



TEST DATA OF LEA75F-9

Regulated DC Power Supply
May.1. 2003

Approved by : K. Shibutani _____
K.SHIBUTANI Design Manager

Prepared by : M. Hamaguchi _____
M.HAMAGUCHI Design Engineer

COSEL CO.,LTD.

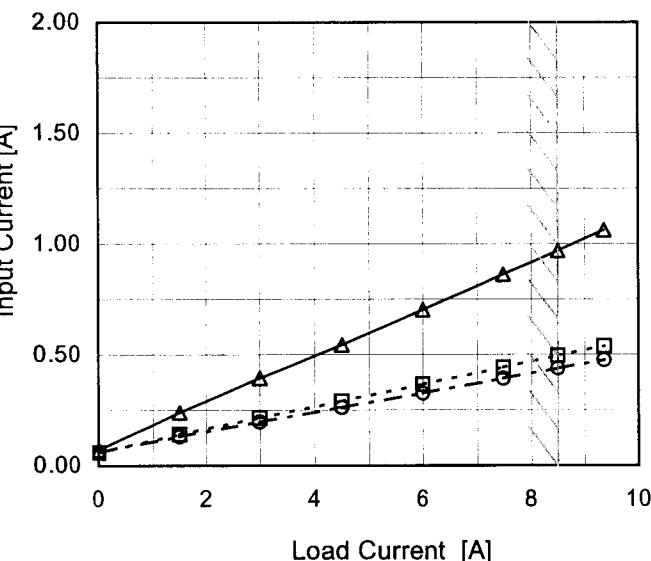
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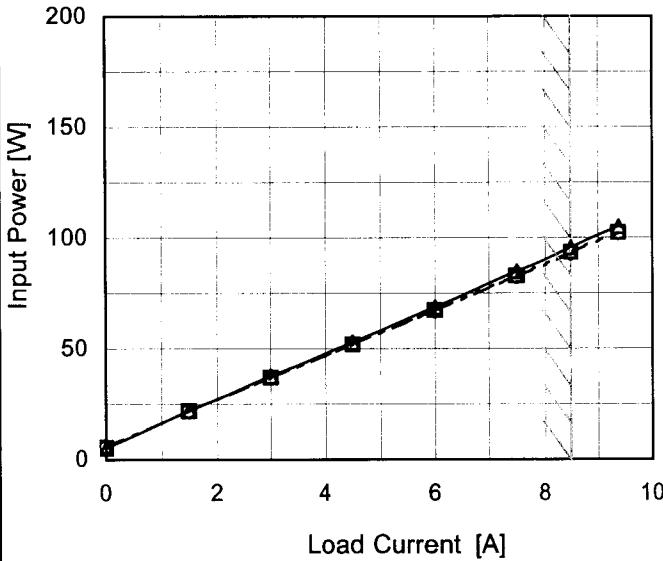
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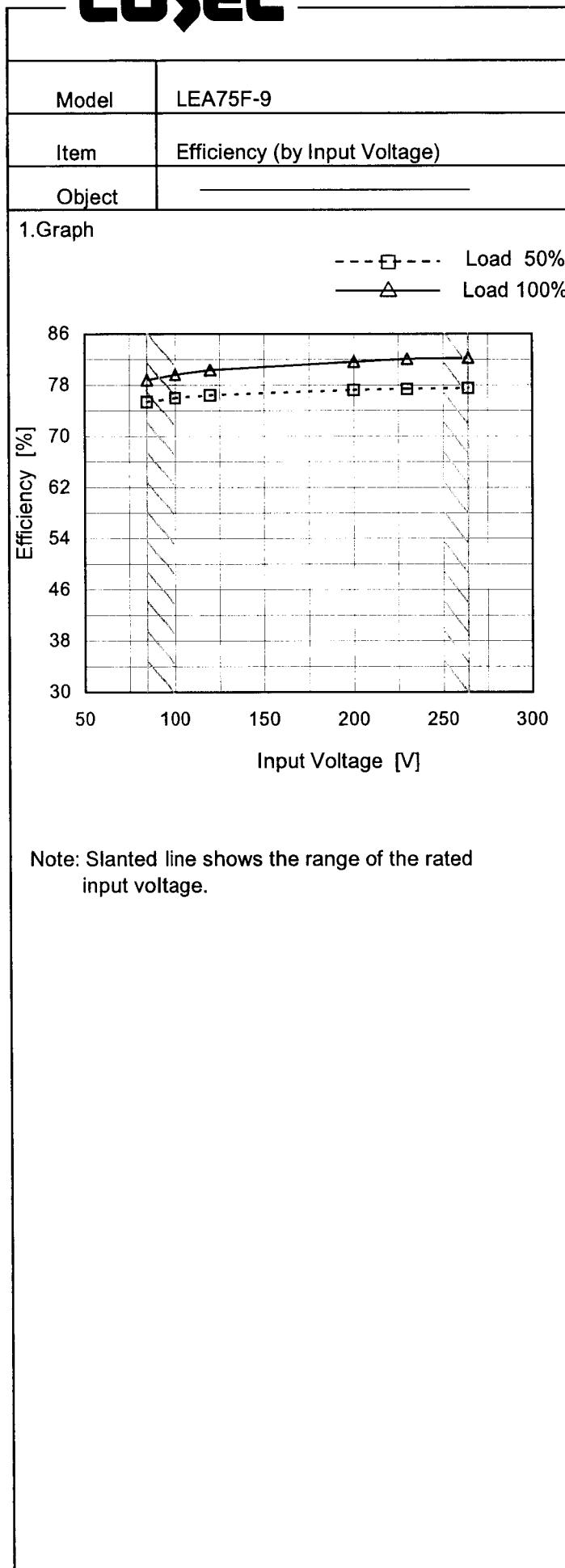
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Model	LEA75F-9																																																		
Item	Input Current (by Load Current)																																																		
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1.Graph	<p>Legend:</p> <ul style="list-style-type: none"> Input Volt. 100V (solid line with open triangle markers) Input Volt. 200V (dashed line with open square markers) Input Volt. 230V (dash-dot line with open circle markers) <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 230[V]</th> </tr> </thead> <tbody> <tr><td>0.00</td><td>0.070</td><td>0.059</td><td>0.061</td></tr> <tr><td>1.50</td><td>0.239</td><td>0.141</td><td>0.131</td></tr> <tr><td>3.00</td><td>0.394</td><td>0.216</td><td>0.196</td></tr> <tr><td>4.50</td><td>0.545</td><td>0.291</td><td>0.261</td></tr> <tr><td>6.00</td><td>0.702</td><td>0.367</td><td>0.326</td></tr> <tr><td>7.50</td><td>0.862</td><td>0.443</td><td>0.393</td></tr> <tr><td>8.50</td><td>0.969</td><td>0.495</td><td>0.438</td></tr> <tr><td>9.35</td><td>1.062</td><td>0.539</td><td>0.476</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>			Load Current [A]	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	0.070	0.059	0.061	1.50	0.239	0.141	0.131	3.00	0.394	0.216	0.196	4.50	0.545	0.291	0.261	6.00	0.702	0.367	0.326	7.50	0.862	0.443	0.393	8.50	0.969	0.495	0.438	9.35	1.062	0.539	0.476	--	-	-	-	--	-	-	-	--	-	-	-
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Model	LEA75F-9	Temperature	25°C																																																			
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 Temperature 25°C
 Testing Circuitry Figure A

