COSEL

TEST DATA OF DBS700B12

Regulated DC Power Supply
January 14, 2010

Approved by : _Tatsuya Mano_

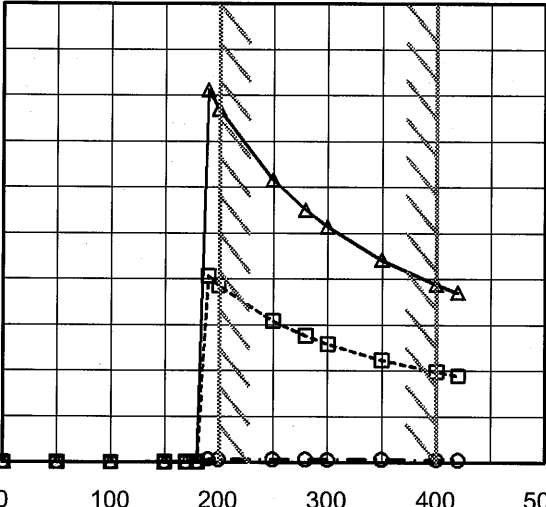Tatsuya Mano   Design Manager

Prepared by : _Takayuki Fukuda_

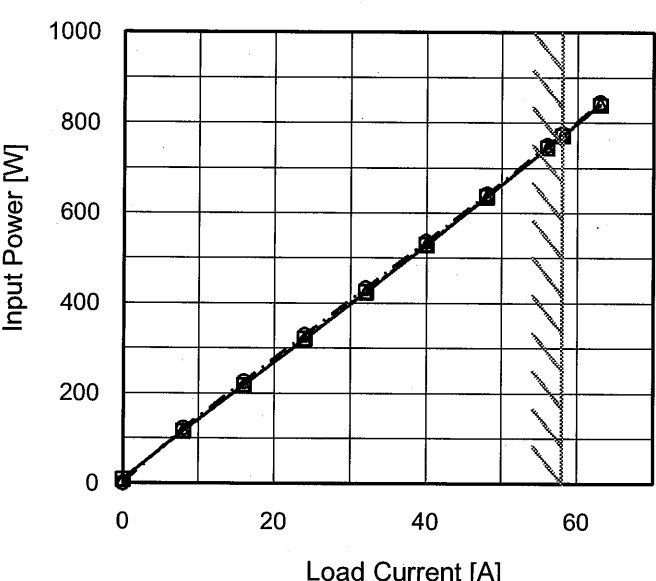Takayuki Fukuda   Design Engineer

COSEL CO.,LTD.

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Model	DBS700B12
Item	Input Current (by Input Voltage)
Object	———————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

——△—— Load 100%
---田--- Load 50%
—·—○—·— Load 0%

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
50	0.000	0.000	0.000
100	0.000	0.000	0.000
150	0.003	0.003	0.003
170	0.003	0.003	0.003
180	0.003	0.003	0.003
190	0.035	2.036	4.062
200	0.035	1.928	3.854
250	0.033	1.543	3.080
280	0.030	1.383	2.752
300	0.029	1.294	2.570
350	0.029	1.118	2.210
400	0.028	0.988	1.940
420	0.025	0.945	1.852
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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COSEL

Model	DBS700B12
Item	Input Current (by Load Current)
Object	———————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

——△—— Input Volt.   200V
---☐--- Input Volt.   280V
—·—○—·· Input Volt.   400V

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0	0.035	0.030	0.004
8	0.584	0.412	0.306
16	1.086	0.778	0.566
24	1.597	1.146	0.823
32	2.116	1.517	1.082
40	2.640	1.894	1.342
48	3.178	2.274	1.606
56	3.720	2.658	1.874
58	3.856	2.754	1.942
63	4.200	2.998	2.112
--	-	-	-

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

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Model	DBS700B12
Item	Input Power (by Load Current)
Object	————————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

———△——— Input Volt.   200V
- - -◻- - - Input Volt.   280V
—·—○—·— Input Volt.   400V

Load Current [A]

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

2.Values

Load Current [A]	Input Power [W]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0	7.0	8.4	0.1
8	116.8	115.3	122.2
16	217.2	217.9	226.2
24	319.4	320.9	329.2
32	423.0	424.9	433.0
40	528.0	530.0	537.0
48	635.0	637.0	642.0
56	744.0	744.0	750.0
58	771.0	771.0	776.0
63	841.0	839.0	845.0
--	-	-	-

