

TEST DATA OF MGFS62412

Regulated DC Power Supply
December 16, 2016

Approved by : Takayuki Fukuda
Takayuki Fukuda Design Manager

Prepared by : Takaaki Sekiguchi
Takaaki Sekiguchi 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		MGFS62412		Temperature	25°C																																																																															
Item		Input Current (by Input Voltage)		Testing Circuitry	Figure A																																																																															
Object		_____																																																																																		
1.Graph			—△— Load 100% - - - □ - - Load 50% - · - ○ - · - Load 0%	2.Values																																																																																
			<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="3">Input Current [A]</th> </tr> <tr> <th>Load 0%</th> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>6.0</td><td>0.003</td><td>0.003</td><td>0.003</td></tr> <tr><td>8.0</td><td>0.003</td><td>0.003</td><td>0.003</td></tr> <tr><td>8.2</td><td>0.003</td><td>0.003</td><td>0.003</td></tr> <tr><td>8.4</td><td>0.024</td><td>0.413</td><td>0.834</td></tr> <tr><td>8.6</td><td>0.024</td><td>0.403</td><td>0.812</td></tr> <tr><td>8.8</td><td>0.024</td><td>0.394</td><td>0.789</td></tr> <tr><td>9.0</td><td>0.023</td><td>0.385</td><td>0.770</td></tr> <tr><td>12.0</td><td>0.019</td><td>0.289</td><td>0.571</td></tr> <tr><td>18.0</td><td>0.015</td><td>0.193</td><td>0.378</td></tr> <tr><td>24.0</td><td>0.009</td><td>0.148</td><td>0.283</td></tr> <tr><td>30.0</td><td>0.004</td><td>0.119</td><td>0.228</td></tr> <tr><td>36.0</td><td>0.004</td><td>0.100</td><td>0.191</td></tr> <tr><td>40.0</td><td>0.004</td><td>0.091</td><td>0.173</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>			Input Voltage [V]	Input Current [A]			Load 0%	Load 50%	Load 100%	0.0	0.000	0.000	0.000	6.0	0.003	0.003	0.003	8.0	0.003	0.003	0.003	8.2	0.003	0.003	0.003	8.4	0.024	0.413	0.834	8.6	0.024	0.403	0.812	8.8	0.024	0.394	0.789	9.0	0.023	0.385	0.770	12.0	0.019	0.289	0.571	18.0	0.015	0.193	0.378	24.0	0.009	0.148	0.283	30.0	0.004	0.119	0.228	36.0	0.004	0.100	0.191	40.0	0.004	0.091	0.173	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Input Voltage [V]	Input Current [A]																																																																																			
	Load 0%	Load 50%	Load 100%																																																																																	
0.0	0.000	0.000	0.000																																																																																	
6.0	0.003	0.003	0.003																																																																																	
8.0	0.003	0.003	0.003																																																																																	
8.2	0.003	0.003	0.003																																																																																	
8.4	0.024	0.413	0.834																																																																																	
8.6	0.024	0.403	0.812																																																																																	
8.8	0.024	0.394	0.789																																																																																	
9.0	0.023	0.385	0.770																																																																																	
12.0	0.019	0.289	0.571																																																																																	
18.0	0.015	0.193	0.378																																																																																	
24.0	0.009	0.148	0.283																																																																																	
30.0	0.004	0.119	0.228																																																																																	
36.0	0.004	0.100	0.191																																																																																	
40.0	0.004	0.091	0.173																																																																																	
--	-	-	-																																																																																	
--	-	-	-																																																																																	
--	-	-	-																																																																																	
--	-	-	-																																																																																	
Note: Slanted line shows the range of the rated input voltage.																																																																																				



Model		MGFS62412		Temperature	25°C																																																																													
Item		Input Current (by Load Current)		Testing Circuitry	Figure A																																																																													
Object		_____																																																																																
1.Graph			—△— Input Volt. 9V	2.Values																																																																														
			---□--- Input Volt. 12V																																																																															
			-·-·*·-·-·- Input Volt. 18V																																																																															
			-·-·○·-·-·- Input Volt. 24V																																																																															
			-·-·◇·-·-·- Input Volt. 36V																																																																															
<p>Note: Slanted line shows the range of the rated load current.</p>			<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Input Current [A]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.023</td><td>0.019</td><td>0.015</td><td>0.009</td><td>0.004</td></tr> <tr><td>0.10</td><td>0.165</td><td>0.126</td><td>0.087</td><td>0.067</td><td>0.047</td></tr> <tr><td>0.20</td><td>0.312</td><td>0.235</td><td>0.159</td><td>0.120</td><td>0.084</td></tr> <tr><td>0.30</td><td>0.463</td><td>0.346</td><td>0.231</td><td>0.174</td><td>0.119</td></tr> <tr><td>0.40</td><td>0.619</td><td>0.459</td><td>0.304</td><td>0.230</td><td>0.154</td></tr> <tr><td>0.50</td><td>0.770</td><td>0.571</td><td>0.378</td><td>0.283</td><td>0.191</td></tr> <tr><td>0.55</td><td>0.856</td><td>0.632</td><td>0.417</td><td>0.312</td><td>0.209</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><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]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	0.023	0.019	0.015	0.009	0.004	0.10	0.165	0.126	0.087	0.067	0.047	0.20	0.312	0.235	0.159	0.120	0.084	0.30	0.463	0.346	0.231	0.174	0.119	0.40	0.619	0.459	0.304	0.230	0.154	0.50	0.770	0.571	0.378	0.283	0.191	0.55	0.856	0.632	0.417	0.312	0.209	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
Load Current [A]	Input Current [A]																																																																																	
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																													
0.00	0.023	0.019	0.015	0.009	0.004																																																																													
0.10	0.165	0.126	0.087	0.067	0.047																																																																													
0.20	0.312	0.235	0.159	0.120	0.084																																																																													
0.30	0.463	0.346	0.231	0.174	0.119																																																																													
0.40	0.619	0.459	0.304	0.230	0.154																																																																													
0.50	0.770	0.571	0.378	0.283	0.191																																																																													
0.55	0.856	0.632	0.417	0.312	0.209																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													



