TEST DATA OF DHS100A12

Regulated DC Power Supply
April 5, 2010

Approved by : _Tatsuya Mano_
Tatsuya Mano   Design Manager

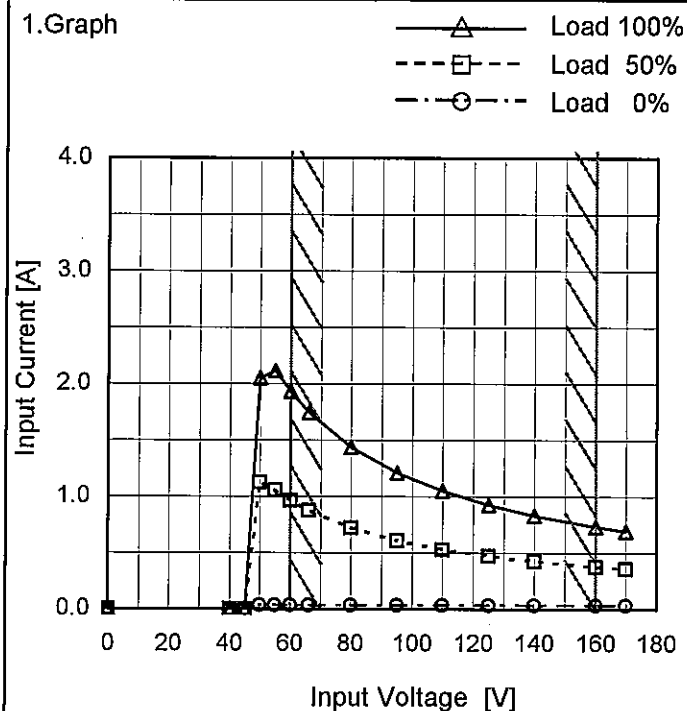Prepared by : _Tetsuro Hirata_
Tetsuro Hirata   Design Engineer

COSEL CO.,LTD.

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Model	DHS100A12
Item	Input Current (by Input Voltage)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

— △ — Load 100%
--- ☐ --- Load 50%
—··— ○ —··— 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	0.000	0.000	0.000
40	0.001	0.001	0.002
45	0.002	0.002	0.002
50	0.036	1.128	2.052
55	0.035	1.057	2.113
60	0.035	0.964	1.929
66	0.034	0.874	1.746
80	0.034	0.721	1.438
95	0.033	0.607	1.210
110	0.033	0.529	1.049
125	0.032	0.470	0.927
140	0.032	0.424	0.831
160	0.032	0.376	0.733
170	0.032	0.357	0.692
---	-	-	-
---	-	-	-
---	-	-	-
---	-	-	-

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Model	DHS100A12
Item	Input Current (by Load Current)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

—△— Input Volt.   60V
---□--- Input Volt.   110V
—·—○—·· Input Volt.   160V

Load Current [A]

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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0.00	0.035	0.033	0.032
1.50	0.378	0.210	0.156
3.00	0.700	0.386	0.277
4.50	1.030	0.566	0.401
6.00	1.370	0.749	0.527
7.50	1.718	0.938	0.656
8.40	1.929	1.049	0.733
9.24	2.132	1.158	0.806
--	-	-	-
--	-	-	-
--	-	-	-

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Model	DHS100A12
Item	Input Power (by Load Current)
Object	

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

— △ — Input Volt. 60V
- - - ⊟ - - - Input Volt. 110V
— · — ○ — · — Input Volt. 160V

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

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0.00	2.1	3.6	5.2
1.50	22.7	23.0	24.9
3.00	42.0	42.4	44.4
4.50	61.8	62.2	64.1
6.00	82.1	82.4	84.3
7.50	103.0	102.9	104.8
8.40	115.8	115.5	117.3
9.24	128.0	127.4	129.0
--	-	-	-
--	-	-	-
---	-	-	-

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Model	DHS100A12
Item	Efficiency (by Input Voltage)
Object	

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

- - -▱- - - Load 50%

———△——— Load 100%

Input Voltage [V]

