

# TEST DATA OF DPG500

(100V INPUT)

AC-DC Front End Module  
March.8. 2010

Approved by : Tatsuya Mano  
Tatsuya Mano Design Manager

Prepared by : Satoshi Uetani  
Satoshi Uetani Design Engineer

**COSEL CO.,LTD.**

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# COSEL

Model		DPG500																																																				
Item		Input Current (by Load Power)																																																				
Object																																																						
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt.</div><div>85V</div></div><div><div>---□---</div><div>Input Volt.</div><div>100V</div></div><div><div>---○---</div><div>Input Volt.</div><div>132V</div></div></div> <p>Input Current [A]</p> <p>Load Power [W]</p> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Power [W]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 85[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 132[V]</th></tr><tr><td>0</td><td>0.15</td><td>0.17</td><td>0.23</td></tr><tr><td>50</td><td>0.76</td><td>0.65</td><td>0.53</td></tr><tr><td>100</td><td>1.38</td><td>1.18</td><td>0.92</td></tr><tr><td>150</td><td>2.01</td><td>1.71</td><td>1.31</td></tr><tr><td>200</td><td>2.64</td><td>2.25</td><td>1.71</td></tr><tr><td>250</td><td>3.28</td><td>2.78</td><td>2.11</td></tr><tr><td>300</td><td>3.90</td><td>3.30</td><td>2.50</td></tr><tr><td>330</td><td>4.31</td><td>3.63</td><td>2.74</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 Power [W]	Input Current [A]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	0	0.15	0.17	0.23	50	0.76	0.65	0.53	100	1.38	1.18	0.92	150	2.01	1.71	1.31	200	2.64	2.25	1.71	250	3.28	2.78	2.11	300	3.90	3.30	2.50	330	4.31	3.63	2.74	--	-	-	-	--	-	-	-	--	-	-	-
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# COSEL

Model

DPG500

Item

Input Power (by Load Power)

Object

1.Graph

—△—

Input Volt.

85V

---□---

Input Volt.

100V

-·-○-·-

Input Volt.

132V

Input Power [W]

Load Power [W]

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

Temperature

25°C

Testing Circuitry

Figure A

2.Values

Load Power [W]	Input Power [W]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0	3.0	3.0	2.9
50	56.6	56.2	55.6
100	109.5	109.0	107.8
150	162.9	162.0	160.3
200	216.3	215.1	212.6
250	270.4	268.3	265.2
300	324.2	321.3	317.4
330	359.7	353.9	349.4
--	-	-	-
--	-	-	-
--	-	-	-

# COSEL

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Item		Efficiency (by Input Voltage)																																	
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Note: Slanted line shows the range of the rated input voltage.

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**COSEL**

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**COSEL**

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**COSEL**

LOREL

Model	DPG500
Item	Power Factor (by Load Power)
Object	

Temperature 25°C  
Testing Circuitry Figure A

1.Graph

—△—

Input Volt.

85V

- - □ - -

Input Volt.

100V

- · · ○ · ·

Input Volt.

132V

2.Values

Power Factor

Load Power [W]

Load Power [W]	85V Power Factor	100V Power Factor	132V Power Factor
50	0.879	0.861	0.800
100	0.932	0.922	0.892
150	0.954	0.946	0.926
200	0.964	0.958	0.942
250	0.971	0.968	0.954
300	0.978	0.973	0.963
330	0.979	0.976	0.966

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

Load Power [W]	Power Factor		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
50	0.879	0.861	0.800
100	0.932	0.922	0.892
150	0.954	0.946	0.926
200	0.964	0.958	0.942
250	0.971	0.968	0.954
300	0.978	0.973	0.963
330	0.979	0.976	0.966
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--	-	-	-

