COSEL

TEST DATA OF DBS400B05

(280V   INPUT)

Regulated DC Power Supply

Date : July 9. 1999

Approved by : ___I. Yasuda___
Design Manager

Prepared by : ___Y. Fukuda___
Design Engineer

コーセル株式会社

COSEL CO., LTD.

COSEL

CONTENTS

(Final Page 22)

BC－3249

COSEL

Model	DBS400B05
Item	Line Regulation　静的入力変動
Object	＋5.0Ｖ80Ａ

Temperature　　　　25℃
Testing Circuitry　　Figure A
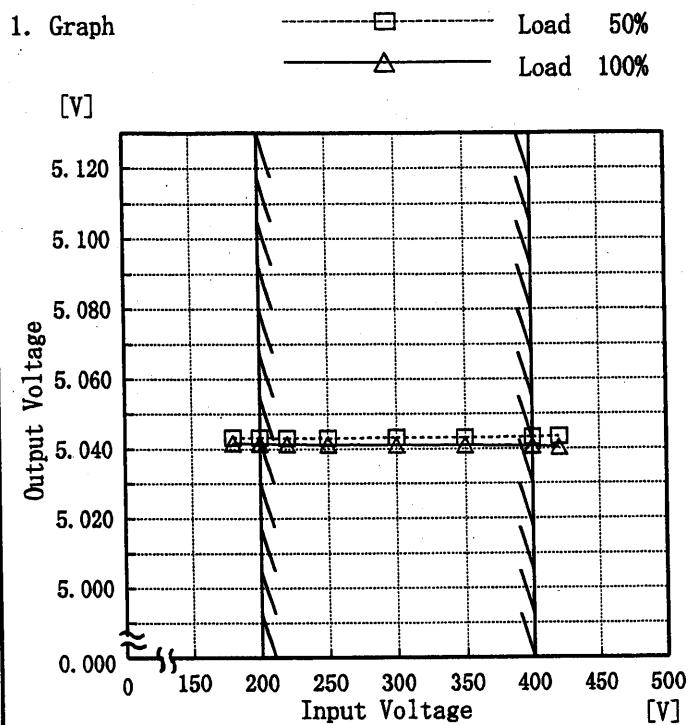
1. Graph　　　　-----□----- Load 50%
　　　　　　　　　———△——— Load 100%

[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%
180	5.043	5.042
200	5.043	5.042
220	5.043	5.041
250	5.043	5.041
300	5.043	5.041
350	5.043	5.041
400	5.043	5.041
420	5.044	5.040
—	—	—

ＢＣ－3249

COSEL

Model	DBS400B05
Item	Input Current (by Input Voltage) 入力電流（入力電圧特性）
Object	————

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

———△——— Load 100%
- - -□- - - Load 50%
———○——— Load   0%

[A]

Input Current

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 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	0.002	0.002	0.002
150	0.003	0.003	0.003
165	0.022	1.481	2.725
170	0.022	1.425	2.807
180	0.021	1.331	2.691
200	0.020	1.183	2.414
250	0.018	0.952	1.922
300	0.017	0.800	1.602
350	0.017	0.693	1.378
400	0.017	0.613	1.210
420	0.016	0.588	1.156
—	—	—	—
—	—	—	—
—	—	—	—

BC－3249

COSEL

Model	DBS400B05
Item	Input Current (by Load Current) 入力電流（負荷特性）
Object	————

Temperature   25℃
Testing Circuitry   Figure A

1. Graph

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

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	Input Current		[A]
	Input Volt.	Input Volt.	Input Volt.
[A]	200[V]	280[V]	400[V]
0	0.02	0.02	0.02
15	0.46	0.33	0.25
30	0.88	0.63	0.46
45	1.31	0.94	0.68
60	1.76	1.26	0.90
75	2.23	1.59	1.12
80	2.39	1.70	1.20
88	2.65	1.88	1.32
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

