



# TEST DATA OF LGA150A-5-Y

Regulated DC Power Supply  
April 15 , 2008

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Yoshiaki Shimizu Design Manager

Prepared by : Kazuo Ishimura  
Kazuo Ishimura Design Engineer

**COSEL CO.,LTD.**

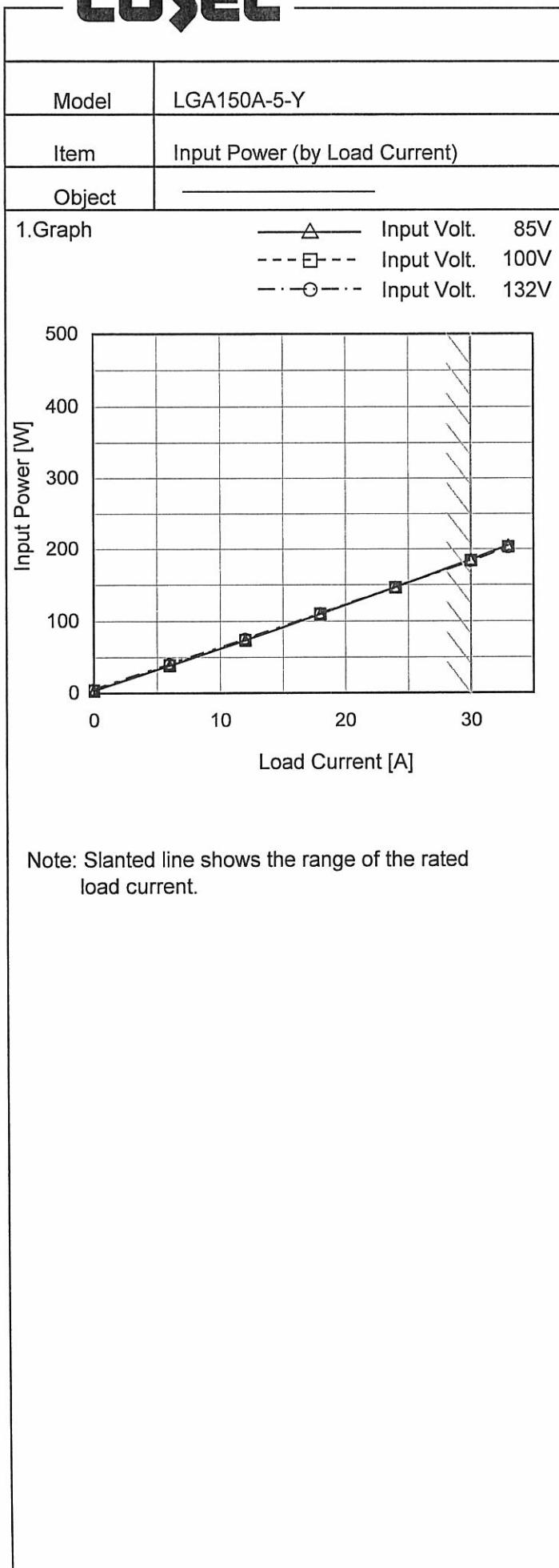
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Model	LGA150A-5-Y																																																					
Item	Input Current (by Load Current)	Temperature 25°C	Testing Circuitry Figure A																																																			
Object	_____	_____	_____																																																			
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 Temperature 25°C  
 Testing Circuitry Figure A

