COSEL

参考資料

TEST DATA OF PLA30F-5

Regulated DC Power Supply
June 24, 2014

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COSEL CO.,LTD.

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Item	Input Current (by Load Current)
Object	————————

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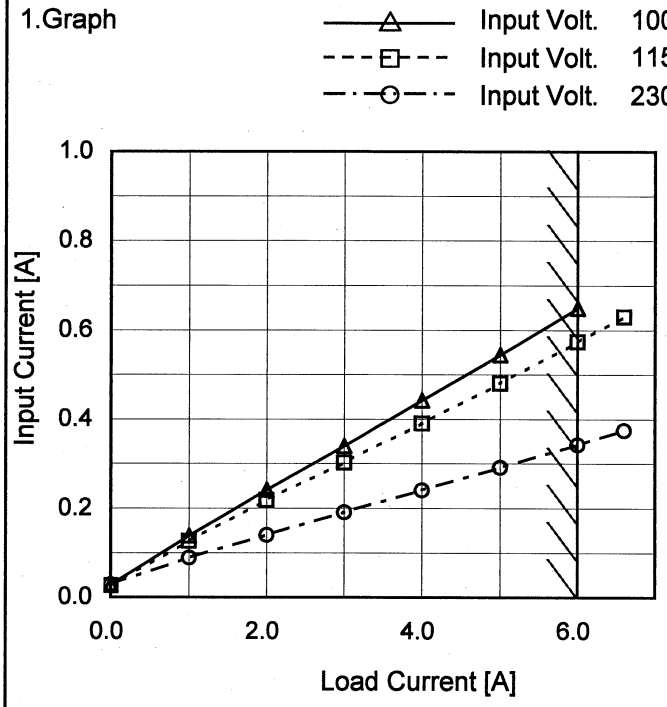

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.0	0.028	0.026	0.029
1.0	0.139	0.126	0.089
2.0	0.242	0.219	0.140
3.0	0.340	0.303	0.191
4.0	0.442	0.391	0.241
5.0	0.545	0.481	0.291
6.0	0.649	0.574	0.343
6.6	-	0.630	0.375
--	-	-	-
--	-	-	-
--	-	-	-

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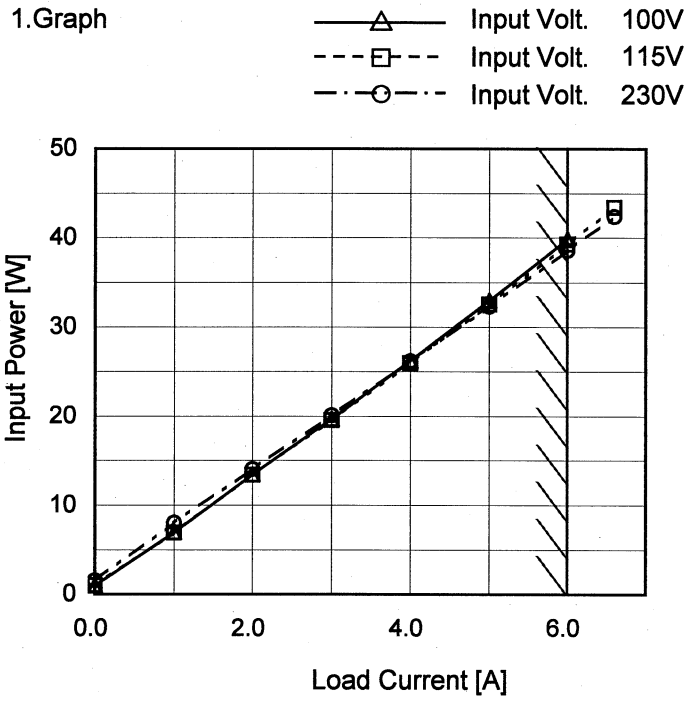
Model	PLA30F-5
Item	Input Power (by Load Current)
Object	————————

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]
0.0	0.99	1.00	1.54
1.0	6.97	6.94	8.05
2.0	13.44	13.40	14.03
3.0	19.72	19.58	20.13
4.0	26.25	25.98	26.20
5.0	32.97	32.54	32.30
6.0	39.88	39.29	38.60
6.6	-	43.44	42.40
--	-	-	-
--	-	-	-
--	-	-	-

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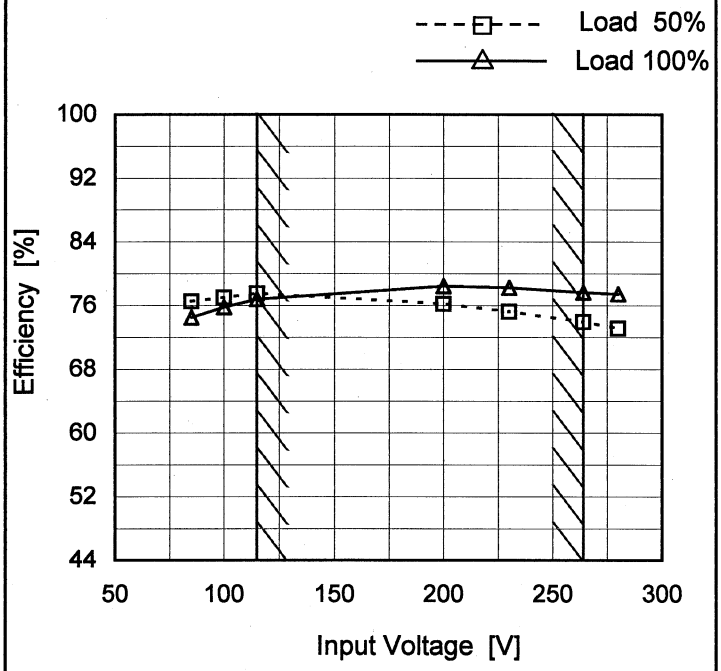
Model	PLA30F-5
Item	Efficiency (by Input Voltage)
Object	———————

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	76.5	74.5 ※1
100	77.0	75.8 ※2
115	77.5	76.8
200	76.2	78.5
230	75.2	78.2
264	73.9	77.6
280	73.1	77.4
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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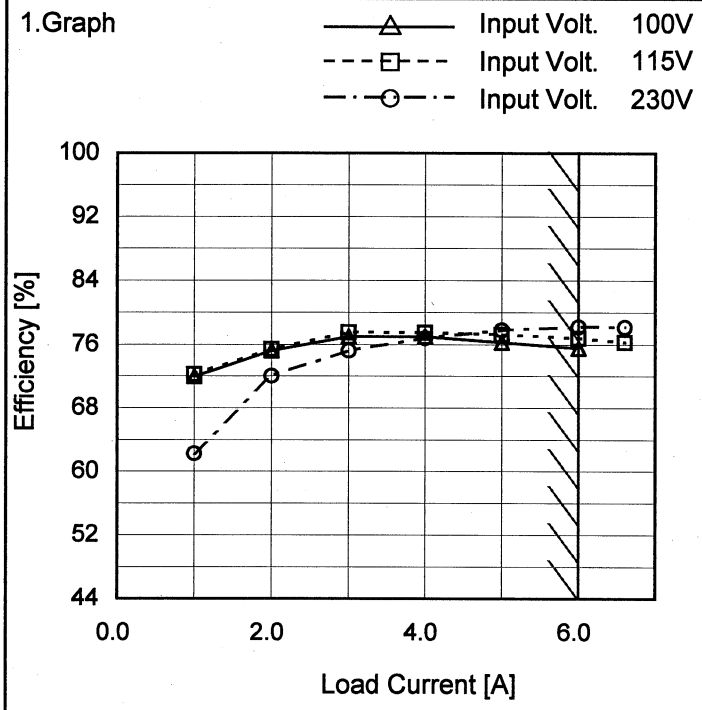
Model	PLA30F-5
Item	Efficiency (by Load Current)
Object	———————

