

TEST DATA OF MGFS10243R3

Regulated DC Power Supply
December 13, 2016

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Takayuki Fukuda Design Manager

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COSEL CO.,LTD.

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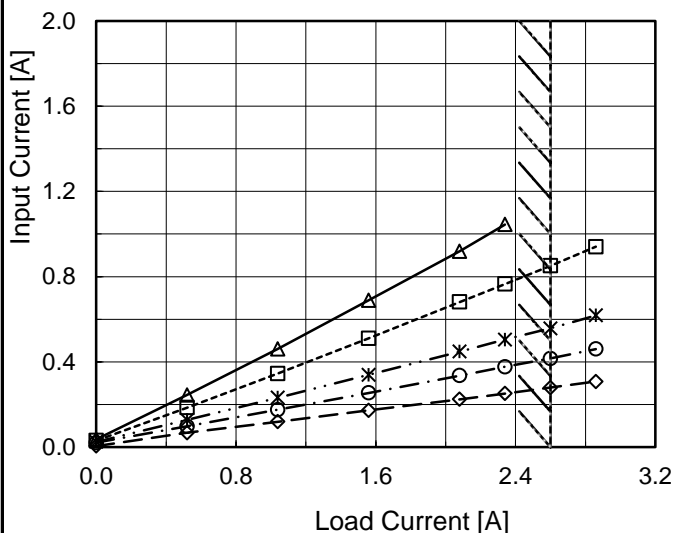
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Model	MGFS10243R3
Item	Input Current (by Load Current)
Object	_____

Temperature 25°C
Testing Circuitry Figure A

- 1.Graph
- △— Input Volt. 9V
 - Input Volt. 12V
 - *·-·- Input Volt. 18V
 - Input Volt. 24V
 - ◇-·- Input Volt. 36V



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

2.Values

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	0.037	0.031	0.025	0.021	0.005
0.52	0.244	0.186	0.128	0.097	0.068
1.04	0.461	0.345	0.232	0.176	0.119
1.56	0.689	0.511	0.339	0.255	0.172
2.08	0.919	0.681	0.448	0.336	0.225
2.34	1.045	0.765	0.505	0.377	0.252
2.60	- ※	0.851	0.557	0.416	0.279
2.86	- ※	0.940	0.618	0.460	0.308
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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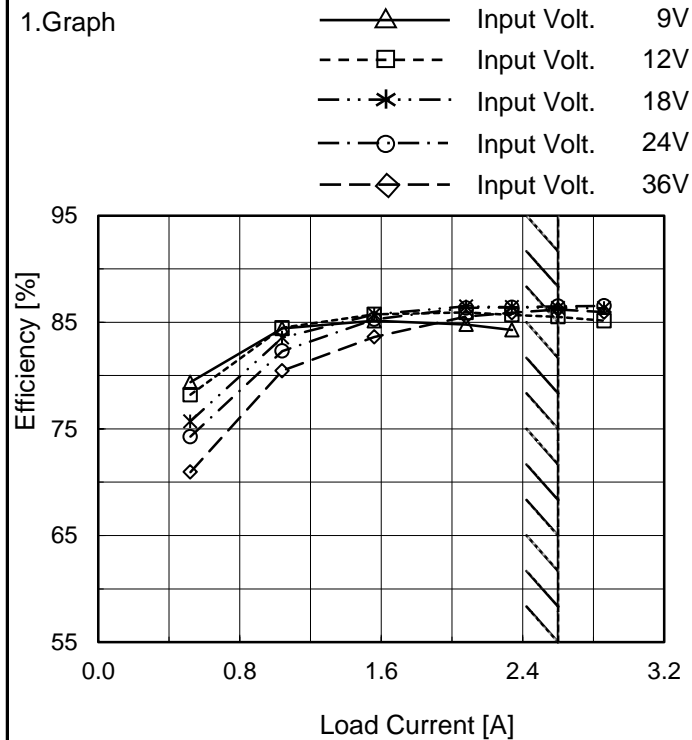


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Item	Efficiency (by Load Current)
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Temperature 25°C
Testing Circuitry Figure A



