

TEST DATA OF CHS3804810

Regulated DC Power Supply
March 30, 2017

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Junichi Hatagishi Design Manager

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Hiroyuki Shoji 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)

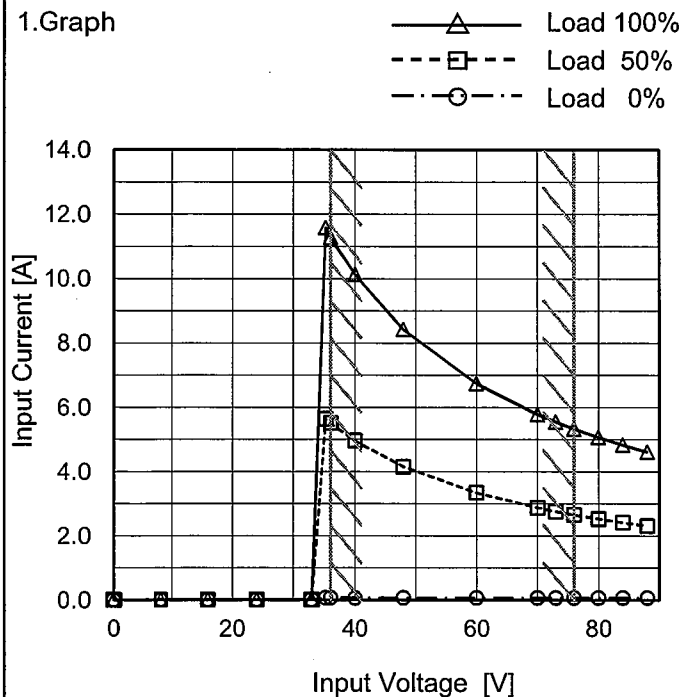
Model CHS3804810

Item Input Current (by Input Voltage)

Object

Temperature 25°C
Testing Circuitry Figure A

1.Graph

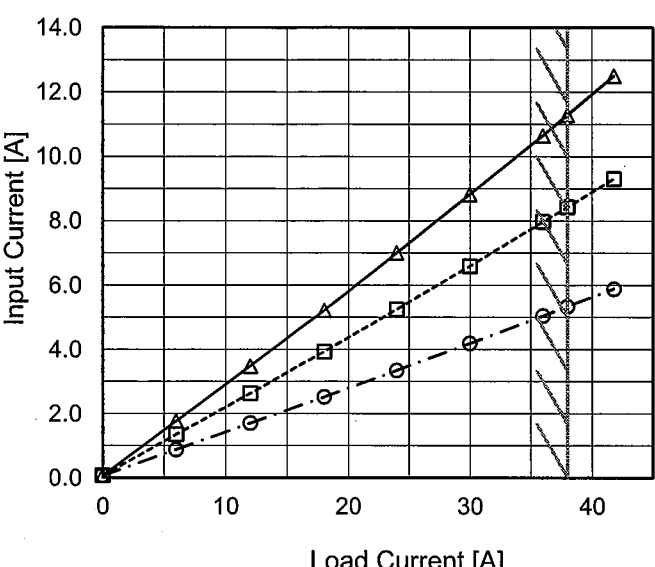


Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
8.0	0.008	0.008	0.008
16.0	0.009	0.009	0.009
24.0	0.009	0.009	0.009
33.0	0.010	0.010	0.010
35.2	0.069	5.644	11.588
36.0	0.069	5.514	11.287
40.0	0.068	4.964	10.142
48.0	0.069	4.152	8.426
60.0	0.072	3.343	6.744
70.0	0.072	2.878	5.787
73.0	0.072	2.763	5.558
76.0	0.072	2.658	5.339
80.0	0.072	2.533	5.074
84.0	0.073	2.418	4.834
88.0	0.073	2.312	4.618
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Model		CHS3804810		Temperature		25°C																																																				
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Model		CHS3804810	
Item		Efficiency (by Input Voltage)	
Object			
1.Graph		2.Values	