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]
0.0	-	-	-
1.0	71.9	72.2	62.3
2.0	75.2	75.4	72.0
3.0	77.0	77.5	75.2
4.0	77.0	77.5	76.8
5.0	76.2	77.2	77.8
6.0	75.6	76.8	78.2
6.6	-	76.3	78.1
--	-	-	-
--	-	-	-
--	-	-	-

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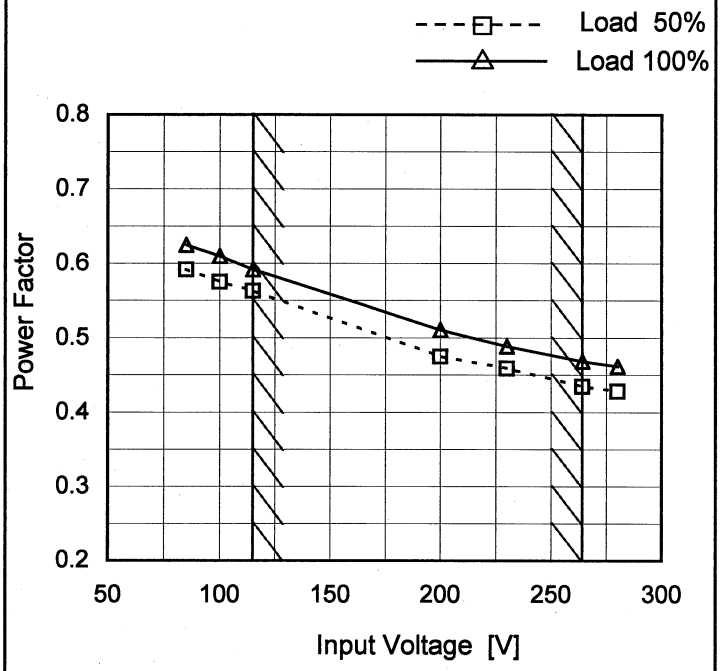
Model	PLA30F-5
Item	Power Factor (by Input Voltage)
Object	――――――――

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	0.592	0.625 ※1
100	0.575	0.610 ※2
115	0.563	0.592
200	0.475	0.511
230	0.459	0.489
264	0.435	0.469
280	0.428	0.461
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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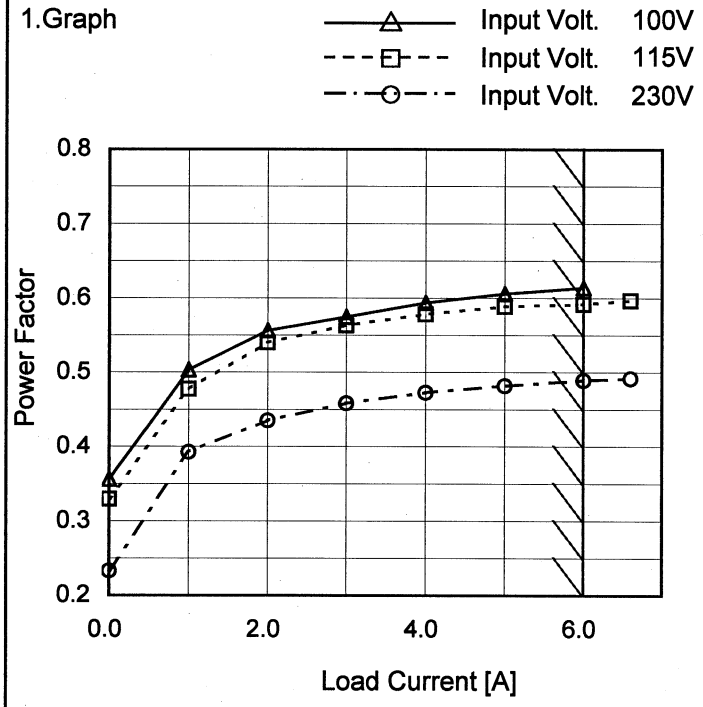
Model	PLA30F-5
Item	Power Factor (by Load Current)
Object	————————

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]
0.0	0.357	0.330	0.233
1.0	0.504	0.478	0.393
2.0	0.557	0.540	0.435
3.0	0.575	0.563	0.459
4.0	0.594	0.579	0.473
5.0	0.606	0.589	0.482
6.0	0.614	0.592	0.489
6.6	-	0.597	0.492
--	-	-	-
--	-	-	-
--	-	-	-

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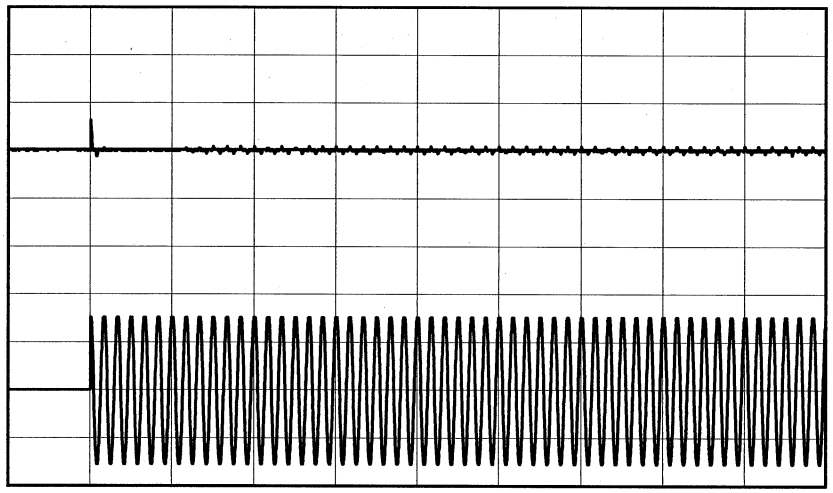
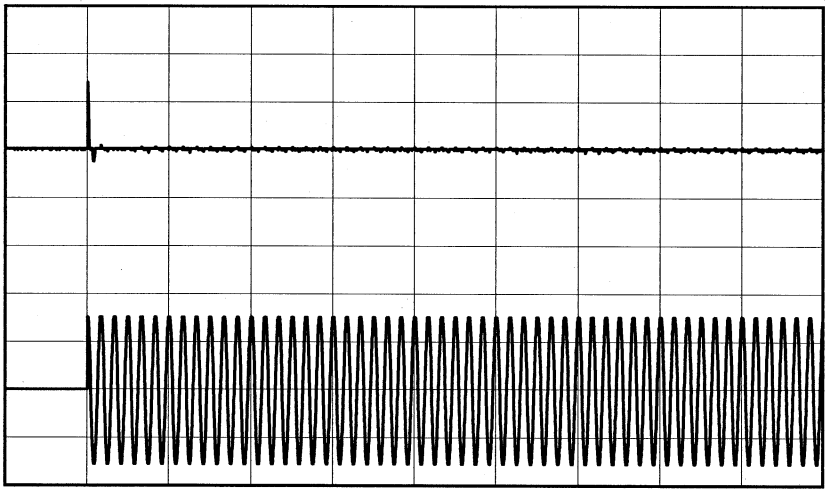
Model	PLA30F-5
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