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Model	DBS700B12
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%
195	90.2	90.0
200	90.6	90.1
240	90.5	90.1
280	90.1	90.1
320	89.6	89.9
360	88.8	89.7
400	88.1	89.5
420	87.8	89.4
--	-	-

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Model	DBS700B12
Item	Efficiency (by Load Current)
Object	———————

Temperature　　25°C
Testing Circuitry　Figure A

1.Graph

——△—— Input Volt. 200V
---⊟--- Input Volt. 280V
—·—○—·· Input Volt. 400V

Efficiency [%]

Load Current [A]

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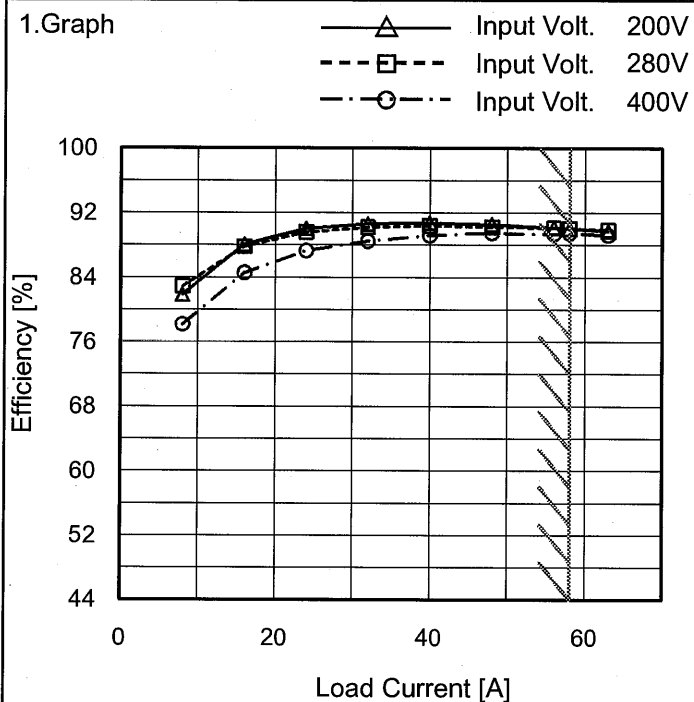
2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0	-	-	-
8	81.8	82.9	78.2
16	88.1	87.8	84.5
24	90.0	89.6	87.3
32	90.6	90.2	88.5
40	90.8	90.4	89.2
48	90.6	90.3	89.5
56	90.1	90.1	89.4
58	90.1	90.1	89.5
63	89.7	89.9	89.2
--	-	-	-

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Model	DBS700B12
Item	Line Regulation
Object	+12V58A

Temperature   25°C
Testing Circuitry   Figure A

1. Graph

--- ⊟ --- Load 50%
—— △ —— Load 100%

Output Voltage [V] vs 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%
195	12.046	12.043
200	12.046	12.042
240	12.046	12.041
280	12.045	12.040
320	12.044	12.038
360	12.044	12.038
400	12.043	12.038
420	12.042	12.037
--	-	-

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Model	DBS700B12
Item	Load Regulation
Object	+12V58A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 200V
- - - ⊟ - - - Input Volt. 280V
— · — ○ — · · — Input Volt. 400V

Load Current [A]

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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0	12.055	12.055	12.055
8	12.051	12.051	12.050
16	12.048	12.048	12.047
24	12.047	12.046	12.044
32	12.046	12.044	12.043
40	12.045	12.043	12.041
48	12.043	12.042	12.040
56	12.042	12.040	12.038
58	12.041	12.039	12.038
63	12.040	12.038	12.036
--	-	-	-

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Model	DBS700B12
Item	Dynamic Load Response
Object	+12V58A

Temperature	25°C
Testing Circuitry	Figure A

Input Volt.   280 V

Cycle   1000 mS

Load Current   58A / 50 μ

Min. Load (0A) ←→
Load 100% (58A)

