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参考資料

TEST DATA OF PLA150F-12

Regulated DC Power Supply
May 23, 2013

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COSEL CO.,LTD.

参考資料

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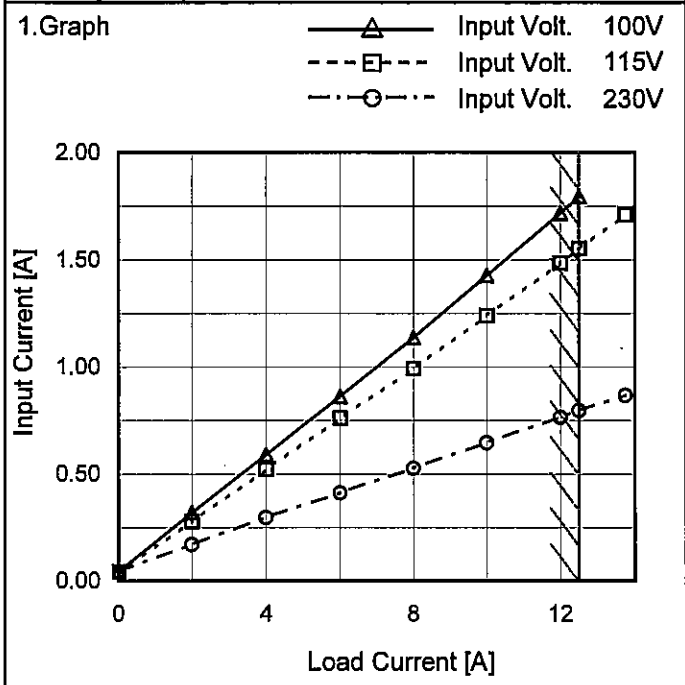
COSEL

Model	PLA150F-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. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.044	0.042	0.044
2.00	0.320	0.278	0.171
4.00	0.591	0.520	0.298
6.00	0.863	0.760	0.412
8.00	1.138	0.992	0.528
10.00	1.428	1.238	0.646
12.00	1.718	1.483	0.766
12.50	1.796	1.552	0.797
13.75	-	1.710	0.868
--	-	-	-
--	-	-	-

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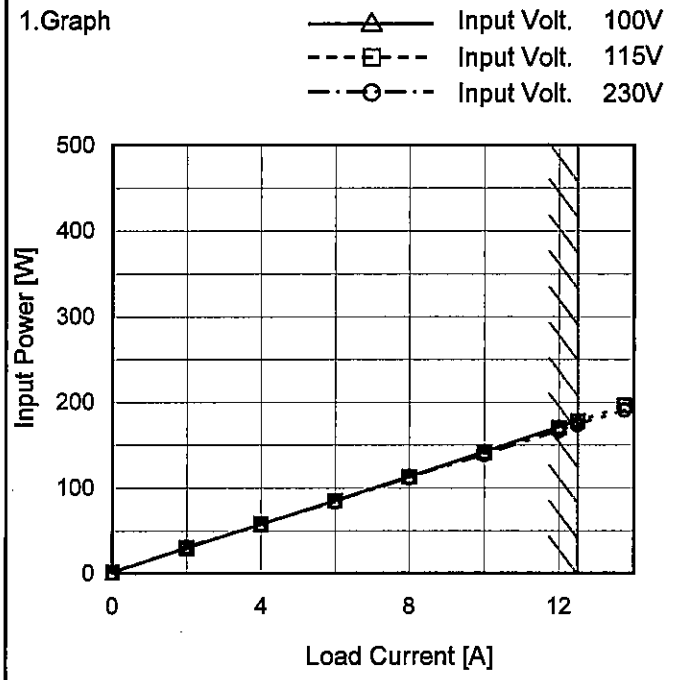
Model	PLA150F-12
Item	Input Power (by Load Current)
Object	————————

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. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	1.3	1.3	1.0
2.00	30.0	29.7	31.0
4.00	57.6	57.6	57.0
6.00	85.2	84.3	84.0
8.00	113.6	112.4	112.0
10.00	142.5	141.1	139.0
12.00	171.6	169.8	167.0
12.50	179.4	177.6	174.0
13.75	-	195.9	191.0
--	-	-	-
--	-	-	-

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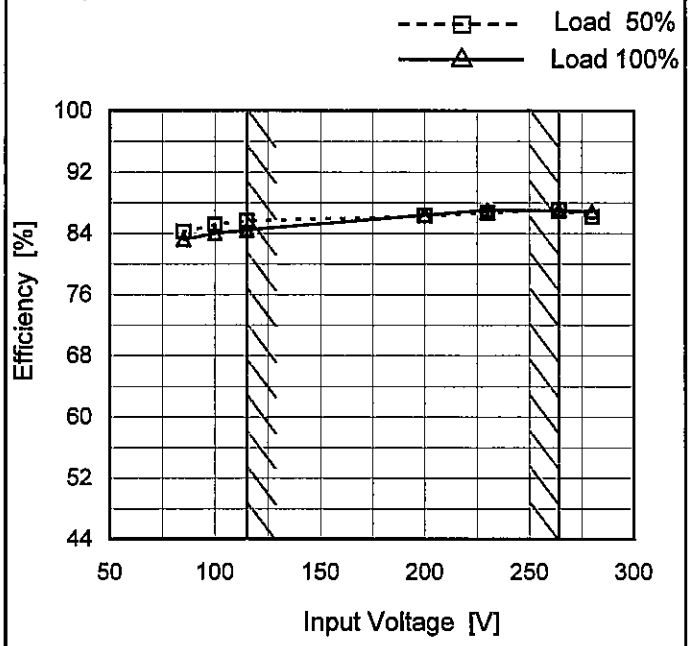
COSEL

Model	PLA150F-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%
85	84.2	83.2 ※1
100	85.1	84.0 ※2
115	85.6	84.5
200	86.3	86.4
230	86.7	87.1
264	87.1	87.0
280	86.1	86.9
–	-	-
–	-	-

