

# TEST DATA OF MGS151212

Regulated DC Power Supply  
September 11, 2010

Approved by : Kazunari Asano  
Kazunari Asano

Design Manager

Prepared by : Shintaro Mizukami.  
Shintaro Mizukami

Design Engineer

**COSEL CO.,LTD.**



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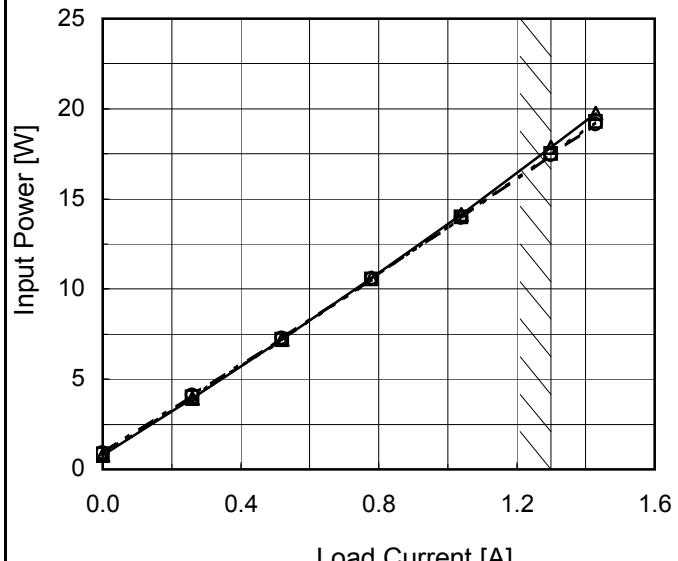
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1.Graph	<p>—△— Load 100%</p> <p>- - -□- - Load 50%</p> <p>- - ○- - Load 0%</p> <table border="1"> <caption>Data points estimated from Graph</caption> <thead> <tr> <th>Input Voltage [V]</th> <th>Load 0% [A]</th> <th>Load 50% [A]</th> <th>Load 100% [A]</th> </tr> </thead> <tbody> <tr><td>8.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>8.5</td><td>0.001</td><td>0.001</td><td>0.001</td></tr> <tr><td>9.0</td><td>0.001</td><td>0.001</td><td>0.001</td></tr> <tr><td>10.0</td><td>0.001</td><td>0.001</td><td>0.001</td></tr> <tr><td>12.0</td><td>0.002</td><td>0.002</td><td>0.002</td></tr> <tr><td>14.0</td><td>0.002</td><td>0.002</td><td>0.002</td></tr> <tr><td>16.0</td><td>0.002</td><td>0.002</td><td>0.002</td></tr> <tr><td>18.0</td><td>0.002</td><td>0.002</td><td>0.002</td></tr> <tr><td>20.0</td><td>0.002</td><td>0.002</td><td>0.002</td></tr> </tbody> </table>	Input Voltage [V]	Load 0% [A]	Load 50% [A]	Load 100% [A]	8.0	0.000	0.000	0.000	8.5	0.001	0.001	0.001	9.0	0.001	0.001	0.001	10.0	0.001	0.001	0.001	12.0	0.002	0.002	0.002	14.0	0.002	0.002	0.002	16.0	0.002	0.002	0.002	18.0	0.002	0.002	0.002	20.0	0.002	0.002	0.002
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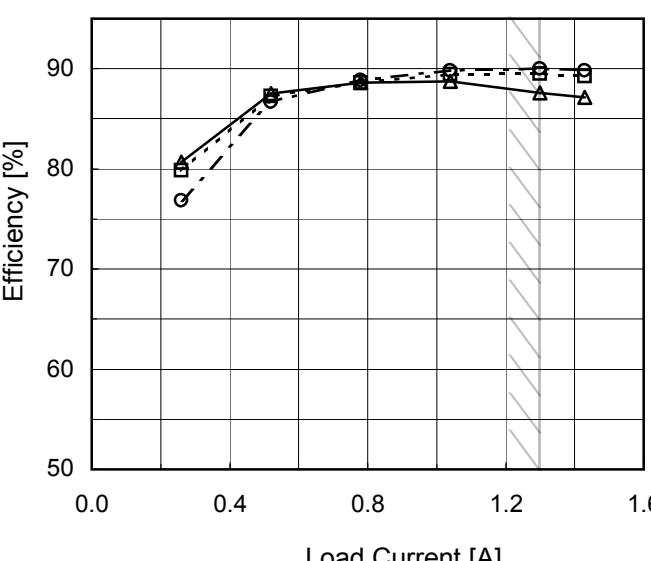
Note: Slanted line shows the range of the rated input voltage.

