



TEST DATA OF MGS1R52412

Regulated DC Power Supply
March 28, 2016

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Takayuki Fukuada Design Manager

Prepared by : Shohei Mukaide
Shohei Mukaide 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)

Model	MGS1R52412																																																																																	
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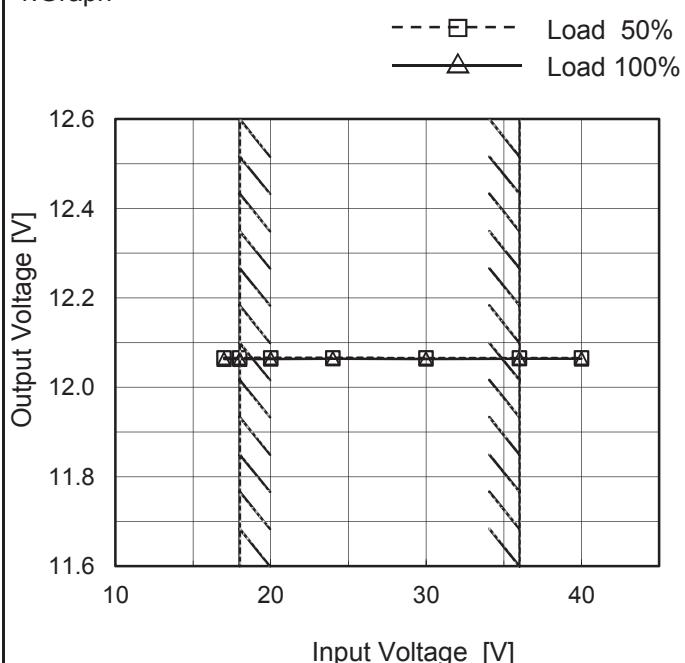
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Item	Line Regulation
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