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
85	75.4	78.8
100	76.0	79.6
120	76.4	80.4
200	77.2	81.7
230	77.4	82.1
264	77.5	82.3
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Testing Circuitry Figure A

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3.00	71.6	72.7	72.9
4.50	76.3	77.7	77.8
6.00	78.4	79.9	80.2
7.50	79.4	81.2	81.6
8.50	79.8	81.6	82.0
9.35	79.8	81.9	82.2
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Note: Slanted line shows the range of the rated load current.

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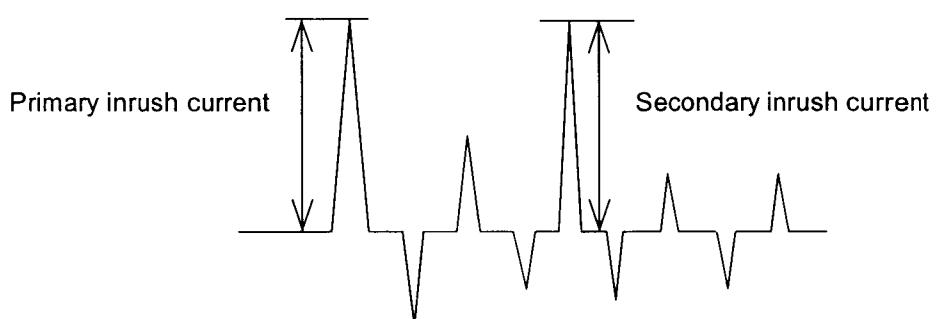
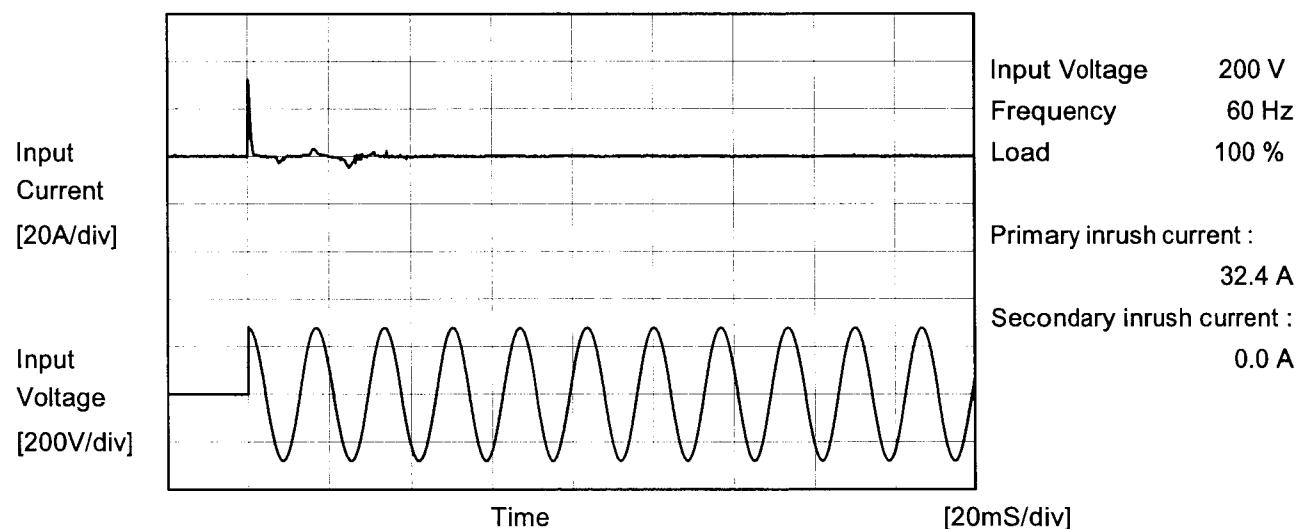
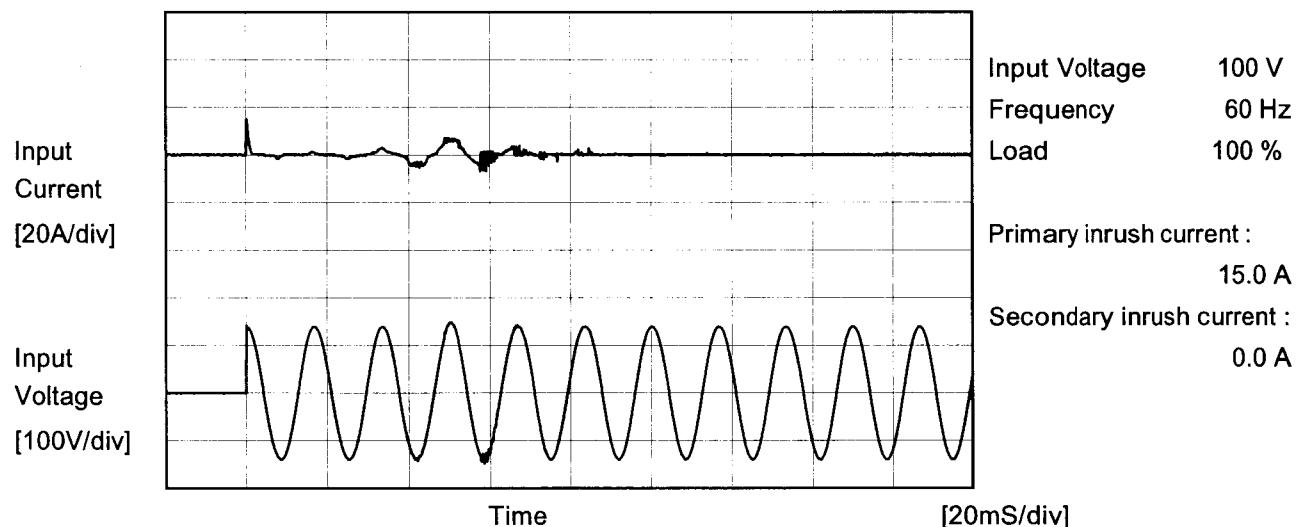
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Model	LEA75F-9	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	—		





