



# TEST DATA OF DBS200B12

(280V INPUT)

Regulated DC Power Supply

Date : Apr. 16. 1999

Approved by : K. Shimano  
Design Manager

Prepared by : K. Mizui  
Design Engineer

コーセル株式会社  
COSEL CO., LTD.

## CONTENTS

1. Line Regulation . . . . .	1
静的入力変動	
2. Input Current (by Input Voltage) . . . . .	2
入力電流 (入力電圧特性)	
3. Input Current (by Load Current) . . . . .	3
入力電流 (負荷特性)	
4. Input Power (by Load Current) . . . . .	4
入力電力 (負荷特性)	
5. Efficiency (by Input Voltage) . . . . .	5
効率 (入力電圧特性)	
6. Efficiency (by Load Current) . . . . .	6
効率 (負荷特性)	
7. Load Regulation . . . . .	7
静的負荷変動	
8. Ripple Voltage (by Load Current) . . . . .	8
リップル電圧 (負荷特性)	
9. Ripple-Noise . . . . .	9
リップルノイズ	
10. Overcurrent Protection . . . . .	10
過電流保護	
11. Overvoltage Protection . . . . .	11
過電圧保護	
12. Dynamic Load Responce . . . . .	12
動的負荷変動	
13. Rise and Fall Time . . . . .	13
立上り、立下り時間	
14. Ambient Temperature Drift . . . . .	14
周囲温度変動	
15. Minimum Input Voltage for Regulated Output Voltage . . . . .	15
最低レギュレーション電圧	
16. Ripple Voltage (by Ambient Temperature) . . . . .	16
リップル電圧 (周囲温度特性)	
17. Time Lapse Drift . . . . .	17
経時ドリフト	
18. Output Voltage Accuracy . . . . .	18
定電圧精度	
19. Condensation . . . . .	19
結露特性	
20. Line Noise Tolerance . . . . .	20
入力雑音耐量	
21. Figure of Testing Circuitry . . . . .	21
測定回路図	

(Final Page 21 )

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Model		DBS200B12	
Item	Line Regulation  静的入力変動		
Object	+12.0V20A		

1. Graph

-----□----- Load 50%

-----△----- Load 100%

[V]

12.09

12.07

12.05

12.03

12.01

11.99

11.97

0

Output Voltage

0

150

200

250

300

350

400

450

500

Input Voltage

[V]

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

(注)斜線は定格入力電圧範囲を示す。

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
170	12.025	12.020
180	12.024	12.021
200	12.025	12.021
250	12.025	12.021
280	12.025	12.021
300	12.024	12.021
350	12.024	12.021
400	12.024	12.021
420	12.023	12.020

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
170	12.025	12.020
180	12.024	12.021
200	12.025	12.021
250	12.025	12.021
280	12.025	12.021
300	12.024	12.021
350	12.024	12.021
400	12.024	12.021
420	12.023	12.020

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Model		DBS200B12	
Item		Input Current (by Input Voltage) 入力電流 (入力電圧特性)	
Object			

1. Graph

—△— Load 100%

- - -□- - - Load 50%

- - -○- - - Load 0%

[A]

2.00

1.50

1.00

0.50

0.00

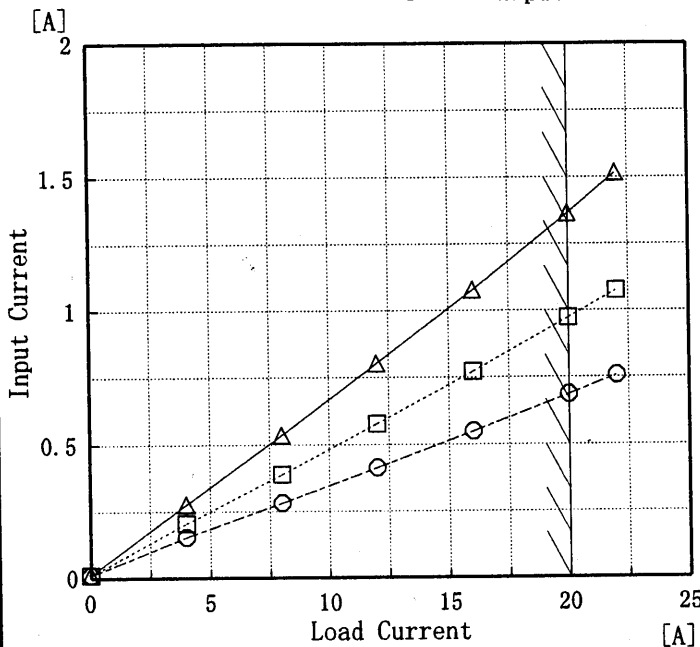
Input Voltage [V]

0100200300400500

2. Values

Input Volt. [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	0.002	0.002
165	0.013	0.814	1.660
170	0.013	0.787	1.607
180	0.012	0.740	1.510
200	0.011	0.666	1.355
250	0.011	0.536	1.081
280	0.010	0.482	0.965
300	0.010	0.451	0.901
350	0.010	0.390	0.775
400	0.009	0.346	0.682
420	0.010	0.331	0.650
—	—	—	—
—	—	—	—

