



TEST DATA OF LFA30F-3R3-Y

Regulated DC Power Supply
July 7, 2009

Approved by : Yoshiaki Shimizu
Yoshiaki Shimizu Design Manager

Prepared by : Kazuo Ishimura
Kazuo Ishimura Design Engineer

COSEL CO.,LTD.



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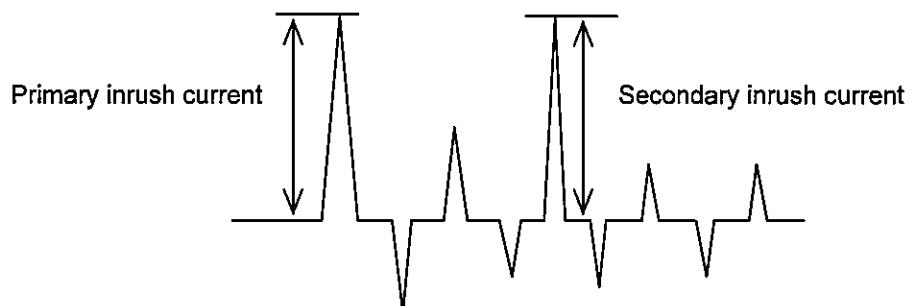
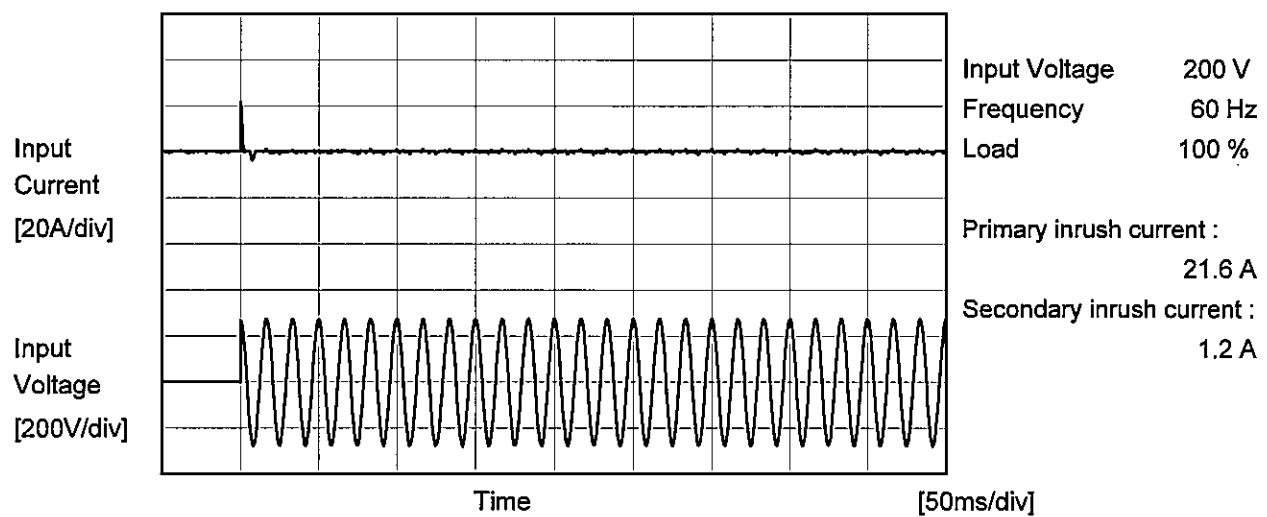
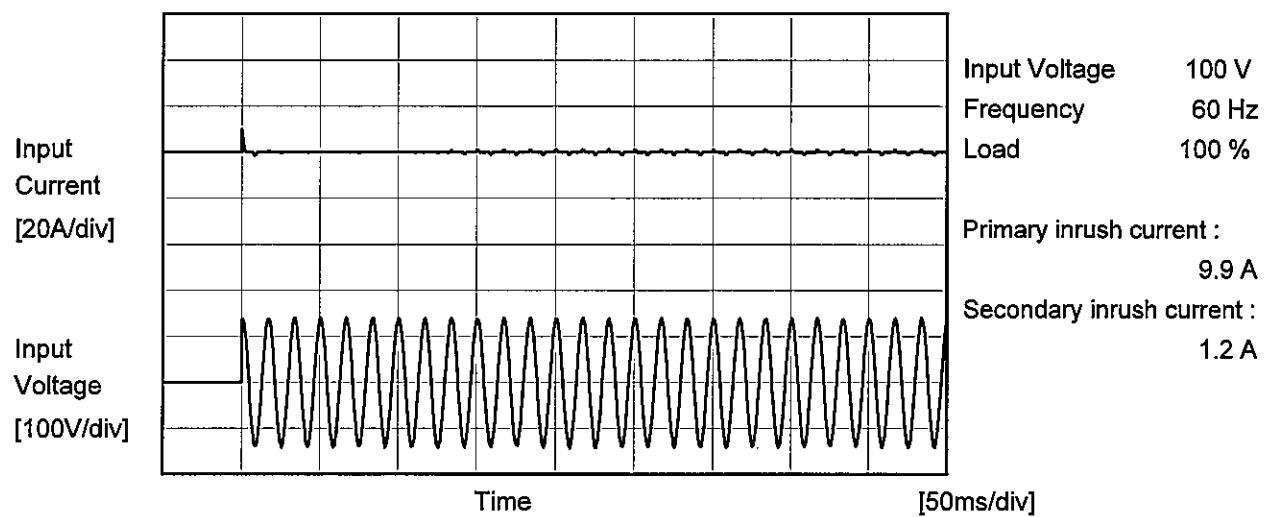
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Item		Inrush Current	
Object		_____	