BC-3249

COSEL

Model	DBS400B05
Item	Input Power (by Load Current) 入力電力（負荷特性）
Object	————
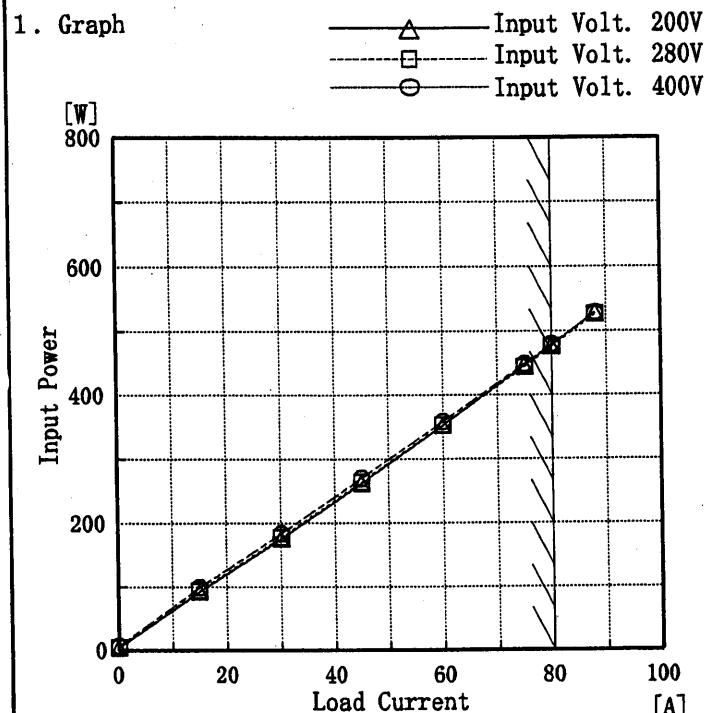
Temperature   25℃
Humidity   40%RH
Testing Circuitry   Figure A

1. Graph

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

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	Input Power		[W]
	Input Volt.	Input Volt.	Input Volt.
[A]	200[V]	280[V]	400[V]
0	4	5	7
15	92	94	100
30	176	178	184
45	262	264	270
60	352	353	358
75	446	444	448
80	477	476	479
88	529	526	528
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

BC－3249

COSEL

Model	DBS400B05
Item	Efficiency (by Input Voltage) 効率（入力電圧特性）
Object	

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

--------□-------- Load 50%

———△——— Load 100%

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%
180	85.7	84.1
200	86.8	84.4
220	86.4	84.6
250	86.1	84.7
300	85.3	84.7
350	84.6	84.7
400	83.6	84.4
420	83.2	84.0
—	—	—

BC-3249

COSEL

Model	DBS400B05
Item	Efficiency (by Load Current) 効率 (負荷特性)
Object	——————
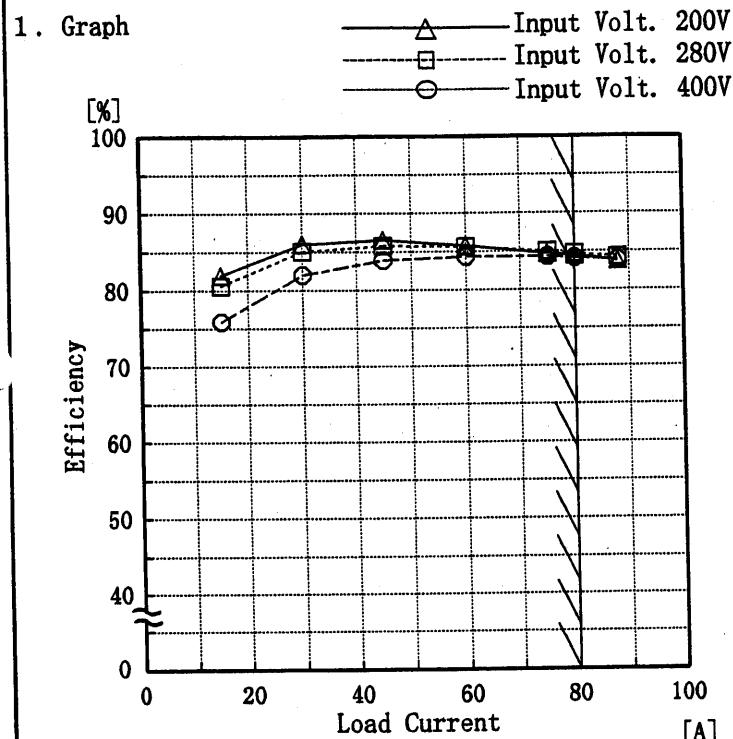
Temperature   25℃
Testing Circuitry   Figure A

1. Graph

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

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	Efficiency		[%]
	Input Volt.	Input Volt.	Input Volt.
[A]	200[V]	280[V]	400[V]
15	81.9	80.6	75.9
30	86.0	85.0	82.0
45	86.5	85.7	83.9
60	85.8	85.6	84.3
75	84.7	85.0	84.3
80	84.5	84.7	84.1
88	83.8	84.2	83.9
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

BC－3249

CO$EL

Model	DBS400B05
Item	Load Regulation 静的負荷変動
Object	+5.0V80A

Temperature 25℃
Testing Circuitry Figure A

1. Graph

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

[V]

Output Voltage

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 [A]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0	5.048	5.047	5.046
15	5.046	5.046	5.045
30	5.045	5.045	5.044
45	5.045	5.044	5.044
60	5.044	5.044	5.043
75	5.044	5.043	5.043
80	5.043	5.043	5.042
88	5.043	5.042	5.042
—	—	—	—
—	—	—	—

BC—3249

COSEL

Model	DBS400B05
Item	Ripple Voltage(by Load Current) リップル電圧(負荷特性)
Object	+5.0V80A

Temperature   25℃
Testing   Circuitry   Figure A

1. Graph   ——△—— Input Volt. 200V

[mV]   ----□---- Input Volt. 400V

Ripple Voltage is shown as p-p in the figure below.

