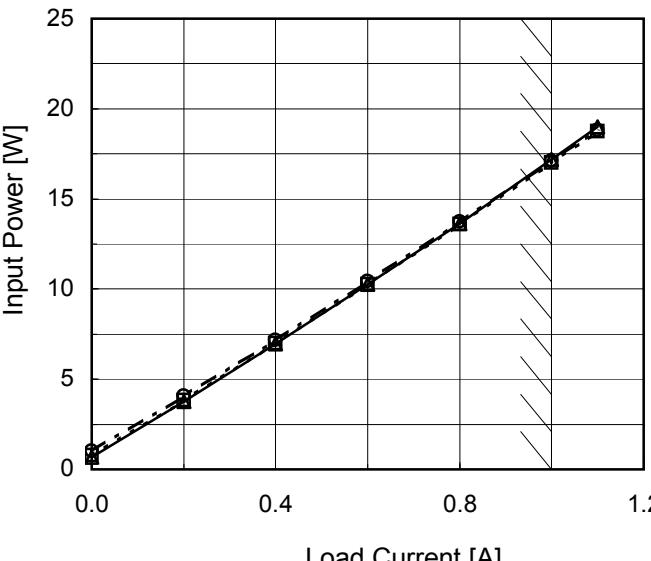
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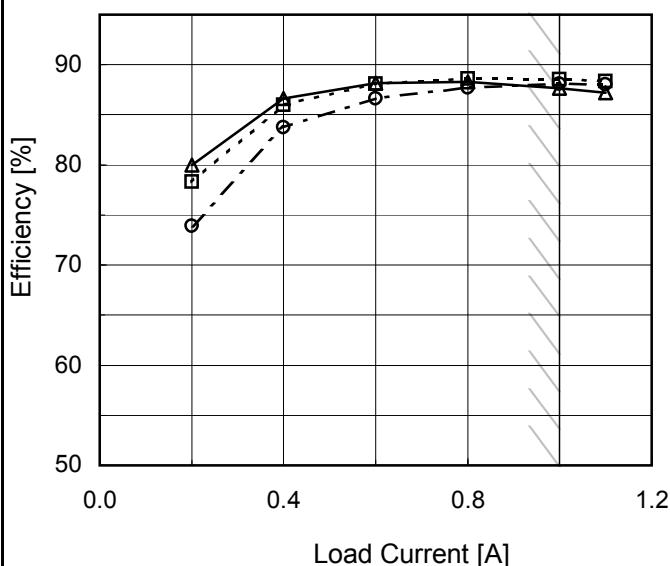
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<p>The graph plots Efficiency [%] on the y-axis (50 to 90) against Input Voltage [V] on the x-axis (20 to 80). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a slight decrease in efficiency as input voltage increases. A slanted line 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>34</td><td>87.5</td><td>87.4</td></tr> <tr><td>36</td><td>87.7</td><td>87.6</td></tr> <tr><td>40</td><td>87.7</td><td>88.0</td></tr> <tr><td>48</td><td>87.4</td><td>88.5</td></tr> <tr><td>60</td><td>87.0</td><td>88.5</td></tr> <tr><td>76</td><td>85.7</td><td>87.9</td></tr> <tr><td>80</td><td>85.4</td><td>87.8</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>		Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	34	87.5	87.4	36	87.7	87.6	40	87.7	88.0	48	87.4	88.5	60	87.0	88.5	76	85.7	87.9	80	85.4	87.8	--	-	-	--	-	-
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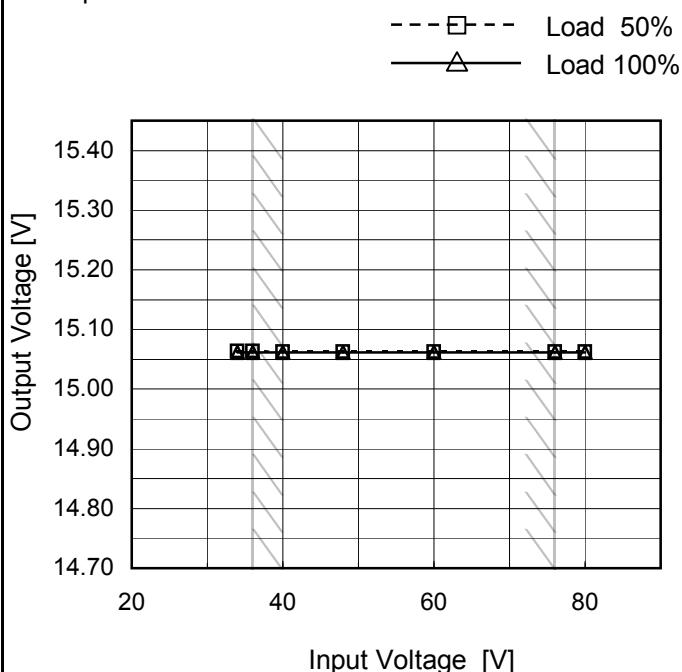
Note: Slanted line shows the range of the rated load current.

Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
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0.2	80.0	78.3	73.9
0.4	86.6	86.0	83.7
0.6	88.1	88.1	86.6
0.8	88.3	88.6	87.7
1.0	87.7	88.5	88.1
1.1	87.2	88.3	88.0
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Model	MGS154815
Item	Line Regulation
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

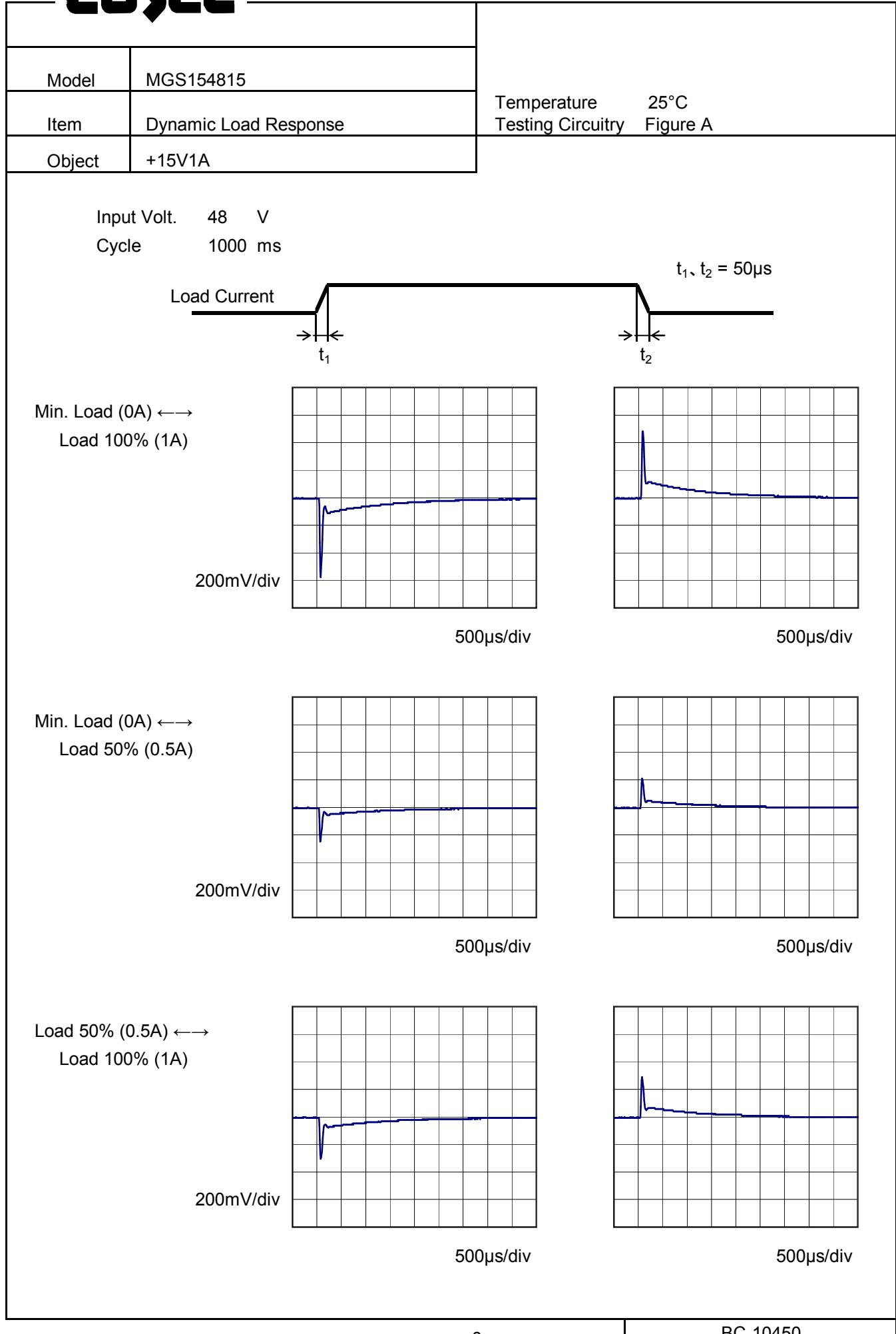
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
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36	15.063	15.061
40	15.063	15.062
48	15.063	15.062
60	15.063	15.062
76	15.063	15.062
80	15.062	15.062
--	-	-
--	-	-

