

TEST DATA OF MGFS302415

Regulated DC Power Supply
December 24, 2010

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Kazunari Asano

Design Manager

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Design Engineer

COSEL CO.,LTD.

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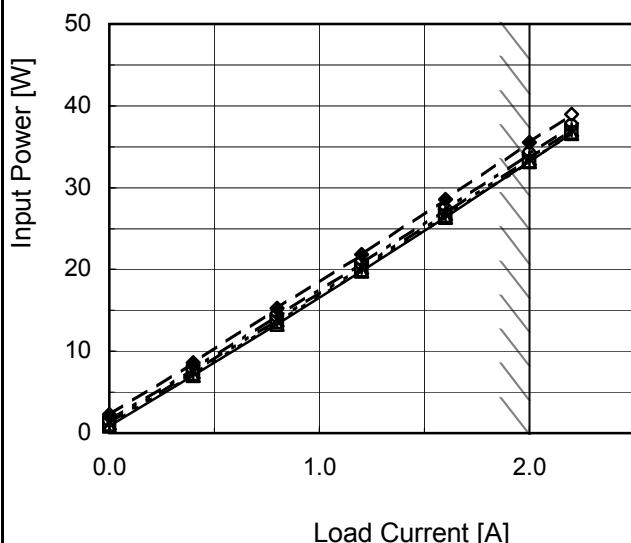
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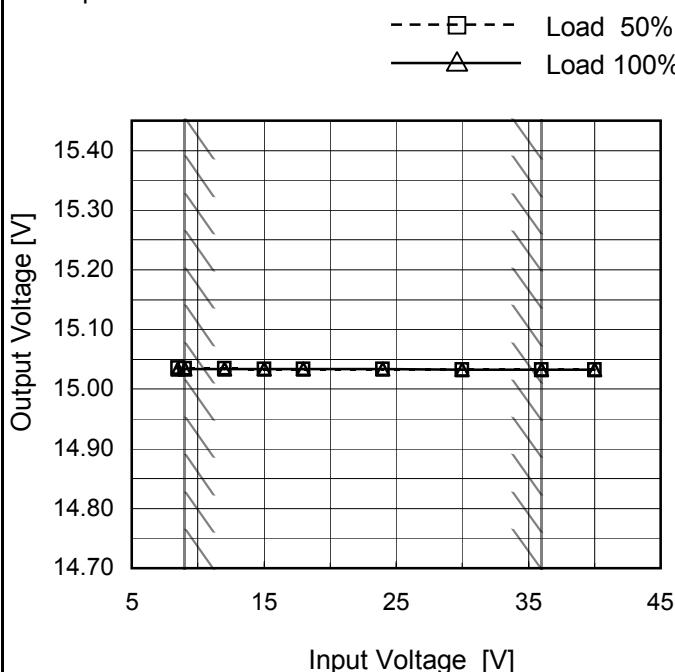
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<p>The graph plots Efficiency [%] on the y-axis (50 to 100) against Input Voltage [V] on the x-axis (5 to 45). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a general downward trend 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>90.9</td><td>90.5</td></tr> <tr><td>9.0</td><td>90.7</td><td>90.6</td></tr> <tr><td>12.0</td><td>90.0</td><td>90.4</td></tr> <tr><td>15.0</td><td>89.1</td><td>89.9</td></tr> <tr><td>18.0</td><td>87.9</td><td>89.2</td></tr> <tr><td>24.0</td><td>85.8</td><td>88.1</td></tr> <tr><td>30.0</td><td>83.5</td><td>86.5</td></tr> <tr><td>36.0</td><td>81.0</td><td>84.7</td></tr> <tr><td>40.0</td><td>79.3</td><td>83.5</td></tr> </tbody> </table>			Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	8.5	90.9	90.5	9.0	90.7	90.6	12.0	90.0	90.4	15.0	89.1	89.9	18.0	87.9	89.2	24.0	85.8	88.1	30.0	83.5	86.5	36.0	81.0	84.7	40.0	79.3	83.5		
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Note:	Slanted line shows the range of the rated load current.																																																																																	

