

TEST DATA OF MGFS152415

Regulated DC Power Supply
September 15, 2010

Approved by : Kazunari Asano
Kazunari Asano Design Manager

Prepared by : Ryoko Ueda
Ryoko Ueda Design Engineer

COSEL CO.,LTD.

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Model	MGFS152415	Temperature Testing Circuitry 25°C Figure A																																							
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Object	_____	2.Values																																							
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>0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>5</td><td>0.000</td><td>0.000</td><td>0.000</td></tr> <tr><td>10</td><td>0.000</td><td>0.000</td><td>2.000</td></tr> <tr><td>15</td><td>0.000</td><td>0.000</td><td>1.500</td></tr> <tr><td>20</td><td>0.000</td><td>0.000</td><td>0.900</td></tr> <tr><td>25</td><td>0.000</td><td>0.000</td><td>0.600</td></tr> <tr><td>30</td><td>0.000</td><td>0.000</td><td>0.400</td></tr> <tr><td>35</td><td>0.000</td><td>0.000</td><td>0.300</td></tr> <tr><td>40</td><td>0.000</td><td>0.000</td><td>0.250</td></tr> </tbody> </table>	Input Voltage [V]	Load 0% [A]	Load 50% [A]	Load 100% [A]	0	0.000	0.000	0.000	5	0.000	0.000	0.000	10	0.000	0.000	2.000	15	0.000	0.000	1.500	20	0.000	0.000	0.900	25	0.000	0.000	0.600	30	0.000	0.000	0.400	35	0.000	0.000	0.300	40	0.000	0.000	0.250
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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	0.000	0.000	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
8.3	0.091	0.283	1.514
8.5	0.090	1.013	2.020
9.0	0.086	0.956	1.895
12.0	0.071	0.719	1.399
18.0	0.056	0.482	0.928
24.0	0.048	0.365	0.697
36.0	0.039	0.250	0.470
40.0	0.037	0.227	0.424
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1.Graph	<p>Graph showing Input Power [W] vs Load Current [A] for MGFS152415 at 25°C. The graph shows five curves for input voltages 9V, 12V, 18V, 24V, and 36V. A slanted line indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>9[V]</th> <th>12[V]</th> <th>18[V]</th> <th>24[V]</th> <th>36[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0.77</td><td>0.86</td><td>1.02</td><td>1.15</td><td>1.41</td></tr> <tr><td>0.2</td><td>3.84</td><td>3.91</td><td>4.05</td><td>4.18</td><td>4.42</td></tr> <tr><td>0.4</td><td>6.97</td