参考資料

COSEL

TEST DATA OF LGA150A-12

Regulated DC Power Supply
April 15 , 2008

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COSEL CO.,LTD.

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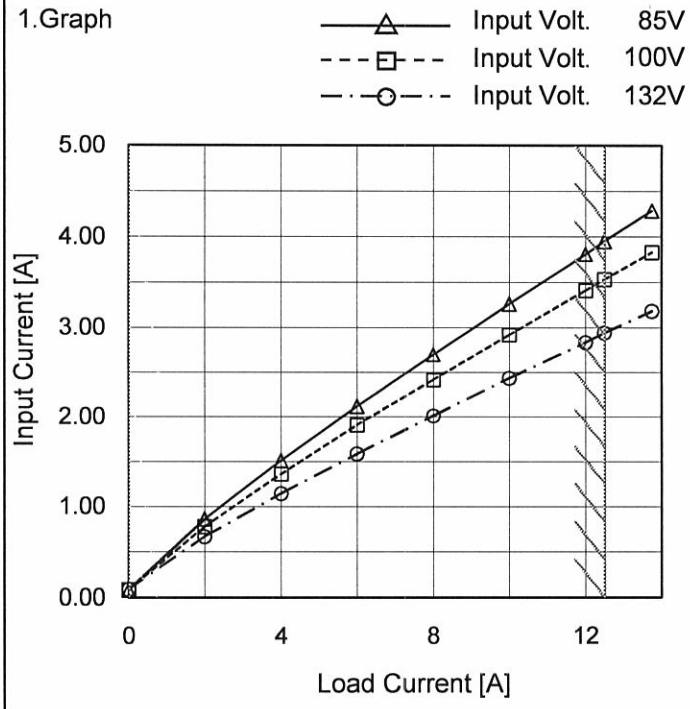
Model	LGA150A-12
Item	Input Current (by Load Current)
Object	————————

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. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	0.079	0.082	0.091
2.00	0.861	0.779	0.668
4.00	1.511	1.357	1.141
6.00	2.114	1.910	1.585
8.00	2.695	2.414	2.013
10.00	3.258	2.916	2.429
12.00	3.810	3.406	2.832
12.50	3.950	3.531	2.937
13.75	4.280	3.830	3.180
--	-	-	-
--	-	-	-

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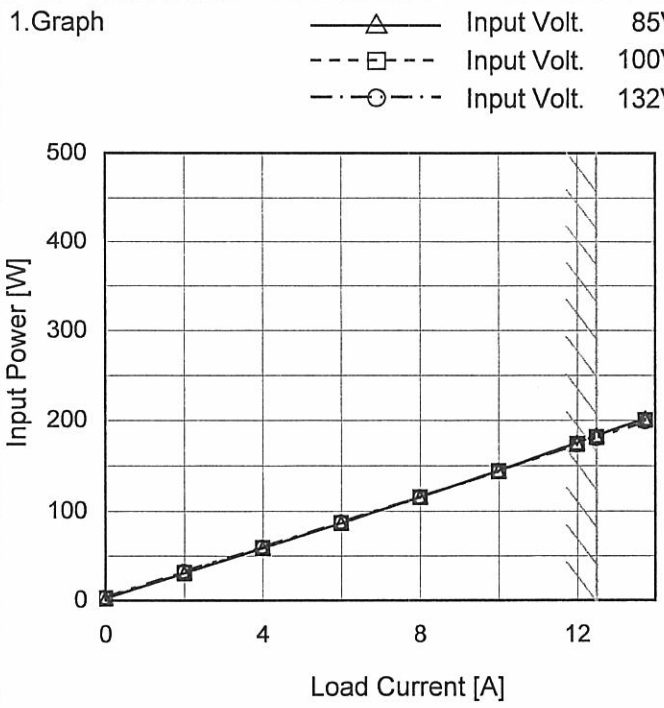
Model	LGA150A-12
Item	Input Power (by Load Current)
Object	———————

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]
0.00	2.2	2.5	3.4
2.00	30.4	31.0	32.4
4.00	58.5	58.8	59.8
6.00	86.7	86.7	87.6
8.00	115.5	115.2	115.8
10.00	144.9	144.0	144.0
12.00	175.0	173.4	172.8
12.50	183.0	180.9	180.0
13.75	202.0	200.0	198.2
--	-	-	-
--	-	-	-

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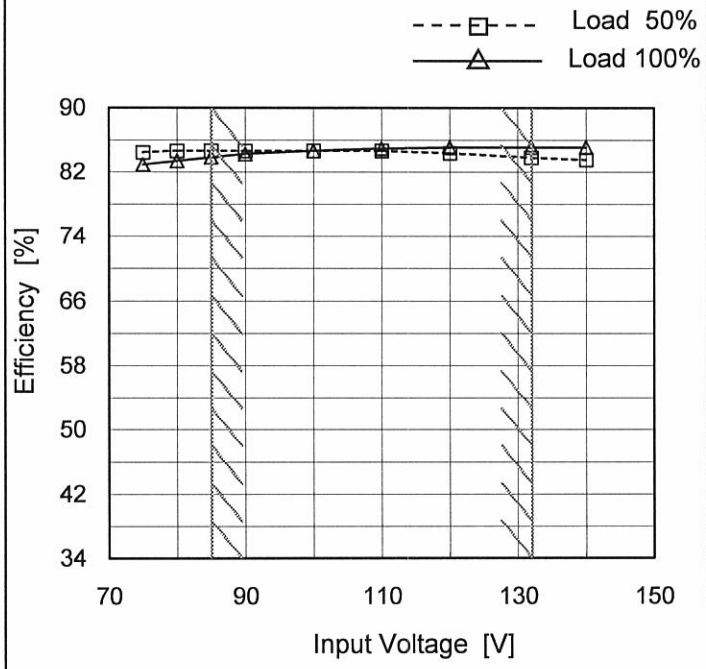
Model	LGA150A-12
Item	Efficiency (by Input Voltage)
Object	———————————

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	84.5	82.9
80	84.7	83.4
85	84.7	83.8
90	84.7	84.3
100	84.7	84.7
110	84.7	84.9
120	84.4	85.0
132	83.8	85.1
140	83.6	85.1

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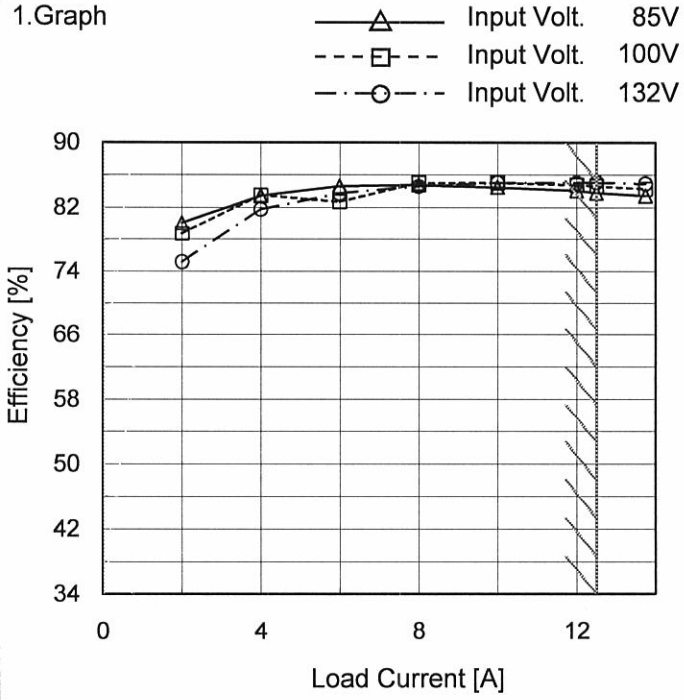
Model	LGA150A-12
Item	Efficiency (by Load Current)
Object	————————

