参考資料

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TEST DATA OF LGA100A-48

Regulated DC Power Supply
May 20, 2011

Approved by : Kenji Shiho
Kenji Shiho Design Manager

Prepared by : Hironobu Shimizu
Hironobu Shimizu Design Engineer

COSEL CO.,LTD.

参考資料

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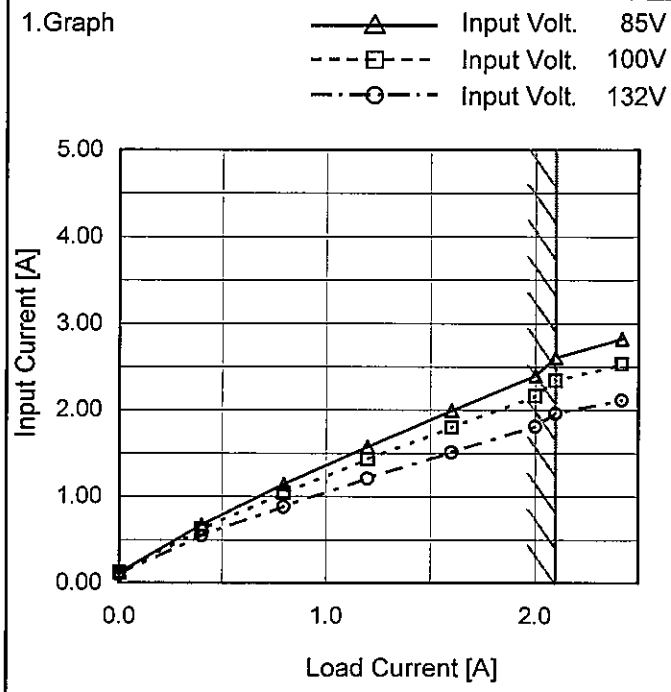
参考資料

COSEL

Model	LGA100A-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	0.121	0.118	0.102
0.40	0.677	0.620	0.544
0.80	1.142	1.037	0.884
1.20	1.578	1.426	1.208
1.60	1.996	1.798	1.516
2.00	2.404	2.160	1.814
2.10	2.606	2.337	1.959
2.42	2.828	2.531	2.118
--	-	-	-
--	-	-	-
--	-	-	-

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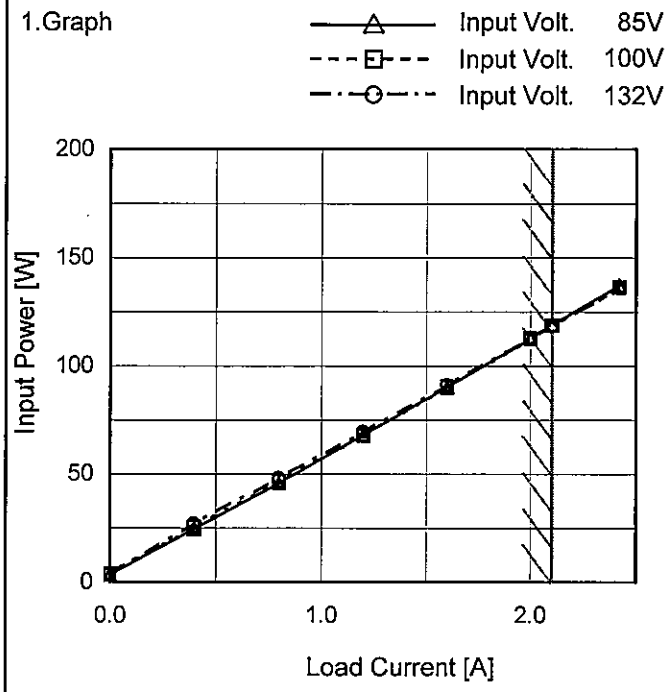
Model	LGA100A-48
Item	Input Power (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

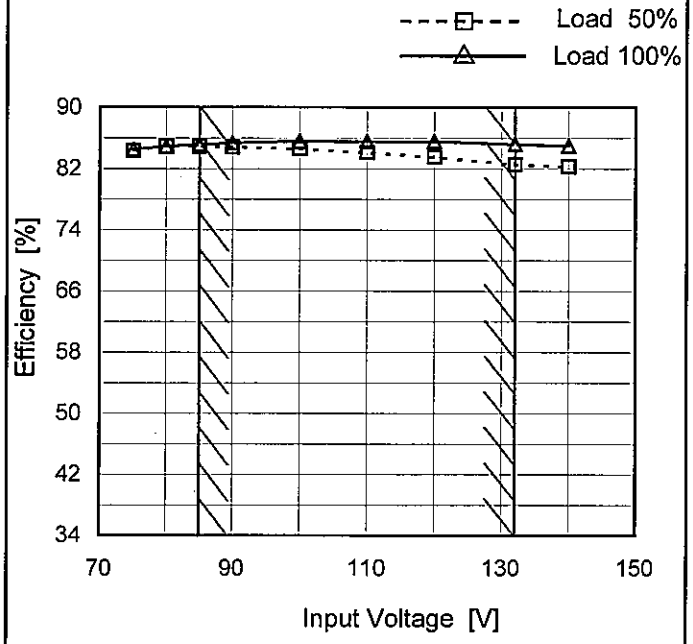
Load Current [A]	Input Power [W]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	3.6	3.9	4.1
0.40	24.8	25.5	27.4
0.80	46.1	46.6	48.2
1.20	68.1	68.0	69.5
1.60	90.3	90.3	91.2
2.00	112.8	112.5	113.1
2.10	119.1	118.5	118.6
2.42	137.1	136.2	136.2
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LGA100A-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	84.3	84.5
80	84.9	85.0
85	84.9	85.2
90	84.8	85.4
100	84.6	85.6
110	84.1	85.5
120	83.5	85.6
132	82.5	85.2
140	82.2	85.0

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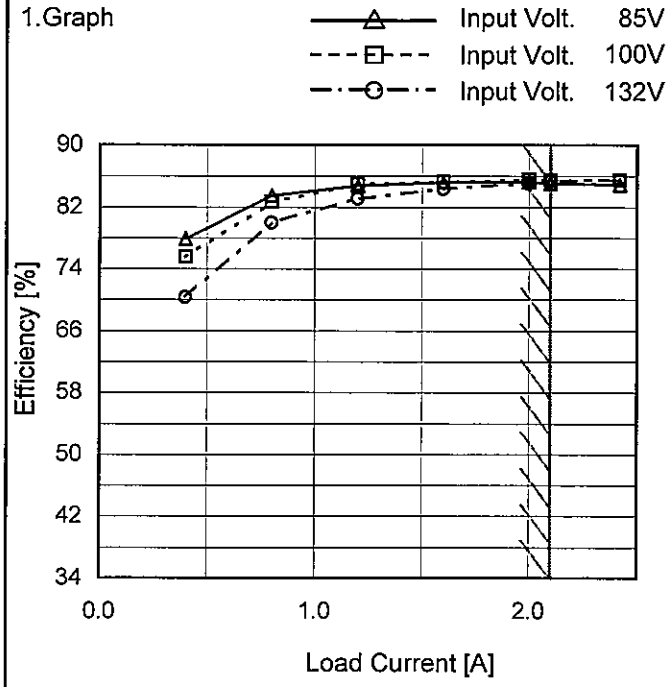
Model	LGA100A-48
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

