

TEST DATA OF MGFS32405

Regulated DC Power Supply
January 6, 2017

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COSEL CO.,LTD.

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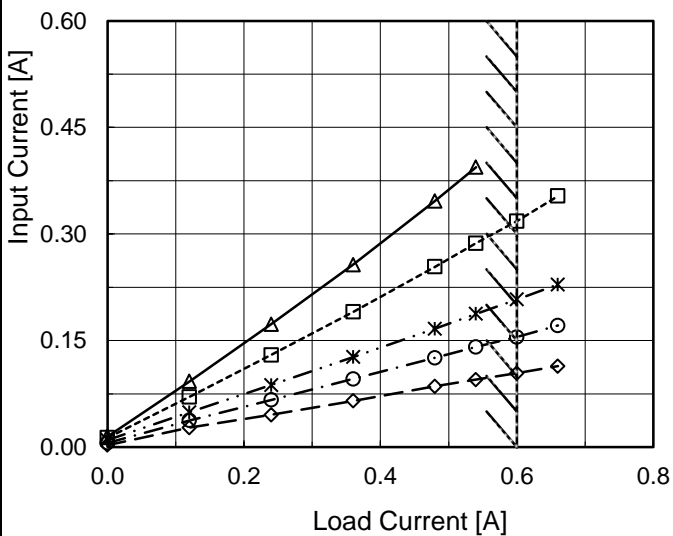
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Model	MGFS32405
Item	Input Current (by Load Current)
Object	_____

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	0.015	0.013	0.010	0.006	0.003
0.12	0.093	0.071	0.049	0.038	0.028
0.24	0.173	0.130	0.087	0.067	0.046
0.36	0.257	0.190	0.127	0.096	0.065
0.48	0.346	0.254	0.167	0.126	0.086
0.54	0.394	0.287	0.188	0.141	0.095
0.60	- ※	0.318	0.208	0.155	0.104
0.66	- ※	0.354	0.229	0.171	0.114
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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



Model		MGFS32405		Temperature 25°C																																																																														
Item		Input Power (by Load Current)		Testing Circuitry Figure A																																																																														
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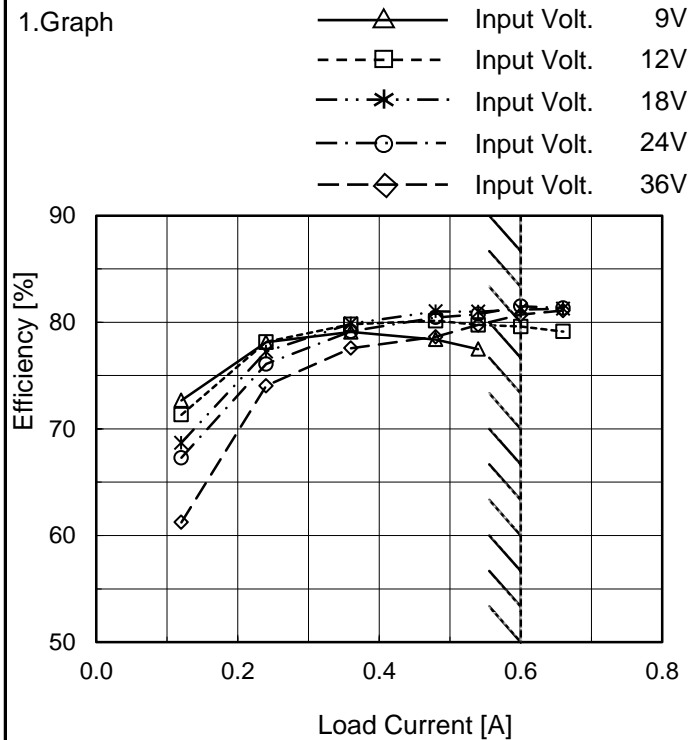


