

TEST DATA OF MGFS34805

Regulated DC Power Supply
January 11, 2017

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COSEL CO.,LTD.

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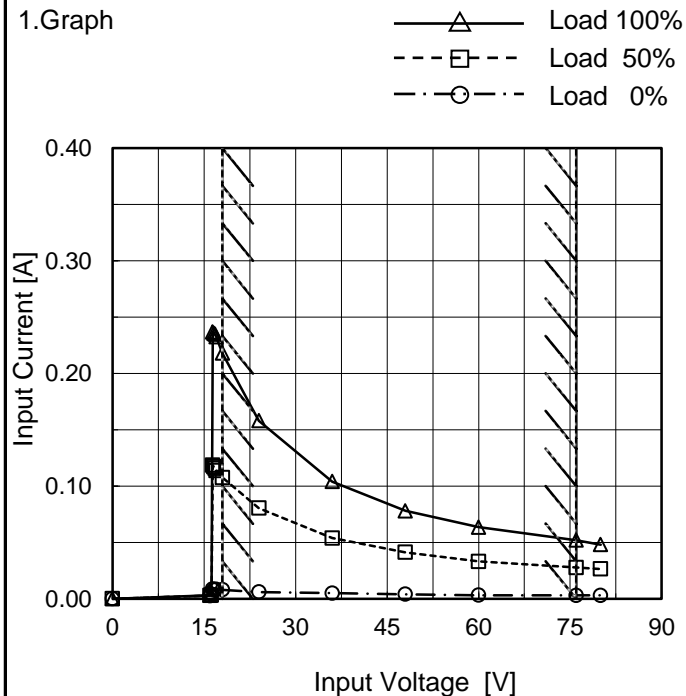
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(Final Page 19)



Model	MGFS34805
Item	Input Current (by Input Voltage)
Object	_____

Temperature 25°C
Testing Circuitry Figure A



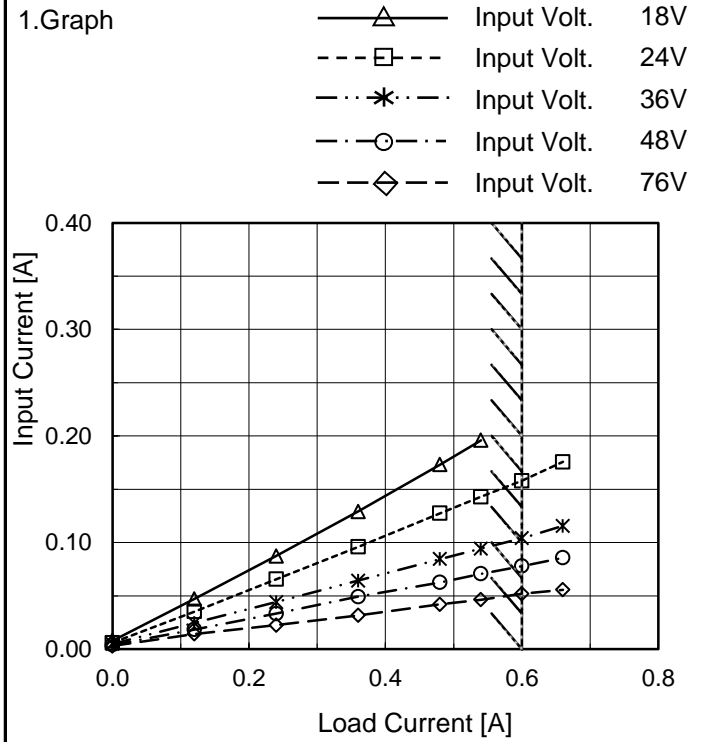
2.Values

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	0.004	0.003	0.004
16.4	0.009	0.119	0.237
16.6	0.008	0.117	0.236
16.8	0.008	0.116	0.235
17.0	0.008	0.114	0.233
18.0	0.008	0.108	0.218
24.0	0.006	0.081	0.158
36.0	0.005	0.054	0.104
48.0	0.004	0.041	0.078
60.0	0.003	0.033	0.064
76.0	0.003	0.028	0.052
80.0	0.003	0.027	0.048
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model	MGFS34805
Item	Input Current (by Load Current)
Object	_____

Temperature 25°C
Testing Circuitry Figure A



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	0.008	0.006	0.005	0.004	0.003
0.12	0.047	0.035	0.025	0.018	0.014
0.24	0.087	0.066	0.044	0.033	0.023
0.36	0.129	0.096	0.064	0.049	0.032
0.48	0.173	0.128	0.085	0.063	0.042
0.54	0.196	0.143	0.094	0.071	0.046
0.60	- ※	0.158	0.104	0.078	0.052
0.66	- ※	0.176	0.116	0.086	0.056
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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



