参考資料

COSEL

TEST DATA OF LGA150A-24

Regulated DC Power Supply
April 15 , 2008

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COSEL CO.,LTD.

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CONTENTS

1.Input Current (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・ 1
2.Input Power (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・ 2
3.Efficiency (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・ 3
4.Efficiency (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・ 4
5.Power Factor (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・ 5
6.Power Factor (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・ 6
7.Inrush Current ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 7
8.Leakage Current ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 8
9.Line Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 9
10.Load Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 10
11.Dynamic Load Response ・・・・・・・・・・・・・・・・・・・・・・・・・・ 11
12.Ripple Voltage (by Load Current) ・・・・・・・・・・・・・・・・・・・・・ 12
13.Ripple-Noise ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 13
14.Ripple Voltage (by Ambient Temperature) ・・・・・・・・・・・・・・・・・ 14
15.Ambient Temperature Drift ・・・・・・・・・・・・・・・・・・・・・・・・ 15
16.Output Voltage Accuracy ・・・・・・・・・・・・・・・・・・・・・・・・・ 16
17.Time Lapse Drift ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 17
18.Rise and Fall Time ・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 18
19.Hold-Up Time ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 19
20.Instantaneous Interruption Compensation ・・・・・・・・・・・・・・・・・ 20
21.Minimum Input Voltage for Regulated Output Voltage ・・・・・・・・・・・ 21
22.Overcurrent Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・ 22
23.Overvoltage Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・ 23
24.Figure of Testing Circuitry ・・・・・・・・・・・・・・・・・・・・・・・・ 24
(Final Page 25)

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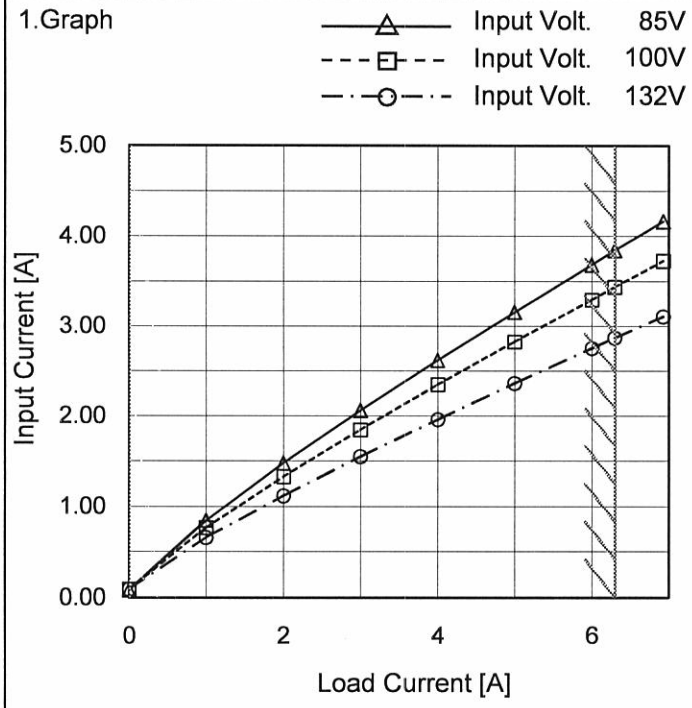
Model	LGA150A-24
Item	Input Current (by Load Current)
Object	————————

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	0.084	0.088	0.094
1.00	0.844	0.764	0.653
2.00	1.474	1.324	1.115
3.00	2.058	1.846	1.545
4.00	2.614	2.345	1.958
5.00	3.153	2.826	2.360
6.00	3.680	3.295	2.750
6.30	3.840	3.435	2.866
6.93	4.160	3.724	3.106
--	-	-	-
--	-	-	-

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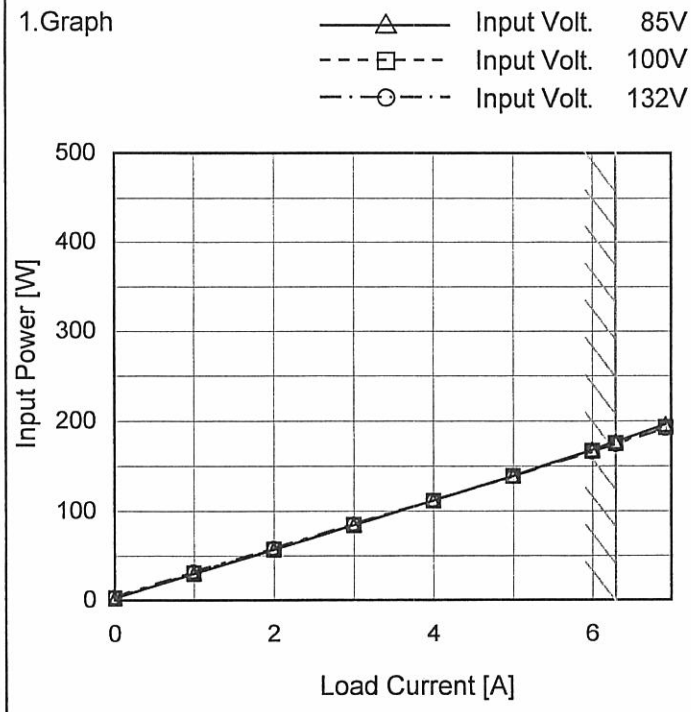
Model	LGA150A-24
Item	Input Power (by Load Current)
Object	————————

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	2.1	2.5	3.4
1.00	29.9	30.5	31.9
2.00	56.6	57.0	58.3
3.00	84.0	84.3	85.1
4.00	111.6	111.3	111.6
5.00	139.5	138.9	138.6
6.00	168.0	166.8	165.9
6.30	177.0	175.2	174.3
6.93	196.0	192.9	191.7
--	-	-	-
--	-	-	-

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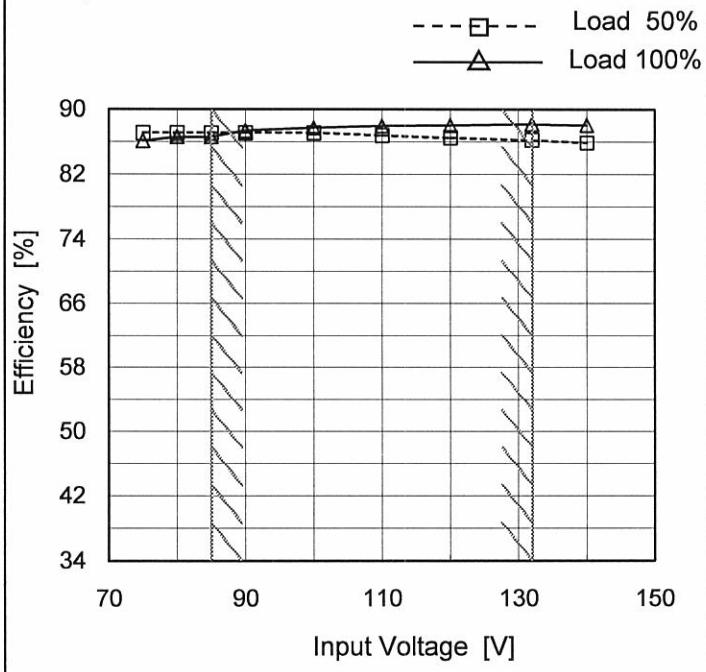
Model	LGA150A-24
Item	Efficiency (by Input Voltage)
Object	———————————