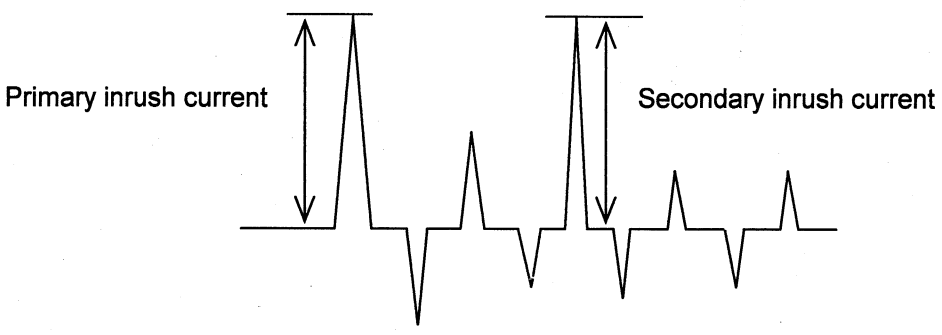
Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
12.4 A
Secondary inrush current :
2.0 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
28.0 A
Secondary inrush current :
1.4 A



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Model	PLA30F-5	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	————————	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	115 [V]	240 [V]	
DEN-AN	Both phases	0.09	0.11	0.24	Operation
	One of phases	0.18	0.20	0.46	Stand by
IEC60950-1	Both phases	0.12	0.14	0.29	Operation
	One of phases	0.18	0.20	0.44	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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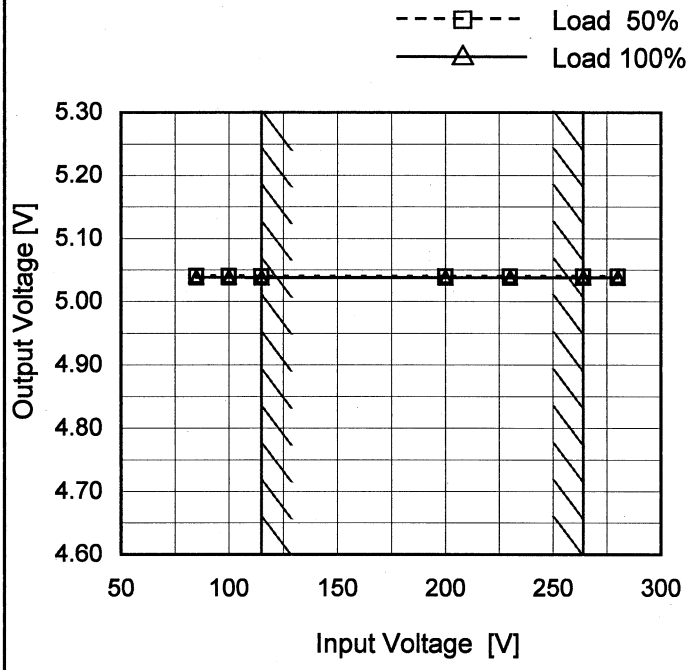
Model	PLA30F-5
Item	Line Regulation
Object	+5V6A

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	5.041	5.038 ※1
100	5.040	5.038 ※2
115	5.040	5.038
200	5.040	5.038
230	5.040	5.038
264	5.040	5.038
280	5.040	5.038
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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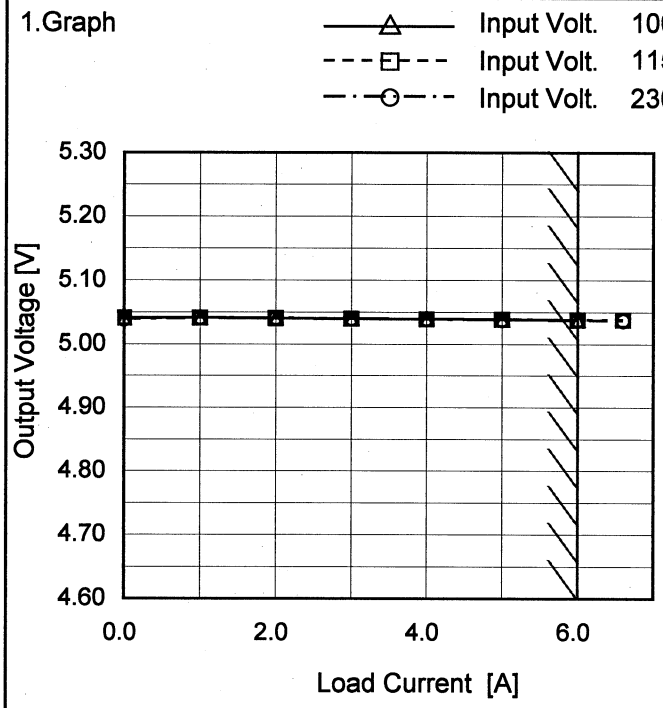
Model	PLA30F-5
Item	Load Regulation
Object	+5V6A

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]
0.0	5.041	5.041	5.039
1.0	5.041	5.041	5.041
2.0	5.041	5.040	5.040
3.0	5.040	5.040	5.040
4.0	5.040	5.039	5.039
5.0	5.039	5.039	5.038
6.0	5.038	5.038	5.038
6.6	-	5.038	5.037
---	-	-	-
---	-	-	-
---	-	-	-

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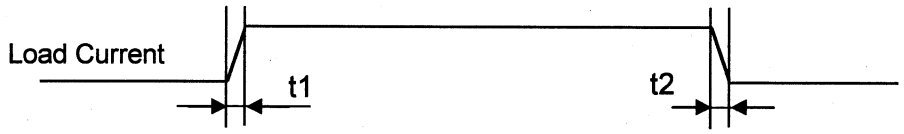
Model	PLA30F-5
Item	Dynamic Load Response
Object	+5V6A