Model	MGFS302415
Item	Line Regulation
Object	+15V2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



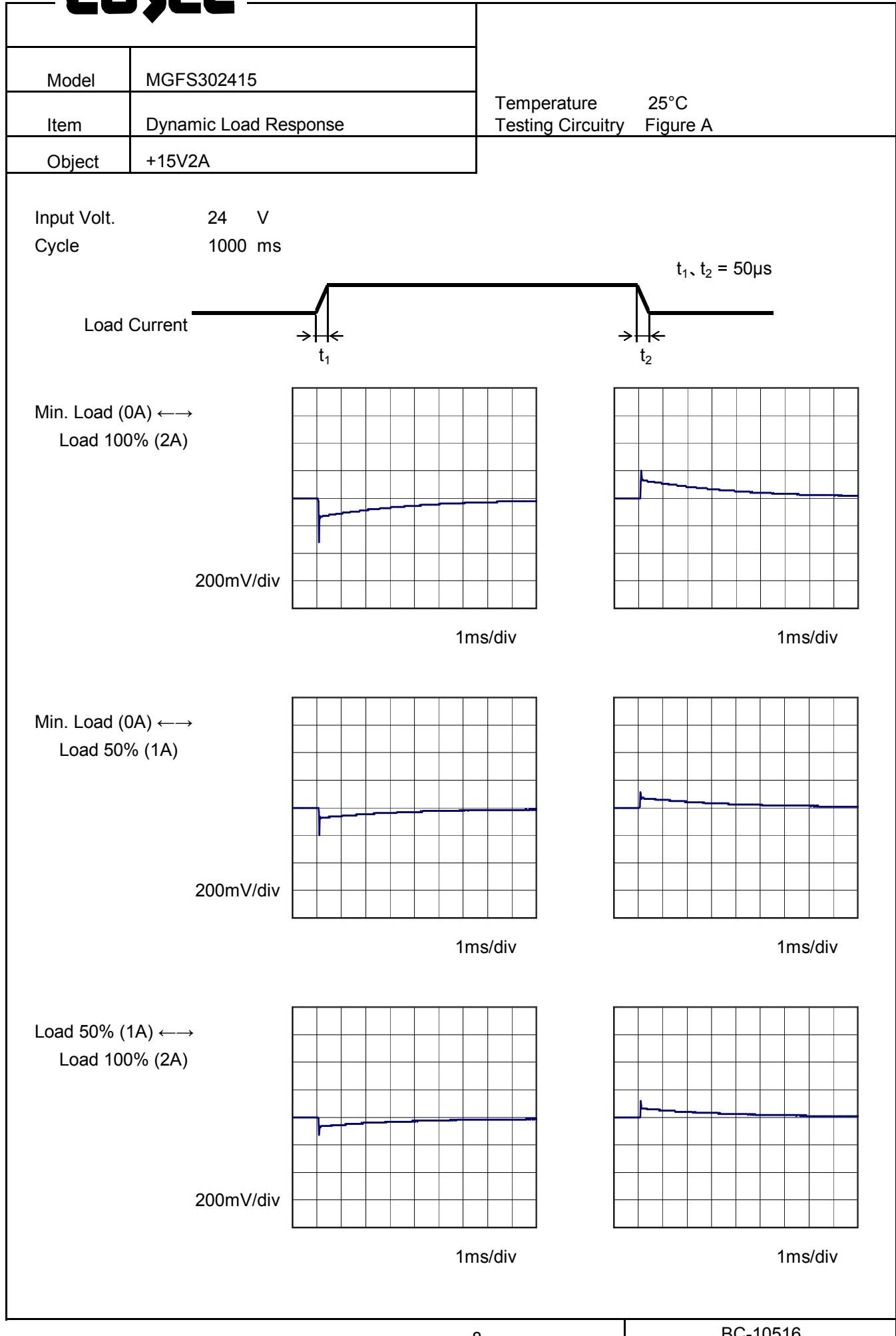
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8.5	15.036	15.034
9.0	15.035	15.034
12.0	15.035	15.034
15.0	15.034	15.034
18.0	15.034	15.034
24.0	15.033	15.034
30.0	15.033	15.033
36.0	15.033	15.033
40.0	15.032	15.033

