参考資料

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TEST DATA OF LGA50A-12

Regulated DC Power Supply
April 1, 2008

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COSEL CO.,LTD.

参考資料

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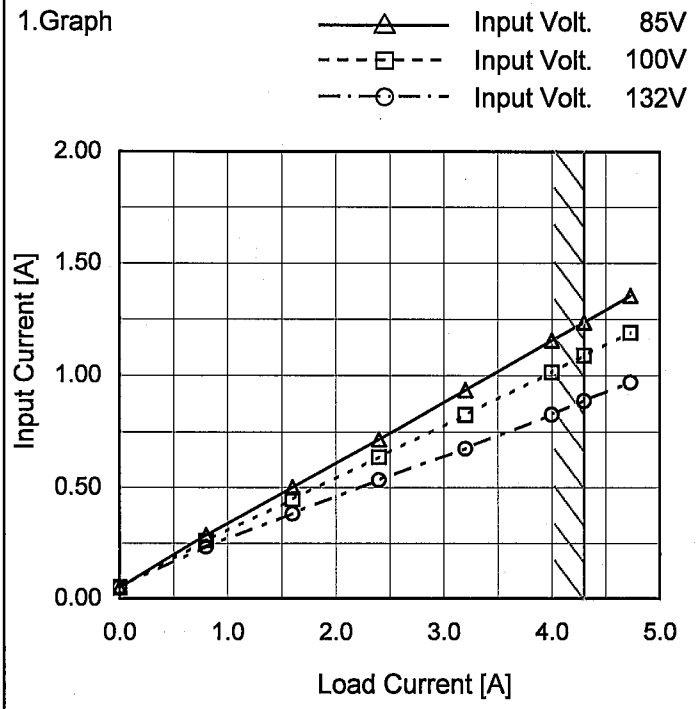
Model	LGA50A-12
Item	Input Current (by Load Current)
Object	――――――

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	0.049	0.051	0.052
0.80	0.287	0.261	0.234
1.60	0.500	0.447	0.383
2.40	0.715	0.635	0.533
3.20	0.934	0.824	0.674
4.00	1.155	1.013	0.826
4.30	1.236	1.088	0.886
4.73	1.354	1.190	0.969
--	-	-	-
--	-	-	-
--	-	-	-

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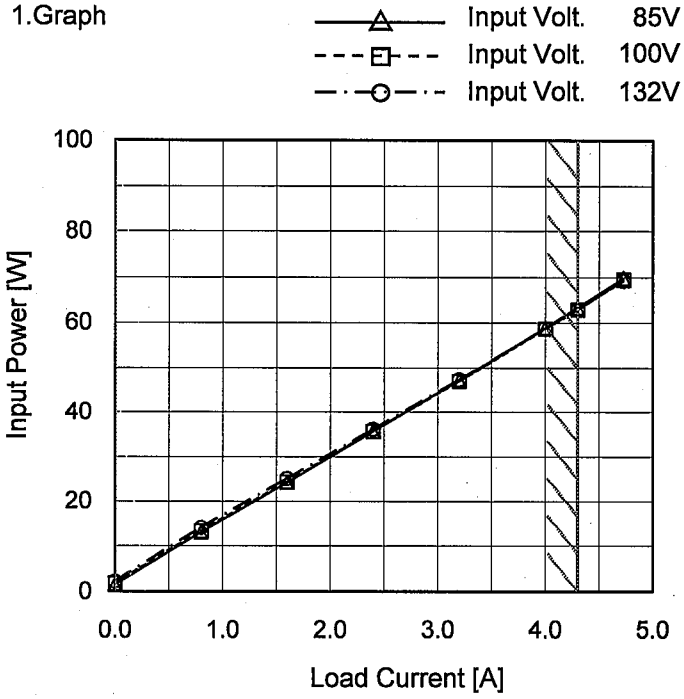
Model	LGA50A-12
Item	Input Power (by Load Current)
Object	――――――

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	1.5	1.8	2.3
0.80	13.0	13.3	14.1
1.60	24.2	24.3	25.1
2.40	35.6	35.7	36.1
3.20	47.1	47.0	47.3
4.00	58.8	58.6	58.7
4.30	63.3	62.9	63.0
4.73	69.8	69.4	69.3
--	-	-	-
--	-	-	-
--	-	-	-

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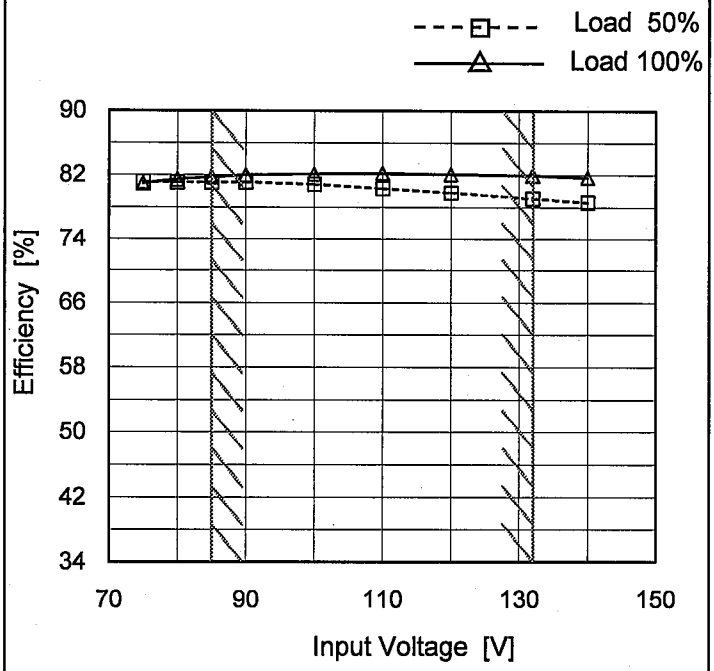
Model	LGA50A-12
Item	Efficiency (by Input Voltage)
Object	――――――――

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	81.1	80.9
80	81.1	81.4
85	81.1	81.7
90	81.1	81.9
100	80.8	82.1
110	80.3	82.2
120	79.8	82.1
132	79.1	81.9
140	78.6	81.7

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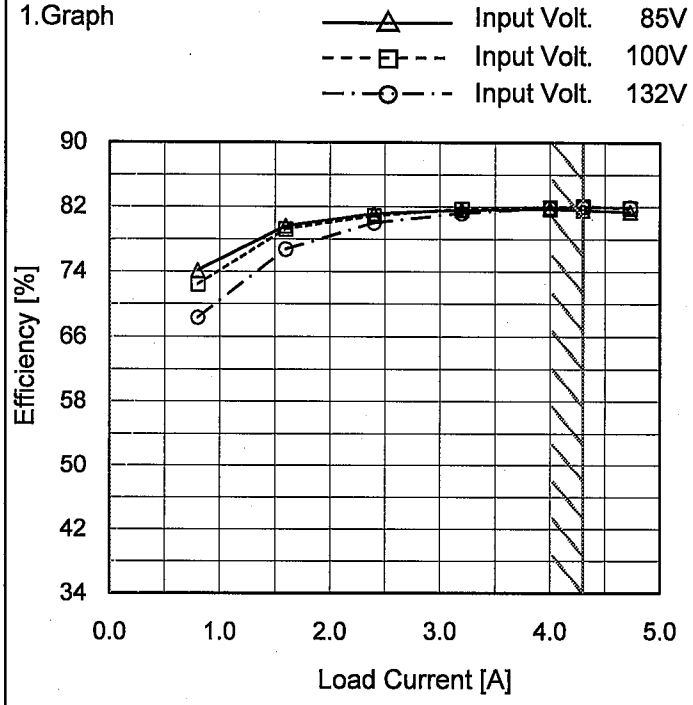
COSEL