Model		MGFS34805		Temperature 25°C																																																																														
Item		Input Power (by Load Current)		Testing Circuitry Figure A																																																																														
Object		_____																																																																																
1.Graph		<p>—△— Input Volt. 18V</p> <p>---□--- Input Volt. 24V</p> <p>-·-·*·-·-·- Input Volt. 36V</p> <p>-·-·○-·-·- Input Volt. 48V</p> <p>---◇--- Input Volt. 76V</p>		2.Values																																																																														
				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="5">Input Power [W]</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>0.14</td><td>0.15</td><td>0.18</td><td>0.17</td><td>0.17</td></tr> <tr><td>0.12</td><td>0.85</td><td>0.85</td><td>0.89</td><td>0.88</td><td>1.09</td></tr> <tr><td>0.24</td><td>1.57</td><td>1.57</td><td>1.60</td><td>1.60</td><td>1.71</td></tr> <tr><td>0.36</td><td>2.32</td><td>2.30</td><td>2.32</td><td>2.37</td><td>2.41</td></tr> <tr><td>0.48</td><td>3.10</td><td>3.06</td><td>3.05</td><td>3.01</td><td>3.20</td></tr> <tr><td>0.54</td><td>3.51</td><td>3.43</td><td>3.40</td><td>3.40</td><td>3.53</td></tr> <tr><td>0.60</td><td>- ※</td><td>3.80</td><td>3.75</td><td>3.78</td><td>3.87</td></tr> <tr><td>0.66</td><td>- ※</td><td>4.21</td><td>4.17</td><td>4.12</td><td>4.24</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 Power [W]					Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.00	0.14	0.15	0.18	0.17	0.17	0.12	0.85	0.85	0.89	0.88	1.09	0.24	1.57	1.57	1.60	1.60	1.71	0.36	2.32	2.30	2.32	2.37	2.41	0.48	3.10	3.06	3.05	3.01	3.20	0.54	3.51	3.43	3.40	3.40	3.53	0.60	- ※	3.80	3.75	3.78	3.87	0.66	- ※	4.21	4.17	4.12	4.24	--	-	-	-	-	-	--	-	-	-	-	-	--	-	-	-	-	-
Load Current [A]	Input Power [W]																																																																																	
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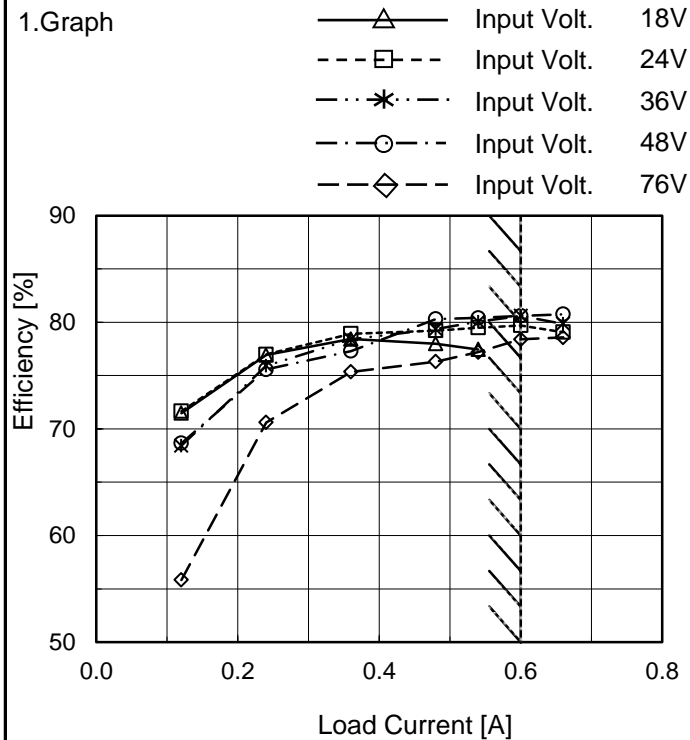


Model		MGFS34805		Temperature 25°C Testing Circuitry Figure A																																
Item		Efficiency (by Input Voltage)																																		
Object		_____		2.Values																																
<p>1.Graph</p> <p>---□--- Load 50% —△— Load 100%</p> <p>Note: Slanted line shows the range of the rated input voltage.</p>																																				
<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>17</td><td>77.7</td><td>77.6 ※1</td></tr> <tr><td>18</td><td>77.9</td><td>78.0 ※1</td></tr> <tr><td>24</td><td>78.5</td><td>79.7</td></tr> <tr><td>30</td><td>78.6</td><td>80.1</td></tr> <tr><td>36</td><td>78.5</td><td>80.6</td></tr> <tr><td>48</td><td>76.9</td><td>80.6</td></tr> <tr><td>60</td><td>75.7</td><td>80.5</td></tr> <tr><td>76</td><td>72.1</td><td>78.4</td></tr> <tr><td>80</td><td>71.0</td><td>78.0</td></tr> </tbody> </table> <p>※1: Load 80%</p>				Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	17	77.7	77.6 ※1	18	77.9	78.0 ※1	24	78.5	79.7	30	78.6	80.1	36	78.5	80.6	48	76.9	80.6	60	75.7	80.5	76	72.1	78.4	80	71.0	78.0	
Input Voltage [V]	Efficiency [%]																																			
	Load 50%	Load 100%																																		
17	77.7	77.6 ※1																																		
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60	75.7	80.5																																		
76	72.1	78.4																																		
80	71.0	78.0																																		