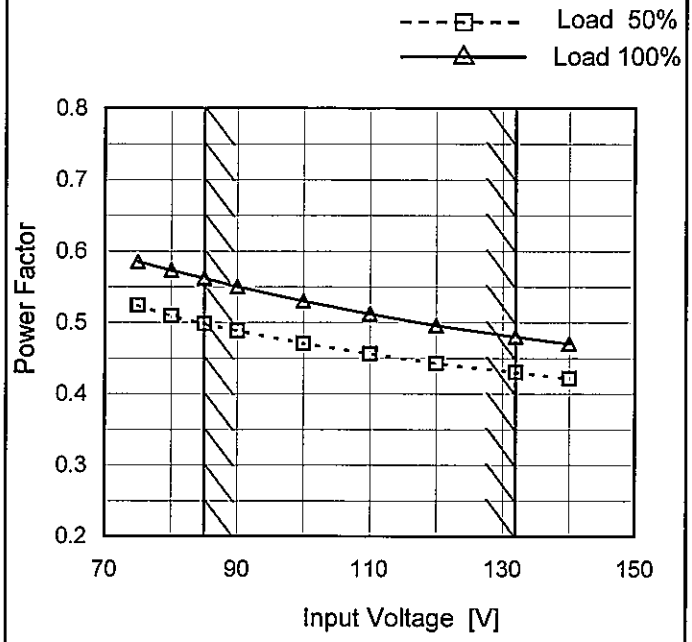
Load Current [A]	Efficiency [%]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	-	-	-
0.40	77.9	75.5	70.4
0.80	83.5	82.6	80.0
1.20	84.7	84.9	83.1
1.60	85.2	85.2	84.4
2.00	85.3	85.5	85.1
2.10	85.1	85.5	85.4
2.42	84.9	85.5	85.5
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	LGA100A-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	0.524	0.585
80	0.509	0.573
85	0.498	0.562
90	0.488	0.550
100	0.471	0.530
110	0.456	0.512
120	0.443	0.496
132	0.430	0.481
140	0.422	0.471

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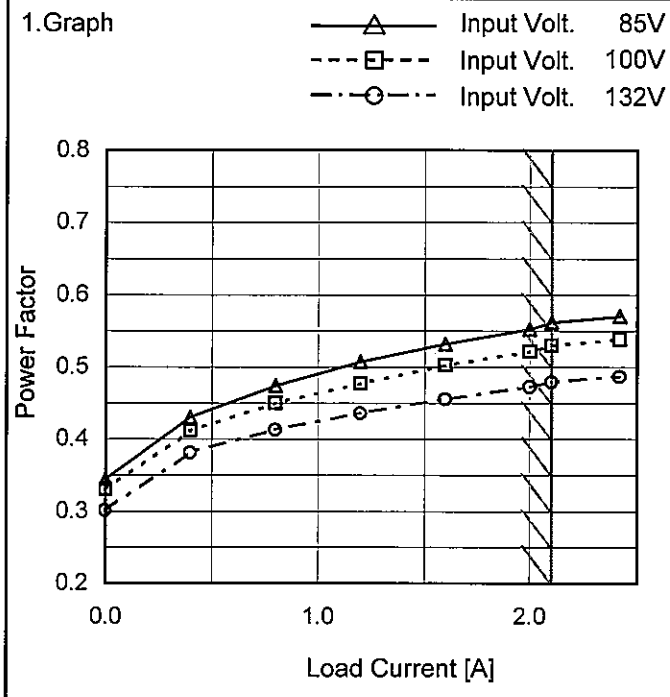
Model	LGA100A-48
Item	Power Factor (by Load Current)
Object	――――――

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	0.345	0.330	0.302
0.40	0.431	0.411	0.382
0.80	0.475	0.449	0.413
1.20	0.508	0.477	0.436
1.60	0.533	0.503	0.456
2.00	0.553	0.522	0.473
2.10	0.562	0.530	0.479
2.42	0.571	0.539	0.487
--	-	-	-
--	-	-	-
--	-	-	-

