参考資料

COSEL

TEST DATA OF LDA50F-9

Regulated DC Power Supply
Oct.13. 2004

Approved by : K. Shiho
K.Shiho Design Manager

Prepared by : A. Kawai
A.Kawai Design Engineer

COSEL CO.,LTD.

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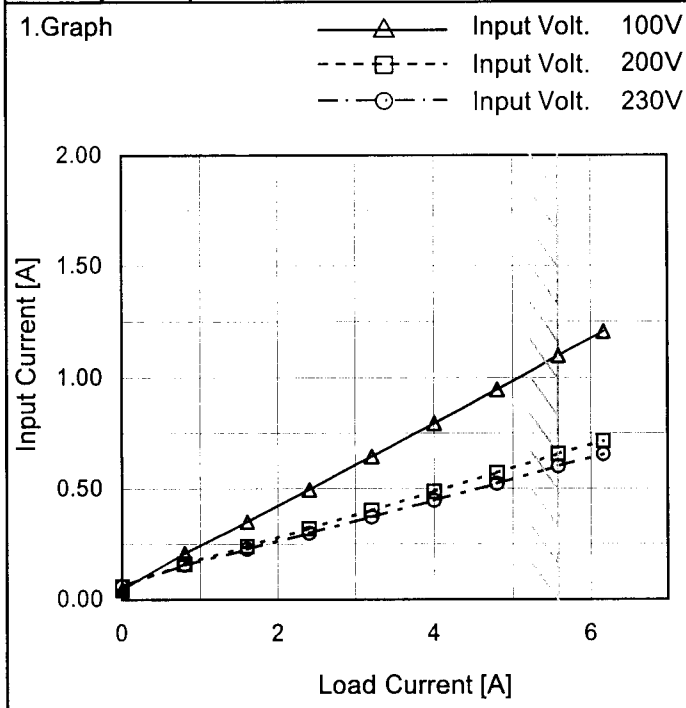
Model	LDA50F-9
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

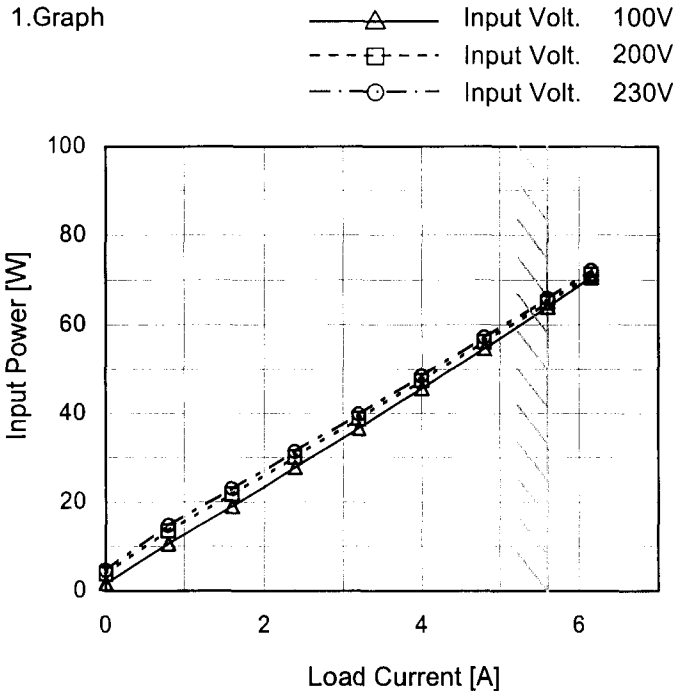
Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.044	0.057	0.060
0.80	0.209	0.161	0.155
1.60	0.351	0.241	0.226
2.40	0.496	0.321	0.300
3.20	0.645	0.403	0.373
4.00	0.795	0.487	0.447
4.80	0.947	0.572	0.523
5.60	1.099	0.656	0.600
6.16	1.207	0.716	0.655
--	-	-	-
--	-	-	-

COSEL

Model	LDA50F-9
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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. 200[V]	Input Volt. 230[V]
0.00	1.68	3.80	4.60
0.80	10.53	13.50	14.70
1.60	19.07	21.80	23.00
2.40	27.80	30.20	31.40
3.20	36.70	38.90	39.90
4.00	45.70	47.50	48.50
4.80	54.70	56.20	57.20
5.60	64.00	65.00	65.90
6.16	70.60	71.30	72.10
--	-	-	-
--	-	-	-

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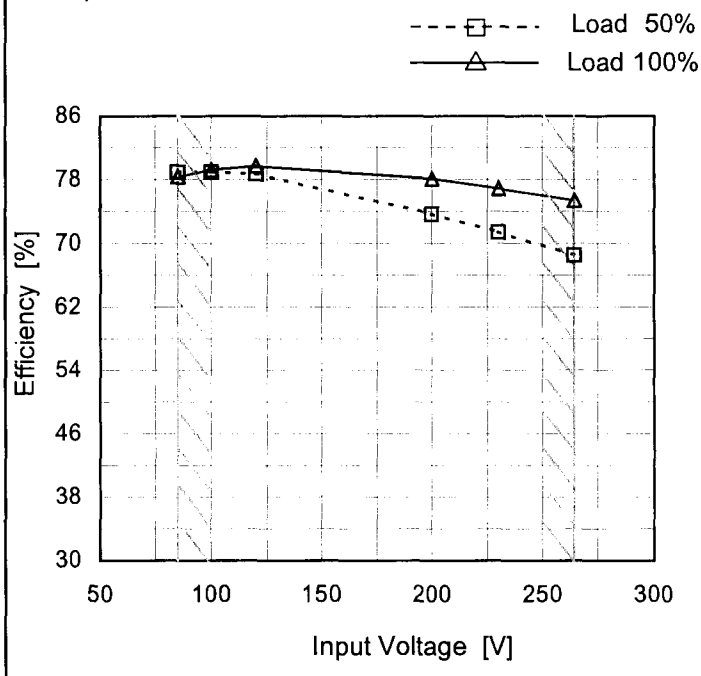
Model	LDA50F-9
Item	Efficiency (by Input Voltage)
Object	————————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
85	79.0	78.4
100	79.0	79.2
120	78.7	79.7
200	73.7	78.1
230	71.4	76.9
264	68.6	75.4
--	-	-
--	-	-
--	-	-

