



TEST DATA OF DBS400B24

(280V INPUT)

Regulated DC Power Supply

Nov. 17, 2000

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Design Manager

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Design Engineer

コーセル株式会社
COSEL CO., LTD.

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Model		DBS400B24		Temperature		25℃	
Item		Line Regulation 静的入力変動		Testing Circuitry		Figure A	
Object		+24.0V17A					
1. Graph				2. Values			

□

Load 50%

△

Load 100%

Output Voltage

[V]

24.300

24.200

24.100

24.000

23.900

23.800

23.700

23.600

100

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。

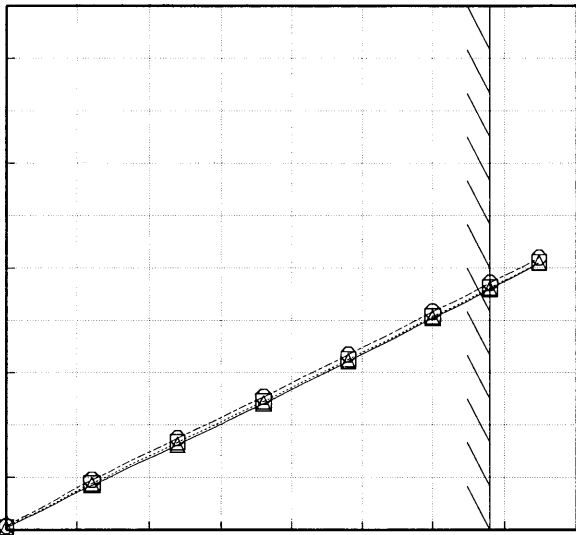
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
170	24.049	24.022
180	24.048	24.023
200	24.048	24.023
220	24.048	24.022
250	24.049	24.022
300	24.050	24.022
350	24.050	24.023
400	24.050	24.023
420	24.050	24.023

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<div><div>—△— Load 100%</div><div>—□— Load 50%</div><div>—○— Load 0%</div><div><div>[A]</div><div>5.00</div><div>4.00</div><div>3.00</div><div>2.00</div><div>1.00</div><div>0.00</div><div>0</div><div>100</div><div>200</div><div>300</div><div>400</div><div>500</div><div>Input Voltage</div><div>[V]</div></div><div>Note: Slanted line shows the range of the rated input voltage.</div><div>(注)斜線は定格入力電圧範囲を示す。</div></div>				<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Load 0%</th><th>Load 50%</th><th>Load 100%</th></tr><tr><td>0</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>50</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>100</td><td>0.002</td><td>0.002</td><td>0.002</td></tr><tr><td>150</td><td>0.003</td><td>0.003</td><td>0.003</td></tr><tr><td>165</td><td>0.