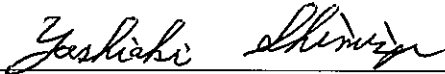
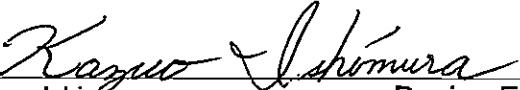




TEST DATA OF LFA30F-12

Regulated DC Power Supply
June 29, 2009

Approved by : 
Yoshiaki Shimizu Design Manager

Prepared by : 
Kazuo Ishimura Design Engineer

COSEL CO.,LTD.

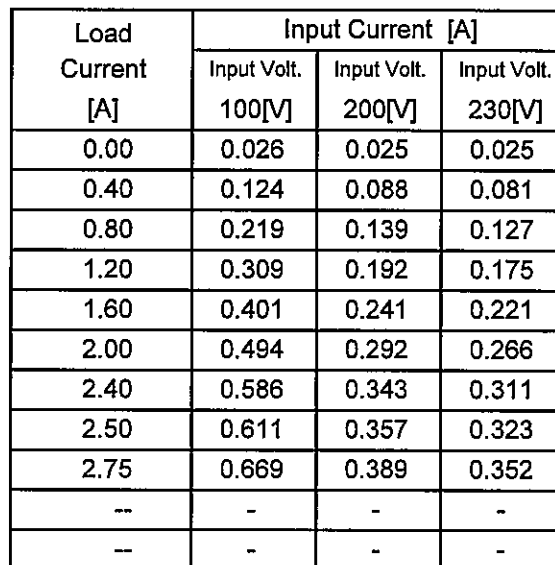
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Temperature 25°C
Testing Circuitry Figure A

2.Values



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

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Model	LFA30F-12
Item	Efficiency (by Input Voltage)
Object	

1.Graph

□

Load 50%

△

Load 100%

Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]
75	79.3	78.0
85	80.1	79.6
100	81.0	80.7
120	81.0	82.0
200	79.7	82.3
230	78.4	82.3
264	76.8	81.6
280	76.1	81.1

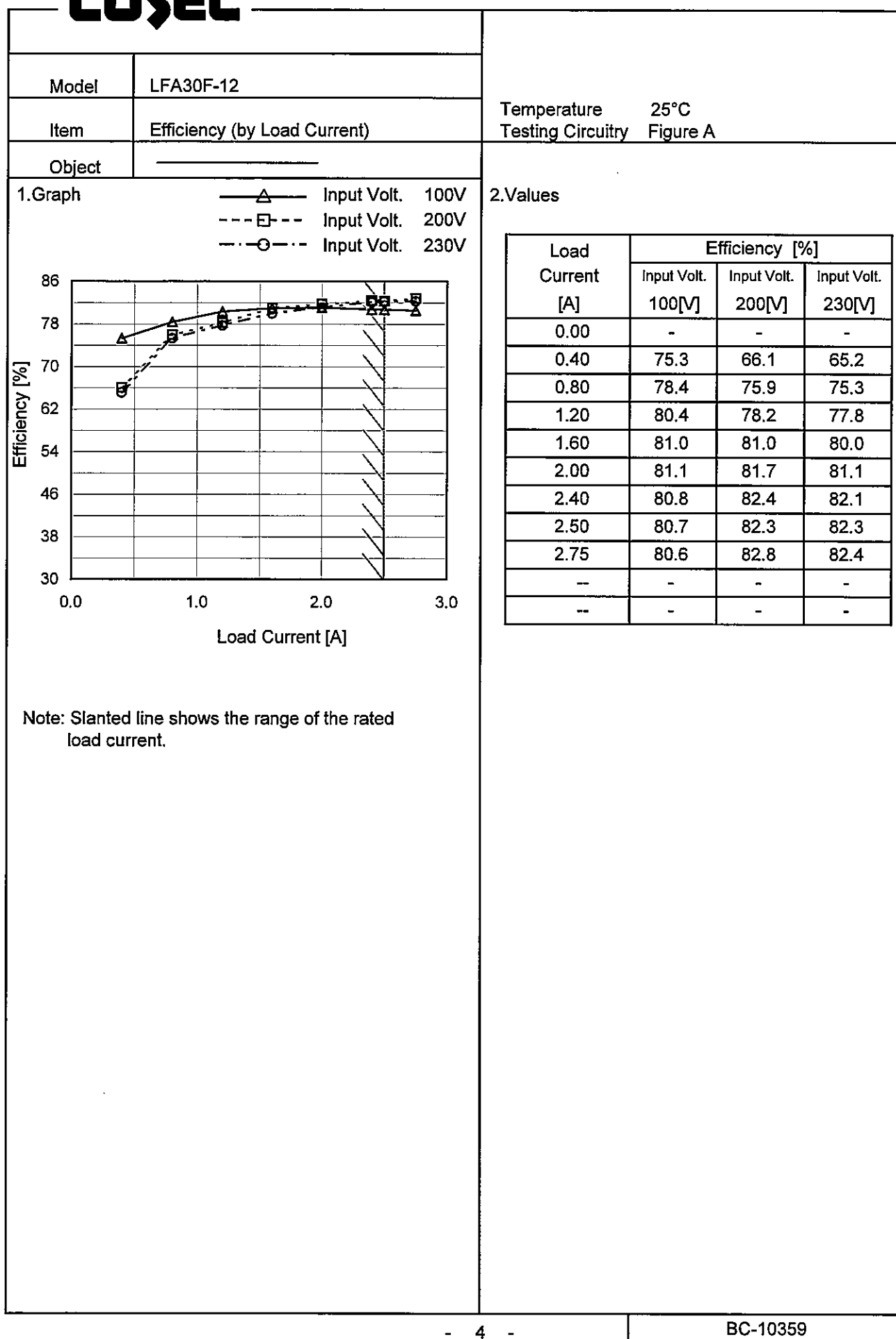
Note: Slanted line shows the range of the rated input voltage.