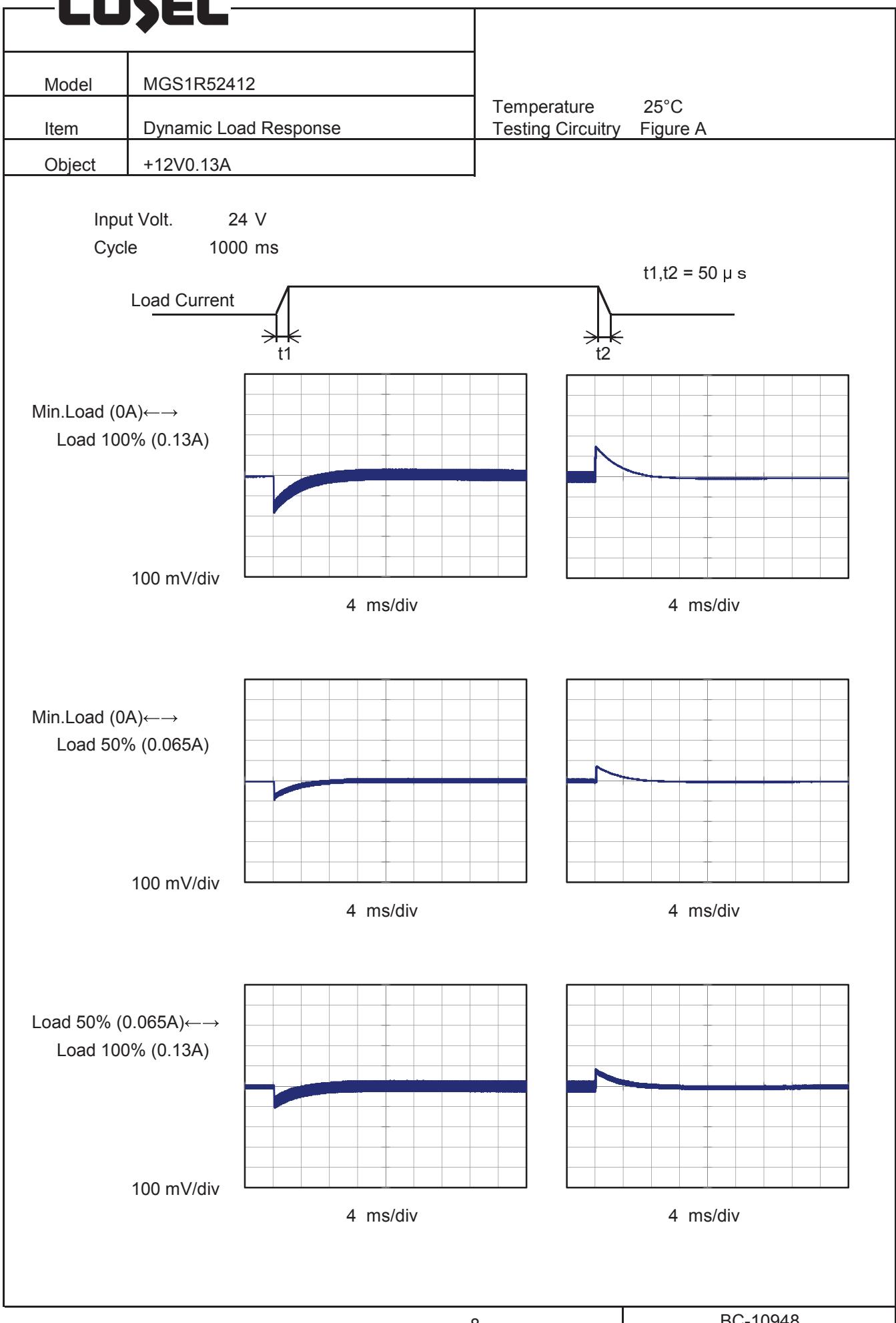


2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	12.066	12.063
18	12.066	12.063
20	12.066	12.063
24	12.066	12.064
30	12.066	12.063
36	12.066	12.064
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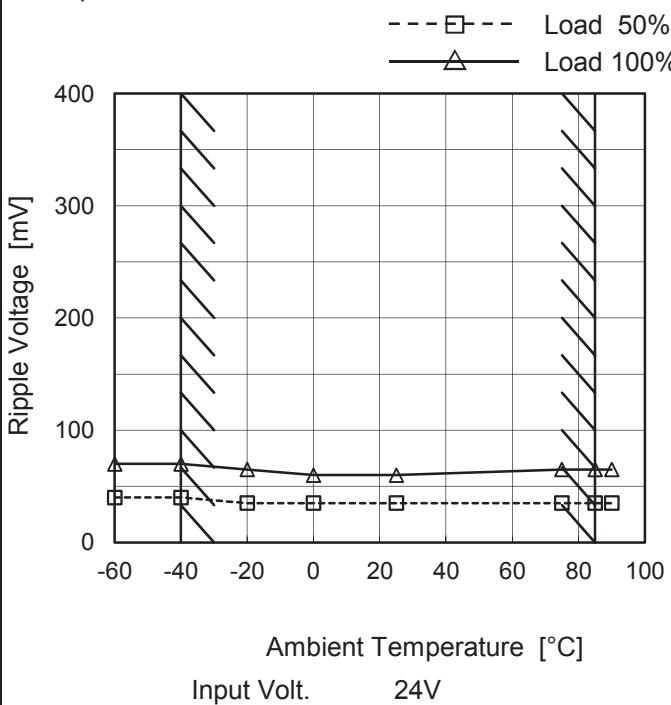
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<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The Y-axis ranges from 0 to 400 mV, and the X-axis ranges from 0.00 to 0.15 A. Two curves are plotted: one for Input Volt. 18V (solid line with open circles) and one for Input Volt. 36V (dashed line with open triangles). Both curves show an increase in ripple voltage as load current increases, with the 36V curve being consistently higher than the 18V curve. A slanted line indicates the rated load current range.</p>																																								
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<p>Ripple [mVp-p]</p> <p>Figure showing a complex ripple wave form. The waveform is triangular and periodic, representing the measured ripple voltage. It has a sharp peak-to-peak amplitude indicated by vertical arrows at the top and bottom of the waveform.</p>																																								
<p>Fig.Complex Ripple Wave Form</p>																																								

Model	MGS1R52412	Temperature Testing Circuitry	25°C Figure B																																						
Item	Ripple-Noise																																								
Object	+12V0.13A																																								
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<p>Fig.Complex Ripple Noise Wave Form</p>																																									

Model	MGS1R52412
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.13A

Testing Circuitry Figure B

1.Graph



2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	40	70
-40	40	70
-20	35	65
0	35	60
25	35	60
75	35	65
85	35	65
90	35	65
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.