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

Model	MGS154815																																																				
Item	Load Regulation																																																				
Object	+15V1A																																																				
1. Graph <div style="display: flex; justify-content: space-between;"> — △ — Input Volt. 36V --- □ --- Input Volt. 48V - - - ○ - - - Input Volt. 76V </div> <p>The graph plots Output Voltage [V] on the y-axis (ranging from 14.70 to 15.40) against Load Current [A] on the x-axis (ranging from 0.0 to 1.2). Three horizontal lines represent the output voltage for different input voltages: 36V (top), 48V (middle), and 76V (bottom). A slanted line indicates the range of the rated load current.</p>																																																					
2. Values <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>15.065</td><td>15.064</td><td>15.064</td></tr> <tr><td>0.2</td><td>15.064</td><td>15.064</td><td>15.063</td></tr> <tr><td>0.4</td><td>15.064</td><td>15.064</td><td>15.063</td></tr> <tr><td>0.6</td><td>15.064</td><td>15.063</td><td>15.063</td></tr> <tr><td>0.8</td><td>15.063</td><td>15.063</td><td>15.062</td></tr> <tr><td>1.0</td><td>15.062</td><td>15.062</td><td>15.062</td></tr> <tr><td>1.1</td><td>15.062</td><td>15.062</td><td>15.062</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Output Voltage [V]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	15.065	15.064	15.064	0.2	15.064	15.064	15.063	0.4	15.064	15.064	15.063	0.6	15.064	15.063	15.063	0.8	15.063	15.063	15.062	1.0	15.062	15.062	15.062	1.1	15.062	15.062	15.062	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated load current.

COSEL



Model	MGS154815																																							
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure B																																						
Object	+15V1A																																							
1.Graph																																								
2.Values																																								
<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 36 [V]</th> <th>Input Volt. 76 [V]</th> </tr> </thead> <tbody> <tr> <td>0.0</td><td>7</td><td>9</td></tr> <tr> <td>0.2</td><td>8</td><td>9</td></tr> <tr> <td>0.4</td><td>8</td><td>10</td></tr> <tr> <td>0.6</td><td>9</td><td>10</td></tr> <tr> <td>0.8</td><td>10</td><td>12</td></tr> <tr> <td>1.0</td><td>12</td><td>13</td></tr> <tr> <td>1.1</td><td>13</td><td>13</td></tr> <tr> <td>--</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Ripple Voltage [mV]		Input Volt. 36 [V]	Input Volt. 76 [V]	0.0	7	9	0.2	8	9	0.4	8	10	0.6	9	10	0.8	10	12	1.0	12	13	1.1	13	13	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																							
	Input Volt. 36 [V]	Input Volt. 76 [V]																																						
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<p>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.</p>																																								
<p>Ripple [mVp-p]</p>																																								
<p>Fig.Complex Ripple Wave Form</p>																																								