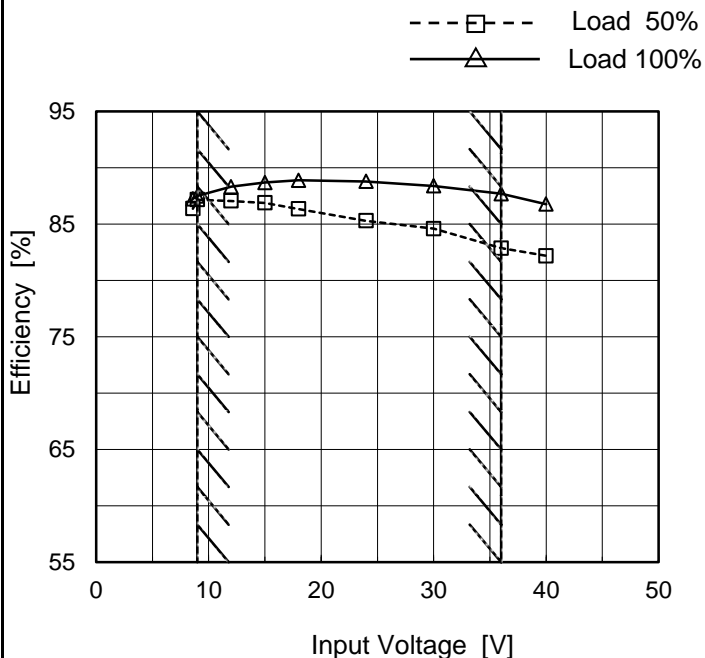
Model		MGFS62412		Temperature 25°C																																																																														
Item		Input Power (by Load Current)		Testing Circuitry Figure A																																																																														
Object		_____																																																																																
1.Graph		<p> —△— Input Volt. 9V - - - □ - - - Input Volt. 12V ···*··· Input Volt. 18V - · - ○ - · - - Input Volt. 24V - - ◇ - - - Input Volt. 36V </p>		2.Values																																																																														
				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Input Power [W]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.22</td><td>0.23</td><td>0.27</td><td>0.20</td><td>0.15</td></tr> <tr><td>0.10</td><td>1.49</td><td>1.51</td><td>1.56</td><td>1.60</td><td>1.70</td></tr> <tr><td>0.20</td><td>2.79</td><td>2.81</td><td>2.85</td><td>2.88</td><td>3.02</td></tr> <tr><td>0.30</td><td>4.13</td><td>4.12</td><td>4.14</td><td>4.17</td><td>4.28</td></tr> <tr><td>0.40</td><td>5.51</td><td>5.47</td><td>5.44</td><td>5.50</td><td>5.55</td></tr> <tr><td>0.50</td><td>6.89</td><td>6.83</td><td>6.78</td><td>6.80</td><td>6.88</td></tr> <tr><td>0.55</td><td>7.59</td><td>7.52</td><td>7.48</td><td>7.46</td><td>7.53</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>		Load Current [A]	Input Power [W]					Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	0.22	0.23	0.27	0.20	0.15	0.10	1.49	1.51	1.56	1.60	1.70	0.20	2.79	2.81	2.85	2.88	3.02	0.30	4.13	4.12	4.14	4.17	4.28	0.40	5.51	5.47	5.44	5.50	5.55	0.50	6.89	6.83	6.78	6.80	6.88	0.55	7.59	7.52	7.48	7.46	7.53	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
Load Current [A]	Input Power [W]																																																																																	
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																													
0.00	0.22	0.23	0.27	0.20	0.15																																																																													
0.10	1.49	1.51	1.56	1.60	1.70																																																																													
0.20	2.79	2.81	2.85	2.88	3.02																																																																													
0.30	4.13	4.12	4.14	4.17	4.28																																																																													
0.40	5.51	5.47	5.44	5.50	5.55																																																																													
0.50	6.89	6.83	6.78	6.80	6.88																																																																													
0.55	7.59	7.52	7.48	7.46	7.53																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
--	-	-	-	-	-																																																																													
<p>Note: Slanted line shows the range of the rated load current.</p>																																																																																		



Model	MGFS62412
Item	Efficiency (by Input Voltage)
Object	_____

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
8.6	86.4	87.2
9.0	87.2	87.5
12.0	87.1	88.3
15.0	86.9	88.7
18.0	86.3	88.9
24.0	85.3	88.8
30.0	84.6	88.4
36.0	82.9	87.7
40.0	82.2	86.8