Model	LFA30F-3R3-Y	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
Object	<hr/>		

1. Results

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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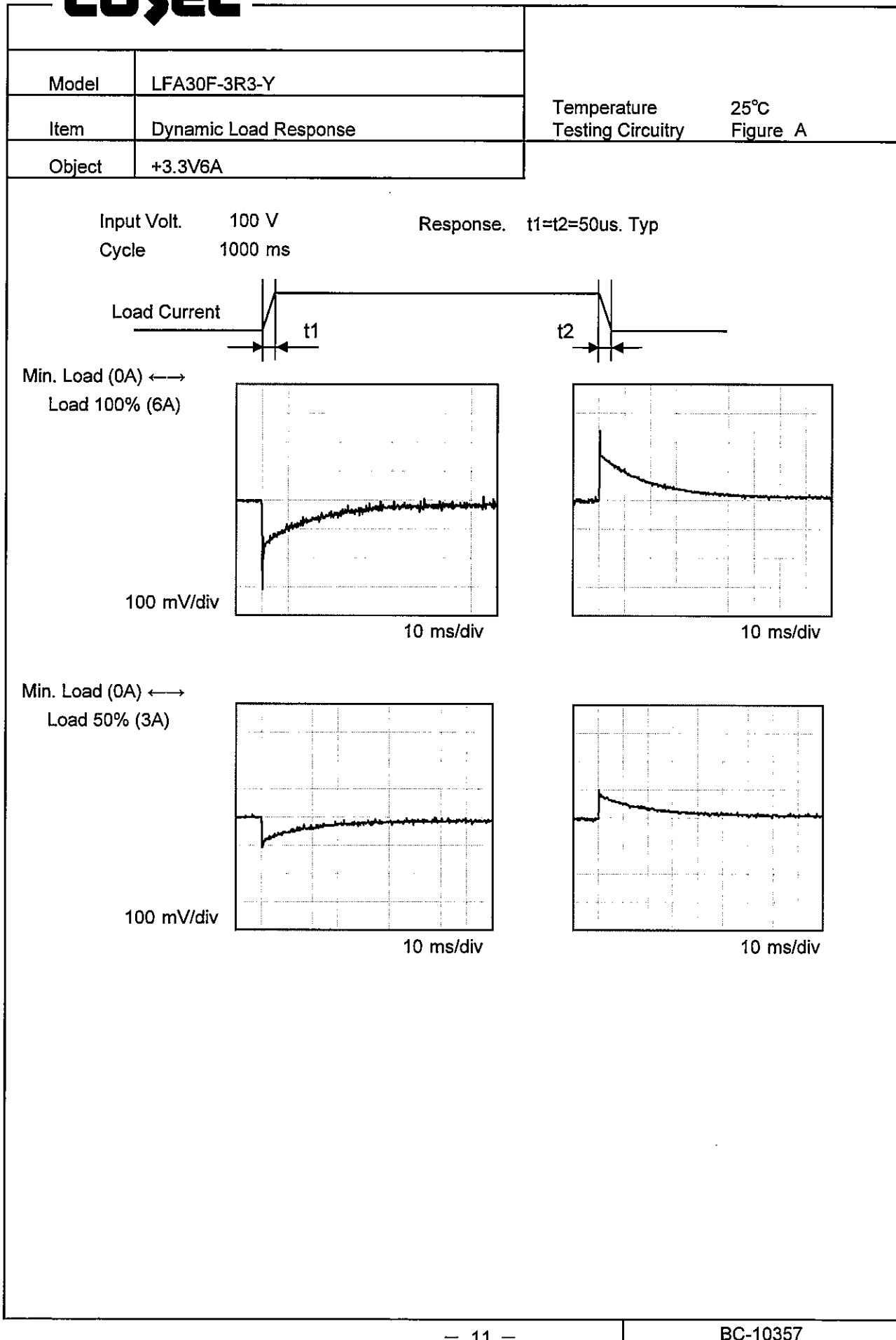
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COSEL