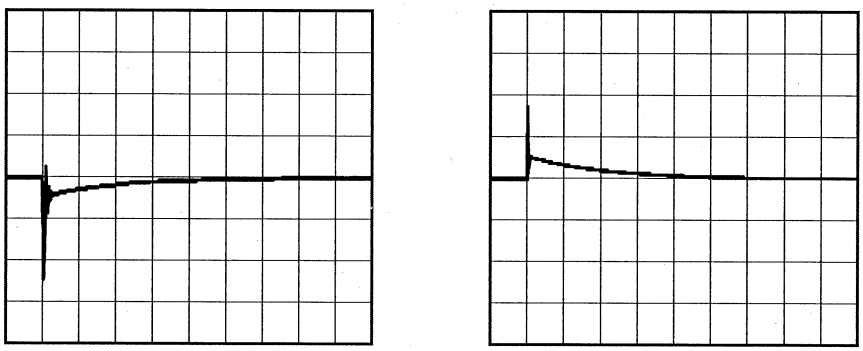
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 115 V
Cycle 1000 ms

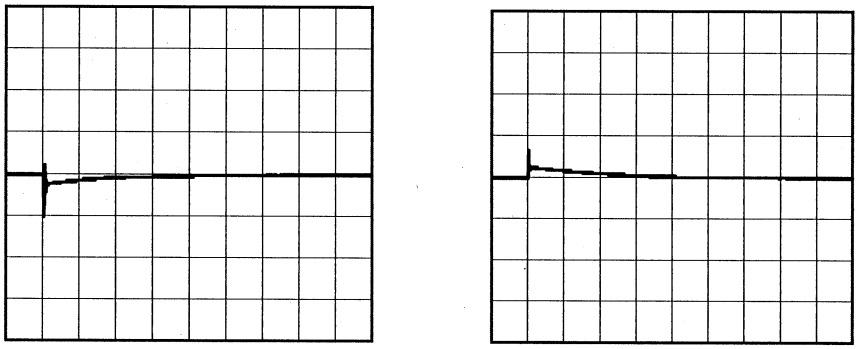
Response. t1=t2=50us. Typ



Min. Load (0A) ⟷
Load 100% (6A)



Min. Load (0A) ⟷
Load 50% (3A)



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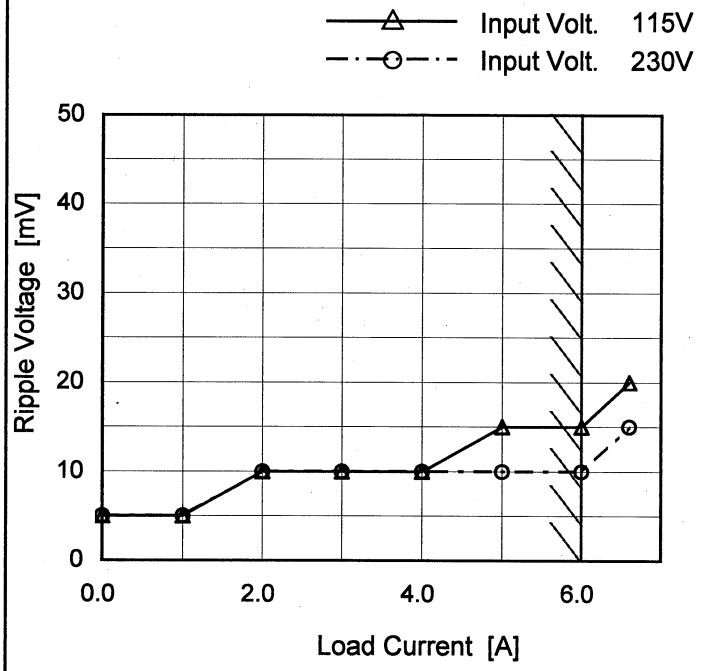
Model	PLA30F-5
Item	Ripple Voltage (by Load Current)
Object	+5V6A

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

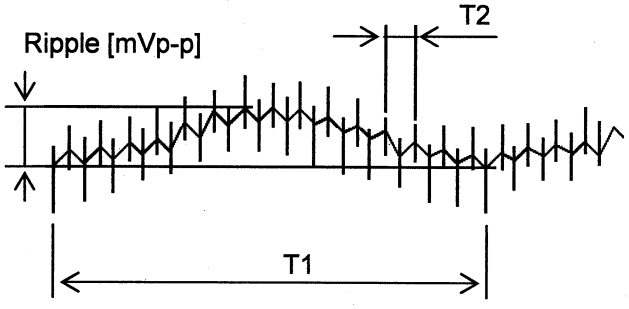


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV] Input Volt. 115 [V]	Ripple Voltage [mV] Input Volt. 230 [V]
0.0	5	5
1.0	5	5
2.0	10	10
3.0	10	10
4.0	10	10
5.0	15	10
6.0	15	10
6.6	20	15
--	-	-
--	-	-
--	-	-

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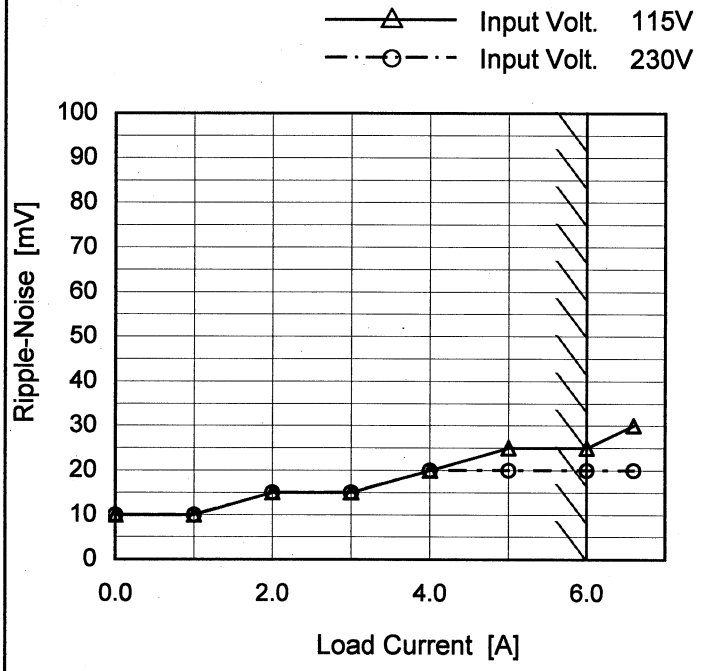
Model	PLA30F-5
Item	Ripple-Noise
Object	+5V6A

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. 115 [V]	Input Volt. 230 [V]
0.0	10	10
1.0	10	10
2.0	15	15
3.0	15	15
4.0	20	20
5.0	25	20
6.0	25	20
6.6	30	20
--	-	-
--	-	-
--	-	-