Model	MGFS34805
Item	Efficiency (by Load Current)
Object	_____

Temperature 25°C
Testing Circuitry Figure A



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	-	-	-	-	-
0.12	71.5	71.7	68.4	68.7	55.8
0.24	76.9	77.0	75.9	75.6	70.6
0.36	78.4	78.9	78.4	77.3	75.4
0.48	78.0	79.2	79.3	80.3	76.3
0.54	77.5	79.5	80.0	80.4	77.2
0.60	- ※	79.7	80.6	80.6	78.4
0.66	- ※	79.1	79.8	80.7	78.6
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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

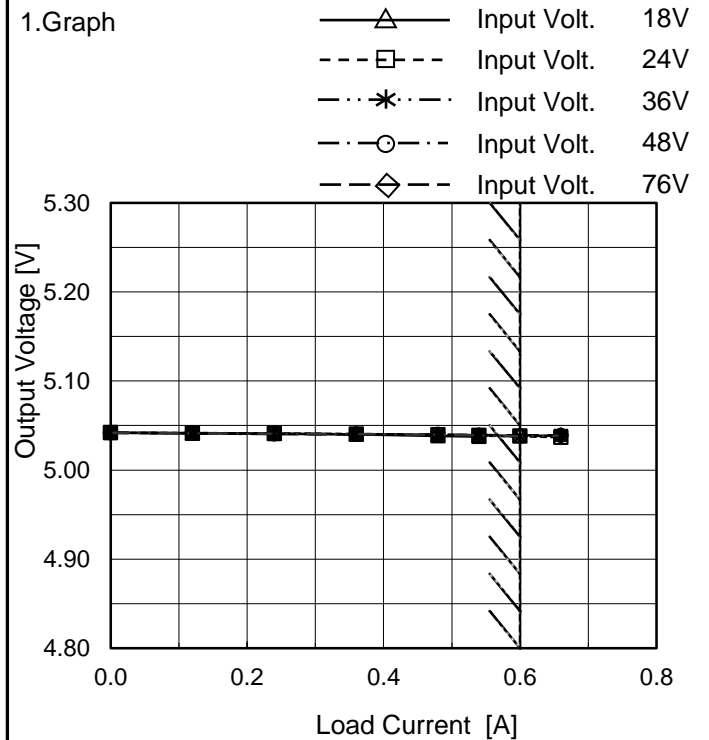


COSEL																																		
Model	MGFS34805																																	
Item	Line Regulation	Temperature 25°C Testing Circuitry Figure A																																
Object	+5V0.6A																																	
<p>1.Graph</p> <p style="text-align: right;"> ---□--- Load 50% —△— Load 100% </p> <p>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>17</td> <td>5.039</td> <td>- ※</td> </tr> <tr> <td>18</td> <td>5.039</td> <td>- ※</td> </tr> <tr> <td>24</td> <td>5.039</td> <td>5.038</td> </tr> <tr> <td>30</td> <td>5.039</td> <td>5.039</td> </tr> <tr> <td>36</td> <td>5.039</td> <td>5.038</td> </tr> <tr> <td>48</td> <td>5.039</td> <td>5.038</td> </tr> <tr> <td>60</td> <td>5.039</td> <td>5.040</td> </tr> <tr> <td>76</td> <td>5.039</td> <td>5.039</td> </tr> <tr> <td>80</td> <td>5.039</td> <td>5.040</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%	17	5.039	- ※	18	5.039	- ※	24	5.039	5.038	30	5.039	5.039	36	5.039	5.038	48	5.039	5.038	60	5.039	5.040	76	5.039	5.039	80	5.039	5.040
Input Voltage [V]	Output Voltage [V]																																	
	Load 50%	Load 100%																																
17	5.039	- ※																																
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60	5.039	5.040																																
76	5.039	5.039																																
80	5.039	5.040																																



Model	MGFS34805
Item	Load Regulation
Object	+5V0.6A

Temperature 25°C
Testing Circuitry Figure A



2.Values

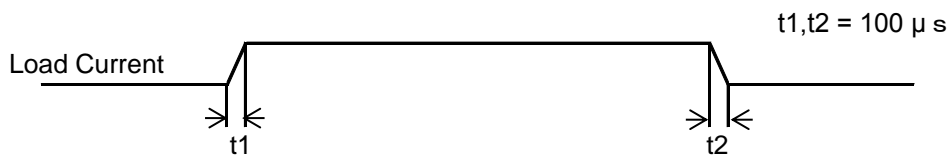
Load Current [A]	Output Voltage [V]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	5.042	5.042	5.042	5.042	5.042
0.12	5.041	5.041	5.041	5.041	5.041
0.24	5.041	5.041	5.041	5.041	5.041
0.36	5.040	5.040	5.040	5.040	5.040
0.48	5.038	5.040	5.040	5.040	5.040
0.54	5.038	5.039	5.039	5.039	5.039
0.60	- ※	5.038	5.038	5.038	5.039
0.66	- ※	5.037	5.039	5.039	5.039
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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



