

TEST DATA OF PLA100F-36

Regulated DC Power Supply
June 26, 2013

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Katsumi Ishikawa Design Manager

Prepared by : Naoki Fujita
Naoki Fujita Design Engineer

COSEL CO.,LTD.

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Model		PLA100F-36		Temperature Testing Circuitry	25°C Figure A																																																			
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Object		_____																																																						
1.Graph				2.Values																																																				
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Model PLA100F-36

Item Input Power (by Load Current)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
 ---□--- Input Volt. 115V
 ---○--- Input Volt. 230V

Input Power [W]

Load Current [A]

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

2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	1.0	1.0	0.7
0.50	22.5	22.3	22.7
1.00	43.4	43.1	43.1
1.50	63.4	63.0	62.3
2.00	84.2	83.4	81.8
2.50	105.1	103.9	101.5
2.80	117.7	116.3	113.2
3.08	-	128.1	124.4
--	-	-	-
--	-	-	-
--	-	-	-

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Model		PLA100F-36	
Item		Efficiency (by Input Voltage)	
Object			
1.Graph		2.Values	

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Model	PLA100F-36
Item	Power Factor (by Input Voltage)
Object	

1.Graph

□

Load 50%

△

Load 100%

The graph plots Power Factor (Y-axis, 0.4 to 1.0) against Input Voltage [V] (X-axis, 50 to 300). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a decrease in power factor as input voltage increases. A slanted line is drawn across the graph, indicating the range of the rated input voltage.

Input Voltage [V]	Power Factor (Load 50%)	Power Factor (Load 100%)
85	0.985	0.992
100	0.974	0.991
115	0.964	0.988
200	0.890	0.960
230	0.861	0.950
264	0.617	0.691
280	0.471	0.502

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

Temperature

25°C

Testing Circuitry

Figure A

2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
85	0.985	0.992 ※1
100	0.974	0.991 ※2
115	0.964	0.988
200	0.890	0.960
230	0.861	0.950
264	0.617	0.691
280	0.471	0.502
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--	-	-