><td>7.01</td><td>7.11</td><td>7.24</td><td>7.46</td></tr> <tr><td>0.6</td><td>10.25</td><td>10.20</td><td>10.25</td><td>10.34</td><td>10.57</td></tr> <tr><td>0.8</td><td>13.64</td><td>13.49</td><td>13.46</td><td>13.52</td><td>13.74</td></tr> <tr><td>1.0</td><td>17.12</td><td>16.87</td><td>16.74</td><td>16.76</td><td>16.94</td></tr> <tr><td>1.1</td><td>18.85</td><td>18.61</td><td>18.41</td><td>18.40</td><td>18.60</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]	9[V]	12[V]	18[V]	24[V]	36[V]	0.0	0.77	0.86	1.02	1.15	1.41	0.2	3.84	3.91	4.05	4.18	4.42	0.4	6.97	7.01	7.11	7.24	7.46	0.6	10.25	10.20	10.25	10.34	10.57	0.8	13.64	13.49	13.46	13.52	13.74	1.0	17.12	16.87	16.74	16.76	16.94	1.1	18.85	18.61	18.41	18.40	18.60	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-					
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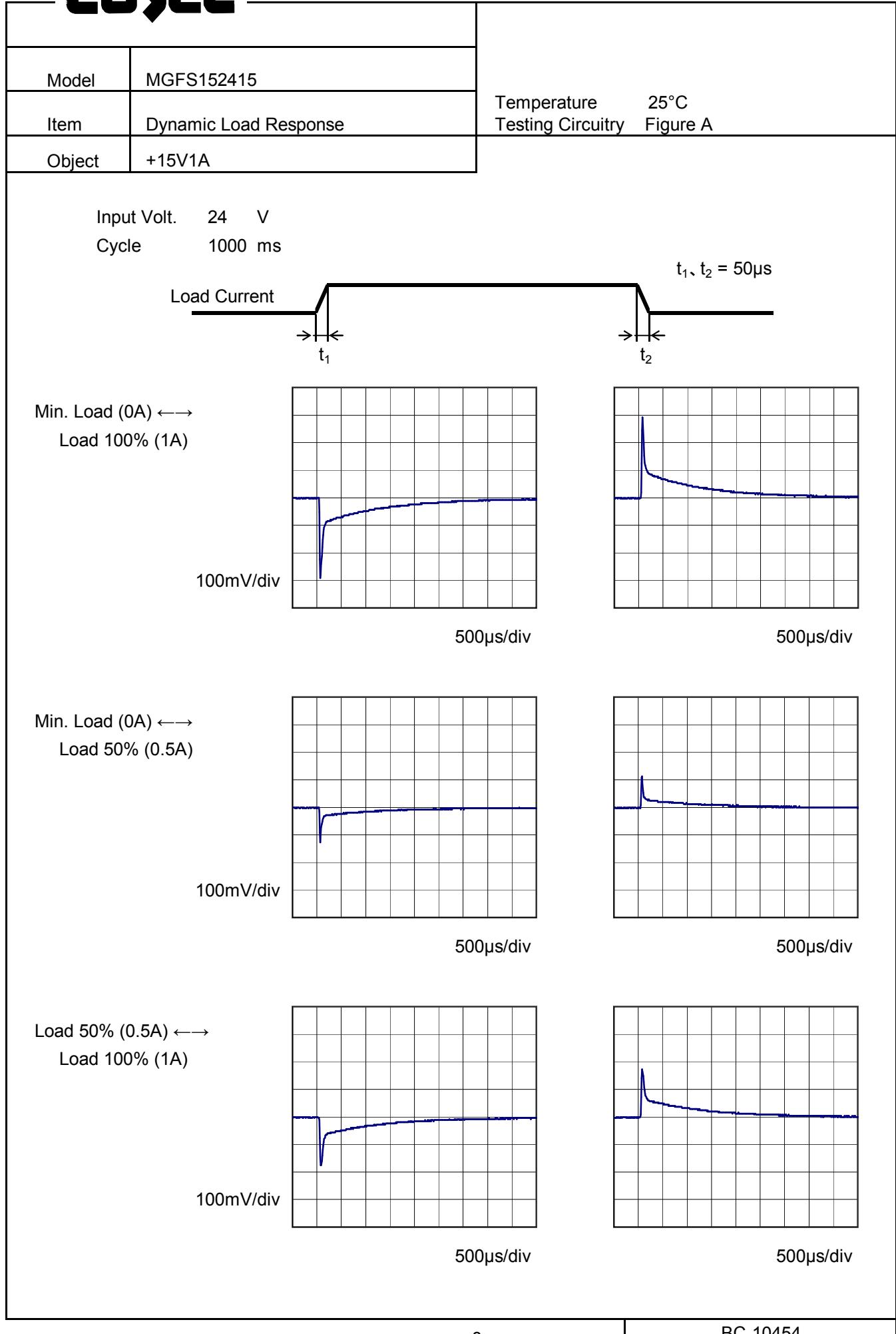
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<p>The graph plots Efficiency [%] on the y-axis (50 to 90) against Input Voltage [V] on the x-axis (5 to 45). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a slight decrease in efficiency as input voltage increases. A slanted line on the graph 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>87.2</td><td>87.4</td></tr> <tr><td>9.0</td><td>87.5</td><td>88.0</td></tr> <tr><td>12.0</td><td>87.6</td><td>89.2</td></tr> <tr><td>15.0</td><td>87.3</td><td>89.8</td></tr> <tr><td>18.0</td><td>86.8</td><td>90.0</td></tr> <tr><td>24.0</td><td>85.9</td><td>90.0</td></tr> <tr><td>30.0</td><td>84.9</td><td>89.5</td></tr> <tr><td>36.0</td><td>83.7</td><td>88.9</td></tr> <tr><td>40.0</td><td>82.7</td><td>88.5</td></tr> </tbody> </table>			Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	8.5	87.2	87.4	9.0	87.5	88.0	12.0	87.6	89.2	15.0	87.3	89.8	18.0	86.8	90.0	24.0	85.9	90.0	30.0	84.9	89.5	36.0	83.7	88.9	40.0	82.7	88.5		
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Model	MGFS152415	Temperature 25°C Testing Circuitry Figure A																																																																																	
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Object	+15V1A																																																																																		
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COSEL



