参考資料

COSEL

TEST DATA OF LGA100A-15

Regulated DC Power Supply
May 20, 2011

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COSEL CO.,LTD.

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Object	————————

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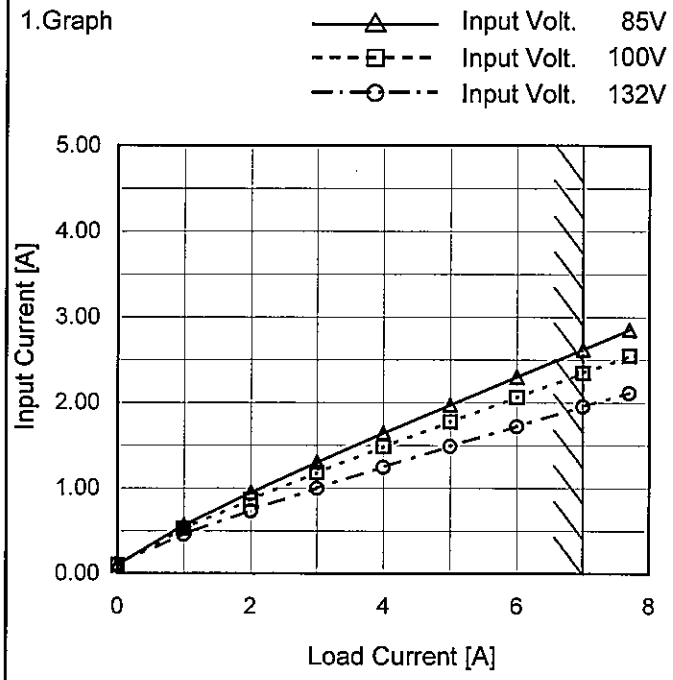
1.Graph



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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	0.100	0.102	0.110
1.0	0.571	0.523	0.458
2.0	0.950	0.861	0.738
3.0	1.305	1.178	0.998
4.0	1.644	1.481	1.248
5.0	1.976	1.774	1.489
6.0	2.302	2.062	1.724
7.0	2.626	2.346	1.956
7.7	2.852	2.544	2.117
--	-	-	-
--	-	-	-

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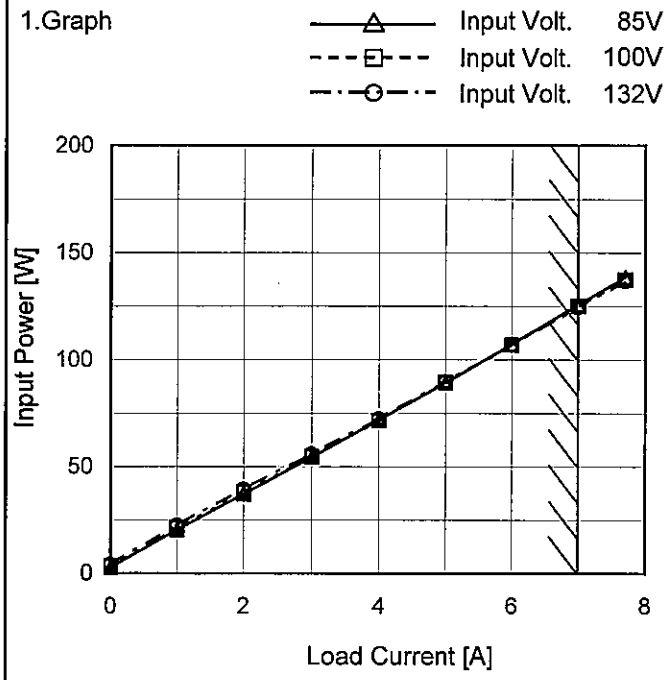
Model	LGA100A-15
Item	Input Power (by Load Current)
Object	———

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. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	2.9	3.3	4.3
1.0	20.6	21.2	22.7
2.0	37.4	37.9	39.5
3.0	54.4	54.6	56.0
4.0	72.0	71.6	72.6
5.0	89.4	89.4	90.0
6.0	107.4	106.8	107.1
7.0	125.7	124.8	124.5
7.7	138.6	137.4	136.8
--	-	-	-
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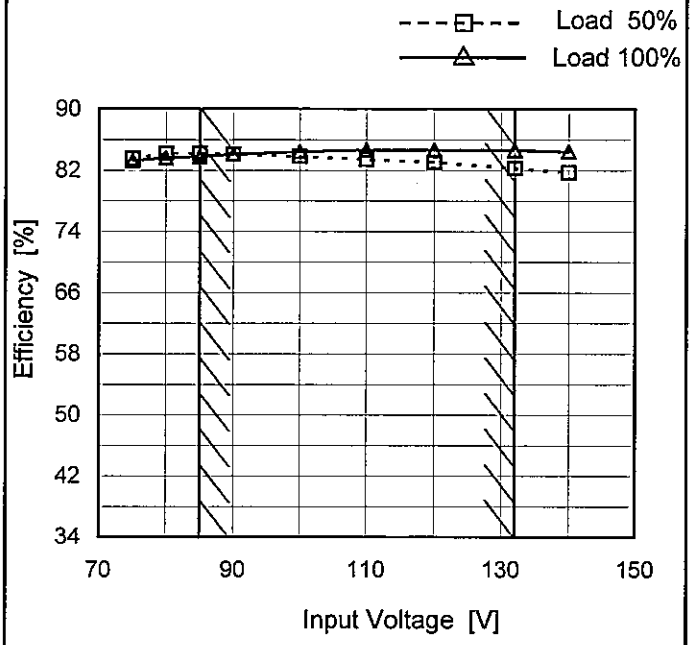
COSEL

Model	LGA100A-15
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%
75	83.5	83.3
80	84.2	83.7
85	84.2	83.9
90	84.1	84.1
100	83.8	84.5
110	83.4	84.7
120	83.0	84.7
132	82.2	84.7
140	81.7	84.5

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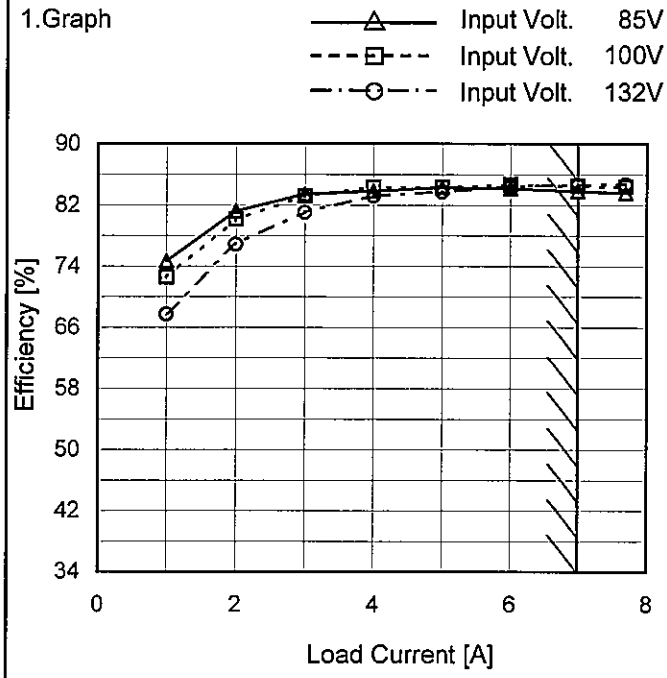
Model	LGA100A-15
Item	Efficiency (by Load Current)
Object	———————