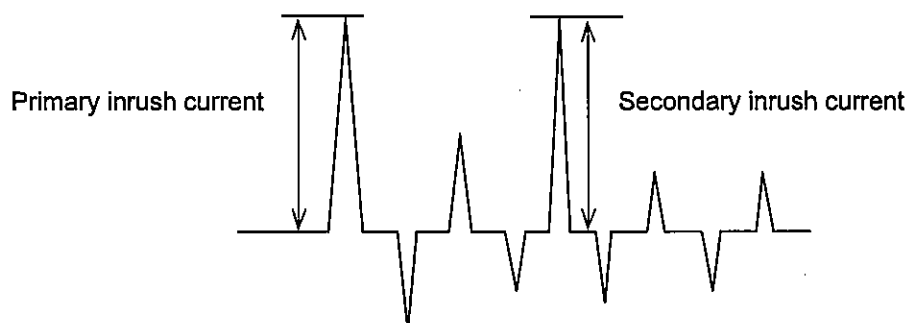
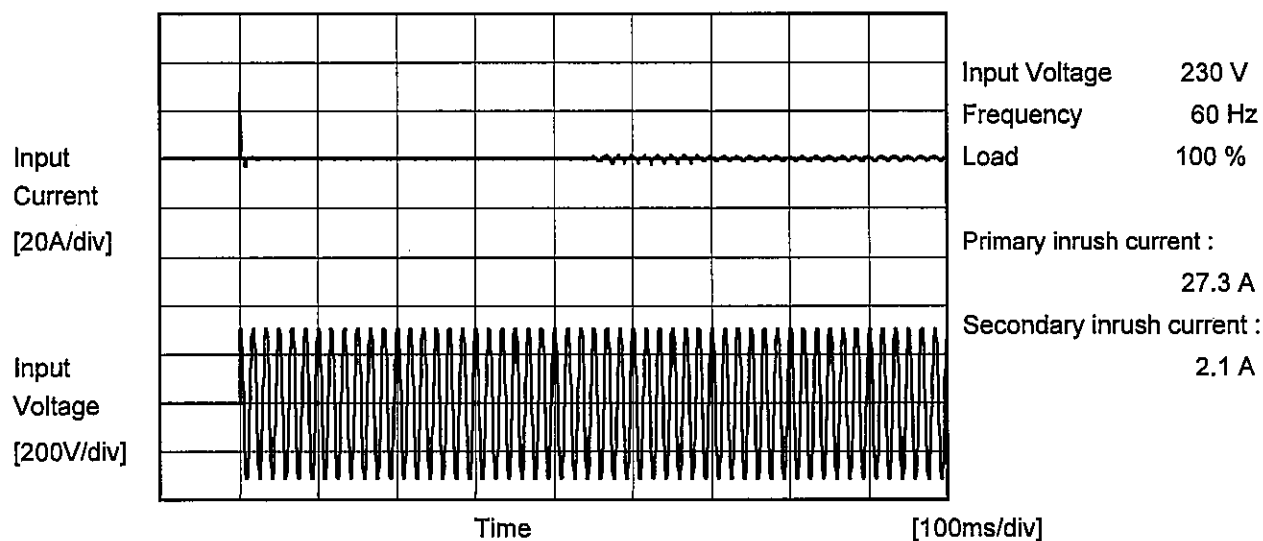
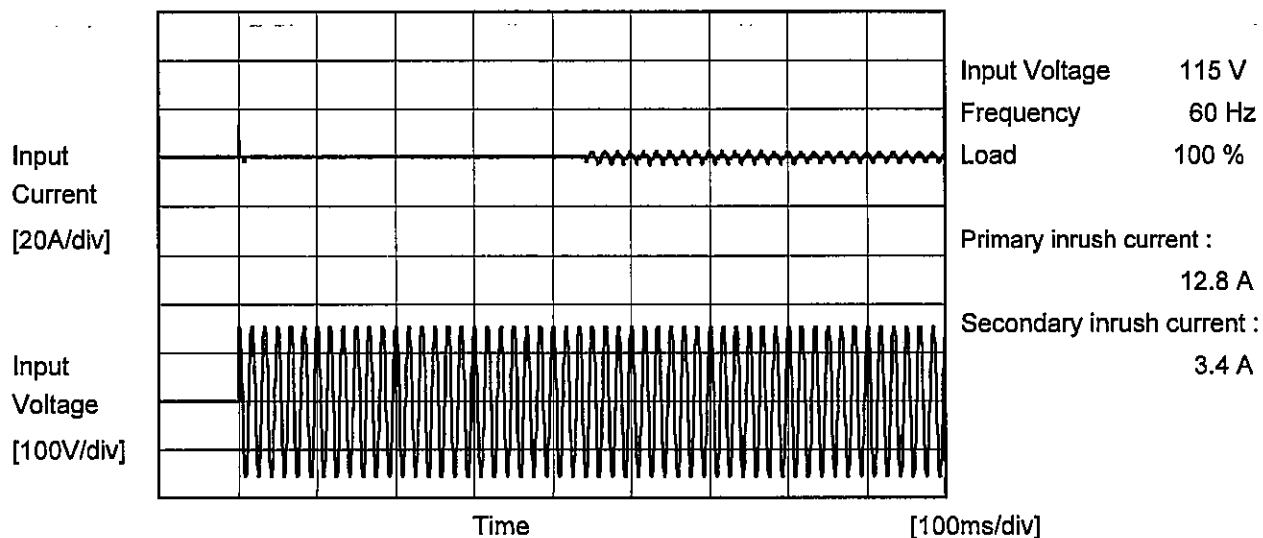
※1:Load 80%

※2:Load 90%

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Model		PLA100F-36		Temperature 25°C																																																		
Item		Power Factor (by Load Current)		Testing Circuitry Figure A																																																		
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Note: Slanted line shows the range of the rated load current.																																																						

