



TEST DATA OF CHS604812

Regulated DC Power Supply
September 25, 2014

Approved by :

Yoshimichi Hirokawa

Yoshimichi Hirokawa

Design Manager

Prepared by :

Masashi Ueda

Masashi Ueda

Design Engineer

COSEL CO.,LTD.

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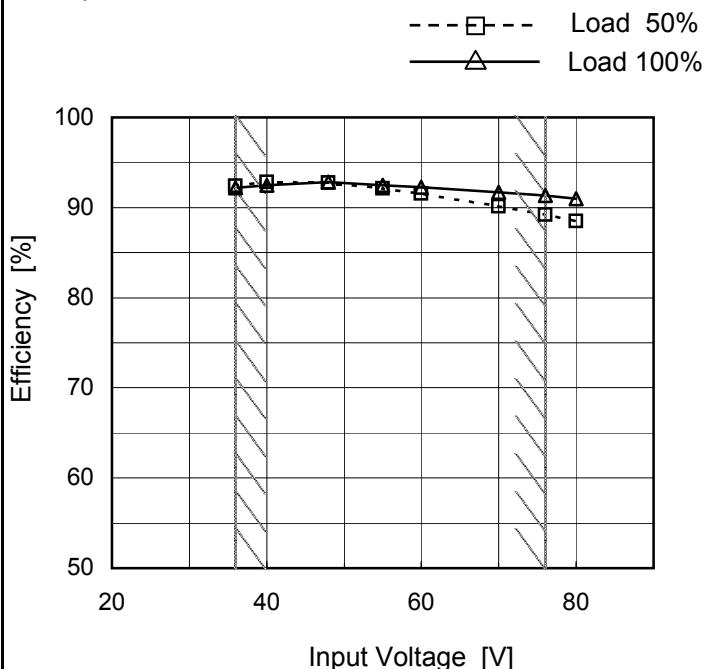
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Model	CHS604812	Temperature	25°C
Item	Efficiency (by Input Voltage)	Testing Circuitry	Figure A
Object	—		

1.Graph



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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
34	-	-
36	92.4	92.2
40	92.8	92.5
48	92.8	92.8
55	92.1	92.4
60	91.5	92.2
70	90.1	91.7
76	89.2	91.3
80	88.5	91.0

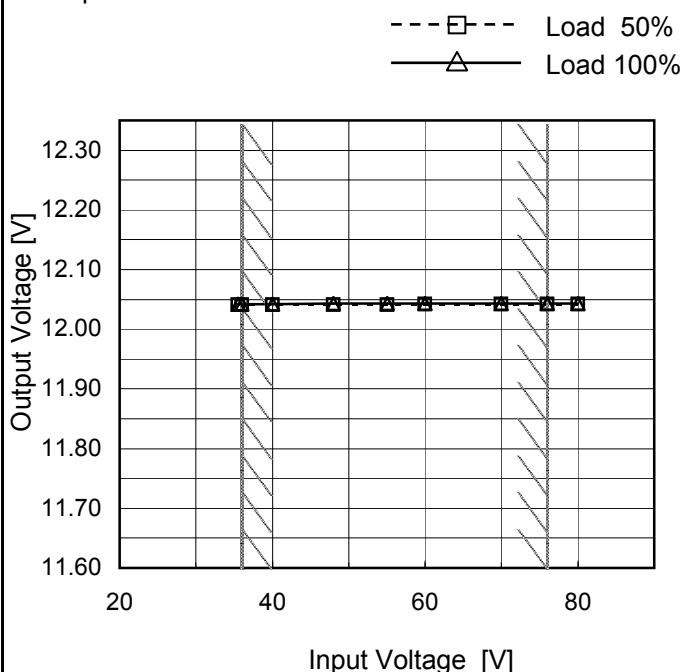
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<p>The graph shows efficiency increasing from approximately 85% at 1A to 93% at 6A. The 36V curve is the highest, followed by 48V, and then 76V.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 36V [%]</th> <th>Input Volt. 48V [%]</th> <th>Input Volt. 76V [%]</th> </tr> </thead> <tbody> <tr><td>1.0</td><td>85.7</td><td>87.1</td><td>79.4</td></tr> <tr><td>2.0</td><td>90.9</td><td>91.2</td><td>86.2</td></tr> <tr><td>3.0</td><td>92.4</td><td>92.8</td><td>89.2</td></tr> <tr><td>4.0</td><td>92.8</td><td>93.1</td><td>90.6</td></tr> <tr><td>5.0</td><td>92.6</td><td>93.1</td><td>91.2</td></tr> <tr><td>6.0</td><td>92.2</td><td>92.8</td><td>91.3</td></tr> <tr><td>6.6</td><td>91.8</td><td>92.5</td><td>91.3</td></tr> </tbody> </table>		Load Current [A]	Input Volt. 36V [%]	Input Volt. 48V [%]	Input Volt. 76V [%]	1.0	85.7	87.1	79.4	2.0	90.9	91.2	86.2	3.0	92.4	92.8	89.2	4.0	92.8	93.1	90.6	5.0	92.6	93.1	91.2	6.0	92.2	92.8	91.3	6.6	91.8	92.5	91.3	<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Efficiency [%]</th> </tr> <tr> <th>Input Volt. 36[V]</th> <th>Input Volt. 48[V]</th> <th>Input Volt. 76[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>1.0</td><td>85.7</td><td>87.1</td><td>79.4</td></tr> <tr><td>2.0</td><td>90.9</td><td>91.2</td><td>86.2</td></tr> <tr><td>3.0</td><td>92.4</td><td>92.8</td><td>89.2</td></tr> <tr><td>4.0</td><td>92.8</td><td>93.1</td><td>90.6</td></tr> <tr><td>5.0</td><td>92.6</td><td>93.1</td><td>91.2</td></tr> <tr><td>6.0</td><td>92.2</td><td>92.8</td><td>91.3</td></tr> <tr><td>6.6</td><td>91.8</td><td>92.5</td><td>91.3</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]	Efficiency [%]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	-	-	-	1.0	85.7	87.1	79.4	2.0	90.9	91.2	86.2	3.0	92.4	92.8	89.2	4.0	92.8	93.1	90.6	5.0	92.6	93.1	91.2	6.0	92.2	92.8	91.3	6.6	91.8	92.5	91.3	--	-	-	-	--	-	-	-	--	-	-	-
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Note: Slanted line shows the range of the rated load current.

