

TEST DATA OF MGFS34815

Regulated DC Power Supply
January 11, 2017

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COSEL CO.,LTD.



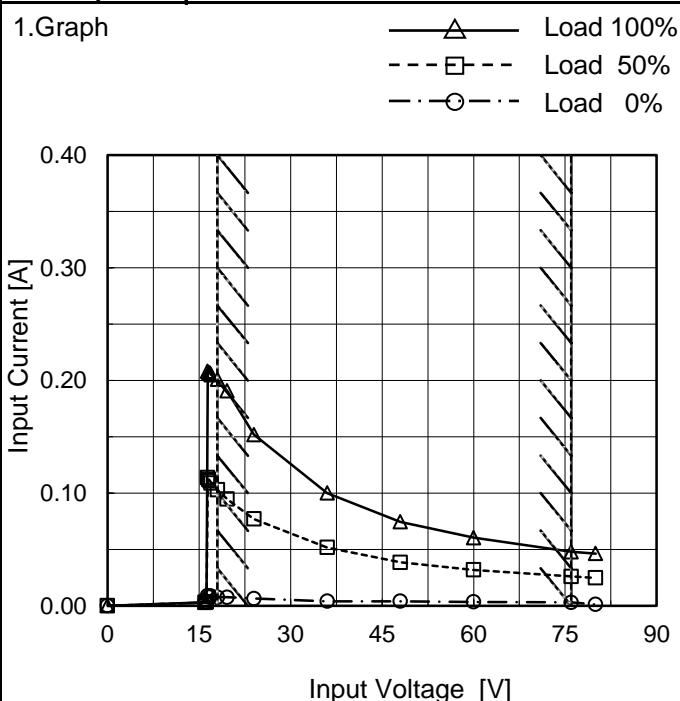
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Model	MGFS34815
Item	Input Current (by Input Voltage)
Object	_____



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

Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
16.0	0.003	0.003	0.003
16.2	0.003	0.003	0.004
16.4	0.009	0.114	0.208
16.6	0.008	0.112	0.207
16.8	0.009	0.111	0.207
17.0	0.008	0.109	0.205
18.0	0.008	0.103	0.201
19.6	0.008	0.095	0.191
24.0	0.006	0.077	0.152
36.0	0.004	0.052	0.100
48.0	0.004	0.039	0.075
60.0	0.003	0.032	0.060
76.0	0.003	0.026	0.048
80.0	0.001	0.025	0.046
--	-	-	-
--	-	-	-
--	-	-	-

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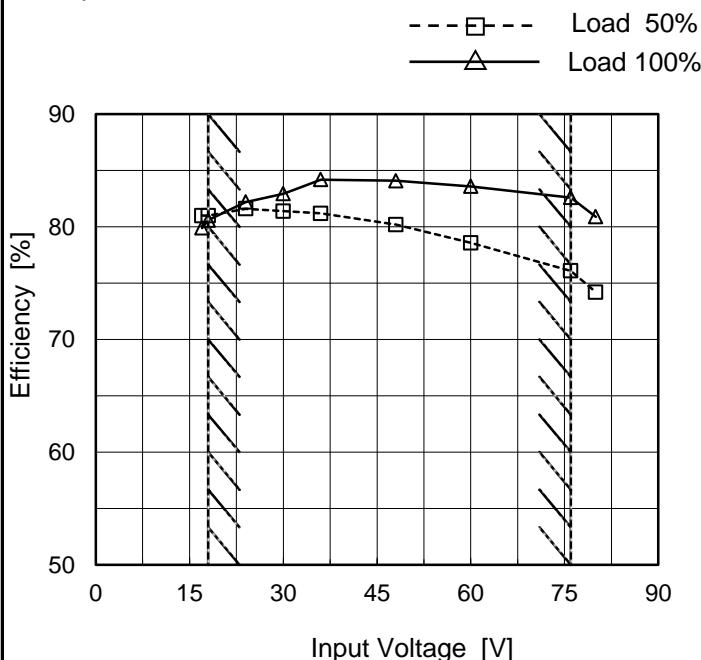
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Model	MGFS34815
Item	Efficiency (by Input Voltage)
Object	_____

