



TEST DATA OF MGS100505

Regulated DC Power Supply
August 5, 2016

Approved by : Takayuki Fukuda
Takayuki Fukuda Design Manager

Prepared by : Ryosuke Nakao
Ryosuke Nakao Design Engineer

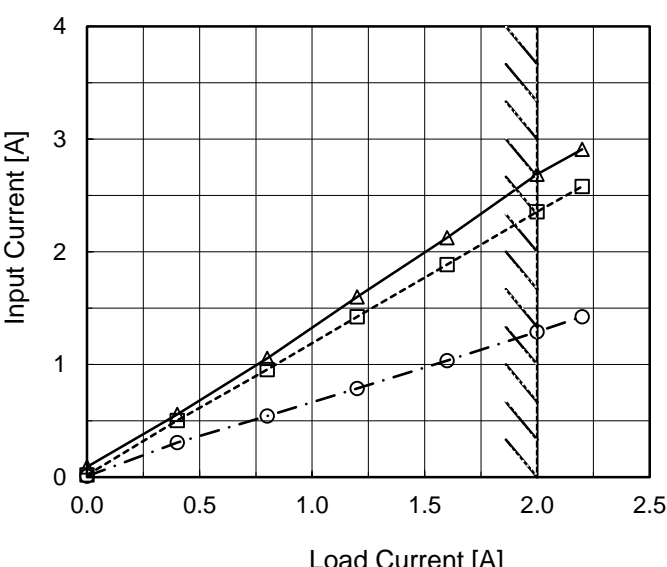
COSEL CO.,LTD.

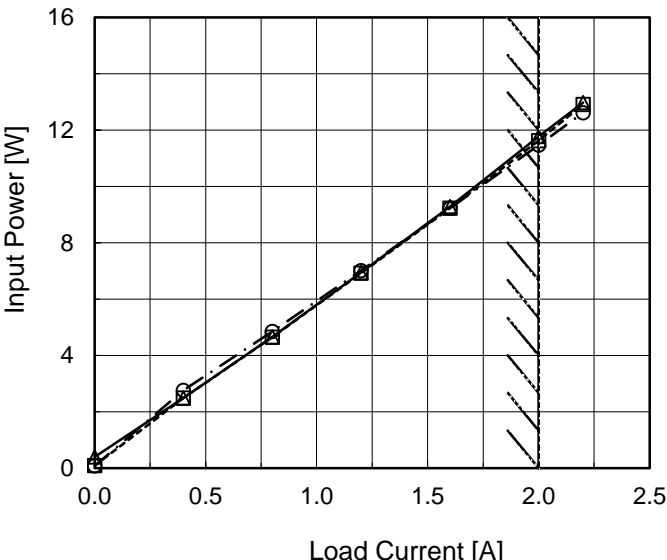
CONTENTS

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)	9
10.Ripple-Noise	10
11.Ripple Voltage (by Ambient Temperature)	11
12.Ambient Temperature Drift	12
13.Output Voltage Accuracy	13
14.Time Lapse Drift	14
15.Rise and Fall Time	15
16.Minimum Input Voltage for Regulated Output Voltage	16
17.Overcurrent Protection	17
18.Switching Frequency (by Load Current)	18
19.Figure of Testing Circuitry	19

(Final Page 19)

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BC-11047



Model

MGS100505

Item

Efficiency (by Input Voltage)

Object

1.Graph

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COSEL

Model	MGS100505	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+5V2A		

Input Volt. 5 V
Cycle 100 ms

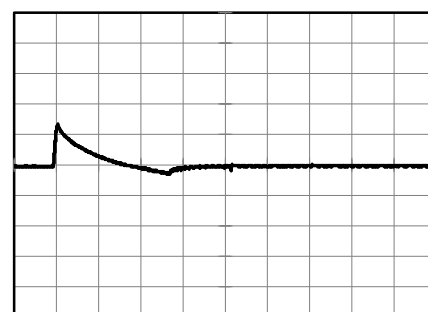
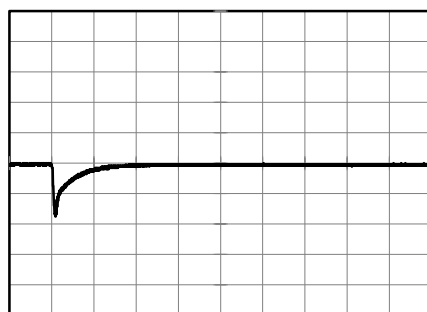
$t_1, t_2 = 100 \mu s$



