

# TEST DATA OF CHS3804812

Regulated DC Power Supply  
March 30, 2017

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Junichi Hatagishi Design Manager

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**COSEL CO.,LTD.**

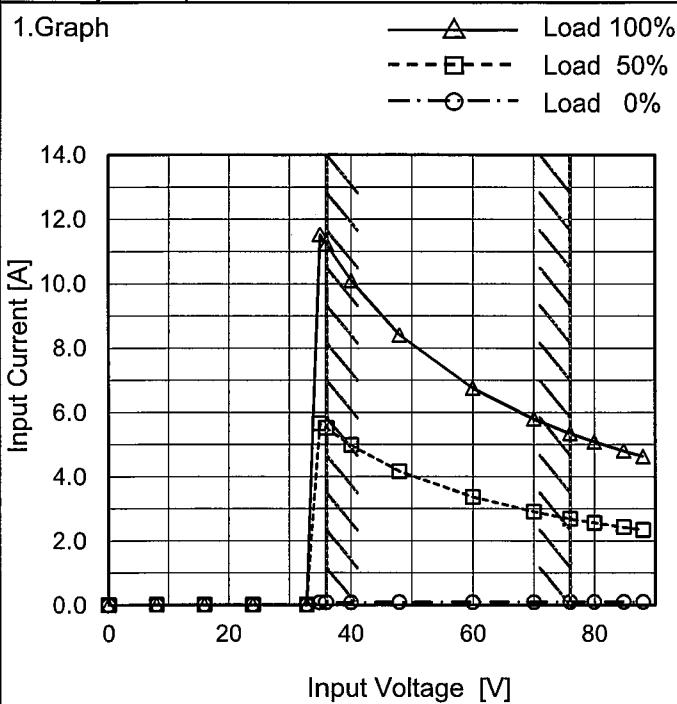
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Model	CHS3804812
Item	Input Current (by Input Voltage)
Object	_____



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

Temperature 25°C  
Testing Circuitry Figure A

## 2. Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
8.0	0.009	0.009	0.009
16.0	0.009	0.009	0.009
24.0	0.009	0.010	0.009
33.0	0.010	0.010	0.010
35.1	0.082	5.652	11.530
36.0	0.081	5.514	11.234
40.0	0.083	4.983	10.101
48.0	0.089	4.165	8.410
60.0	0.094	3.366	6.757
70.0	0.097	2.908	5.802
76.0	0.099	2.689	5.351
80.0	0.100	2.563	5.090
84.8	0.100	2.428	4.806
88.0	0.100	2.345	4.631
--	-	-	-
--	-	-	-
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Model	CHS3804812	Temperature Testing Circuitry	25°C Figure A																																																			
Item	Input Current (by Load Current)																																																					
Object	_____																																																					
1.Graph	<p>—△— Input Volt. 36V        - - -□- - Input Volt. 48V        - - ○- - Input Volt. 76V</p>																																																					
2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Current [A]</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>0.081</td><td>0.089</td><td>0.099</td></tr> <tr> <td>4.0</td><td>1.434</td><td>1.102</td><td>0.740</td></tr> <tr> <td>8.0</td><td>2.782</td><td>2.117</td><td>1.383</td></tr> <tr> <td>12.0</td><td>4.139</td><td>3.142</td><td>2.036</td></tr> <tr> <td>16.0</td><td>5.514</td><td>4.165</td><td>2.689</td></tr> <tr> <td>20.0</td><td>6.916</td><td>5.212</td><td>3.353</td></tr> <tr> <td>25.0</td><td>8.692</td><td>6.524</td><td>4.183</td></tr> <tr> <td>30.0</td><td>10.524</td><td>7.885</td><td>5.025</td></tr> <tr> <td>32.0</td><td>11.234</td><td>8.410</td><td>5.351</td></tr> <tr> <td>35.2</td><td>12.440</td><td>9.276</td><td>5.917</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Input Current [A]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	0.081	0.089	0.099	4.0	1.434	1.102	0.740	8.0	2.782	2.117	1.383	12.0	4.139	3.142	2.036	16.0	5.514	4.165	2.689	20.0	6.916	5.212	3.353	25.0	8.692	6.524	4.183	30.0	10.524	7.885	5.025	32.0	11.234	8.410	5.351	35.2	12.440	9.276	5.917	--	-	-	-
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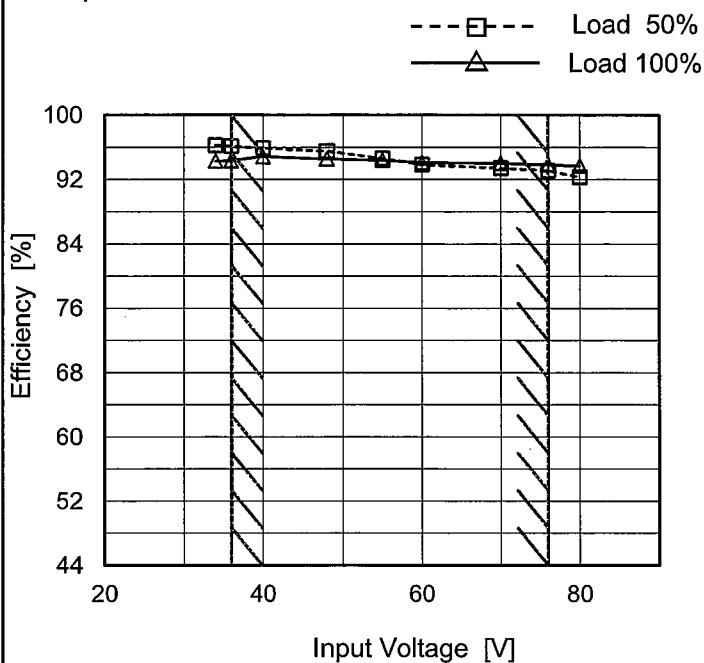
Model	CHS3804812	Temperature	25°C																																																			
Item	Input Power (by Load Current)	Testing Circuitry	Figure A																																																			
Object	—	—	—																																																			
1. Graph		2. Values																																																				
<p>The graph plots Input Power [W] on the Y-axis against Load Current [A] on the X-axis. Three curves are shown for Input Voltages of 36V, 48V, and 76V. The 36V curve starts at (0,0) and ends at approximately (35, 450). The 48V curve starts at (0,0) and ends at approximately (30, 400). The 76V curve starts at (0,0) and ends at approximately (25, 320). A vertical dashed line is drawn at approximately 32.5A, and a slanted dashed line extends from the origin through the 36V data points, indicating the rated load current range.</p>		<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Input Power [W]</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>2.9</td> <td>4.3</td> <td>7.5</td> </tr> <tr> <td>4.0</td> <td>51.6</td> <td>52.9</td> <td>56.2</td> </tr> <tr> <td>8.0</td> <td>100.2</td> <td>101.8</td> <td>105.1</td> </tr> <tr> <td>12.0</td> <td>149.1</td> <td>150.8</td> <td>154.7</td> </tr> <tr> <td>16.0</td> <td>198.7</td> <td>200.0</td> <td>204.5</td> </tr> <tr> <td>20.0</td> <td>249.3</td> <td>250.5</td> <td>254.9</td> </tr> <tr> <td>25.0</td> <td>313.1</td> <td>313.7</td> <td>317.7</td> </tr> <tr> <td>30.0</td> <td>378.8</td> <td>378.3</td> <td>381.9</td> </tr> <tr> <td>32.0</td> <td>405.1</td> <td>404.2</td> <td>407.1</td> </tr> <tr> <td>35.2</td> <td>448.3</td> <td>446.1</td> <td>449.3</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>		Load Current [A]	Input Power [W]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0.0	2.9	4.3	7.5	4.0	51.6	52.9	56.2	8.0	100.2	101.8	105.1	12.0	149.1	150.8	154.7	16.0	198.7	200.0	204.5	20.0	249.3	250.5	254.9	25.0	313.1	313.7	317.7	30.0	378.8	378.3	381.9	32.0	405.1	404.2	407.1	35.2	448.3	446.1	449.3	--	-	-	-
Load Current [A]	Input Power [W]																																																					
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Note: Slanted line shows the range of the rated load current.