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Item	Line Regulation
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
35.5	12.041	12.042
36.0	12.041	12.042
40.0	12.041	12.042
48.0	12.041	12.043
55.0	12.041	12.043
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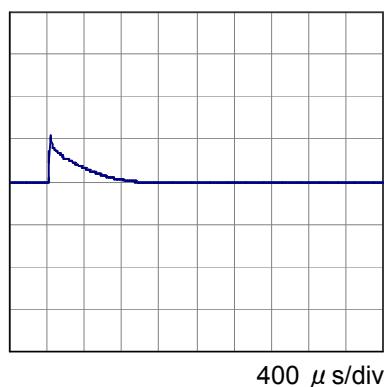
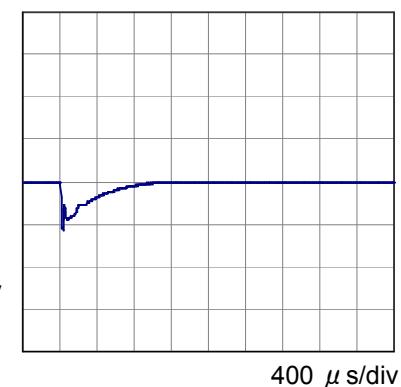
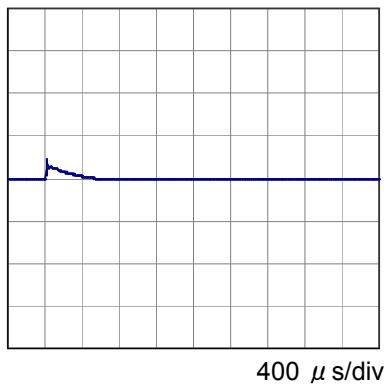
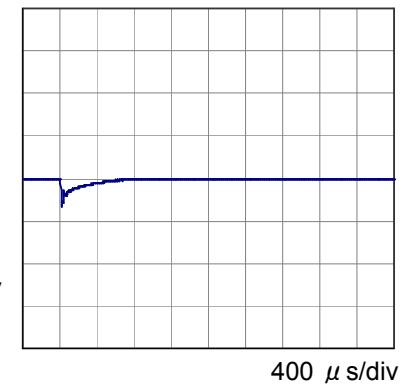
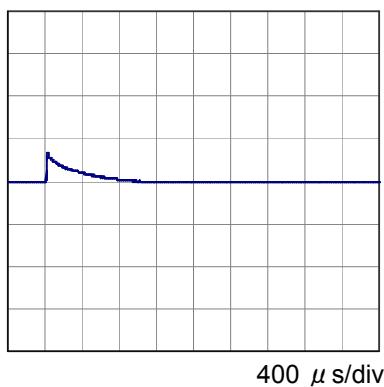
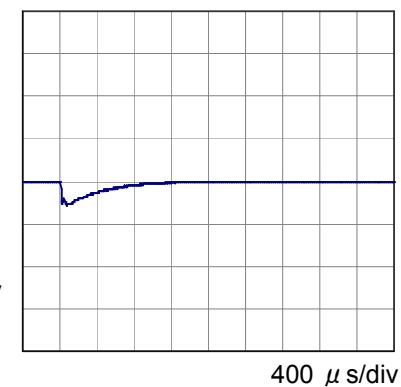
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Note: Slanted line shows the range of the rated load current.

