

# 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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Model		MGS154815	Temperature		25°C																																																																															
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<p>The graph plots Input Current [A] on the y-axis (0.0 to 1.0) against Load Current [A] on the x-axis (0.0 to 1.2). Three data series are shown: 36V (solid line with triangles), 48V (dashed line with squares), and 76V (dash-dot line with circles). A vertical slanted line is drawn at approximately 1.05 A on the x-axis, indicating the rated load current range.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input 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>0.0</td><td>0.019</td><td>0.016</td><td>0.013</td></tr> <tr><td>0.2</td><td>0.104</td><td>0.080</td><td>0.053</td></tr> <tr><td>0.4</td><td>0.193</td><td>0.146</td><td>0.094</td></tr> <tr><td>0.6</td><td>0.285</td><td>0.213</td><td>0.137</td></tr> <tr><td>0.8</td><td>0.380</td><td>0.283</td><td>0.180</td></tr> <tr><td>1.0</td><td>0.478</td><td>0.354</td><td>0.225</td></tr> <tr><td>1.1</td><td>0.528</td><td>0.391</td><td>0.247</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]	Input Current [A]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	0.019	0.016	0.013	0.2	0.104	0.080	0.053	0.4	0.193	0.146	0.094	0.6	0.285	0.213	0.137	0.8	0.380	0.283	0.180	1.0	0.478	0.354	0.225	1.1	0.528	0.391	0.247	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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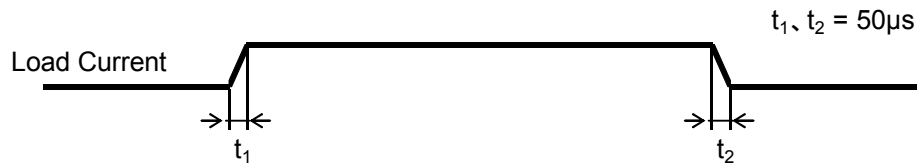


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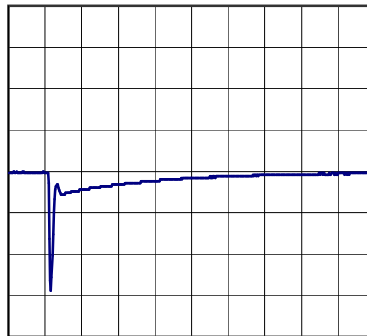
Model	MGS154815	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+15V1A		

Input Volt. 48 V  
 Cycle 1000 ms

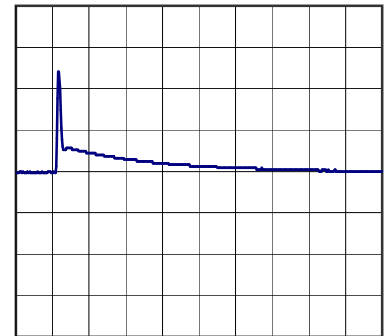


Min. Load (0A)  $\longleftrightarrow$   
 Load 100% (1A)

200mV/div



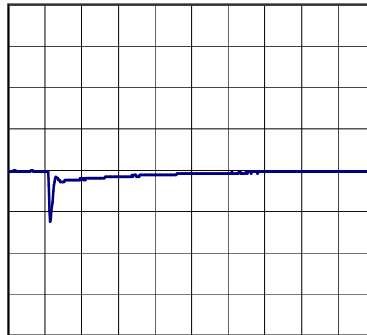
500µs/div



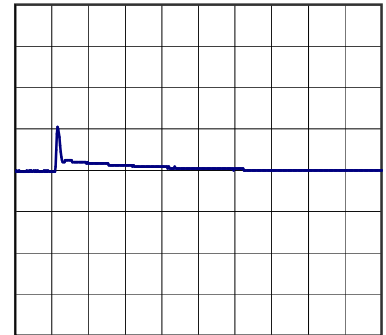
500µs/div

Min. Load (0A)  $\longleftrightarrow$   
 Load 50% (0.5A)

200mV/div



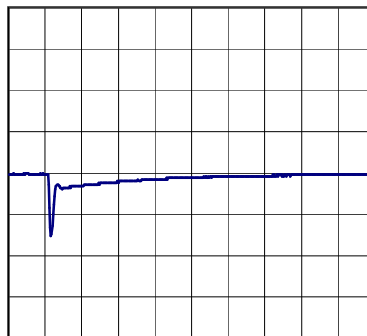
500µs/div



500µs/div

Load 50% (0.5A)  $\longleftrightarrow$   
 Load 100% (1A)