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
2.0	0.001	0.001	0.001
4.0	0.001	0.002	0.002
6.0	0.002	0.002	0.002
7.0	0.002	0.002	0.002
8.0	0.002	0.002	0.002
8.1	0.092	1.123	2.206
8.5	0.089	1.040	2.098
9.0	0.085	0.983	1.966
10.0	0.079	0.881	1.747
12.0	0.069	0.733	1.457
14.0	0.062	0.629	1.241
16.0	0.056	0.554	1.082
18.0	0.052	0.492	0.963
20.0	0.048	0.443	0.865
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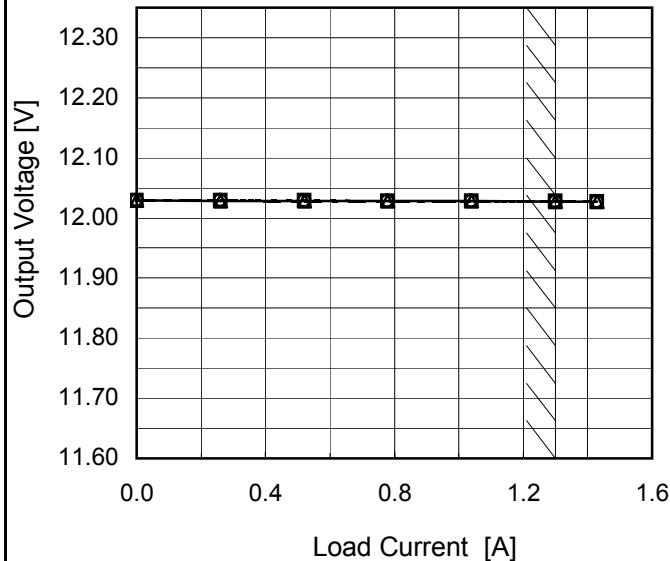
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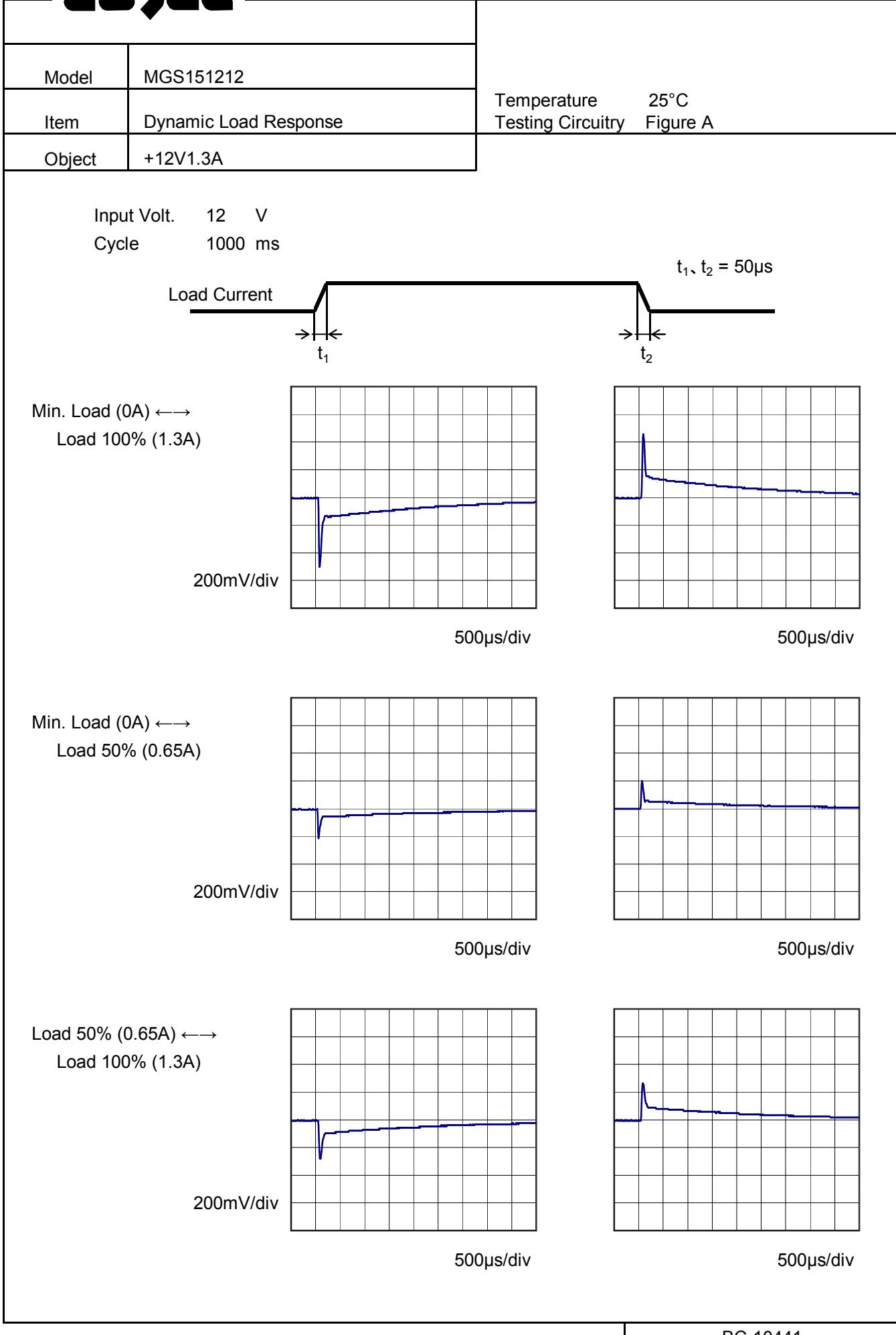
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<p>The graph plots Efficiency [%] on the y-axis (50 to 90) against Input Voltage [V] on the x-axis (6 to 22). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show efficiency increasing slightly with input voltage. 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>8.5</td><td>87.9</td><td>87.3</td></tr> <tr><td>9.0</td><td>88.1</td><td>87.7</td></tr> <tr><td>10.0</td><td>88.2</td><td>88.6</td></tr> <tr><td>12.0</td><td>88.5</td><td>89.4</td></tr> <tr><td>15.0</td><td>88.5</td><td>89.9</td></tr> <tr><td>18.0</td><td>88.0</td><td>89.9</td></tr> <tr><td>20.0</td><td>87.9</td><td>90.1</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% [%]	8.5	87.9	87.3	9.0	88.1	87.7	10.0	88.2	88.6	12.0	88.5	89.4	15.0	88.5	89.9	18.0	88.0	89.9	20.0	87.9	90.1	--	-	-	--	-	-		
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Model	MGS151212	Temperature Testing Circuitry      25°C Figure A																																																					
Item	Load Regulation																																																						
Object	+12V1.3A																																																						
1.Graph	<p style="text-align: center;"> <span style="color: black;">—△—</span> Input Volt. 9V  <span style="color: gray;">---□---</span> Input Volt. 12V  <span style="color: gray;">---○---</span> Input Volt. 18V         </p>  <p>The graph plots Output Voltage [V] on the Y-axis (11.60 to 12.30) against Load Current [A] on the X-axis (0.0 to 1.6). Three horizontal lines represent the output voltage for different input voltages: 9V (12.029V), 12V (12.028V), and 18V (12.027V). A slanted line indicates the range of the rated load current.</p>	2.Values																																																					
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Note: Slanted line shows the range of the rated load current.