Min.Load (0A) \longleftrightarrow
Load 100% (2A)

200 mV/div

1 ms/div

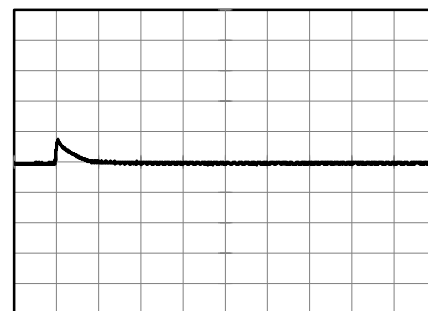
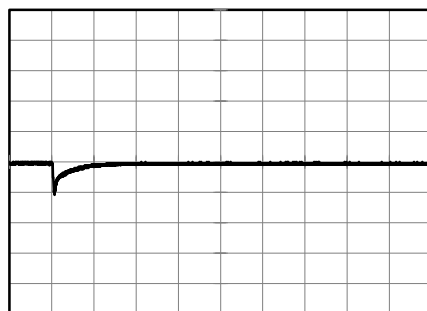


1 ms/div

Min.Load (0A) \longleftrightarrow
Load 50% (1A)

200 mV/div

1 ms/div

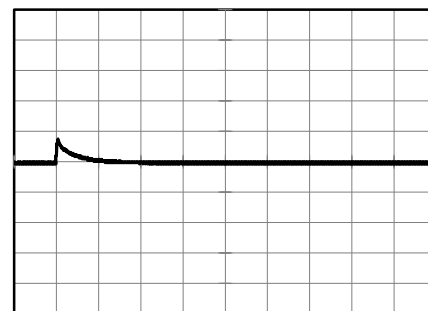
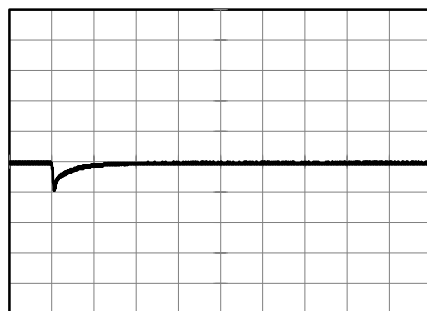


1 ms/div

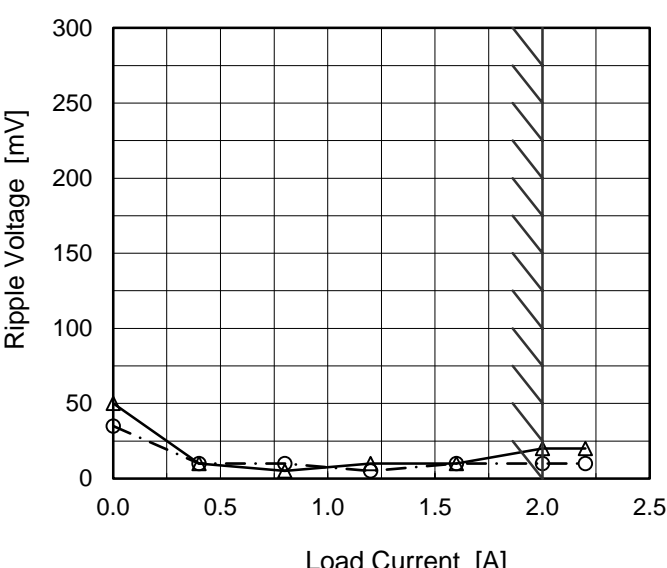
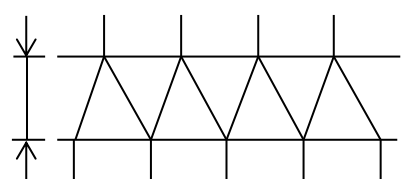
Load 50% (1A) \longleftrightarrow
Load 100% (2A)

