



TEST DATA OF DBS200B07

(280V INPUT)

Regulated DC Power Supply

Date : Apr. 15. 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 22)

COSEL

Model		DBS200B07	
Item		Line Regulation 静的入力変動	
Object		+7.5V28A	

1. Graph

-----□----- Load 50%

-----△----- Load 100%

[V]

7.580

7.560

7.540

7.520

7.500

7.480

7.460

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	7.513	7.511
180	7.514	7.511
200	7.514	7.511
250	7.514	7.511
280	7.513	7.511
300	7.513	7.511
350	7.513	7.511
400	7.514	7.511
420	7.513	7.511

COSEL

Model		DBS200B07	
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

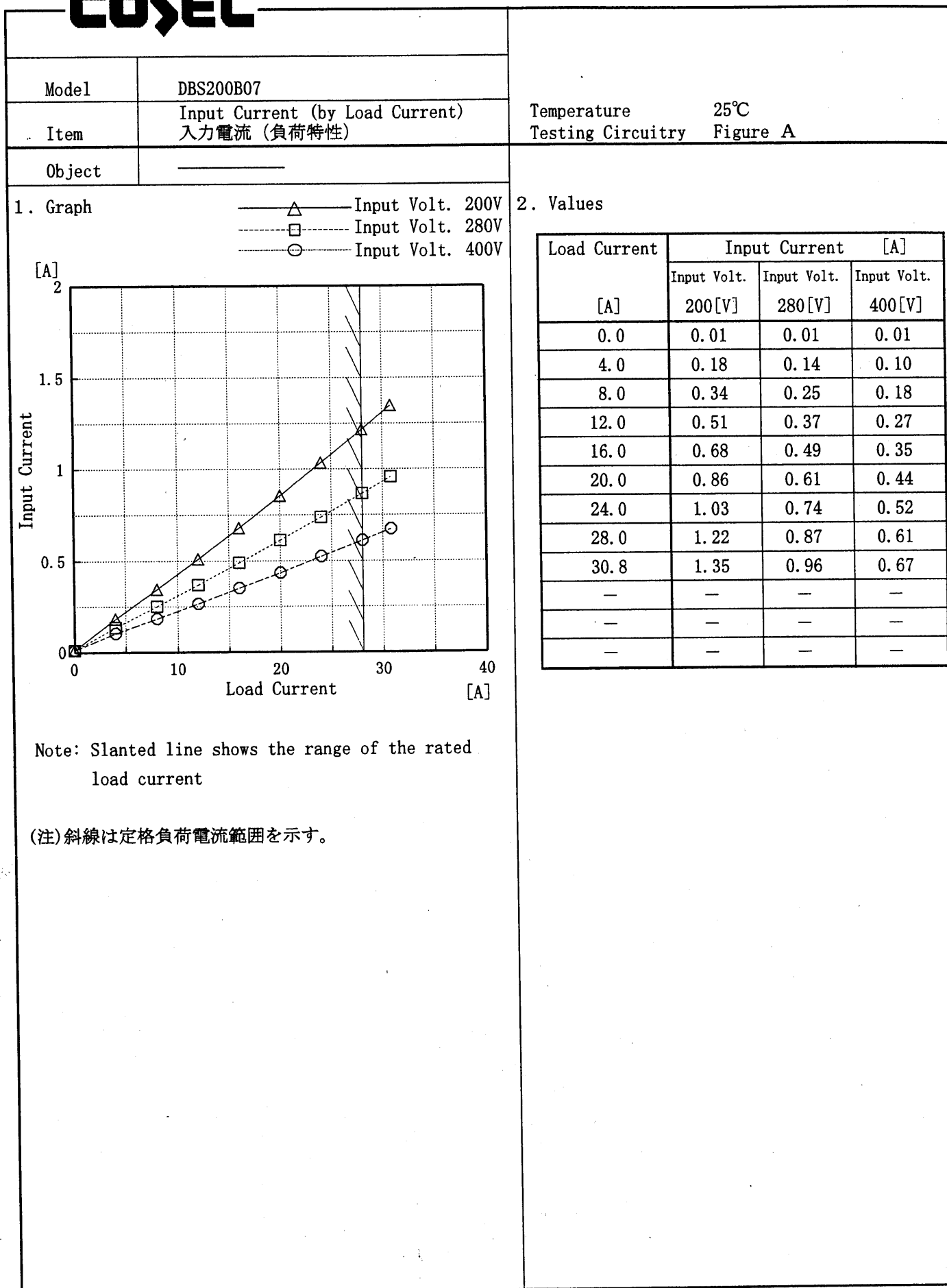
Input Current

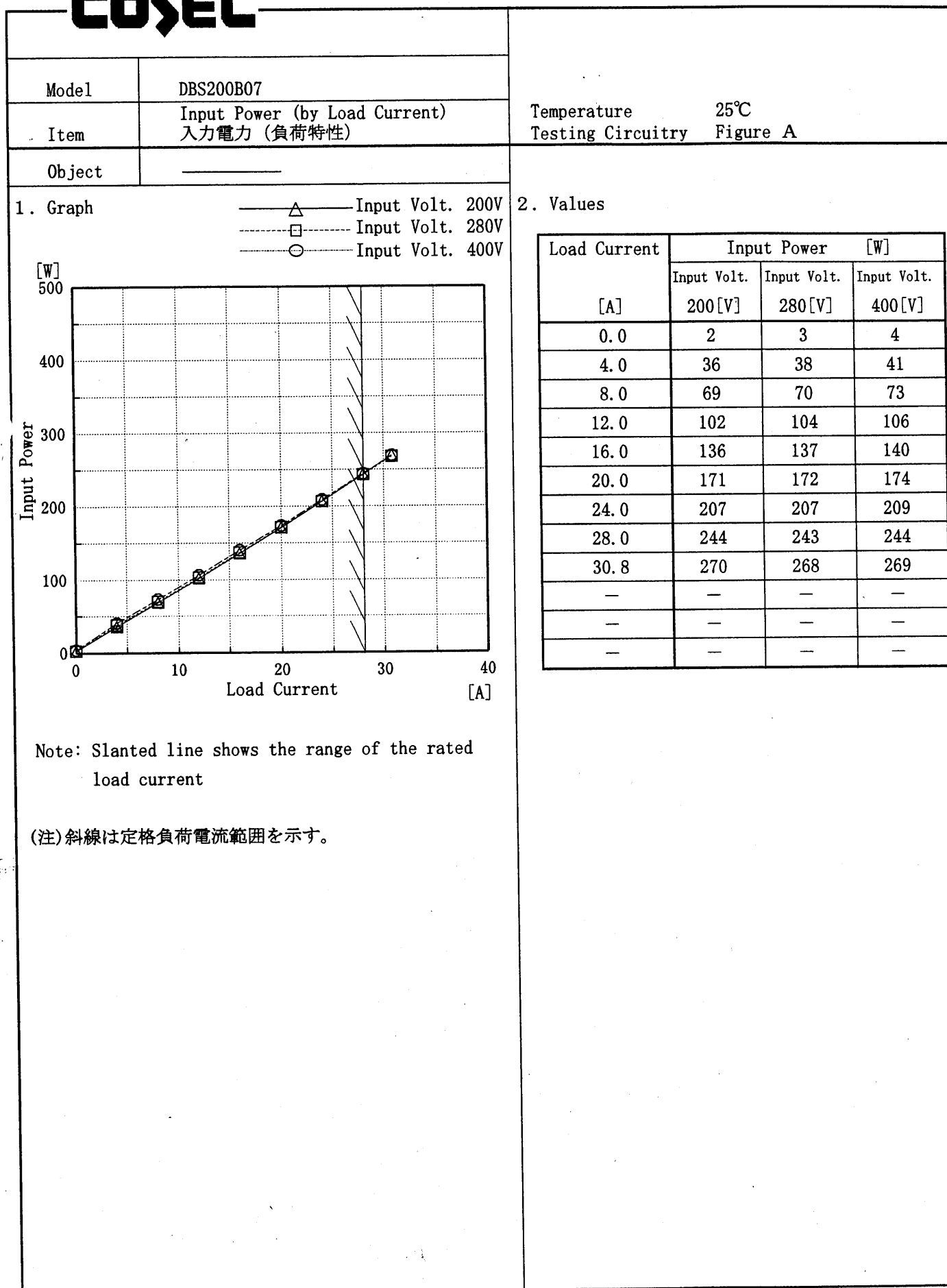
Input Voltage

[V]

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	0.002	0.002
150	0.003	0.003	0.003
165	0.012	0.729	1.479
170	0.012	0.704	1.432
180	0.012	0.662	1.349
200	0.011	0.596	1.211
250	0.010	0.480	0.965
280	0.010	0.431	0.862
300	0.010	0.403	0.805
350	0.009	0.349	0.692
400	0.009	0.309	0.607
420	0.009	0.296	0.581
—	—	—	—
—	—	—	—

COSEL

COSEL

COSEL

Model DBS200B07		Temperature 25°C Testing Circuitry Figure A
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	86.9	84.9
180	87.4	85.2
200	87.4	85.2
250	86.8	85.5
280	86.3	85.6
300	85.8	85.6
350	85.1	85.2
400	84.4	85.2
420	83.8	85.2

COSEL

Model DBS200B07		Temperature 25°C Testing Circuitry Figure A
Item	Efficiency (by Load Current) 効率 (負荷特性)	
Object		

1. Graph

Efficiency [%]

Load Current [A]