Model	MGS154815	Temperature	25°C																																						
Item	Ripple-Noise	Testing Circuitry	Figure B																																						
Object	+15V1A																																								
1.Graph		2.Values																																							
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The graph shows two curves: one for Input Volt. 36V (solid line with triangle markers) and one for Input Volt. 76V (dashed line with circle markers). The x-axis represents Load Current [A] from 0.0 to 1.2. The y-axis represents Ripple Voltage [mV] from 0 to 100. Both curves show a slight increase in ripple voltage as load current increases, with the 76V curve generally higher than the 36V curve. A vertical dashed line is drawn at approximately 1.0 A to indicate the rated load current range.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple-Noise [mV]</th> </tr> <tr> <th>Input Volt. 36 [V]</th> <th>Input Volt. 76 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>8</td><td>11</td></tr> <tr><td>0.2</td><td>9</td><td>11</td></tr> <tr><td>0.4</td><td>10</td><td>12</td></tr> <tr><td>0.6</td><td>12</td><td>13</td></tr> <tr><td>0.8</td><td>13</td><td>14</td></tr> <tr><td>1.0</td><td>15</td><td>15</td></tr> <tr><td>1.1</td><td>17</td><td>16</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 36 [V]	Input Volt. 76 [V]	0.0	8	11	0.2	9	11	0.4	10	12	0.6	12	13	0.8	13	14	1.0	15	15	1.1	17	16	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
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<p>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.</p>																																									
<p>Fig.Complex Ripple Noise Wave Form</p> <p>The diagram illustrates a complex ripple noise waveform. It consists of a series of sharp, triangular oscillations superimposed on a constant DC level. Two vertical arrows on the left side of the waveform indicate the peak-to-peak amplitude of the noise.</p>																																									

Model	MGS154815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V1A
1. Graph	
<p>Graph showing Ripple Voltage [mV] vs Ambient Temperature [°C] for MGS154815 at Input Volt. 48V. The graph shows two data series: Load 50% (dashed line with squares) and Load 100% (solid line with triangles). Both series show a decrease in ripple voltage as ambient temperature increases from -50°C to 50°C. A slanted line indicates the rated ambient temperature range.</p>	
<p>Measured by 100 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>	

Testing Circuitry Figure B

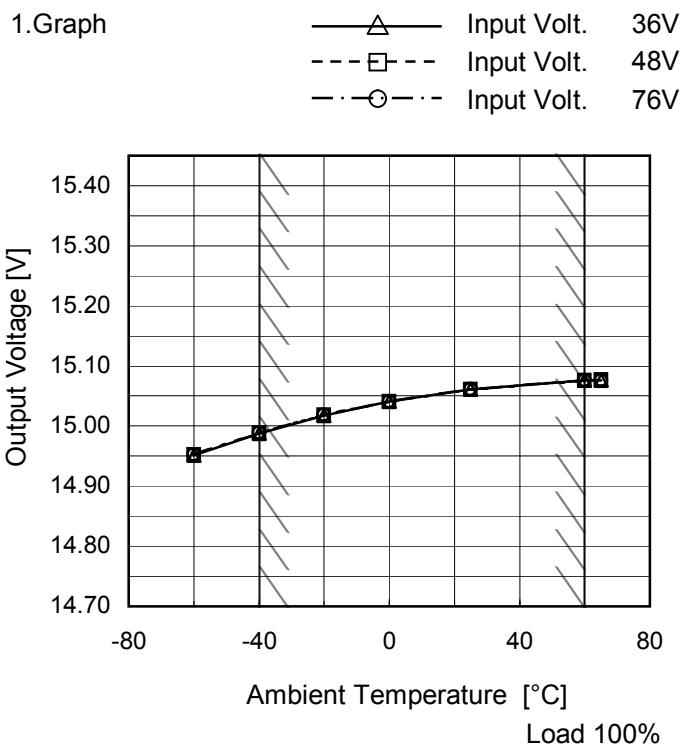
2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	25	37
-40	23	35
-20	21	30
0	18	26
25	16	22
60	16	22
65	16	22
--	-	-
--	-	-
--	-	-
--	-	-