200 mV/div

1 ms/div



1 ms/div

Model		MGS100505		Temperature 25°C																																							
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure B																																							
Object		+5V2A																																									
1.Graph				2.Values																																							
<div><div><div><div><div></div><div>—△—</div><div>Input Volt.</div><div>4.5V</div></div><div><div>-.-○-.-</div><div>Input Volt.</div><div>9V</div></div></div><div></div></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 4.5 [V]</th><th>Input Volt. 9 [V]</th></tr><tr><td>0.0</td><td>50</td><td>35</td></tr><tr><td>0.4</td><td>10</td><td>10</td></tr><tr><td>0.8</td><td>5</td><td>10</td></tr><tr><td>1.2</td><td>10</td><td>5</td></tr><tr><td>1.6</td><td>10</td><td>10</td></tr><tr><td>2.0</td><td>20</td><td>10</td></tr><tr><td>2.2</td><td>20</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></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 4.5 [V]	Input Volt. 9 [V]	0.0	50	35	0.4	10	10	0.8	5	10	1.2	10	5	1.6	10	10	2.0	20	10	2.2	20	10	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																										
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<div>Measured by 100 MHz Oscilloscope.</div> <div>Ripple Voltage is shown as p-p in the figure below.</div> <div>Note: Slanted line shows the range of the rated load current.</div>																																											
<div><div>Ripple [mVp-p]</div><div></div></div> <div>Fig.Complex Ripple Wave Form</div>																																											

Model		MGS100505																																							
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Object		+5V2A																																							
1.Graph		2.Values																																							
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<p>Measured by 100 MHz Oscilloscope.</p> <p>Ripple-Noise is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p> <div><div><p>Ripple Noise[mVp-p]</p></div><div><p>Fig.Complex Ripple Noise Wave Form</p></div></div>																																									

1. Graph

The graph shows the ripple voltage in millivolts (mV) on the y-axis (0 to 300) against the ambient temperature in degrees Celsius (°C) on the x-axis (-60 to 100). Two data series are plotted: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a sharp increase in ripple voltage between -40°C and 40°C, reaching a peak of approximately 280 mV. Outside this range, the ripple voltage is low, around 10 mV. A slanted line indicates the range of rated ambient temperature from -40°C to 40°C.

Ambient Temperature [°C]	Load 50% [mV]	Load 100% [mV]
-60	10	10
-40	10	10
-30	10	10
-20	10	10
-10	10	10
0	10	10
10	10	10
20	10	10
30	10	10
40	10	10
50	10	10
60	10	10

Measured by 100 MHz Oscilloscope.

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

Model		MGS100505
Item		Ambient Temperature Drift
Object		+5V2A

1.Graph

—△—

Input Volt.

4.5V

---□---

Input Volt.

5V

---○---

Input Volt.

9V

Output Voltage [V]

Ambient Temperature [°C]

Load 100%

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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-60	5.027	5.027	5.027
-40	5.033	5.033	5.033
-20	5.035	5.035	5.035
0	5.036	5.036	5.036
25	5.042	5.042	5.042
50	5.044	5.045	5.045
60	5.045	5.045	5.046
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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		Testing Circuitry Figure A
Model	MGS100505	
Item	Output Voltage Accuracy	
Object	+5V2A	

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 - 50°C

Input Voltage : 4.5 - 9V

Load Current : 0 - 2A

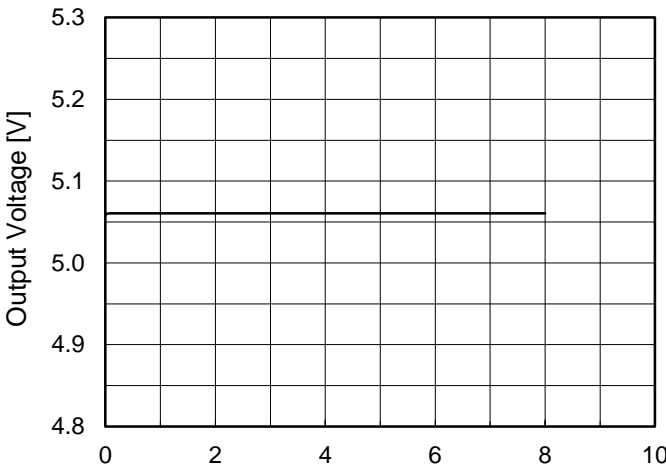
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	50	4.5	0	5.051	±9	±0.2
Minimum Voltage	-40	4.5	2	5.033		

