参考資料

COSEL

TEST DATA OF LGA150A-48

Regulated DC Power Supply
May 20, 2011

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COSEL CO.,LTD.

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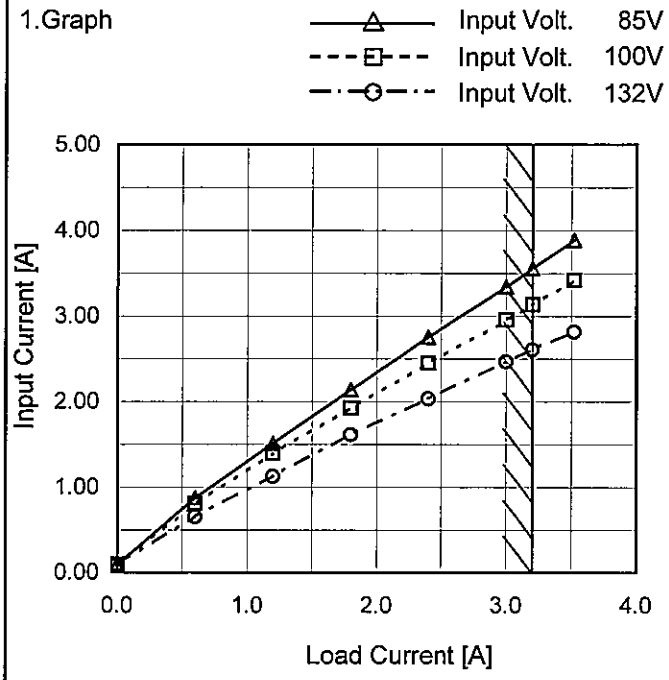
Model	LGA150A-48
Item	Input Current (by Load Current)
Object	———————

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	0.089	0.092	0.095
0.60	0.878	0.803	0.657
1.20	1.517	1.395	1.128
1.80	2.141	1.924	1.615
2.40	2.754	2.451	2.037
3.00	3.345	2.952	2.471
3.20	3.558	3.131	2.610
3.52	3.890	3.416	2.819
--	-	-	-
--	-	-	-
--	-	-	-

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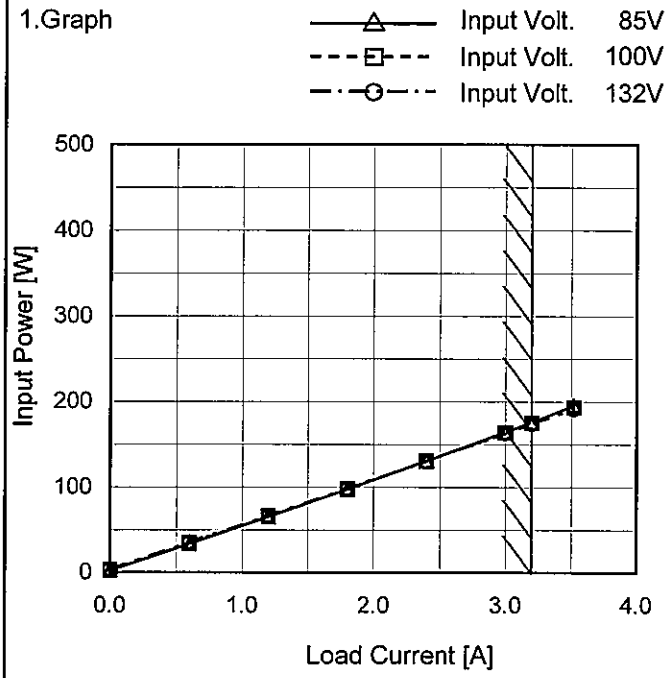
Model	LGA150A-48
Item	Input Power (by Load Current)
Object	————————

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	2.4	2.9	3.6
0.60	33.6	34.2	35.6
1.20	65.7	65.6	66.6
1.80	97.8	97.8	98.4
2.40	131.1	130.5	130.5
3.00	164.8	163.5	162.9
3.20	176.4	174.6	173.7
3.52	196.0	192.9	191.4
--	-	-	-
--	-	-	-
--	-	-	-

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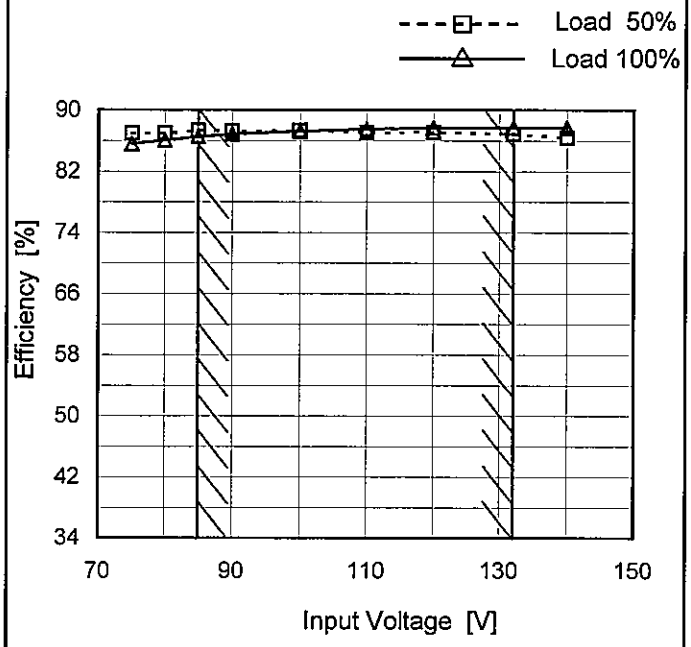
Model	LGA150A-48
Item	Efficiency (by Input Voltage)
Object	———————

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	87.0	85.6
80	87.0	86.1
85	87.3	86.5
90	87.3	86.9
100	87.3	87.2
110	87.1	87.6
120	87.1	87.7
132	86.9	87.8
140	86.4	87.7