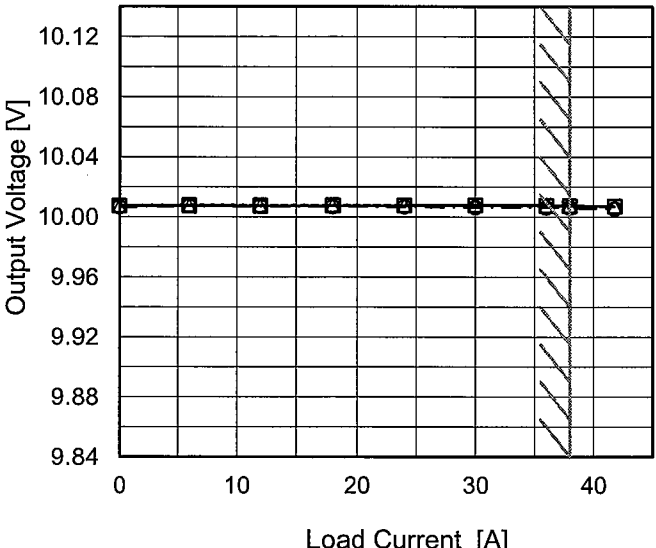


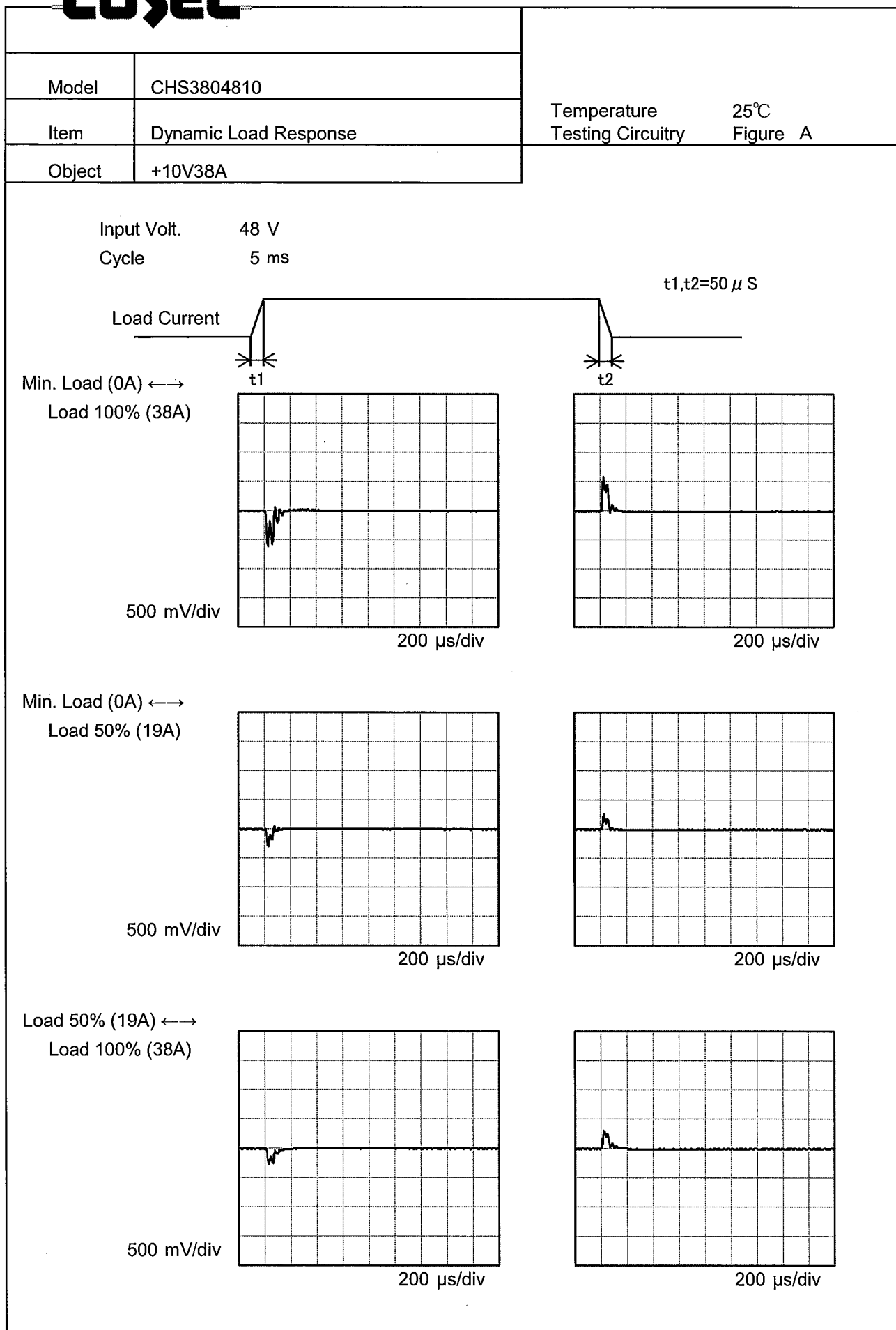
Model	CHS3804810																																																					
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Object		Testing Circuitry	Figure A																																																			
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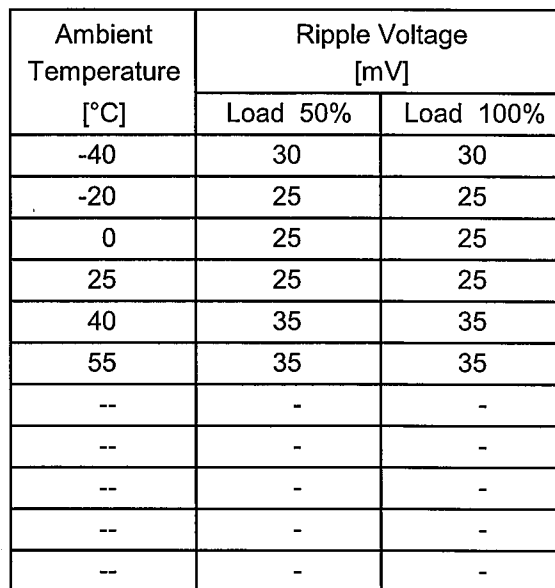