**COSSEL**

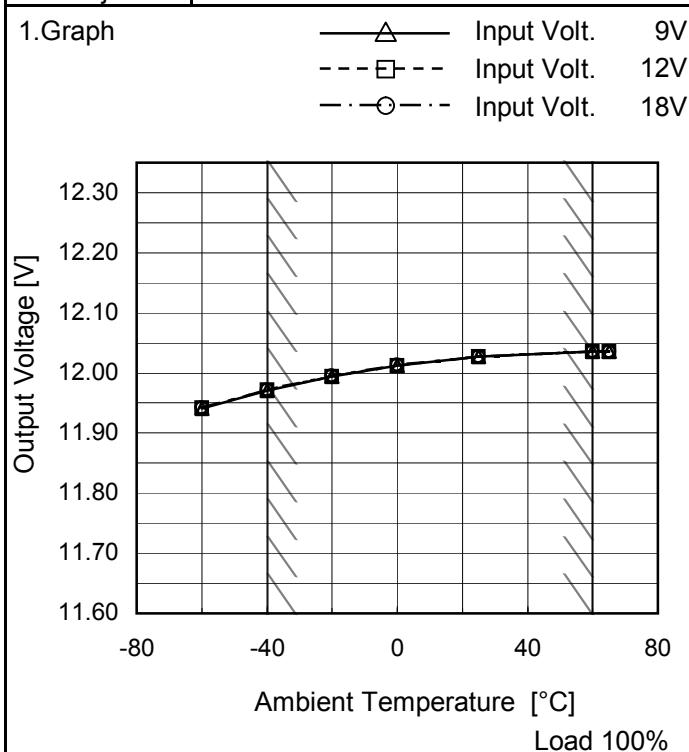
Model	MGS151212																																							
Item	Ripple Voltage (by Load Current)	Temperature      25°C Testing Circuitry      Figure B																																						
Object	+12V1.3A																																							
1.Graph																																								
<p>Y-axis: Ripple Voltage [mV] (0 to 100)  X-axis: Load Current [A] (0.0 to 1.6)  Legend: Input Volt. 9V (solid line with open circles), Input Volt. 18V (dashed line with open circles)</p>																																								
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<p>Fig.Complex Ripple Wave Form</p>																																								

Model	MGS151212	Temperature Testing Circuitry	25°C Figure B																																						
Item	Ripple-Noise																																								
Object	+12V1.3A																																								
1.Graph			2.Values																																						
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The graph plots Ripple Voltage [mV] on the Y-axis (0 to 100) against Load Current [A] on the X-axis (0.0 to 1.6). Two curves are shown: one for Input Volt. 9V (solid line with triangle markers) and one for Input Volt. 18V (dashed line with circle markers). Both curves show a slight increase in ripple voltage as load current increases, with a more pronounced effect at 18V. A vertical dashed line at approximately 1.3 A indicates 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. 9 [V]</th> <th>Input Volt. 18 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>8</td><td>9</td></tr> <tr><td>0.26</td><td>7</td><td>9</td></tr> <tr><td>0.52</td><td>7</td><td>9</td></tr> <tr><td>0.78</td><td>8</td><td>10</td></tr> <tr><td>1.04</td><td>9</td><td>10</td></tr> <tr><td>1.30</td><td>10</td><td>11</td></tr> <tr><td>1.43</td><td>11</td><td>11</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. 9 [V]	Input Volt. 18 [V]	0.00	8	9	0.26	7	9	0.52	7	9	0.78	8	10	1.04	9	10	1.30	10	11	1.43	11	11	--	-	-	--	-	-	--	-	-	--	-	-
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Model	MGS151212																																								
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure B																																							
Object	+12V1.3A																																								
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<p>Measured by 100 MHz Oscilloscope.</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																									

Model	MGS151212
Item	Ambient Temperature Drift
Object	+12V1.3A



Testing Circuitry Figure A

## 2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	11.941	11.942	11.943
-40	11.971	11.972	11.972
-20	11.994	11.995	11.995
0	12.012	12.013	12.013
25	12.027	12.027	12.027
60	12.036	12.036	12.036
65	12.036	12.036	12.036
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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