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

リップル電圧は、下図p－p値で示される。

(注)斜線は定格負荷電流範囲を示す。

図　リップル波形図

2.Values

Load Current [A]	Ripple Output Volt. [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0	5	5
10	10	15
20	10	15
40	10	15
60	10	15
80	10	15
90	10	15
—	—	—
—	—	—
—	—	—
—	—	—

BC－3249

CO$EL

Model	DBS400B05
Item	Ripple-Noise リップルノイズ
Object	＋5.0V80A

Temperature	25℃
Testing Circuitry	Figure A

1. Graph   —△— Input Volt. 200V
                ----☐---- Input Volt. 400V

[mV]

2. Values

Load current [A]	Ripple-Noise [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0	10	10
10	20	20
20	20	20
40	20	20
60	20	20
80	25	25
90	25	25
—	—	—
—	—	—
—	—	—
—	—	—
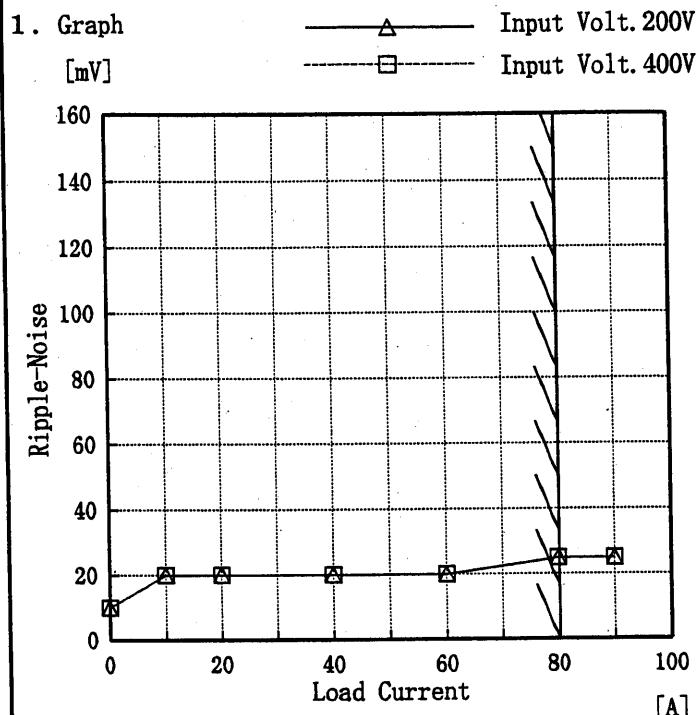
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated
load current.

リップルノイズは、下図p－p値で示される。
(注)斜線は定格負荷電流範囲を示す。

図　リップルノイズ波形図

BC－3249

COSEL

Model	DBS400B05
Item	Overcurrent Protection 過電流保護
Object	+5.0V80A

Temperature   25℃
Testing Circuitry Figure A

1. Graph

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

[V]

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
5.00	94.65	95.46	97.32
4.75	94.87	95.68	97.64
4.50	95.10	95.91	97.86
4.00	95.73	96.15	98.32
3.50	95.93	96.35	98.91
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–

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。

BC-3249

COSEL

Model	DBS400B05
Item	Overvoltage Protection 過電圧保護
Object	+5.0V80A

Testing Circuitry   Figure A

1. Graph

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

[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。

2. Values

Ambient Temp. [℃]	Operating Point [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
−35	6.72	6.72	6.72
−20	6.72	6.72	6.72
0	6.64	6.64	6.64
15	6.57	6.57	6.57
25	6.57	6.57	6.57
40	6.50	6.50	6.50
55	6.50	6.50	6.50
70	6.43	6.43	6.43
85	6.42	6.42	6.42
90	6.35	6.35	6.35
−	−	−	−

BC−3249

COSEL

| Model	DBS400B05		
Item	Dynamic Load Responce 動的負荷変動	Temperature	25℃
		Testing Circuitry	Figure A
Object	+5V80A		

Input Volt.　　280 V
Cycle　　　　1000 mS

Load Current

Min. Load (0.0A) ⟷
Load 100% (80.0A)

500 mV/div
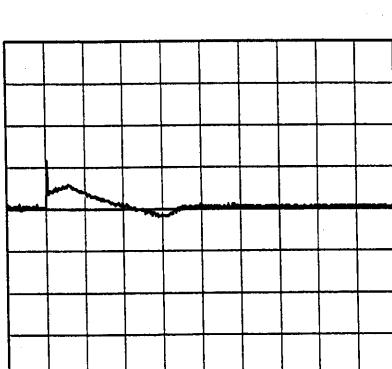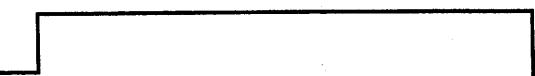
2 ms/div