Temperature	25°C
Testing Circuitry	Figure A

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	79.3	78.0
85	80.1	79.6
100	81.0	80.7
120	81.0	82.0
200	79.7	82.3
230	78.4	82.3
264	76.8	81.6
280	76.1	81.1
—	-	-

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Model		LFA30F-12	
Item		Power Factor (by Input Voltage)	
Object			

1.Graph

---□--- Load 50%

—△— Load 100%

Power Factor

Input Voltage [V]

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

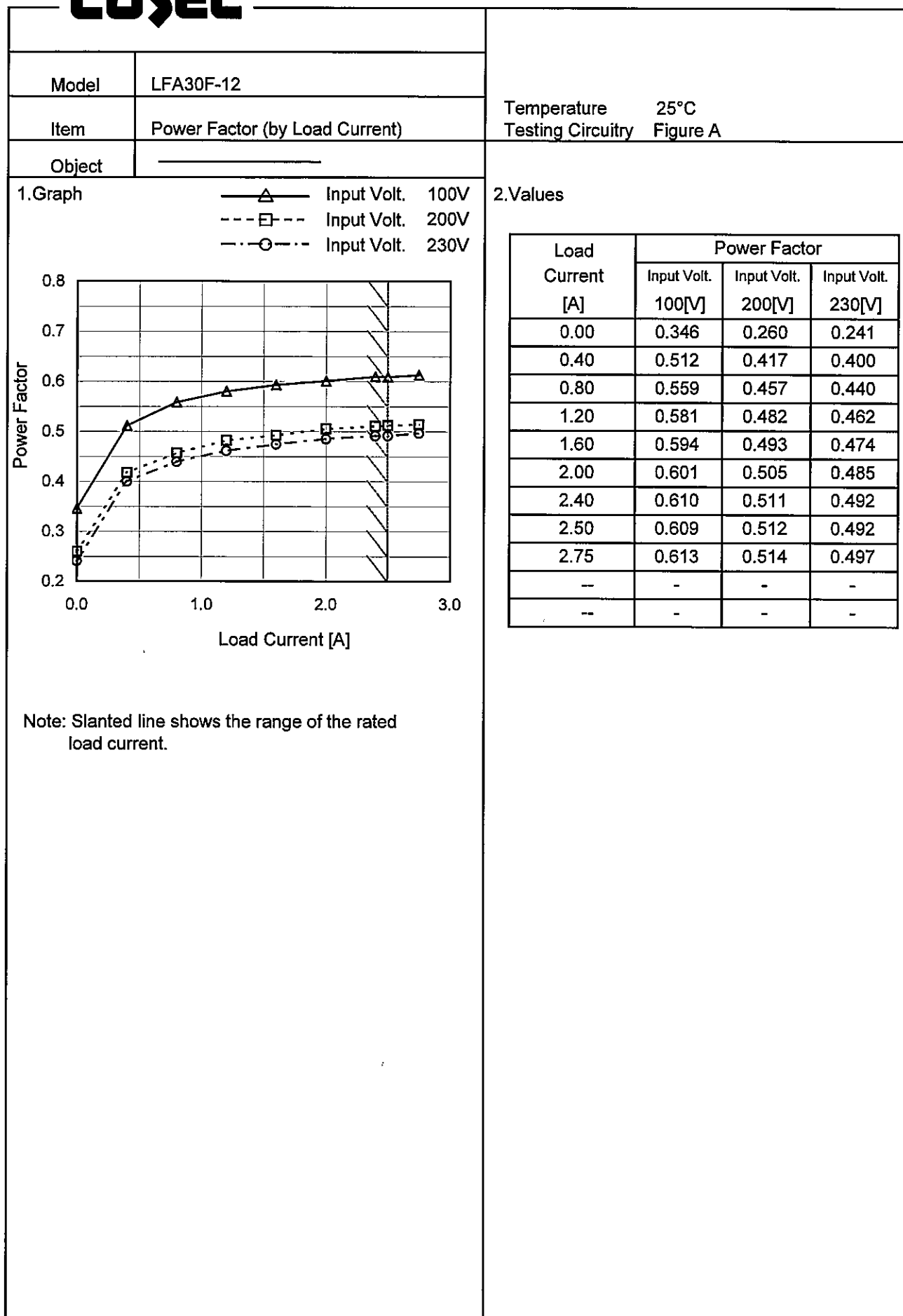
2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.625	0.654
85	0.605	0.632
100	0.578	0.608
120	0.552	0.581
200	0.475	0.504
230	0.459	0.491
264	0.443	0.472
280	0.436	0.465
--	-	-