Model	MGS151212	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V1.3A	

### 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 - 1.3A

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

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

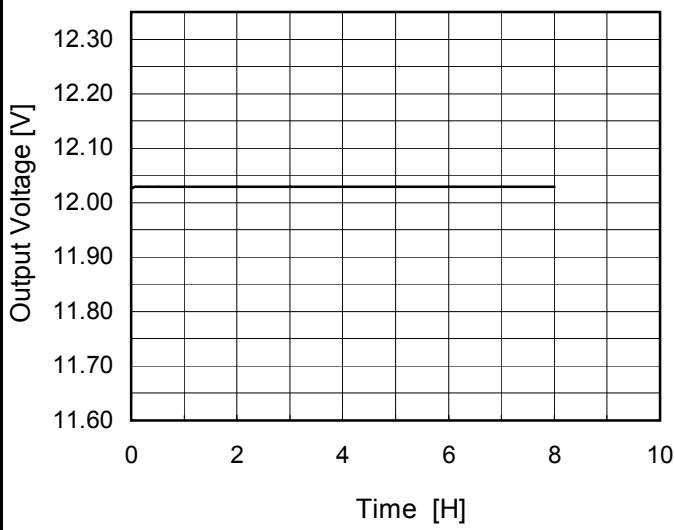
### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	9	0	12.038	±34	±0.3
Minimum Voltage	-40	9	1.3	11.971		

**COSEL**

Model	MGS151212
Item	Time Lapse Drift
Object	+12V1.3A

1. Graph



Temperature 25°C  
Testing Circuitry Figure A

2. Values

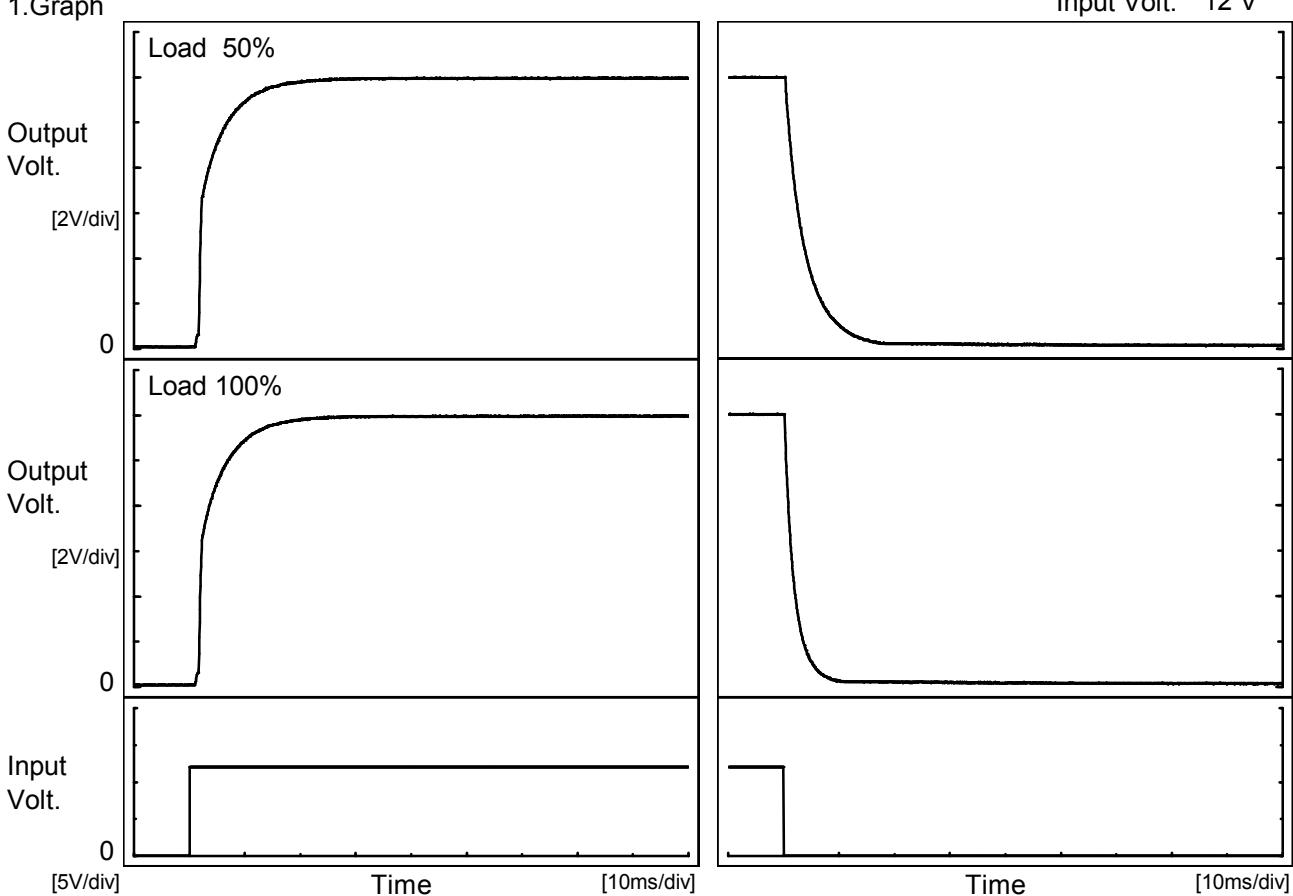
Time since start [H]	Output Voltage [V]
0.0	12.025
0.5	12.029
1.0	12.029
2.0	12.029
3.0	12.029
4.0	12.029
5.0	12.029
6.0	12.029
7.0	12.029
8.0	12.029

