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参考資料

TEST DATA OF PMA30F-5

Regulated DC Power Supply
June 4, 2010

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COSEL CO.,LTD.

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参考資料

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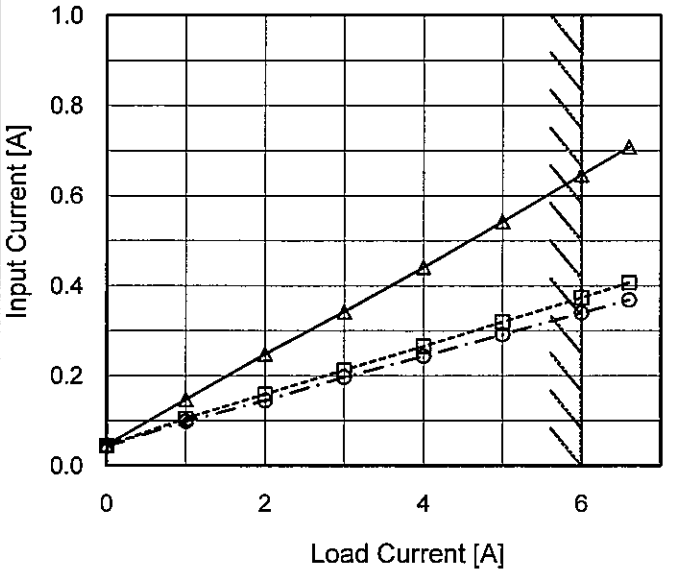
Model	PMA30F-5
Item	Input Current (by Load Current)
Object	――――――

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. 200[V]	Input Volt. 230[V]
0.0	0.046	0.045	0.043
1.0	0.147	0.105	0.099
2.0	0.248	0.159	0.145
3.0	0.342	0.213	0.197
4.0	0.441	0.266	0.244
5.0	0.542	0.320	0.292
6.0	0.646	0.374	0.340
6.6	0.708	0.407	0.369
--	-	-	-
--	-	-	-
--	-	-	-

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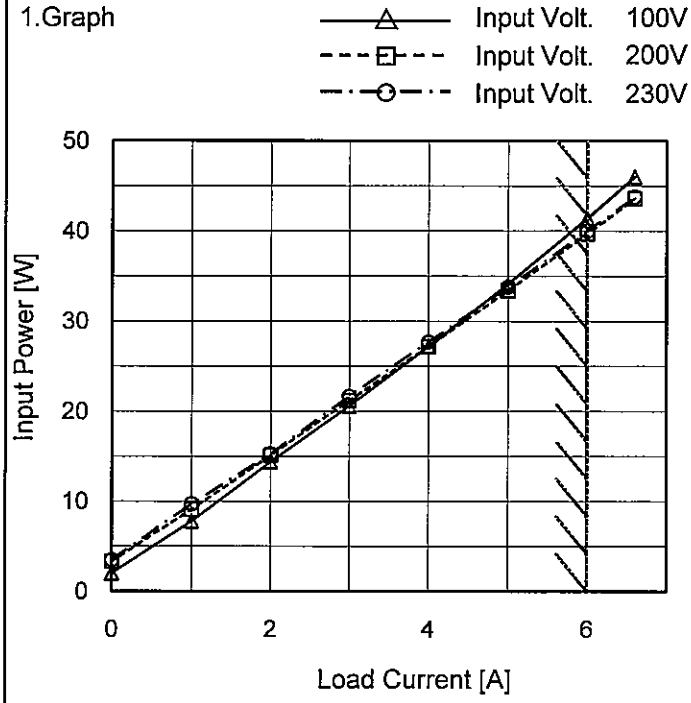
Model	PMA30F-5
Item	Input Power (by Load Current)
Object	――――――

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. 200[V]	Input Volt. 230[V]
0.0	2.00	3.30	3.50
1.0	7.80	9.10	9.70
2.0	14.40	15.10	15.30
3.0	20.60	21.20	21.70
4.0	27.20	27.20	27.70
5.0	34.10	33.40	33.80
6.0	41.40	39.70	40.00
6.6	46.00	43.60	43.80
--	-	-	-
--	-	-	-
--	-	-	-