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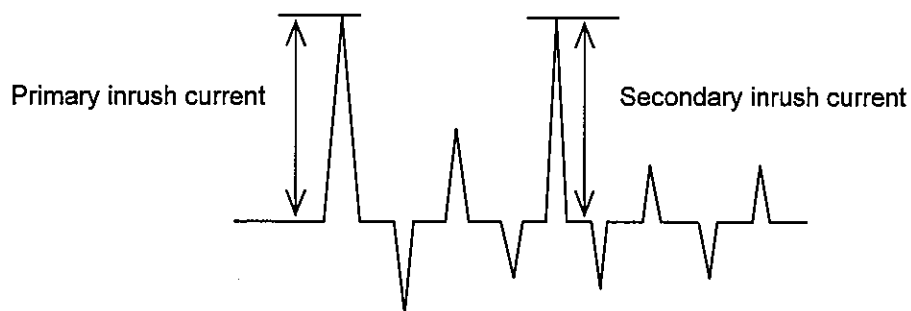
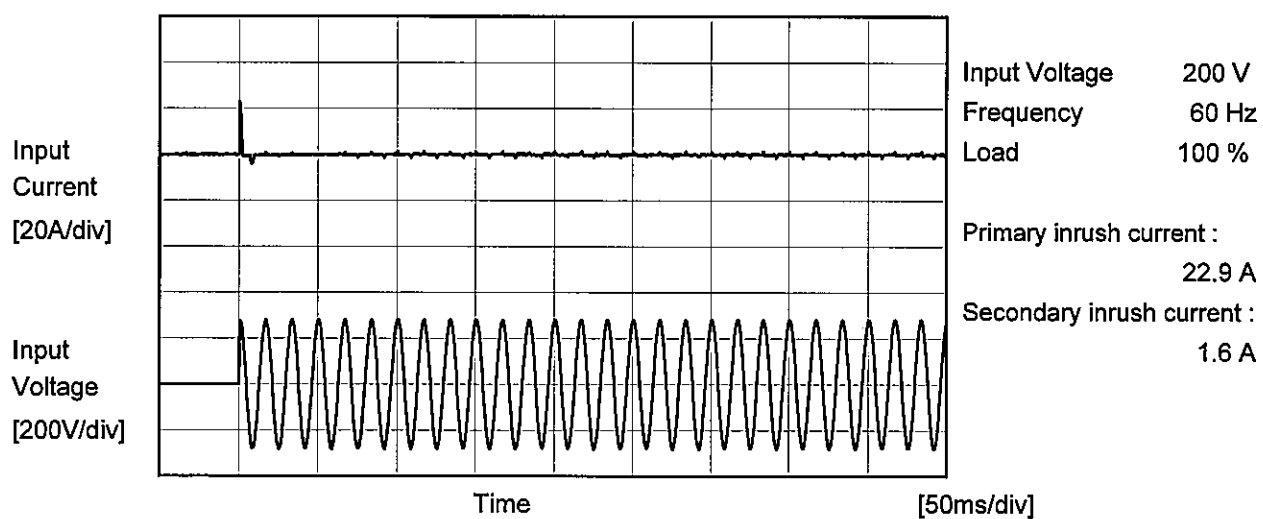
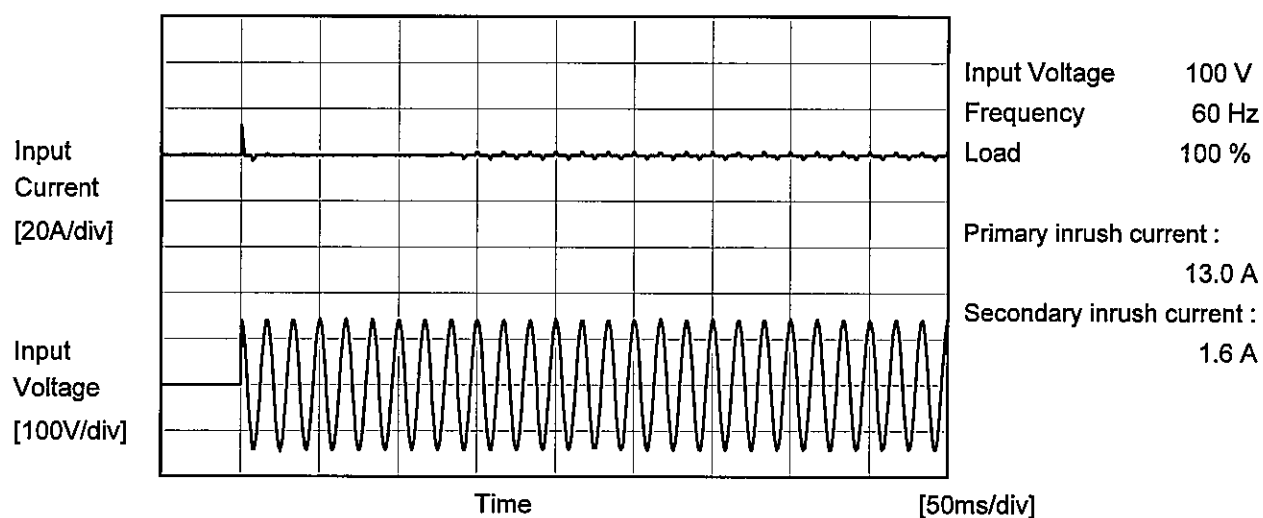
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Model	LFA30F-12	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		



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		Temperature 25°C Testing Circuitry Figure B
Model	LFA30F-12	
Item	Leakage Current	
Object	_____	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.13	0.27	0.32	Operation
	One of phases	0.21	0.45	0.55	Stand by
IEC60950	Both phases	0.15	0.30	0.37	Operation
	One of phases	0.22	0.46	0.55	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.