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

Model	MGS1R52412	Testing Circuitry Figure A																																																					
Item	Ambient Temperature Drift																																																						
Object	+12V0.13A																																																						
1.Graph	<p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <ul style="list-style-type: none"> — ▲ — Input Volt. 18V - - □ - - Input Volt. 24V - - ○ - - Input Volt. 36V 																																																						
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Note:	Slanted line shows the range of the rated ambient temperature.																																																						

Model	MGS1R52412	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V0.13A	

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 - 85°C

Input Voltage : 18 - 36V

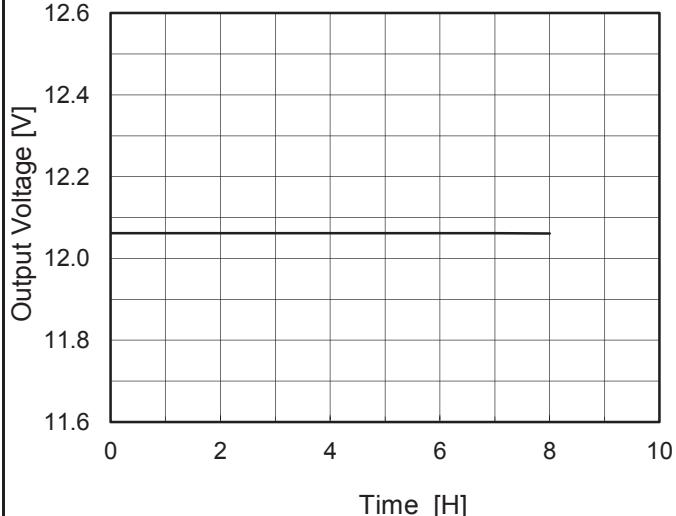
Load Current : 0 - 0.13A

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

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

2. Values