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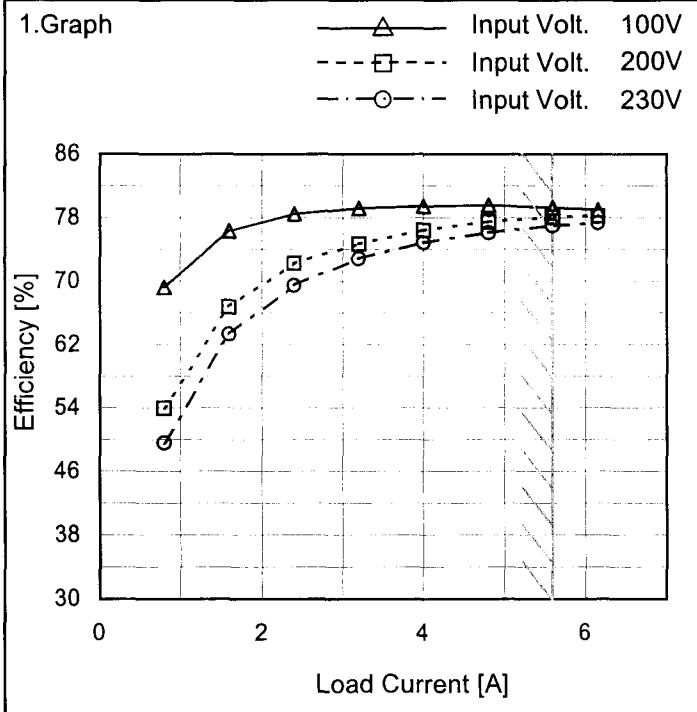
Model	LDA50F-9
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	-	-	-
0.80	69.2	54.0	49.6
1.60	76.3	66.8	63.3
2.40	78.5	72.2	69.5
3.20	79.2	74.7	72.8
4.00	79.4	76.4	74.8
4.80	79.6	77.5	76.1
5.60	79.3	78.1	77.0
6.16	79.0	78.2	77.3
--	-	-	-
--	-	-	-

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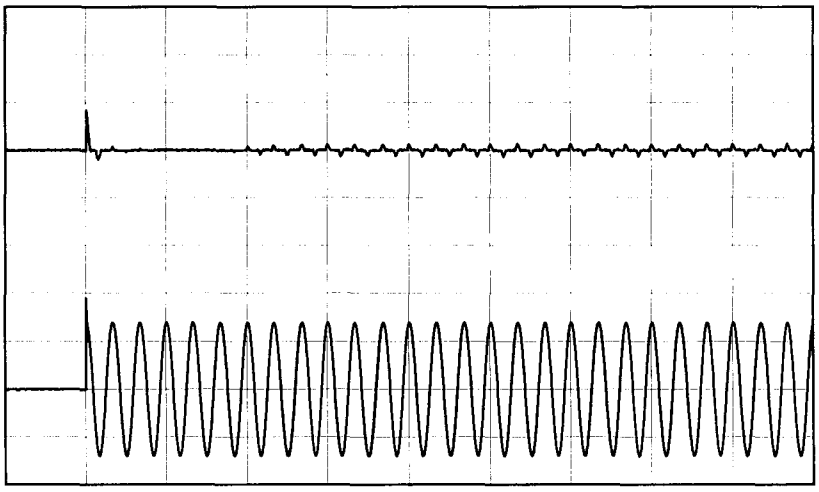
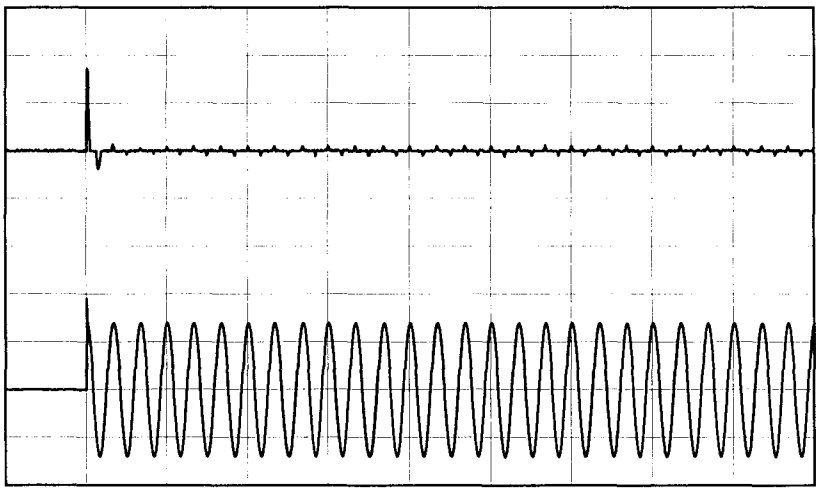
Model	LDA50F-9
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



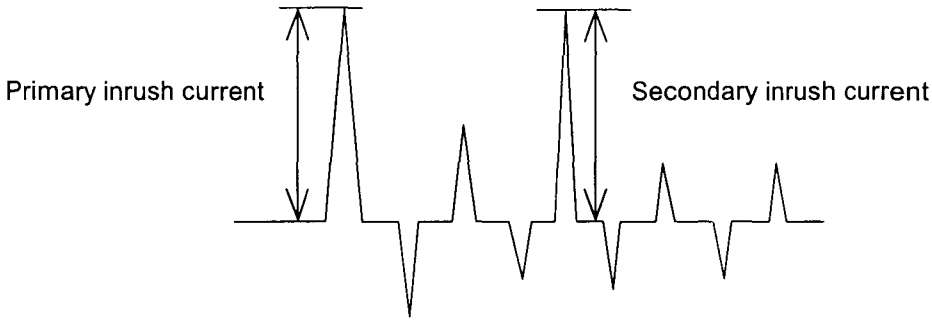
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
16.6 A
Secondary inrush current :
3.0 A



Input Voltage 200 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
34.3 A
Secondary inrush current :
2.5 A



