



TEST DATA OF MGS104805

Regulated DC Power Supply
August 9, 2016

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Design Engineer

COSEL CO.,LTD.



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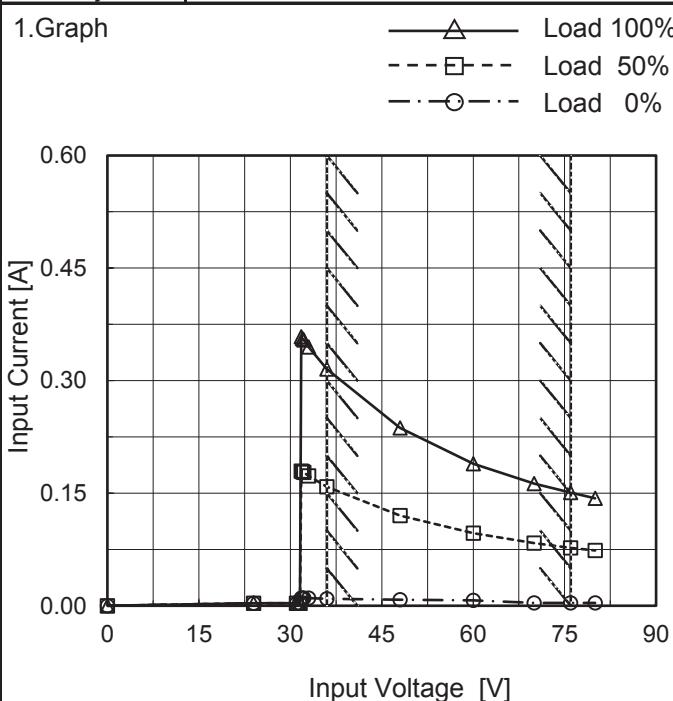
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Model	MGS104805
Item	Input Current (by Input Voltage)
Object	_____

1.Graph



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
24.0	0.003	0.003	0.003
31.0	0.003	0.003	0.003
31.6	0.003	0.003	0.003
31.8	0.010	0.180	0.359
32.0	0.010	0.179	0.356
32.2	0.010	0.178	0.354
33.0	0.010	0.173	0.345
36.0	0.009	0.159	0.316
48.0	0.008	0.120	0.237
60.0	0.007	0.097	0.189
70.0	0.004	0.084	0.163
76.0	0.004	0.077	0.151
80.0	0.004	0.074	0.143
--	-	-	-
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Model	MGS104805																																																					
Item	Input Current (by Load Current)																																																					
Object	_____																																																					
1.Graph	—△— Input Volt. 36V - -□--- Input Volt. 48V - -○--- Input Volt. 76V																																																					
<p>The graph shows the relationship between Input Current [A] on the Y-axis (0.00 to 0.60) and Load Current [A] on the X-axis (0.0 to 2.5). Three curves are plotted for different input voltages: 36V (solid line with open triangles), 48V (dashed line with open squares), and 76V (dash-dot line with open circles). All curves start at (0,0) and increase monotonically. A solid slanted line represents the rated load current range, which is approximately between 1.8A and 2.0A.</p>																																																						
2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Current [A]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr> <td>0.0</td><td>0.009</td><td>0.008</td><td>0.004</td></tr> <tr> <td>0.4</td><td>0.068</td><td>0.052</td><td>0.035</td></tr> <tr> <td>0.8</td><td>0.129</td><td>0.097</td><td>0.063</td></tr> <tr> <td>1.2</td><td>0.190</td><td>0.143</td><td>0.092</td></tr> <tr> <td>1.6</td><td>0.253</td><td>0.190</td><td>0.121</td></tr> <tr> <td>2.0</td><td>0.316</td><td>0.237</td><td>0.151</td></tr> <tr> <td>2.2</td><td>0.350</td><td>0.261</td><td>0.165</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Input Current [A]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	0.009	0.008	0.004	0.4	0.068	0.052	0.035	0.8	0.129	0.097	0.063	1.2	0.190	0.143	0.092	1.6	0.253	0.190	0.121	2.0	0.316	0.237	0.151	2.2	0.350	0.261	0.165	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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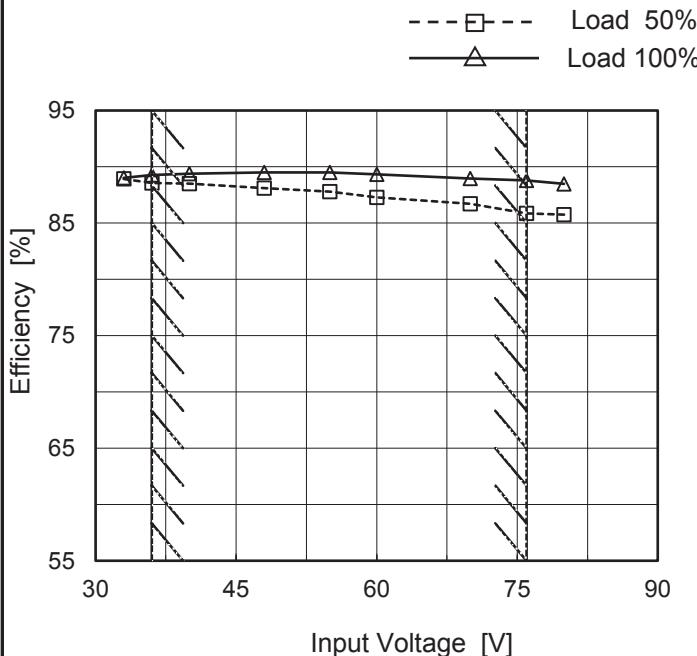
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Model	MGS104805																																																		
Item	Input Power (by Load Current)																																																		
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1.Graph	<p>Legend:</p> <ul style="list-style-type: none"> Input Volt. 36V Input Volt. 48V Input Volt. 76V <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Power [W] (36V)</th> <th>Input Power [W] (48V)</th> <th>Input Power [W] (76V)</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>0.34</td><td>0.40</td><td>0.27</td></tr> <tr><td>0.4</td><td>2.45</td><td>2.50</td><td>2.64</td></tr> <tr><td>0.8</td><td>4.63</td><td>4.67</td><td>4.79</td></tr> <tr><td>1.2</td><td>6.84</td><td>6.87</td><td>6.99</td></tr> <tr><td>1.6</td><td>9.09</td><td>9.10</td><td>9.21</td></tr> <tr><td>2.0</td><td>11.38</td><td>11.35</td><td>11.44</td></tr> <tr><td>2.2</td><td>12.54</td><td>12.50</td><td>12.56</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Input Power [W] (36V)	Input Power [W] (48V)	Input Power [W] (76V)	0.0	0.34	0.40	0.27	0.4	2.45	2.50	2.64	0.8	4.63	4.67	4.79	1.2	6.84	6.87	6.99	1.6	9.09	9.10	9.21	2.0	11.38	11.35	11.44	2.2	12.54	12.50	12.56	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model	MGS104805
Item	Efficiency (by Input Voltage)
Object	_____