Model		MGFS62412		Temperature 25°C																																																																												
Item		Efficiency (by Load Current)		Testing Circuitry Figure A																																																																												
Object		_____																																																																														
1.Graph		<ul style="list-style-type: none"> —△— Input Volt. 9V ---□--- Input Volt. 12V ---*--- Input Volt. 18V ---○--- Input Volt. 24V ---◇--- Input Volt. 36V 		2.Values																																																																												
		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Efficiency [%]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.10</td><td>80.8</td><td>79.6</td><td>77.0</td><td>75.3</td><td>70.7</td></tr> <tr><td>0.20</td><td>86.6</td><td>85.8</td><td>84.6</td><td>83.7</td><td>79.8</td></tr> <tr><td>0.30</td><td>87.5</td><td>87.7</td><td>87.3</td><td>86.6</td><td>84.4</td></tr> <tr><td>0.40</td><td>87.5</td><td>88.2</td><td>88.7</td><td>87.7</td><td>86.9</td></tr> <tr><td>0.50</td><td>87.5</td><td>88.3</td><td>88.9</td><td>88.8</td><td>87.7</td></tr> <tr><td>0.55</td><td>87.3</td><td>88.2</td><td>88.7</td><td>88.9</td><td>88.1</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>		Load Current [A]	Efficiency [%]					Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	-	-	-	-	-	0.10	80.8	79.6	77.0	75.3	70.7	0.20	86.6	85.8	84.6	83.7	79.8	0.30	87.5	87.7	87.3	86.6	84.4	0.40	87.5	88.2	88.7	87.7	86.9	0.50	87.5	88.3	88.9	88.8	87.7	0.55	87.3	88.2	88.7	88.9	88.1	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
Load Current [A]	Efficiency [%]																																																																															
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																											
0.00	-	-	-	-	-																																																																											
0.10	80.8	79.6	77.0	75.3	70.7																																																																											
0.20	86.6	85.8	84.6	83.7	79.8																																																																											
0.30	87.5	87.7	87.3	86.6	84.4																																																																											
0.40	87.5	88.2	88.7	87.7	86.9																																																																											
0.50	87.5	88.3	88.9	88.8	87.7																																																																											
0.55	87.3	88.2	88.7	88.9	88.1																																																																											
--	-	-	-	-	-																																																																											
--	-	-	-	-	-																																																																											
--	-	-	-	-	-																																																																											
--	-	-	-	-	-																																																																											
Note: Slanted line shows the range of the rated load current.																																																																																



<p>Model MGFS62412</p>		<p>Temperature 25°C Testing Circuitry Figure A</p>																																
<p>Item</p>	<p>Line Regulation</p>																																	
<p>Object</p>	<p>+12V0.5A</p>																																	
<p>1.Graph</p> <p>---□--- Load 50% —△— Load 100%</p> <p>Note: Slanted line shows the range of the rated input voltage.</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>8.6</td><td>12.024</td><td>12.025</td></tr> <tr><td>9.0</td><td>12.024</td><td>12.025</td></tr> <tr><td>12.0</td><td>12.024</td><td>12.025</td></tr> <tr><td>15.0</td><td>12.024</td><td>12.025</td></tr> <tr><td>18.0</td><td>12.024</td><td>12.025</td></tr> <tr><td>24.0</td><td>12.024</td><td>12.024</td></tr> <tr><td>30.0</td><td>12.023</td><td>12.024</td></tr> <tr><td>36.0</td><td>12.023</td><td>12.024</td></tr> <tr><td>40.0</td><td>12.023</td><td>12.024</td></tr> </tbody> </table>	Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	8.6	12.024	12.025	9.0	12.024	12.025	12.0	12.024	12.025	15.0	12.024	12.025	18.0	12.024	12.025	24.0	12.024	12.024	30.0	12.023	12.024	36.0	12.023	12.024	40.0	12.023	12.024
Input Voltage [V]	Output Voltage [V]																																	
	Load 50%	Load 100%																																
8.6	12.024	12.025																																
9.0	12.024	12.025																																
12.0	12.024	12.025																																
15.0	12.024	12.025																																
18.0	12.024	12.025																																
24.0	12.024	12.024																																
30.0	12.023	12.024																																
36.0	12.023	12.024																																
40.0	12.023	12.024																																



<p>Model MGFS62412</p>		<p>Temperature 25°C</p>																																																																														
<p>Item Load Regulation</p>		<p>Testing Circuitry Figure A</p>																																																																														
<p>Object +12V0.5A</p>																																																																																
<p>1.Graph</p>		<p>2.Values</p>																																																																														
<p> —△— Input Volt. 9V ---□--- Input Volt. 12V -·-·*·-·-·- Input Volt. 18V -·-·○-·-·- Input Volt. 24V -·-·◇-·-·- Input Volt. 36V </p> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr> <td>0.00</td> <td>12.033</td> <td>12.033</td> <td>12.032</td> <td>12.032</td> <td>12.033</td> </tr> <tr> <td>0.10</td> <td>12.031</td> <td>12.031</td> <td>12.030</td> <td>12.029</td> <td>12.028</td> </tr> <tr> <td>0.20</td> <td>12.030</td> <td>12.030</td> <td>12.029</td> <td>12.028</td> <td>12.027</td> </tr> <tr> <td>0.30</td> <td>12.029</td> <td>12.028</td> <td>12.027</td> <td>12.027</td> <td>12.025</td> </tr> <tr> <td>0.40</td> <td>12.027</td> <td>12.027</td> <td>12.026</td> <td>12.025</td> <td>12.025</td> </tr> <tr> <td>0.50</td> <td>12.025</td> <td>12.025</td> <td>12.025</td> <td>12.024</td> <td>12.024</td> </tr> <tr> <td>0.55</td> <td>12.025</td> <td>12.025</td> <td>12.025</td> <td>12.024</td> <td>12.023</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>--</td> <td>-</td> <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]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	12.033	12.033	12.032	12.032	12.033	0.10	12.031	12.031	12.030	12.029	12.028	0.20	12.030	12.030	12.029	12.028	12.027	0.30	12.029	12.028	12.027	12.027	12.025	0.40	12.027	12.027	12.026	12.025	12.025	0.50	12.025	12.025	12.025	12.024	12.024	0.55	12.025	12.025	12.025	12.024	12.023	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
Load Current [A]	Output Voltage [V]																																																																															
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																											
0.00	12.033	12.033	12.032	12.032	12.033																																																																											
0.10	12.031	12.031	12.030	12.029	12.028																																																																											
0.20	12.030	12.030	12.029	12.028	12.027																																																																											
0.30	12.029	12.028	12.027	12.027	12.025																																																																											
0.40	12.027	12.027	12.026	12.025	12.025																																																																											
0.50	12.025	12.025	12.025	12.024	12.024																																																																											
0.55	12.025	12.025	12.025	12.024	12.023																																																																											
--	-	-	-	-	-																																																																											
--	-	-	-	-	-																																																																											
--	-	-	-	-	-																																																																											
--	-	-	-	-	-																																																																											