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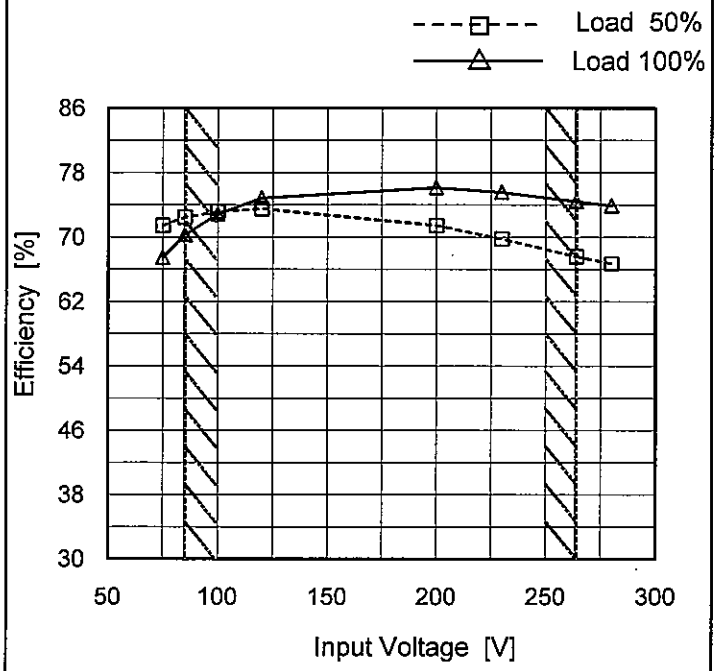
Model	PMA30F-5
Item	Efficiency (by Input Voltage)
Object	――――――――

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%
75	71.4	67.5
85	72.5	70.3
100	73.2	72.8
120	73.5	74.8
200	71.5	76.2
230	69.8	75.6
264	67.6	74.5
280	66.7	73.9
--	-	-

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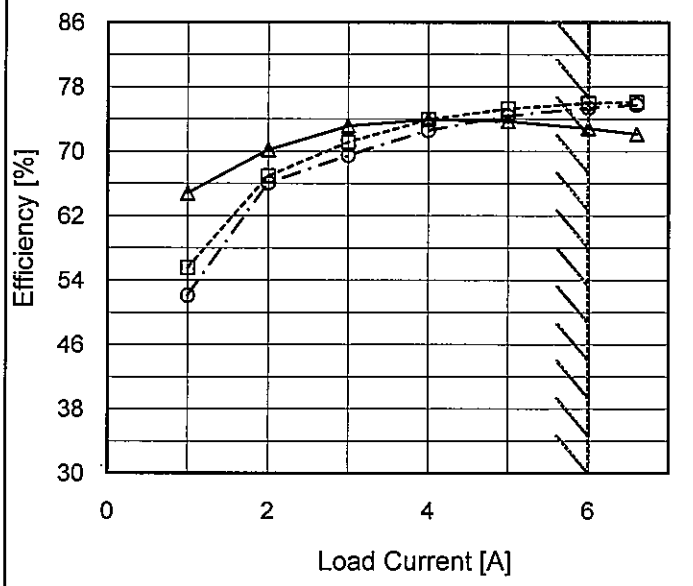
Model	PMA30F-5
Item	Efficiency (by Load Current)
Object	――――――

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. 200[V]	Input Volt. 230[V]
0.0	-	-	-
1.0	64.8	55.6	52.1
2.0	70.2	67.0	66.1
3.0	73.2	71.1	69.5
4.0	73.9	74.0	72.6
5.0	73.7	75.3	74.4
6.0	72.9	76.0	75.4
6.6	72.1	76.1	75.8
--	-	-	-
--	-	-	-
--	-	-	-