Model	LFA30F-3R3-Y																																																					
Item	Load Regulation	Temperature Testing Circuitry	25°C Figure A																																																			
Object	+3.3V6A																																																					
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Note: Slanted line shows the range of the rated load current.

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Model	LFA30F-3R3-Y																																							
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure C																																						
Object	+3.3V6A																																							
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Model	LFA30F-3R3-Y	Temperature	25°C																																						
Item	Ripple-Noise	Testing Circuitry	Figure C																																						
Object	+3.3V6A																																								
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<p>Graph showing Ripple-Noise [mV] vs Load Current [A].</p> <p>Legend:</p> <ul style="list-style-type: none"> Input Volt. 100V (Solid Line with ▲) Input Volt. 200V (Dashed Line with ○) <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Ripple-Noise [mV] (Input Volt. 100V)</th> <th>Ripple-Noise [mV] (Input Volt. 200V)</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>15</td><td>20</td></tr> <tr><td>1.0</td><td>25</td><td>25</td></tr> <tr><td>2.0</td><td>25</td><td>30</td></tr> <tr><td>3.0</td><td>30</td><td>30</td></tr> <tr><td>4.0</td><td>35</td><td>35</td></tr> <tr><td>5.0</td><td>40</td><td>35</td></tr> <tr><td>6.0</td><td>40</td><td>35</td></tr> <tr><td>6.6</td><td>50</td><td>45</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. 100V)	Ripple-Noise [mV] (Input Volt. 200V)	0.0	15	20	1.0	25	25	2.0	25	30	3.0	30	30	4.0	35	35	5.0	40	35	6.0	40	35	6.6	50	45	-	-	-	-	-	-	-	-	-		
Load Current [A]	Ripple-Noise [mV] (Input Volt. 100V)	Ripple-Noise [mV] (Input Volt. 200V)																																							
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<p>Fig. Complex Ripple Wave Form</p>																																									