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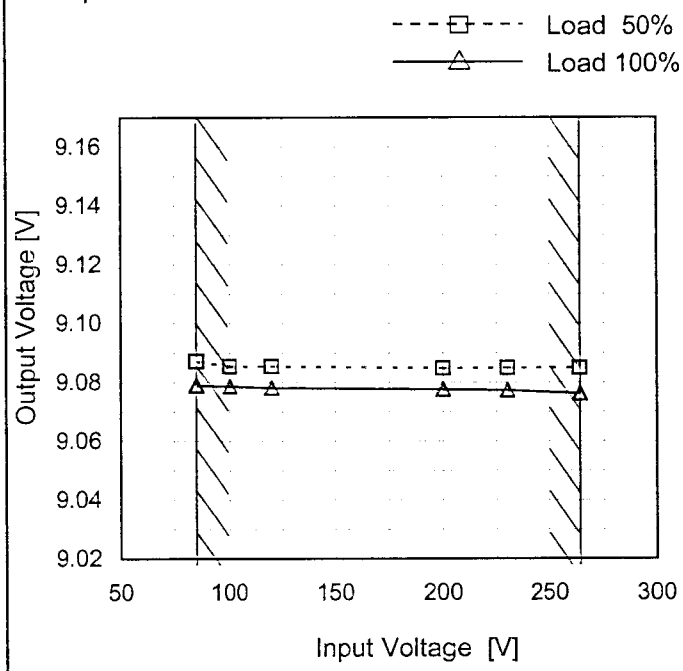
Model	LDA50F-9
Item	Line Regulation
Object	+9V5.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

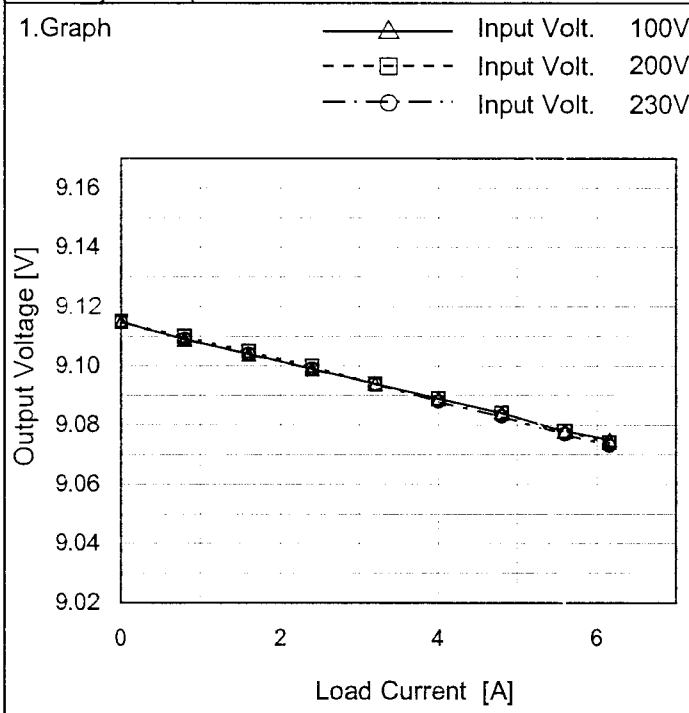
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	9.087	9.079
100	9.085	9.079
120	9.085	9.078
200	9.085	9.078
230	9.085	9.077
264	9.085	9.076
--	-	-
--	-	-
--	-	-

COSEL

Model	LDA50F-9
Item	Load Regulation
Object	+9V5.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	9.115	9.115	9.115
0.80	9.109	9.110	9.109
1.60	9.104	9.105	9.104
2.40	9.099	9.100	9.099
3.20	9.094	9.094	9.094
4.00	9.089	9.089	9.088
4.80	9.084	9.084	9.083
5.60	9.078	9.078	9.077
6.16	9.075	9.074	9.073
--	-	-	-
--	-	-	-

COSEL

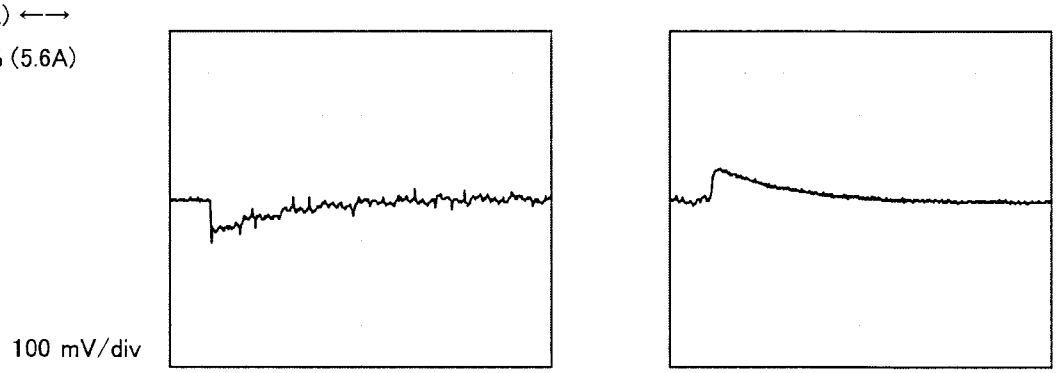
Model	LDA50F-9		
Item	Dynamic Load Response	Temperature Testing Circuitry	25℃ Figure A
Object	+9V5.6A		

Input Volt. 100 V

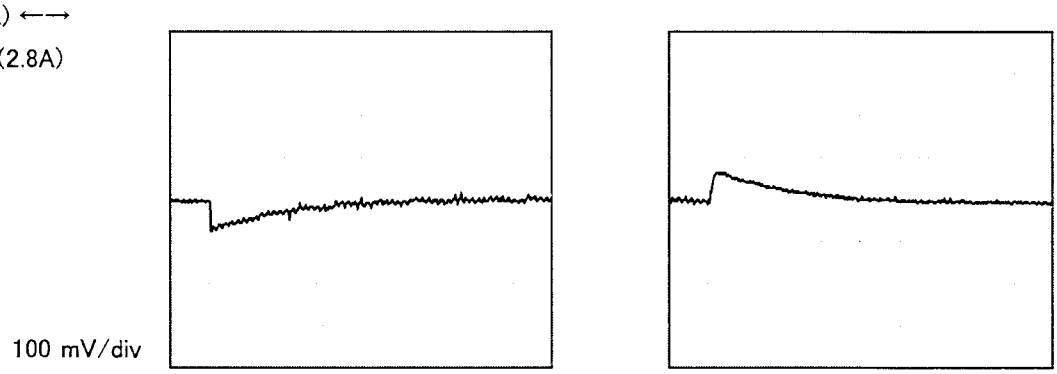
Cycle 1000 ms

Load Current

Min. Load (0A) ⟷
Load 100% (5.6A)



