



TEST DATA OF SUS101212

SUCS101212

Regulated DC Power Supply

Mar 24, 2005

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Yoshimichi Hirokawa Design Engineer

COSEL CO.,LTD.

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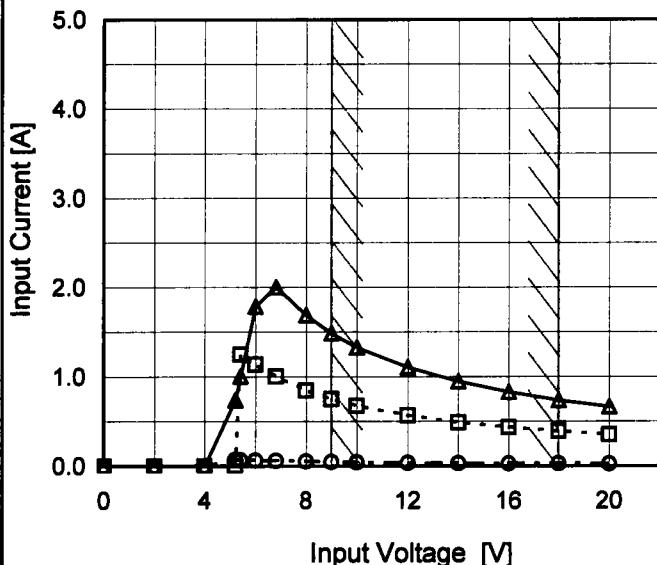
Model SUS101212/SUCCS101212

Item Input Current (by Input Voltage)

Object _____

1. Graph

—△— Load 100%
 - - -□-- Load 50%
 - - -○-- Load 0%



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

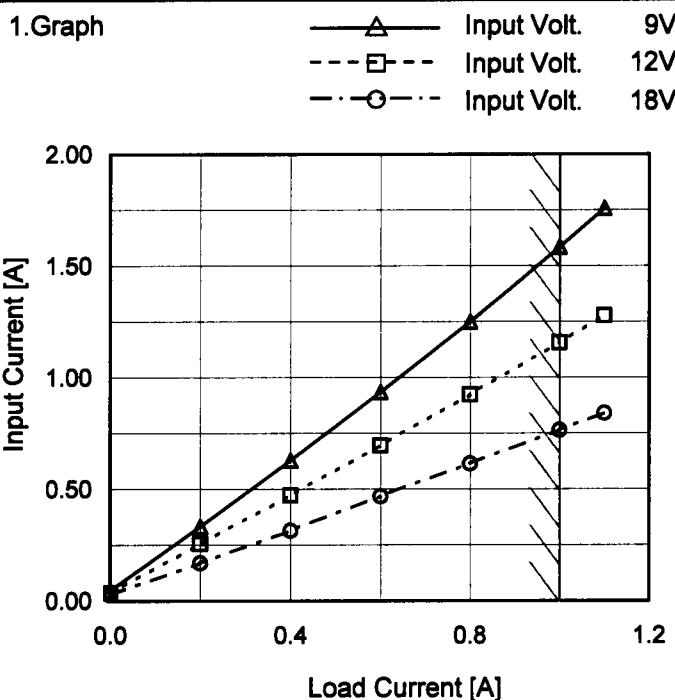
Temperature 25°C
 Testing Circuitry Figure A

2. Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
2.0	0.000	0.000	0.000
4.0	0.000	0.000	0.000
5.2	0.070	0.004	0.739
5.4	0.068	1.249	1.005
6.0	0.064	1.138	1.788
6.8	0.060	1.004	2.004
8.0	0.053	0.848	1.693
9.0	0.048	0.752	1.486
10.0	0.044	0.677	1.328
12.0	0.037	0.566	1.108
14.0	0.033	0.489	0.949
16.0	0.030	0.434	0.829
18.0	0.028	0.390	0.738
20.0	0.026	0.351	0.666
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUS101212/SUCCS101212
Item	Input Current (by Load Current)
Object	_____



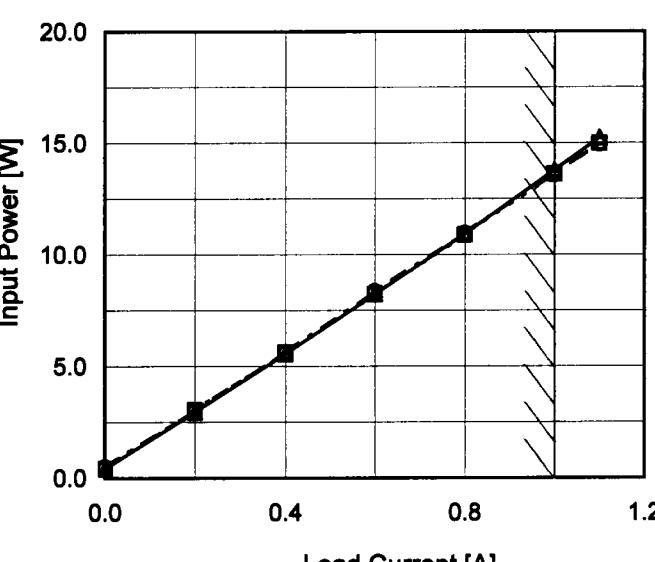
Note: Slanted line shows the range of the rated load current.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.0	0.047	0.036	0.027
0.2	0.333	0.256	0.169
0.4	0.630	0.473	0.315
0.6	0.936	0.695	0.468
0.8	1.250	0.924	0.614
1.0	1.585	1.157	0.765
1.1	1.758	1.277	0.840
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