2.Values

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	-	-	-	-	-
0.52	79.4	78.2	75.7	74.3	70.9
1.04	84.4	84.5	83.6	82.3	80.5
1.56	85.1	85.7	85.8	85.3	83.6
2.08	84.8	85.9	86.5	86.3	85.5
2.34	84.3	85.7	86.4	86.4	85.9
2.60	- ※	85.5	86.3	86.5	86.2
2.86	- ※	85.1	86.3	86.5	85.9
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<p>1.Graph</p> <div style="text-align: right;"> <p>---□--- Load 50%</p> <p>—△— Load 100%</p> </div> <p style="text-align: center;">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>3.326</td> <td>- ※</td> </tr> <tr> <td>9.0</td> <td>3.326</td> <td>- ※</td> </tr> <tr> <td>12.0</td> <td>3.326</td> <td>3.323</td> </tr> <tr> <td>15.0</td> <td>3.326</td> <td>3.323</td> </tr> <tr> <td>18.0</td> <td>3.326</td> <td>3.323</td> </tr> <tr> <td>24.0</td> <td>3.326</td> <td>3.323</td> </tr> <tr> <td>30.0</td> <td>3.326</td> <td>3.323</td> </tr> <tr> <td>36.0</td> <td>3.326</td> <td>3.323</td> </tr> <tr> <td>40.0</td> <td>3.326</td> <td>3.323</td> </tr> </tbody> </table> <p>※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.</p>	Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	8.6	3.326	- ※	9.0	3.326	- ※	12.0	3.326	3.323	15.0	3.326	3.323	18.0	3.326	3.323	24.0	3.326	3.323	30.0	3.326	3.323	36.0	3.326	3.323	40.0	3.326	3.323
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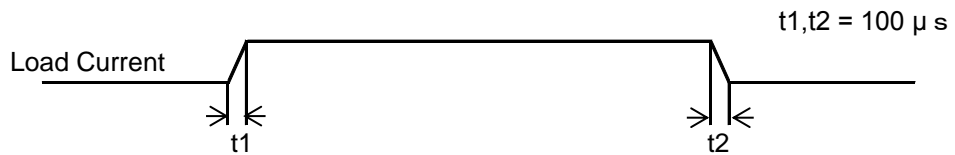


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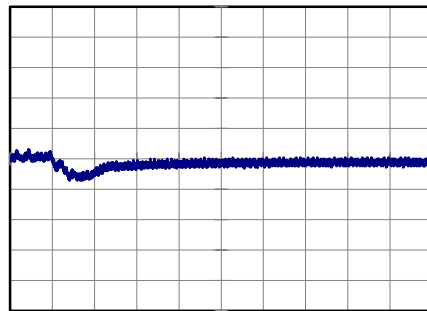
Model	MGFS10243R3	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+3.3V2.6A		

Input Volt. 24 V
Cycle 100 ms

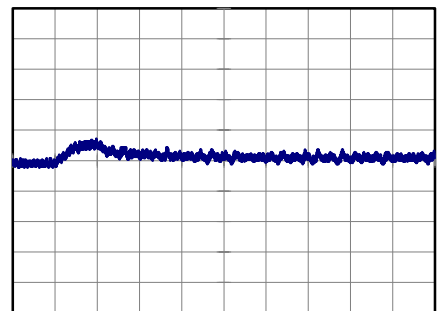


Min.Load (0A) ←→
Load 100% (2.6A)

200 mV/div



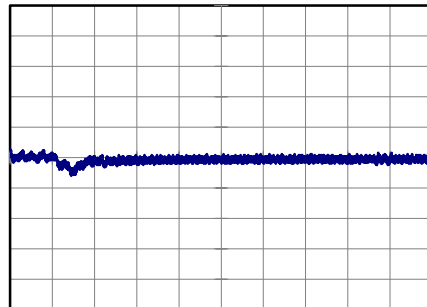
100 μs/div



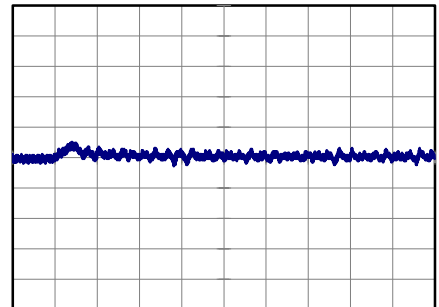
100 μs/div

Min.Load (0A) ←→
Load 50% (1.3A)