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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
60	87.9	88.0
66	88.1	88.2
80	88.3	88.5
95	88.3	88.5
110	87.4	88.2
125	86.5	87.8
140	85.8	87.4
160	84.6	86.9
170	83.9	86.5

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COSEL

Model	DHS100A12
Item	Efficiency (by Load Current)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

—△— Input Volt.   60V
---◻--- Input Volt.   110V
—·—○—·— Input Volt.   160V

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

2.Values

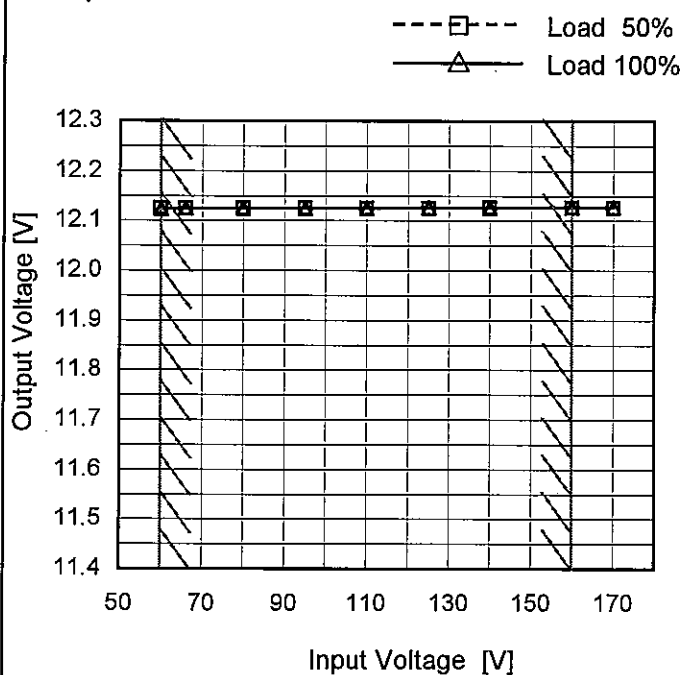| Load Current [A]	Efficiency [%]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0.00	–	–	–
1.50	80.3	79.0	73.2
3.00	86.5	85.7	81.9
4.50	88.2	87.7	85.1
6.00	88.6	88.2	86.3
7.50	88.3	88.3	86.7
8.40	88.0	88.2	86.9
9.24	87.5	88.0	86.9
--	–	–	–
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Model	DHS100A12
Item	Line Regulation
Object	+12V8.4A

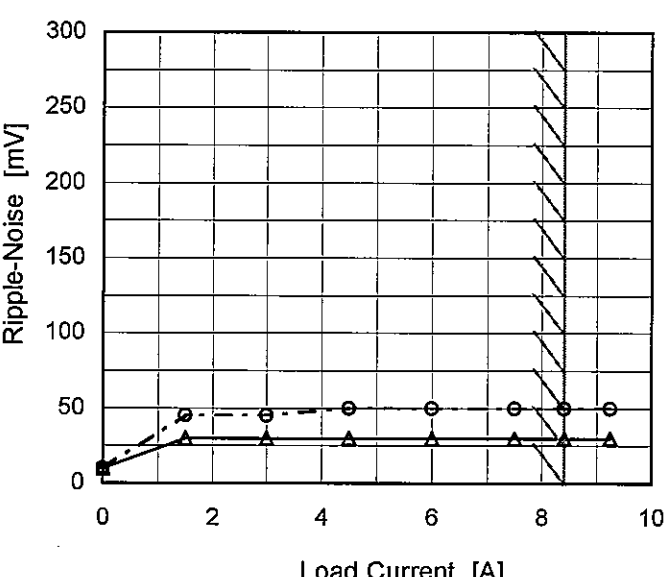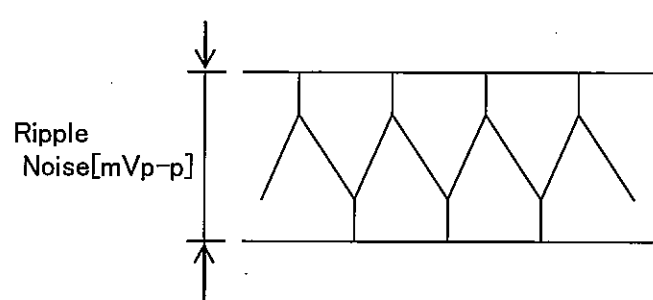Temperature 25°C
Testing Circuitry Figure A