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Model	SUS101212/SUCS101212																																																				
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<p style="text-align: center;"> Input Volt. 9V Input Volt. 12V Input Volt. 18V </p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Load Current [A]</th> <th>9[V]</th> <th>12[V]</th> <th>18[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0.42</td><td>0.43</td><td>0.51</td></tr> <tr><td>0.2</td><td>2.96</td><td>3.04</td><td>3.02</td></tr> <tr><td>0.4</td><td>5.57</td><td>5.61</td><td>5.63</td></tr> <tr><td>0.6</td><td>8.23</td><td>8.22</td><td>8.36</td></tr> <tr><td>0.8</td><td>10.93</td><td>10.89</td><td>10.96</td></tr> <tr><td>1.0</td><td>13.79</td><td>13.61</td><td>13.63</td></tr> <tr><td>1.1</td><td>15.25</td><td>14.99</td><td>14.96</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]	9[V]	12[V]	18[V]	0.0	0.42	0.43	0.51	0.2	2.96	3.04	3.02	0.4	5.57	5.61	5.63	0.6	8.23	8.22	8.36	0.8	10.93	10.89	10.96	1.0	13.79	13.61	13.63	1.1	15.25	14.99	14.96	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-					
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Model	SUS101212/SUCCS101212	Temperature	25°C																																
Item	Efficiency (by Input Voltage)	Testing Circuitry	Figure A																																
Object	—																																		
1. Graph			2. Values																																
<p>Efficiency [%]</p> <p>Input Voltage [V]</p> <p>Legend: Load 50% (dashed line with squares), Load 100% (solid line with triangles)</p>			<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>87.1</td> <td>85.9</td> </tr> <tr> <td>9</td> <td>87.1</td> <td>86.7</td> </tr> <tr> <td>10</td> <td>87.0</td> <td>87.2</td> </tr> <tr> <td>12</td> <td>86.4</td> <td>87.8</td> </tr> <tr> <td>15</td> <td>85.6</td> <td>87.8</td> </tr> <tr> <td>18</td> <td>84.3</td> <td>87.7</td> </tr> <tr> <td>20</td> <td>84.0</td> <td>87.4</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%	Load 100%	8	87.1	85.9	9	87.1	86.7	10	87.0	87.2	12	86.4	87.8	15	85.6	87.8	18	84.3	87.7	20	84.0	87.4	--	-	-	--	-	-
Input Voltage [V]	Efficiency [%]																																		
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20	84.0	87.4																																	
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Note: Slanted line shows the range of the rated input voltage.

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Model	SUS101212/SUCS101212
Item	Efficiency (by Load Current)
Object	_____

1. Graph

Load Current [A]	Input Volt. 9V	Input Volt. 12V	Input Volt. 18V
0.2	80.0	84.0	85.0
0.4	85.0	86.0	86.0
0.6	86.0	87.0	87.0
0.8	87.0	87.5	87.5
1.0	87.5	87.6	87.6
1.2	87.5	87.7	87.7

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

Temperature 25°C
Testing Circuitry Figure A

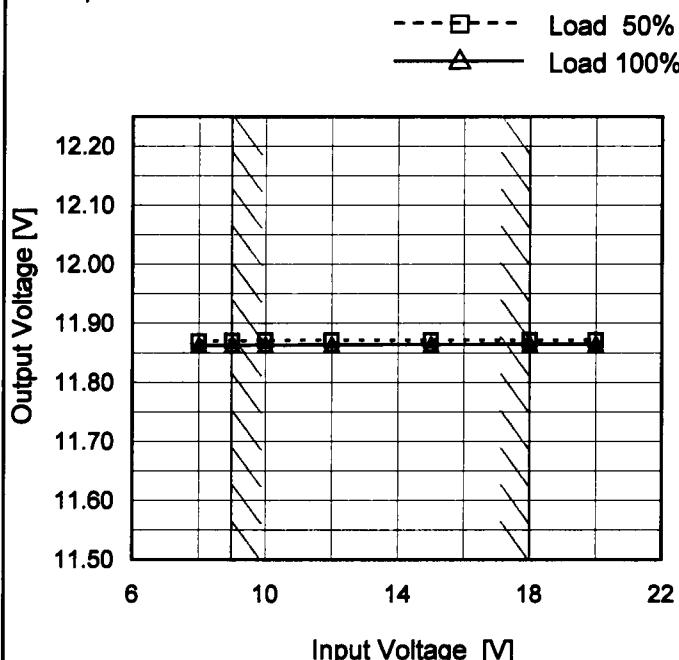
2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.0	-	-	-
0.2	81.2	79.6	79.8
0.4	86.1	85.0	84.9
0.6	87.0	87.0	85.7
0.8	87.2	87.5	87.1
1.0	86.5	87.6	87.6
1.1	86.1	87.4	87.7
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUS101212/SUCS101212
Item	Line Regulation
Object	+12V1A

