

# TEST DATA OF MGS151205

Regulated DC Power Supply  
September 10, 2010

Approved by : Kazunari Asano  
Kazunari Asano Design Manager

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**COSEL CO.,LTD.**

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<p>The graph plots Input Current [A] on the y-axis (0.0 to 2.5) against Load Current [A] on the x-axis (0.0 to 3.0). Three data series are shown: 9V (solid line with triangles), 12V (dashed line with squares), and 18V (dash-dot line with circles). A vertical shaded region is present between approximately 2.8A and 3.3A on the x-axis.</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. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0.076</td><td>0.063</td><td>0.050</td></tr> <tr><td>0.6</td><td>0.414</td><td>0.317</td><td>0.220</td></tr> <tr><td>1.2</td><td>0.767</td><td>0.578</td><td>0.393</td></tr> <tr><td>1.8</td><td>1.135</td><td>0.848</td><td>0.571</td></tr> <tr><td>2.4</td><td>1.518</td><td>1.127</td><td>0.754</td></tr> <tr><td>3.0</td><td>1.922</td><td>1.414</td><td>0.940</td></tr> <tr><td>3.3</td><td>2.131</td><td>1.561</td><td>1.035</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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	0.0	0.076	0.063	0.050	0.6	0.414	0.317	0.220	1.2	0.767	0.578	0.393	1.8	1.135	0.848	0.571	2.4	1.518	1.127	0.754	3.0	1.922	1.414	0.940	3.3	2.131	1.561	1.035	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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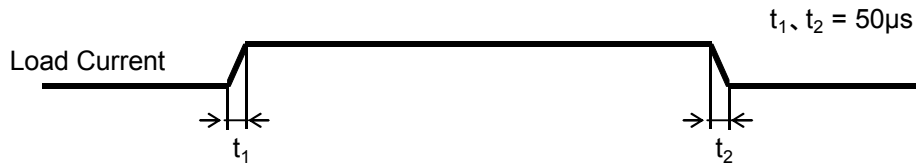


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<p>1.Graph</p> <p>                     —△— Input Volt. 9V                      ---□--- Input Volt. 12V                      -·-○-·- Input Volt. 18V                 </p> <p style="text-align: center;">Output Voltage [V]</p> <p style="text-align: center;">Load Current [A]</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>5.058</td><td>5.058</td><td>5.058</td></tr> <tr><td>0.6</td><td>5.058</td><td>5.058</td><td>5.058</td></tr> <tr><td>1.2</td><td>5.058</td><td>5.058</td><td>5.057</td></tr> <tr><td>1.8</td><td>5.057</td><td>5.057</td><td>5.057</td></tr> <tr><td>2.4</td><td>5.057</td><td>5.057</td><td>5.057</td></tr> <tr><td>3.0</td><td>5.056</td><td>5.056</td><td>5.056</td></tr> <tr><td>3.3</td><td>5.056</td><td>5.056</td><td>5.056</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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	0.0	5.058	5.058	5.058	0.6	5.058	5.058	5.058	1.2	5.058	5.058	5.057	1.8	5.057	5.057	5.057	2.4	5.057	5.057	5.057	3.0	5.056	5.056	5.056	3.3	5.056	5.056	5.056	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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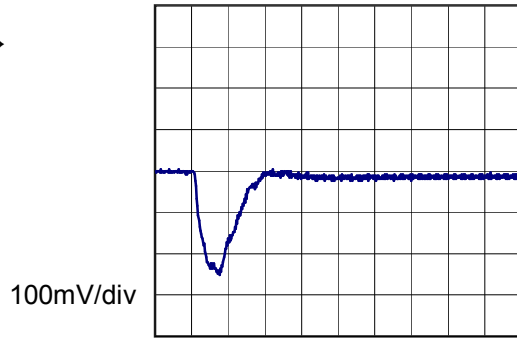


Model		MGS151205	Temperature 25°C Testing Circuitry Figure A
Item		Dynamic Load Response	
Object		+5V3A	

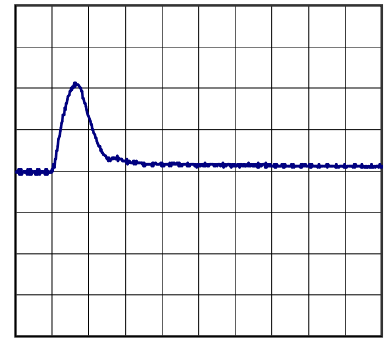
Input Volt. 12 V  
Cycle 1000 ms



Min. Load (0A) ←→  
Load 100% (3A)