200mV/div



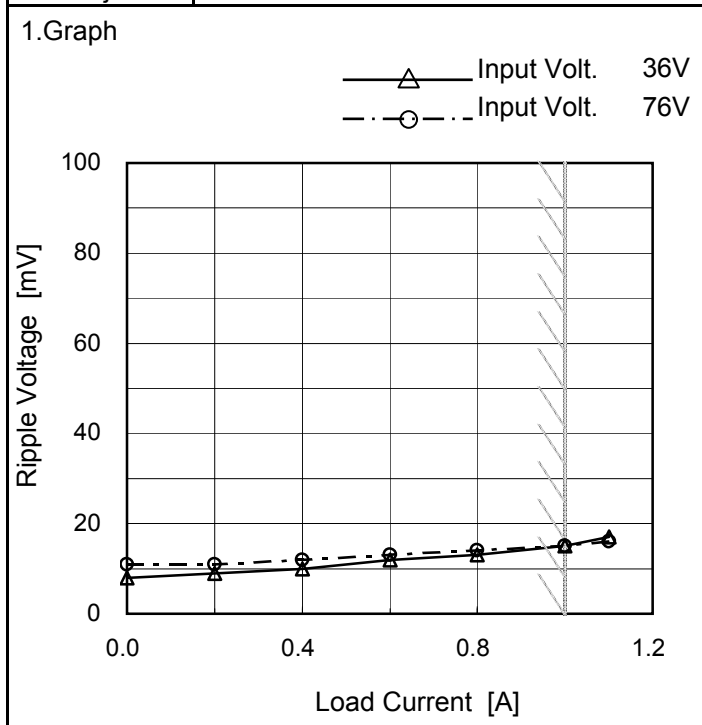
500µs/div



500µs/div

<p>Model MGS154815</p>		<p>Temperature 25°C Testing Circuitry Figure B</p>																																						
<p>Item Ripple Voltage (by Load Current)</p>																																								
<p>Object +15V1A</p>																																								
<p>1.Graph</p> <div style="text-align: right;"> <p>—△— Input Volt. 36V</p> <p>- -○- - Input Volt. 76V</p> </div> <p>Ripple Voltage [mV]</p> <p>Load Current [A]</p>		<p>2.Values</p> <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	--	-	-	--	-	-	--	-	-	--	-	-
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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		



2. Values

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
--	-	-
--	-	-
--	-	-
--	-	-

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.

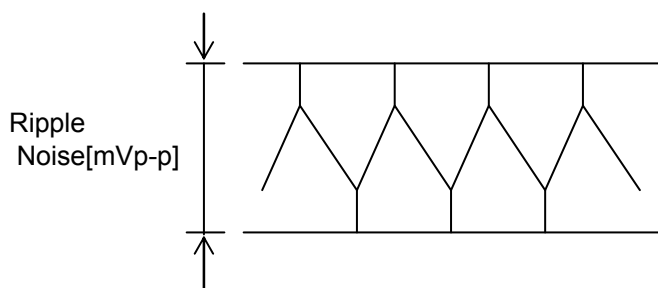
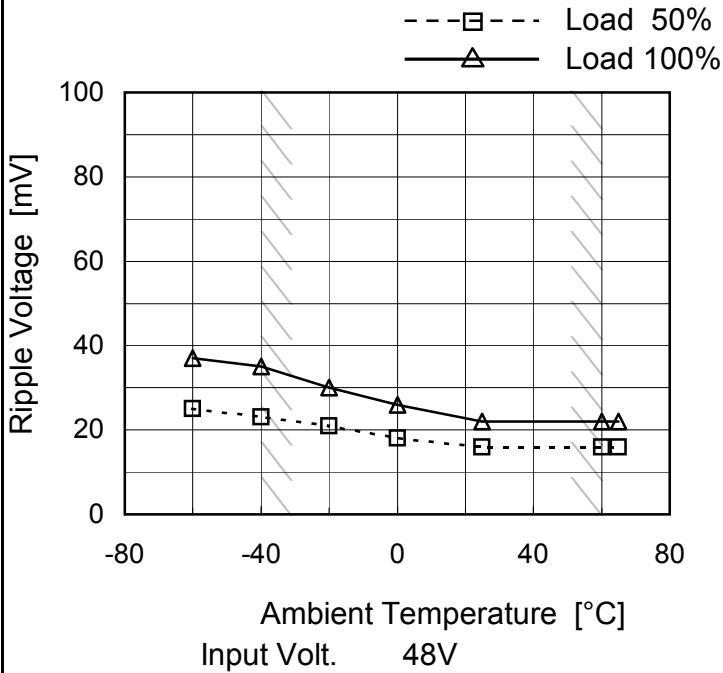


Fig.Complex Ripple Noise Wave Form

Model	MGS154815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V1A

Testing Circuitry Figure B

1. Graph



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
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.  
 Note: Slanted line shows the range of the rated ambient temperature.