**COSEL**

Model	MGS151212
Item	Rise and Fall Time
Object	+12V1.3A

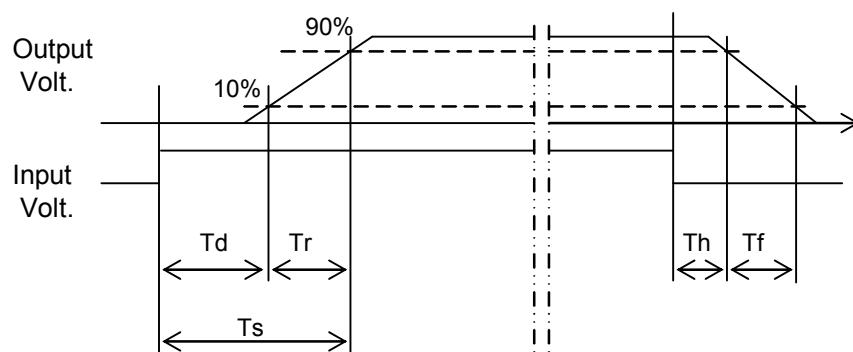
Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

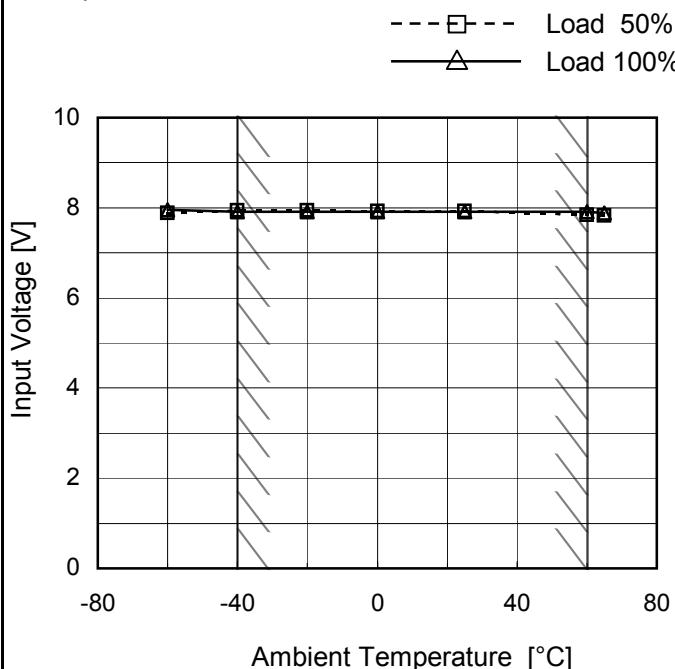
Load	Time	Td	Tr	Ts	Th	Tf
50 %		1.8	8.1	9.9	0.4	8.5
100 %		1.8	8.2	10.0	0.3	4.3