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Model	CHS3804812
Item	Efficiency (by Input Voltage)
Object	—

## 1. Graph



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

Temperature 25°C  
Testing Circuitry Figure A

## 2. Values

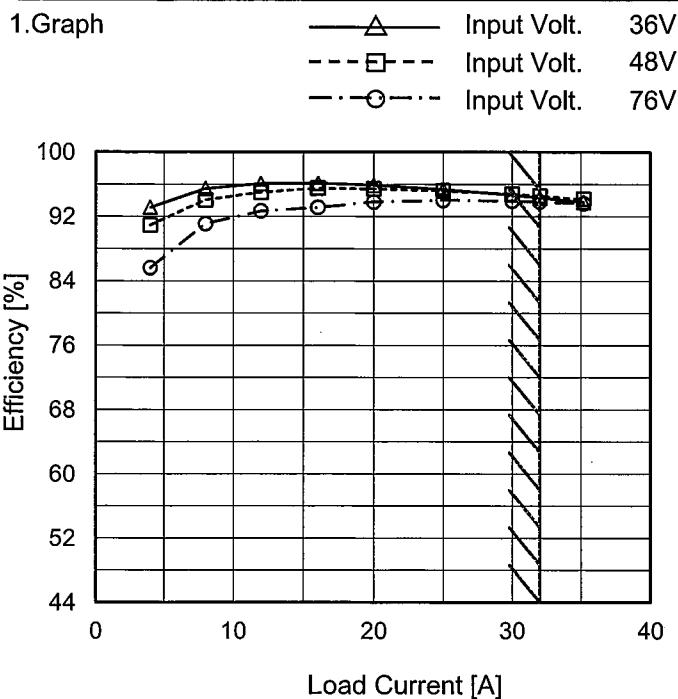
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
34	96.3	94.3
36	96.1	94.4
40	95.9	94.9
48	95.5	94.6
55	94.6	94.4
60	93.9	94.1
70	93.4	94.0
76	93.1	93.9
80	92.3	93.7

**COSEL**

Model CHS3804812

Item Efficiency (by Load Current)