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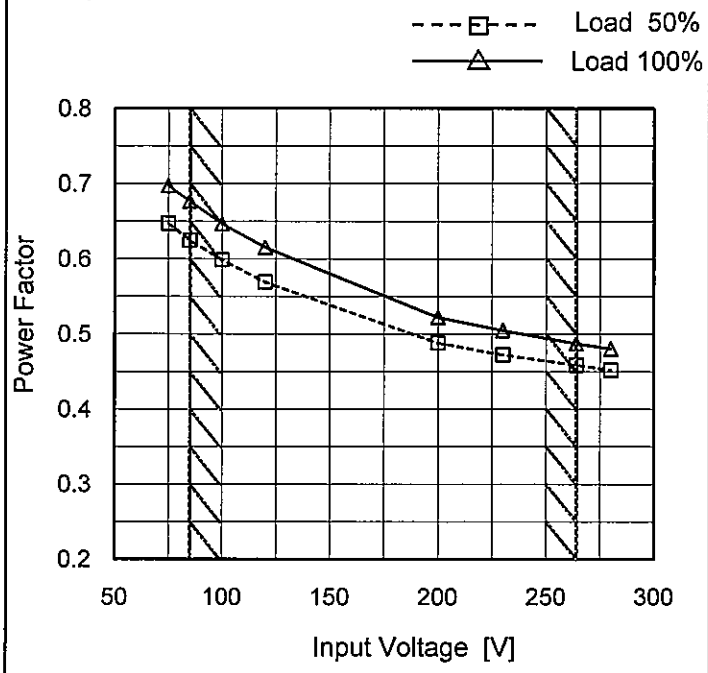
Model	PMA30F-5
Item	Power Factor (by Input Voltage)
Object	――――――――

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%
75	0.647	0.697
85	0.625	0.677
100	0.599	0.647
120	0.569	0.615
200	0.488	0.522
230	0.473	0.505
264	0.459	0.487
280	0.452	0.481
--	-	-

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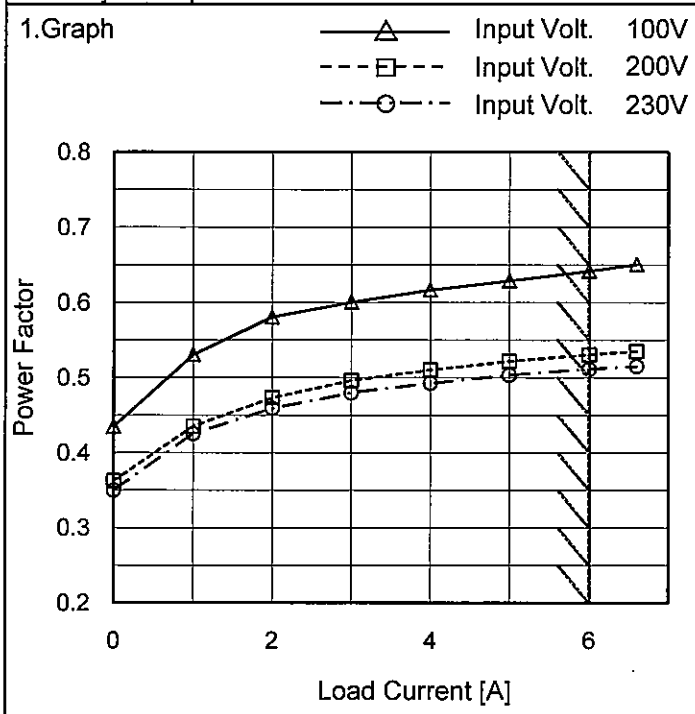
Model	PMA30F-5
Item	Power Factor (by Load Current)
Object	――――――

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. 200[V]	Input Volt. 230[V]
0.0	0.435	0.363	0.350
1.0	0.531	0.435	0.425
2.0	0.581	0.473	0.459
3.0	0.601	0.496	0.480
4.0	0.617	0.510	0.493
5.0	0.629	0.522	0.504
6.0	0.642	0.531	0.512
6.6	0.651	0.535	0.515
--	-	-	-
--	-	-	-
--	-	-	-