## 2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0	3.1	3.5	4.6
6	38.2	38.8	40.5
12	73.5	73.8	75.3
18	109.5	109.5	110.4
24	146.7	146.1	146.4
30	185.0	183.6	183.0
33	205.0	203.0	201.9
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model	LGA150A-5-Y																																	
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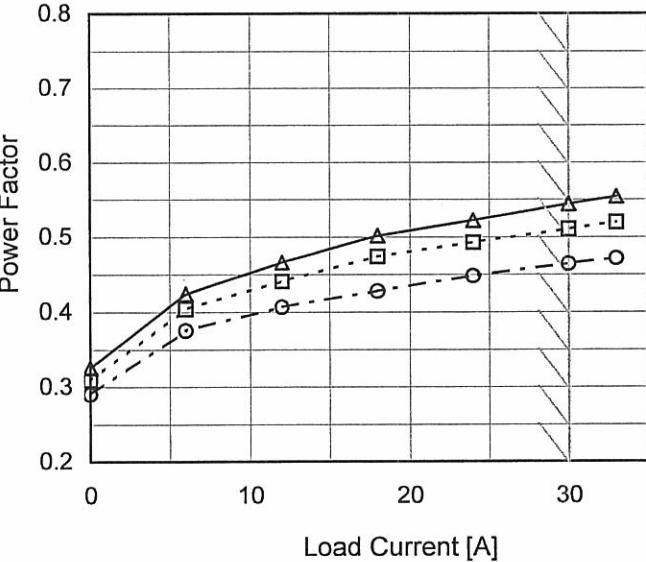
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<p>The graph plots Efficiency [%] on the Y-axis (34 to 90) against Load Current [A] on the X-axis (0 to 30). Three curves are shown for Input Voltages: 85V (solid line with triangle markers), 100V (dashed line with square markers), and 132V (dash-dot line with circle markers). All curves show efficiency starting at ~80% at 0A and remaining stable until approximately 20A, after which they drop sharply. A slanted line on the right side of the graph indicates the rated load current range.</p>																																																						
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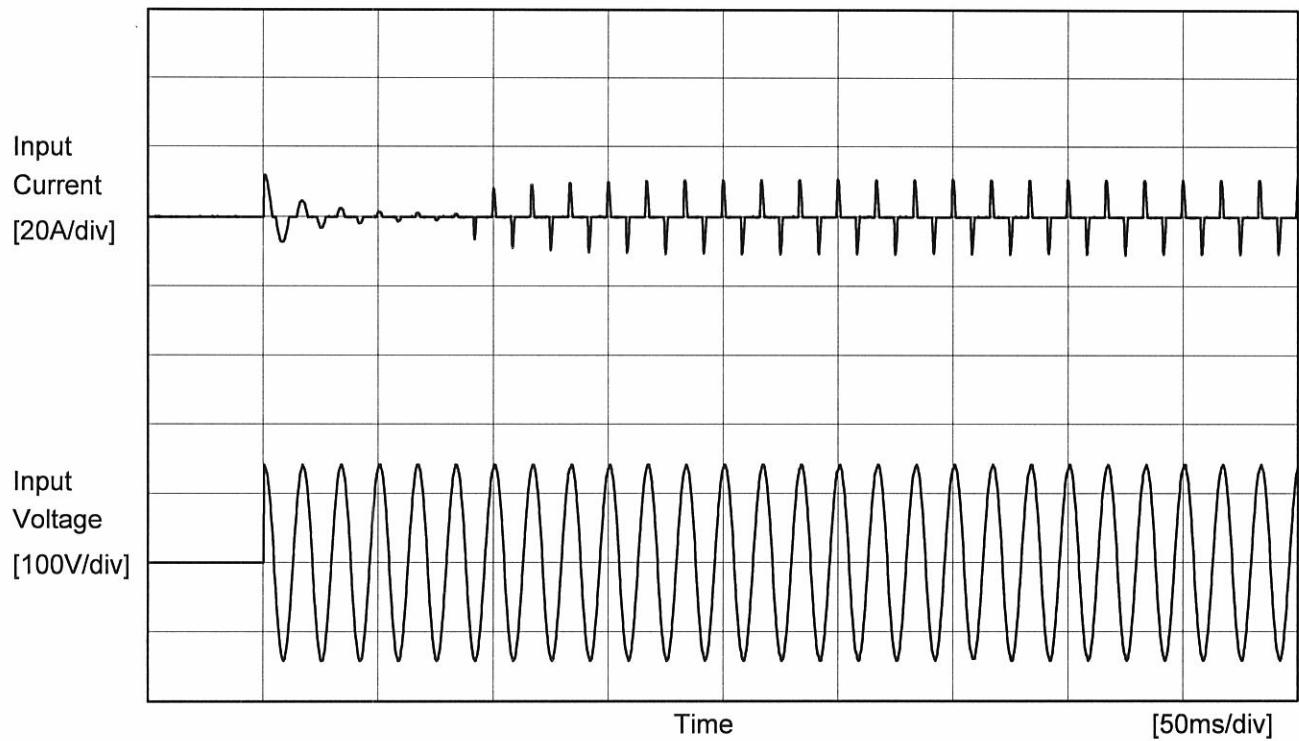
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<p>Graph showing Power Factor vs Input Voltage for LGA150A-5-Y at 25°C. The Y-axis is Power Factor (0.2 to 0.8). The X-axis is Input Voltage [V] (70 to 150). Two curves are shown: Load 50% (dashed line with squares) and Load 100% (solid line with triangles). Both curves show a slight decrease as input voltage increases. A slanted line indicates the rated input voltage range.</p>																																		
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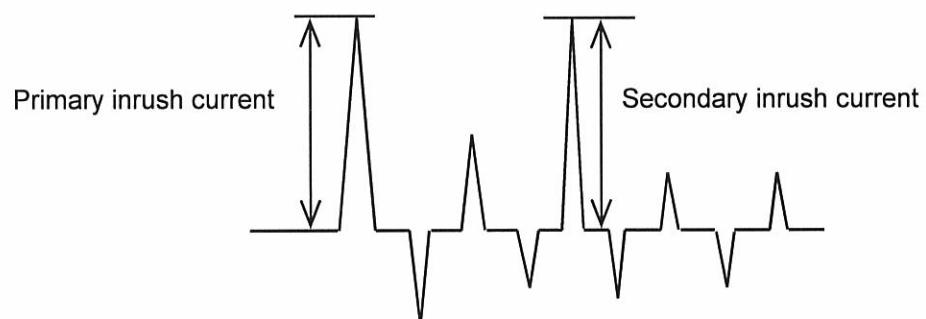
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Model	LGA150A-5-Y	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current	
Object	_____	



Input Voltage 100 V  
 Frequency 60 Hz  
 Load 100 %

Primary inrush current 13.4 A  
 Secondary inrush current 13.8 A





Model	LGA150A-5-Y	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
Object	_____		

### 1. Results

Standards	Leakage Current [mA]		
	Input Volt. 100 [V]	Input Volt. 120 [V]	Input Volt. 132 [V]
(A)DEN-AN	0.30	0.39	0.43
(B)IEC60950	0.30	0.37	0.42

frequency 60Hz

### 2. Condition

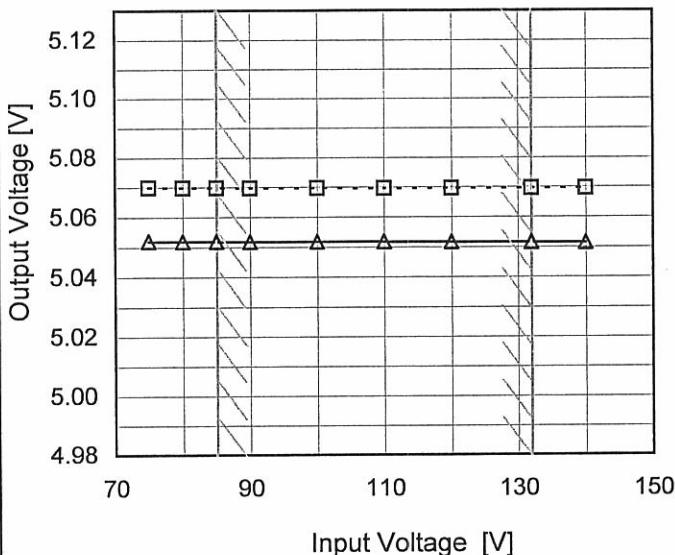
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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Model	LGA150A-5-Y
Item	Line Regulation
Object	+5V30A