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. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	-	-	-
1.0	74.7	72.5	67.7
2.0	81.2	80.1	76.9
3.0	83.5	83.2	81.1
4.0	83.9	84.3	83.2
5.0	84.3	84.3	83.7
6.0	84.2	84.7	84.4
7.0	83.9	84.5	84.7
7.7	83.6	84.4	84.7
--	-	-	-
--	-	-	-

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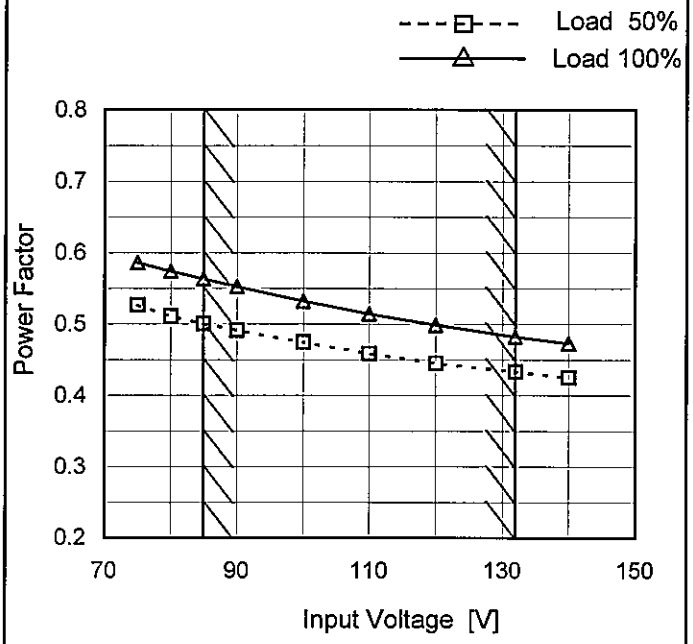
Model	LGA100A-15
Item	Power Factor (by Input Voltage)
Object	

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]	Power Factor	
	Load 50%	Load 100%
75	0.527	0.586
80	0.511	0.574
85	0.500	0.563
90	0.491	0.552
100	0.474	0.532
110	0.459	0.514
120	0.445	0.499
132	0.433	0.483
140	0.425	0.473

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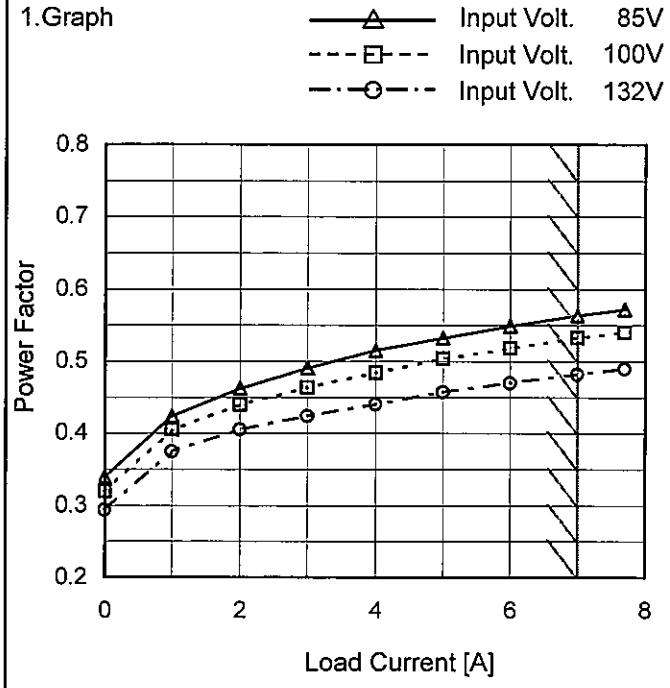
Model	LGA100A-15
Item	Power Factor (by Load Current)
Object	———————

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]	Power Factor		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	0.340	0.319	0.294
1.0	0.424	0.405	0.375
2.0	0.463	0.440	0.405
3.0	0.491	0.463	0.425
4.0	0.515	0.483	0.441
5.0	0.532	0.504	0.458
6.0	0.549	0.518	0.470
7.0	0.564	0.532	0.482
7.7	0.572	0.540	0.489
--	-	-	-
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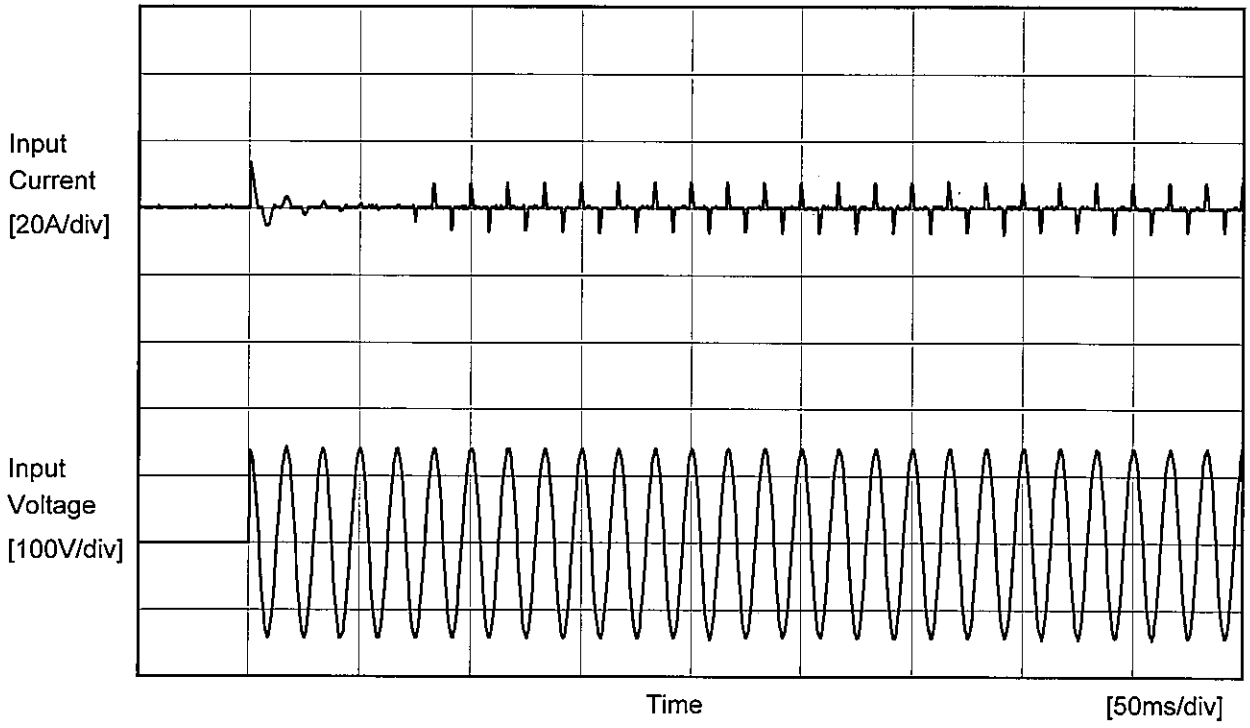
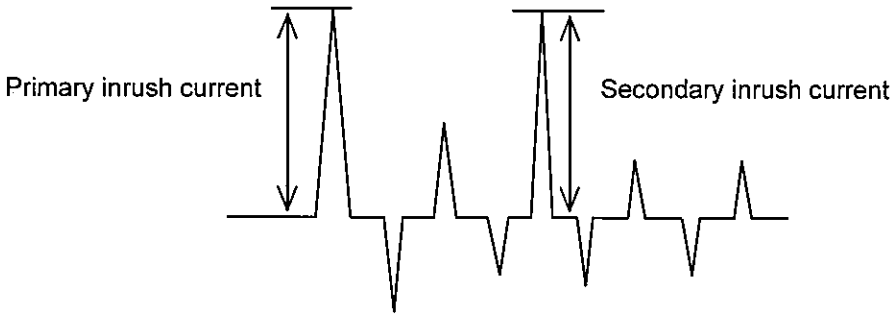
Model	LGA100A-15
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	13.3 A
Secondary inrush current	7.9 A