1V/div
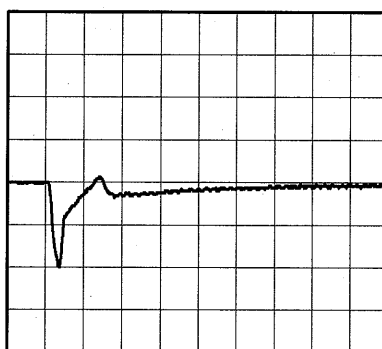
500 μ s/div
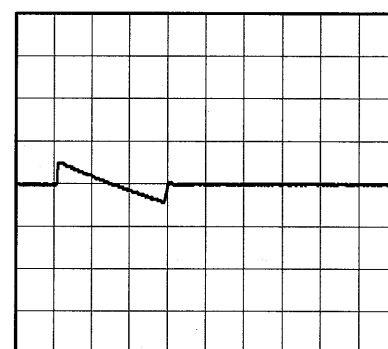
10 ms/div

Min. Load (0A) ←→
Load 50% (29A)

1V/div
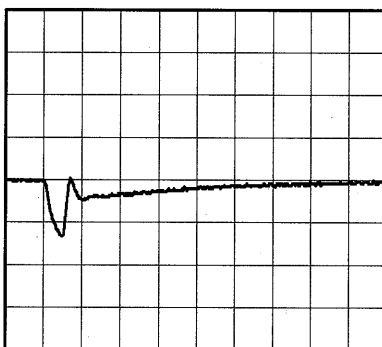
500 μ s/div

10 ms/div

Load 10% (5.8A) ←→
Load 100% (58A)

1V/div

500 μ s/div

10 ms/div

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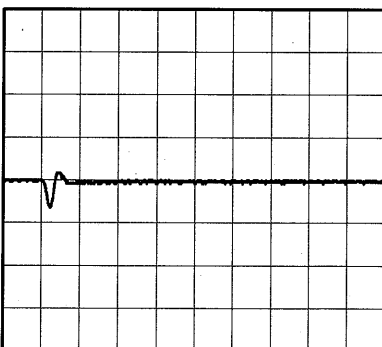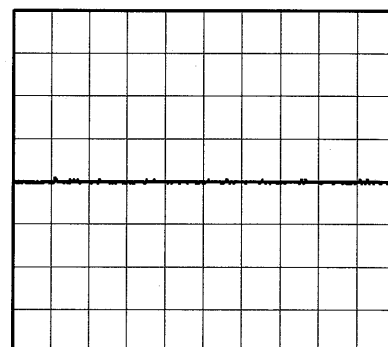
Model	DBS700B12
Item	Ripple Voltage (by Load Current)
Object	+12V58A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

——△—— Input Volt. 200V
—·—○—·— Input Volt. 400V

Load Current [A]

Measured by 250 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated
        load current.
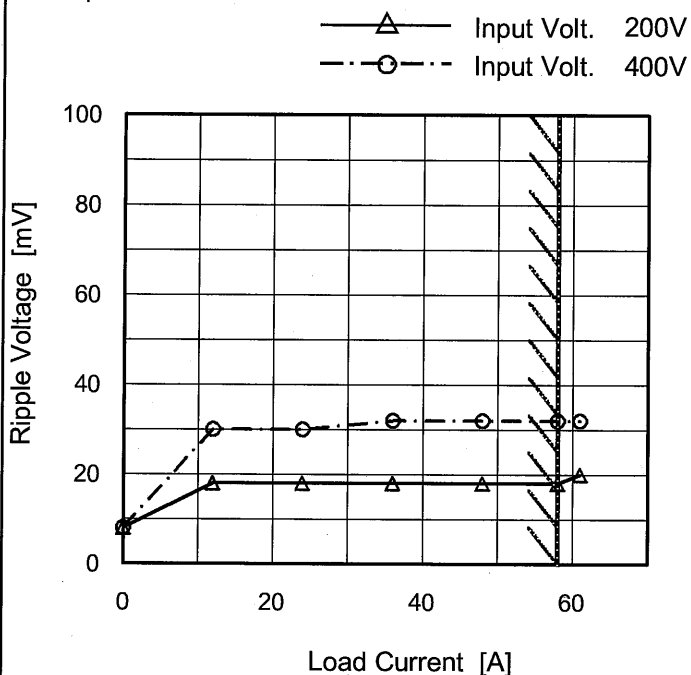
2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0	8	8
12	18	30
24	18	30
36	18	32
48	18	32
58	18	32
61	20	32
--	-	-
--	-	-
--	-	-
--	-	-