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	87.1	86.1
80	87.1	86.6
85	87.1	86.6
90	87.1	87.3
100	87.1	87.7
110	86.8	87.9
120	86.5	88.0
132	86.2	88.1
140	85.9	88.0

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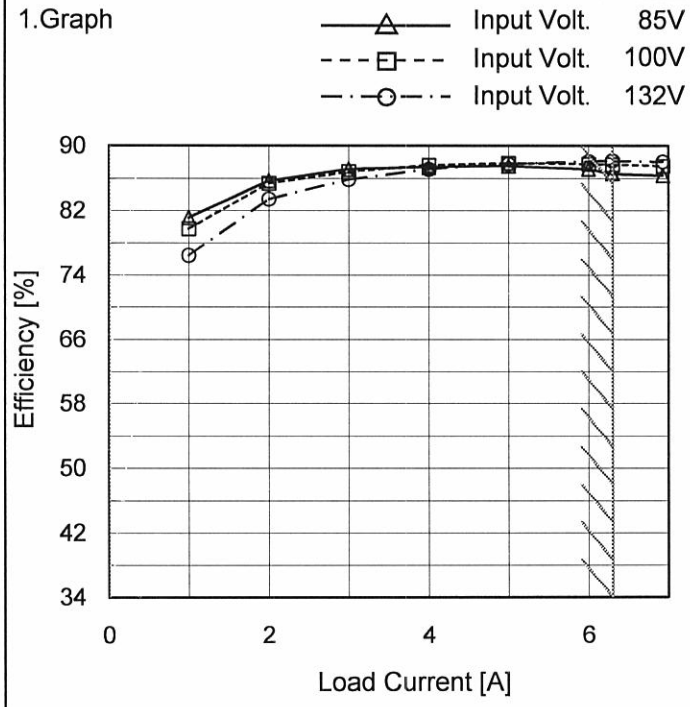
Model	LGA150A-24
Item	Efficiency (by Load Current)
Object	————————

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	-	-	-
1.00	81.1	79.8	76.4
2.00	85.7	85.4	83.4
3.00	87.1	86.8	85.9
4.00	87.4	87.6	87.1
5.00	87.5	87.9	87.8
6.00	87.1	87.8	88.1
6.30	86.6	87.7	88.1
6.93	86.4	87.5	88.0
--	-	-	-
--	-	-	-

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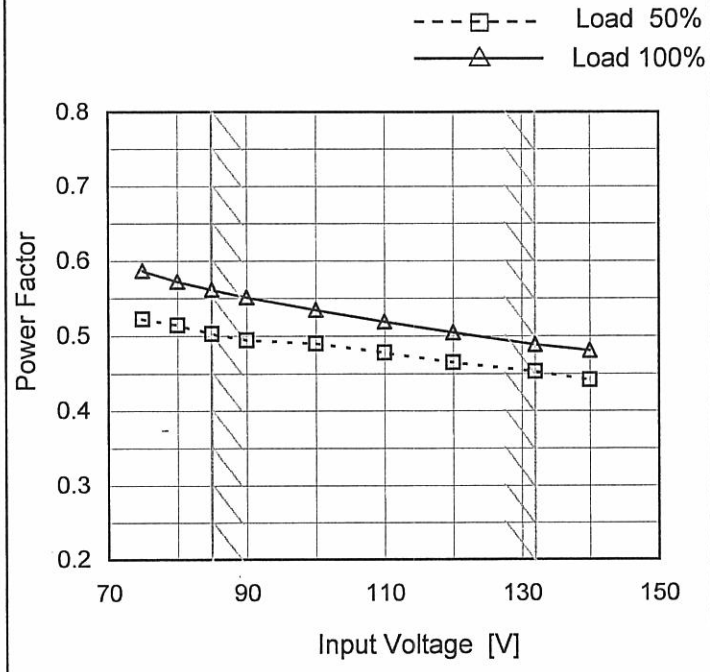
Model	LGA150A-24
Item	Power Factor (by Input Voltage)
Object	———————————

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	0.523	0.587
80	0.514	0.572
85	0.503	0.562
90	0.494	0.551
100	0.490	0.534
110	0.478	0.519
120	0.465	0.505
132	0.453	0.489
140	0.442	0.481

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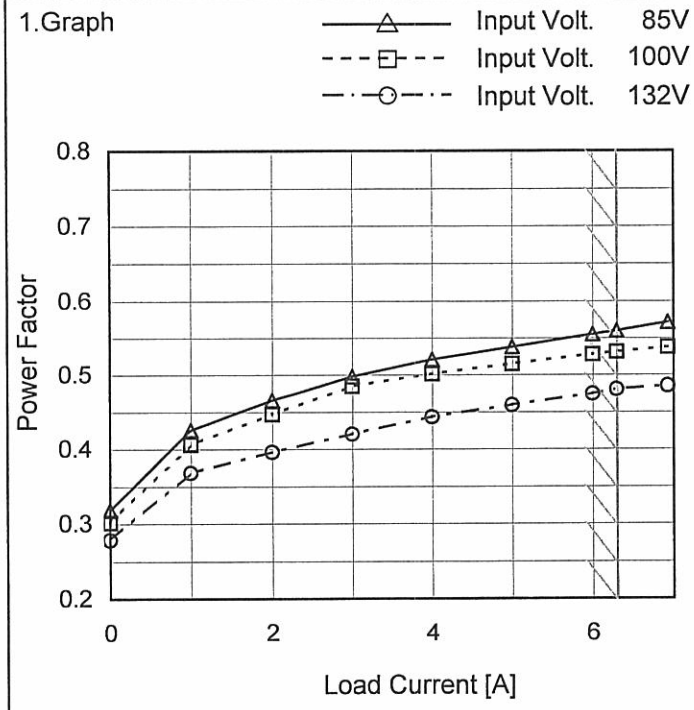
Model	LGA150A-24
Item	Power Factor (by Load Current)
Object	————————

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	0.318	0.302	0.279
1.00	0.426	0.406	0.368
2.00	0.466	0.447	0.396
3.00	0.498	0.485	0.420
4.00	0.521	0.501	0.443
5.00	0.538	0.515	0.459
6.00	0.555	0.528	0.475
6.30	0.560	0.531	0.481
6.93	0.571	0.537	0.485
--	-	-	-
--	-	-	-