COSEL

Model	CHS604812
Item	Dynamic Load Response
Object	+12V6A

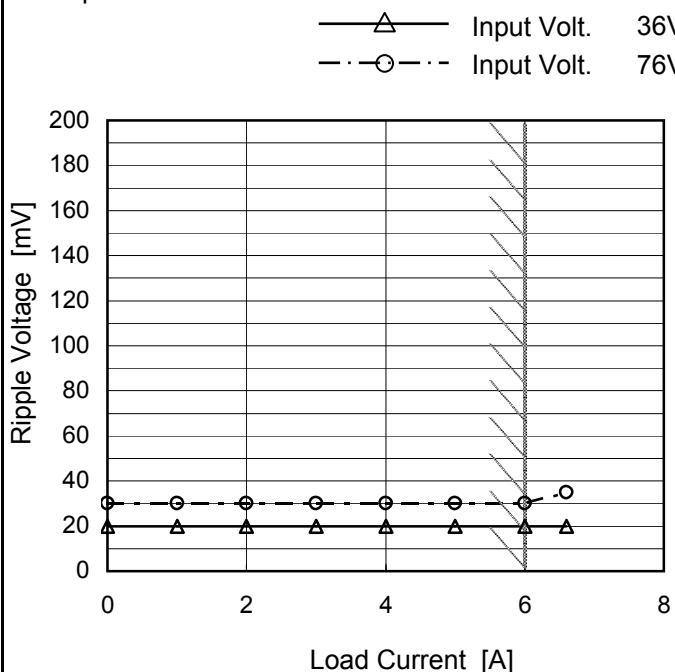
Temperature 25°C
Testing Circuitry Figure AInput Volt. 48 V
Cycle 10 msMin. Load (0A) →
Load 100% (6A)Min. Load (0A) →
Load 50% (3A)Load 50% (3A) →
Load 100% (6A)

COSEL

Model	CHS604812
Item	Ripple Voltage (by Load Current)
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure B

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	20	30
1.0	20	30
2.0	20	30
3.0	20	30
4.0	20	30
5.0	20	30
6.0	20	30
6.6	20	35
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.

Ripple Voltage is shown as p-p in the figure below.

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

Ripple [mVp-p]

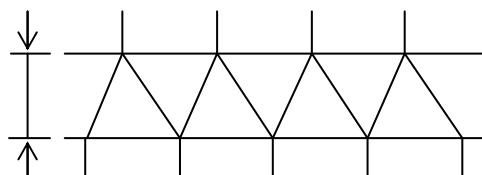
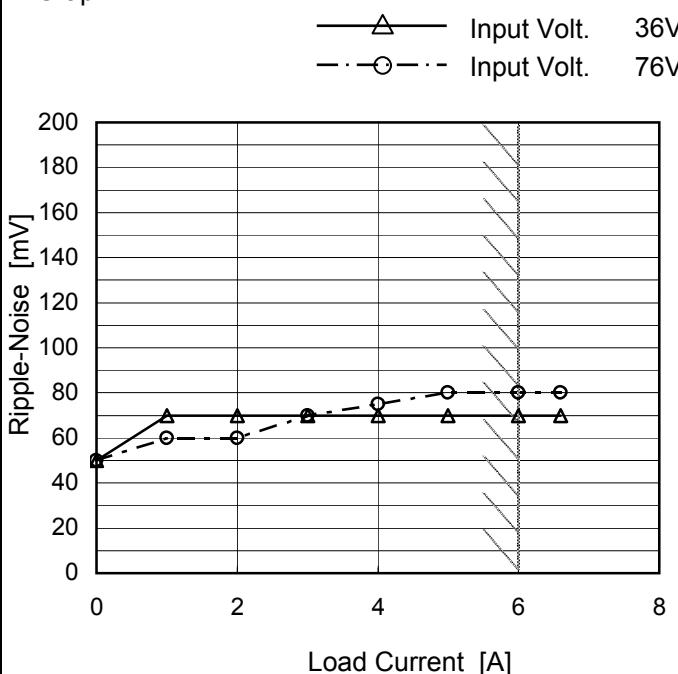