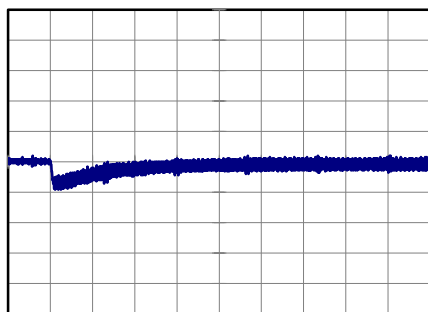
Model	MGFS34805	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+5V0.6A		

Input Volt. 48 V
Cycle 100 ms

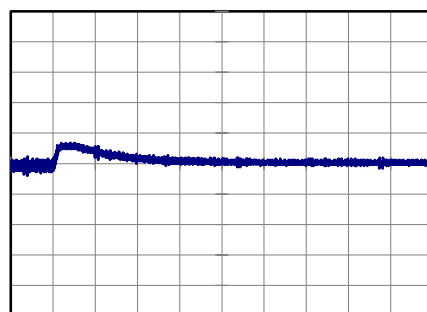


Min. Load (0A) ←→
Load 100% (0.6A)

100 mV/div



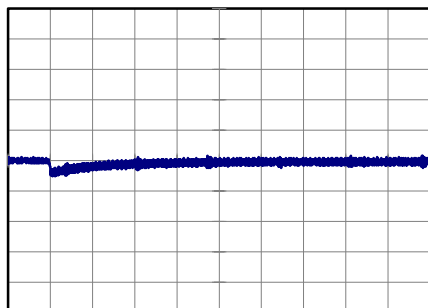
400 μs/div



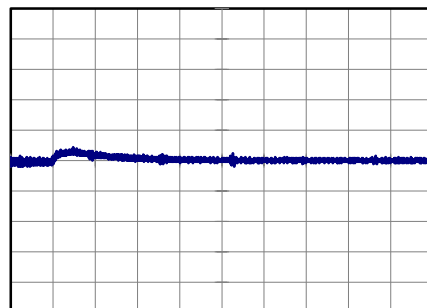
400 μs/div

Min. Load (0A) ←→
Load 50% (0.3A)

100 mV/div



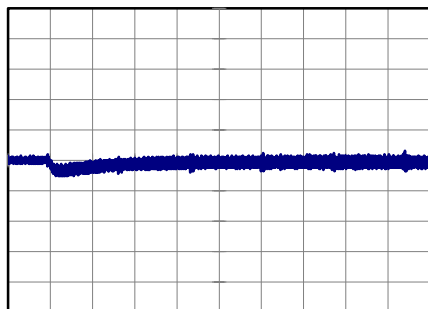
400 μs/div



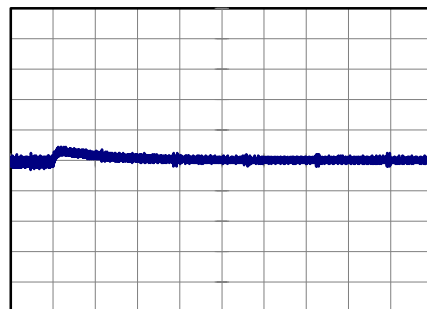
400 μs/div

Load 50% (0.3A) ←→
Load 100% (0.6A)

100 mV/div



400 μs/div



400 μs/div

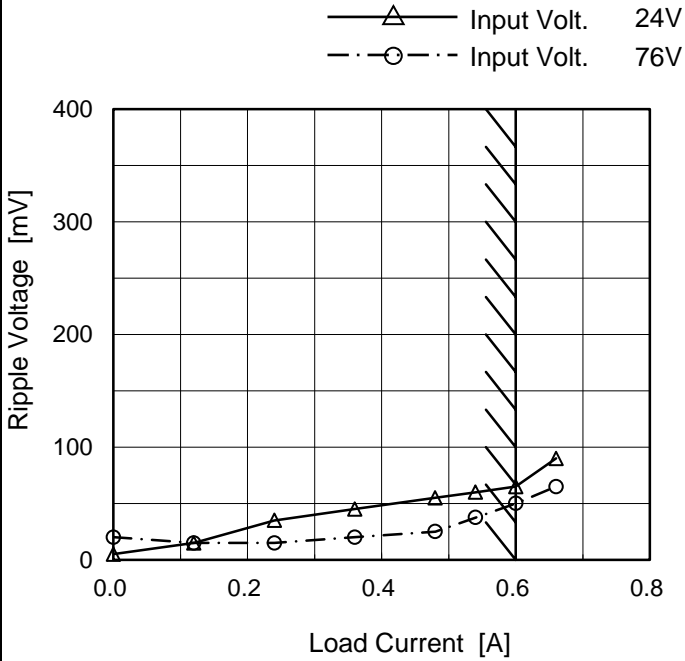


<p>Model MGFS34805</p>		<p>Temperature 25°C Testing Circuitry Figure B</p>																																						
Item	Ripple Voltage (by Load Current)																																							
Object	+5V0.6A																																							
<p>1.Graph</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Input Volt. 24 [V]</th> <th>Input Volt. 76 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>5</td><td>15</td></tr> <tr><td>0.12</td><td>10</td><td>10</td></tr> <tr><td>0.24</td><td>35</td><td>15</td></tr> <tr><td>0.36</td><td>40</td><td>15</td></tr> <tr><td>0.48</td><td>50</td><td>20</td></tr> <tr><td>0.54</td><td>55</td><td>30</td></tr> <tr><td>0.60</td><td>60</td><td>40</td></tr> <tr><td>0.66</td><td>85</td><td>55</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	15	0.12	10	10	0.24	35	15	0.36	40	15	0.48	50	20	0.54	55	30	0.60	60	40	0.66	85	55	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																							
	Input Volt. 24 [V]	Input Volt. 76 [V]																																						
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<p>Measured by 100 MHz Oscilloscope. Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>																																								
<p>Ripple [mVp-p]</p>																																								
<p>Fig.Complex Ripple Wave Form</p>																																								