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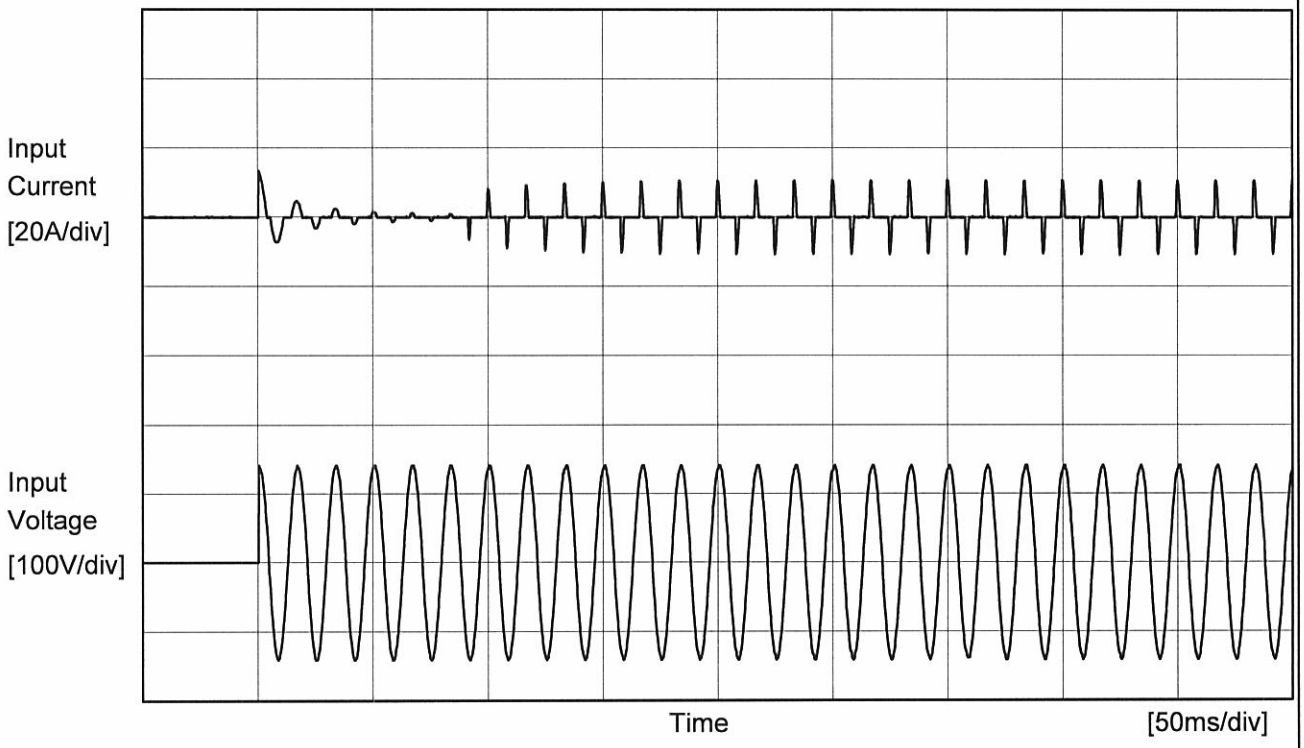
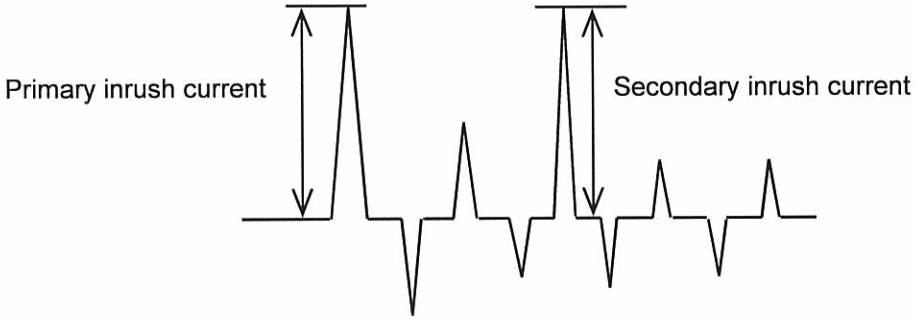
Model	LGA150A-24
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	13.2 A
Secondary inrush current	10.9 A



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Model	LGA150A-24	
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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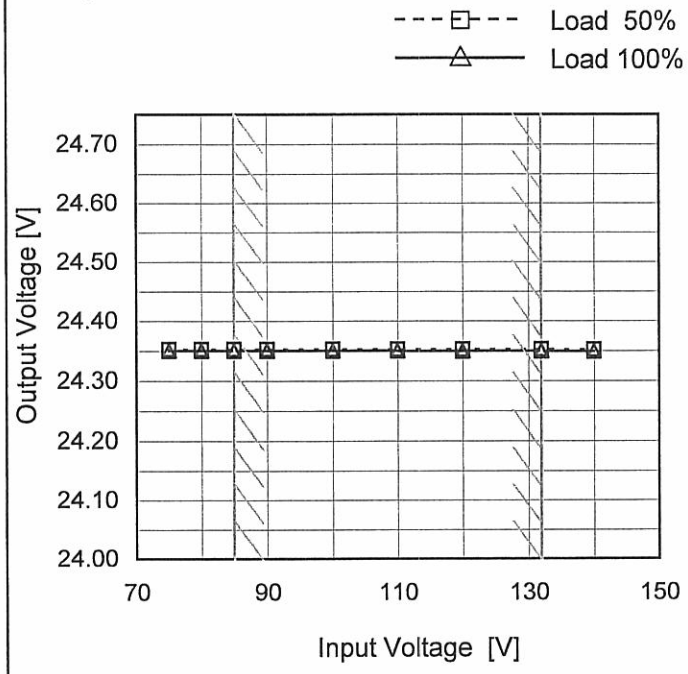
Model	LGA150A-24
Item	Line Regulation
Object	+24V6.3A

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	24.353	24.350
80	24.353	24.350
85	24.353	24.350
90	24.353	24.350
100	24.353	24.350
110	24.353	24.350
120	24.353	24.350
132	24.352	24.350
140	24.352	24.349

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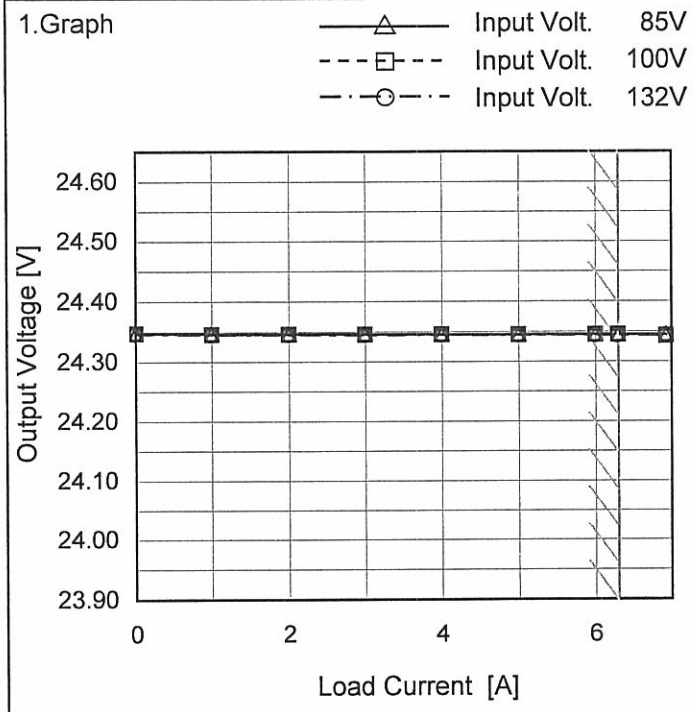
Model	LGA150A-24
Item	Load Regulation
Object	+24V6.3A