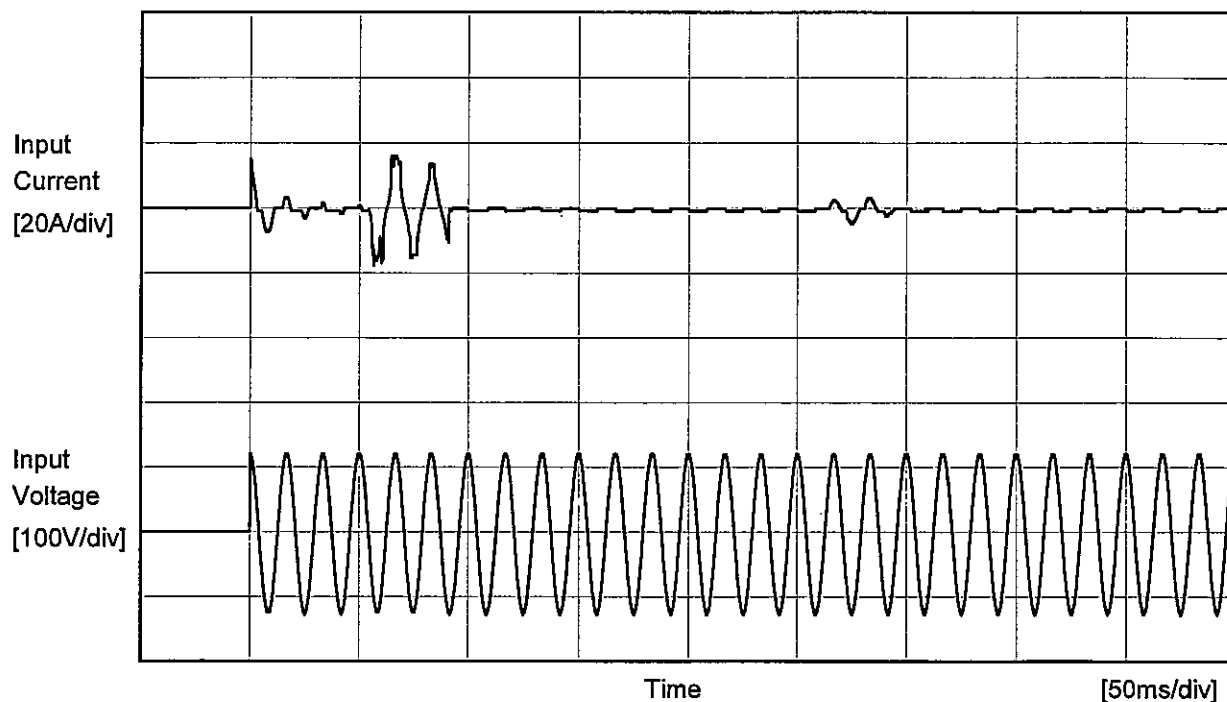
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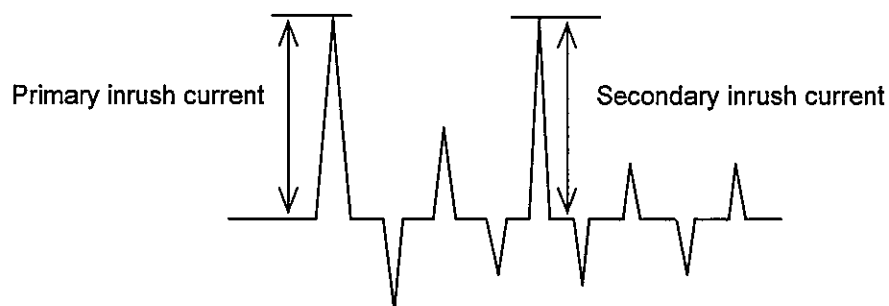
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Model	DPG500	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		