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Model	LGA100A-15		
Item	Leakage Current	Temperature Testing Circuitry	25°C Figure B
Object	———		

1.Results

Standards	Leakage Current [mA]		
	Input Volt. 100 [V]	Input Volt. 120 [V]	Input Volt. 132 [V]
(A)DEN-AN	0.29	0.37	0.41
(B)IEC60950-1	0.29	0.35	0.40

frequency 60Hz

2.Condition

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

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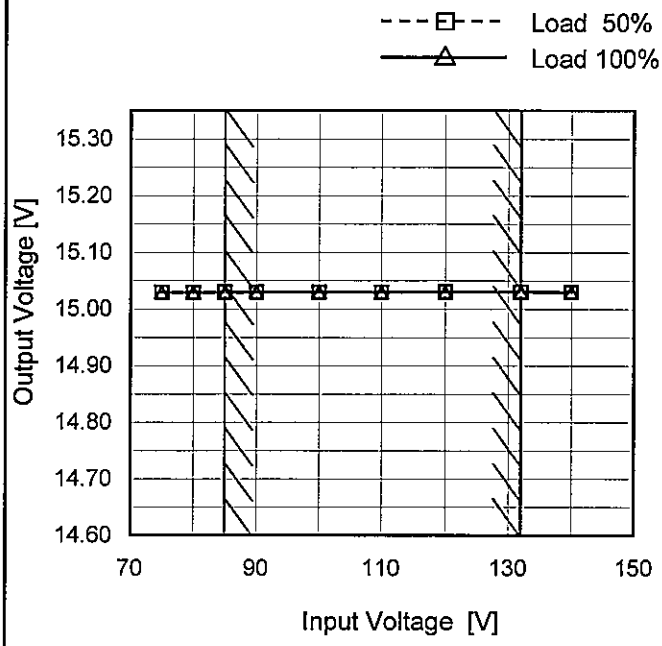
Model	LGA100A-15
Item	Line Regulation
Object	+15V7A

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%
75	15.029	15.030
80	15.029	15.030
85	15.029	15.030
90	15.030	15.030
100	15.030	15.030
110	15.030	15.030
120	15.030	15.030
132	15.030	15.031
140	15.030	15.030

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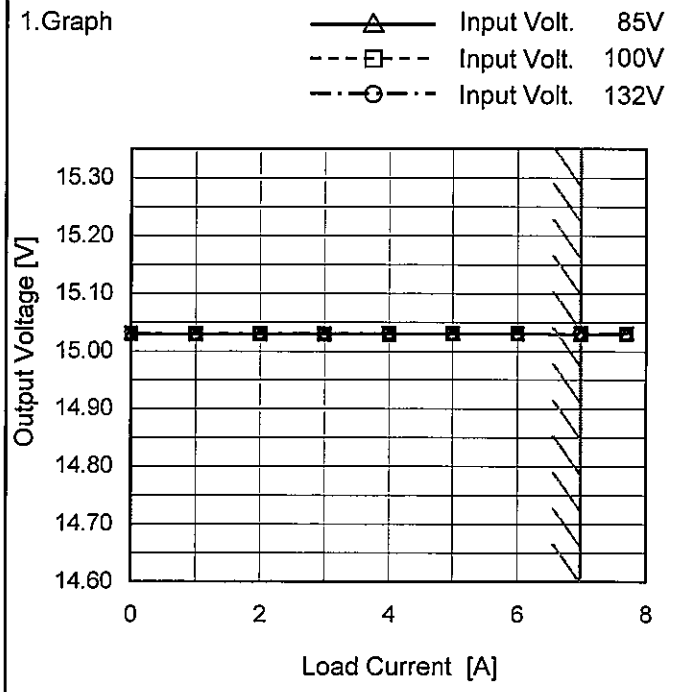
Model	LGA100A-15
Item	Load Regulation
Object	+15V7A

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. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	15.030	15.030	15.030
1.0	15.029	15.030	15.030
2.0	15.029	15.030	15.030
3.0	15.030	15.030	15.030
4.0	15.030	15.030	15.030
5.0	15.030	15.030	15.031
6.0	15.030	15.030	15.031
7.0	15.030	15.030	15.031
7.7	15.030	15.031	15.031
--	-	-	-
--	-	-	-