200 mV/div



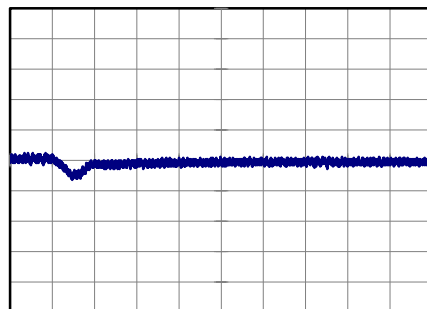
100 μs/div



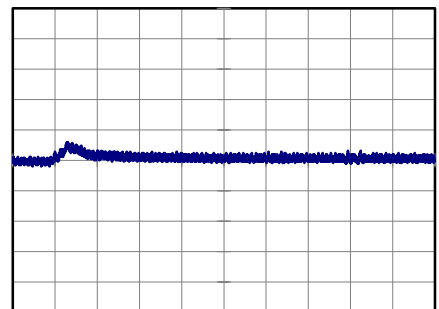
100 μs/div

Load 50% (1.3A) ←→
Load 100% (2.6A)

200 mV/div



100 μs/div



100 μs/div



<p>Model MGFS10243R3</p>		<p>Temperature 25°C Testing Circuitry Figure B</p>																																						
Item	Ripple Voltage (by Load Current)																																							
Object	+3.3V2.6A																																							
<p>1.Graph</p> <p> —△— Input Volt. 12V -·-○-·- Input Volt. 36V </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. 12 [V]</th> <th>Input Volt. 36 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>70</td><td>95</td></tr> <tr><td>0.52</td><td>5</td><td>5</td></tr> <tr><td>1.04</td><td>5</td><td>5</td></tr> <tr><td>1.56</td><td>10</td><td>5</td></tr> <tr><td>2.08</td><td>10</td><td>10</td></tr> <tr><td>2.34</td><td>10</td><td>10</td></tr> <tr><td>2.60</td><td>15</td><td>10</td></tr> <tr><td>2.86</td><td>20</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. 12 [V]	Input Volt. 36 [V]	0.00	70	95	0.52	5	5	1.04	5	5	1.56	10	5	2.08	10	10	2.34	10	10	2.60	15	10	2.86	20	10	--	-	-	--	-	-	--	-	-
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<p>Model MGFS10243R3</p>		<p>Temperature 25°C Testing Circuitry Figure B</p>																																						
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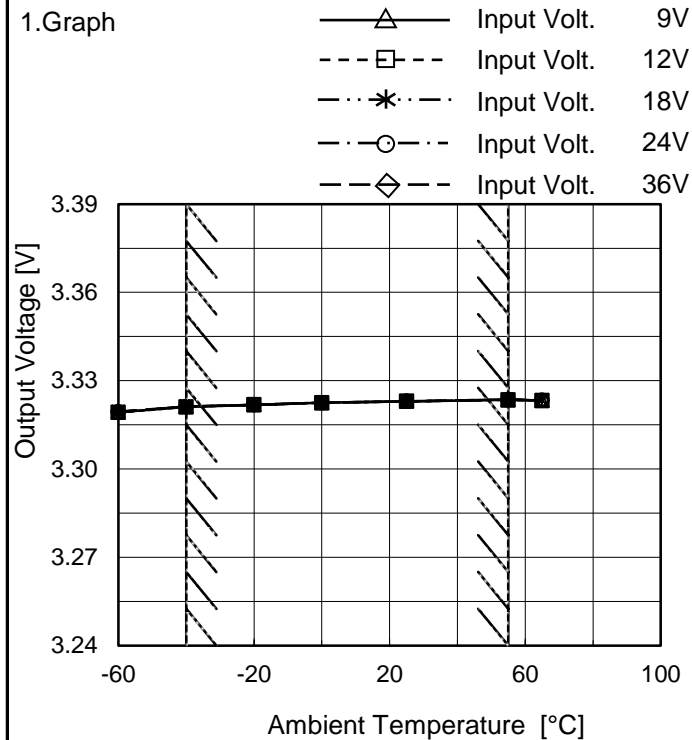