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Model		DBS200B12		Temperature		25℃																																																								
Item		Input Current (by Load Current) 入力電流 (負荷特性)		Testing Circuitry		Figure A																																																								
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1. Graph				2. Values																																																										
<div><div>—△— Input Volt. 200V</div><div>- - -□- - Input Volt. 280V</div><div>- - -○- - Input Volt. 400V</div></div> <div><div>Input Current [A]</div><div></div><div>Load Current [A]</div></div> <div><div>Note: Slanted line shows the range of the rated load current</div><div>(注) 斜線は定格負荷電流範囲を示す。</div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 200[V]</th><th>Input Volt. 280[V]</th><th>Input Volt. 400[V]</th></tr><tr><td>0</td><td>0.01</td><td>0.01</td><td>0.01</td></tr><tr><td>4</td><td>0.28</td><td>0.20</td><td>0.15</td></tr><tr><td>8</td><td>0.54</td><td>0.39</td><td>0.28</td></tr><tr><td>12</td><td>0.80</td><td>0.58</td><td>0.41</td></tr><tr><td>16</td><td>1.08</td><td>0.77</td><td>0.55</td></tr><tr><td>20</td><td>1.37</td><td>0.97</td><td>0.69</td></tr><tr><td>22</td><td>1.52</td><td>1.08</td><td>0.76</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><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table>				Load Current [A]	Input Current [A]			Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	0	0.01	0.01	0.01	4	0.28	0.20	0.15	8	0.54	0.39	0.28	12	0.80	0.58	0.41	16	1.08	0.77	0.55	20	1.37	0.97	0.69	22	1.52	1.08	0.76	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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# COSEL

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Load Current [A]	Input Power [W]																																																													
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Model		DBS200B12	
Item		Efficiency (by Input Voltage) 効率 (入力電圧特性)	
Object			

1. Graph

-----□-----

Load 50%

-----△-----

Load 100%

Efficiency [%]

95

91

87

83

79

75

71

67

63

59

0

0

150

200

250

300

350

400

450

500

Input Voltage [V]

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

(注) 斜線は定格入力電圧範囲を示す。

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
170	88.5	86.1
180	89.0	86.8
200	88.9	87.1
250	88.4	87.4
280	87.9	87.2
300	87.9	87.1
350	86.7	87.1
400	86.0	86.5
420	85.4	86.4

—6—



**COSEL**

Model		DBS200B12	
Item	Load Regulation	静的負荷変動	
Object	+12.0V20A		

1. Graph

△

□

○

Input Volt. 200V

Input Volt. 280V

Input Volt. 400V

[V]

12.09

12.07

12.05

12.03

12.01

11.99

11.97

0

Output Voltage

12.03

12.027

12.026

12.025

12.023

12.021

12.020

0

5

10

15

20

25

Load Current

[A]

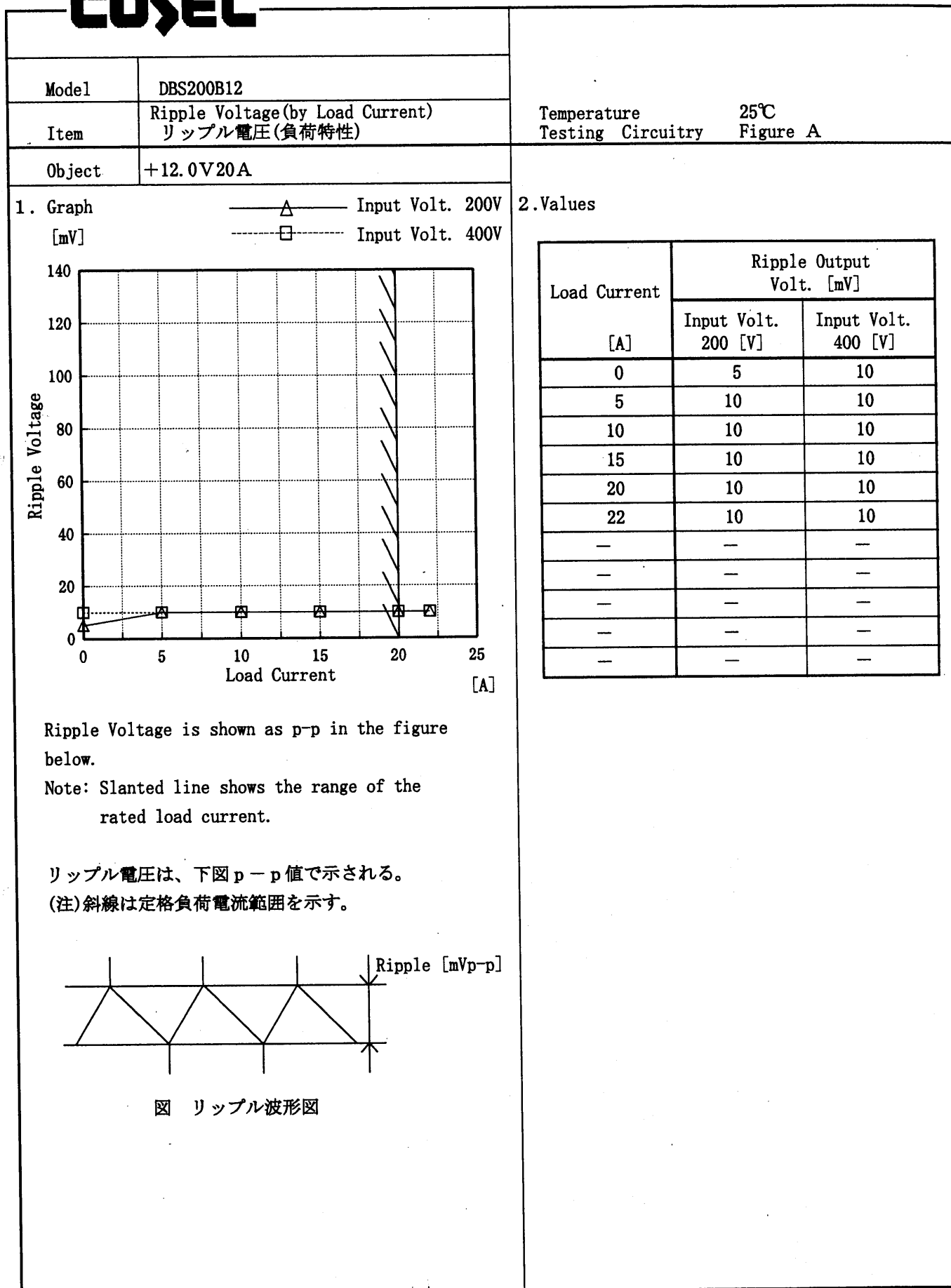
Note: Slanted line shows the range of the rated load current.