1.Graph

- - - 🔲 - - - Load 50%
———△——— Load 100%

Input Voltage [V]

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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
60	12.125	12.124
66	12.125	12.124
80	12.125	12.125
95	12.125	12.125
110	12.125	12.125
125	12.125	12.126
140	12.126	12.127
160	12.126	12.127
170	12.126	12.128

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Model	DHS100A12
Item	Load Regulation
Object	+12V8.4A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

— △ — Input Volt.   60V
- - - ☐ - - - Input Volt.   110V
— · — ○ — · · Input Volt.   160V

Load Current [A]

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

2.Values

Load Current	Output Voltage [V]		
[A]	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
0.00	12.131	12.130	12.130
1.50	12.125	12.126	12.126
3.00	12.124	12.125	12.126
4.50	12.124	12.125	12.126
6.00	12.124	12.125	12.126
7.50	12.124	12.125	12.126
8.40	12.124	12.125	12.127
9.24	12.124	12.125	12.127
--	-	-	-
--	-	-	-
--	-	-	-

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Model	DHS100A12
Item	Dynamic Load Response
Object	+12V8.4A

Temperature   25°C
Testing Circuitry   Figure A

Input Volt.   110 V

Cycle   1000 ms

Load Current

8.4A / 20 μs

Min. Load (0A) ←→
Load 100% (8.4A)

500mV/div

500 μs/div   10 ms/div

Min. Load (0A) ←→
Load 50% (4.2A)

500mV/div

500 μs/div   10 ms/div

Load 10% (0.84A) ←→
Load 100% (8.4A)

500mV/div

500 μs/div   10 ms/div

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Model	DHS100A12
Item	Ripple Voltage (by Load Current)
Object	+12V8.4A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

———△——— Input Volt. 60V
—··—○—·· Input Volt. 160V

Ripple Voltage [mV]

Load Current [A]

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 60 [V]	Input Volt. 160 [V]
0.00	10	10
1.50	30	45
3.00	30	45
4.50	30	50
6.00	30	50
7.50	30	50
8.40	30	50
9.24	30	50
--	-	-
--	-	-
--	-	-

Measured by 500 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

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Model	DHS100A12
Item	Ripple-Noise
Object	+12V8.4A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

——△—— Input Volt.   60V
—·—○—·— Input Volt.   160V

Ripple-Noise [mV] vs Load Current [A]

Measured by 500 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. 60 [V]	Input Volt. 160 [V]
0.00	10	10
1.50	30	45
3.00	30	45
4.50	30	50
6.00	30	50
7.50	30	50
8.40	30	50
9.24	30	50
--	-	-
--	-	-
--	-	-

Ripple
Noise[mVp–p]

Fig.Complex Ripple Noise Wave Form

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Model	DHS100A12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V8.4A