Model MGS154815

Item Ambient Temperature Drift

Object +15V1A



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.952	14.952	14.952
-40	14.988	14.988	14.989
-20	15.018	15.018	15.019
0	15.041	15.041	15.041
25	15.061	15.061	15.061
60	15.076	15.076	15.076
65	15.077	15.077	15.077
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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



Model	MGS154815	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+15V1A	

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 - 60°C

Input Voltage : 36 - 76V

Load Current : 0 - 1A

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

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

2. Values

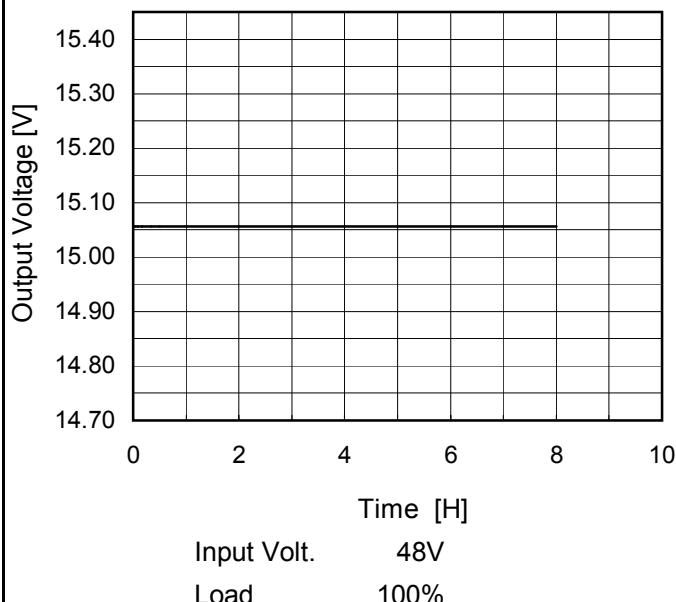
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	36	0	15.079	±46	±0.3
Minimum Voltage	-40	36	1	14.988		

COSEL

Model	MGS154815
Item	Time Lapse Drift
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

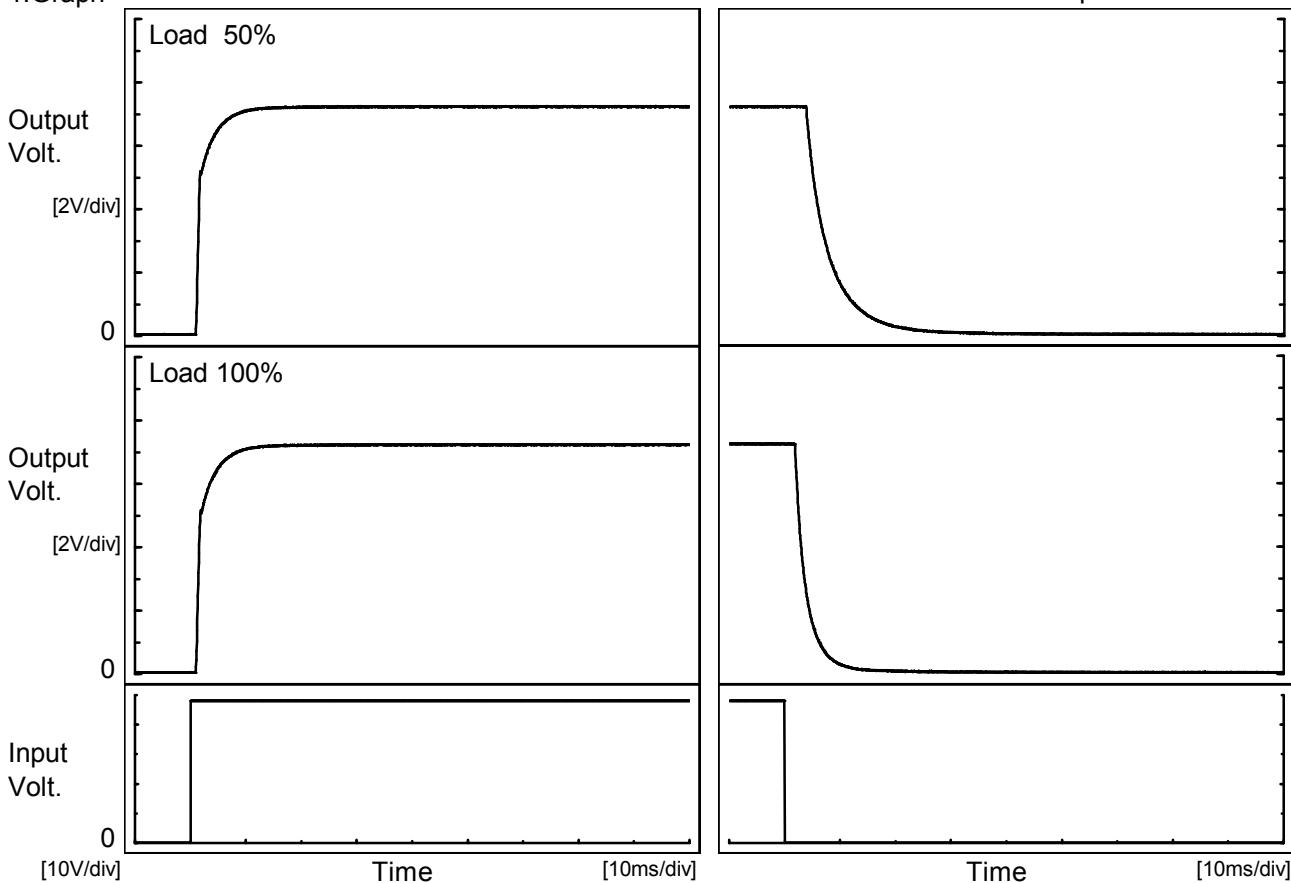
Time since start [H]	Output Voltage [V]
0.0	15.056
0.5	15.056
1.0	15.056
2.0	15.056
3.0	15.056
4.0	15.056
5.0	15.056
6.0	15.056
7.0	15.056
8.0	15.056