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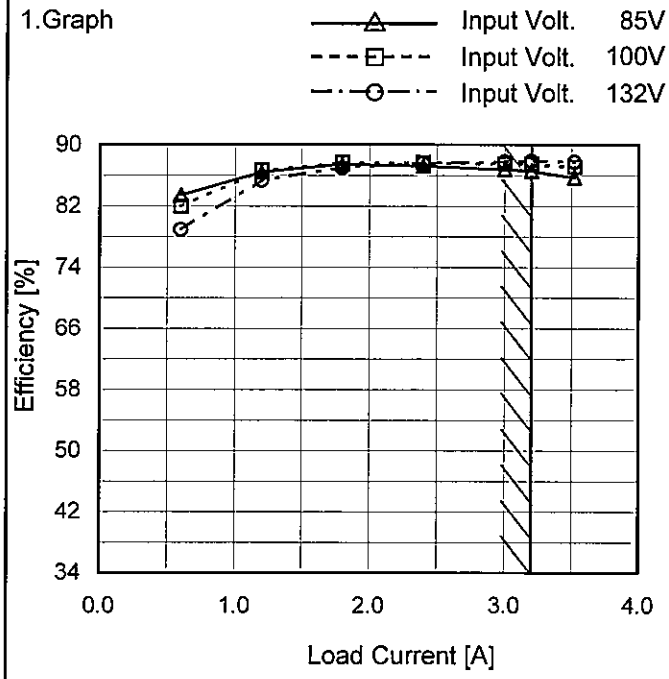
Model	LGA150A-48
Item	Efficiency (by Load Current)
Object	———————

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	-	-	-
0.60	83.4	81.9	78.9
1.20	86.5	86.6	85.4
1.80	87.5	87.6	87.0
2.40	87.3	87.6	87.6
3.00	86.8	87.5	87.8
3.20	86.6	87.5	87.9
3.52	85.8	87.1	87.8
--	-	-	-
--	-	-	-
--	-	-	-

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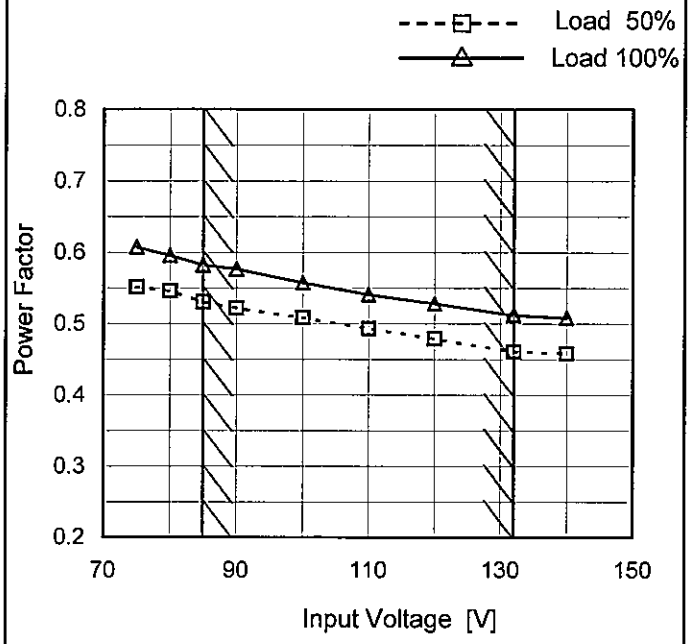
Model	LGA150A-48
Item	Power Factor (by Input Voltage)
Object	

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	0.551	0.608
80	0.546	0.596
85	0.530	0.582
90	0.521	0.577
100	0.508	0.558
110	0.493	0.541
120	0.479	0.529
132	0.461	0.513
140	0.458	0.508

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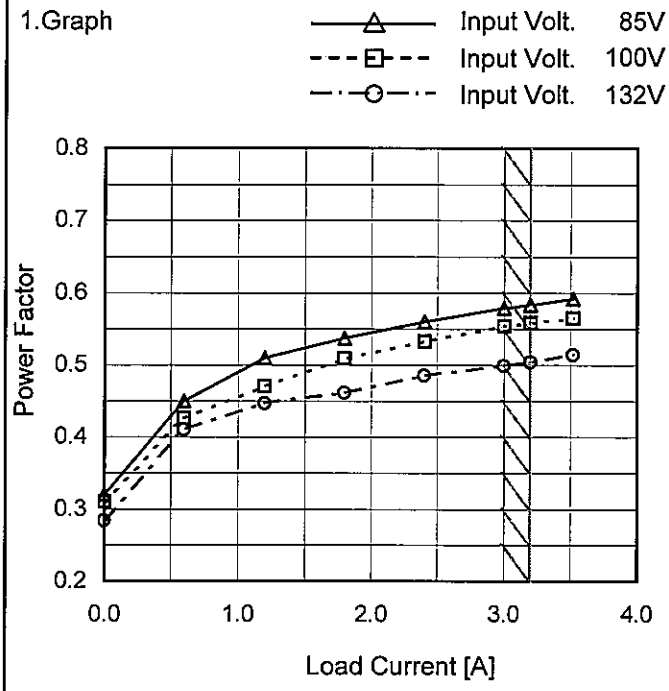
Model	LGA150A-48
Item	Power Factor (by Load Current)
Object	———————

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	0.321	0.310	0.284
0.60	0.450	0.426	0.411
1.20	0.510	0.471	0.447
1.80	0.537	0.508	0.461
2.40	0.560	0.532	0.485
3.00	0.579	0.554	0.499
3.20	0.584	0.558	0.504
3.52	0.592	0.565	0.514
--	-	-	-
--	-	-	-
--	-	-	-