1. Graph



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

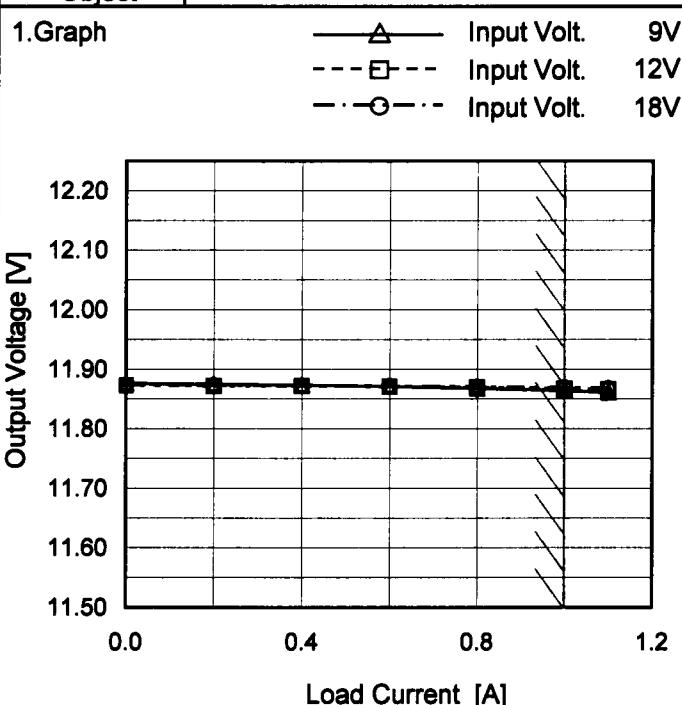
Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8	11.869	11.863
9	11.871	11.863
10	11.871	11.863
12	11.871	11.864
15	11.871	11.865
18	11.871	11.865
20	11.871	11.865
-	-	-
-	-	-

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Model	SUS101212/SUCS101212
Item	Load Regulation
Object	+12V1A