COSEL																																		
Model	MGFS32405																																	
Item	Efficiency (by Input Voltage)	Temperature 25°C Testing Circuitry Figure A																																
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<p>1.Graph</p> <div style="text-align: right;"> <p>---□--- Load 50%</p> <p>—△— Load 100%</p> </div> <p style="text-align: center;">Input Voltage [V]</p>		<p>2.Values</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>8.6</td> <td>77.7</td> <td>77.6 ※1</td> </tr> <tr> <td>9.0</td> <td>78.8</td> <td>78.4 ※1</td> </tr> <tr> <td>12.0</td> <td>79.0</td> <td>79.6</td> </tr> <tr> <td>15.0</td> <td>79.5</td> <td>80.7</td> </tr> <tr> <td>18.0</td> <td>79.1</td> <td>81.2</td> </tr> <tr> <td>24.0</td> <td>77.5</td> <td>81.5</td> </tr> <tr> <td>30.0</td> <td>76.7</td> <td>81.1</td> </tr> <tr> <td>36.0</td> <td>75.7</td> <td>80.7</td> </tr> <tr> <td>40.0</td> <td>74.0</td> <td>79.6</td> </tr> </tbody> </table> <p style="text-align: right;">※1: Load 80%</p>	Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	8.6	77.7	77.6 ※1	9.0	78.8	78.4 ※1	12.0	79.0	79.6	15.0	79.5	80.7	18.0	79.1	81.2	24.0	77.5	81.5	30.0	76.7	81.1	36.0	75.7	80.7	40.0	74.0	79.6
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<p>Note: Slanted line shows the range of the rated input voltage.</p>																																		



Model	MGFS32405
Item	Efficiency (by Load Current)
Object	_____

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	-	-	-	-	-
0.12	72.7	71.3	68.7	67.3	61.2
0.24	78.1	78.2	77.3	76.1	74.0
0.36	79.1	79.8	79.9	79.1	77.6
0.48	78.4	80.1	81.0	80.5	78.6
0.54	77.5	79.7	81.0	80.7	79.7
0.60	- ※	79.6	81.2	81.5	80.7
0.66	- ※	79.1	81.3	81.3	81.1
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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

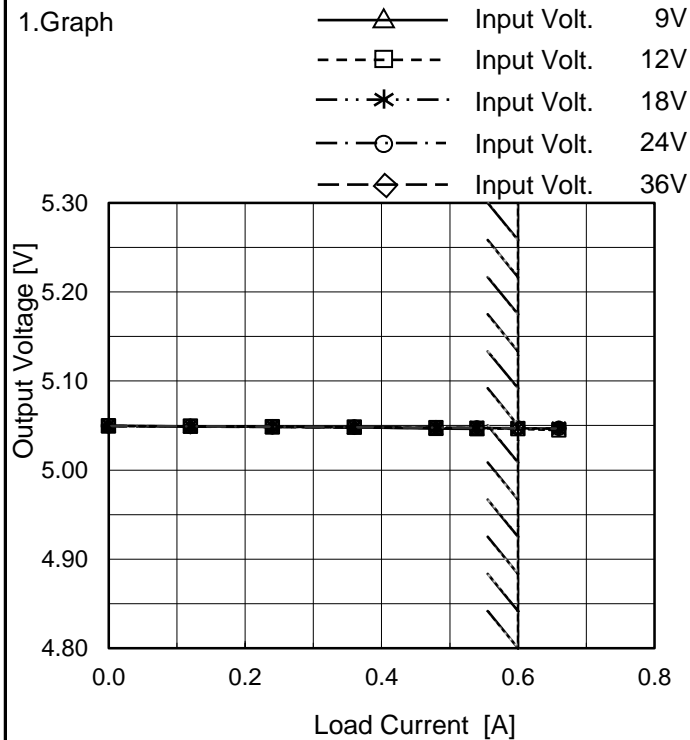


COSEL																																		
Model	MGFS32405																																	
Item	Line Regulation	Temperature 25°C Testing Circuitry Figure A																																
Object	+5V0.6A																																	
<p>1.Graph</p> <p style="text-align: right;"> ---□--- Load 50% —△— 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>8.6</td> <td>5.047</td> <td>- ※</td> </tr> <tr> <td>9.0</td> <td>5.047</td> <td>- ※</td> </tr> <tr> <td>12.0</td> <td>5.048</td> <td>5.046</td> </tr> <tr> <td>15.0</td> <td>5.048</td> <td>5.047</td> </tr> <tr> <td>18.0</td> <td>5.048</td> <td>5.047</td> </tr> <tr> <td>24.0</td> <td>5.048</td> <td>5.047</td> </tr> <tr> <td>30.0</td> <td>5.048</td> <td>5.048</td> </tr> <tr> <td>36.0</td> <td>5.048</td> <td>5.047</td> </tr> <tr> <td>40.0</td> <td>5.048</td> <td>5.047</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	5.047	- ※	9.0	5.047	- ※	12.0	5.048	5.046	15.0	5.048	5.047	18.0	5.048	5.047	24.0	5.048	5.047	30.0	5.048	5.048	36.0	5.048	5.047	40.0	5.048	5.047
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Model	MGFS32405
Item	Load Regulation
Object	+5V0.6A