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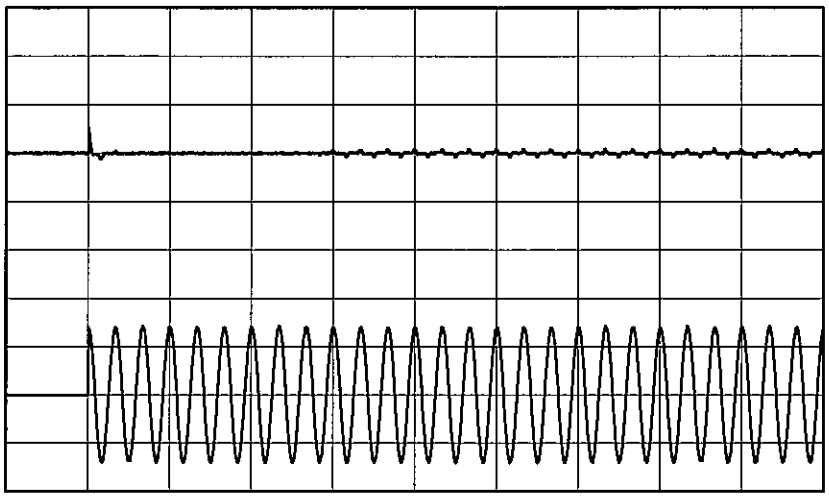
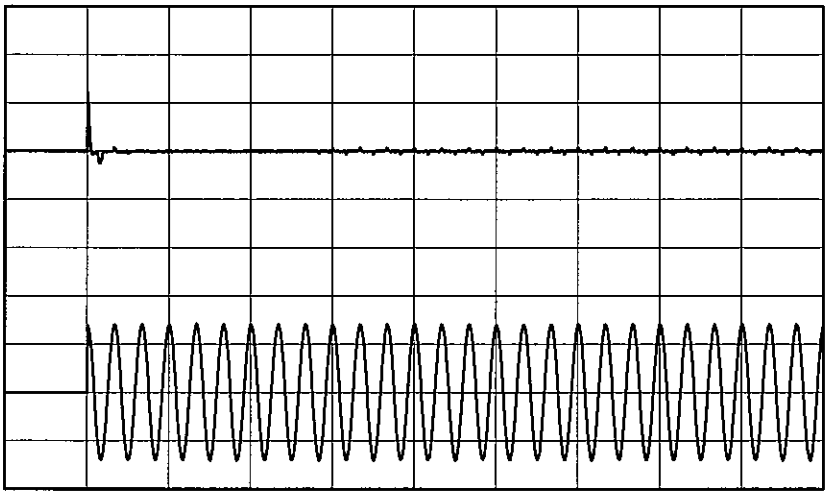
Model	PMA30F-5	
Item	Inrush Current	Temperature 25°C Testing Circuitry Figure A
Object	————————	



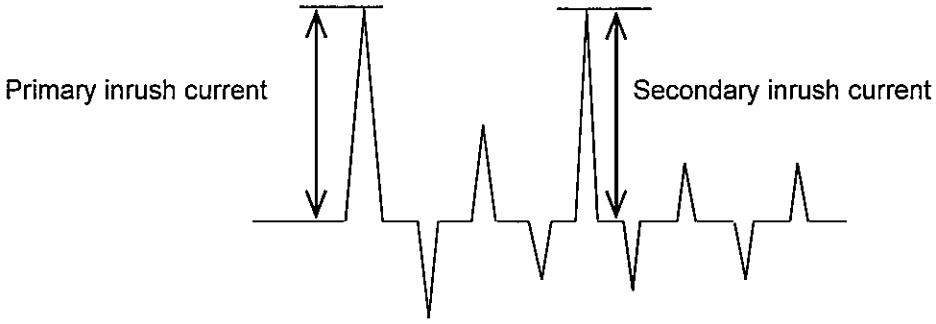
Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current : 10.6 A
Secondary inrush current : 2.0 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current : 24.2 A
Secondary inrush current : 1.3 A