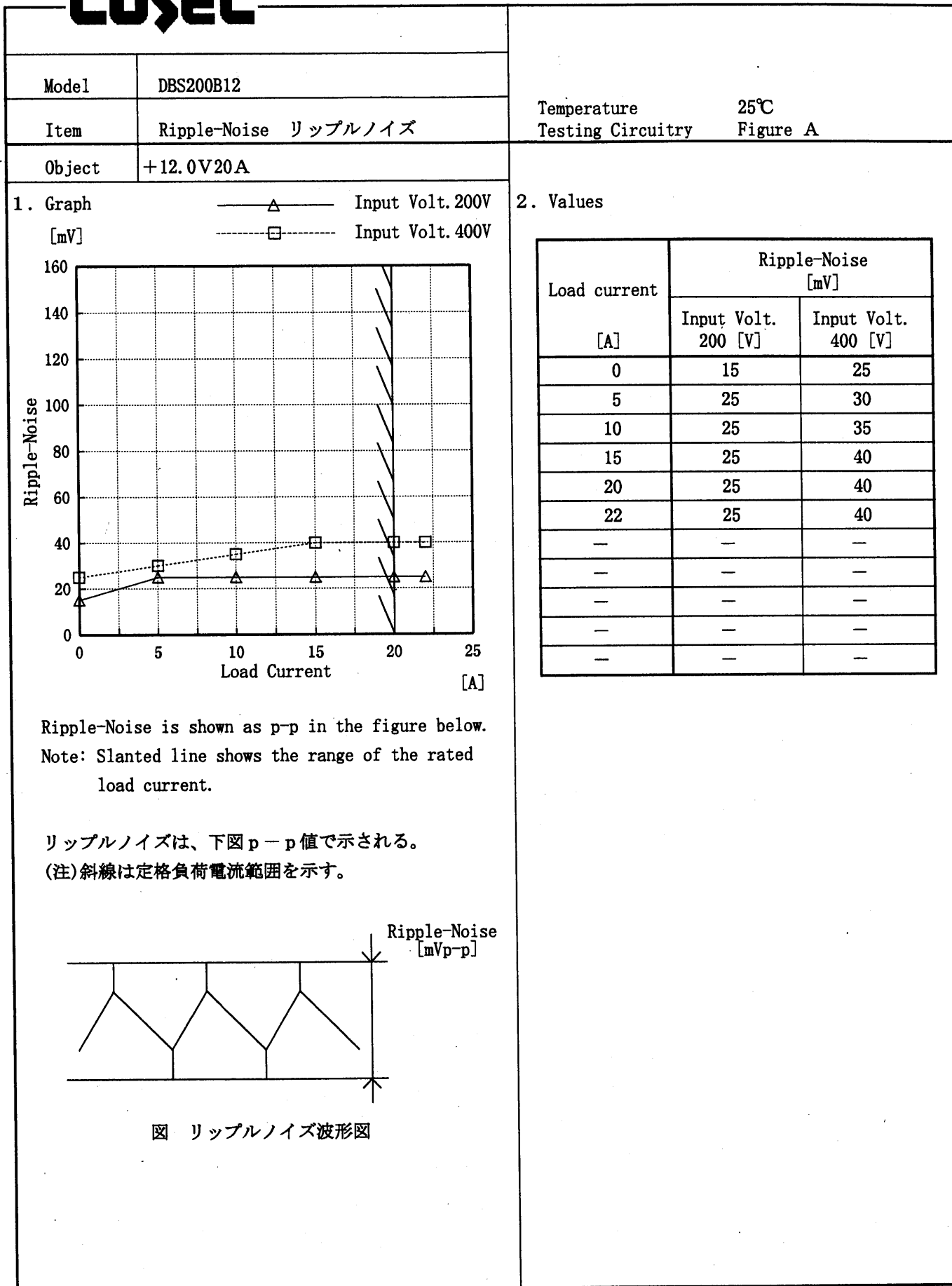
(注)斜線は定格負荷電流範囲を示す。

2. Values

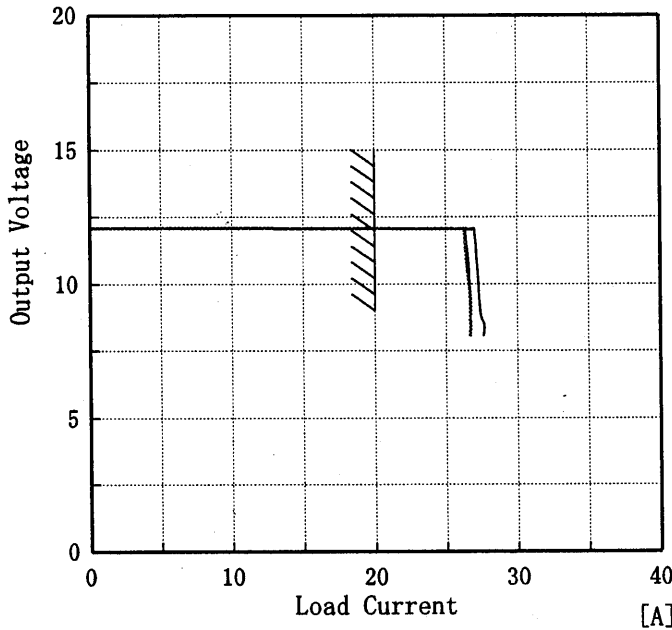
Load Current	Output Voltage		
	[V]		
Input Volt.	Input Volt.	Input Volt.	Input Volt.
200[V]	280[V]	400[V]	
0.0	12.030	12.030	12.030
4.0	12.027	12.027	12.027
8.0	12.026	12.025	12.025
12.0	12.025	12.024	12.023
16.0	12.023	12.023	12.022
20.0	12.021	12.021	12.021
22.0	12.020	12.020	12.020
—	—	—	—
—	—	—	—
—	—	—	—