Object \_\_\_\_\_


 Temperature 25°C  
 Testing Circuitry Figure A

## 2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	-	-	-
4.0	93.1	90.9	85.6
8.0	95.5	94.1	91.1
12.0	96.1	95.0	92.7
16.0	96.1	95.5	93.1
20.0	95.9	95.4	93.8
25.0	95.4	95.2	94.0
30.0	94.7	94.8	94.0
32.0	94.4	94.6	93.9
35.2	93.8	94.2	93.6
--	-	-	-

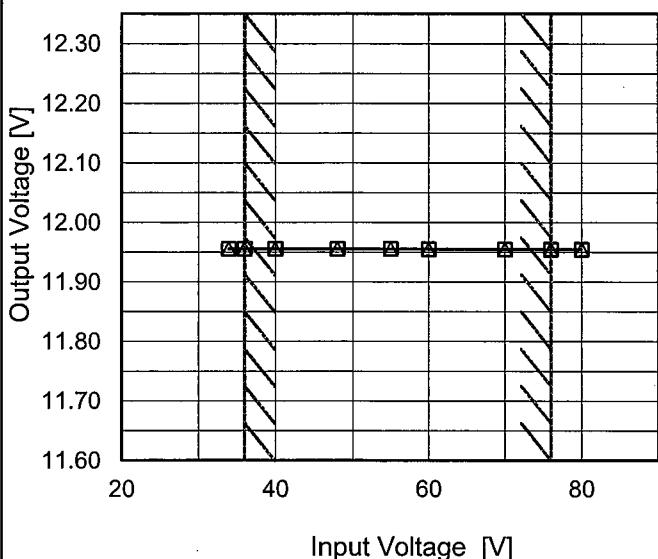
Note: Slanted line shows the range of the rated load current.

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Model	CHS3804812
Item	Line Regulation
Object	+12V32A

## 1. Graph

--- □ --- Load 50%  
 —△— Load 100%

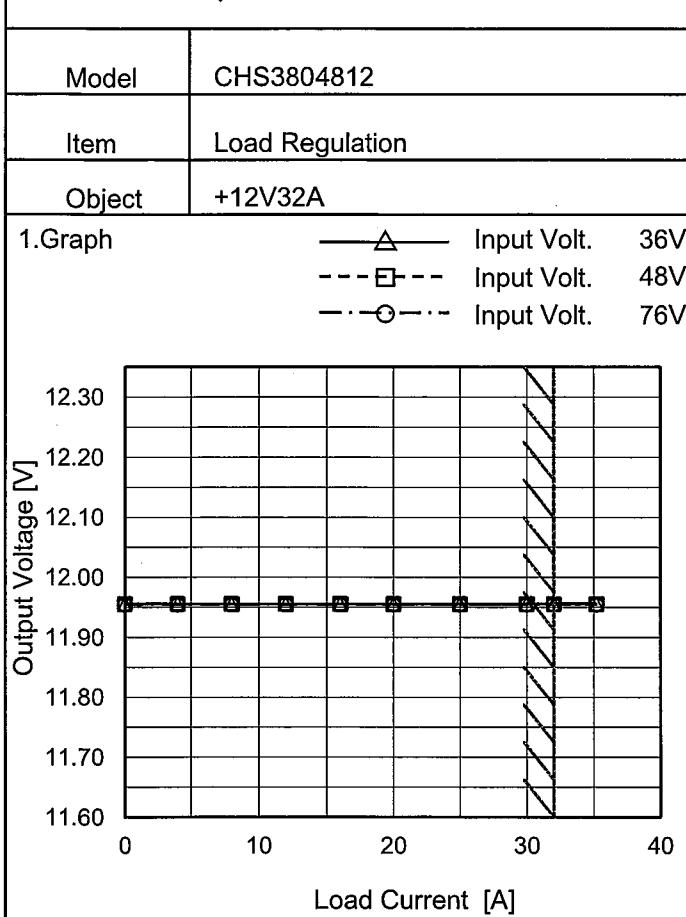


Note: Slanted line shows the range of the rated input voltage.

Temperature 25°C  
 Testing Circuitry Figure A

## 2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
34	11.956	11.956
36	11.956	11.956
40	11.956	11.956
48	11.956	11.956
55	11.955	11.956
60	11.955	11.955
70	11.955	11.955
76	11.955	11.955
80	11.955	11.955

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Temperature 25°C  
Testing Circuitry Figure A

