

TEST DATA OF MGFS104815

Regulated DC Power Supply
December 28, 2016

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Takayuki Fukuda Design Manager

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Takaaki Sekiguchi Design Engineer

COSEL CO.,LTD.

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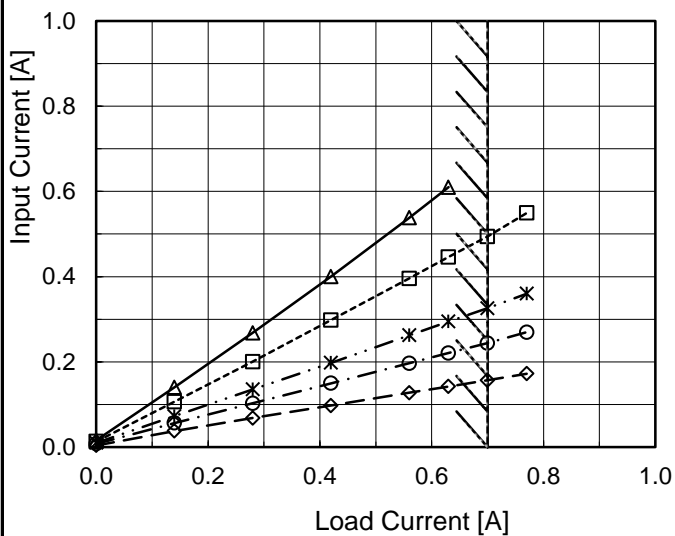
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Model	MGFS104815
Item	Input Current (by Load Current)
Object	_____

Temperature 25°C
Testing Circuitry Figure A

- 1.Graph
- △— Input Volt. 18V
 - - - □ - - - Input Volt. 24V
 - · · * · · - · - Input Volt. 36V
 - · · ○ · · - · - Input Volt. 48V
 - - ◇ - - Input Volt. 76V



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

2.Values

Load Current [A]	Input Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.016	0.013	0.010	0.008	0.004
0.14	0.141	0.106	0.073	0.057	0.038
0.28	0.268	0.200	0.136	0.103	0.068
0.42	0.400	0.298	0.198	0.150	0.098
0.56	0.538	0.396	0.262	0.197	0.128
0.63	0.610	0.446	0.295	0.221	0.142
0.70	- ※	0.494	0.326	0.244	0.157
0.77	- ※	0.549	0.360	0.270	0.172
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--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.



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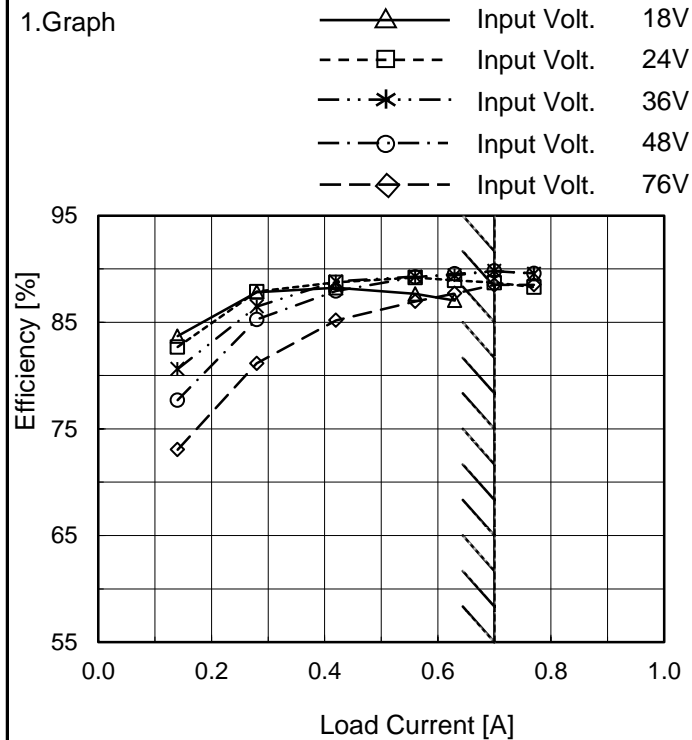