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**COSEL**

**COSEL**

Model		DBS200B12		Temperature25℃ Testing CircuitryFigure A
Item		Overcurrent Protection 過電流保護		
Object		+12.0V20A		
1. Graph				
[V]		Input Volt. 200 V Input Volt. 280 V Input Volt. 400 V		
				
Note: Slanted line shows the range of the rated load current.				
(注)斜線は定格負荷電流範囲を示す。				

2. Values			
Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
12.00	26.29	26.39	26.99
11.40	26.35	26.48	27.07
10.80	26.45	26.58	27.16
9.60	26.67	26.66	27.30
8.40	26.68	26.70	27.66
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

**COSEL**

Model DBS200B12

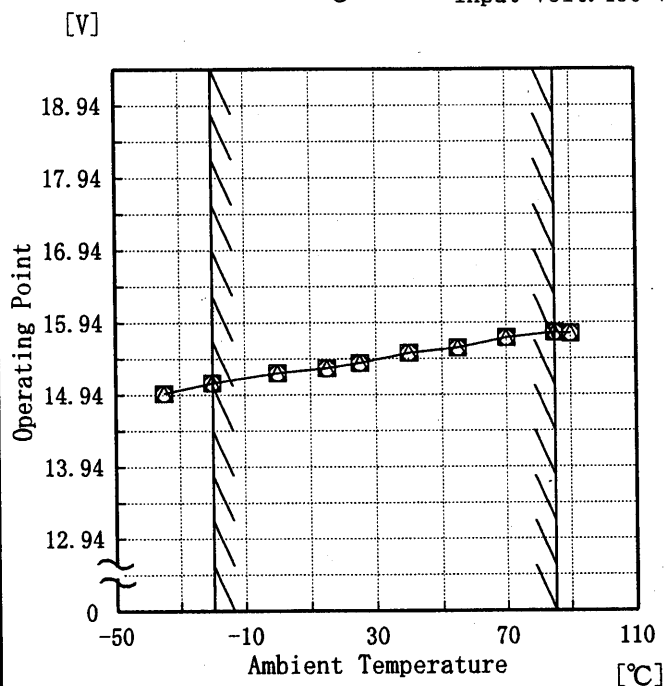
Item Overvoltage Protection  
過電圧保護

Object +12.0V20A

Testing Circuitry Figure A

## 1. Graph

—△— Input Volt. 200 V  
 - - -□- - - Input Volt. 280 V  
 —○— Input Volt. 400 V



## 2. Values

Ambient Temp. [°C]	Operating Point [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-35	14.96	14.96	14.96
-20	15.10	15.10	15.10
0	15.24	15.24	15.24
15	15.31	15.31	15.31
25	15.38	15.38	15.38
40	15.52	15.52	15.52
55	15.59	15.59	15.59
70	15.73	15.73	15.73
85	15.80	15.80	15.80
90	15.79	15.79	15.79
—	—	—	—

**COSEL**

Model	DBS200B12	Temperature	25°C
Item	Dynamic Load Response 動的負荷変動	Testing Circuitry	Figure A
Object	+12.0V20A		

Input Volt. 280 V

Cycle 1000 mS

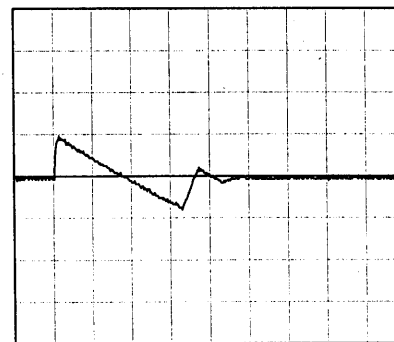
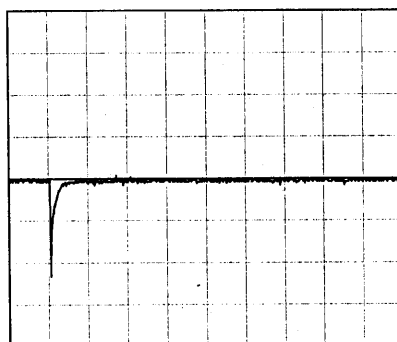
Load Current



Min. Load (0.0A) ↔

Load 100% (20.0A)

500 mV/div

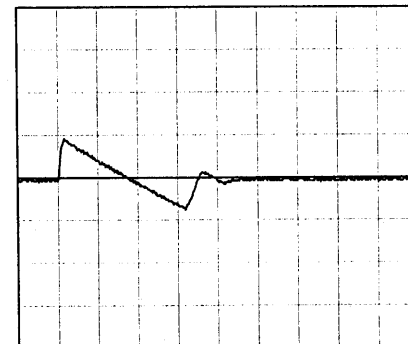
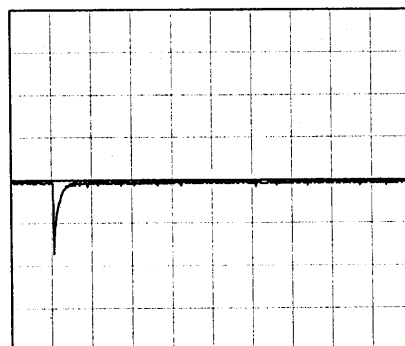


