



TEST DATA OF MGS1R54805

Regulated DC Power Supply
August 9, 2016

Approved by : Takayuki Fukuda _____
Takayuki Fukuda Design Manager

Prepared by : Shohei Mukaide _____
Shohei Mukaide Design Engineer

COSEL CO.,LTD.



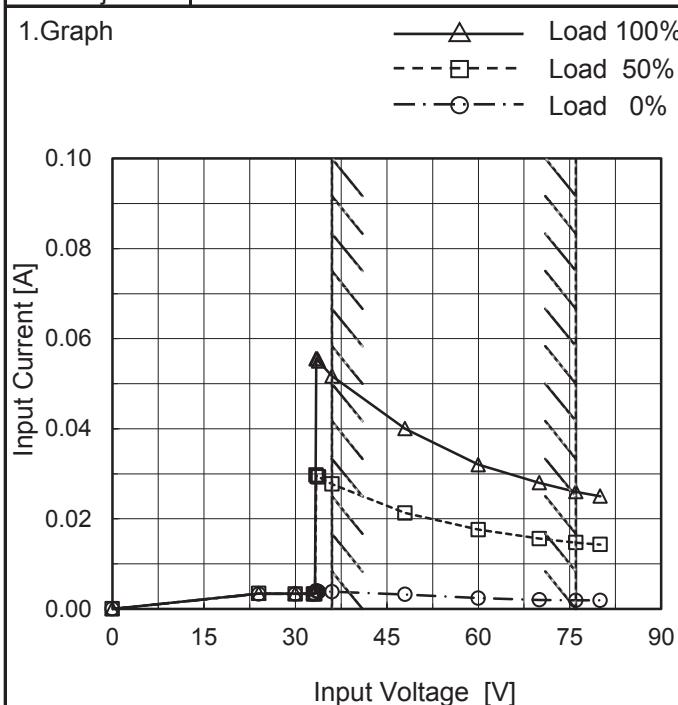
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(Final Page 19)

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Model	MGS1R54805
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

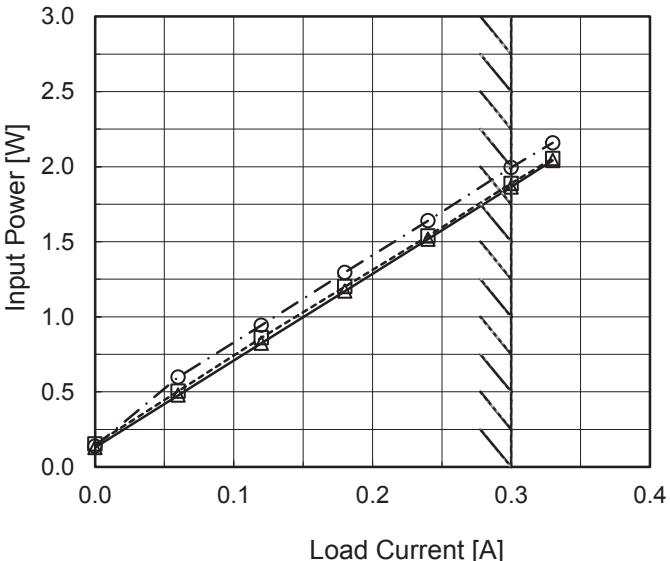
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
24.0	0.003	0.003	0.003
30.0	0.003	0.003	0.003
33.0	0.003	0.003	0.004
33.2	0.003	0.003	0.004
33.4	0.004	0.030	0.056
33.6	0.004	0.029	0.056
33.8	0.004	0.029	0.055
36.0	0.004	0.028	0.052
48.0	0.003	0.021	0.040
60.0	0.002	0.018	0.032
70.0	0.002	0.016	0.028
76.0	0.002	0.015	0.026
80.0	0.002	0.014	0.025
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	MGS1R54805																																																					
Item	Input Current (by Load Current)	Temperature	25°C																																																			
Object		Testing Circuitry	Figure A																																																			
1.Graph	<p>—△— Input Volt. 36V - - -□--- Input Volt. 48V - - ○ - - Input Volt. 76V</p> <table border="1"> <caption>Data points estimated from Figure A</caption> <thead> <tr> <th>Load Current [A]</th> <th>Input Current [A] (36V)</th> <th>Input Current [A] (48V)</th> <th>Input Current [A] (76V)</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.004</td><td>0.003</td><td>0.002</td></tr> <tr><td>0.06</td><td>0.013</td><td>0.011</td><td>0.008</td></tr> <tr><td>0.12</td><td>0.023</td><td>0.018</td><td>0.012</td></tr> <tr><td>0.18</td><td>0.032</td><td>0.025</td><td>0.017</td></tr> <tr><td>0.24</td><td>0.042</td><td>0.032</td><td>0.022</td></tr> <tr><td>0.30</td><td>0.052</td><td>0.040</td><td>0.026</td></tr> <tr><td>0.33</td><td>0.056</td><td>0.043</td><td>0.028</td></tr> </tbody> </table>	Load Current [A]	Input Current [A] (36V)	Input Current [A] (48V)	Input Current [A] (76V)	0.00	0.004	0.003	0.002	0.06	0.013	0.011	0.008	0.12	0.023	0.018	0.012	0.18	0.032	0.025	0.017	0.24	0.042	0.032	0.022	0.30	0.052	0.040	0.026	0.33	0.056	0.043	0.028																					
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Note: Slanted line shows the range of the rated load current.