Model	MGFS62412	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+12V0.5A		

Input Volt. 24 V
 Cycle 100 ms

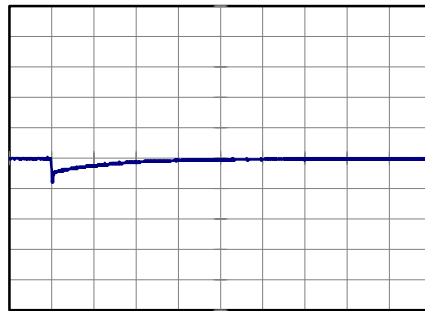
t1, t2 = 100 μs



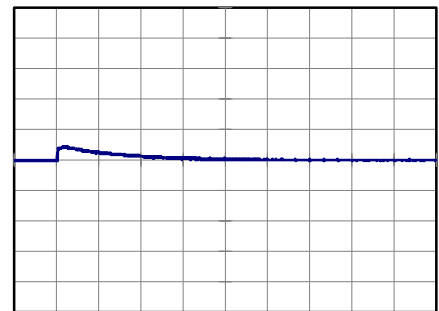
Min. Load (0A) ←→
 Load 100% (0.5A)

500 mV/div

2 ms/div



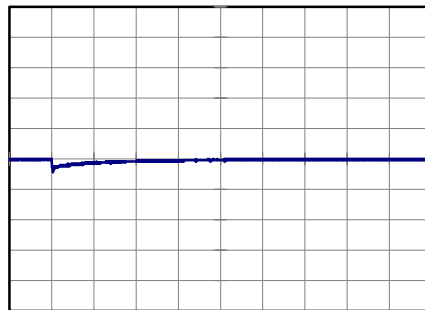
2 ms/div



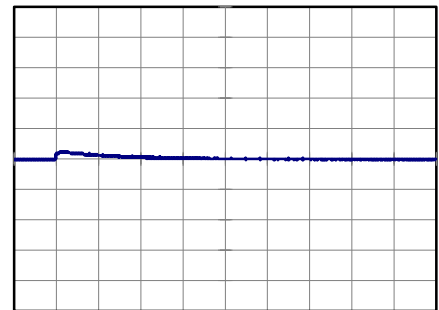
Min. Load (0A) ←→
 Load 50% (0.25A)

500 mV/div

2 ms/div



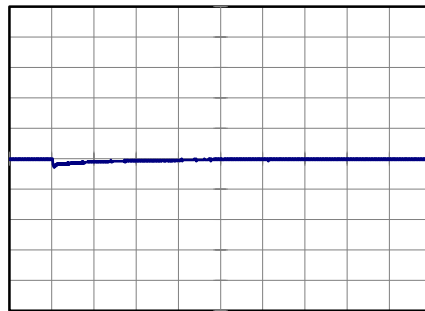
2 ms/div



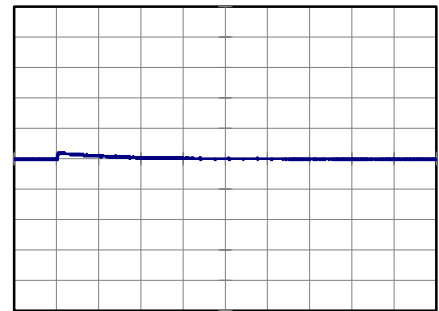
Load 50% (0.25A) ←→
 Load 100% (0.5A)

500 mV/div

2 ms/div



2 ms/div





COSEL																																									
Model	MGFS62412	Temperature	25°C																																						
Item	Ripple Voltage (by Load Current)	Testing Circuitry	Figure B																																						
Object	+12V0.5A																																								
<p>1.Graph</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="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 9 [V]</th> <th>Input Volt. 36 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>5</td><td>30</td></tr> <tr><td>0.10</td><td>5</td><td>5</td></tr> <tr><td>0.20</td><td>5</td><td>5</td></tr> <tr><td>0.30</td><td>5</td><td>5</td></tr> <tr><td>0.40</td><td>10</td><td>5</td></tr> <tr><td>0.50</td><td>15</td><td>5</td></tr> <tr><td>0.55</td><td>20</td><td>5</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 Voltage [mV]		Input Volt. 9 [V]	Input Volt. 36 [V]	0.00	5	30	0.10	5	5	0.20	5	5	0.30	5	5	0.40	10	5	0.50	15	5	0.55	20	5	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 9 [V]	Input Volt. 36 [V]																																							
0.00	5	30																																							
0.10	5	5																																							
0.20	5	5																																							
0.30	5	5																																							
0.40	10	5																																							
0.50	15	5																																							
0.55	20	5																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
<p>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.</p>																																									
<p>Ripple [mVp-p]</p> <p style="text-align: center;">Fig.Complex Ripple Wave Form</p>																																									