5 ms/div

Min. Load (0.0A) ↔

Load 50% (10.0A)

500 mV/div

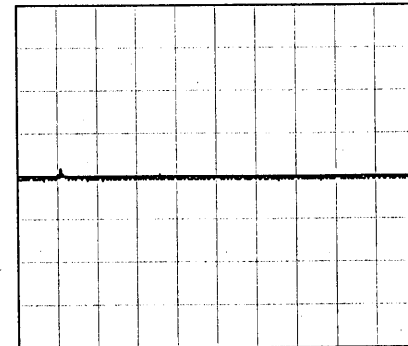
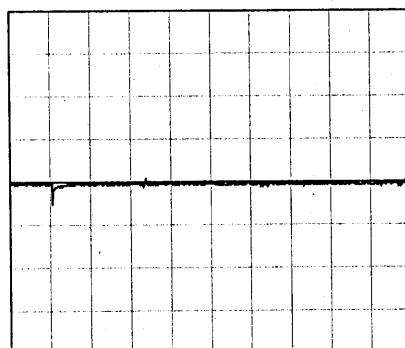


5 ms/div

Load 10% (2.0A) ↔

Load 100% (20.0A)

500 mV/div



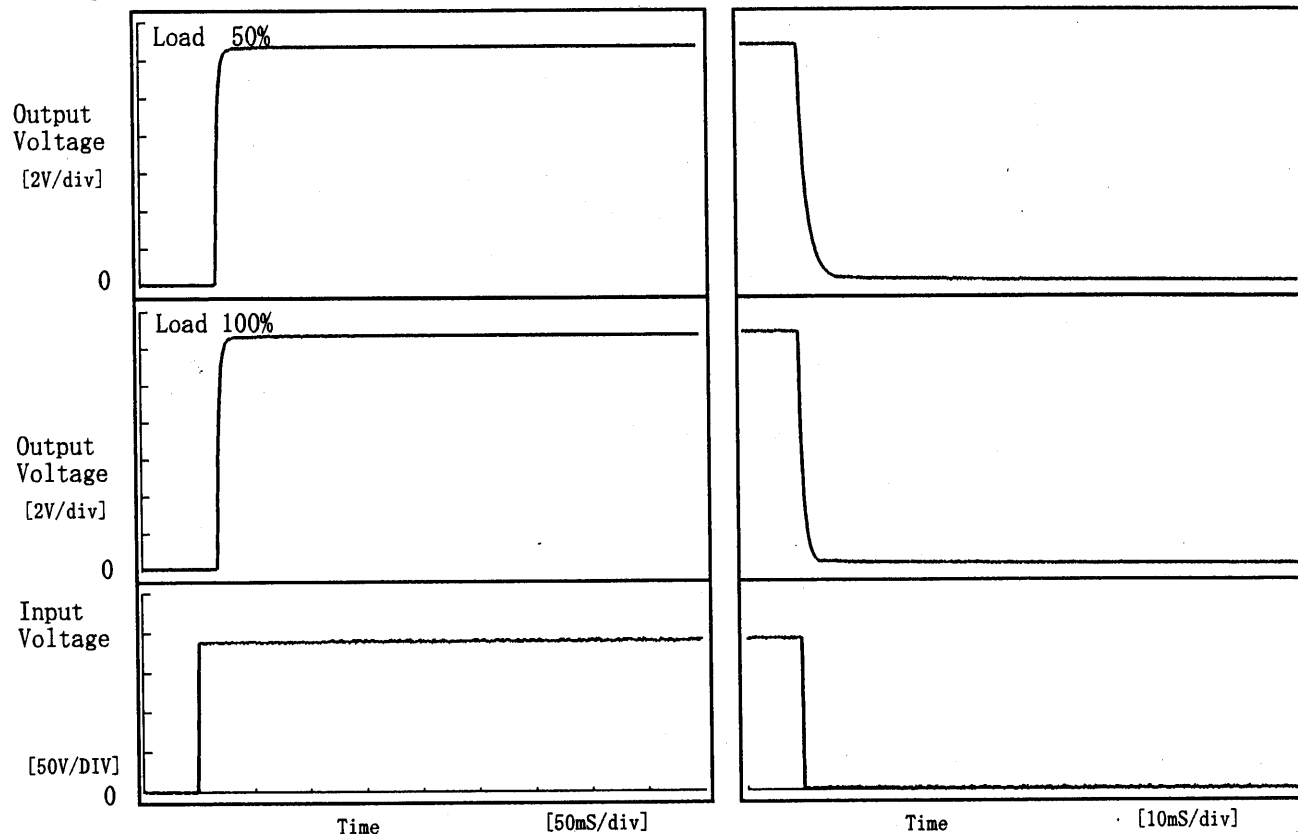
5 ms/div

**COSEL**

Model	DBS200B12	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12.0V20A		

## 1. Graph

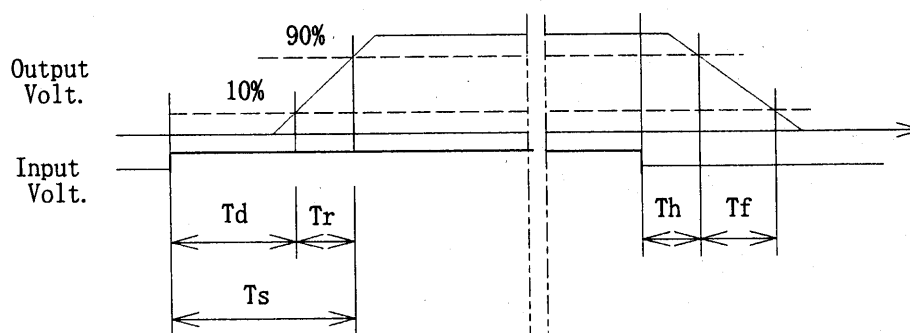
Input Volt. 200 V



## 2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	18.50	4.00	22.50	0.3	3.70
100 %	18.50	4.00	22.50	0.1	1.90



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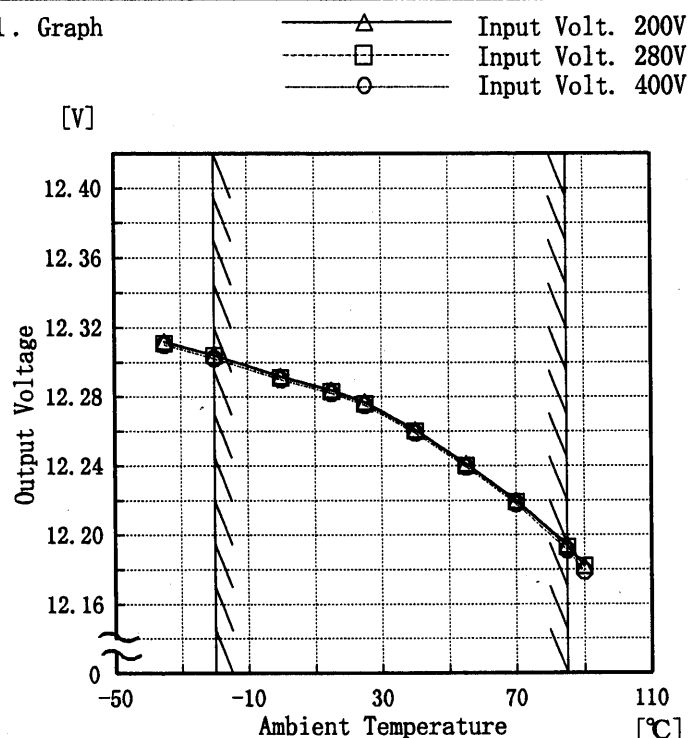
Model DBS200B12

Item Ambient Temperature Drift  
周囲温度変動

Object +12.0V20A

Testing Circuitry Figure A

## 1. Graph



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

(注)斜線は定格周囲温度範囲を示す。

## 2. Values

Temperature [°C]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-35	12.312	12.311	12.310
-20	12.304	12.304	12.302
0	12.292	12.291	12.290
15	12.284	12.283	12.282
25	12.277	12.276	12.275
40	12.261	12.260	12.259
55	12.241	12.240	12.239
70	12.220	12.219	12.218
85	12.194	12.193	12.191
90	12.182	12.182	12.179
—	—	—	—



# COSEL

Model DBS200B12		Testing Circuitry Figure A																																						
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧																																							
Object	+12.0V20A																																							
1. Graph <div> <div>-----□----- Load 50%</div> <div>-----△----- Load 100%</div> </div> <p>Input Voltage [V]</p> <p>Ambient Temperature [°C]</p>		2. Values																																						