COSEL

Model		CHS3804810		Temperature 25°C	
Item		Ripple Voltage (by Load Current)		Testing Circuitry Figure B	
Object		+10V38A			
1.Graph				2.Values	
<div><div><div>—△—</div><div>Input Volt.</div><div>36V</div></div><div><div>---○---</div><div>Input Volt.</div><div>76V</div></div></div> <div><div><div>Ripple Voltage [mV]</div><div><div><div>200</div><div>180</div><div>160</div><div>140</div><div>120</div><div>100</div><div>80</div><div>60</div><div>40</div><div>20</div><div>0</div></div><div><div>0</div><div>10</div><div>20</div><div>30</div><div>40</div></div></div></div><div><div>Load Current [A]</div><div><div><div>0.0</div><div>6.0</div><div>12.0</div><div>18.0</div><div>24.0</div><div>30.0</div><div>36.0</div><div>38.0</div><div>41.8</div><div>--</div><div>--</div></div><div><div>15</div><div>15</div><div>15</div><div>15</div><div>15</div><div>15</div><div>15</div><div>15</div><div>15</div><div>-</div><div>-</div></div><div><div>45</div><div>45</div><div>45</div><div>45</div><div>45</div><div>45</div><div>45</div><div>45</div><div>45</div><div>-</div><div>-</div></div></div></div></div> <div><div>Measured by 100 MHz Oscilloscope.</div><div>Ripple Voltage is shown as p-p in the figure below.</div><div>Note: Slanted line shows the range of the rated load current.</div></div> <div><div><div>Ripple [mVp-p]</div><div><div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div></div></div></div><div><div>Fig.Complex Ripple Wave Form</div></div></div>					