<p>Model MGFS62412</p> <p>Item Ripple-Noise</p> <p>Object +12V0.5A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure B</p>																																						
<p>1.Graph</p> <p> —△— Input Volt. 9V - - ○ - - Input Volt. 36V </p>		<p>2.Values</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. 36 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>5</td><td>30</td></tr> <tr><td>0.10</td><td>5</td><td>5</td></tr> <tr><td>0.20</td><td>5</td><td>5</td></tr> <tr><td>0.30</td><td>10</td><td>5</td></tr> <tr><td>0.40</td><td>10</td><td>10</td></tr> <tr><td>0.50</td><td>20</td><td>10</td></tr> <tr><td>0.55</td><td>25</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>	Load Current [A]	Ripple-Noise [mV]		Input Volt. 9 [V]	Input Volt. 36 [V]	0.00	5	30	0.10	5	5	0.20	5	5	0.30	10	5	0.40	10	10	0.50	20	10	0.55	25	10	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																							
	Input Volt. 9 [V]	Input Volt. 36 [V]																																						
0.00	5	30																																						
0.10	5	5																																						
0.20	5	5																																						
0.30	10	5																																						
0.40	10	10																																						
0.50	20	10																																						
0.55	25	10																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
<p>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.</p> <p>Ripple Noise[mVp-p]</p> <p>Fig.Complex Ripple Noise Wave Form</p>																																								

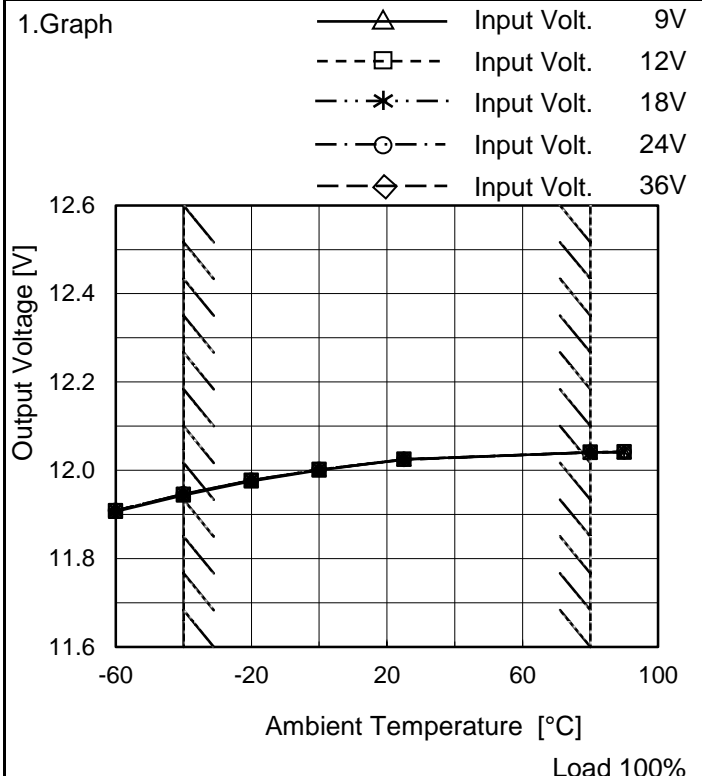


COSEL																																								
Model	MGFS62412																																							
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure B																																						
Object	+12V0.5A																																							
<p>1.Graph</p> <p style="text-align: center;">Ambient Temperature [°C] Input Volt. 24V</p>		<p>2.Values</p> <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>5</td><td>5</td></tr> <tr><td>-40</td><td>5</td><td>5</td></tr> <tr><td>-20</td><td>5</td><td>5</td></tr> <tr><td>0</td><td>5</td><td>5</td></tr> <tr><td>25</td><td>5</td><td>5</td></tr> <tr><td>80</td><td>5</td><td>5</td></tr> <tr><td>90</td><td>5</td><td>5</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	5	5	-40	5	5	-20	5	5	0	5	5	25	5	5	80	5	5	90	5	5	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Ripple Voltage [mV]																																							
	Load 50%	Load 100%																																						
-60	5	5																																						
-40	5	5																																						
-20	5	5																																						
0	5	5																																						
25	5	5																																						
80	5	5																																						
90	5	5																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
<p>Measured by 100 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>																																								



Model	MGFS62412
Item	Ambient Temperature Drift
Object	+12V0.5A

Testing Circuitry Figure A



2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	11.907	11.908	11.909	11.909	11.909
-40	11.944	11.946	11.946	11.947	11.946
-20	11.976	11.977	11.977	11.977	11.977
0	12.000	12.002	12.002	12.002	12.001
25	12.025	12.025	12.025	12.024	12.024
80	12.040	12.041	12.041	12.041	12.040
90	12.041	12.042	12.042	12.042	12.041
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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



COSEL		
Model	MGFS62412	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V0.5A	