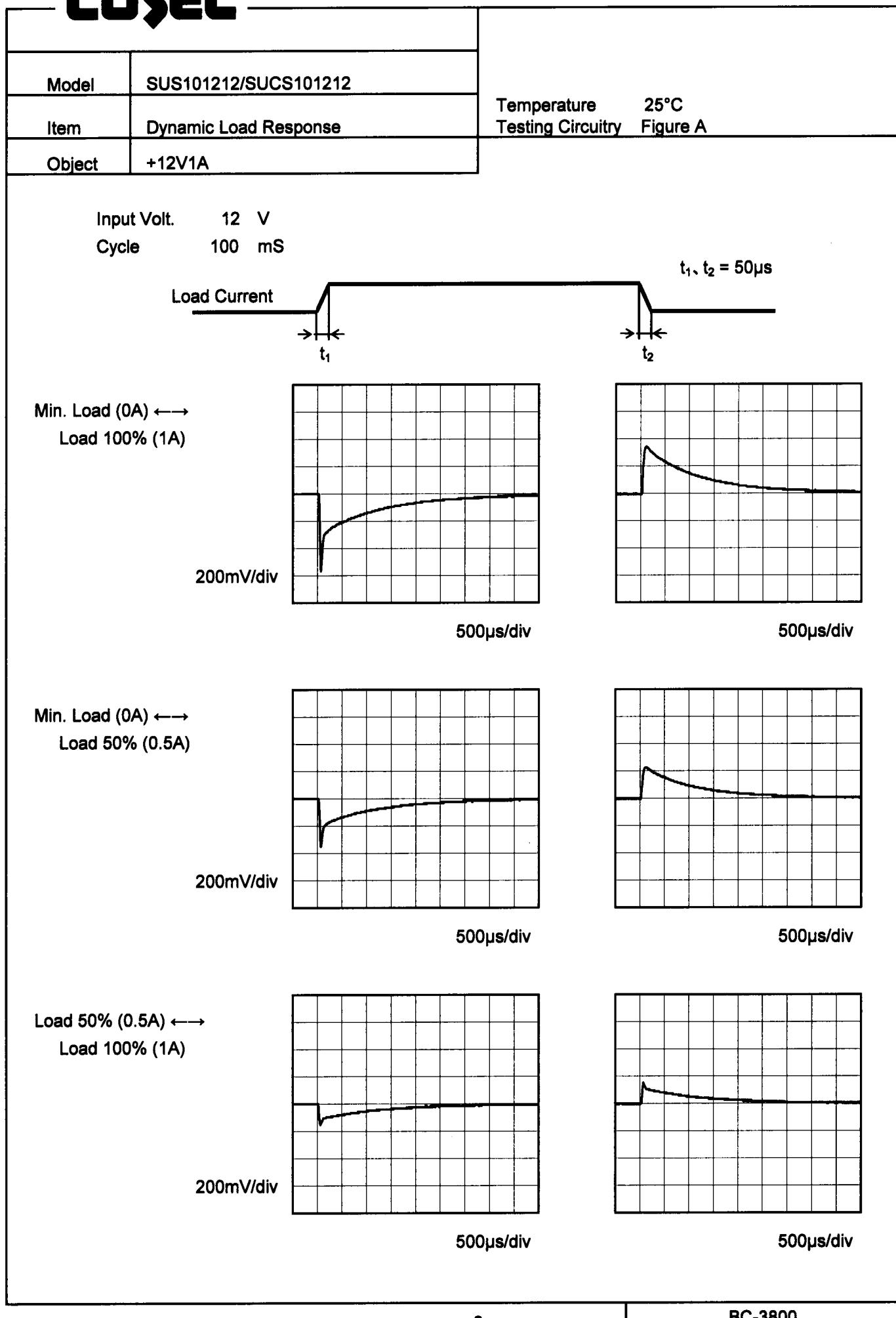


Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.0	11.876	11.873	11.873
0.2	11.875	11.872	11.873
0.4	11.873	11.872	11.872
0.6	11.871	11.871	11.872
0.8	11.868	11.870	11.871
1.0	11.864	11.868	11.869
1.1	11.861	11.866	11.868
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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

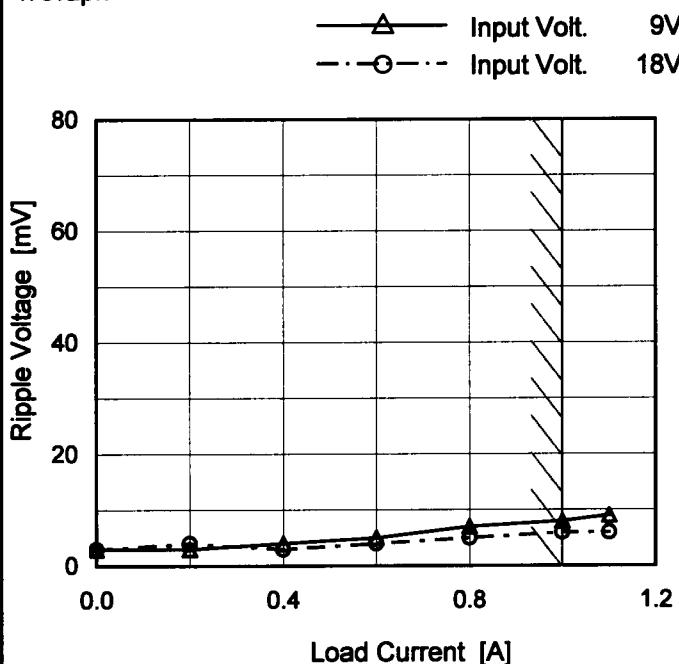
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Model	SUS101212/SUCS101212
Item	Ripple Voltage (by Load Current)
Object	+12V1A

Temperature 25°C
Testing Circuitry Figure B

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.0	3	3
0.2	3	4
0.4	4	3
0.6	5	4
0.8	7	5
1.0	8	6
1.1	9	6
—	-	-
—	-	-
—	-	-
—	-	-

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]

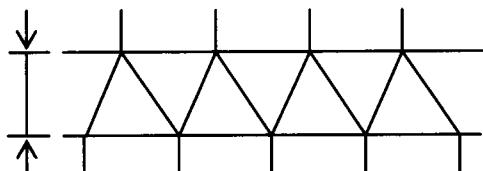


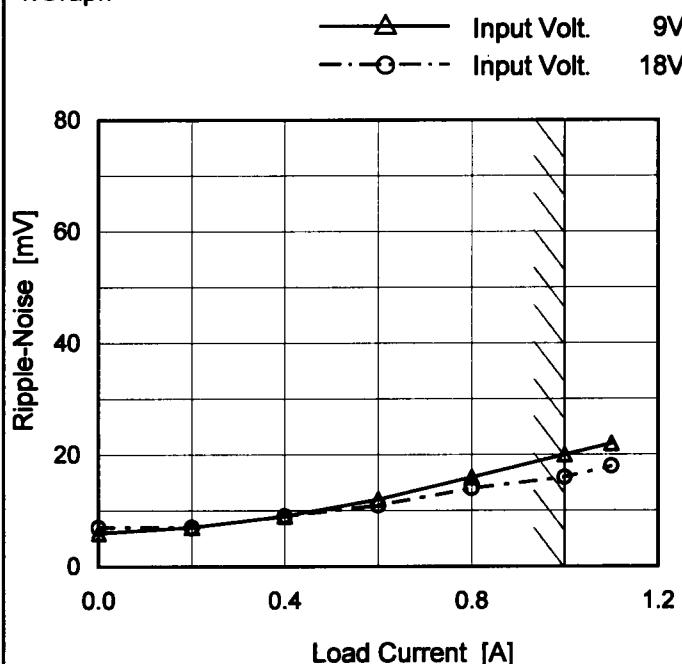
Fig.Complex Ripple Wave Form

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Model	SUS101212/SUCCS101212
Item	Ripple-Noise
Object	+12V1A

 Temperature 25°C
 Testing Circuitry Figure B

1. Graph



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.