Model	PLA100F-36		
Item	Inrush Current	Temperature	25°C
Object		Testing Circuitry	Figure A





Model		PLA100F-36	Temperature 25°C Testing Circuitry Figure B
Item		Leakage Current	
Object		_____	

1.Results

[mA]

Standards		Input Volt.			Note
		100[V]	115[V]	240[V]	
DEN-AN	Both phases	0.34	0.34	0.62	Operation
	One of phases	0.30	0.34	0.77	Stand by
IEC60950-1	Both phases	0.25	0.28	0.55	Operation
	One of phases	0.27	0.32	0.71	Stand by

The value for "One of phases" is the reference value only.

2.Condition

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

Model		PLA100F-36	
Item		Line Regulation	
Object		+36V2.8A	

1.Graph

□

Load 50%

△

Load 100%

Output Voltage [V]

36.40

36.30

36.20

36.10

36.00

35.90

35.80

35.70

50

100

150

200

250

300

Input Voltage [V]

36.40

36.30

36.20

36.10

36.00

35.90

35.80

35.70

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

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	36.170	36.169 ※1
100	36.170	36.168 ※2
115	36.170	36.167
200	36.170	36.167
230	36.170	36.167
264	36.169	36.167
280	36.169	36.166
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--	-	-

※1:Load 80%

※2:Load 90%

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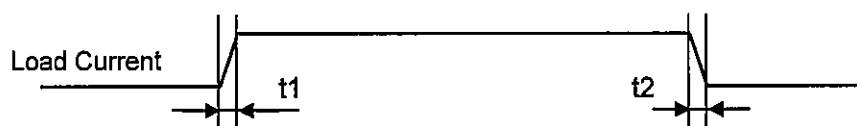
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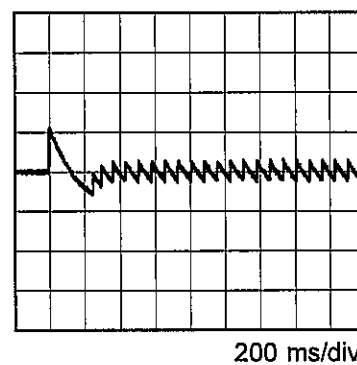
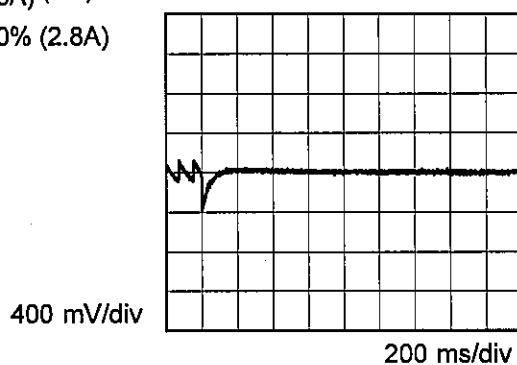
Model	PLA100F-36	Temperature	25° C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+36V2.8A		

Input Volt. 115 V
Cycle 1000 ms

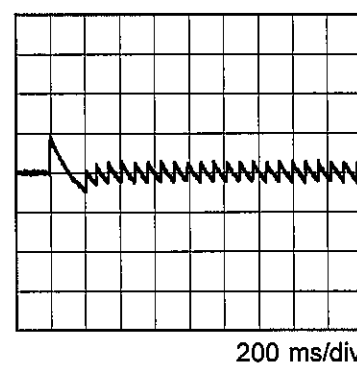
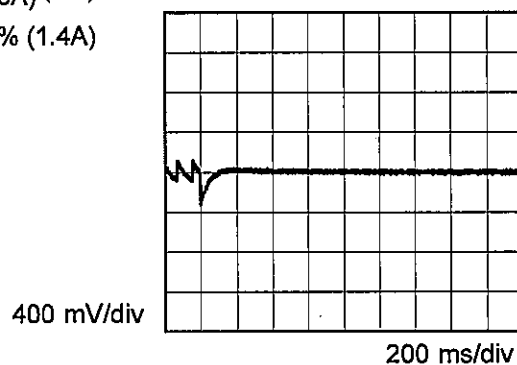
Response. $t_1=t_2=50\mu\text{s}$. Typ