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 - 80°C

Input Voltage : 9 - 36V

Load Current : 0 - 0.5A

* 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

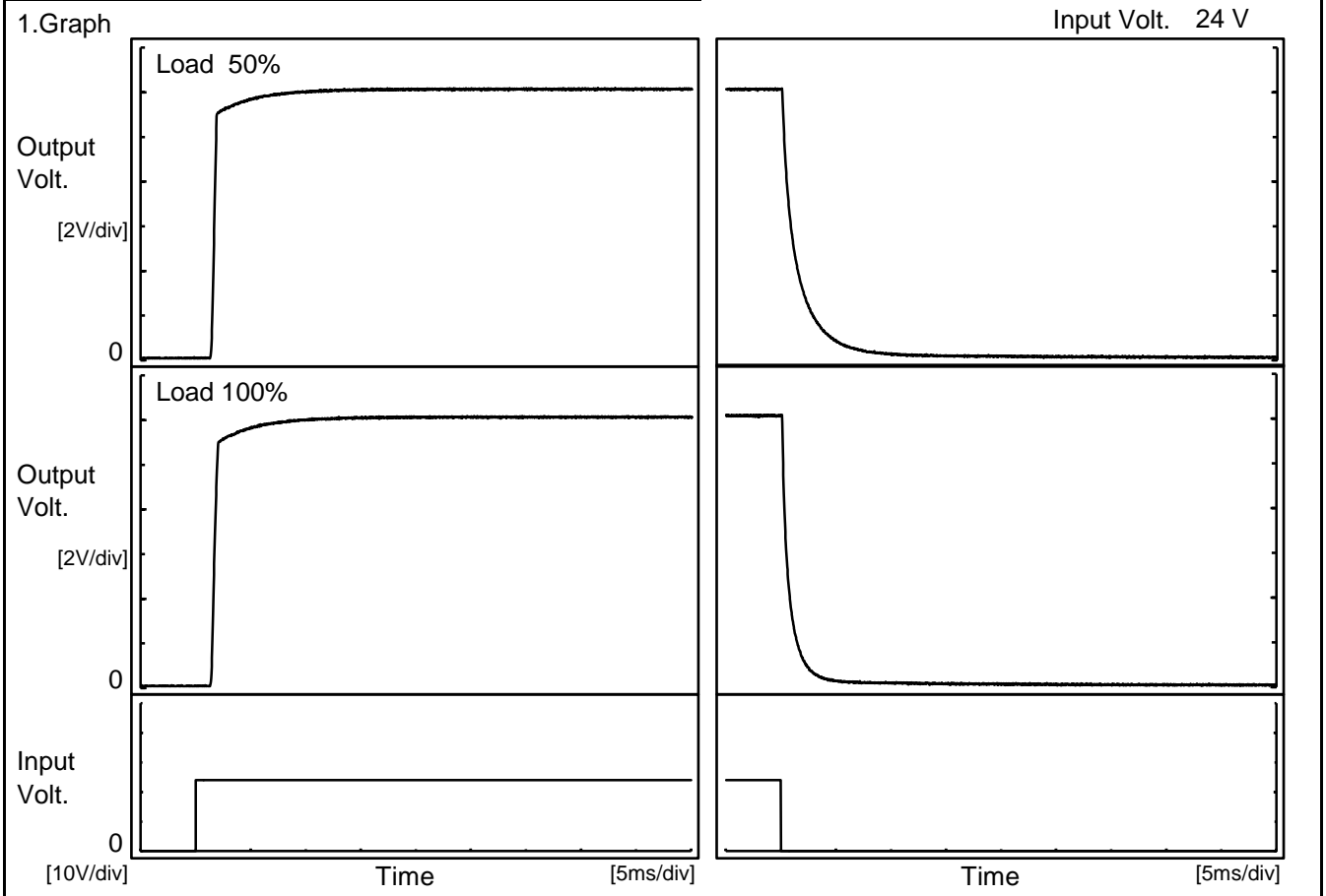
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	75	9	0	12.050	±53	±0.4
Minimum Voltage	-40	9	0.5	11.944		



COSEL																								
Model	MGFS62412																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+12V0.5A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 24V 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>12.018</td></tr> <tr><td>0.5</td><td>12.026</td></tr> <tr><td>1.0</td><td>12.026</td></tr> <tr><td>2.0</td><td>12.026</td></tr> <tr><td>3.0</td><td>12.026</td></tr> <tr><td>4.0</td><td>12.026</td></tr> <tr><td>5.0</td><td>12.026</td></tr> <tr><td>6.0</td><td>12.026</td></tr> <tr><td>7.0</td><td>12.026</td></tr> <tr><td>8.0</td><td>12.026</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.018	0.5	12.026	1.0	12.026	2.0	12.026	3.0	12.026	4.0	12.026	5.0	12.026	6.0	12.026	7.0	12.026	8.0	12.026
Time since start [H]	Output Voltage [V]																							
0.0	12.018																							
0.5	12.026																							
1.0	12.026																							
2.0	12.026																							
3.0	12.026																							
4.0	12.026																							
5.0	12.026																							
6.0	12.026																							
7.0	12.026																							
8.0	12.026																							



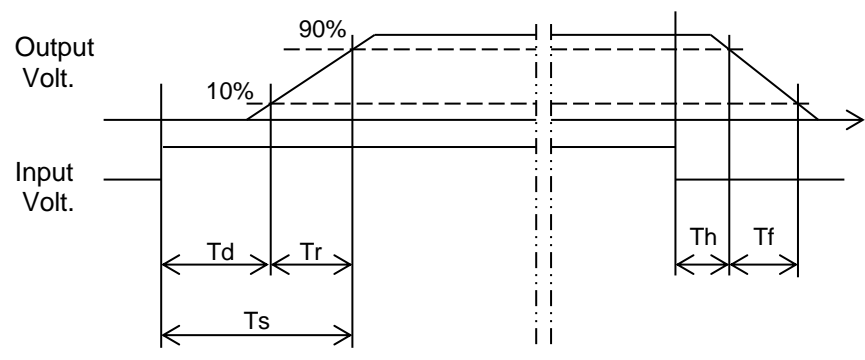
Model		MGFS62412	Temperature	25°C
Item		Rise and Fall Time	Testing Circuitry	Figure A
Object		+12V0.5A		



2.Values

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.5	0.4	1.9	0.2	3.8
100 %	1.5	0.6	2.1	0.2	1.8

[ms]





<p>Model MGFS62412</p> <p>Item Minimum Input Voltage for Regulated Output Voltage</p> <p>Object +12V0.5A</p>		<p>Testing Circuitry Figure A</p>																																						
<p>1.Graph</p> <p>---□--- Load 50%</p> <p>—△— Load 100%</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>7.6</td><td>7.7</td></tr> <tr><td>-40</td><td>7.5</td><td>7.6</td></tr> <tr><td>-20</td><td>7.5</td><td>7.6</td></tr> <tr><td>0</td><td>7.5</td><td>7.6</td></tr> <tr><td>25</td><td>7.4</td><td>7.5</td></tr> <tr><td>80</td><td>7.3</td><td>7.4</td></tr> <tr><td>90</td><td>7.3</td><td>7.4</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	7.6	7.7	-40	7.5	7.6	-20	7.5	7.6	0	7.5	7.6	25	7.4	7.5	80	7.3	7.4	90	7.3	7.4	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																							
	Load 50%	Load 100%																																						
-60	7.6	7.7																																						
-40	7.5	7.6																																						
-20	7.5	7.6																																						
0	7.5	7.6																																						
25	7.4	7.5																																						
80	7.3	7.4																																						
90	7.3	7.4																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						