Testing Circuitry Figure B

2.Values



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

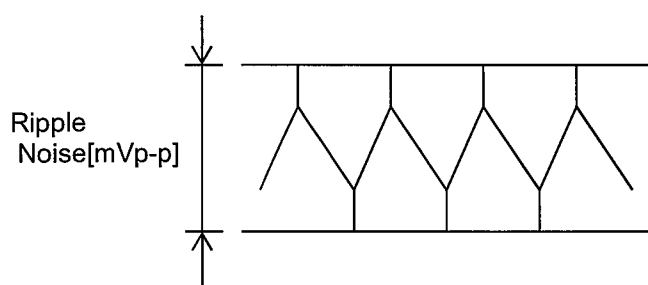


Fig.Complex Ripple Noise Wave Form

Model		CHS3804810																																																				
Item		Ambient Temperature Drift																																																				
Object		+10V38A																																																				
1.Graph		2.Values																																																				
<div><div><div><div>—△—</div><div>Input Volt.</div><div>36V</div></div><div><div>---□---</div><div>Input Volt.</div><div>48V</div></div><div><div>---○---</div><div>Input Volt.</div><div>76V</div></div></div><div><div>Output Voltage [V]</div><div><div>10.12</div><div>10.08</div><div>10.04</div><div>10.00</div><div>9.96</div><div>9.92</div><div>9.88</div><div>9.84</div></div><div><div>-60</div><div>-20</div><div>20</div><div>60</div></div><div>Ambient Temperature [°C]</div><div>Load 100%</div></div></div>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 36[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 76[V]</th></tr><tr><td>-40</td><td>10.032</td><td>10.029</td><td>10.026</td></tr><tr><td>-20</td><td>10.024</td><td>10.022</td><td>10.020</td></tr><tr><td>0</td><td>10.017</td><td>10.015</td><td>10.012</td></tr><tr><td>25</td><td>10.008</td><td>10.007</td><td>10.006</td></tr><tr><td>40</td><td>10.005</td><td>10.005</td><td>10.003</td></tr><tr><td>55</td><td>10.002</td><td>10.003</td><td>10.003</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><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	-40	10.032	10.029	10.026	-20	10.024	10.022	10.020	0	10.017	10.015	10.012	25	10.008	10.007	10.006	40	10.005	10.005	10.003	55	10.002	10.003	10.003	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated ambient temperature.																																																						



		Testing Circuitry Figure A
Model	CHS3804810	
Item	Output Voltage Accuracy	
Object	+10V38A	

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 - 55°C

Input Voltage : 36 - 76V

Load Current : 0 - 38A

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

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-40	36	38	10.032	±15	±0.2
Minimum Voltage	55	36	38	10.002		