※1:Load 80%
※2:Load 90%

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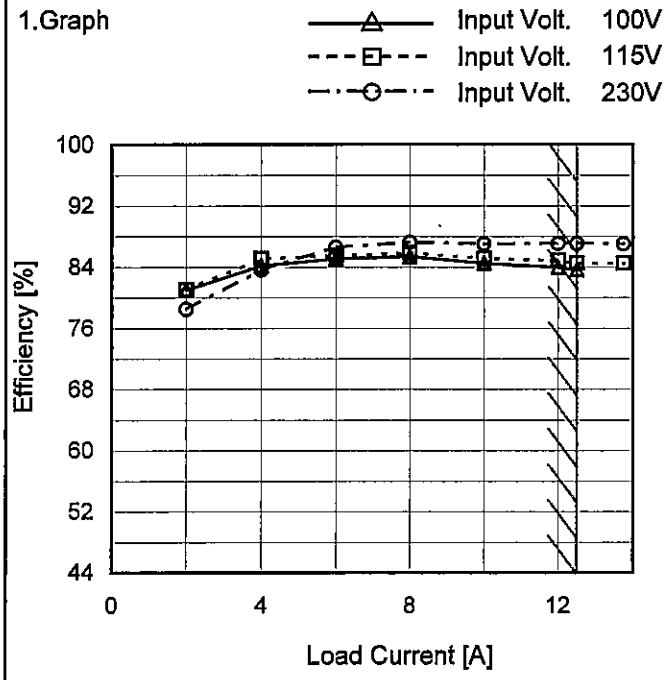
Model	PLA150F-12
Item	Efficiency (by Load Current)
Object	――――――

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. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
2.00	81.0	81.1	78.5
4.00	84.2	85.1	83.7
6.00	85.1	85.5	86.6
8.00	85.4	85.8	87.2
10.00	84.5	85.1	87.1
12.00	84.0	84.8	87.1
12.50	83.7	84.5	87.1
13.75	-	84.5	87.0
--	-	-	-
--	-	-	-

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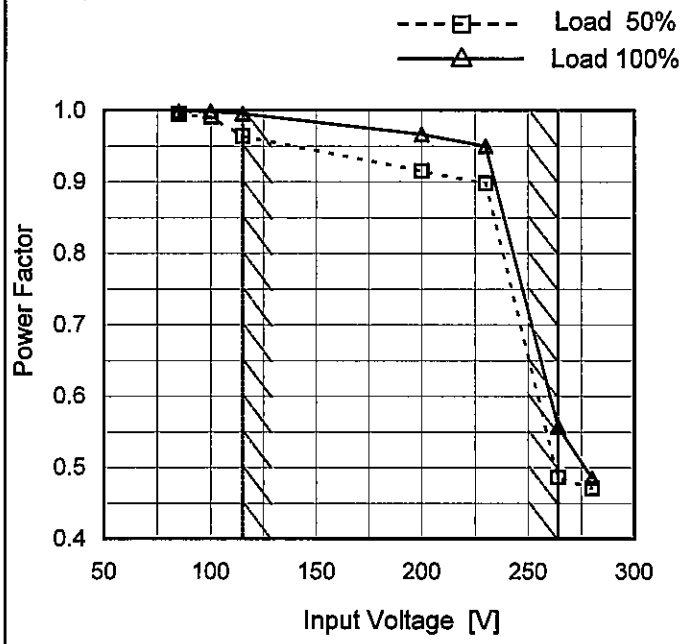
Model	PLA150F-12
Item	Power Factor (by Input Voltage)
Object	――――――――

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%
85	0.994	0.999 ※1
100	0.991	0.999 ※2
115	0.964	0.996
200	0.915	0.967
230	0.898	0.951
264	0.486	0.557
280	0.471	0.486
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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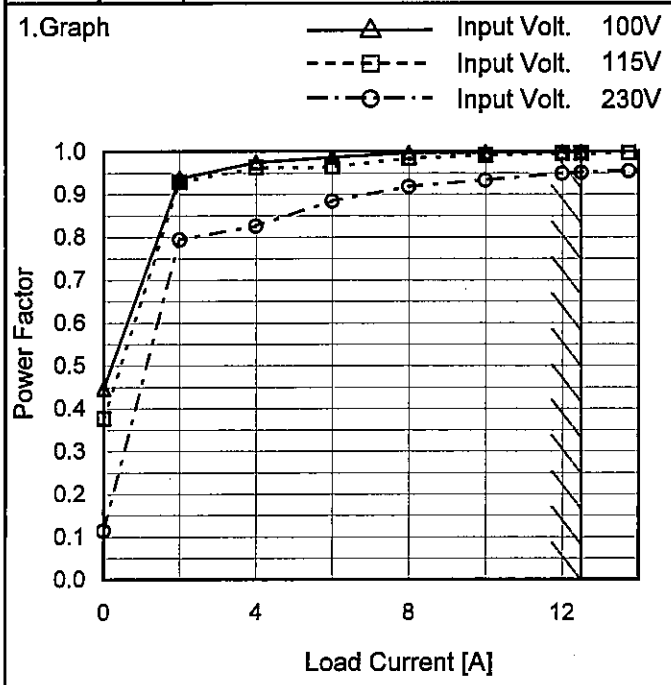
Model	PLA150F-12
Item	Power Factor (by Load Current)
Object	————————

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. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.447	0.376	0.115
2.00	0.938	0.928	0.795
4.00	0.975	0.962	0.826
6.00	0.987	0.963	0.884
8.00	0.997	0.984	0.918
10.00	0.998	0.991	0.933
12.00	0.999	0.995	0.949
12.50	0.999	0.995	0.951
13.75	-	0.996	0.955
---	-	-	-
---	-	-	-