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
17	81.0	79.9 ※1
18	81.0	80.6 ※1
24	81.6	82.2
30	81.4	82.9
36	81.2	84.2
48	80.2	84.1
60	78.6	83.6
76	76.1	82.6
80	74.2	80.9

※1: Load 80%

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

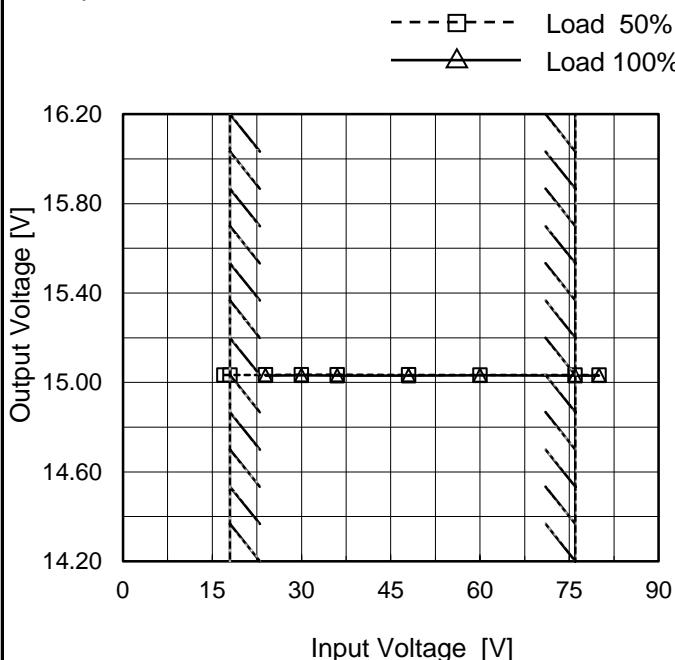
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<p>The graph shows efficiency increasing with load current for all input voltages. A slanted line from approximately (0.05, 60) to (0.20, 80) indicates the rated load current range. The legend indicates:</p> <ul style="list-style-type: none"> Input Volt. 18V (solid line with open triangle) Input Volt. 24V (dashed line with open square) Input Volt. 36V (dash-dot line with asterisk) Input Volt. 48V (dotted line with open circle) Input Volt. 76V (dash-dot-dot line with open diamond) 		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Efficiency [%]</th> </tr> <tr> <th>18[V]</th> <th>24[V]</th> <th>36[V]</th> <th>48[V]</th> <th>76[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>0.04</td><td>75.3</td><td>73.2</td><td>71.5</td><td>70.2</td><td>59.5</td></tr> <tr><td>0.08</td><td>80.5</td><td>80.2</td><td>79.1</td><td>76.0</td><td>72.3</td></tr> <tr><td>0.12</td><td>81.2</td><td>82.4</td><td>81.9</td><td>81.3</td><td>79.1</td></tr> <tr><td>0.16</td><td>80.6</td><td>83.3</td><td>83.3</td><td>83.4</td><td>81.3</td></tr> <tr><td>0.18</td><td>80.5</td><td>82.7</td><td>83.8</td><td>83.6</td><td>82.0</td></tr> <tr><td>0.20</td><td>-</td><td>82.2</td><td>84.2</td><td>84.1</td><td>82.6</td></tr> <tr><td>0.22</td><td>-</td><td>81.8</td><td>83.7</td><td>83.4</td><td>82.1</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> </tbody> </table>		Load Current [A]	Efficiency [%]					18[V]	24[V]	36[V]	48[V]	76[V]	0.00	-	-	-	-	-	0.04	75.3	73.2	71.5	70.2	59.5	0.08	80.5	80.2	79.1	76.0	72.3	0.12	81.2	82.4	81.9	81.3	79.1	0.16	80.6	83.3	83.3	83.4	81.3	0.18	80.5	82.7	83.8	83.6	82.0	0.20	-	82.2	84.2	84.1	82.6	0.22	-	81.8	83.7	83.4	82.1	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
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Model	MGFS34815	Temperature	25°C
Item	Line Regulation	Testing Circuitry	Figure A
Object	+15V0.2A		