020</td><td>1.399</td><td>2.824</td></tr><tr><td>170</td><td>0.020</td><td>1.354</td><td>2.739</td></tr><tr><td>180</td><td>0.019</td><td>1.273</td><td>2.576</td></tr><tr><td>200</td><td>0.018</td><td>1.141</td><td>2.305</td></tr><tr><td>250</td><td>0.018</td><td>0.923</td><td>1.847</td></tr><tr><td>300</td><td>0.017</td><td>0.779</td><td>1.548</td></tr><tr><td>350</td><td>0.018</td><td>0.678</td><td>1.339</td></tr><tr><td>400</td><td>0.018</td><td>0.603</td><td>1.183</td></tr><tr><td>420</td><td>0.018</td><td>0.579</td><td>1.131</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>				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	0.002	0.002	0.002	150	0.003	0.003	0.003	165	0.020	1.399	2.824	170	0.020	1.354	2.739	180	0.019	1.273	2.576	200	0.018	1.141	2.305	250	0.018	0.923	1.847	300	0.017	0.779	1.548	350	0.018	0.678	1.339	400	0.018	0.603	1.183	420	0.018	0.579	1.131	—	—	—	—	—	—	—	—	—	—	—	—
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Load Current [A]	Output Voltage [V]																																																					
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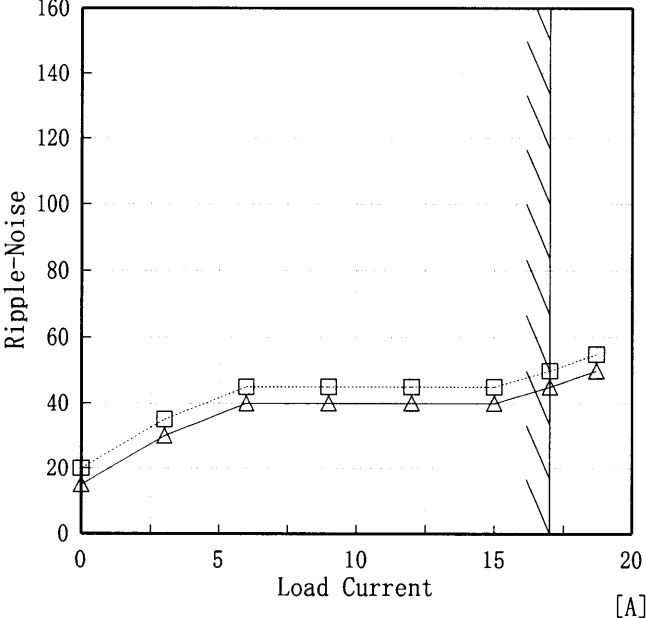
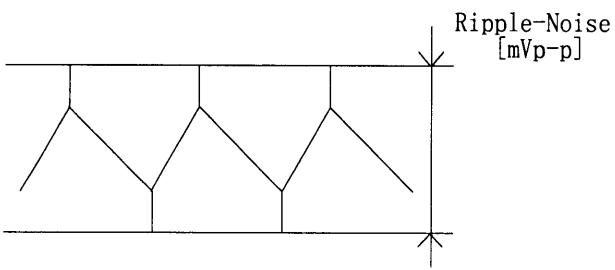
Model		DBS400B24	
Item	Ripple Voltage (by Load Current) リップル電圧 (負荷特性)		Temperature 25℃ Testing Circuitry Figure A
Object	+24V17A		
1. Graph			
[mV]		Input Volt. 200V Input Volt. 400V	
Ripple Voltage is shown as p-p in the figure below.			
Note: Slanted line shows the range of the rated load current.			
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	Ripple Output Volt. [mV]	
[A]	Input Volt. 200 [V]	Input Volt. 400 [V]
0.0	10	10
3.0	15	20
6.0	15	30
9.0	15	30
12.0	15	30
15.0	15	30
17.0	15	30
18.7	20	35
—	—	—
—	—	—
—	—	—