Temperature 25°C
Testing Circuitry Figure A



2.Values

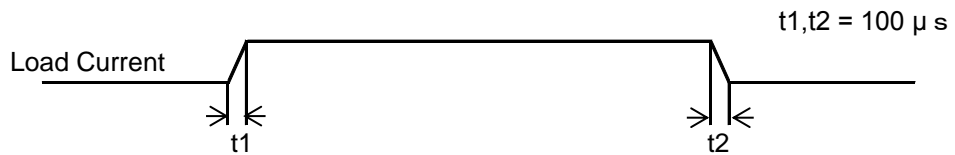
Load Current [A]	Output Voltage [V]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	5.050	5.050	5.050	5.050	5.049
0.12	5.049	5.049	5.049	5.049	5.049
0.24	5.049	5.049	5.049	5.048	5.048
0.36	5.048	5.048	5.048	5.048	5.048
0.48	5.047	5.048	5.048	5.048	5.047
0.54	5.046	5.047	5.047	5.047	5.047
0.60	- ※	5.046	5.047	5.047	5.047
0.66	- ※	5.045	5.047	5.047	5.047
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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

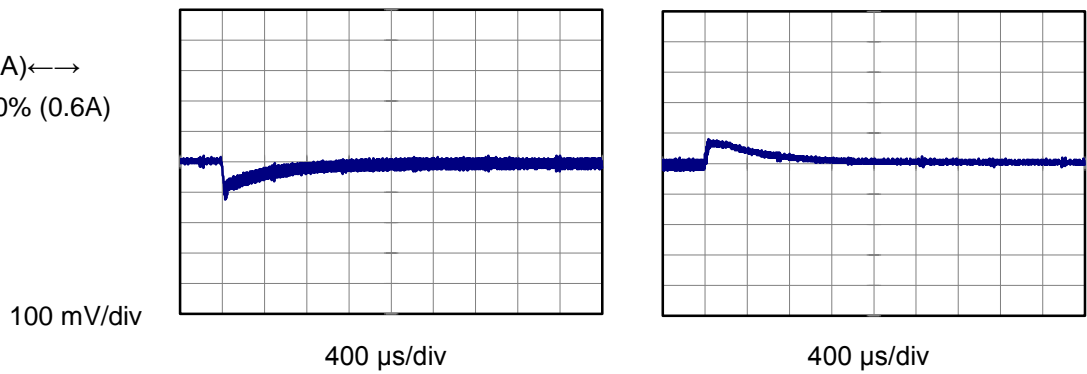


Model		MGFS32405	
Item		Dynamic Load Response	
Object		+5V0.6A	
		Temperature	25°C
		Testing Circuitry	Figure A