COSEL																																								
Model	MGFS10243R3																																							
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure B																																						
Object	+3.3V2.6A																																							
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<p>Measured by 100 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>																																								



Model	MGFS10243R3
Item	Ambient Temperature Drift
Object	+3.3V2.6A

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	3.319	3.319	3.319	3.319	3.320
-40	3.321	3.321	3.321	3.321	3.321
-20	3.322	3.322	3.322	3.322	3.322
0	3.323	3.323	3.323	3.323	3.323
25	3.323	3.323	3.323	3.323	3.323
55	3.324	3.324	3.324	3.324	3.324
65	3.323	3.323	3.323	3.323	3.323
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Note: In case of Input Volt. 9V, Load 80%.
Other case Load 100%.



COSEL		Testing Circuitry Figure A
Model	MGFS10243R3	
Item	Output Voltage Accuracy	
Object	+3.3V2.6A	

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 : 12 - 36V

Load Current : 0 - 2.6A

* 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	36	0	3.331	±5	±0.2
Minimum Voltage	0	12	2.6	3.321		

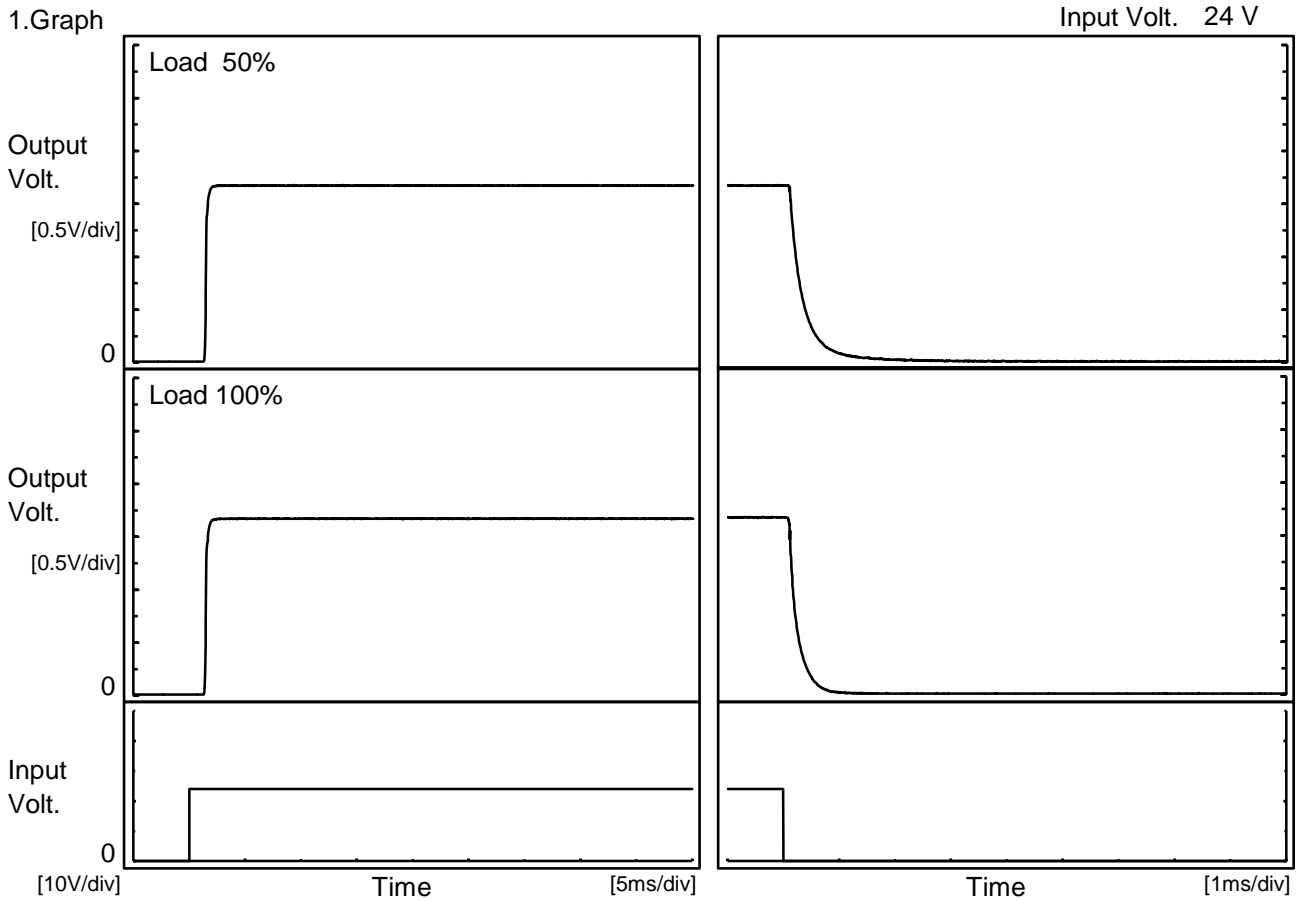


COSEL																								
Model	MGFS10243R3																							
Item	Time Lapse Drift	Temperature 25°C Testing Circuitry Figure A																						
Object	+3.3V2.6A																							
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 24V Load 100%</p>		<p>2.Values</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>3.322</td></tr> <tr><td>0.5</td><td>3.323</td></tr> <tr><td>1.0</td><td>3.323</td></tr> <tr><td>2.0</td><td>3.323</td></tr> <tr><td>3.0</td><td>3.323</td></tr> <tr><td>4.0</td><td>3.323</td></tr> <tr><td>5.0</td><td>3.323</td></tr> <tr><td>6.0</td><td>3.323</td></tr> <tr><td>7.0</td><td>3.323</td></tr> <tr><td>8.0</td><td>3.323</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	3.322	0.5	3.323	1.0	3.323	2.0	3.323	3.0	3.323	4.0	3.323	5.0	3.323	6.0	3.323	7.0	3.323	8.0	3.323
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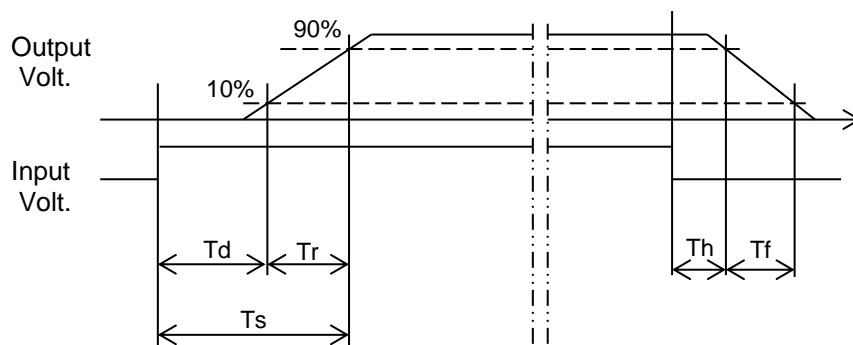
Model	MGFS10243R3	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+3.3V2.6A		

1. Graph



2. Values

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.4	0.3	1.7	0.1	0.6
100 %	1.4	0.3	1.7	0.1	0.4





