COSEL

TEST DATA OF CHS3004812H

Regulated DC Power Supply
June 3, 2013

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COSEL CO.,LTD.

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Item	Input Current (by Input Voltage)
Object	———————

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Testing Circuitry   Figure A

1.Graph

————△———— Load 100%
- - -⊟- - - Load 50%
—·—〇—·— Load 0%

Input Current [A] vs Input Voltage [V]

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	0.000	0.000	0.000
16.0	0.000	0.000	0.000
24.0	0.006	0.006	0.006
33.0	0.015	0.015	0.015
36.0	0.085	3.906	7.530
37.6	0.084	4.076	7.860
38.4	0.082	4.044	8.030
40.0	0.081	3.890	7.859
48.0	0.082	3.255	6.535
60.0	0.087	2.629	5.239
70.0	0.090	2.292	4.523
76.0	0.091	2.117	4.166
80.0	0.091	2.020	3.962
84.8	0.092	1.896	3.725
88.0	0.092	1.834	3.591
--	-	-	-
--	-	-	-

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Model	CHS3004812H
Item	Input Current (by Load Current)
Object	————————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

———△——— Input Volt.   40V
- - -⊟- - - Input Volt.   48V
—·—○—·· Input Volt.   76V

Input Current [A] vs Load Current [A]

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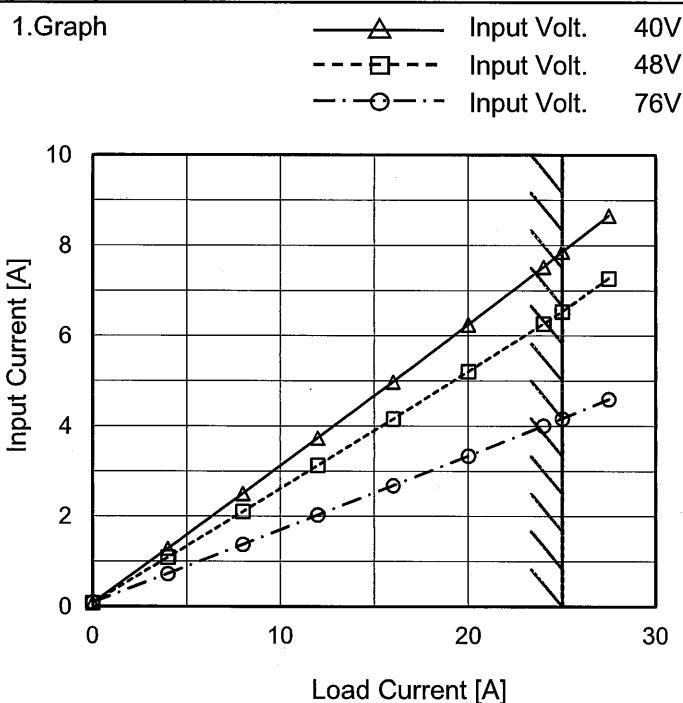
2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 40[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	0.079	0.081	0.091
4.0	1.288	1.088	0.727
8.0	2.505	2.105	1.377
12.0	3.734	3.128	2.032
16.0	4.979	4.158	2.684
20.0	6.243	5.208	3.340
24.0	7.522	6.268	4.009
25.0	7.859	6.535	4.166
27.5	8.663	7.272	4.598
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Model	CHS3004812H
Item	Input Power (by Load Current)
Object	————————
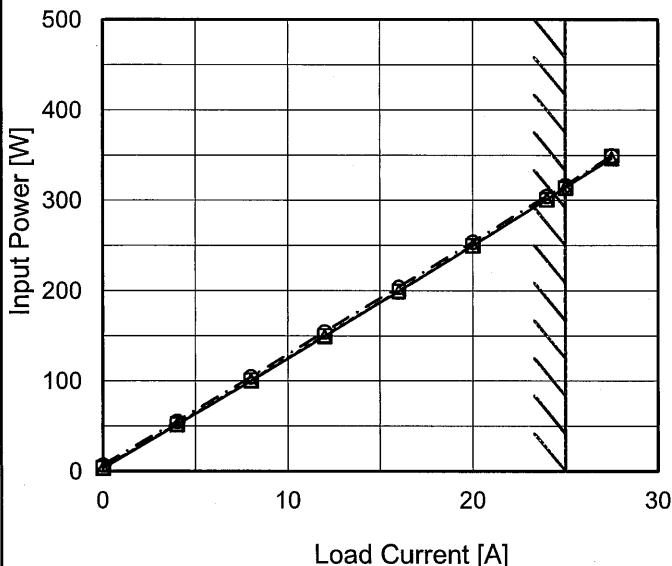
Temperature 25°C
Testing Circuitry Figure A