1. Graph



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

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	15.033	-
18	15.033	-
24	15.034	15.031
30	15.034	15.032
36	15.034	15.030
48	15.033	15.030
60	15.033	15.031
76	15.033	15.030
80	15.033	15.031

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COSEL

Model	MGFS34815	Temperature Testing Circuitry Figure A
Item	Dynamic Load Response	
Object	+15V0.2A	

Input Volt. 48 V
 Cycle 100 ms



Min.Load (0A)↔
 Load 100% (0.2A)

100 mV/div

4 ms/div

4 ms/div

Min.Load (0A)↔
 Load 50% (0.1A)

100 mV/div

4 ms/div

4 ms/div

Load 50% (0.1A)↔
 Load 100% (0.2A)

100 mV/div

4 ms/div

4 ms/div

COSEL

Model	MGFS34815																																							
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure B																																						
Object	+15V0.2A																																							
1.Graph																																								
<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 0.25 A. Two curves are plotted: one for Input Volt. 24V (solid line with triangle markers) and one for Input Volt. 76V (dashed line with circle markers). Both curves show an increase in ripple voltage as load current increases, with a slanted line indicating the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple Voltage [mV] (Input Volt. 24V)</th> <th>Ripple Voltage [mV] (Input Volt. 76V)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>5</td><td>20</td></tr> <tr><td>0.04</td><td>25</td><td>15</td></tr> <tr><td>0.08</td><td>25</td><td>20</td></tr> <tr><td>0.12</td><td>50</td><td>30</td></tr> <tr><td>0.16</td><td>65</td><td>45</td></tr> <tr><td>0.18</td><td>75</td><td>45</td></tr> <tr><td>0.20</td><td>85</td><td>45</td></tr> <tr><td>0.22</td><td>95</td><td>45</td></tr> </tbody> </table>			Load Current [A]	Ripple Voltage [mV] (Input Volt. 24V)	Ripple Voltage [mV] (Input Volt. 76V)	0.00	5	20	0.04	25	15	0.08	25	20	0.12	50	30	0.16	65	45	0.18	75	45	0.20	85	45	0.22	95	45											
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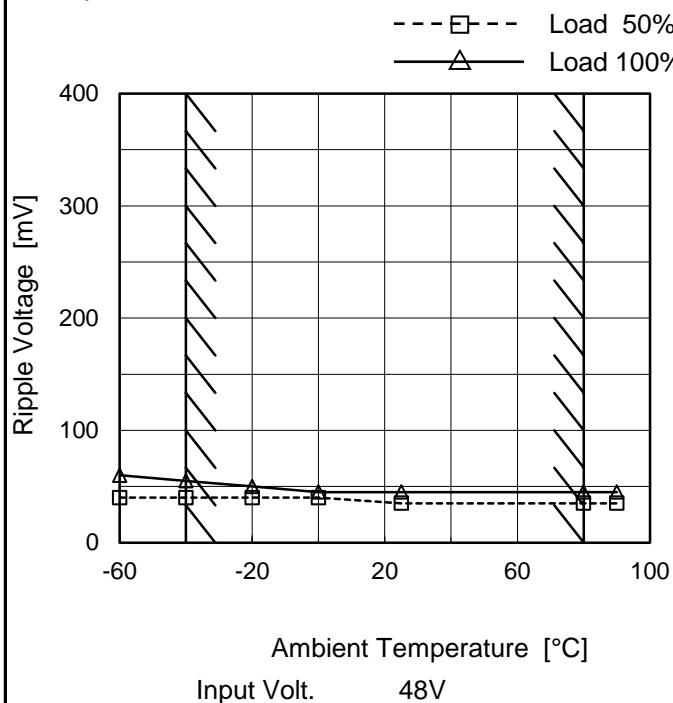
COSEL