Model	LGA50A-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	-	-	-
0.80	74.1	72.4	68.3
1.60	79.6	79.3	76.7
2.40	81.1	80.9	80.0
3.20	81.6	81.7	81.2
4.00	81.7	82.0	81.8
4.30	81.6	82.1	82.0
4.73	81.4	81.9	82.0
---	-	-	-
---	-	-	-
---	-	-	-

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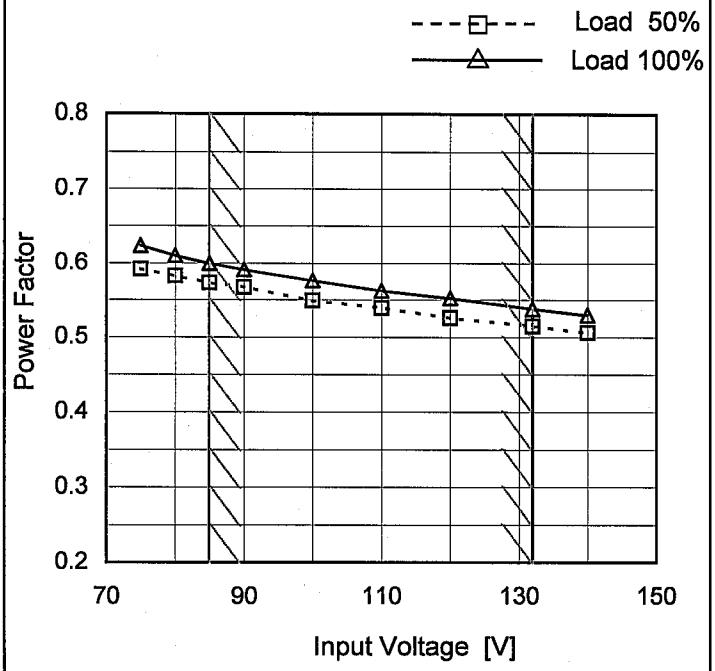
Model	LGA50A-12
Item	Power Factor (by Input Voltage)
Object	――――――――

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	0.592	0.624
80	0.582	0.610
85	0.573	0.600
90	0.567	0.591
100	0.549	0.576
110	0.539	0.562
120	0.526	0.552
132	0.515	0.538
140	0.506	0.530

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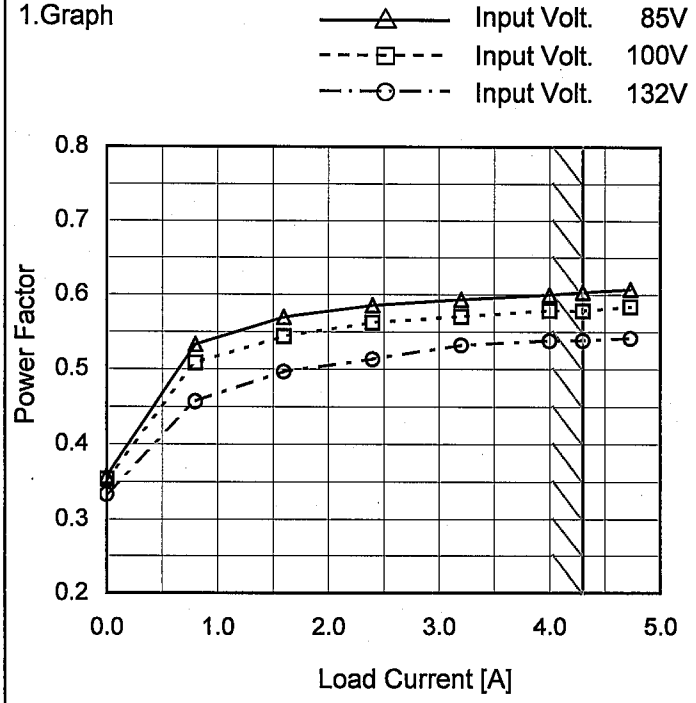
Model	LGA50A-12
Item	Power Factor (by Load Current)
Object	――――――

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	0.357	0.353	0.333
0.80	0.533	0.508	0.456
1.60	0.569	0.544	0.496
2.40	0.586	0.562	0.513
3.20	0.593	0.570	0.532
4.00	0.599	0.578	0.538
4.30	0.603	0.578	0.538
4.73	0.607	0.584	0.541
--	-	-	-
--	-	-	-
--	-	-	-