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.0	6	7
0.2	7	7
0.4	9	9
0.6	12	11
0.8	16	14
1.0	20	16
1.1	22	18
—	-	-
—	-	-
—	-	-
—	-	-

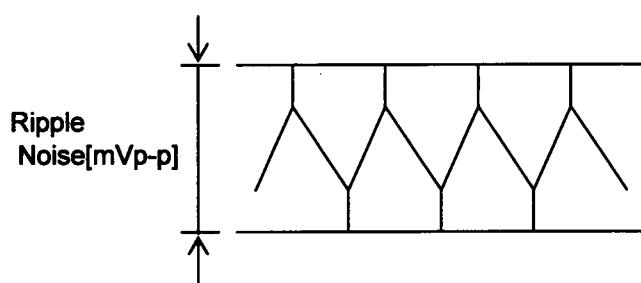
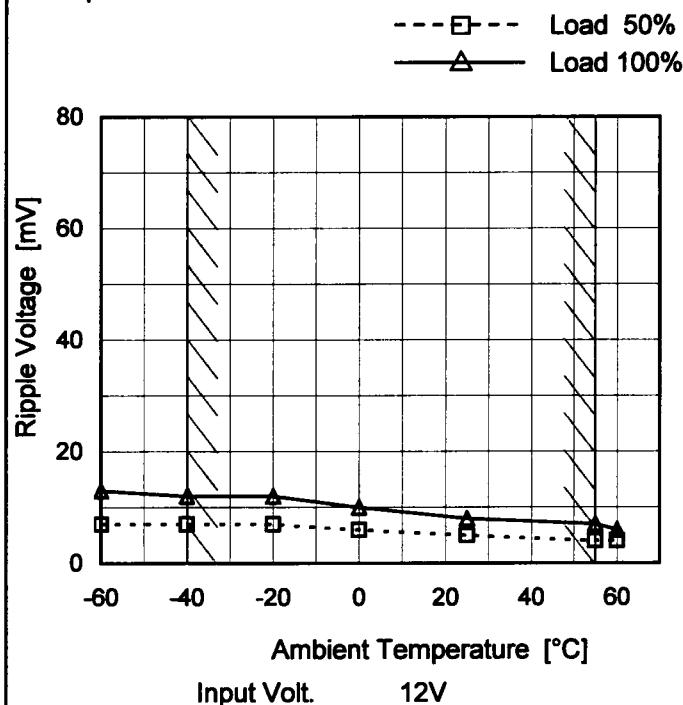


Fig.Complex Ripple Noise Wave Form

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Model	SUS101212/SUCS101212
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V1A

1. Graph



Testing Circuitry Figure B

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	7	13
-40	7	12
-20	7	12
0	6	10
25	5	8
55	4	7
60	4	6
-	-	-
-	-	-
-	-	-
-	-	-

Measured by 100 MHz Oscilloscope.

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

Model	SUS101212/SUCS101212																																																					
Item	Ambient Temperature Drift																																																					
Object	+12V1A																																																					
1. Graph		Testing Circuitry Figure A																																																				
<p>The graph plots Output Voltage [V] on the y-axis (ranging from 11.50 to 12.20) against Ambient Temperature [°C] on the x-axis (ranging from -60 to 60). Three data series are shown for Input Voltages of 9V, 12V, and 18V. Each series consists of four data points at -60°C, -20°C, 20°C, and 60°C. The output voltage is nearly constant at approximately 11.87V across all temperatures and input voltages. A slanted line is drawn through the data points, representing the rated ambient temperature range.</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</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>-60</td><td>11.869</td><td>11.872</td><td>11.876</td></tr> <tr><td>-40</td><td>11.876</td><td>11.879</td><td>11.881</td></tr> <tr><td>-20</td><td>11.878</td><td>11.880</td><td>11.882</td></tr> <tr><td>0</td><td>11.875</td><td>11.876</td><td>11.877</td></tr> <tr><td>25</td><td>11.864</td><td>11.864</td><td>11.865</td></tr> <tr><td>55</td><td>11.843</td><td>11.843</td><td>11.843</td></tr> <tr><td>60</td><td>11.839</td><td>11.839</td><td>11.839</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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	-60	11.869	11.872	11.876	-40	11.876	11.879	11.881	-20	11.878	11.880	11.882	0	11.875	11.876	11.877	25	11.864	11.864	11.865	55	11.843	11.843	11.843	60	11.839	11.839	11.839	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated ambient temperature.



Model	SUS101212/SUCS101212	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V1A	

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 : 9 - 18V

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

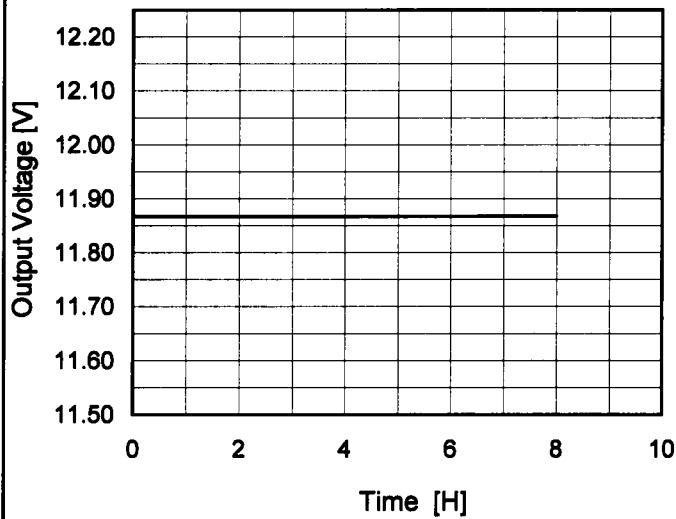
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	9	0	11.887	± 22	± 0.2
Minimum Voltage	55	9	1	11.843		