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Model

LFA30F-12

Item

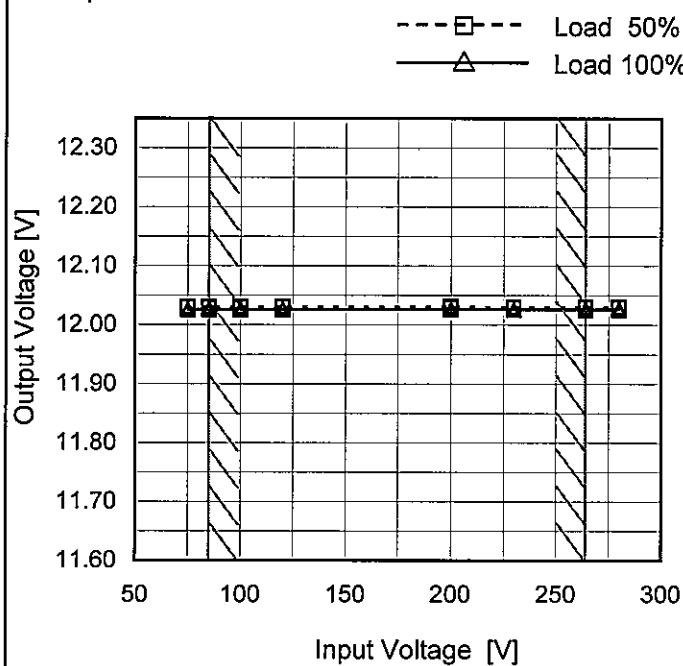
Line Regulation

Object

+12V2.5A

 Temperature 25°C
 Testing Circuitry Figure A

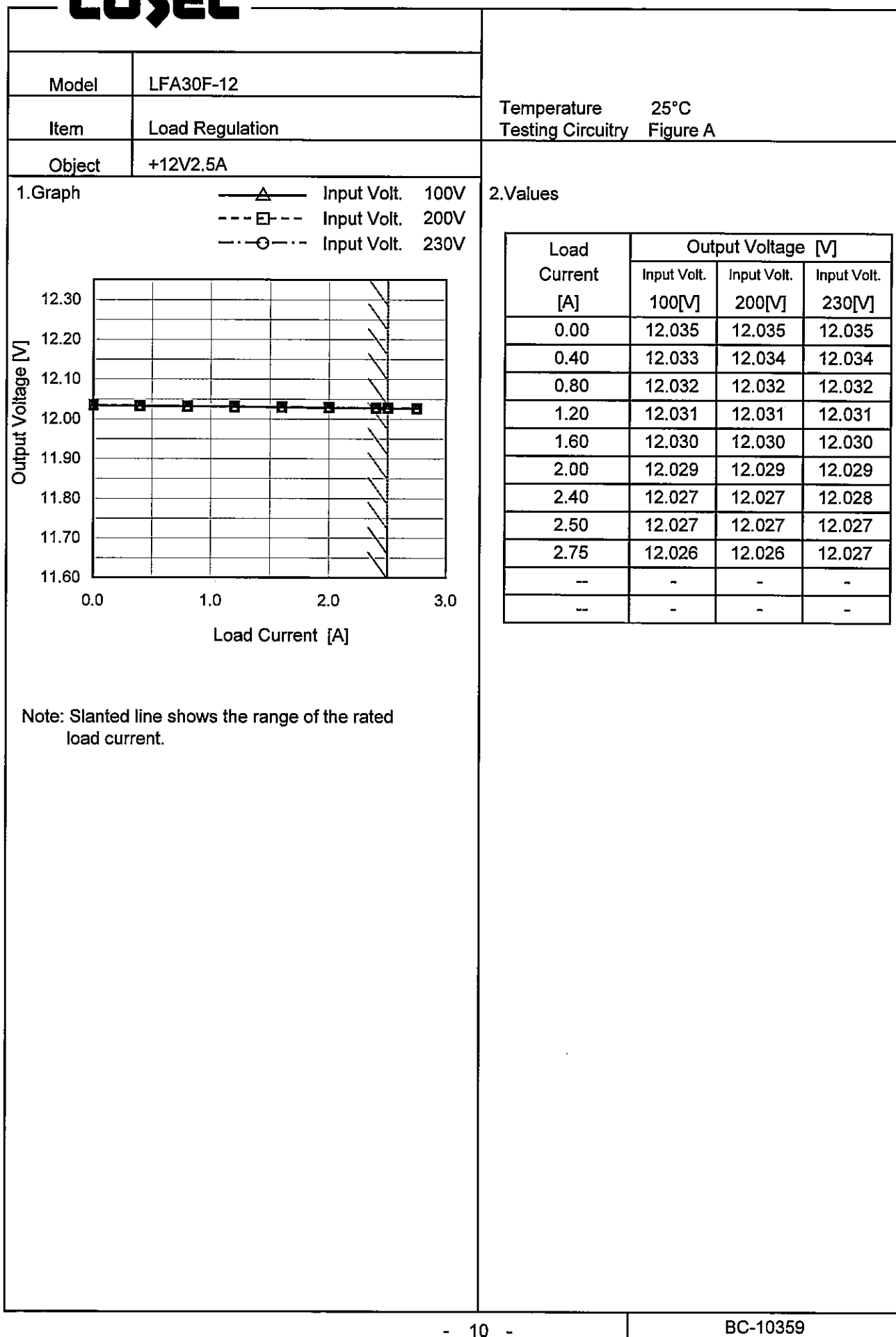
1. Graph



2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	12.030	12.027
85	12.030	12.027
100	12.030	12.027
120	12.030	12.027
200	12.030	12.027
230	12.030	12.027
264	12.030	12.027
280	12.030	12.027
--	-	-

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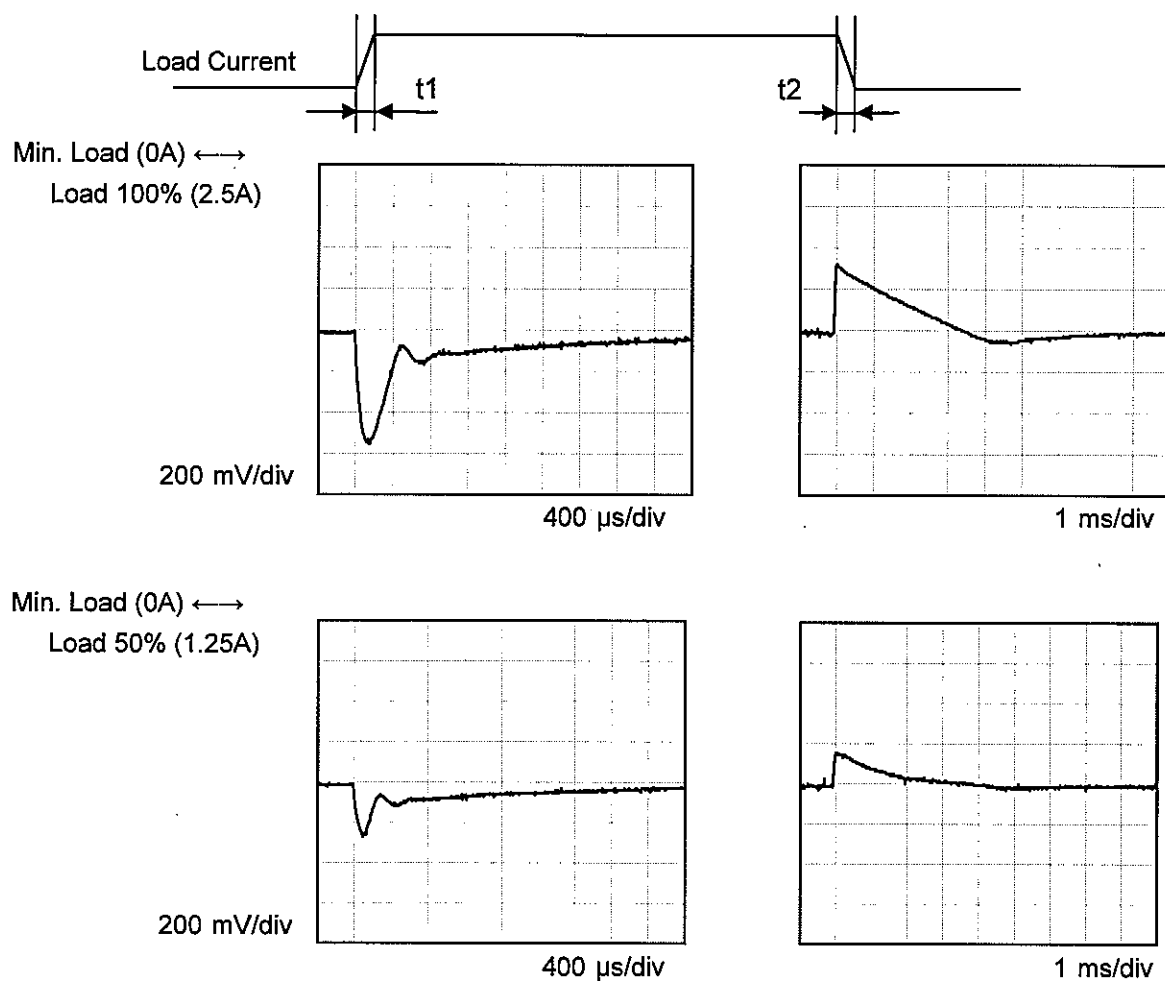