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

Model	MGFS302415																																																																																	
Item	Load Regulation																																																																																	
Object	+15V2A																																																																																	
1.Graph	—△— Input Volt. 9V ---□--- Input Volt. 12V —·*·— Input Volt. 18V —·○·— Input Volt. 24V —◇— Input Volt. 36V	Output Voltage [V]	2. Values	Temperature 25°C Testing Circuitry Figure A																																																																														
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Note: Slanted line shows the range of the rated load current.

COSEL

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Model	MGFS302415																																						
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure B																																					
Object	+15V2A																																						
1.Graph																																							
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Load Current [A]	Ripple Voltage [mV]																																						
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Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.																																							
Fig.Complex Ripple Wave Form																																							

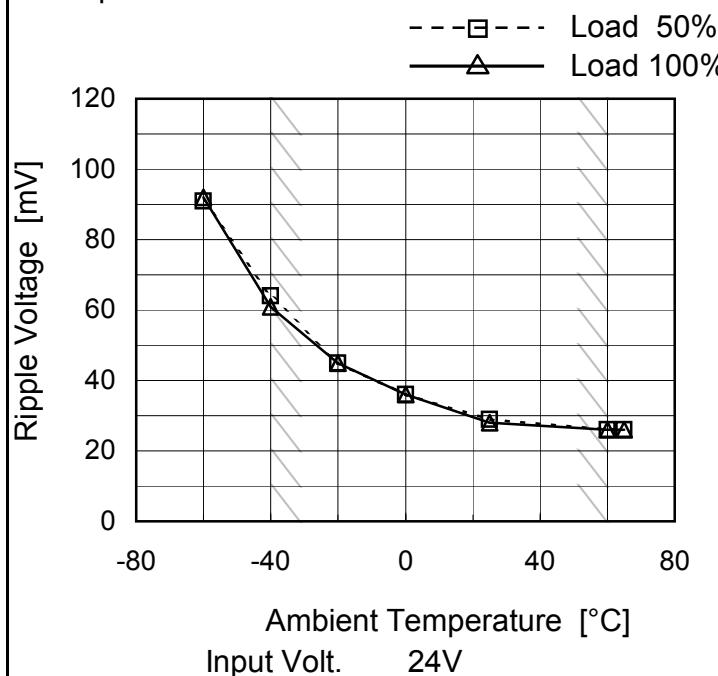
COSEL

Model	MGFS302415																																						
Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure B																																					
Object	+15V2A																																						
1.Graph																																							
		2.Values																																					
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Load Current [A]	Ripple-Noise [mV]																																						
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<p>Fig.Complex Ripple Noise Wave Form</p>																																							

