



TEST DATA OF LGA100A-12

Regulated DC Power Supply
April 15 , 2008

Approved by : Yoshiaki Shimizu Design Manager

Prepared by : Kazuo Ishimura Design Engineer

COSEL CO.,LTD.

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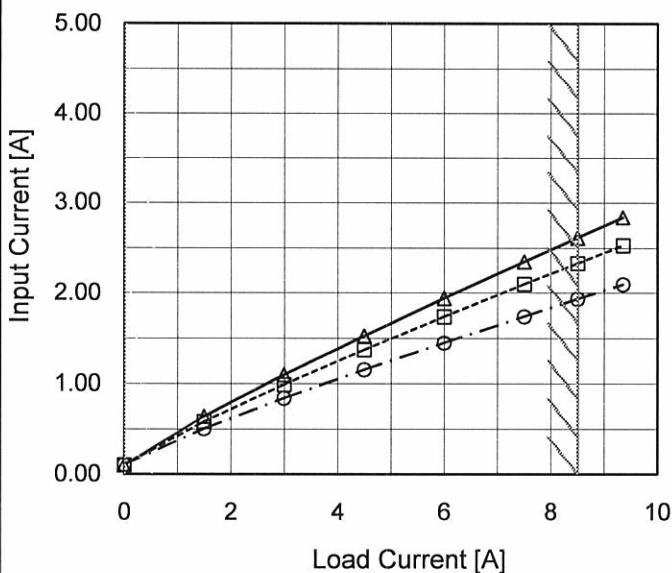
(Final Page 25)



Model	LGA100A-12
Item	Input Current (by Load Current)
Object	_____

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

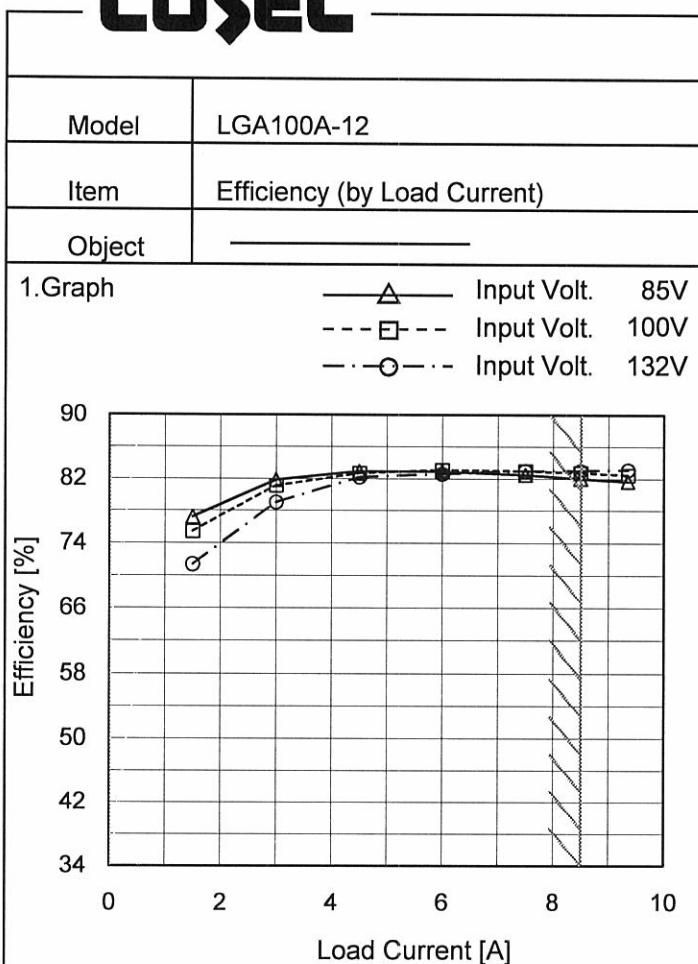
Load Current [A]	Input Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	0.098	0.099	0.103
1.50	0.640	0.584	0.505
3.00	1.096	0.989	0.838
4.50	1.526	1.371	1.152
6.00	1.940	1.738	1.452
7.50	2.345	2.096	1.743
8.50	2.612	2.328	1.933
9.35	2.837	2.525	2.093
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--	-	-	-
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Model	LGA100A-12																																																					
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Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	-	-	-
1.50	77.6	75.8	71.8
3.00	82.2	81.5	79.4
4.50	83.3	83.1	82.6
6.00	83.3	83.5	83.0
7.50	82.9	83.4	83.4
8.50	82.4	83.2	83.4
9.35	82.1	82.9	83.5
--	-	-	-
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Note: Slanted line shows the range of the rated load current.