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

2. Values

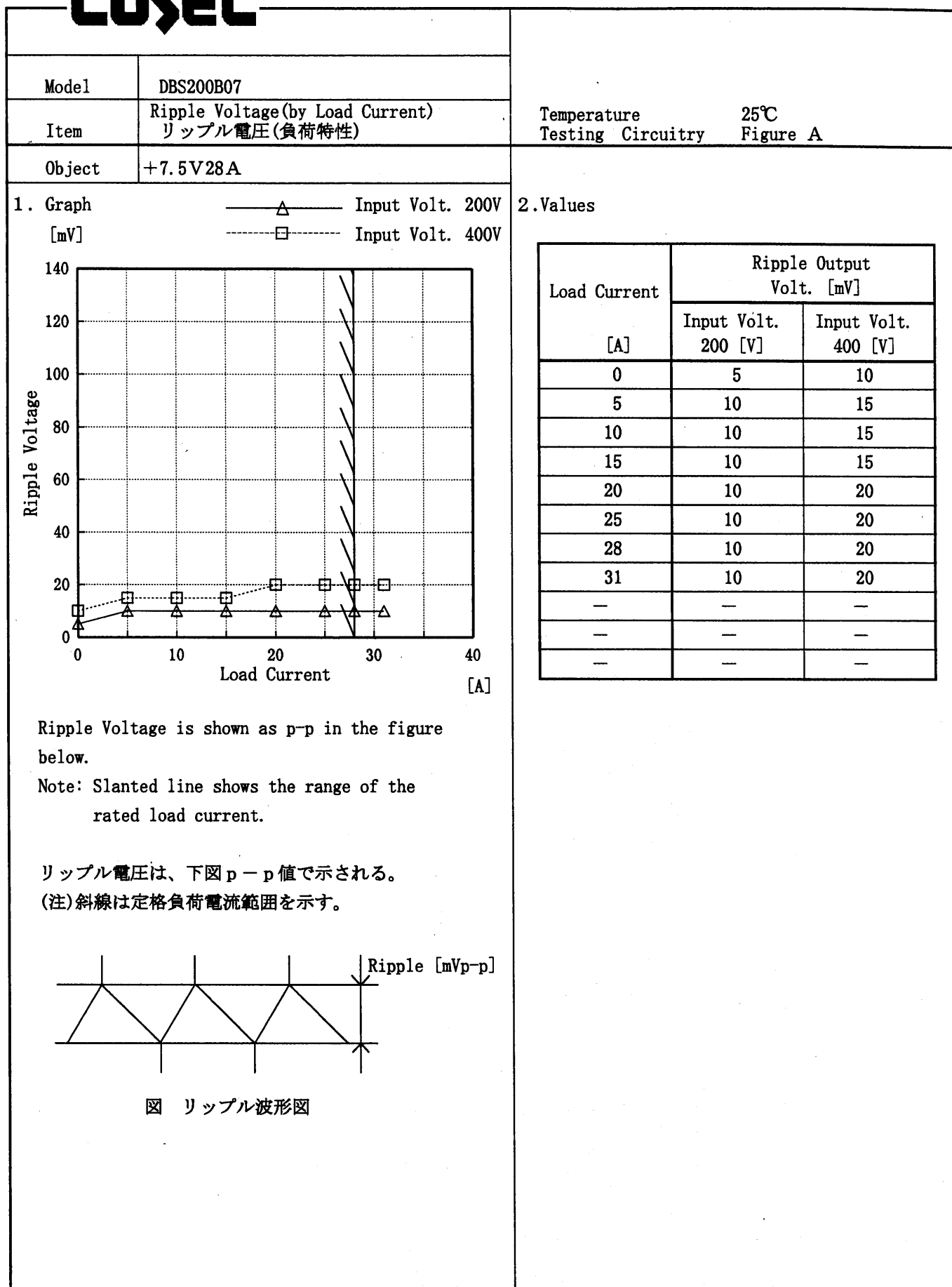
Load Current [A]	Efficiency [%]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
4.0	81.3	77.5	72.2
8.0	86.0	84.2	80.8
12.0	87.1	85.9	83.7
16.0	87.3	86.4	84.7
20.0	86.8	86.5	85.3
24.0	86.1	86.1	85.3
28.0	85.4	85.6	85.1
30.8	84.7	85.2	84.8
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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。

COSEL

Model		DBS200B07		Temperature		25℃																																																
Item		Load Regulation 静的負荷変動		Testing Circuitry		Figure A																																																
Object		+7.5V28A																																																				
1. Graph				2. Values																																																		
<div><div><div>△</div><div>□</div><div>○</div></div><div><div>Input Volt. 200V</div><div>Input Volt. 280V</div><div>Input Volt. 400V</div></div></div> <div><div><div>Output Voltage [V]</div><div><div><div>7.580</div><div>7.560</div><div>7.540</div><div>7.520</div><div>7.500</div><div>7.480</div><div>7.460</div><div>0</div></div><div><div>0</div><div>10</div><div>20</div><div>30</div><div>40</div></div></div><div><div>Load Current [A]</div><div><div>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></div></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 200[V]</th><th>Input Volt. 280[V]</th><th>Input Volt. 400[V]</th></tr><tr><td>0.0</td><td>7.516</td><td>7.517</td><td>7.516</td></tr><tr><td>4.0</td><td>7.516</td><td>7.516</td><td>7.515</td></tr><tr><td>8.0</td><td>7.515</td><td>7.515</td><td>7.515</td></tr><tr><td>12.0</td><td>7.514</td><td>7.514</td><td>7.514</td></tr><tr><td>16.0</td><td>7.513</td><td>7.513</td><td>7.513</td></tr><tr><td>20.0</td><td>7.513</td><td>7.513</td><td>7.512</td></tr><tr><td>24.0</td><td>7.512</td><td>7.512</td><td>7.511</td></tr><tr><td>28.0</td><td>7.512</td><td>7.511</td><td>7.511</td></tr><tr><td>30.8</td><td>7.511</td><td>7.511</td><td>7.511</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table>				Load Current [A]	Output Voltage [V]			Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]	0.0	7.516	7.517	7.516	4.0	7.516	7.516	7.515	8.0	7.515	7.515	7.515	12.0	7.514	7.514	7.514	16.0	7.513	7.513	7.513	20.0	7.513	7.513	7.512	24.0	7.512	7.512	7.511	28.0	7.512	7.511	7.511	30.8	7.511	7.511	7.511	—	—	—	—
Load Current [A]	Output Voltage [V]																																																					
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]																																																			
0.0	7.516	7.517	7.516																																																			
4.0	7.516	7.516	7.515																																																			
8.0	7.515	7.515	7.515																																																			
12.0	7.514	7.514	7.514																																																			
16.0	7.513	7.513	7.513																																																			
20.0	7.513	7.513	7.512																																																			
24.0	7.512	7.512	7.511																																																			
28.0	7.512	7.511	7.511																																																			
30.8	7.511	7.511	7.511																																																			
—	—	—	—																																																			