COSEL

Model	MGFS302415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V2A

1. Graph



Testing Circuitry Figure B

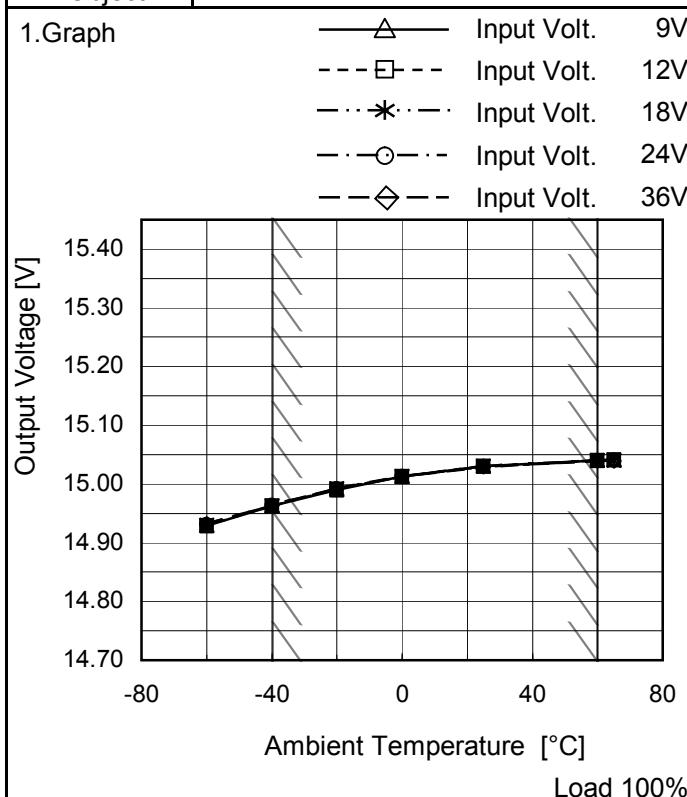
2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	91	92
-40	64	61
-20	45	45
0	36	36
25	29	28
60	26	26
65	26	26
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.

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

Model	MGFS302415
Item	Ambient Temperature Drift
Object	+15V2A



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	14.929	14.929	14.930	14.931	14.932
-40	14.963	14.963	14.963	14.963	14.964
-20	14.990	14.991	14.992	14.992	14.992
0	15.012	15.013	15.013	15.013	15.013
25	15.030	15.030	15.030	15.030	15.029
60	15.041	15.040	15.040	15.040	15.039
65	15.041	15.041	15.040	15.040	15.039
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-



Model	MGFS302415	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+15V2A	

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 - 2A

* 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

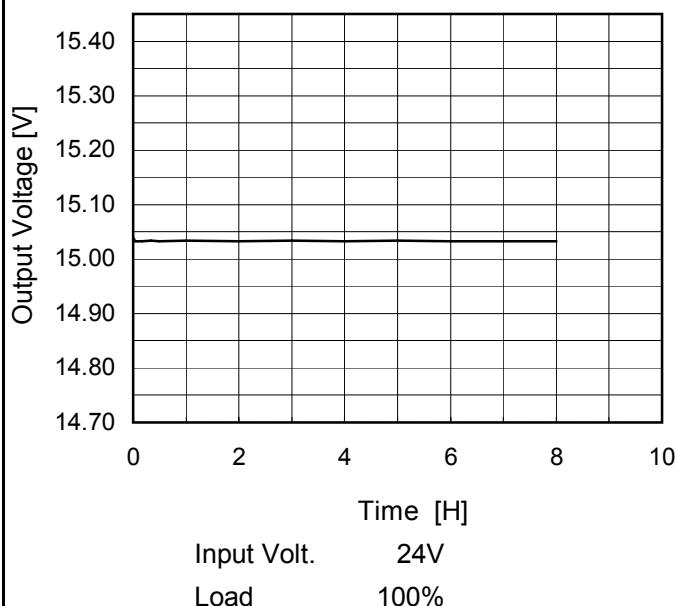
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	12	0	15.043	±41	±0.3
Minimum Voltage	-40	36	0	14.961		

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Model	MGFS302415
Item	Time Lapse Drift
Object	+15V2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