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]
0.00	-	-	-
2.00	80.0	78.7	75.1
4.00	83.4	83.6	81.8
6.00	84.6	82.7	83.7
8.00	84.8	85.0	84.6
10.00	84.5	85.0	85.0
12.00	84.1	84.8	85.1
12.50	83.8	84.7	85.1
13.75	83.5	84.3	84.9
--	-	-	-
--	-	-	-

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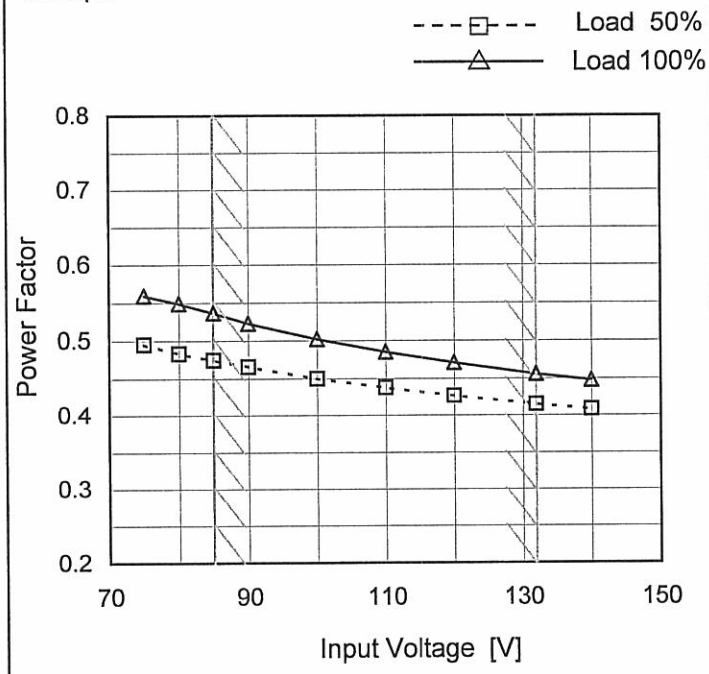
Model	LGA150A-12
Item	Power Factor (by Input Voltage)
Object	———————

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	0.495	0.559
80	0.483	0.549
85	0.475	0.537
90	0.466	0.523
100	0.450	0.502
110	0.438	0.485
120	0.427	0.471
132	0.415	0.456
140	0.408	0.448

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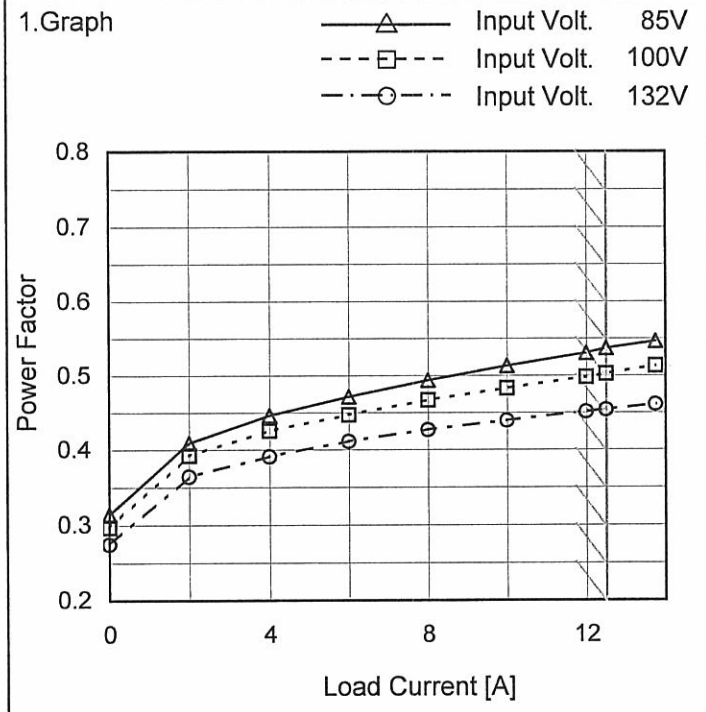
Model	LGA150A-12
Item	Power Factor (by Load Current)
Object	————————

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]
0.00	0.314	0.297	0.274
2.00	0.409	0.392	0.364
4.00	0.446	0.425	0.391
6.00	0.472	0.447	0.411
8.00	0.493	0.467	0.427
10.00	0.513	0.483	0.439
12.00	0.530	0.498	0.451
12.50	0.537	0.502	0.454
13.75	0.546	0.513	0.461
--	-	-	-
--	-	-	-