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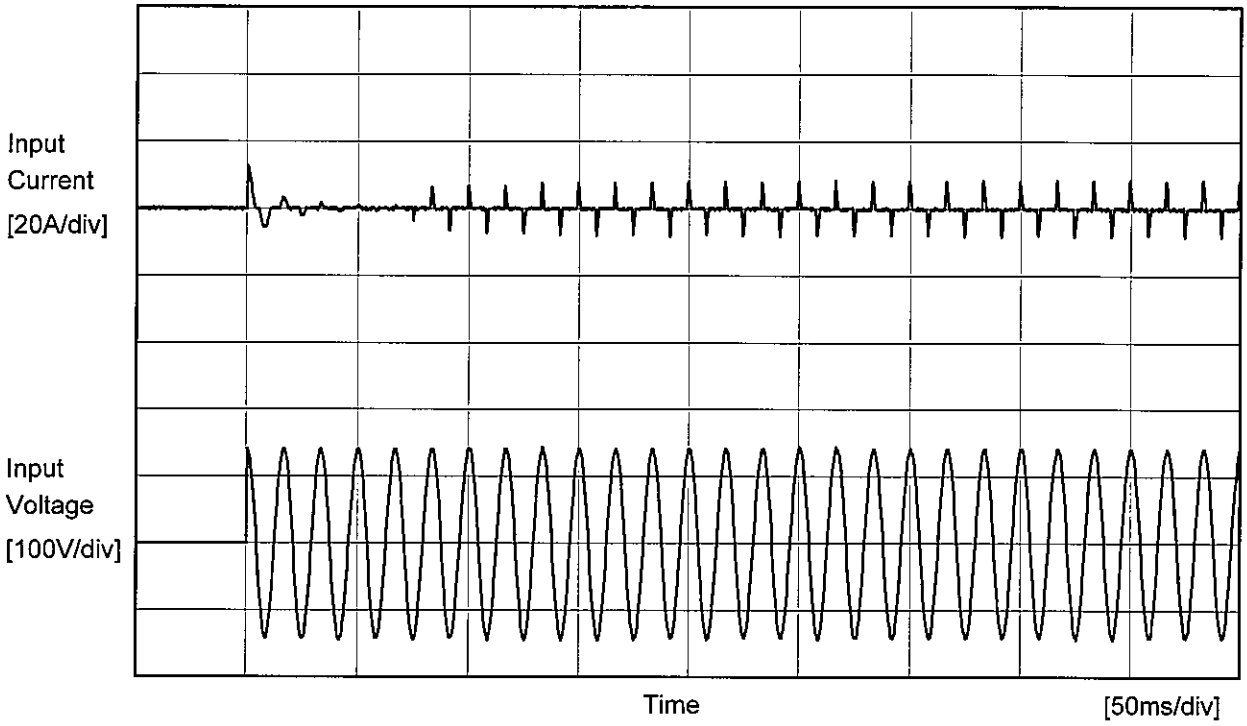
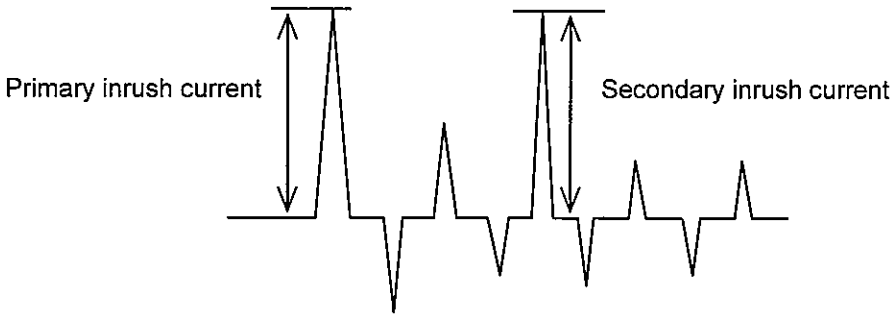
Model	LGA100A-48
Item	Inrush Current
Object	――――――

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	12.7 A
Secondary inrush current	8.5 A



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Model	LGA100A-48	Temperature 25°C
Item	Leakage Current	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	0.29	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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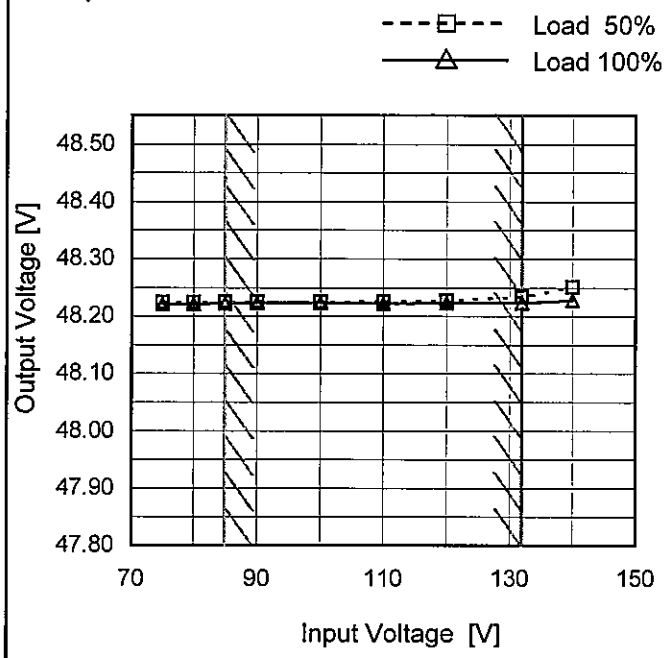
Model	LGA100A-48
Item	Line Regulation
Object	+48V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

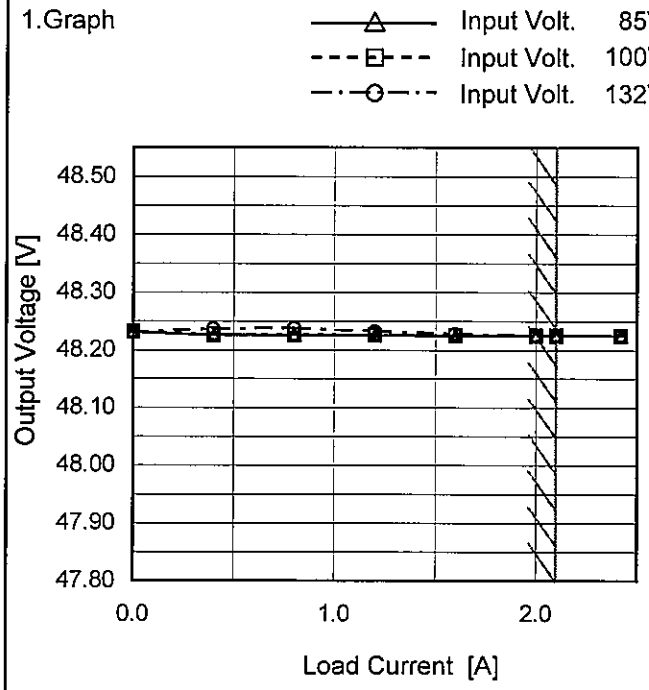
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	48.224	48.222
80	48.224	48.222
85	48.225	48.223
90	48.225	48.224
100	48.225	48.224
110	48.226	48.223
120	48.227	48.224
132	48.234	48.224
140	48.251	48.228

COSEL

Model	LGA100A-48
Item	Load Regulation
Object	+48V2.1A

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	48.232	48.231	48.230
0.40	48.227	48.227	48.237
0.80	48.226	48.227	48.238
1.20	48.226	48.226	48.233
1.60	48.226	48.225	48.228
2.00	48.225	48.225	48.225
2.10	48.225	48.225	48.225
2.42	48.225	48.225	48.225
--	-	-	-
--	-	-	-
--	-	-	-

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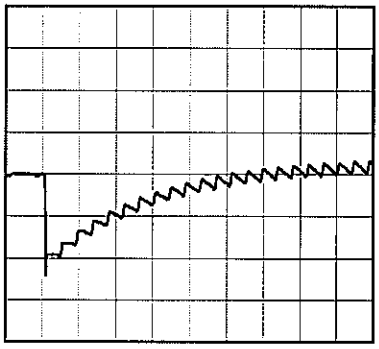
Model	LGA100A-48		
Item	Dynamic Load Response	Temperature Testing Circuitry	25°C Figure C
Object	+48V2.1A		