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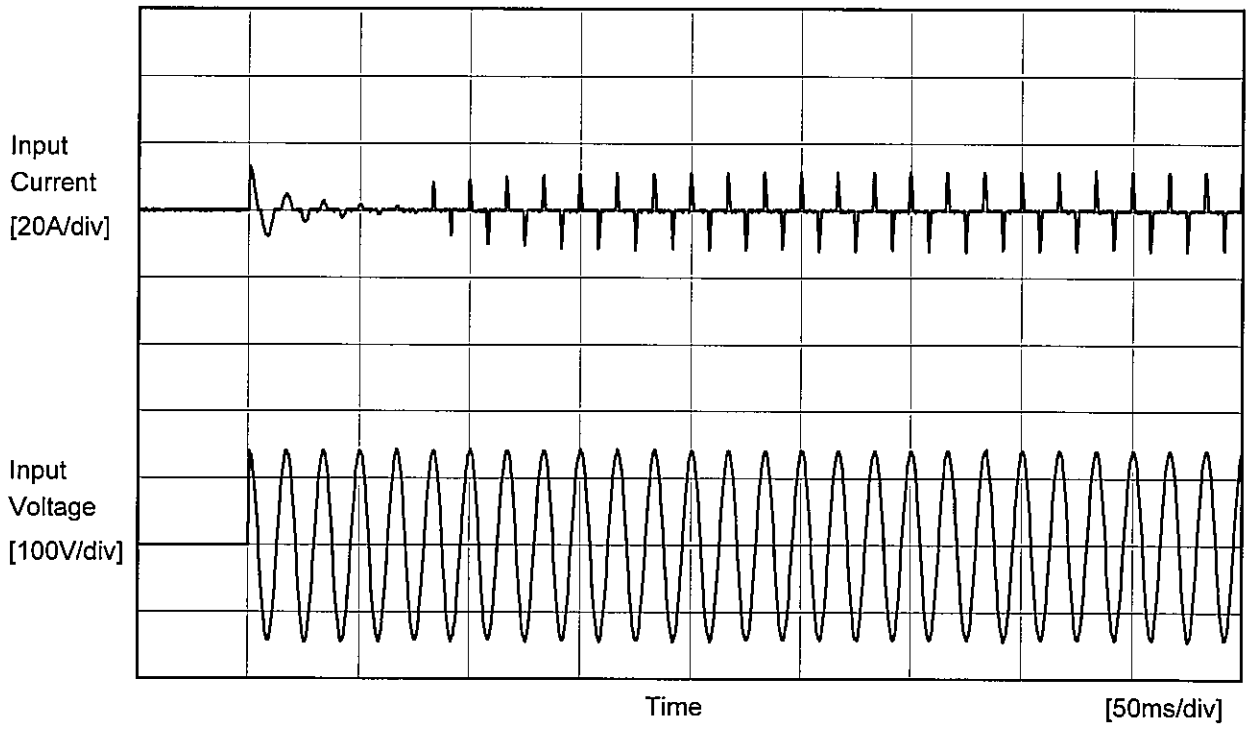
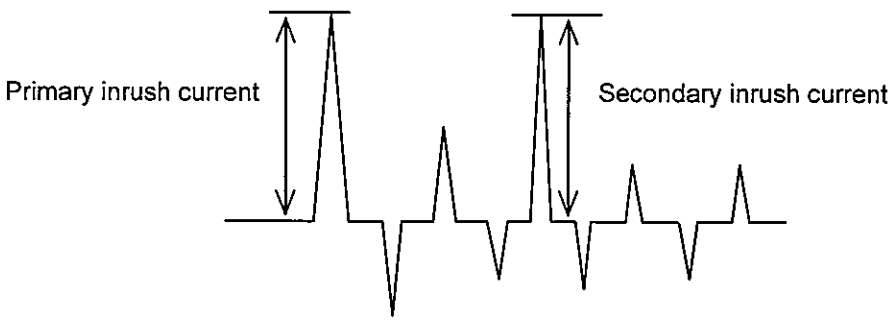
Model	LGA150A-48
Item	Inrush Current
Object	———————

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	13.0 A
Secondary inrush current	12.6 A



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Model	LGA150A-48	
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)IEC60950-1	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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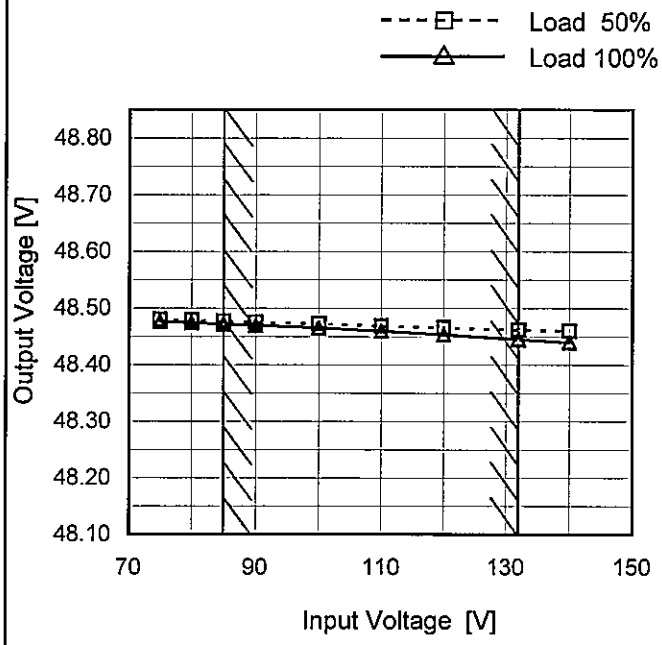
Model	LGA150A-48
Item	Line Regulation
Object	+48V3.2A

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	48.480	48.477
80	48.478	48.475
85	48.477	48.472
90	48.475	48.470
100	48.472	48.465
110	48.468	48.460
120	48.465	48.454
132	48.462	48.446
140	48.459	48.440

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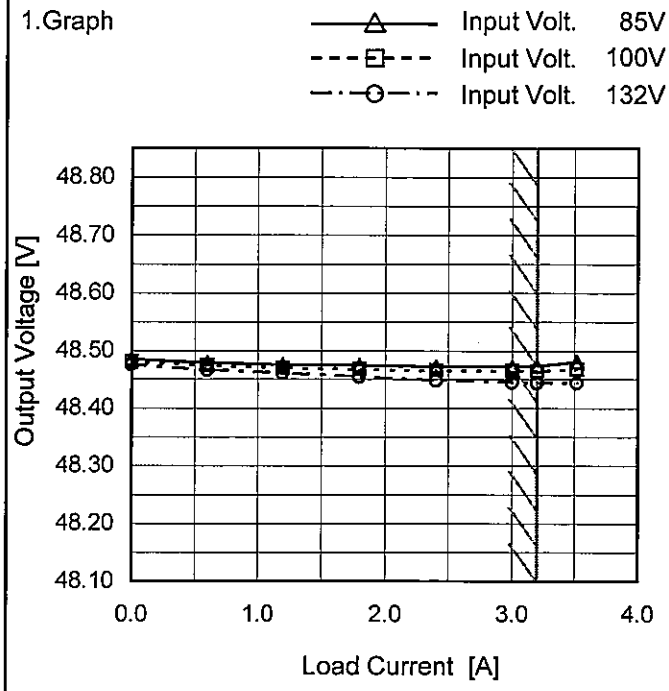
Model	LGA150A-48
Item	Load Regulation
Object	+48V3.2A

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	48.486	48.481	48.476
0.60	48.479	48.474	48.467
1.20	48.476	48.470	48.461
1.80	48.475	48.467	48.455
2.40	48.473	48.466	48.449
3.00	48.473	48.465	48.445
3.20	48.474	48.465	48.444
3.52	48.481	48.468	48.444
--	-	-	-
--	-	-	-
--	-	-	-

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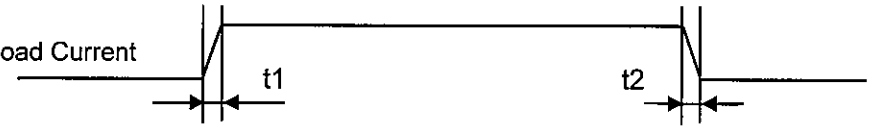
Model	LGA150A-48
Item	Dynamic Load Response
Object	+48V3.2A