COSEL																																								
Model	MGFS10243R3																																							
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																						
Object	+3.3V2.6A																																							
<p>1.Graph</p> <p style="text-align: right;"> ---□--- Load 50% —△— Load 80% </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 80%</th> </tr> </thead> <tbody> <tr><td>-60</td><td>7.6</td><td>7.6</td></tr> <tr><td>-40</td><td>7.6</td><td>7.6</td></tr> <tr><td>-20</td><td>7.6</td><td>7.6</td></tr> <tr><td>0</td><td>7.6</td><td>7.6</td></tr> <tr><td>25</td><td>7.6</td><td>7.6</td></tr> <tr><td>55</td><td>7.5</td><td>7.5</td></tr> <tr><td>65</td><td>7.5</td><td>7.5</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]	Input Voltage [V]		Load 50%	Load 80%	-60	7.6	7.6	-40	7.6	7.6	-20	7.6	7.6	0	7.6	7.6	25	7.6	7.6	55	7.5	7.5	65	7.5	7.5	--	-	-	--	-	-	--	-	-	--	-	-
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<p>Model MGFS10243R3</p>		<p>Temperature 25°C</p>																																																																																				
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<p>1.Graph</p> <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 20px;"> <p>— Input Volt. 9V</p> <p>— Input Volt. 12V</p> <p>— Input Volt. 18V</p> <p>— Input Volt. 24V</p> <p>— Input Volt. 36V</p> </div> </div> <p style="text-align: center;">Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Maximum output current at minimum input Voltage is 80% of rated load current.</p> <p>Refer to instruction manuals for details of input derating.</p>		<p>2.Values</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>3.14</td><td>2.955</td><td>3.219</td><td>3.314</td><td>3.340</td><td>3.405</td></tr> <tr><td>2.97</td><td>3.068</td><td>3.327</td><td>3.416</td><td>3.420</td><td>3.470</td></tr> <tr><td>2.64</td><td>3.315</td><td>3.567</td><td>3.630</td><td>3.593</td><td>3.596</td></tr> <tr><td>2.31</td><td>3.576</td><td>3.847</td><td>3.855</td><td>3.779</td><td>3.729</td></tr> <tr><td>1.98</td><td>3.911</td><td>4.153</td><td>4.080</td><td>3.964</td><td>3.860</td></tr> <tr><td>1.65</td><td>4.289</td><td>4.459</td><td>4.295</td><td>4.100</td><td>3.953</td></tr> <tr><td>1.32</td><td>4.415</td><td>4.587</td><td>4.414</td><td>4.233</td><td>4.083</td></tr> <tr><td>0.99</td><td>4.593</td><td>4.740</td><td>4.532</td><td>4.341</td><td>4.175</td></tr> <tr><td>0.66</td><td>4.936</td><td>5.044</td><td>4.750</td><td>4.533</td><td>4.348</td></tr> <tr><td>0.33</td><td>5.274</td><td>5.427</td><td>5.046</td><td>4.767</td><td>4.549</td></tr> <tr><td>0.00</td><td>5.058</td><td>5.289</td><td>5.373</td><td>5.016</td><td>4.720</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]	3.14	2.955	3.219	3.314	3.340	3.405	2.97	3.068	3.327	3.416	3.420	3.470	2.64	3.315	3.567	3.630	3.593	3.596	2.31	3.576	3.847	3.855	3.779	3.729	1.98	3.911	4.153	4.080	3.964	3.860	1.65	4.289	4.459	4.295	4.100	3.953	1.32	4.415	4.587	4.414	4.233	4.083	0.99	4.593	4.740	4.532	4.341	4.175	0.66	4.936	5.044	4.750	4.533	4.348	0.33	5.274	5.427	5.046	4.767	4.549	0.00	5.058	5.289	5.373	5.016	4.720	--	-	-	-	-	-
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Item		Switching frequency (by Load Current)		Testing Circuitry Figure A																																																																														
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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>																																																																														