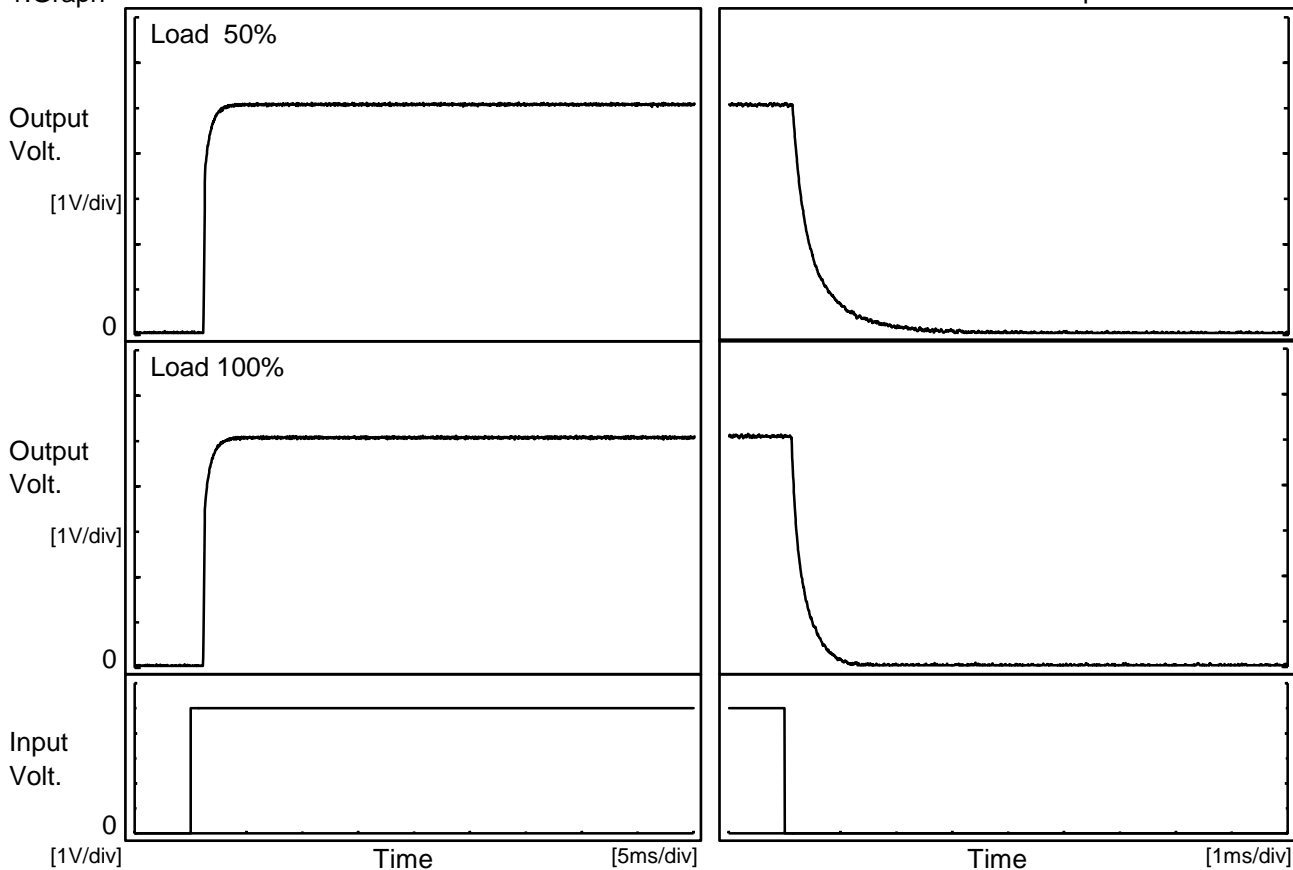


Model	MGS100505																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+5V2A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 5V</p><p>Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>5.058</td></tr><tr><td>0.5</td><td>5.061</td></tr><tr><td>1.0</td><td>5.061</td></tr><tr><td>2.0</td><td>5.061</td></tr><tr><td>3.0</td><td>5.061</td></tr><tr><td>4.0</td><td>5.061</td></tr><tr><td>5.0</td><td>5.061</td></tr><tr><td>6.0</td><td>5.061</td></tr><tr><td>7.0</td><td>5.061</td></tr><tr><td>8.0</td><td>5.061</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	5.058	0.5	5.061	1.0	5.061	2.0	5.061	3.0	5.061	4.0	5.061	5.0	5.061	6.0	5.061	7.0	5.061	8.0	5.061
Time since start [H]	Output Voltage [V]																								
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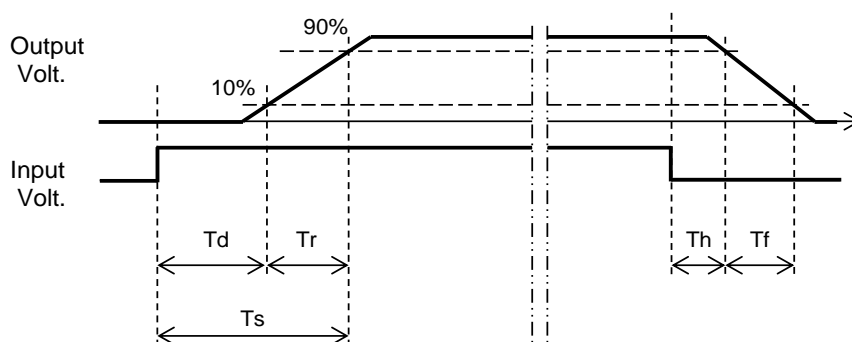
Model	MGS100505	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+5V2A		

