

# TEST DATA OF MGS302405

Regulated DC Power Supply  
November 25, 2010

Approved by : Kazunari Asano  
Kazunari Asano Design Manager

Prepared by : Sho Saito  
Sho Saito Design Engineer

**COSEL CO.,LTD.**

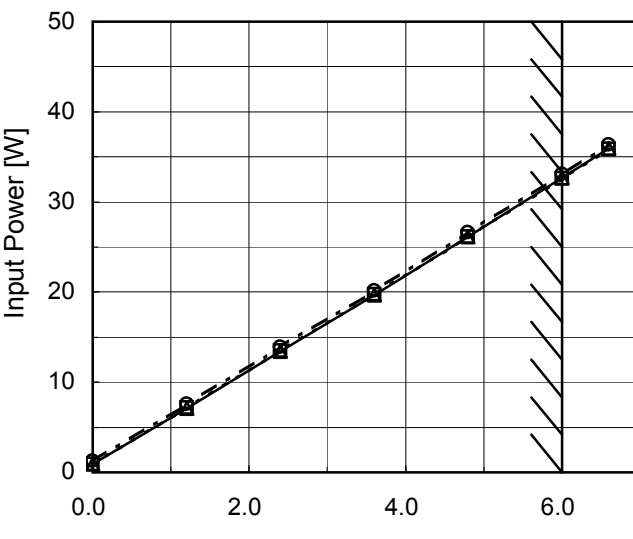
## CONTENTS

1.Input Current (by Input Voltage) . . . . .	1
2.Input Current (by Load Current) . . . . .	2
3.Input Power (by Load Current) . . . . .	3
4.Efficiency (by Input Voltage) . . . . .	4
5.Efficiency (by Load Current) . . . . .	5
6.Line Regulation . . . . .	6
7.Load Regulation . . . . .	7
8.Dynamic Load Response . . . . .	8
9.Ripple Voltage (by Load Current) . . . . .	9
10.Ripple-Noise . . . . .	10
11.Ripple Voltage (by Ambient Temperature) . . . . .	11
12.Ambient Temperature Drift . . . . .	12
13.Output Voltage Accuracy . . . . .	13
14.Time Lapse Drift . . . . .	14
15.Rise and Fall Time . . . . .	15
16.Minimum Input Voltage for Regulated Output Voltage . . . . .	16
17.Overcurrent Protection . . . . .	17
18.Overvoltage Protection . . . . .	18
19.Figure of Testing Circuitry . . . . .	19

(Final Page 19)

Model	MGS302405																																																																																	
Item	Input Current (by Input Voltage)	Temperature	25°C																																																																															
Object		Testing Circuitry	Figure A																																																																															
1.Graph		2.Values																																																																																
<div><div><div>—△—</div><div>Load 100%</div></div><div><div>---□---</div><div>Load 50%</div></div><div><div>-·-○-·-</div><div>Load 0%</div></div></div> <p>Note: Slanted line shows the range of the rated input voltage.</p>		<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Load 0%</th><th>Load 50%</th><th>Load 100%</th></tr><tr><td>0.0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>4.0</td><td>0.001</td><td>0.001</td><td>0.001</td></tr><tr><td>8.0</td><td>0.002</td><td>0.002</td><td>0.002</td></tr><tr><td>16.0</td><td>0.002</td><td>0.002</td><td>0.002</td></tr><tr><td>16.6</td><td>0.064</td><td>1.001</td><td>1.994</td></tr><tr><td>17.0</td><td>0.058</td><td>0.982</td><td>1.928</td></tr><tr><td>18.0</td><td>0.049</td><td>0.921</td><td>1.810</td></tr><tr><td>20.0</td><td>0.040</td><td>0.824</td><td>1.632</td></tr><tr><td>22.0</td><td>0.038</td><td>0.750</td><td>1.481</td></tr><tr><td>24.0</td><td>0.037</td><td>0.693</td><td>1.363</td></tr><tr><td>28.0</td><td>0.037</td><td>0.599</td><td>1.171</td></tr><tr><td>30.0</td><td>0.036</td><td>0.559</td><td>1.095</td></tr><tr><td>32.0</td><td>0.036</td><td>0.527</td><td>1.028</td></tr><tr><td>36.0</td><td>0.036</td><td>0.474</td><td>0.920</td></tr><tr><td>40.0</td><td>0.035</td><td>0.430</td><td>0.832</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></table>		Input Voltage [V]	Input Current [A]			Load 0%	Load 50%	Load 100%	0.0	0.000	0.000	0.000	4.0	0.001	0.001	0.001	8.0	0.002	0.002	0.002	16.0	0.002	0.002	0.002	16.6	0.064	1.001	1.994	17.0	0.058	0.982	1.928	18.0	0.049	0.921	1.810	20.0	0.040	0.824	1.632	22.0	0.038	0.750	1.481	24.0	0.037	0.693	1.363	28.0	0.037	0.599	1.171	30.0	0.036	0.559	1.095	32.0	0.036	0.527	1.028	36.0	0.036	0.474	0.920	40.0	0.035	0.430	0.832	--	-	-	-	--	-	-	-	--	-	-	-
Input Voltage [V]	Input Current [A]																																																																																	
	Load 0%	Load 50%	Load 100%																																																																															
0.0	0.000	0.000	0.000																																																																															
4.0	0.001	0.001	0.001																																																																															
8.0	0.002	0.002	0.002																																																																															
16.0	0.002	0.002	0.002																																																																															
16.6	0.064	1.001	1.994																																																																															
17.0	0.058	0.982	1.928																																																																															
18.0	0.049	0.921	1.810																																																																															
20.0	0.040	0.824	1.632																																																																															
22.0	0.038	0.750	1.481																																																																															
24.0	0.037	0.693	1.363																																																																															
28.0	0.037	0.599	1.171																																																																															
30.0	0.036	0.559	1.095																																																																															
32.0	0.036	0.527	1.028																																																																															
36.0	0.036	0.474	0.920																																																																															
40.0	0.035	0.430	0.832																																																																															
--	-	-	-																																																																															
--	-	-	-																																																																															
--	-	-	-																																																																															