Min. Load (0A) \longleftrightarrow
Load 100% (2.8A)



Min. Load (0A) \longleftrightarrow
Load 50% (1.4A)



COSEL

Model		PLA100F-36	
Item		Ripple Voltage (by Load Current)	
Object		+36V2.8A	

1.Graph

—△—

Input Volt.

115V

- - -○- - -

Input Volt.

230V

Ripple Voltage [mV]

300

270

240

210

180

150

120

90

60

30

0

0.0

1.0

2.0

3.0

Load Current [A]

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.

T1: Due to AC Input Line

T2: Due to Switching

Ripple [mVp-p]

↓

↑

T2

T1

Fig. Complex Ripple Wave Form

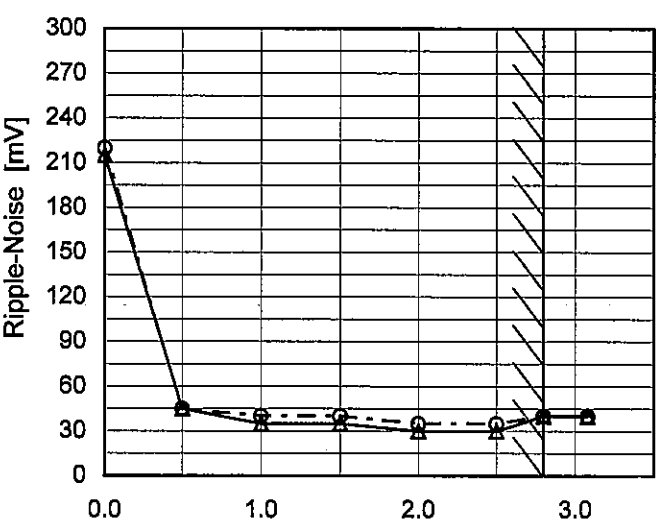
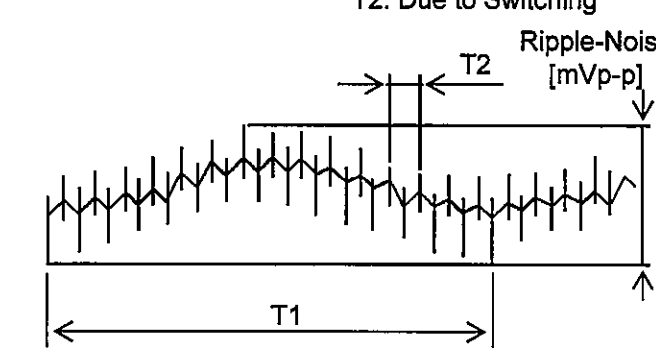
Temperature 25°C

Testing Circuitry Figure C

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.00	210	215
0.50	40	35
1.00	30	35
1.50	30	35
2.00	15	20
2.50	15	20
2.80	25	25
3.08	25	25
--	-	-
--	-	-
--	-	-

COSEL

COSEL																																									
Model	PLA100F-36																																								
Item	Ripple-Noise	Temperature	25°C																																						
Object	+36V2.8A	Testing Circuitry	Figure C																																						
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 115V</div><div>-·-○-·- Input Volt. 230V</div></div></div> <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>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 115 [V]</th><th>Input Volt. 230 [V]</th></tr><tr><td>0.00</td><td>215</td><td>220</td></tr><tr><td>0.50</td><td>45</td><td>45</td></tr><tr><td>1.00</td><td>35</td><td>40</td></tr><tr><td>1.50</td><td>35</td><td>40</td></tr><tr><td>2.00</td><td>30</td><td>35</td></tr><tr><td>2.50</td><td>30</td><td>35</td></tr><tr><td>2.80</td><td>40</td><td>40</td></tr><tr><td>3.08</td><td>40</td><td>40</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 Current [A]	Ripple-Noise [mV]		Input Volt. 115 [V]	Input Volt. 230 [V]	0.00	215	220	0.50	45	45	1.00	35	40	1.50	35	40	2.00	30	35	2.50	30	35	2.80	40	40	3.08	40	40	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
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3.08	40	40																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
<div><div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div></div> <p>Fig. Complex Ripple Wave Form</p>																																									