Model	LFA30F-12	Temperature Testing Circuitry	25°C Figure A
Item	Dynamic Load Response		
Object	+12V2.5A		

Input Volt. 100 V
Cycle 1000 ms

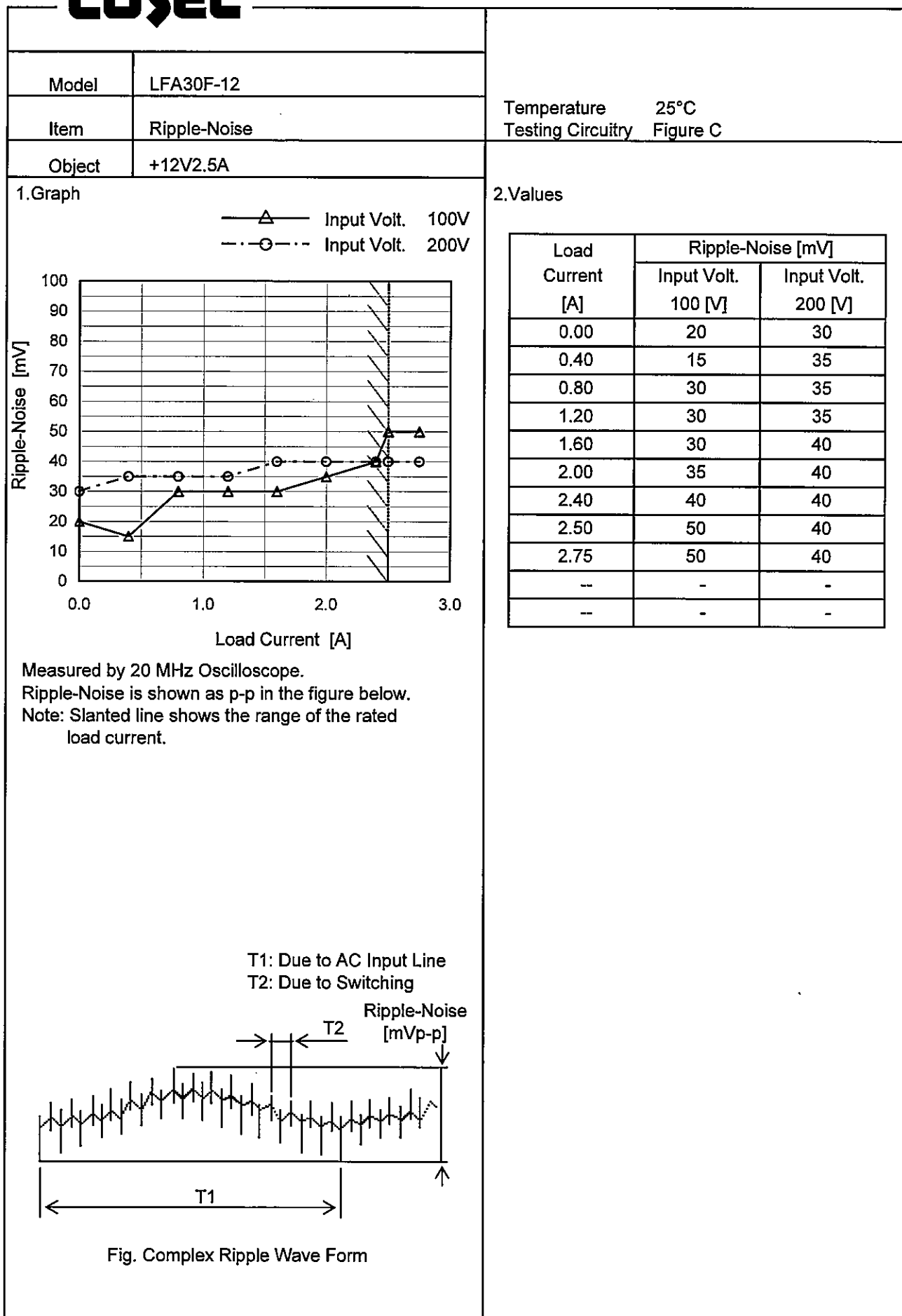
Response. $t_1=t_2=50\mu\text{s}$. Typ



Model		LFA30F-12	
Item		Ripple Voltage (by Load Current)	
Object		+12V2.5A	
1.Graph		2.Values	