COSEL

Model	MGS154815
Item	Rise and Fall Time
Object	+15V1A

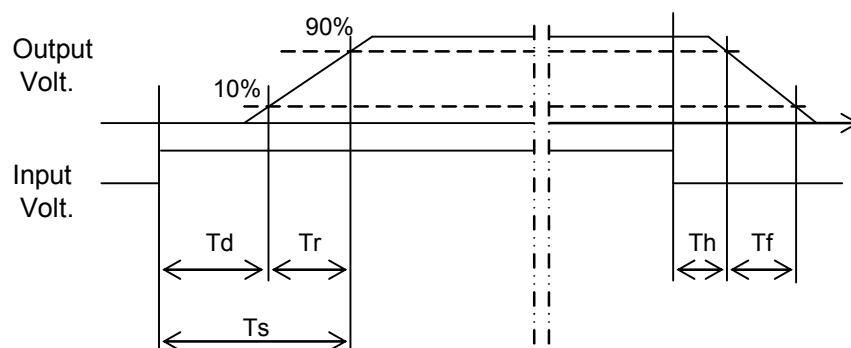
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

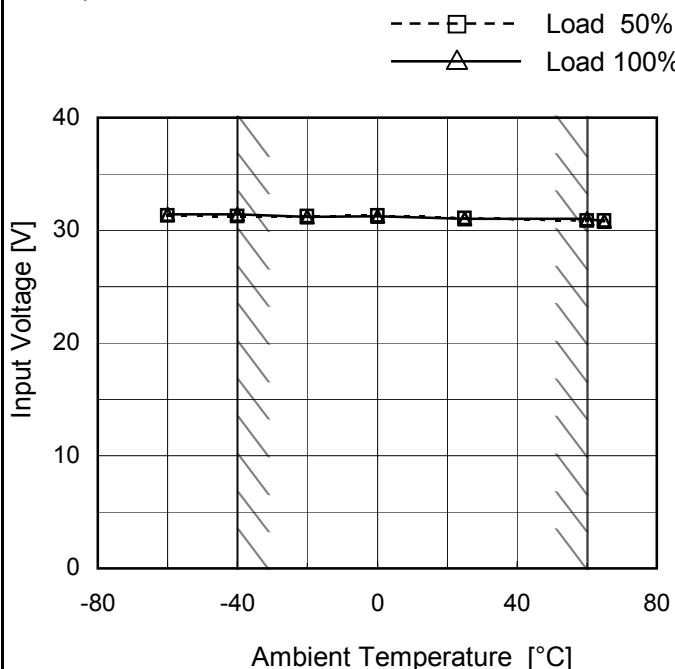
Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		1.2	5.3	6.5	4.0	9.7	
100 %		1.2	5.4	6.6	2.0	4.9	