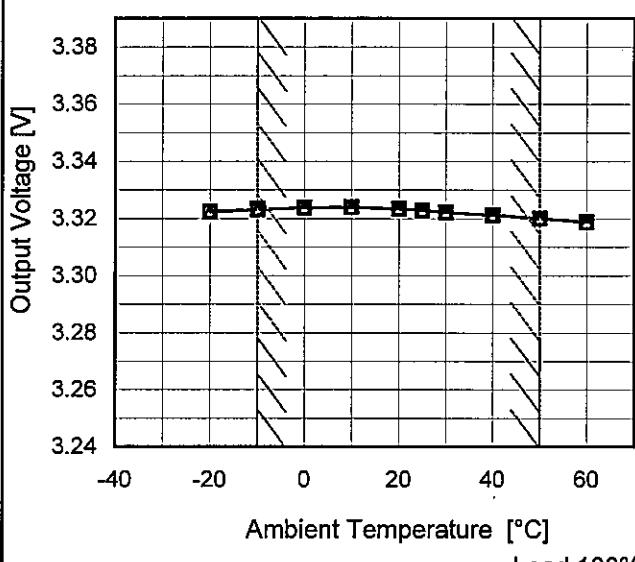
COSEL

Model	LFA30F-3R3-Y																																							
Item	Ripple Voltage (by Ambient Temp.)																																							
Object	+3.3V6A																																							
1. Graph																																								
<p>Graph showing Ripple Voltage [mV] vs Ambient Temperature [°C] for LFA30F-3R3-Y at +3.3V6A load. The graph shows two sets of data points for Input Voltages of 100V and 200V. A slanted line indicates the rated ambient temperature range from -30°C to 50°C.</p> <table border="1"> <thead> <tr> <th>Ambient Temperature [°C]</th> <th>Ripple Voltage [mV] (Input Volt. 100V)</th> <th>Ripple Voltage [mV] (Input Volt. 200V)</th> </tr> </thead> <tbody> <tr><td>-30</td><td>75</td><td>55</td></tr> <tr><td>-10</td><td>45</td><td>35</td></tr> <tr><td>0</td><td>35</td><td>25</td></tr> <tr><td>25</td><td>25</td><td>15</td></tr> <tr><td>50</td><td>20</td><td>15</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> </tbody> </table>		Ambient Temperature [°C]	Ripple Voltage [mV] (Input Volt. 100V)	Ripple Voltage [mV] (Input Volt. 200V)	-30	75	55	-10	45	35	0	35	25	25	25	15	50	20	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
Ambient Temperature [°C]	Ripple Voltage [mV] (Input Volt. 100V)	Ripple Voltage [mV] (Input Volt. 200V)																																						
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Measured by 20 MHz Oscilloscope.

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

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Model	LFA30F-3R3-Y																																																					
Item	Ambient Temperature Drift																																																					
Object	+3.3V6A																																																					
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Model	LFA30F-3R3-Y	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+3.3V6A	

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 - 6A

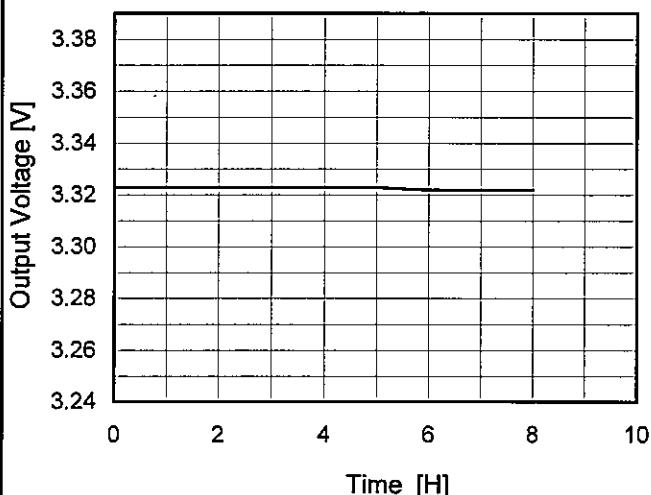
* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	20	85	0	3.323	±2	±0.1
Minimum Voltage	50	264	6	3.320		