 Temperature 25°C  
 Testing Circuitry Figure A

## 1.Graph

 --- □--- Load 50%  
 —△— Load 100%


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

## 2.Values

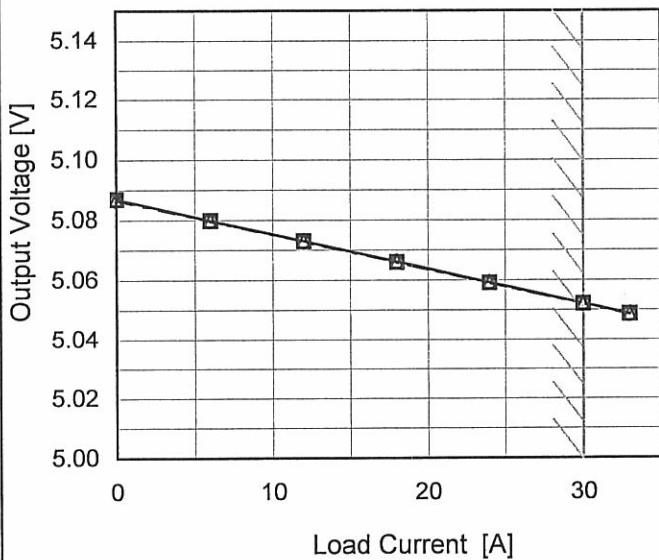
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	5.070	5.052
80	5.070	5.052
85	5.070	5.052
90	5.070	5.052
100	5.070	5.052
110	5.070	5.052
120	5.070	5.052
132	5.070	5.052
140	5.070	5.052

**COSEL**

Model	LGA150A-5-Y
Item	Load Regulation
Object	+5V30A

1.Graph

—△— Input Volt. 85V  
 - - □ - - Input Volt. 100V  
 - · ○ - - Input Volt. 132V



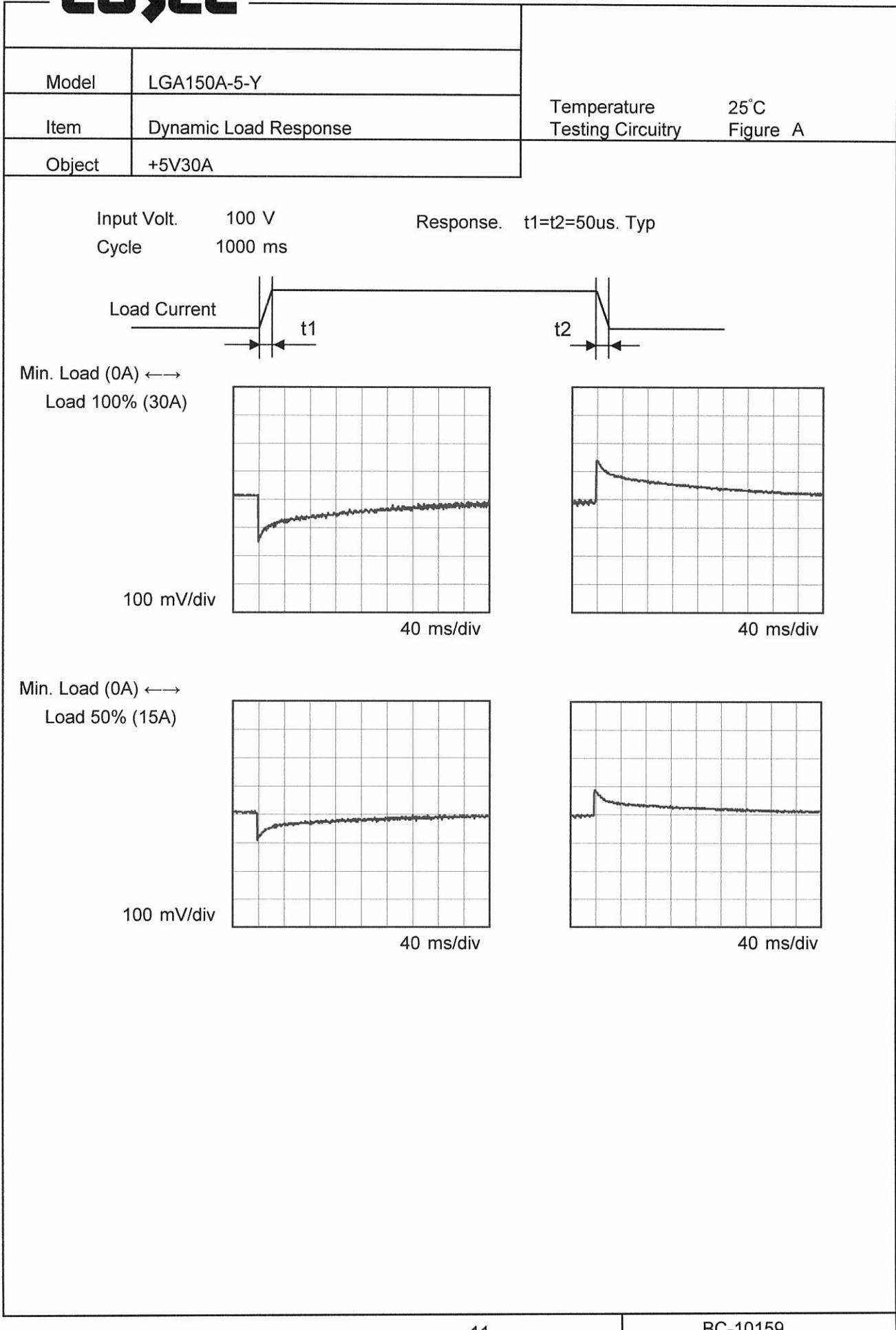
Note: Slanted line shows the range of the rated load current.