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Model	LGA100A-12	Temperature Testing Circuitry	25°C Figure A																																
Item	Power Factor (by Input Voltage)																																		
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<p>Graph showing Power Factor vs Input Voltage for LGA100A-12 at 25°C. The Y-axis is Power Factor (0.2 to 0.8) and the X-axis is Input Voltage [V] (70 to 150). Two series are plotted: Load 50% (dashed line with squares) and Load 100% (solid line with triangles). Both series show a slight decrease in power factor as input voltage increases, with the 100% load curve being consistently higher than the 50% load curve. A slanted line indicates the rated input voltage range.</p>			<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Power Factor</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>75</td><td>0.520</td><td>0.582</td></tr> <tr><td>80</td><td>0.509</td><td>0.569</td></tr> <tr><td>85</td><td>0.498</td><td>0.557</td></tr> <tr><td>90</td><td>0.486</td><td>0.547</td></tr> <tr><td>100</td><td>0.468</td><td>0.526</td></tr> <tr><td>110</td><td>0.454</td><td>0.509</td></tr> <tr><td>120</td><td>0.441</td><td>0.494</td></tr> <tr><td>132</td><td>0.430</td><td>0.478</td></tr> <tr><td>140</td><td>0.422</td><td>0.469</td></tr> </tbody> </table>	Input Voltage [V]	Power Factor		Load 50%	Load 100%	75	0.520	0.582	80	0.509	0.569	85	0.498	0.557	90	0.486	0.547	100	0.468	0.526	110	0.454	0.509	120	0.441	0.494	132	0.430	0.478	140	0.422	0.469
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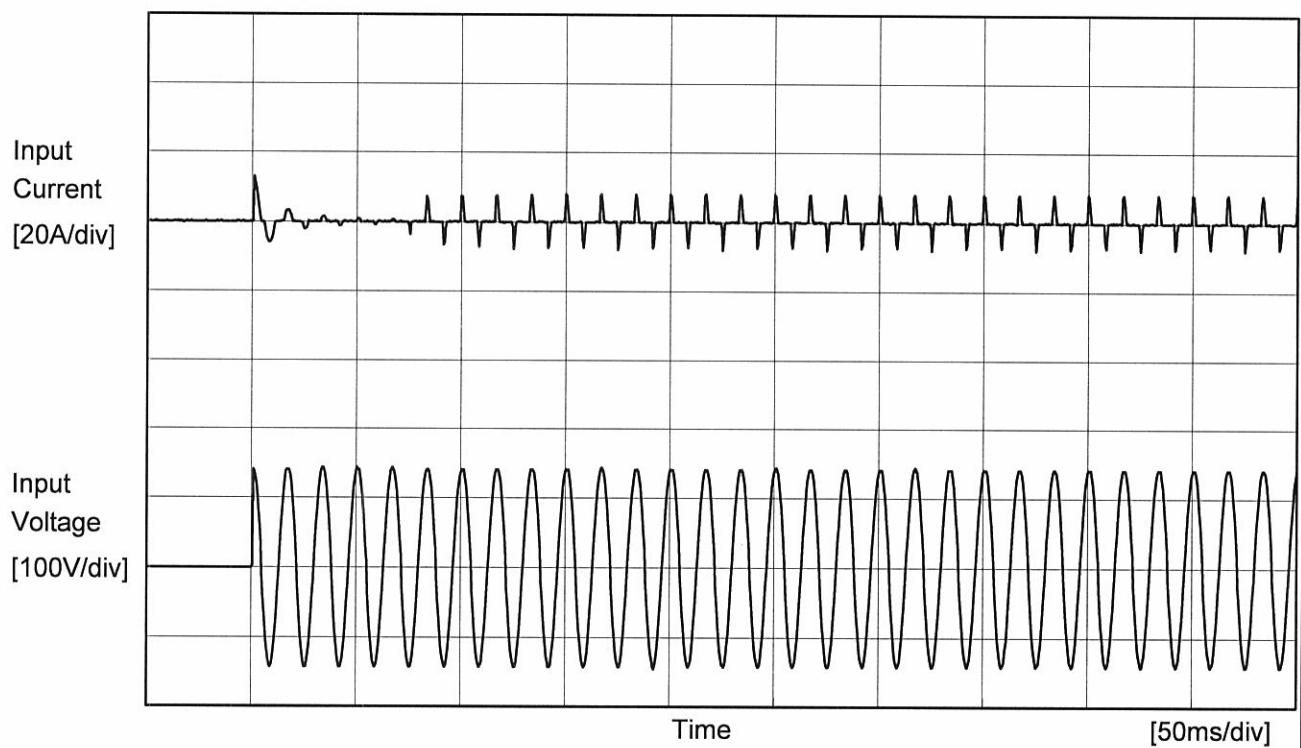
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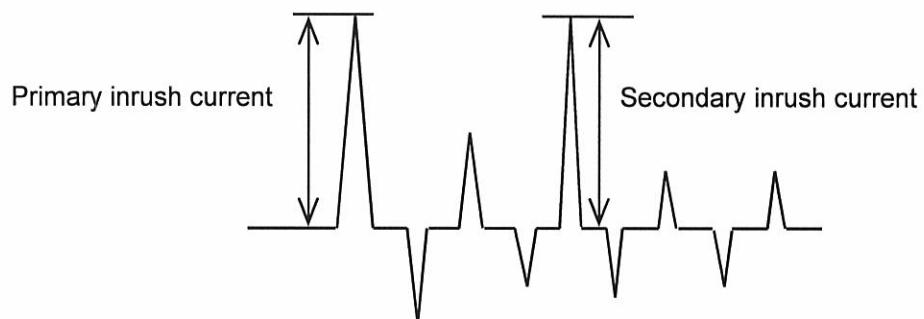
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Model	LGA100A-12	Temperature Testing Circuitry Object	25°C Figure A
Item	Inrush Current		
Object	_____		