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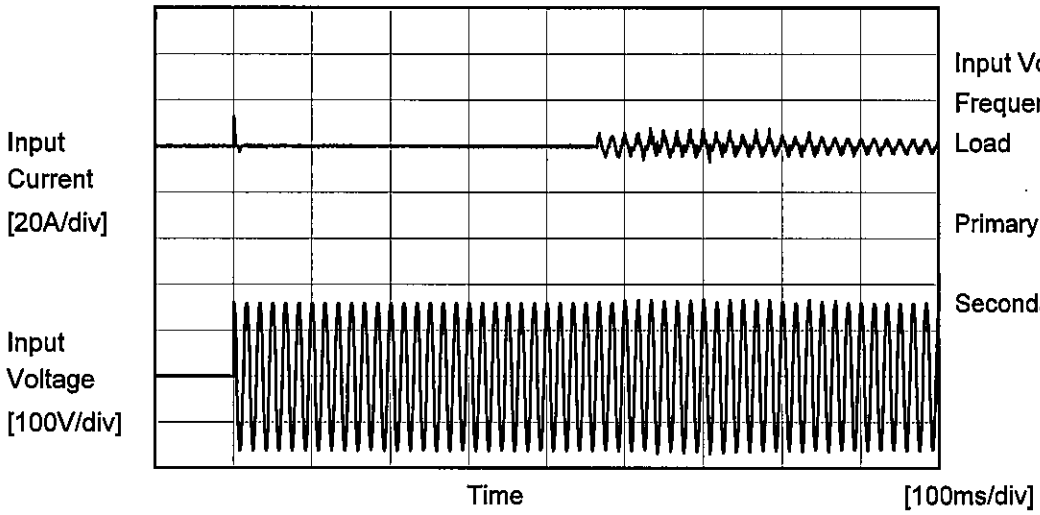
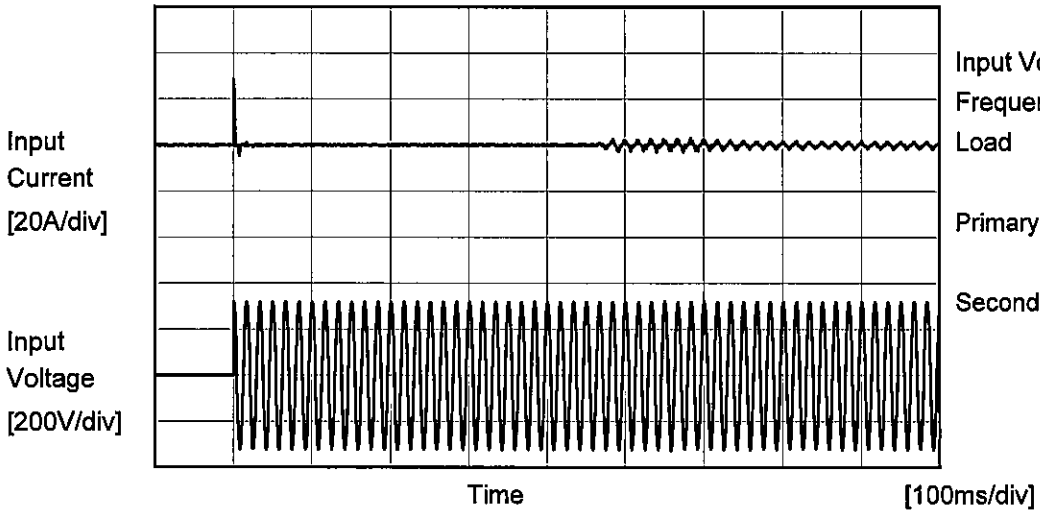
Model	PLA150F-12		
Item	Inrush Current	Temperature	25°C
		Testing Circuitry	Figure A
Object	————————		



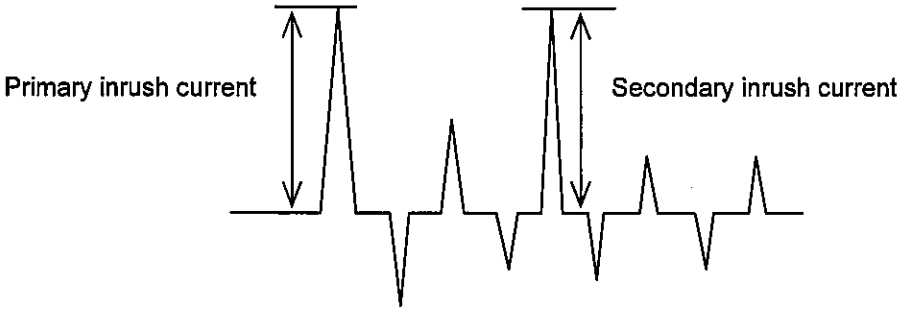
Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current : 12.9 A
Secondary inrush current : 7.8 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current : 28.5 A
Secondary inrush current : 3.0 A



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Model	PLA150F-12	Temperature 25°C
Item	Leakage Current	Testing Circuitry Figure B
Object	――――――――	

1.Results

[mA]

Standards		Input Volt.			Note
		100[V]	115[V]	240[V]	
DEN-AN	Both phases	0.45	0.50	0.65	Operation
	One of phases	0.30	0.35	0.78	Stand by
IEC60950-1	Both phases	0.30	0.31	0.55	Operation
	One of phases	0.27	0.31	0.72	Stand by

The value for "One of phases" is the reference value only.

2.Condition

Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

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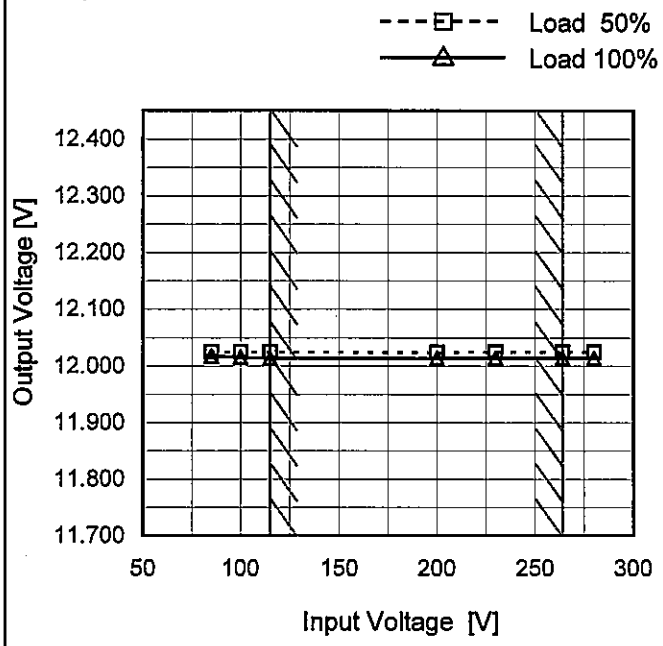
Model	PLA150F-12
Item	Line Regulation
Object	+12V12.5A

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%
85	12.024	12.018 ※1
100	12.024	12.016 ※2
115	12.024	12.014
200	12.024	12.014
230	12.024	12.014
264	12.024	12.014
280	12.024	12.014
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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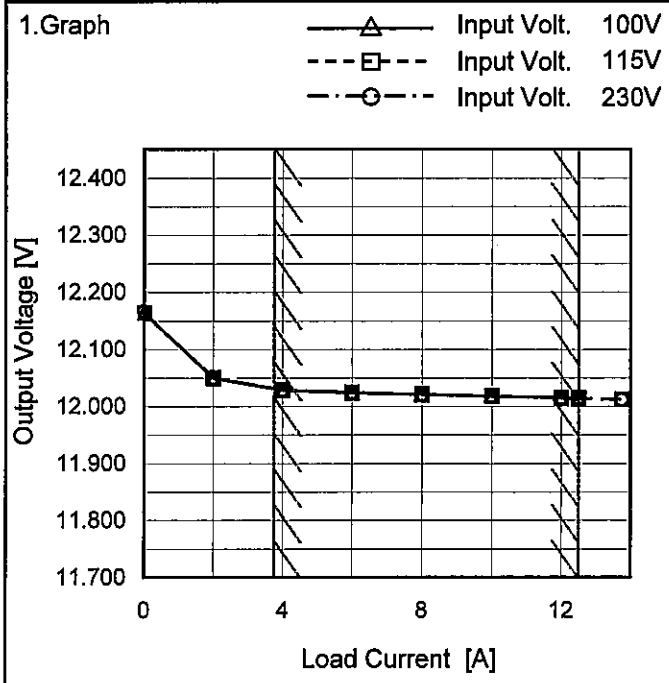
COSEL