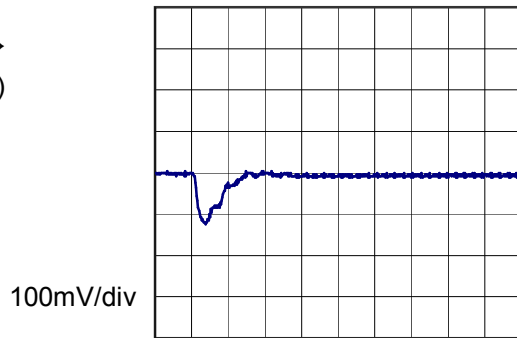


50µs/div

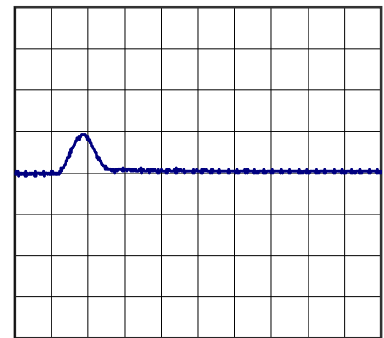


50µs/div

Min. Load (0A) ←→  
Load 50% (1.5A)

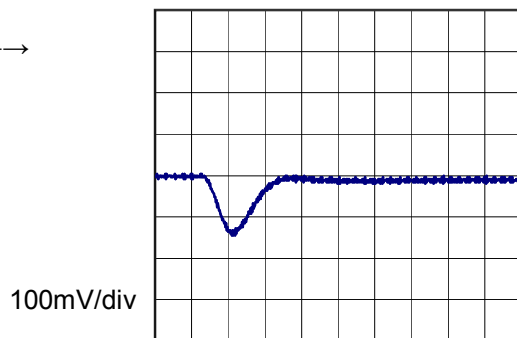


50µs/div

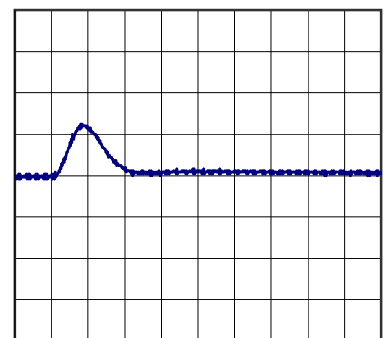


50µs/div

Load 50% (1.5A) ←→  
Load 100% (3A)



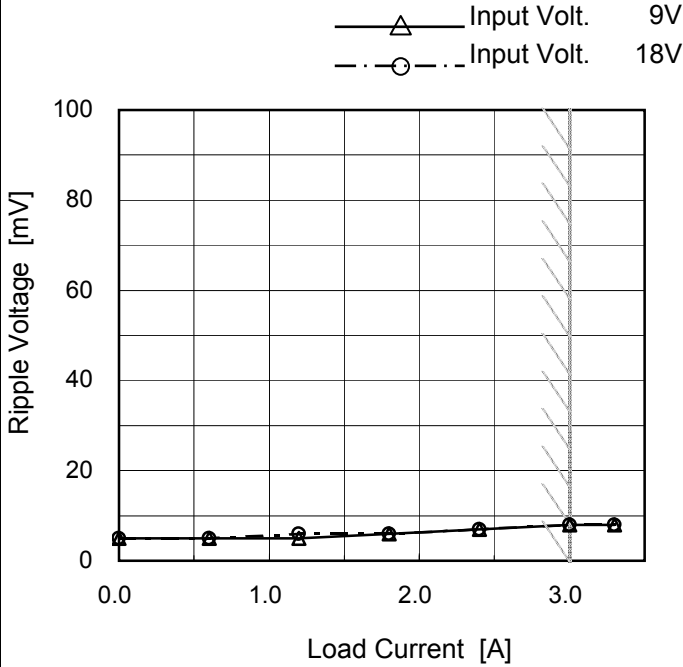
50µs/div



50µs/div

Model	MGS151205	Temperature	25°C
Item	Ripple Voltage (by Load Current)	Testing Circuitry	Figure B
Object	+5V3A		

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.0	5	5
0.6	5	5
1.2	5	6
1.8	6	6
2.4	7	7
3.0	8	8
3.3	8	8
--	-	-
--	-	-
--	-	-
--	-	-