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Model	PMA30F-5	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	――――――――	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
IEC60601	Both phases	0.03	0.06	0.08	Operation
	One of phases	0.04	0.10	0.12	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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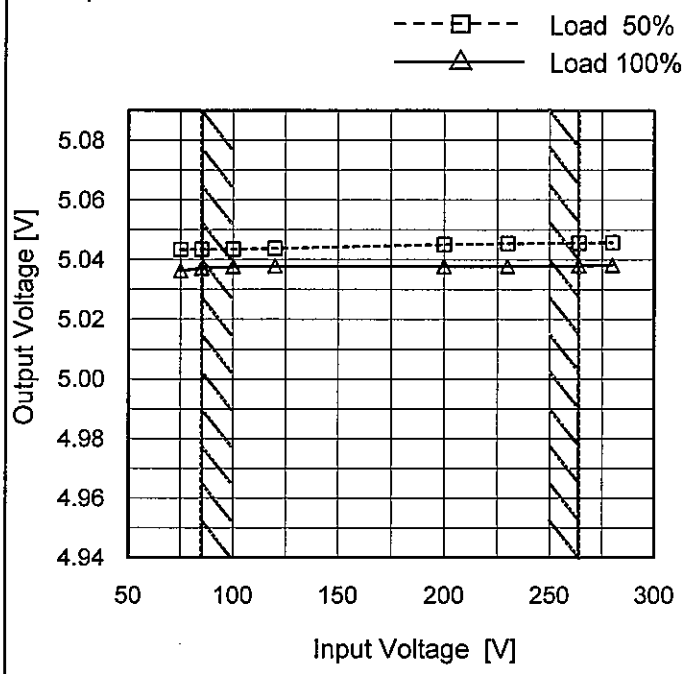
Model	PMA30F-5
Item	Line Regulation
Object	+5V6A

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%
75	5.043	5.036
85	5.044	5.037
100	5.044	5.038
120	5.044	5.038
200	5.045	5.038
230	5.045	5.038
264	5.046	5.038
280	5.046	5.038
--	-	-

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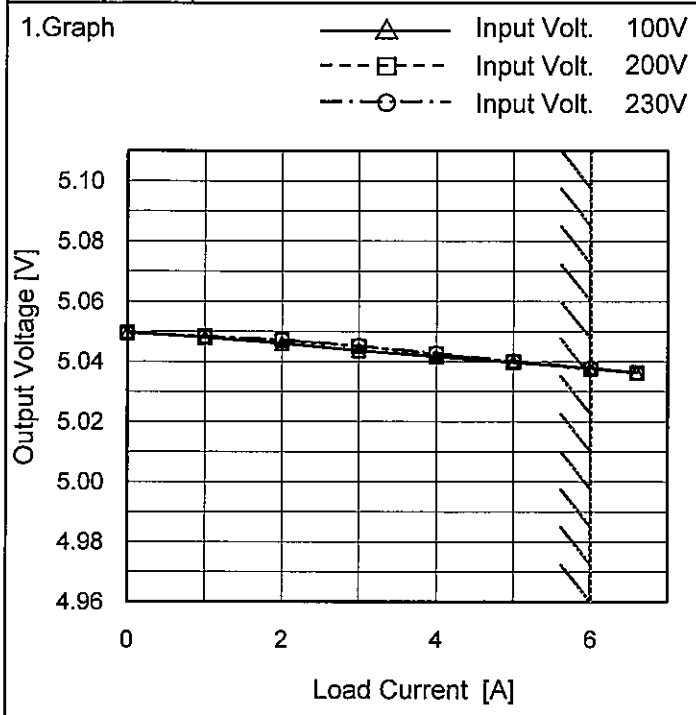
Model	PMA30F-5
Item	Load Regulation
Object	+5V6A

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. 200[V]	Input Volt. 230[V]
0.0	5.050	5.050	5.050
1.0	5.048	5.048	5.048
2.0	5.046	5.047	5.047
3.0	5.044	5.045	5.045
4.0	5.042	5.043	5.043
5.0	5.040	5.040	5.040
6.0	5.038	5.038	5.038
6.6	5.036	5.036	5.036
--	-	-	-
--	-	-	-
--	-	-	-