1.Graph

————△———— Input Volt. 40V
- - -⊟- - - Input Volt. 48V
—·—○—·· Input Volt. 76V

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

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 40[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	3.2	3.9	7.0
4.0	51.5	52.2	55.3
8.0	100.2	101.0	104.7
12.0	149.4	150.2	154.5
16.0	199.2	199.6	204.0
20.0	249.7	250.0	253.9
24.0	300.9	300.9	304.6
25.0	314.3	313.7	316.6
27.5	346.5	349.1	349.4
--	-	-	-
--	-	-	-

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参考資料

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Model	CHS3004812H
Item	Efficiency (by Input Voltage)
Object	
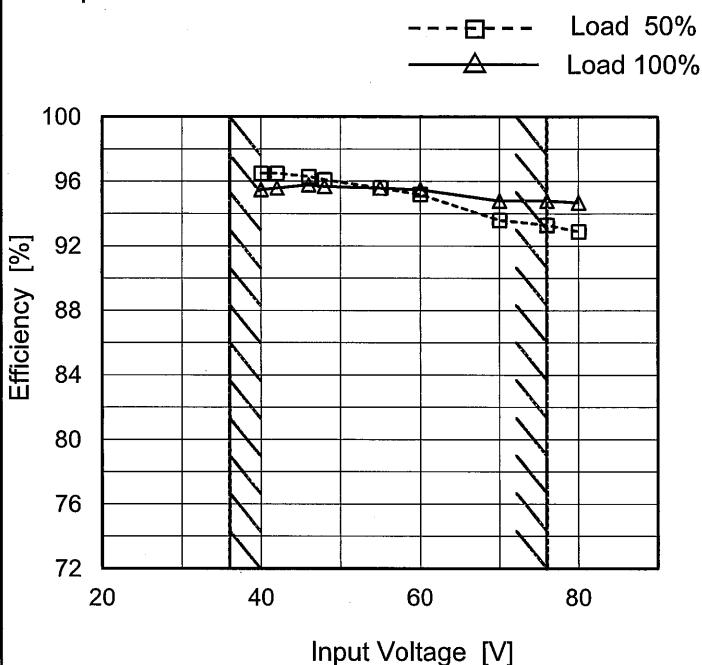
Temperature　　25°C
Testing Circuitry　Figure A

1.Graph

--- ⊟ --- Load 50%
——— △ ——— Load 100%

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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
40	96.5	95.5
42	96.5	95.6
46	96.3	95.8
48	96.1	95.7
55	95.6	95.6
60	95.2	95.5
70	93.6	94.8
76	93.3	94.8
80	92.9	94.7

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Model	CHS3004812H
Item	Efficiency (by Load Current)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

—△—	Input Volt.	40V
- - -⊟- - -	Input Volt.	48V
—·—○—··	Input Volt.	76V

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

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 40[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	-	-	-
4.0	93.3	92.0	86.9
8.0	95.9	95.1	91.8
12.0	96.5	96.0	93.3
16.0	96.5	96.3	94.2
20.0	96.2	96.1	94.6
24.0	95.8	95.8	94.6
25.0	95.5	95.7	94.8
27.5	95.3	94.6	94.7
--	-	-	-
--	-	-	-

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Model	CHS3004812H
Item	Line Regulation
Object	+12V25A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