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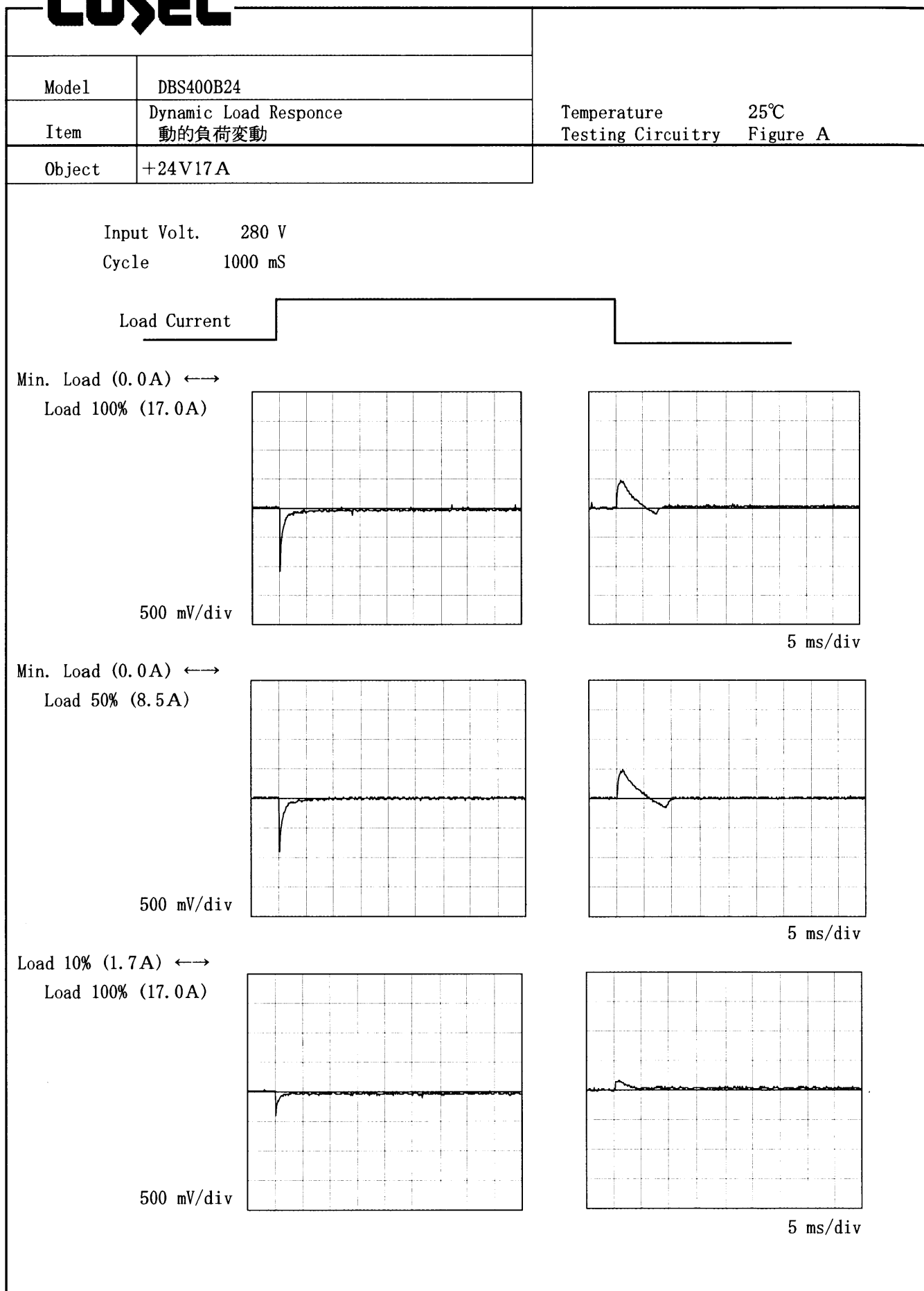
Model DBS400B24		Temperature 25°C Testing Circuitry Figure A																																						
Item	Ripple-Noise リップルノイズ																																							
Object	+24V17A																																							
<p>1. Graph</p> <p>—△— Input Volt. 200V - -□- - Input Volt. 400V</p>  <p>Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>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。</p>  <p>図 リップルノイズ波形図</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr> <tr> <th>Input Volt. 200 [V]</th><th>Input Volt. 400 [V]</th></tr> </thead> <tbody> <tr><td>0.0</td><td>15</td><td>20</td></tr> <tr><td>3.0</td><td>30</td><td>35</td></tr> <tr><td>6.0</td><td>40</td><td>45</td></tr> <tr><td>9.0</td><td>40</td><td>45</td></tr> <tr><td>12.0</td><td>40</td><td>45</td></tr> <tr><td>15.0</td><td>40</td><td>45</td></tr> <tr><td>17.0</td><td>45</td><td>50</td></tr> <tr><td>18.7</td><td>50</td><td>55</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Load current [A]	Ripple-Noise [mV]		Input Volt. 200 [V]	Input Volt. 400 [V]	0.0	15	20	3.0	30	35	6.0	40	45	9.0	40	45	12.0	40	45	15.0	40	45	17.0	45	50	18.7	50	55	—	—	—	—	—	—	—	—	—
Load current [A]	Ripple-Noise [mV]																																							
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15.0	40	45																																						
17.0	45	50																																						
18.7	50	55																																						
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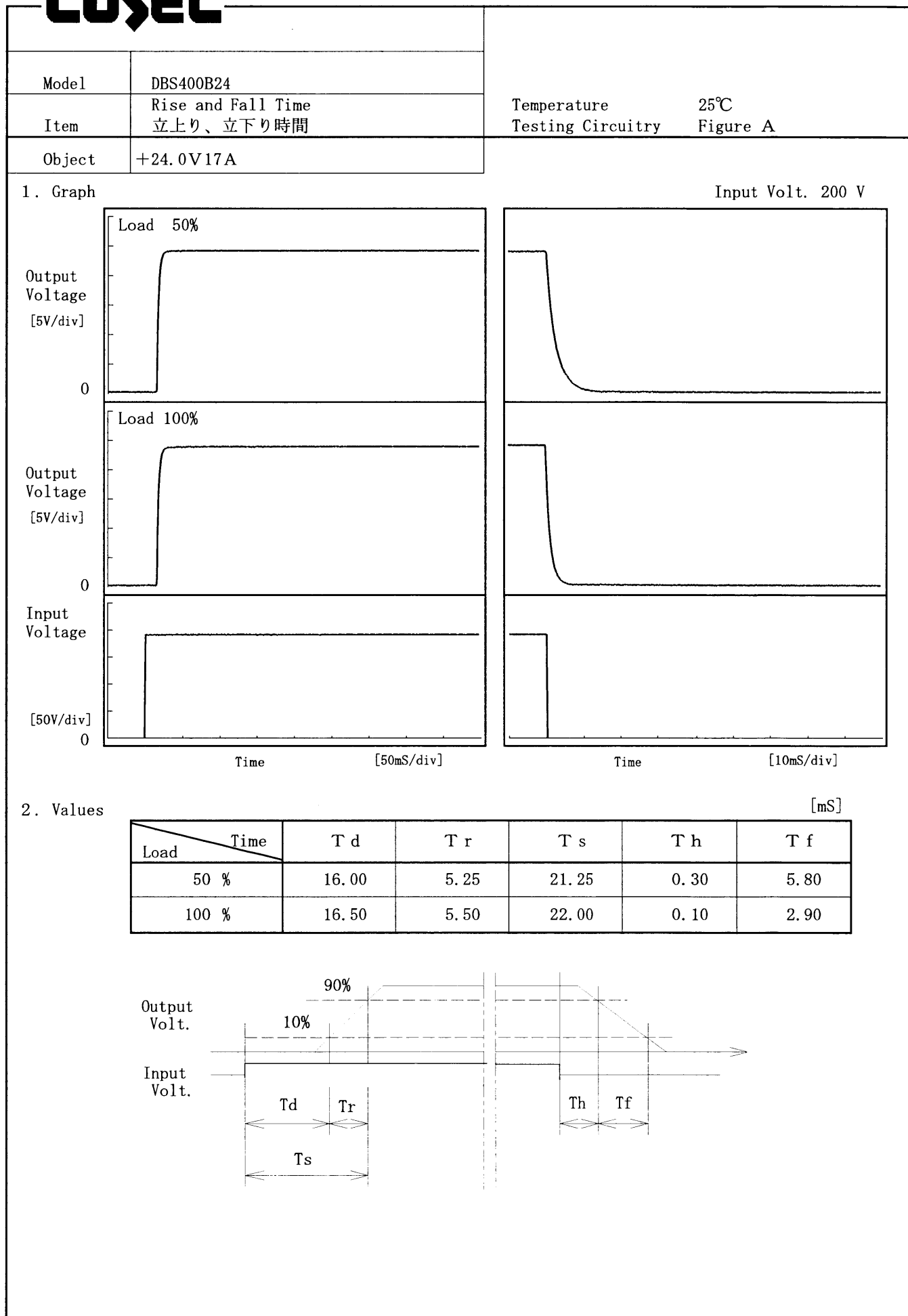
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Model		DBS400B24		Temperature		25℃																																																								
Item		Overcurrent Protection 過電流保護		Testing Circuitry		Figure A																																																								
Object		+24.0V17A																																																												
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<div><div><div></div><div></div><div></div></div><div>Input Volt. 200 V Input Volt. 280 V Input Volt. 400 V</div></div> <div><div>[V]</div><div>Output Voltage</div><div>[V]</div><div>Load Current</div><div>[A]</div></div> <div><p>Note: Slanted line shows the range of the rated load current.</p><p>Intermittent operation occurs when the output voltage is from 17V to 0V.</p><p>(注)斜線は定格負荷電流範囲を示す。 17V～0V間は、間欠モードとなる。