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Model	MGFS104815
Item	Efficiency (by Load Current)
Object	_____

Temperature 25°C
Testing Circuitry Figure A



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

2.Values

Load Current [A]	Efficiency [%]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	-	-	-	-	-
0.14	83.7	82.7	80.6	77.7	73.1
0.28	87.8	87.9	86.5	85.3	81.1
0.42	88.2	88.7	88.8	87.9	85.2
0.56	87.7	89.2	89.3	89.2	87.0
0.63	87.0	88.9	89.4	89.5	87.7
0.70	- ※	88.7	89.8	89.8	88.5
0.77	- ※	88.3	89.5	89.6	88.5
--	-	-	-	-	-
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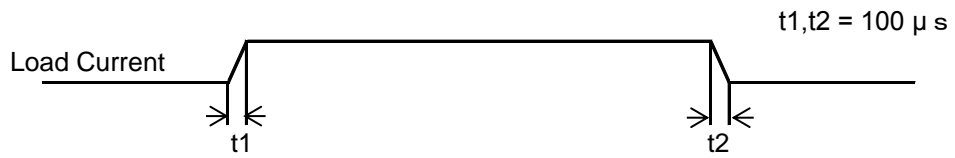


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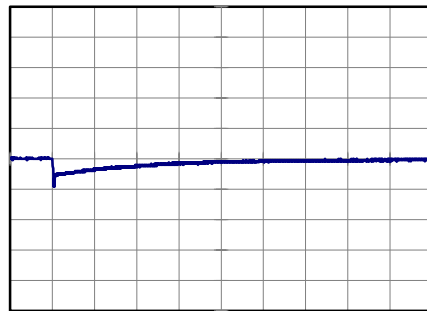
Model		MGFS104815	
Item		Dynamic Load Response	
Object		+15V0.7A	
		Temperature	25°C
		Testing Circuitry	Figure A

Input Volt. 48 V
Cycle 100 ms

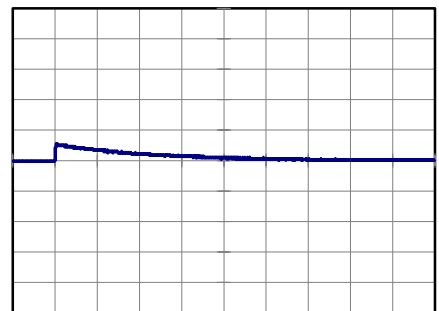


Min. Load (0A) ←→
Load 100% (0.7A)

500 mV/div



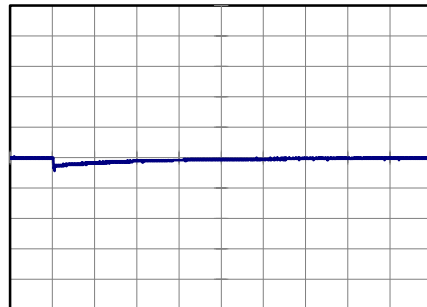
2 ms/div



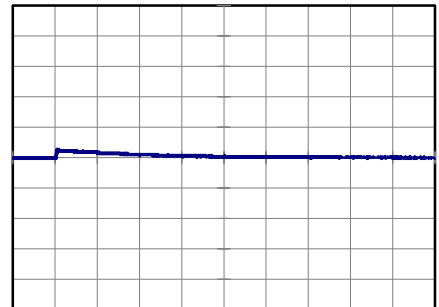
2 ms/div

Min. Load (0A) ←→
Load 50% (0.35A)