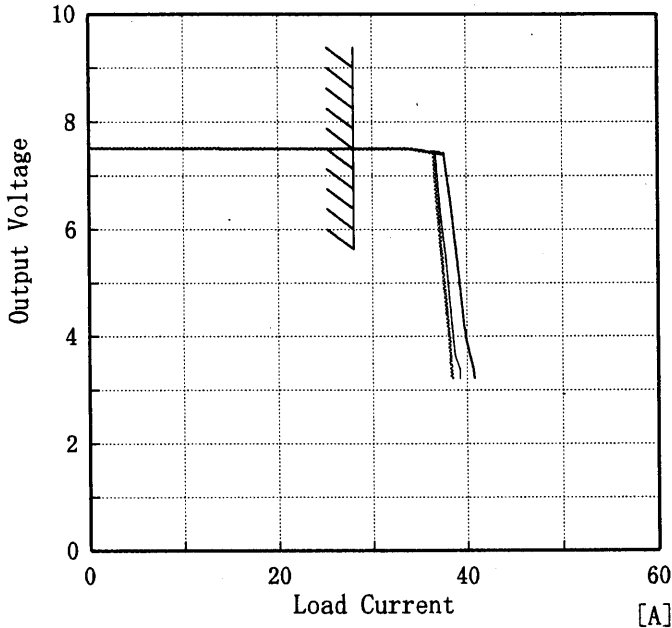
COSEL

COSEL

Model		DBS200B07		Temperature		25℃	
Item		Ripple-Noise リップルノイズ		Testing Circuitry		Figure A	
Object		+7.5V28A					
1. Graph				2. Values			

</

COSEL

Model		DBS200B07		Temperature25℃ Testing CircuitryFigure A
Item		Overcurrent Protection 過電流保護		
Object		+7.5V28A		
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]	
7.50	33.90	33.73	33.63	
7.13	36.59	36.81	37.76	
6.75	36.73	36.98	38.08	
6.00	37.08	37.40	38.59	
5.25	37.43	37.88	39.03	
4.50	37.82	38.26	39.50	
3.75	38.19	38.65	40.12	
—	—	—	—	
—	—	—	—	
—	—	—	—	
—	—	—	—	
—	—	—	—	

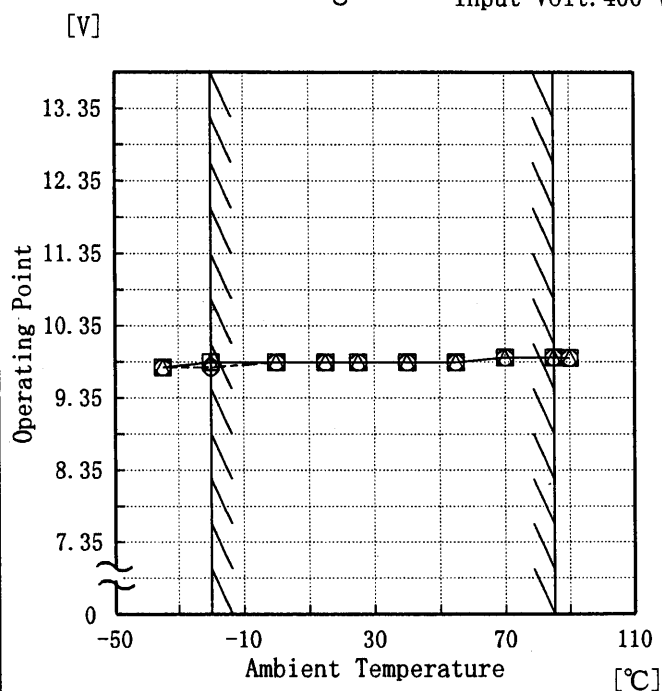
Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
7.50	33.90	33.73	33.63
7.13	36.59	36.81	37.76
6.75	36.73	36.98	38.08
6.00	37.08	37.40	38.59
5.25	37.43	37.88	39.03
4.50	37.82	38.26	39.50
3.75	38.19	38.65	40.12
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	DBS200B07
Item	Overvoltage Protection 過電圧保護
Object	+7.5V28A

1. Graph

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



Load 0%

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。

Testing Circuitry Figure A

2. Values

Ambient Temp. [°C]	Operating Point [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-35	9.77	9.77	9.77
-20	9.84	9.84	9.77
0	9.84	9.84	9.84
15	9.84	9.84	9.84
25	9.84	9.84	9.84
40	9.84	9.84	9.84
55	9.84	9.84	9.84
70	9.91	9.91	9.91
85	9.91	9.91	9.91
90	9.90	9.90	9.90
—	—	—	—

COSEL

Model	DBS200B07	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Responce 動的負荷変動	
Object	+7.5V28A	

Input Volt. 280 V

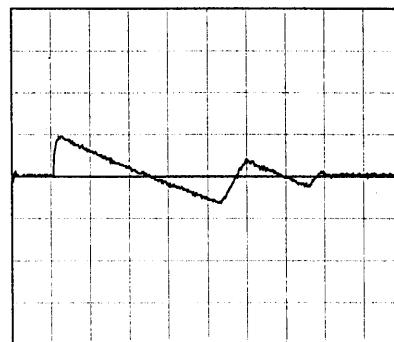
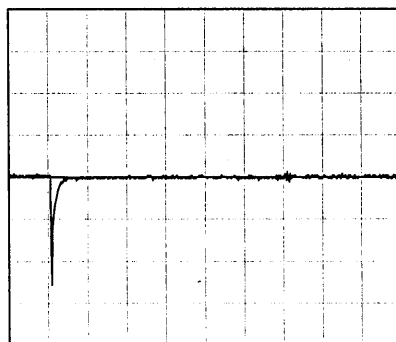
Cycle 1000 mS

Load Current

Min. Load (0.0A) ↔

Load 100% (28.0A)