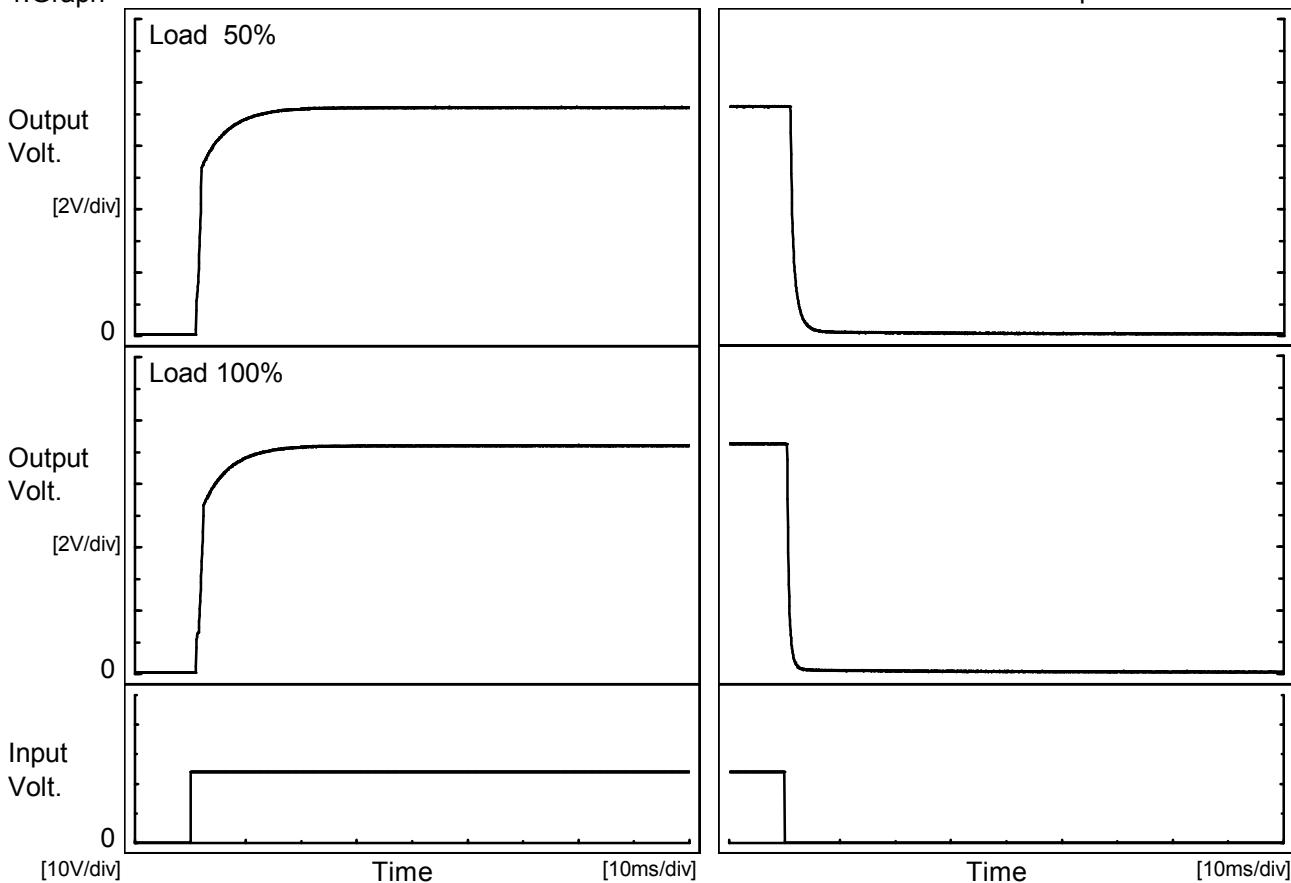
Time since start [H]	Output Voltage [V]
0.0	15.033
0.5	15.033
1.0	15.034
2.0	15.033
3.0	15.034
4.0	15.033
5.0	15.034
6.0	15.033
7.0	15.033
8.0	15.033

COSEL

Model	MGFS302415
Item	Rise and Fall Time
Object	+15V2A

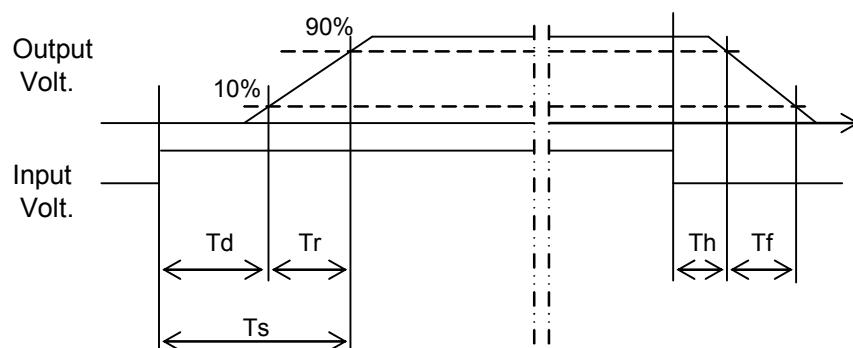
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