## 2.Values

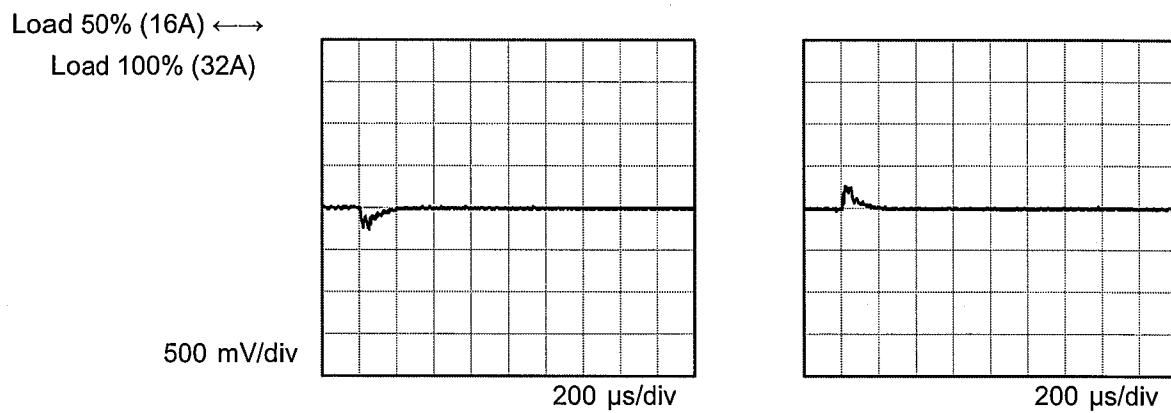
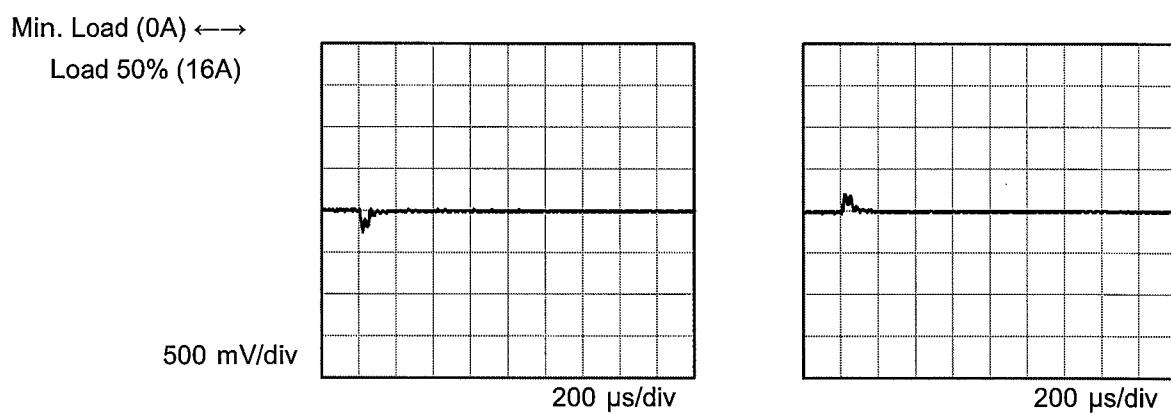
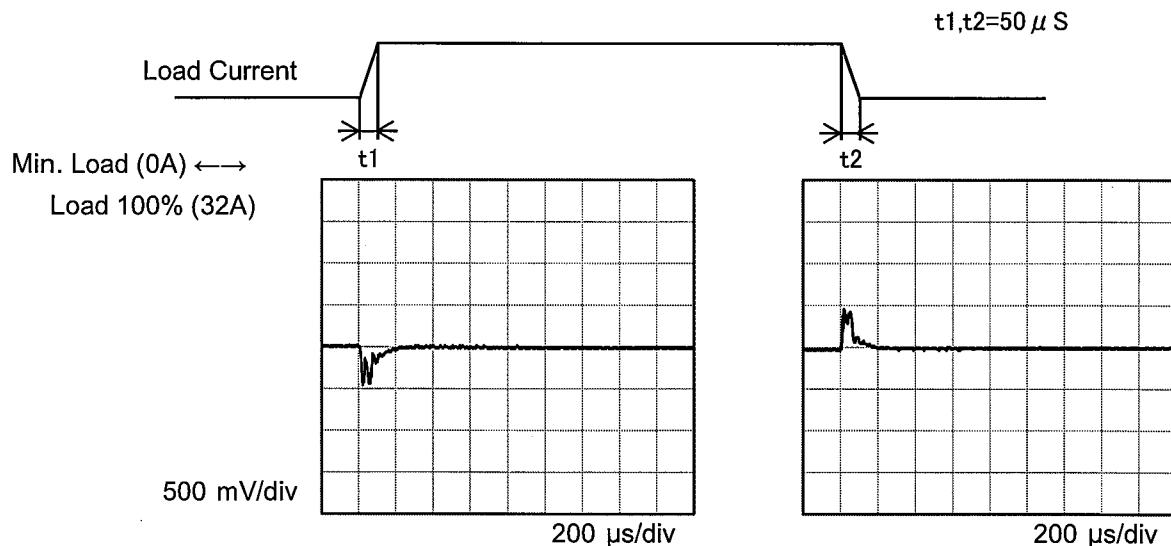
Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	11.956	11.956	11.955
4.0	11.956	11.956	11.955
8.0	11.956	11.956	11.955
12.0	11.956	11.956	11.955
16.0	11.956	11.956	11.955
20.0	11.956	11.956	11.955
25.0	11.956	11.956	11.955
30.0	11.956	11.956	11.955
32.0	11.956	11.956	11.955
35.2	11.956	11.956	11.955
--	-	-	-

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

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Model	CHS3804812	Temperature Testing Circuitry 25°C Figure A
Item	Dynamic Load Response	
Object	+12V32A	