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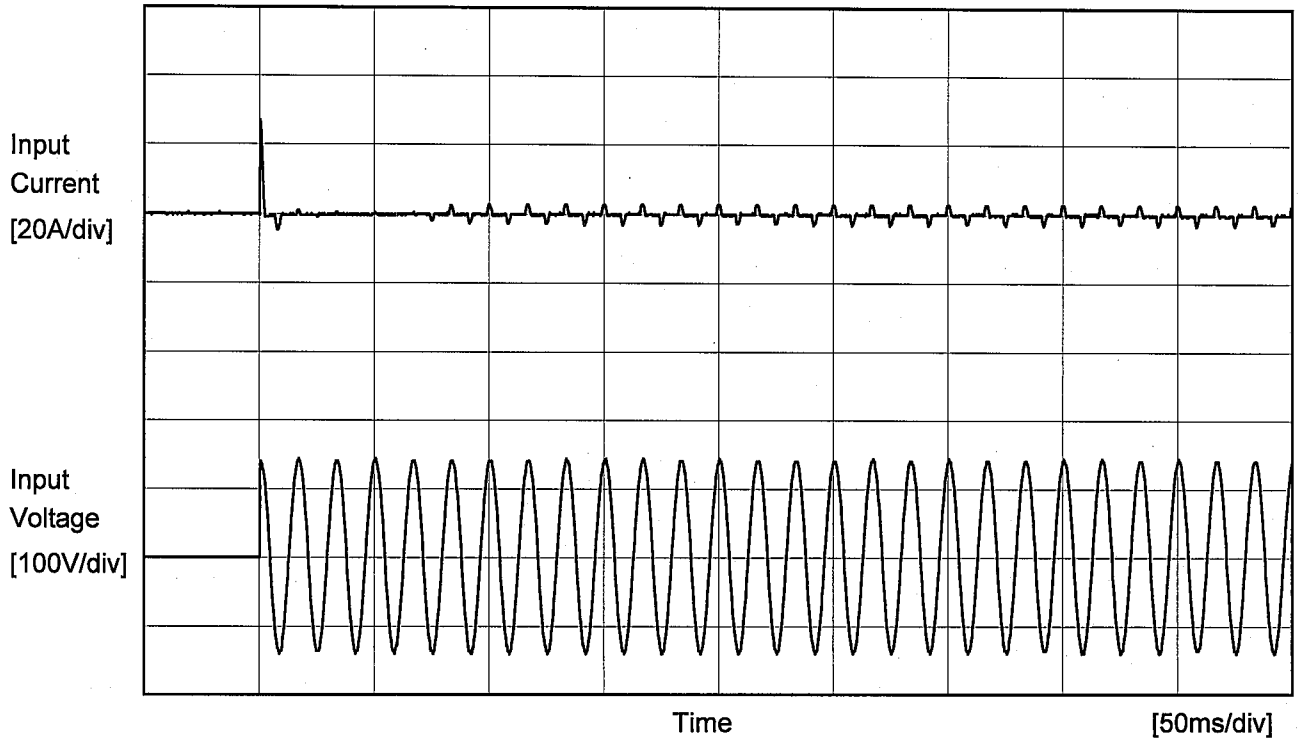
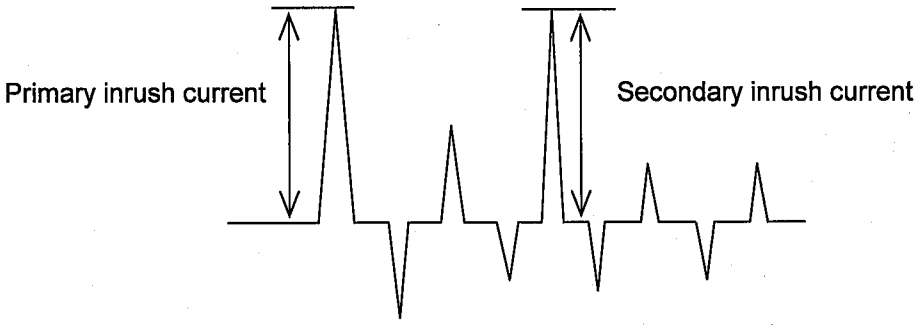
Model	LGA50A-12
Item	Inrush Current
Object	――――――

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	26.9 A
Secondary inrush current	3.1 A



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参考資料

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Model	LGA50A-12
Item	Leakage Current
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure B

1.Results

Standards	Leakage Current [mA]		
	Input Volt. 100 [V]	Input Volt. 120 [V]	Input Volt. 132 [V]
(A)DEN-AN	0.23	0.27	0.30
(B)IEC60950	0.24	0.30	0.33

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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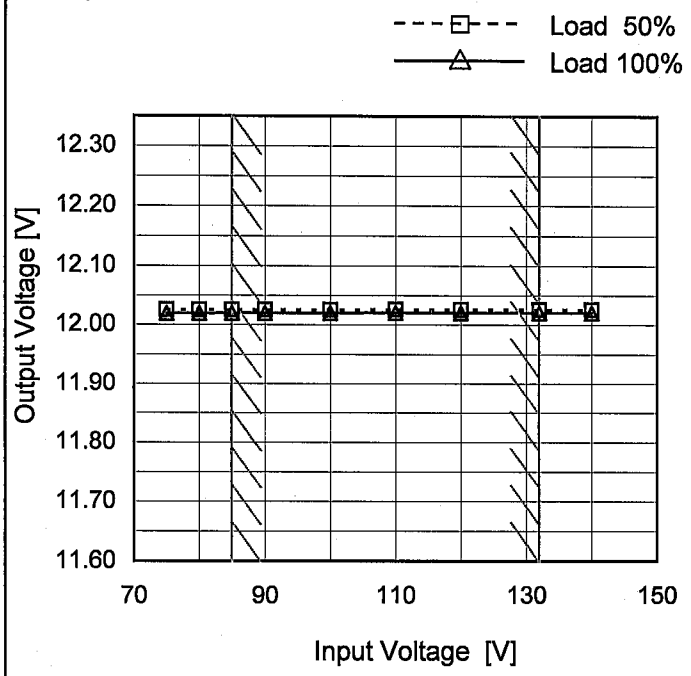
Model	LGA50A-12
Item	Line Regulation
Object	+12V4.3A

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	12.025	12.019
80	12.025	12.020
85	12.025	12.020
90	12.025	12.020
100	12.026	12.020
110	12.026	12.020
120	12.026	12.020
132	12.026	12.020
140	12.026	12.020

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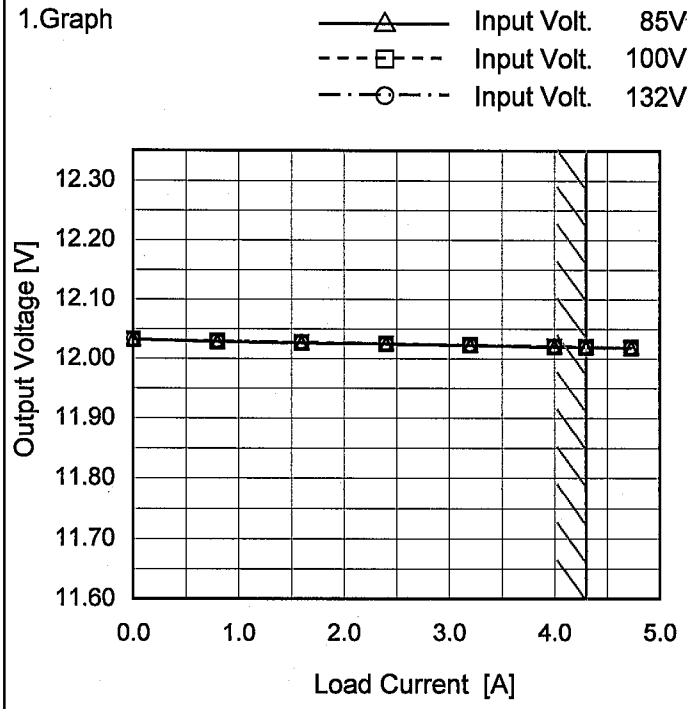
Model	LGA50A-12
Item	Load Regulation
Object	+12V4.3A

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	12.032	12.032	12.032
0.80	12.029	12.029	12.029
1.60	12.026	12.027	12.027
2.40	12.024	12.025	12.025
3.20	12.022	12.023	12.023
4.00	12.020	12.020	12.021
4.30	12.019	12.020	12.020
4.73	12.018	12.018	12.019
---	-	-	-
---	-	-	-
---	-	-	-

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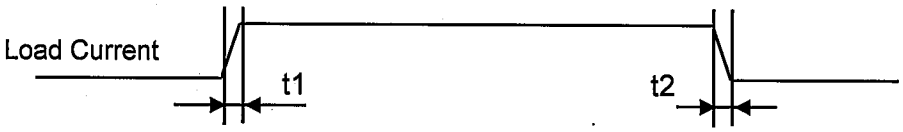
Model	LGA50A-12
Item	Dynamic Load Response
Object	+12V4.3A