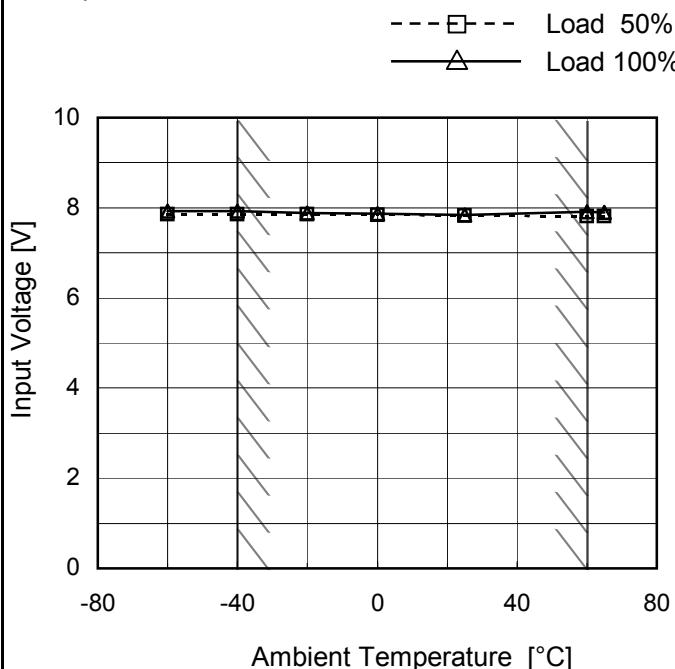
Load	Time	Td	Tr	Ts	Th	Tf
50 %		1.1	8.3	9.4	1.0	1.8
100 %		1.1	8.6	9.7	0.5	0.9



Model	MGFS302415
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V2A

Testing Circuitry Figure A

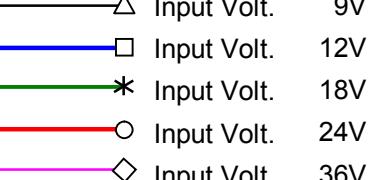
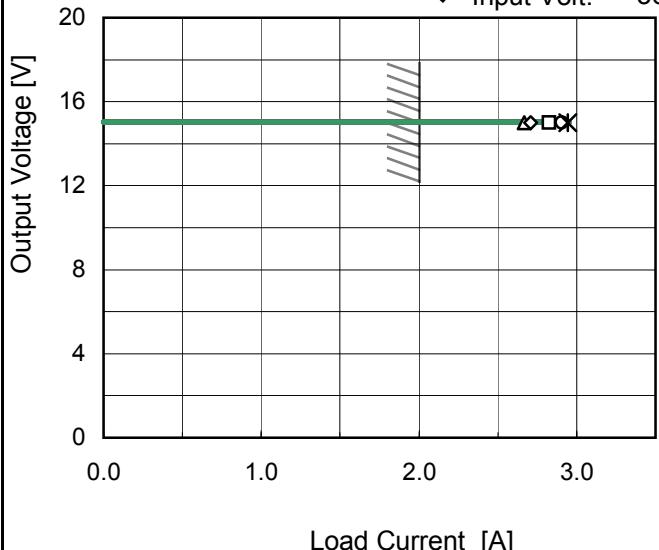
1. Graph