500 mV/div



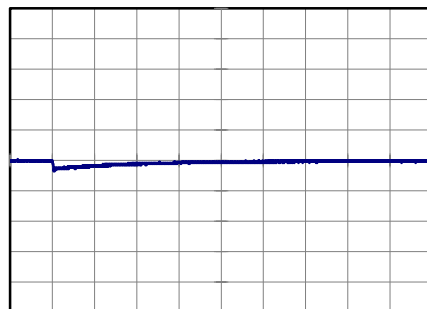
2 ms/div



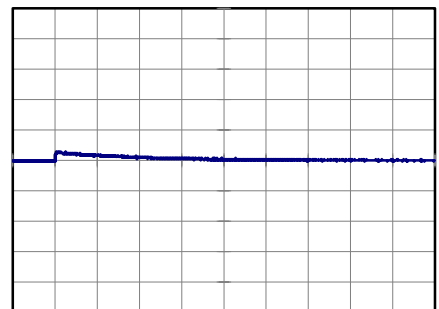
2 ms/div

Load 50% (0.35A) ←→
Load 100% (0.7A)

500 mV/div



2 ms/div



2 ms/div



<p>Model MGFS104815</p> <p>Item Ripple Voltage (by Load Current)</p> <p>Object +15V0.7A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure B</p>																																						
<p>1.Graph</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>—△— Input Volt. 24V</p> <p>- - ○ - - Input Volt. 76V</p> </div> </div>		<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. 24 [V]</th> <th>Input Volt. 76 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>5</td><td>25</td></tr> <tr><td>0.14</td><td>5</td><td>5</td></tr> <tr><td>0.28</td><td>5</td><td>10</td></tr> <tr><td>0.42</td><td>10</td><td>10</td></tr> <tr><td>0.56</td><td>15</td><td>10</td></tr> <tr><td>0.63</td><td>20</td><td>10</td></tr> <tr><td>0.70</td><td>25</td><td>10</td></tr> <tr><td>0.77</td><td>35</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> </tbody> </table>	Load Current [A]	Ripple Voltage [mV]		Input Volt. 24 [V]	Input Volt. 76 [V]	0.00	5	25	0.14	5	5	0.28	5	10	0.42	10	10	0.56	15	10	0.63	20	10	0.70	25	10	0.77	35	10	--	-	-	--	-	-	--	-	-
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<p>Model MGFS104815</p>		<p>Temperature 25°C Testing Circuitry Figure B</p>																																						
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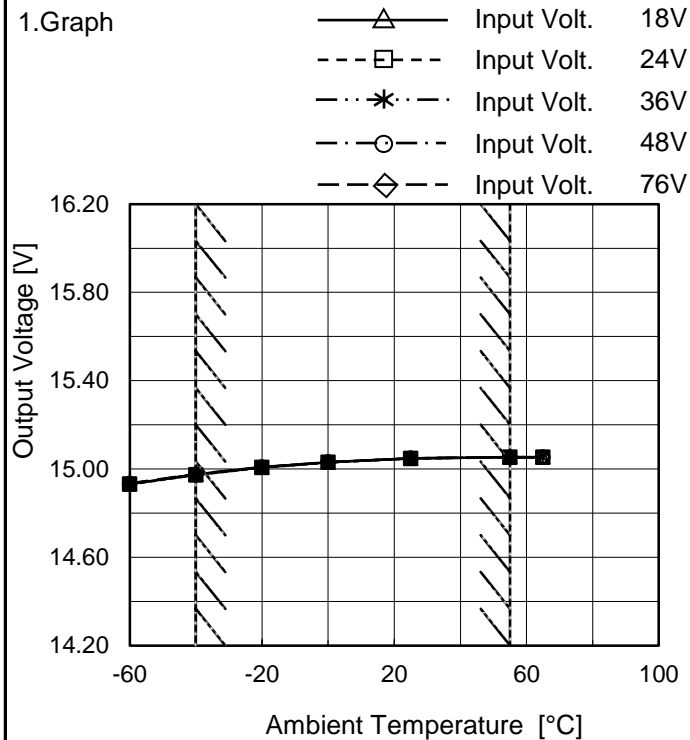