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

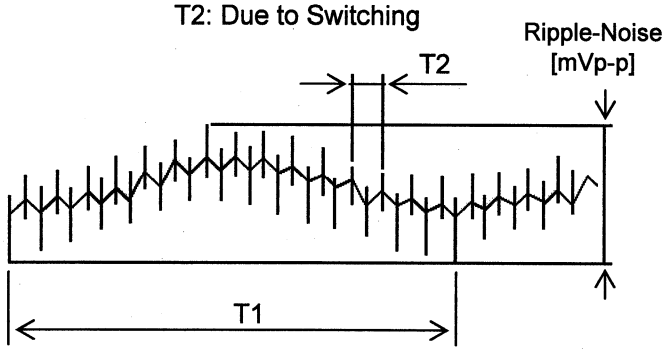


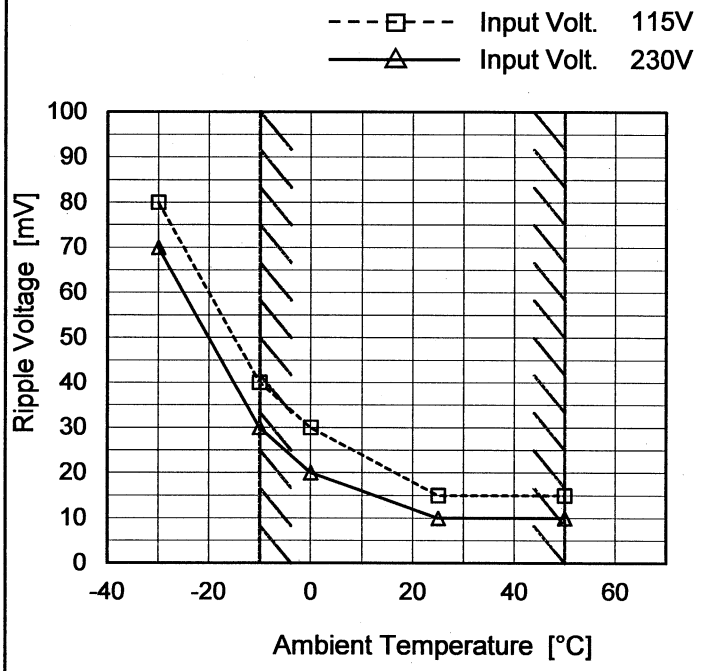
Fig. Complex Ripple Wave Form

COSEL

Model	PLA30F-5
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V6A

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]
-30	80	70
-10	40	30
0	30	20
25	15	10
50	15	10
---	-	-
---	-	-
---	-	-
---	-	-
---	-	-
---	-	-

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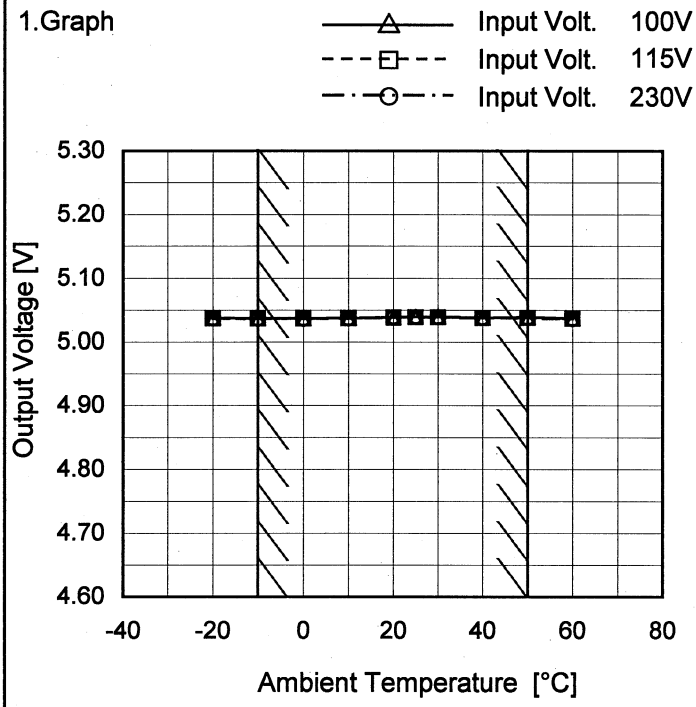
Model	PLA30F-5
Item	Ambient Temperature Drift
Object	+5V6A

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	5.037	5.037	5.037
-10	5.037	5.037	5.036
0	5.037	5.037	5.036
10	5.038	5.037	5.037
20	5.038	5.038	5.038
25	5.040	5.039	5.039
30	5.040	5.039	5.039
40	5.038	5.038	5.037
50	5.039	5.038	5.038
60	5.037	5.037	5.036
--	-	-	-

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

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Model	PLA30F-5	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+5V6A	

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 : 115 - 264V
Load Current : 0 - 6A

* 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

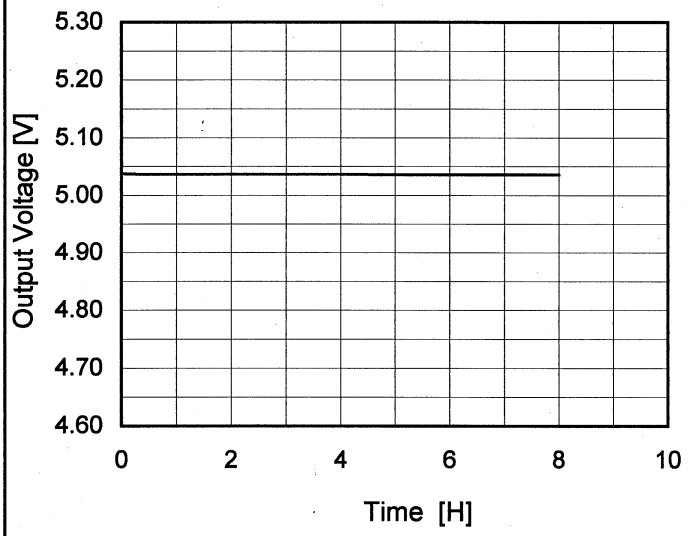
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	30	115	0	5.042	±3	±0.1
Minimum Voltage	50	264	0	5.036		

COSEL

Model	PLA30F-5
Item	Time Lapse Drift
Object	+5V6A

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	5.038
0.5	5.037
1.0	5.037
2.0	5.036
3.0	5.036
4.0	5.036
5.0	5.036
6.0	5.036
7.0	5.036
8.0	5.036