COSEL

Model	LFA30F-3R3-Y	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+3.3V6A																								
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>3.323</td></tr> <tr><td>0.5</td><td>3.323</td></tr> <tr><td>1.0</td><td>3.323</td></tr> <tr><td>2.0</td><td>3.323</td></tr> <tr><td>3.0</td><td>3.323</td></tr> <tr><td>4.0</td><td>3.323</td></tr> <tr><td>5.0</td><td>3.323</td></tr> <tr><td>6.0</td><td>3.322</td></tr> <tr><td>7.0</td><td>3.322</td></tr> <tr><td>8.0</td><td>3.322</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	3.323	0.5	3.323	1.0	3.323	2.0	3.323	3.0	3.323	4.0	3.323	5.0	3.323	6.0	3.322	7.0	3.322	8.0	3.322
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6.0	3.322																								
7.0	3.322																								
8.0	3.322																								

* The characteristic of AC200V is equal.

COSEL

Model	LFA30F-3R3-Y	Temperature Testing Circuitry 25°C Figure A
Item	Rise and Fall Time	
Object	+3.3V6A	

1. Graph

Input Volt.	Output Volt.	Time
100 V	Load 100%	[50ms/div]
200 V	Load 100%	[50ms/div]
100 V	Output Volt. [0.5V/div]	Time [50ms/div]
200 V	Output Volt. [0.5V/div]	Time [50ms/div]
100 V	Input Volt. [0.5V/div]	Time [50ms/div]
200 V	Input Volt. [0.5V/div]	Time [50ms/div]

2. Values [ms]

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		119.8	14.5	134.3	31.8	12.3
200 V		55.0	14.3	69.3	161.3	13.0