Temperature 25°C  
 Testing Circuitry Figure A

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0	5.087	5.087	5.087
6	5.080	5.080	5.080
12	5.073	5.073	5.073
18	5.066	5.066	5.066
24	5.059	5.059	5.059
30	5.052	5.052	5.052
33	5.049	5.049	5.049
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	LGA150A-5-Y																																							
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure C																																						
Object	+5V30A																																							
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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>																																								
<p>T1: Due to AC Input Line T2: Due to Switching</p>																																								
<p>Fig. Complex Ripple Wave Form</p>																																								

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Object	+5V30A																																							
1. Graph																																								
<p>Graph showing Ripple-Noise [mV] vs Load Current [A]. The Y-axis ranges from 0 to 200 mV, and the X-axis ranges from 0 to 35 A. Two curves are plotted: Input Volt. 85V (solid line with open triangles) and Input Volt. 132V (dashed line with open circles). Both curves show an increase in noise with load current. A slanted line indicates the range of the rated load current.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple-Noise [mV] (Input Volt. 85V)</th> <th>Ripple-Noise [mV] (Input Volt. 132V)</th> </tr> </thead> <tbody> <tr><td>0</td><td>15</td><td>15</td></tr> <tr><td>6</td><td>25</td><td>25</td></tr> <tr><td>12</td><td>35</td><td>35</td></tr> <tr><td>18</td><td>40</td><td>40</td></tr> <tr><td>24</td><td>45</td><td>45</td></tr> <tr><td>30</td><td>55</td><td>55</td></tr> <tr><td>33</td><td>60</td><td>60</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> <tr><td>--</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Ripple-Noise [mV] (Input Volt. 85V)	Ripple-Noise [mV] (Input Volt. 132V)	0	15	15	6	25	25	12	35	35	18	40	40	24	45	45	30	55	55	33	60	60	--	-	-	--	-	-	--	-	-	--	-	-		
Load Current [A]	Ripple-Noise [mV] (Input Volt. 85V)	Ripple-Noise [mV] (Input Volt. 132V)																																						
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2. Values																																								
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Load Current [A]	Ripple-Noise [mV]																																							
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<p>Measured by 20 MHz Oscilloscope. Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>Diagram illustrating the Complex Ripple Wave Form. The diagram shows a waveform with two distinct components: T1 (Due to AC Input Line) and T2 (Due to Switching). The total Ripple-Noise is indicated as <math>T_1 + T_2</math> [mVp-p].</p>																																								
<p>Fig. Complex Ripple Wave Form</p>																																								

**COSEL**

Model	LGA150A-5-Y	Testing Circuitry FigureC																									
Item	Ripple Voltage (by Ambient Temp.)																										
Object	+5V30A																										
1.Graph		2.Values																									
<p>Graph showing Ripple Voltage [mV] vs Ambient Temperature [°C]. The graph shows a decreasing trend of Ripple Voltage as ambient temperature increases from -30°C to 40°C. A slanted line indicates the range of rated ambient temperature between approximately -10°C and 25°C.</p> <p>Input Volt. 100V Input Load. 100%</p>																											
<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 ambient temperature.</p> <p>T1: Due to AC Input Line T2: Due to Switching</p> <p>Ripple [mVp-p]</p> <p>Fig. Complex Ripple Wave Form</p>																											
<table border="1"> <thead> <tr> <th>Ambient Temperature [°C]</th> <th>Ripple Voltage [mV]</th> </tr> </thead> <tbody> <tr><td>-30</td><td>100</td></tr> <tr><td>-10</td><td>55</td></tr> <tr><td>0</td><td>45</td></tr> <tr><td>25</td><td>25</td></tr> <tr><td>40</td><td>25</td></tr> <tr><td>--</td><td>-</td></tr> <tr><td>--</td><td>-</td></tr> <tr><td>--</td><td>-</td></tr> <tr><td>--</td><td>-</td></tr> <tr><td>--</td><td>-</td></tr> <tr><td>--</td><td>-</td></tr> <tr><td>--</td><td>-</td></tr> </tbody> </table>		Ambient Temperature [°C]	Ripple Voltage [mV]	-30	100	-10	55	0	45	25	25	40	25	--	-	--	-	--	-	--	-	--	-	--	-	--	-
Ambient Temperature [°C]	Ripple Voltage [mV]																										
-30	100																										
-10	55																										
0	45																										
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Model	LGA150A-5-Y
Item	Ambient Temperature Drift
Object	+5V30A
1.Graph	<p style="text-align: center;"> <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; border-radius: 50%; margin-right: 5px;"></span> Input Volt. 85V  <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; border-top: none; border-left: none; border-radius: 50%; margin-right: 5px;"></span> Input Volt. 100V  <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; border-top: none; border-left: none; border-radius: 50%; margin-right: 5px;"></span> Input Volt. 132V         </p> <p style="text-align: center;">Output Voltage [V]</p> <p style="text-align: center;">Ambient Temperature [°C]</p> <p style="text-align: center;">Load 100%</p>
Note:	Slanted line shows the range of the rated ambient temperature.