Min. Load (0.0A) ⟷
Load 50% (40.0A)

500 mV/div
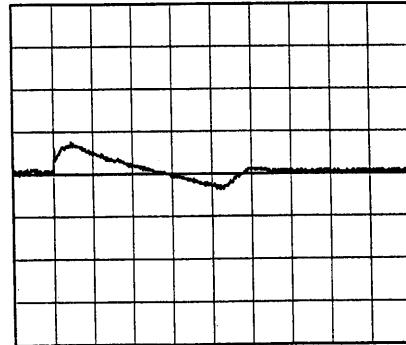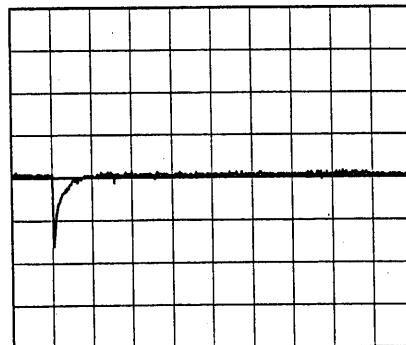
2 ms/div

Load 10% (8.0A) ⟷
Load 100% (80.0A)

500 mV/div

2 ms/div

BC—3249
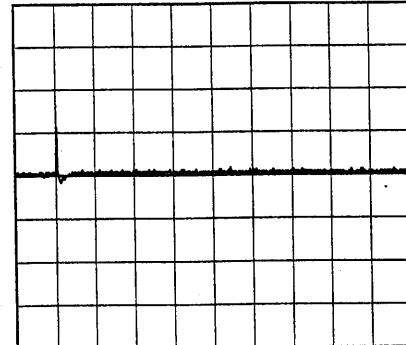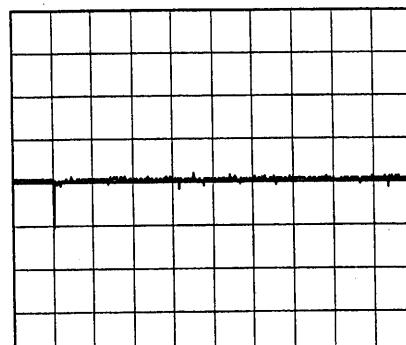
COSEL

Model	DBS400B05		Temperature	25℃
Item	Rise and Fall Time　立上り、立下り時間		Testing Circuitry	Figure A
Object	＋5.0V80A			

1．Graph

Input Volt. 200 V

Load　50%

Output Voltage [1V/div]

0

Load 100%

Output Voltage [1V/div]

0

Input Voltage

[50V/DIV]

0

Time　[50mS/div]