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Item	Input Power (by Load Current)	Temperature	25°C																																																			
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 <p>The graph shows a linear increase of input power with load current for all three input voltages. The 36V curve is the lowest, followed by 48V, and 76V is the highest. A slanted line is drawn across the graph, starting from approximately (0.05A, 0.2W) and ending at (0.35A, 2.1W), representing the rated load current range.</p>																																																						
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Item	Efficiency (by Input Voltage)	Temperature 25°C Testing Circuitry Figure A																																
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<p>The graph plots Efficiency [%] on the y-axis (50 to 90) against Input Voltage [V] on the x-axis (30 to 90). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a general downward trend as input voltage increases. A slanted line on the graph indicates the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Efficiency Load 50% [%]</th> <th>Efficiency Load 100% [%]</th> </tr> </thead> <tbody> <tr><td>34</td><td>76.4</td><td>81.4</td></tr> <tr><td>36</td><td>75.7</td><td>81.5</td></tr> <tr><td>40</td><td>74.8</td><td>80.9</td></tr> <tr><td>48</td><td>73.8</td><td>80.2</td></tr> <tr><td>55</td><td>72.6</td><td>79.4</td></tr> <tr><td>60</td><td>71.5</td><td>78.7</td></tr> <tr><td>70</td><td>68.8</td><td>77.5</td></tr> <tr><td>76</td><td>67.4</td><td>76.4</td></tr> <tr><td>80</td><td>66.7</td><td>75.6</td></tr> </tbody> </table>			Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	34	76.4	81.4	36	75.7	81.5	40	74.8	80.9	48	73.8	80.2	55	72.6	79.4	60	71.5	78.7	70	68.8	77.5	76	67.4	76.4	80	66.7	75.6		
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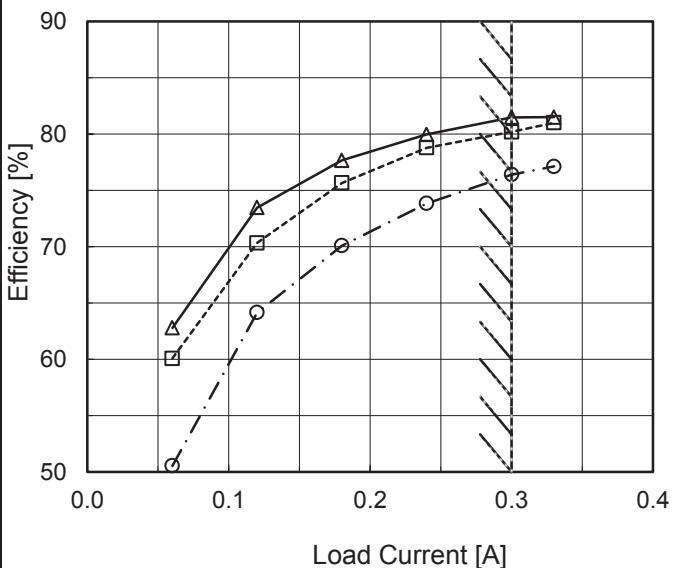
Model MGS1R54805

Item Efficiency (by Load Current)