<b>COSEL</b>																																																					
Model	MGS154815																																																				
Item	Ambient Temperature Drift	Testing Circuitry Figure A																																																			
Object	+15V1A																																																				
1.Graph	<p>                     —△— Input Volt. 36V                      - - - □ - - - Input Volt. 48V                      · · · ○ · · · Input Volt. 76V                 </p> <p style="text-align: center;">Ambient Temperature [°C] Load 100%</p>	2.Values																																																			
		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</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>-60</td><td>14.952</td><td>14.952</td><td>14.952</td></tr> <tr><td>-40</td><td>14.988</td><td>14.988</td><td>14.989</td></tr> <tr><td>-20</td><td>15.018</td><td>15.018</td><td>15.019</td></tr> <tr><td>0</td><td>15.041</td><td>15.041</td><td>15.041</td></tr> <tr><td>25</td><td>15.061</td><td>15.061</td><td>15.061</td></tr> <tr><td>60</td><td>15.076</td><td>15.076</td><td>15.076</td></tr> <tr><td>65</td><td>15.077</td><td>15.077</td><td>15.077</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>	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	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																																					



<b>COSEL</b>		
Model	MGS154815	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
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 =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

\* 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		



<b>COSEL</b>																								
Model	MGS154815																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+15V1A																							
<p>1. Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 48V Load 100%</p>		<p>2. Values</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>15.056</td></tr> <tr><td>0.5</td><td>15.056</td></tr> <tr><td>1.0</td><td>15.056</td></tr> <tr><td>2.0</td><td>15.056</td></tr> <tr><td>3.0</td><td>15.056</td></tr> <tr><td>4.0</td><td>15.056</td></tr> <tr><td>5.0</td><td>15.056</td></tr> <tr><td>6.0</td><td>15.056</td></tr> <tr><td>7.0</td><td>15.056</td></tr> <tr><td>8.0</td><td>15.056</td></tr> </tbody> </table>	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
Time since start [H]	Output Voltage [V]																							
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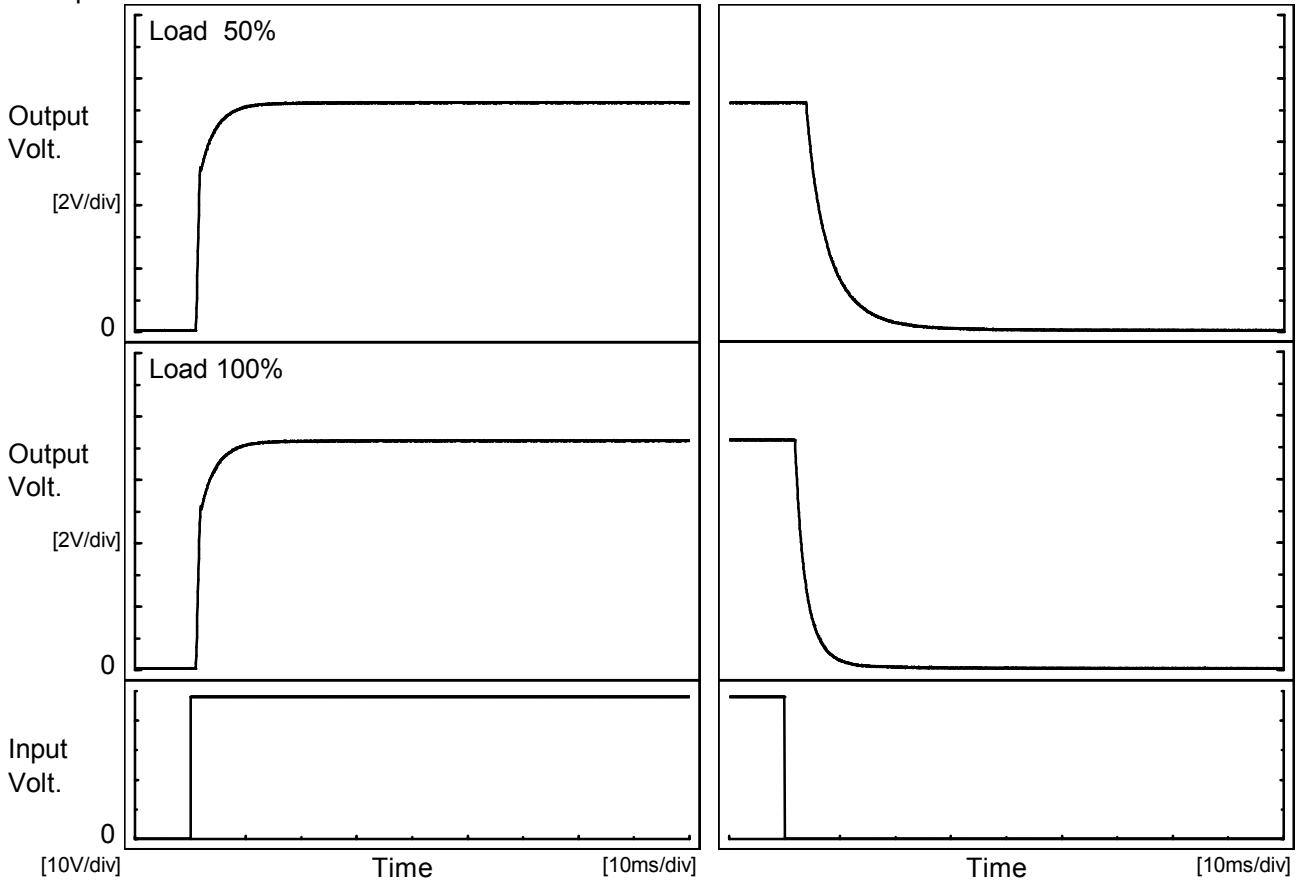