1.Graph



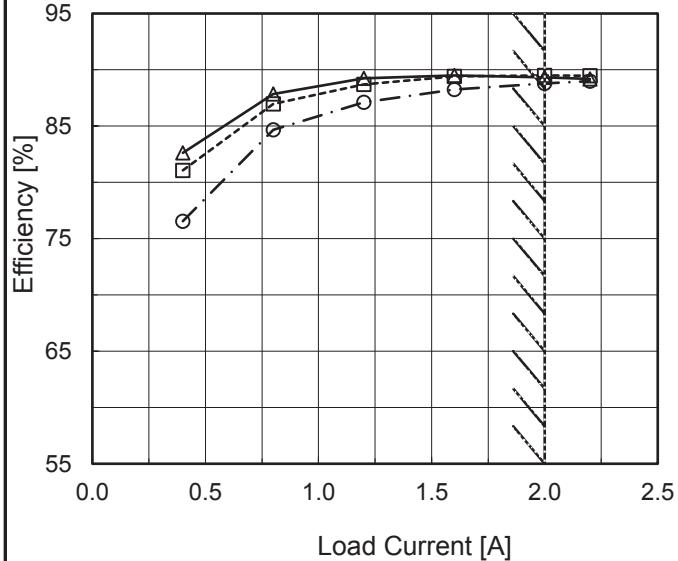
Note: Slanted line shows the range of the rated input voltage.

Temperature 25°C
Testing Circuitry Figure A

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	88.9	89.0
36	88.6	89.3
40	88.5	89.4
48	88.1	89.5
55	87.8	89.5
60	87.3	89.3
70	86.7	89.0
76	85.9	88.8
80	85.7	88.5