## Testing Circuitry Figure A

## 2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	5.061	5.061	5.061
-10	5.060	5.060	5.060
0	5.058	5.058	5.058
10	5.055	5.055	5.055
20	5.053	5.053	5.053
25	5.052	5.052	5.052
30	5.052	5.052	5.052
40	5.050	5.050	5.050
50	5.048	5.048	5.048
60	5.045	5.045	5.045
--	-	-	-



Model	LGA150A-5-Y	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+5V30A	

### 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 : -10 - 40°C

Input Voltage : 85 - 132V

Load Current : 0 - 30A

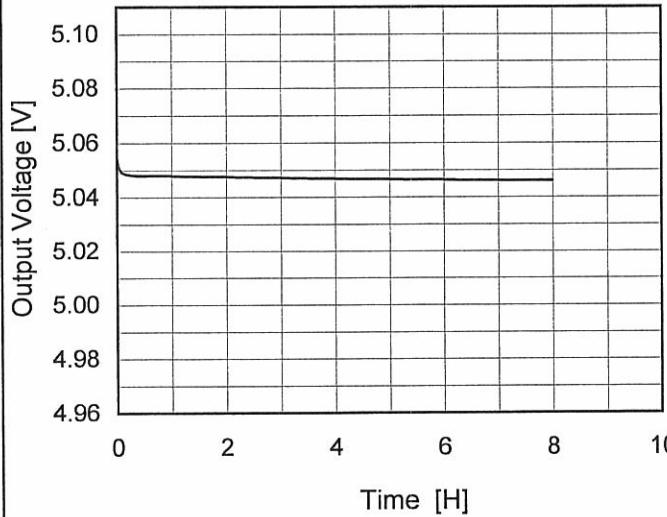
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

### 2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	20	132	0	5.088	±19	±0.4
Minimum Voltage	40	132	30	5.050		

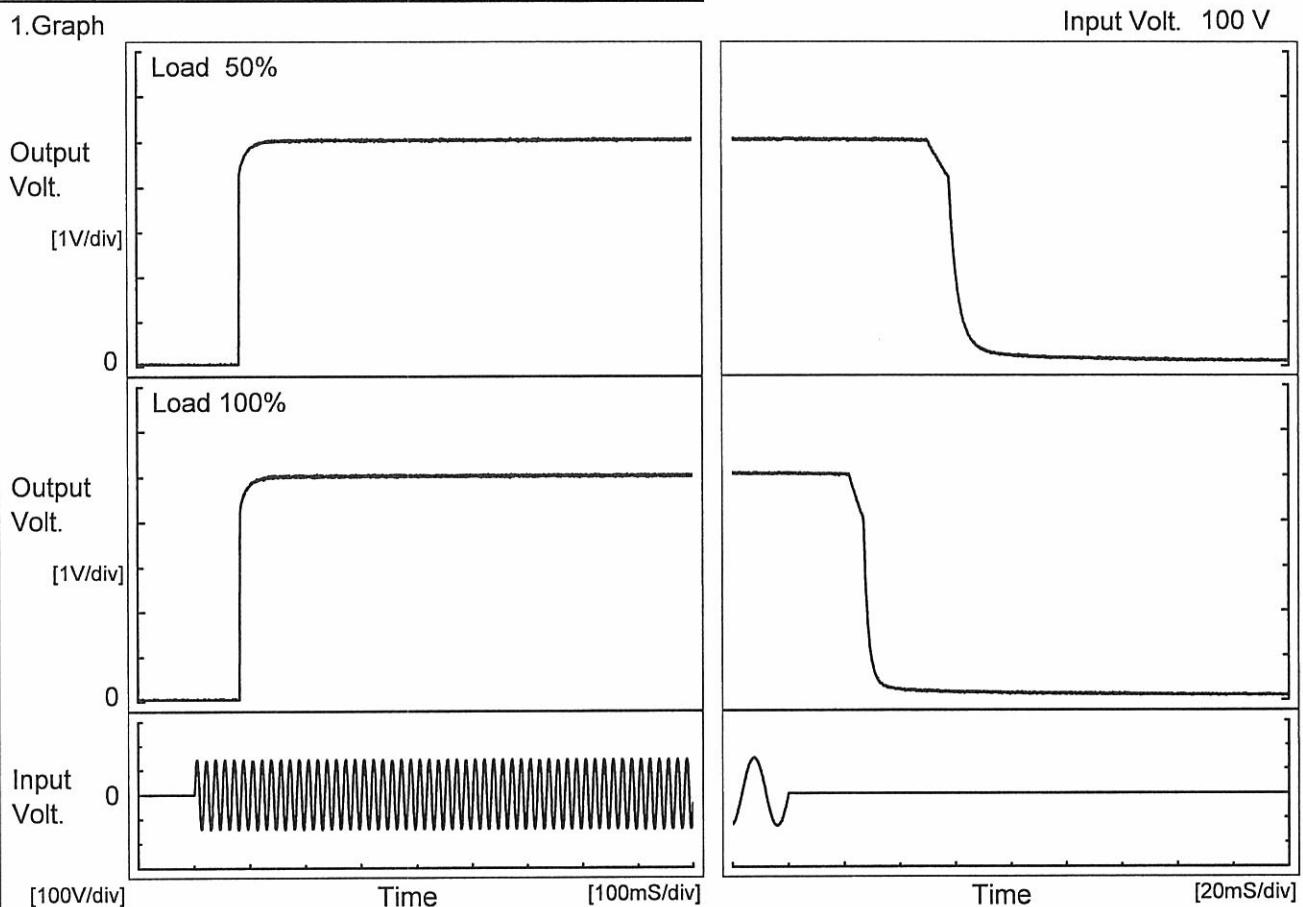
**COSEL**

Model	LGA150A-5-Y	Temperature Testing Circuitry	25°C Figure A																						
Item	Time Lapse Drift																								
Object	+5V30A																								
1.Graph			2.Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 100V Load 100%</p>			<table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>5.054</td></tr> <tr><td>0.5</td><td>5.048</td></tr> <tr><td>1.0</td><td>5.048</td></tr> <tr><td>2.0</td><td>5.048</td></tr> <tr><td>3.0</td><td>5.047</td></tr> <tr><td>4.0</td><td>5.047</td></tr> <tr><td>5.0</td><td>5.047</td></tr> <tr><td>6.0</td><td>5.046</td></tr> <tr><td>7.0</td><td>5.046</td></tr> <tr><td>8.0</td><td>5.046</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	5.054	0.5	5.048	1.0	5.048	2.0	5.048	3.0	5.047	4.0	5.047	5.0	5.047	6.0	5.046	7.0	5.046	8.0	5.046
Time since start [H]	Output Voltage [V]																								
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**COSEL**