T1: Due to AC Input Line
T2: Due to Switching
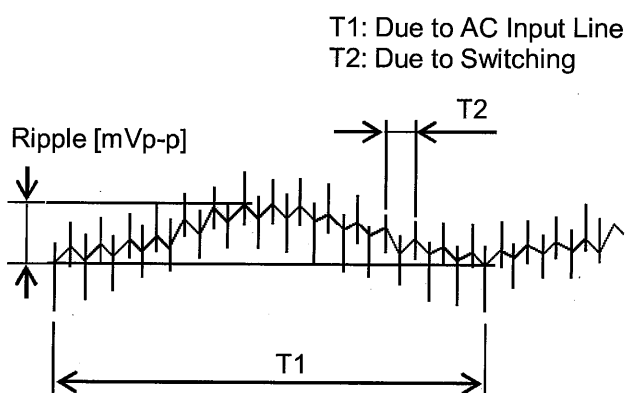
Fig. Complex Ripple Wave Form

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Model	DBS700B12
Item	Ripple-Noise
Object	+12V58A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

————△———— Input Volt. 200V
—··—○—··— Input Volt. 400V
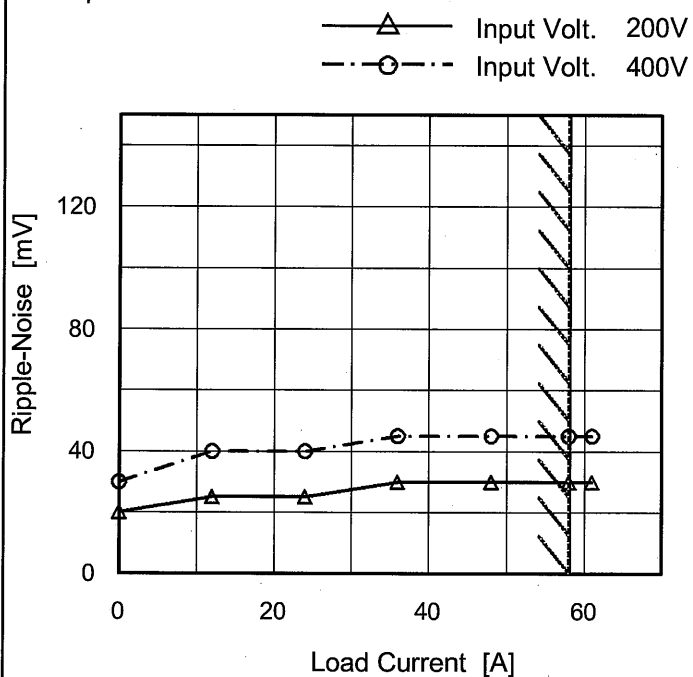
Load Current [A]

Measured by 250 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. 200 [V]	Input Volt. 400 [V]
0	20	30
12	25	40
24	25	40
36	30	45
48	30	45
58	30	45
61	30	45
--	-	-
--	-	-
--	-	-
--	-	-
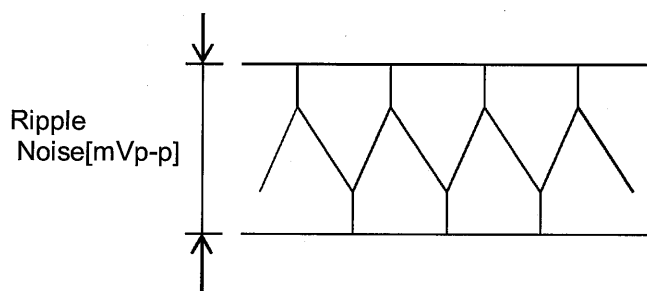
Ripple
Noise[mVp-p]

Fig. Complex Ripple Noise Wave Form

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Model	DBS700B12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V58A

Testing Circuitry   Figure B

1. Graph

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

Ambient Temperature [°C]