Fig.Complex Ripple Wave Form

Model	CHS604812	Temperature Testing Circuitry 25°C Figure B
Item	Ripple-Noise	
Object	+12V6A	

1. Graph



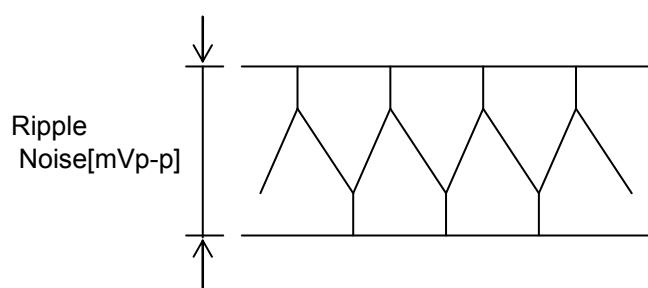
Measured by 100 MHz Oscilloscope.

Ripple-Noise is shown as p-p in the figure below.

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

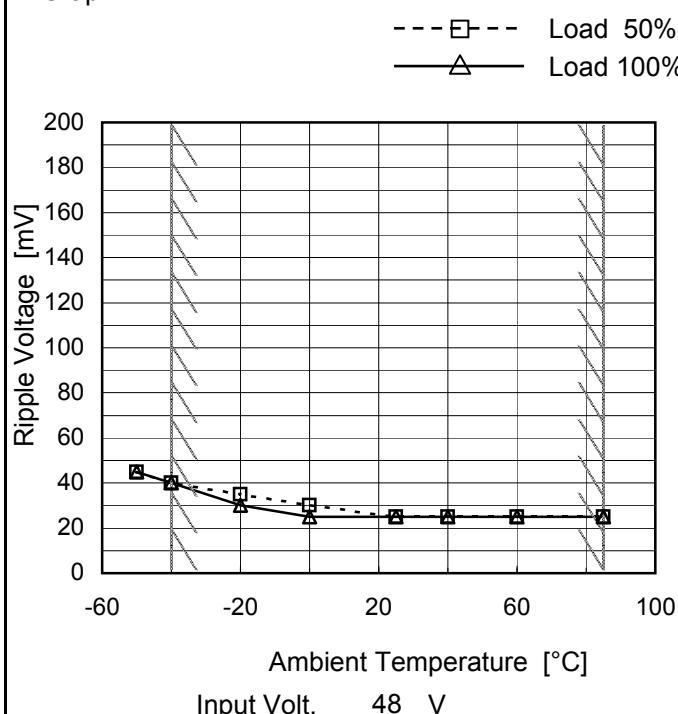
2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	50	50
1.0	70	60
2.0	70	60
3.0	70	70
4.0	70	75
5.0	70	80
6.0	70	80
6.6	70	80
--	-	-
--	-	-
--	-	-



Model	CHS604812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V6A

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%
-50	45	45
-40	40	40
-20	35	30
0	30	25
25	25	25
40	25	25
60	25	25
85	25	25
--	-	-
--	-	-
--	-	-

Ripple [mVp-p]