500 mV/div

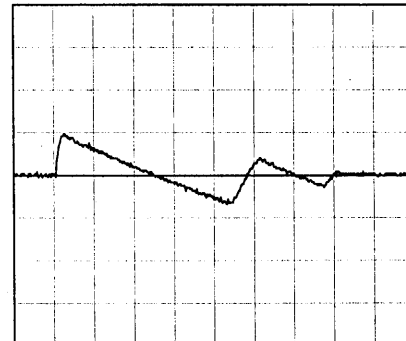
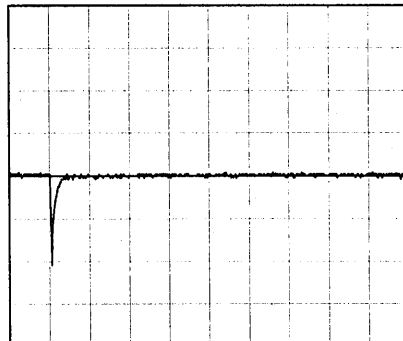


5 ms/div

Min. Load (0.0A) ↔

Load 50% (14.0A)

500 mV/div

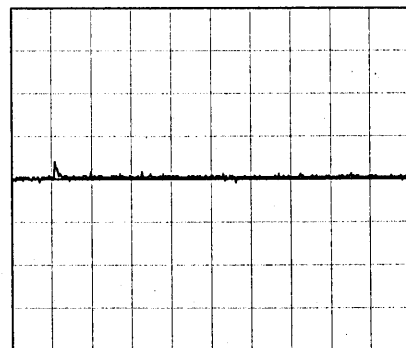
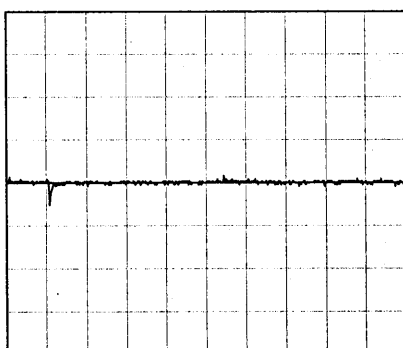


5 ms/div

Load 10% (2.8A) ↔

Load 100% (28.0A)