Object _____

1.Graph

—△— Input Volt. 36V
 - - □ - - Input Volt. 48V
 - - ○ - - Input Volt. 76V



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

 Temperature 25°C
 Testing Circuitry Figure A

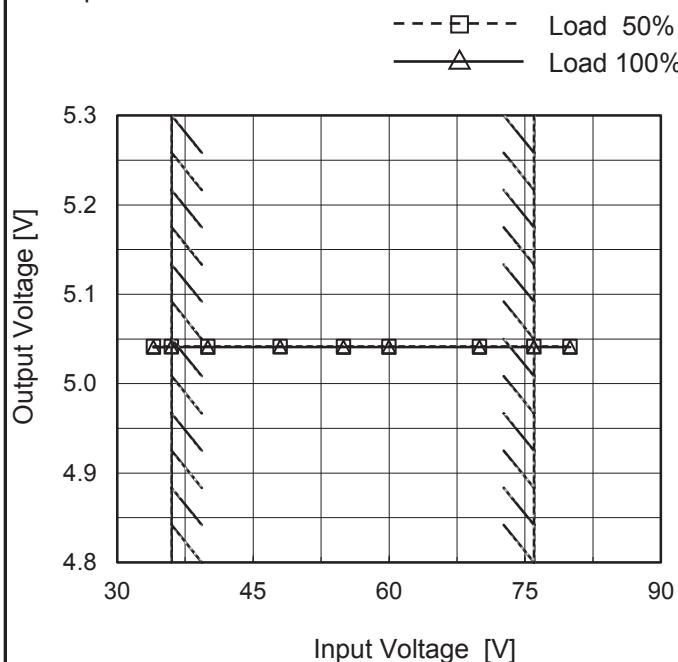
2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	-	-	-
0.06	62.8	60.1	50.5
0.12	73.5	70.3	64.2
0.18	77.7	75.7	70.1
0.24	80.0	78.8	73.9
0.30	81.5	80.2	76.4
0.33	81.5	81.0	77.1
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	MGS1R54805	Temperature	25°C
Item	Line Regulation	Testing Circuitry	Figure A
Object	+5V0.3A		

1.Graph



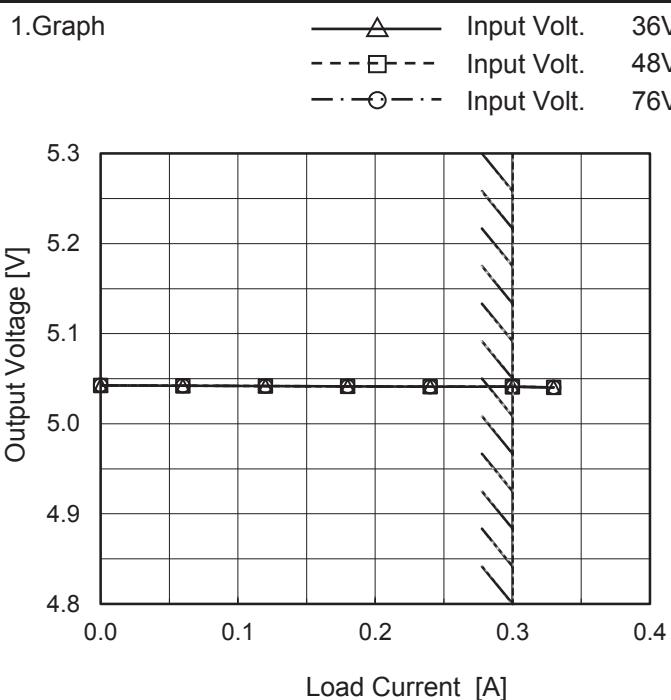
Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
34	5.042	5.041
36	5.042	5.041
40	5.042	5.041
48	5.042	5.041
55	5.042	5.041
60	5.042	5.041
70	5.042	5.041
76	5.042	5.041
80	5.042	5.041