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	24.348	24.347	24.347
1.00	24.346	24.346	24.345
2.00	24.346	24.346	24.345
3.00	24.346	24.345	24.345
4.00	24.345	24.345	24.344
5.00	24.345	24.345	24.344
6.00	24.345	24.345	24.344
6.30	24.345	24.345	24.344
6.93	24.345	24.343	24.344
--	-	-	-
--	-	-	-

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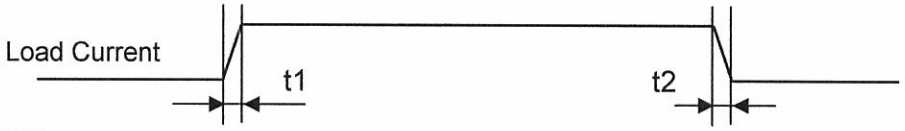
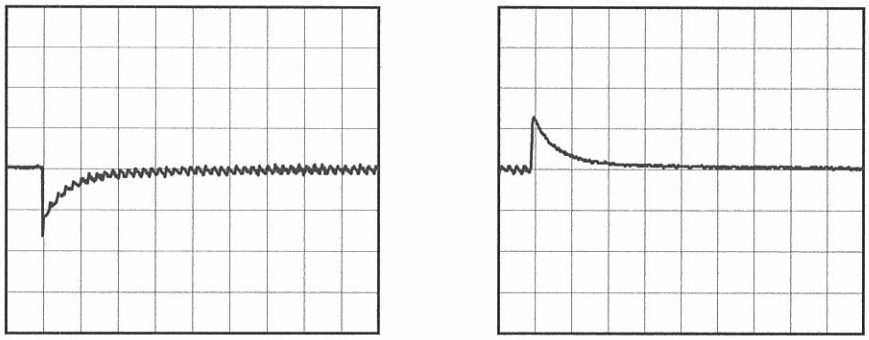
Model	LGA150A-24		
Item	Dynamic Load Response	Temperature	25°C
Object	+24V6.3A	Testing Circuitry	Figure A

Input Volt. 100 V
Cycle 1000 ms

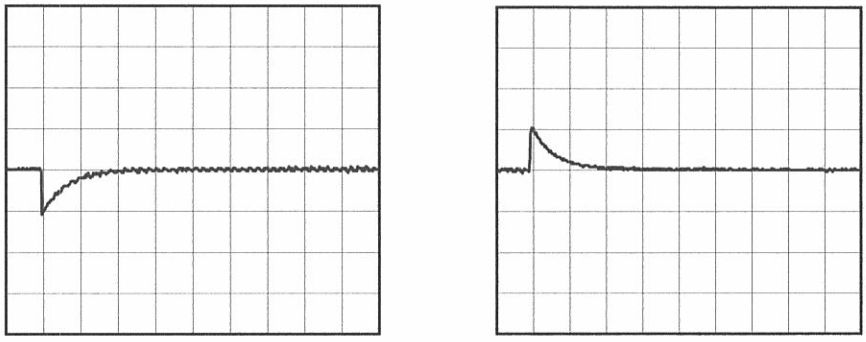
Response. t1=t2=50us. Typ



Min. Load (0A) ⟷
Load 100% (6.3A)



Min. Load (0A) ⟷
Load 50% (3.15A)



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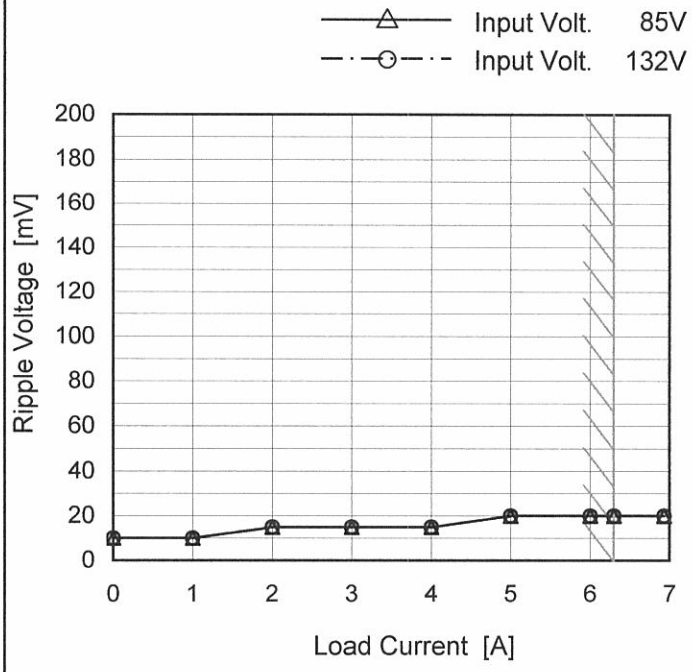
Model	LGA150A-24
Item	Ripple Voltage (by Load Current)
Object	+24V6.3A

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.

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	10	10
1.00	10	10
2.00	15	15
3.00	15	15
4.00	15	15
5.00	20	20
6.00	20	20
6.30	20	20
6.93	20	20
--	-	-
--	-	-

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

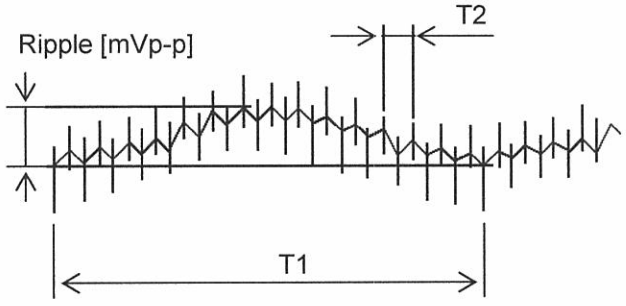


Fig. Complex Ripple Wave Form

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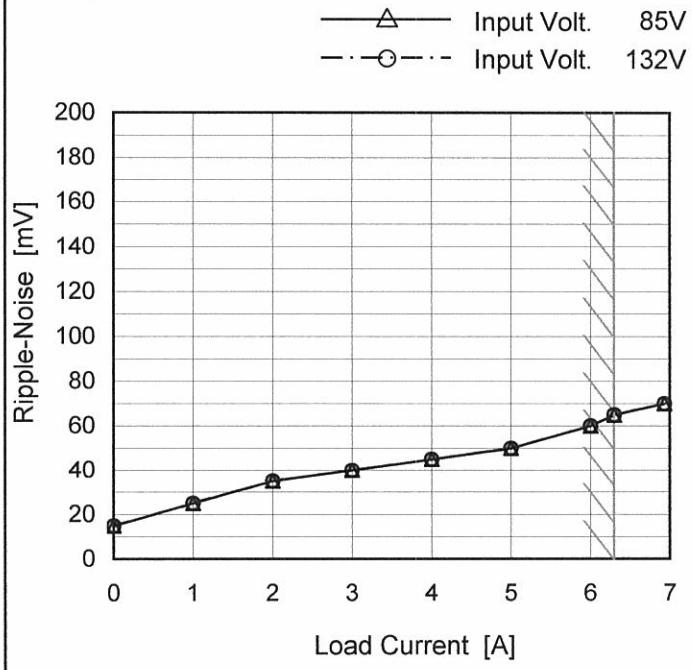
Model	LGA150A-24
Item	Ripple-Noise
Object	+24V6.3A