Model	MGS302405																																																					
Item	Input Current (by Load Current)	Temperature	25°C																																																			
		Testing Circuitry	Figure A																																																			
Object	_____																																																					
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt.</div><div>18V</div></div><div><div>---□---</div><div>Input Volt.</div><div>24V</div></div><div><div>---○---</div><div>Input Volt.</div><div>36V</div></div></div> <div>Input Current [A]</div> <div>Load Current [A]</div> <div>Note: Slanted line shows the range of the rated load current.</div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 18[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th></tr><tr><td>0.0</td><td>0.050</td><td>0.038</td><td>0.035</td></tr><tr><td>1.2</td><td>0.395</td><td>0.300</td><td>0.211</td></tr><tr><td>2.4</td><td>0.747</td><td>0.560</td><td>0.387</td></tr><tr><td>3.6</td><td>1.093</td><td>0.824</td><td>0.562</td></tr><tr><td>4.8</td><td>1.445</td><td>1.093</td><td>0.739</td></tr><tr><td>6.0</td><td>1.813</td><td>1.360</td><td>0.920</td></tr><tr><td>6.6</td><td>2.000</td><td>1.498</td><td>1.010</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></table>		Load Current [A]	Input Current [A]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.0	0.050	0.038	0.035	1.2	0.395	0.300	0.211	2.4	0.747	0.560	0.387	3.6	1.093	0.824	0.562	4.8	1.445	1.093	0.739	6.0	1.813	1.360	0.920	6.6	2.000	1.498	1.010	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Current [A]																																																					
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																			
0.0	0.050	0.038	0.035																																																			
1.2	0.395	0.300	0.211																																																			
2.4	0.747	0.560	0.387																																																			
3.6	1.093	0.824	0.562																																																			
4.8	1.445	1.093	0.739																																																			
6.0	1.813	1.360	0.920																																																			
6.6	2.000	1.498	1.010																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			

Model	MGS302405																																																					
Item	Input Power (by Load Current)	Temperature	25°C																																																			
		Testing Circuitry	Figure A																																																			
Object	_____																																																					
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt.</div><div>18V</div></div><div><div>---□---</div><div>Input Volt.</div><div>24V</div></div><div><div>---○---</div><div>Input Volt.</div><div>36V</div></div></div> 		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Power [W]</th></tr><tr><th>Input Volt. 18[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th></tr><tr><td>0.0</td><td>0.90</td><td>0.91</td><td>1.27</td></tr><tr><td>1.2</td><td>7.11</td><td>7.16</td><td>7.60</td></tr><tr><td>2.4</td><td>13.41</td><td>13.46</td><td>13.90</td></tr><tr><td>3.6</td><td>19.69</td><td>19.74</td><td>20.19</td></tr><tr><td>4.8</td><td>26.11</td><td>26.17</td><td>26.62</td></tr><tr><td>6.0</td><td>32.64</td><td>32.62</td><td>33.07</td></tr><tr><td>6.6</td><td>35.95</td><td>35.87</td><td>36.35</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></table>		Load Current [A]	Input Power [W]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.0	0.90	0.91	1.27	1.2	7.11	7.16	7.60	2.4	13.41	13.46	13.90	3.6	19.69	19.74	20.19	4.8	26.11	26.17	26.62	6.0	32.64	32.62	33.07	6.6	35.95	35.87	36.35	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Input Power [W]																																																					
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																			
0.0	0.90	0.91	1.27																																																			
1.2	7.11	7.16	7.60																																																			
2.4	13.41	13.46	13.90																																																			
3.6	19.69	19.74	20.19																																																			
4.8	26.11	26.17	26.62																																																			
6.0	32.64	32.62	33.07																																																			
6.6	35.95	35.87	36.35																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
Note: Slanted line shows the range of the rated load current.																																																						