Model	MGFS34815																																							
Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure B																																						
Object	+15V0.2A																																							
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COSEL

Model	MGFS34815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.2A

1. Graph



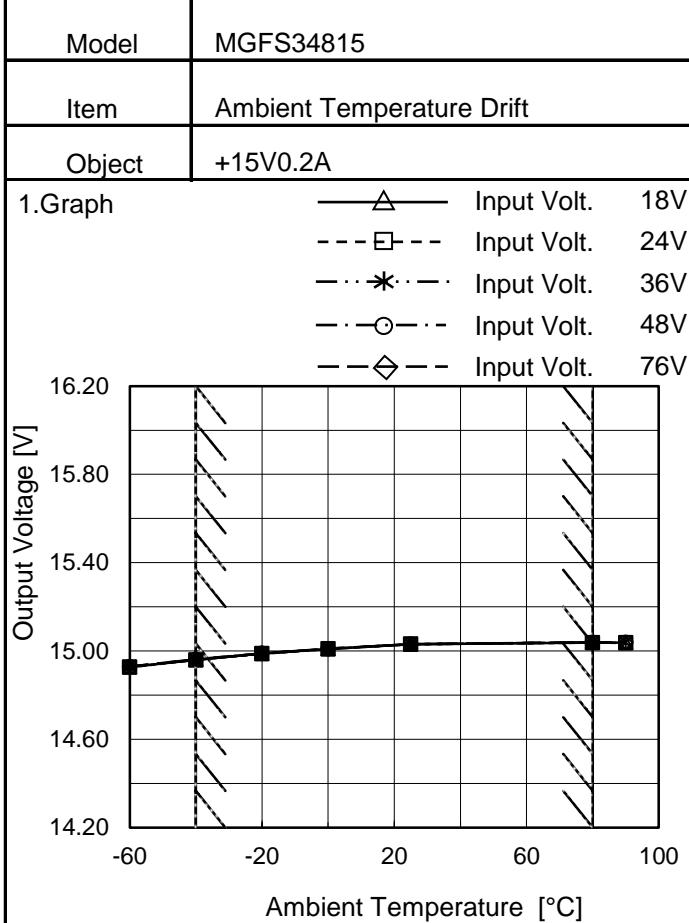
Measured by 100 MHz Oscilloscope.

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

Testing Circuitry Figure B

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	40	60
-40	40	55
-20	40	50
0	40	45
25	35	45
80	35	45
90	35	45
--	-	-
--	-	-
--	-	-
--	-	-

COSEL


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

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	18[V]	24[V]	36[V]	48[V]	76[V]
-60	14.927	14.926	14.928	14.929	14.930
-40	14.960	14.959	14.961	14.962	14.962
-20	14.988	14.988	14.989	14.989	14.989
0	15.009	15.009	15.010	15.010	15.010
25	15.031	15.031	15.030	15.030	15.030
80	15.038	15.038	15.039	15.039	15.039
90	15.038	15.037	15.038	15.038	15.038
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Note: In case of Input Volt. 18V, Load 80%.
Other case Load 100%.



Model	MGFS34815	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+15V0.2A	

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 : 24 - 76V

Load Current : 0 - 0.2A

* 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

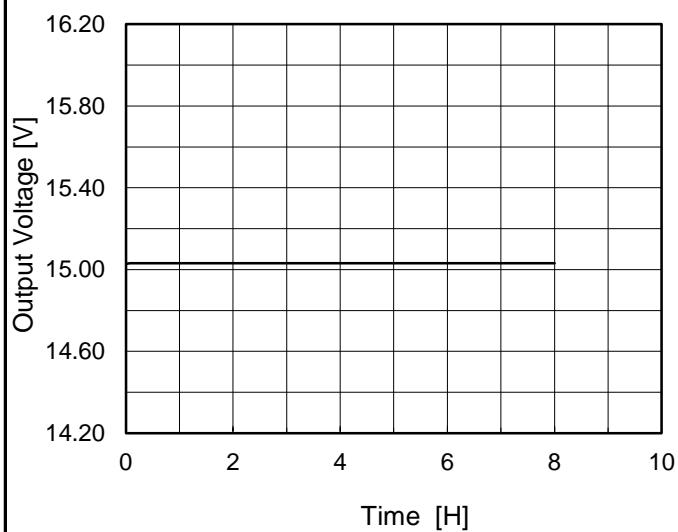
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	70	76	0	15.054	±48	±0.3
Minimum Voltage	-40	24	0.2	14.959		