COSEL

Model

PLA100F-36

Item

Ripple Voltage (by Ambient Temp.)

Object

+36V2.8A

1.Graph

---□---

Input Volt. 115V

---△---

Input Volt. 230V

Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
-20	45	45
-10	35	35
0	25	25
25	25	25
45	20	20
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model		PLA100F-36	
Item		Ambient Temperature Drift	
Object		+36V2.8A	
1.Graph		2.Values	

—△—

Input Volt. 100V

---□---

Input Volt. 115V

---○---

Input Volt. 230V

Output Voltage [V]

Ambient Temperature [°C]

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

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
-20	36.076	36.076	36.075
-10	36.100	36.100	36.100
0	36.120	36.119	36.119
10	36.139	36.139	36.139
20	36.157	36.157	36.156
25	36.167	36.167	36.167
35	36.175	36.175	36.174
45	36.181	36.181	36.181
55	36.190	36.190	36.189
65	36.195	36.195	36.194
--	-	-	-

Note: In case of Input Volt. 100V, Load 90%.
Other case Load 100%.

COSEL

		Testing Circuitry Figure A
Model	PLA100F-36	
Item	Output Voltage Accuracy	
Object	+36V2.8A	

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 - 45°C

Input Voltage : 115 - 264V

Load Current : 0.84 - 2.8A

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

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

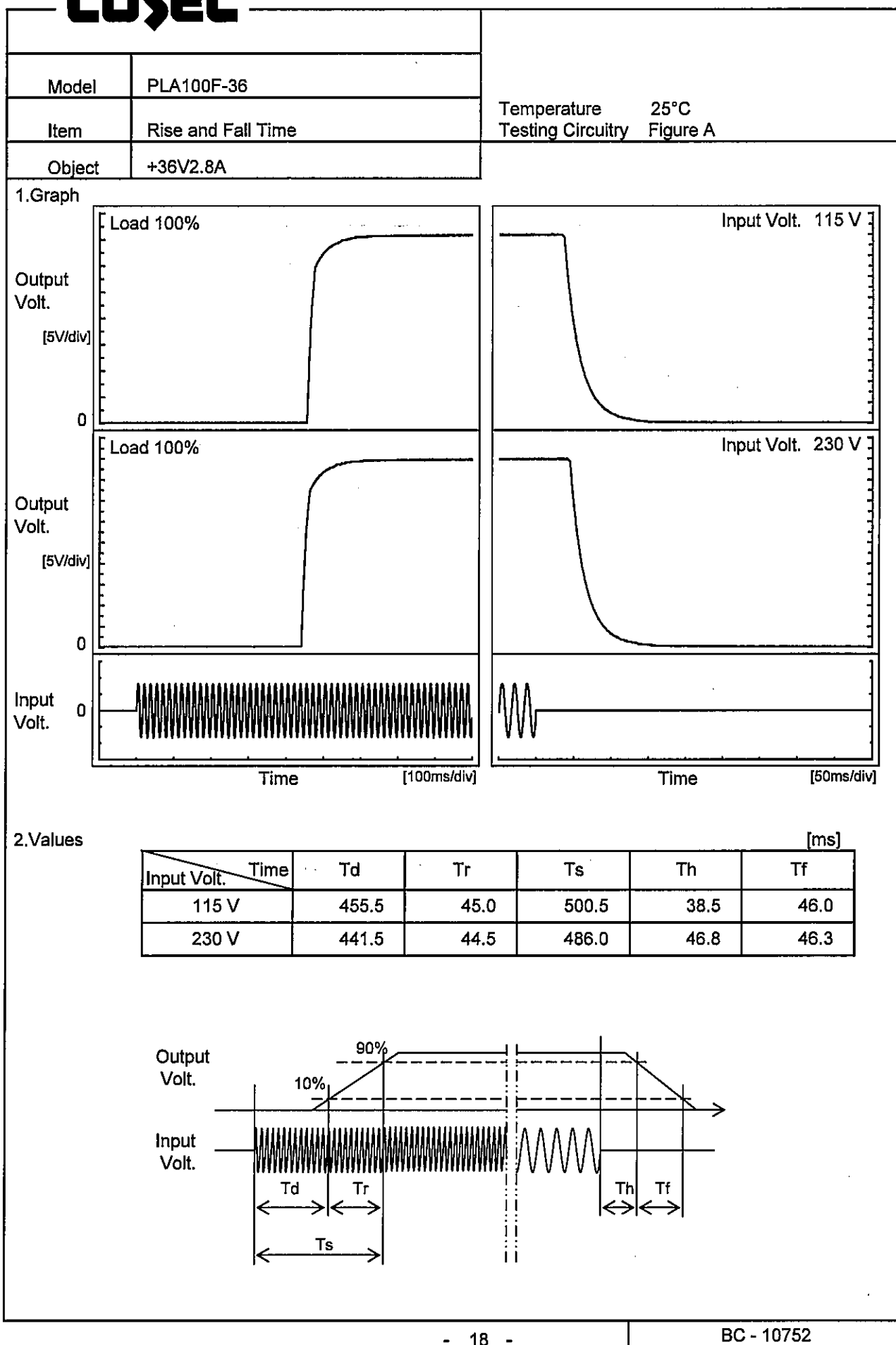
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	45	230	0.84	36.181	±41	±0.1
Minimum Voltage	-10	115	2.8	36.100		