Model	MGS302405																																
Item	Efficiency (by Input Voltage)	Temperature	25°C																														
		Testing Circuitry	Figure A																														
Object																																	
1.Graph		2.Values																															
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><thead><tr><th>Input Voltage [V]</th><th>Load 50% [%]</th><th>Load 100% [%]</th></tr></thead><tbody><tr><td>17</td><td>90.9</td><td>92.2</td></tr><tr><td>18</td><td>91.5</td><td>92.6</td></tr><tr><td>20</td><td>91.9</td><td>92.8</td></tr><tr><td>24</td><td>91.2</td><td>92.8</td></tr><tr><td>30</td><td>90.0</td><td>92.2</td></tr><tr><td>36</td><td>88.8</td><td>91.5</td></tr><tr><td>40</td><td>87.9</td><td>91.0</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>		Input Voltage [V]	Load 50% [%]	Load 100% [%]	17	90.9	92.2	18	91.5	92.6	20	91.9	92.8	24	91.2	92.8	30	90.0	92.2	36	88.8	91.5	40	87.9	91.0	--	-	-	--	-	-		
Input Voltage [V]	Load 50% [%]	Load 100% [%]																															
17	90.9	92.2																															
18	91.5	92.6																															
20	91.9	92.8																															
24	91.2	92.8																															
30	90.0	92.2																															
36	88.8	91.5																															
40	87.9	91.0																															
--	-	-																															
--	-	-																															
Note: Slanted line shows the range of the rated input voltage.																																	

Model	MGS302405																																																					
Item	Efficiency (by Load Current)	Temperature	25°C																																																			
		Testing Circuitry	Figure A																																																			
Object	_____																																																					
1.Graph		2.Values																																																				
<div><div>—△— Input Volt. 18V</div><div>---□--- Input Volt. 24V</div><div>-·-○-·- Input Volt. 36V</div></div> <p>Efficiency [%]</p> <p>Load Current [A]</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 18[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th></tr><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>1.2</td><td>85.3</td><td>84.7</td><td>79.8</td></tr><tr><td>2.4</td><td>90.4</td><td>90.1</td><td>87.3</td></tr><tr><td>3.6</td><td>92.1</td><td>91.8</td><td>89.8</td></tr><tr><td>4.8</td><td>92.7</td><td>92.5</td><td>90.9</td></tr><tr><td>6.0</td><td>92.7</td><td>92.8</td><td>91.5</td></tr><tr><td>6.6</td><td>92.6</td><td>92.8</td><td>91.6</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></table>		Load Current [A]	Efficiency [%]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.0	-	-	-	1.2	85.3	84.7	79.8	2.4	90.4	90.1	87.3	3.6	92.1	91.8	89.8	4.8	92.7	92.5	90.9	6.0	92.7	92.8	91.5	6.6	92.6	92.8	91.6	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Efficiency [%]																																																					
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																			
0.0	-	-	-																																																			
1.2	85.3	84.7	79.8																																																			
2.4	90.4	90.1	87.3																																																			
3.6	92.1	91.8	89.8																																																			
4.8	92.7	92.5	90.9																																																			
6.0	92.7	92.8	91.5																																																			
6.6	92.6	92.8	91.6																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
Note: Slanted line shows the range of the rated load current.																																																						

Model	MGS302405	Temperature 25°C Testing Circuitry Figure A																																	
Item	Line Regulation																																		
Object	+5V6A																																		
1.Graph		2.Values																																	
<div><div><div></div><div></div></div><div><div></div><div></div></div></div> <table><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>5.054</td><td>5.052</td></tr><tr><td>18</td><td>5.054</td><td>5.052</td></tr><tr><td>20</td><td>5.054</td><td>5.052</td></tr><tr><td>24</td><td>5.054</td><td>5.052</td></tr><tr><td>30</td><td>5.054</td><td>5.052</td></tr><tr><td>36</td><td>5.054</td><td>5.052</td></tr><tr><td>40</td><td>5.054</td><td>5.052</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	17	5.054	5.052	18	5.054	5.052	20	5.054	5.052	24	5.054	5.052	30	5.054	5.052	36	5.054	5.052	40	5.054	5.052	--	-	-	--	-	-		
Input Voltage [V]	Output Voltage [V]																																		
	Load 50%	Load 100%																																	
17	5.054	5.052																																	
18	5.054	5.052																																	
20	5.054	5.052																																	
24	5.054	5.052																																	
30	5.054	5.052																																	
36	5.054	5.052																																	
40	5.054	5.052																																	
--	-	-																																	
--	-	-																																	
Note: Slanted line shows the range of the rated input voltage.																																			