COSEL

Model	MGFS34815
Item	Time Lapse Drift
Object	+15V0.2A

Temperature 25°C
 Testing Circuitry Figure A

1.Graph



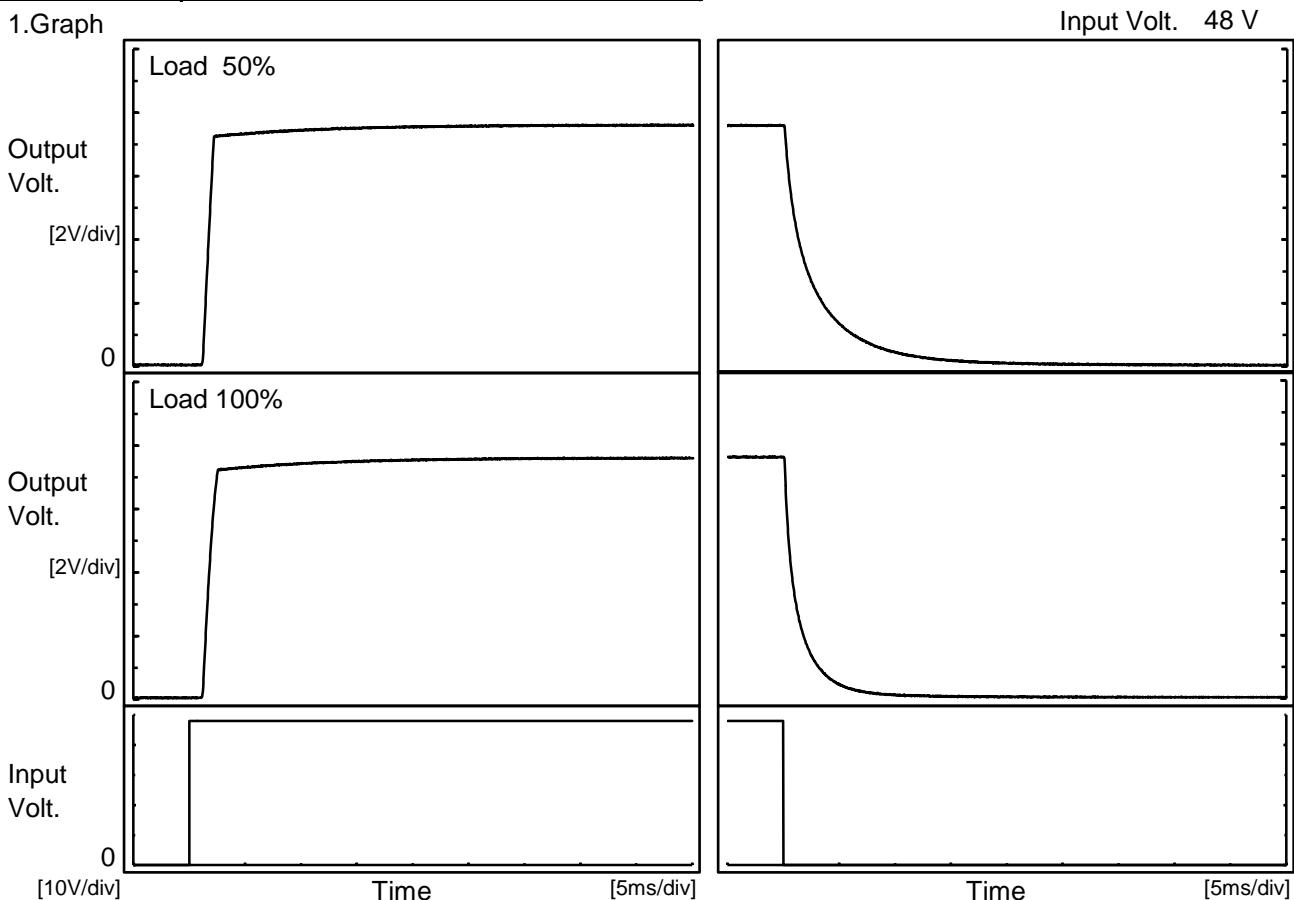
2.Values

Time since start [H]	Output Voltage [V]
0.0	15.026
0.5	15.031
1.0	15.031
2.0	15.031
3.0	15.031
4.0	15.031
5.0	15.031
6.0	15.031
7.0	15.031
8.0	15.030

COSEL

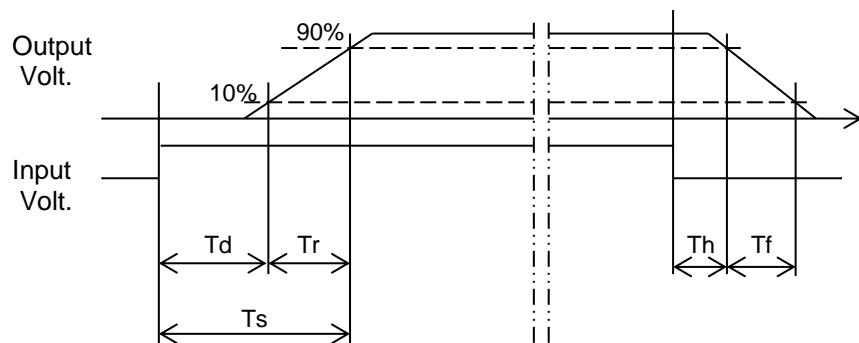
Model	MGFS34815	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+15V0.2A		

1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		1.3	0.9	2.2	0.3	7.1	
100 %		1.3	1.1	2.4	0.2	3.5	