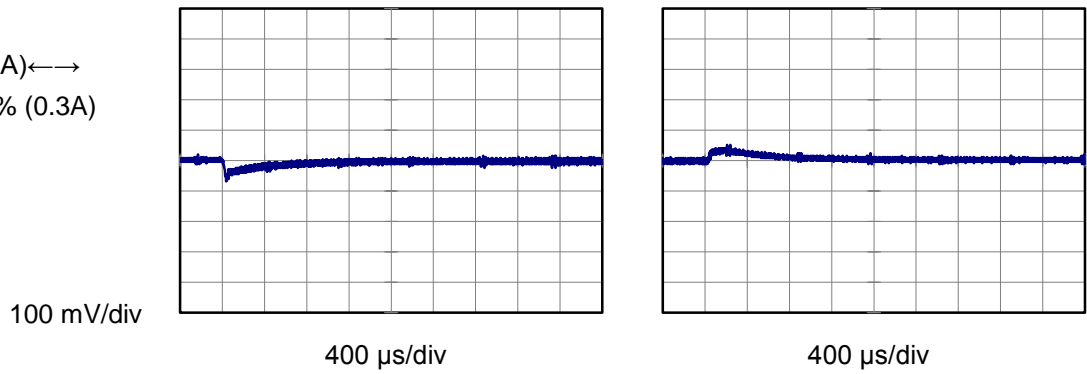
Input Volt. 24 V
Cycle 100 ms



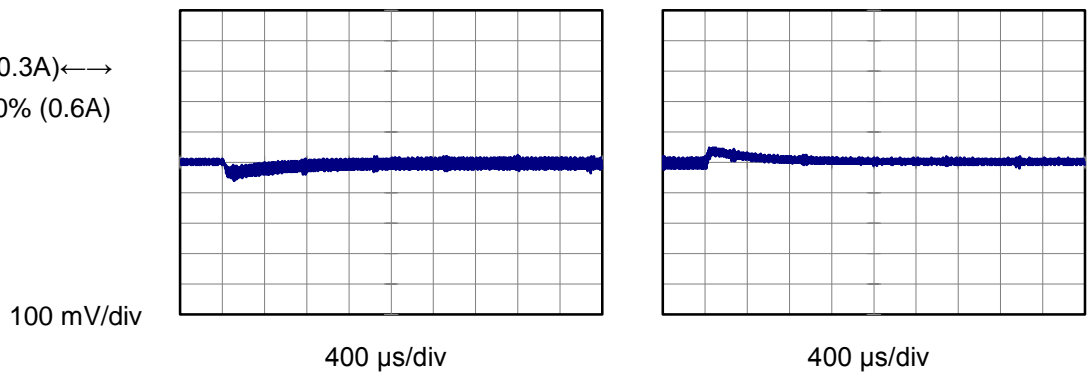
Min. Load (0A) ←→
Load 100% (0.6A)



Min. Load (0A) ←→
Load 50% (0.3A)



Load 50% (0.3A) ←→
Load 100% (0.6A)



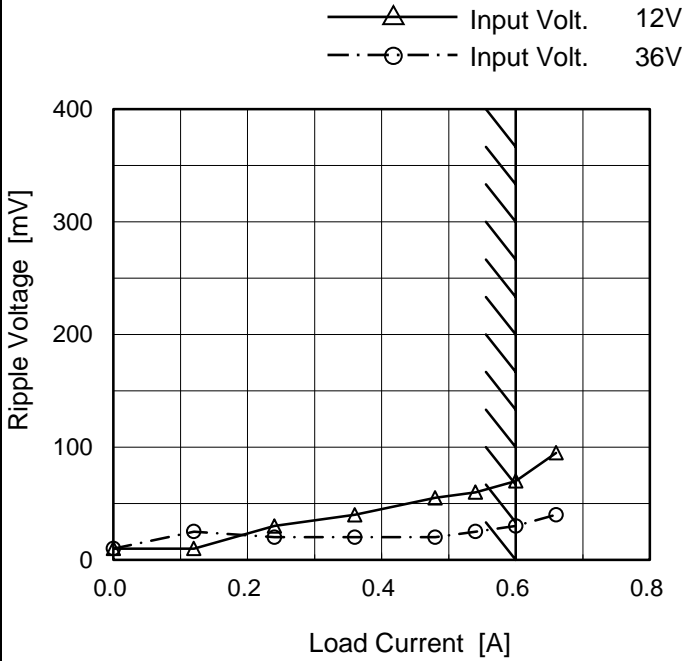


<p>Model MGFS32405</p>		<p>Temperature 25°C Testing Circuitry Figure B</p>																																						
Item	Ripple Voltage (by Load Current)																																							
Object	+5V0.6A																																							
<p>1.Graph</p> <div style="text-align: right;"> <p>—△— Input Volt. 12V -·-○-·- Input Volt. 36V</p> </div> <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>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>10</td><td>10</td></tr> <tr><td>0.12</td><td>10</td><td>25</td></tr> <tr><td>0.24</td><td>25</td><td>20</td></tr> <tr><td>0.36</td><td>35</td><td>15</td></tr> <tr><td>0.48</td><td>50</td><td>20</td></tr> <tr><td>0.54</td><td>60</td><td>20</td></tr> <tr><td>0.60</td><td>65</td><td>25</td></tr> <tr><td>0.66</td><td>85</td><td>35</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	10	10	0.12	10	25	0.24	25	20	0.36	35	15	0.48	50	20	0.54	60	20	0.60	65	25	0.66	85	35	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																							
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<p>Ripple [mVp-p]</p> <p>Fig.Complex Ripple Wave Form</p>																																								



Model	MGFS32405	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. 12 [V]	Input Volt. 36 [V]
0.00	10	10
0.12	10	25
0.24	30	20
0.36	40	20
0.48	55	20
0.54	60	25
0.60	70	30
0.66	95	40
--	-	-
--	-	-
--	-	-