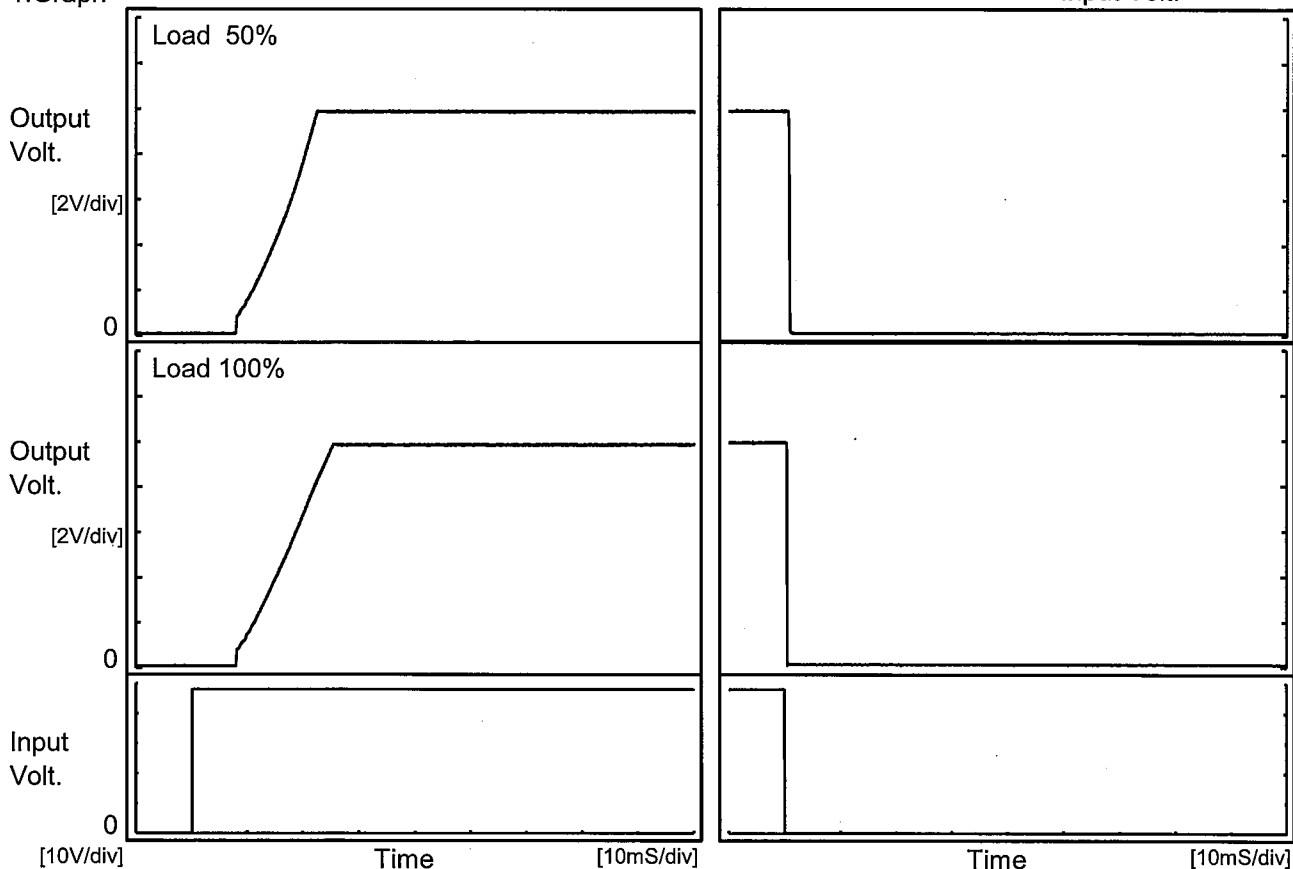


Model	CHS3804810		
Item	Time Lapse Drift	Temperature	25°C
Object	+10V38A	Testing Circuitry	Figure A
1.Graph		2.Values	
<div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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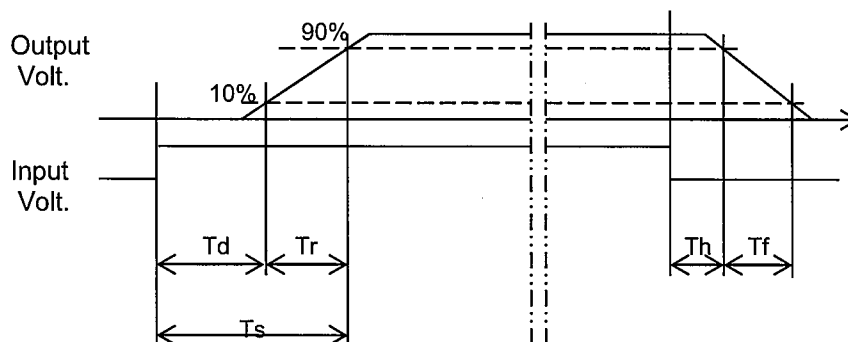
Model	CHS3804810	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+10V38A		

1.Graph



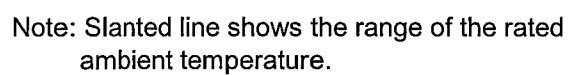
2.Values

Load	Time	Td	Tr	Ts	Th	Tf
50 %		8.7	13.0	21.7	0.8	0.1
100 %		8.9	15.0	23.9	0.4	0.0



Testing Circuitry Figure A

2.Values



Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	32.8	32.8
-20	32.8	32.8
0	32.8	32.9
25	33.0	33.0
40	33.0	33.2
55	32.9	33.4
--	-	-
--	-	-
--	-	-
--	-	-
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Model	CHS3804810																																																																		
Item	Overcurrent Protection		Temperature	25°C																																																															
Object	+10V38A		Testing Circuitry	Figure A																																																															
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<div><div><div></div><div>Input Volt.</div><div>36V</div></div><div><div></div><div>Input Volt.</div><div>48V</div></div><div><div></div><div>Input Volt.</div><div>76V</div></div></div> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load Current [A]</th></tr><tr><th>Input Volt. 36[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 76[V]</th></tr><tr><td>9.5</td><td>49.73</td><td>49.79</td><td>49.77</td></tr><tr><td>9.0</td><td>50.09</td><td>49.94</td><td>49.77</td></tr><tr><td>8.0</td><td>49.79</td><td>50.17</td><td>50.37</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><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><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>			Output Voltage [V]	Load Current [A]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	9.5	49.73	49.79	49.77	9.0	50.09	49.94	49.77	8.0	49.79	50.17	50.37	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model		CHS3804810
Item		Overvoltage Protection
Object		+10V38A

1.Graph

△

Input Volt. 48V

□

Input Volt. 76V

Operating Point [V]

Ambient Temperature [°C]

Load 0%

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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 48[V]	Input Volt. 76[V]
-40	12.66	12.68
-20	12.68	12.70
0	12.70	12.74
25	12.72	12.76
40	12.74	12.78
55	12.76	12.80
60	12.78	12.80
--	-	-
--	-	-
--	-	-
--	-	-