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Model		LFA30F-12																																																													
Item		Ripple Voltage (by Ambient Temp.)																																																													
Object		+12V2.5A																																																													
1.Graph																																																															
<div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>Input Volt. 100V</div><div>Input Volt. 200V</div></div> <div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>Ripple Voltage [mV]</div><div>Ambient Temperature [°C]</div><div>Load 100 %</div></div> <div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>Input Volt. 100V</div><div>Input Volt. 200V</div></div> <div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>Input Volt. 100V</div><div>Input Volt. 200V</div></div> <div>Measured by 20 MHz Oscilloscope.</div> <div>Note: Slanted line shows the range of the rated ambient temperature.</div> <tr><td colspan="4">2.Values</td></tr> <tr><td colspan="2">Ambient Temperature [°C]</td><td colspan="2">Ripple Voltage [mV]</td></tr> <tr><td colspan="2"></td><td>Input Volt. 100 [V]</td><td>Input Volt. 200 [V]</td></tr> <tr><td colspan="2">-30</td><td>55</td><td>40</td></tr> <tr><td colspan="2">-10</td><td>30</td><td>25</td></tr> <tr><td colspan="2">0</td><td>25</td><td>15</td></tr> <tr><td colspan="2">25</td><td>25</td><td>15</td></tr> <tr><td colspan="2">50</td><td>20</td><td>10</td></tr> <tr><td colspan="2">--</td><td>-</td><td>-</td></tr> <tr><td colspan="2">--</td><td>-</td><td>-</td></tr> <tr><td colspan="2">--</td><td>-</td><td>-</td></tr> <tr><td colspan="2">--</td><td>-</td><td>-</td></tr> <tr><td colspan="2">--</td><td>-</td><td>-</td></tr> <tr><td colspan="2">--</td><td>-</td><td>-</td></tr> <tr><td colspan="2">--</td><td>-</td><td>-</td></tr>				2.Values				Ambient Temperature [°C]		Ripple Voltage [mV]				Input Volt. 100 [V]	Input Volt. 200 [V]	-30		55	40	-10		30	25	0		25	15	25		25	15	50		20	10	--		-	-	--		-	-	--		-	-	--		-	-	--		-	-	--		-	-	--		-	-
2.Values																																																															
Ambient Temperature [°C]		Ripple Voltage [mV]																																																													
		Input Volt. 100 [V]	Input Volt. 200 [V]																																																												
-30		55	40																																																												
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		Testing Circuitry Figure A
Model	LFA30F-12	
Item	Output Voltage Accuracy	
Object	+12V2.5A	

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 - 264V

Load Current : 0 - 2.5A

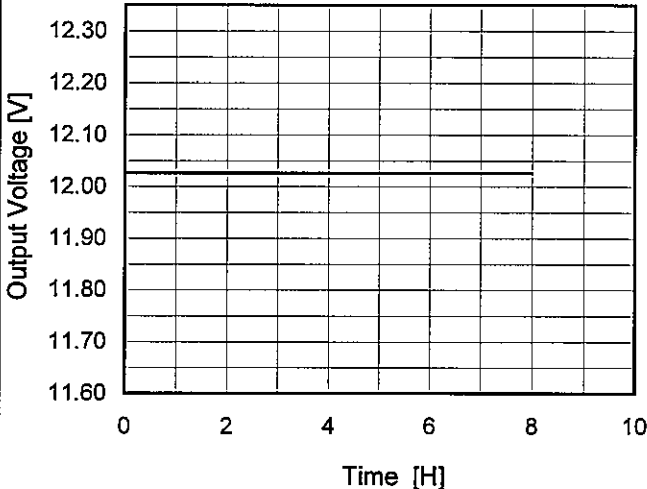
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

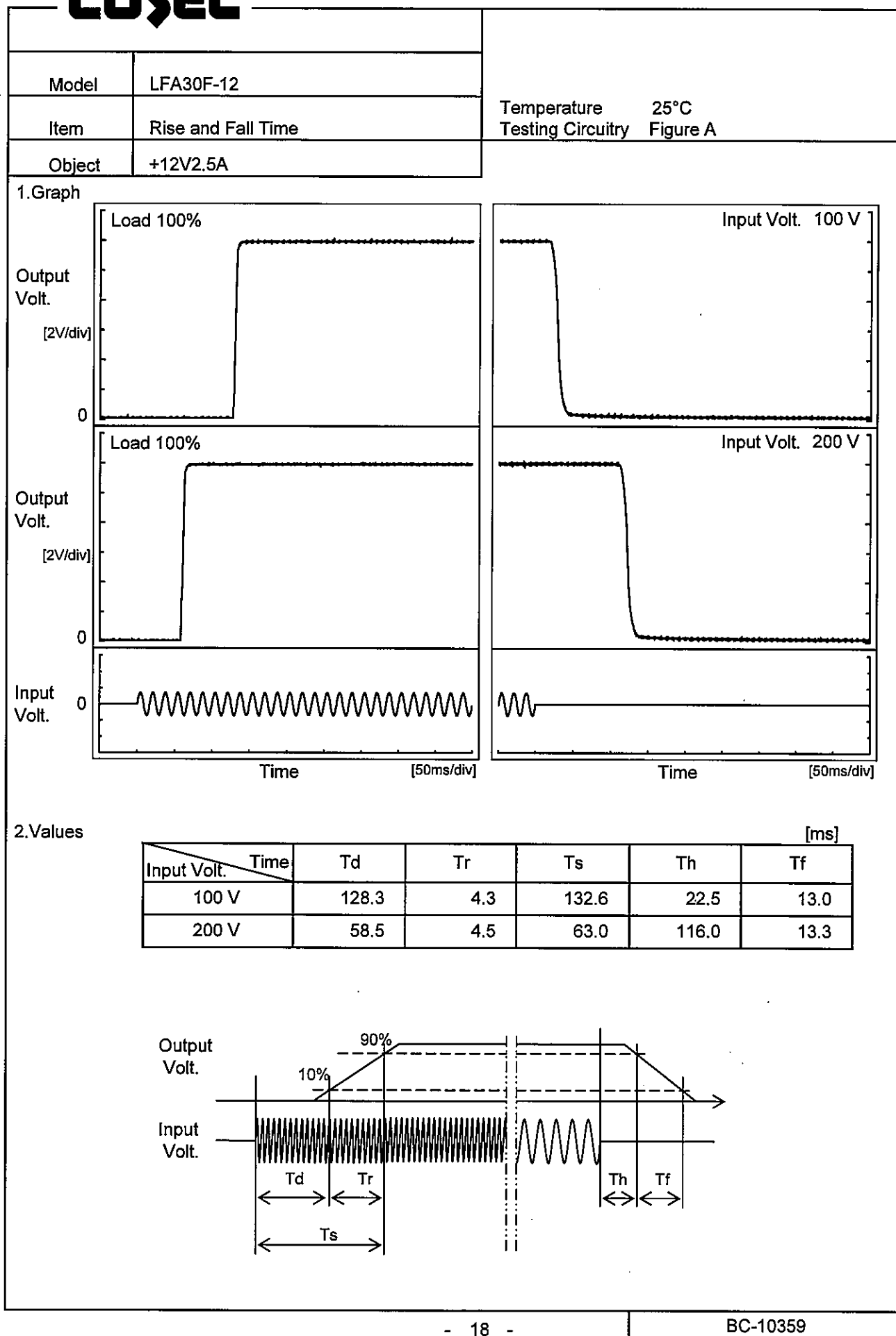
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-10	264	0	12.046	±15	±0.1
Minimum Voltage	50	85	2.5	12.016		