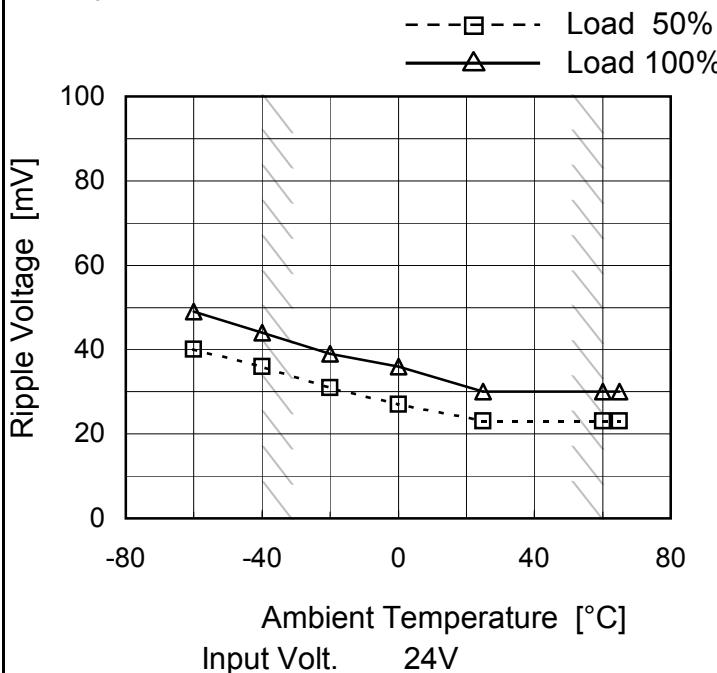
Model	MGFS152415																																							
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure B																																						
Object	+15V1A																																							
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Model	MGFS152415	Temperature Testing Circuitry	25°C Figure B																							
Item	Ripple-Noise																									
Object	+15V1A																									
1.Graph			2.Values																							
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<p>Fig.Complex Ripple Noise Wave Form</p>			- 10 -																							
			BC-10454																							

Model	MGFS152415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V1A

Testing Circuitry Figure B

1. Graph



2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	40	49
-40	36	44
-20	31	39
0	27	36
25	23	30
60	23	30
65	23	30
--	-	-
--	-	-
--	-	-
--	-	-

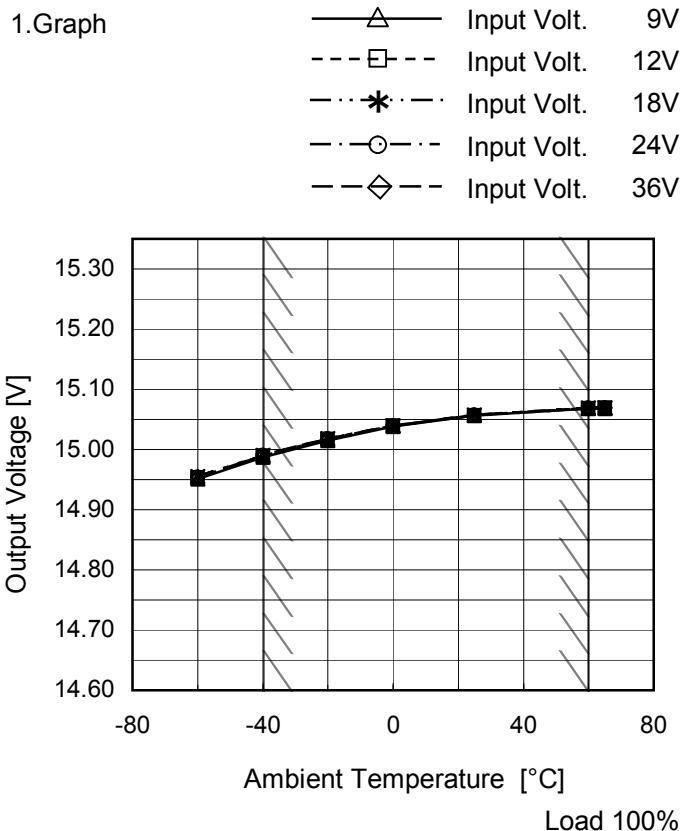
Measured by 100 MHz Oscilloscope.