Input Voltage 100 V  
 Frequency 60 Hz  
 Load 0 %

Primary inrush current 15.1 A  
 Secondary inrush current 17.7 A





<b>COSEL</b>																													
Model	DPG500	Temperature 25°C Testing Circuitry Figure B																											
Item	Leakage Current																												
Object	_____																												
<p>1.Results</p> <table border="1"> <thead> <tr> <th rowspan="2">Standards</th> <th colspan="3">Leakage Current [mA]</th> </tr> <tr> <th>Input Volt. 85 [V]</th> <th>Input Volt. 100 [V]</th> <th>Input Volt. 132 [V]</th> </tr> </thead> <tbody> <tr> <td>(A)DEN-AN</td> <td>0.11</td> <td>0.15</td> <td>0.19</td> </tr> <tr> <td>(B)IEC60950-1</td> <td>0.11</td> <td>0.16</td> <td>0.19</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Standards</th> <th colspan="3">Leakage Current [mA]</th> </tr> <tr> <th>Input Volt. 170 [V]</th> <th>Input Volt. 230 [V]</th> <th>Input Volt. 264 [V]</th> </tr> </thead> <tbody> <tr> <td>(B)IEC60950-1</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>				Standards	Leakage Current [mA]			Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]	(A)DEN-AN	0.11	0.15	0.19	(B)IEC60950-1	0.11	0.16	0.19	Standards	Leakage Current [mA]			Input Volt. 170 [V]	Input Volt. 230 [V]	Input Volt. 264 [V]	(B)IEC60950-1	-	-	-
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(B)IEC60950-1	-	-	-																										
<p>2.Condition</p> <p>Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.</p>																													

# COSEL

Model		DPG500	
Item		Line Regulation	
Object		+360V 300W	

1.Graph

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□

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Load 50%

—

△

—

Load 100%

Output Voltage [V]

420

400

380

360

340

320

300

280

70

90

110

130

150

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%
80	360.81	360.81
85	360.81	360.81
90	360.81	360.81
100	360.81	360.81
110	360.81	360.81
120	360.81	360.81
132	360.82	360.82
140	360.82	360.82
--	-	-

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# COSEL

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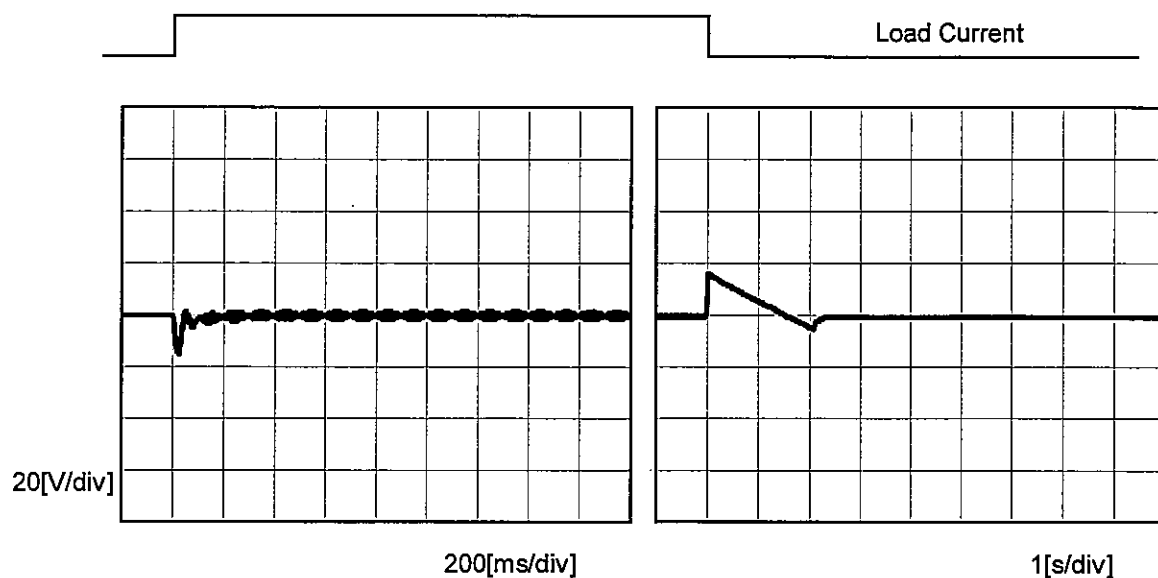


Model	DPG500		
Item	Dynamic Load Response	Temperature	25°C
Object	+360V300W	Testing Circuitry	Figure A