		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temp. [°C]</th><th colspan="2">Input Voltage [V]</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> </thead> <tbody> <tr><td>-35</td><td>146</td><td>153</td></tr> <tr><td>-20</td><td>147</td><td>154</td></tr> <tr><td>0</td><td>148</td><td>156</td></tr> <tr><td>15</td><td>148</td><td>157</td></tr> <tr><td>25</td><td>149</td><td>158</td></tr> <tr><td>40</td><td>149</td><td>159</td></tr> <tr><td>55</td><td>150</td><td>160</td></tr> <tr><td>70</td><td>150</td><td>161</td></tr> <tr><td>85</td><td>150</td><td>163</td></tr> <tr><td>90</td><td>150</td><td>163</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Ambient Temp. [°C]	Input Voltage [V]		Load 50%	Load 100%	-35	146	153	-20	147	154	0	148	156	15	148	157	25	149	158	40	149	159	55	150	160	70	150	161	85	150	163	90	150	163	—	—	—
Ambient Temp. [°C]	Input Voltage [V]																																							
	Load 50%	Load 100%																																						
-35	146	153																																						
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15	148	157																																						
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55	150	160																																						
70	150	161																																						
85	150	163																																						
90	150	163																																						
—	—	—																																						

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

(注)斜線は定格周囲温度範囲を示す。

**COSEL**

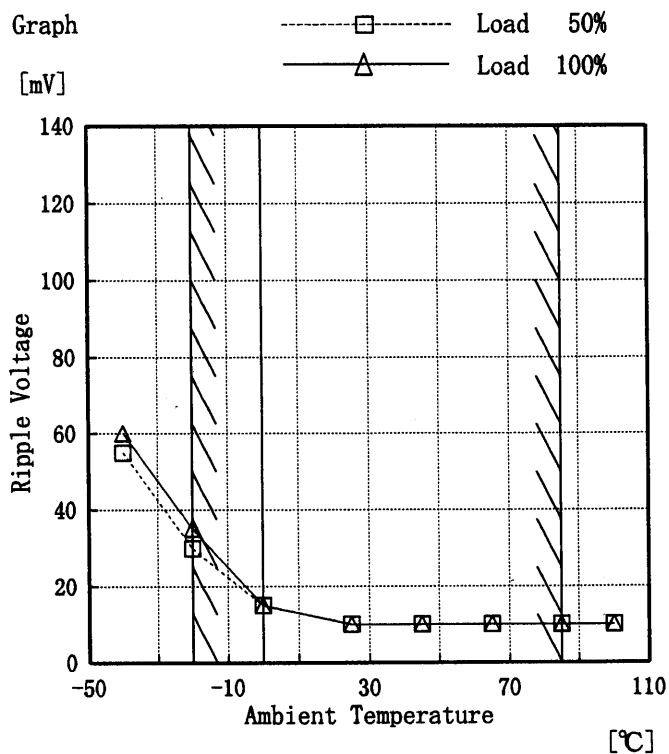
Model DBS200B12

Item Ripple Voltage (by Ambient Temp.)  
リップル電圧 (周囲温度特性)