△ Load 100%
⊟ Load 50%
○ Load 0%

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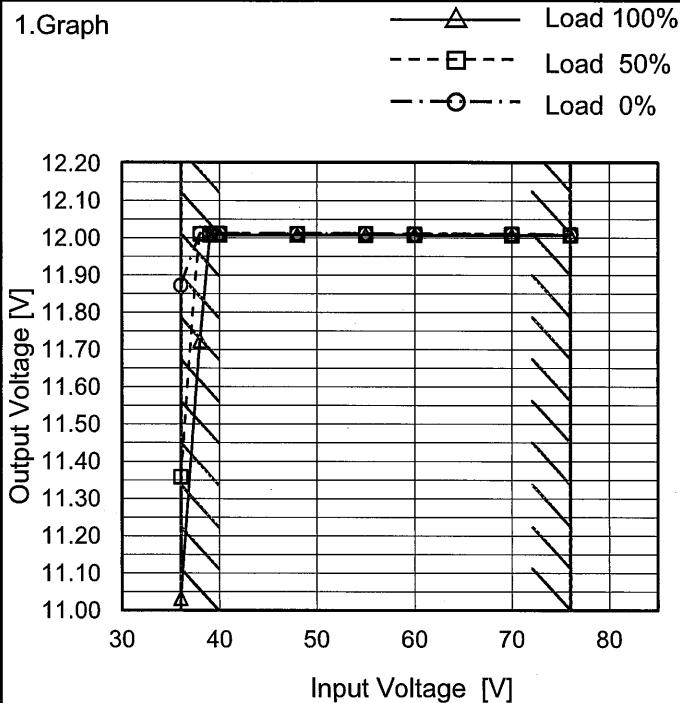
2.Values

Input Voltage [V]	Output Voltage [V]		
	Load 0%	Load 50%	Load 100%
36	11.873	11.359	11.032
38	12.012	12.011	11.724
39	12.012	12.012	12.008
40	12.012	12.012	12.008
48	12.012	12.012	12.008
55	12.012	12.012	12.008
60	12.011	12.011	12.008
70	12.011	12.011	12.007
76	12.009	12.009	12.007

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Model	CHS3004812H
Item	Load Regulation
Object	+12V25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Symbol	Input Volt.	
—△—	Input Volt.	40V
- - ◻ - -	Input Volt.	48V
— · ◯ — · ·	Input Volt.	76V

Output Voltage [V] vs Load Current [A]

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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 40[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	12.012	12.012	12.009
4.0	12.012	12.012	12.009
8.0	12.012	12.012	12.009
12.0	12.012	12.012	12.009
16.0	12.012	12.012	12.008
20.0	12.011	12.011	12.008
24.0	12.010	12.010	12.008
25.0	12.008	12.008	12.007
27.5	12.008	12.008	12.007
--	-	-	-
--	-	-	-

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Model	CHS3004812H
Item	Dynamic Load Response
Object	+12V25A

Temperature	25℃
Testing Circuitry	Figure A

Input Volt.   48 V
Cycle   5 ms

t1,t2=50μS

Load Current

t1   t2

Min. Load (0A) ←→
Load 100% (25A)

500 mV/div
                              200 μs/div   200 μs/div

Min. Load (0A) ←→
Load 50% (12.5A)

500 mV/div
                              200 μs/div   200 μs/div

Load 50% (12.5A) ←→
Load 100% (25A)

500 mV/div
                              200 μs/div   200 μs/div

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参考資料

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Model	CHS3004812H
Item	Ripple Voltage (by Load Current)
Object	+12V25A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

——△—— Input Volt.   40V
— · —○— · · Input Volt.   76V

Ripple Voltage [mV] vs Load Current [A]