COSEL

Model	MGS1R54805
Item	Load Regulation
Object	+5V0.3A

 Temperature 25°C
 Testing Circuitry Figure A


2.Values

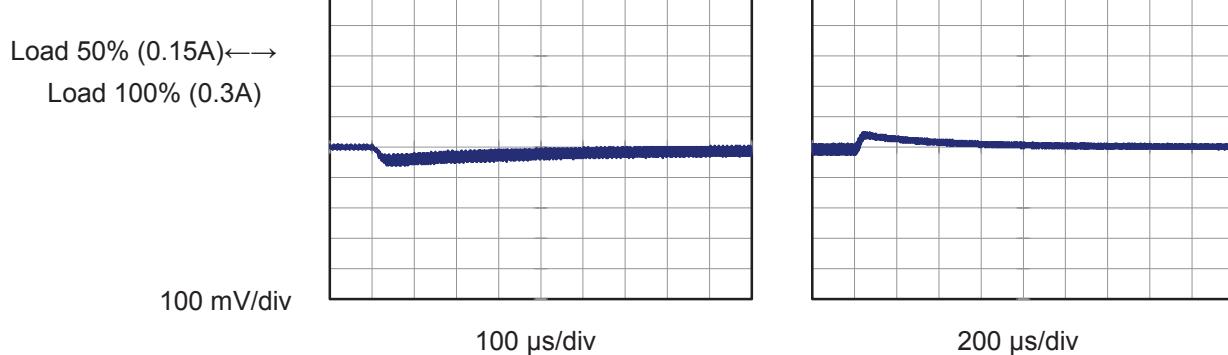
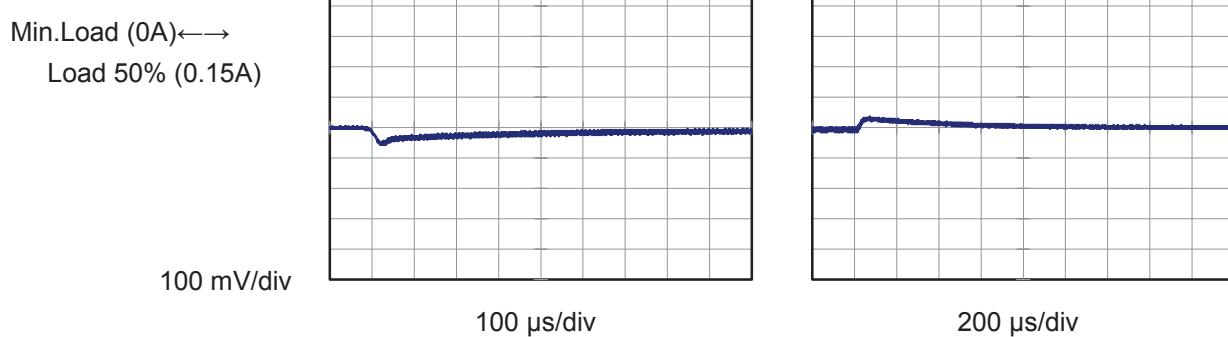
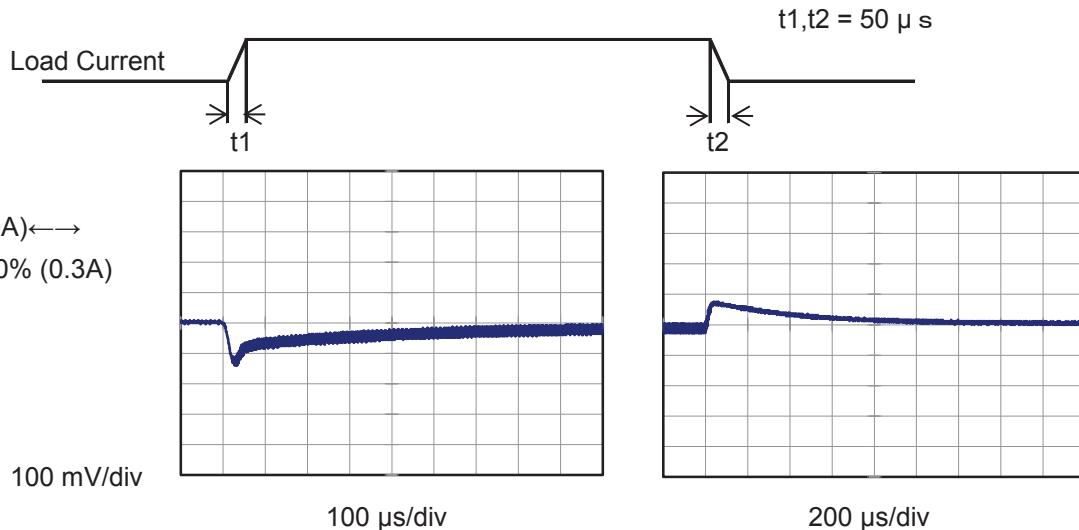
Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	5.043	5.043	5.043
0.06	5.042	5.042	5.042
0.12	5.042	5.042	5.042
0.18	5.042	5.042	5.042
0.24	5.041	5.041	5.041
0.30	5.041	5.041	5.041
0.33	5.040	5.040	5.040
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