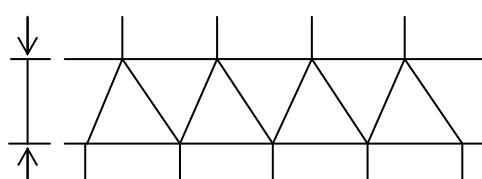


Fig.Complex Ripple Wave Form

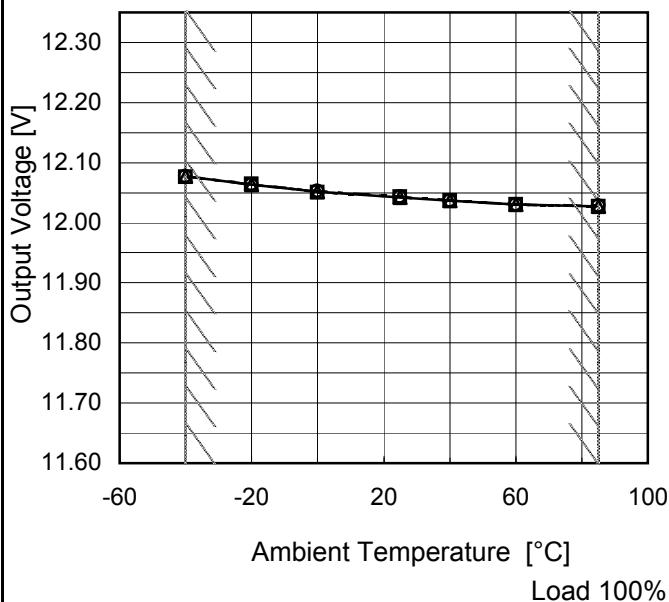
Model CHS604812

Item Ambient Temperature Drift

Object +12V6A

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]
-40	12.077	12.076	12.078
-20	12.064	12.064	12.063
0	12.051	12.051	12.052
25	12.042	12.043	12.043
40	12.037	12.037	12.037
60	12.030	12.030	12.031
85	12.027	12.027	12.028
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model	CHS604812	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V6A	

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 - 6A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

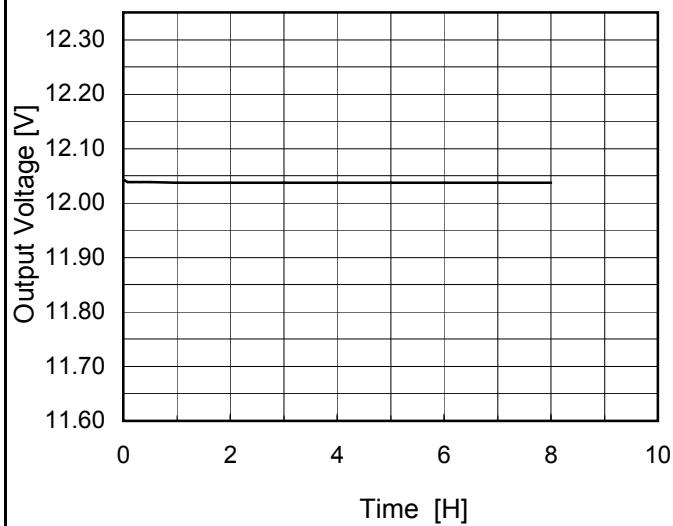
$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-40	76	6	12.078	±27	±0.2
Minimum Voltage	85	36	0	12.025		