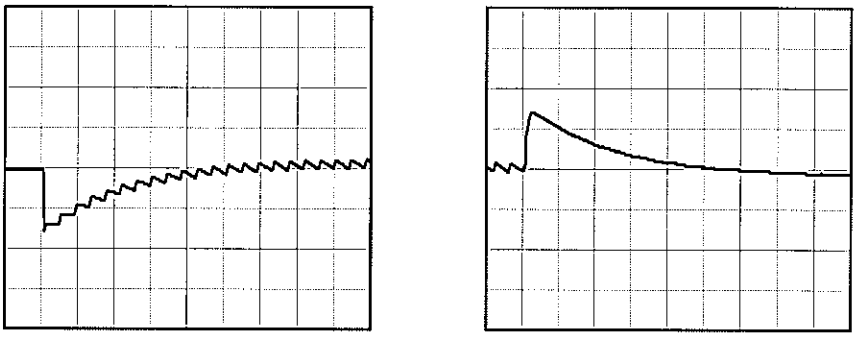
Temperature 25°C
Testing Circuitry Figure C

Input Volt. 100 V
Cycle 1000 ms

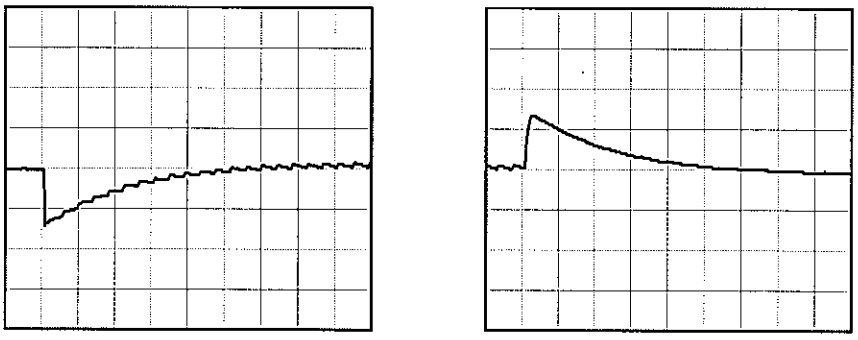
Response. t1=t2=50 μs. Typ



Min. Load (0A) ⟷
Load 100% (3.2A)



Min. Load (0A) ⟷
Load 50% (1.6A)



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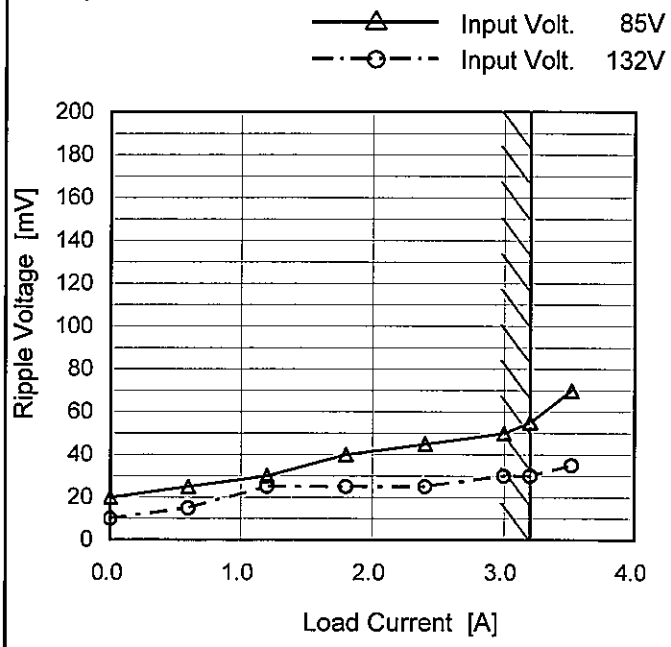
Model	LGA150A-48
Item	Ripple Voltage (by Load Current)
Object	+48V3.2A

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

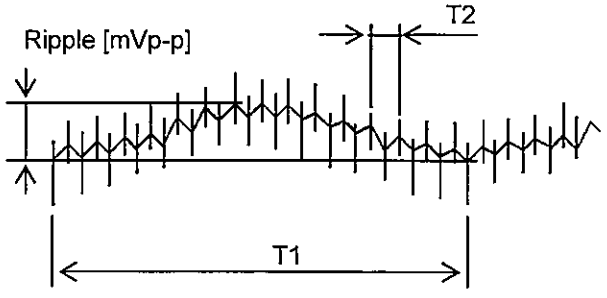


Fig. Complex Ripple Wave Form

2.Values

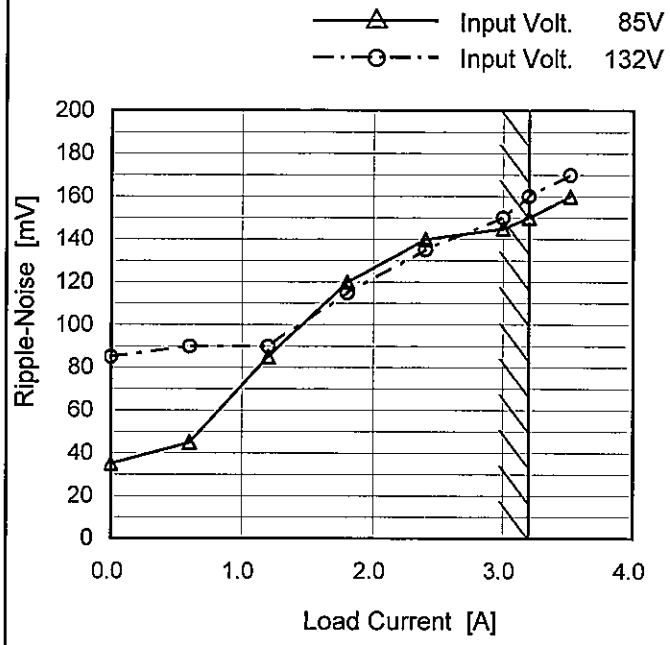
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	20	10
0.60	25	15
1.20	30	25
1.80	40	25
2.40	45	25
3.00	50	30
3.20	55	30
3.52	70	35
--	-	-
--	-	-
--	-	-

COSEL

Model	LGA150A-48
Item	Ripple-Noise
Object	+48V3.2A

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	35	85
0.60	45	90
1.20	85	90
1.80	120	115
2.40	140	135
3.00	145	150
3.20	150	160
3.52	160	170
--	-	-
--	-	-
--	-	-