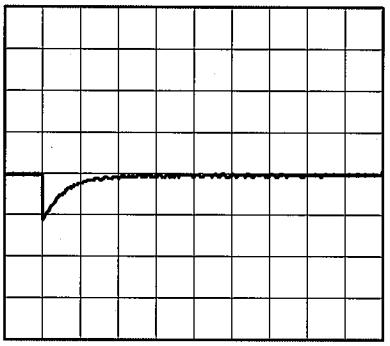
Temperature 25°C
Testing Circuitry Figure C

Input Volt. 100 V
Cycle 1000 ms

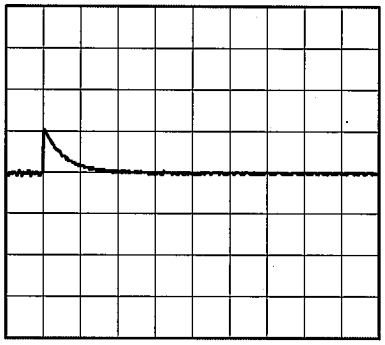
Response. t1=t2=50 μs. Typ



Min. Load (0A) ⟷
Load 100% (4.3A)

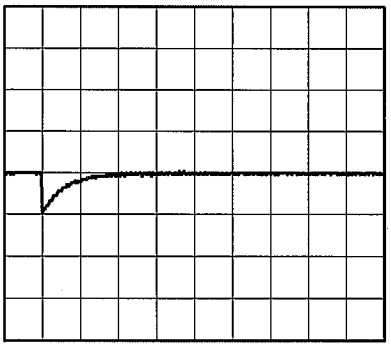


100 mV/div
40 ms/div

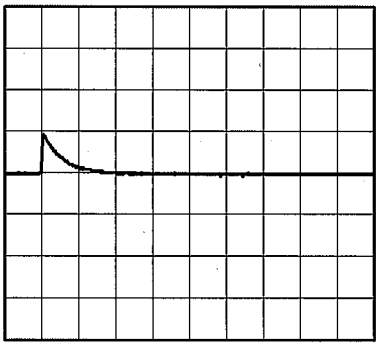


40 ms/div

Min. Load (0A) ⟷
Load 50% (2.15A)



100 mV/div
40 ms/div



40 ms/div

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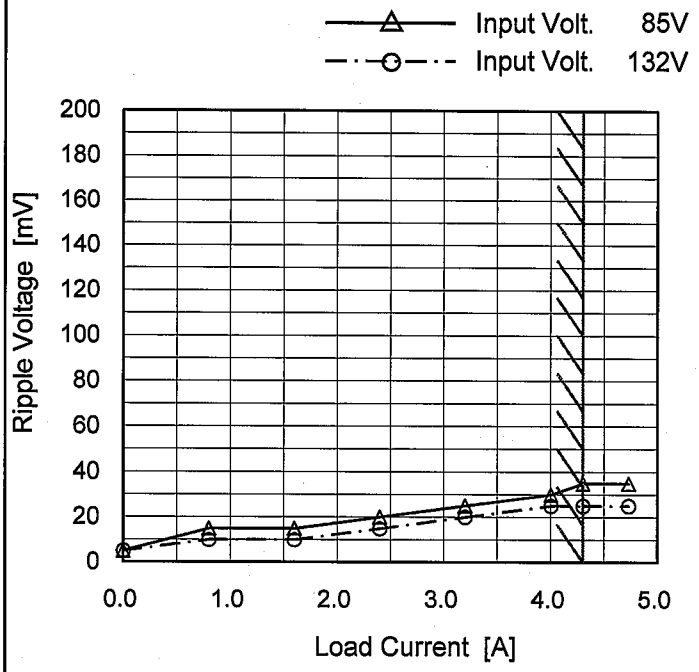
Model	LGA50A-12
Item	Ripple Voltage (by Load Current)
Object	+12V4.3A

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.

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

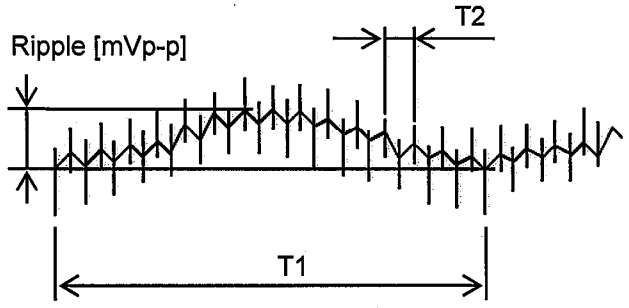


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	5	5
0.80	15	10
1.60	15	10
2.40	20	15
3.20	25	20
4.00	30	25
4.30	35	25
4.73	35	25
--	-	-
--	-	-
--	-	-

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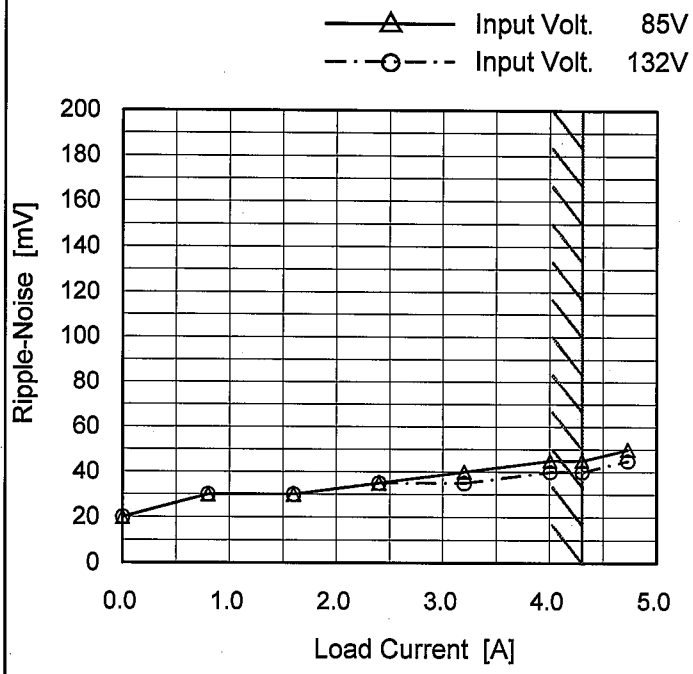
Model	LGA50A-12
Item	Ripple-Noise
Object	+12V4.3A

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.