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Model	MGS1R54805	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+5V0.3A		

Input Volt. 48 V
 Cycle 100 ms



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Model	MGS1R54805	Temperature	25°C																																				
Item	Ripple Voltage (by Load Current)	Testing Circuitry	Figure B																																				
Object	+5V0.3A																																						
1. Graph			2. Values																																				
<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 0.0 to 0.4 A. Two sets of data points are plotted: Input Volt. 36V (solid line with open triangles) and Input Volt. 76V (dashed line with open circles). A slanted line indicates the range of the rated load current.</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>10</td><td>10</td></tr> <tr><td>0.06</td><td>10</td><td>10</td></tr> <tr><td>0.12</td><td>25</td><td>15</td></tr> <tr><td>0.18</td><td>35</td><td>25</td></tr> <tr><td>0.24</td><td>45</td><td>35</td></tr> <tr><td>0.30</td><td>55</td><td>45</td></tr> <tr><td>0.33</td><td>65</td><td>50</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>				Load Current [A]	Ripple Voltage [mV] (Input Volt. 36V)	Ripple Voltage [mV] (Input Volt. 76V)	0.00	10	10	0.06	10	10	0.12	25	15	0.18	35	25	0.24	45	35	0.30	55	45	0.33	65	50	--	-	-	--	-	-	--	-	-	--	-	-
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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>																																							

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Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure B																																						
Object	+5V0.3A																																							
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0.24	45	40																																						
0.30	60	50																																						
0.33	70	55																																						
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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>																																								
Fig.Complex Ripple Noise Wave Form																																								

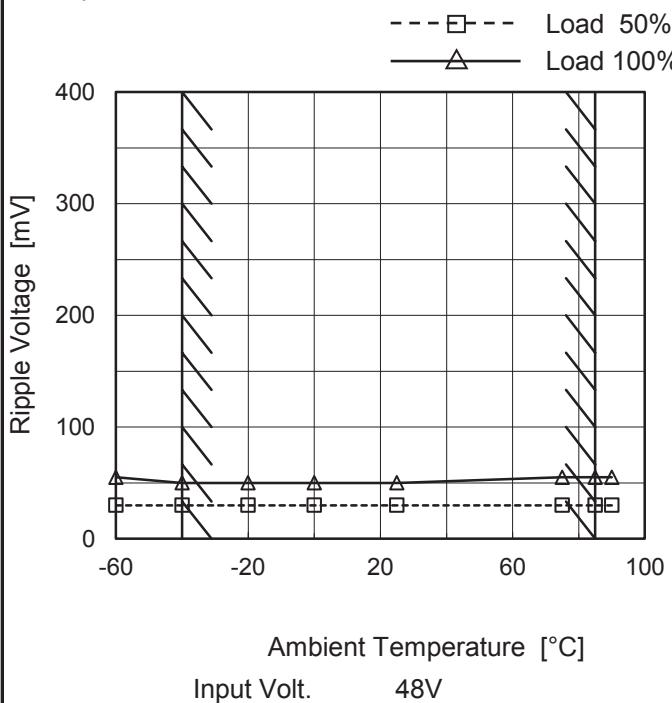
COSEL

Model MGS1R54805

Item Ripple Voltage (by Ambient Temp.)

Object +5V0.3A

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	30	55
-40	30	50
-20	30	50
0	30	50
25	30	50
75	30	55
85	30	55
90	30	55
--	-	-
--	-	-
--	-	-