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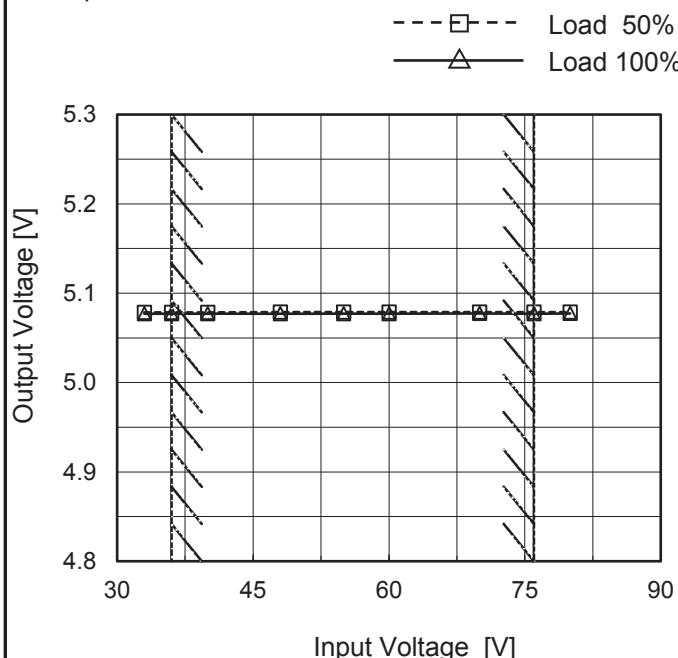
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 <p>The graph plots Efficiency [%] on the y-axis (55 to 95) against Load Current [A] on the x-axis (0.0 to 2.5). Three data series are shown: 36V (solid line with triangles), 48V (dashed line with squares), and 76V (dash-dot line with circles). All curves show efficiency increasing with load current until it plateaus. A slanted line from the top right indicates the rated load current range.</p>			2.Values																																																					
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<p>Note: Slanted line shows the range of the rated load current.</p>																																																								

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Model	MGS104805
Item	Line Regulation
Object	+5V2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



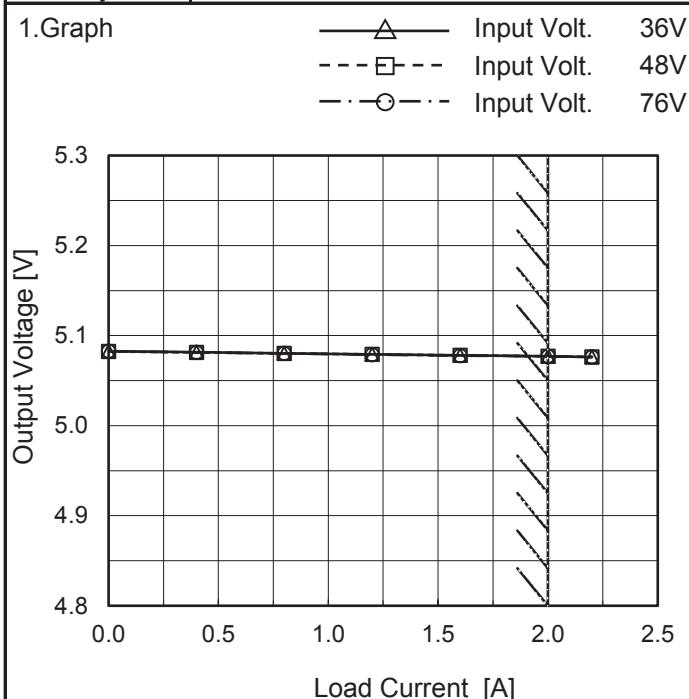
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	5.079	5.077
36	5.079	5.077
40	5.079	5.077
48	5.079	5.077
55	5.079	5.077
60	5.079	5.077
70	5.079	5.077
76	5.079	5.077
80	5.079	5.077