500 mV/div



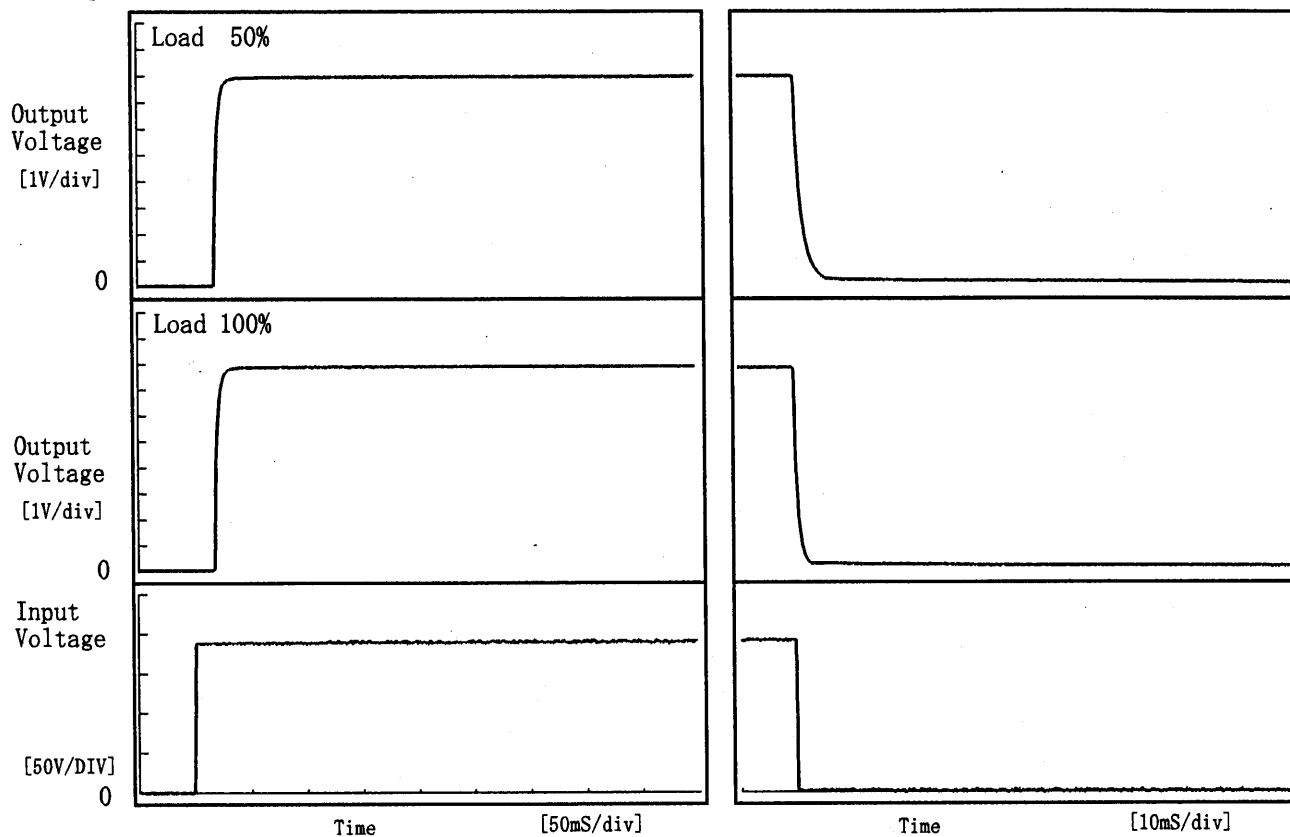
5 ms/div

COSEL

Model	DBS200B07	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+7.5V28A		

1. Graph

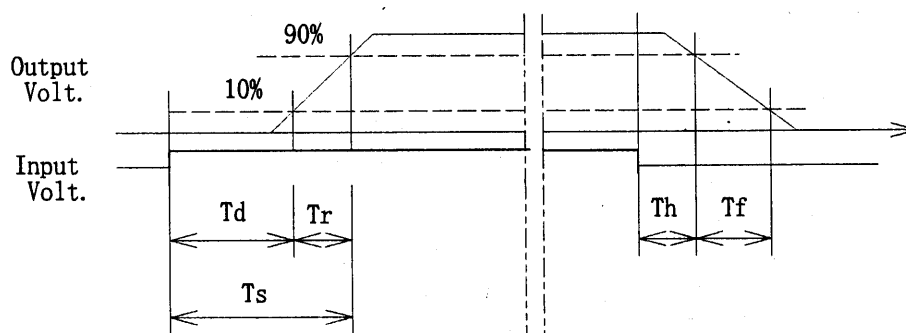
Input Volt. 200 V



2. Values

[mS]

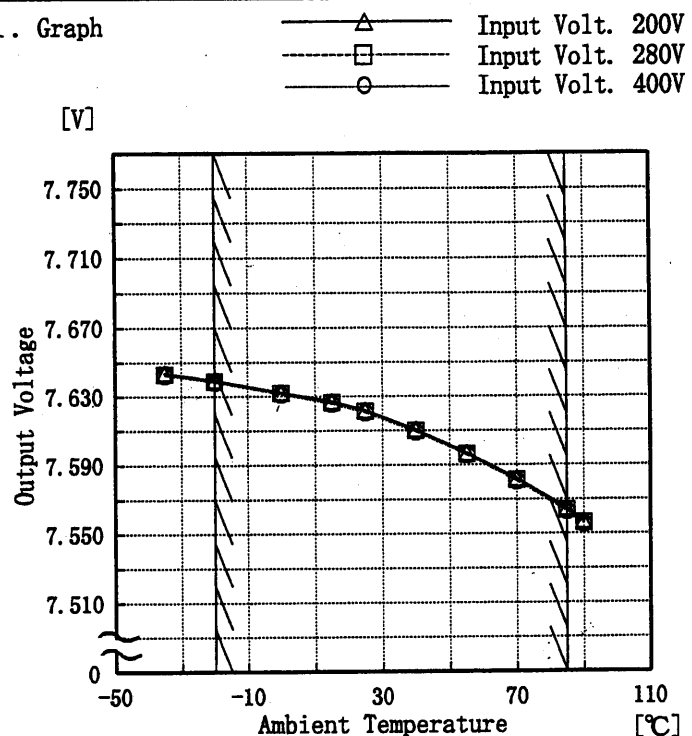
Load \ Time	T d	T r	T s	T h	T f
50 %	18.25	4.75	23.00	0.2	3.55
100 %	18.25	4.75	23.00	0.0	1.75



COSEL

Model	DBS200B07
Item	Ambient Temperature Drift 周囲温度変動
Object	+7.5V28A

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。

Testing Circuitry Figure A

2. Values

Temperature [°C]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-35	7.644	7.643	7.643
-20	7.639	7.639	7.638
0	7.632	7.632	7.631
15	7.627	7.627	7.626
25	7.622	7.621	7.620
40	7.611	7.610	7.609
55	7.597	7.596	7.596
70	7.582	7.581	7.580
85	7.565	7.564	7.563
90	7.557	7.556	7.556
—	—	—	—

COSEL

Model DBS200B07		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	+7.5V28A																																							
1. Graph <div> -----□----- Load 50% -----△----- Load 100% </div> <p>Input Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p> <p>(注)斜線は定格周囲温度範囲を示す。</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>147</td><td>155</td></tr> <tr><td>-20</td><td>148</td><td>156</td></tr> <tr><td>0</td><td>148</td><td>158</td></tr> <tr><td>15</td><td>149</td><td>159</td></tr> <tr><td>25</td><td>149</td><td>159</td></tr> <tr><td>40</td><td>149</td><td>160</td></tr> <tr><td>55</td><td>149</td><td>161</td></tr> <tr><td>70</td><td>149</td><td>162</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	147	155	-20	148	156	0	148	158	15	149	159	25	149	159	40	149	160	55	149	161	70	149	162	85	150	163	90	150	163	—	—	—
Ambient Temp. [°C]	Input Voltage [V]																																							
	Load 50%	Load 100%																																						
-35	147	155																																						
-20	148	156																																						
0	148	158																																						
15	149	159																																						
25	149	159																																						
40	149	160																																						
55	149	161																																						
70	149	162																																						
85	150	163																																						
90	150	163																																						
—	—	—																																						