Object +12.0V20A

Testing Circuitry Figure A

## 1. Graph



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

(注)斜線は定格周囲温度範囲を示す。

## 2. Values

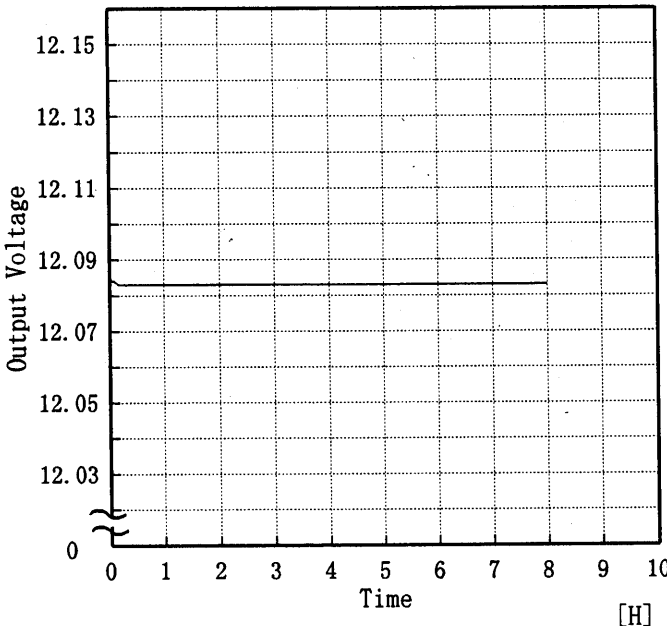
Ambient Temp. [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	55	60
-20	30	35
0	15	15
25	10	10
45	10	10
65	10	10
85	10	10
100	10	10
—	—	—
—	—	—
—	—	—

**COSEL**

COSEL	
Model	DBS200B12
Item	Time Lapse Drift 経時ドリフト
Object	+12.0V20A

1. Graph

[V]



Output Voltage [V]

Time [H]

Input Volt. 280V

Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.092
0.5	12.083
1.0	12.083
2.0	12.083
3.0	12.083
4.0	12.083
5.0	12.083
6.0	12.083
7.0	12.083
8.0	12.083

**COSEL**

Model		DBS200B12	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+12.0V20A	

## 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 : -20~85 °C

Input Voltage : 200~400 V

Load Current : 0~20 A

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

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

## 定電圧精度

周囲温度、入力電圧、負荷を下記仕様内で、任意に変動させたときの出力電圧の変動をいう。

周囲温度 -20~85 °C

入力電圧 200~400 V

負荷電流 0~20 A

\* 定電圧精度(変動値) =  $\pm (\text{出力電圧の最高値} - \text{出力電圧の最低値}) / 2$

\* 定電圧精度(変動率) =  $\frac{\text{変動値}}{\text{定格出力電圧}} \times 100$

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-20	200	0	12.311	±64	±0.6
Minimum Voltage	85	400	20	12.183		

# COSEL

LOREL

Model	DBS200B12
Item	Condensation 結露特性
Object	+12.0V20A

Testing Circuitry	Figure A
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1. Condensation test

Testing procedure is as follows.

① Keeping and cooling the unit in a tank at -10℃ for an hour with the input off.

② Taking it out of the tank and dewing itself in a room where the temperature is 25℃ and the humidity is 40%RH.

③ Testing electrical characteristics of the unit to confirm there be no fault.

1. 結露特性試験

入力を切った状態で、恒温槽で－10℃に冷却しておき、約1時間後に恒温槽から取り出し、室温25℃、湿度40%RHの状態におき結露させ、その電気的特性の測定を行い、異常のないことを確認する。

2. Values

Item	Data	Testing Conditions
Output Voltage [V]	12.358	Input Volt.: 280V, Load Current:20A
Line Regulation [mV]	1	Input Volt.: 200～400V, Load Current:20A
Load Regulation [mV]	14	Input Volt.: 280V, Load Current:0～20A

**COSEL**

Model		DBS200B12	Temperature 25°C Testing Circuitry Figure C
Item		Line Noise Tolerance 入力雑音耐量	
Object		+12.0V20A	

## 1. Results

Pulse Width [nS]	MODE	No protection failure should occur 保護回路の誤動作がない	DC-like Regulation of Output Voltage 出力電圧の直流的変動
50	COMMON	OK	no fluctuation
	NORMAL	OK	no fluctuation
1000	COMMON	OK	no fluctuation
	NORMAL	OK	no fluctuation

## Conditions

Input Voltage : 200 V  
 Pulse Voltage :  $\pm 2000$  V  
 Pulse Cycle : 10 mS  
 Pulse Input Duration: 1 min. or more  
 Load : 100 %