Min. Load (0A) ⟷
Load 50% (2.8A)



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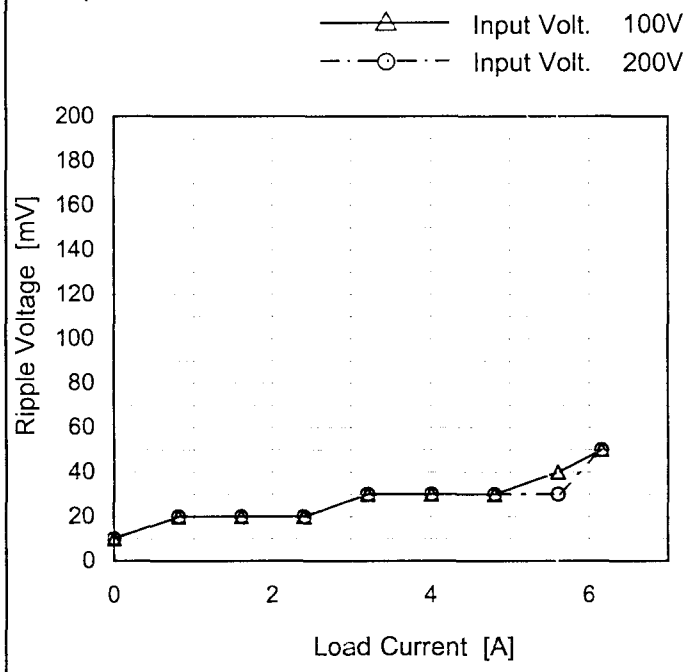
Model	LDA50F-9
Item	Ripple Voltage (by Load Current)
Object	+9V5.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

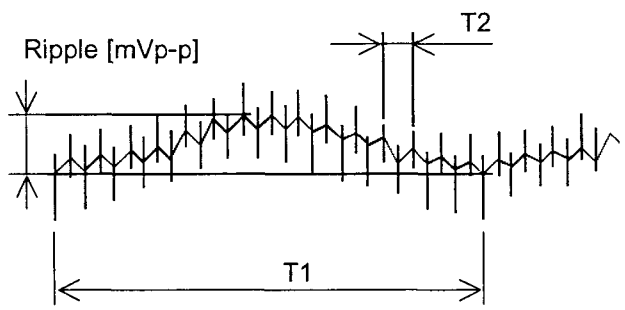


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	10	10
0.80	20	20
1.60	20	20
2.40	20	20
3.20	30	30
4.00	30	30
4.80	30	30
5.60	40	30
6.16	50	50
--	-	-
--	-	-

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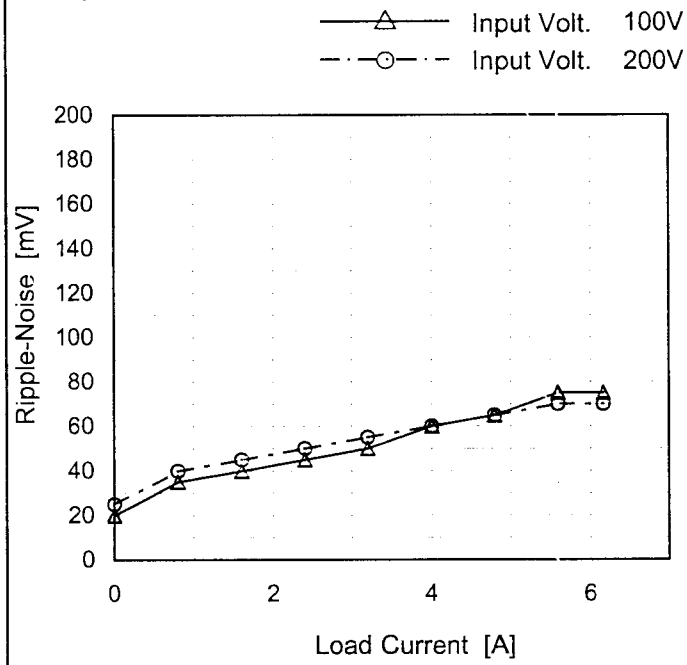
Model	LDA50F-9
Item	Ripple-Noise
Object	+9V5.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	20	25
0.80	35	40
1.60	40	45
2.40	45	50
3.20	50	55
4.00	60	60
4.80	65	65
5.60	75	70
6.16	75	70
--	-	-
--	-	-

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

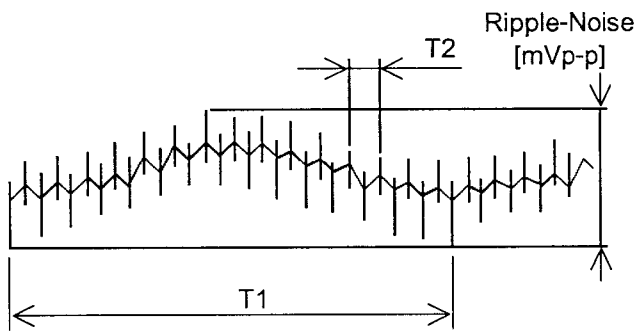


Fig. Complex Ripple Wave Form

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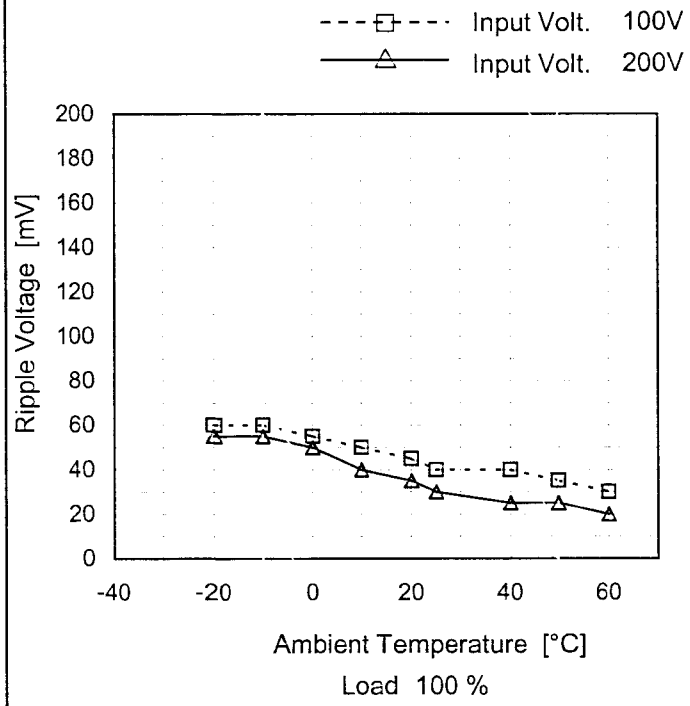
Model	LDA50F-9
Item	Ripple Voltage (by Ambient Temp.)
Object	+9V5.6A

Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.