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
1.00	25	25
2.00	35	35
3.00	40	40
4.00	45	45
5.00	50	50
6.00	60	60
6.30	65	65
6.93	70	70
--	-	-
--	-	-

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

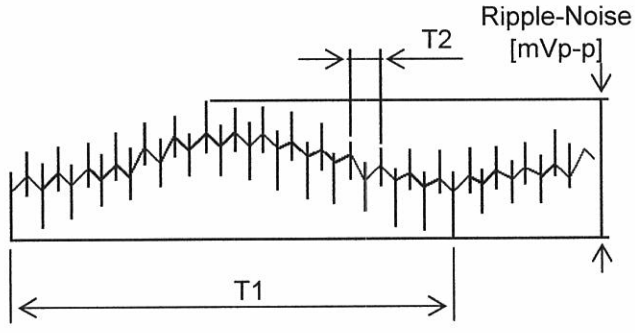


Fig. Complex Ripple Wave Form

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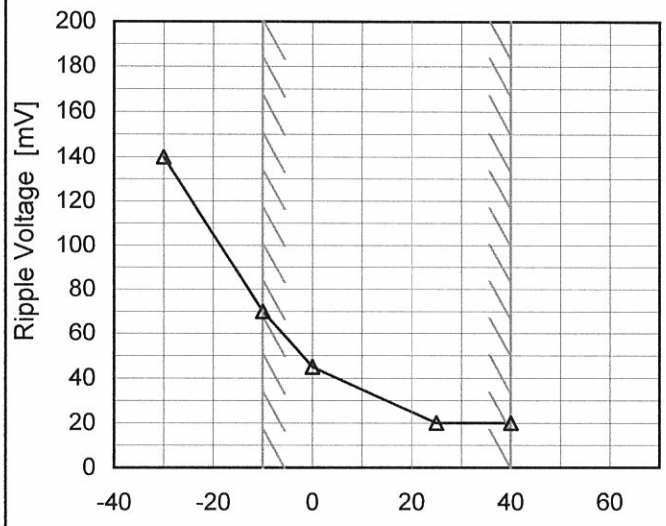
Model	LGA150A-24
Item	Ripple Voltage (by Ambient Temp.)
Object	+24V6.3A

Testing Circuitry FigureC

1.Graph



Input Volt. 100V

Input Load. 100%

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]
-30	140
-10	70
0	45
25	20
40	20
--	-
--	-
--	-
--	-
--	-
--	-

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

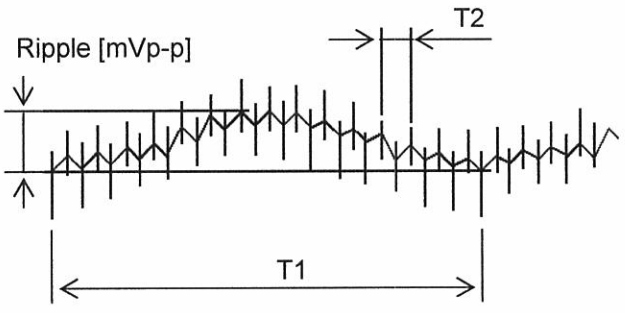


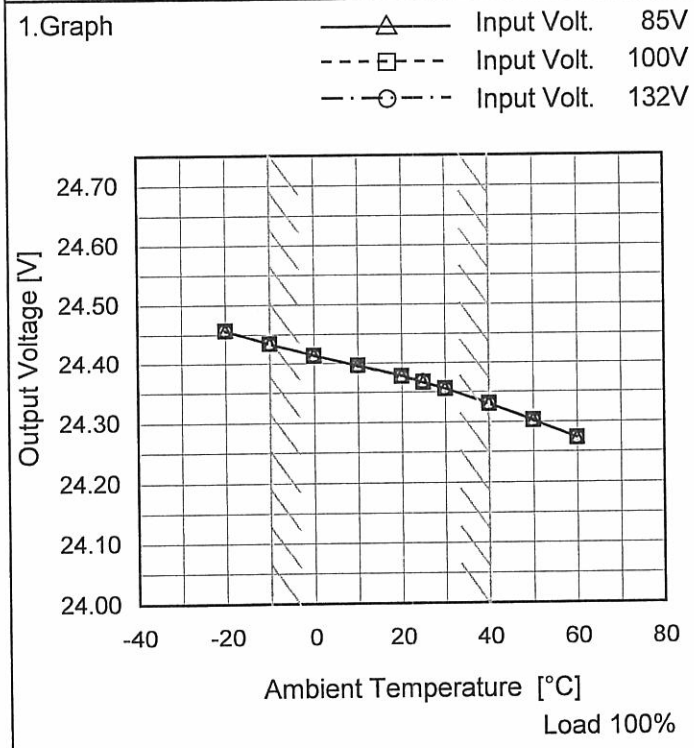
Fig. Complex Ripple Wave Form

COSEL

Model	LGA150A-24
Item	Ambient Temperature Drift
Object	+24V6.3A

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	24.457	24.457	24.457
-10	24.434	24.434	24.434
0	24.414	24.414	24.414
10	24.396	24.396	24.395
20	24.378	24.377	24.377
25	24.367	24.367	24.368
30	24.356	24.356	24.356
40	24.331	24.331	24.331
50	24.303	24.303	24.303
60	24.273	24.273	24.273
--	-	-	-

COSEL

Model	LGA150A-24	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+24V6.3A	

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 - 6.3A

* 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	85	0	24.439	±54	±0.2
Minimum Voltage	40	132	6.3	24.331		

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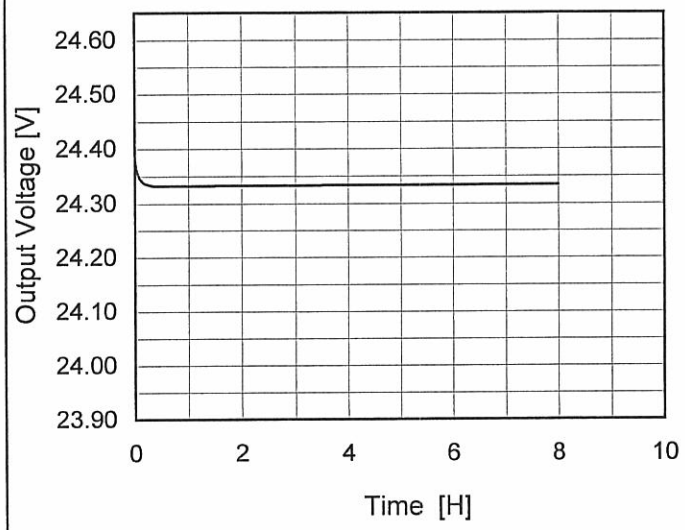
Model	LGA150A-24
Item	Time Lapse Drift
Object	+24V6.3A

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	24.382
0.5	24.333
1.0	24.333
2.0	24.333
3.0	24.333
4.0	24.334
5.0	24.334
6.0	24.334
7.0	24.335
8.0	24.334