Input Volt.   280V
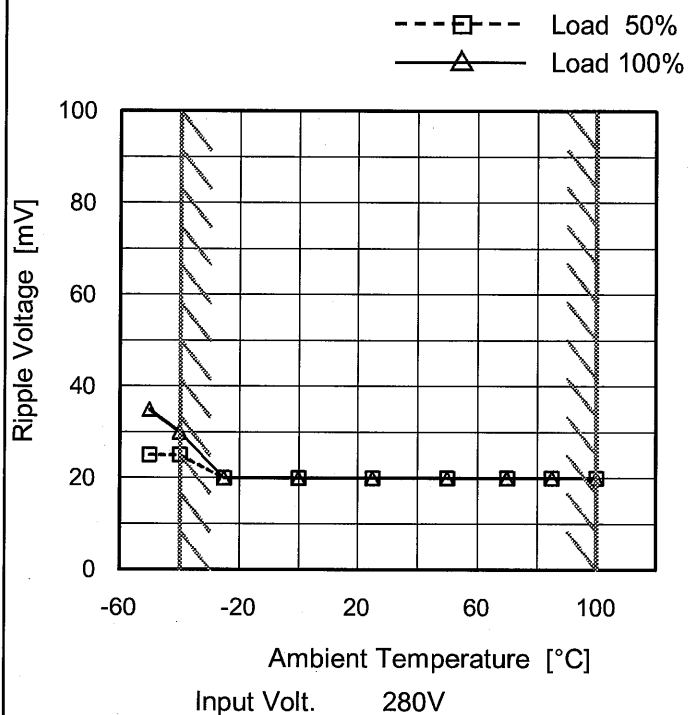
Measured by 250 MHz Oscilloscope.
Note: Slanted line shows the range of the rated
      ambient temperature.

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	25	35
-40	25	30
-25	20	20
0	20	20
25	20	20
50	20	20
70	20	20
85	20	20
100	20	20
---	-	-
---	-	-

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Model	DBS700B12
Item	Ambient Temperature Drift
Object	+12V58A

Testing Circuitry   Figure A

1.Graph

————△———— Input Volt. 200V
– – –☐– – – Input Volt. 280V
—·—O—··— Input Volt. 400V

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. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-50	11.960	11.958	11.958
-40	11.975	11.973	11.973
-20	12.002	12.000	11.999
0	12.024	12.021	12.020
25	12.044	12.041	12.039
40	12.053	12.049	12.048
55	12.060	12.057	12.054
70	12.067	12.065	12.063
85	12.077	12.075	12.073
100	12.092	12.090	12.088
--	-	-	-

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Model	DBS700B12
Item	Output Voltage Accuracy
Object	+12V58A

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 : 200 - 400V
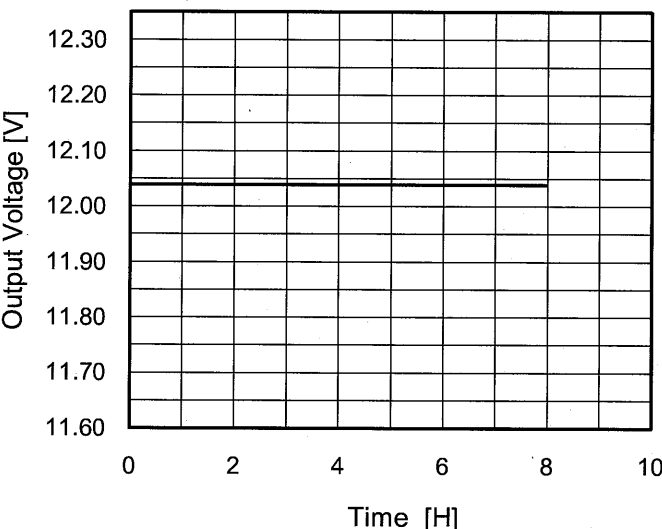
       Load Current : 0 - 58A

* 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		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	100	200	0	12.115	±71	±0.6
Minimum Voltage	-40	400	58	11.973		

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Model	DBS700B12
Item	Time Lapse Drift
Object	+12V58A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Input Volt. 280V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.040
0.5	12.039
1.0	12.039
2.0	12.039
3.0	12.039
4.0	12.039
5.0	12.039
6.0	12.039
7.0	12.039
8.0	12.039

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COSEL

Model	DBS700B12
Item	Rise and Fall Time
Object	+12V58A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Input Volt. 280 V

Load 50%

Output Volt.

[2V/div]

0

Load 100%

Output Volt.

[2V/div]

0

Input Volt.

0

[100V/div]

Time [50mS/div]

Time [10mS/div]

2.Values [mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	58.8	3.5	62.3	0.2	2.9
100 %	59.0	3.5	62.5	0.2	1.4

Output Volt.

90%

10%

Input Volt.