Testing Circuitry   Figure B

1.Graph

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

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

Ambient Temperature [°C]
Input Volt.   110V
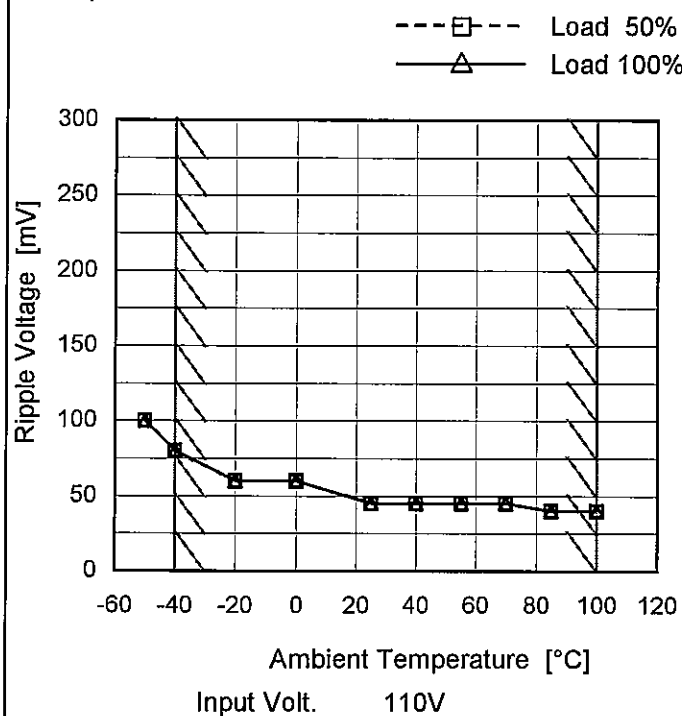
Measured by 500 MHz Oscilloscope.
Note: Slanted line shows the range of the rated
     ambient temperature.
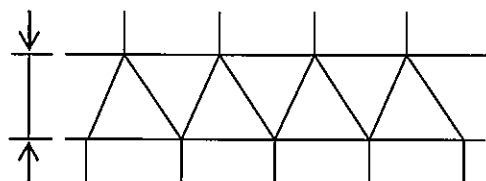
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	100	100
-40	80	80
-20	60	60
0	60	60
25	45	45
40	45	45
55	45	45
70	45	45
85	40	40
100	40	40
--	-	-

Ripple [mVp-p]

Fig.Complex Ripple Wave Form

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Model	DHS100A12
Item	Ambient Temperature Drift
Object	+12V8.4A

Testing Circuitry   Figure A
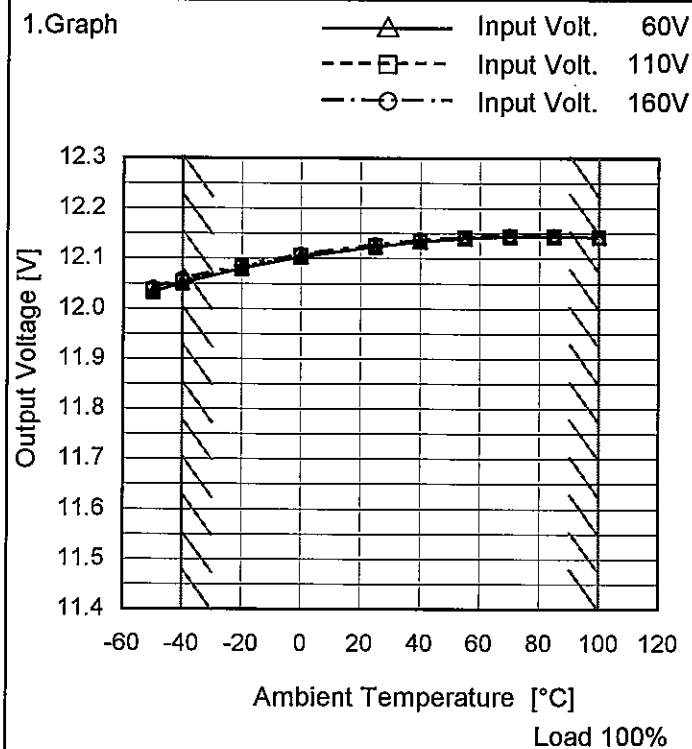
1.Graph

———△——— Input Volt.   60V
---□--- Input Volt.   110V
—·—○—·· Input Volt.   160V

Output Voltage [V]

Ambient Temperature [°C]

Load 100%

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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
-50	12.032	12.036	12.041
-40	12.050	12.053	12.058
-20	12.081	12.082	12.087
0	12.104	12.106	12.109
25	12.124	12.125	12.127
40	12.134	12.136	12.137
55	12.140	12.141	12.142
70	12.143	12.144	12.145
85	12.144	12.145	12.145
100	12.143	12.143	12.142
---	-	-	-