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

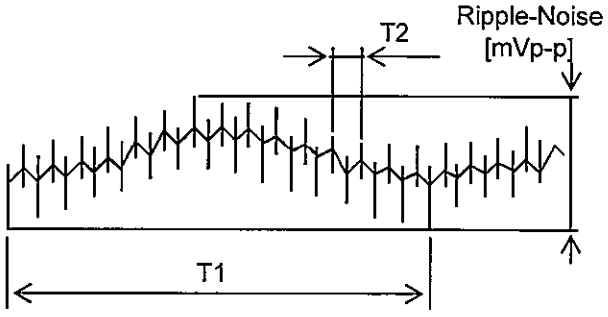


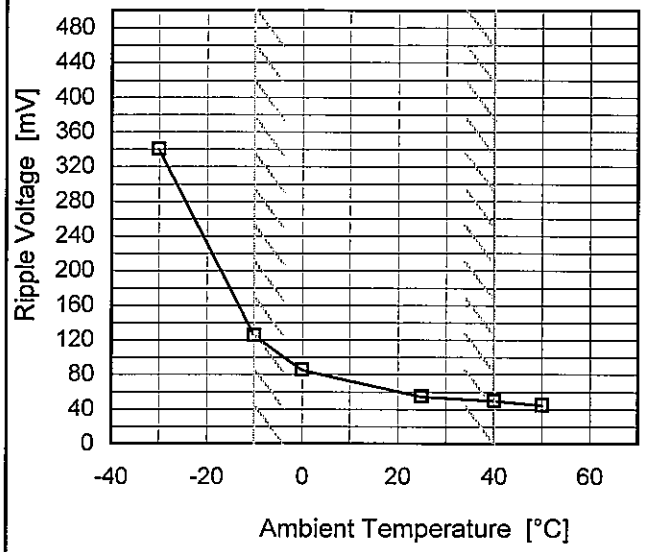
Fig. Complex Ripple Wave Form

COSEL

Model	LGA150A-48
Item	Ripple Voltage (by Ambient Temp.)
Object	+48V3.2A

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.

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

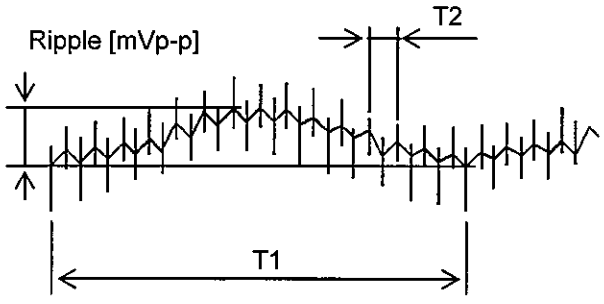


Fig. Complex Ripple Wave Form

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]
-30	340
-10	125
0	85
25	55
40	50
50	45
--	-
--	-
--	-
--	-
--	-

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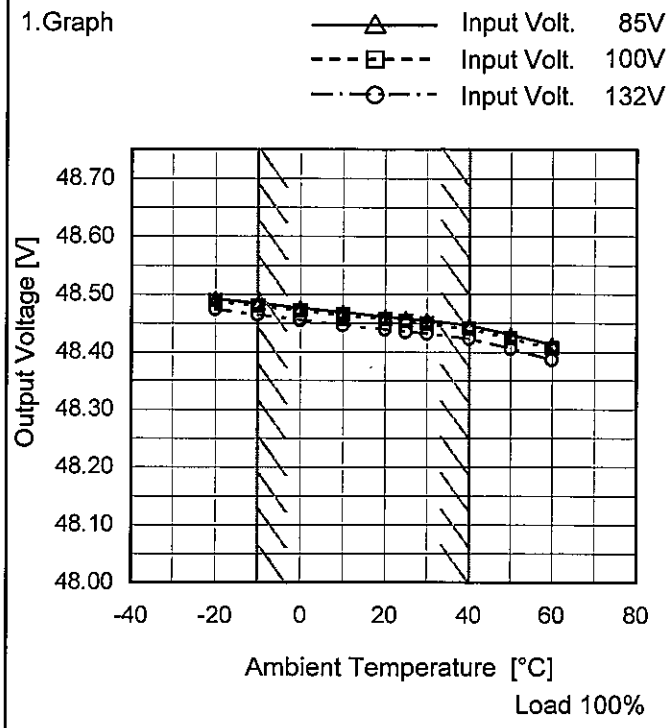
Model	LGA150A-48
Item	Ambient Temperature Drift
Object	+48V3.2A

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	48.492	48.488	48.474
-10	48.485	48.480	48.464
0	48.476	48.471	48.455
10	48.469	48.463	48.447
20	48.462	48.456	48.439
25	48.458	48.453	48.435
30	48.455	48.449	48.432
40	48.446	48.440	48.423
50	48.431	48.424	48.406
60	48.413	48.406	48.387
--	-	-	-

COSEL

Model	LGA150A-48
Item	Output Voltage Accuracy
Object	+48V3.2A

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 - 40°C
Input Voltage : 85 - 132V
Load Current : 0 - 3.2A

* 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	48.496	±37	±0.1
Minimum Voltage	40	132	3.2	48.423		

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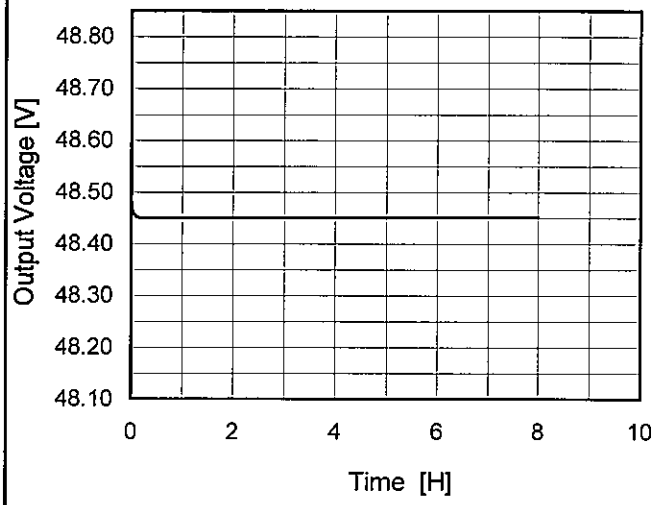
Model	LGA150A-48
Item	Time Lapse Drift
Object	+48V3.2A

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	48.486
0.5	48.451
1.0	48.451
2.0	48.451
3.0	48.451
4.0	48.451
5.0	48.452
6.0	48.452
7.0	48.452
8.0	48.453