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Model	SUS101212/SUCS101212
Item	Time Lapse Drift
Object	+12V1A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



Input Volt. 12V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	11.873
0.5	11.867
1.0	11.867
2.0	11.867
3.0	11.867
4.0	11.867
5.0	11.867
6.0	11.867
7.0	11.868
8.0	11.868

COSEL

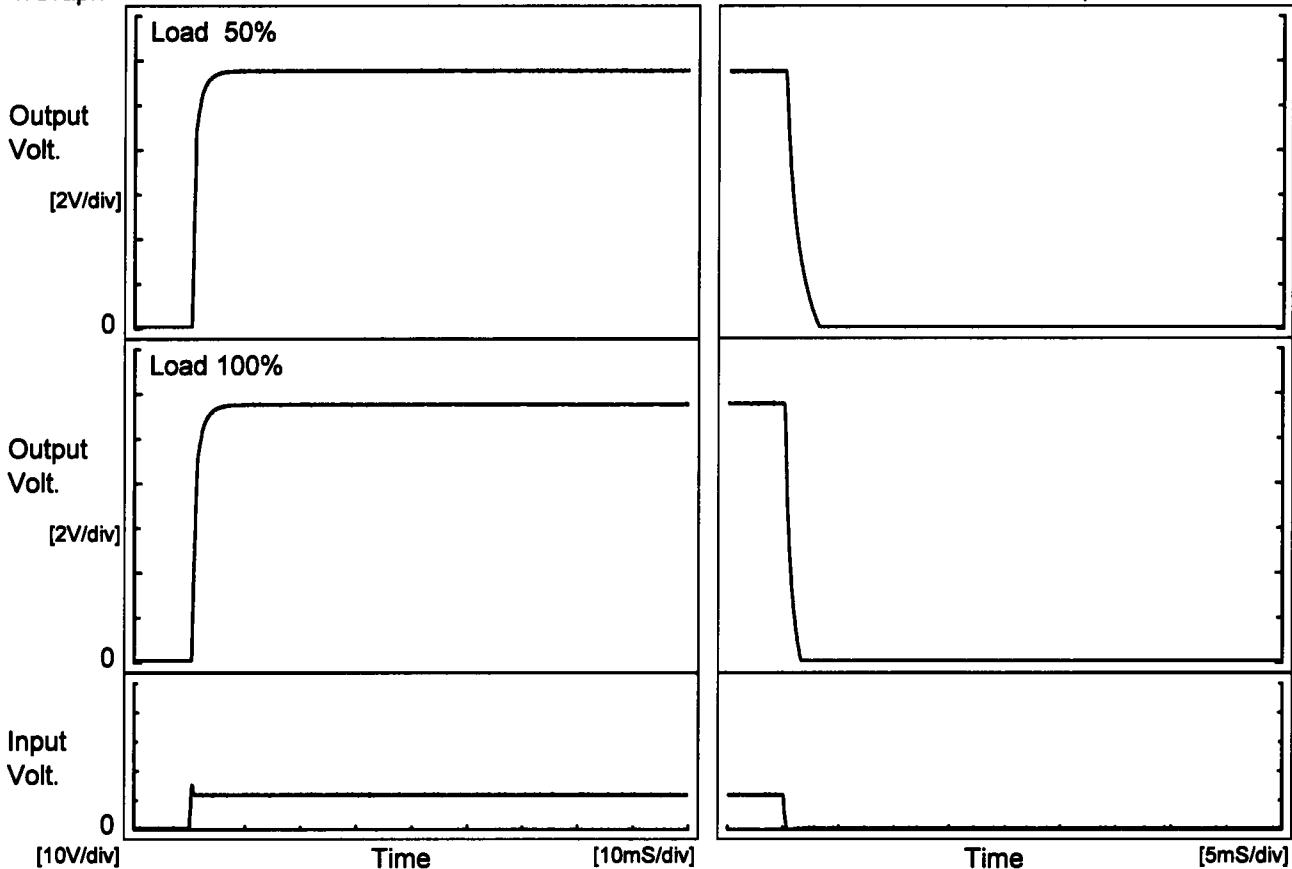
Model SUS101212/SUCS101212

Item Rise and Fall Time

Object +12V1A

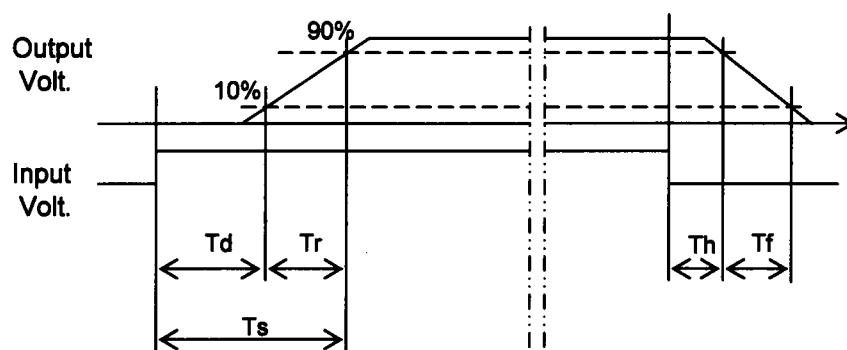
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