Model	MGFS34805	Temperature	25°C
Item	Ripple-Noise	Testing Circuitry	Figure B
Object	+5V0.6A		

1.Graph



2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 24 [V]	Input Volt. 76 [V]
0.00	5	20
0.12	15	15
0.24	35	15
0.36	45	20
0.48	55	25
0.54	60	37.5
0.60	65	50
0.66	90	65
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.
 Ripple-Noise is shown as p-p in the figure below.
 Note: Slanted line shows the range of the rated load current.

Ripple Noise[mVp-p]

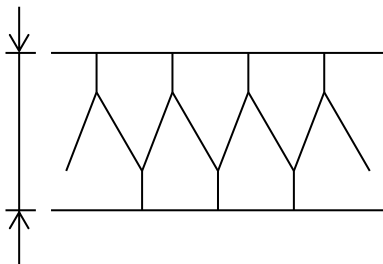


Fig.Complex Ripple Noise Wave Form

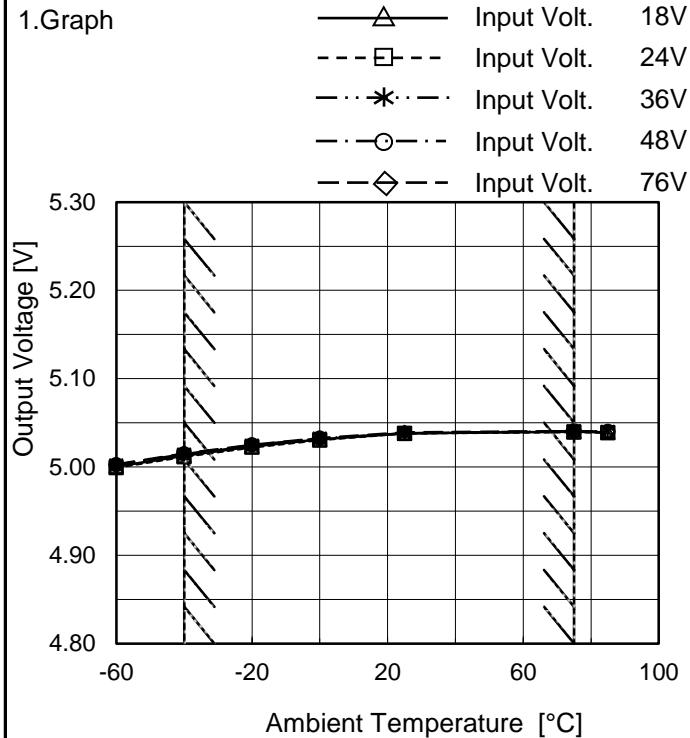


COSEL																																								
Model	MGFS34805																																							
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure B																																						
Object	+5V0.6A																																							
<p>1. Graph</p> <p style="text-align: center;">Ambient Temperature [°C] Input Volt. 48V</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Ripple Voltage [mV]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>-60</td><td>25</td><td>65</td></tr> <tr><td>-40</td><td>20</td><td>60</td></tr> <tr><td>-20</td><td>20</td><td>60</td></tr> <tr><td>0</td><td>15</td><td>55</td></tr> <tr><td>25</td><td>15</td><td>55</td></tr> <tr><td>75</td><td>15</td><td>55</td></tr> <tr><td>85</td><td>15</td><td>55</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]	Ripple Voltage [mV]		Load 50%	Load 100%	-60	25	65	-40	20	60	-20	20	60	0	15	55	25	15	55	75	15	55	85	15	55	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Ripple Voltage [mV]																																							
	Load 50%	Load 100%																																						
-60	25	65																																						
-40	20	60																																						
-20	20	60																																						
0	15	55																																						
25	15	55																																						
75	15	55																																						
85	15	55																																						
--	-	-																																						
--	-	-																																						
--	-	-																																						
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<p>Measured by 100 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>																																								



Model	MGFS34805
Item	Ambient Temperature Drift
Object	+5V0.6A

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	5.000	4.999	5.002	5.002	5.003
-40	5.013	5.012	5.014	5.015	5.015
-20	5.023	5.022	5.024	5.025	5.025
0	5.031	5.030	5.032	5.032	5.033
25	5.038	5.038	5.038	5.038	5.039
75	5.040	5.039	5.041	5.041	5.041
85	5.039	5.039	5.040	5.040	5.040
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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



COSEL		Testing Circuitry Figure A
Model	MGFS34805	
Item	Output Voltage Accuracy	
Object	+5V0.6A	