Input Volt. 100 V
Cycle 1000 ms

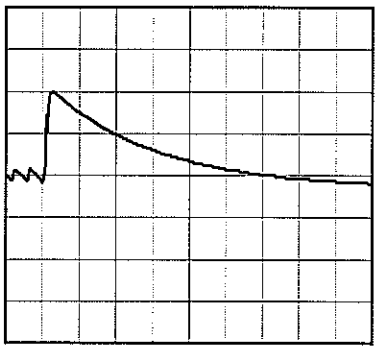
Response. t1=t2=50 μs. Typ

Min. Load (0A) ⟷
Load 100% (2.1A)



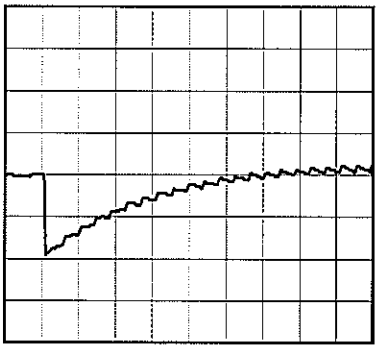
100 mV/div

20 ms/div



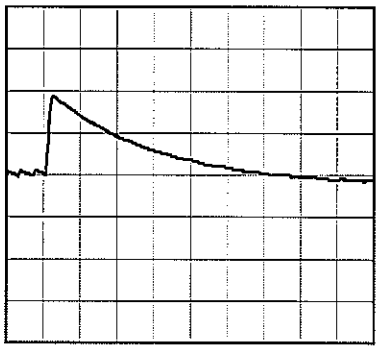
20 ms/div

Min. Load (0A) ⟷
Load 50% (1.05A)



100 mV/div

20 ms/div



20 ms/div

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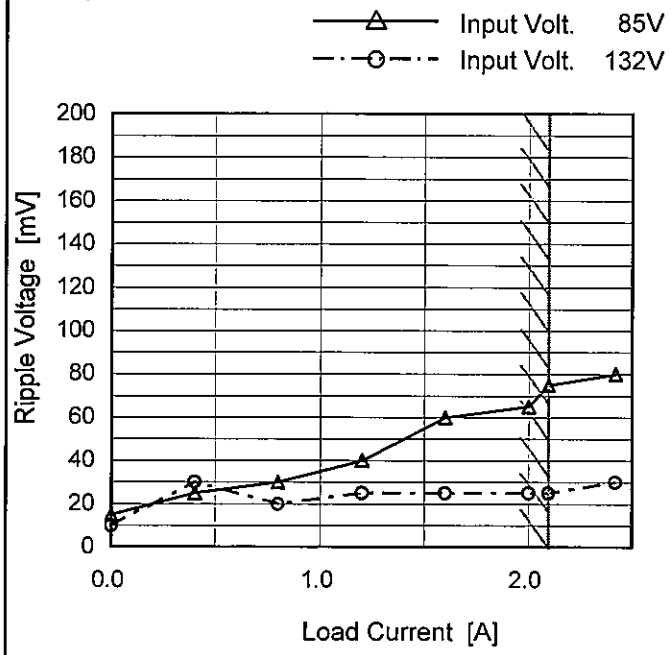
Model	LGA100A-48
Item	Ripple Voltage (by Load Current)
Object	+48V2.1A

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

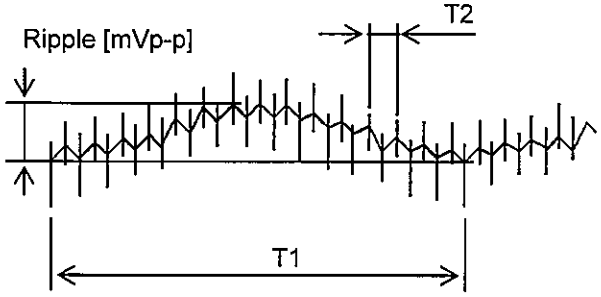


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV] Input Volt. 85 [V]	Ripple Voltage [mV] Input Volt. 132 [V]
0.00	15	10
0.40	25	30
0.80	30	20
1.20	40	25
1.60	60	25
2.00	65	25
2.10	75	25
2.42	80	30
--	-	-
--	-	-
--	-	-

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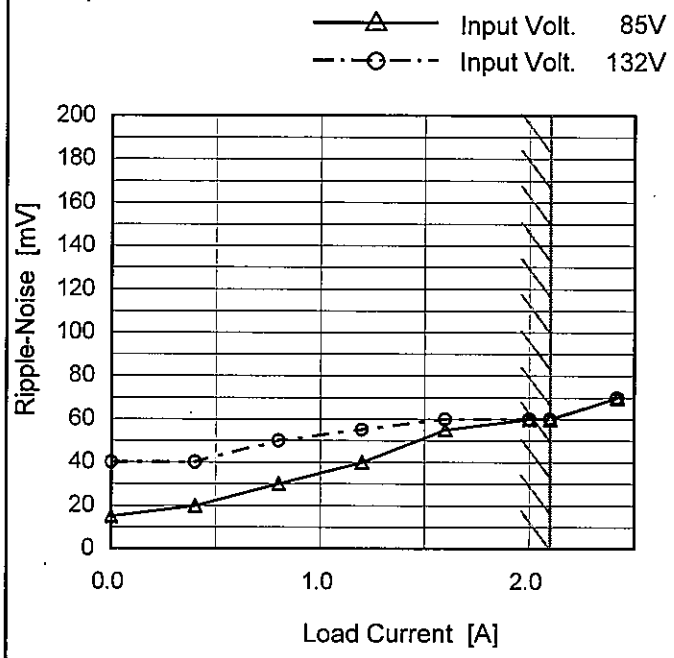
Model	LGA100A-48
Item	Ripple-Noise
Object	+48V2.1A

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.