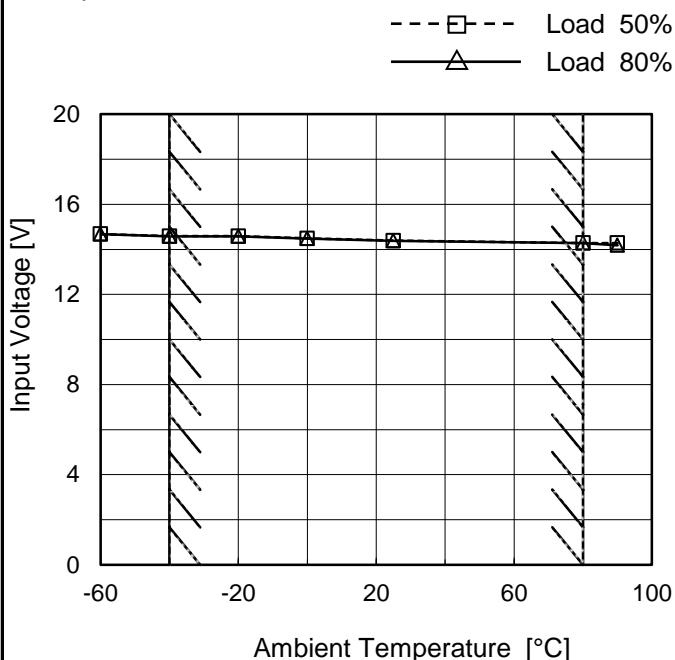


COSEL

Model	MGFS34815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.2A

Testing Circuitry Figure A

1. Graph



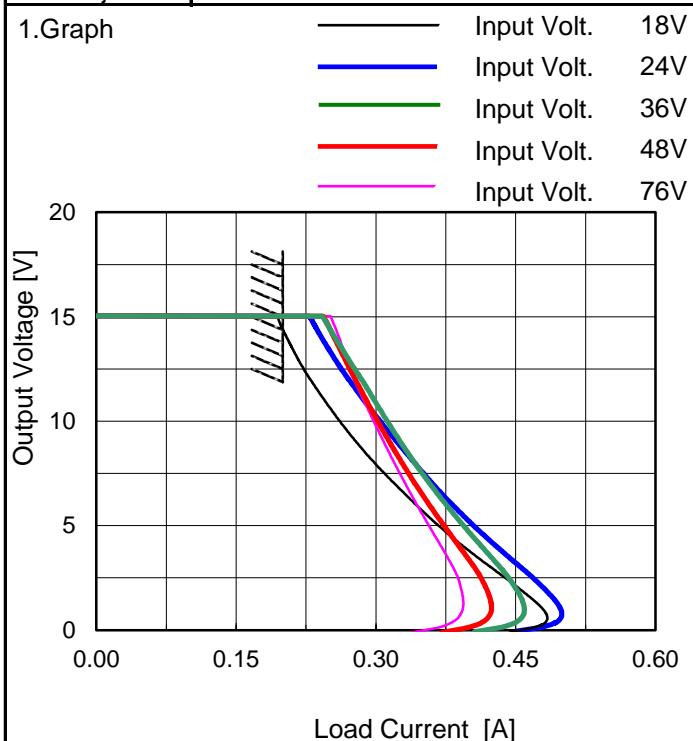
Note: Slanted line shows the range of the rated ambient temperature.

2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 80%
-60	14.7	14.7
-40	14.6	14.6
-20	14.6	14.6
0	14.5	14.5
25	14.4	14.4
80	14.3	14.3
90	14.3	14.2
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS34815
Item	Overcurrent Protection
Object	+15V0.2A


 Temperature 25°C
 Testing Circuitry Figure A

2. Values

Output Voltage [V]	Load Current [A]				
	18[V]	24[V]	36[V]	48[V]	76[V]
14.3	0.202	0.238	0.253	0.252	0.258
13.5	0.210	0.248	0.263	0.261	0.264
12.0	0.230	0.270	0.284	0.277	0.276
10.5	0.252	0.295	0.305	0.295	0.292
9.0	0.278	0.322	0.326	0.314	0.308
7.5	0.309	0.351	0.350	0.335	0.326
6.0	0.343	0.382	0.375	0.357	0.344
4.5	0.380	0.416	0.403	0.381	0.363
3.0	0.423	0.455	0.433	0.405	0.383