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

COSEL

Model	MGS104805
Item	Load Regulation
Object	+5V2A


 Temperature 25°C
 Testing Circuitry Figure A

2.Values

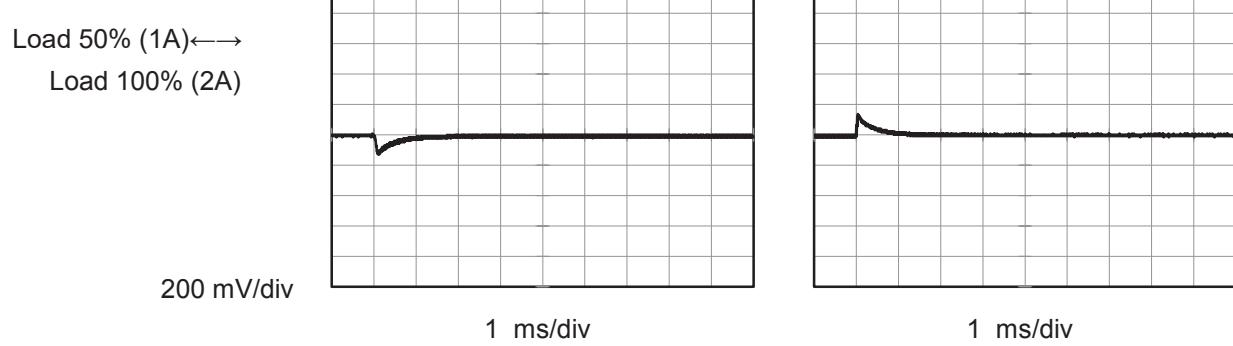
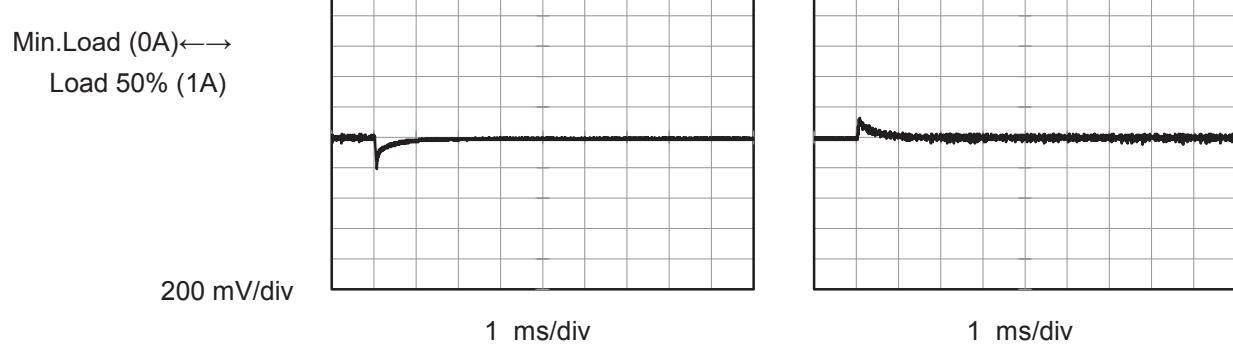
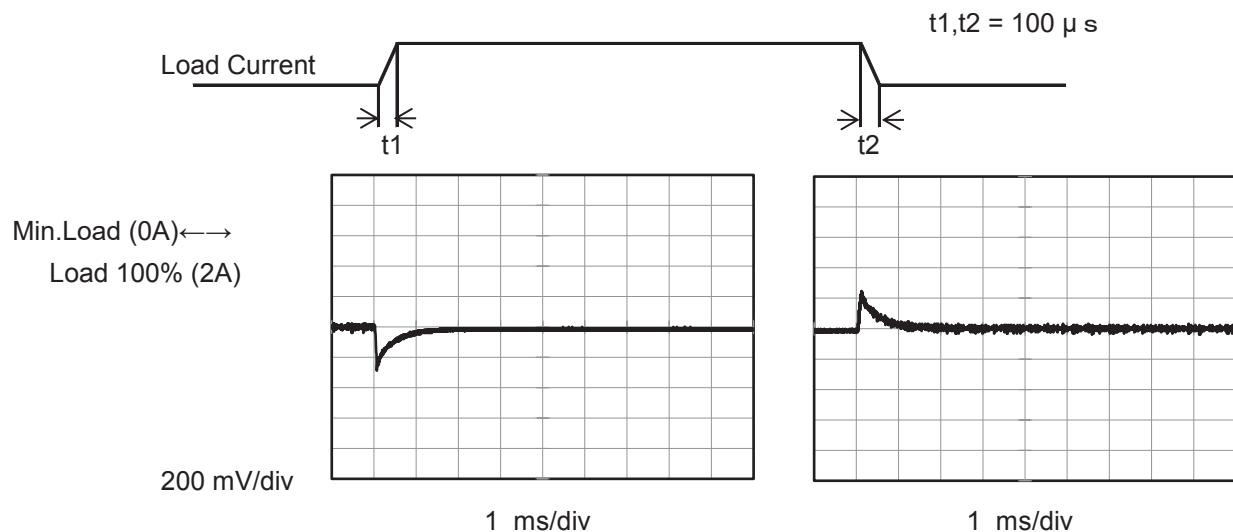
Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	5.083	5.082	5.083
0.4	5.082	5.081	5.081
0.8	5.080	5.080	5.080
1.2	5.079	5.079	5.079
1.6	5.078	5.078	5.078
2.0	5.077	5.077	5.077
2.2	5.076	5.076	5.076
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

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Model	MGS104805	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+5V2A		

Input Volt. 48 V
 Cycle 100 ms

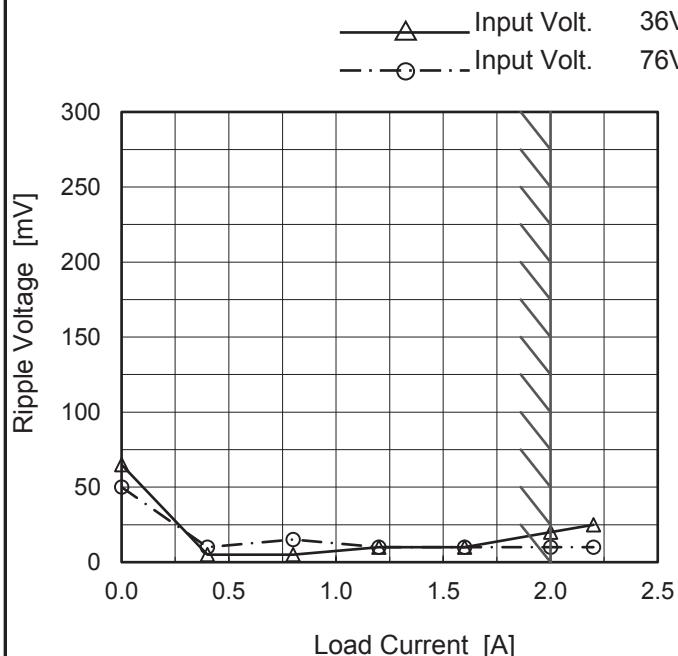


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Model	MGS104805
Item	Ripple Voltage (by Load Current)
Object	+5V2A