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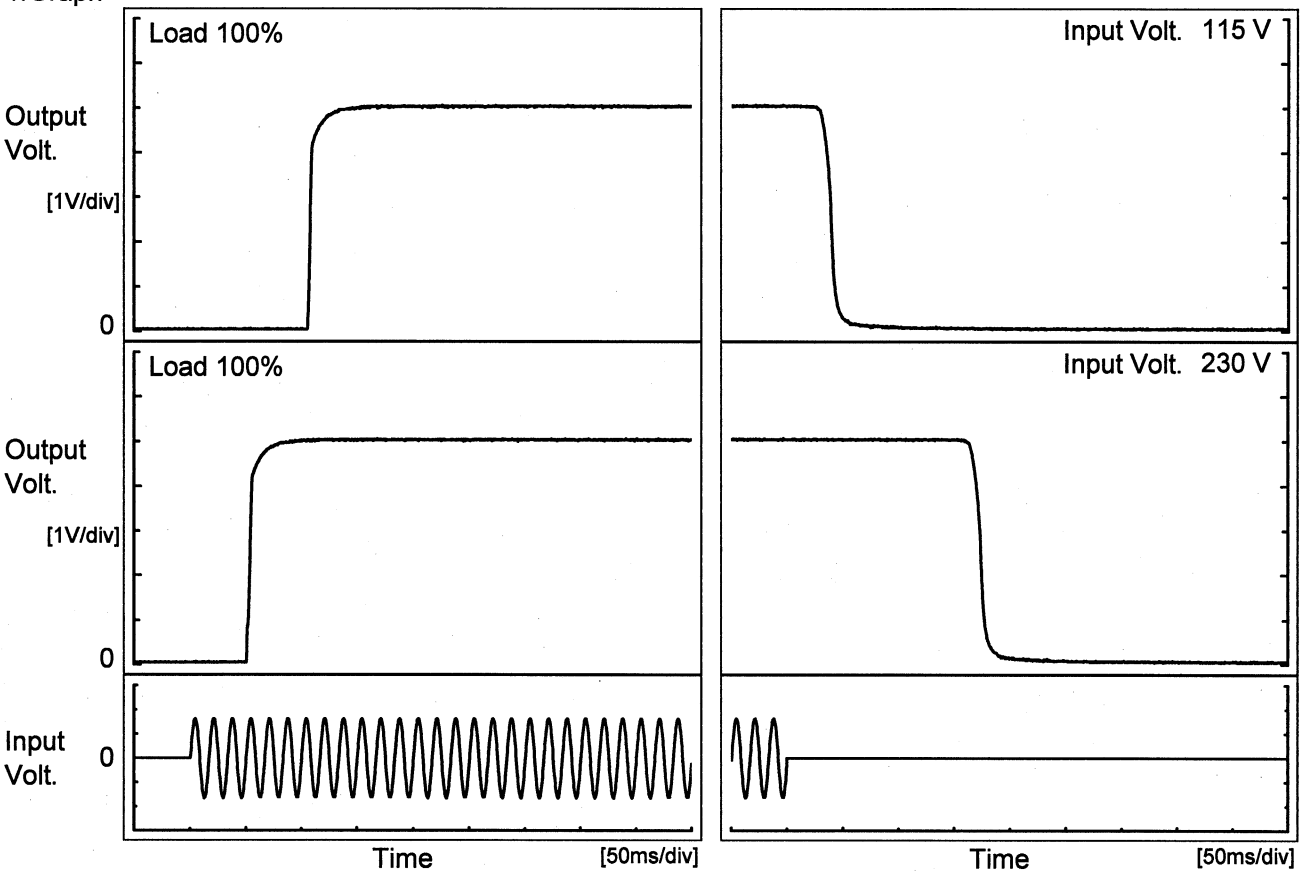
Model	PLA30F-5	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+5V6A	

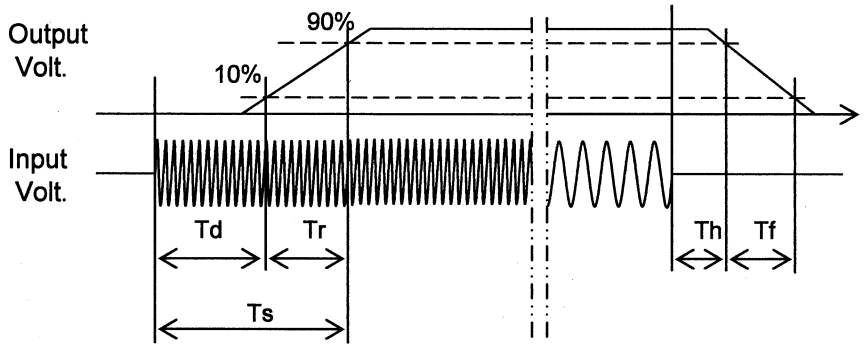
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	106.5	9.3	115.8	32.5	12.8
230 V	51.0	10.0	61.0	167.3	12.8



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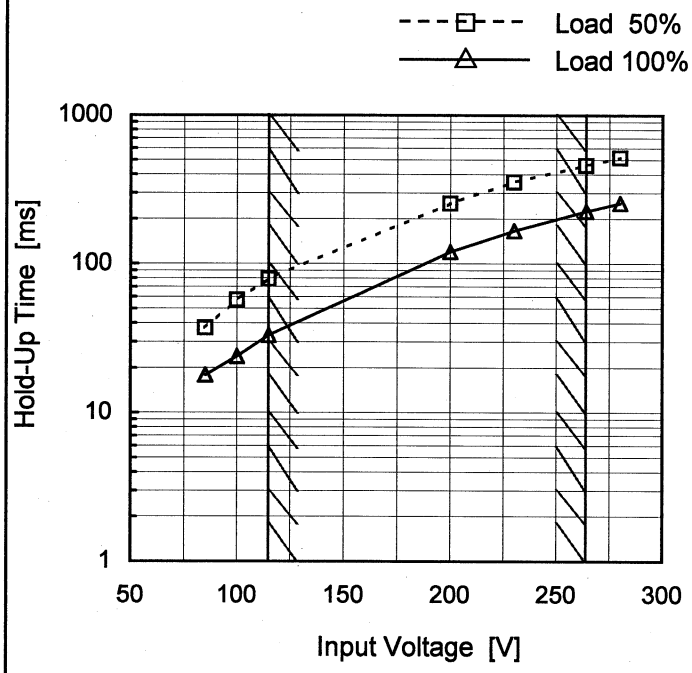
Model	PLA30F-5
Item	Hold-Up Time
Object	+5V6A