Model	MGS302405																																																					
Item	Load Regulation	Temperature	25°C																																																			
Object	+5V6A	Testing Circuitry	Figure A																																																			
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt.</div><div>18V</div></div><div><div>---□---</div><div>Input Volt.</div><div>24V</div></div><div><div>-·-○-·-</div><div>Input Volt.</div><div>36V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 18[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th></tr><tr><td>0.0</td><td>5.056</td><td>5.056</td><td>5.056</td></tr><tr><td>1.2</td><td>5.055</td><td>5.055</td><td>5.055</td></tr><tr><td>2.4</td><td>5.055</td><td>5.054</td><td>5.054</td></tr><tr><td>3.6</td><td>5.054</td><td>5.054</td><td>5.054</td></tr><tr><td>4.8</td><td>5.053</td><td>5.053</td><td>5.053</td></tr><tr><td>6.0</td><td>5.052</td><td>5.052</td><td>5.052</td></tr><tr><td>6.6</td><td>5.052</td><td>5.052</td><td>5.052</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></table>		Load Current [A]	Output Voltage [V]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	0.0	5.056	5.056	5.056	1.2	5.055	5.055	5.055	2.4	5.055	5.054	5.054	3.6	5.054	5.054	5.054	4.8	5.053	5.053	5.053	6.0	5.052	5.052	5.052	6.6	5.052	5.052	5.052	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																					
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																			
0.0	5.056	5.056	5.056																																																			
1.2	5.055	5.055	5.055																																																			
2.4	5.055	5.054	5.054																																																			
3.6	5.054	5.054	5.054																																																			
4.8	5.053	5.053	5.053																																																			
6.0	5.052	5.052	5.052																																																			
6.6	5.052	5.052	5.052																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			

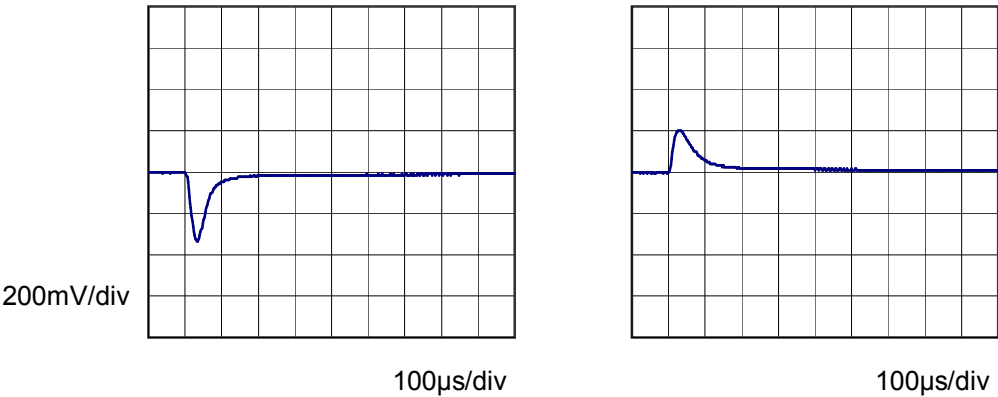


Model	MGS302405		
Item	Dynamic Load Response	Temperature	25°C
Object	+5V6A	Testing Circuitry	Figure A

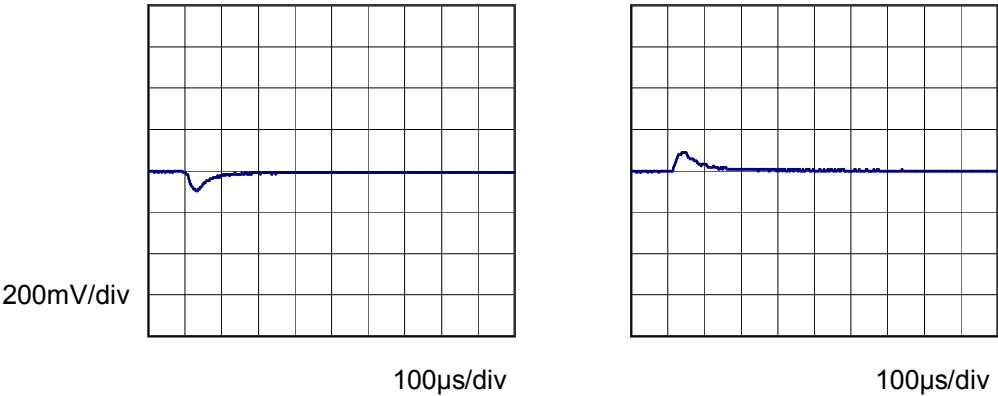
Input Volt.            24    V  
Cycle                    1000 ms



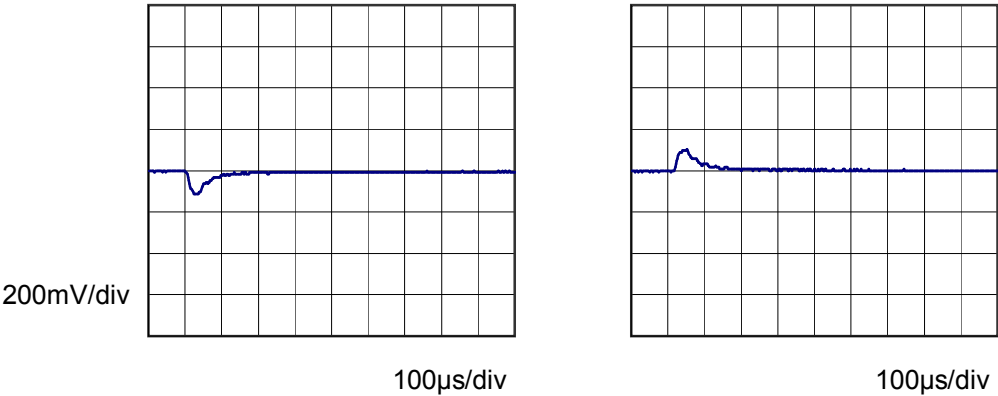
Min. Load (0A)  $\longleftrightarrow$   
Load 100% (6A)