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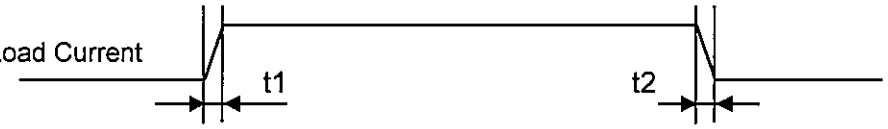
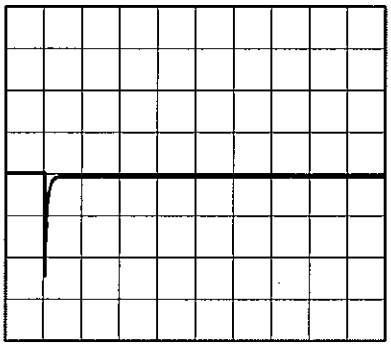
Model	PMA30F-5		
Item	Dynamic Load Response	Temperature Testing Circuitry	25˚C Figure A
Object	+5V6A		

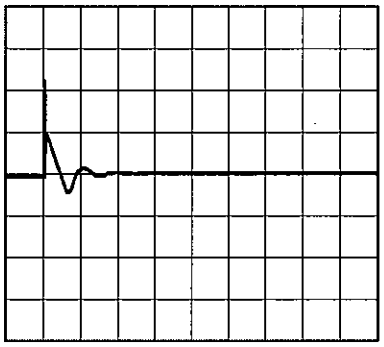
Input Volt. 100 V
Cycle 1000 ms

Response. t1=t2=50us. Typ



Min. Load (0A) ⟷
Load 100% (6A)



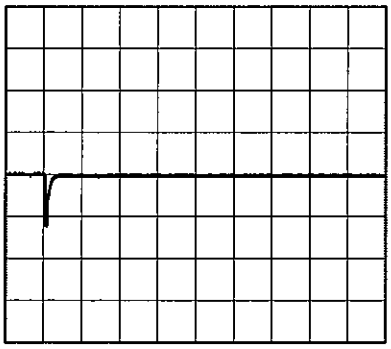


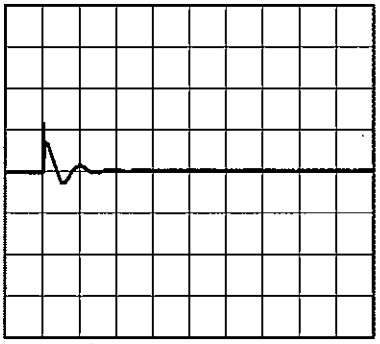
200 mV/div

10 ms/div

10 ms/div

Min. Load (0A) ⟷
Load 50% (3A)





200 mV/div

10 ms/div

10 ms/div

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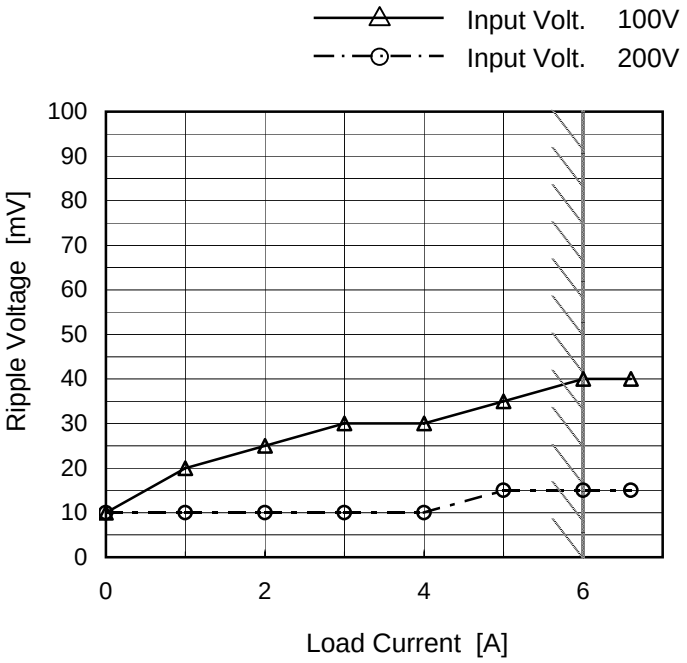
Model	PMA30F-5
Item	Ripple Voltage (by Load Current)
Object	+5V6A