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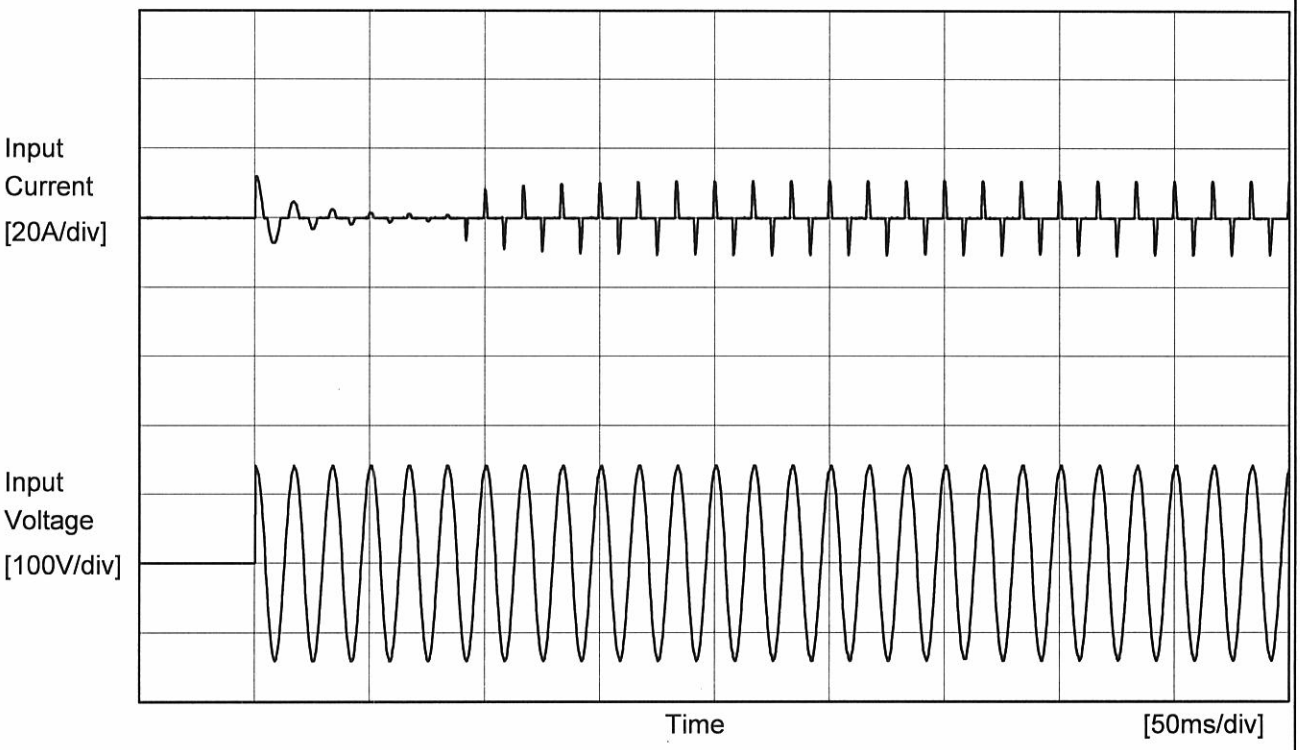
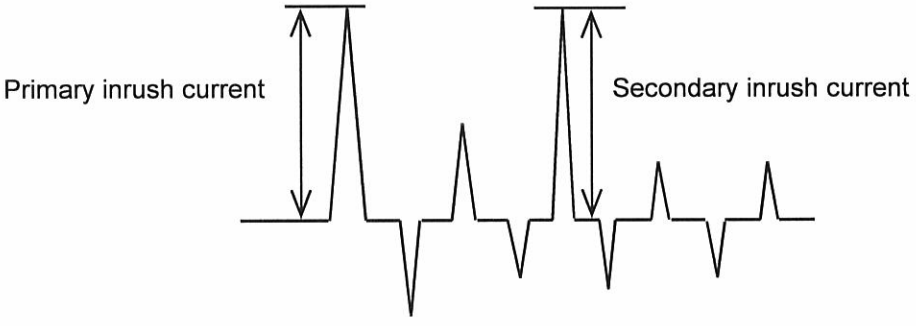
Model	LGA150A-12
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	13.4 A
Secondary inrush current	13.8 A



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Model	LGA150A-12	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	————————	

1.Results

Standards	Leakage Current [mA]		
	Input Volt. 100 [V]	Input Volt. 120 [V]	Input Volt. 132 [V]
(A)DEN-AN	0.30	0.39	0.43
(B)IEC60950	0.30	0.37	0.42

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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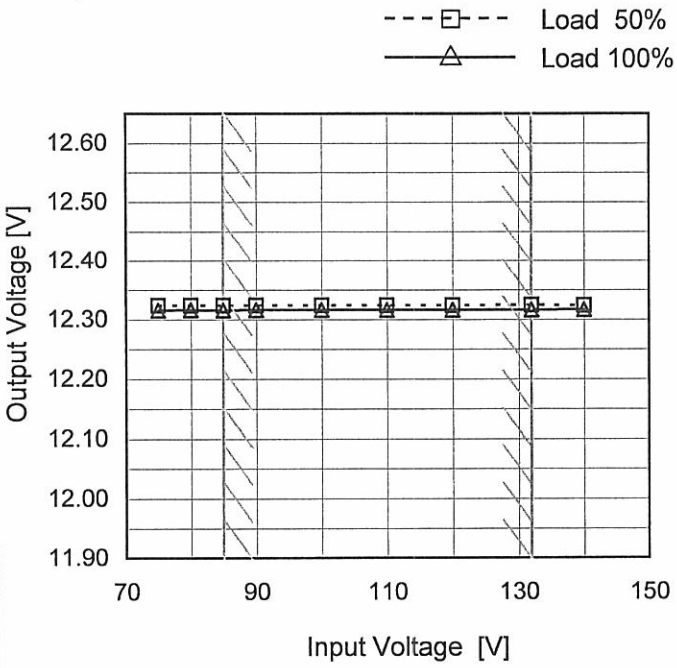
Model	LGA150A-12
Item	Line Regulation
Object	+12V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

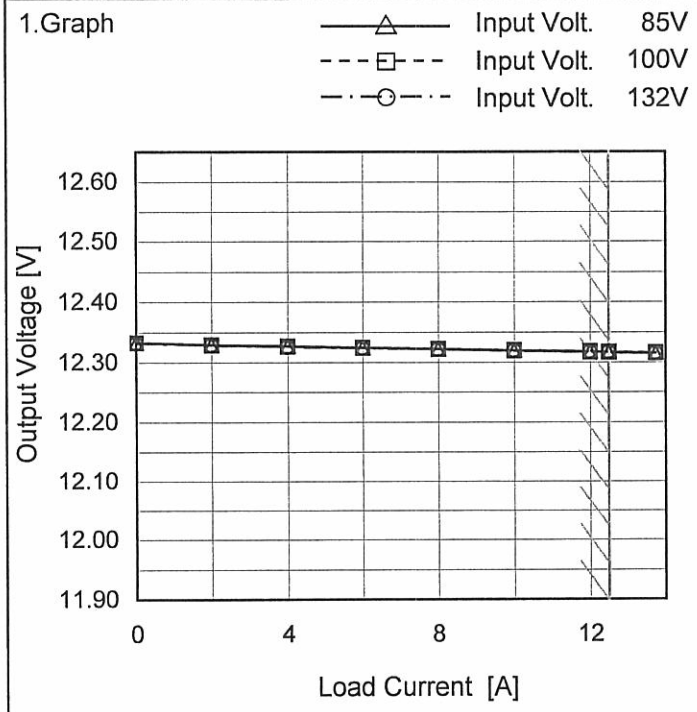
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	12.324	12.316
80	12.324	12.316
85	12.324	12.316
90	12.324	12.316
100	12.324	12.316
110	12.324	12.317
120	12.324	12.317
132	12.325	12.317
140	12.324	12.317

COSEL

Model	LGA150A-12
Item	Load Regulation
Object	+12V12.5A

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]
0.00	12.333	12.333	12.332
2.00	12.329	12.329	12.329
4.00	12.327	12.327	12.326
6.00	12.325	12.324	12.324
8.00	12.322	12.322	12.322
10.00	12.320	12.320	12.320
12.00	12.318	12.317	12.317
12.50	12.317	12.317	12.317
13.75	12.316	12.315	12.315
--	-	-	-
--	-	-	-

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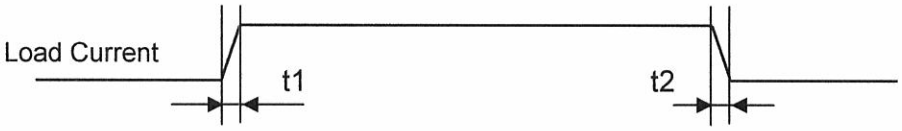
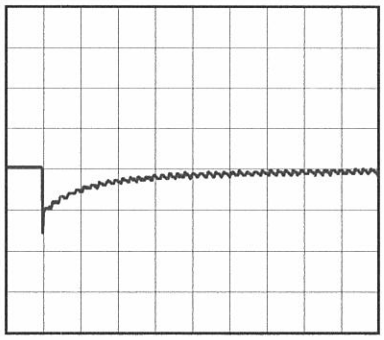
Model	LGA150A-12		
Item	Dynamic Load Response	Temperature	25° C
Object	+12V12.5A	Testing Circuitry	Figure A