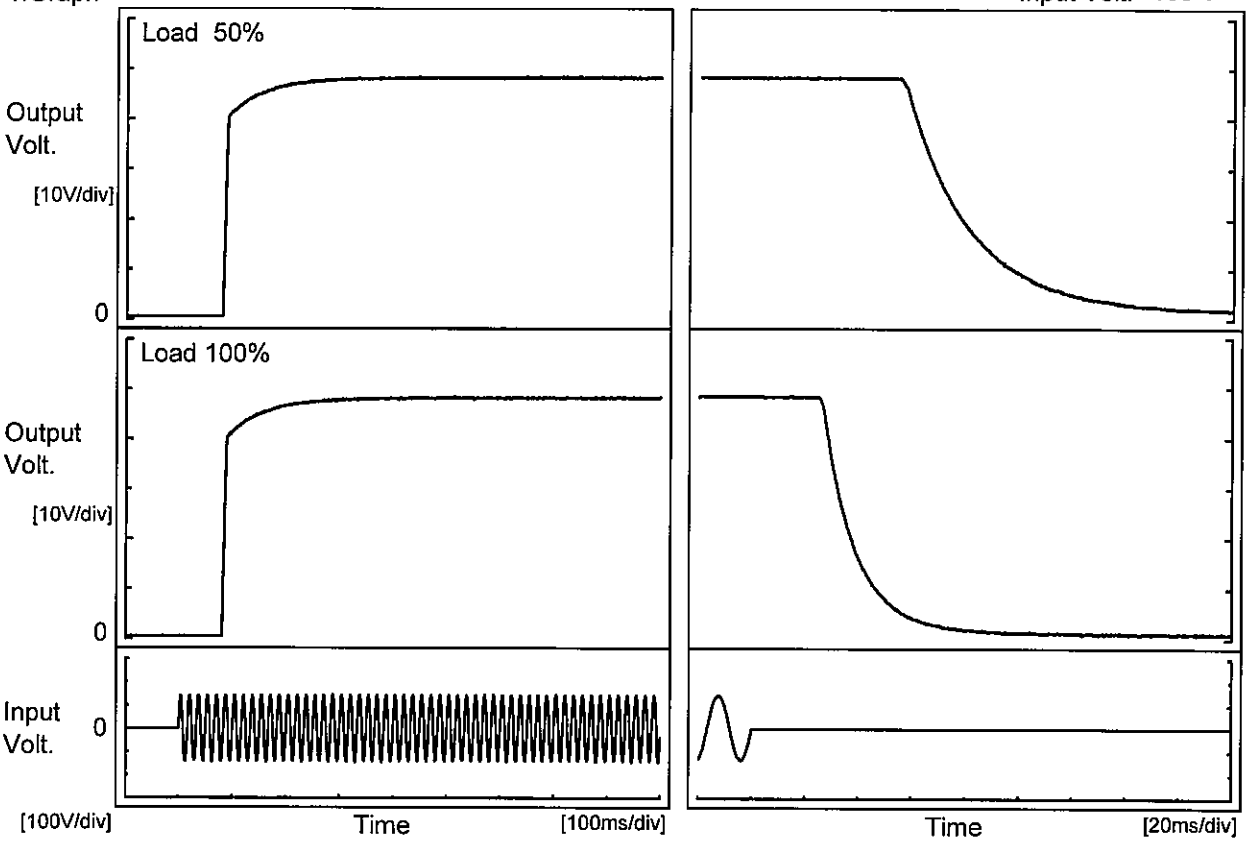
COSEL

Model	LGA150A-48
Item	Rise and Fall Time
Object	+48V3.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

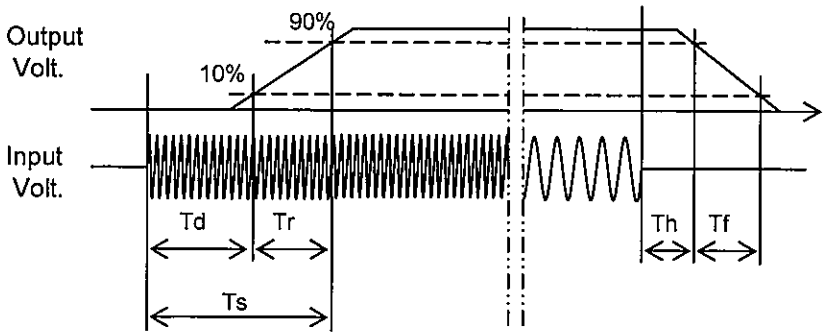
Input Volt. 100 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	82.0	40.5	122.5	59.2	59.6
100 %	81.5	44.0	125.5	27.7	29.3

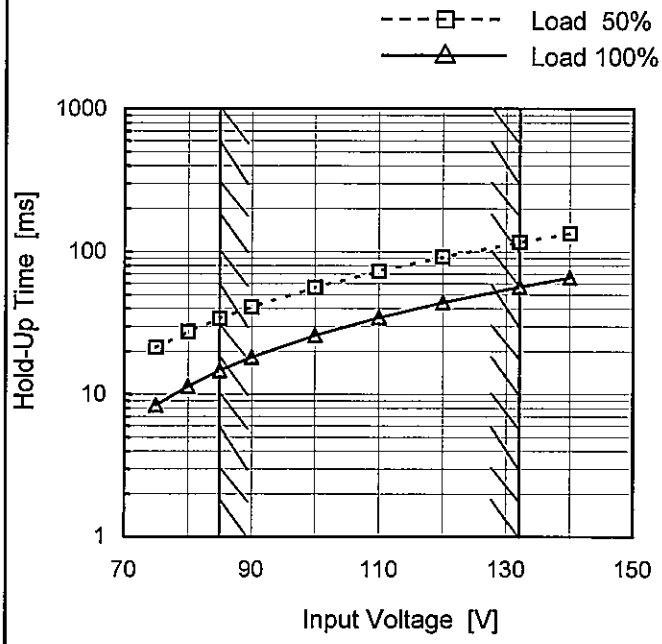


COSEL

Model	LGA150A-48
Item	Hold-Up Time
Object	+48V3.2A

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

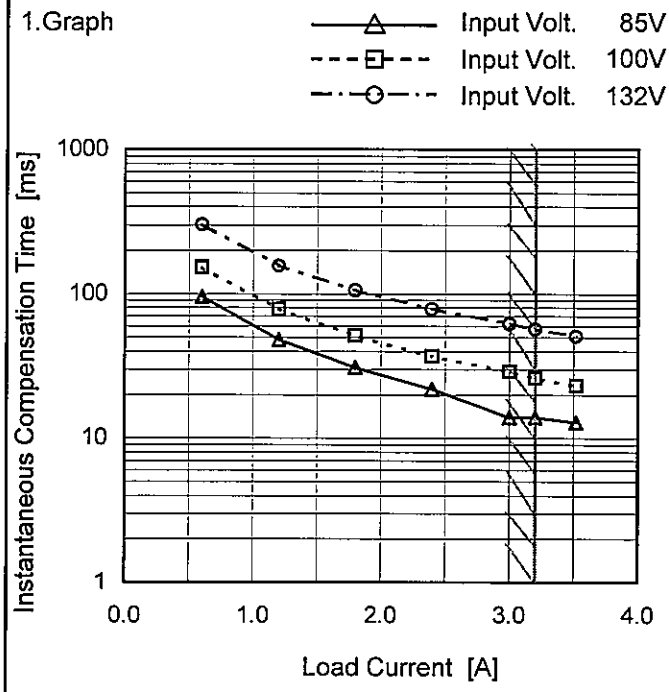
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	21	8
80	27	11
85	34	15
90	41	18
100	56	26
110	73	35
120	92	44
132	116	57
140	134	66