Model	MGS154815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V1A

Testing Circuitry Figure A

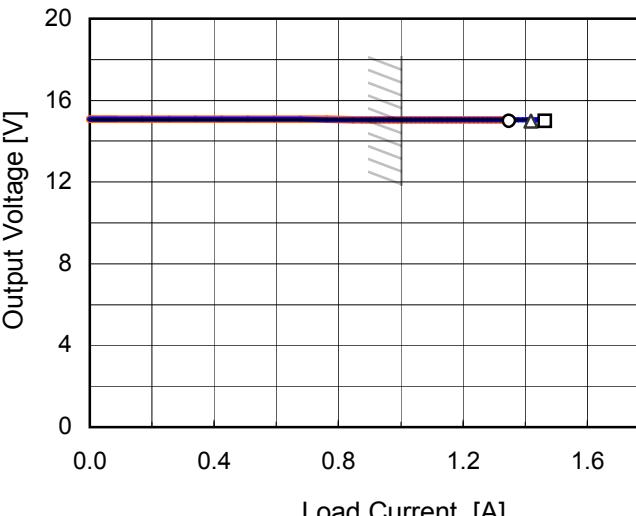
1.Graph



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	31.3	31.5
-40	31.3	31.5
-20	31.3	31.3
0	31.3	31.3
25	31.1	31.1
60	30.9	31.1
65	30.9	30.9
--	-	-
--	-	-
--	-	-
--	-	-

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

Model	MGS154815	Temperature Testing Circuitry 25°C Figure A																																																							
Item	Overcurrent Protection																																																								
Object	+15V1A																																																								
1.Graph	<p>—△— Input Volt. 36V —□— Input Volt. 48V —○— Input Volt. 76V</p> 	2.Values																																																							
		<table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr><td>15.0</td><td>1.42</td><td>1.46</td><td>1.35</td></tr> <tr><td>14.3</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>13.5</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>12.0</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>10.5</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>9.0</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>7.5</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>6.0</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>4.5</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>3.0</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>1.5</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>	Output Voltage [V]	Load Current [A]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	15.0	1.42	1.46	1.35	14.3	-	-	-	13.5	-	-	-	12.0	-	-	-	10.5	-	-	-	9.0	-	-	-	7.5	-	-	-	6.0	-	-	-	4.5	-	-	-	3.0	-	-	-	1.5	-	-	-	0.0	-	-	-
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1.5	-	-	-																																																						
0.0	-	-	-																																																						

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

Intermittent operation occurs when overcurrent protection is activated.