1.Graph



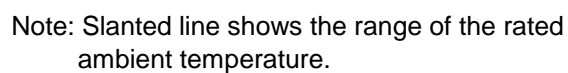
2.Values

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.2	0.7	1.9	0.2	0.9
100 %	1.2	0.7	1.9	0.1	0.5



Testing Circuitry Figure A

2.Values



Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	3.8	3.8
-40	3.7	3.8
-20	3.7	3.8
0	3.7	3.8
25	3.7	3.8
50	3.7	3.8
60	3.7	3.8
--	-	-
--	-	-
--	-	-
--	-	-

Model		MGS100505		Temperature 25°C																																																								
Item		Overcurrent Protection		Testing Circuitry Figure A																																																								
Object		+5V2A																																																										
1.Graph		<div><div></div>Input Volt. 4.5V</div> <div><div></div>Input Volt. 5V</div> <div><div></div>Input Volt. 9V</div>		2.Values																																																								
<div><div>Output Voltage [V]</div><div><div></div></div><div>8</div><div>6</div><div>4</div><div>2</div><div>0</div><div>0.0</div><div>1.5</div><div>3.0</div><div>4.5</div><div>6.0</div><div>Load Current [A]</div></div> <div>Note: Slanted line shows the range of the rated load current.</div>				<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 4.5[V]</th><th>Input Volt. 5[V]</th><th>Input Volt. 9[V]</th></tr><tr><td>5.00</td><td>2.05</td><td>2.05</td><td>2.05</td></tr><tr><td>4.75</td><td>2.56</td><td>2.57</td><td>2.79</td></tr><tr><td>4.50</td><td>2.62</td><td>2.63</td><td>2.83</td></tr><tr><td>4.00</td><td>2.74</td><td>2.75</td><td>2.91</td></tr><tr><td>3.50</td><td>2.88</td><td>2.89</td><td>3.01</td></tr><tr><td>3.00</td><td>3.03</td><td>3.02</td><td>3.11</td></tr><tr><td>2.50</td><td>3.16</td><td>3.14</td><td>3.22</td></tr><tr><td>2.00</td><td>3.24</td><td>3.21</td><td>3.27</td></tr><tr><td>1.50</td><td>3.32</td><td>3.32</td><td>3.36</td></tr><tr><td>1.00</td><td>3.47</td><td>3.45</td><td>3.45</td></tr><tr><td>0.50</td><td>3.69</td><td>3.64</td><td>3.55</td></tr><tr><td>0.00</td><td>3.86</td><td>3.76</td><td>3.41</td></tr></table>		Output Voltage [V]	Load Current [A]			Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]	5.00	2.05	2.05	2.05	4.75	2.56	2.57	2.79	4.50	2.62	2.63	2.83	4.00	2.74	2.75	2.91	3.50	2.88	2.89	3.01	3.00	3.03	3.02	3.11	2.50	3.16	3.14	3.22	2.00	3.24	3.21	3.27	1.50	3.32	3.32	3.36	1.00	3.47	3.45	3.45	0.50	3.69	3.64	3.55	0.00	3.86	3.76	3.41
Output Voltage [V]	Load Current [A]																																																											
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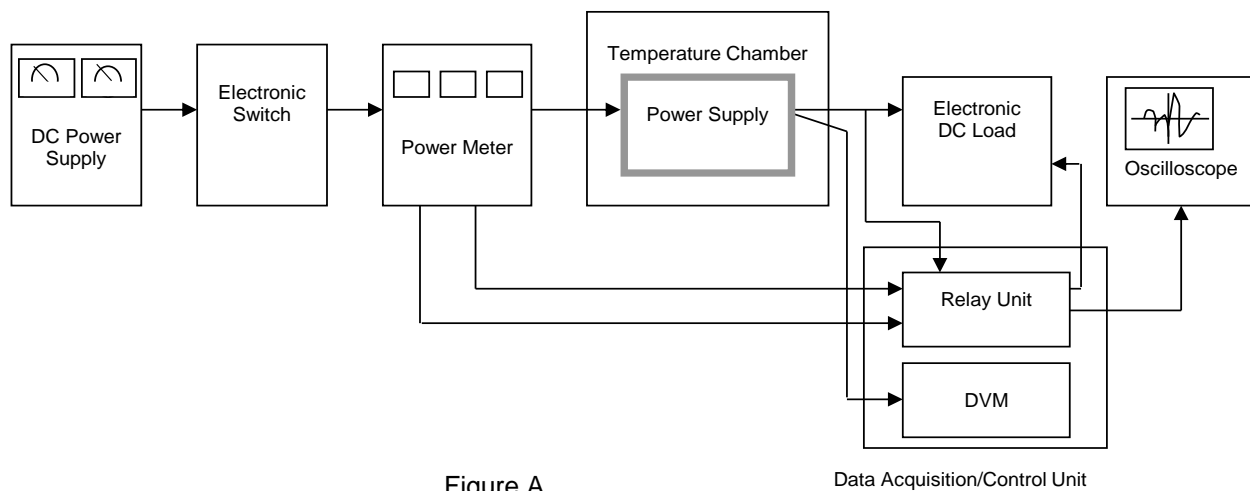