COSEL

Model		PLA100F-36		Temperature 25°C	
Item		Time Lapse Drift		Testing Circuitry Figure A	
Object		+36V2.8A			
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



BC - 10752

COSEL

Model		PLA100F-36		Temperature 25°C																																																				
Item		Instantaneous Interruption Compensation		Testing Circuitry Figure A																																																				
Object		+36V2.8A																																																						
1.Graph				2.Values																																																				
<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>115V</div></div><div><div>---○---</div><div>Input Volt.</div><div>230V</div></div></div> <p>Instantaneous Compensation Time [ms]</p> <p>Load Current [A]</p>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.50</td><td>203</td><td>202</td><td>248</td></tr><tr><td>1.00</td><td>104</td><td>104</td><td>127</td></tr><tr><td>1.50</td><td>69</td><td>70</td><td>86</td></tr><tr><td>2.00</td><td>53</td><td>53</td><td>62</td></tr><tr><td>2.50</td><td>39</td><td>39</td><td>51</td></tr><tr><td>2.80</td><td>36</td><td>37</td><td>45</td></tr><tr><td>3.08</td><td>-</td><td>21</td><td>37</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 Current [A]	Time [ms]			Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]	0.00	-	-	-	0.50	203	202	248	1.00	104	104	127	1.50	69	70	86	2.00	53	53	62	2.50	39	39	51	2.80	36	37	45	3.08	-	21	37	--	-	-	-	--	-	-	-	--	-	-	-
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BC - 10752