Time　[10mS/div]
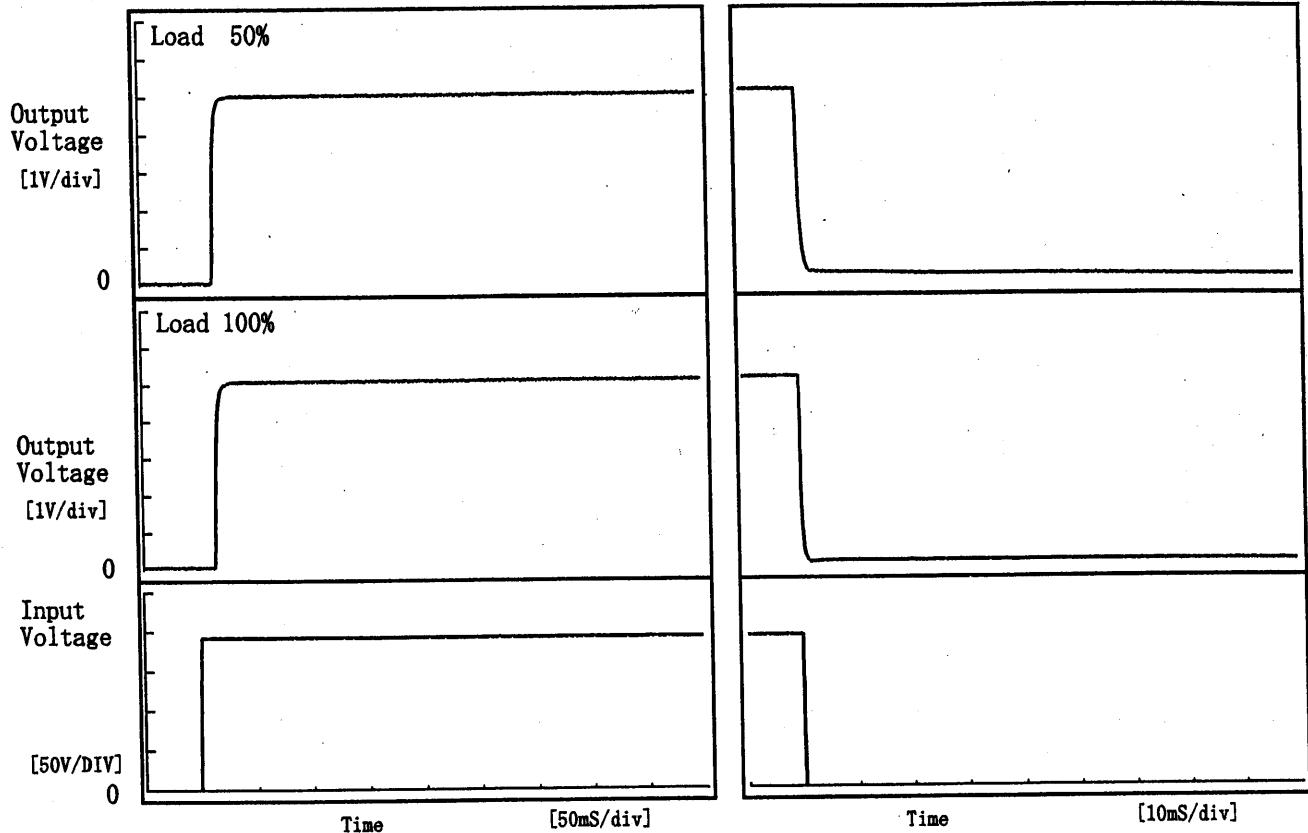
2．Values

[mS]

Load ＼ Time	T d	T r	T s	T h	T f
50 %	14.00	4.25	18.25	0.1	1.60
100 %	14.50	4.00	18.50	0.1	0.70

Output Volt.

90%

10%

Input Volt.

Td　Tr

Ts

Th　Tf

BC—3249
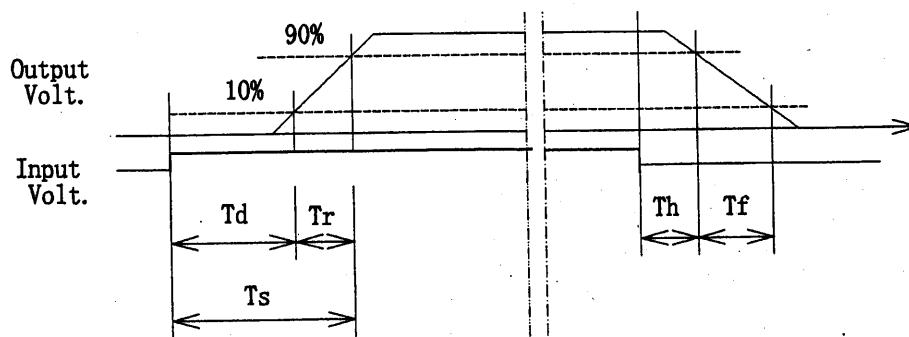
COSEL

Model	DBS400B05
Item	Ambient Temperature Drift 周囲温度変動
Object	+5.0V80A

Testing Circuitry   Figure A

1. Graph

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

[V]

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 [℃]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-35	5.056	5.056	5.056
-20	5.053	5.053	5.053
0	5.048	5.048	5.048
15	5.045	5.045	5.045
25	5.042	5.042	5.042
40	5.036	5.036	5.036
55	5.030	5.029	5.029
70	5.020	5.020	5.019
85	5.010	5.009	5.009
90	5.005	5.005	5.005
—	—	—	—
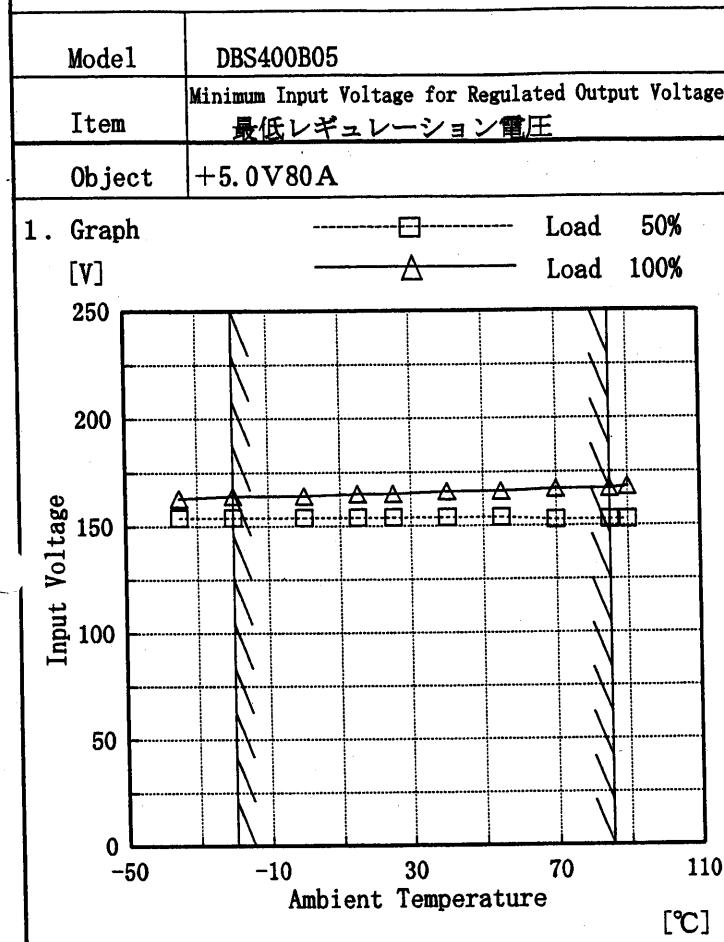
Load   100%