Model	LEA75F-9	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
Object	<hr/>		

1. Results

Standards		Input Volt.			Note
		100 [V]	200 [V]	230 [V]	
DEN-AN	Both phases	0.11	-	-	Operation
	One of phase	0.18	-	-	stand by
IEC60950	Both phases	0.11	0.22	0.25	Operation
	One of phase	0.18	0.38	0.44	stand by

The value for "One phase" 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.

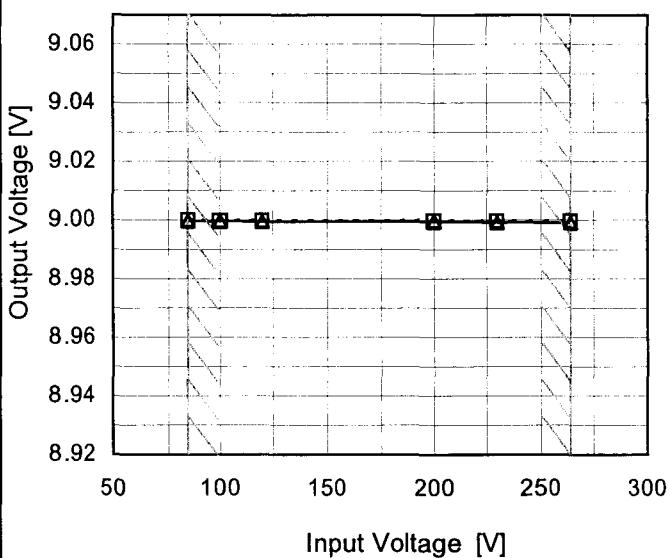
COSEL

Model	LEA75F-9
Item	Line Regulation
Object	+9V8.5A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