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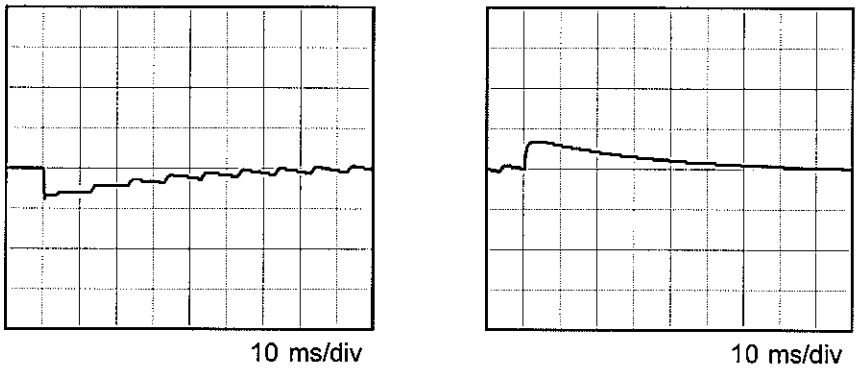
Model	LGA100A-15
Item	Dynamic Load Response
Object	+15V7A

Temperature 25°C
Testing Circuitry Figure C

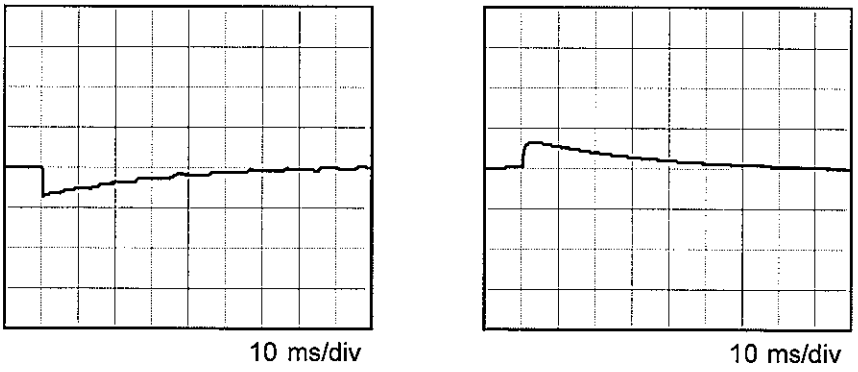
Input Volt. 100 V
Cycle 1000 ms

Response. t1=t2=50 μs. Typ

Min. Load (0A) ⟷
Load 100% (7A)



Min. Load (0A) ⟷
Load 50% (3.5A)



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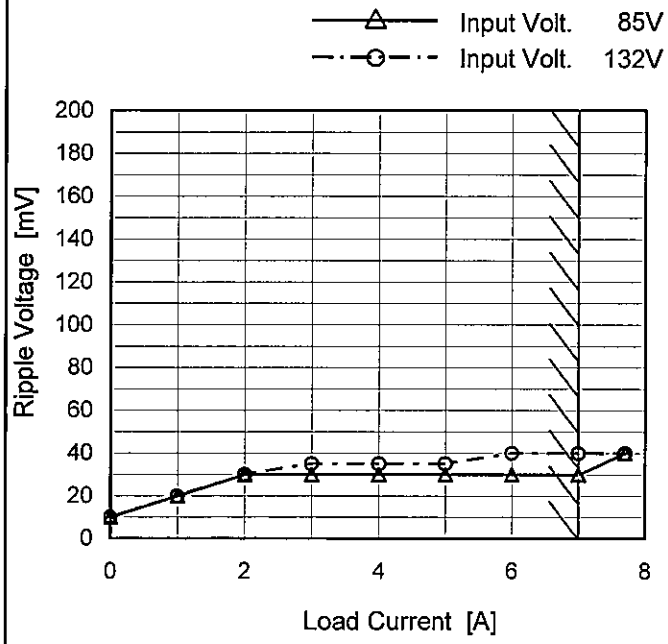
Model	LGA100A-15
Item	Ripple Voltage (by Load Current)
Object	+15V7A

Temperature 25°C
Testing Circuitry Figure C

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

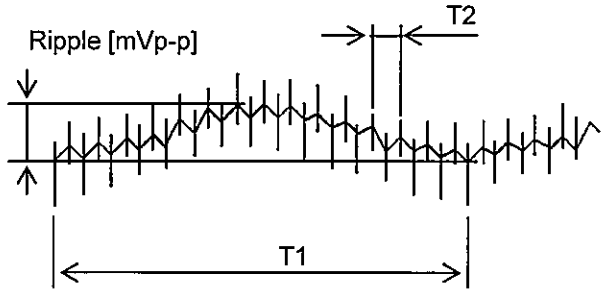


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	10	10
1.0	20	20
2.0	30	30
3.0	30	35
4.0	30	35
5.0	30	35
6.0	30	40
7.0	30	40
7.7	40	40
--	-	-
--	-	-

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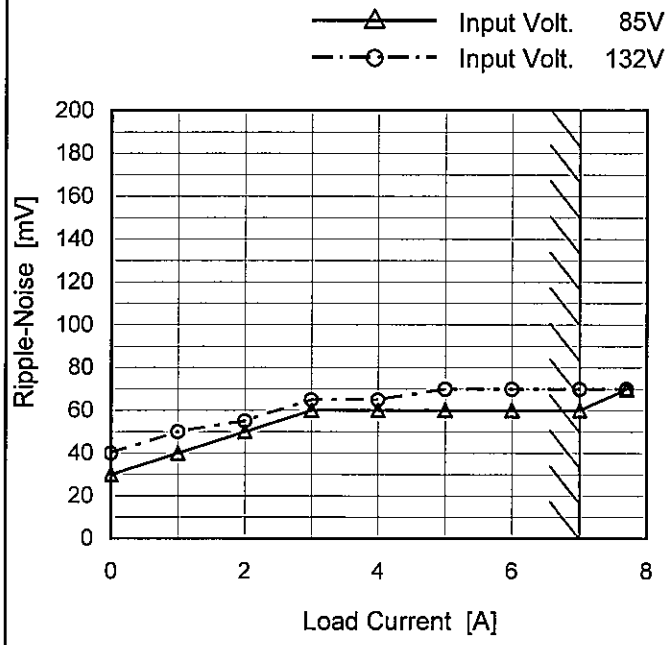
Model	LGA100A-15
Item	Ripple-Noise
Object	+15V7A

Temperature 25°C
Testing Circuitry Figure C

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. 85 [V]	Input Volt. 132 [V]
0.0	30	40
1.0	40	50
2.0	50	55
3.0	60	65
4.0	60	65
5.0	60	70
6.0	60	70
7.0	60	70
7.7	70	70
--	-	-
--	-	-