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

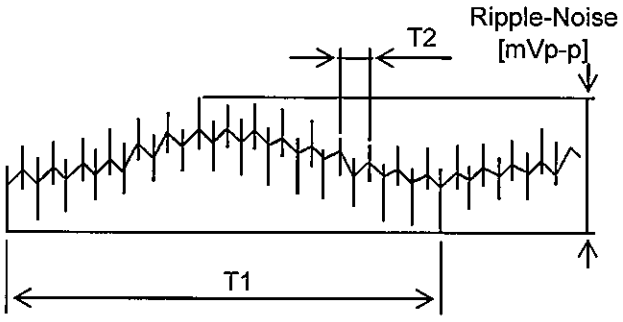


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV] Input Volt. 85 [V]	Ripple-Noise [mV] Input Volt. 132 [V]
0.00	15	40
0.40	20	40
0.80	30	50
1.20	40	55
1.60	55	60
2.00	60	60
2.10	60	60
2.42	70	70
--	-	-
--	-	-
--	-	-

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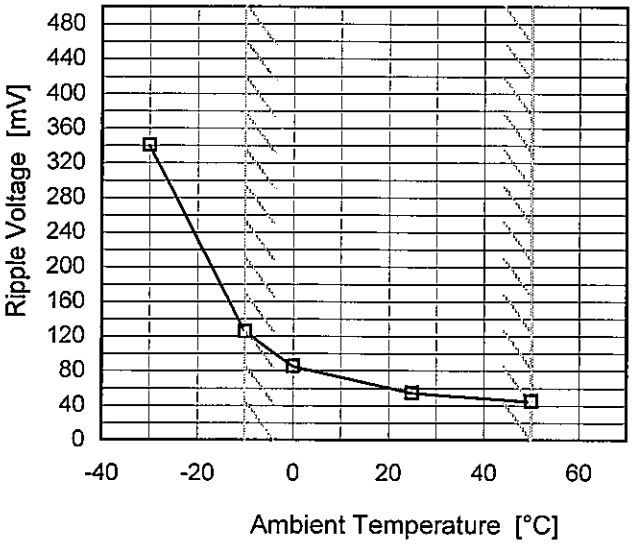
Model	LGA100A-48
Item	Ripple Voltage (by Ambient Temp.)
Object	+48V2.1A

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

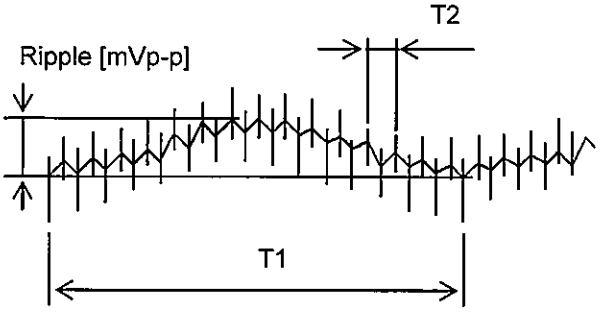


Fig. Complex Ripple Wave Form

2.Values

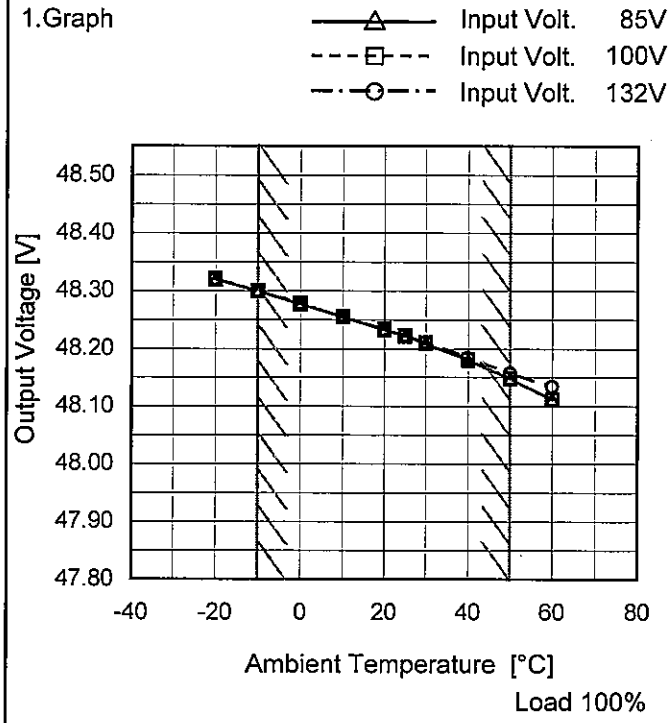
Ambient Temperature [°C]	Ripple Voltage [mV]
-30	340
-10	125
0	85
25	55
50	45
--	-
--	-
--	-
--	-
--	-
--	-

COSEL

Model	LGA100A-48
Item	Ambient Temperature Drift
Object	+48V2.1A

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	48.320	48.321	48.321
-10	48.300	48.300	48.300
0	48.278	48.278	48.278
10	48.255	48.255	48.255
20	48.233	48.233	48.234
25	48.221	48.222	48.223
30	48.209	48.210	48.212
40	48.181	48.181	48.185
50	48.148	48.149	48.158
60	48.112	48.113	48.135
--	-	-	-

COSEL

Model	LGA100A-48
Item	Output Voltage Accuracy
Object	+48V2.1A

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 - 2.1A

* 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	48.308	±80	±0.2
Minimum Voltage	50	85	2.1	48.148		

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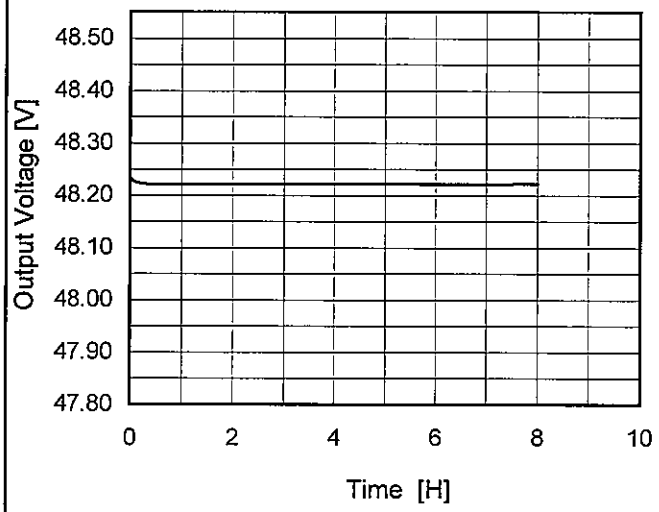
Model	LGA100A-48
Item	Time Lapse Drift
Object	+48V2.1A

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	48.235
0.5	48.222
1.0	48.222
2.0	48.222
3.0	48.222
4.0	48.222
5.0	48.222
6.0	48.222
7.0	48.223
8.0	48.223