Model	CHS604812
Item	Time Lapse Drift
Object	+12V6A

1.Graph



2.Values

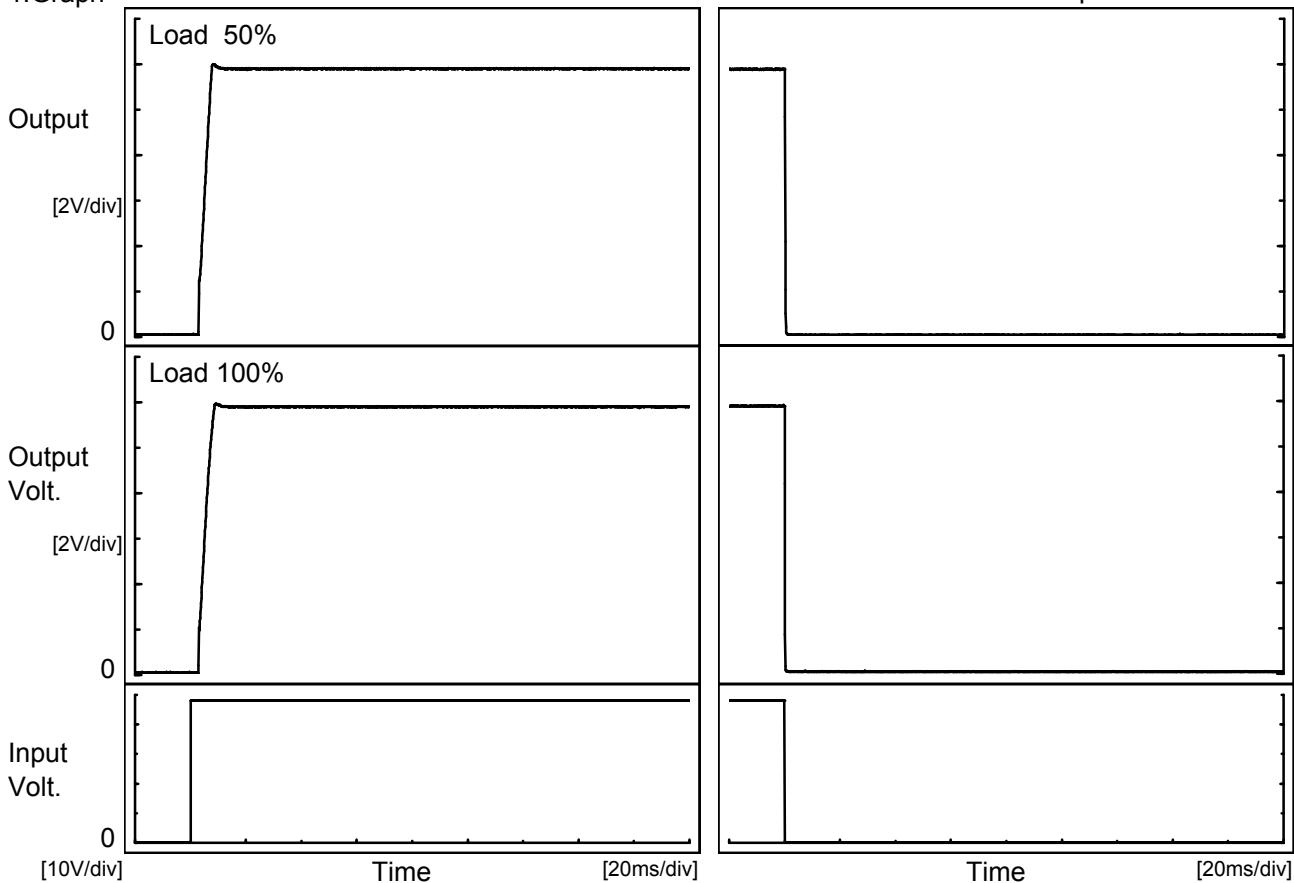
Time since start [H]	Output Voltage [V]
0.0	12.043
0.5	12.038
1.0	12.037
2.0	12.037
3.0	12.037
4.0	12.037
5.0	12.037
6.0	12.037
7.0	12.037
8.0	12.037

COSEL

Model	CHS604812
Item	Rise and Fall Time
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure A

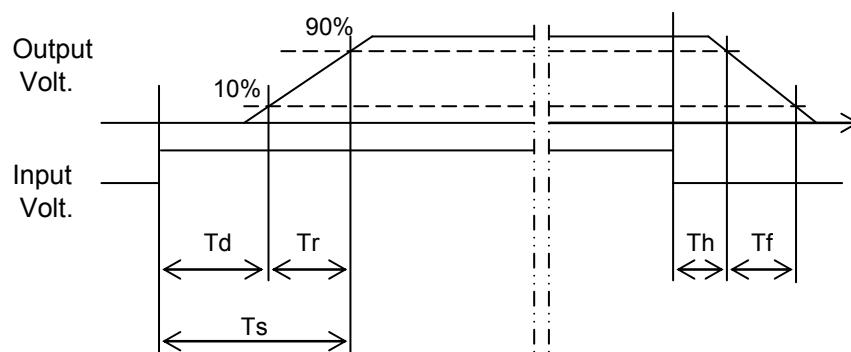
1. Graph



2. Values

[ms]

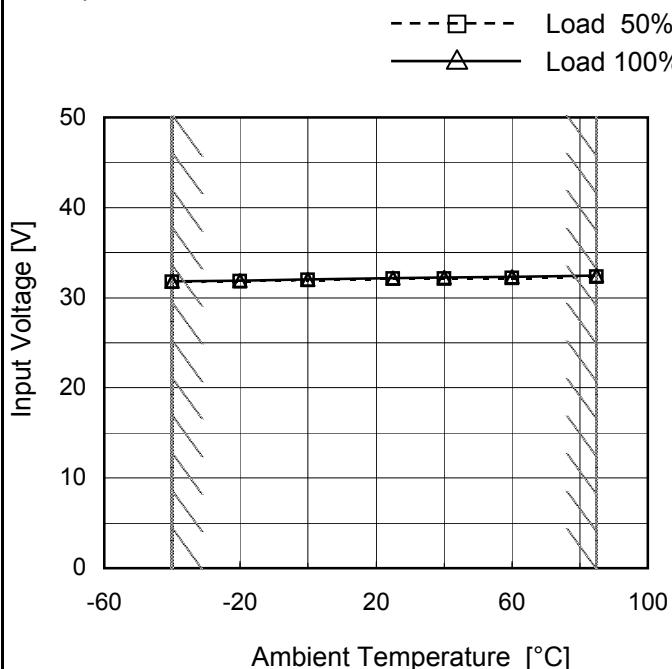
Load	Time	Td	Tr	Ts	Th	Tf
50 %		3.0	4.2	7.2	0.0	0.3
100 %		3.0	4.8	7.8	0.0	0.2