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]

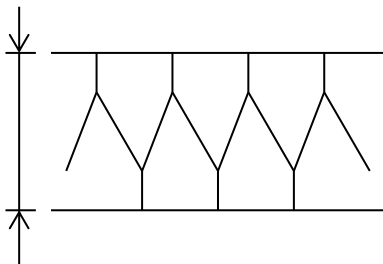


Fig.Complex Ripple Noise Wave Form

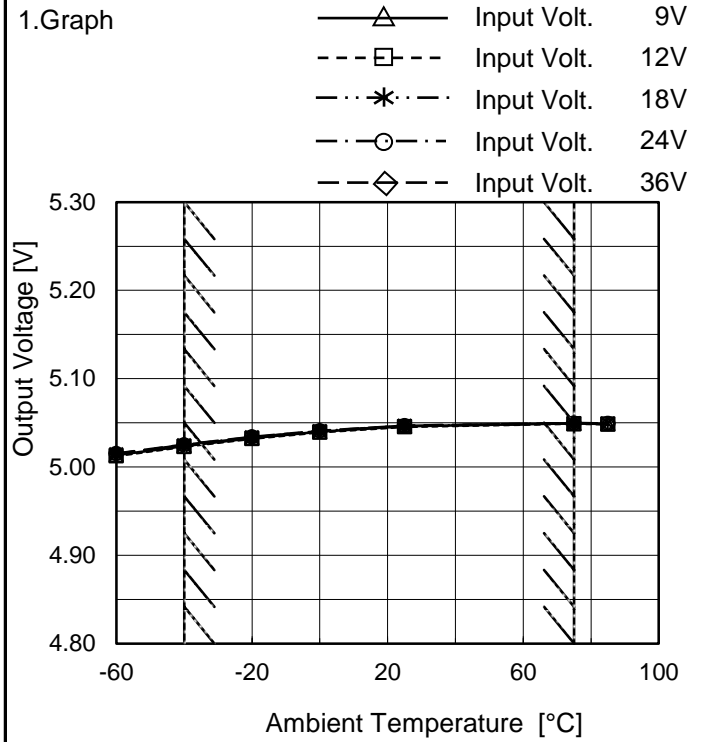


COSEL																																								
Model	MGFS32405																																							
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure B																																						
Object	+5V0.6A																																							
<p>1.Graph</p> <p style="text-align: center;">Ambient Temperature [°C] Input Volt. 24V</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>45</td><td>65</td></tr> <tr><td>-40</td><td>40</td><td>80</td></tr> <tr><td>-20</td><td>40</td><td>75</td></tr> <tr><td>0</td><td>35</td><td>70</td></tr> <tr><td>25</td><td>35</td><td>65</td></tr> <tr><td>75</td><td>35</td><td>65</td></tr> <tr><td>85</td><td>35</td><td>65</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	45	65	-40	40	80	-20	40	75	0	35	70	25	35	65	75	35	65	85	35	65	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Ripple Voltage [mV]																																							
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<p>Measured by 100 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>																																								



Model	MGFS32405
Item	Ambient Temperature Drift
Object	+5V0.6A

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	5.013	5.013	5.014	5.015	5.015
-40	5.024	5.023	5.025	5.025	5.025
-20	5.033	5.032	5.034	5.034	5.034
0	5.040	5.039	5.041	5.041	5.041
25	5.046	5.046	5.047	5.047	5.047
75	5.049	5.049	5.050	5.050	5.050
85	5.049	5.048	5.049	5.049	5.049
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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



COSEL		Testing Circuitry Figure A
Model	MGFS32405	
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 : 12 - 36V

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	36	0	5.052	±15	±0.3
Minimum Voltage	-40	12	0.6	5.023		