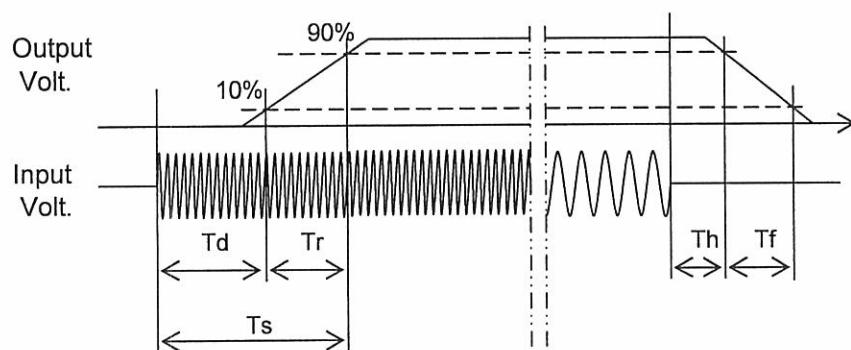
Model	LGA150A-5-Y	Temperature Testing Circuitry	25°C Figure A
Item	Rise and Fall Time		
Object	+5V30A		

## 1. Graph



## 2. Values

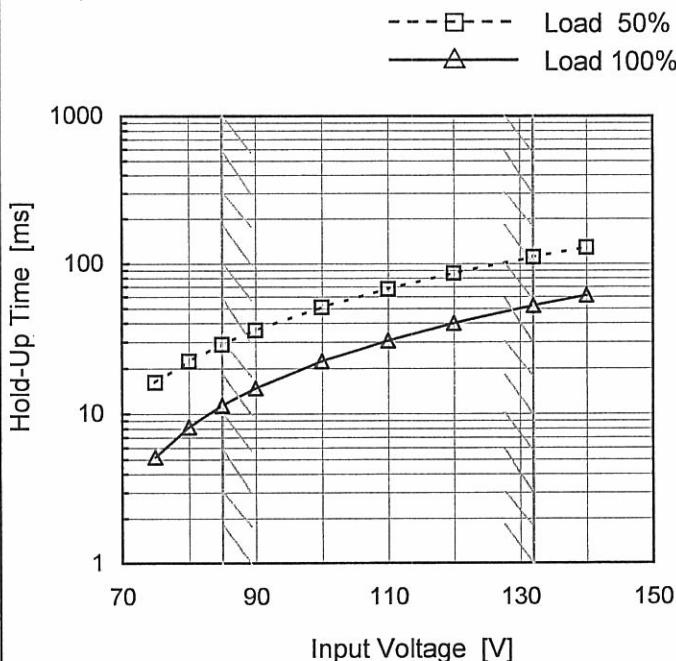
Load	Time	Td	Tr	Ts	Th	Tf	[mS]
50 %		82.5	6.0	88.5	54.4	12.1	
100 %		82.5	6.0	88.5	24.1	7.3	



**COSEL**

Model	LGA150A-5-Y
Item	Hold-Up Time
Object	+5V30A

## 1.Graph



This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.  
 Note: Slanted line shows the range of the rated input voltage.

Temperature 25°C  
 Testing Circuitry Figure A

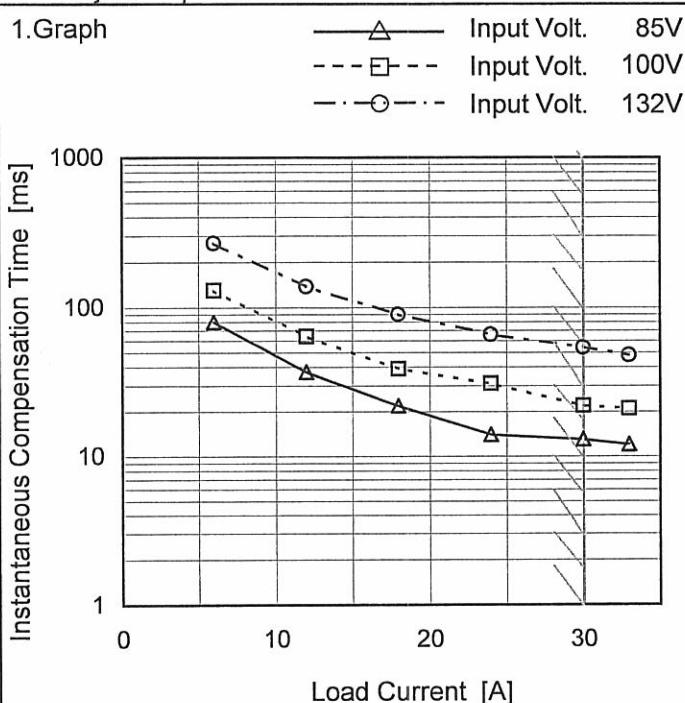
## 2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	16	5
80	22	8
85	29	11
90	36	15
100	51	22
110	68	31
120	86	40
132	111	52
140	128	61