COSEL

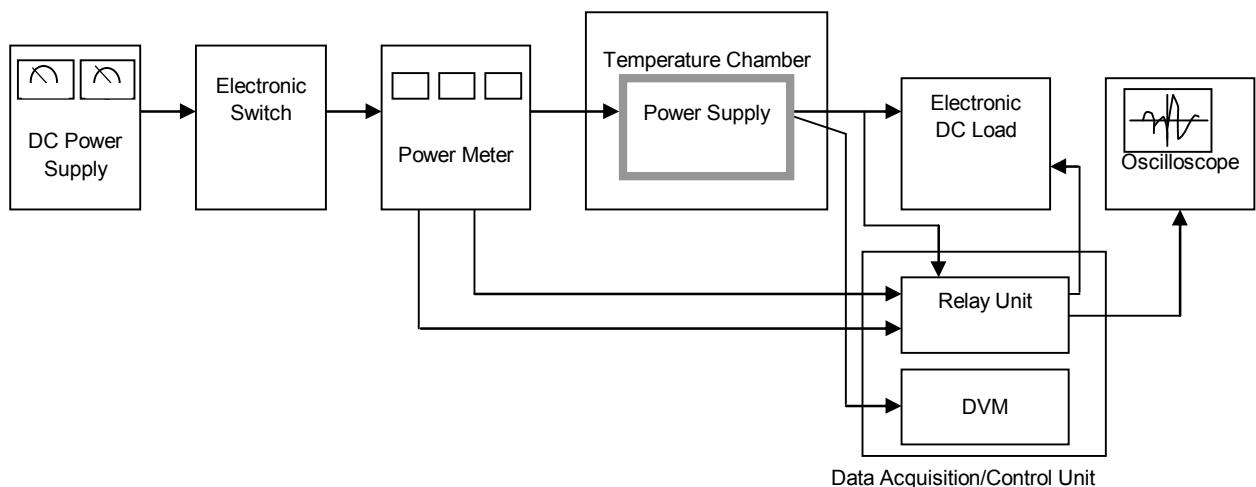


Figure A

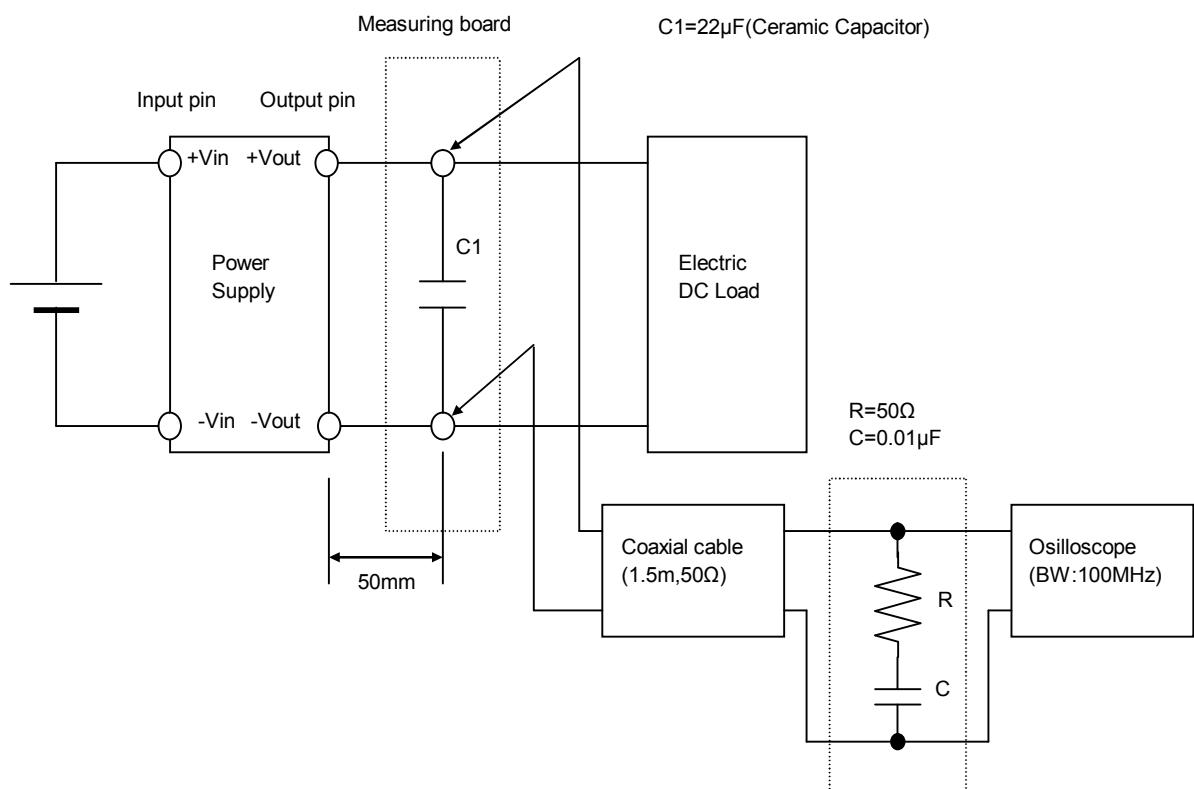


Figure B (Ripple and Ripple noise Characteristic)