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

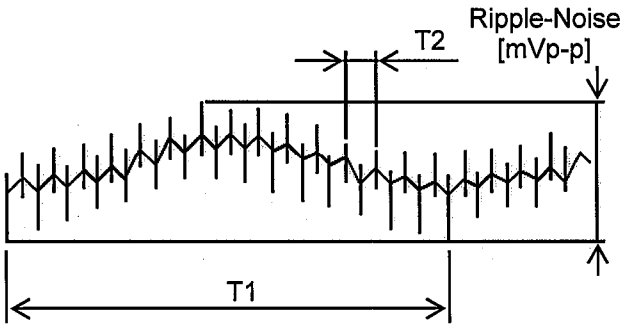


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	20	20
0.80	30	30
1.60	30	30
2.40	35	35
3.20	40	35
4.00	45	40
4.30	45	40
4.73	50	45
--	-	-
--	-	-
--	-	-

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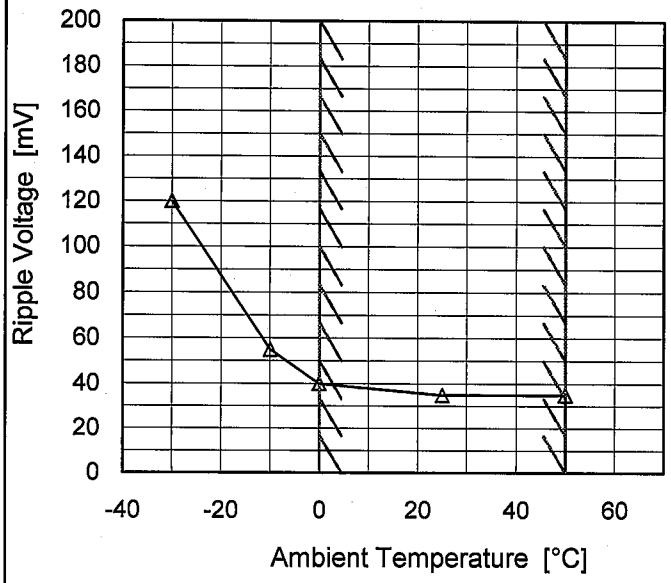
Model	LGA50A-12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V4.3A

Testing Circuitry Figure C

1.Graph



Input Volt. 100V

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

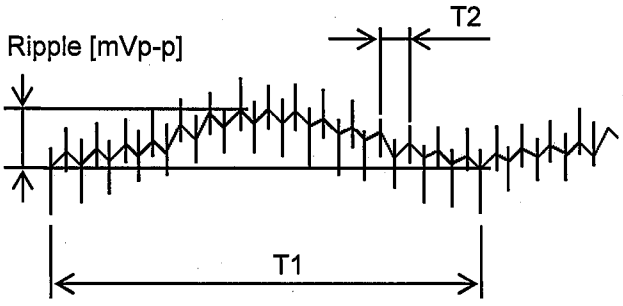


Fig. Complex Ripple Wave Form

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]
-30	120
-10	55
0	40
25	35
50	35
--	-
--	-
--	-
--	-
--	-
--	-

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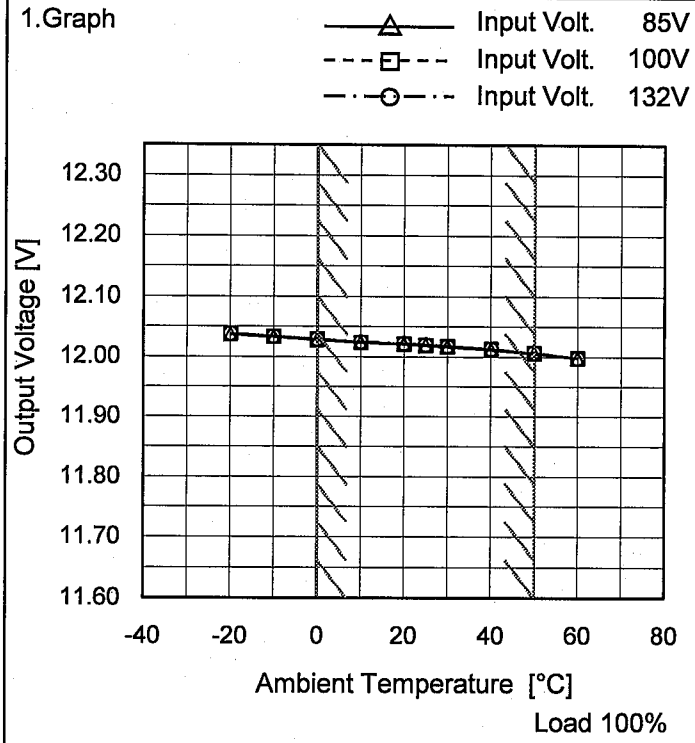
Model	LGA50A-12
Item	Ambient Temperature Drift
Object	+12V4.3A

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	12.037	12.038	12.038
-10	12.033	12.034	12.034
0	12.028	12.029	12.029
10	12.024	12.024	12.025
20	12.021	12.021	12.022
25	12.019	12.019	12.020
30	12.017	12.018	12.018
40	12.012	12.013	12.013
50	12.006	12.006	12.007
60	11.998	11.998	11.998
--	-	-	-

COSEL

Model	LGA50A-12	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V4.3A	

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 - 50°C
Input Voltage : 85 - 132V
Load Current : 0 - 4.3A

* 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	132	0	12.045	±20	±0.2
Minimum Voltage	50	85	4.3	12.006		

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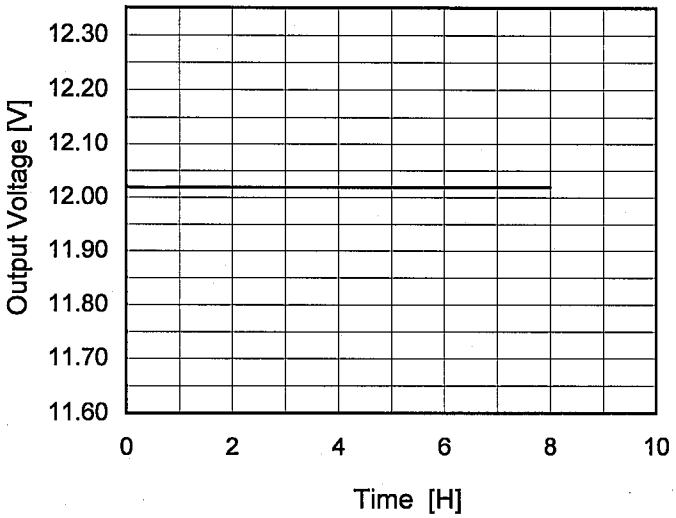
Model	LGA50A-12
Item	Time Lapse Drift
Object	+12V4.3A

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	12.021
0.5	12.018
1.0	12.018
2.0	12.018
3.0	12.018
4.0	12.018
5.0	12.019
6.0	12.018
7.0	12.018
8.0	12.019