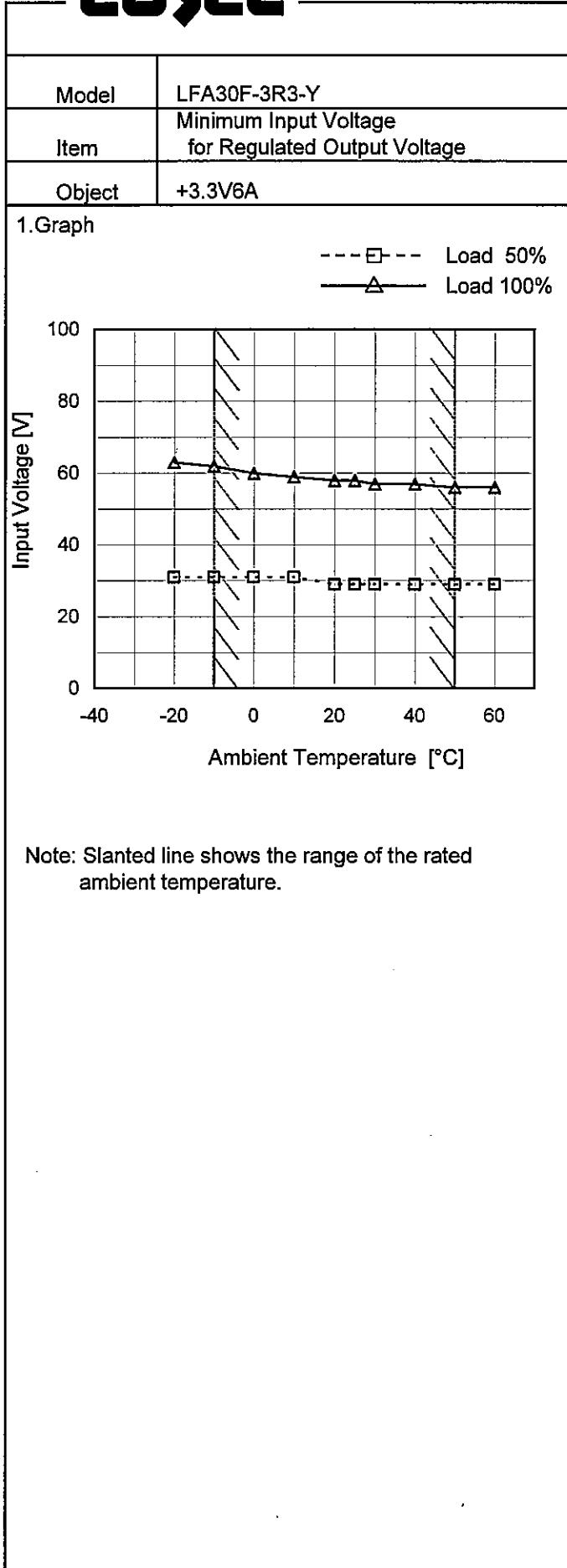
COSEL

Model	LFA30F-3R3-Y																																	
Item	Hold-Up Time	Temperature 25°C Testing Circuitry Figure A																																
Object	+3.3V6A																																	
1. Graph																																		
<p>Legend: ---□--- Load 50% —△— Load 100%</p> <p>Y-axis: Hold-Up Time [ms] X-axis: Input Voltage [V]</p>																																		
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<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Hold-Up Time [ms]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>75</td> <td>37</td> <td>9</td> </tr> <tr> <td>85</td> <td>50</td> <td>15</td> </tr> <tr> <td>100</td> <td>73</td> <td>26</td> </tr> <tr> <td>120</td> <td>110</td> <td>45</td> </tr> <tr> <td>200</td> <td>331</td> <td>158</td> </tr> <tr> <td>230</td> <td>443</td> <td>216</td> </tr> <tr> <td>264</td> <td>591</td> <td>294</td> </tr> <tr> <td>280</td> <td>667</td> <td>335</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table>			Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	75	37	9	85	50	15	100	73	26	120	110	45	200	331	158	230	443	216	264	591	294	280	667	335	--	-	-
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<p>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.</p>																																		

COSEL

Model	LFA30F-3R3-Y	Temperature	25°C																																																			
Item	Instantaneous Interruption Compensation	Testing Circuitry	Figure A																																																			
Object	+3.3V6A																																																					
1.Graph	<p>—△— Input Volt. 100V - - -□--- Input Volt. 200V - - -○--- Input Volt. 230V</p> <table border="1"> <caption>Data points estimated from Graph</caption> <thead> <tr> <th>Load Current [A]</th> <th>100V [ms]</th> <th>200V [ms]</th> <th>230V [ms]</th> </tr> </thead> <tbody> <tr><td>1.0</td><td>~213</td><td>~888</td><td>~1169</td></tr> <tr><td>2.0</td><td>~113</td><td>~483</td><td>~641</td></tr> <tr><td>3.0</td><td>~74</td><td>~332</td><td>~445</td></tr> <tr><td>4.0</td><td>~52</td><td>~250</td><td>~337</td></tr> <tr><td>5.0</td><td>~38</td><td>~197</td><td>~266</td></tr> <tr><td>6.0</td><td>~25</td><td>~159</td><td>~217</td></tr> <tr><td>6.6</td><td>~20</td><td>~139</td><td>~193</td></tr> </tbody> </table>			Load Current [A]	100V [ms]	200V [ms]	230V [ms]	1.0	~213	~888	~1169	2.0	~113	~483	~641	3.0	~74	~332	~445	4.0	~52	~250	~337	5.0	~38	~197	~266	6.0	~25	~159	~217	6.6	~20	~139	~193																			
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Note: Slanted line shows the range of the rated load current.

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Testing Circuitry Figure A

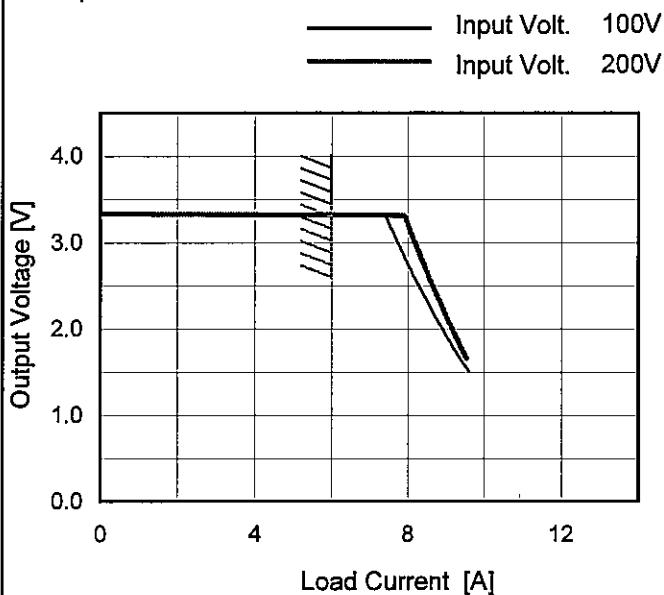
2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	31	63
-10	31	62
0	31	60
10	31	59
20	29	58
25	29	58
30	29	57
40	29	57
50	29	56
60	29	56
-	-	-