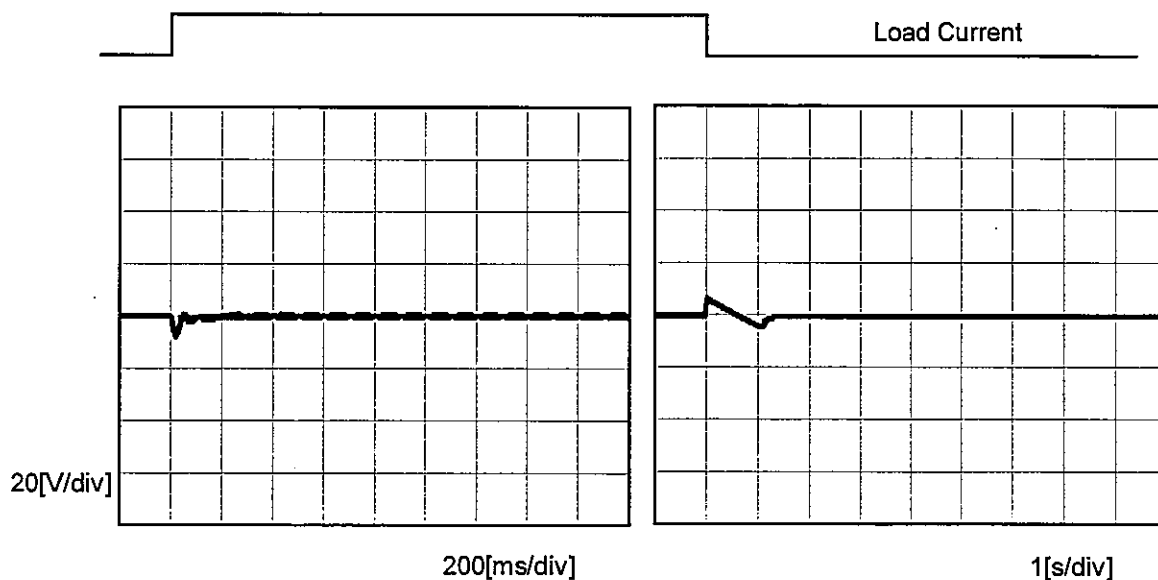
Input Volt. 100 V

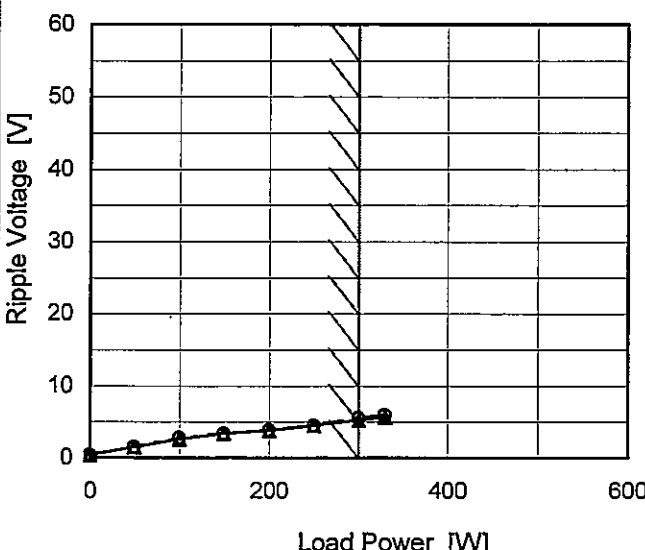
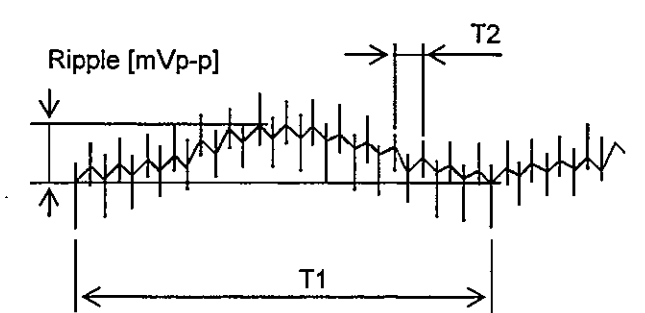
Cycle 10 s

Min. Load ( 0 W ) -- Load 100% ( 300 W )



Min. Load ( 0 W ) -- Load 50% ( 150 W )