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 - 75°C

Input Voltage : 24 - 76V

Load Current : 0 - 0.6A

* 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	70	76	0	5.044	±16	±0.3
Minimum Voltage	-40	24	0.6	5.012		



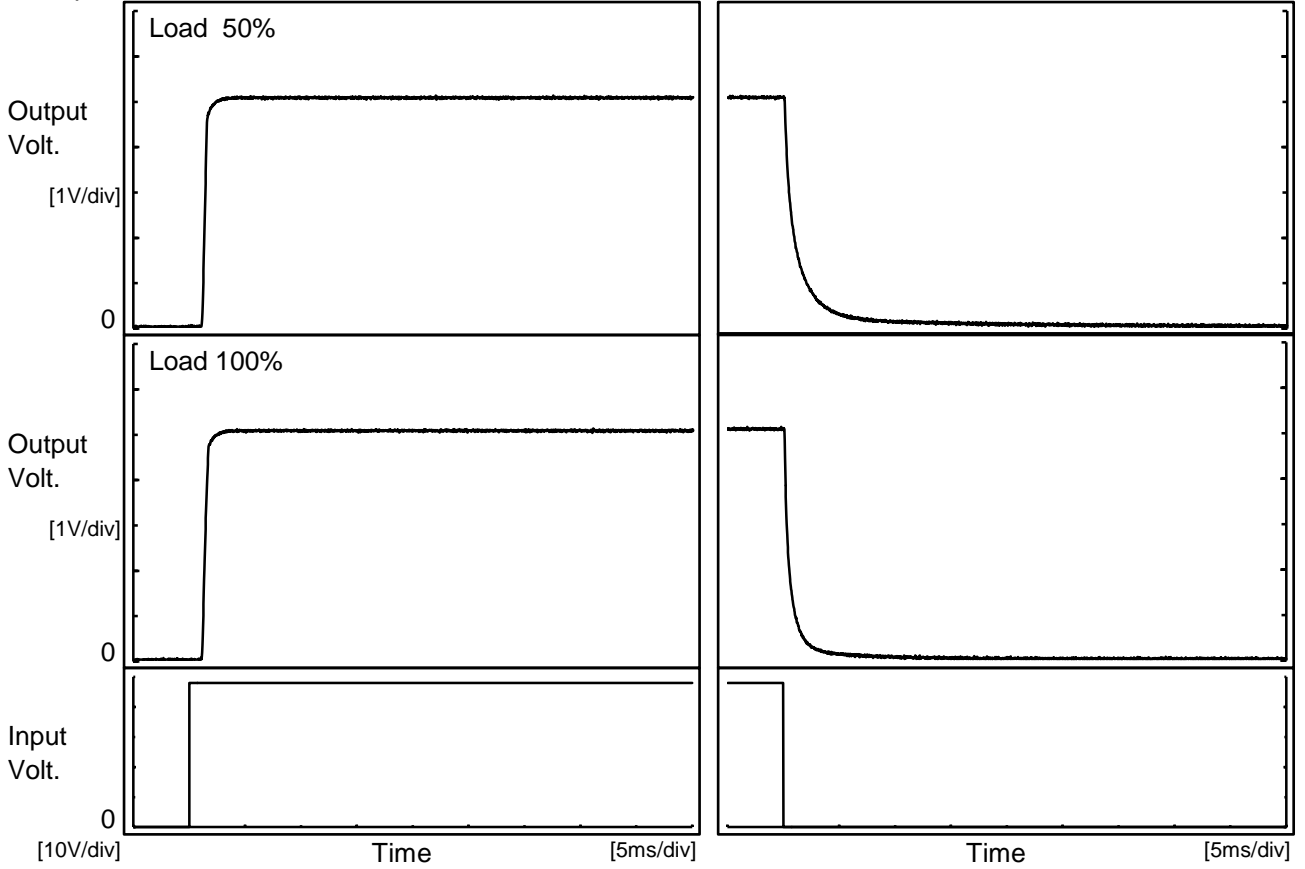
COSEL																									
Model	MGFS34805	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+5V0.6A																								
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 48V Load 100%</p>		<p>2.Values</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>5.037</td></tr> <tr><td>0.5</td><td>5.040</td></tr> <tr><td>1.0</td><td>5.040</td></tr> <tr><td>2.0</td><td>5.040</td></tr> <tr><td>3.0</td><td>5.040</td></tr> <tr><td>4.0</td><td>5.040</td></tr> <tr><td>5.0</td><td>5.040</td></tr> <tr><td>6.0</td><td>5.040</td></tr> <tr><td>7.0</td><td>5.040</td></tr> <tr><td>8.0</td><td>5.040</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	5.037	0.5	5.040	1.0	5.040	2.0	5.040	3.0	5.040	4.0	5.040	5.0	5.040	6.0	5.040	7.0	5.040	8.0	5.040
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Model	MGFS34805	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+5V0.6A		