BC-3249

COSEL

Model	DBS400B05
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	＋5.0V80A

Testing Circuitry　Figure A

1. Graph

- - - ☐ - - -　　Load　50%
───△───　　Load　100%

[V]

Input Voltage / Ambient Temperature [℃]

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. [℃]	Input Voltage [V]	
	Load　50%	Load　100%
−35	154	163
−20	154	164
0	154	164
15	154	165
25	154	165
40	154	166
55	154	166
70	153	167
85	153	167
90	153	168
—	—	—

BC−3249

COSEL

Model	DBS400B05
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	＋5.0V80A

Testing Circuitry　　　Figure A

1. Graph

-------☐-------　Load　50%
———△———　Load　100%

[mV]

Ambient Temperature

[℃]
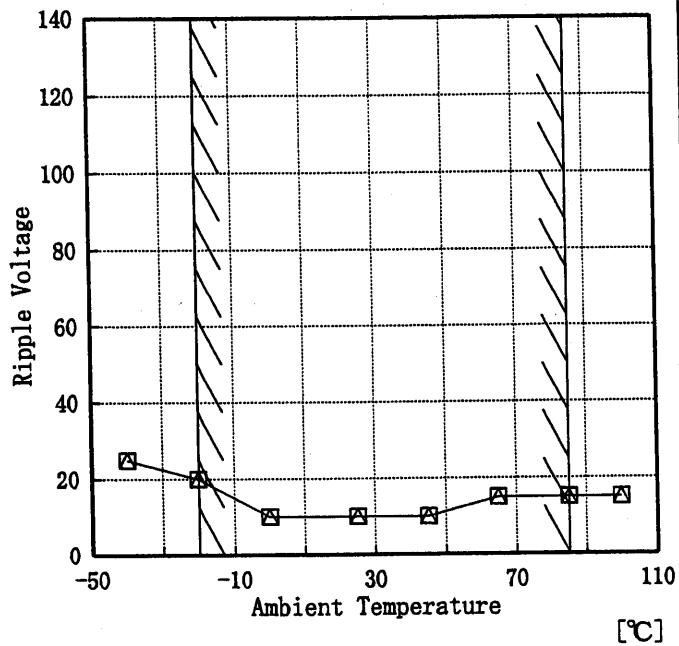
Input Volt.　280 V

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. [℃]	Ripple Voltage [mV]	
	Load　50%	Load　100%
-40	25	25
-20	20	20
0	10	10
25	10	10
45	10	10
65	15	15
85	15	15
100	15	15
—	—	—
—	—	—
—	—	—

BC-3249

CO$EL

Model	DBS400B05
Item	Time Lapse Drift 経時ドリフト
Object	+5.0V80A

| Temperature	25 ℃
Testing Circuitry	Figure A

1. Graph

[V]