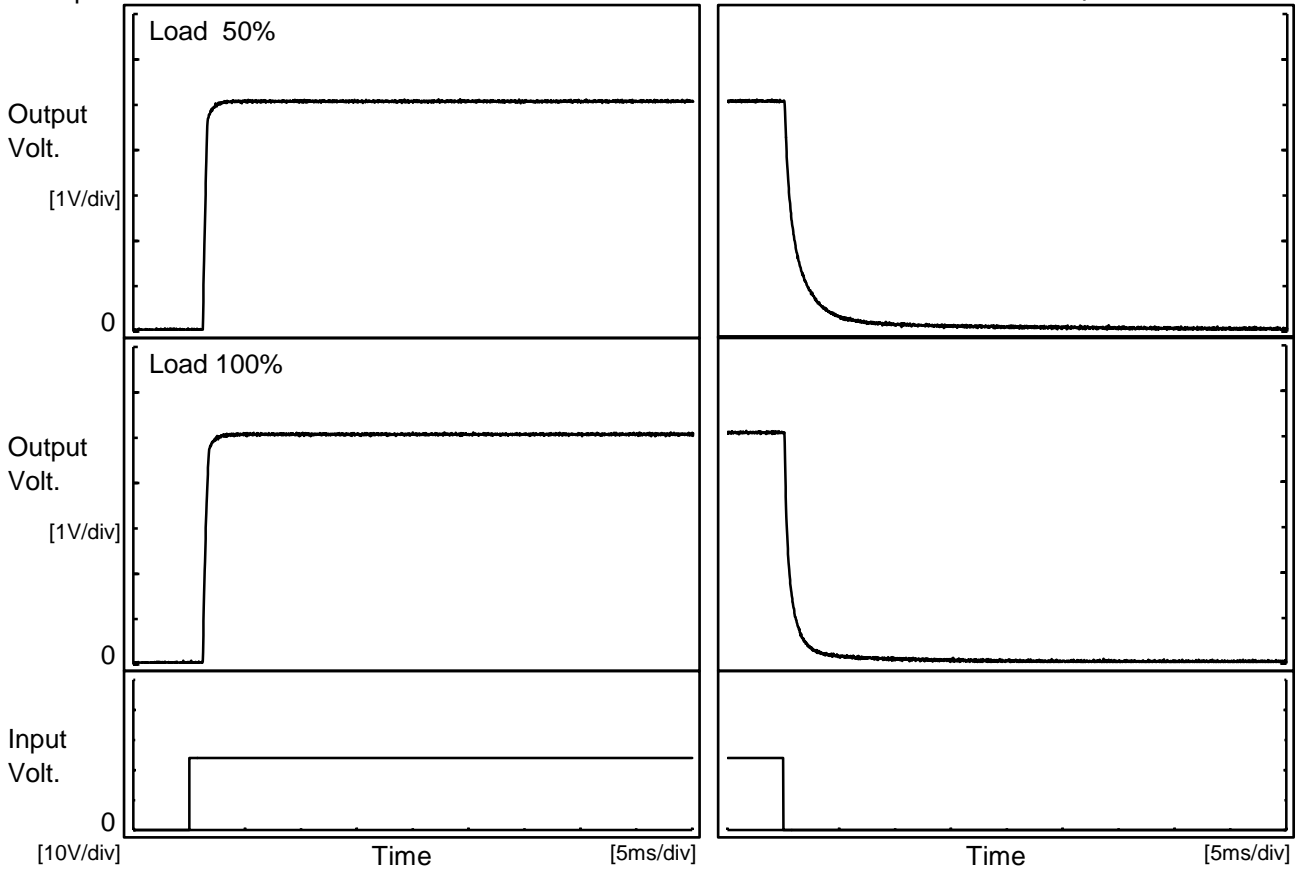
COSEL																									
Model	MGFS32405	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+5V0.6A																								
<p>1.Graph</p> <p style="text-align: center;">Time [H]</p> <p>Input Volt. 24V Load 100%</p>		<p>2.Values</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>5.046</td></tr> <tr><td>0.5</td><td>5.048</td></tr> <tr><td>1.0</td><td>5.047</td></tr> <tr><td>2.0</td><td>5.047</td></tr> <tr><td>3.0</td><td>5.047</td></tr> <tr><td>4.0</td><td>5.047</td></tr> <tr><td>5.0</td><td>5.047</td></tr> <tr><td>6.0</td><td>5.047</td></tr> <tr><td>7.0</td><td>5.047</td></tr> <tr><td>8.0</td><td>5.047</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	5.046	0.5	5.048	1.0	5.047	2.0	5.047	3.0	5.047	4.0	5.047	5.0	5.047	6.0	5.047	7.0	5.047	8.0	5.047
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Model	MGFS32405	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+5V0.6A		