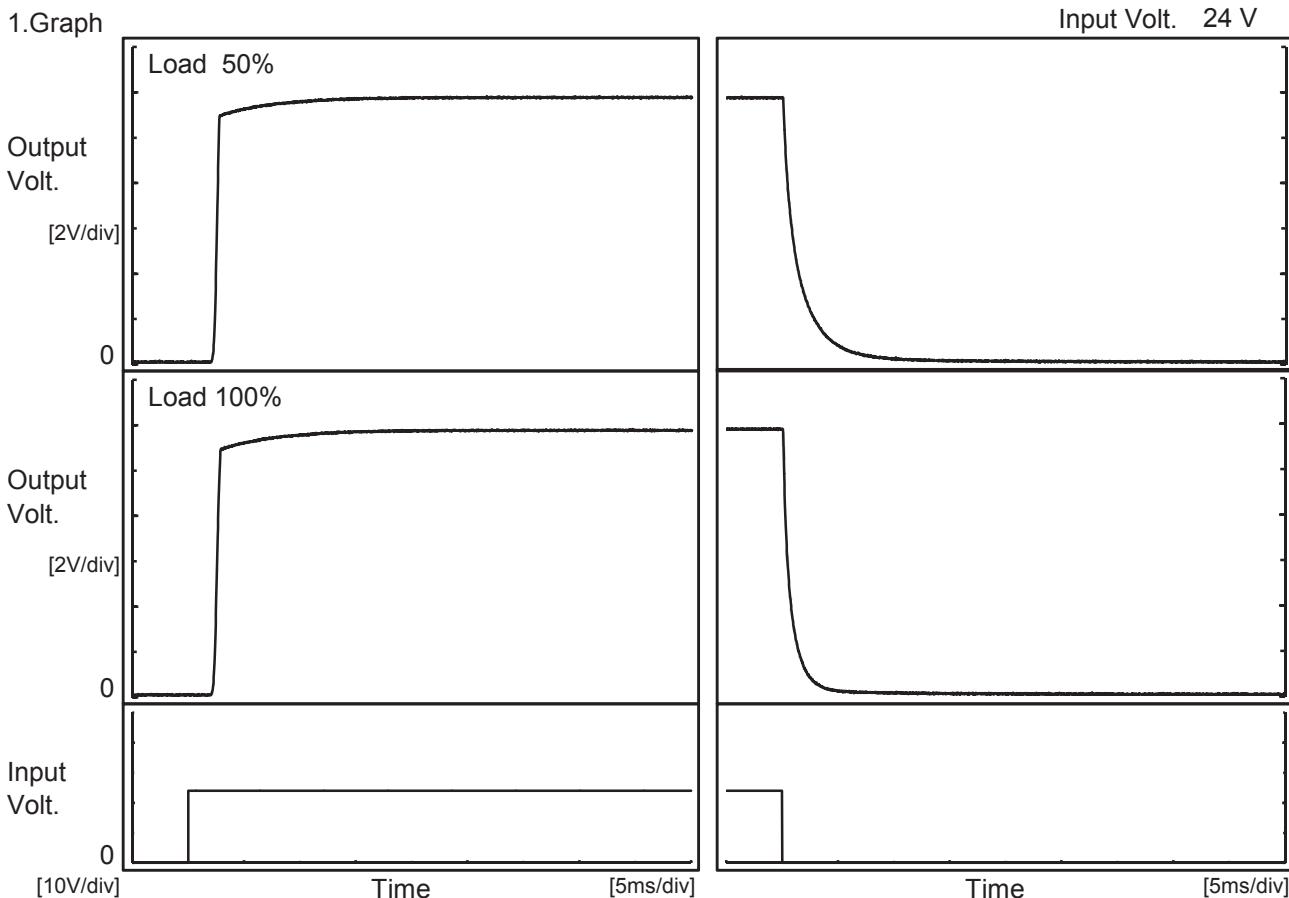
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	36	0	12.087	±48	±0.4
Minimum Voltage	-40	18	0.13	11.992		

Model	MGS1R52412	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+12V0.13A																								
1.Graph			2.Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 24V Load 100%</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>12.061</td></tr> <tr><td>0.5</td><td>12.062</td></tr> <tr><td>1.0</td><td>12.062</td></tr> <tr><td>2.0</td><td>12.062</td></tr> <tr><td>3.0</td><td>12.062</td></tr> <tr><td>4.0</td><td>12.062</td></tr> <tr><td>5.0</td><td>12.062</td></tr> <tr><td>6.0</td><td>12.061</td></tr> <tr><td>7.0</td><td>12.062</td></tr> <tr><td>8.0</td><td>12.061</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.061	0.5	12.062	1.0	12.062	2.0	12.062	3.0	12.062	4.0	12.062	5.0	12.062	6.0	12.061	7.0	12.062	8.0	12.061
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Model	MGS1R52412
Item	Rise and Fall Time
Object	+12V0.13A

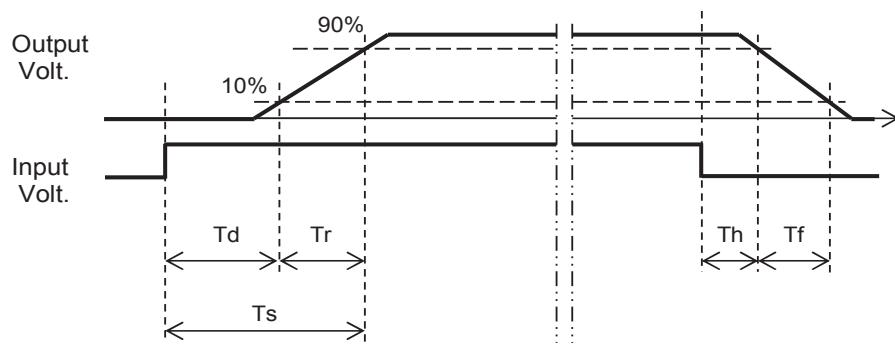
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