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

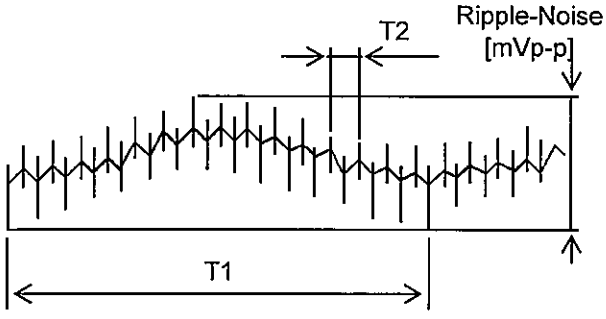


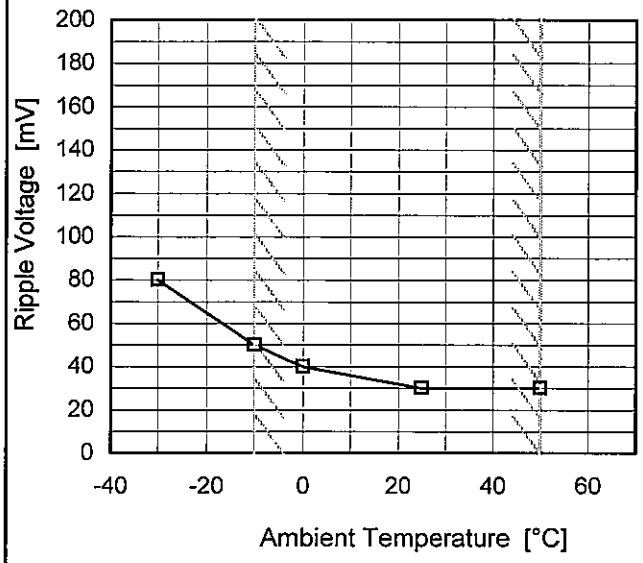
Fig. Complex Ripple Wave Form

COSEL

Model	LGA100A-15
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V7A

Testing Circuitry Figure C

1.Graph



Input Volt. 100V

Input Load. 100%

Measured by 20 MHz Oscilloscope.

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

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]
-30	80
-10	50
0	40
25	30
50	30
--	-
--	-
--	-
--	-
--	-
--	-

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

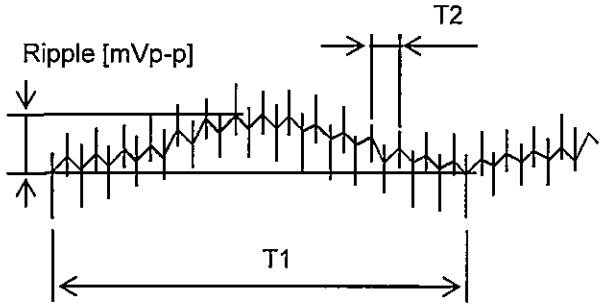


Fig. Complex Ripple Wave Form

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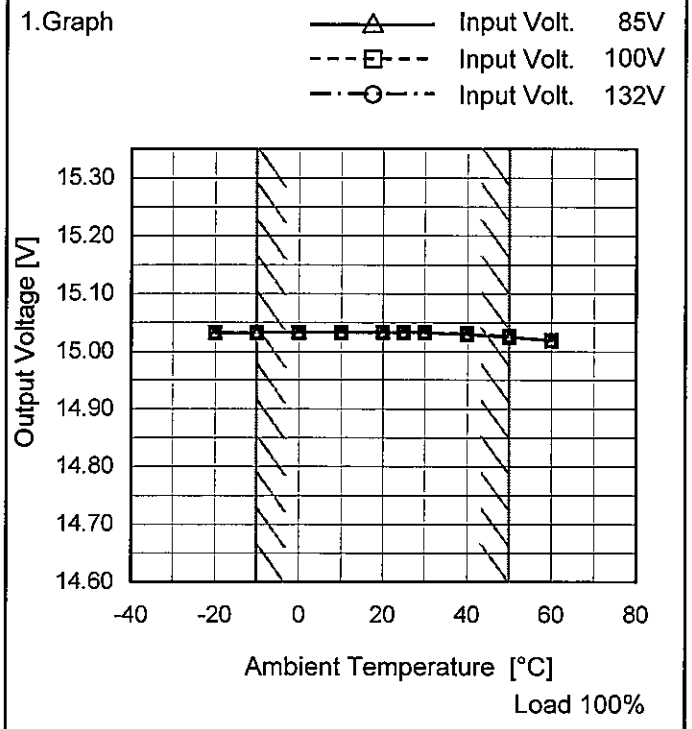
Model	LGA100A-15
Item	Ambient Temperature Drift
Object	+15V7A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	15.032	15.032	15.033
-10	15.032	15.033	15.033
0	15.032	15.032	15.033
10	15.032	15.033	15.033
20	15.033	15.033	15.033
25	15.033	15.033	15.033
30	15.032	15.033	15.033
40	15.030	15.030	15.031
50	15.026	15.026	15.026
60	15.018	15.019	15.019
--	-	-	-

COSEL

Model	LGA100A-15
Item	Output Voltage Accuracy
Object	+15V7A

Testing Circuitry Figure A

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 - 132V
Load Current : 0 - 7A

* 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

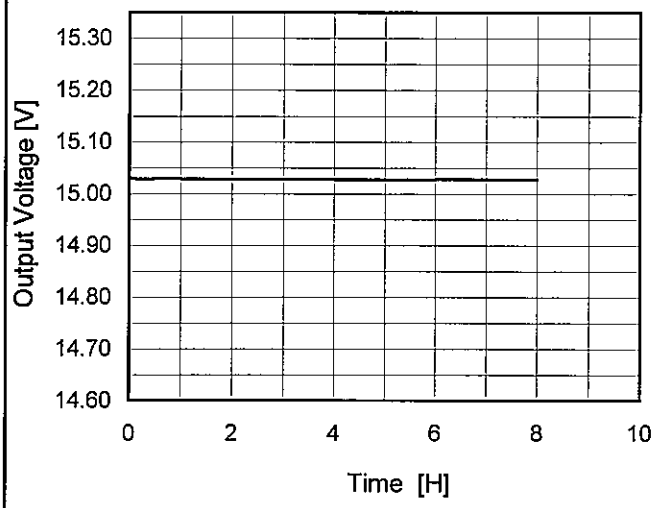
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	20	132	7	15.033	±4	±0.1
Minimum Voltage	50	85	7	15.026		

COSEL

Model	LGA100A-15
Item	Time Lapse Drift
Object	+15V7A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	15.033
0.5	15.030
1.0	15.030
2.0	15.029
3.0	15.029
4.0	15.029
5.0	15.028
6.0	15.028
7.0	15.028
8.0	15.028