Model	PLA150F-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. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	12.165	12.164	12.167
2.00	12.050	12.050	12.051
4.00	12.028	12.028	12.029
6.00	12.024	12.024	12.025
8.00	12.021	12.021	12.021
10.00	12.018	12.018	12.018
12.00	12.016	12.014	12.015
12.50	12.014	12.014	12.014
13.75	-	12.012	12.012
--	-	-	-
--	-	-	-

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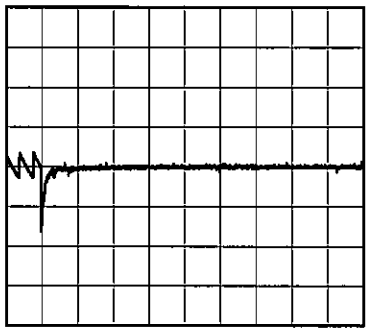
Model	PLA150F-12		
Item	Dynamic Load Response	Temperature Testing Circuitry	25˚ C Figure A
Object	+12V12.5A		

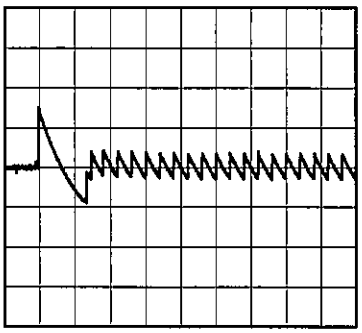
Input Volt. 115 V

Cycle 1000 ms

Response. t1=t2=50us. Typ

Min. Load (0A) ←→
Load 100% (12.5A)



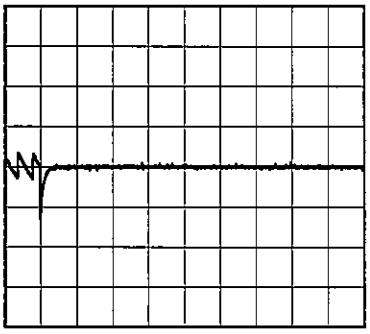


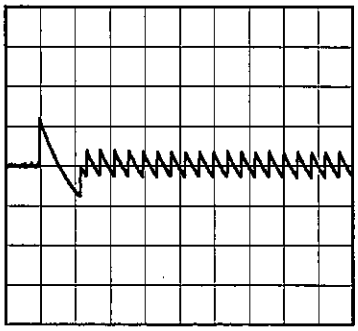
400 mV/div

200 ms/div

200 ms/div

Min. Load (0A) ←→
Load 50% (6.25A)





400 mV/div

200 ms/div

200 ms/div

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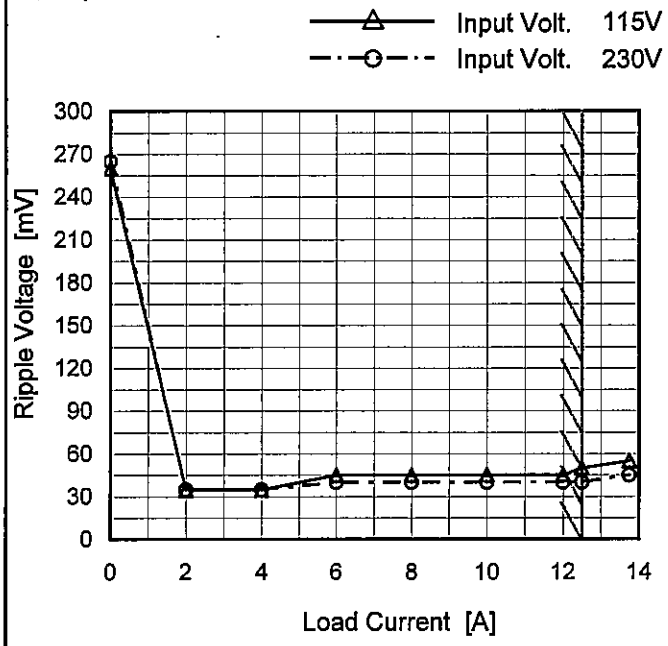
Model	PLA150F-12
Item	Ripple Voltage (by Load Current)
Object	+12V12.5A

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.

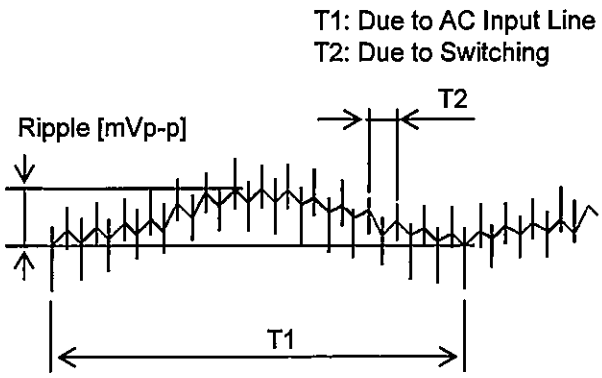


Fig. Complex Ripple Wave Form

2.Values

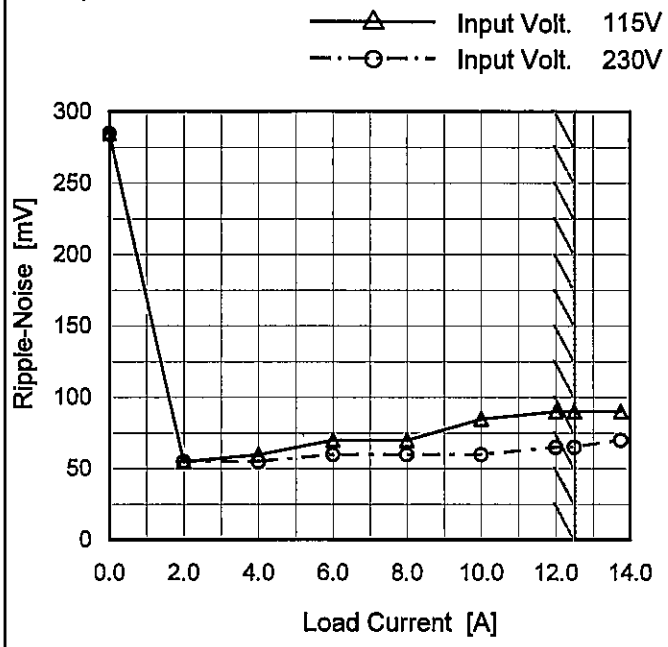
Load Current [A]	Ripple Voltage [mV] Input Volt. 115 [V]	Ripple Voltage [mV] Input Volt. 230 [V]
0.00	260	265
2.00	35	35
4.00	35	35
6.00	45	40
8.00	45	40
10.00	45	40
12.00	45	40
12.50	50	40
13.75	55	45
--	-	-
--	-	-

COSEL

Model	PLA150F-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.