</p></div>				<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="3">Load 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>24.00</td><td>21.28</td><td>21.64</td><td>22.57</td></tr><tr><td>22.80</td><td>21.25</td><td>21.62</td><td>22.57</td></tr><tr><td>21.60</td><td>21.27</td><td>21.60</td><td>22.63</td></tr><tr><td>19.20</td><td>21.24</td><td>21.57</td><td>22.67</td></tr><tr><td>16.80</td><td>—</td><td>—</td><td>—</td></tr><tr><td>14.40</td><td>—</td><td>—</td><td>—</td></tr><tr><td>12.00</td><td>—</td><td>—</td><td>—</td></tr><tr><td>9.60</td><td>—</td><td>—</td><td>—</td></tr><tr><td>7.20</td><td>—</td><td>—</td><td>—</td></tr><tr><td>4.80</td><td>—</td><td>—</td><td>—</td></tr><tr><td>2.40</td><td>—</td><td>—</td><td>—</td></tr><tr><td>0.00</td><td>—</td><td>—</td><td>—</td></tr></table>				Output Voltage [V]	Load Current [A]			Input Volt. 200 [V]	Input Volt. 280 [V]	Input Volt. 400 [V]	24.00	21.28	21.64	22.57	22.80	21.25	21.62	22.57	21.60	21.27	21.60	22.63	19.20	21.24	21.57	22.67	16.80	—	—	—	14.40	—	—	—	12.00	—	—	—	9.60	—	—	—	7.20	—	—	—	4.80	—	—	—	2.40	—	—	—	0.00	—	—	—
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Model		DBS400B24		Testing Circuitry	Figure A																																																	
Item		Overvoltage Protection 過電圧保護																																																				
Object		+24.0V17A																																																				
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Model		DBS400B24		Testing Circuitry	Figure A																																																			
Item		Ambient Temperature Drift 周囲温度変動																																																						
Object		+24.0V17A																																																						
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Model		DBS400B24																																						
Item		Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧																																						
Object		+24.0V 17A																																						
1. Graph		<div> <div> <div>□</div> <div>Load 50%</div> </div> <div> <div>△</div> <div>Load 100%</div> </div> </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>																																						
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Ambient Temperature [°C]	Input Voltage [V]																																							
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-35	136	140																																						
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Model DBS400B24		Testing Circuitry Figure A																																						
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)																																							