COSEL

Model	LGA150A-48
Item	Instantaneous Interruption Compensation
Object	+48V3.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

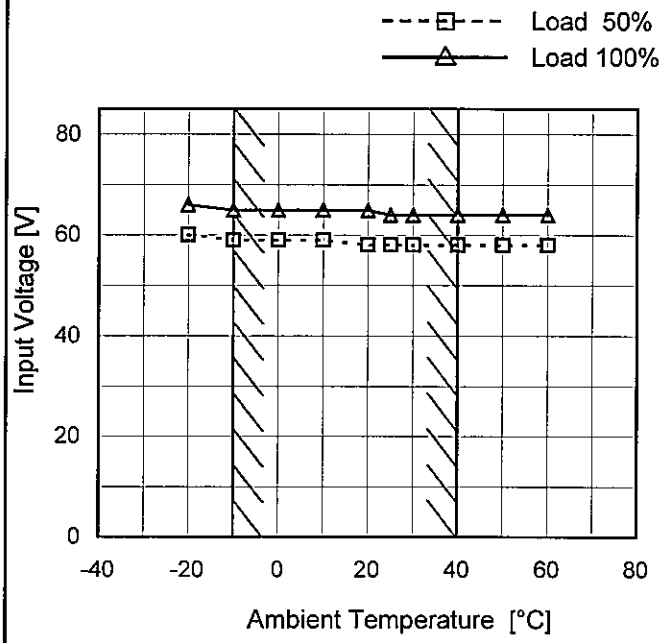
Load Current [A]	Time [ms] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	-	-	-
0.60	96	152	303
1.20	48	78	157
1.80	31	51	106
2.40	22	37	79
3.00	14	29	62
3.20	14	26	57
3.52	13	23	51
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LGA150A-48
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V3.2A

Testing Circuitry Figure A

1.Graph



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

2.Values

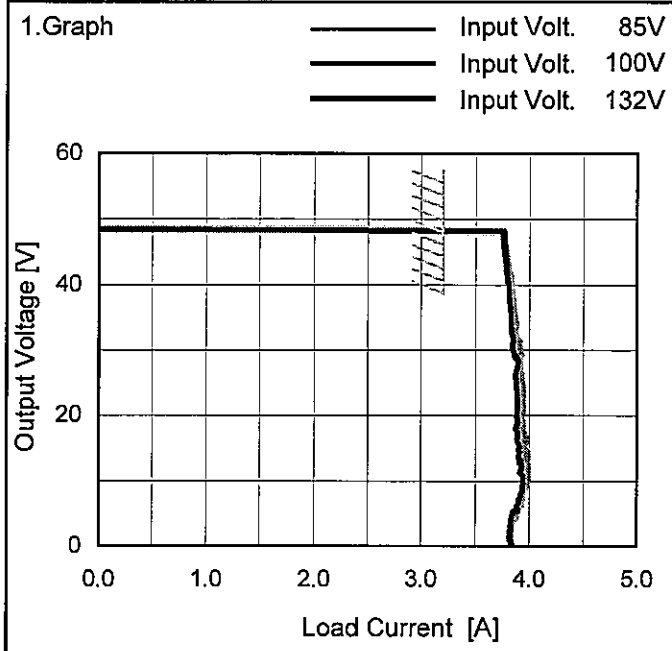
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	60	66
-10	59	65
0	59	65
10	59	65
20	58	65
25	58	64
30	58	64
40	58	64
50	58	64
60	58	64
--	-	-

COSEL

Model	LGA150A-48
Item	Overcurrent Protection
Object	+48V3.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

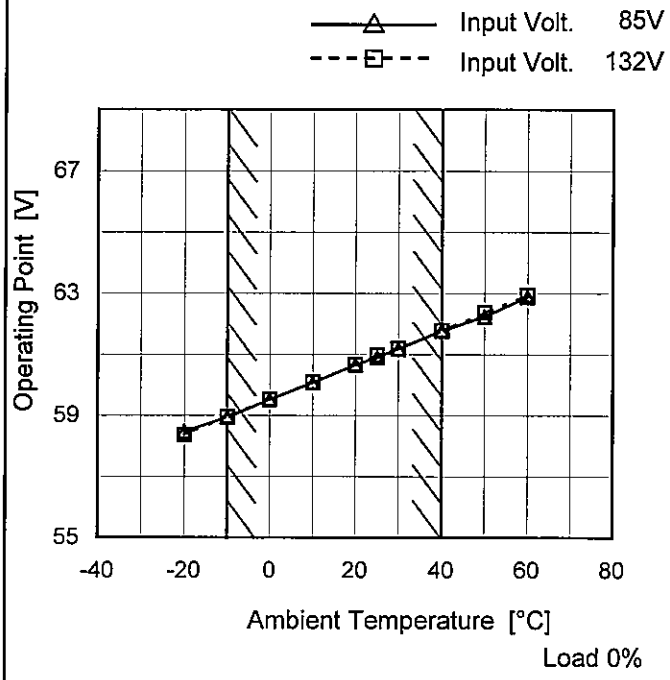
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
48.0	3.78	3.75	3.76
45.6	3.79	3.76	3.77
43.2	3.78	3.75	3.76
38.4	3.82	3.81	3.84
33.6	3.84	3.84	3.87
28.8	3.86	3.88	3.92
24.0	3.88	3.88	3.93
19.2	3.88	3.89	3.93
14.4	3.91	3.91	3.97
9.6	3.94	3.94	3.97
4.8	3.84	3.85	3.87
0.0	3.86	3.85	3.85

COSEL

Model	LGA150A-48
Item	Overvoltage Protection
Object	+48V3.2A

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	58.48	58.36
-10	58.95	58.95
0	59.53	59.53
10	60.08	60.08
20	60.66	60.66
25	60.90	60.96
30	61.19	61.19
40	61.78	61.78
50	62.25	62.36
60	62.89	62.95
--	-	-