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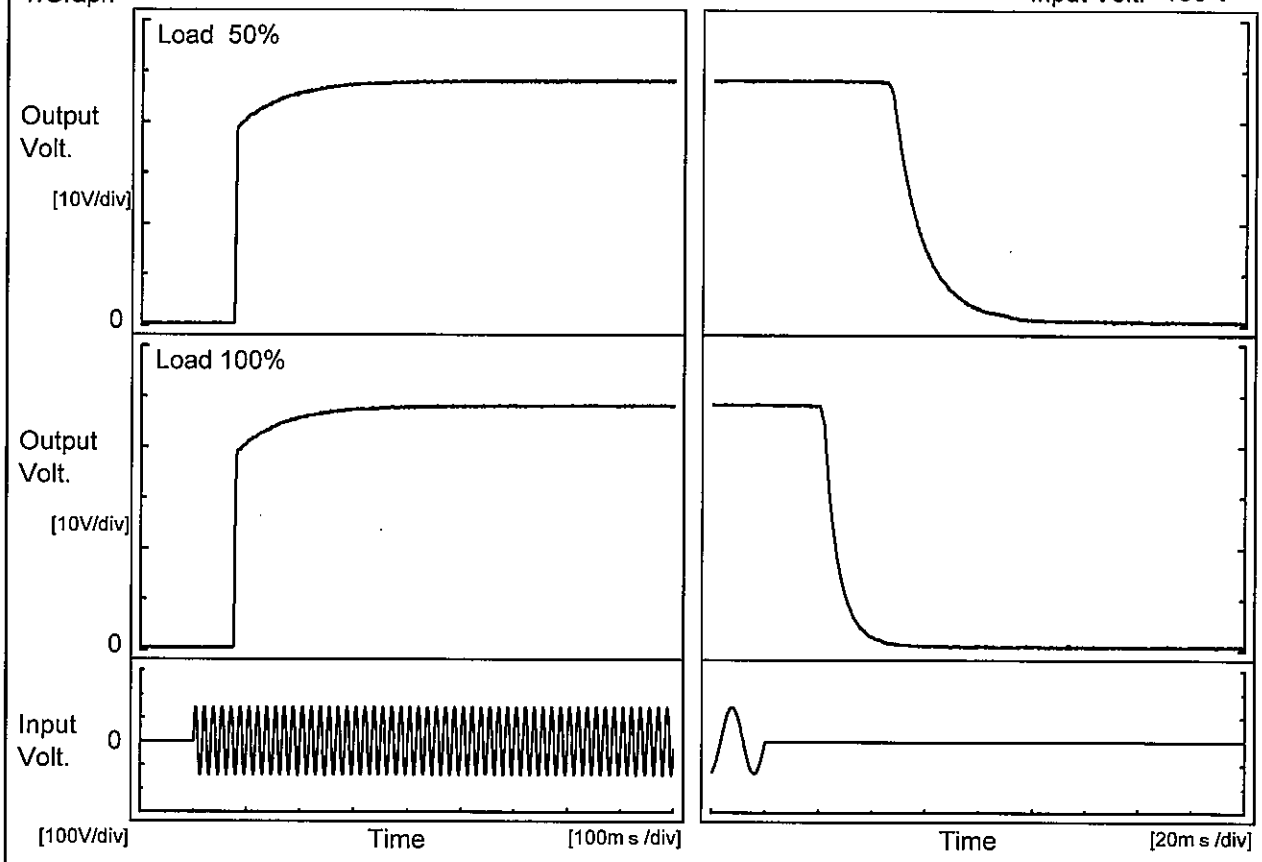
COSEL

Model	LGA100A-48
Item	Rise and Fall Time
Object	+48V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

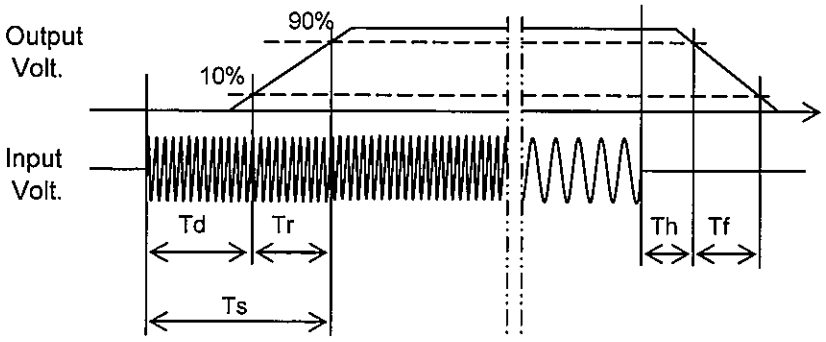
Input Volt. 100 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	76.5	66.5	143.0	47.8	25.5
100 %	76.5	67.0	143.5	22.1	12.6



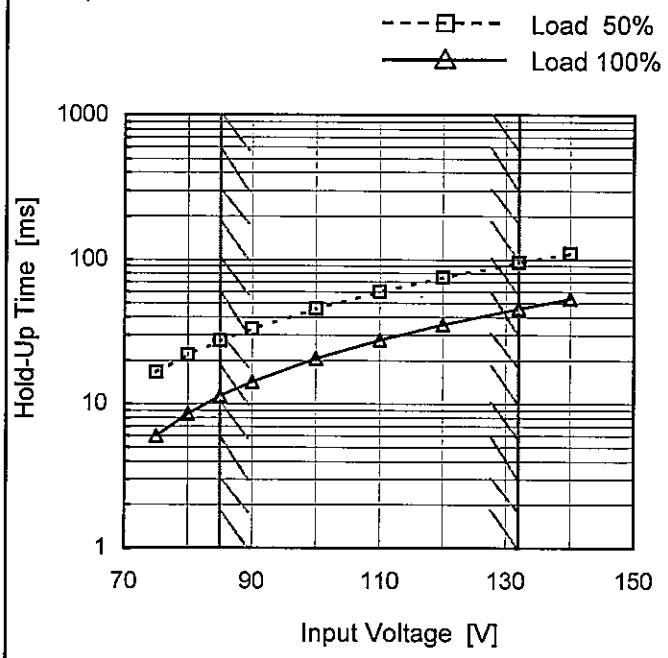
BC-10548

COSEL

Model	LGA100A-48
Item	Hold-Up Time
Object	+48V2.1A

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

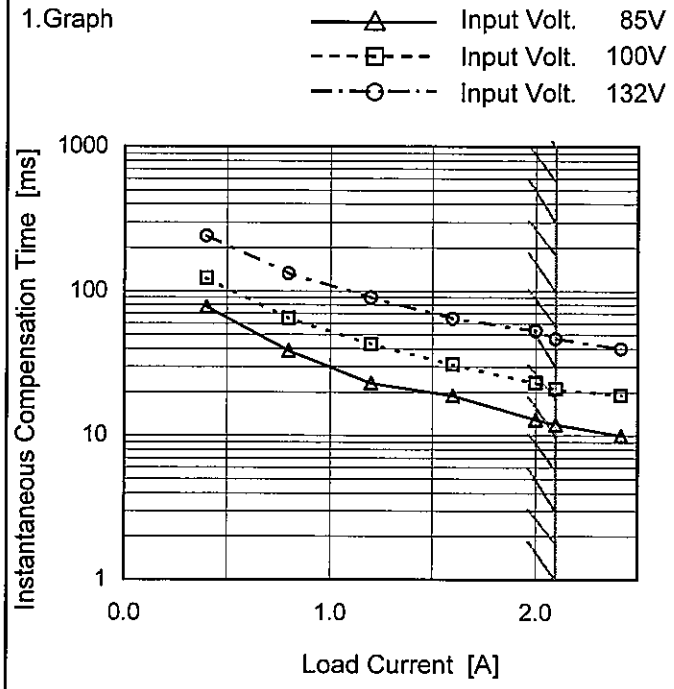
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	17	6
80	22	9
85	27	11
90	33	14
100	46	21
110	60	28
120	75	36
132	95	46
140	110	54