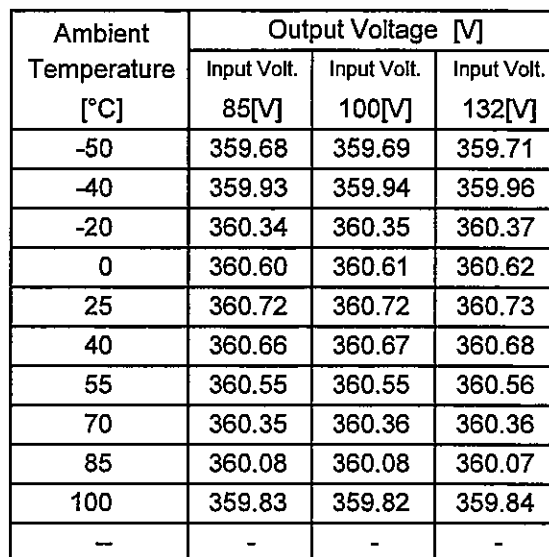
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Object		+360V300W																																							
1.Graph		2.Values																																							
<div><div><div>—△—</div><div>Input Volt. 85V</div></div><div><div>-·-○--</div><div>Input Volt. 132V</div></div></div> 		<table><tr><th rowspan="2">Load Power [W]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 85 [V]</th><th>Input Volt. 132 [V]</th></tr><tr><td>0</td><td>0.4</td><td>0.4</td></tr><tr><td>50</td><td>1.5</td><td>1.5</td></tr><tr><td>100</td><td>2.6</td><td>2.8</td></tr><tr><td>150</td><td>3.4</td><td>3.4</td></tr><tr><td>200</td><td>3.8</td><td>3.9</td></tr><tr><td>250</td><td>4.5</td><td>4.5</td></tr><tr><td>300</td><td>5.3</td><td>5.6</td></tr><tr><td>330</td><td>5.6</td><td>6.0</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></table>		Load Power [W]	Ripple Voltage [mV]		Input Volt. 85 [V]	Input Volt. 132 [V]	0	0.4	0.4	50	1.5	1.5	100	2.6	2.8	150	3.4	3.4	200	3.8	3.9	250	4.5	4.5	300	5.3	5.6	330	5.6	6.0	—	—	—	—	—	—	—	—	—
Load Power [W]	Ripple Voltage [mV]																																								
	Input Volt. 85 [V]	Input Volt. 132 [V]																																							
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—	—	—																																							
—	—	—																																							
—	—	—																																							
<p>Measured by 20 MHz Oscilloscope. Ripple Voltage is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p>																																									
<div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div>																																									
Fig. Complex Ripple Wave Form																																									

- 12 -

BC-10385

Testing Circuitry Figure A

## 2.Values



- 13 -

**COSEL**

		Testing Circuitry Figure A
Model	DPG500	
Item	Output Voltage Accuracy	
Object	+360V 300W	