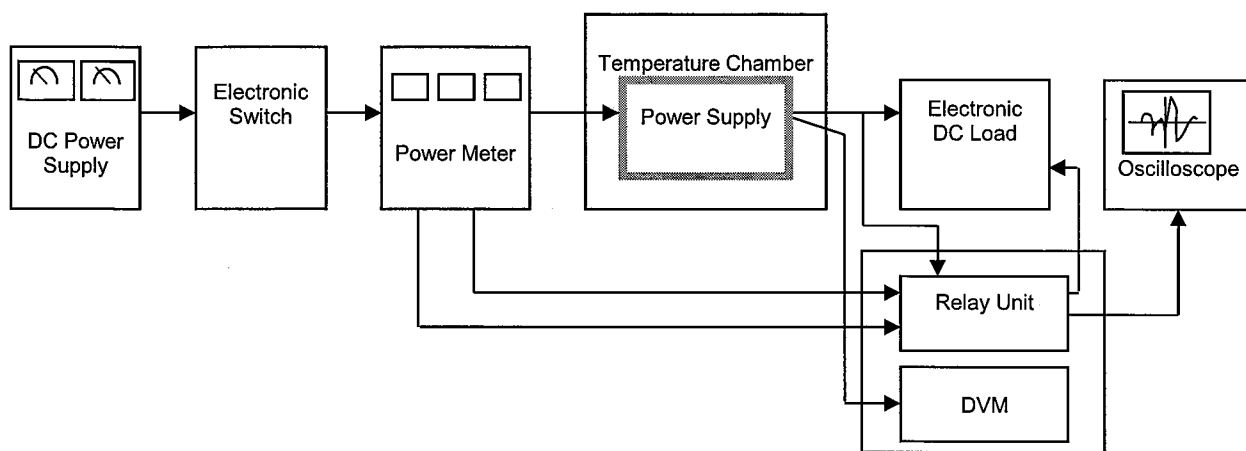


Figure A

Data Acquisition/Control Unit

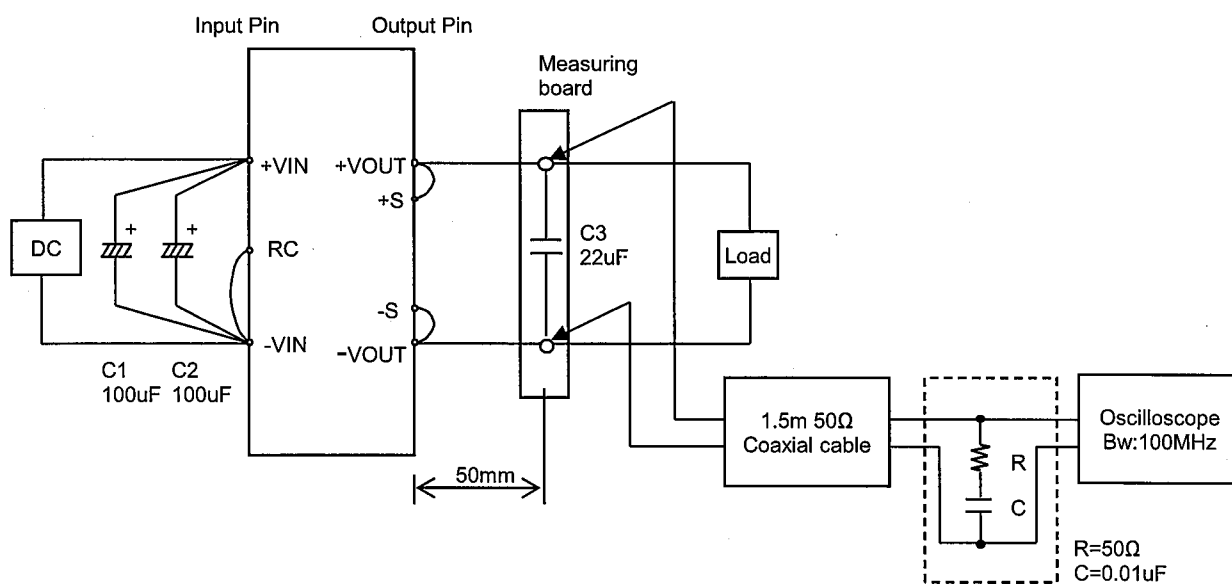


Figure B