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]

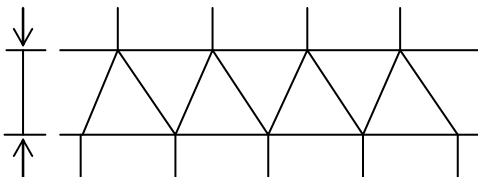
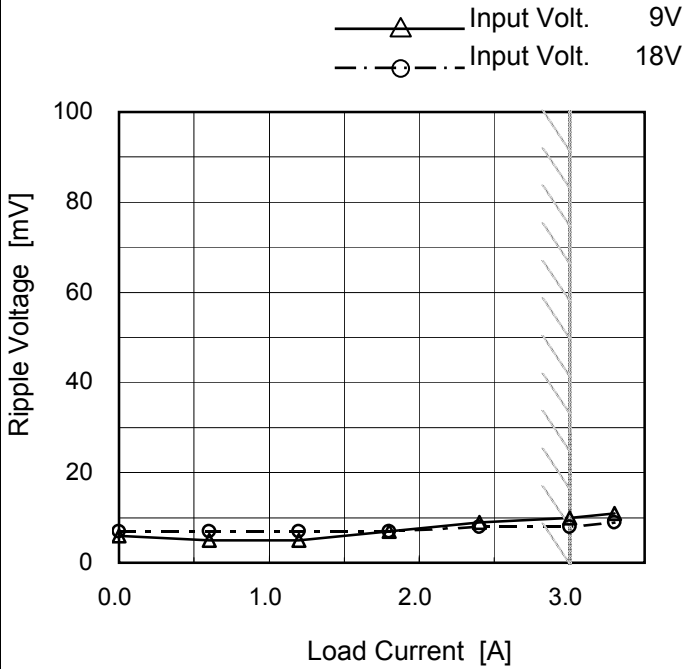


Fig. Complex Ripple Wave Form

Model	MGS151205	Temperature	25°C
Item	Ripple-Noise	Testing Circuitry	Figure B
Object	+5V3A		

1. Graph



2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.0	6	7
0.6	5	7
1.2	5	7
1.8	7	7
2.4	9	8
3.0	10	8
3.3	11	9
--	-	-
--	-	-
--	-	-
--	-	-

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.

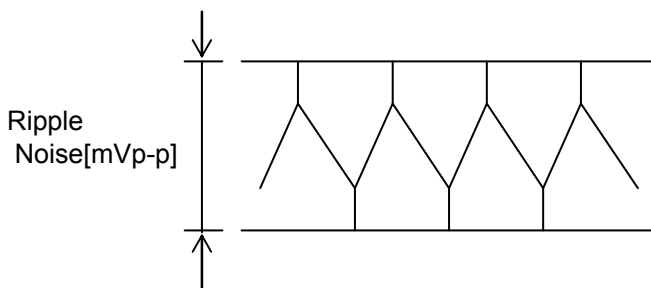


Fig.Complex Ripple Noise Wave Form



Model		MGS151205	Testing Circuitry Figure B																																						
Item		Ripple Voltage (by Ambient Temp.)																																							
Object		+5V3A																																							
1.Graph		<p style="text-align: center;">Input Volt. 12V</p>	2.Values																																						
		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>-60</td><td>9</td><td>13</td></tr> <tr><td>-40</td><td>8</td><td>12</td></tr> <tr><td>-20</td><td>7</td><td>11</td></tr> <tr><td>0</td><td>7</td><td>11</td></tr> <tr><td>25</td><td>6</td><td>10</td></tr> <tr><td>60</td><td>6</td><td>10</td></tr> <tr><td>65</td><td>6</td><td>10</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]	Ripple Voltage [mV]		Load 50%	Load 100%	-60	9	13	-40	8	12	-20	7	11	0	7	11	25	6	10	60	6	10	65	6	10	--	-	-	--	-	-	--	-	-	--	-	-	
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<b>COSEL</b>																																																					
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<b>COSEL</b>		
Model	MGS151205	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+5V3A	

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 : 9 - 18V

Load Current : 0 - 3A

\* 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	9	0	5.063	±18	±0.4
Minimum Voltage	-40	9	3	5.027		