Min. Load (0A)  $\longleftrightarrow$   
Load 50% (3A)



Load 50% (3A)  $\longleftrightarrow$   
Load 100% (6A)



Model	MGS302405																																								
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																						
		Testing Circuitry	Figure B																																						
Object	+5V6A																																								
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt.</div><div>18V</div></div><div><div>---○---</div><div>Input Volt.</div><div>36V</div></div></div> <p>Ripple Voltage [mV]</p> <p>Load Current [A]</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 18 [V]</th><th>Input Volt. 36 [V]</th></tr><tr><td>0.0</td><td>5</td><td>7</td></tr><tr><td>1.2</td><td>5</td><td>7</td></tr><tr><td>2.4</td><td>5</td><td>7</td></tr><tr><td>3.6</td><td>5</td><td>7</td></tr><tr><td>4.8</td><td>5</td><td>7</td></tr><tr><td>6.0</td><td>5</td><td>7</td></tr><tr><td>6.6</td><td>5</td><td>7</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></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 18 [V]	Input Volt. 36 [V]	0.0	5	7	1.2	5	7	2.4	5	7	3.6	5	7	4.8	5	7	6.0	5	7	6.6	5	7	--	-	-	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple Voltage [mV]																																								
	Input Volt. 18 [V]	Input Volt. 36 [V]																																							
0.0	5	7																																							
1.2	5	7																																							
2.4	5	7																																							
3.6	5	7																																							
4.8	5	7																																							
6.0	5	7																																							
6.6	5	7																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
<p>Ripple Voltage is shown as p-p in the figure below.</p> <p>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	MGS302405		
Item	Ripple-Noise	Temperature	25°C
		Testing Circuitry	Figure B
Object	+5V6A		
1.Graph		2.Values	
<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div> <div><div></div><div></div></div>			



Model	MGS302405																																																						
Item	Ambient Temperature Drift	Testing Circuitry    Figure A																																																					
Object	+5V6A																																																						
1.Graph		2.Values																																																					
<div><div>—△—    Input Volt.    18V</div><div>---□---    Input Volt.    24V</div><div>-·-○-·-    Input Volt.    36V</div></div> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 18[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th></tr><tr><td>-60</td><td>5.019</td><td>5.020</td><td>5.021</td></tr><tr><td>-40</td><td>5.031</td><td>5.032</td><td>5.032</td></tr><tr><td>-20</td><td>5.040</td><td>5.040</td><td>5.041</td></tr><tr><td>0</td><td>5.047</td><td>5.047</td><td>5.047</td></tr><tr><td>25</td><td>5.052</td><td>5.052</td><td>5.052</td></tr><tr><td>60</td><td>5.053</td><td>5.053</td><td>5.052</td></tr><tr><td>65</td><td>5.053</td><td>5.052</td><td>5.052</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></table>			Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	-60	5.019	5.020	5.021	-40	5.031	5.032	5.032	-20	5.040	5.040	5.041	0	5.047	5.047	5.047	25	5.052	5.052	5.052	60	5.053	5.053	5.052	65	5.053	5.052	5.052	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																						
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																				
-60	5.019	5.020	5.021																																																				
-40	5.031	5.032	5.032																																																				
-20	5.040	5.040	5.041																																																				
0	5.047	5.047	5.047																																																				
25	5.052	5.052	5.052																																																				
60	5.053	5.053	5.052																																																				
65	5.053	5.052	5.052																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				
--	-	-	-																																																				
Note: Slanted line shows the range of the rated ambient temperature.																																																							



Model		MGS302405	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+5V6A	

### 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 - 60°C

Input Voltage : 18 - 36V

Load Current : 0 - 6A

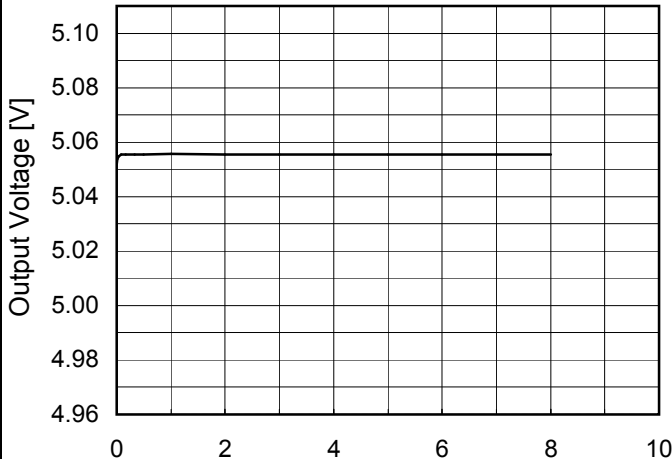
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