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

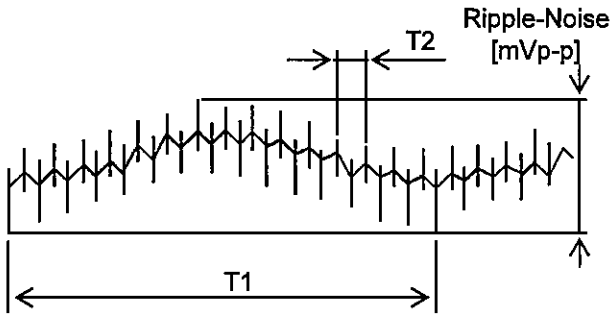


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
0.00	285	285
2.00	55	55
4.00	60	55
6.00	70	60
8.00	70	60
10.00	85	60
12.00	90	65
12.50	90	65
13.75	90	70
--	-	-
--	-	-

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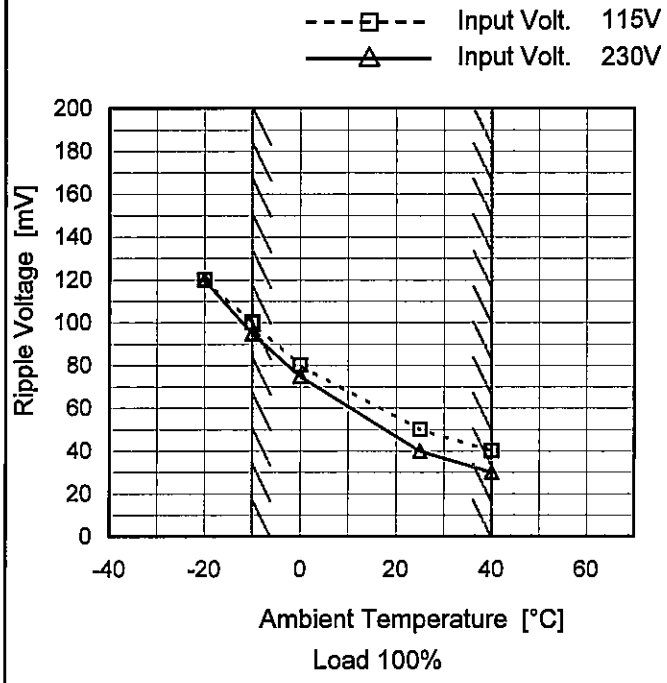
Model	PLA150F-12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V12.5A

Testing Circuitry Figure C

1.Graph



Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 115 [V]	Input Volt. 230 [V]
-20	120	120
-10	100	95
0	80	75
25	50	40
40	40	30
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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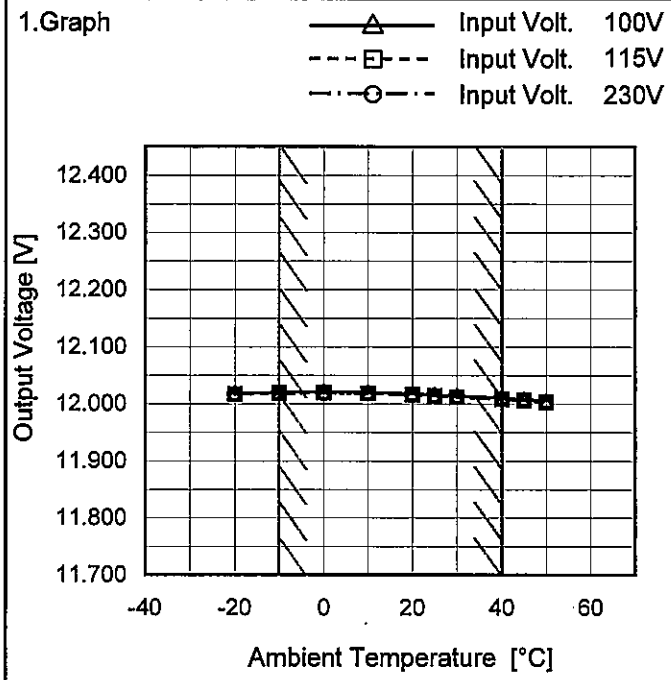
Model	PLA150F-12
Item	Ambient Temperature Drift
Object	+12V12.5A

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. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
-20	12.019	12.016	12.017
-10	12.020	12.018	12.018
0	12.021	12.019	12.019
10	12.021	12.018	12.018
20	12.018	12.016	12.016
25	12.016	12.014	12.014
30	12.015	12.012	12.012
40	12.011	12.008	12.008
45	12.009	12.006	12.006
50	12.006	12.003	12.003
--	-	-	-

Note: In case of Input Volt. 100V, Load 90%.
Other case Load 100%.

COSEL

Model	PLA150F-12
Item	Output Voltage Accuracy
Object	+12V12.5A

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 : 115 - 264V
Load Current : 3.75 - 12.5A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

* 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	0	115	3.75	12.033	±13	±0.1
Minimum Voltage	40	115	12.5	12.008		

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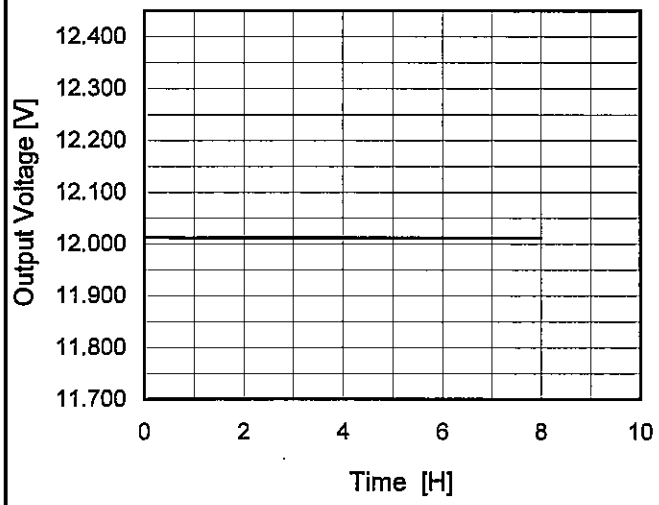
Model	PLA150F-12
Item	Time Lapse Drift
Object	+12V12.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 230V
Load 100%

* The characteristic of AC115V is equal.