Td | Tr

Th | Tf

Ts

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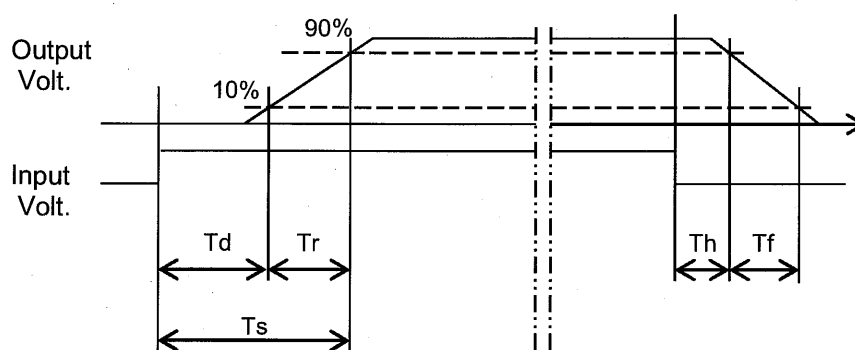
Model	DBS700B12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V58A
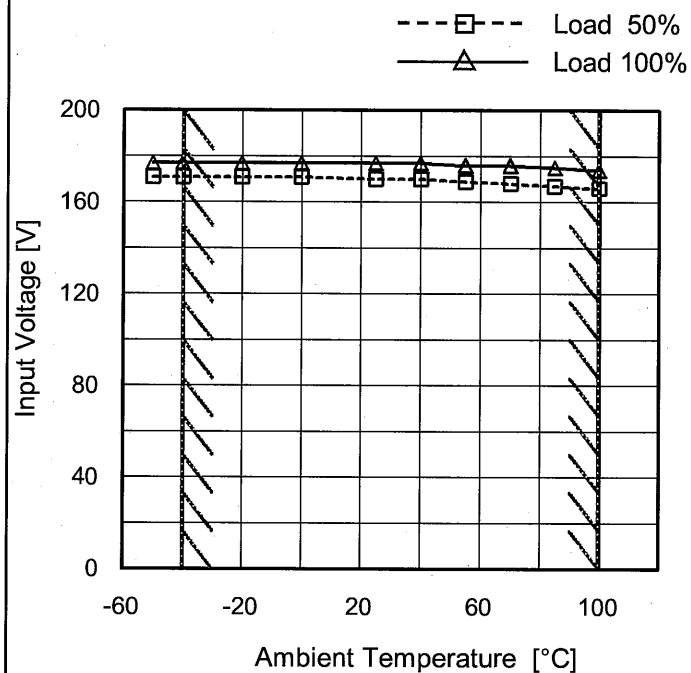
Testing Circuitry   Figure A

1.Graph

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


Input Voltage [V] vs 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	171	177
-40	171	177
-20	171	177
0	171	177
25	170	177
40	170	177
55	169	176
70	168	176
85	167	175
100	166	174
--	-	-

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Model	DBS700B12
Item	Overcurrent Protection
Object	+12V58A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

———— Input Volt. 200V
———— Input Volt. 280V
━━━━━ Input Volt. 400V

Load Current [A]

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

Intermittent operation occurs when the output voltage is from 7.2V to 0V.

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
12.0	59.42	59.41	59.40
11.4	70.98	70.93	72.18
10.8	71.14	71.31	72.54
9.6	71.67	72.07	73.77
8.4	72.30	72.94	75.20
7.2	72.95	74.10	77.17
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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COSEL

Model	DBS700B12
Item	Overvoltage Protection
Object	+12V58A

Testing Circuitry   Figure A

1.Graph

——△—— Input Volt.   200V
- - - ☐ - - - Input Volt.   280V
— · —○— · — Input Volt.   400V

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. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-50	15.34	15.34	15.34
-40	15.45	15.45	15.45
-20	15.45	15.45	15.45
0	15.45	15.45	15.45
25	15.45	15.45	15.45
40	15.45	15.45	15.45
55	15.45	15.45	15.45
70	15.45	15.45	15.45
85	15.45	15.45	15.45
100	15.56	15.56	15.56
--	-	-	-

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Figure A

Figure B

Co[μF]	
Base plate temperature:	Base plate temperature:
Tc=0℃～+100℃	Tc=-40℃～+100℃
2200	2200 x 3

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