<b>COSEL</b>																								
Model	MGS151205																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+5V3A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 12V 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>5.053</td></tr> <tr><td>0.5</td><td>5.057</td></tr> <tr><td>1.0</td><td>5.057</td></tr> <tr><td>2.0</td><td>5.057</td></tr> <tr><td>3.0</td><td>5.057</td></tr> <tr><td>4.0</td><td>5.057</td></tr> <tr><td>5.0</td><td>5.057</td></tr> <tr><td>6.0</td><td>5.057</td></tr> <tr><td>7.0</td><td>5.057</td></tr> <tr><td>8.0</td><td>5.057</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	5.053	0.5	5.057	1.0	5.057	2.0	5.057	3.0	5.057	4.0	5.057	5.0	5.057	6.0	5.057	7.0	5.057	8.0	5.057
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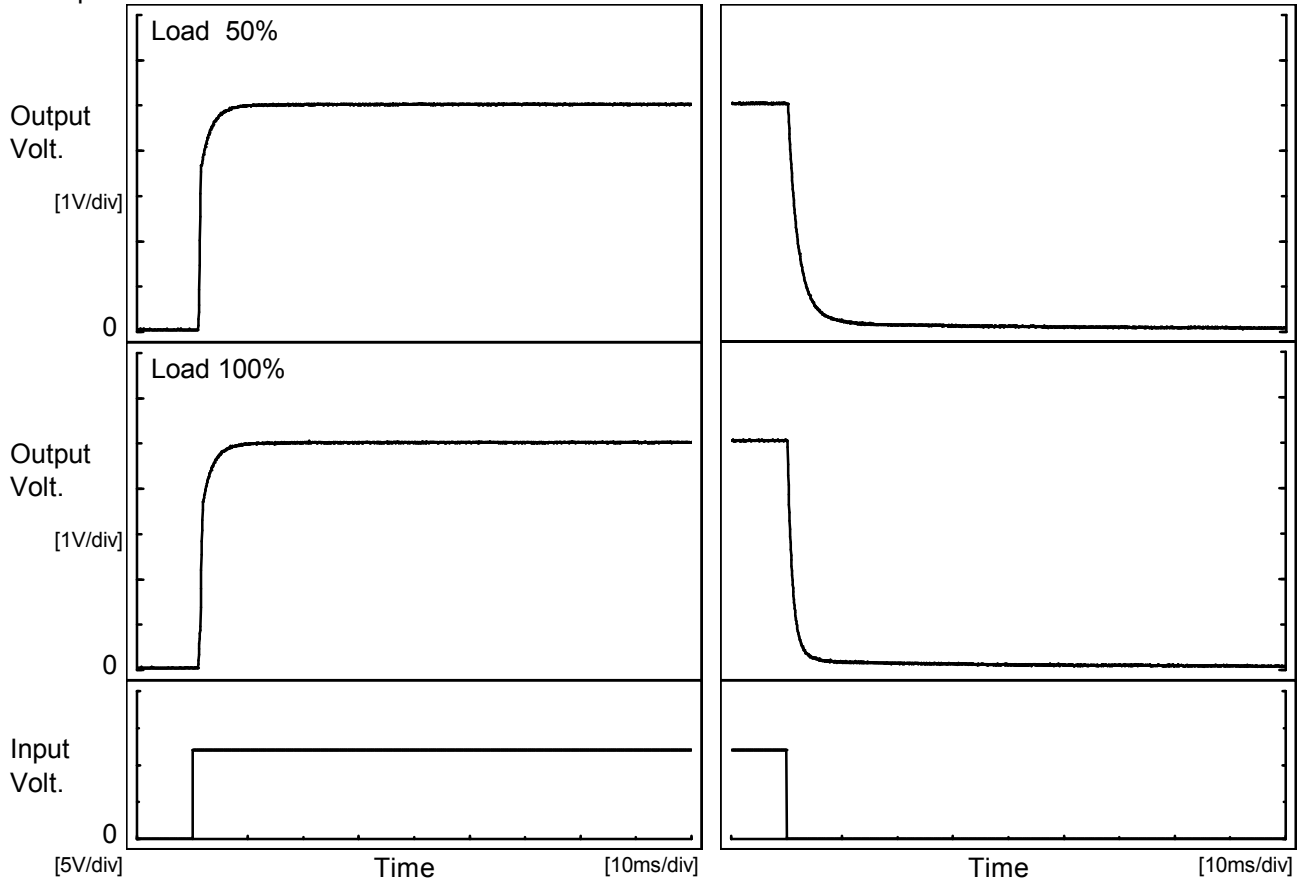




<b>COSEL</b>			
Model	MGS151205	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+5V3A		