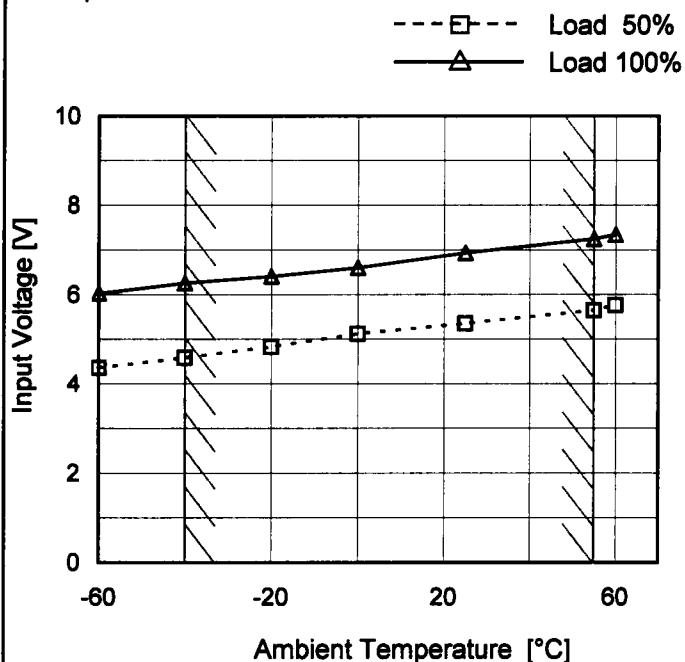
Load	Time	Td	Tr	Ts	Th	Tf	[mS]
50 %		0.5	2.3	2.8	0.2	2.1	
100 %		0.5	2.6	3.1	0.2	1.1	



COSEL

Model	SUS101212/SUCS101212
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V1A

1. Graph



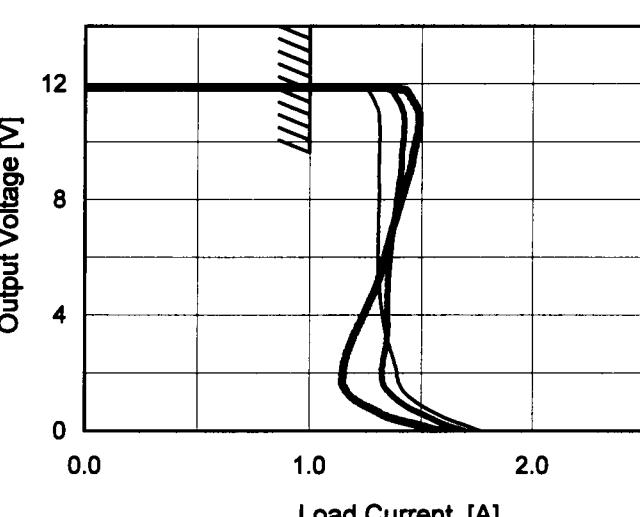
Note: Slanted line shows the range of the rated ambient temperature.

Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	4.4	6.1
-40	4.6	6.3
-20	4.9	6.5
0	5.2	6.6
25	5.4	7.0
55	5.7	7.3
60	5.8	7.4
--	-	-
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COSEL

Model	SUS101212/SUCS101212	Temperature Testing Circuitry	25°C Figure A																																																							
Item	Overcurrent Protection																																																									
Object	+12V1A																																																									
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Note: Slanted line shows the range of the rated load current.		<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>12.0</td><td>1.25</td><td>1.33</td><td>1.36</td></tr> <tr><td>11.4</td><td>1.29</td><td>1.39</td><td>1.46</td></tr> <tr><td>10.8</td><td>1.31</td><td>1.42</td><td>1.49</td></tr> <tr><td>9.6</td><td>1.31</td><td>1.41</td><td>1.46</td></tr> <tr><td>8.4</td><td>1.31</td><td>1.40</td><td>1.42</td></tr> <tr><td>7.2</td><td>1.31</td><td>1.38</td><td>1.38</td></tr> <tr><td>6.0</td><td>1.31</td><td>1.36</td><td>1.34</td></tr> <tr><td>4.8</td><td>1.31</td><td>1.35</td><td>1.29</td></tr> <tr><td>3.6</td><td>1.34</td><td>1.35</td><td>1.22</td></tr> <tr><td>2.4</td><td>1.38</td><td>1.33</td><td>1.16</td></tr> <tr><td>1.2</td><td>1.45</td><td>1.38</td><td>1.19</td></tr> <tr><td>0.0</td><td>1.79</td><td>1.71</td><td>1.64</td></tr> </tbody> </table>		Output Voltage [V]	Load Current [A]			Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	12.0	1.25	1.33	1.36	11.4	1.29	1.39	1.46	10.8	1.31	1.42	1.49	9.6	1.31	1.41	1.46	8.4	1.31	1.40	1.42	7.2	1.31	1.38	1.38	6.0	1.31	1.36	1.34	4.8	1.31	1.35	1.29	3.6	1.34	1.35	1.22	2.4	1.38	1.33	1.16	1.2	1.45	1.38	1.19	0.0	1.79	1.71	1.64
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COSEL