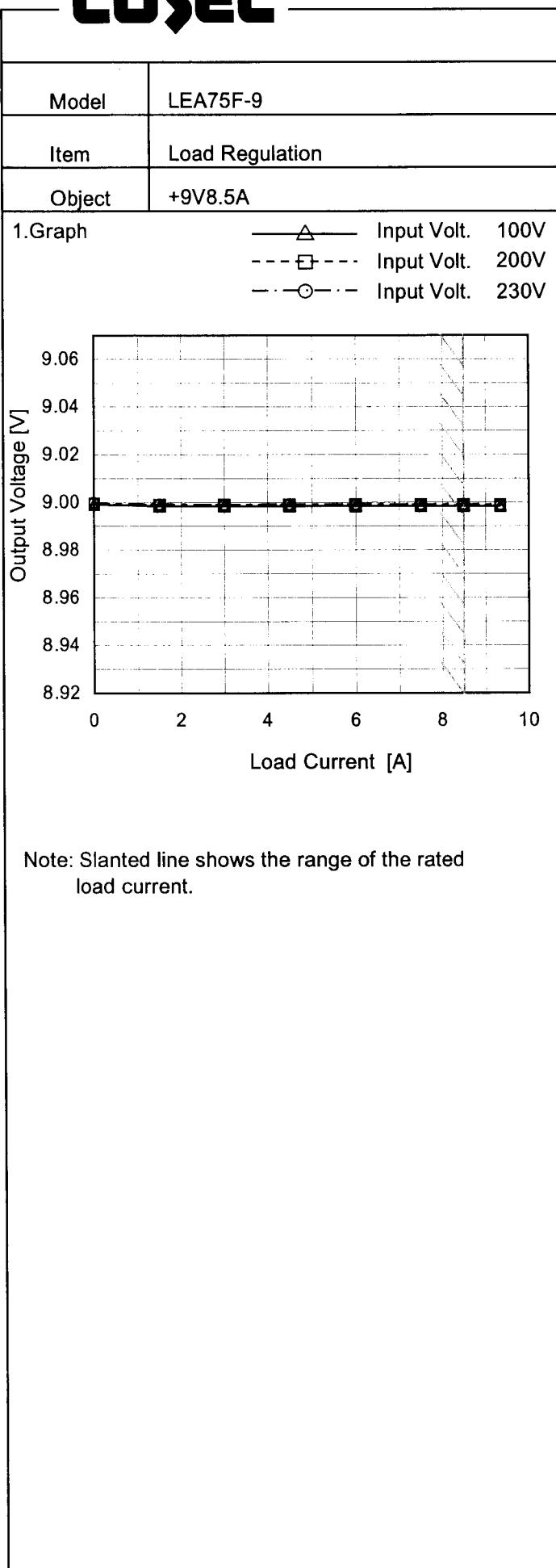
--- □ --- Load 50%
 —△— Load 100%



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

2. Values

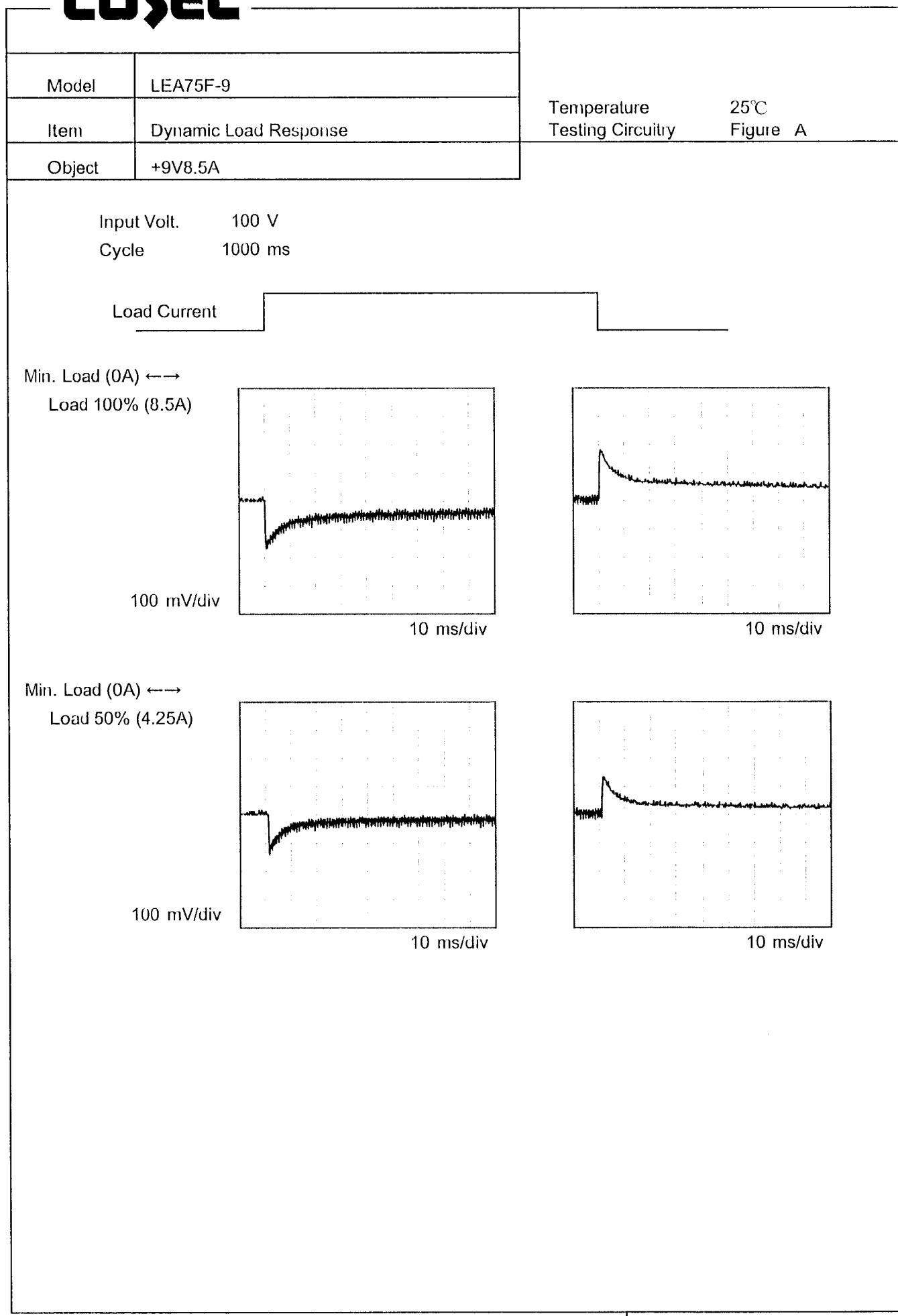
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100	9.000	9.000
120	9.000	9.000
200	9.000	9.000
230	9.000	8.999
264	9.000	8.999
--	-	-
--	-	-
--	-	-

COSEL


Temperature	25°C
Testing Circuitry	Figure A

2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	8.999	9.000	9.000
1.50	8.998	8.999	8.999
3.00	8.999	8.999	8.999
4.50	8.999	8.999	8.999
6.00	8.999	8.999	8.999
7.50	8.999	8.999	8.999
8.50	8.998	8.999	8.999
9.35	8.998	8.999	8.999
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

COSEL

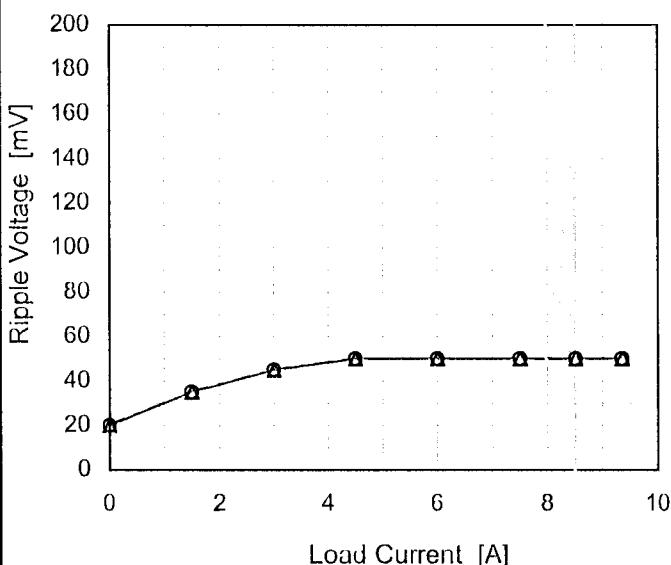
Model LEA75F-9

Item Ripple Voltage (by Load Current)

Object +9V8.5A

1. Graph

—△— Input Volt. 100V
 - -○--- Input Volt. 200V

Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	20	20
1.50	35	35
3.00	45	45
4.50	50	50
6.00	50	50
7.50	50	50
8.50	50	50
9.35	50	50
--	-	-
--	-	-
--	-	-

Ripple Voltage is shown as p-p in the figure below.

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

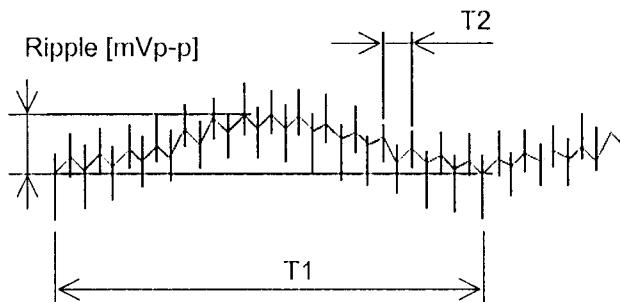
T1: Due to AC Input Line
T2: Due to Switching