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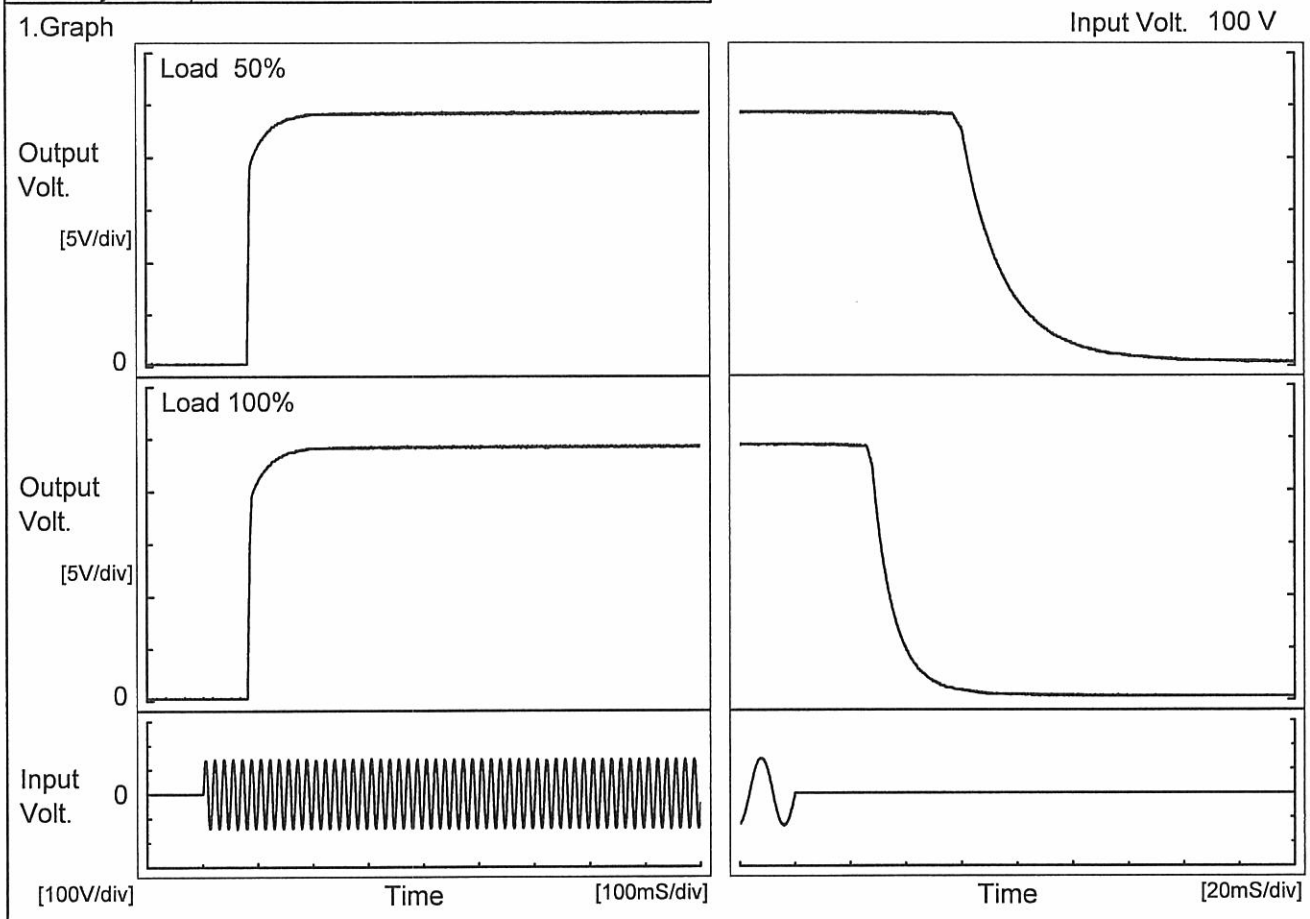
Model	LGA150A-24
Item	Rise and Fall Time
Object	+24V6.3A

Temperature 25°C
Testing Circuitry Figure A

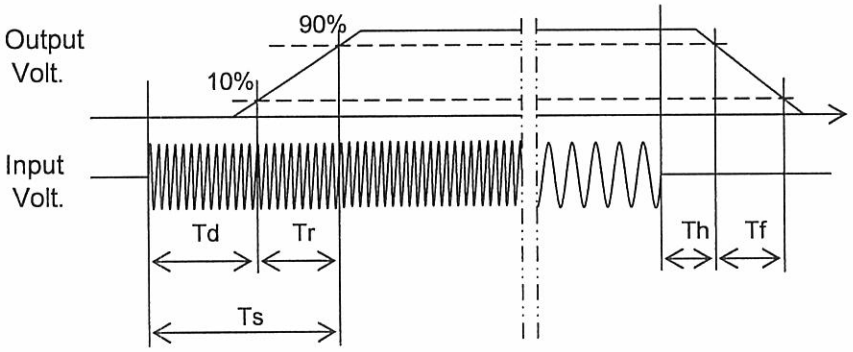
1.Graph



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	82.5	28.5	111.0	60.6	35.4
100 %	82.5	28.0	110.5	28.2	17.7