 Temperature 25°C
 Testing Circuitry Figure B

1.Graph



2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	65	50
0.4	5	10
0.8	5	15
1.2	10	10
1.6	10	10
2.0	20	10
2.2	25	10
--	-	-
--	-	-
--	-	-
--	-	-

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.

Ripple [mVp-p]

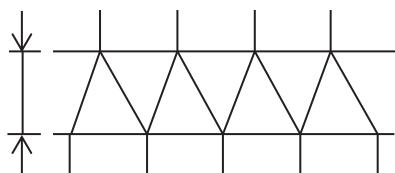


Fig.Complex Ripple Wave Form

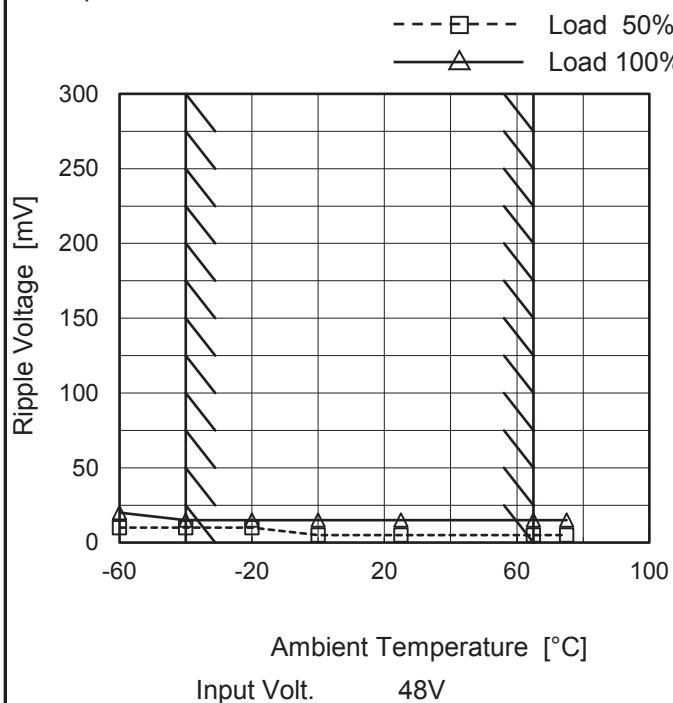
COSEL

Model	MGS104805																																							
Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure B																																						
Object	+5V2A																																							
1.Graph																																								
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The Y-axis ranges from 0 to 300 mV, and the X-axis ranges from 0.0 to 2.5 A. Two curves are plotted: one for Input Volt. 36V (solid line with triangle markers) and one for Input Volt. 76V (dashed line with circle markers). Both curves show a decrease in ripple voltage as load current increases. A slanted line indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple Voltage [mV] (Input Volt. 36V)</th> <th>Ripple Voltage [mV] (Input Volt. 76V)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>70</td><td>55</td></tr> <tr><td>0.4</td><td>10</td><td>15</td></tr> <tr><td>0.8</td><td>10</td><td>20</td></tr> <tr><td>1.2</td><td>15</td><td>20</td></tr> <tr><td>1.6</td><td>20</td><td>20</td></tr> <tr><td>2.0</td><td>25</td><td>25</td></tr> <tr><td>2.2</td><td>30</td><td>25</td></tr> </tbody> </table>		Load Current [A]	Ripple Voltage [mV] (Input Volt. 36V)	Ripple Voltage [mV] (Input Volt. 76V)	0.00	70	55	0.4	10	15	0.8	10	20	1.2	15	20	1.6	20	20	2.0	25	25	2.2	30	25															
Load Current [A]	Ripple Voltage [mV] (Input Volt. 36V)	Ripple Voltage [mV] (Input Volt. 76V)																																						
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<p>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.</p> <p>Ripple Noise[mVp-p]</p> <p>Fig.Complex Ripple Noise Wave Form</p>																																								

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Model	MGS104805
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V2A

1. Graph



Measured by 100 MHz Oscilloscope.