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Model		LFA30F-12																							
Item		Time Lapse Drift																							
Object		+12V2.5A																							
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 100V</p><p>Load 100%</p></div>		<table><thead><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr></thead><tbody><tr><td>0.0</td><td>12.031</td></tr><tr><td>0.5</td><td>12.026</td></tr><tr><td>1.0</td><td>12.026</td></tr><tr><td>2.0</td><td>12.026</td></tr><tr><td>3.0</td><td>12.026</td></tr><tr><td>4.0</td><td>12.026</td></tr><tr><td>5.0</td><td>12.026</td></tr><tr><td>6.0</td><td>12.026</td></tr><tr><td>7.0</td><td>12.026</td></tr><tr><td>8.0</td><td>12.026</td></tr></tbody></table>		Time since start [H]	Output Voltage [V]	0.0	12.031	0.5	12.026	1.0	12.026	2.0	12.026	3.0	12.026	4.0	12.026	5.0	12.026	6.0	12.026	7.0	12.026	8.0	12.026
Time since start [H]	Output Voltage [V]																								
0.0	12.031																								
0.5	12.026																								
1.0	12.026																								
2.0	12.026																								
3.0	12.026																								
4.0	12.026																								
5.0	12.026																								
6.0	12.026																								
7.0	12.026																								
8.0	12.026																								
* The characteristic of AC200V is equal.																									

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Model		LFA30F-12	
Item		Hold-Up Time	
Object		+12V2.5A	

1.Graph

□

Load 50%

△

Load 100%

Hold-Up Time [ms]

1000

100

10

1

50

100

150

200

250

300

Input Voltage [V]

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.

2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	26	7
85	36	12
100	52	21
120	79	33
200	237	116
230	318	158
264	425	210
280	481	239
--	-	-

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Model		LFA30F-12	
Item		Instantaneous Interruption Compensation	
Object		+12V2.5A	

1.Graph

—△—

Input Volt.

100V

---□---

Input Volt.

200V

-·-○-·-

Input Volt.

230V

Instantaneous Compensation Time [ms]

1000

100

10

1

0.0

1.0

2.0

3.0

Load Current [A]

0.5

1.0

1.5

2.0

2.5

3.0

1000

100

10

1

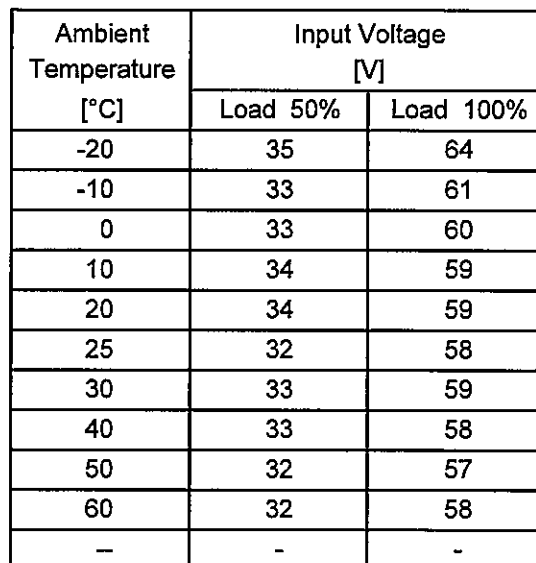
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.40	163	679	897
0.80	84	367	492
1.20	56	249	335
1.60	40	188	254
2.00	30	149	202
2.40	22	122	166
2.50	20	113	157
2.75	14	103	141
--	-	-	-
--	-	-	-

Testing Circuitry Figure A

2.Values



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

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Model		LFA30F-12	
Item		Overcurrent Protection	
Object		+12V2.5A	

1.Graph

Input Volt. 100V

Input Volt. 200V

Output Voltage [V]

12

8

4

0

0

2

4

6

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Model

LFA30F-12

Item

Overvoltage Protection

Object

+12V2.5A

1.Graph

—△—

Input Volt. 100V

---□---

Input Volt. 200V

Operating Point [V]

17.0

16.0

15.0

14.0

13.0

—△—

---□---

-40

-20

0

20

40

60

80

Ambient Temperature [°C]

Load 0%

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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 200[V]
-20	14.69	14.69
-10	14.83	14.83
0	14.90	14.90
10	14.97	14.97
20	15.04	15.04
25	15.11	15.11
30	15.11	15.11
40	15.25	15.25
50	15.32	15.32
60	15.39	15.39
--	-	-