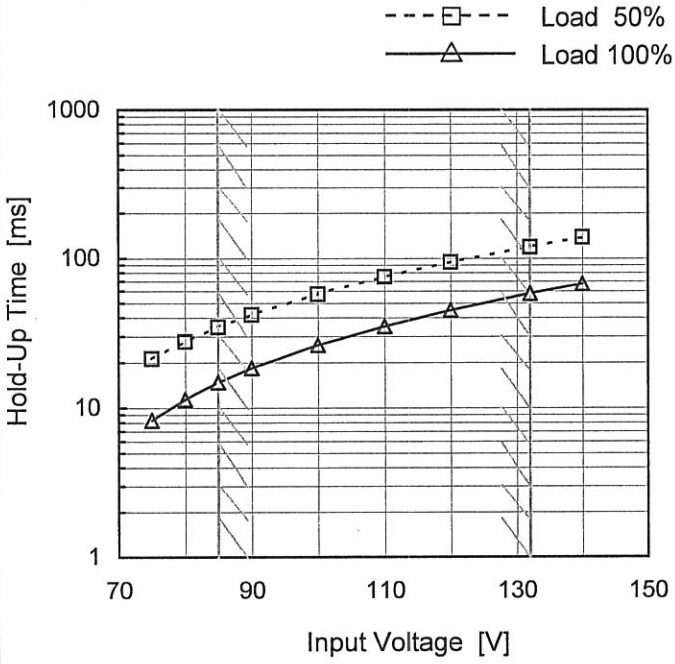
BC-10161

COSEL

Model	LGA150A-24
Item	Hold-Up Time
Object	+24V6.3A

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

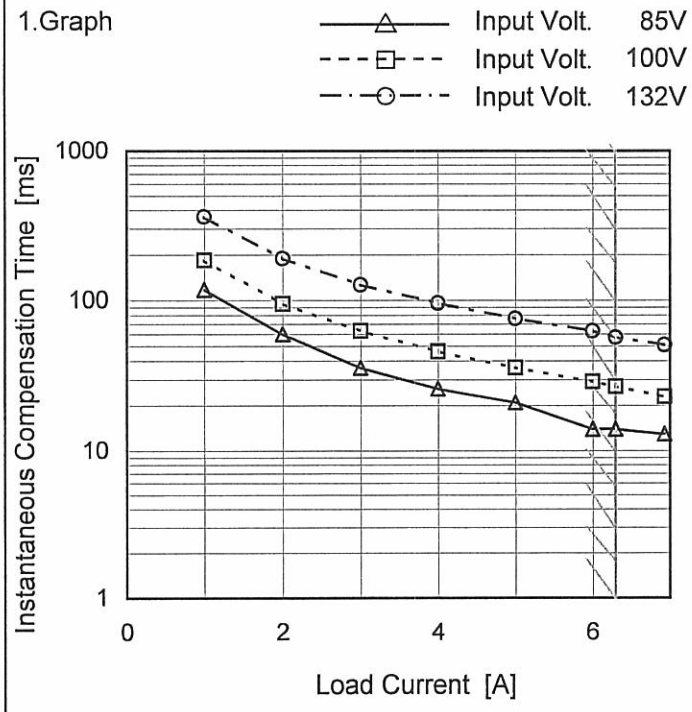
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	21	8
80	28	11
85	35	15
90	42	18
100	58	26
110	75	35
120	94	45
132	119	58
140	138	67

COSEL

Model	LGA150A-24
Item	Instantaneous Interruption Compensation
Object	+24V6.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

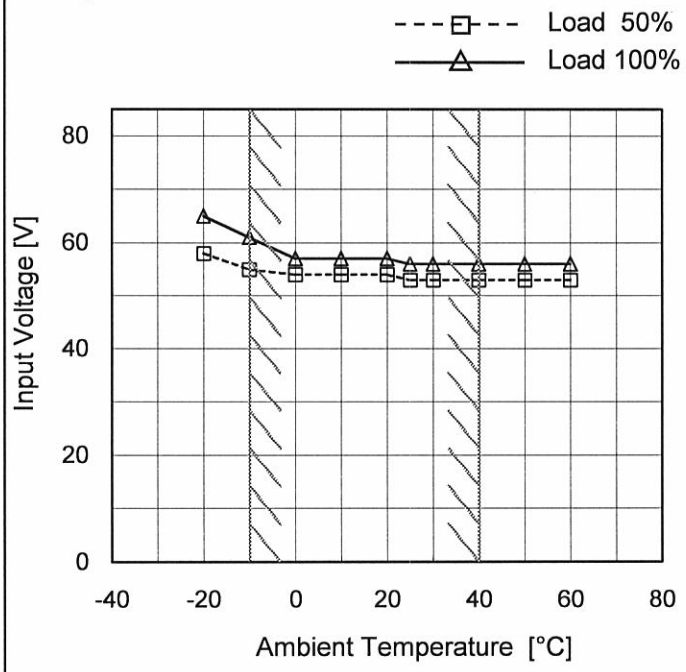
Load Current [A]	Time [ms]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	-	-	-
1.00	118	185	362
2.00	60	95	190
3.00	36	63	127
4.00	26	46	96
5.00	21	36	76
6.00	14	29	63
6.30	14	27	57
6.93	13	23	51
--	-	-	-
--	-	-	-

COSEL

Model	LGA150A-24
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+24V6.3A

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	55	61
0	54	57
10	54	57
20	54	57
25	53	56
30	53	56
40	53	56
50	53	56
60	53	56
--	-	-

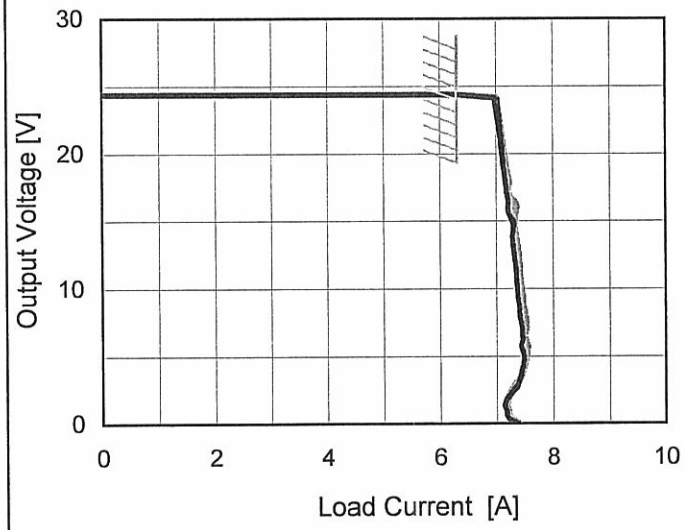
COSEL

Model	LGA150A-24
Item	Overcurrent Protection
Object	+24V6.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Input Volt. 85V
Input Volt. 100V
Input Volt. 132V



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

2.Values

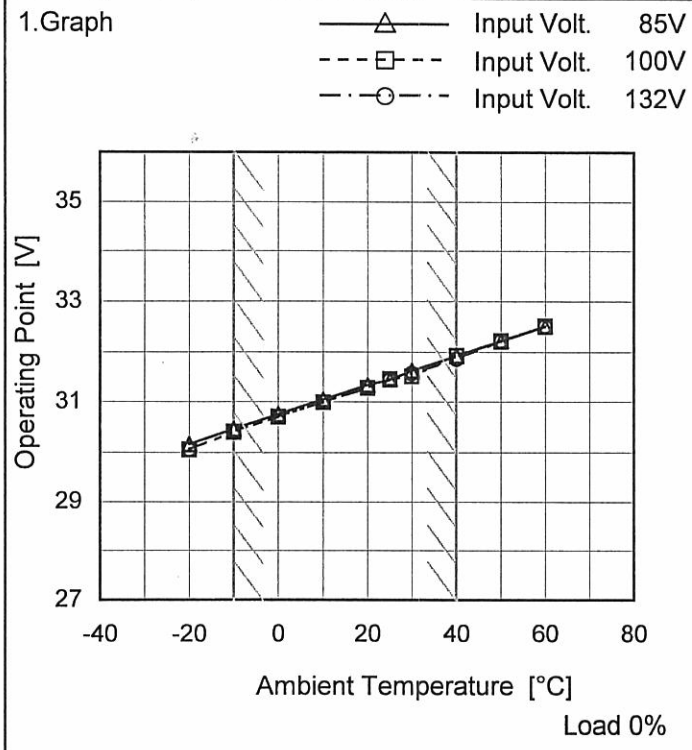
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
24.0	6.53	6.40	7.00
22.8	7.08	7.02	7.05
21.6	7.10	7.06	7.00
19.2	7.15	7.12	7.16
16.8	7.21	7.20	7.23
14.4	7.31	7.31	7.32
12.0	7.32	7.33	7.39
9.6	7.37	7.37	7.45
7.2	7.43	7.44	7.51
4.8	7.48	7.48	7.51
2.4	7.38	7.30	7.29
0.0	7.38	7.39	7.39