Temperature 25°C
Testing Circuitry Figure A

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

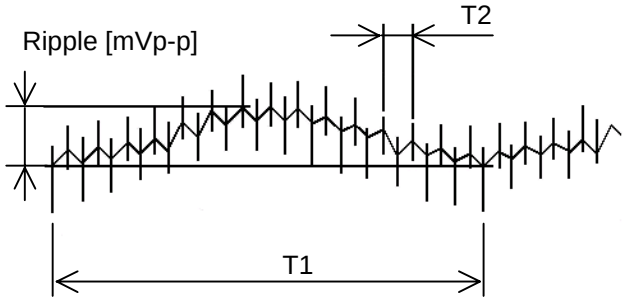


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	10	10
1.0	20	10
2.0	25	10
3.0	30	10
4.0	30	10
5.0	35	15
6.0	40	15
6.6	40	15
--	-	-
--	-	-
--	-	-

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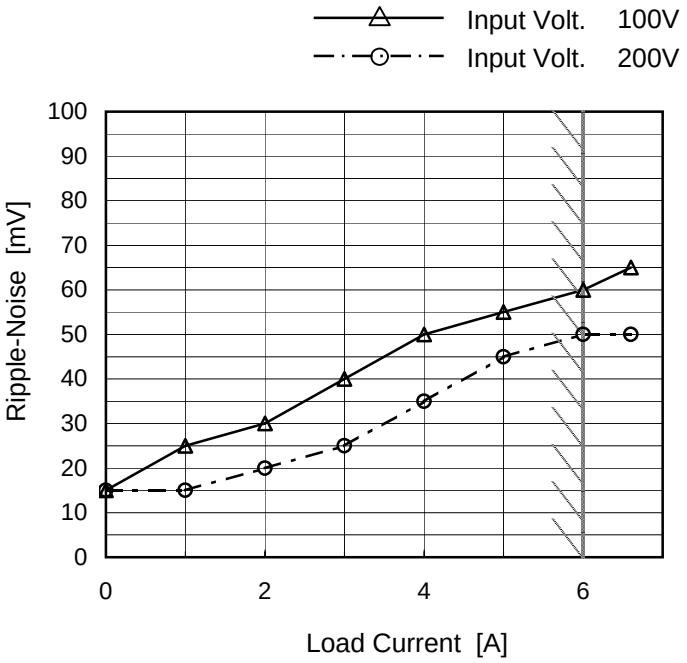
Model	PMA30F-5
Item	Ripple-Noise
Object	+5V6A

Temperature 25°C
Testing Circuitry Figure A

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

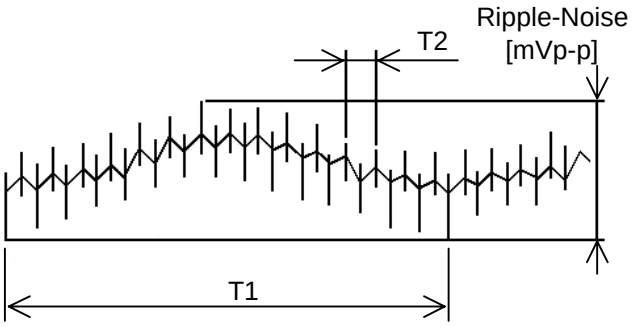


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	15	15
1.0	25	15
2.0	30	20
3.0	40	25
4.0	50	35
5.0	55	45
6.0	60	50
6.6	65	50
--	-	-
--	-	-
--	-	-