Input Voltage	100 V
Frequency	60 Hz
Load	100 %

Primary inrush current	12.9 A
Secondary inrush current	8.1 A





Model	LGA100A-12	Temperature Testing Circuitry Figure B
Item	Leakage Current	
Object	_____	

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 100 [V]	Input Volt. 120 [V]	Input Volt. 132 [V]
(A)DEN-AN	0.29	0.37	0.41
(B)IEC60950	0.29	0.35	0.40

frequency 60Hz

2. Condition

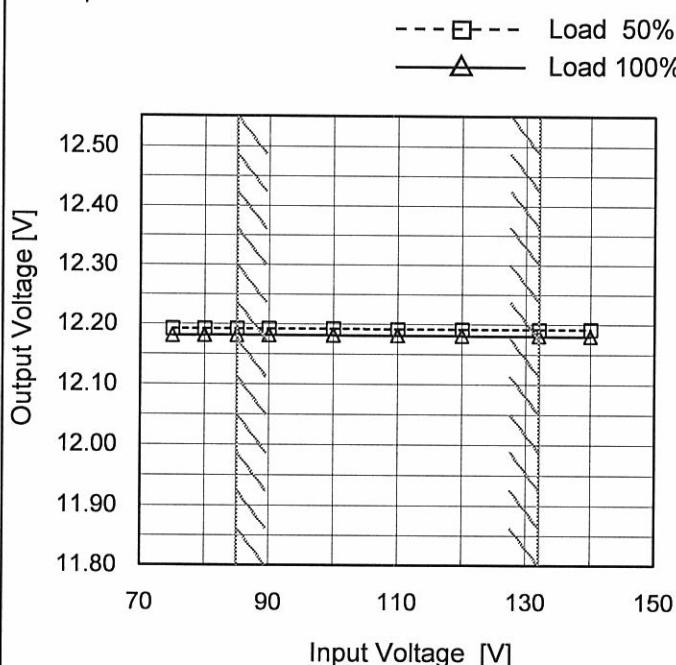
Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.



Model	LGA100A-12
Item	Line Regulation
Object	+12V8.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