COSEL

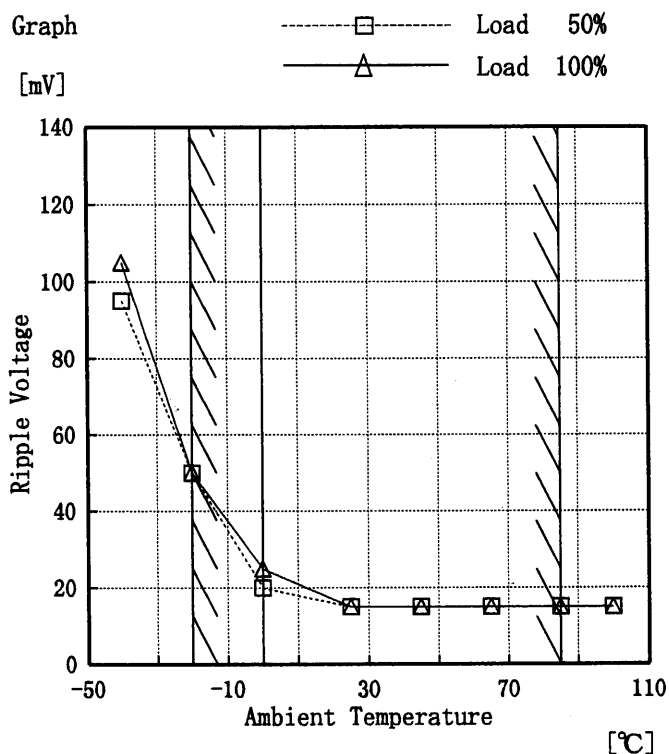
Model DBS200B07

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

Object +7.5V28A

Testing Circuitry Figure A

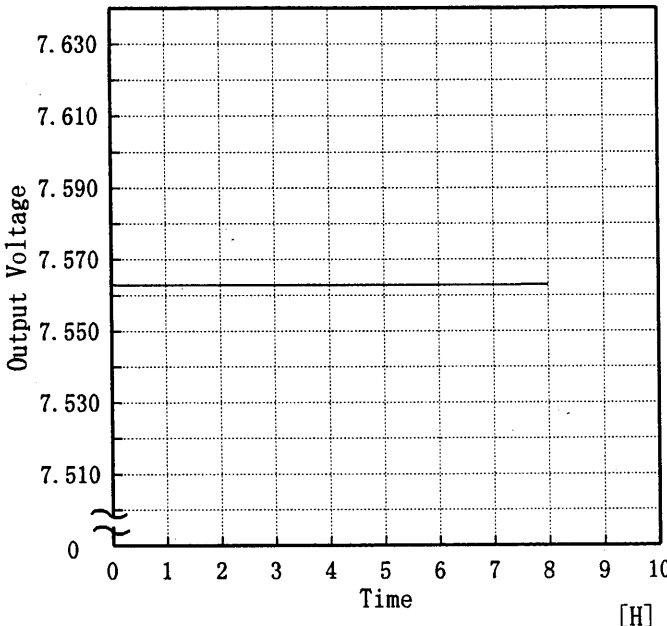
1. Graph



2. Values

Ambient Temp. [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	95	105
-20	50	50
0	20	25
25	15	15
45	15	15
65	15	15
85	15	15
100	15	15
—	—	—
—	—	—
—	—	—

COSEL

COSEL																									
Model	DBS200B07																								
Item	Time Lapse Drift 経時ドリフト	Temperature	25 ℃																						
Object	+7.5V28A	Testing Circuitry	Figure A																						
1. Graph		2.Values																							
<div>[V]</div> <div></div> <div>Output Voltage [V]</div> <div>Time [H]</div> <div>Input Volt. 280V</div> <div>Load 100%</div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>7.566</td></tr><tr><td>0.5</td><td>7.563</td></tr><tr><td>1.0</td><td>7.563</td></tr><tr><td>2.0</td><td>7.563</td></tr><tr><td>3.0</td><td>7.563</td></tr><tr><td>4.0</td><td>7.563</td></tr><tr><td>5.0</td><td>7.563</td></tr><tr><td>6.0</td><td>7.563</td></tr><tr><td>7.0</td><td>7.563</td></tr><tr><td>8.0</td><td>7.563</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	7.566	0.5	7.563	1.0	7.563	2.0	7.563	3.0	7.563	4.0	7.563	5.0	7.563	6.0	7.563	7.0	7.563	8.0	7.563
Time since start [H]	Output Voltage [V]																								
0.0	7.566																								
0.5	7.563																								
1.0	7.563																								
2.0	7.563																								
3.0	7.563																								
4.0	7.563																								
5.0	7.563																								
6.0	7.563																								
7.0	7.563																								
8.0	7.563																								

COSEL

		Testing Circuitry Figure A
Model	DBS200B07	
Item	Output Voltage Accuracy 定電圧精度	
Object	+7.5V28A	

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 : 0~28 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 0~28 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	7.643	±43	±0.6
Minimum Voltage	85	400	28	7.557		

COSEL

LOREL

Model	DBS200B07
Item	Condensation 結露特性
Object	+7.5V28A

Testing Circuitry	Figure A
-------------------	----------

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]	7.536	Input Volt.: 280V, Load Current:28A
Line Regulation [mV]	1	Input Volt.: 200～400V, Load Current:28A
Load Regulation [mV]	8	Input Volt.: 280V, Load Current:0～28A

-19-

BC-3194

COSEL

Model	DBS200B07		
Item	Line Noise Tolerance 入力雑音耐量	Temperature Testing Circuitry	25°C Figure C
Object	+7.5V28A		

1. Results

Pulse Width [n S]	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 : ± 2000 V
 Pulse Cycle : 10 mS
 Pulse Input Duration: 1 min. or more
 Load : 100 %