Input Volt. 100 V
Cycle 1000 ms

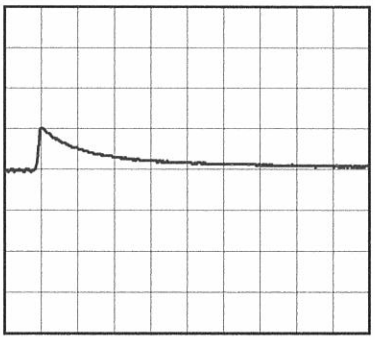
Response. t1=t2=50us. Typ



Min. Load (0A) ⟷
Load 100% (12.5A)

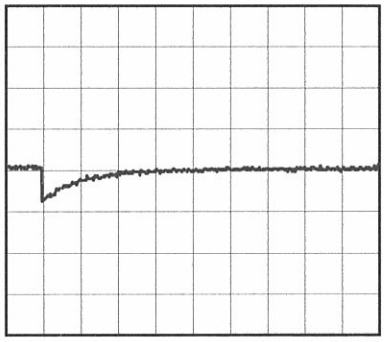


100 mV/div
40 ms/div

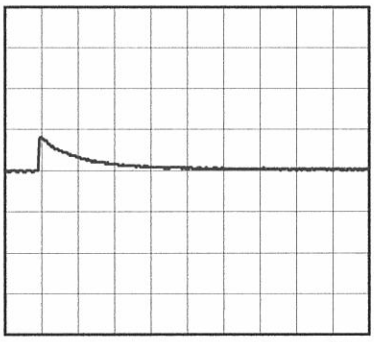


40 ms/div

Min. Load (0A) ⟷
Load 50% (6.25A)



100 mV/div
40 ms/div



40 ms/div

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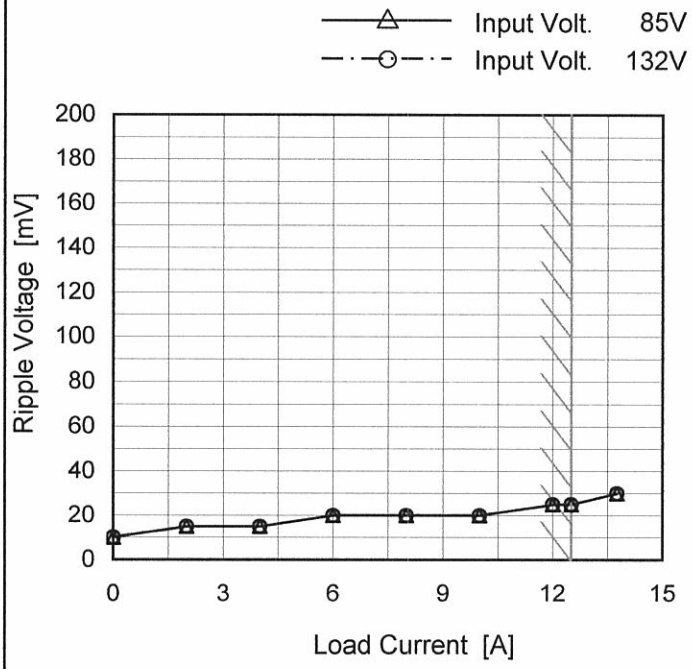
Model	LGA150A-12
Item	Ripple Voltage (by Load Current)
Object	+12V12.5A

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

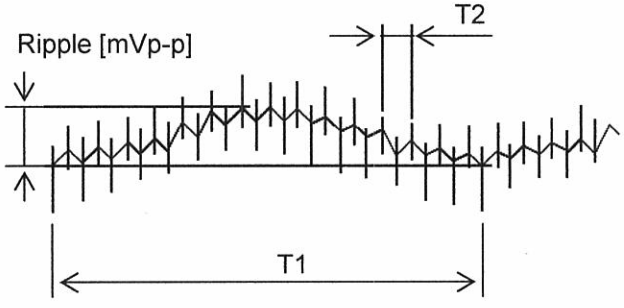


Fig. Complex Ripple Wave Form

2.Values

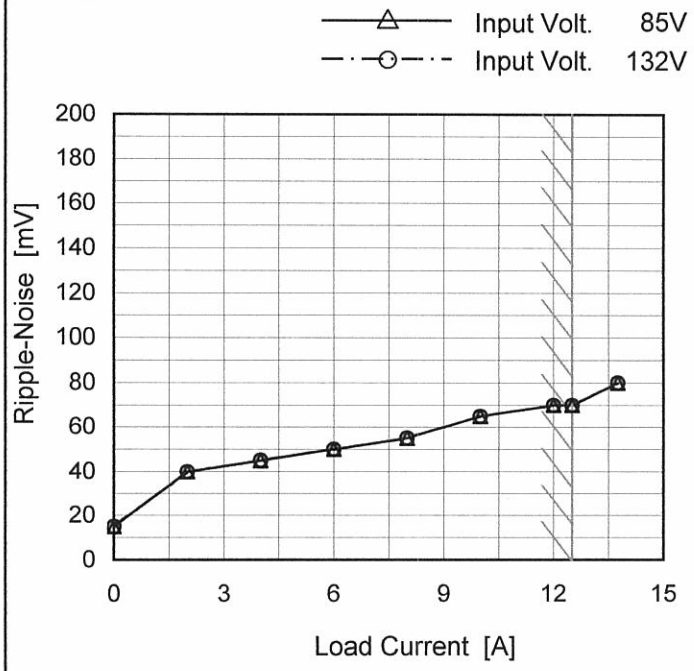
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	10	10
2.00	15	15
4.00	15	15
6.00	20	20
8.00	20	20
10.00	20	20
12.00	25	25
12.50	25	25
13.75	30	30
--	-	-
--	-	-

COSEL

Model	LGA150A-12
Item	Ripple-Noise
Object	+12V12.5A

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]
0.00	15	15
2.00	40	40
4.00	45	45
6.00	50	50
8.00	55	55
10.00	65	65
12.00	70	70
12.50	70	70
13.75	80	80
--	-	-
--	-	-