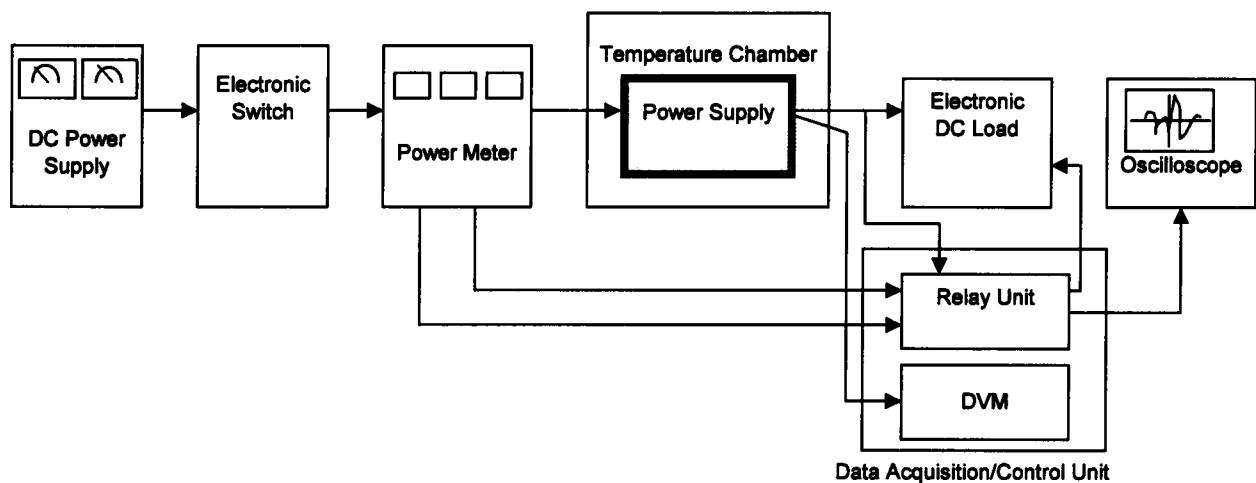


Figure A

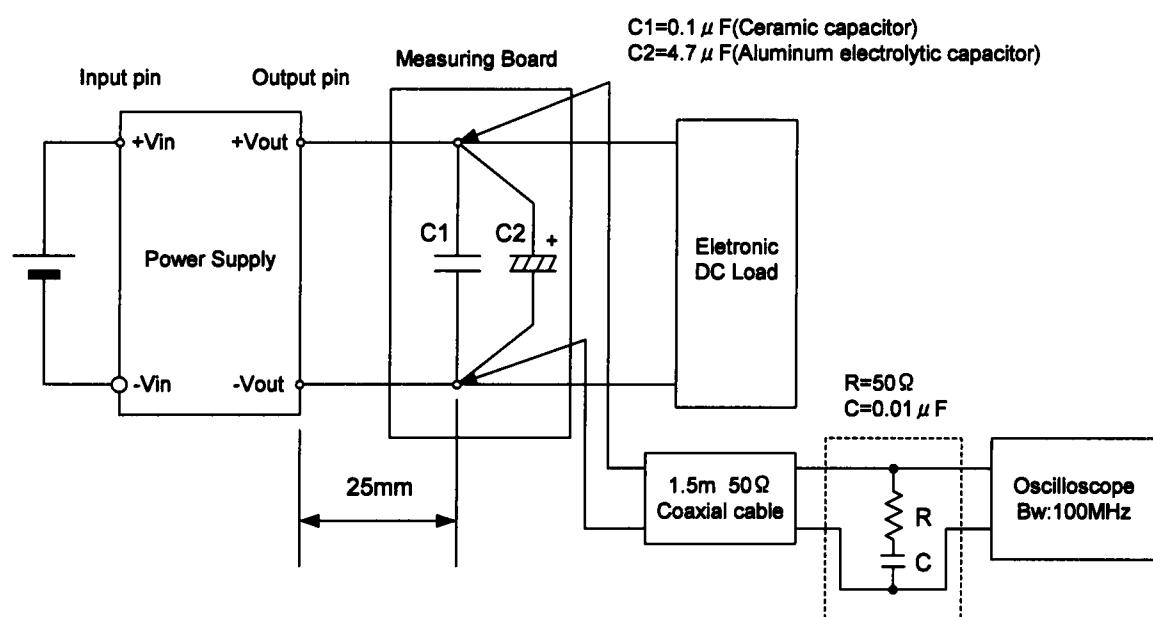


Figure B (Ripple and Ripple noise Characteristic)