Object	+24V17A																																							
<p>1. Graph</p> <p>□ Load 50% —△— Load 100%</p> <p>[mV]</p> <p>Ripple Voltage</p> <p>Ambient Temperature [°C]</p> <p>Input Volt. 280 V</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>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temp. [°C]</th><th colspan="2">Ripple Voltage [mV]</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> </thead> <tbody> <tr><td>-40</td><td>120</td><td>120</td></tr> <tr><td>-20</td><td>45</td><td>45</td></tr> <tr><td>0</td><td>25</td><td>25</td></tr> <tr><td>25</td><td>25</td><td>25</td></tr> <tr><td>45</td><td>20</td><td>20</td></tr> <tr><td>65</td><td>25</td><td>25</td></tr> <tr><td>85</td><td>30</td><td>30</td></tr> <tr><td>100</td><td>35</td><td>35</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Ambient Temp. [°C]	Ripple Voltage [mV]		Load 50%	Load 100%	-40	120	120	-20	45	45	0	25	25	25	25	25	45	20	20	65	25	25	85	30	30	100	35	35	—	—	—	—	—	—	—	—	—
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Model	DBS400B24	Temperature 25℃ Testing Circuitry Figure A																						
Item	Time Lapse Drift 経時ドリフト																							
Object	+24.0V17A																							
1. Graph		2.Values																						
<div>[V]</div> <div><div><div>Output Voltage</div><div>Time</div></div><div><div>24.300</div><div>24.200</div><div>24.100</div><div>24.000</div><div>23.900</div><div>23.800</div><div>23.700</div><div>23.600</div></div><div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div><div>10</div></div></div> <div><div>Input Volt.</div><div>280V</div></div> <div><div>Load</div><div>100%</div></div> <div>[H]</div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>24.004</td></tr><tr><td>0.5</td><td>23.988</td></tr><tr><td>1.0</td><td>23.988</td></tr><tr><td>2.0</td><td>23.989</td></tr><tr><td>3.0</td><td>23.989</td></tr><tr><td>4.0</td><td>23.988</td></tr><tr><td>5.0</td><td>23.988</td></tr><tr><td>6.0</td><td>23.988</td></tr><tr><td>7.0</td><td>23.988</td></tr><tr><td>8.0</td><td>23.988</td></tr></table>	Time since start [H]	Output Voltage [V]	0.0	24.004	0.5	23.988	1.0	23.988	2.0	23.989	3.0	23.989	4.0	23.988	5.0	23.988	6.0	23.988	7.0	23.988	8.0	23.988
Time since start [H]	Output Voltage [V]																							
0.0	24.004																							
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5.0	23.988																							
6.0	23.988																							
7.0	23.988																							
8.0	23.988																							