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

2. Values

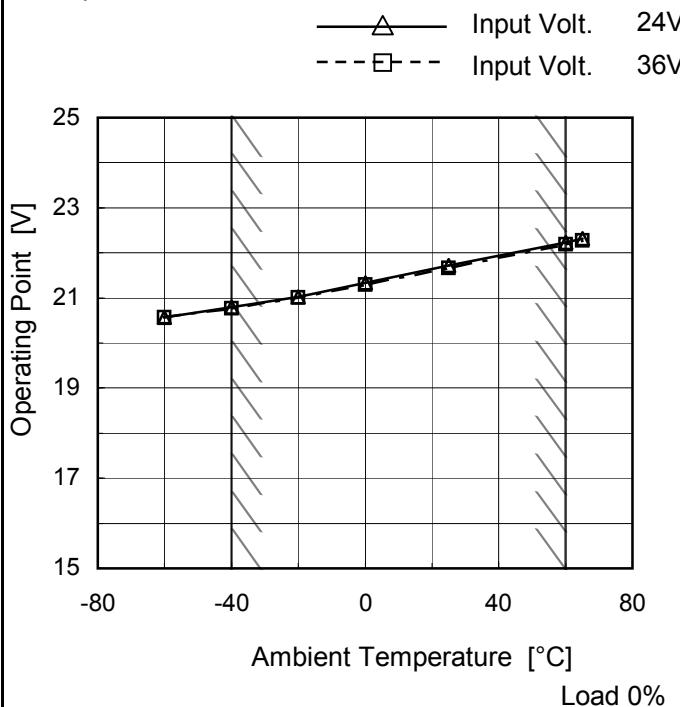
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	7.9	8.0
-40	7.9	8.0
-20	7.9	7.9
0	7.9	7.9
25	7.9	7.9
60	7.9	8.0
65	7.9	7.9
--	-	-
--	-	-
--	-	-
--	-	-

Model	MGFS302415	Temperature Testing Circuitry 25°C Figure A				
Item	Overcurrent Protection					
Object	+15V2A					
1.Graph						
						
						
		<p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when overcurrent protection is activated.</p>				
2.Values						
Output Voltage [V]		Load Current [A]				
9[V]	12[V]	18[V]	24[V]	36[V]		
15.0	2.670	2.828	2.942	2.907	2.706	
14.3	-	-	-	-	-	
13.5	-	-	-	-	-	
12.0	-	-	-	-	-	
10.5	-	-	-	-	-	
9.0	-	-	-	-	-	
7.5	-	-	-	-	-	
6.0	-	-	-	-	-	
4.5	-	-	-	-	-	
3.0	-	-	-	-	-	
1.5	-	-	-	-	-	
0.0	-	-	-	-	-	

Model	MGFS302415
Item	Oversupply Protection
Object	+15V2A

Testing Circuitry Figure A

1. Graph



2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 24[V]	Input Volt. 36[V]
-60	20.57	20.56
-40	20.80	20.77
-20	21.03	21.01
0	21.34	21.29
25	21.72	21.67
60	22.23	22.19
65	22.32	22.27
--	-	-
--	-	-
--	-	-
--	-	-