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

2.Values

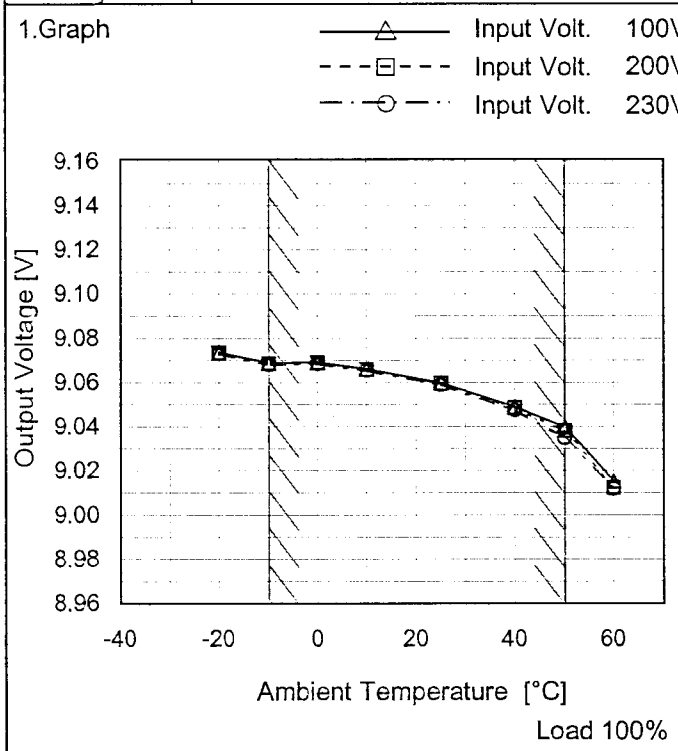
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-20	60	55
-10	60	55
0	55	50
10	50	40
20	45	35
25	40	30
40	40	25
50	35	25
60	30	20
--	-	-
--	-	-

COSEL

Model	LDA50F-9
Item	Ambient Temperature Drift
Object	+9V5.6A

Testing Circuitry Figure A

1.Graph



Load 100%

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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	9.074	9.073	9.073
-10	9.069	9.068	9.068
0	9.069	9.069	9.069
10	9.066	9.066	9.065
25	9.060	9.060	9.059
40	9.049	9.049	9.047
50	9.040	9.038	9.035
60	9.015	9.012	9.012
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LDA50F-9	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+9V5.6A	

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 - 5.6A

* 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

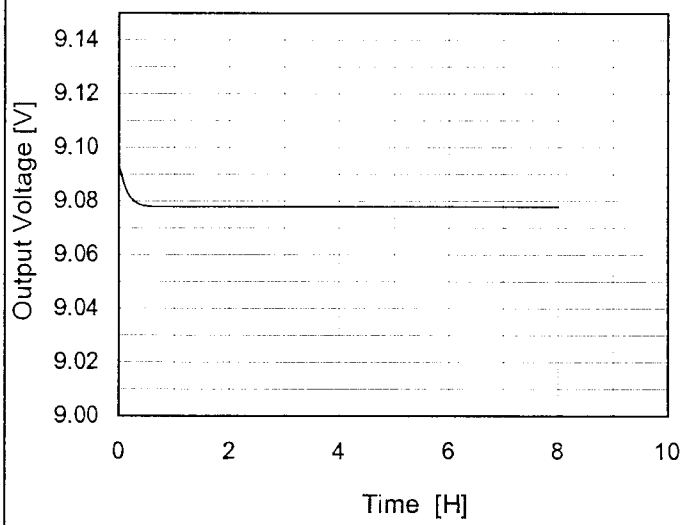
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-10	264	0	9.143	±59	±0.7
Minimum Voltage	50	264	5.6	9.025		

COSEL

Model	LDA50F-9
Item	Time Lapse Drift
Object	+9V5.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