LUCEL

Model	DBS400B24	Testing Circuitry Figure A
Item	Output Voltage Accuracy 定電圧精度	
Object	+24.0V17A	

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 : -20~85 °C

Input Voltage : 200~400 V

Load Current : 0~17 A

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

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

1. 定電圧精度

周囲温度、入力電圧、負荷電流を下記仕様内で、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 0~17 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) = $\frac{\text{変動値}}{\text{定格出力電圧}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration) [%]
Maximum Voltage	-20	280	0	24.092	±109	±0.5
Minimum Voltage	85	400	17	23.874		

COSEL

Model		DBS400B24	Testing Circuitry	Figure A
Item		Condensation 結露特性		
Object		+24V17A		
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]		24.050	Input Volt.: 280V, Load Current:17A	
Line Regulation [mV]		1	Input Volt.: 200~400V, Load Current:17A	
Load Regulation [mV]		51	Input Volt.: 280V, Load Current:0~17A	

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BC-3312

COSEL

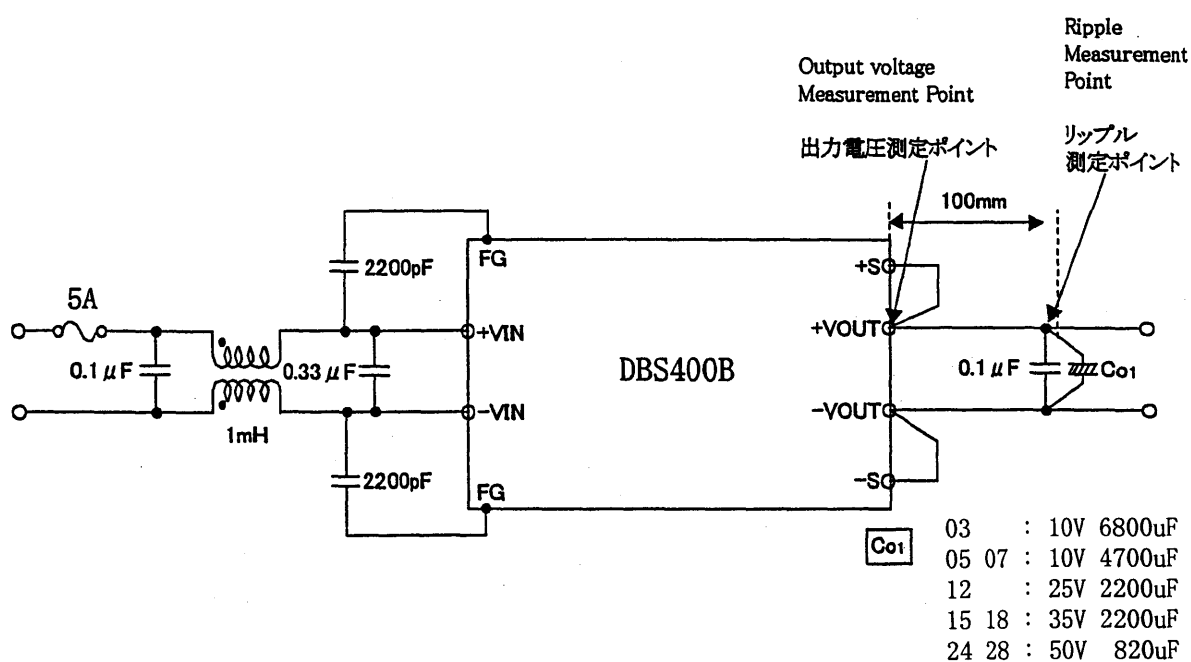
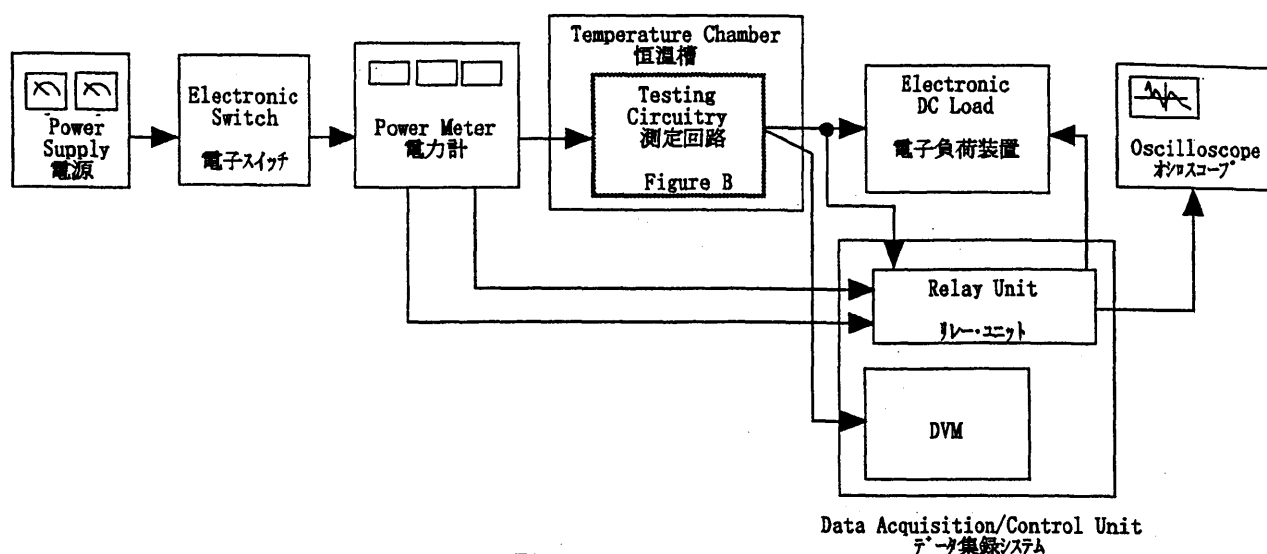
Model		DBS400B24	Temperature Testing Circuitry	25°C Figure C
Item		Line Noise Tolerance 入力雑音耐量		
Object		+24 V 17 A		