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

COSEL

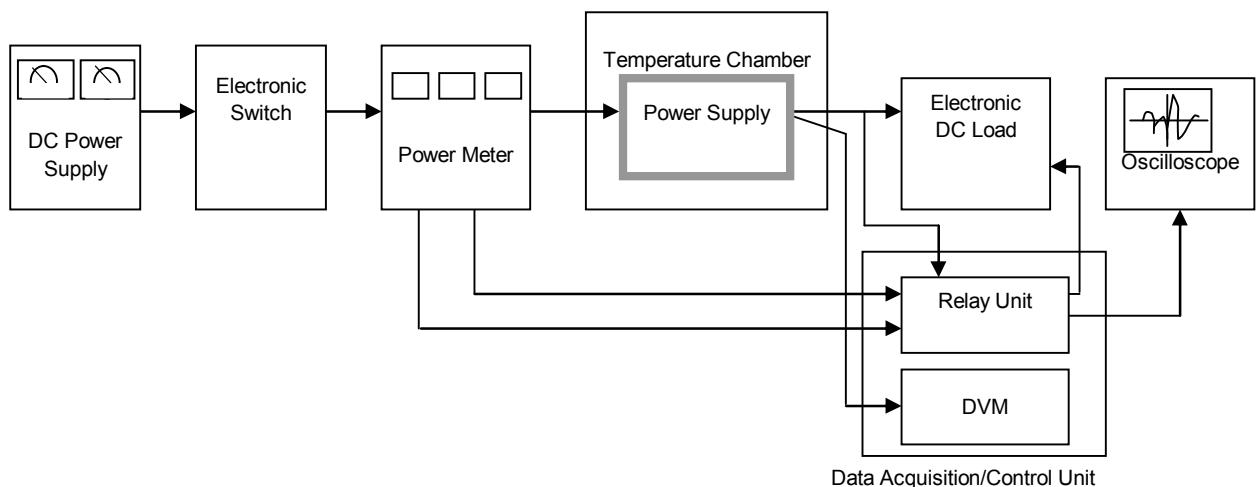


Figure A

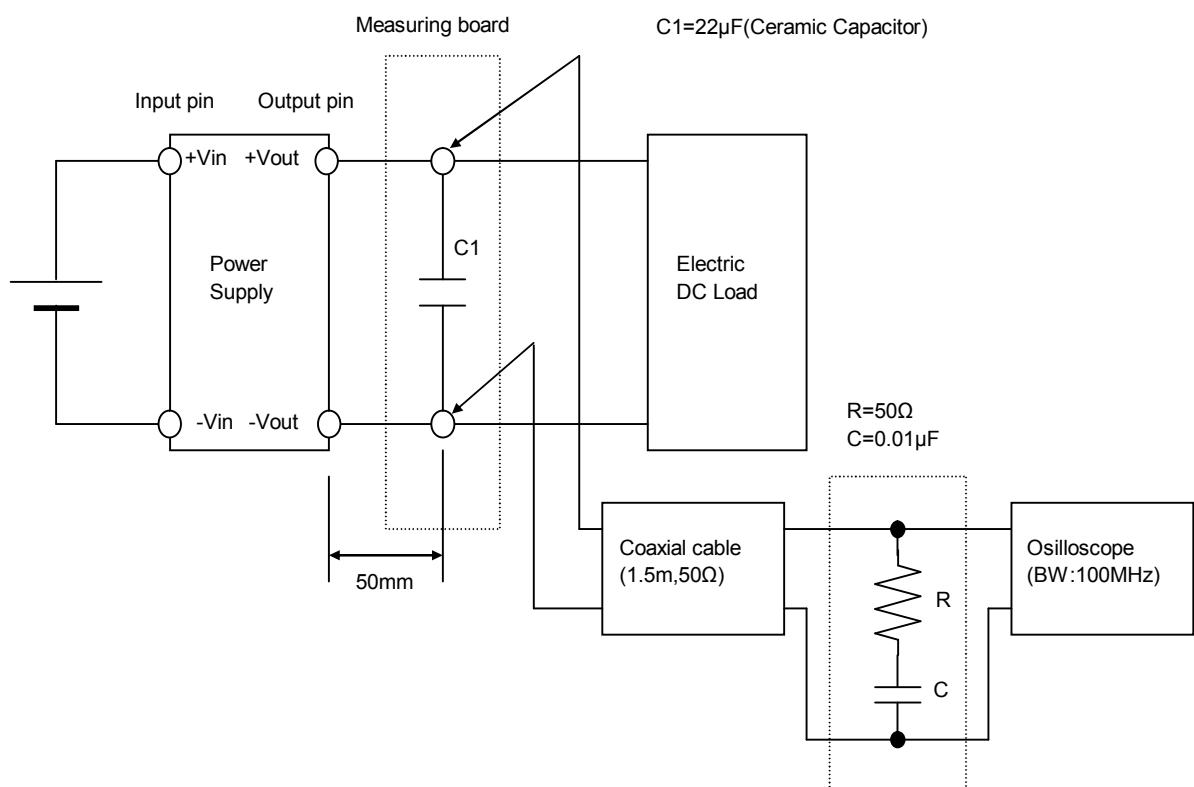


Figure B (Ripple and Ripple noise Characteristic)