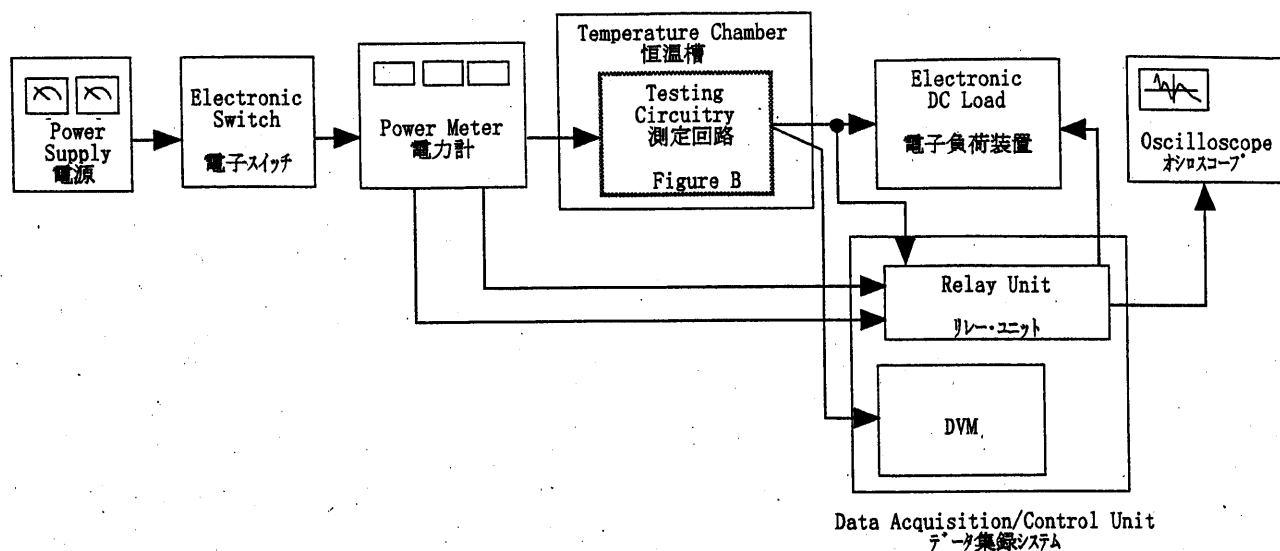


Figure A

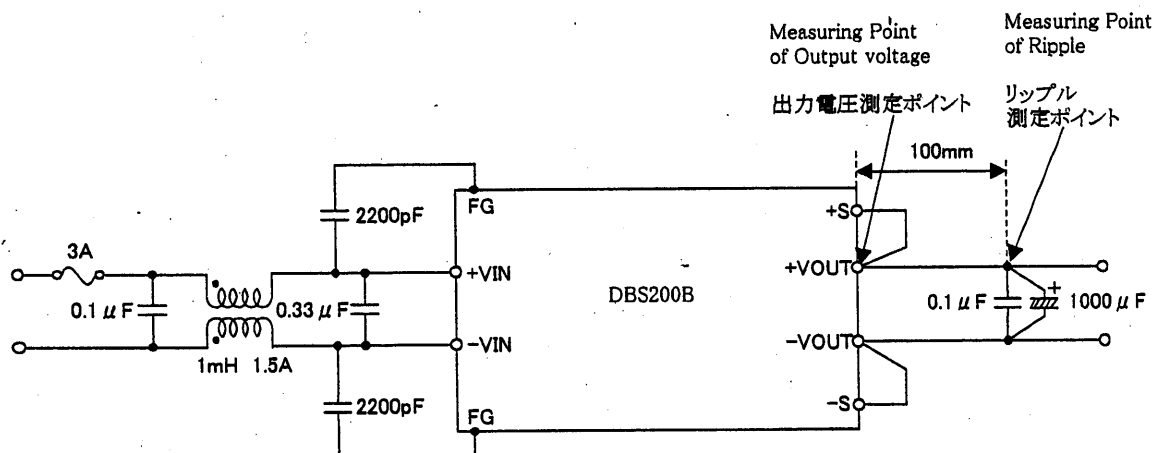


Figure B (General Electric Characteristic)  
一般電気特性

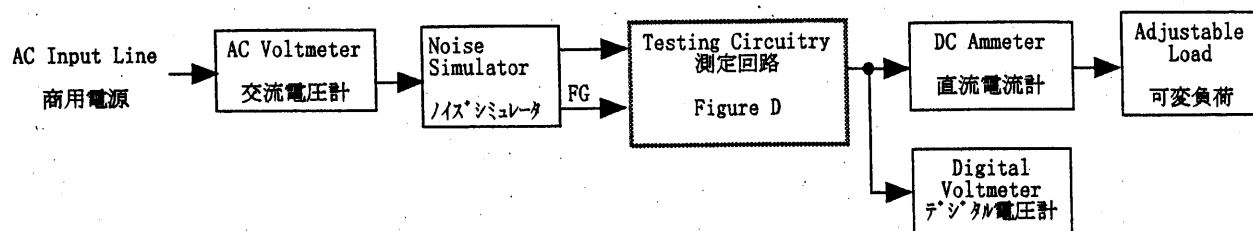
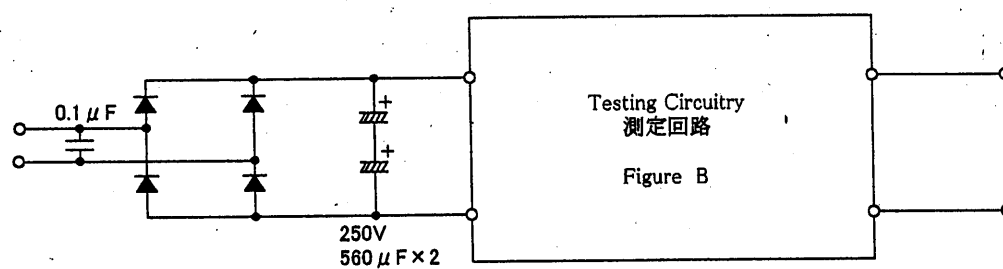


Figure C

Figure D (Line Noise Tolerance)  
入力雑音耐量