<p>Model MGFS62412</p>		<p>Temperature 25°C</p>																																																																																				
<p>Item Overcurrent Protection</p>		<p>Testing Circuitry Figure A</p>																																																																																				
<p>Object +12V0.5A</p>																																																																																						
<p>1.Graph</p>		<p>2.Values</p>																																																																																				
<p> — Input Volt. 9V — Input Volt. 12V — Input Volt. 18V — Input Volt. 24V — Input Volt. 36V </p> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="5">Load Current [A]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>11.4</td><td>0.644</td><td>0.680</td><td>0.678</td><td>0.676</td><td>0.682</td></tr> <tr><td>10.8</td><td>0.670</td><td>0.704</td><td>0.701</td><td>0.694</td><td>0.695</td></tr> <tr><td>9.6</td><td>0.723</td><td>0.761</td><td>0.752</td><td>0.734</td><td>0.725</td></tr> <tr><td>8.4</td><td>0.787</td><td>0.823</td><td>0.802</td><td>0.775</td><td>0.756</td></tr> <tr><td>7.2</td><td>0.862</td><td>0.892</td><td>0.851</td><td>0.818</td><td>0.792</td></tr> <tr><td>6.0</td><td>0.951</td><td>0.966</td><td>0.907</td><td>0.865</td><td>0.832</td></tr> <tr><td>4.8</td><td>1.051</td><td>1.048</td><td>0.968</td><td>0.917</td><td>0.873</td></tr> <tr><td>3.6</td><td>1.169</td><td>1.141</td><td>1.038</td><td>0.975</td><td>0.919</td></tr> <tr><td>2.4</td><td>1.289</td><td>1.264</td><td>1.119</td><td>1.036</td><td>0.969</td></tr> <tr><td>1.2</td><td>1.418</td><td>1.378</td><td>1.202</td><td>1.102</td><td>1.014</td></tr> <tr><td>0.0</td><td>1.642</td><td>1.552</td><td>1.257</td><td>1.093</td><td>0.973</td></tr> <tr><td>--</td><td>-</td><td>-</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]	Input Volt. 24[V]	Input Volt. 36[V]	11.4	0.644	0.680	0.678	0.676	0.682	10.8	0.670	0.704	0.701	0.694	0.695	9.6	0.723	0.761	0.752	0.734	0.725	8.4	0.787	0.823	0.802	0.775	0.756	7.2	0.862	0.892	0.851	0.818	0.792	6.0	0.951	0.966	0.907	0.865	0.832	4.8	1.051	1.048	0.968	0.917	0.873	3.6	1.169	1.141	1.038	0.975	0.919	2.4	1.289	1.264	1.119	1.036	0.969	1.2	1.418	1.378	1.202	1.102	1.014	0.0	1.642	1.552	1.257	1.093	0.973	--	-	-	-	-	-
Output Voltage [V]	Load Current [A]																																																																																					
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																																	
11.4	0.644	0.680	0.678	0.676	0.682																																																																																	
10.8	0.670	0.704	0.701	0.694	0.695																																																																																	
9.6	0.723	0.761	0.752	0.734	0.725																																																																																	
8.4	0.787	0.823	0.802	0.775	0.756																																																																																	
7.2	0.862	0.892	0.851	0.818	0.792																																																																																	
6.0	0.951	0.966	0.907	0.865	0.832																																																																																	
4.8	1.051	1.048	0.968	0.917	0.873																																																																																	
3.6	1.169	1.141	1.038	0.975	0.919																																																																																	
2.4	1.289	1.264	1.119	1.036	0.969																																																																																	
1.2	1.418	1.378	1.202	1.102	1.014																																																																																	
0.0	1.642	1.552	1.257	1.093	0.973																																																																																	
--	-	-	-	-	-																																																																																	



<p>Model MGFS62412</p>		<p>Temperature 25°C</p>																																																																														
<p>Item Switching frequency (by Load Current)</p>		<p>Testing Circuitry Figure A</p>																																																																														
<p>Object +12V0.5A</p>																																																																																
<p>1.Graph</p> <p> —△— Input Volt. 9V ---□--- Input Volt. 12V -·-·*·-·-·- Input Volt. 18V -·-·○-·-·- Input Volt. 24V -·-·◇-·-·- Input Volt. 36V </p> <p>Switching Frequency [kHz]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>When load current is low, MG operates intermittently, so switching frequency would not become constant.</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Input Current [A]</th> </tr> <tr> <th>Input Volt. 9[V]</th> <th>Input Volt. 12[V]</th> <th>Input Volt. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>770</td><td>880</td><td>1011</td><td>1059</td><td>1197</td></tr> <tr><td>0.10</td><td>463</td><td>568</td><td>715</td><td>802</td><td>890</td></tr> <tr><td>0.20</td><td>331</td><td>424</td><td>554</td><td>638</td><td>730</td></tr> <tr><td>0.30</td><td>257</td><td>336</td><td>453</td><td>530</td><td>618</td></tr> <tr><td>0.40</td><td>210</td><td>279</td><td>382</td><td>453</td><td>537</td></tr> <tr><td>0.50</td><td>176</td><td>237</td><td>330</td><td>395</td><td>474</td></tr> <tr><td>0.55</td><td>164</td><td>220</td><td>309</td><td>371</td><td>447</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><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]	Input Volt. 24[V]	Input Volt. 36[V]	0.00	770	880	1011	1059	1197	0.10	463	568	715	802	890	0.20	331	424	554	638	730	0.30	257	336	453	530	618	0.40	210	279	382	453	537	0.50	176	237	330	395	474	0.55	164	220	309	371	447	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
Load Current [A]	Input Current [A]																																																																															
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																																											
0.00	770	880	1011	1059	1197																																																																											
0.10	463	568	715	802	890																																																																											
0.20	331	424	554	638	730																																																																											
0.30	257	336	453	530	618																																																																											
0.40	210	279	382	453	537																																																																											
0.50	176	237	330	395	474																																																																											
0.55	164	220	309	371	447																																																																											
--	-	-	-	-	-																																																																											
--	-	-	-	-	-																																																																											
--	-	-	-	-	-																																																																											
--	-	-	-	-	-																																																																											