Model	CHS604812
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V6A

Testing Circuitry Figure A

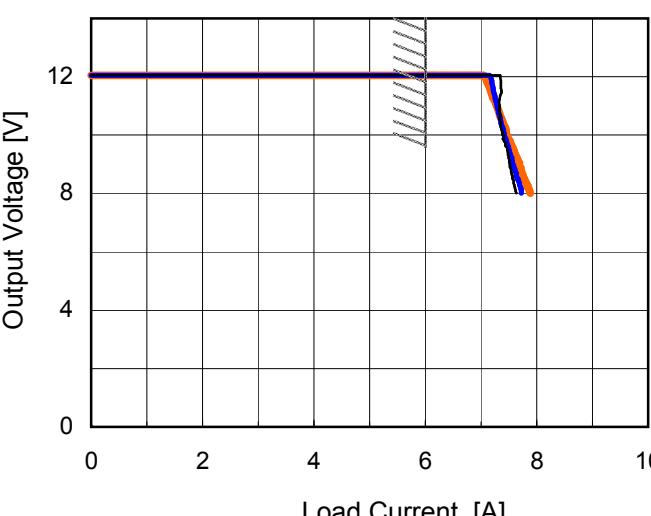
1. Graph



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

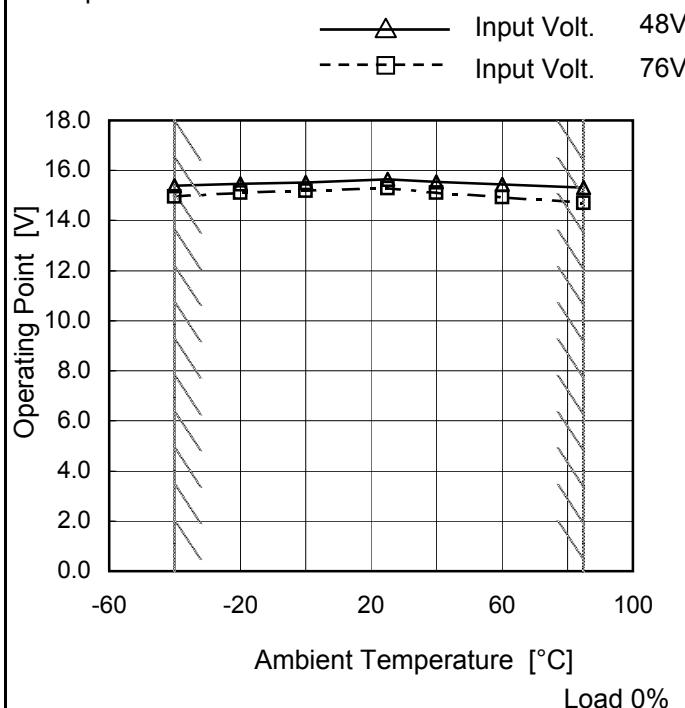
2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	31.8	31.9
-20	31.9	32.0
0	32.0	32.1
25	32.1	32.2
40	32.2	32.3
60	32.2	32.3
85	32.4	32.5
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--	-	-
--	-	-

Model	CHS604812	Temperature Testing Circuitry 25°C Figure A																																																													
Item	Overcurrent Protection																																																														
Object	+12V6A																																																														
1.Graph	<p>— Input Volt. 36V — Input Volt. 48V — Input Volt. 76V</p>  <p>Note: Slanted line shows the range of the rated load current.</p>	2.Values																																																													
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Model	CHS604812
Item	Oversupply Protection
Object	+12V6A

1. Graph



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

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 48[V]	Input Volt. 76[V]
-40	15.38	14.96
-20	15.48	15.11
0	15.52	15.20
25	15.65	15.30
40	15.55	15.10
60	15.44	14.92
85	15.32	14.70
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--	-	-
--	-	-
--	-	-