COSEL

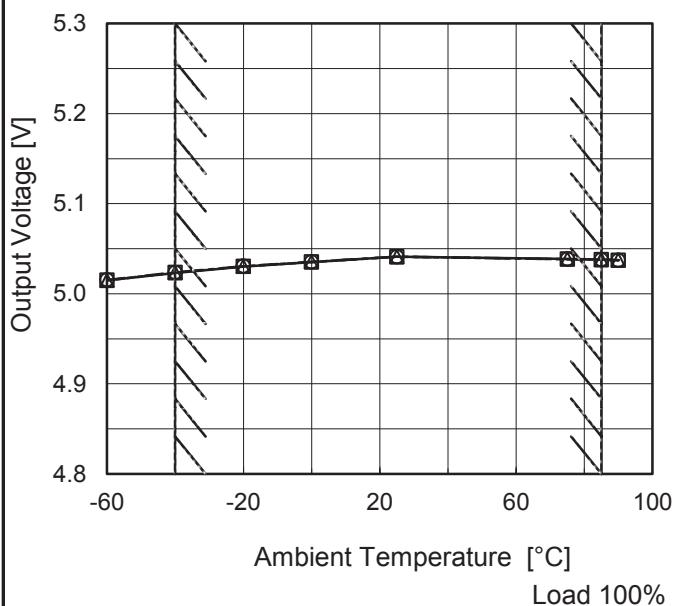
Model MGS1R54805

Item Ambient Temperature Drift

Object +5V0.3A

1.Graph

—△— Input Volt. 36V
 - - -□--- Input Volt. 48V
 - ·○--- Input Volt. 76V



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

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	5.015	5.015	5.015
-40	5.023	5.024	5.024
-20	5.030	5.031	5.031
0	5.035	5.035	5.035
25	5.041	5.041	5.041
75	5.039	5.039	5.038
85	5.038	5.038	5.038
90	5.037	5.037	5.037
--	-	-	-
--	-	-	-
--	-	-	-



Model	MGS1R54805	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+5V0.3A	

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 - 85°C

Input Voltage : 36 - 76V

Load Current : 0 - 0.3A

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

$$\text{* Output Voltage Accuracy (Ratio)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

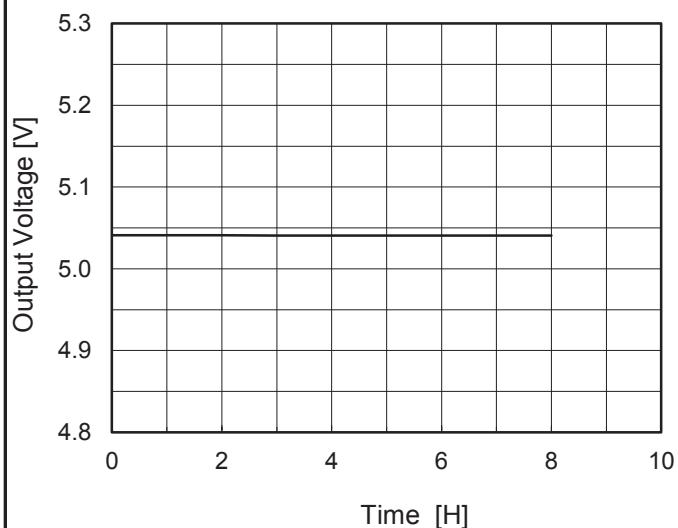
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	75	76	0	5.041	± 9	± 0.2
Minimum Voltage	-40	36	0.3	5.023		

COSEL

Model	MGS1R54805	Temperature	25°C
Item	Time Lapse Drift	Testing Circuitry	Figure A
Object	+5V0.3A		