Input Volt.   280V
Load   100%
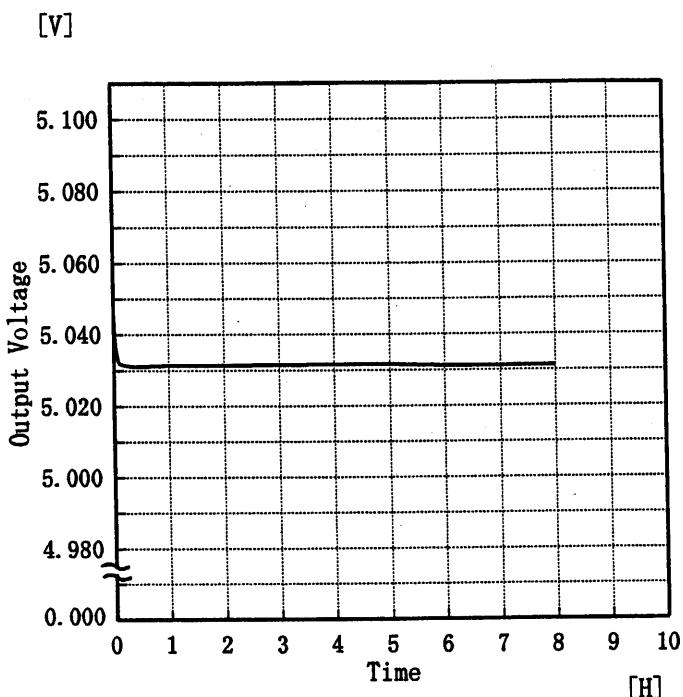
2.Values

Time since start [H]	Output Voltage [V]
0.0	5.045
0.5	5.031
1.0	5.031
2.0	5.031
3.0	5.032
4.0	5.032
5.0	5.032
6.0	5.031
7.0	5.031
8.0	5.031

BC-3249

CO$EL

Model	DBS400B05
Item	Output Voltage Accuracy 定電圧精度
Object	+5.0V80A

Testing Circuitry   Figure A

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 ℃
  Input Voltage： 200〜400 V
  Load Current : 0.00〜80.00 A

* 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

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 ℃
  入力電圧 200〜400 V
  負荷電流 0.00〜80.00 A

* 定電圧精度(変動値) = ±(出力電圧の最高値－出力電圧の最低値)／2

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

Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-20	400	0.00	5.057	±25	±0.5
Minimum Voltage	85	400	80.00	5.007		

BC-3249

COSEL

Model	DBS400B05		
Item	Condensation 結露特性	Testing Circuitry	Figure A
Object	+5.0V80A		

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]	5.048	Input Volt.: 280V, Load Current:80A
Line Regulation [mV]	1	Input Volt.: 200〜400V, Load Current:80A
Load Regulation [mV]	5	Input Volt.: 280V, Load Current:0〜80A

BC−3249

COSEL

Model	DBS400B05		
Item	Line Noise Tolerance 入力雑音耐量	Temperature	25℃
		Testing Circuitry	Figure C
Object	+5.0V80A		

1. Results

Pulse Width [nS]	MODE	No protection fai- lure 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 %

BC—3249

CO$EL
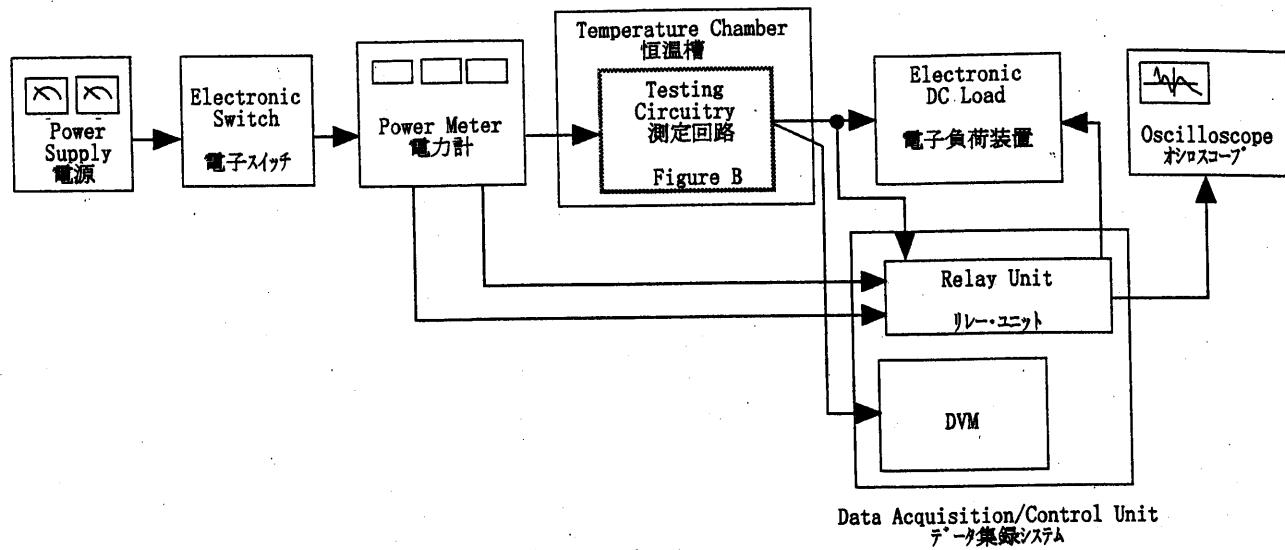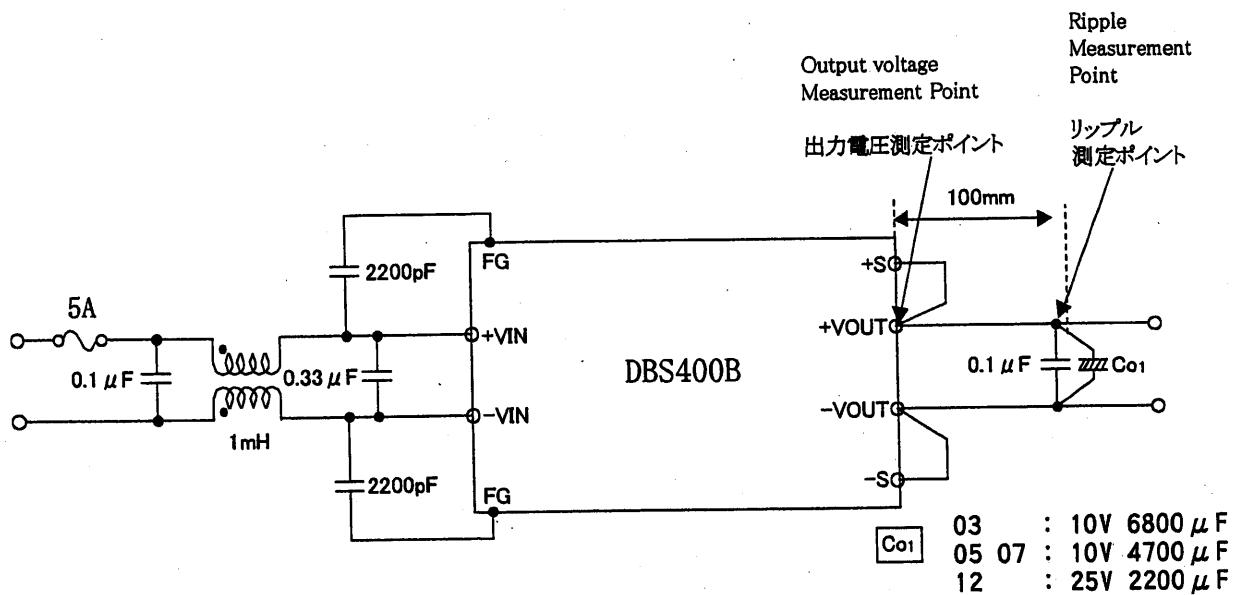
Figure A