Input Volt. 48 V  
Cycle 5 ms



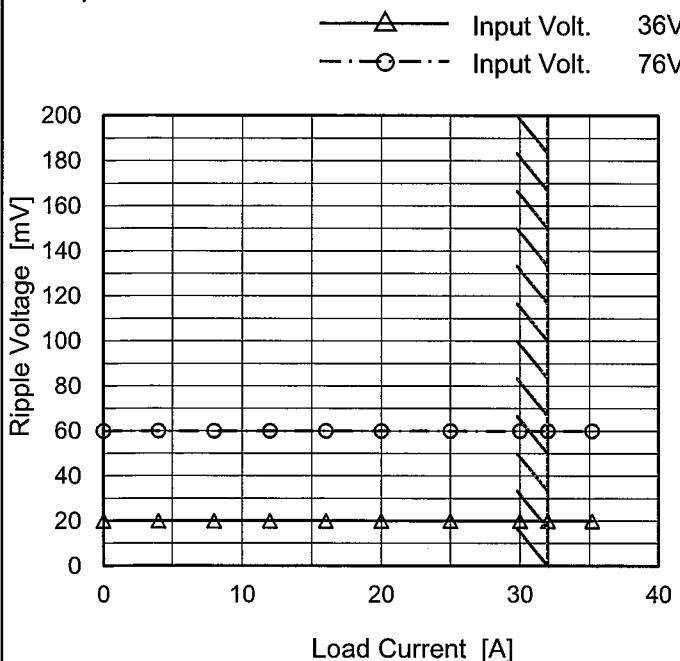
**COSEL**

Model CHS3804812

Item Ripple Voltage (by Load Current)

Object +12V32A

## 1.Graph



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]

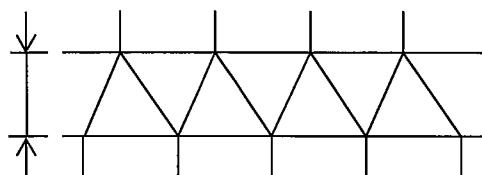


Fig.Complex Ripple Wave Form

Temperature 25°C  
Testing Circuitry Figure B

## 2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	20	60
4.0	20	60
8.0	20	60
12.0	20	60
16.0	20	60
20.0	20	60
25.0	20	60
30.0	20	60
32.0	20	60
35.2	20	60
--	-	-

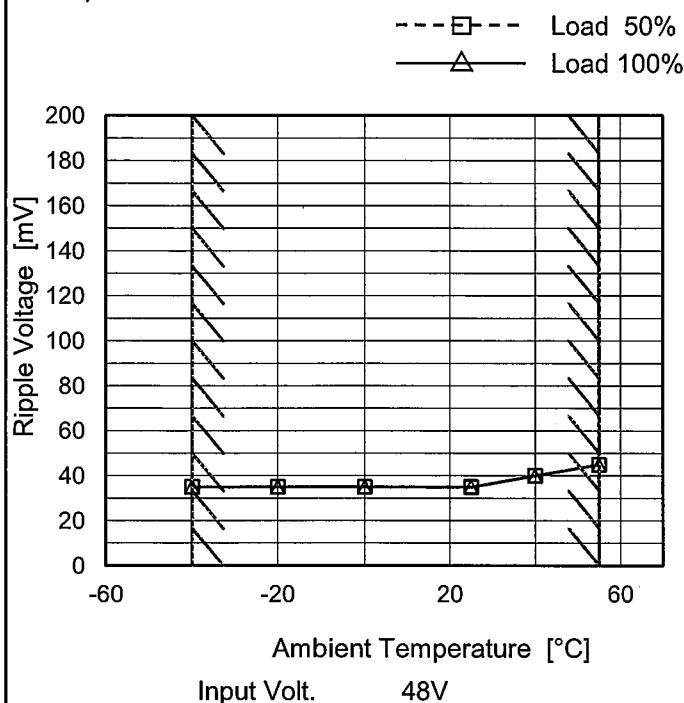
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Model	CHS3804812	Temperature	25°C																																						
Item	Ripple-Noise	Testing Circuitry	Figure B																																						
Object	+12V32A																																								
1.Graph																																									
			2.Values																																						
<p>Measured by 100 MHz Oscilloscope. Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>			<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple-Noise [mV]</th> </tr> <tr> <th>Input Volt. 36 [V]</th> <th>Input Volt. 76 [V]</th> </tr> </thead> <tbody> <tr> <td>0.0</td><td>25</td><td>70</td></tr> <tr> <td>4.0</td><td>25</td><td>70</td></tr> <tr> <td>8.0</td><td>30</td><td>70</td></tr> <tr> <td>12.0</td><td>30</td><td>70</td></tr> <tr> <td>16.0</td><td>30</td><td>70</td></tr> <tr> <td>20.0</td><td>35</td><td>70</td></tr> <tr> <td>25.0</td><td>40</td><td>70</td></tr> <tr> <td>30.0</td><td>40</td><td>70</td></tr> <tr> <td>32.0</td><td>40</td><td>70</td></tr> <tr> <td>35.2</td><td>40</td><td>70</td></tr> <tr> <td>--</td><td>-</td><td>-</td></tr> </tbody> </table>	Load Current [A]	Ripple-Noise [mV]		Input Volt. 36 [V]	Input Volt. 76 [V]	0.0	25	70	4.0	25	70	8.0	30	70	12.0	30	70	16.0	30	70	20.0	35	70	25.0	40	70	30.0	40	70	32.0	40	70	35.2	40	70	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
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35.2	40	70																																							
--	-	-																																							
			Fig.Complex Ripple Noise Wave Form																																						

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Model	CHS3804812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V32A

## 1. Graph



Measured by 100 MHz Oscilloscope.