1. Graph

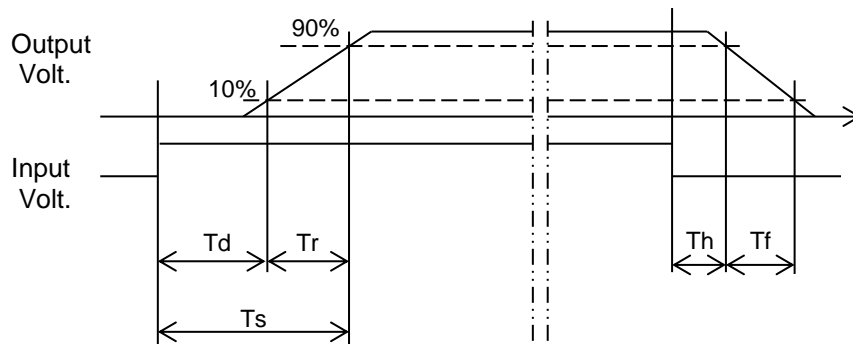
Input Volt. 24 V



2. Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.3	0.4	1.7	0.2	3.4
100 %	1.3	0.5	1.8	0.1	1.7





COSEL																																								
Model	MGFS32405																																							
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																						
Object	+5V0.6A																																							
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COSEL																																																																																									
Model	MGFS32405																																																																																								
Item	Overcurrent Protection	Temperature	25°C																																																																																						
Object	+5V0.6A	Testing Circuitry	Figure A																																																																																						
<p>1.Graph</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> </div> <div style="width: 50%;"> <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>4.75</td><td>0.652</td><td>0.752</td><td>0.778</td><td>0.759</td><td>0.767</td></tr> <tr><td>4.50</td><td>0.676</td><td>0.777</td><td>0.802</td><td>0.781</td><td>0.786</td></tr> <tr><td>4.00</td><td>0.724</td><td>0.836</td><td>0.857</td><td>0.826</td><td>0.825</td></tr> <tr><td>3.50</td><td>0.786</td><td>0.901</td><td>0.913</td><td>0.875</td><td>0.867</td></tr> <tr><td>3.00</td><td>0.857</td><td>0.973</td><td>0.972</td><td>0.926</td><td>0.911</td></tr> <tr><td>2.50</td><td>0.939</td><td>1.052</td><td>1.036</td><td>0.982</td><td>0.958</td></tr> <tr><td>2.00</td><td>1.032</td><td>1.139</td><td>1.107</td><td>1.041</td><td>1.010</td></tr> <tr><td>1.50</td><td>1.137</td><td>1.240</td><td>1.186</td><td>1.105</td><td>1.063</td></tr> <tr><td>1.00</td><td>1.264</td><td>1.352</td><td>1.267</td><td>1.173</td><td>1.114</td></tr> <tr><td>0.50</td><td>1.405</td><td>1.469</td><td>1.348</td><td>1.233</td><td>1.158</td></tr> <tr><td>0.00</td><td>1.466</td><td>1.453</td><td>1.286</td><td>1.156</td><td>1.065</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]	4.75	0.652	0.752	0.778	0.759	0.767	4.50	0.676	0.777	0.802	0.781	0.786	4.00	0.724	0.836	0.857	0.826	0.825	3.50	0.786	0.901	0.913	0.875	0.867	3.00	0.857	0.973	0.972	0.926	0.911	2.50	0.939	1.052	1.036	0.982	0.958	2.00	1.032	1.139	1.107	1.041	1.010	1.50	1.137	1.240	1.186	1.105	1.063	1.00	1.264	1.352	1.267	1.173	1.114	0.50	1.405	1.469	1.348	1.233	1.158	0.00	1.466	1.453	1.286	1.156	1.065	--	-	-	-	-	-
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Model		MGFS32405		Temperature 25°C																																																																														
Item		Switching frequency (by Load Current)		Testing Circuitry Figure A																																																																														
Object		+5V0.6A																																																																																
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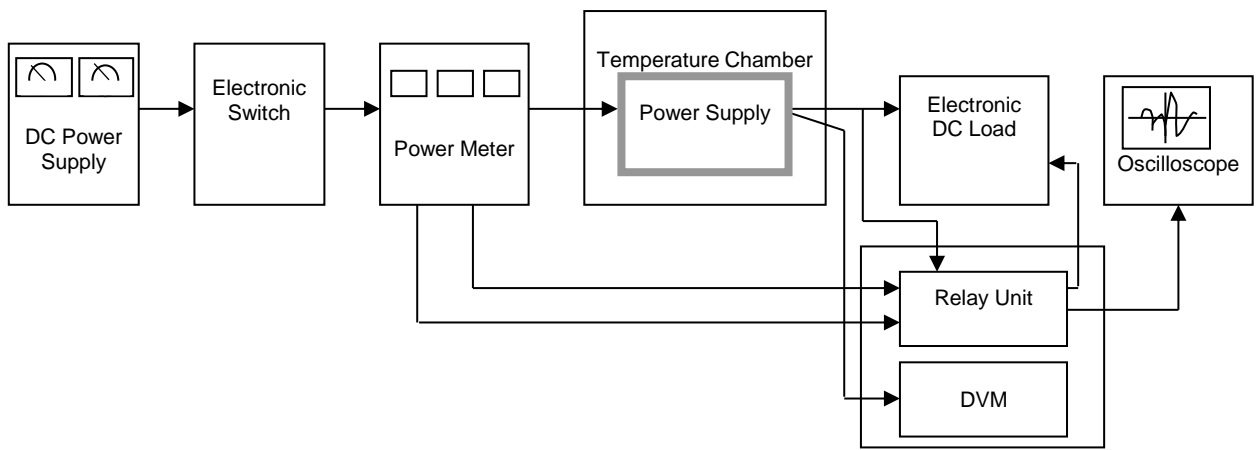