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

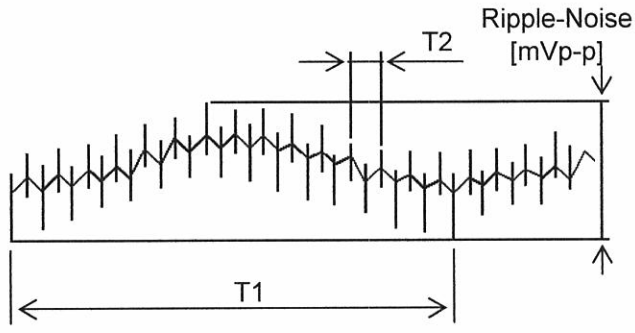


Fig. Complex Ripple Wave Form

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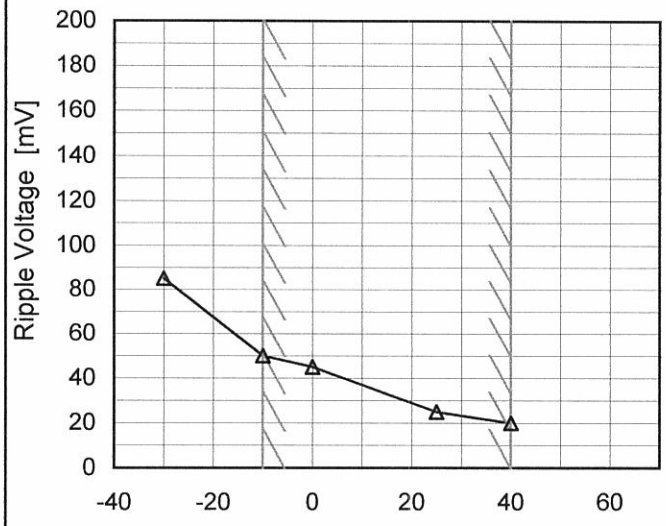
Model	LGA150A-12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V12.5A

Testing Circuitry FigureC

1.Graph



Input Volt. 100V

Input Load. 100%

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 ambient temperature.

T1: Due to AC Input Line

T2: Due to Switching

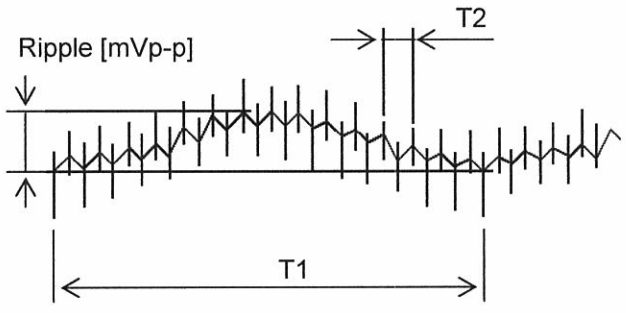


Fig. Complex Ripple Wave Form

2.Values

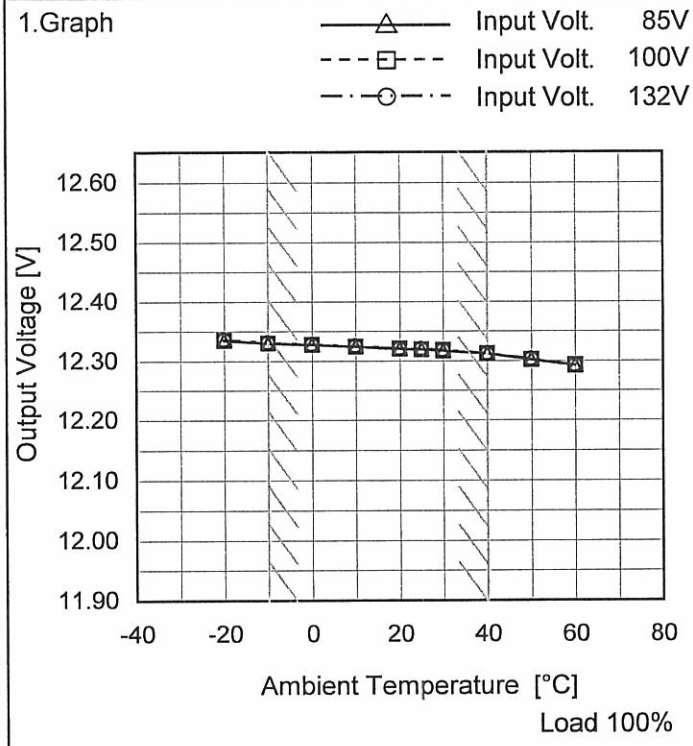
Ambient Temperature [°C]	Ripple Voltage [mV]
-30	85
-10	50
0	45
25	25
40	20
--	-
--	-
--	-
--	-
--	-
--	-

COSEL

Model	LGA150A-12
Item	Ambient Temperature Drift
Object	+12V12.5A

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	12.335	12.335	12.336
-10	12.330	12.330	12.331
0	12.327	12.327	12.328
10	12.324	12.324	12.325
20	12.320	12.321	12.321
25	12.319	12.319	12.320
30	12.317	12.318	12.318
40	12.312	12.312	12.312
50	12.302	12.302	12.303
60	12.292	12.293	12.293
--	-	-	-

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Model	LGA150A-12	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V12.5A	

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 - 40°C
Input Voltage : 85 - 132V
Load Current : 0 - 12.5A

* 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	132	0	12.345	±17	±0.1
Minimum Voltage	40	85	12.5	12.312		

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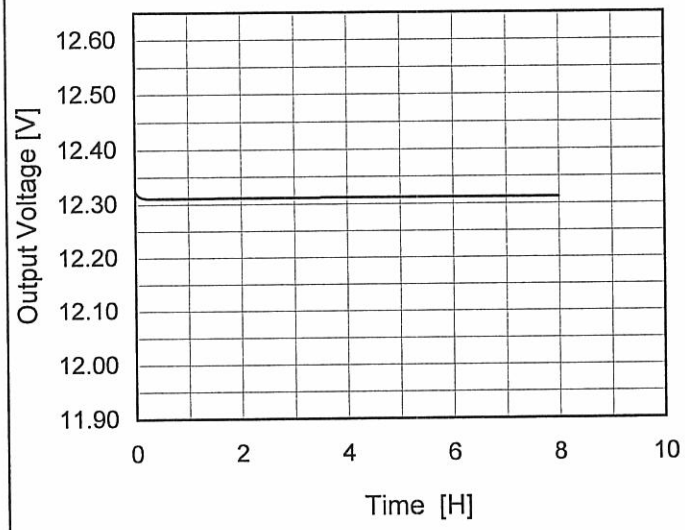
Model	LGA150A-12
Item	Time Lapse Drift
Object	+12V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