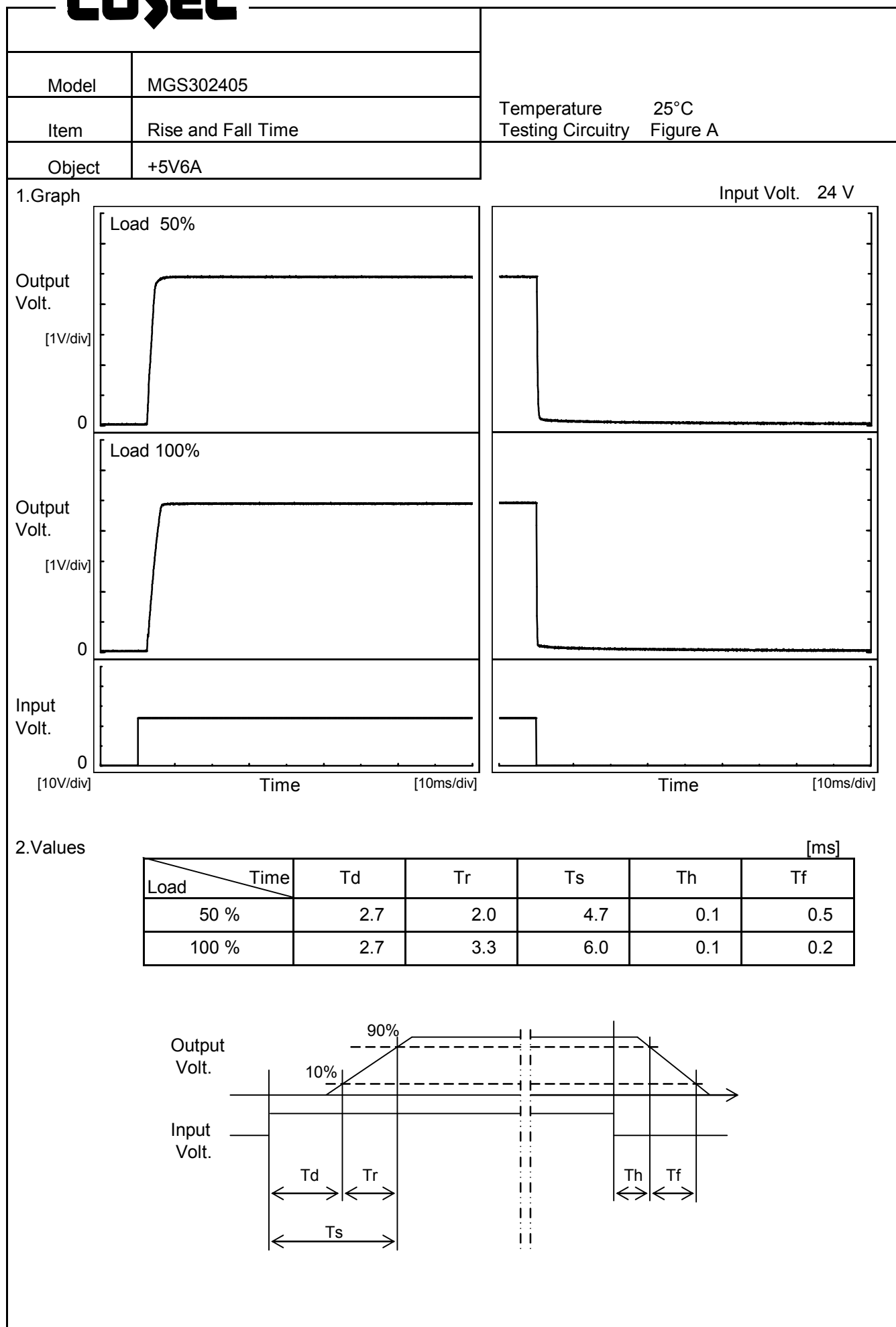
### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	60	18	0	5.056	±13	±0.3
Minimum Voltage	-40	18	6	5.031		



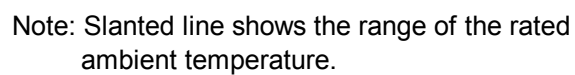
Model	MGS302405																								
Item	Time Lapse Drift	Temperature	25°C																						
		Testing Circuitry	Figure A																						
Object	+5V6A																								
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 24V</p><p>Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>5.052</td></tr><tr><td>0.5</td><td>5.056</td></tr><tr><td>1.0</td><td>5.056</td></tr><tr><td>2.0</td><td>5.056</td></tr><tr><td>3.0</td><td>5.056</td></tr><tr><td>4.0</td><td>5.056</td></tr><tr><td>5.0</td><td>5.056</td></tr><tr><td>6.0</td><td>5.056</td></tr><tr><td>7.0</td><td>5.055</td></tr><tr><td>8.0</td><td>5.055</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	5.052	0.5	5.056	1.0	5.056	2.0	5.056	3.0	5.056	4.0	5.056	5.0	5.056	6.0	5.056	7.0	5.055	8.0	5.055
Time since start [H]	Output Voltage [V]																								
0.0	5.052																								
0.5	5.056																								
1.0	5.056																								
2.0	5.056																								
3.0	5.056																								
4.0	5.056																								
5.0	5.056																								
6.0	5.056																								
7.0	5.055																								
8.0	5.055																								