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

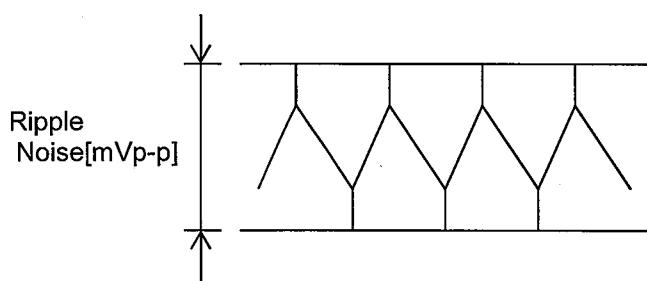


Fig.Complex Ripple Noise Wave Form

## Testing Circuitry Figure B

## 2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	35	35
-20	35	35
0	35	35
25	35	35
40	40	40
55	45	45
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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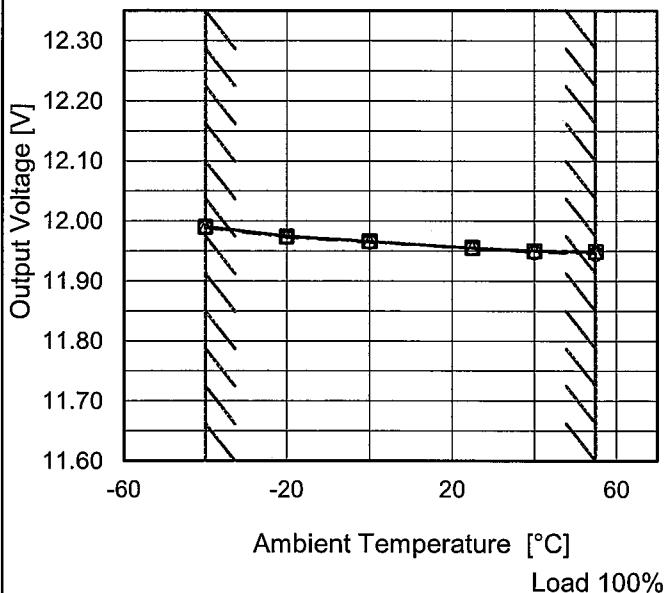
Model CHS3804812

Item Ambient Temperature Drift

Object +12V32A

1.Graph

Ambient Temperature [°C]	Input Volt. 36V [V]	Input Volt. 48V [V]	Input Volt. 76V [V]
-40	11.991	11.991	11.989
-20	11.975	11.974	11.973
0	11.966	11.967	11.965
25	11.956	11.956	11.955
40	11.951	11.950	11.948
55	11.949	11.949	11.946



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	11.991	11.991	11.989
-20	11.975	11.974	11.973
0	11.966	11.967	11.965
25	11.956	11.956	11.955
40	11.951	11.950	11.948
55	11.949	11.949	11.946
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model	CHS3804812	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V32A	

### 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 - 32A

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

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

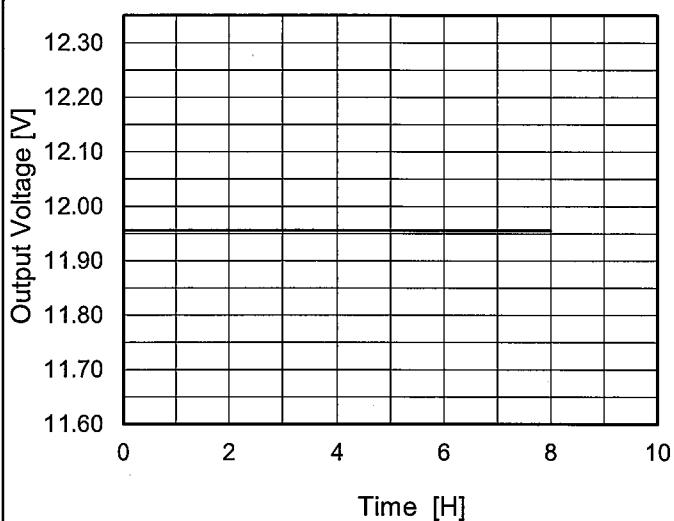
### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	-40	76	0	11.989	$\pm 22$	$\pm 0.2$
Minimum Voltage	55	76	32	11.946		

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Model	CHS3804812
Item	Time Lapse Drift
Object	+12V32A

## 1. Graph



Temperature 25°C  
Testing Circuitry Figure A

## 2. Values

Time since start [H]	Output Voltage [V]
0.0	11.956
0.5	11.956
1.0	11.956
2.0	11.956
3.0	11.956
4.0	11.956
5.0	11.956
6.0	11.956
7.0	11.956
8.0	11.956