**COSEL**

Model	LGA150A-5-Y
Item	Instantaneous Interruption Compensation
Object	+5V30A

Temperature 25°C  
Testing Circuitry Figure A



## 2. Values

Load Current [A]	Time [ms]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0	-	-	-
6	80	131	269
12	37	64	139
18	22	39	90
24	14	31	66
30	13	22	54
33	12	21	48
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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

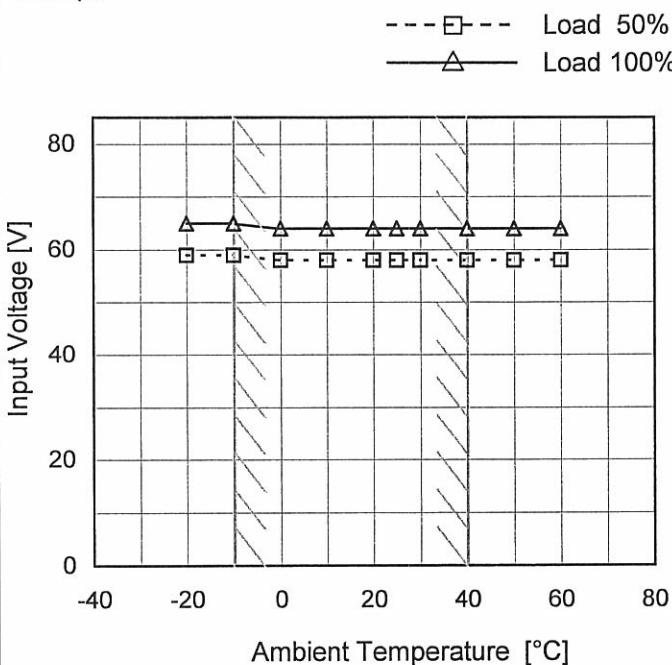
**COSEL**

Model LGA150A-5-Y

Item Minimum Input Voltage  
for Regulated Output Voltage

Object +5V30A

## 1. Graph



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

Testing Circuitry Figure A

## 2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	59	65
-10	59	65
0	58	64
10	58	64
20	58	64
25	58	64
30	58	64
40	58	64
50	58	64
60	58	64
--	-	-



Model	LGA150A-5-Y	Temperature Testing Circuitry	25°C Figure A																																																							
Item	Overcurrent Protection																																																									
Object	+5V30A																																																									
1.Graph	<p>Input Volt. 85V Input Volt. 100V Input Volt. 132V</p> <p>Output Voltage [V]</p> <p>Load Current [A]</p>	2.Values																																																								
<p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when the output voltage is from 2.5V to 0V.</p>			<table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</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>5.00</td><td>32.43</td><td>32.32</td><td>32.30</td></tr> <tr><td>4.75</td><td>38.09</td><td>37.92</td><td>37.50</td></tr> <tr><td>4.50</td><td>38.20</td><td>38.10</td><td>37.64</td></tr> <tr><td>4.00</td><td>38.56</td><td>38.29</td><td>38.10</td></tr> <tr><td>3.50</td><td>38.86</td><td>38.80</td><td>38.88</td></tr> <tr><td>3.00</td><td>39.12</td><td>39.09</td><td>39.21</td></tr> <tr><td>2.50</td><td>39.45</td><td>39.48</td><td>39.98</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> </tbody> </table>	Output Voltage [V]	Load Current [A]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	5.00	32.43	32.32	32.30	4.75	38.09	37.92	37.50	4.50	38.20	38.10	37.64	4.00	38.56	38.29	38.10	3.50	38.86	38.80	38.88	3.00	39.12	39.09	39.21	2.50	39.45	39.48	39.98	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model	LGA150A-5-Y	Testing Circuitry Figure A		
Item	Overvoltage Protection			
Object	+5V30A			
1.Graph	<p style="text-align: center;"> <span style="color: black;">—△—</span> Input Volt. 85V  <span style="color: gray;">---□---</span> Input Volt. 100V  <span style="color: red;">---○---</span> Input Volt. 132V         </p> <p style="text-align: center;">Operating Point [V]</p> <p style="text-align: center;">Ambient Temperature [°C]</p> <p style="text-align: center;">Load 0%</p>	2.Values		
		Ambient Temperature [°C]	Operating Point [V]	
		85[V]	100[V]	132[V]
-20	6.53	6.53	6.53	
-10	6.47	6.47	6.47	
0	6.47	6.47	6.47	
10	6.46	6.46	6.46	
20	6.46	6.46	6.46	
25	6.46	6.46	6.46	
30	6.46	6.46	6.46	
40	6.46	6.46	6.46	
50	6.46	6.46	6.46	
60	6.46	6.46	6.46	
--	-	-	-	