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	37	18 ※1
100	57	24 ※2
115	79	33
200	254	120
230	354	167
264	459	226
280	518	256
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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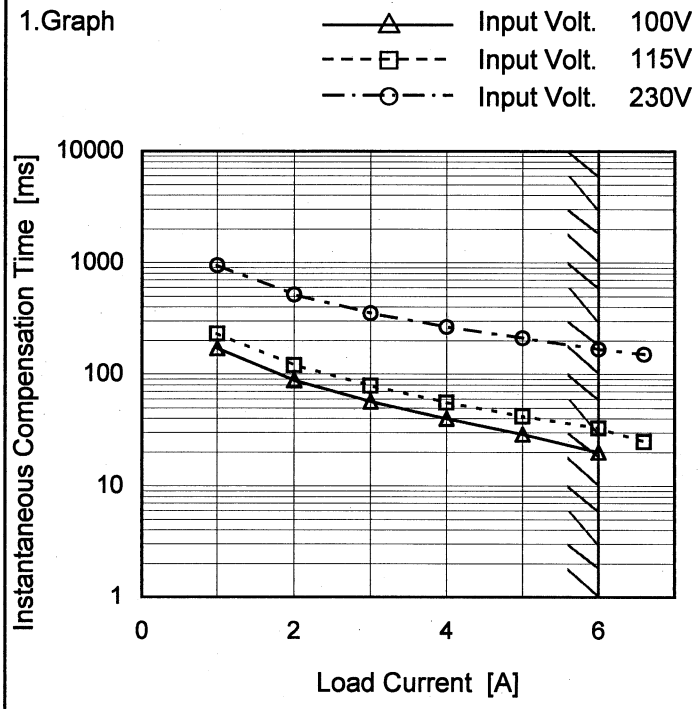
Model	PLA30F-5
Item	Instantaneous Interruption Compensation
Object	+5V6A

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]
0.0	-	-	-
1.0	171	232	950
2.0	88	120	518
3.0	57	79	354
4.0	40	56	266
5.0	29	42	211
6.0	20	33	167
6.6	-	25	151
--	-	-	-
--	-	-	-
--	-	-	-

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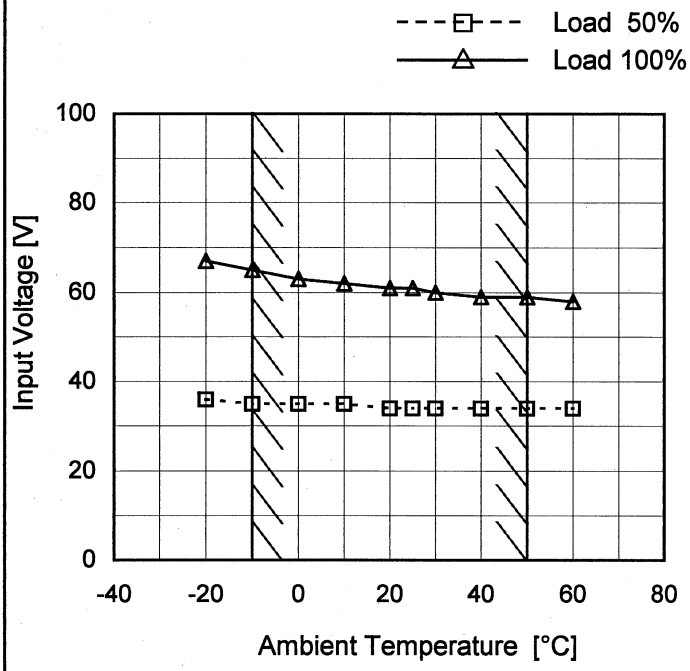
Model	PLA30F-5
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V6A

Testing Circuitry Figure A

1.Graph



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

2.Values

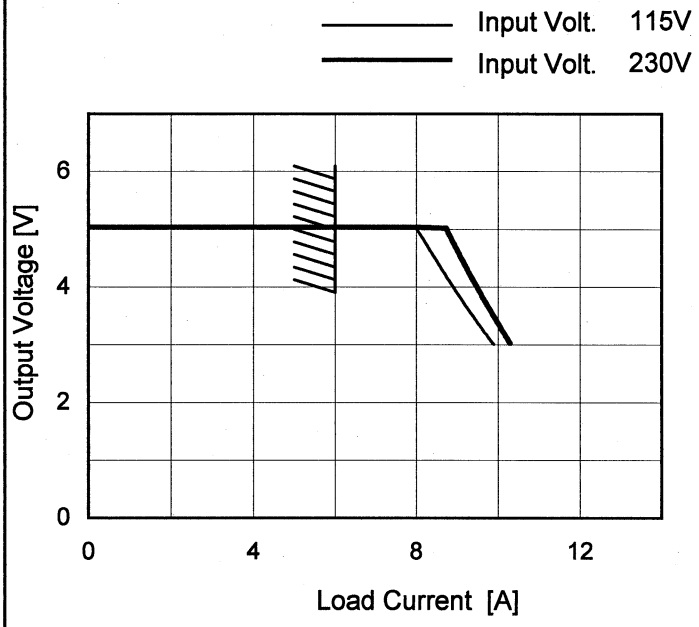
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	36	67
-10	35	65
0	35	63
10	35	62
20	34	61
25	34	61
30	34	60
40	34	59
50	34	59
60	34	58
--	-	-

COSEL

Model	PLA30F-5
Item	Overcurrent Protection
Object	+5V6A

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 3.0V to 0V.

2.Values

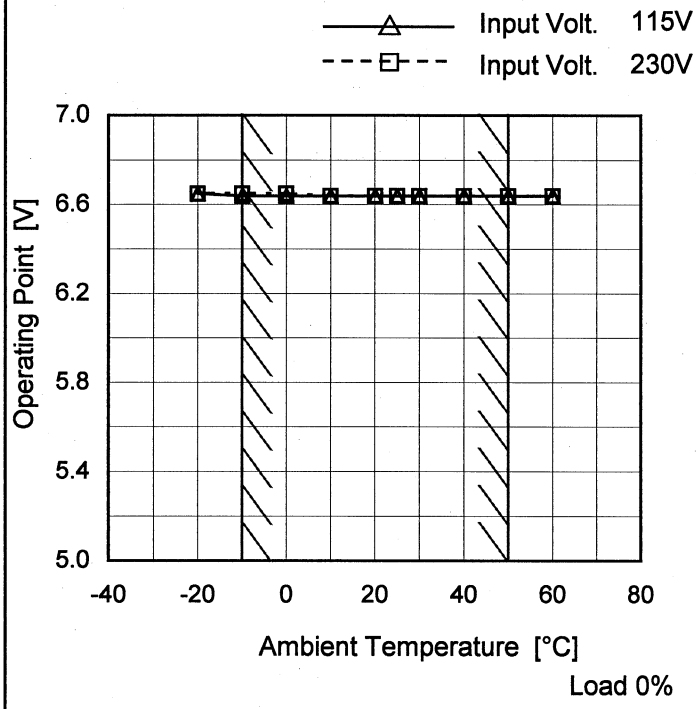
Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
4.75	8.23	8.92
4.50	8.44	9.07
4.00	8.88	9.47
3.50	9.34	9.87
3.00	9.88	10.29
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PLA30F-5
Item	Overvoltage Protection
Object	+5V6A

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	6.65	6.65
-10	6.64	6.65
0	6.64	6.65
10	6.64	6.64
20	6.64	6.64
25	6.64	6.64
30	6.64	6.64
40	6.64	6.64
50	6.64	6.64
60	6.64	6.64
--	-	-