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
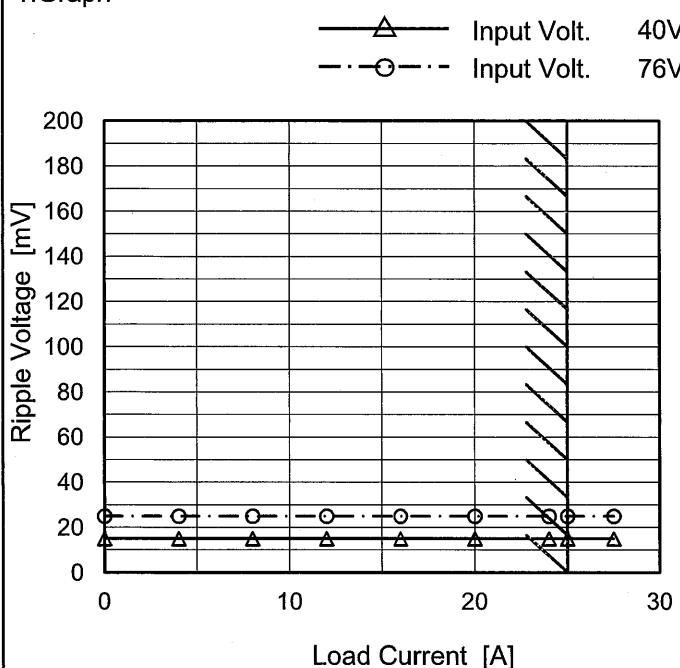
2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 40 [V]	Input Volt. 76 [V]
0.0	15	25
4.0	15	25
8.0	15	25
12.0	15	25
16.0	15	25
20.0	15	25
24.0	15	25
25.0	15	25
27.5	15	25
--	-	-
--	-	-

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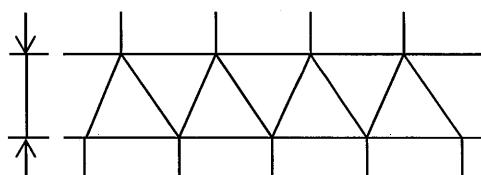
Model	CHS3004812H
Item	Ripple-Noise
Object	+12V25A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

—△— Input Volt. 40V
—·○·— Input Volt. 76V
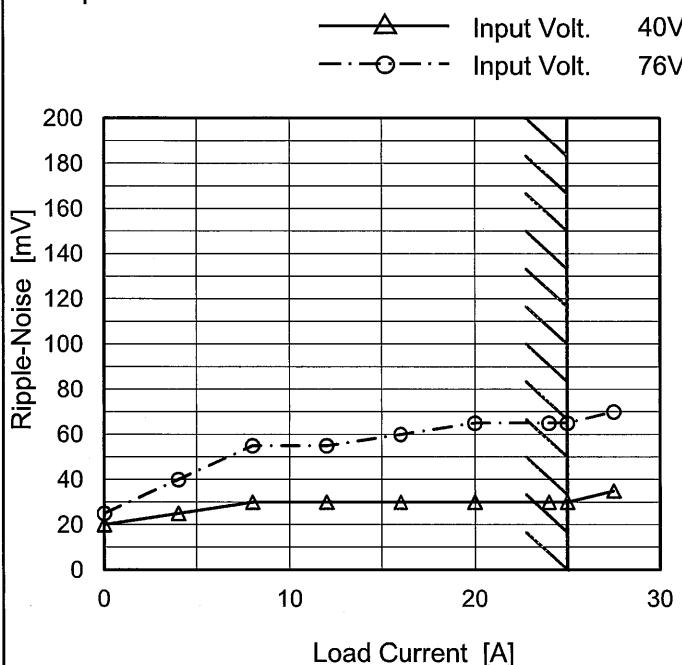
Load Current [A]

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	Ripple-Noise [mV]	
Current	Input Volt.	Input Volt.
[A]	40 [V]	76 [V]
0.0	20	25
4.0	25	40
8.0	30	55
12.0	30	55
16.0	30	60
20.0	30	65
24.0	30	65
25.0	30	65
27.5	35	70
--	-	-
--	-	-
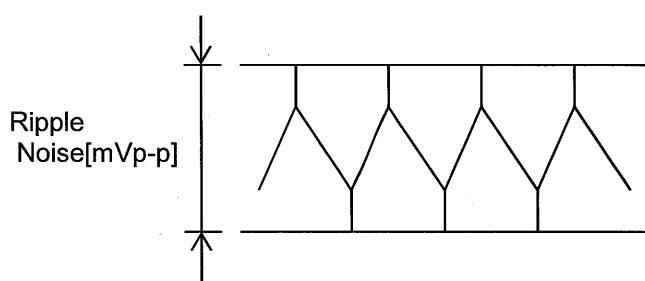
Ripple
Noise[mVp-p]