COSEL

Model	LFA30F-3R3-Y
Item	Overcurrent Protection
Object	+3.3V6A

1.Graph



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

Intermittent operation occurs when the output voltage is from 1.5V to 0V.

Temperature 25°C
Testing Circuitry Figure A

2.Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
3.300	6.53	6.57
3.135	7.60	8.07
2.970	7.77	8.22
2.640	8.11	8.51
2.310	8.52	8.85
1.980	8.94	9.18
1.650	9.39	9.55
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-



<p>Model LFA30F-3R3-Y</p> <p>Item Overvoltage Protection</p> <p>Object +3.3V6A</p>	Testing Circuitry Figure A																																						
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Note: Slanted line shows the range of the rated ambient temperature.																																							

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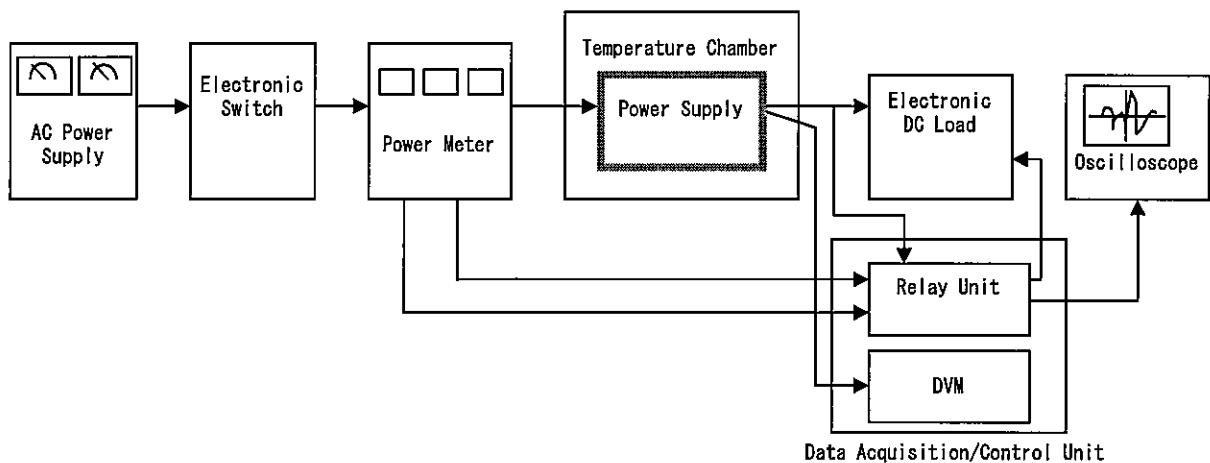


Figure A

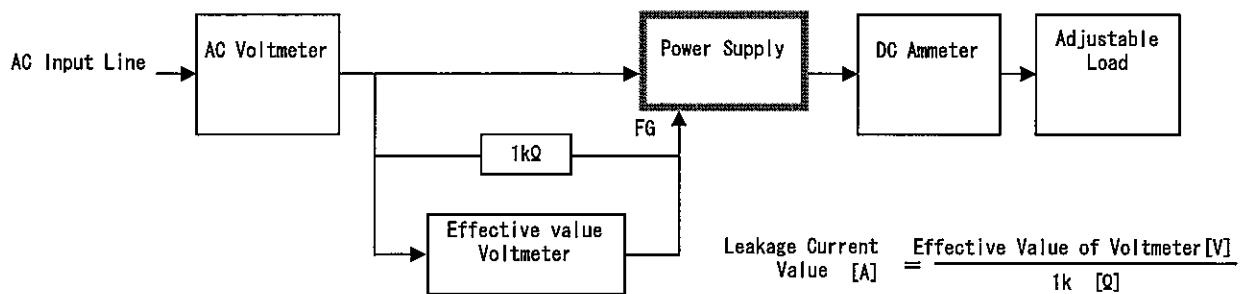


Figure B (DEN-AN)