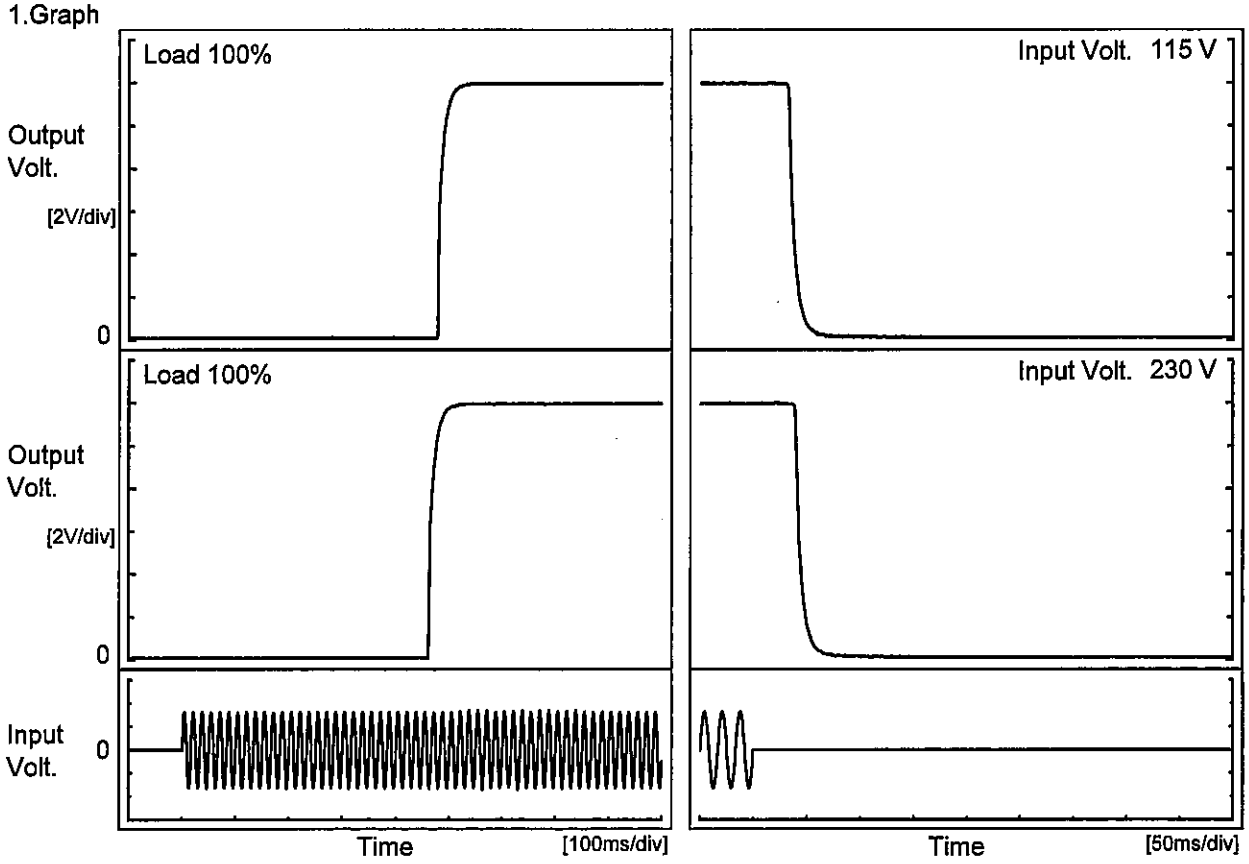
2.Values

Time since start [H]	Output Voltage [V]
0.0	12.014
0.5	12.013
1.0	12.012
2.0	12.012
3.0	12.012
4.0	12.012
5.0	12.012
6.0	12.012
7.0	12.012
8.0	12.012

COSEL

Model	PLA150F-12	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+12V12.5A		

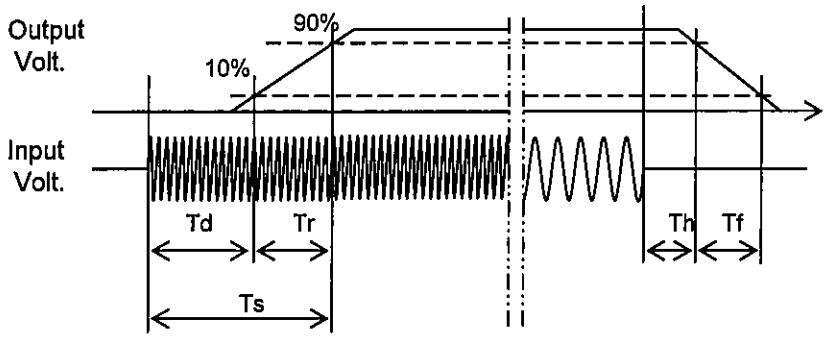
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	479.5	21.0	500.5	32.8	12.5
230 V	462.5	21.0	483.5	39.3	12.8



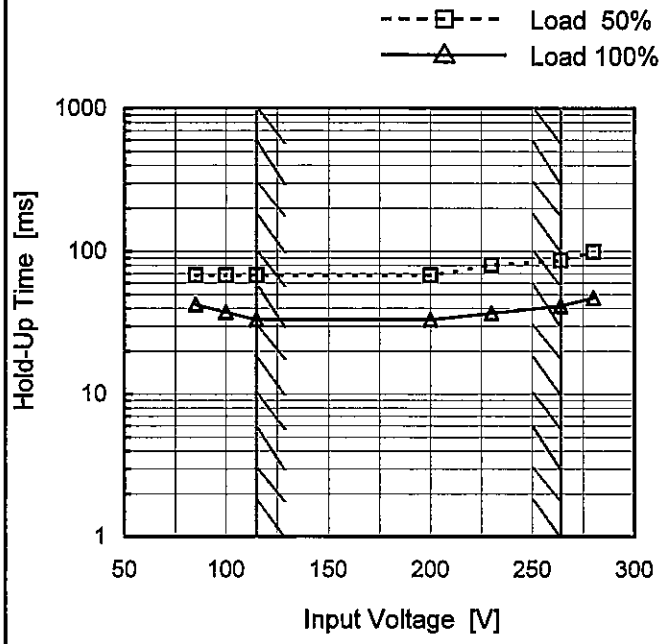
BC - 10754

COSEL

Model	PLA150F-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%
85	68	43 ※1
100	68	38 ※2
115	68	33
200	68	33
230	80	37
264	86	42
280	99	47
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