Fig.Complex Ripple Noise Wave Form

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Model	CHS3004812H
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V25A

Testing Circuitry   Figure B

1.Graph

- - -⊟- - - Load 50%
——△—— Load 100%

Ripple Voltage [mV] vs Ambient Temperature [°C]

Input Volt.   48   V
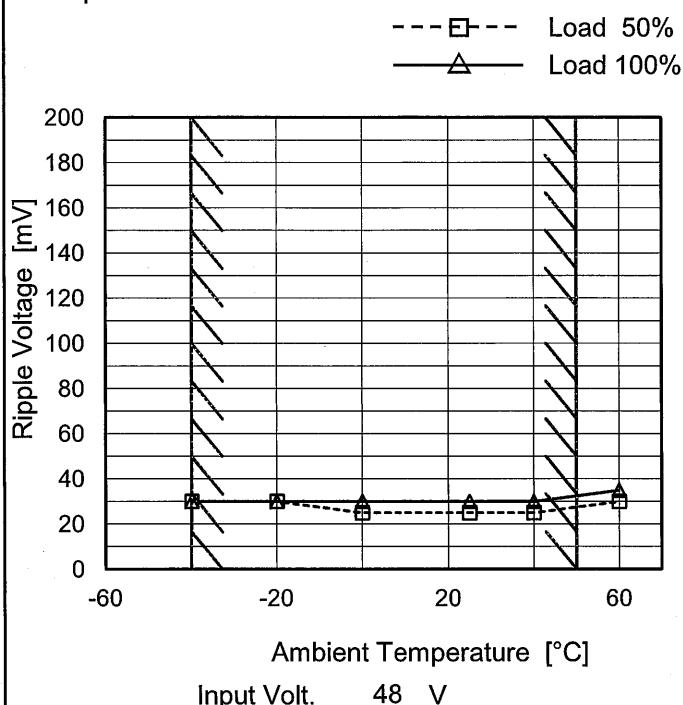
Measured by 100 MHz Oscilloscope.
Note: Slanted line shows the range of the rated
ambient temperature.

Ripple [mVp-p]
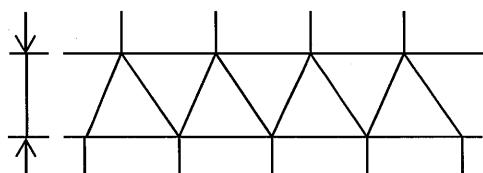
Fig.Complex Ripple Wave Form

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	30	30
-20	30	30
0	25	30
25	25	30
40	25	30
60	30	35
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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Model	CHS3004812H
Item	Ambient Temperature Drift
Object	+12V25A
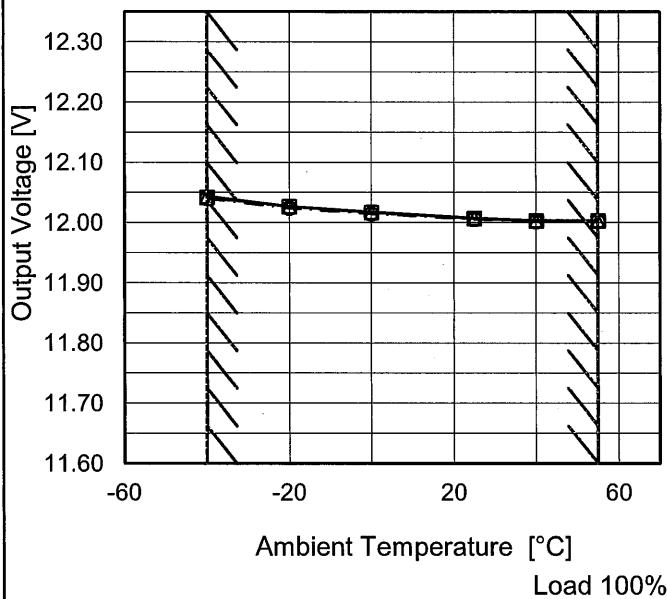
Testing Circuitry   Figure A