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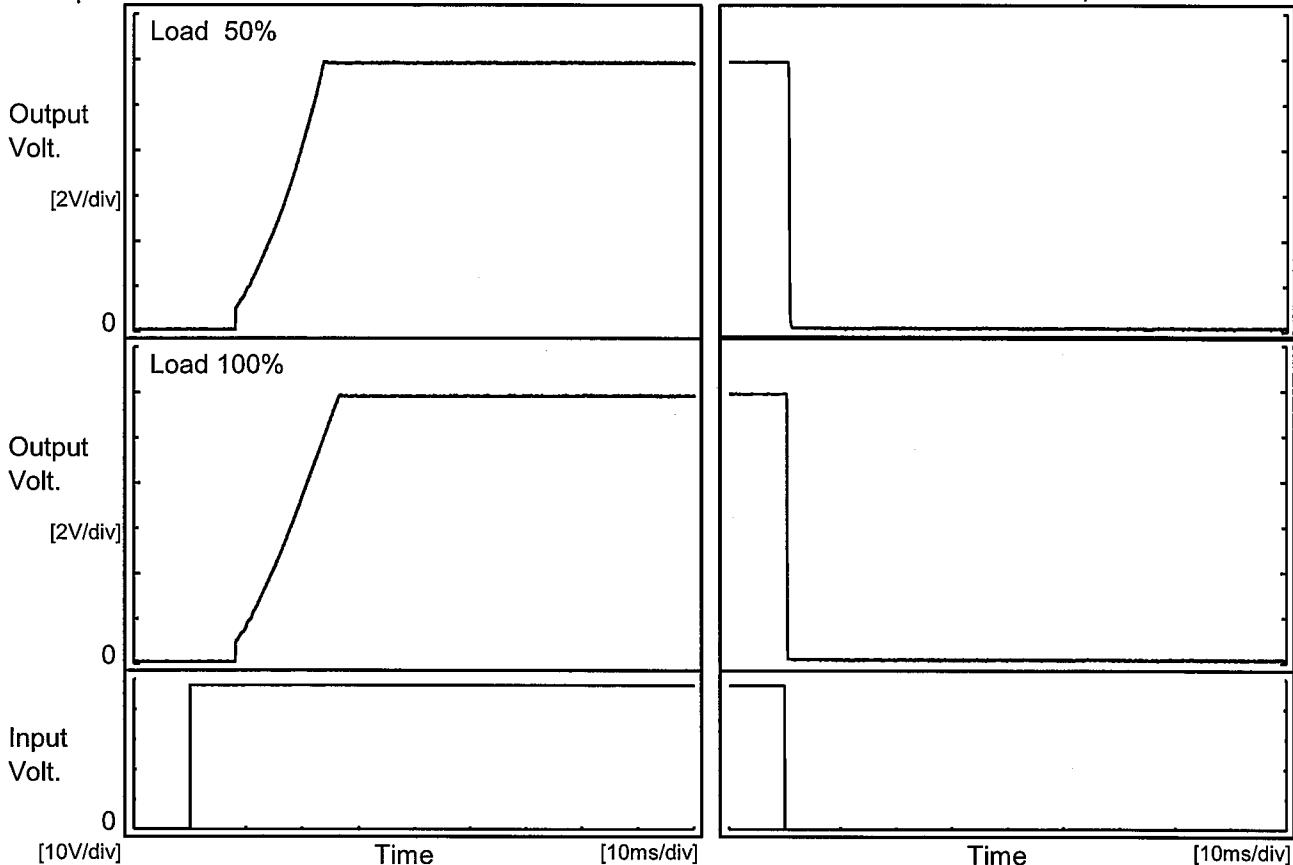
Model CHS3804812

Item Rise and Fall Time

Object +12V32A

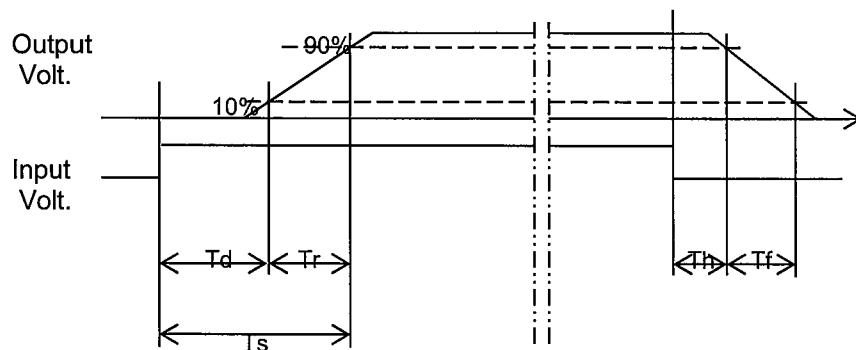
Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Load	Time	Td	Tr	Ts	Th	Tf	[ms]
50 %		8.8	14.0	22.8	0.8	0.1	
100 %		9.0	16.0	25.0	0.4	0.0	