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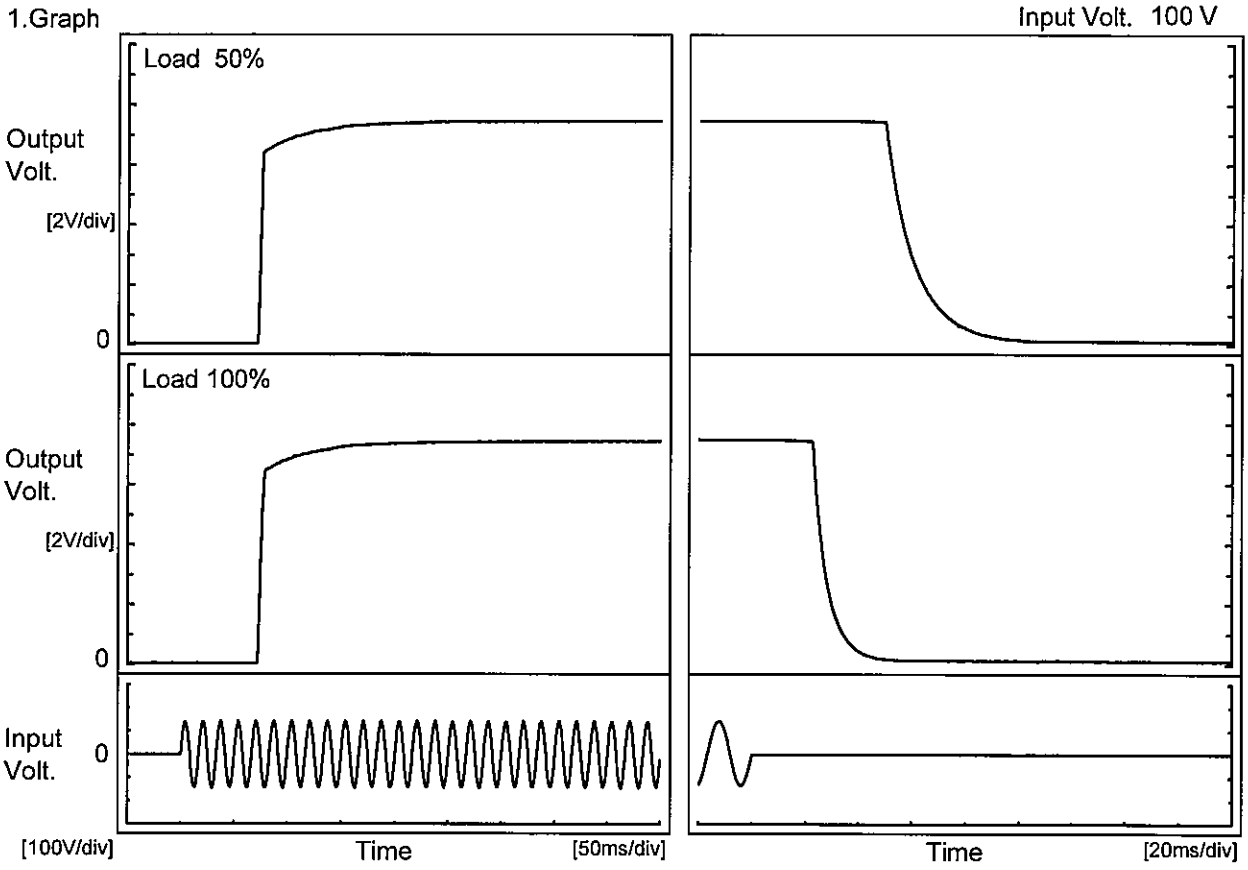
Model	LGA100A-15
Item	Rise and Fall Time
Object	+15V7A

Temperature 25°C
Testing Circuitry Figure A

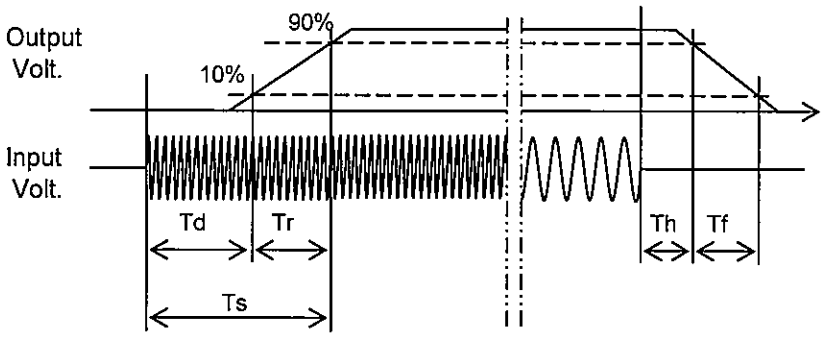
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	73.3	24.0	97.3	50.5	24.8
100 %	73.3	24.0	97.3	23.1	12.6



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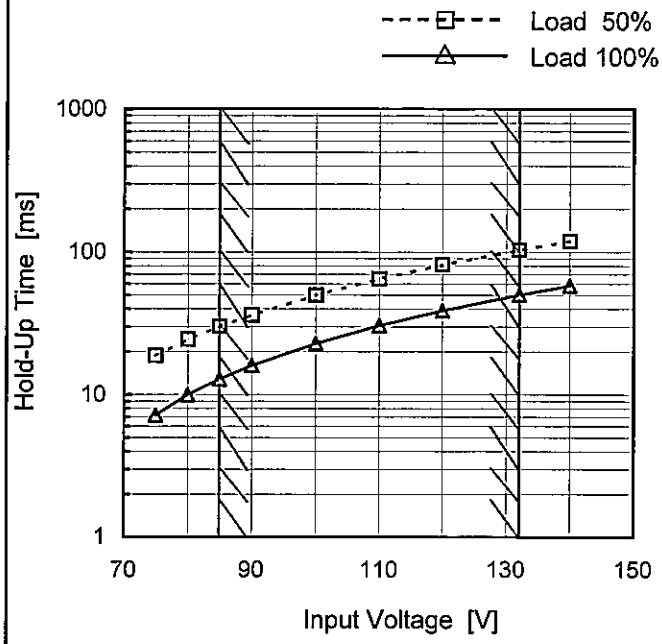
Model	LGA100A-15
Item	Hold-Up Time
Object	+15V7A

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%
75	19	7
80	24	10
85	30	13
90	36	16
100	50	23
110	65	31
120	81	39
132	103	50
140	119	58