Model	MGS151212
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V1.3A

Testing Circuitry Figure A

## 1. Graph

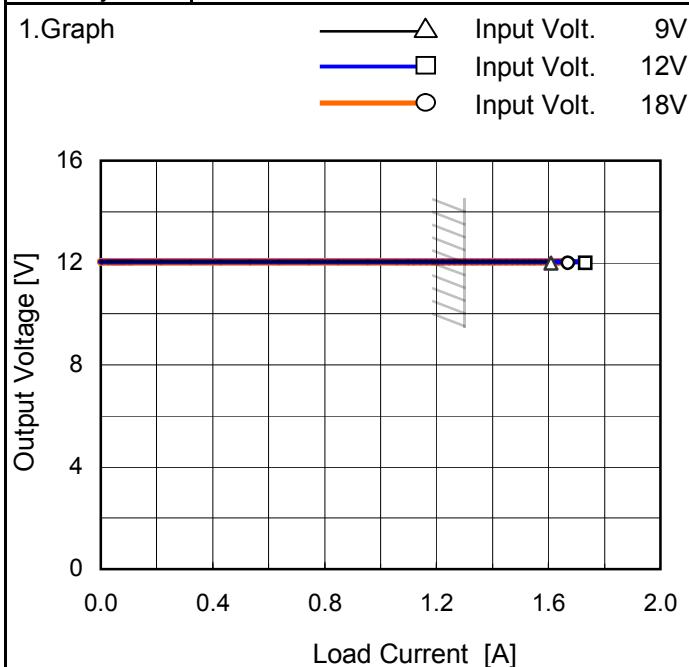


## 2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	7.9	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	7.9	7.9
--	-	-
--	-	-
--	-	-
--	-	-

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

Model	MGS151212
Item	Overcurrent Protection
Object	+12V1.3A



Intermittent operation occurs when overcurrent protection is activated.

Temperature 25°C  
Testing Circuitry Figure A

## 2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
12.0	1.61	1.73	1.67
11.4	-	-	-
10.8	-	-	-
9.6	-	-	-
8.4	-	-	-
7.2	-	-	-
6.0	-	-	-
4.8	-	-	-
3.6	-	-	-
2.4	-	-	-
1.2	-	-	-
0.0	-	-	-