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

BC－3249

CO$EL

AC Input Line
商用電源
→ AC Voltmeter
交流電圧計
→ Noise
Simulator
ノイズ シミュレータ
FG →
Testing Circuitry
測定回路
Figure D
→ DC Ammeter
直流電流計
→ Adjustable
Load
可変負荷

→ Digital
Voltmeter
デジタル電圧計

Figure C

0.1 μF

250V
1000 μF×2

Testing Circuitry
測定回路
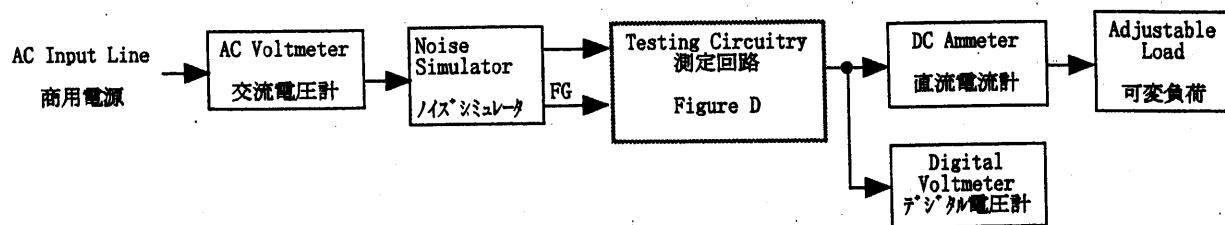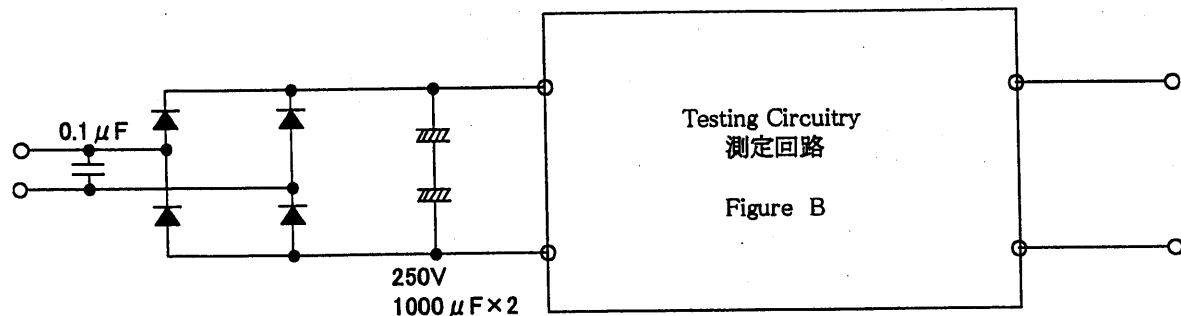
Figure B

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

BC—3249