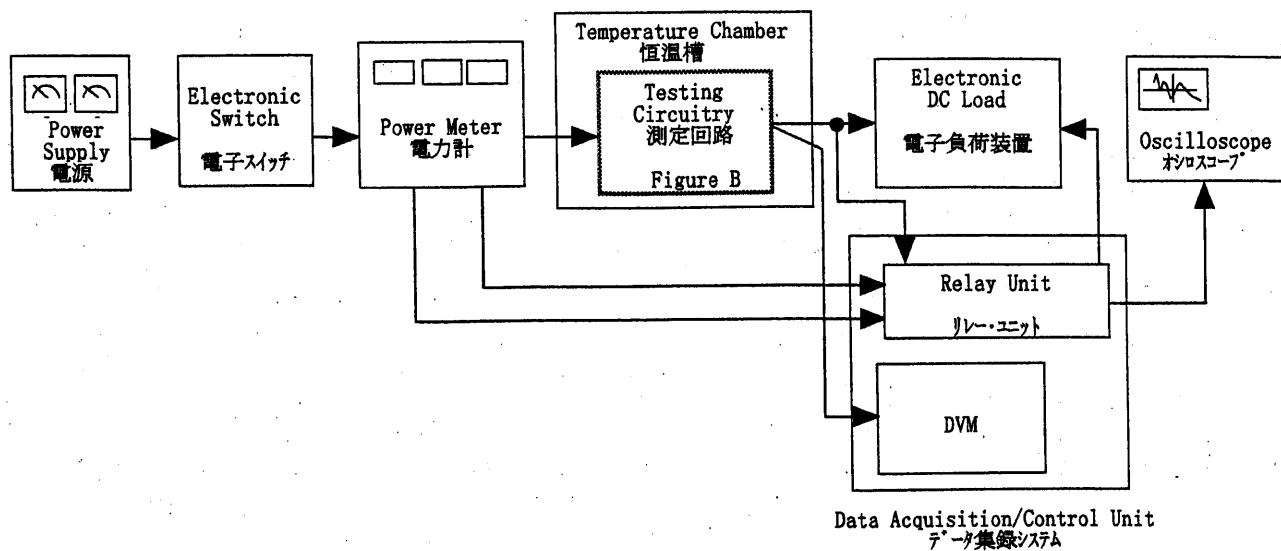


Figure A

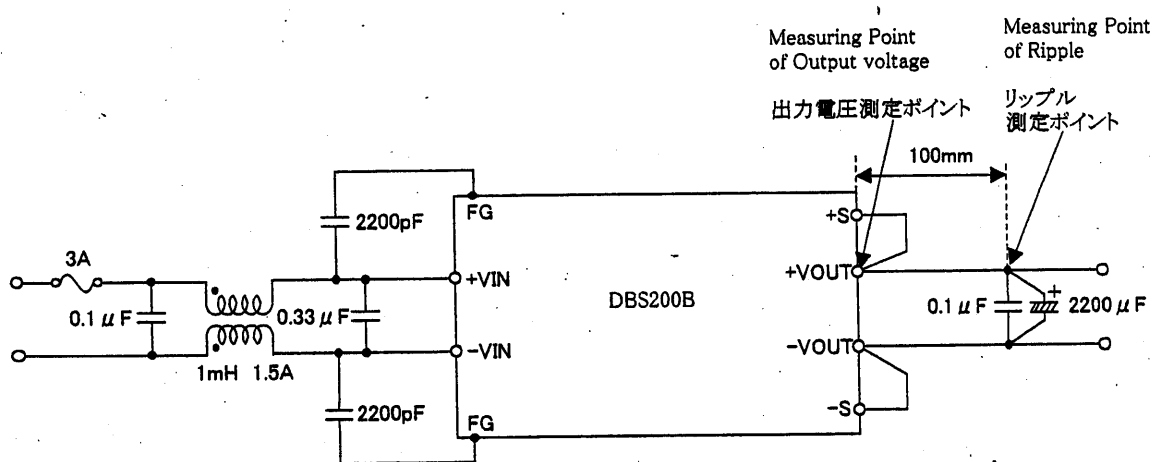


Figure B (General Electric Characteristic)
一般電気特性

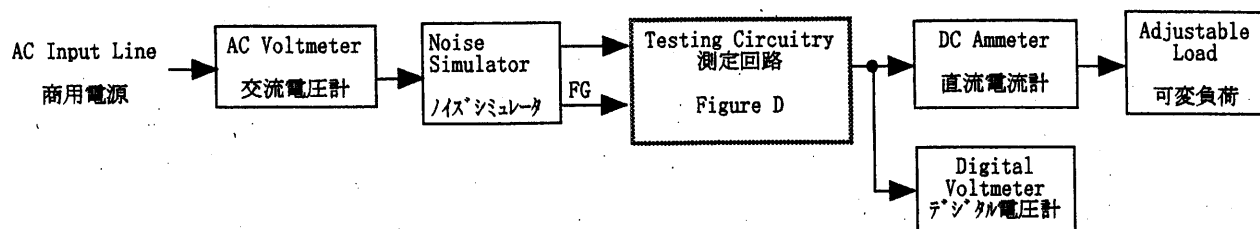


Figure C

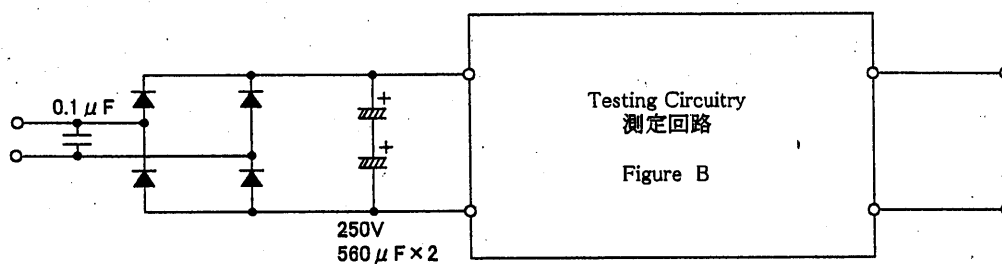


Figure D (Line Noise Tolerance)
入力雑音耐量