2.Values

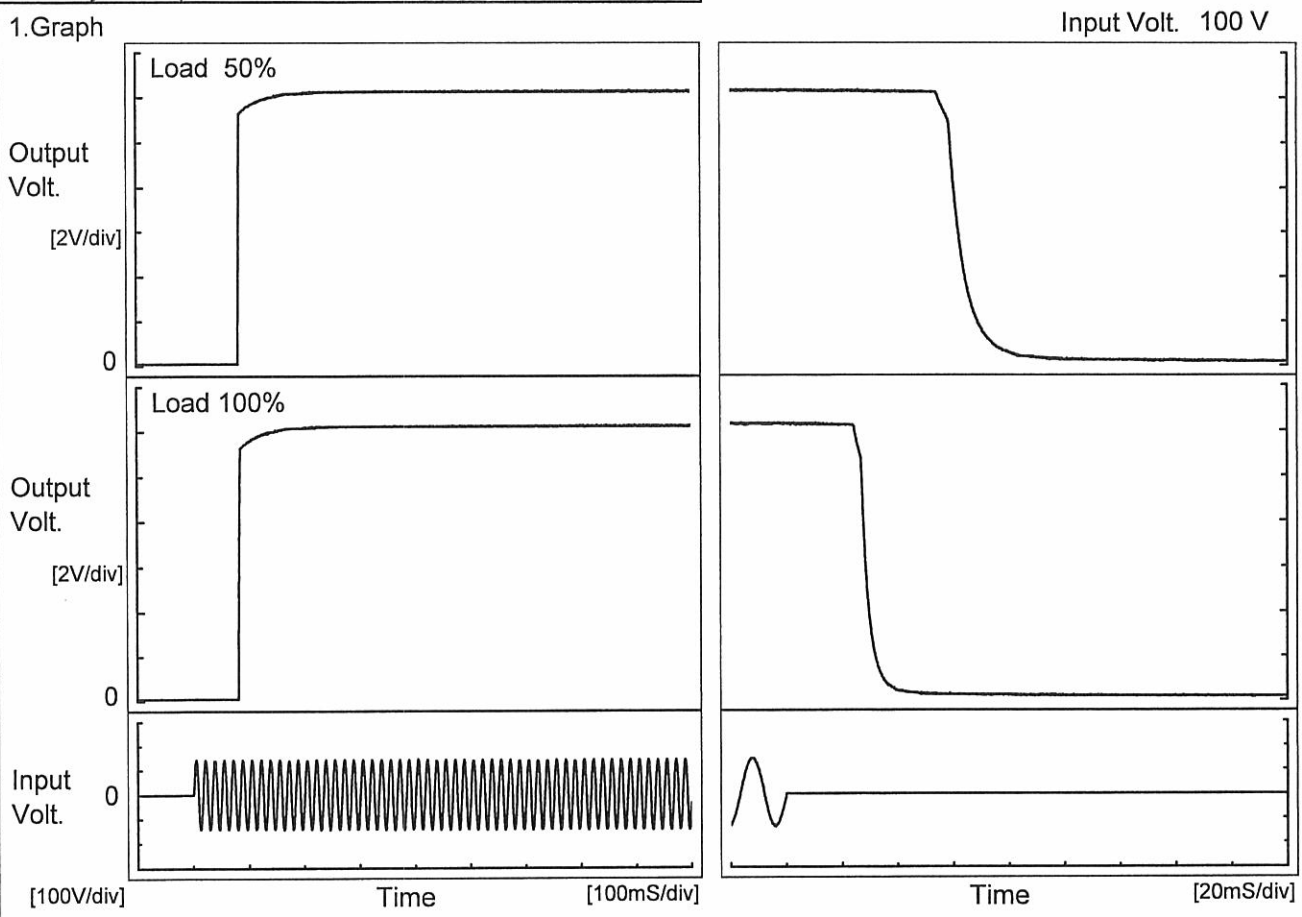
Time since start [H]	Output Voltage [V]
0.0	12.325
0.5	12.311
1.0	12.311
2.0	12.311
3.0	12.311
4.0	12.312
5.0	12.312
6.0	12.312
7.0	12.312
8.0	12.312

COSEL

Model	LGA150A-12
Item	Rise and Fall Time
Object	+12V12.5A

Temperature 25°C
Testing Circuitry Figure A

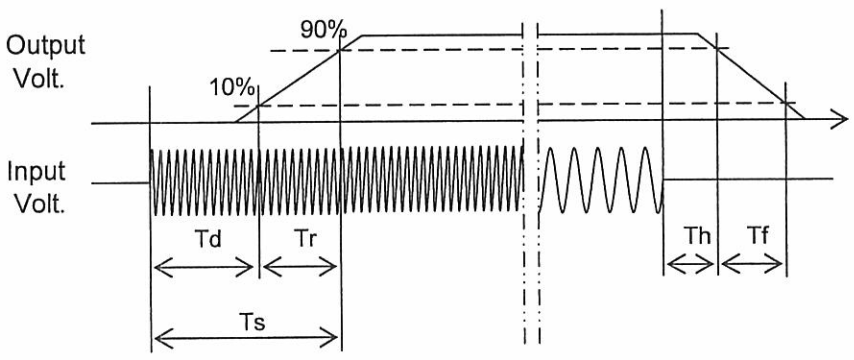
1.Graph



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	82.5	2.0	84.5	58.4	13.5
100 %	82.0	3.0	85.0	26.7	7.0

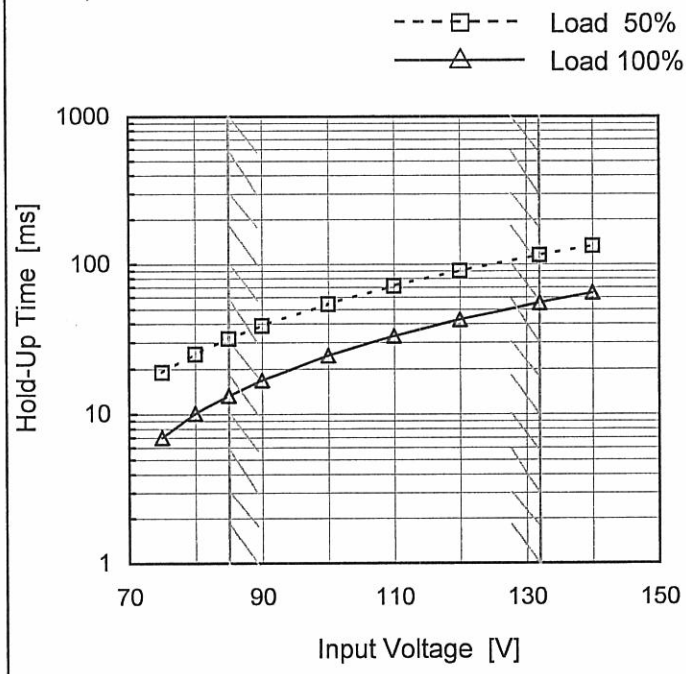


COSEL

Model	LGA150A-12
Item	Hold-Up Time
Object	+12V12.5A

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

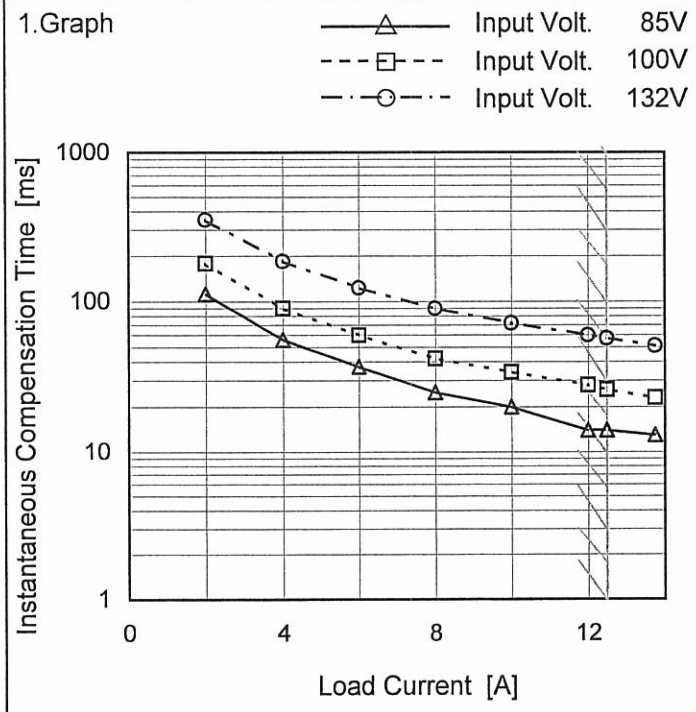
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	19	7
80	25	10
85	32	13
90	39	17
100	54	25
110	71	33
120	90	43
132	115	55
140	133	64