Figure A

Data Acquisition/Control Unit

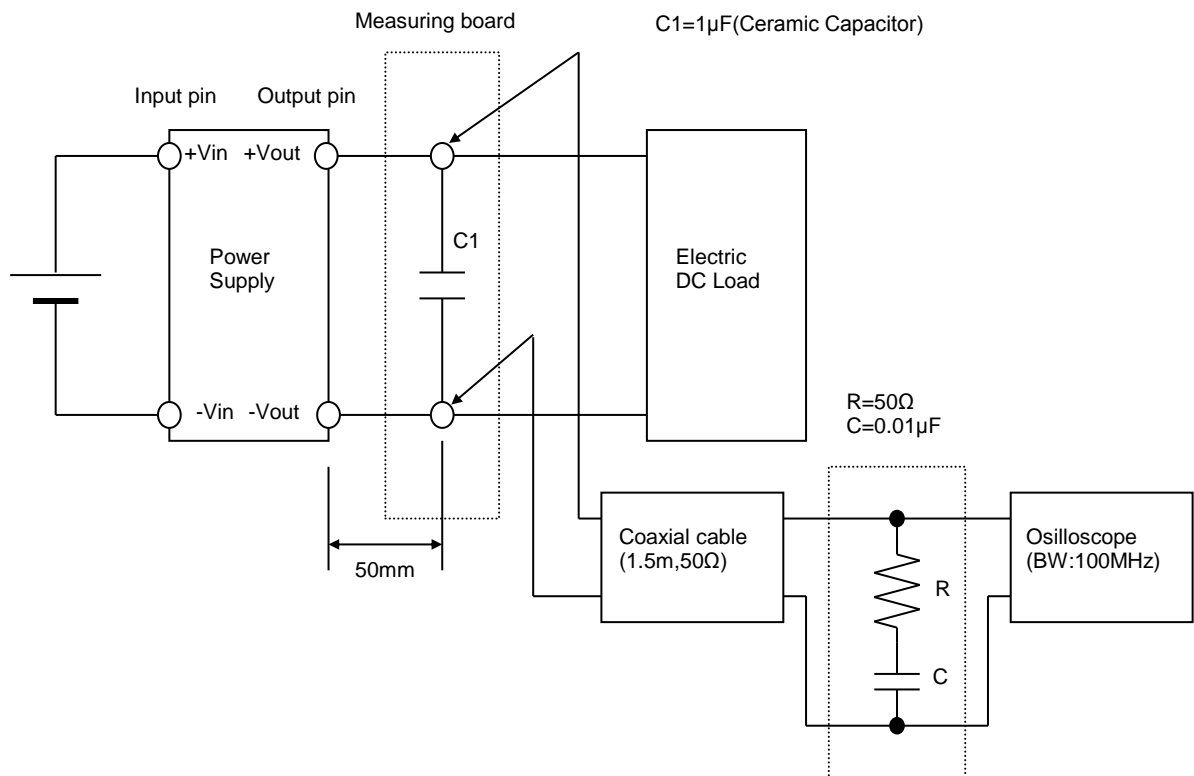


Figure B (Ripple and Ripple noise Characteristic)