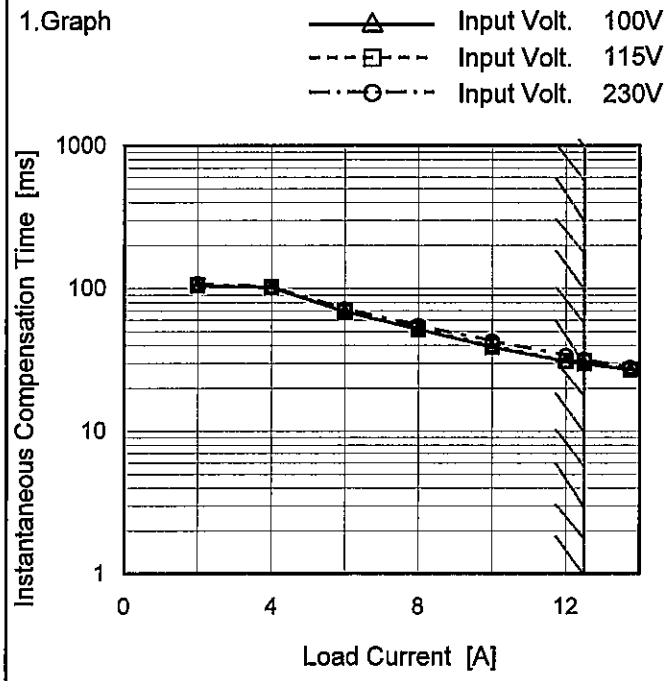
BC - 10754

COSEL

Model	PLA150F-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

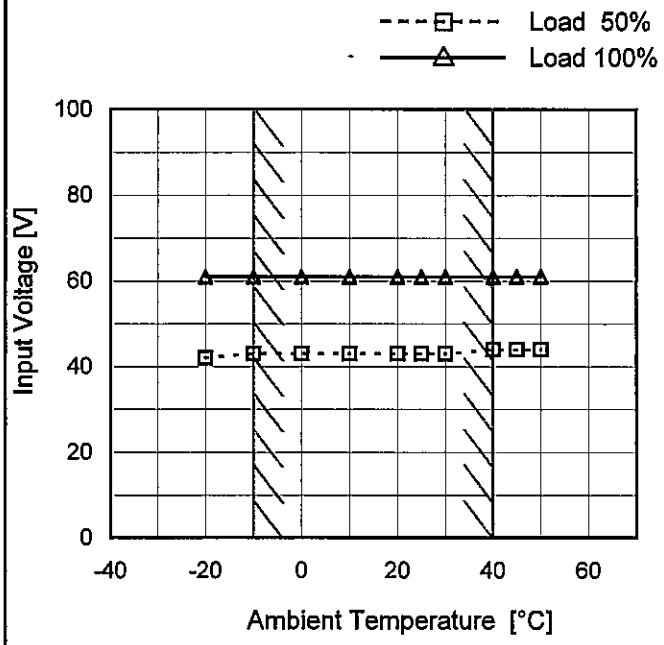
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
2.00	105	105	108
4.00	102	102	103
6.00	69	69	72
8.00	52	52	55
10.00	39	40	43
12.00	31	31	34
12.50	30	31	32
13.75	27	27	28
--	-	-	-
--	-	-	-

COSEL

Model	PLA150F-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

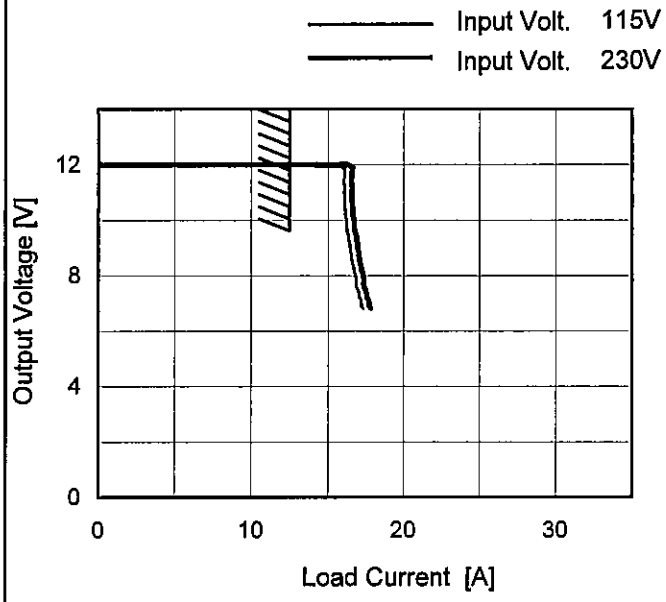
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	42	61
-10	43	61
0	43	61
10	43	61
20	43	61
25	43	61
30	43	61
40	44	61
45	44	61
50	44	61
--	-	-

COSEL

Model	PLA150F-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.

Intermittent operation occurs when the output voltage is from 6.8V to 0V.

2.Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
11.4	16.05	16.55
10.8	16.54	16.60
9.6	16.26	16.79
8.4	16.60	17.16
7.2	17.02	17.58
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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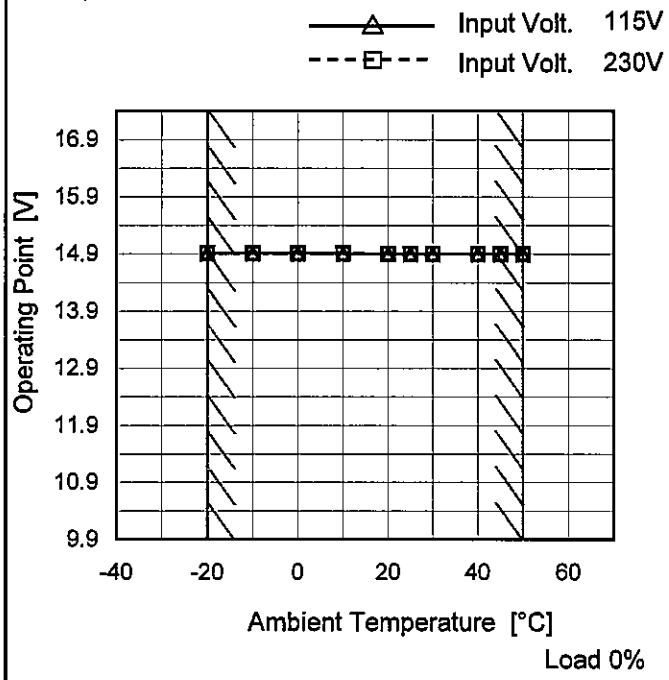
COSEL

Model	PLA150F-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. 115[V]	Input Volt. 230[V]
-20	14.95	14.95
-10	14.95	14.95
0	14.95	14.95
10	14.95	14.95
20	14.94	14.94
25	14.94	14.94
30	14.94	14.94
40	14.94	14.94
45	14.94	14.94
50	14.94	14.94
--	-	-