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

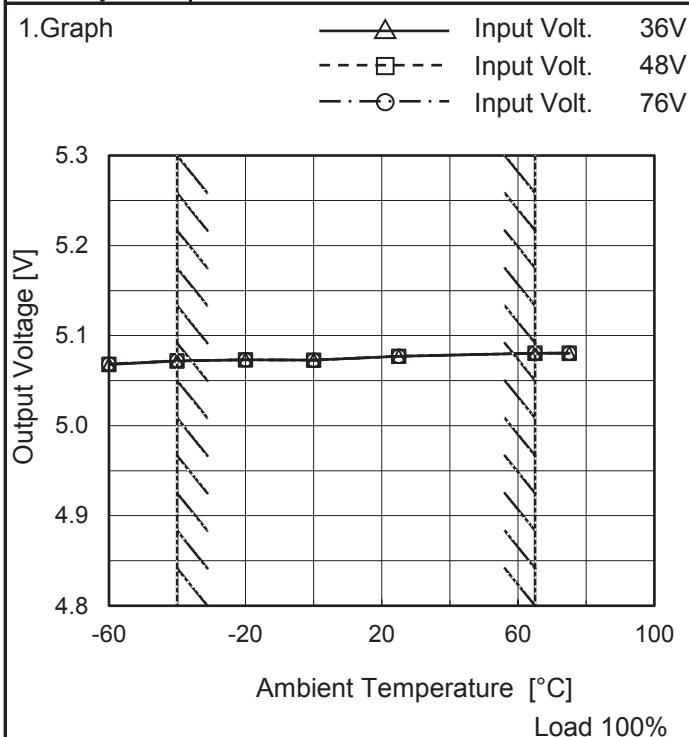
Testing Circuitry Figure B

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	10	20
-40	10	15
-20	10	15
0	5	15
25	5	15
65	5	15
75	5	15
--	-	-
--	-	-
--	-	-
--	-	-

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Model	MGS104805
Item	Ambient Temperature Drift
Object	+5V2A



Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	5.068	5.068	5.069
-40	5.072	5.072	5.072
-20	5.073	5.073	5.073
0	5.073	5.073	5.073
25	5.077	5.077	5.077
65	5.080	5.081	5.081
75	5.080	5.081	5.081
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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



Model	MGS104805	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+5V2A	

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 - 65°C

Input Voltage : 36 - 76V

Load Current : 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

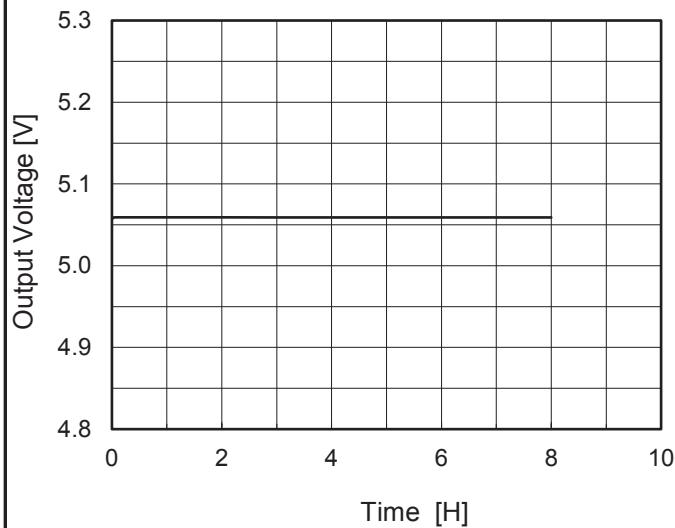
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	65	76	0	5.087	± 8	± 0.2
Minimum Voltage	-40	36	2	5.072		