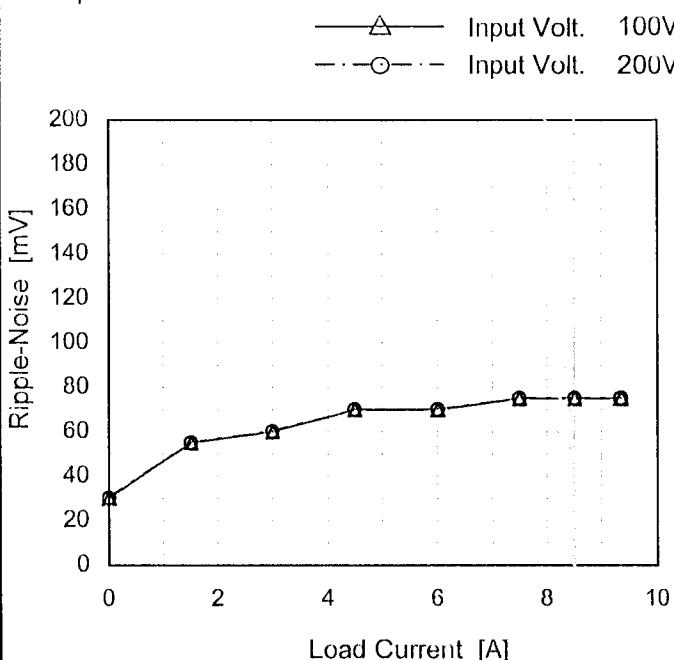
Fig. Complex Ripple Wave Form

COSEL

Model	LEA75F-9
Item	Ripple-Noise
Object	+9V8.5A

 Temperature 25°C
 Testing Circuitry Figure A

1.Graph



Ripple-Noise is shown as p-p in the figure below.
 Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	30	30
1.50	55	55
3.00	60	60
4.50	70	70
6.00	70	70
7.50	75	75
8.50	75	75
9.35	75	75
--	-	-
--	-	-
--	-	-

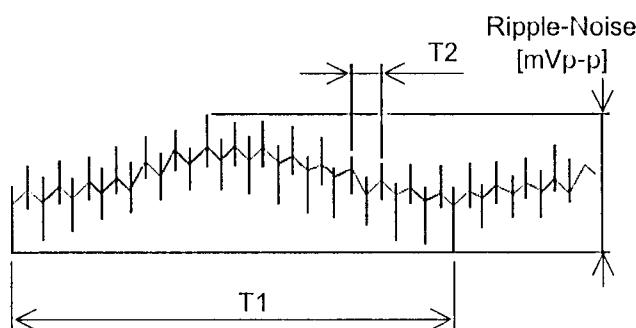
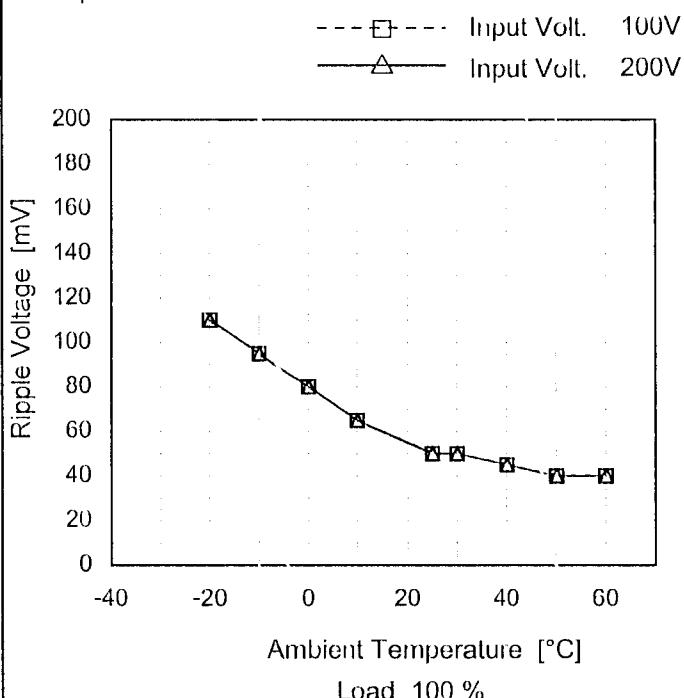
 T1: Due to AC Input Line
 T2: Due to Switching


Fig. Complex Ripple Wave Form

Model	LEA75F-9
Item	Ripple Voltage (by Ambient Temp.)
Object	+9V8.5A

1. Graph



Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-20	110	110
-10	95	95
0	80	80
10	65	65
25	50	50
30	50	50
40	45	45
50	40	40
60	40	40

COSEL

<p>Model LEA75F-9</p> <p>Item Ambient Temperature Drift</p> <p>Object +9V8.5A</p> <p>1. Graph</p> <p>—▲— Input Volt. 100V ---□--- Input Volt. 200V ---○--- Input Volt. 230V</p> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>																																																			
<p>Testing Circuitry Figure A</p> <p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 100[V]</th> <th>Input Volt. 200[V]</th> <th>Input Volt. 230[V]</th> </tr> </thead> <tbody> <tr> <td>-20</td> <td>8.996</td> <td>8.996</td> <td>8.996</td> </tr> <tr> <td>-10</td> <td>8.997</td> <td>8.997</td> <td>8.997</td> </tr> <tr> <td>0</td> <td>8.997</td> <td>8.997</td> <td>8.997</td> </tr> <tr> <td>10</td> <td>8.997</td> <td>8.997</td> <td>8.997</td> </tr> <tr> <td>20</td> <td>8.997</td> <td>8.997</td> <td>8.997</td> </tr> <tr> <td>25</td> <td>8.998</td> <td>8.998</td> <td>8.997</td> </tr> <tr> <td>30</td> <td>8.998</td> <td>8.998</td> <td>8.998</td> </tr> <tr> <td>40</td> <td>8.998</td> <td>8.998</td> <td>8.998</td> </tr> <tr> <td>50</td> <td>8.997</td> <td>8.997</td> <td>8.997</td> </tr> <tr> <td>60</td> <td>8.993</td> <td>8.993</td> <td>8.993</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	-20	8.996	8.996	8.996	-10	8.997	8.997	8.997	0	8.997	8.997	8.997	10	8.997	8.997	8.997	20	8.997	8.997	8.997	25	8.998	8.998	8.997	30	8.998	8.998	8.998	40	8.998	8.998	8.998	50	8.997	8.997	8.997	60	8.993	8.993	8.993	--	-	-	-
Ambient Temperature [°C]		Output Voltage [V]																																																	
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20	8.997	8.997	8.997																																																
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50	8.997	8.997	8.997																																																
60	8.993	8.993	8.993																																																
--	-	-	-																																																