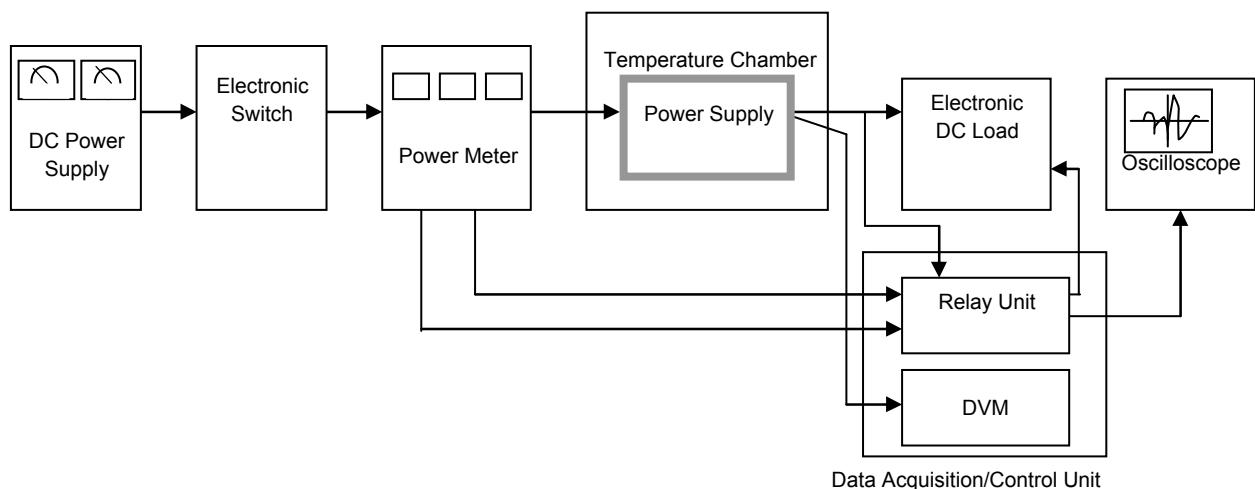


Figure A

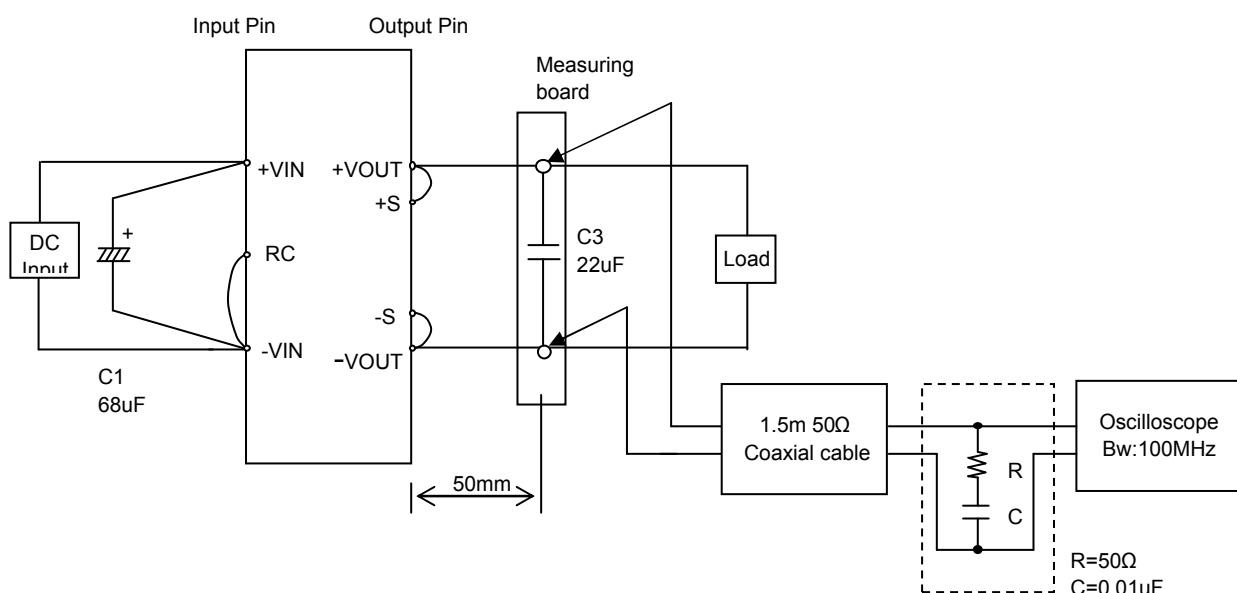


Figure B