COSEL

Model	MGS104805
Item	Time Lapse Drift
Object	+5V2A

 Temperature 25°C
 Testing Circuitry Figure A

1.Graph


 Input Volt. 48V
 Load 100%

2.Values

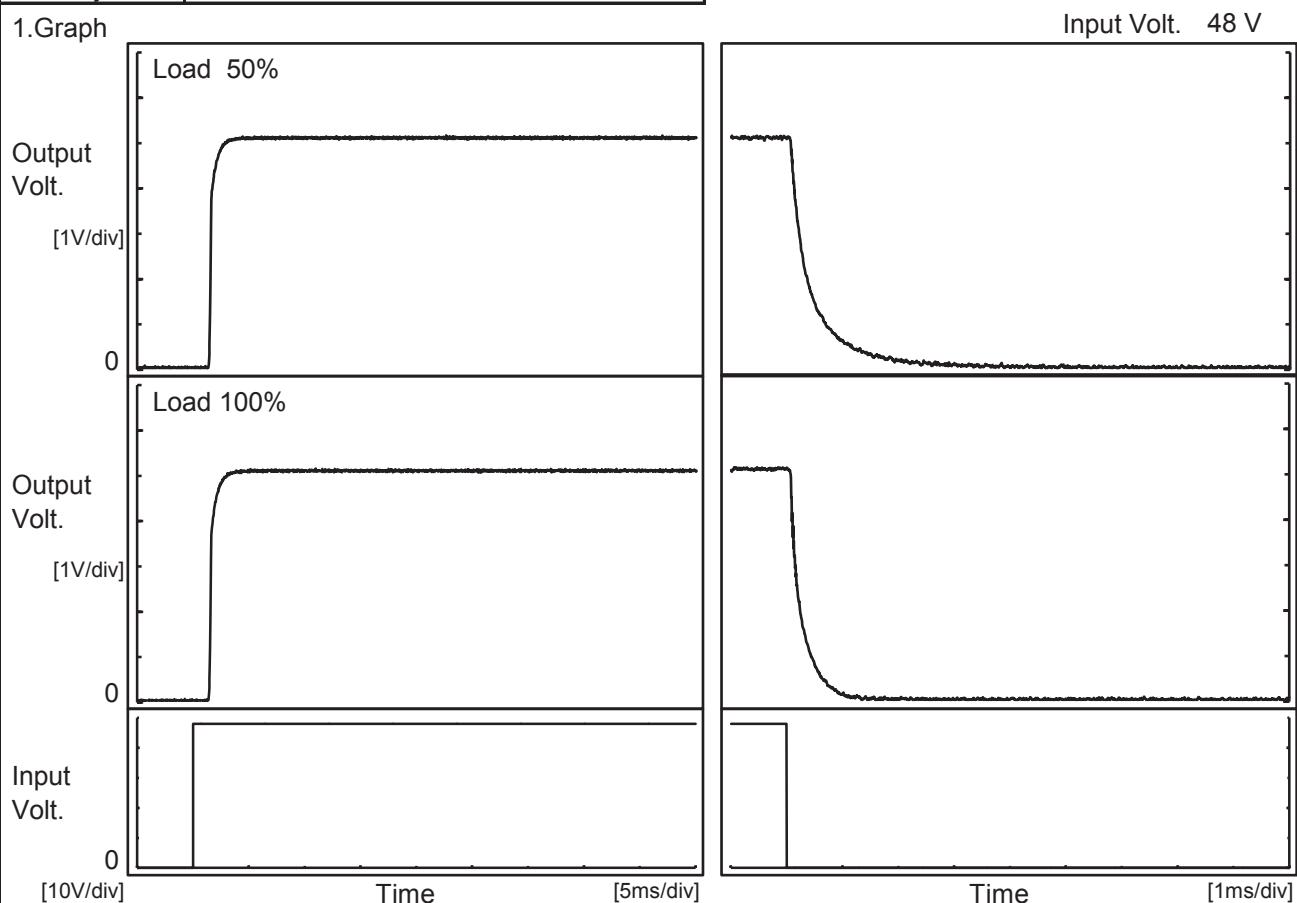
Time since start [H]	Output Voltage [V]
0.0	5.057
0.5	5.059
1.0	5.059
2.0	5.059
3.0	5.059
4.0	5.059
5.0	5.059
6.0	5.059
7.0	5.059
8.0	5.059

COSEL

Model	MGS104805
Item	Rise and Fall Time
Object	+5V2A

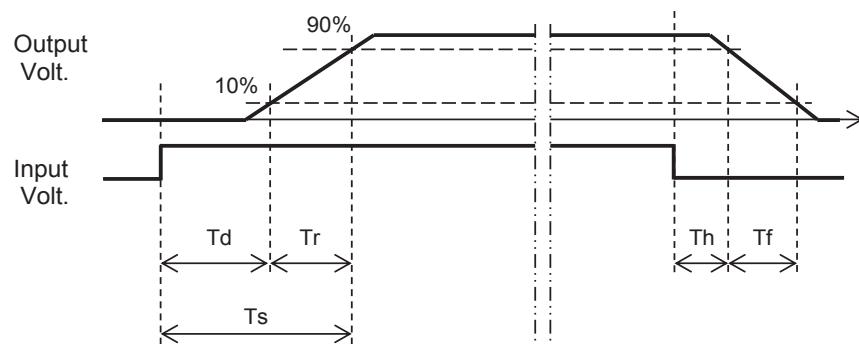
Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		1.5	0.6	2.1	0.1	1.1	
100 %		1.5	0.6	2.1	0.1	0.5	