1.Graph



Input Volt. 48V
Load 100%

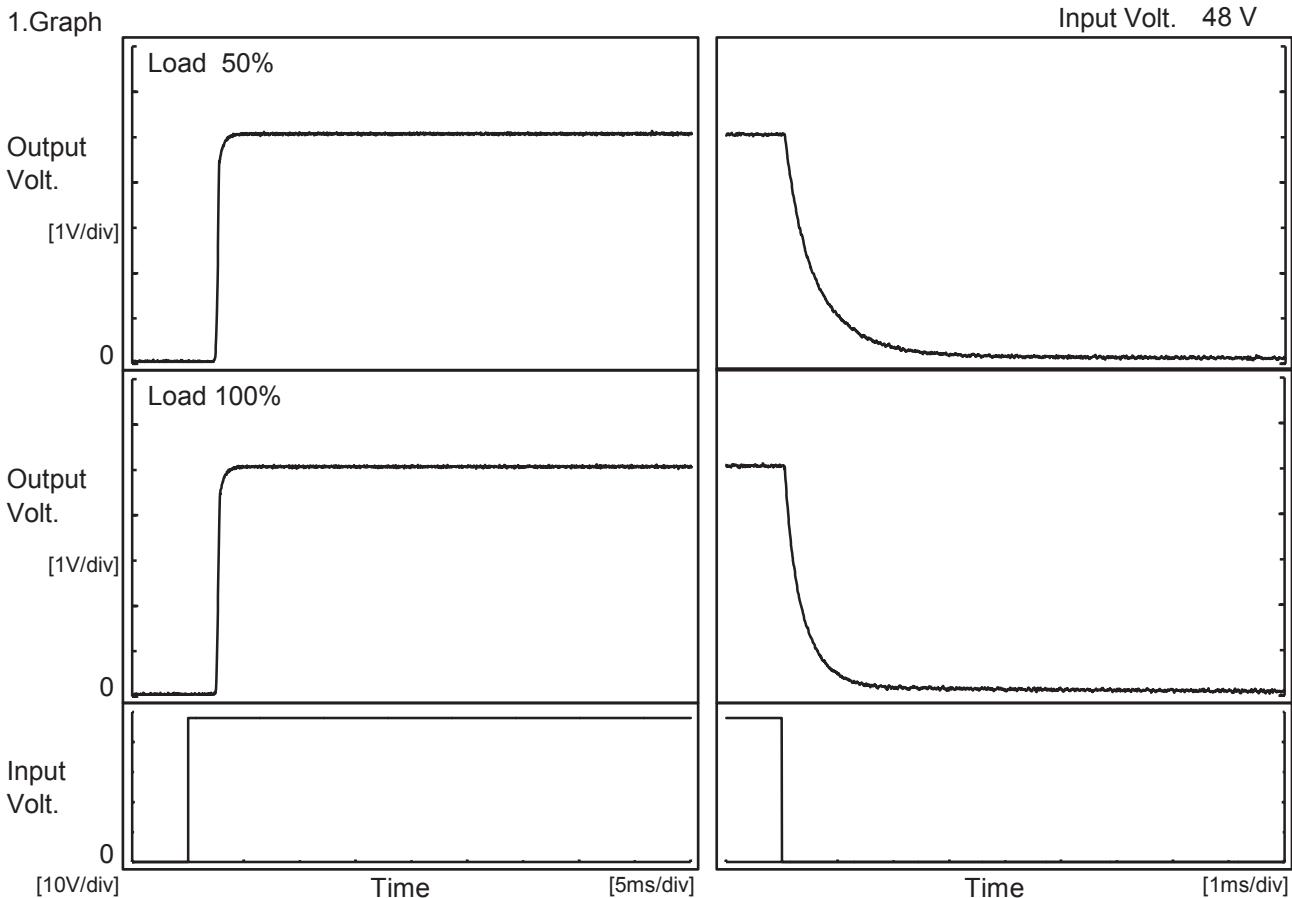
2.Values

Time since start [H]	Output Voltage [V]
0.0	5.041
0.5	5.041
1.0	5.041
2.0	5.041
3.0	5.041
4.0	5.041
5.0	5.041
6.0	5.041
7.0	5.041
8.0	5.041

COSEL

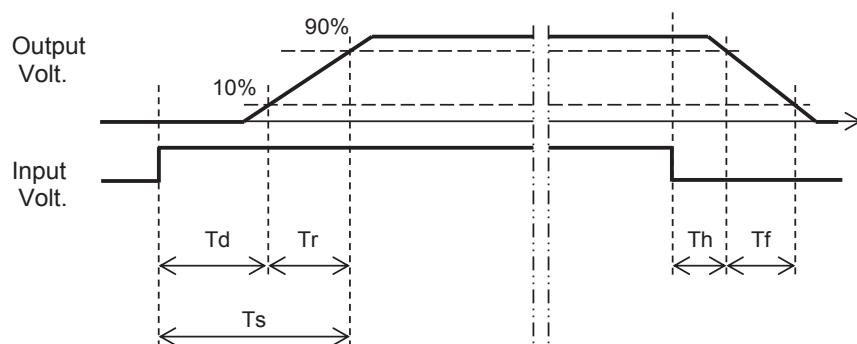
Model	MGS1R54805	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+5V0.3A		

1. Graph



2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		2.5	0.4	2.9	0.1	1.5	
100 %		2.6	0.4	3.0	0.1	0.9	