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



Model	LEA75F-9	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+9V8.5A	

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 - 8.5A

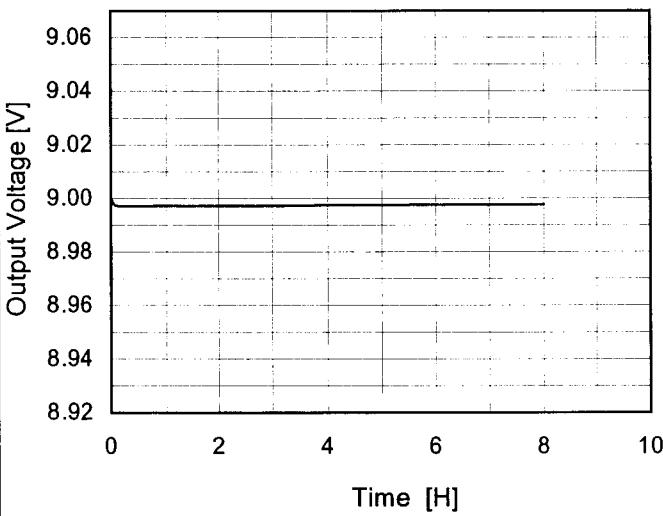
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

2. Values

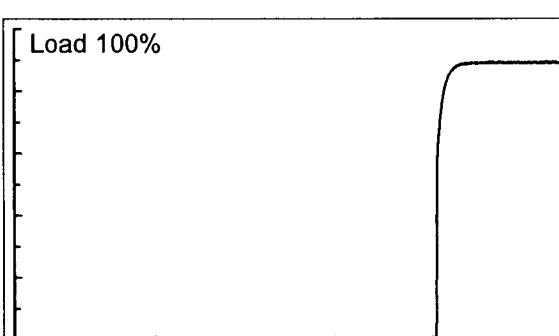
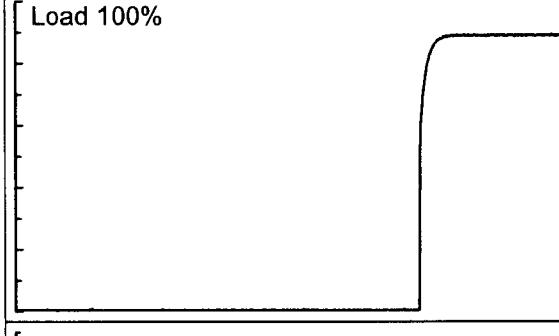
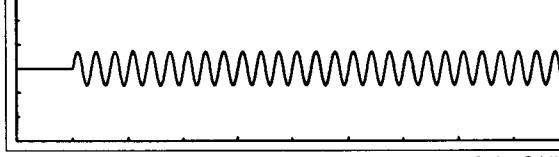
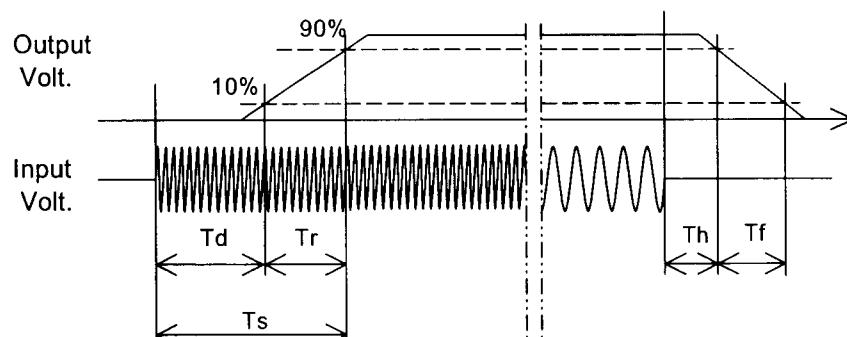
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	264	0	8.999		
Minimum Voltage	50	264	8.5	8.996	±2	±0.1

COSEL

Model	LEA75F-9	Temperature Testing Circuitry	25°C Figure A																						
Item	Time Lapse Drift																								
Object	+9V8.5A																								
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>9.001</td></tr> <tr><td>0.5</td><td>8.997</td></tr> <tr><td>1.0</td><td>8.997</td></tr> <tr><td>2.0</td><td>8.997</td></tr> <tr><td>3.0</td><td>8.997</td></tr> <tr><td>4.0</td><td>8.998</td></tr> <tr><td>5.0</td><td>8.998</td></tr> <tr><td>6.0</td><td>8.998</td></tr> <tr><td>7.0</td><td>8.998</td></tr> <tr><td>8.0</td><td>8.998</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	9.001	0.5	8.997	1.0	8.997	2.0	8.997	3.0	8.997	4.0	8.998	5.0	8.998	6.0	8.998	7.0	8.998	8.0	8.998
Time since start [H]	Output Voltage [V]																								
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6.0	8.998																								
7.0	8.998																								
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* The characteristic of AC200V is equal.

COSEL

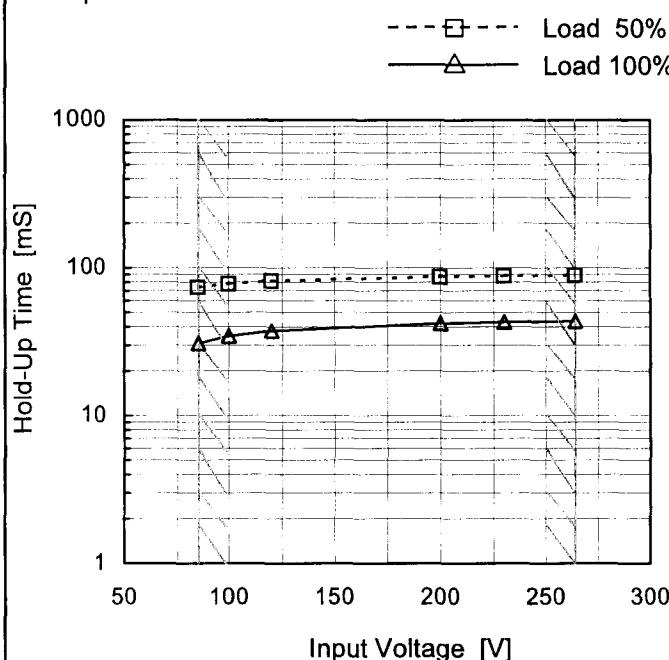
Model	LEA75F-9	Temperature Testing Circuitry	25°C Figure A																												
Item	Rise and Fall Time																														
Object	+9V8.5A																														
1. Graph																															
<p>Output Volt. [1V/div]</p> 			Input Volt. 100 V																												
<p>Output Volt. [1V/div]</p> 			Input Volt. 200 V																												
<p>Input Volt. [1V/div]</p> 			Time [50mS/div]																												
			Time [50mS/div]																												
2. Values																															
<table border="1"> <thead> <tr> <th>Input Volt.</th> <th>Time</th> <th>Td</th> <th>Tr</th> <th>Ts</th> <th>Th</th> <th>Tf</th> <th>[mS]</th> </tr> </thead> <tbody> <tr> <td>100 V</td> <td></td> <td>331.5</td> <td>8.3</td> <td>339.8</td> <td>38.5</td> <td>18.0</td> <td></td> </tr> <tr> <td>200 V</td> <td></td> <td>315.0</td> <td>8.5</td> <td>323.5</td> <td>46.0</td> <td>18.5</td> <td></td> </tr> </tbody> </table>								Input Volt.	Time	Td	Tr	Ts	Th	Tf	[mS]	100 V		331.5	8.3	339.8	38.5	18.0		200 V		315.0	8.5	323.5	46.0	18.5	
Input Volt.	Time	Td	Tr	Ts	Th	Tf	[mS]																								
100 V		331.5	8.3	339.8	38.5	18.0																									
200 V		315.0	8.5	323.5	46.0	18.5																									
																															