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

Model MGFS152415

Item Ambient Temperature Drift

Object +15V1A



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

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	9[V]	12[V]	18[V]	24[V]	36[V]
-60	14.951	14.953	14.955	14.954	14.954
-40	14.987	14.989	14.991	14.991	14.990
-20	15.015	15.017	15.018	15.018	15.018
0	15.038	15.039	15.039	15.040	15.039
25	15.056	15.057	15.058	15.058	15.057
60	15.068	15.069	15.069	15.069	15.069
65	15.068	15.069	15.069	15.069	15.069
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-



Model	MGFS152415	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+15V1A	

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 - 36V

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

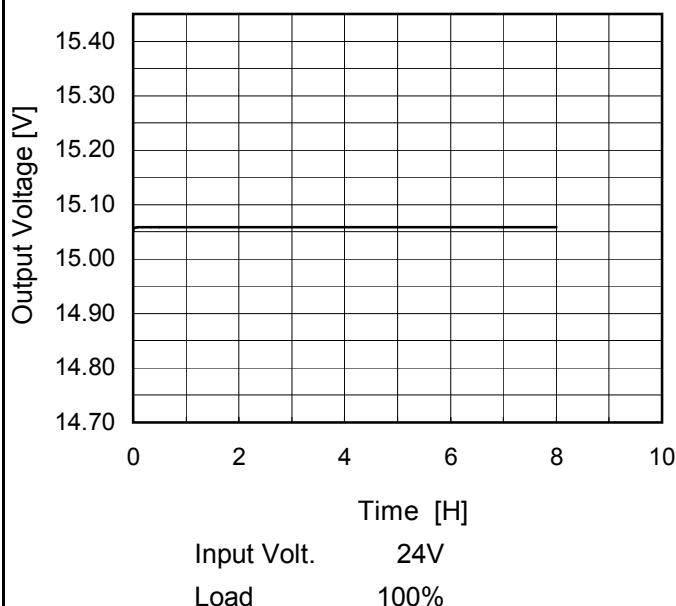
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	9	0	15.072	±43	±0.3
Minimum Voltage	-40	9	1	14.987		

COSEL

Model	MGFS152415
Item	Time Lapse Drift
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