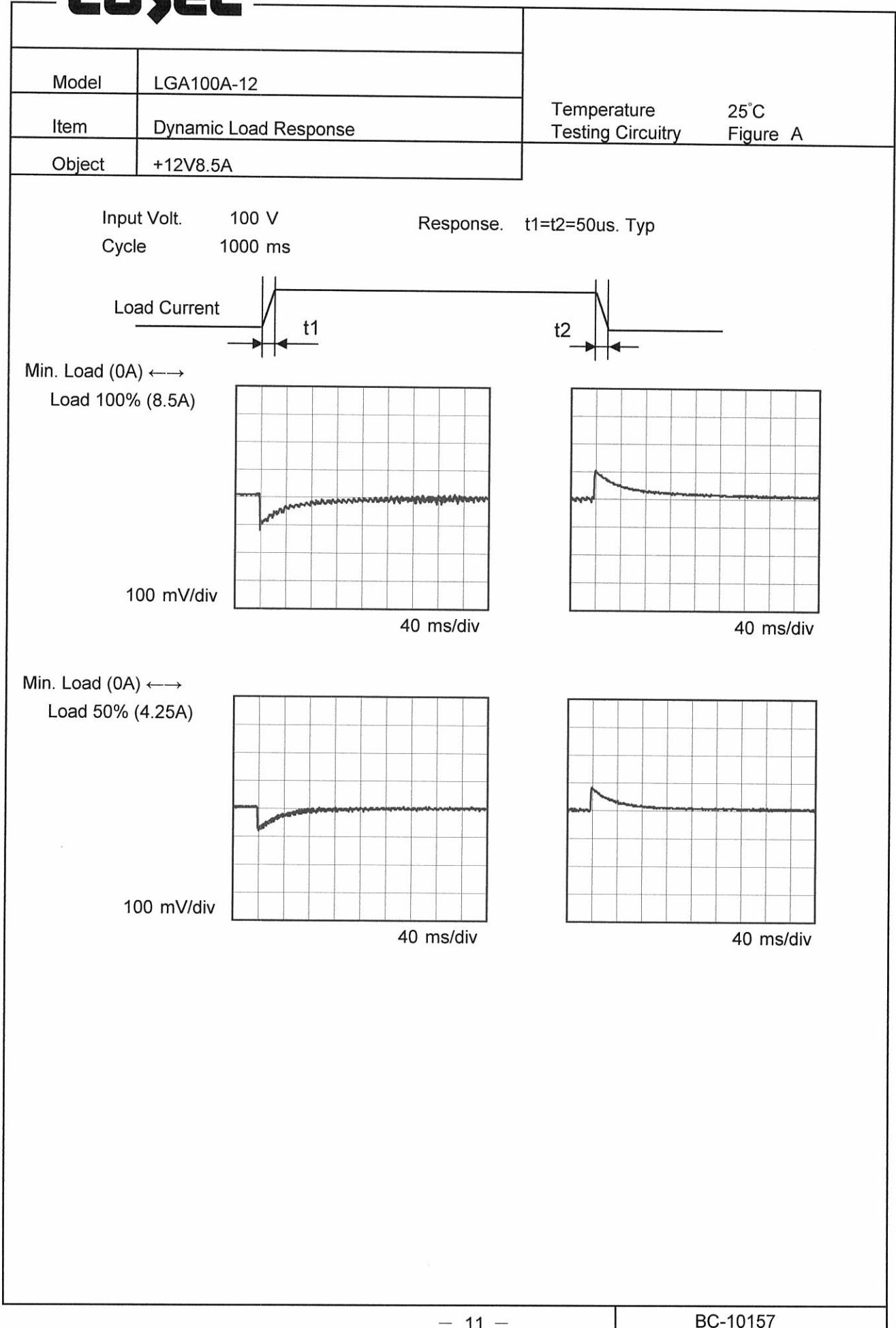
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	12.192	12.181
80	12.192	12.181
85	12.192	12.181
90	12.192	12.181
100	12.192	12.181
110	12.192	12.181
120	12.192	12.181
132	12.192	12.181
140	12.192	12.180

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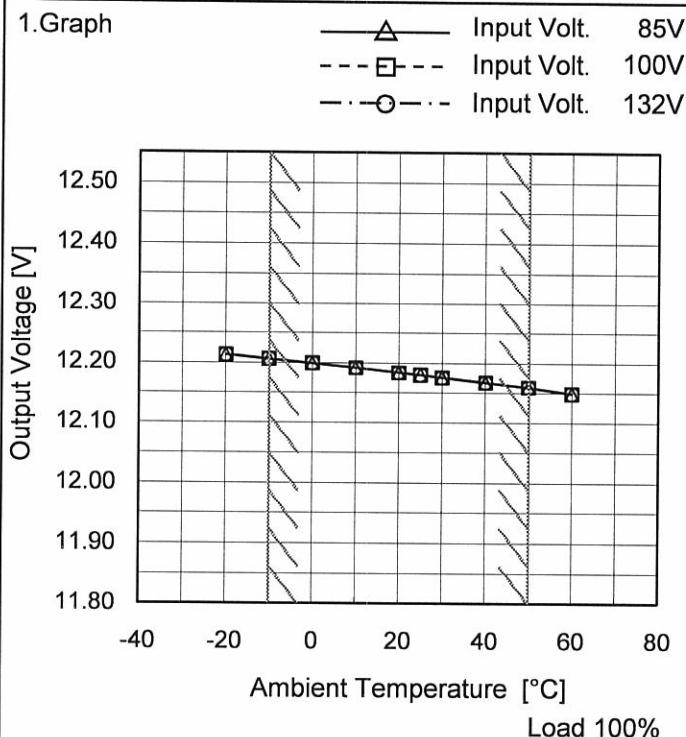
COSEL