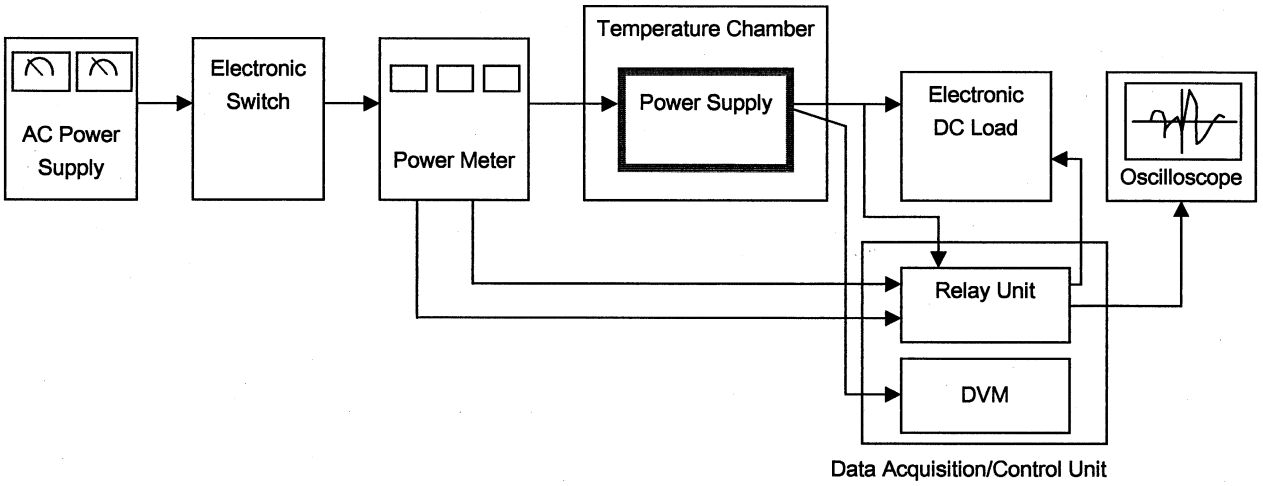


Figure A

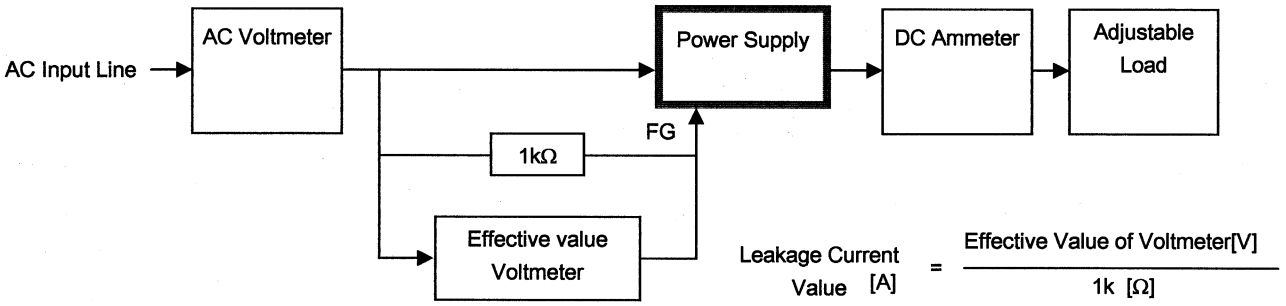


Figure B (DEN-AN)

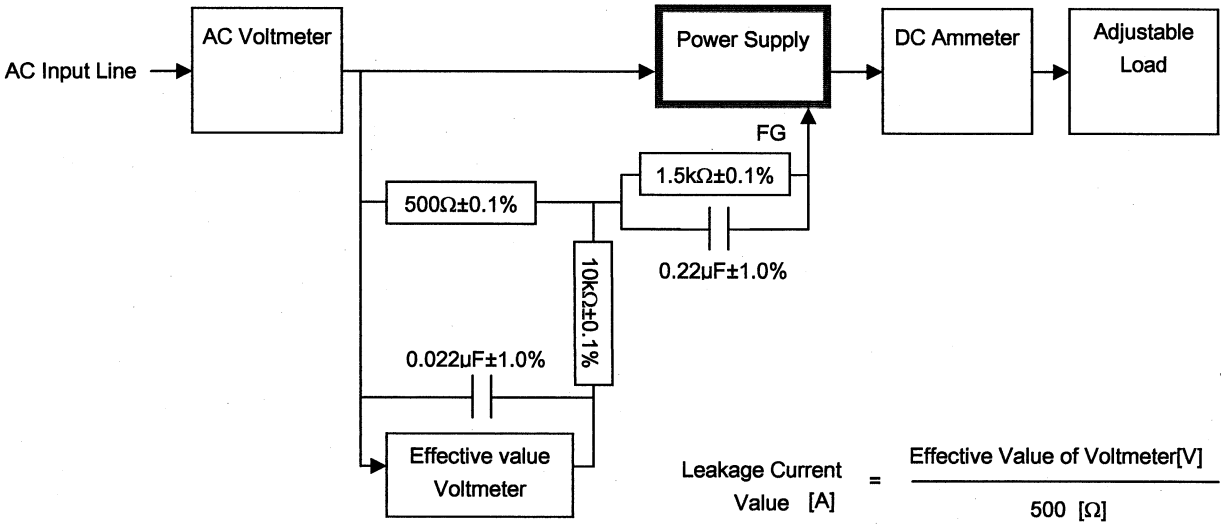


Figure B (IEC60950-1)

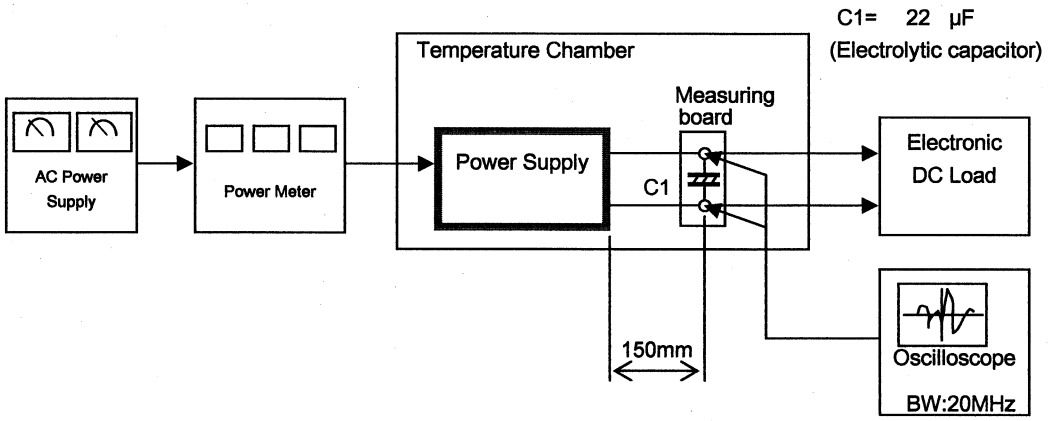

C1= 22 µF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C