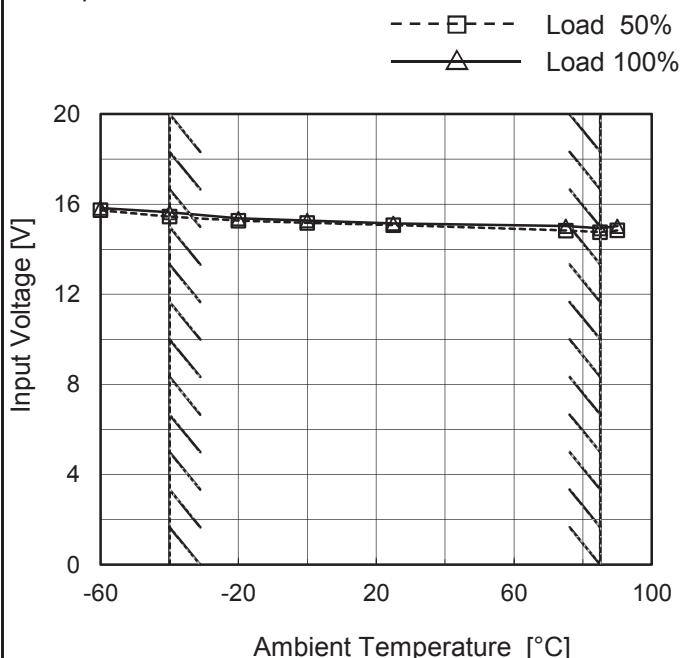
Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		2.4	0.5	2.9	0.2	3.7	
100 %		2.3	0.6	2.9	0.1	1.8	



Model	MGS1R52412
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.13A

Testing Circuitry Figure A

1. Graph



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.8	15.9
-40	15.5	15.7
-20	15.3	15.4
0	15.2	15.3
25	15.1	15.2
75	14.9	15.1
85	14.8	15.0
90	14.9	15.1
--	-	-
--	-	-
--	-	-

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

Model	MGS1R52412	Temperature	25°C																																																							
Item	Overcurrent Protection	Testing Circuitry	Figure A																																																							
Object	+12V0.13A																																																									
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Model	MGS1R52412	Temperature	25°C																																																			
Item	Switching frequency (by Load Current)	Testing Circuitry	Figure A																																																			
Object	+12V0.13A																																																					
1.Graph	<p>Legend:</p> <ul style="list-style-type: none"> Input Volt. 18V Input Volt. 24V Input Volt. 36V <p>Oscillator Frequency [kHz]</p> <p>Load Current [A]</p>																																																					
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Note: Slanted line shows the range of the rated load current.

-When load current is low, MG operates intermittently, so switching frequency would not become constant.