Model	LGA100A-12																																								
Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure C																																							
Object	+12V8.5A																																								
1. Graph																																									
<p>Graph showing Ripple-Noise [mV] vs Load Current [A]. The graph shows two sets of data points for different input voltages: 85V (solid line with open circles) and 132V (dashed line with open squares). The x-axis represents Load Current [A] from 0 to 10, and the y-axis represents Ripple-Noise [mV] from 0 to 200. 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>0.00</td><td>10</td><td>10</td></tr> <tr><td>1.50</td><td>25</td><td>25</td></tr> <tr><td>3.00</td><td>35</td><td>35</td></tr> <tr><td>4.50</td><td>40</td><td>40</td></tr> <tr><td>6.00</td><td>50</td><td>50</td></tr> <tr><td>7.50</td><td>55</td><td>55</td></tr> <tr><td>8.50</td><td>65</td><td>65</td></tr> <tr><td>9.35</td><td>70</td><td>70</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)	0.00	10	10	1.50	25	25	3.00	35	35	4.50	40	40	6.00	50	50	7.50	55	55	8.50	65	65	9.35	70	70	--	-	-	--	-	-	--	-	-	2. Values				
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<p>Figure C: Complex Ripple Wave Form. The diagram shows a waveform with two distinct noise components labeled T1 and T2. T1 is labeled "Due to AC Input Line" and T2 is labeled "Due to Switching". The total noise is labeled "Ripple-Noise [mVp-p]".</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. 85 [V]</th> <th>Input Volt. 132 [V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>10</td><td>10</td></tr> <tr><td>1.50</td><td>25</td><td>25</td></tr> <tr><td>3.00</td><td>35</td><td>35</td></tr> <tr><td>4.50</td><td>40</td><td>40</td></tr> <tr><td>6.00</td><td>50</td><td>50</td></tr> <tr><td>7.50</td><td>55</td><td>55</td></tr> <tr><td>8.50</td><td>65</td><td>65</td></tr> <tr><td>9.35</td><td>70</td><td>70</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. 85 [V]	Input Volt. 132 [V]	0.00	10	10	1.50	25	25	3.00	35	35	4.50	40	40	6.00	50	50	7.50	55	55	8.50	65	65	9.35	70	70	--	-	-	--	-	-	--	-	-
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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>																																									

Model	LGA100A-12	Testing Circuitry FigureC																									
Item	Ripple Voltage (by Ambient Temp.)																										
Object	+12V8.5A																										
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. A slanted line indicates the rated ambient temperature range from -10°C to 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>																											
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Ambient Temperature [°C]	Ripple Voltage [mV]																										
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COSEL

Model	LGA100A-12
Item	Ambient Temperature Drift
Object	+12V8.5A



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	12.213	12.213	12.213
-10	12.206	12.206	12.206
0	12.199	12.199	12.199
10	12.192	12.192	12.192
20	12.184	12.184	12.184
25	12.180	12.180	12.180
30	12.176	12.176	12.176
40	12.168	12.168	12.168
50	12.160	12.160	12.160
60	12.149	12.149	12.149
--	-	-	-



Model	LGA100A-12	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V8.5A	

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 - 50°C

Input Voltage : 85 - 132V

Load Current : 0 - 8.5A

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

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

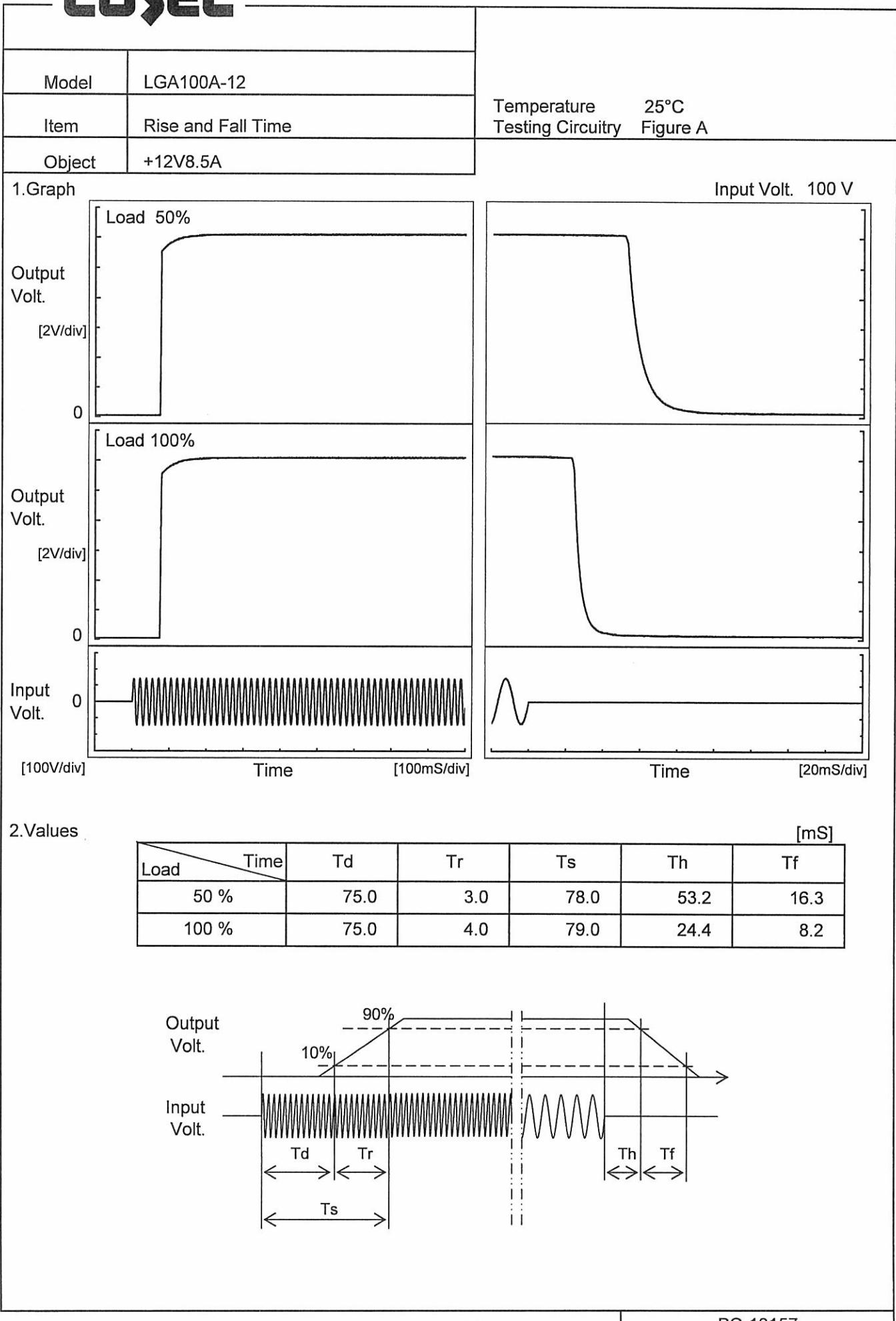
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-10	132	0	12.226	± 30	± 0.3
Minimum Voltage	50	85	8.5	12.167		