COSEL																																								
Model	MGFS104815																																							
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure B																																						
Object	+15V0.7A																																							
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Model	MGFS104815
Item	Ambient Temperature Drift
Object	+15V0.7A

Testing Circuitry Figure A



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

2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.931	14.931	14.932	14.934	14.934
-40	14.974	14.973	14.974	14.976	14.976
-20	15.007	15.006	15.007	15.008	15.008
0	15.030	15.030	15.031	15.031	15.031
25	15.048	15.048	15.048	15.048	15.048
55	15.053	15.053	15.054	15.054	15.053
65	15.053	15.053	15.053	15.053	15.053
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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



COSEL		Testing Circuitry Figure A
Model	MGFS104815	
Item	Output Voltage Accuracy	
Object	+15V0.7A	

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 - 55°C

Input Voltage : 24 - 76V

Load Current : 0 - 0.7A

* 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	55	76	0	15.065	±46	±0.3
Minimum Voltage	-40	24	0.7	14.973		

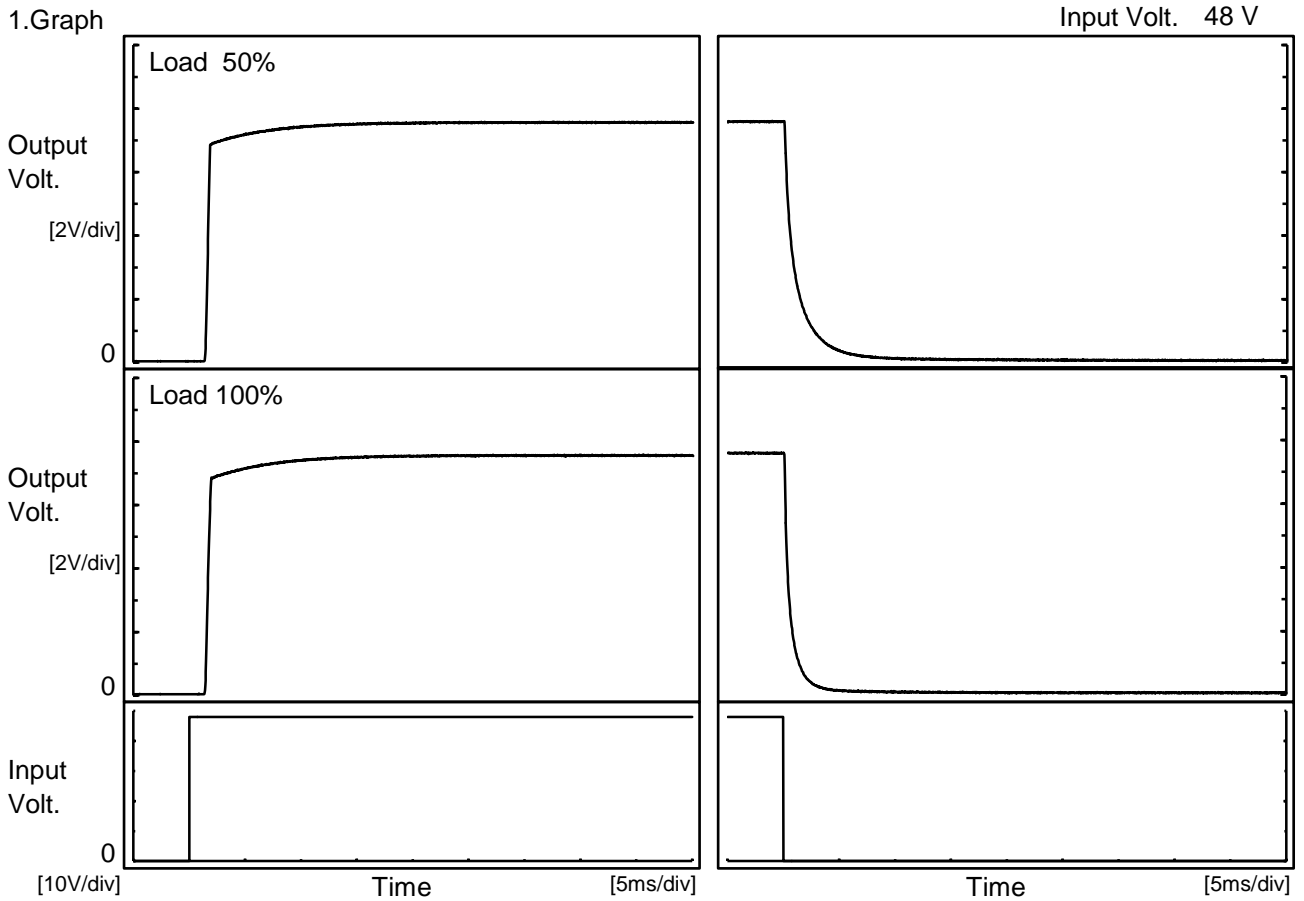


COSEL																									
Model	MGFS104815	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+15V0.7A																								
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 48V Load 100%</p>		<p>2.Values</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>15.043</td></tr> <tr><td>0.5</td><td>15.051</td></tr> <tr><td>1.0</td><td>15.051</td></tr> <tr><td>2.0</td><td>15.051</td></tr> <tr><td>3.0</td><td>15.051</td></tr> <tr><td>4.0</td><td>15.052</td></tr> <tr><td>5.0</td><td>15.052</td></tr> <tr><td>6.0</td><td>15.051</td></tr> <tr><td>7.0</td><td>15.051</td></tr> <tr><td>8.0</td><td>15.051</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	15.043	0.5	15.051	1.0	15.051	2.0	15.051	3.0	15.051	4.0	15.052	5.0	15.052	6.0	15.051	7.0	15.051	8.0	15.051
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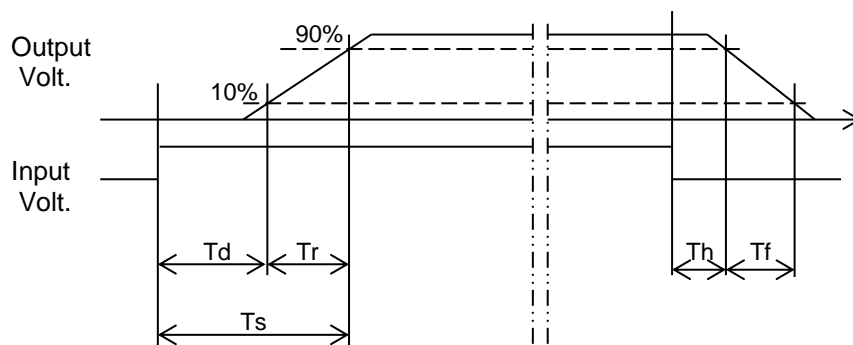
Model	MGFS104815	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+15V0.7A		

1.Graph



2.Values

		[ms]				
Load \ Time	Td	Tr	Ts	Th	Tf	
50 %	1.5	0.4	1.9	0.2	3.0	
100 %	1.5	0.5	2.0	0.1	1.5	