### 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 - 85°C

Input Voltage : 85 - 132V

Load Power : 0 - 300W

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

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

### 2. Values

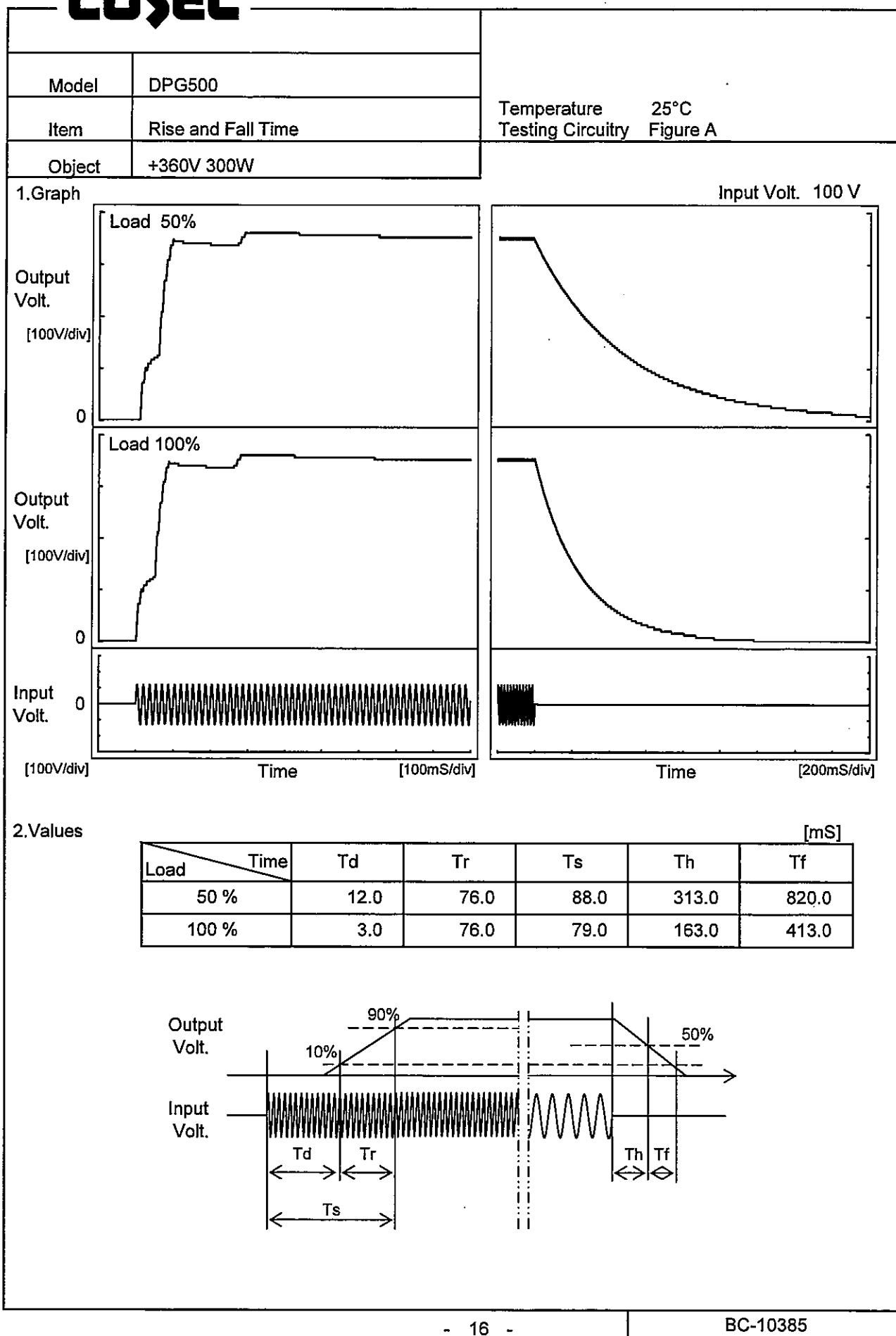
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Power[W]	Voltage[V]	Value [V]	Ration [%]
Maximum Voltage	25	132	0	360.75	±0.41	±0.1
Minimum Voltage	-40	85	300	359.93		



**COSEL**

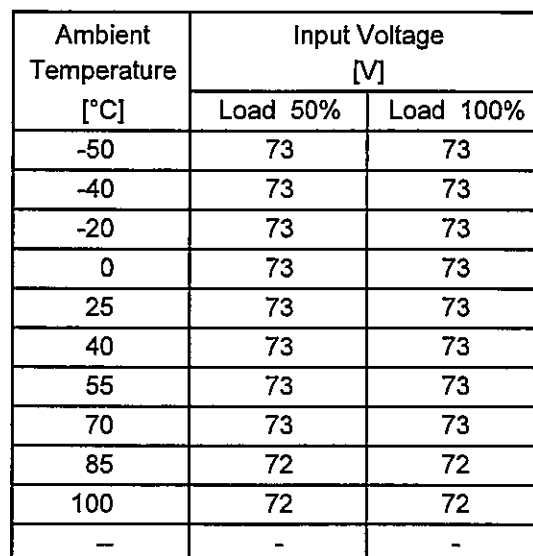
Model	DPG500	Temperature 25°C Testing Circuitry Figure A	
Item	Time Lapse Drift		
Object	+360V 300W		
1.Graph		2.Values	
<div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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# COSEL