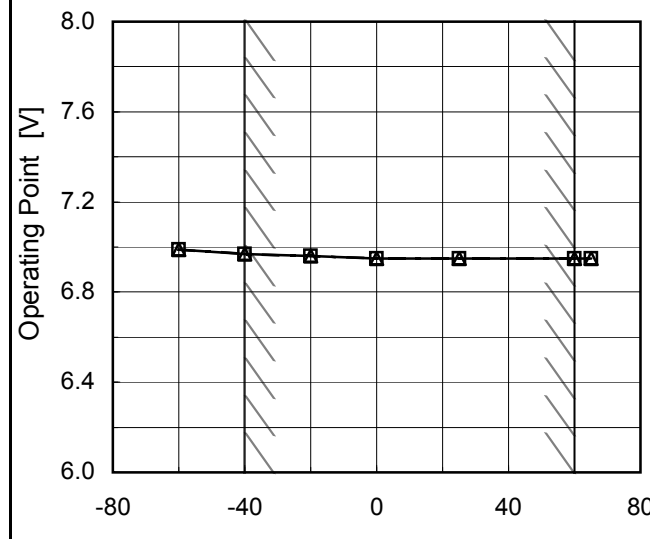
Testing Circuitry Figure A

## 2.Values



- 16 -

Model	MGS302405																																																									
Item	Overcurrent Protection	Temperature	25°C																																																							
Object	+5V6A	Testing Circuitry	Figure A																																																							
1.Graph		2.Values																																																								
<div><div><div>—△</div><div>—□</div><div>—○</div></div><div><div>Input Volt. 18V</div><div>Input Volt. 24V</div><div>Input Volt. 36V</div></div></div> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when overcurrent protection is activated.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 18[V]</th><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th></tr><tr><td>5</td><td>7.34</td><td>7.28</td><td>7.23</td></tr><tr><td>5</td><td>-</td><td>-</td><td>-</td></tr><tr><td>5</td><td>-</td><td>-</td><td>-</td></tr><tr><td>4</td><td>-</td><td>-</td><td>-</td></tr><tr><td>4</td><td>-</td><td>-</td><td>-</td></tr><tr><td>3</td><td>-</td><td>-</td><td>-</td></tr><tr><td>3</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2</td><td>-</td><td>-</td><td>-</td></tr><tr><td>1</td><td>-</td><td>-</td><td>-</td></tr><tr><td>1</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0</td><td>-</td><td>-</td><td>-</td></tr></table>		Output Voltage [V]	Load Current [A]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	5	7.34	7.28	7.23	5	-	-	-	5	-	-	-	4	-	-	-	4	-	-	-	3	-	-	-	3	-	-	-	2	-	-	-	2	-	-	-	1	-	-	-	1	-	-	-	0	-	-	-
Output Voltage [V]	Load Current [A]																																																									
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]																																																							
5	7.34	7.28	7.23																																																							
5	-	-	-																																																							
5	-	-	-																																																							
4	-	-	-																																																							
4	-	-	-																																																							
3	-	-	-																																																							
3	-	-	-																																																							
2	-	-	-																																																							
2	-	-	-																																																							
1	-	-	-																																																							
1	-	-	-																																																							
0	-	-	-																																																							

Model	MGS302405																																								
Item	Overvoltage Protection	Testing Circuitry    Figure A																																							
Object	+5V6A																																								
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt.    24V</div></div><div><div>---□---</div><div>Input Volt.    36V</div></div></div>  <p>Operating Point [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 0%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Operating Point [V]</th></tr><tr><th>Input Volt. 24[V]</th><th>Input Volt. 36[V]</th></tr><tr><td>-60</td><td>6.99</td><td>6.99</td></tr><tr><td>-40</td><td>6.97</td><td>6.97</td></tr><tr><td>-20</td><td>6.96</td><td>6.96</td></tr><tr><td>0</td><td>6.95</td><td>6.95</td></tr><tr><td>25</td><td>6.95</td><td>6.95</td></tr><tr><td>60</td><td>6.95</td><td>6.95</td></tr><tr><td>65</td><td>6.95</td><td>6.95</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></table>		Ambient Temperature [°C]	Operating Point [V]		Input Volt. 24[V]	Input Volt. 36[V]	-60	6.99	6.99	-40	6.97	6.97	-20	6.96	6.96	0	6.95	6.95	25	6.95	6.95	60	6.95	6.95	65	6.95	6.95	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Operating Point [V]																																								
	Input Volt. 24[V]	Input Volt. 36[V]																																							
-60	6.99	6.99																																							
-40	6.97	6.97																																							
-20	6.96	6.96																																							
0	6.95	6.95																																							
25	6.95	6.95																																							
60	6.95	6.95																																							
65	6.95	6.95																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							