Model	LGA100A-12	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+12V8.5A																								
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>12.196</td></tr> <tr><td>0.5</td><td>12.183</td></tr> <tr><td>1.0</td><td>12.184</td></tr> <tr><td>2.0</td><td>12.184</td></tr> <tr><td>3.0</td><td>12.184</td></tr> <tr><td>4.0</td><td>12.184</td></tr> <tr><td>5.0</td><td>12.184</td></tr> <tr><td>6.0</td><td>12.184</td></tr> <tr><td>7.0</td><td>12.184</td></tr> <tr><td>8.0</td><td>12.184</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.196	0.5	12.183	1.0	12.184	2.0	12.184	3.0	12.184	4.0	12.184	5.0	12.184	6.0	12.184	7.0	12.184	8.0	12.184
Time since start [H]	Output Voltage [V]																								
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8.0	12.184																								

COSEL





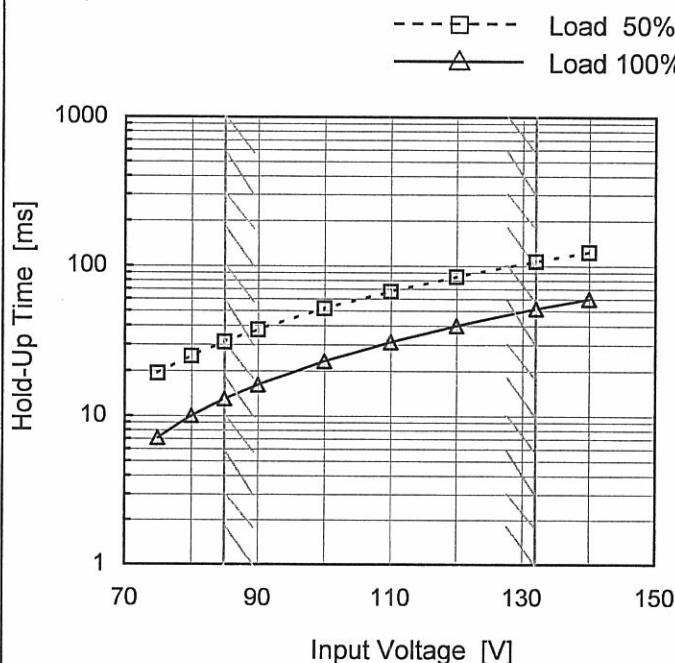
Model LGA100A-12

Item Hold-Up Time

Object +12V8.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	19	7
80	25	10
85	31	13
90	38	16
100	52	23
110	67	31
120	84	40
132	107	52
140	124	60

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.