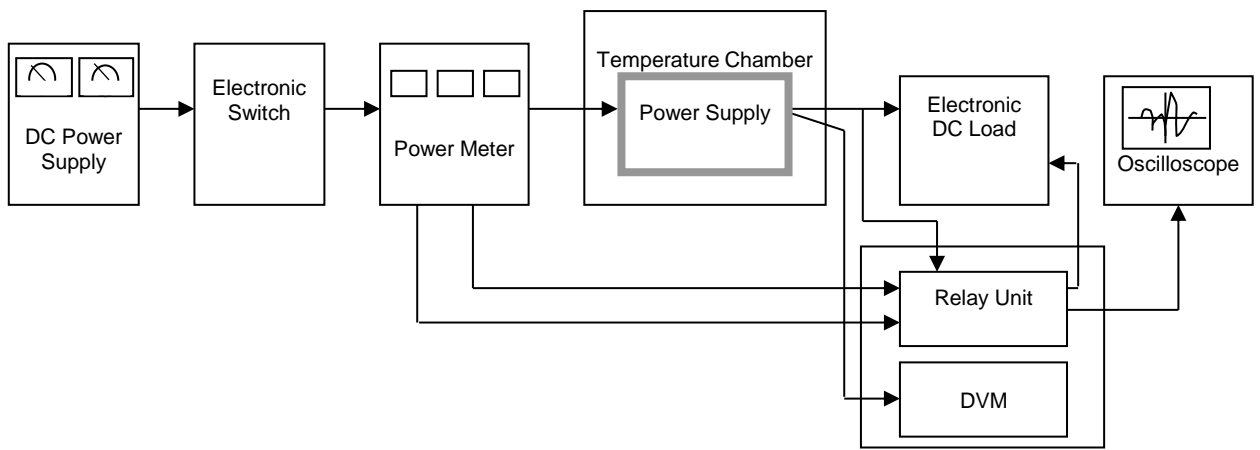


Figure A

Data Acquisition/Control Unit

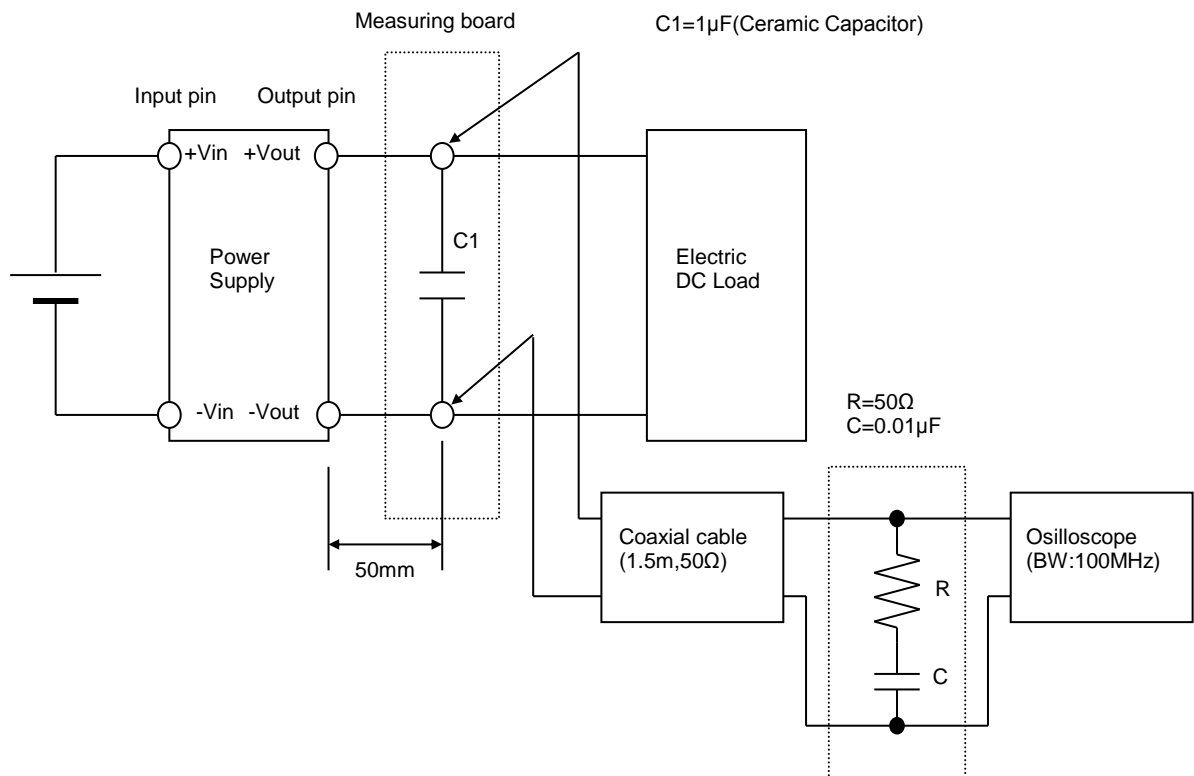


Figure B (Ripple and Ripple noise Characteristic)