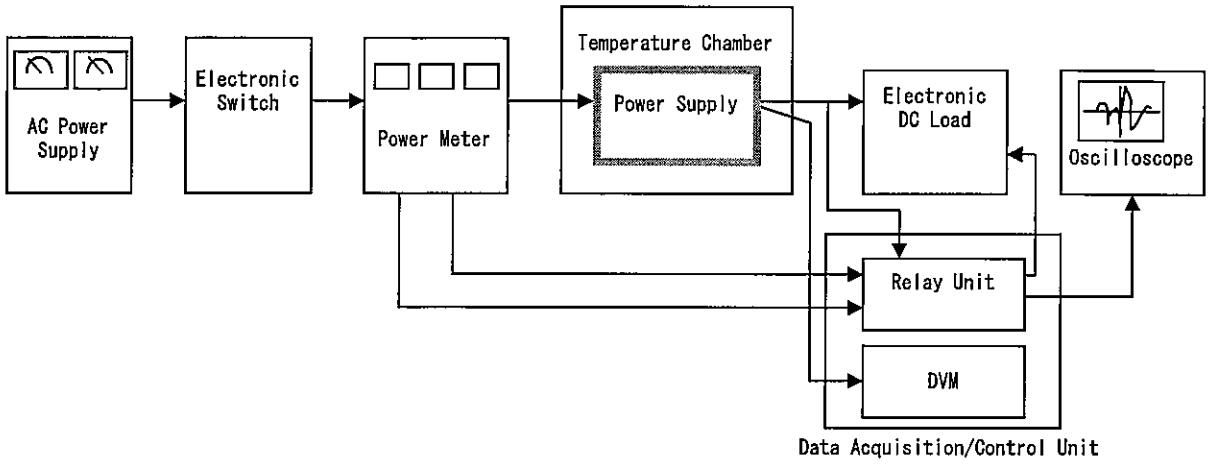


Figure A

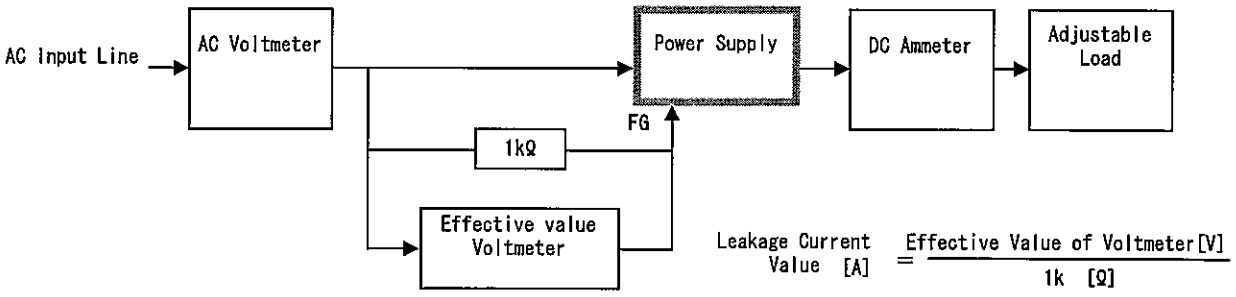


Figure B (DEN-AN)

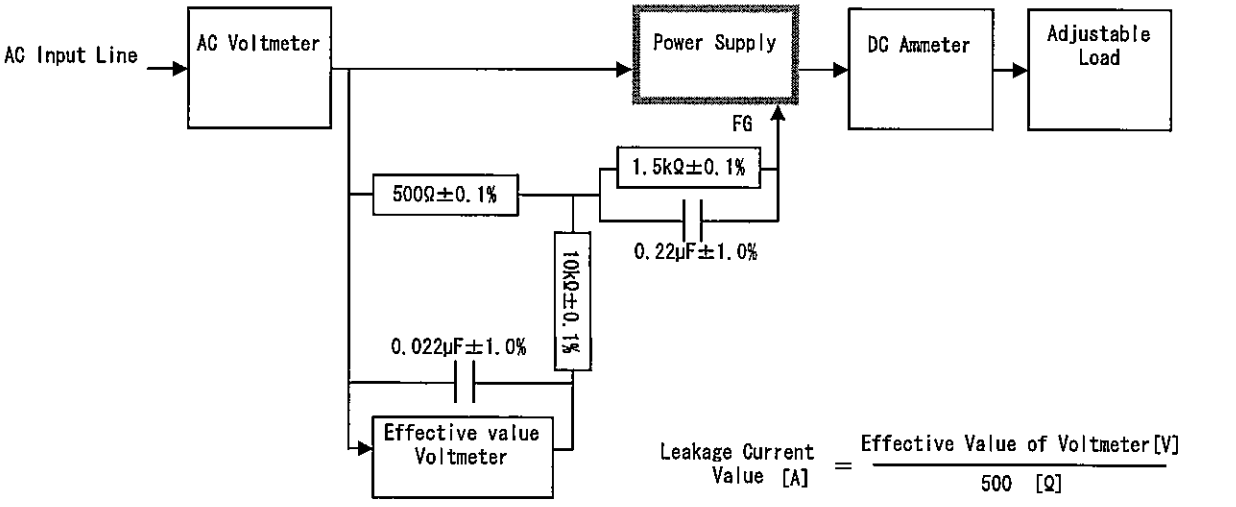


Figure B (IEC60950-1)

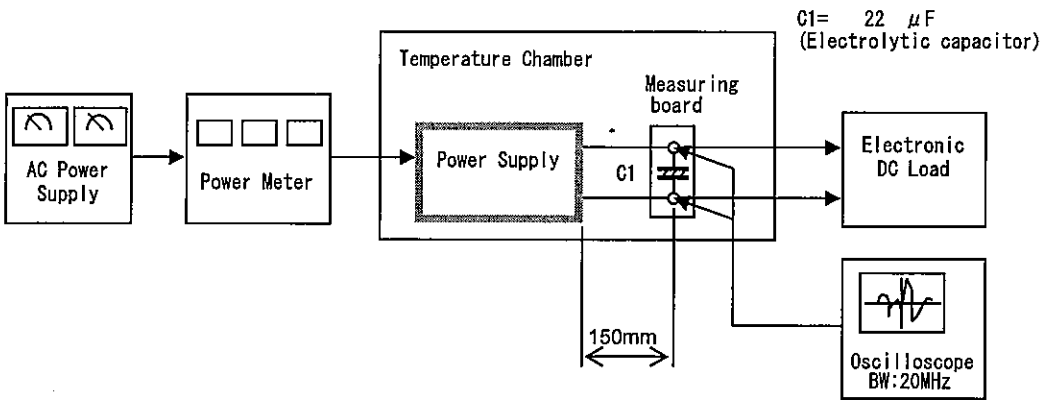

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope BW:20MHz

Figure C