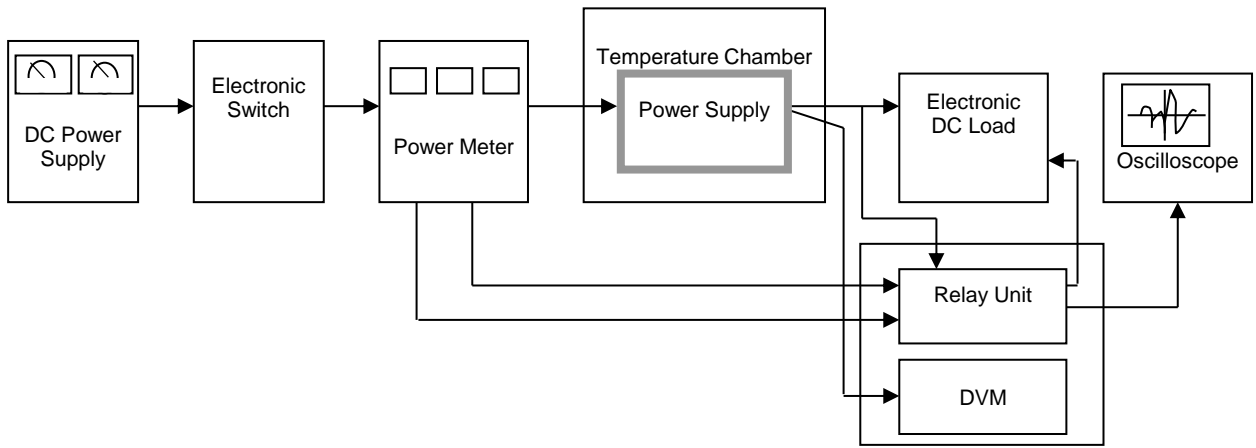


Figure A

Data Acquisition/Control Unit

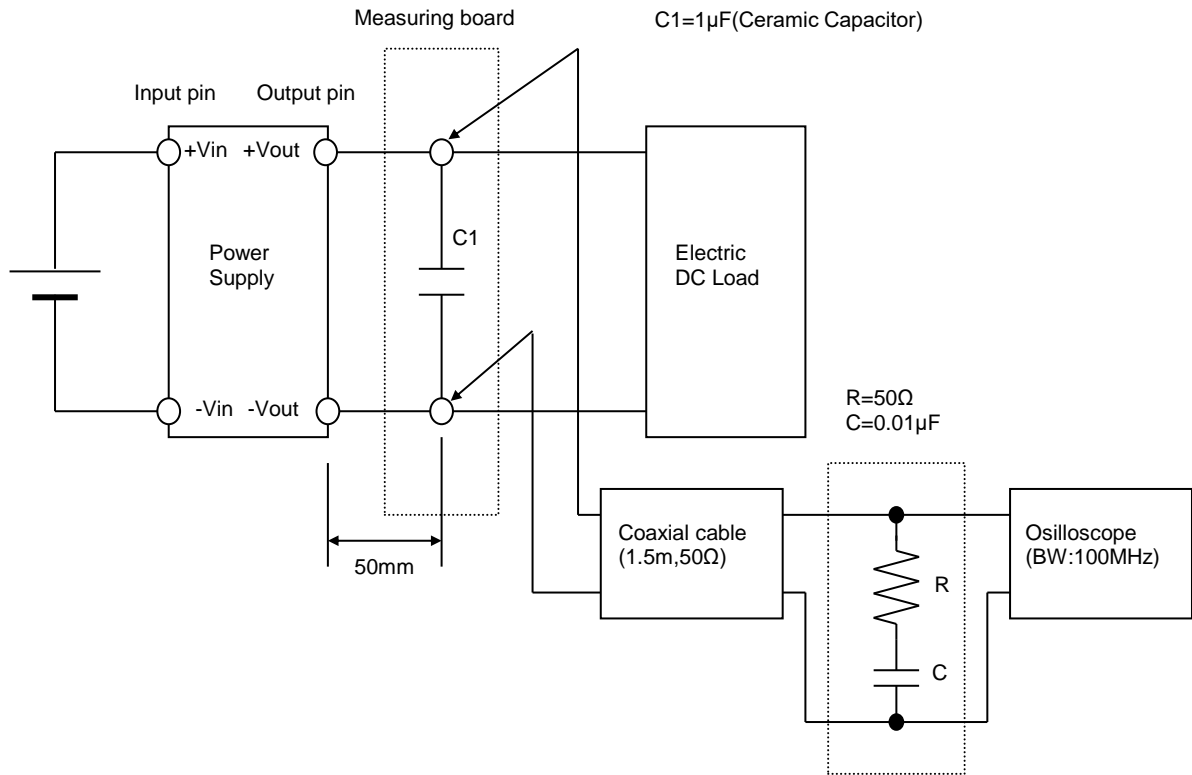


Figure B (Ripple and Ripple noise Characteristic)