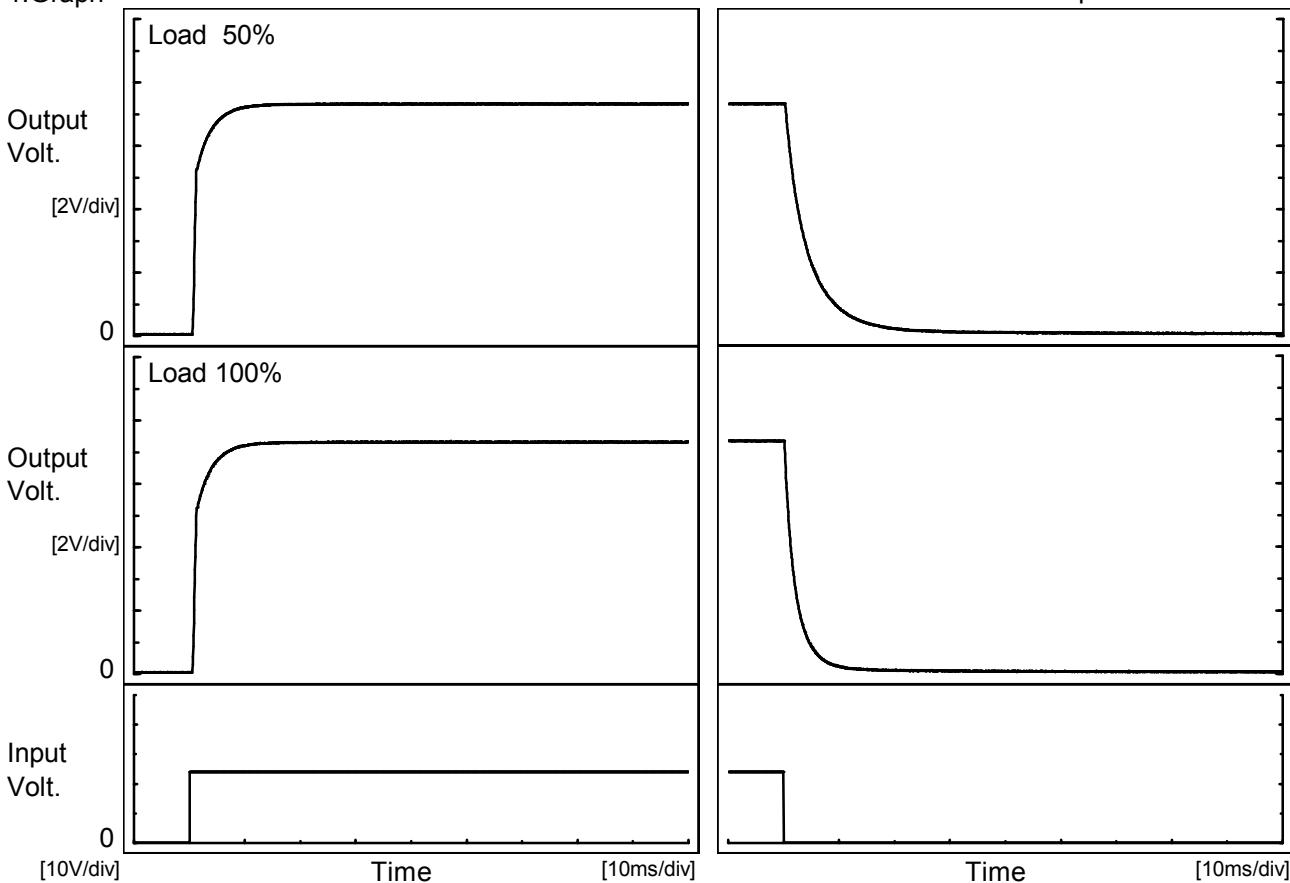
Time since start [H]	Output Voltage [V]
0.0	15.053
0.5	15.059
1.0	15.058
2.0	15.059
3.0	15.059
4.0	15.058
5.0	15.058
6.0	15.058
7.0	15.058
8.0	15.058

COSEL

Model	MGFS152415
Item	Rise and Fall Time
Object	+15V1A

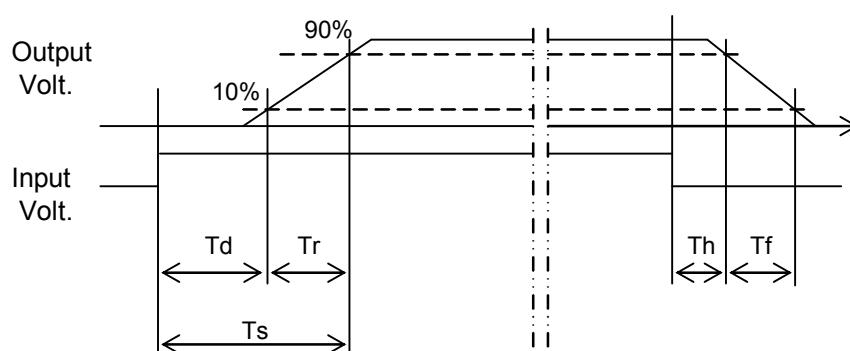
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