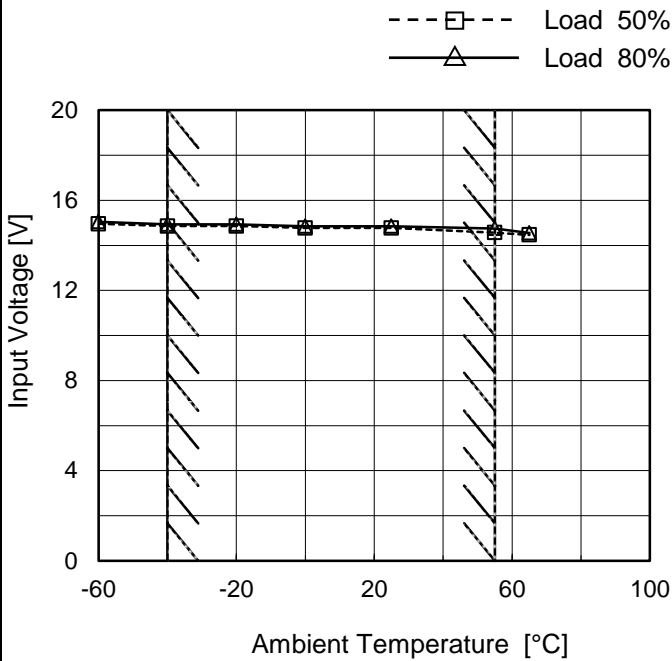




Model		MGFS104815
Item		Minimum Input Voltage for Regulated Output Voltage
Object		+15V0.7A

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	15.0	15.1
-40	14.9	15.0
-20	14.9	15.0
0	14.8	14.9
25	14.8	14.9
55	14.6	14.8
65	14.5	14.6
--	-	-
--	-	-
--	-	-
--	-	-



COSEL																																																																																									
Model	MGFS104815	Temperature 25°C Testing Circuitry Figure A																																																																																							
Item	Overcurrent Protection																																																																																								
Object	+15V0.7A																																																																																								
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<p>1.Graph</p> <p> —△— Input Volt. 18V - - - □ - - - Input Volt. 24V - · · * · · - · - Input Volt. 36V - · · ○ · · - · - Input Volt. 48V - - ◇ - - Input Volt. 76V </p> <p>Switching Frequency [kHz]</p> <p>Load Current [A]</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. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr> <td>0.00</td> <td>532</td> <td>600</td> <td>685</td> <td>728</td> <td>728</td> </tr> <tr> <td>0.14</td> <td>326</td> <td>398</td> <td>494</td> <td>551</td> <td>615</td> </tr> <tr> <td>0.28</td> <td>236</td> <td>299</td> <td>386</td> <td>441</td> <td>509</td> </tr> <tr> <td>0.42</td> <td>184</td> <td>239</td> <td>317</td> <td>368</td> <td>434</td> </tr> <tr> <td>0.56</td> <td>150</td> <td>198</td> <td>269</td> <td>316</td> <td>378</td> </tr> <tr> <td>0.63</td> <td>139</td> <td>184</td> <td>251</td> <td>296</td> <td>357</td> </tr> <tr> <td>0.70</td> <td>- ※</td> <td>169</td> <td>233</td> <td>276</td> <td>336</td> </tr> <tr> <td>0.77</td> <td>- ※</td> <td>158</td> <td>219</td> <td>260</td> <td>318</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. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.00	532	600	685	728	728	0.14	326	398	494	551	615	0.28	236	299	386	441	509	0.42	184	239	317	368	434	0.56	150	198	269	316	378	0.63	139	184	251	296	357	0.70	- ※	169	233	276	336	0.77	- ※	158	219	260	318	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
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<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>※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.</p>																																																																														