COSEL

Model	LGA100A-48
Item	Instantaneous Interruption Compensation
Object	+48V2.1A

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	-	-	-
0.40	78	123	242
0.80	39	65	132
1.20	23	43	90
1.60	19	31	65
2.00	13	23	53
2.10	12	21	47
2.42	10	19	40
--	-	-	-
--	-	-	-
--	-	-	-

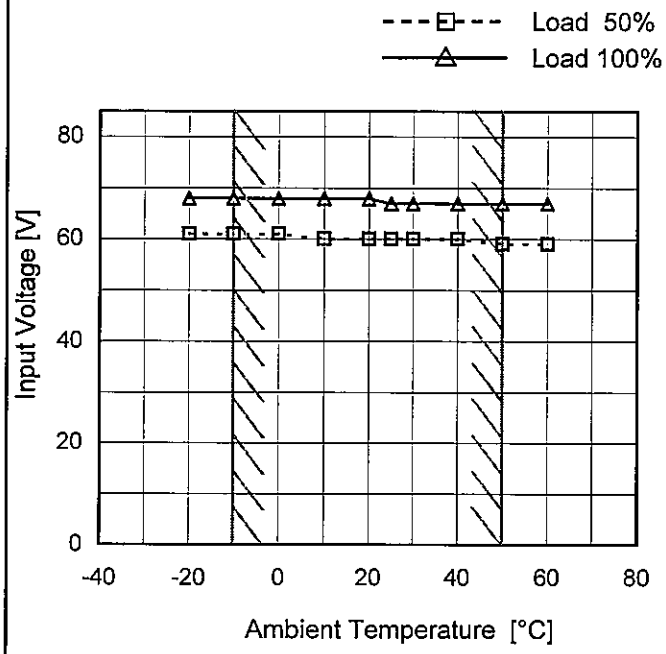
BC-10548

COSEL

Model	LGA100A-48
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+48V2.1A

Testing Circuitry Figure A

1.Graph



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

2.Values

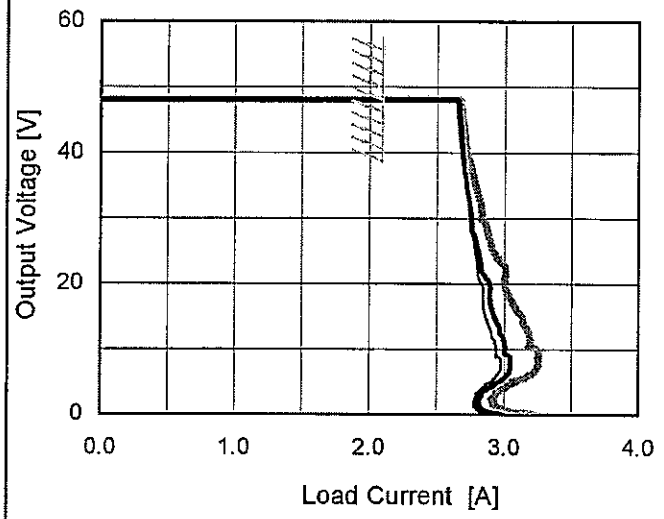
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	61	68
-10	61	68
0	61	68
10	60	68
20	60	68
25	60	67
30	60	67
40	60	67
50	59	67
60	59	67
---	-	-

COSEL

Model	LGA100A-48
Item	Overcurrent Protection
Object	+48V2.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

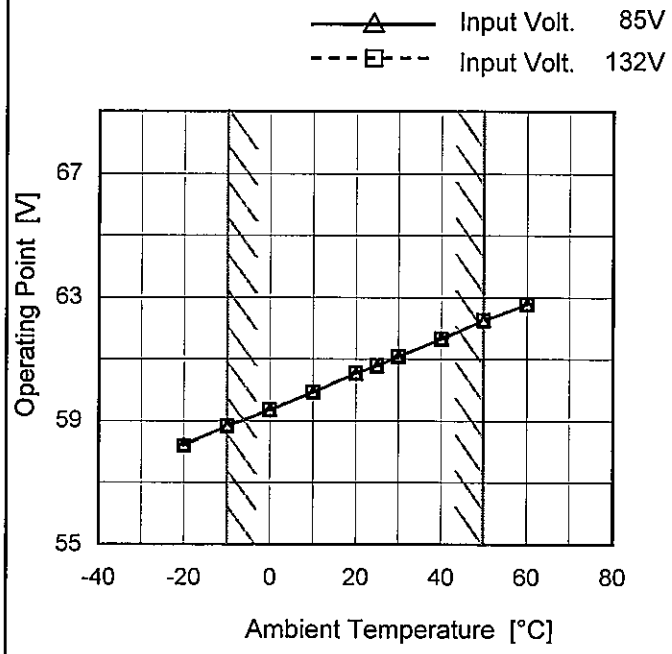
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
48.0	2.21	2.21	2.21
45.6	2.68	2.66	2.69
43.2	2.68	2.67	2.70
38.4	2.70	2.70	2.74
33.6	2.72	2.73	2.80
28.8	2.75	2.76	2.87
24.0	2.79	2.82	2.95
19.2	2.84	2.90	3.01
14.4	2.87	2.94	3.14
9.6	2.94	3.00	3.25
4.8	2.89	2.94	3.07
0.0	2.90	2.98	3.24

COSEL

Model	LGA100A-48
Item	Overvoltage Protection
Object	+48V2.1A

Testing Circuitry Figure A

1.Graph



Load 0%

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	58.24	58.19
-10	58.83	58.83
0	59.35	59.35
10	59.94	59.94
20	60.54	60.54
25	60.78	60.78
30	61.08	61.08
40	61.66	61.66
50	62.25	62.25
60	62.77	62.77
--	-	-