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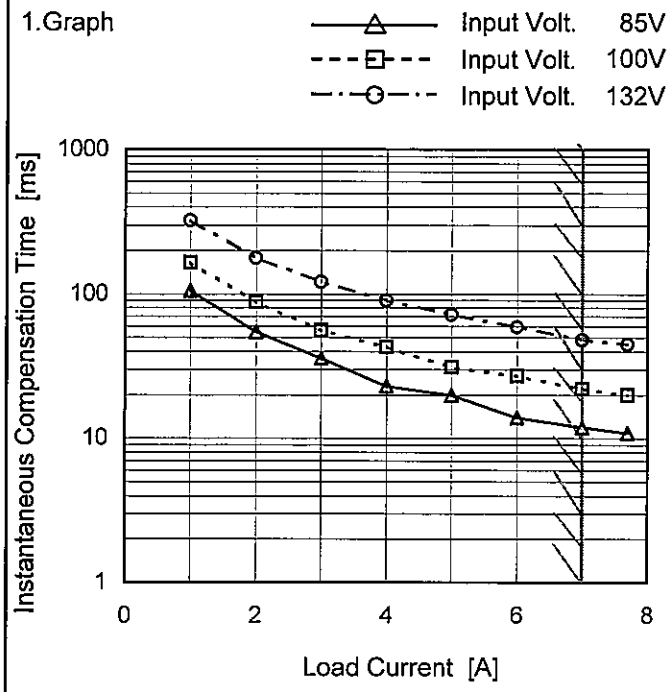
Model	LGA100A-15
Item	Instantaneous Interruption Compensation
Object	+15V7A

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. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	-	-	-
1.0	106	165	325
2.0	55	88	178
3.0	36	56	121
4.0	23	43	90
5.0	20	31	72
6.0	14	27	59
7.0	12	22	48
7.7	11	20	45
--	-	-	-
--	-	-	-

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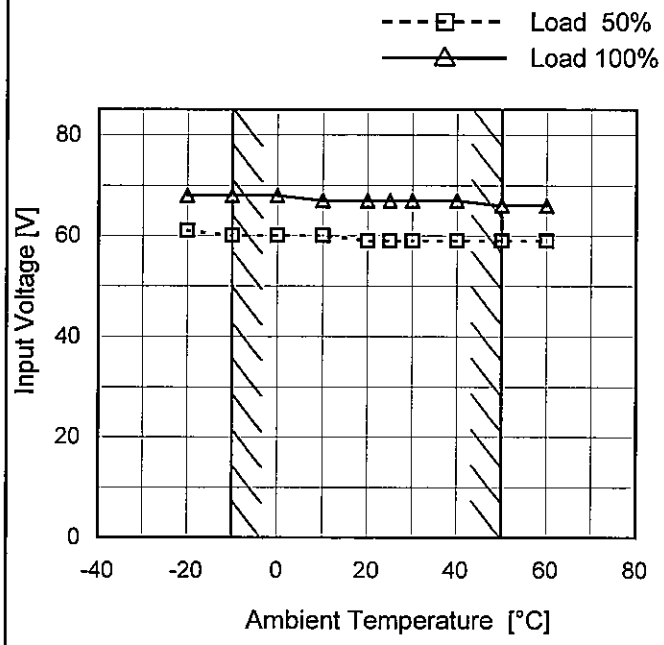
Model	LGA100A-15
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V7A

Testing Circuitry Figure A

1.Graph



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

2.Values

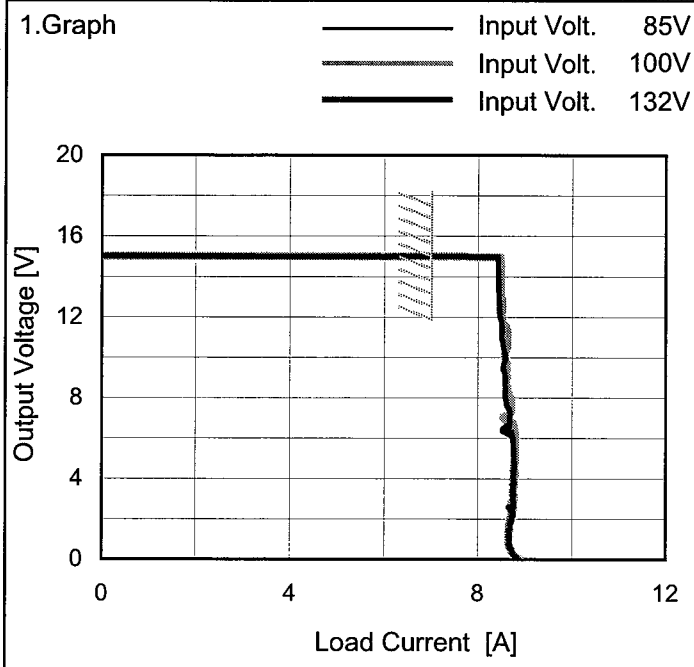
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	61	68
-10	60	68
0	60	68
10	60	67
20	59	67
25	59	67
30	59	67
40	59	67
50	59	66
60	59	66
--	-	-

COSEL

Model	LGA100A-15
Item	Overcurrent Protection
Object	+15V7A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

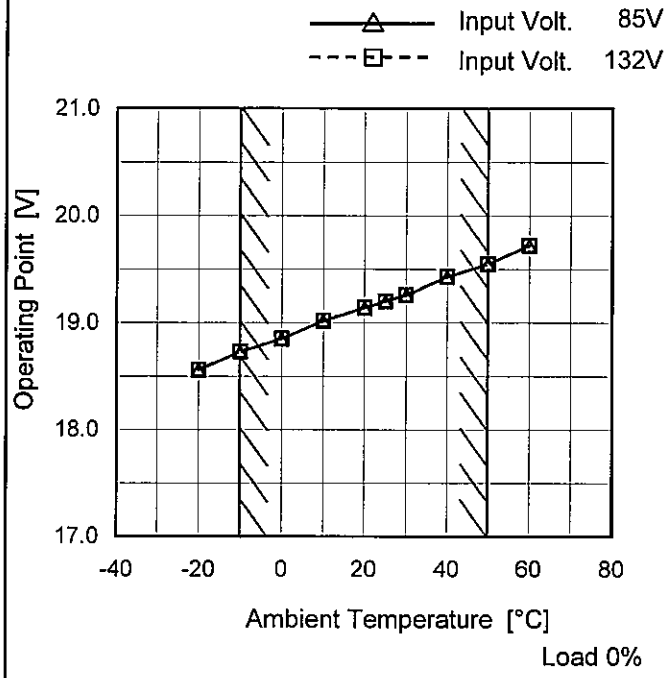
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
15.0	7.45	7.47	7.52
14.3	8.43	8.43	8.48
13.5	8.43	8.43	8.48
12.0	8.46	8.46	8.49
10.5	8.52	8.53	8.63
9.0	8.58	8.57	8.61
7.5	8.61	8.64	8.72
6.0	8.73	8.74	8.78
4.5	8.78	8.77	8.76
3.0	8.76	8.74	8.77
1.5	8.70	8.69	8.66
0.0	8.89	8.85	8.92

COSEL

Model	LGA100A-15
Item	Overvoltage Protection
Object	+15V7A

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. 85[V]	Input Volt. 132[V]
-20	18.56	18.56
-10	18.73	18.73
0	18.85	18.85
10	19.02	19.02
20	19.14	19.14
25	19.20	19.20
30	19.26	19.26
40	19.43	19.43
50	19.55	19.55
60	19.72	19.72
--	-	-