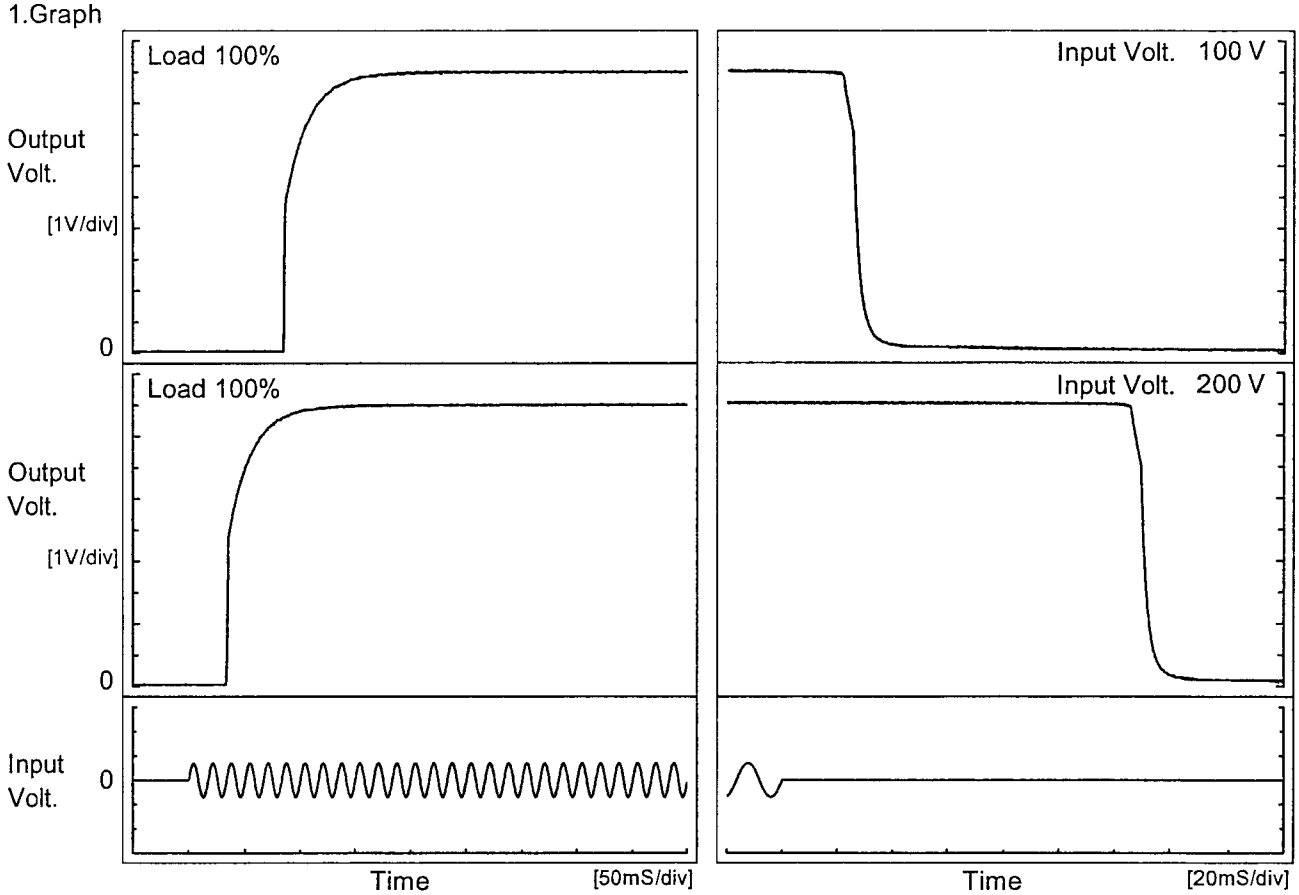
2.Values

Time since start [H]	Output Voltage [V]
0.0	9.091
0.5	9.078
1.0	9.077
2.0	9.077
3.0	9.077
4.0	9.077
5.0	9.077
6.0	9.077
7.0	9.077
8.0	9.077

COSEL

Model	LDA50F-9	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+9V5.6A	

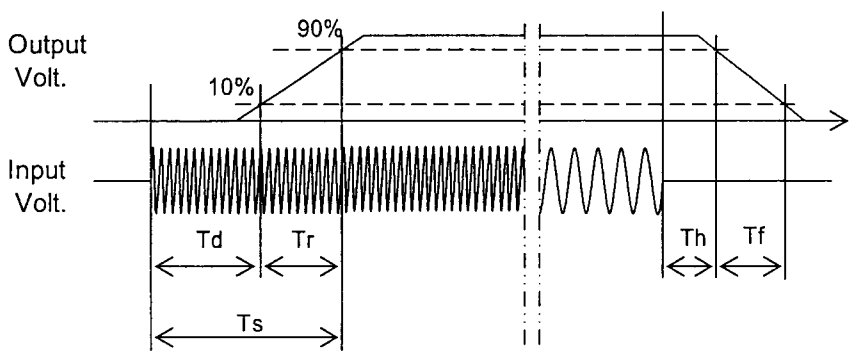
1.Graph



2.Values

[mS]

Time / Input Volt.	Td	Tr	Ts	Th	Tf
100 V	85.8	35.3	121.1	23.1	7.8
200 V	34.0	34.5	68.5	127.0	7.8

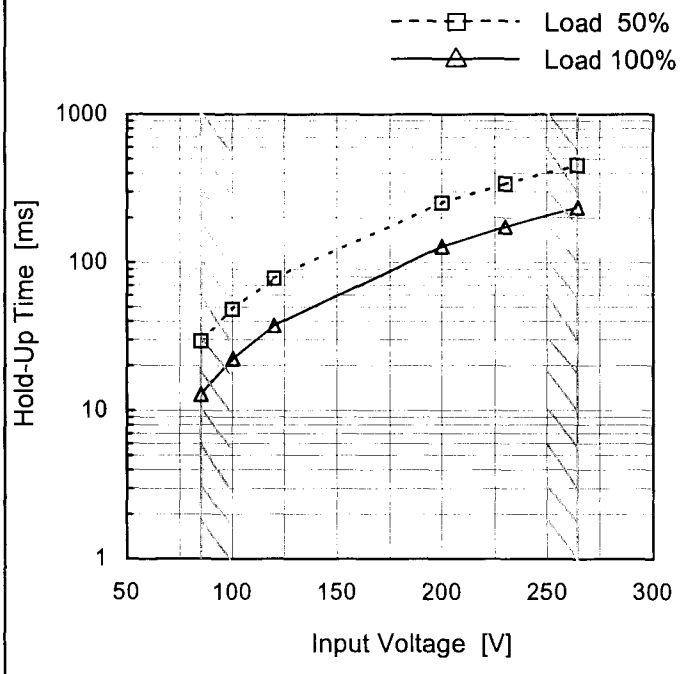


COSEL

Model	LDA50F-9
Item	Hold-Up Time
Object	+9V5.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

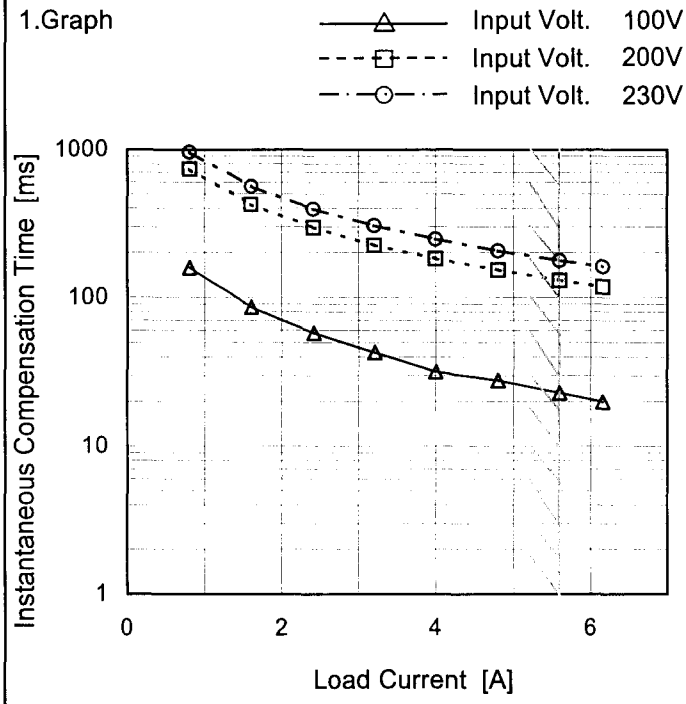
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	29	13
100	48	22
120	78	38
200	253	128
230	339	174
264	453	235
--	-	-
--	-	-
--	-	-