1.Graph

——△—— Input Volt.   40V
- - -□- - - Input Volt.   48V
—·—○—·· Input Volt.   76V

Ambient Temperature [°C]
Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 40[V]	Input Volt. 48[V]	Input Volt. 76[V]
-40	12.044	12.042	12.040
-20	12.027	12.027	12.024
0	12.018	12.017	12.015
25	12.008	12.007	12.006
40	12.003	12.003	12.002
55	12.003	12.003	12.002
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

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Model	CHS3004812H
Item	Output Voltage Accuracy
Object	+12V25A

Testing Circuitry   Figure A

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 : 40 - 76V

Load Current   : 0 - 25A

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

* Output Voltage Accuracy (Ration) = $\dfrac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}}$ × 100

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-40	48	0	12.046	±22	±0.2
Minimum Voltage	40	76	25	12.002		

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Model	CHS3004812H
Item	Time Lapse Drift
Object	+12V25A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Time [H]

Input Volt.   48V
Load   100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.022
0.5	12.011
1.0	12.011
2.0	12.011
3.0	12.011
4.0	12.011
5.0	12.011
6.0	12.011
7.0	12.011
8.0	12.011

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Model	CHS3004812H
Item	Rise and Fall Time
Object	+12V25A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph   Input Volt.   48 V

Load 50%

Output Volt.

[2V/div]

0

Load 100%

Output Volt.

[2V/div]

0

Input Volt.

0

[10V/div]   Time   [10ms/div]   Time   [10ms/div]
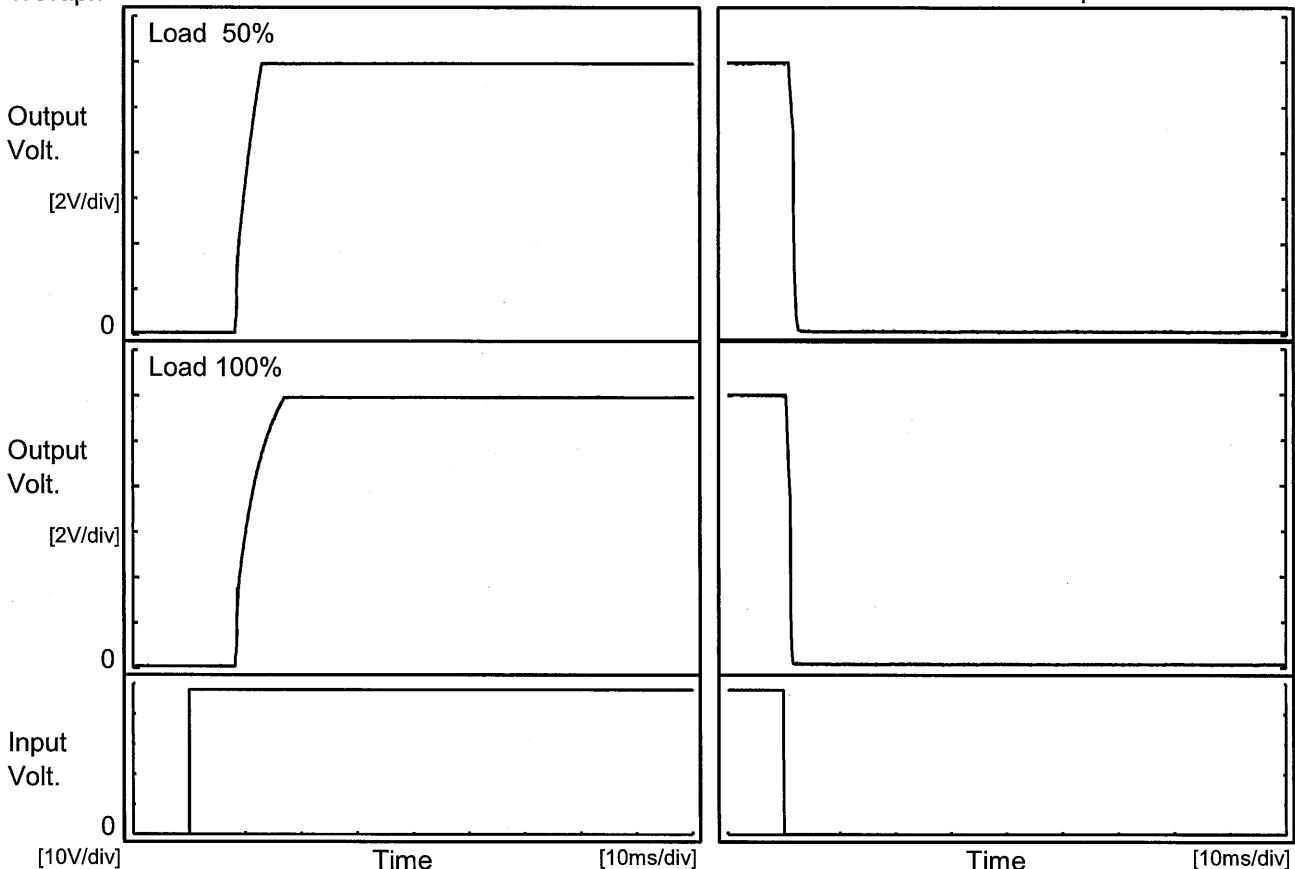
2.Values   [ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	8.6	3.9	12.5	1.2	1.0
100 %	8.5	6.6	15.1	0.6	0.8