Model		MGS154815	Temperature	25°C
Item		Rise and Fall Time	Testing Circuitry	Figure A
Object		+15V1A		

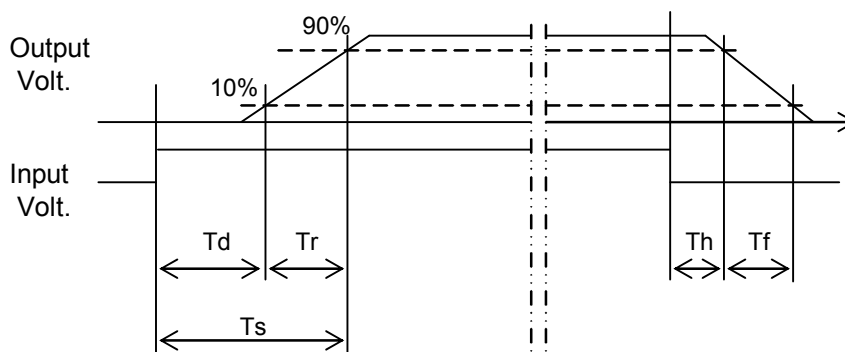
1. Graph

Input Volt. 48 V



2. Values

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





<b>COSEL</b>																																								
Model	MGS154815																																							
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																						
Object	+15V1A																																							
<p>1.Graph</p> <p style="text-align: right;">             ---□--- Load 50%              —△— Load 100%         </p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Input Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>-60</td><td>31.3</td><td>31.5</td></tr> <tr><td>-40</td><td>31.3</td><td>31.5</td></tr> <tr><td>-20</td><td>31.3</td><td>31.3</td></tr> <tr><td>0</td><td>31.3</td><td>31.3</td></tr> <tr><td>25</td><td>31.1</td><td>31.1</td></tr> <tr><td>60</td><td>30.9</td><td>31.1</td></tr> <tr><td>65</td><td>30.9</td><td>30.9</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>	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	--	-	-	--	-	-	--	-	-	--	-	-
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																								