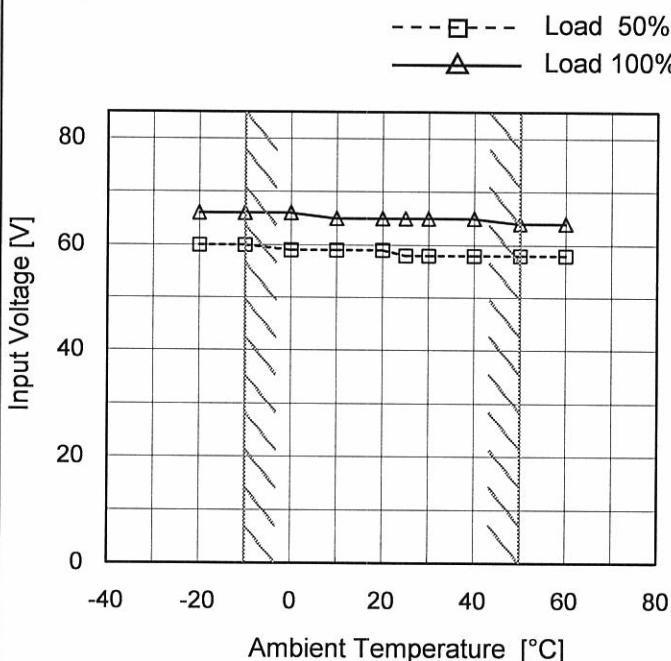
Model	LGA100A-12																																																					
Item	Instantaneous Interruption Compensation																																																					
Object	+12V8.5A																																																					
1.Graph	—△— Input Volt. 85V - -□--- Input Volt. 100V - -○--- Input Volt. 132V																																																					
<p>Note: Slanted line shows the range of the rated load current.</p>																																																						
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Load Current [A]	Time [ms]																																																					
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COSEL

Model	LGA100A-12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V8.5A

Testing Circuitry Figure A

1. Graph



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

2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	60	66
-10	60	66
0	59	66
10	59	65
20	59	65
25	58	65
30	58	65
40	58	65
50	58	64
60	58	64
--	-	-

COSEL

Model	LGA100A-12
Item	Overcurrent Protection
Object	+12V8.5A

1. Graph

Output Voltage [V]

Load Current [A]

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

Temperature 25°C
Testing Circuitry Figure A

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
12.0	9.77	9.76	9.80
11.4	9.79	9.79	9.82
10.8	9.77	9.76	9.80
9.6	9.83	9.85	9.89
8.4	9.89	9.87	10.03
7.2	9.96	9.98	9.99
6.0	9.99	10.01	10.04
4.8	10.06	10.07	10.09
3.6	10.13	10.13	10.13
2.4	10.13	10.13	10.10
1.2	10.10	10.09	10.04
0.0	10.09	10.06	9.96



Model LGA100A-12																																																				
Item Overvoltage Protection Object +12V8.5A	Testing Circuitry Figure A																																																			
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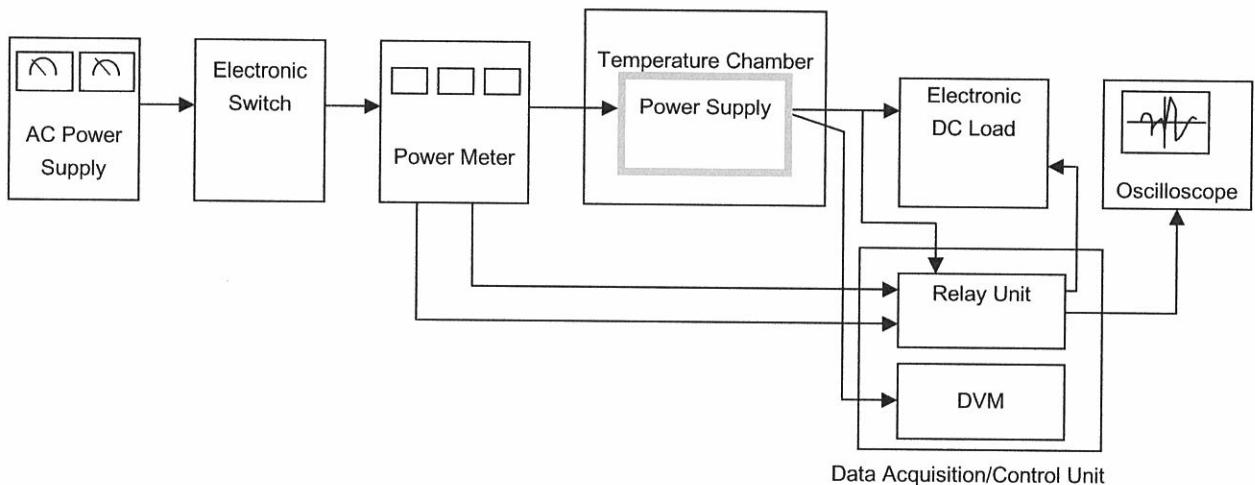