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Model	DHS100A12
Item	Output Voltage Accuracy
Object	+12V8.4A

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 - 100°C

Input Voltage : 60 - 160V

Load Current   : 0 - 8.4A

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

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

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output Current[A]	Output Voltage[V]	Output Voltage Accuracy Value [mV]	Output Voltage Accuracy Ration [%]
Maximum Voltage	85	60	0	12.152	±51	±0.4
Minimum Voltage	-40	60	8.4	12.050		

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Model	DHS100A12
Item	Time Lapse Drift
Object	+12V8.4A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Input Volt.   110V
Load   100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.125
0.5	12.125
1.0	12.125
2.0	12.125
3.0	12.125
4.0	12.125
5.0	12.125
6.0	12.125
7.0	12.125
8.0	12.125

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CO$EL

Model	DHS100A12
Item	Rise and Fall Time
Object	+12V8.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Input Volt. 110 V

Load 50%

Output
Volt.

[2V/div]

0

Load 100%

Output
Volt.

[2V/div]

0

Input
Volt.

0

[25V/div]   Time   [50ms/div]   Time   [10ms/div]

2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	18.0	5.8	23.8	0.5	10.0
100 %	18.0	5.8	23.8	0.3	5.0

Output
Volt.

90%

10%

Input
Volt.

Td   Tr   Th Tf

Ts

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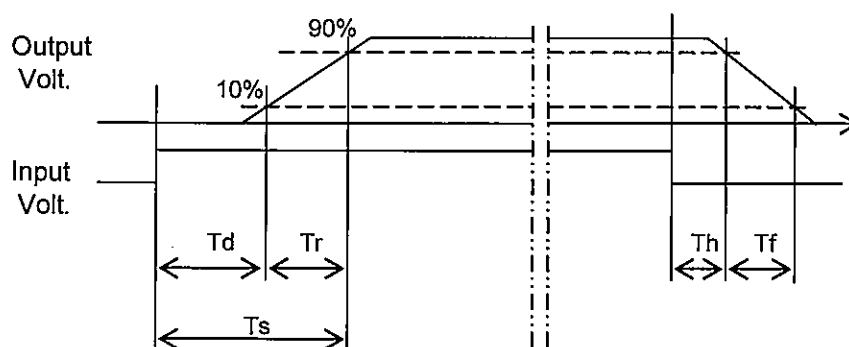
Model	DHS100A12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V8.4A
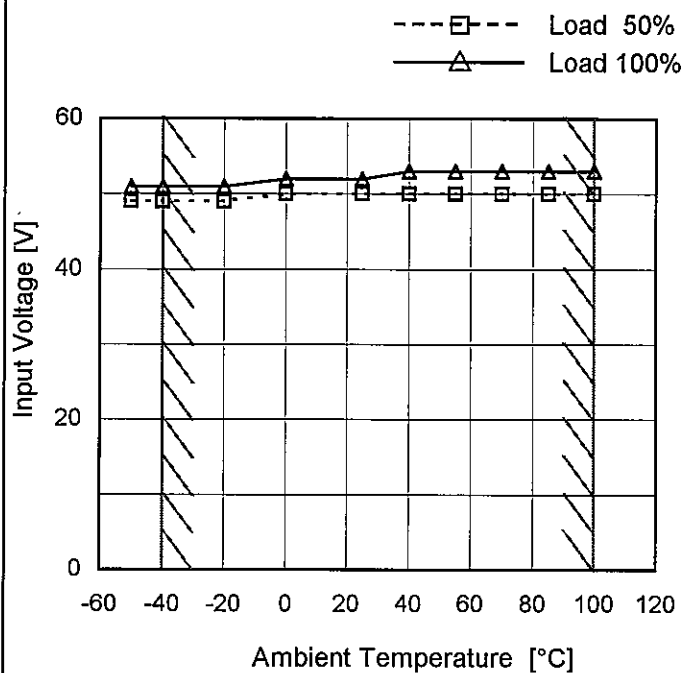
Testing Circuitry   Figure A