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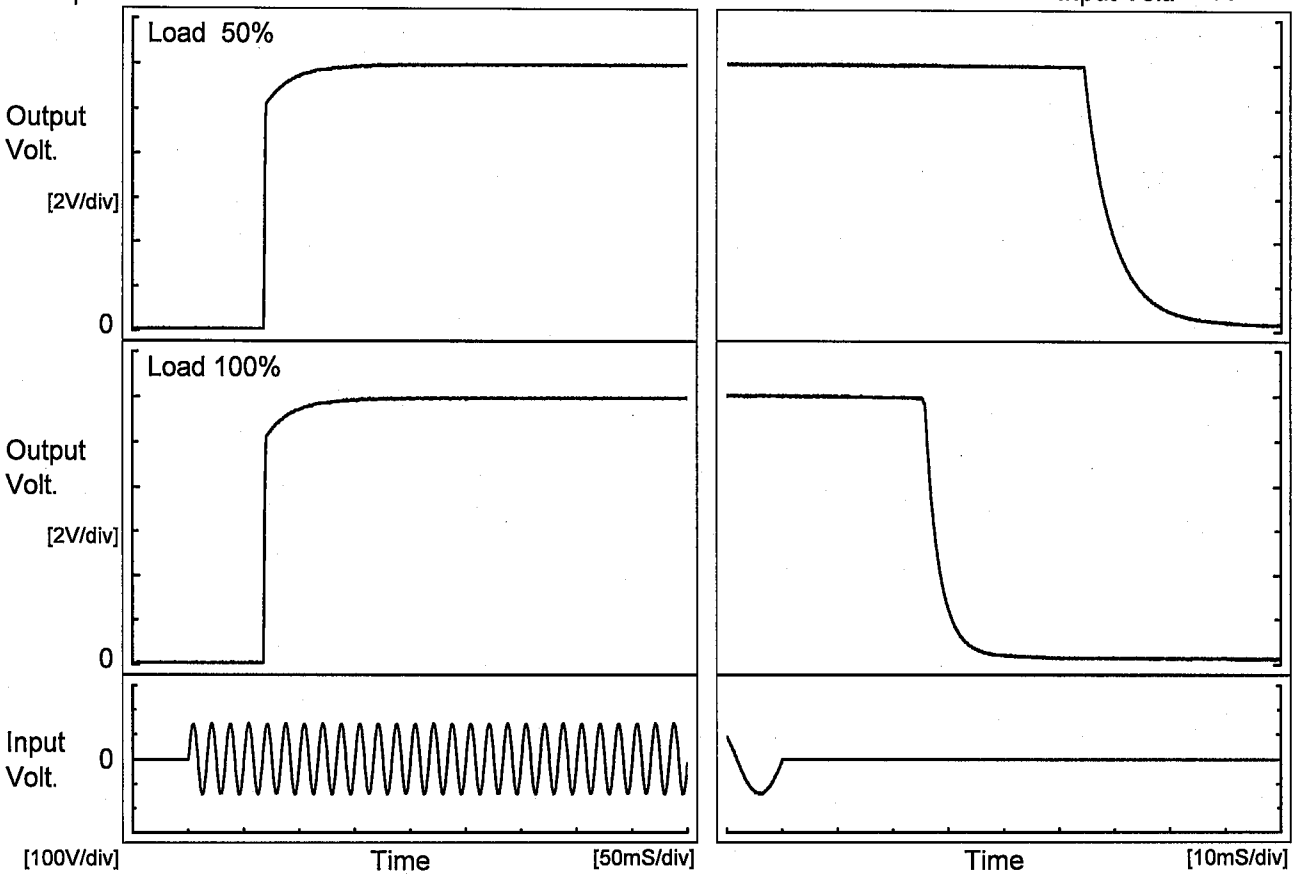
Model	LGA50A-12
Item	Rise and Fall Time
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

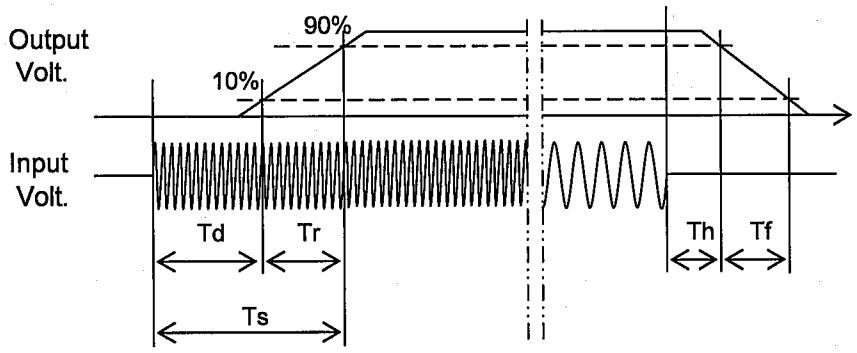
Input Volt. 100 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	68.5	13.3	81.8	54.9	12.4
100 %	68.3	13.5	81.8	26.0	6.1



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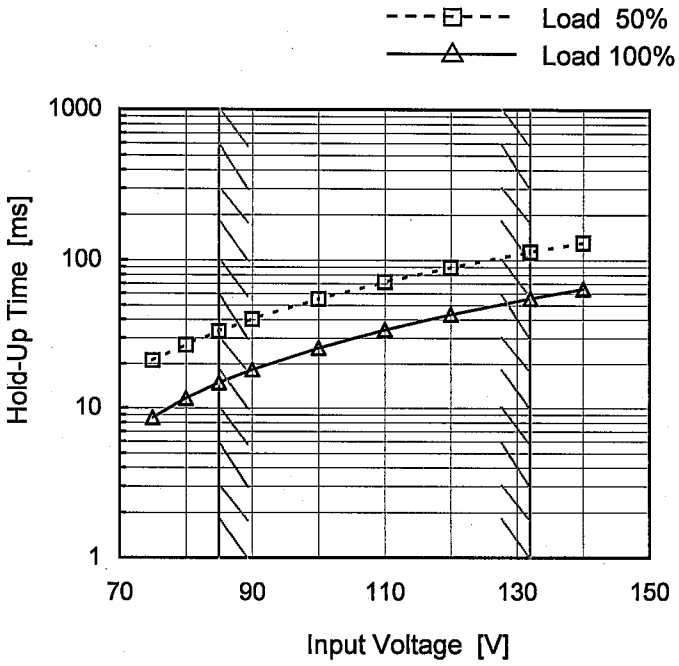
COSEL

Model	LGA50A-12
Item	Hold-Up Time
Object	+12V4.3A

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

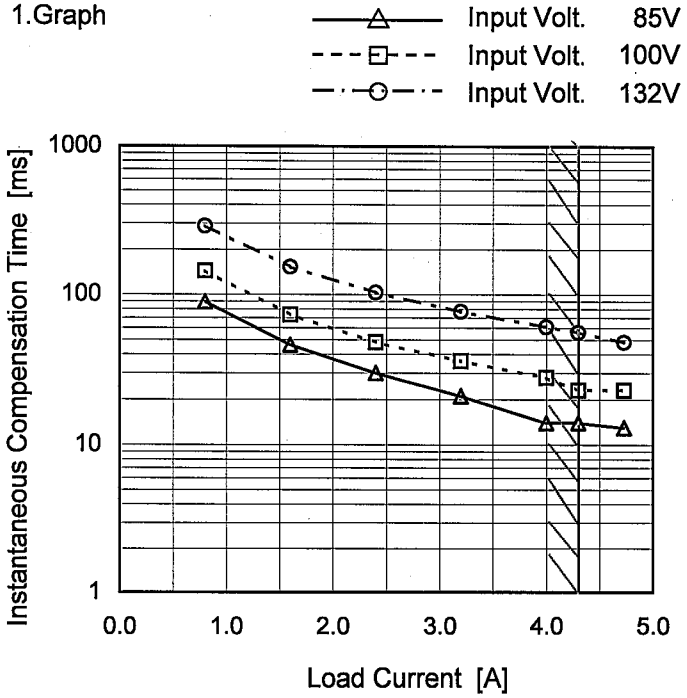
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	21	9
80	27	12
85	33	15
90	40	18
100	55	26
110	71	34
120	89	43
132	113	55
140	130	64