Testing Circuitry Figure A

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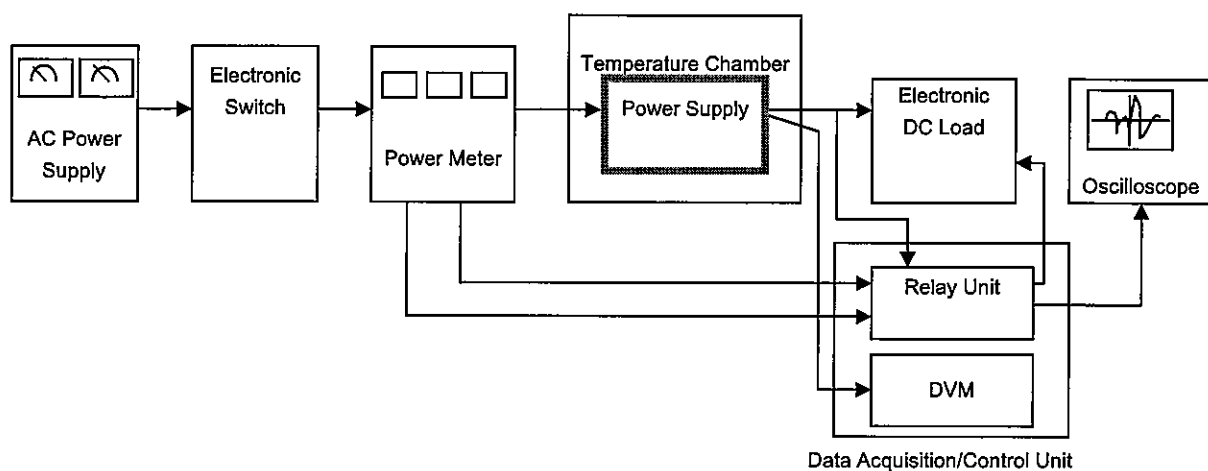


Figure A

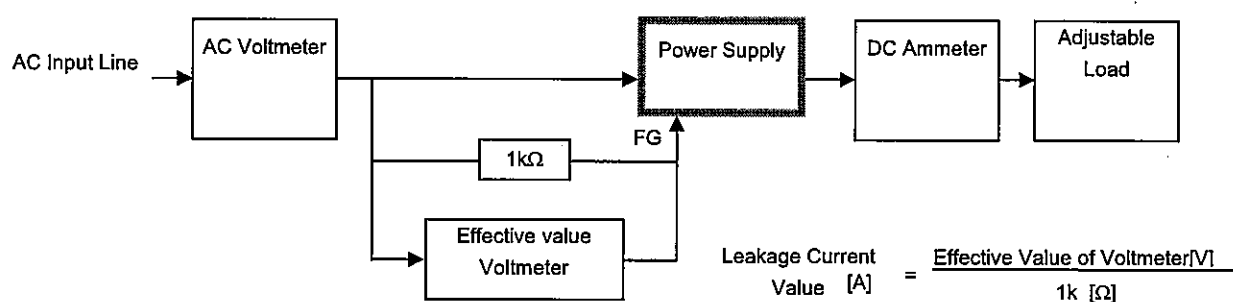


Figure B (DEN-AN)

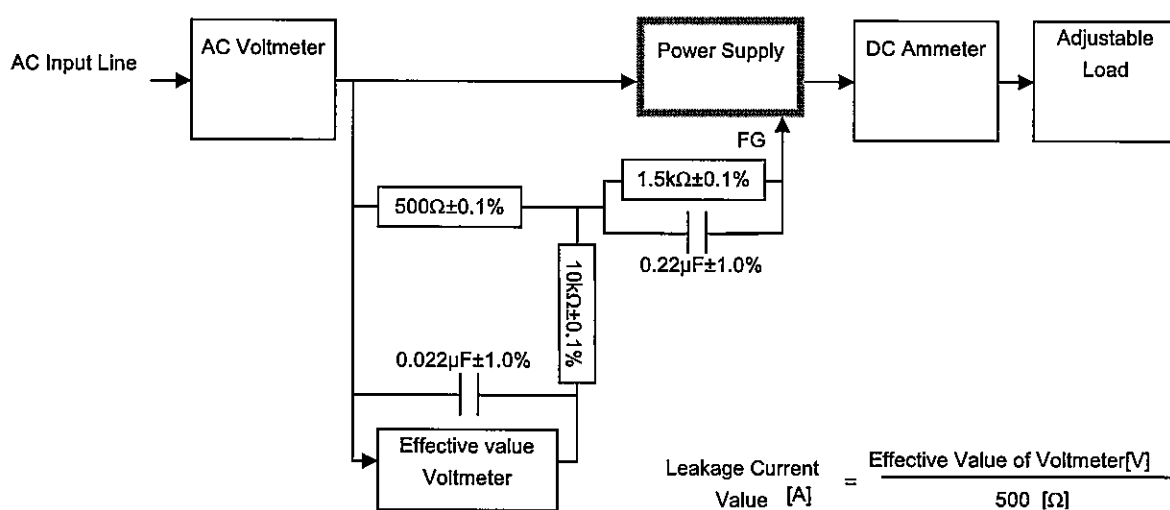


Figure B (IEC60950-1)

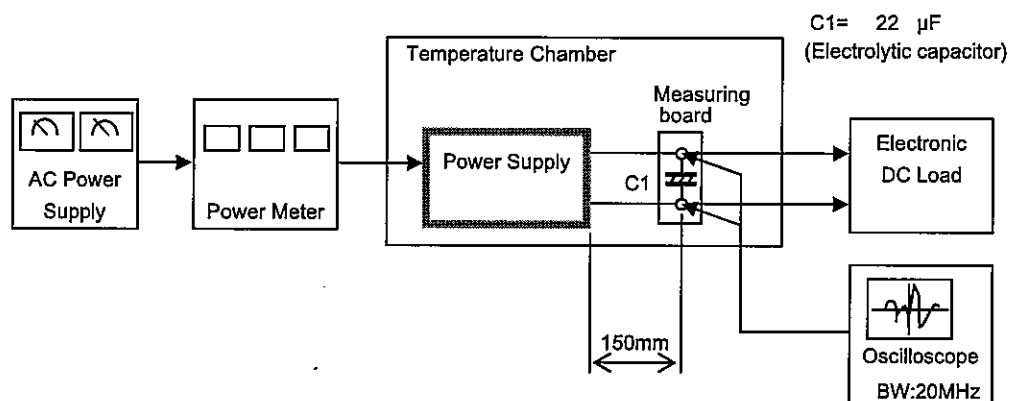


Figure C