Testing Circuitry Figure A

## 2.Values



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

Testing Circuitry Figure A



Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-50	412.0	412.0	412.0
-40	416.0	416.0	416.0
-20	416.0	416.0	416.0
0	420.0	420.0	420.0
25	424.0	424.0	424.0
40	424.0	424.0	424.0
55	424.0	424.0	424.0
70	424.0	424.0	424.0
85	424.0	424.0	424.0
100	424.0	424.0	424.0
-	-	-	-

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

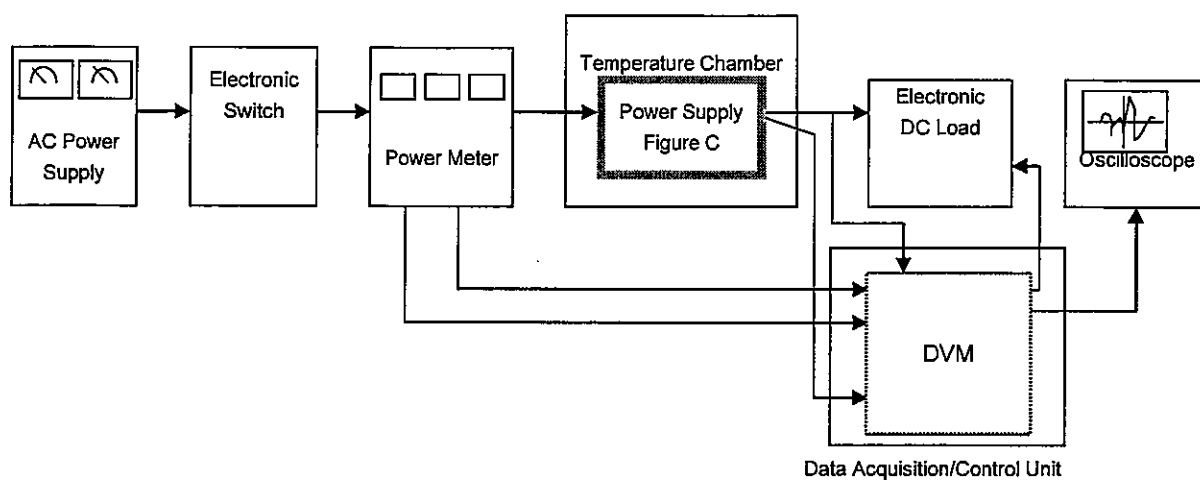


Figure A

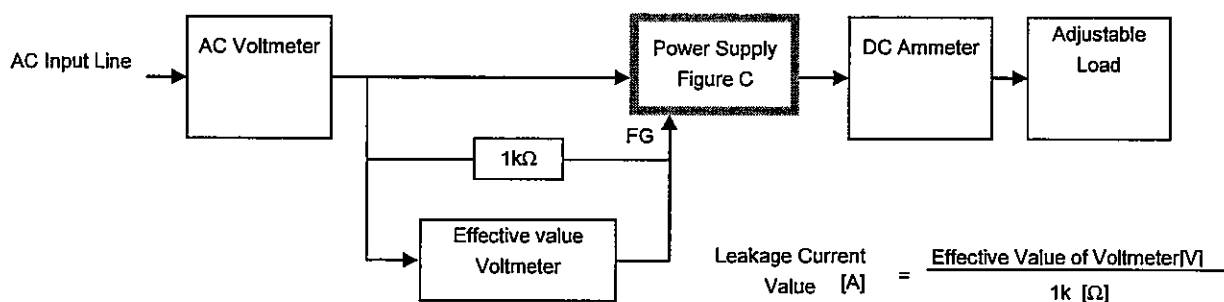


Figure B ( DEN-AN )