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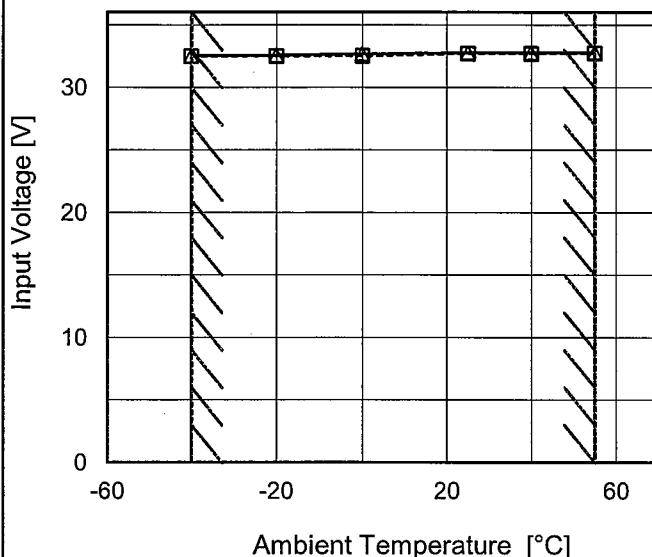
Model CHS3804812

Item Minimum Input Voltage  
for Regulated Output Voltage

Object +12V32A

## 1. Graph

--- □ --- Load 50%  
 —△— Load 100%



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

## Testing Circuitry Figure A

## 2. Values

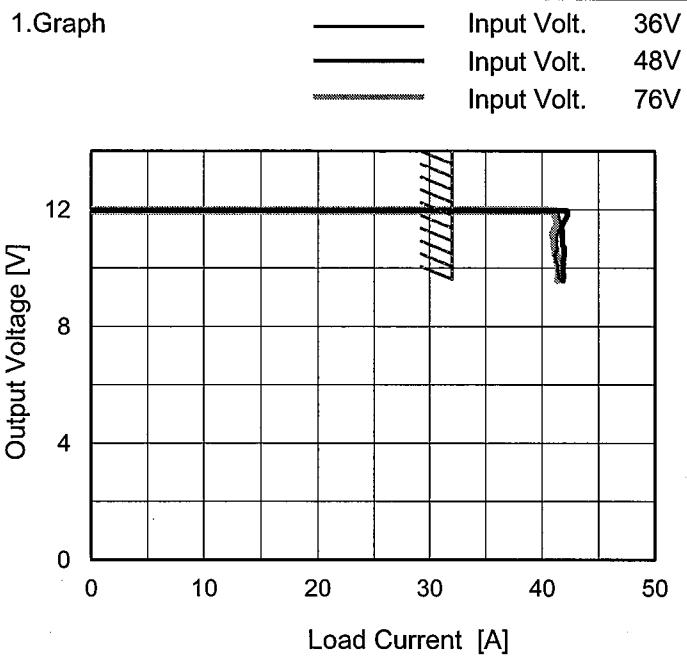
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	32.5	32.6
-20	32.5	32.6
0	32.6	32.7
25	32.7	32.8
40	32.7	32.8
55	32.8	32.8
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

**COSEL**

Model CHS3804812

Item Overcurrent Protection

Object +12V32A



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

Temperature 25°C  
Testing Circuitry Figure A

## 2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
11.4	41.68	41.78	41.46
10.8	41.33	41.83	41.17
9.6	41.55	41.93	41.45
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

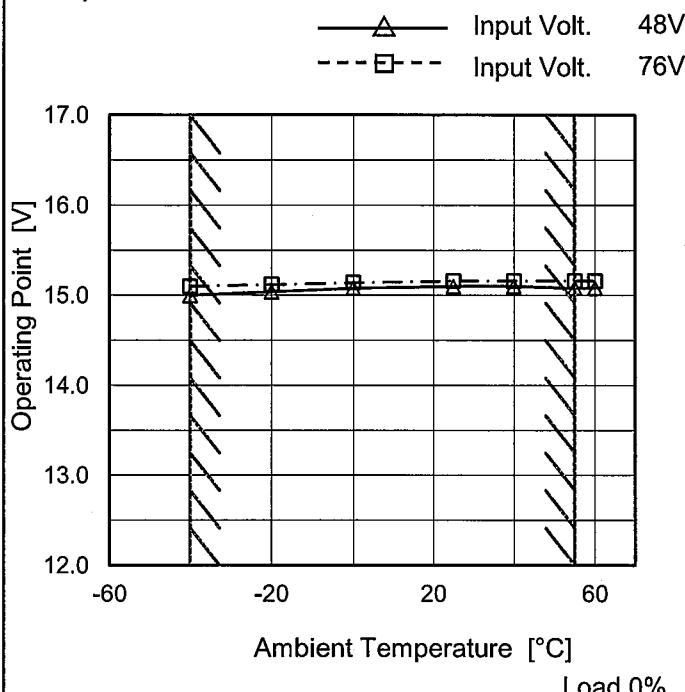
**COSEL**

Model CHS3804812

Item Overvoltage Protection

Object +12V32A

## 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	15.00	15.10
-20	15.04	15.12
0	15.08	15.14
25	15.10	15.16
40	15.10	15.16
55	15.08	15.16
60	15.08	15.16
--	-	-
--	-	-
--	-	-
--	-	-