Model	PLA100F-36																																														
Item	Overcurrent Protection	Temperature	25°C																																												
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1.Graph		2.Values																																													
<div><div><div></div>Input Volt. 115V</div><div><div></div>Input Volt. 230V</div></div> <p>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="2">Load Current [A]</th></tr><tr><th>Input Volt. 115[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>34.2</td><td>3.20</td><td>3.30</td></tr><tr><td>32.4</td><td>3.24</td><td>3.25</td></tr><tr><td>28.8</td><td>3.33</td><td>3.42</td></tr><tr><td>25.2</td><td>3.41</td><td>3.51</td></tr><tr><td>21.6</td><td>3.51</td><td>3.60</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><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></table>		Output Voltage [V]	Load Current [A]		Input Volt. 115[V]	Input Volt. 230[V]	34.2	3.20	3.30	32.4	3.24	3.25	28.8	3.33	3.42	25.2	3.41	3.51	21.6	3.51	3.60	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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COSEL

LOREL

Model	PLA100F-36
Item	Overvoltage Protection
Object	+36V2.8A

1.Graph

—△— Input Volt. 115V
 ---□--- Input Volt. 230V

Operating Point [V]

Ambient Temperature [°C]

Load 0%

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

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 115[V]	Input Volt. 230[V]
-20	44.49	44.49
-10	44.49	44.49
0	44.48	44.48
10	44.77	44.77
20	45.18	45.18
25	45.36	45.36
35	45.65	45.65
45	46.06	46.06
55	46.36	46.36
65	46.76	46.76
--	-	-

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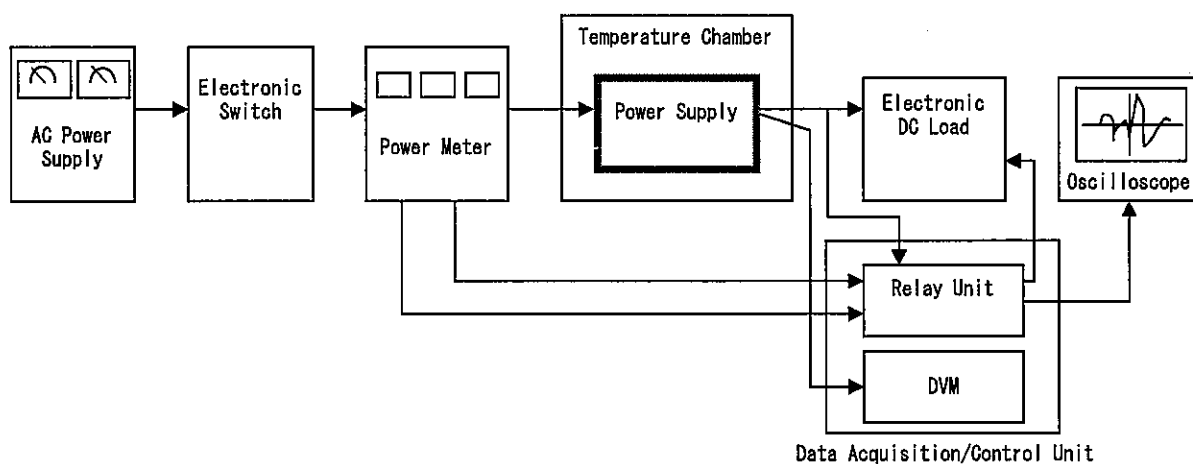


Figure A

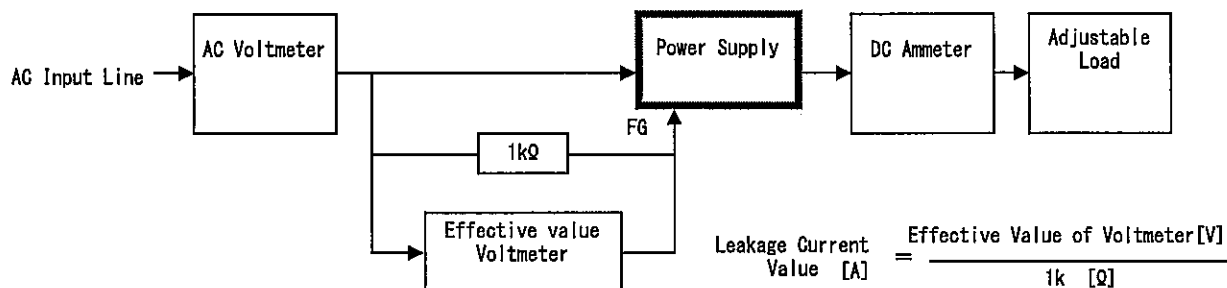


Figure B (DEN-AN)