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%
-50	49	51
-40	49	51
-20	49	51
0	50	52
25	50	52
40	50	53
55	50	53
70	50	53
85	50	53
100	50	53
--	-	-

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Model	DHS100A12
Item	Overcurrent Protection
Object	+12V8.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

——— Input Volt. 60V
——— Input Volt. 110V
——— Input Volt. 160V
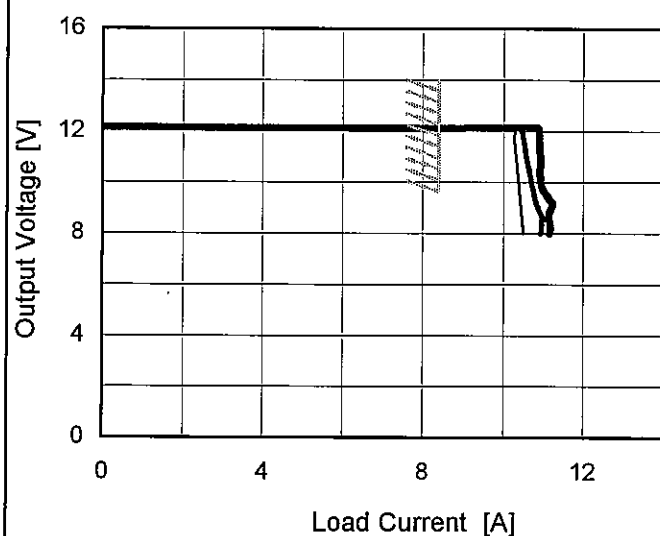
Load Current [A]

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

Intermittent operation occurs when the output voltage is from 8V to 0V.

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
12.0	8.43	8.42	8.42
11.4	10.28	10.53	10.91
10.8	10.32	10.59	10.92
9.6	10.40	10.74	11.03
8.4	10.47	10.96	11.15
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	DHS100A12
Item	Overvoltage Protection
Object	+12V8.4A
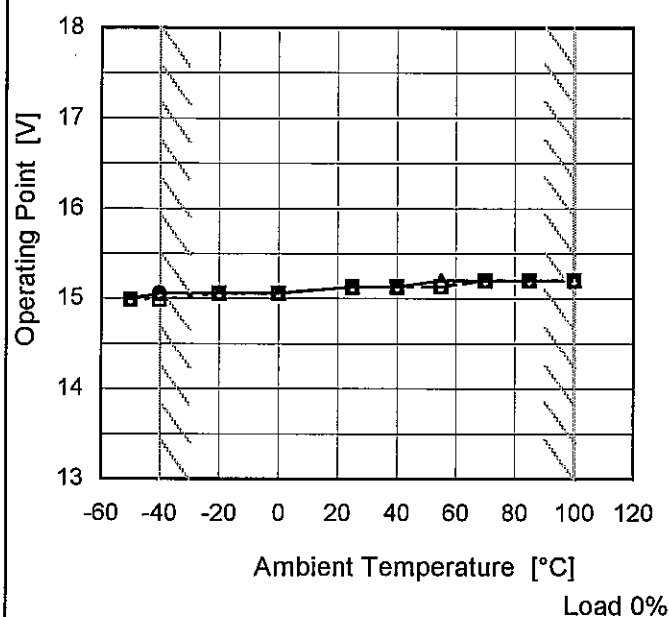
Testing Circuitry   Figure A

1.Graph

———△——— Input Volt.   60V
---⊡--- Input Volt.   110V
—·—○—·— Input Volt.   160V

Ambient Temperature [°C]