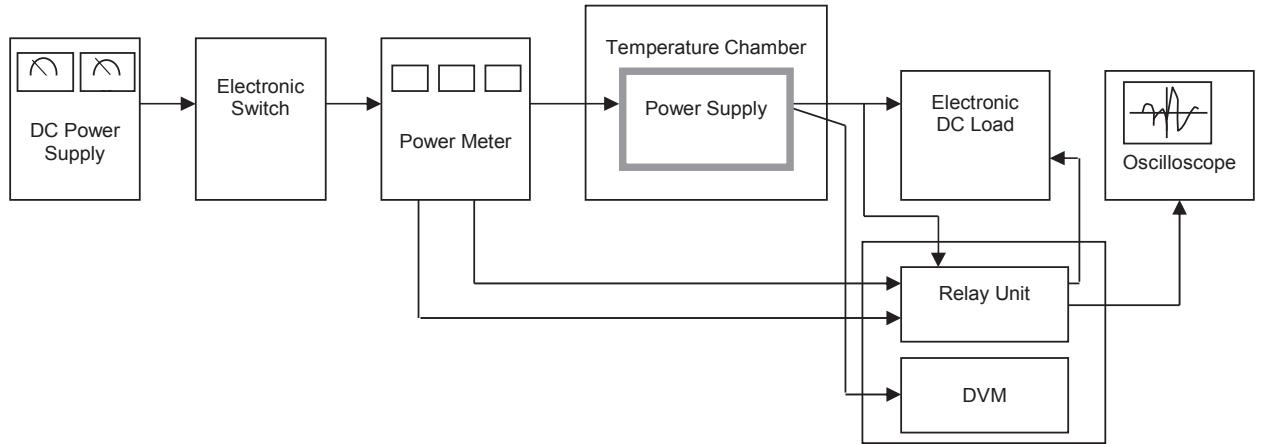


Figure A

Data Acquisition/Control Unit

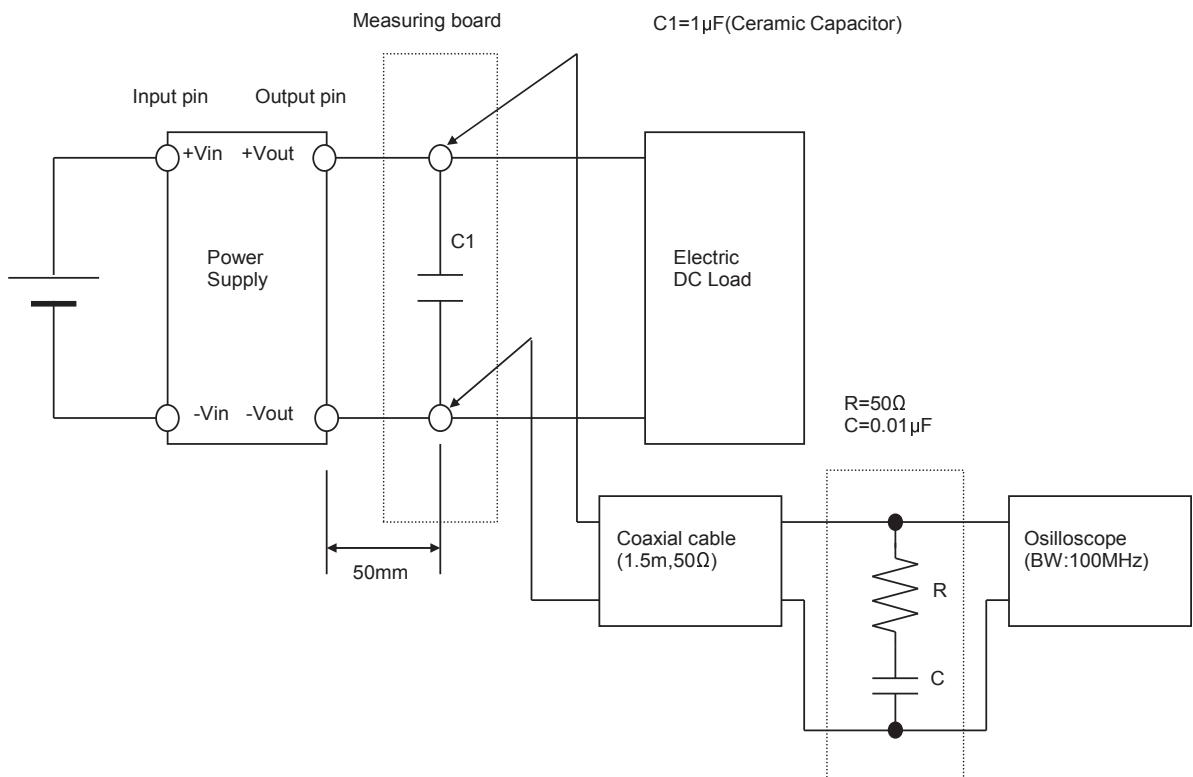


Figure B (Ripple and Ripple noise Characteristic)