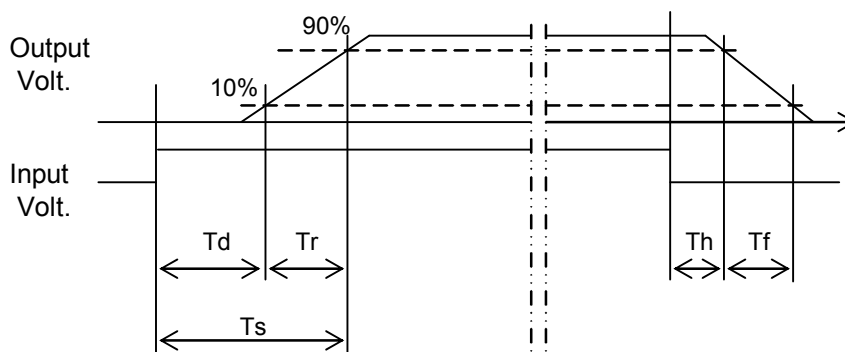
1. Graph

Input Volt. 12 V



2. Values

		[ms]				
Load \ Time	Time	Td	Tr	Ts	Th	Tf
50 %		1.2	2.4	3.6	0.3	5.0
100 %		1.3	2.6	3.9	0.2	2.5





<b>COSEL</b>																																								
Model	MGS151205																																							
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																						
Object	+5V3A																																							
<p>1.Graph</p> <p style="text-align: center;"> <span style="margin-right: 20px;">---□--- Load 50%</span>  <span>—△— Load 100%</span> </p> <p style="text-align: center;">             Input Voltage [V]              Ambient Temperature [°C]         </p> <p>Note: Slanted line shows the range of the rated ambient temperature.</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>8.0</td><td>8.0</td></tr> <tr><td>-40</td><td>8.0</td><td>8.0</td></tr> <tr><td>-20</td><td>8.0</td><td>8.0</td></tr> <tr><td>0</td><td>8.0</td><td>8.0</td></tr> <tr><td>25</td><td>8.0</td><td>8.0</td></tr> <tr><td>60</td><td>7.9</td><td>8.0</td></tr> <tr><td>65</td><td>8.0</td><td>8.0</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	8.0	8.0	-40	8.0	8.0	-20	8.0	8.0	0	8.0	8.0	25	8.0	8.0	60	7.9	8.0	65	8.0	8.0	--	-	-	--	-	-	--	-	-	--	-	-
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<p>Model MGS151205</p> <p>Item Overcurrent Protection</p> <p>Object +5V3A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																																							
<p>1.Graph</p> <p> <span style="color: black;">—△</span> Input Volt. 9V  <span style="color: blue;">—□</span> Input Volt. 12V  <span style="color: orange;">—○</span> Input Volt. 18V                 </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. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> </tr> </thead> <tbody> <tr><td>5.00</td><td>3.96</td><td>4.22</td><td>4.17</td></tr> <tr><td>4.75</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>4.50</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>4.00</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>3.50</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>3.00</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>2.50</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>2.00</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>1.50</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>1.00</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.50</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>	Output Voltage [V]	Load Current [A]			Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	5.00	3.96	4.22	4.17	4.75	-	-	-	4.50	-	-	-	4.00	-	-	-	3.50	-	-	-	3.00	-	-	-	2.50	-	-	-	2.00	-	-	-	1.50	-	-	-	1.00	-	-	-	0.50	-	-	-	0.00	-	-	-
Output Voltage [V]	Load Current [A]																																																								
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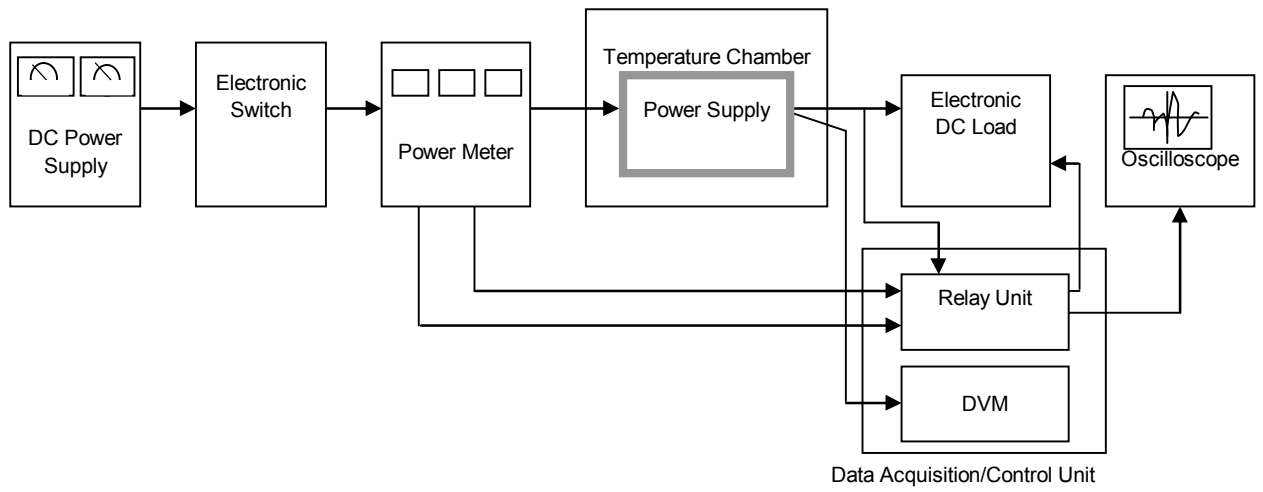