1.5	0.467	0.490	0.456	0.422	0.394
0.0	0.444	0.450	0.406	0.371	0.339
--	-	-	-	-	-

Note: Slanted line shows the range of the rated load current.

Maximum output current at minimum input Voltage is 80% of rated load current.

Refer to instruction manuals for details of input derating.

COSEL

Model	MGFS34815																																																																																		
Item	Switching frequency (by Load Current)	Temperature 25°C Testing Circuitry Figure A																																																																																	
Object	+15V0.2A																																																																																		
1.Graph	<p>—△— Input Volt. 18V - - -□--- Input Volt. 24V - - -*--- Input Volt. 36V - - -○--- Input Volt. 48V - - -◇--- Input Volt. 76V</p>																																																																																		
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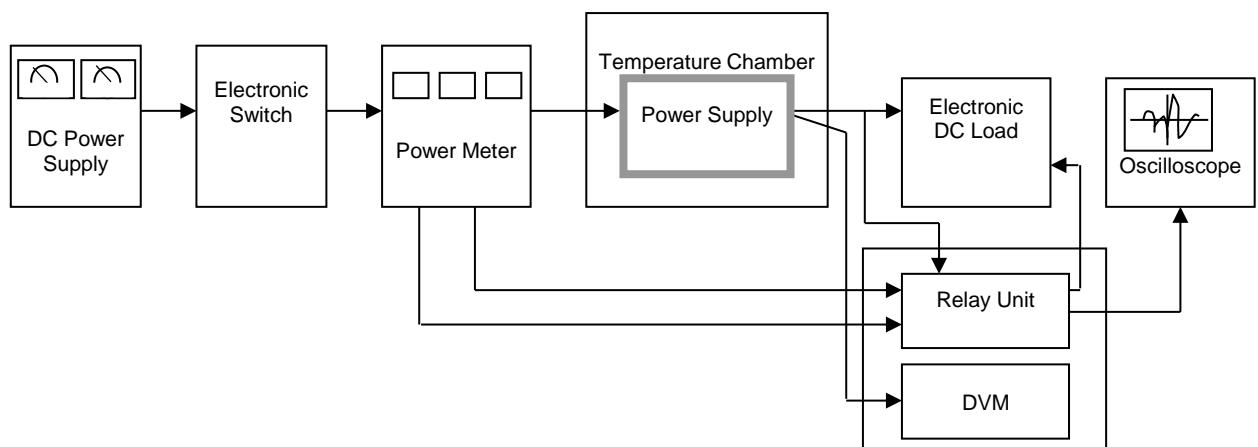