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

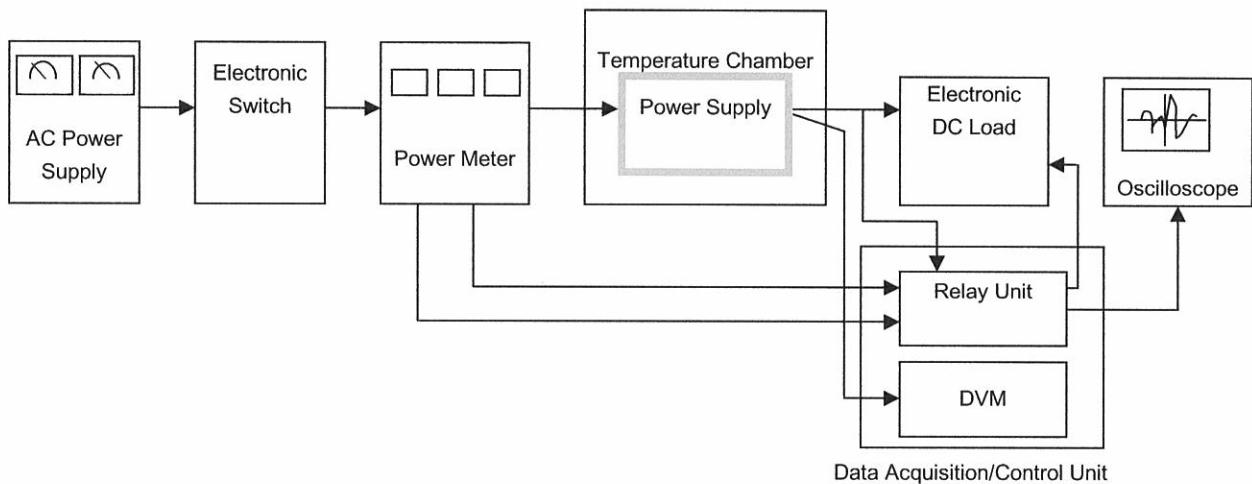


Figure A

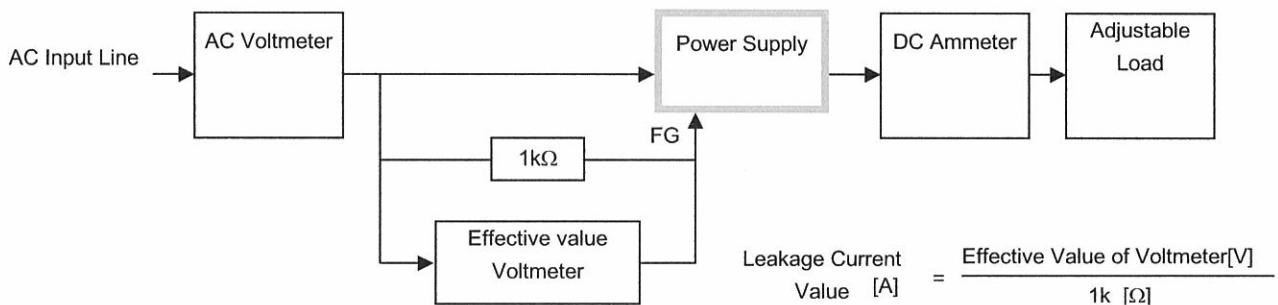


Figure B ( DEN-AN )

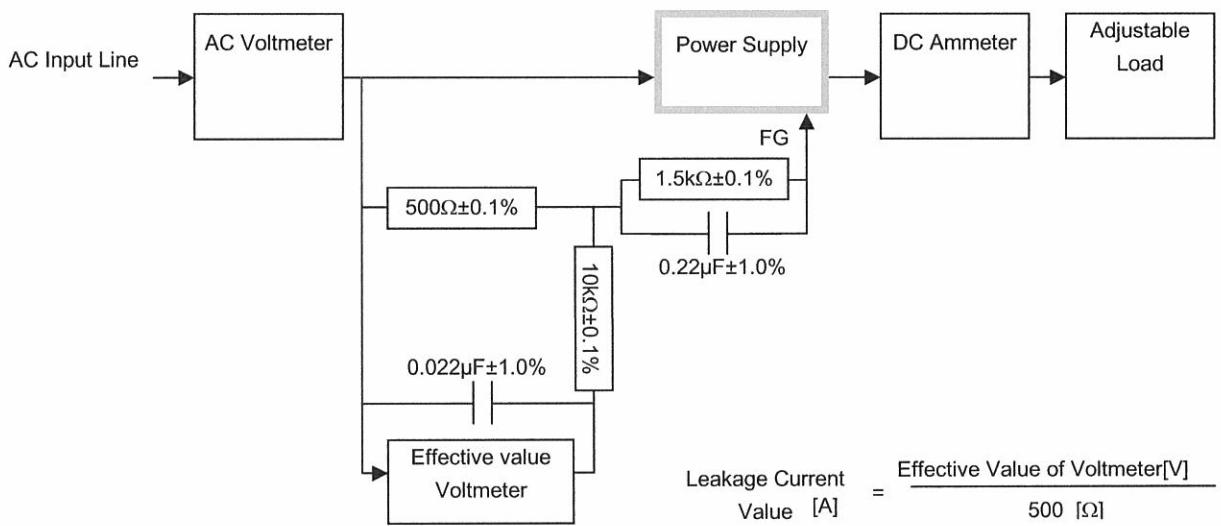


Figure B ( IEC60950-1 )

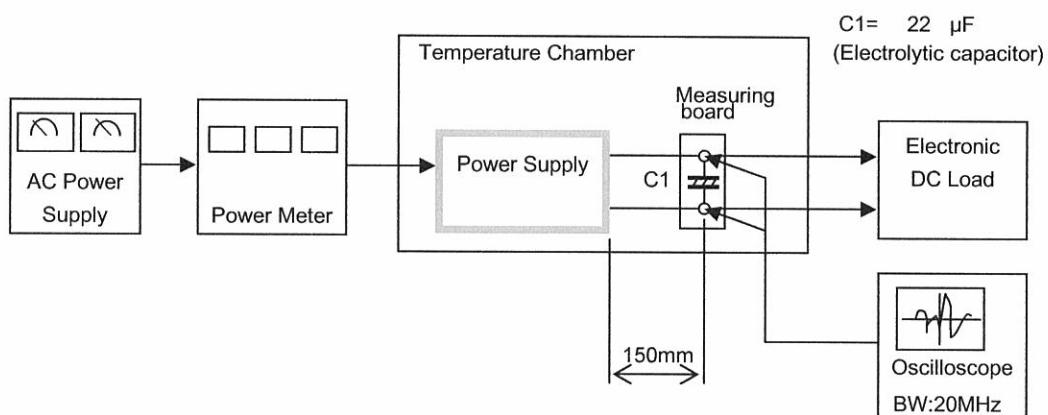


Figure C