COSEL

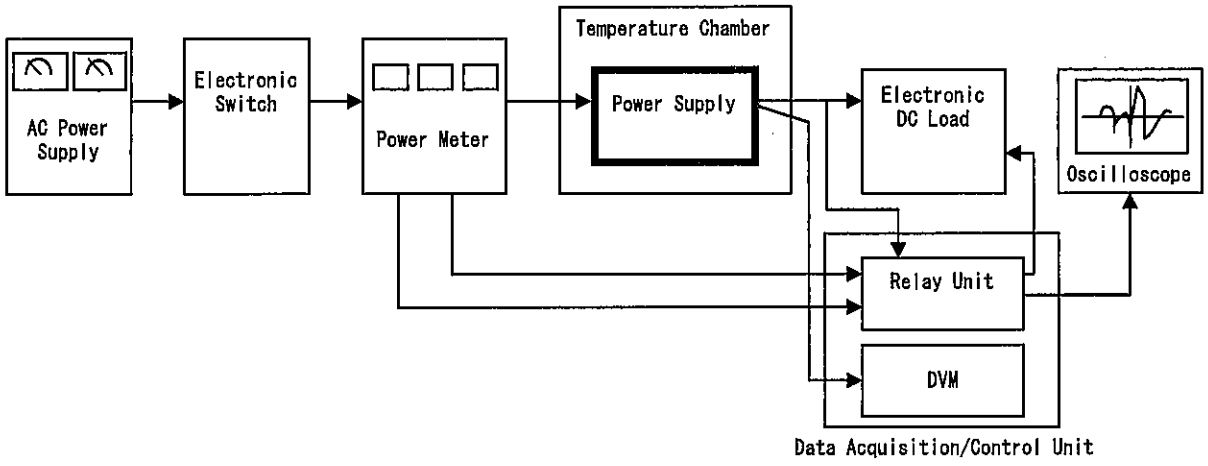


Figure A

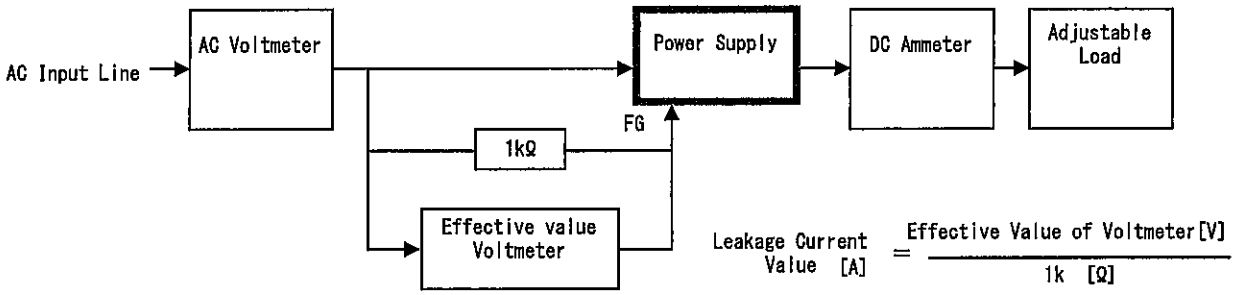


Figure B (DEN-AN)

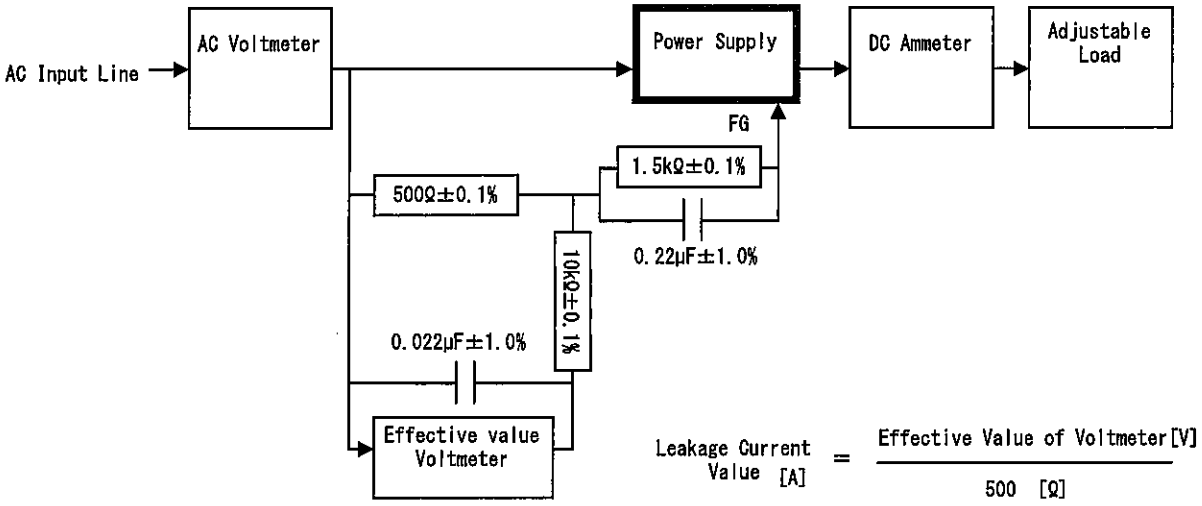


Figure B (IEC60950-1)

COSEL

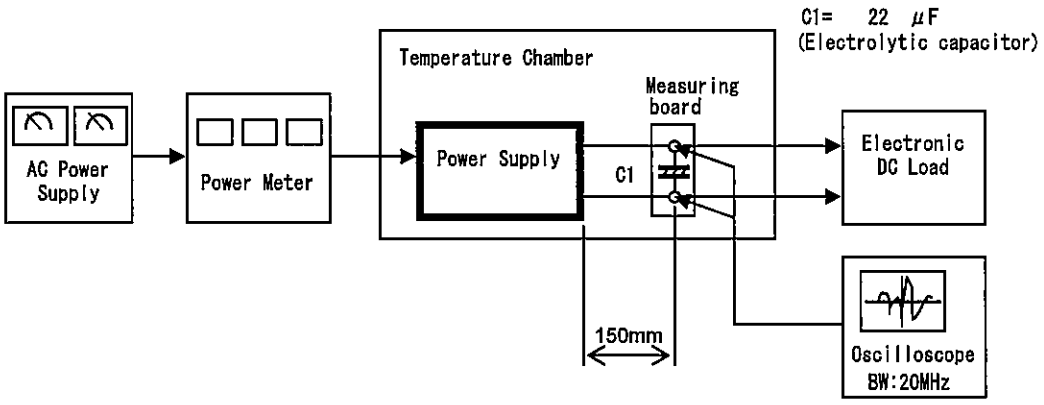


Figure C