COSEL

Model	LGA50A-12
Item	Instantaneous Interruption Compensation
Object	+12V4.3A

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	-	-	-
0.80	89	144	286
1.60	46	73	153
2.40	30	48	103
3.20	21	36	77
4.00	14	28	61
4.30	14	23	56
4.73	13	23	48
--	-	-	-
--	-	-	-
--	-	-	-

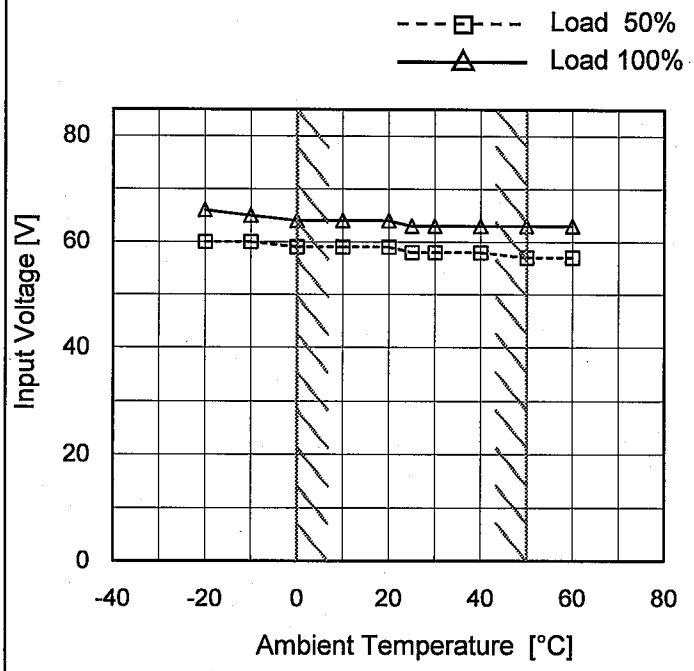
BC-10151

COSEL

Model	LGA50A-12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V4.3A

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	60	66
-10	60	65
0	59	64
10	59	64
20	59	64
25	58	63
30	58	63
40	58	63
50	57	63
60	57	63
--	-	-

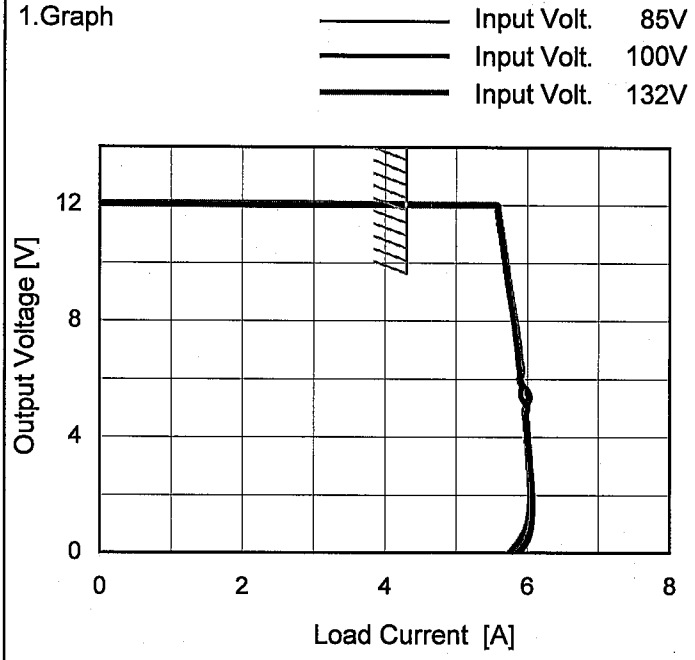
BC-10151

COSEL

Model	LGA50A-12
Item	Overcurrent Protection
Object	+12V4.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

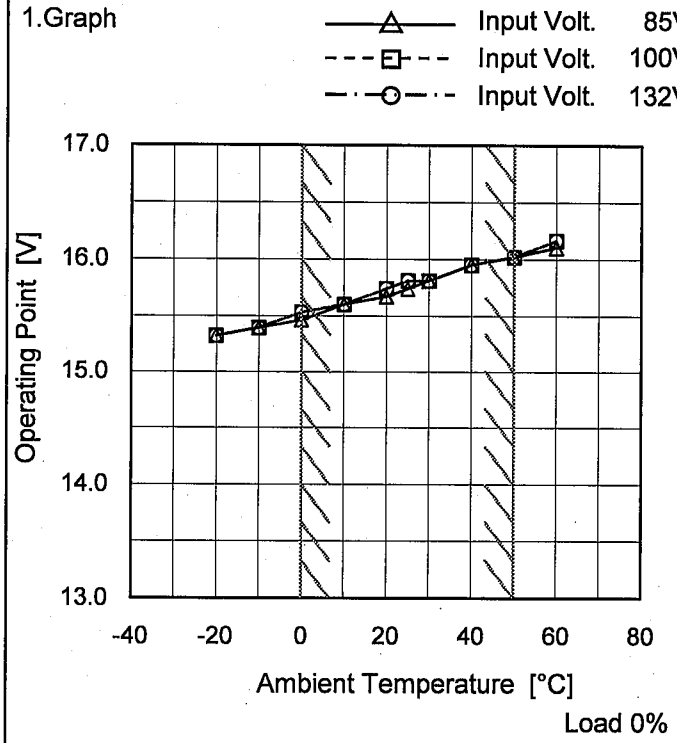
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
12.0	4.36	4.37	4.37
11.4	5.63	5.61	5.61
10.8	5.66	5.64	5.65
9.6	5.71	5.71	5.72
8.4	5.78	5.78	5.80
7.2	5.83	5.85	5.87
6.0	5.89	5.91	5.90
4.8	5.99	5.99	5.97
3.6	6.01	6.02	6.01
2.4	6.06	6.07	6.05
1.2	6.09	6.07	6.03
0.0	5.89	5.85	5.74

COSEL

Model	LGA50A-12
Item	Overvoltage Protection
Object	+12V4.3A

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	15.32	15.32	15.32
-10	15.39	15.39	15.39
0	15.46	15.53	15.53
10	15.60	15.60	15.60
20	15.67	15.74	15.74
25	15.74	15.81	15.81
30	15.81	15.81	15.81
40	15.95	15.95	15.95
50	16.02	16.02	16.02
60	16.10	16.16	16.16
--	-	-	-