COSEL

Model	LGA150A-12
Item	Instantaneous Interruption Compensation
Object	+12V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

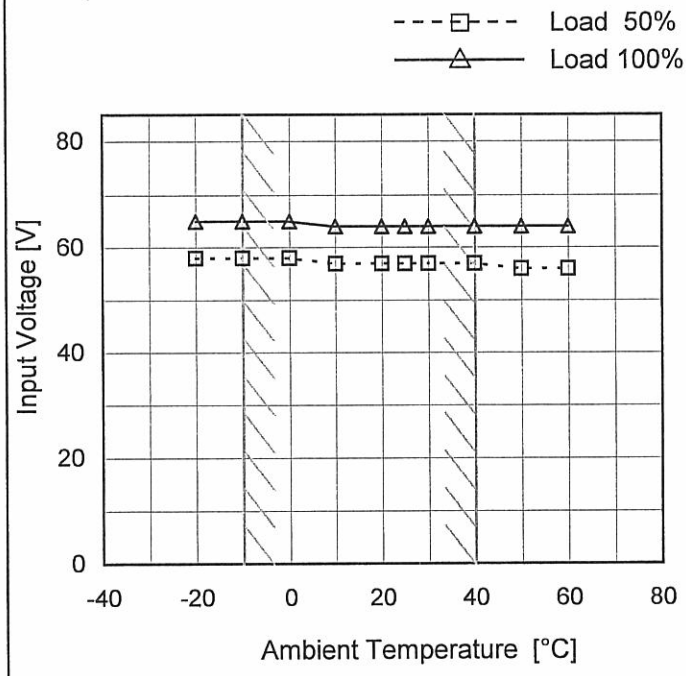
Load Current [A]	Time [ms] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	-	-	-
2.00	112	179	351
4.00	56	90	185
6.00	37	60	123
8.00	25	42	90
10.00	20	34	72
12.00	14	28	60
12.50	14	26	57
13.75	13	23	51
--	-	-	-
--	-	-	-

COSEL

Model	LGA150A-12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V12.5A

Testing Circuitry Figure A

1.Graph



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

2.Values

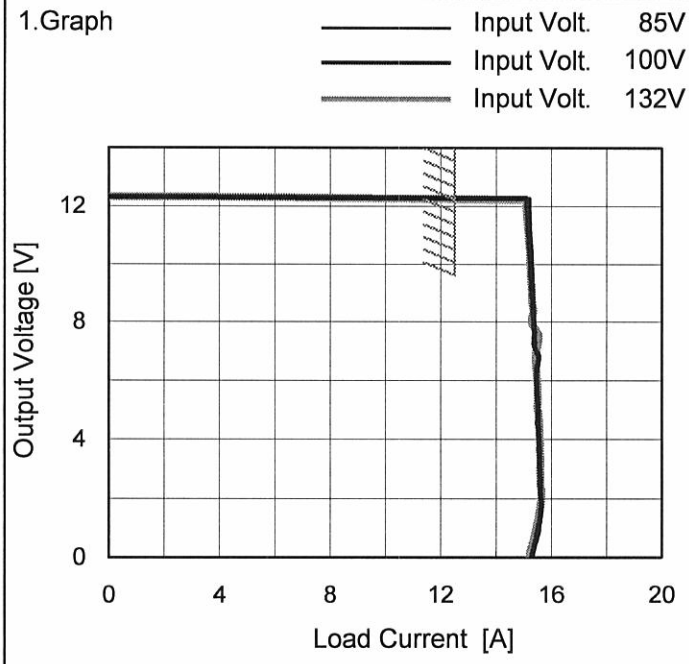
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	58	65
-10	58	65
0	58	65
10	57	64
20	57	64
25	57	64
30	57	64
40	57	64
50	56	64
60	56	64
--	-	-

COSEL

Model	LGA150A-12
Item	Overcurrent Protection
Object	+12V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

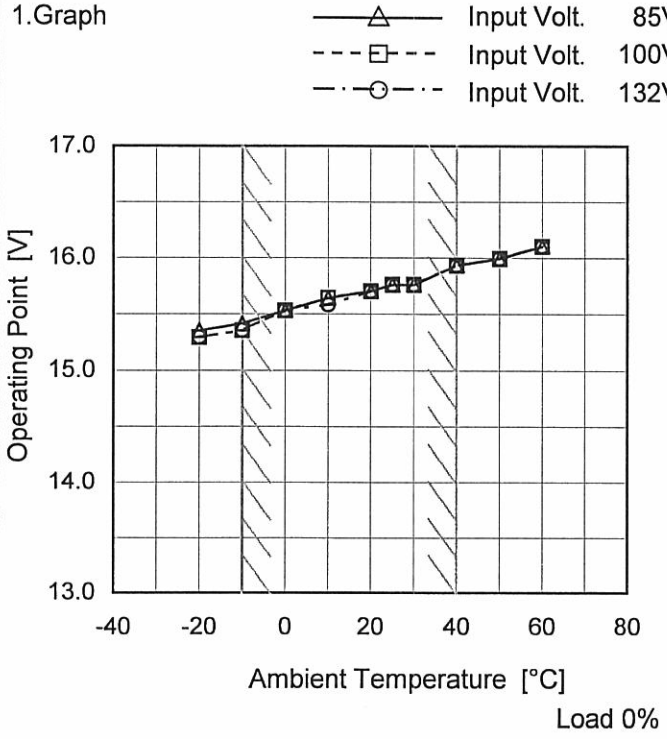
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
12.0	15.23	15.11	15.08
11.4	15.25	15.15	15.14
10.8	15.28	15.18	15.19
9.6	15.33	15.26	15.25
8.4	15.38	15.33	15.35
7.2	15.45	15.37	15.51
6.0	15.50	15.47	15.48
4.8	15.55	15.52	15.54
3.6	15.61	15.56	15.59
2.4	15.64	15.60	15.62
1.2	15.63	15.57	15.52
0.0	15.37	15.28	15.20

COSEL

Model	LGA150A-12
Item	Overvoltage Protection
Object	+12V12.5A

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. 100[V]	Input Volt. 132[V]
-20	15.35	15.29	15.29
-10	15.41	15.35	15.35
0	15.53	15.53	15.53
10	15.64	15.64	15.58
20	15.70	15.70	15.70
25	15.76	15.76	15.76
30	15.76	15.76	15.76
40	15.93	15.93	15.93
50	15.99	15.99	15.99
60	16.10	16.10	16.10
--	-	-	-