Output Volt.

90%

10%

Input Volt.

Td   Tr   Th   Tf

Ts

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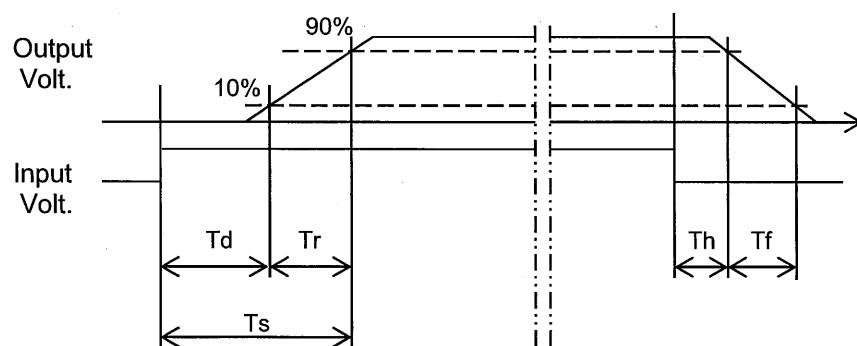
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Model	CHS3004812H
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V25A
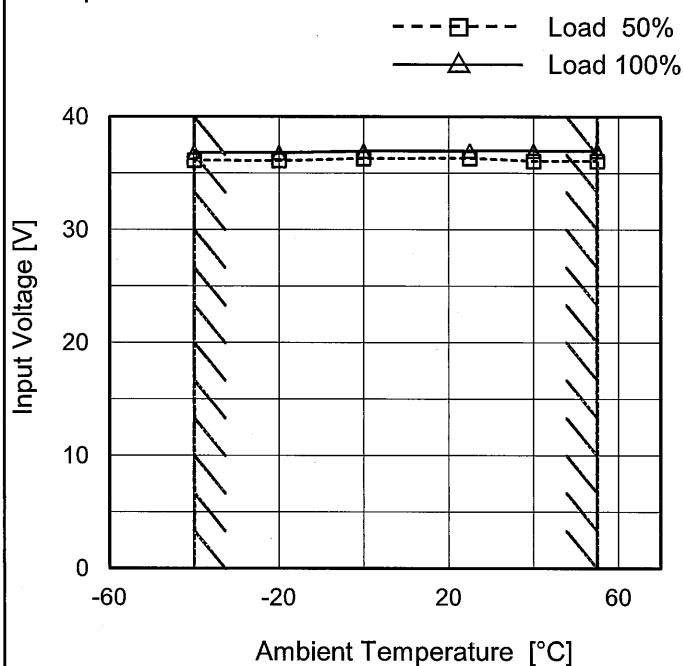
Testing Circuitry   Figure A

1.Graph

--- ⊟ --- Load 50%
—— △ —— Load 100%

Ambient Temperature [°C]