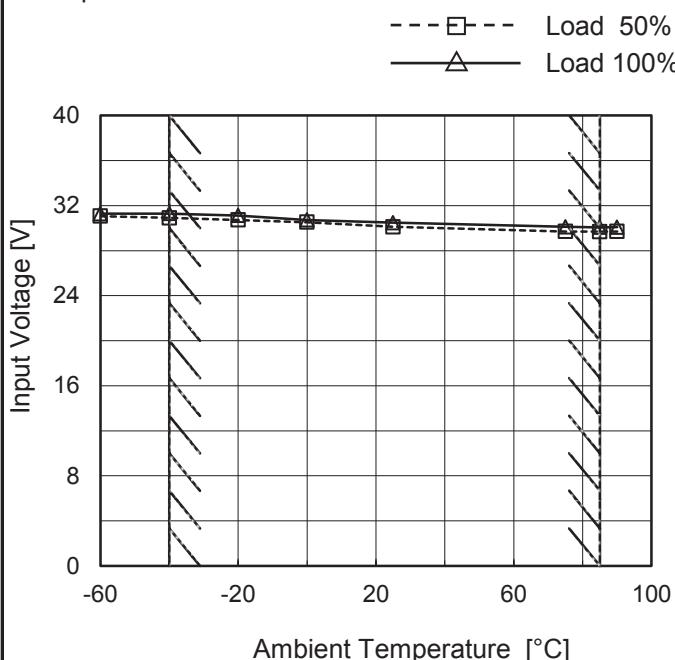


COSEL

Model	MGS1R54805
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V0.3A

Testing Circuitry Figure A

1.Graph



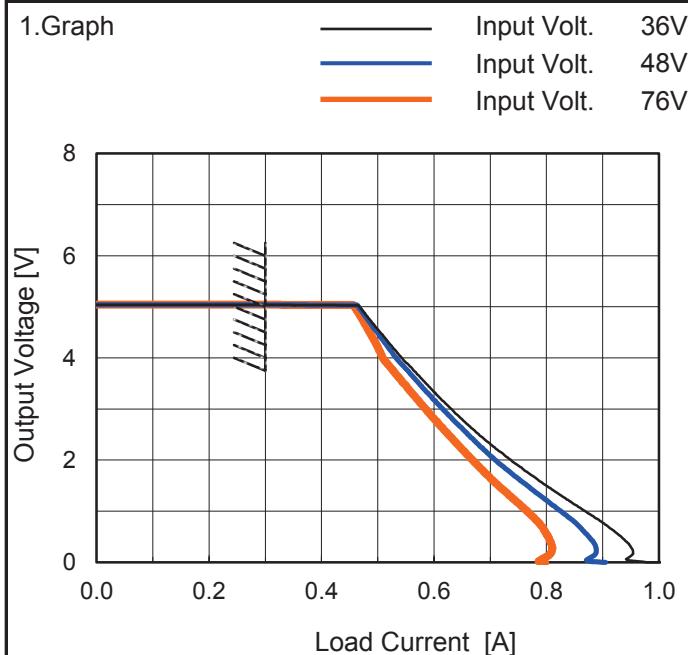
2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	31.1	31.3
-40	31.0	31.3
-20	30.8	31.2
0	30.6	30.8
25	30.2	30.5
75	29.7	30.2
85	29.7	30.1
90	29.7	30.1
--	-	-
--	-	-
--	-	-

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

COSEL

Model	MGS1R54805
Item	Overcurrent Protection
Object	+5V0.3A



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

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	0.31	0.31	0.31
4.75	0.49	0.48	0.47
4.50	0.50	0.50	0.49
4.00	0.54	0.53	0.51
3.50	0.58	0.57	0.55
3.00	0.63	0.61	0.58
2.50	0.68	0.66	0.63
2.00	0.74	0.71	0.67
1.50	0.80	0.77	0.71
1.00	0.87	0.82	0.77
0.50	0.93	0.87	0.80
0.00	0.98	0.91	0.80

COSEL

Model	MGS1R54805	Temperature	25°C																																																			
Item	Switching Frequency (by Load Current)	Testing Circuitry	Figure A																																																			
Object	+5V0.3A																																																					
1.Graph		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>0.00</td><td>504</td><td>533</td><td>541</td></tr> <tr><td>0.06</td><td>424</td><td>463</td><td>503</td></tr> <tr><td>0.12</td><td>364</td><td>404</td><td>450</td></tr> <tr><td>0.18</td><td>320</td><td>359</td><td>408</td></tr> <tr><td>0.24</td><td>285</td><td>325</td><td>373</td></tr> <tr><td>0.30</td><td>257</td><td>296</td><td>344</td></tr> <tr><td>0.33</td><td>244</td><td>282</td><td>330</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]	Frequency [kHz]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.00	504	533	541	0.06	424	463	503	0.12	364	404	450	0.18	320	359	408	0.24	285	325	373	0.30	257	296	344	0.33	244	282	330	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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