Figure A

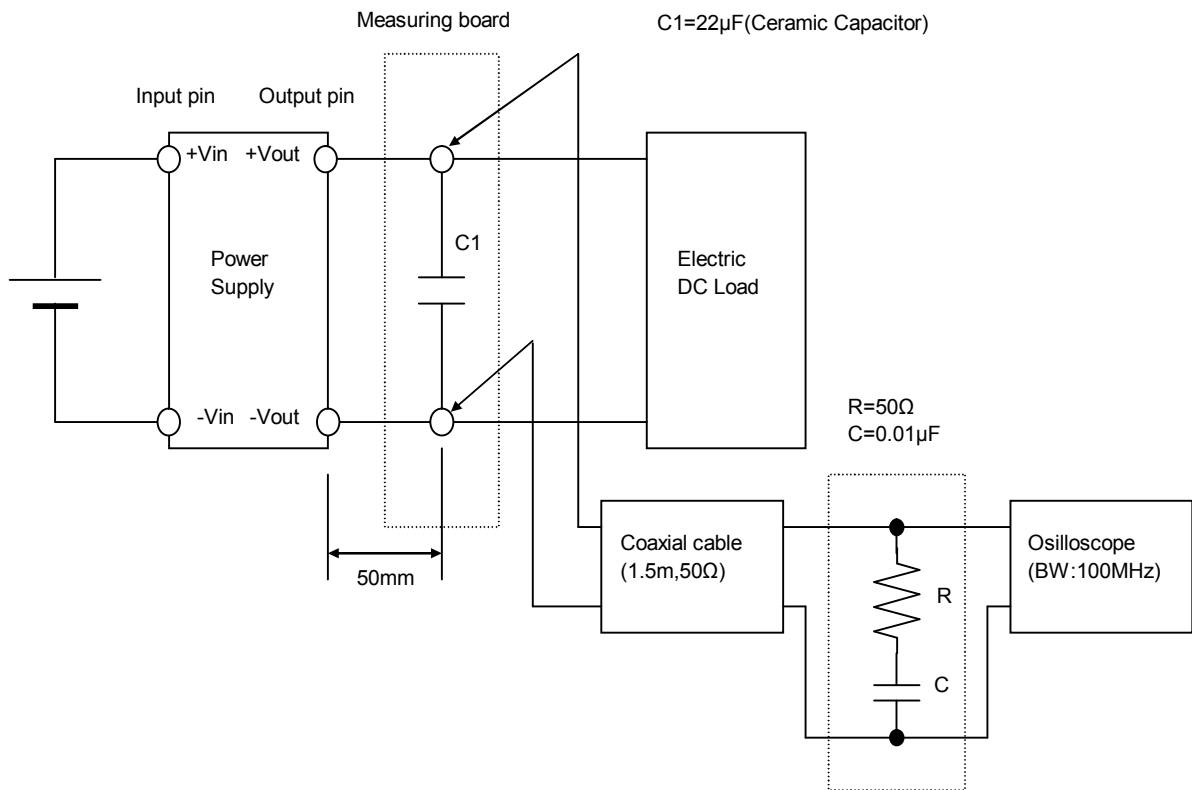


Figure B (Ripple and Ripple noise Characteristic)