COSEL

Model	LDA50F-9
Item	Instantaneous Interruption Compensation
Object	+9V5.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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	-	-	-
0.80	159	739	960
1.60	86	423	563
2.40	58	297	395
3.20	43	225	305
4.00	32	182	247
4.80	28	153	206
5.60	23	130	177
6.16	20	118	161
--	-	-	-
--	-	-	-

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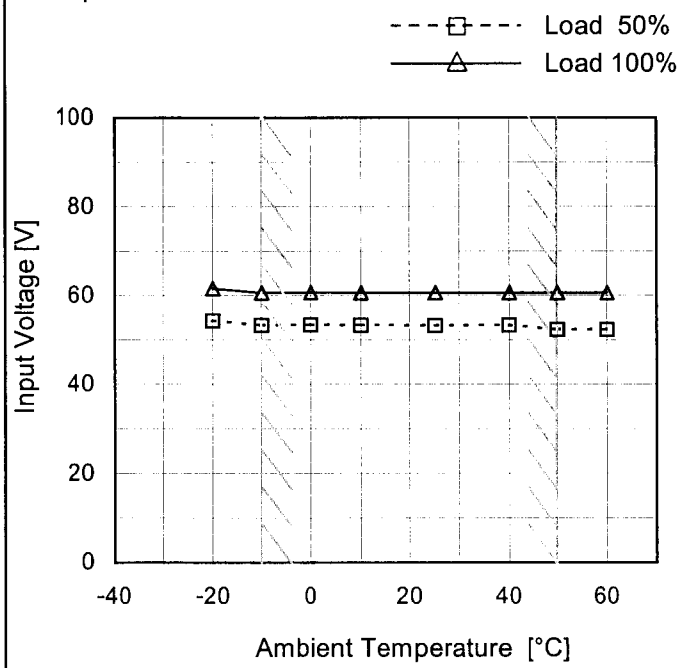
Model	LDA50F-9
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+9V5.6A

Testing Circuitry Figure A

1.Graph



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

2.Values

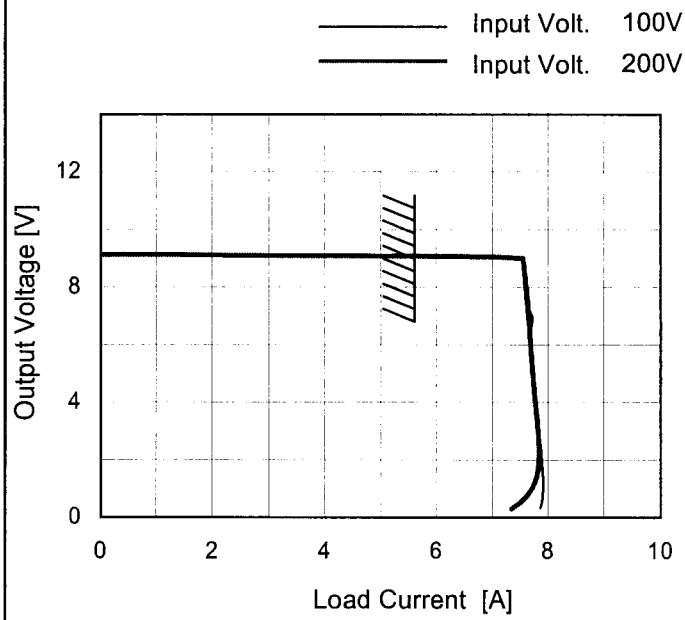
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	55	62
-10	54	61
0	54	61
10	54	61
25	54	61
40	54	61
50	53	61
60	53	61
--	-	-
--	-	-
--	-	-

COSEL

Model	LDA50F-9
Item	Overcurrent Protection
Object	+9V5.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

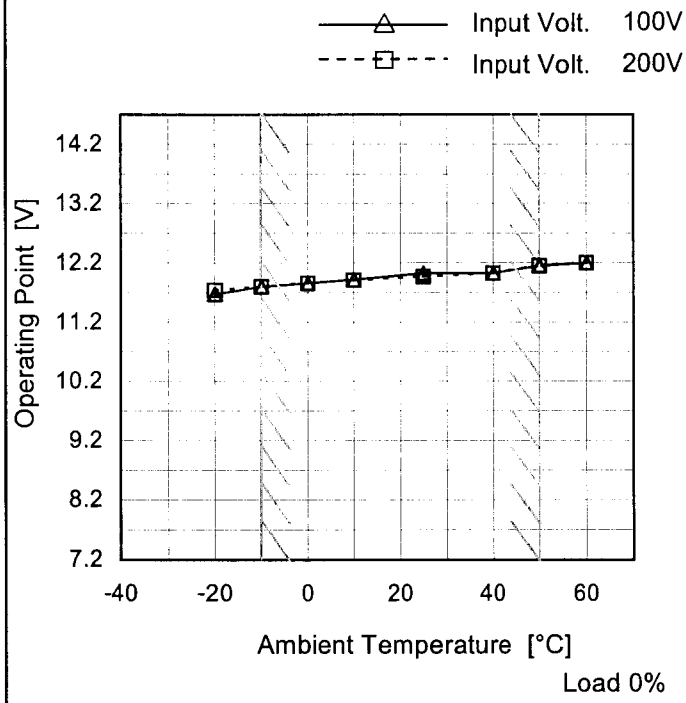
Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
9.00	7.08	6.98
8.55	7.55	7.57
8.10	7.57	7.60
7.20	7.62	7.65
6.30	7.66	7.67
5.40	7.71	7.70
4.50	7.75	7.75
3.60	7.81	7.79
2.70	7.85	7.83
1.80	7.89	7.82
0.90	7.91	7.68
0.00	7.86	7.34