COSEL

Model	LGA150A-24
Item	Overvoltage Protection
Object	+24V6.3A

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	30.16	30.05	30.05
-10	30.46	30.40	30.40
0	30.75	30.70	30.70
10	31.05	30.99	30.99
20	31.34	31.28	31.28
25	31.45	31.46	31.45
30	31.63	31.51	31.57
40	31.92	31.92	31.86
50	32.21	32.21	32.21
60	32.50	32.50	32.50
--	-	-	-

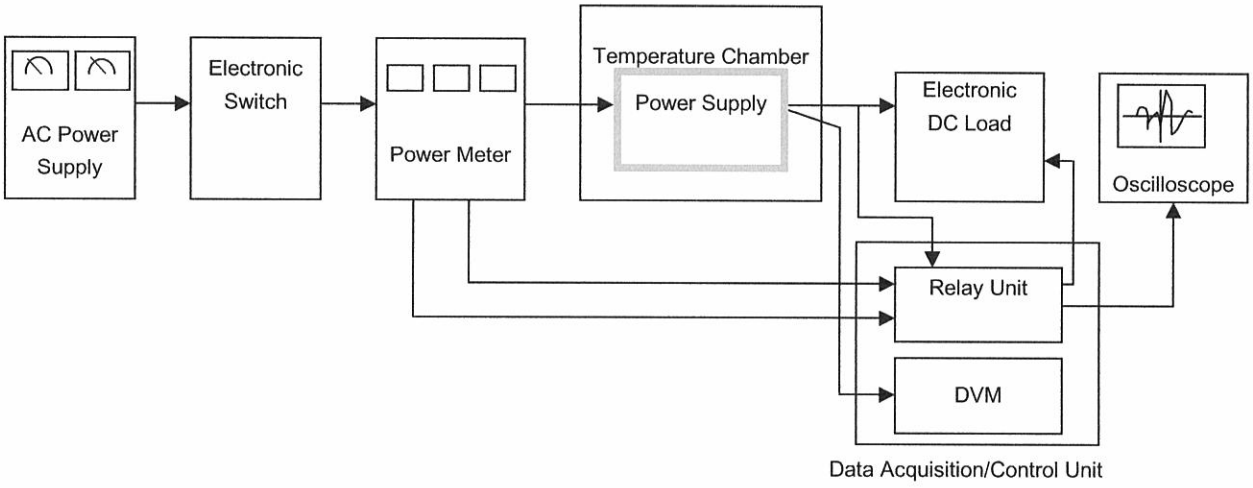


Figure A

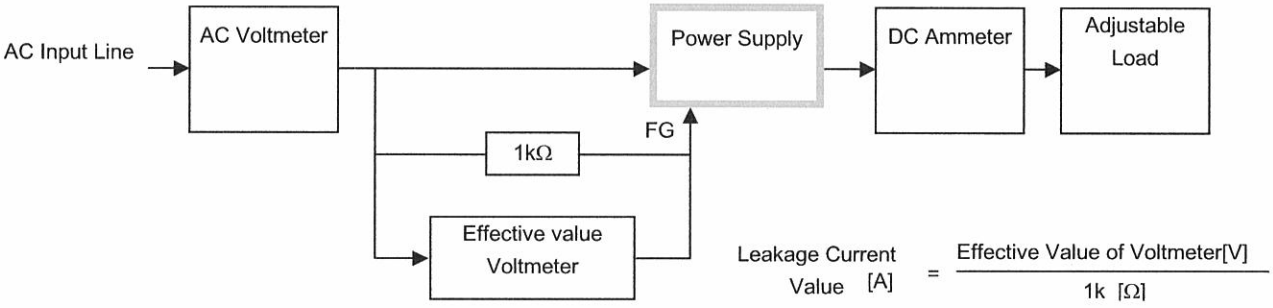


Figure B (DEN-AN)

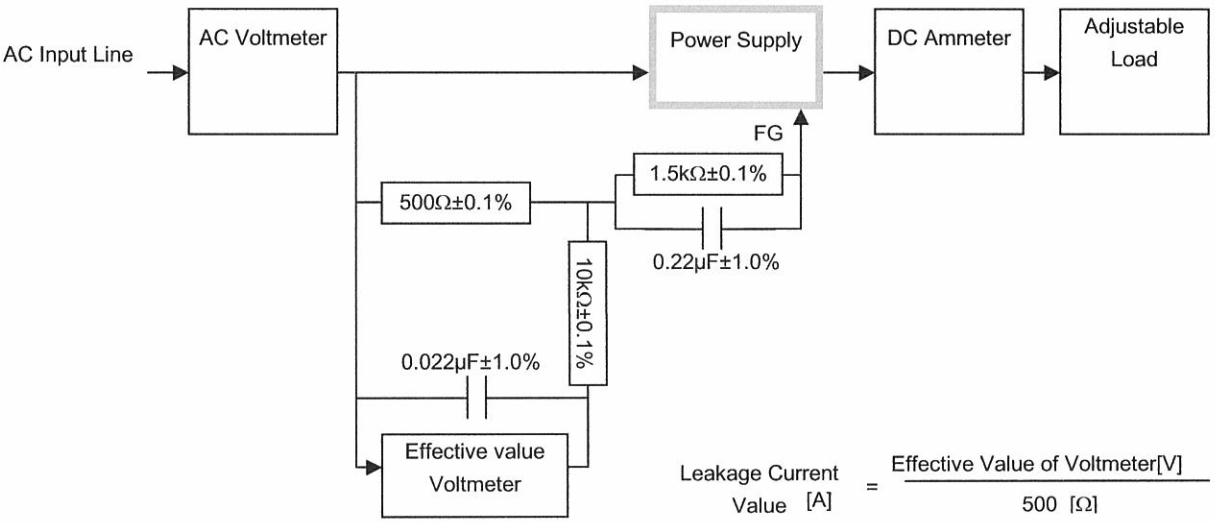


Figure B (IEC60950-1)

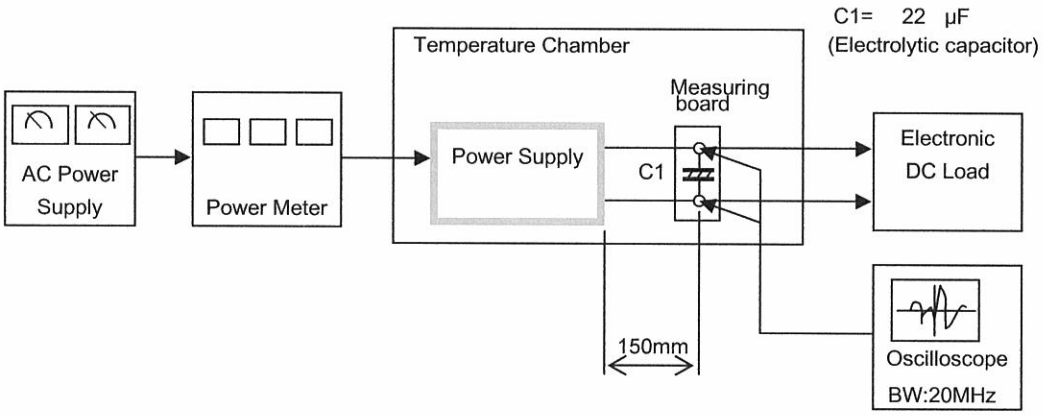

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C