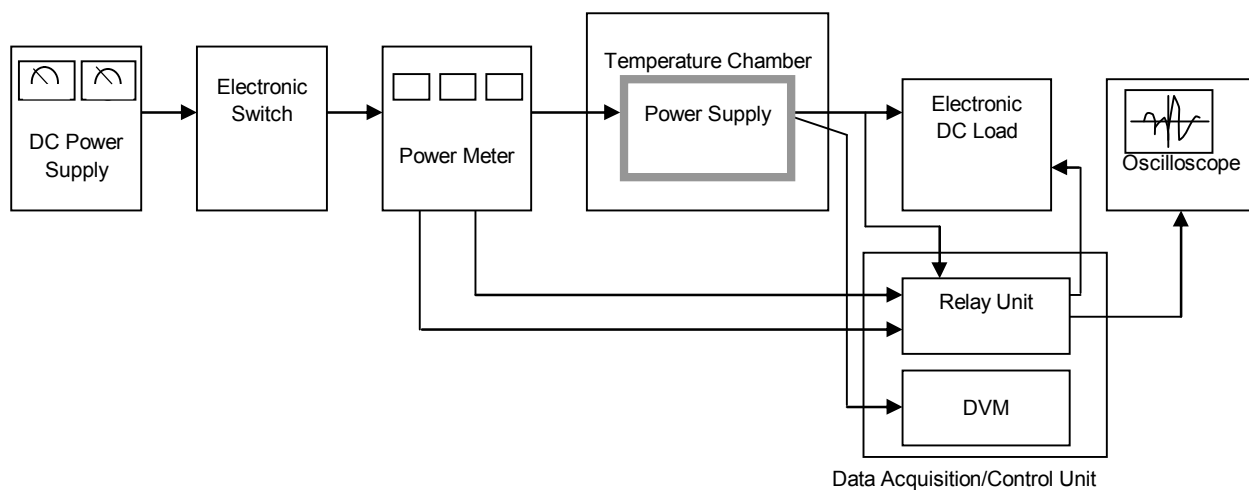


Figure A

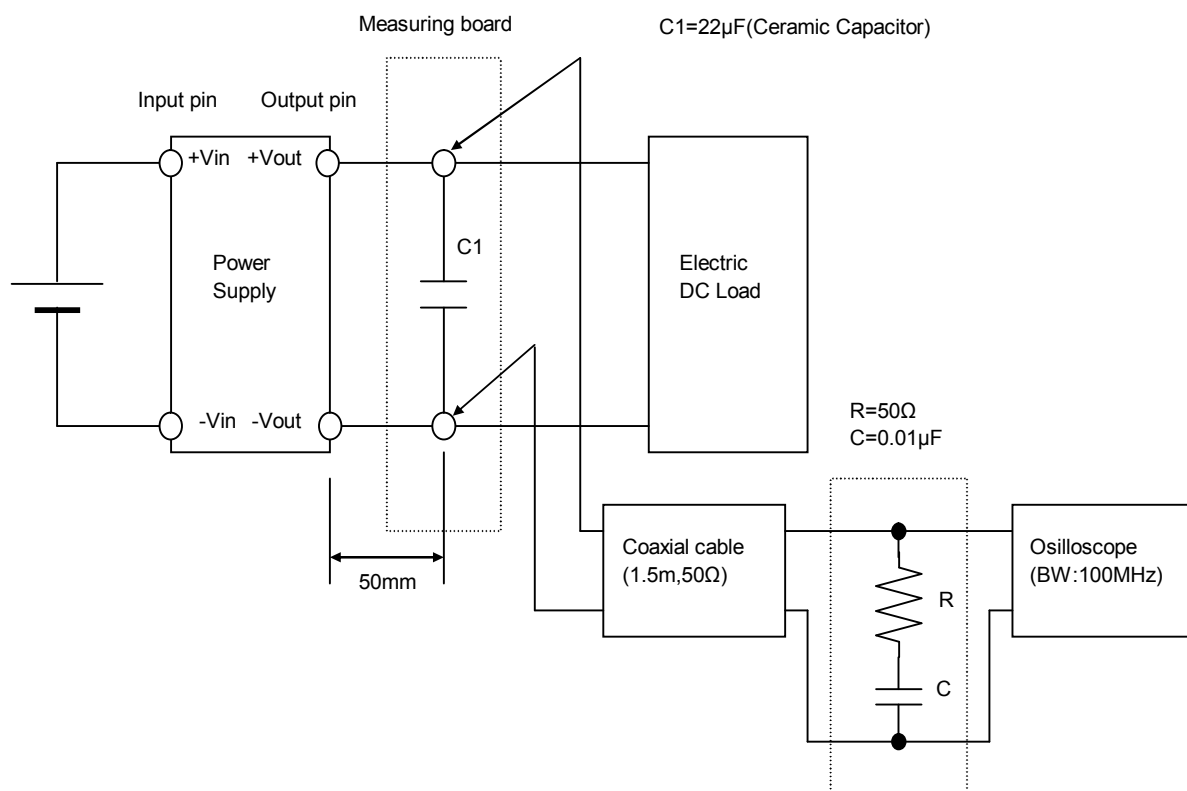


Figure B (Ripple and Ripple noise Characteristic)