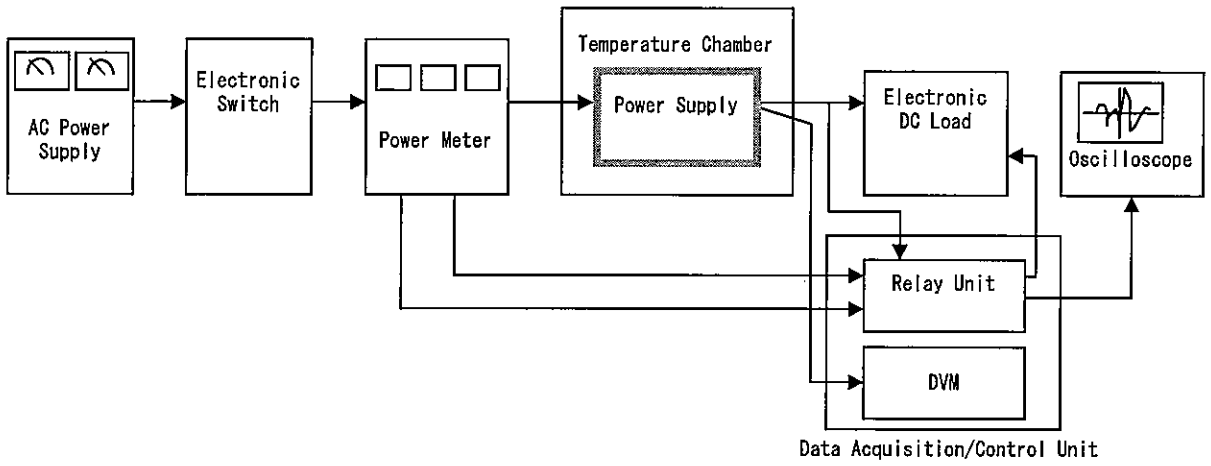


Figure A

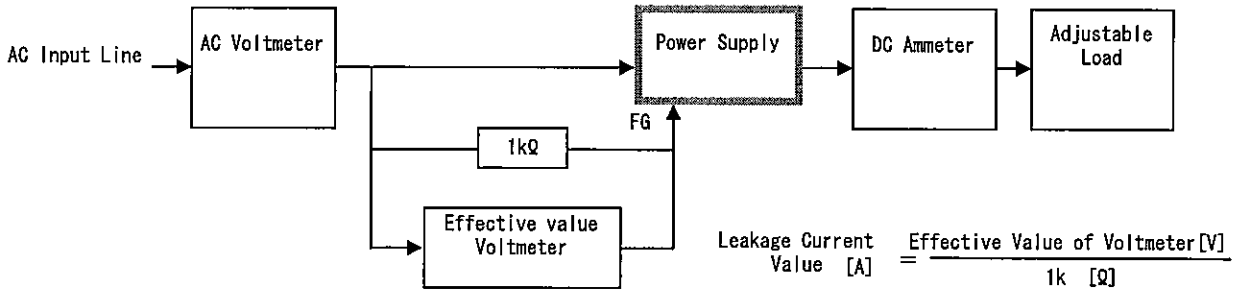


Figure B (DEN-AN)

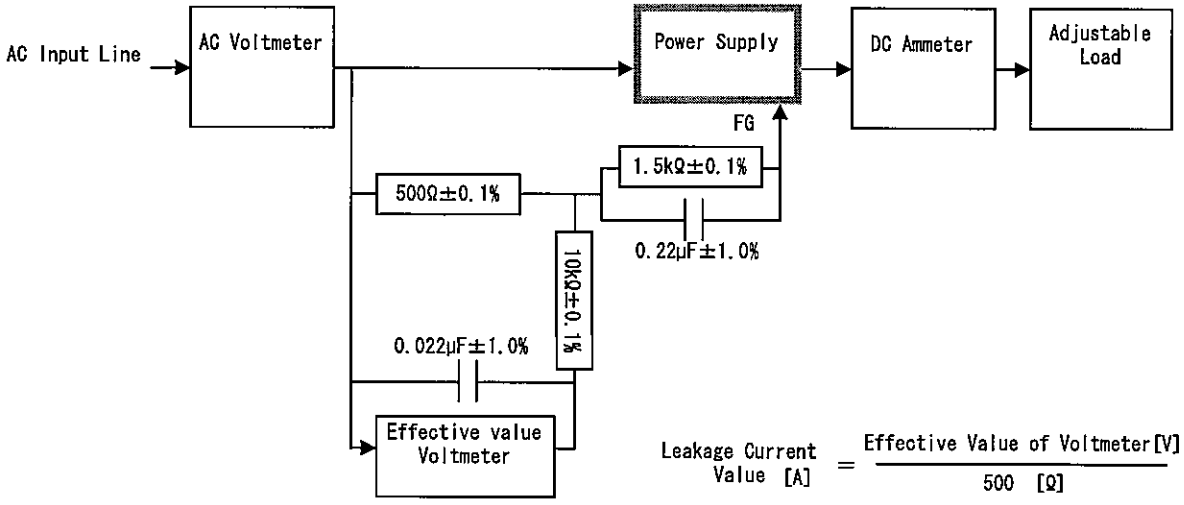


Figure B (IEC60950-1)

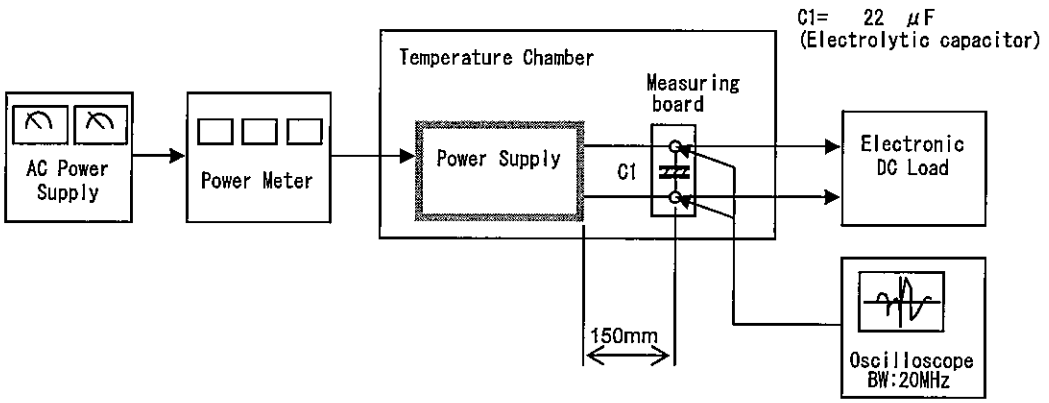

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope BW:20MHz

Figure C