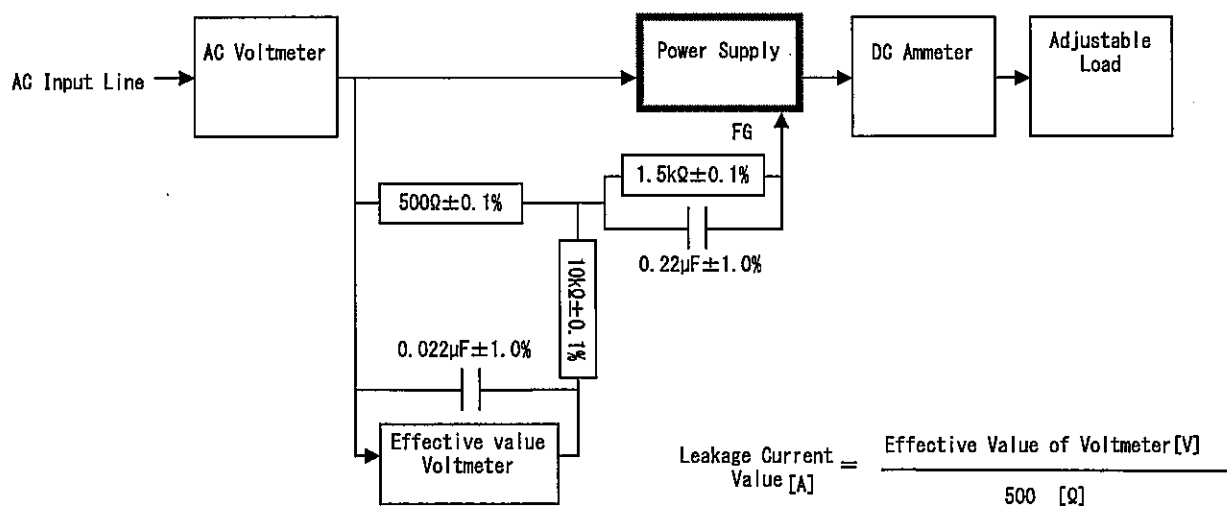


Figure B (IEC60950-1)

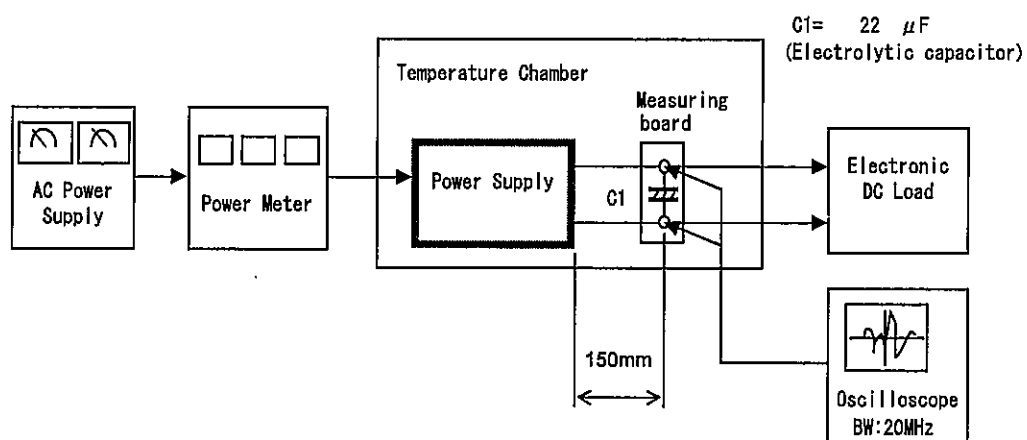


Figure C