Figure A

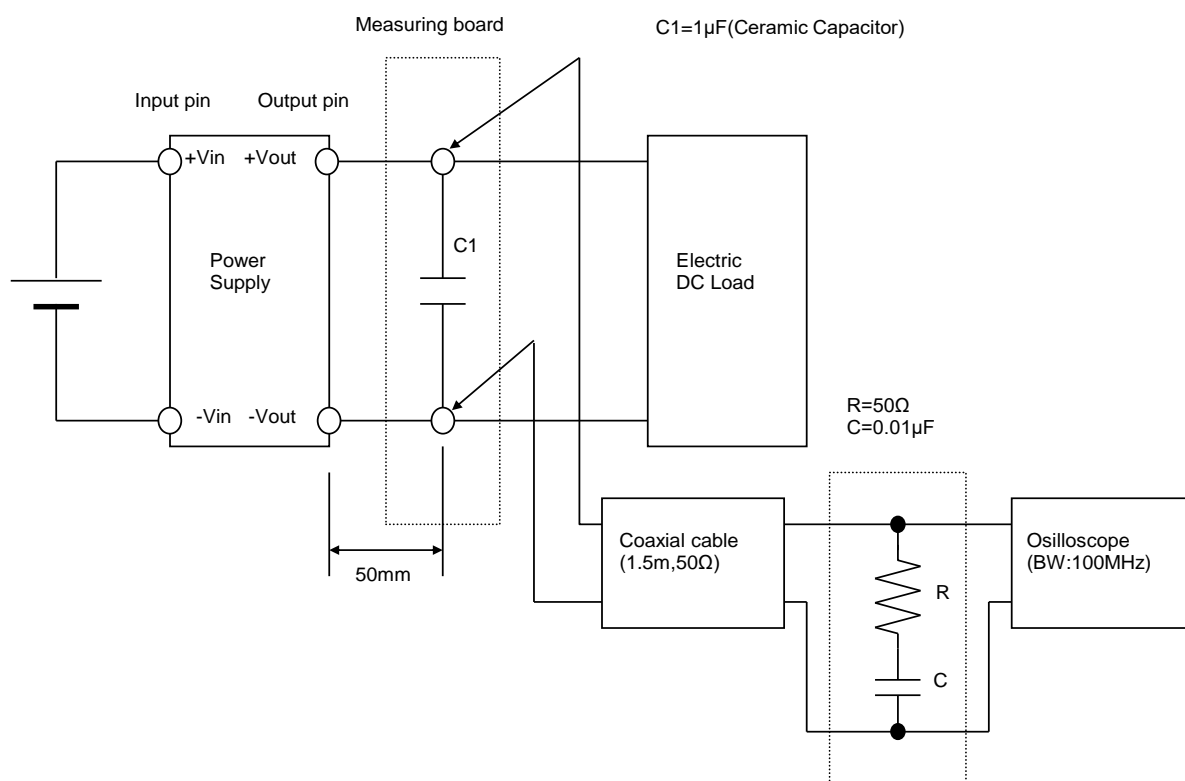


Figure B (Ripple and Ripple noise Characteristic)