Load 0%

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

2.Values

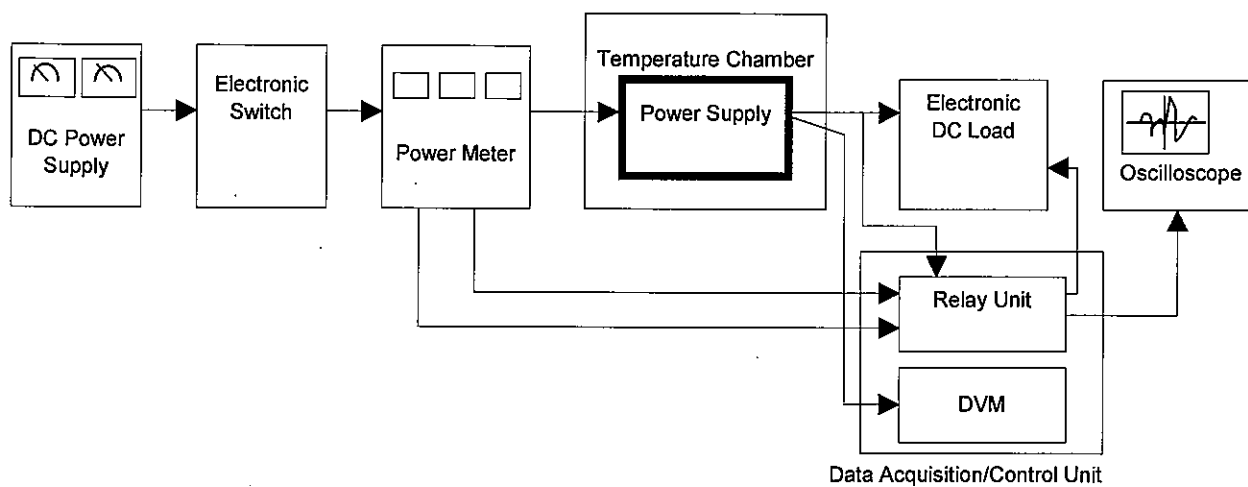| Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 60[V]	Input Volt. 110[V]	Input Volt. 160[V]
-50	14.99	14.99	14.99
-40	15.06	14.99	15.06
-20	15.06	15.06	15.06
0	15.06	15.06	15.06
25	15.13	15.13	15.13
40	15.13	15.13	15.13
55	15.20	15.13	15.13
70	15.20	15.20	15.20
85	15.20	15.20	15.20
100	15.20	15.20	15.20
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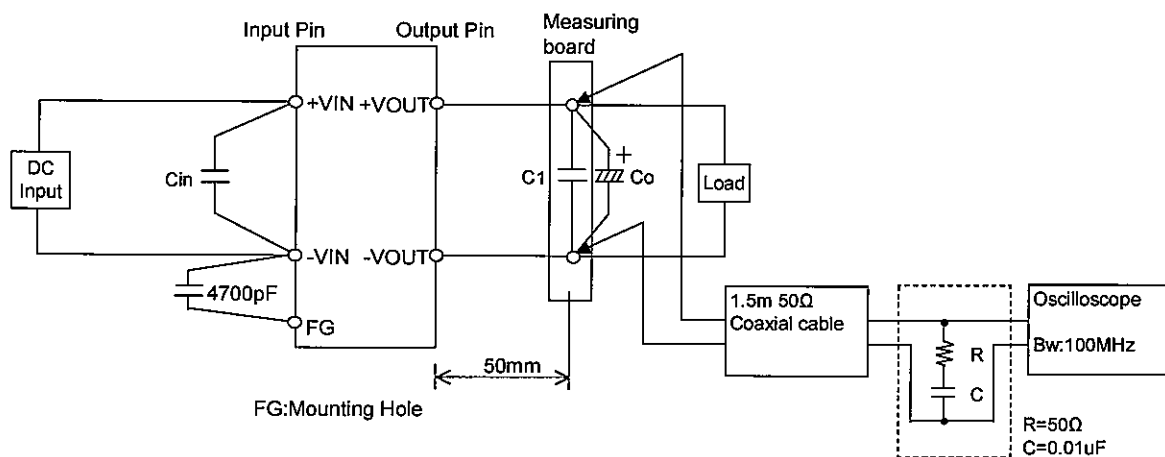BC-10412

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Figure A

C1 : DHS100A24 4.7uF
      Others   10uF
Co : DHS100A05 2200uF
      DHS100A12 470uF
      DHS100A15 470uF
      DHS100A24 220uF

Figure B

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