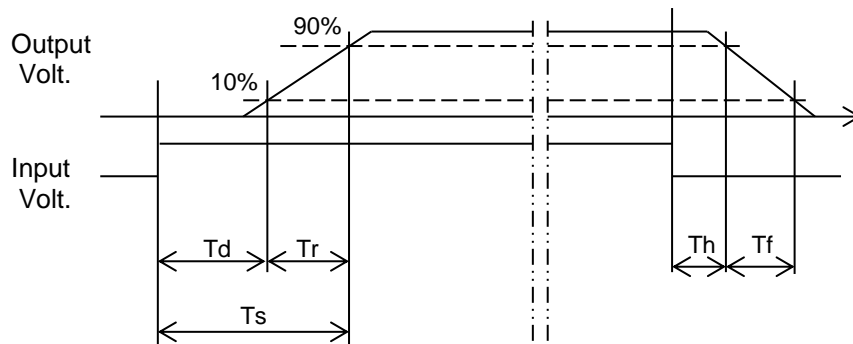
1. Graph

Input Volt. 48 V



2. Values

		[ms]				
Load \ Time	Td	Tr	Ts	Th	Tf	
50 %	1.2	0.4	1.6	0.2	3.2	
100 %	1.2	0.5	1.7	0.1	1.6	

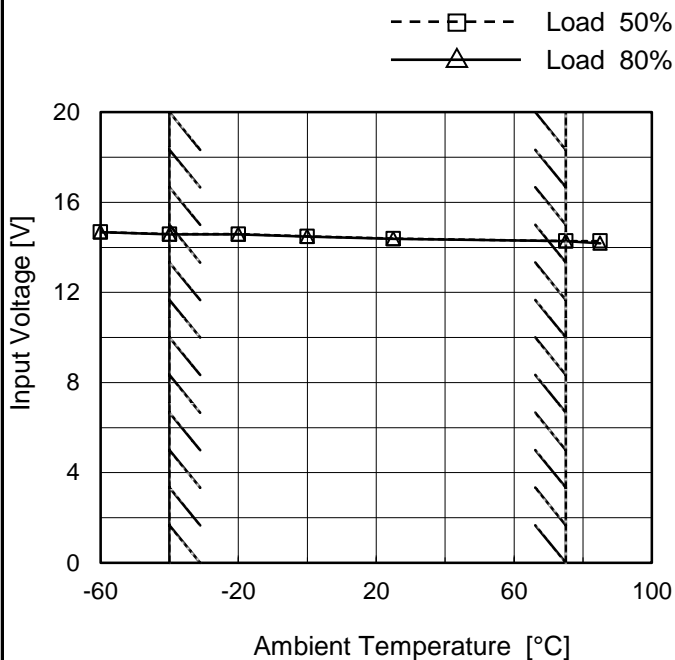




Model	MGFS34805
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V0.6A

Testing Circuitry Figure A

1.Graph



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
75	14.3	14.3
85	14.3	14.2
--	-	-
--	-	-
--	-	-
--	-	-

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



COSEL																																																																																									
Model	MGFS34805	Temperature 25°C																																																																																							
Item	Overcurrent Protection	Testing Circuitry Figure A																																																																																							
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<p>1.Graph</p> <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 20px;"> <p>— Input Volt. 18V</p> <p>— Input Volt. 24V</p> <p>— Input Volt. 36V</p> <p>— Input Volt. 48V</p> <p>— Input Volt. 76V</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. 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>4.75</td><td>0.655</td><td>0.773</td><td>0.803</td><td>0.796</td><td>0.819</td></tr> <tr><td>4.50</td><td>0.679</td><td>0.802</td><td>0.830</td><td>0.817</td><td>0.835</td></tr> <tr><td>4.00</td><td>0.735</td><td>0.866</td><td>0.884</td><td>0.862</td><td>0.863</td></tr> <tr><td>3.50</td><td>0.802</td><td>0.938</td><td>0.942</td><td>0.908</td><td>0.896</td></tr> <tr><td>3.00</td><td>0.878</td><td>1.015</td><td>0.998</td><td>0.961</td><td>0.942</td></tr> <tr><td>2.50</td><td>0.965</td><td>1.093</td><td>1.062</td><td>1.016</td><td>0.989</td></tr> <tr><td>2.00</td><td>1.061</td><td>1.179</td><td>1.133</td><td>1.077</td><td>1.040</td></tr> <tr><td>1.50</td><td>1.162</td><td>1.277</td><td>1.211</td><td>1.142</td><td>1.094</td></tr> <tr><td>1.00</td><td>1.282</td><td>1.384</td><td>1.292</td><td>1.208</td><td>1.146</td></tr> <tr><td>0.50</td><td>1.402</td><td>1.476</td><td>1.351</td><td>1.252</td><td>1.173</td></tr> <tr><td>0.00</td><td>1.413</td><td>1.439</td><td>1.275</td><td>1.163</td><td>1.072</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. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	4.75	0.655	0.773	0.803	0.796	0.819	4.50	0.679	0.802	0.830	0.817	0.835	4.00	0.735	0.866	0.884	0.862	0.863	3.50	0.802	0.938	0.942	0.908	0.896	3.00	0.878	1.015	0.998	0.961	0.942	2.50	0.965	1.093	1.062	1.016	0.989	2.00	1.061	1.179	1.133	1.077	1.040	1.50	1.162	1.277	1.211	1.142	1.094	1.00	1.282	1.384	1.292	1.208	1.146	0.50	1.402	1.476	1.351	1.252	1.173	0.00	1.413	1.439	1.275	1.163	1.072	--	-	-	-	-	-
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<p>Model MGFS34805</p>		<p>Temperature 25°C</p>																																																																														
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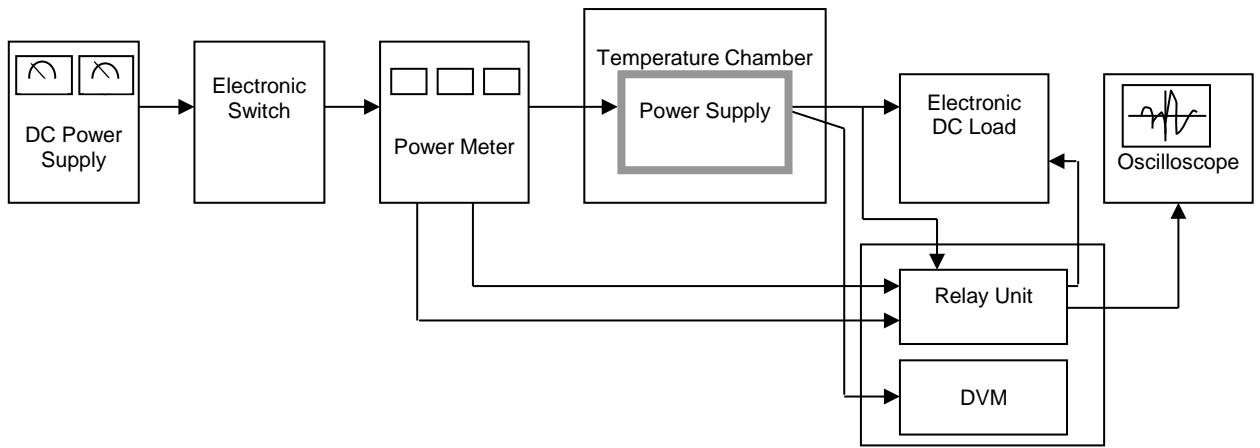