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 %



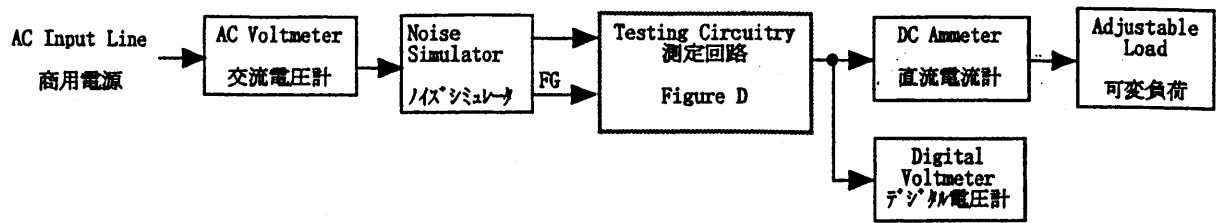


Figure C

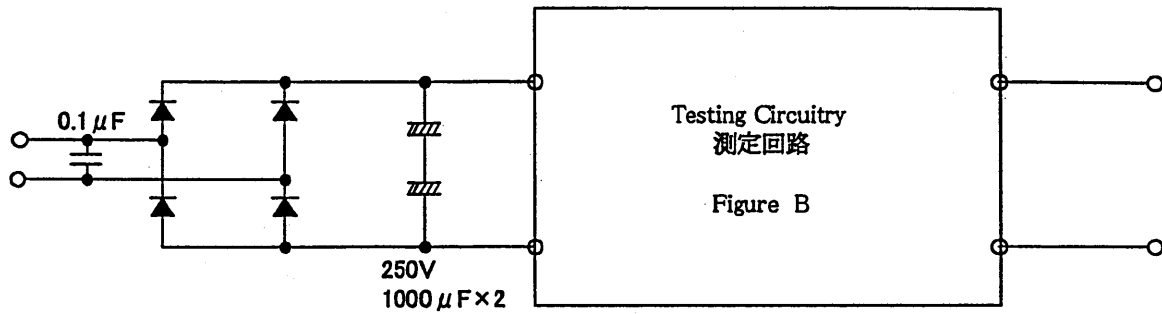


Figure D (Line Noise Tolerance)
入力雑音耐量