Figure A

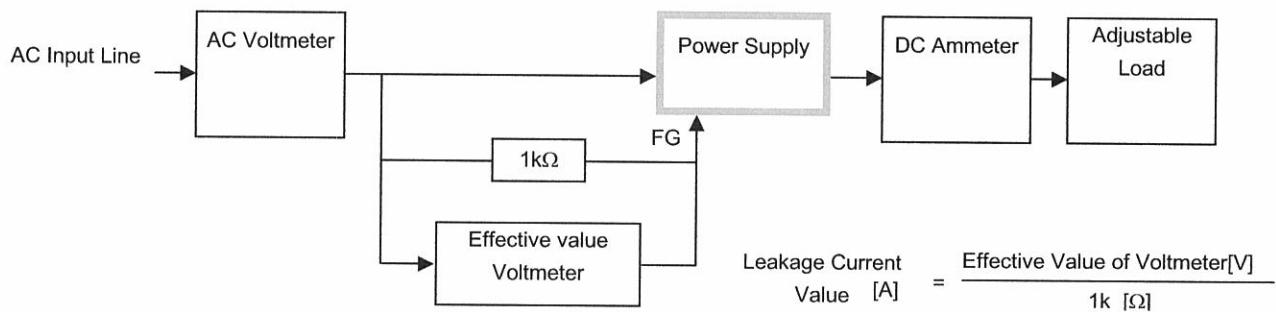


Figure B (DEN-AN)

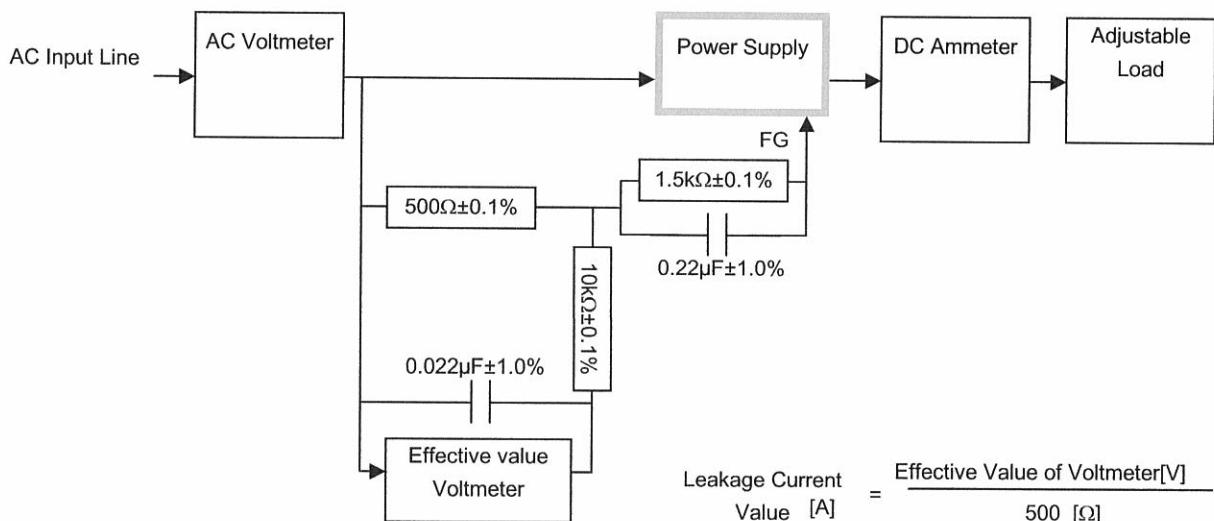


Figure B (IEC60950-1)

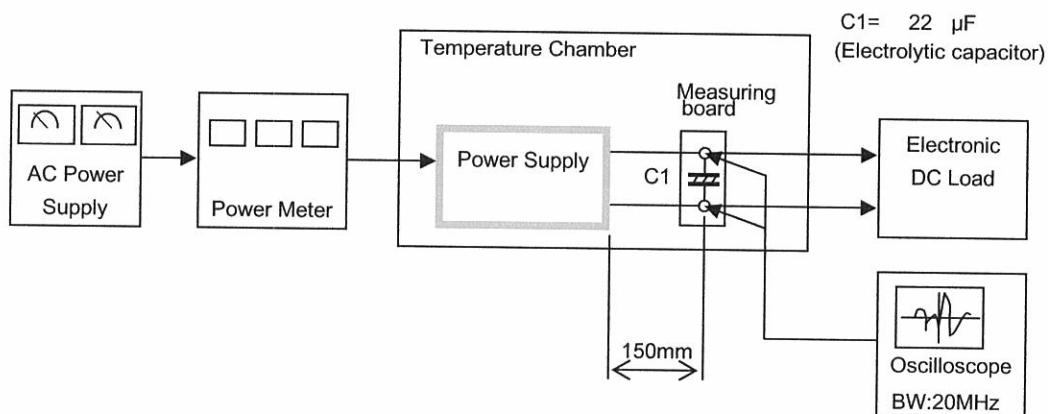


Figure C