Figure A

Data Acquisition/Control Unit

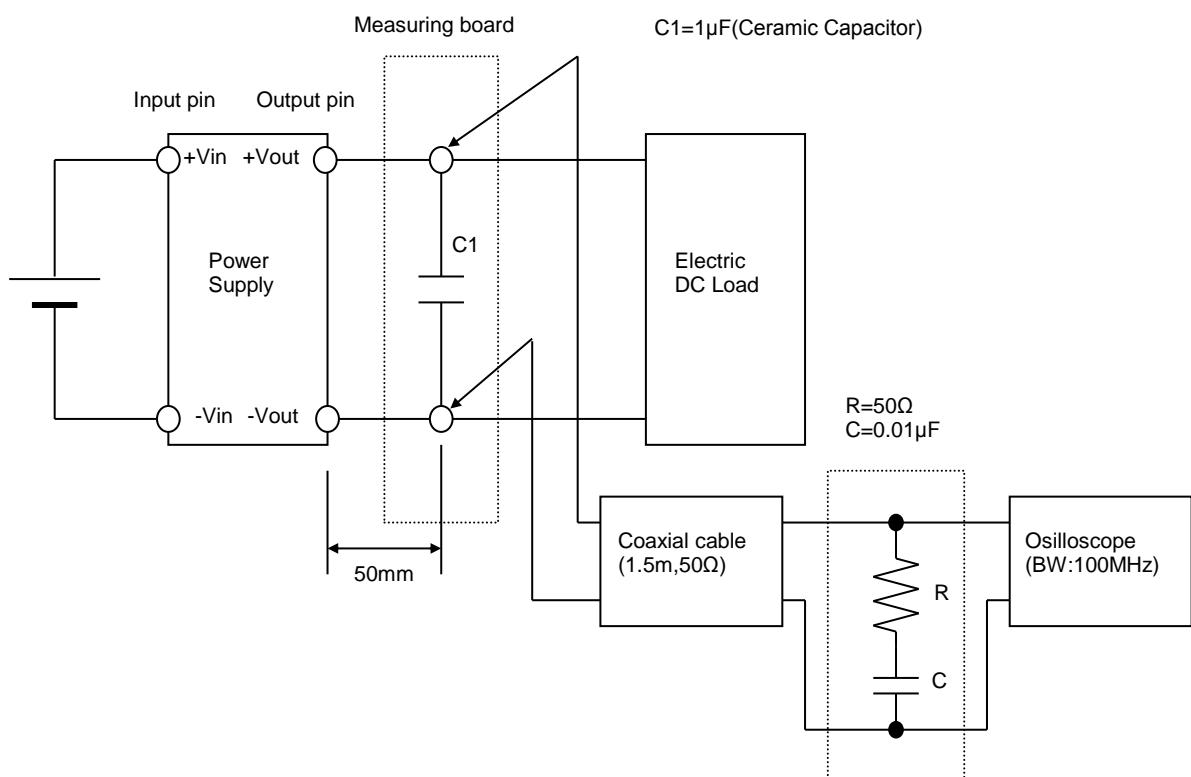


Figure B (Ripple and Ripple noise Characteristic)