COSEL

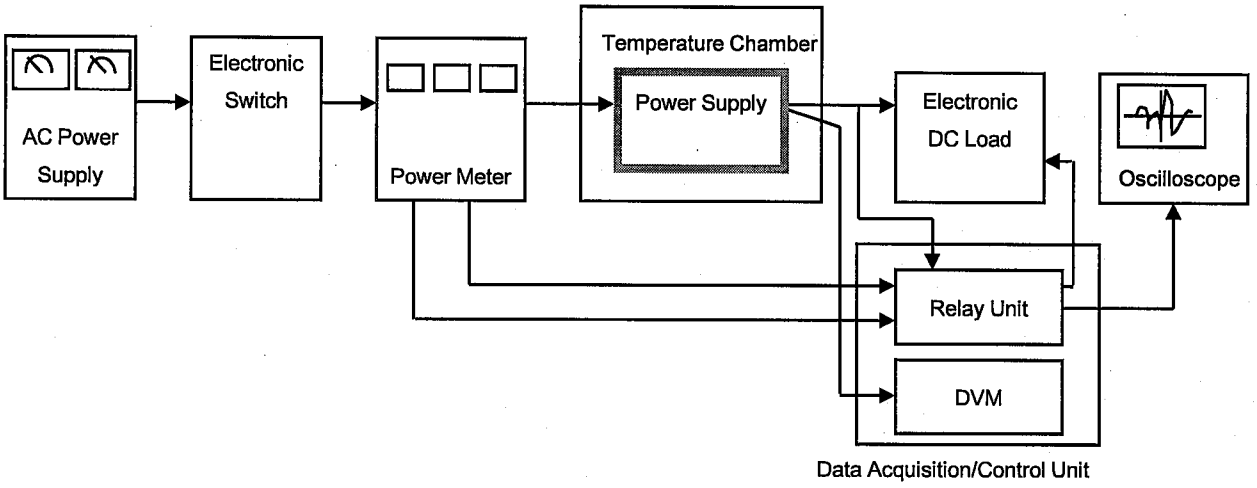


Figure A

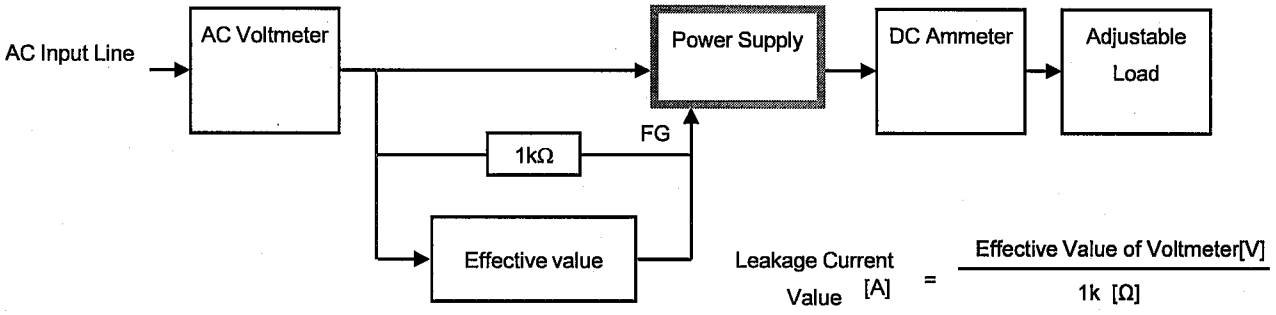


Figure B (DEN-AN)

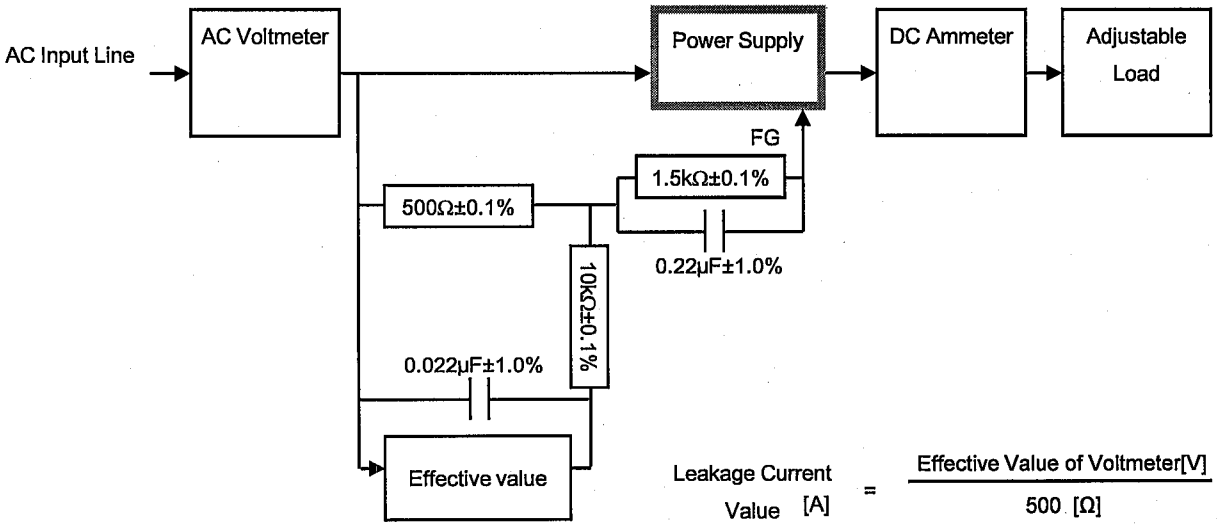


Figure B (IEC60950-1)

COSEL

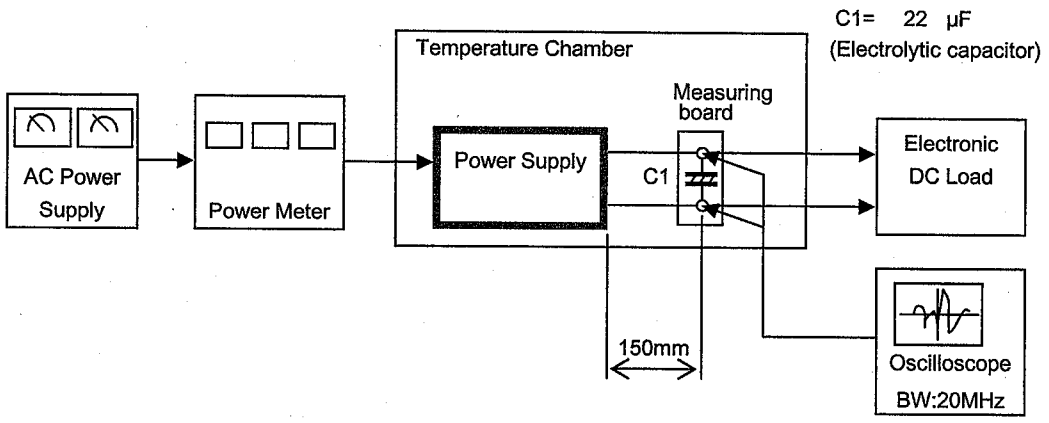


Figure C