COSEL

Model	LEA75F-9
Item	Hold-Up Time
Object	+9V8.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
85	74	31
100	78	35
120	82	38
200	87	42
230	88	43
264	89	44
--	-	-
--	-	-
--	-	-

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.

COSEL

Model	LEA75F-9	Temperature Testing Circuitry	25°C Figure A																																																			
Item	Instantaneous Interruption Compensation																																																					
Object	+9V8.5A																																																					
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>2.0</td><td>250</td><td>200</td><td>180</td></tr> <tr><td>4.0</td><td>150</td><td>120</td><td>100</td></tr> <tr><td>6.0</td><td>100</td><td>80</td><td>70</td></tr> <tr><td>8.0</td><td>60</td><td>50</td><td>40</td></tr> <tr><td>9.35</td><td>40</td><td>35</td><td>30</td></tr> </tbody> </table>			Load Current [A]	100V [ms]	200V [ms]	230V [ms]	2.0	250	200	180	4.0	150	120	100	6.0	100	80	70	8.0	60	50	40	9.35	40	35	30																											
Load Current [A]	100V [ms]	200V [ms]	230V [ms]																																																			
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Load Current [A]	Time [mS]																																																					
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Note:	Slanted line shows the range of the rated load current.																																																					

COSEL

Model	LEA75F-9																																							
Item	Minimum Input Voltage for Regulated Output Voltage																																							
Object	+9V8.5A																																							
1.Graph																																								
<p>Input Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Legend:</p> <ul style="list-style-type: none"> Load 50% (Dashed line with open squares) Load 100% (Solid line with triangles) 																																								
Testing Circuitry Figure A																																								
2.Values																																								
<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Input Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>-20</td><td>74</td><td>74</td></tr> <tr> <td>-10</td><td>74</td><td>74</td></tr> <tr> <td>0</td><td>74</td><td>74</td></tr> <tr> <td>10</td><td>74</td><td>74</td></tr> <tr> <td>20</td><td>74</td><td>74</td></tr> <tr> <td>25</td><td>74</td><td>74</td></tr> <tr> <td>30</td><td>74</td><td>74</td></tr> <tr> <td>40</td><td>74</td><td>74</td></tr> <tr> <td>50</td><td>74</td><td>74</td></tr> <tr> <td>60</td><td>74</td><td>74</td></tr> <tr> <td>--</td><td>-</td><td>-</td></tr> </tbody> </table>			Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-20	74	74	-10	74	74	0	74	74	10	74	74	20	74	74	25	74	74	30	74	74	40	74	74	50	74	74	60	74	74	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																							
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<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																								

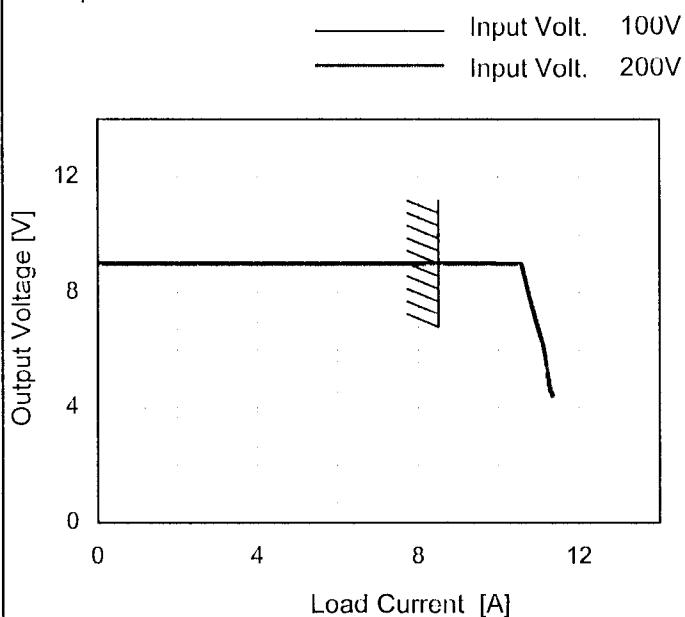
COSEL

Model LEA75F-9

Item Overcurrent Protection

Object +9V8.5A

1. Graph



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

Intermittent operation occurs when the output voltage is from 4.4V 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]
9.00	9.31	9.29
8.55	10.63	10.65
8.10	10.71	10.73
7.20	10.88	10.91
6.30	11.07	11.09
5.40	11.20	11.21
4.50	11.31	11.35
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	LEA75F-9	Testing Circuitry Figure A																																						
Item	Overvoltage Protection																																							
Object	+9V8.5A																																							
1.Graph		2.Values																																						
<p>Operating Point [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 0%</p> <p>Input Volt. 100V</p> <p>Input Volt. 200V</p>		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="2">Operating Point [V]</th> </tr> <tr> <th>Input Volt. 100[V]</th> <th>Input Volt. 200[V]</th> </tr> </thead> <tbody> <tr> <td>-20</td><td>11.72</td><td>11.72</td> </tr> <tr> <td>-10</td><td>11.78</td><td>11.78</td> </tr> <tr> <td>0</td><td>11.84</td><td>11.83</td> </tr> <tr> <td>10</td><td>11.89</td><td>11.89</td> </tr> <tr> <td>20</td><td>11.95</td><td>11.95</td> </tr> <tr> <td>25</td><td>12.01</td><td>12.01</td> </tr> <tr> <td>30</td><td>12.01</td><td>12.01</td> </tr> <tr> <td>40</td><td>12.07</td><td>12.07</td> </tr> <tr> <td>50</td><td>12.13</td><td>12.13</td> </tr> <tr> <td>60</td><td>12.19</td><td>12.19</td> </tr> <tr> <td>--</td><td>-</td><td>-</td> </tr> </tbody> </table>	Ambient Temperature [°C]	Operating Point [V]		Input Volt. 100[V]	Input Volt. 200[V]	-20	11.72	11.72	-10	11.78	11.78	0	11.84	11.83	10	11.89	11.89	20	11.95	11.95	25	12.01	12.01	30	12.01	12.01	40	12.07	12.07	50	12.13	12.13	60	12.19	12.19	--	-	-
Ambient Temperature [°C]	Operating Point [V]																																							
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-10	11.78	11.78																																						
0	11.84	11.83																																						
10	11.89	11.89																																						
20	11.95	11.95																																						
25	12.01	12.01																																						
30	12.01	12.01																																						
40	12.07	12.07																																						
50	12.13	12.13																																						
60	12.19	12.19																																						
--	-	-																																						