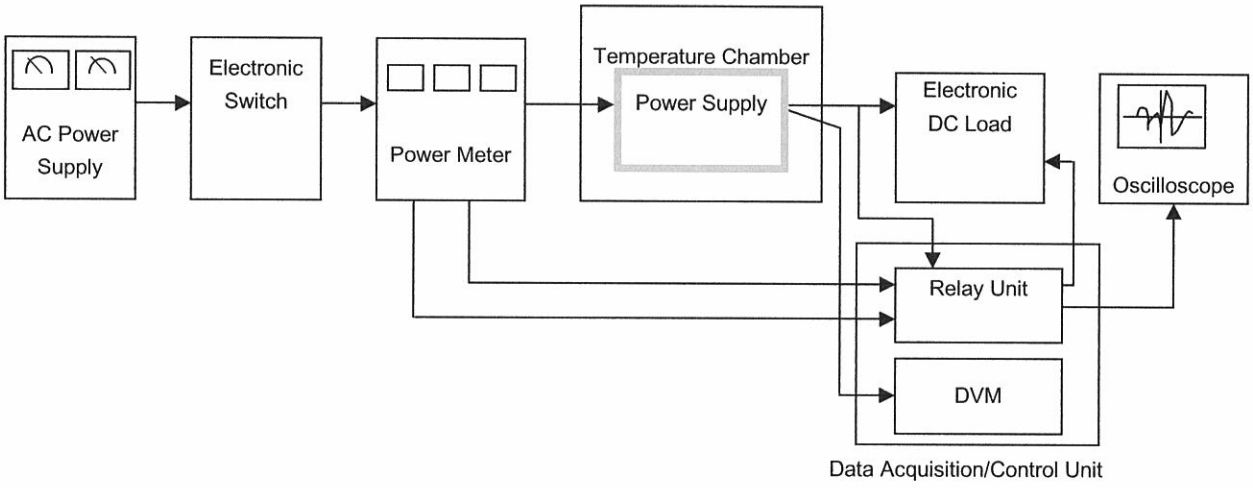


Figure A

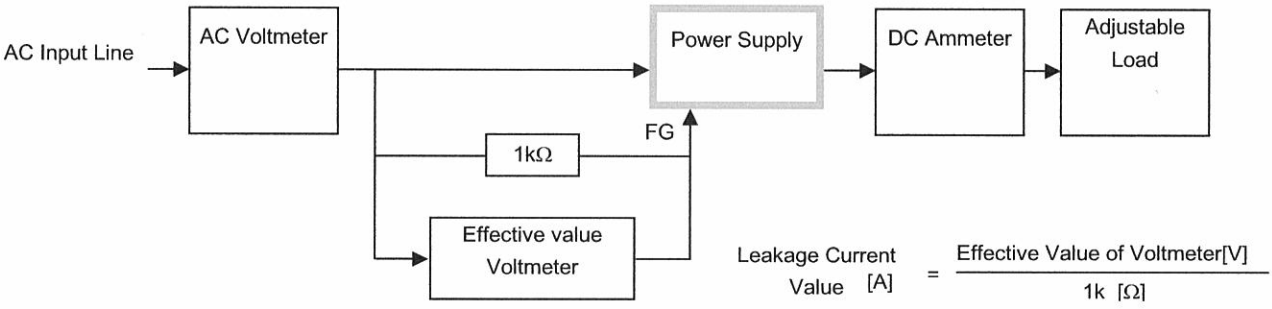


Figure B (DEN-AN)

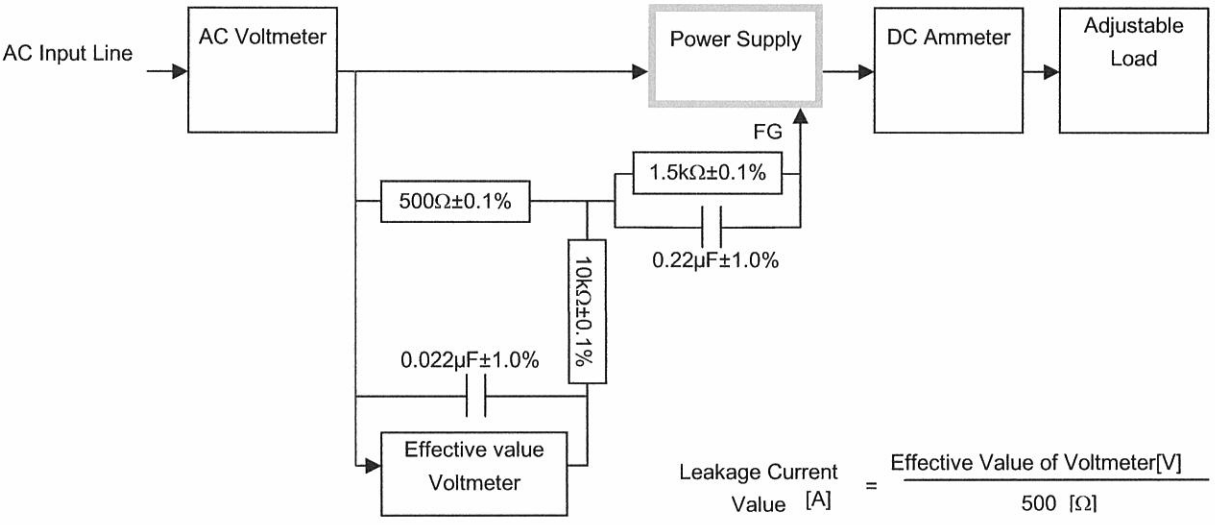


Figure B (IEC60950-1)

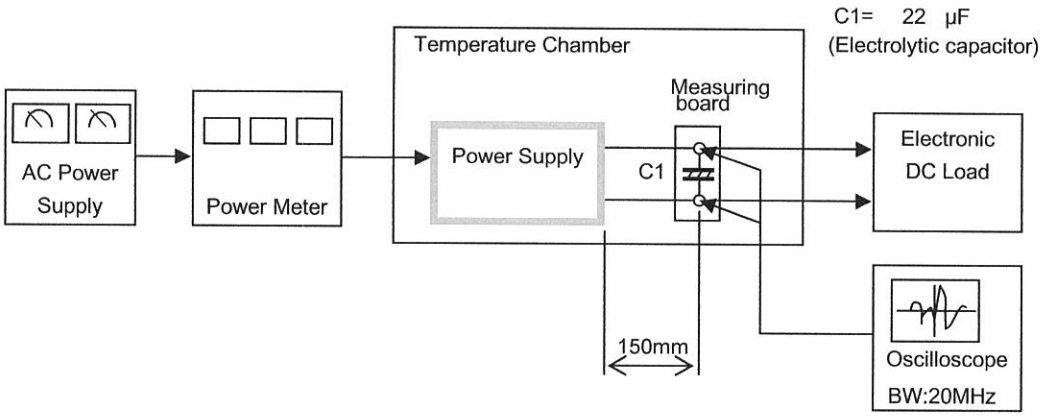

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C