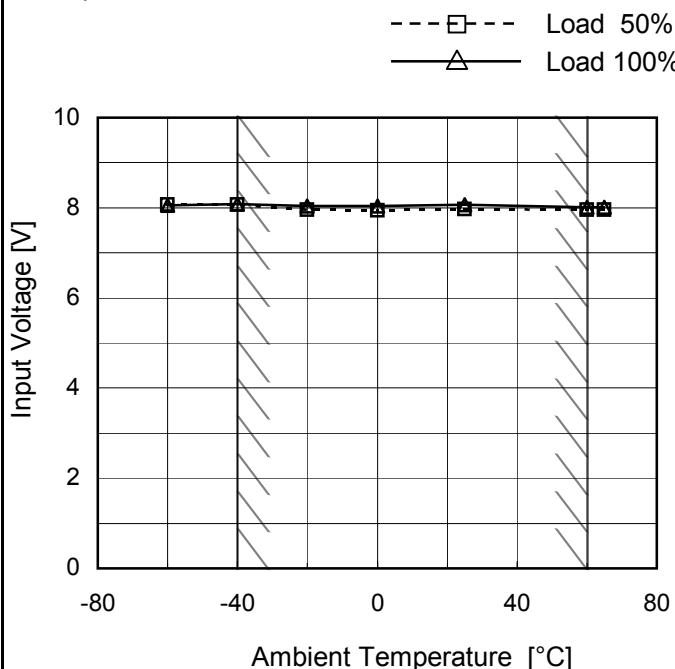
Load	Time	Td	Tr	Ts	Th	Tf
50 %		0.7	4.5	5.2	0.4	10.2
100 %		0.7	4.6	5.3	0.3	5.0



Model	MGFS152415
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V1A

Testing Circuitry Figure A

1.Graph



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	8.1	8.1
-40	8.1	8.1
-20	8.0	8.1
0	8.0	8.1
25	8.0	8.1
60	8.0	8.1
65	8.0	8.1
--	-	-
--	-	-
--	-	-
--	-	-

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

Model	MGFS152415	Temperature Testing Circuitry 25°C Figure A																																																																																				
Item	Overcurrent Protection																																																																																					
Object	+15V1A																																																																																					
1.Graph	<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>	2.Values																																																																																				
		<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>15.0</td> <td>1.237</td> <td>1.381</td> <td>1.526</td> <td>1.540</td> <td>1.396</td> </tr> <tr> <td>14.3</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>13.5</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>12.0</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>10.5</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>9.0</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>7.5</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>6.0</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>4.5</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>3.0</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>1.5</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>0.0</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]	15.0	1.237	1.381	1.526	1.540	1.396	14.3	-	-	-	-	-	13.5	-	-	-	-	-	12.0	-	-	-	-	-	10.5	-	-	-	-	-	9.0	-	-	-	-	-	7.5	-	-	-	-	-	6.0	-	-	-	-	-	4.5	-	-	-	-	-	3.0	-	-	-	-	-	1.5	-	-	-	-	-	0.0	-	-	-	-	-
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Note: Slanted line shows the range of the rated load current.

Intermittent operation occurs when overcurrent protection is activated.