<p>Model MGS154815</p>		<p>Temperature 25°C</p>																																																								
<p>Item Overcurrent Protection</p>		<p>Testing Circuitry Figure A</p>																																																								
<p>Object +15V1A</p>																																																										
<p>1.Graph</p> <p> <span style="color: black;">—△</span> Input Volt. 36V  <span style="color: blue;">—□</span> Input Volt. 48V  <span style="color: orange;">—○</span> Input Volt. 76V                 </p> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when overcurrent protection is activated.</p>		<p>2.Values</p> <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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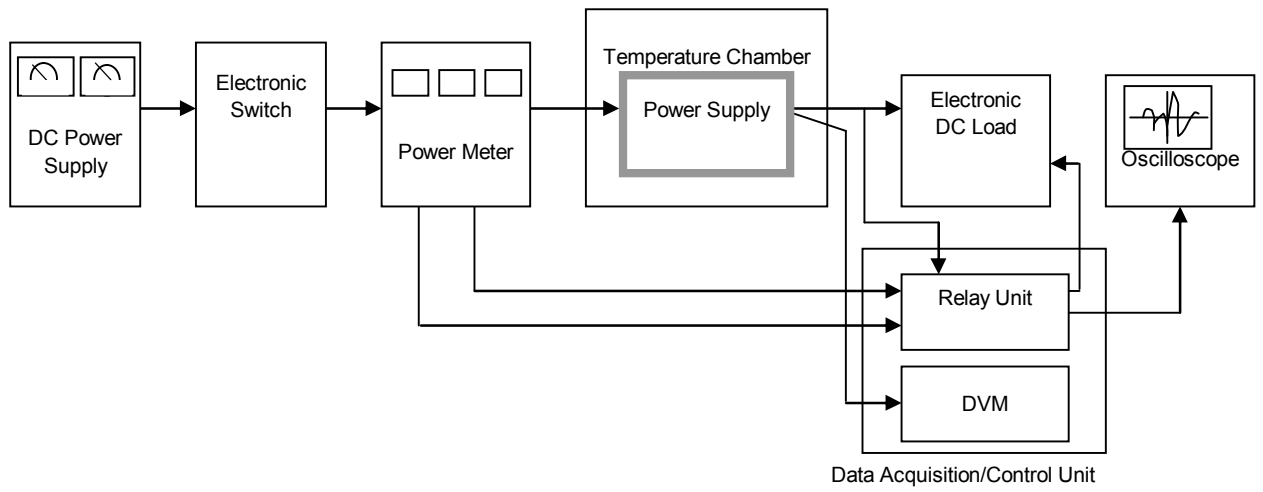


Figure A

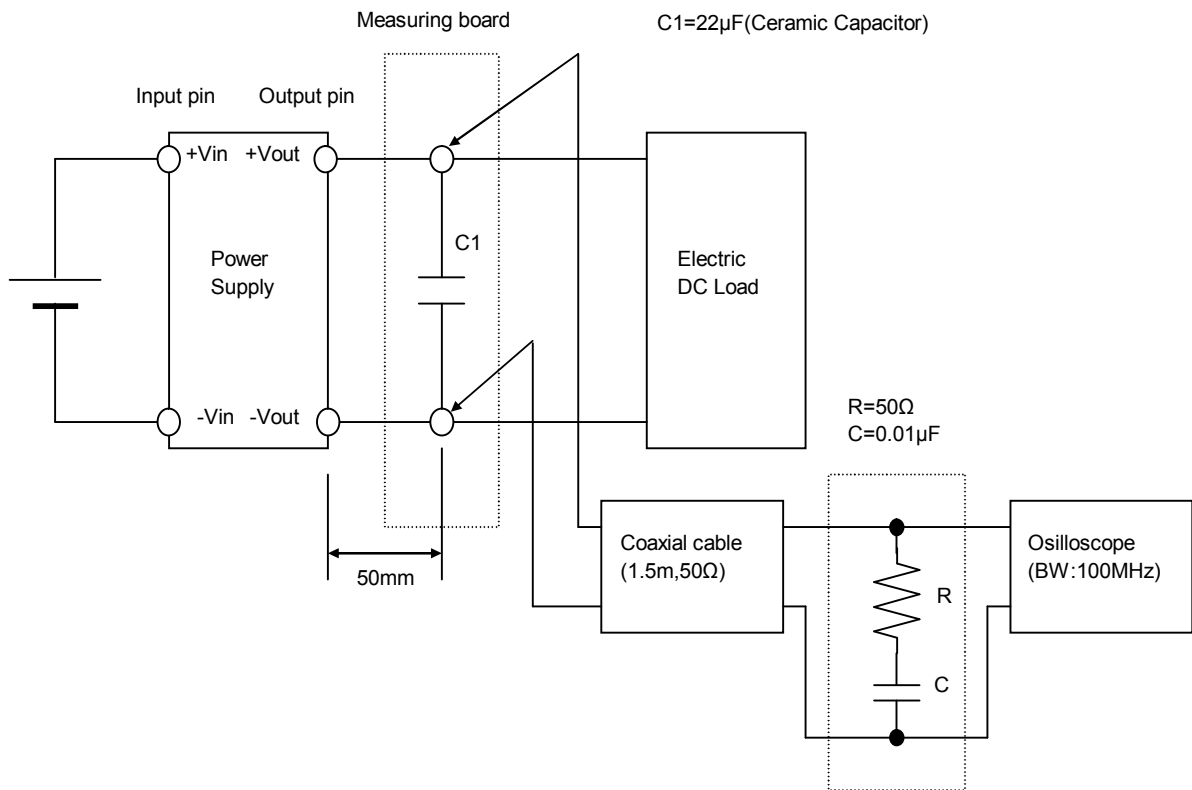


Figure B (Ripple and Ripple noise Characteristic)