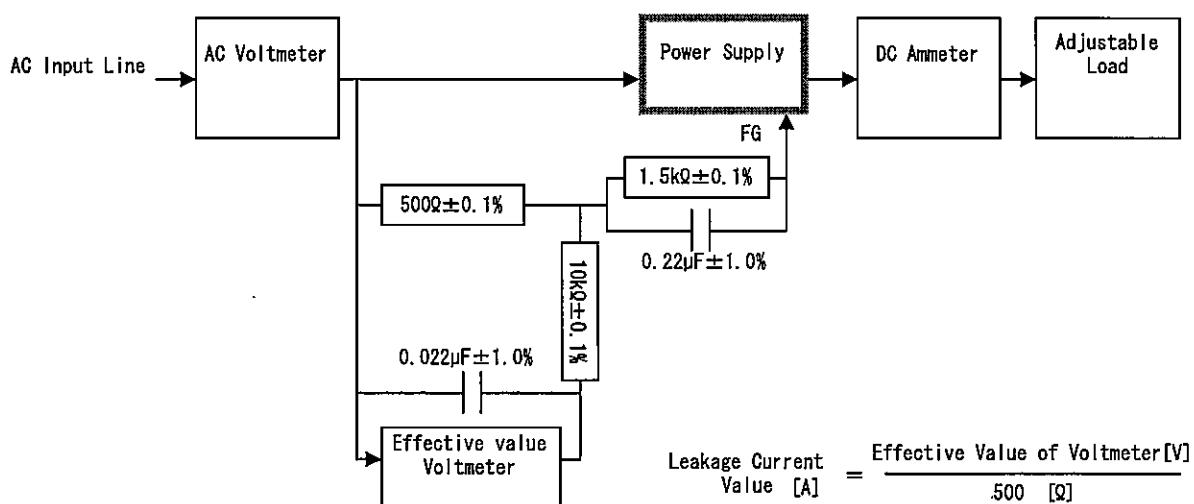


Figure B (IEC60950-1)

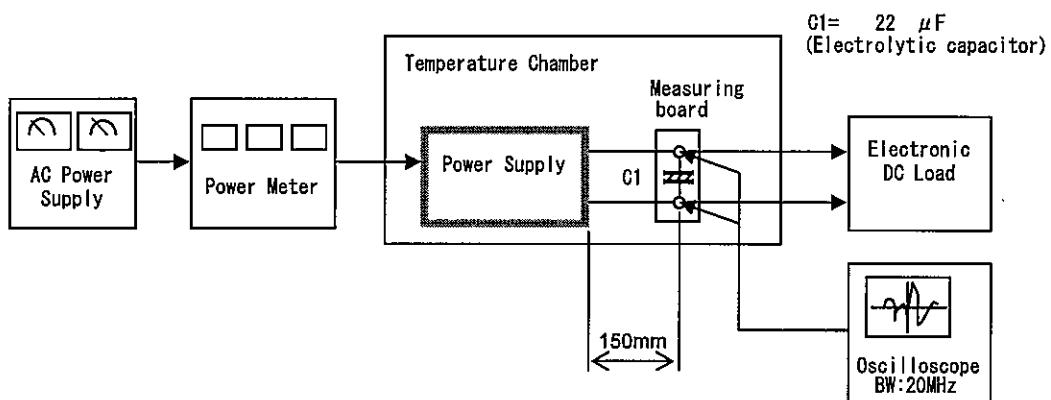
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Figure C