COSEL

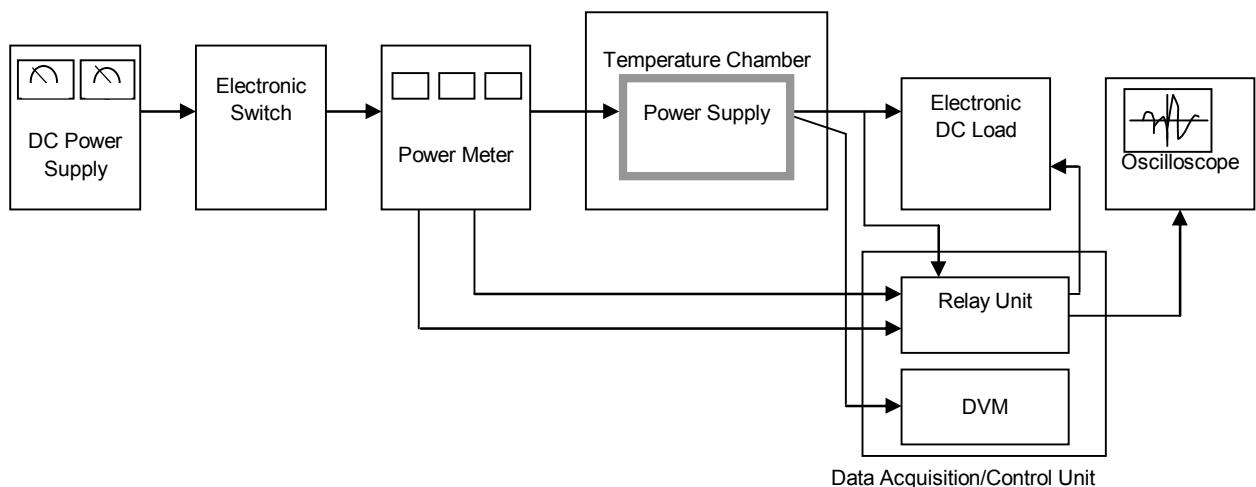


Figure A

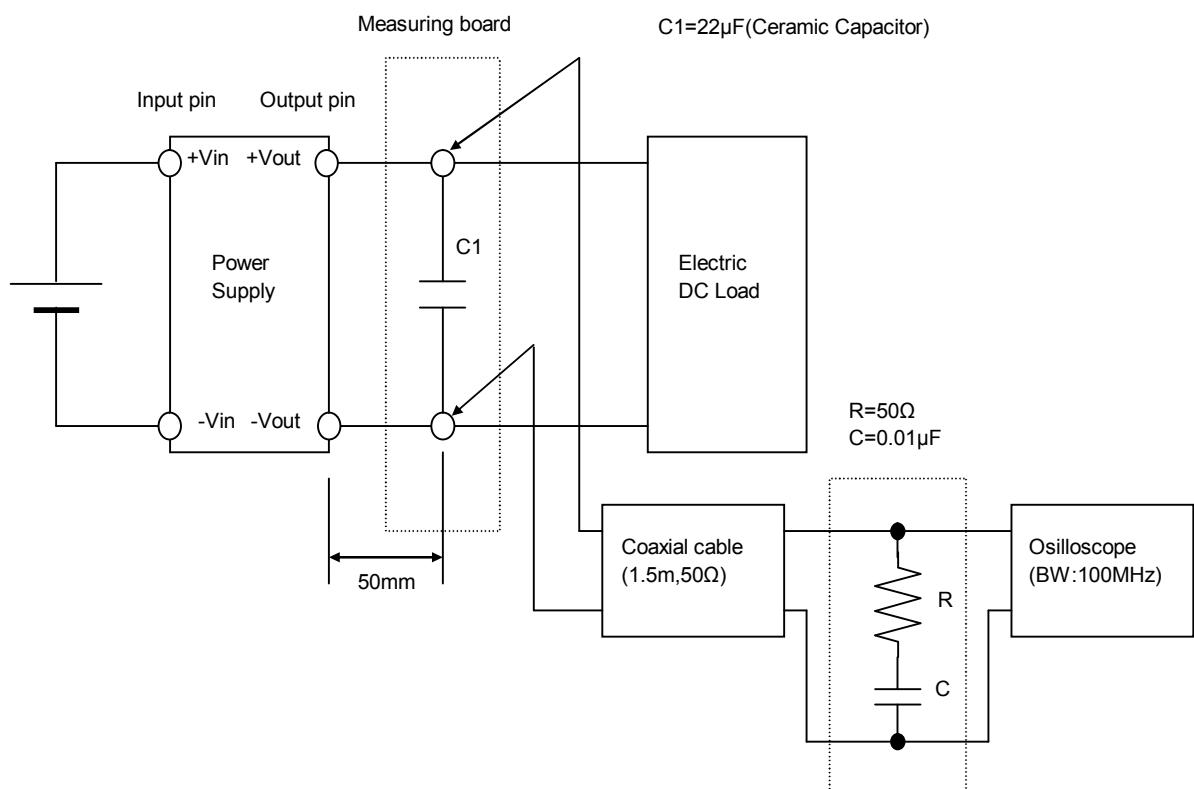


Figure B (Ripple and Ripple noise Characteristic)