COSEL

Model	LDA50F-9
Item	Overvoltage Protection
Object	+9V5.6A

Testing Circuitry Figure A

1.Graph



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	11.68	11.74
-10	11.80	11.80
0	11.86	11.86
10	11.92	11.91
25	12.03	11.97
40	12.03	12.03
50	12.15	12.15
60	12.20	12.20
--	-	-
--	-	-
--	-	-

COSEL

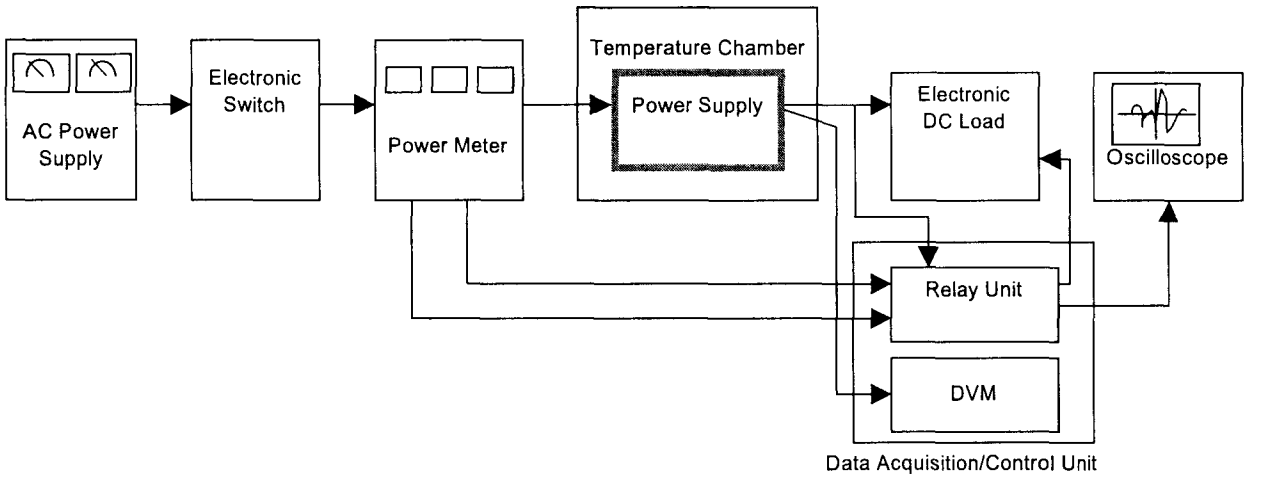


Figure A

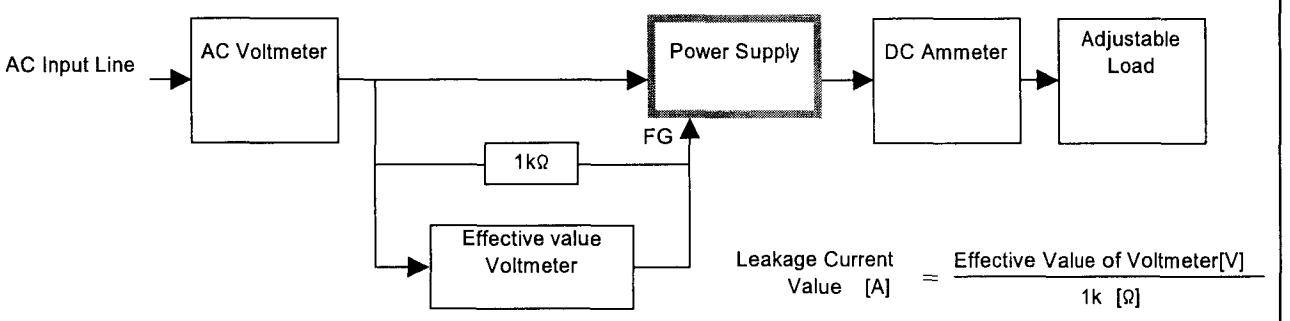


Figure B (DEN-AN)

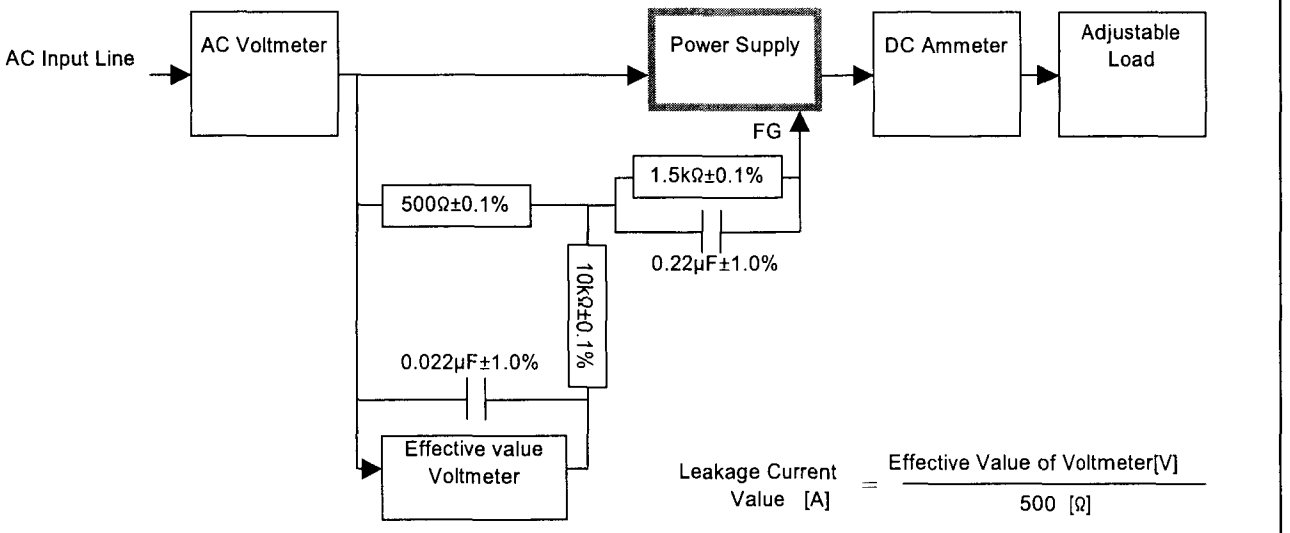


Figure B (IEC60950)