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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	36.2	36.9
-20	36.2	36.9
0	36.4	37.0
25	36.4	37.0
40	36.1	37.0
55	36.1	37.0
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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参考資料

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Model	CHS3004812H
Item	Overcurrent Protection
Object	+12V25A
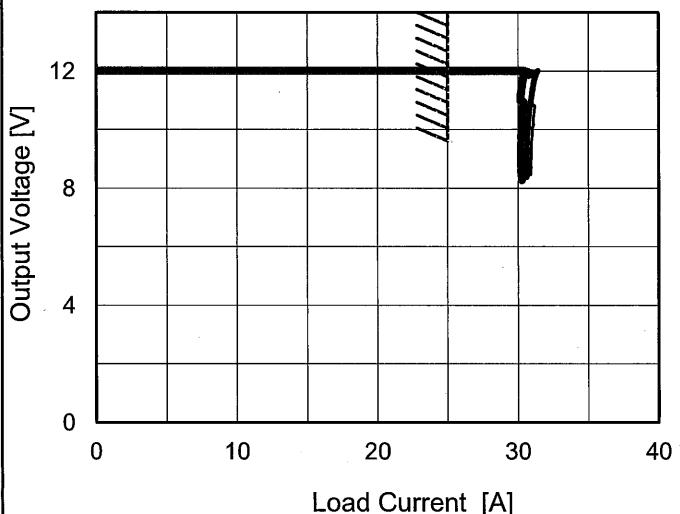
Temperature　　25°C
Testing Circuitry　Figure A

1.Graph

———— Input Volt. 40V
———— Input Volt. 48V
———— Input Volt. 76V

Load Current [A]

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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 40[V]	Input Volt. 48[V]	Input Volt. 76[V]
11.4	31.18	31.00	30.24
10.8	31.23	30.87	30.40
9.6	30.99	30.66	30.23
8.4	30.90	30.61	30.24
8.0	30.90	30.62	30.24
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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参考資料

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Model	CHS3004812H
Item	Overvoltage Protection
Object	+12V25A
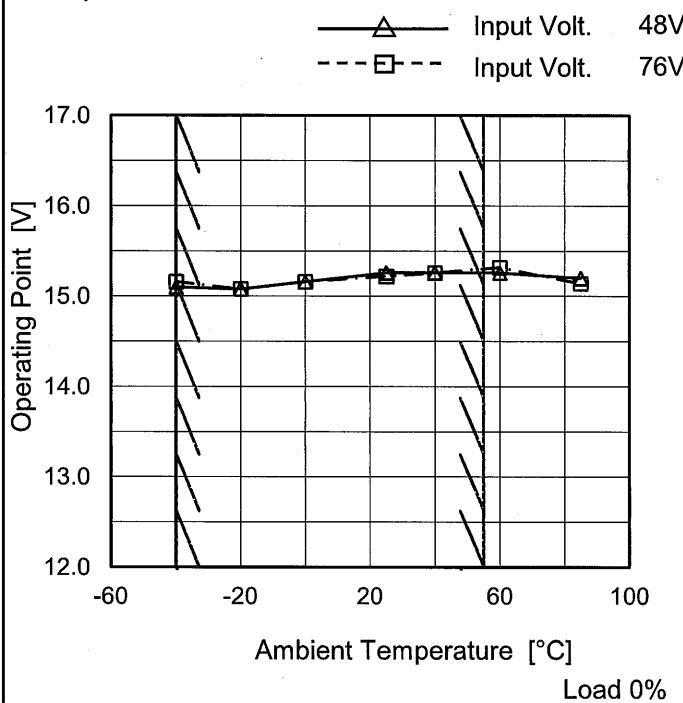
Testing Circuitry   Figure A

1.Graph

───△─── Input Volt. 48V
---☐--- Input Volt. 76V

Operating Point [V] vs 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	15.10	15.16
-20	15.08	15.08
0	15.16	15.16
25	15.26	15.22
40	15.26	15.26
60	15.26	15.32
85	15.20	15.14
--	-	-
--	-	-
--	-	-
--	-	-

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参考資料

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Figure A

Figure B

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