Figure A

Data Acquisition/Control Unit

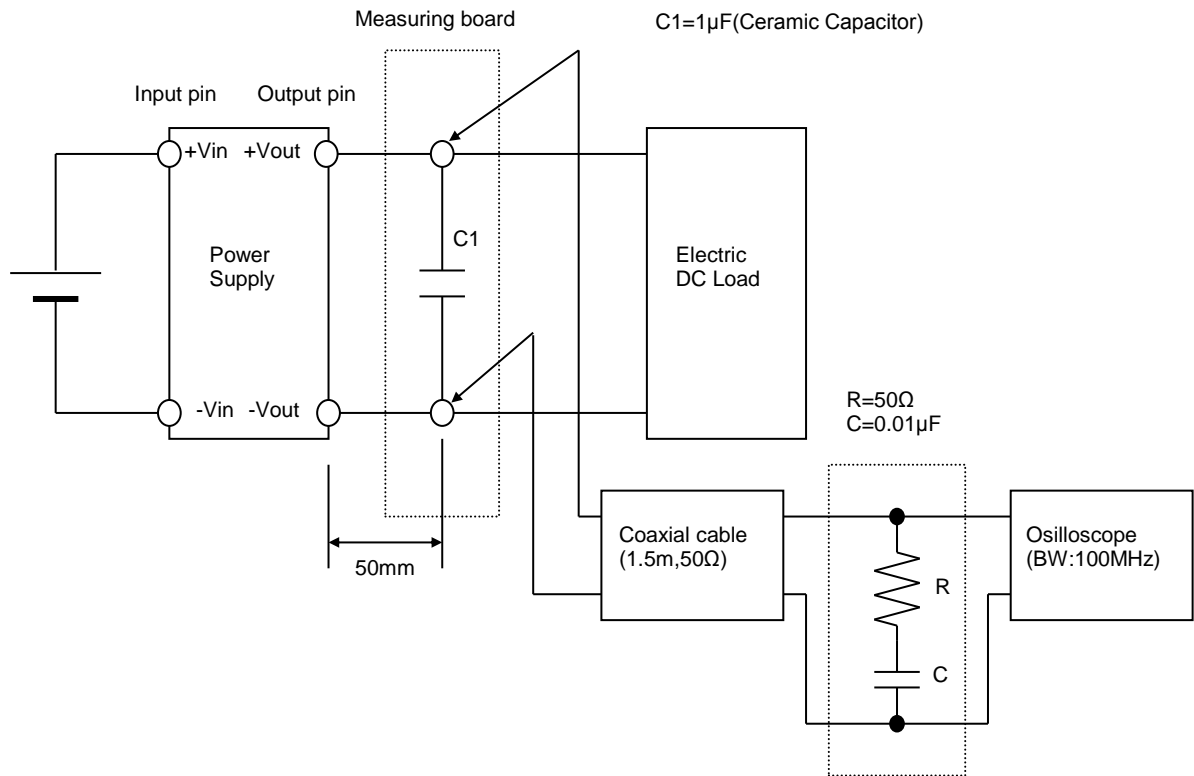


Figure B (Ripple and Ripple noise Characteristic)