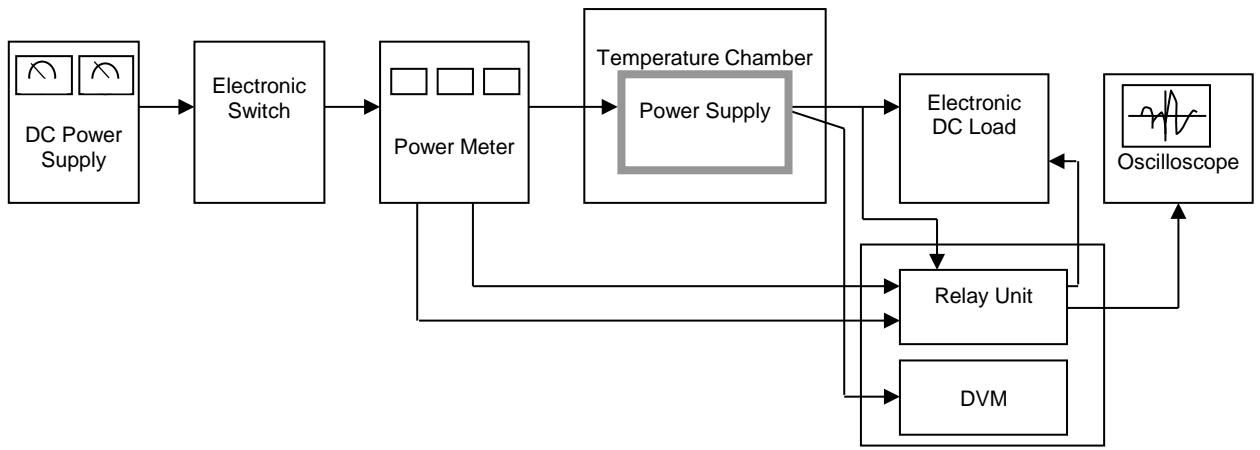


Figure A

Data Acquisition/Control Unit

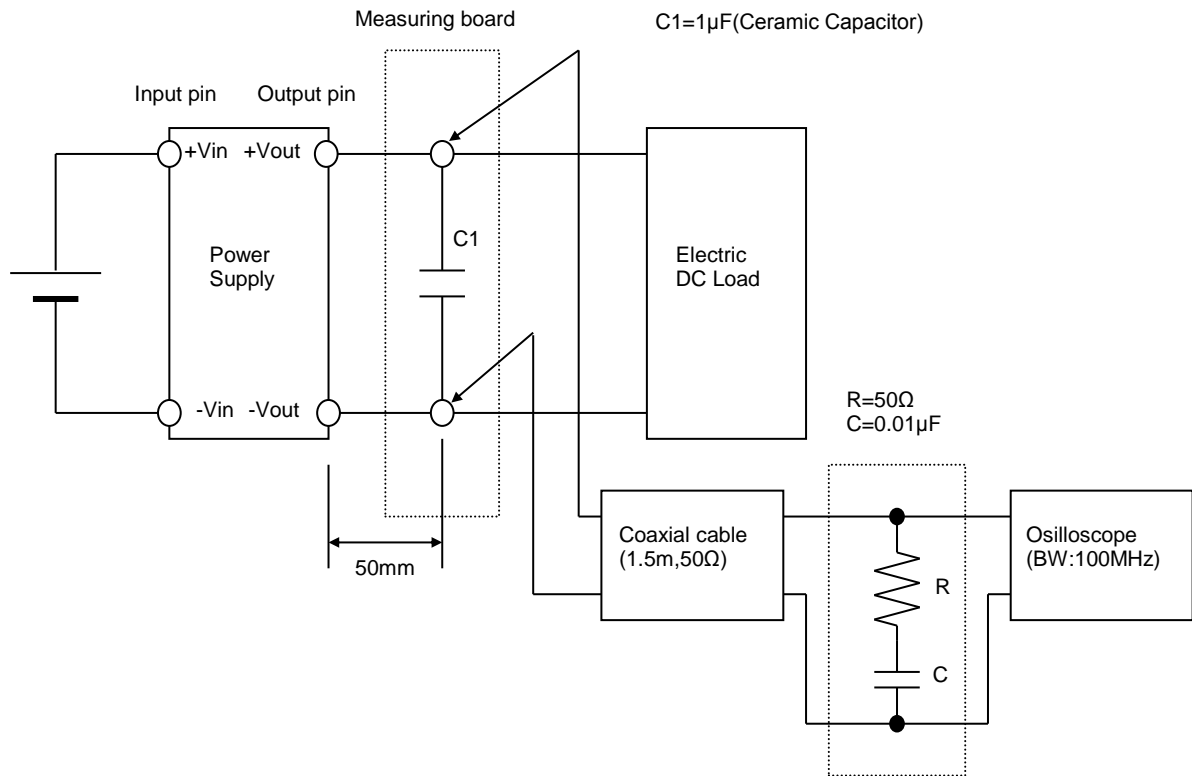


Figure B (Ripple and Ripple noise Characteristic)