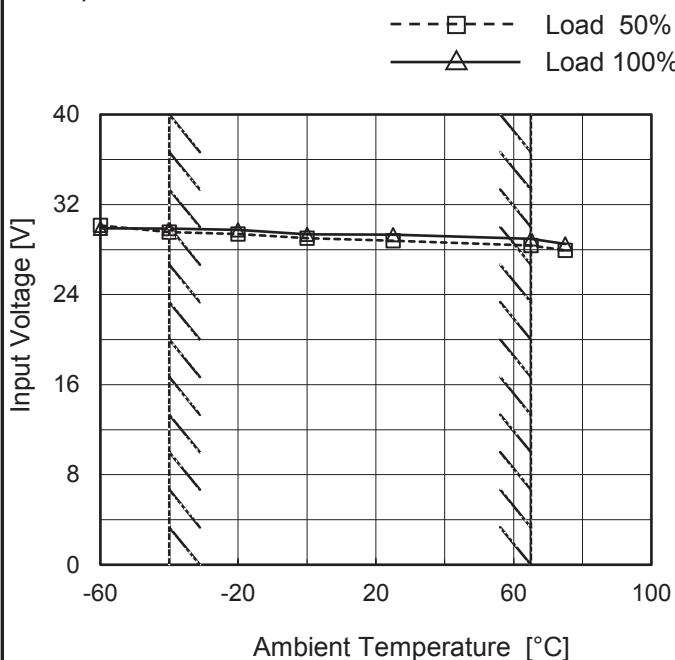


COSEL

Model	MGS104805
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V2A

Testing Circuitry Figure A

1.Graph



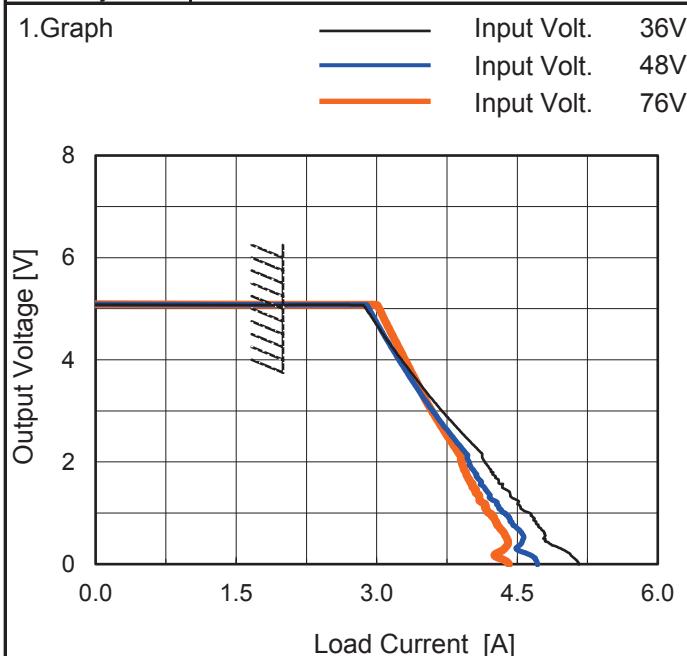
Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.2	29.9
-40	29.6	29.9
-20	29.4	29.8
0	29.1	29.4
25	28.8	29.4
65	28.4	29.0
75	28.0	28.5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGS104805
Item	Overcurrent Protection
Object	+5V2A


 Temperature 25°C
 Testing Circuitry Figure A

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
5.00	2.00	2.00	2.00
4.75	2.97	3.00	3.09
4.50	3.06	3.07	3.16
4.00	3.26	3.23	3.30
3.50	3.47	3.41	3.44
3.00	3.69	3.60	3.58
2.50	3.94	3.80	3.75
2.00	4.15	3.99	3.90
1.50	4.34	4.15	4.02
1.00	4.62	4.36	4.19
0.50	4.78	4.57	4.39
0.00	5.16	4.72	4.41

COSEL

Model	MGS104805	Temperature	25°C																																																			
Item	Switching Frequency (by Load Current)	Testing Circuitry	Figure A																																																			
Object	+5V2A																																																					
1.Graph	<p>Legend:</p> <ul style="list-style-type: none"> Input Volt. 36V Input Volt. 48V Input Volt. 76V <p>Y-axis: Switching Frequency [kHz]</p> <p>X-axis: Load Current [A]</p>																																																					
2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Frequency [kHz]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr> <td>0.0</td><td>545</td><td>596</td><td>658</td></tr> <tr> <td>0.4</td><td>442</td><td>490</td><td>561</td></tr> <tr> <td>0.8</td><td>343</td><td>394</td><td>458</td></tr> <tr> <td>1.0</td><td>308</td><td>357</td><td>419</td></tr> <tr> <td>1.2</td><td>279</td><td>325</td><td>383</td></tr> <tr> <td>1.6</td><td>235</td><td>275</td><td>334</td></tr> <tr> <td>2.0</td><td>202</td><td>241</td><td>295</td></tr> <tr> <td>2.2</td><td>188</td><td>225</td><td>278</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Frequency [kHz]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	545	596	658	0.4	442	490	561	0.8	343	394	458	1.0	308	357	419	1.2	279	325	383	1.6	235	275	334	2.0	202	241	295	2.2	188	225	278	--	-	-	-	--	-	-	-	--	-	-	-
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Note:	Slanted line shows the range of the rated load current.																																																					
-When load current is low, MG operates intermittently, so switching frequency would not become constant.																																																						

COSEL