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

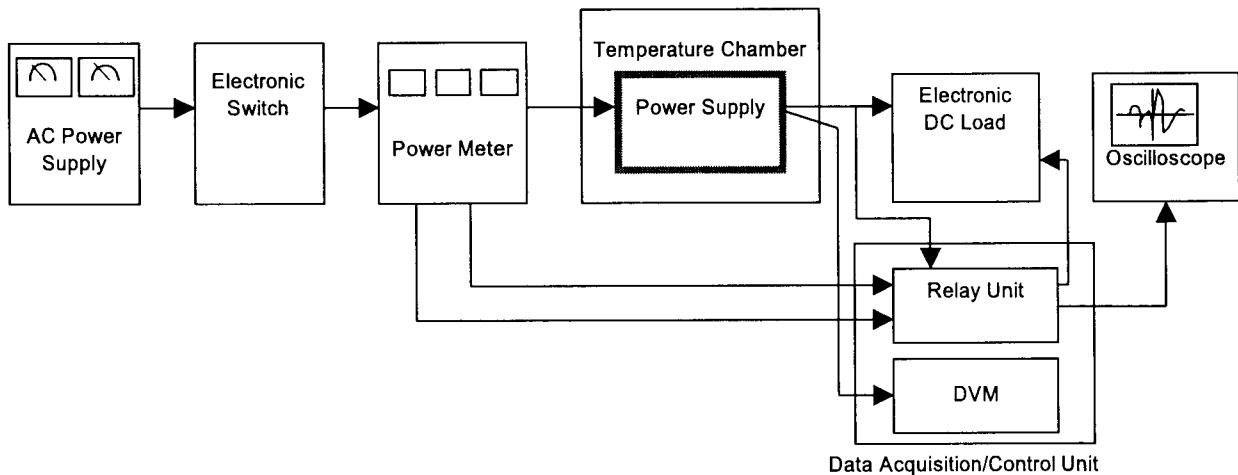


Figure A

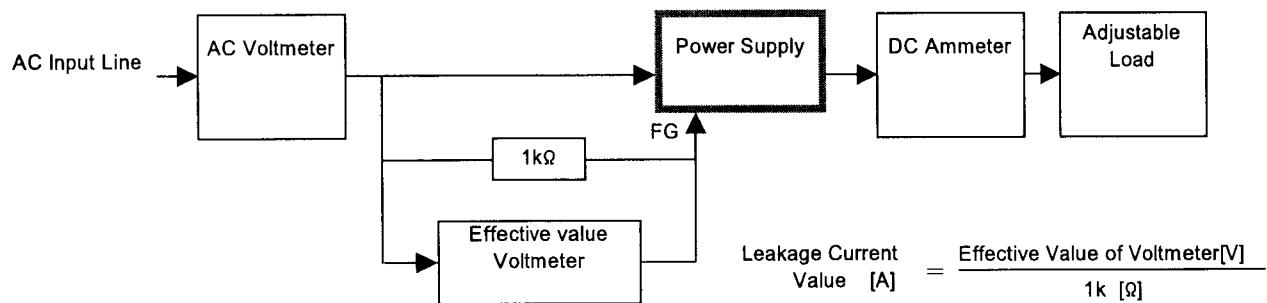


Figure B (DEN-AN)

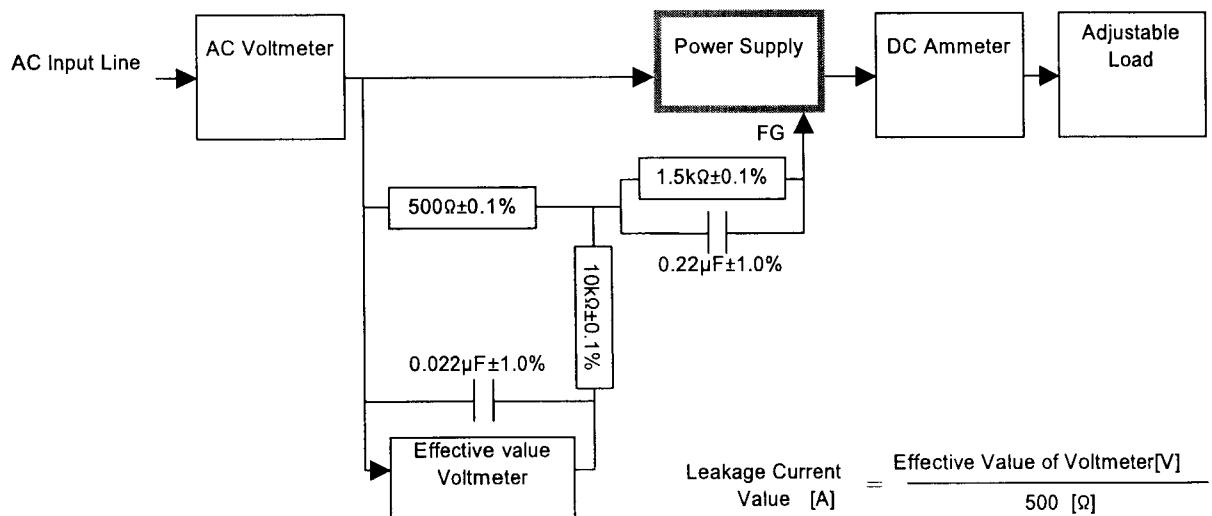


Figure B (IEC60950)