COSEL

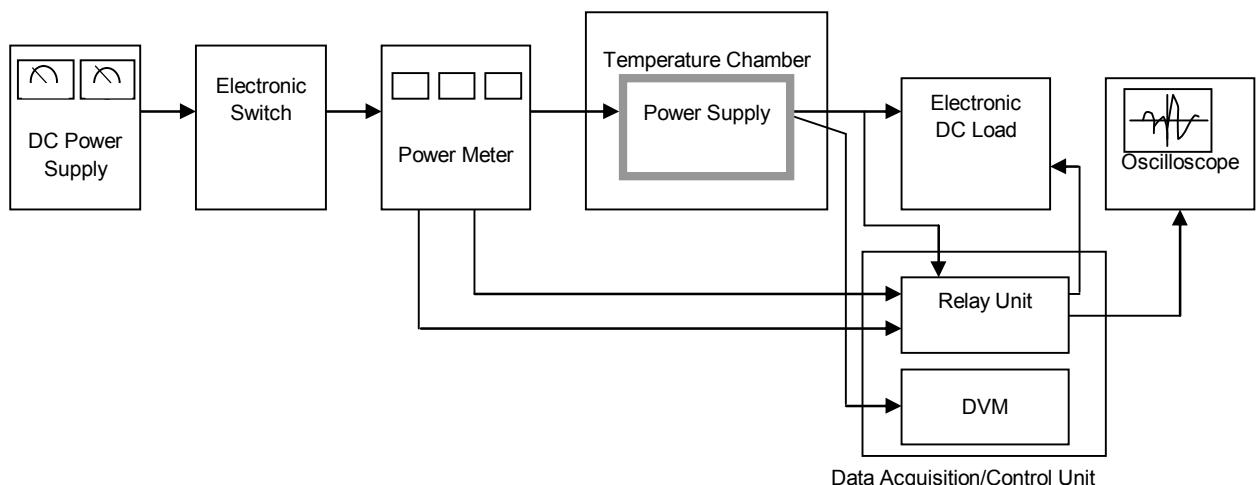


Figure A

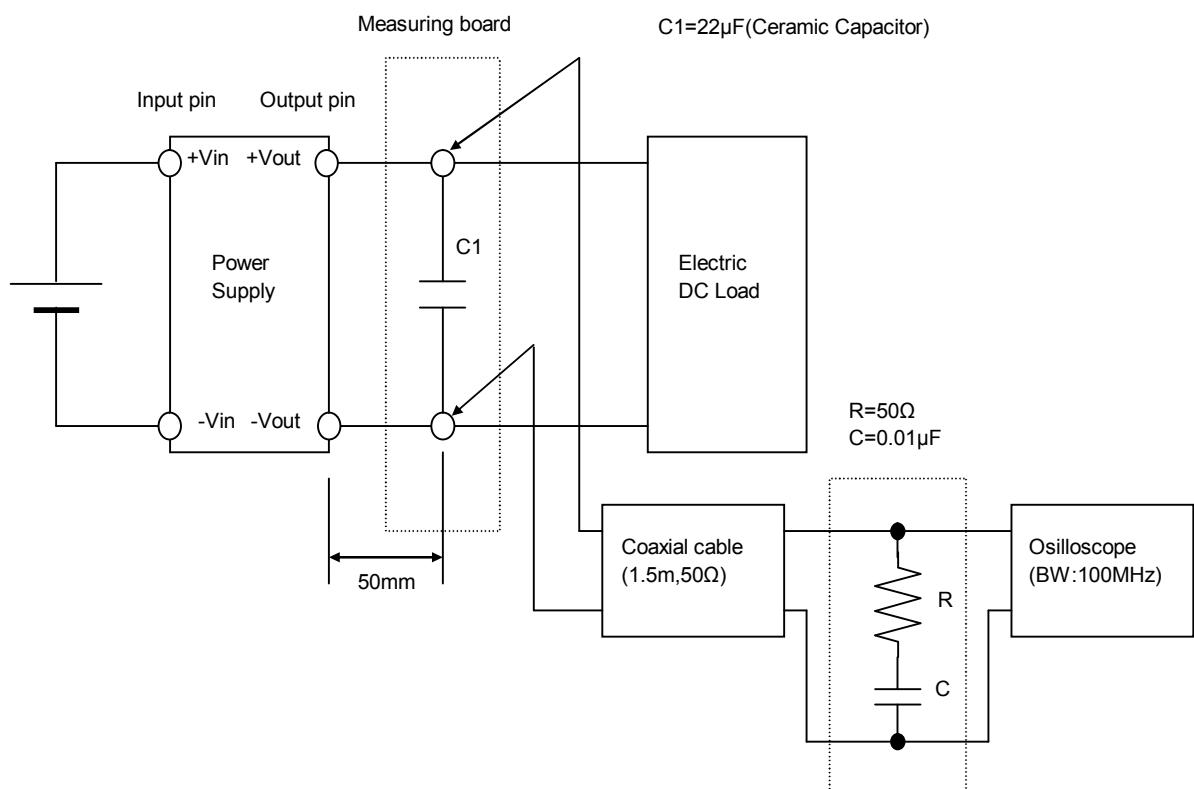


Figure B (Ripple and Ripple noise Characteristic)