COSEL

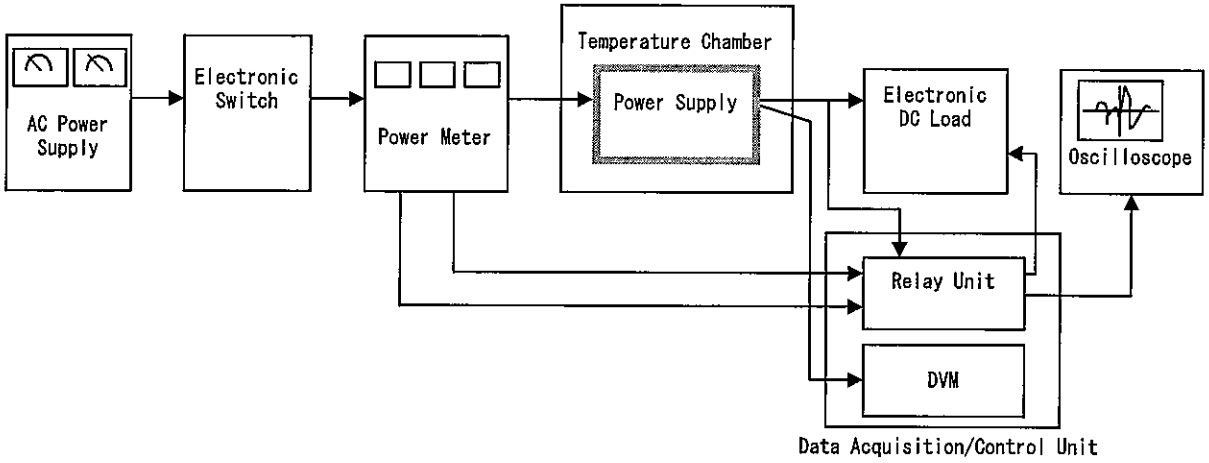


Figure A

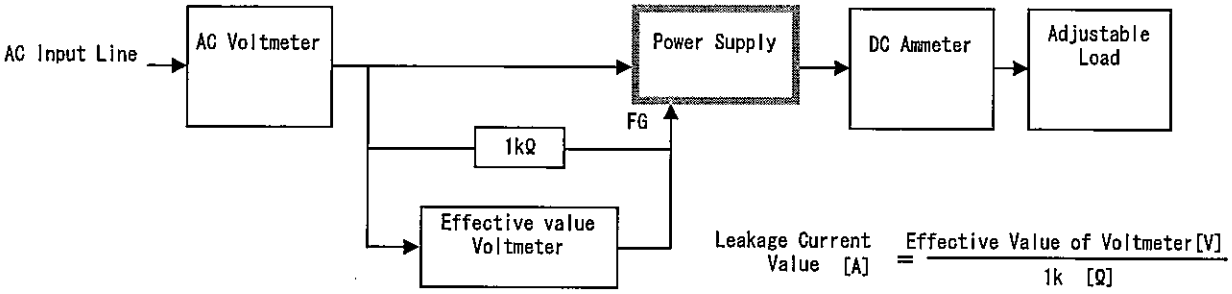


Figure B (DEN-AN)

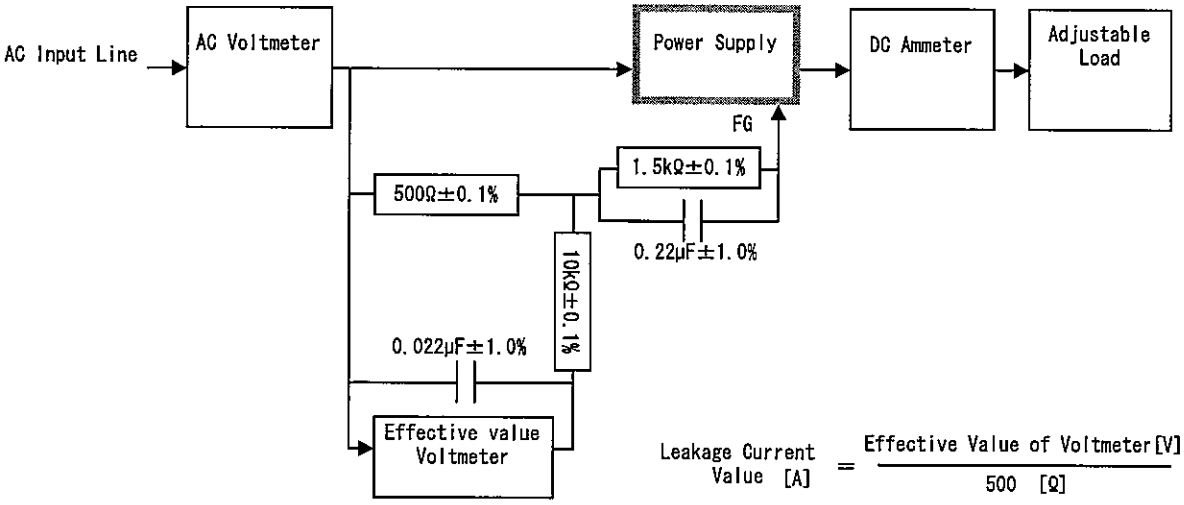


Figure B (IEC60950-1)

COSEL

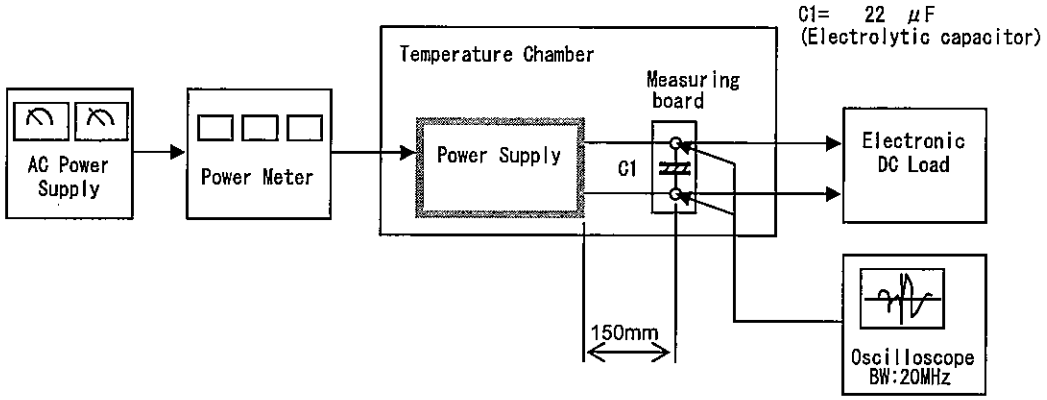


Figure C