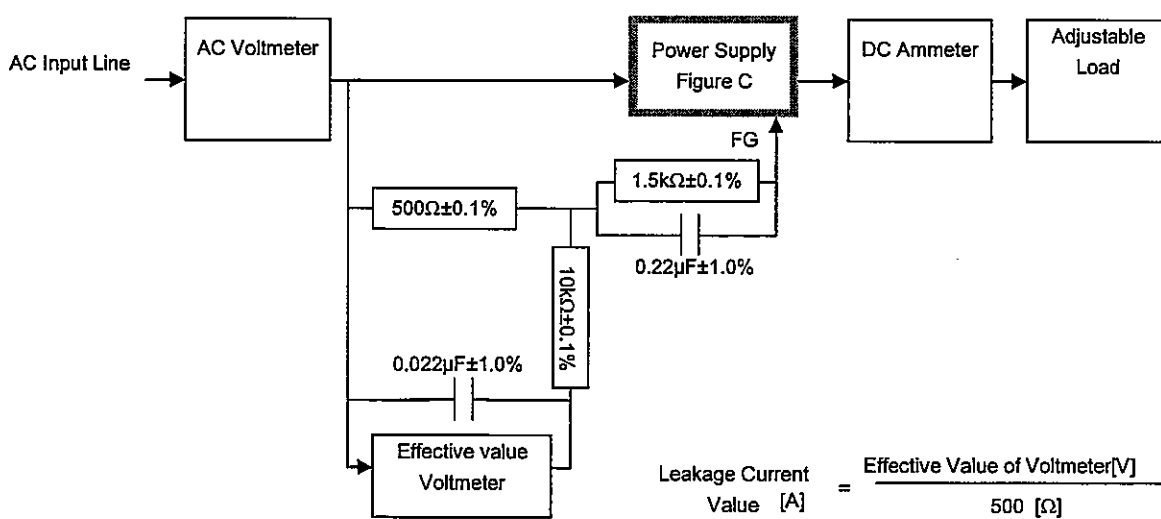


Figure B ( IEC60950-1 )

**COSEL**

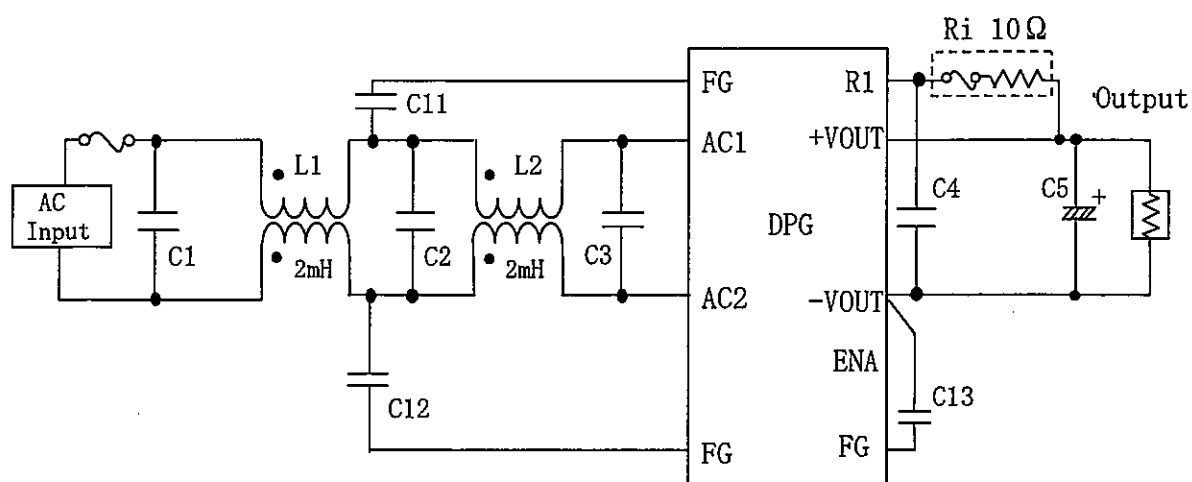


Figure C

- C1, C2, C4 : 0.68uF 250V Film Capacitor ×2  
C3 : 1.0uF 250V Film Capacitor ×2  
C5 : 560uF 450V Electrolytic Capacitor  
C11, C12, C13 : 2200pF Ceramic Capacitor  
L1, L2 : SC-15-200 (NEC TOKIN)