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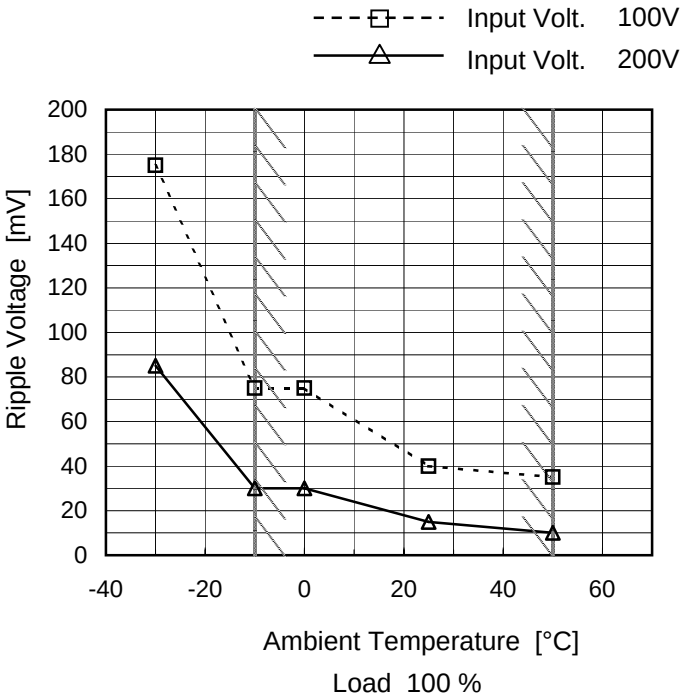
Model	PMA30F-5
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V6A

Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.

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

2.Values

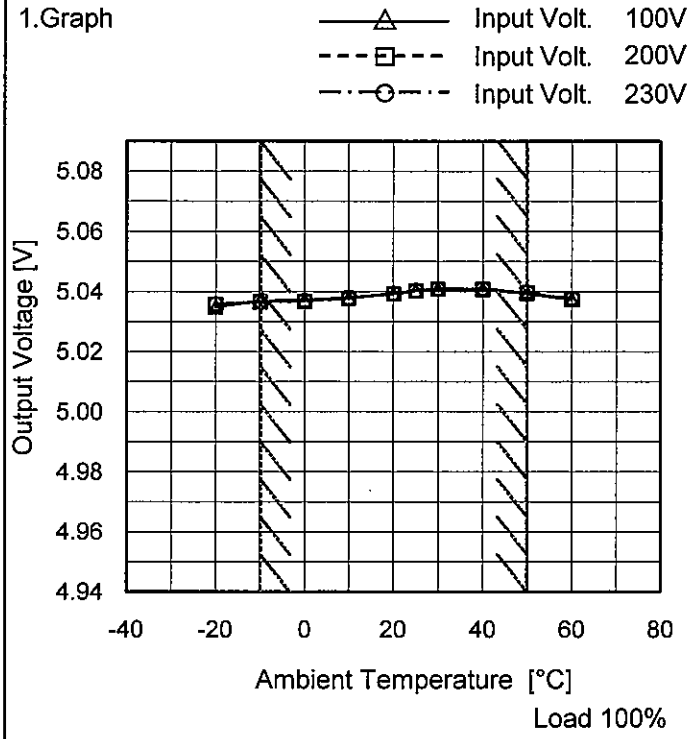
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	175	85
-10	75	30
0	75	30
25	40	15
50	35	10
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PMA30F-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. 200[V]	Input Volt. 230[V]
-20	5.035	5.036	5.036
-10	5.037	5.037	5.037
0	5.037	5.037	5.037
10	5.038	5.038	5.038
20	5.039	5.039	5.040
25	5.040	5.040	5.040
30	5.041	5.041	5.041
40	5.041	5.041	5.041
50	5.039	5.040	5.040
60	5.037	5.038	5.038
--	-	-	-

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Model	PMA30F-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 : 85 - 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	200	0	5.053	±9	±0.2
Minimum Voltage	-10	85	6	5.036		

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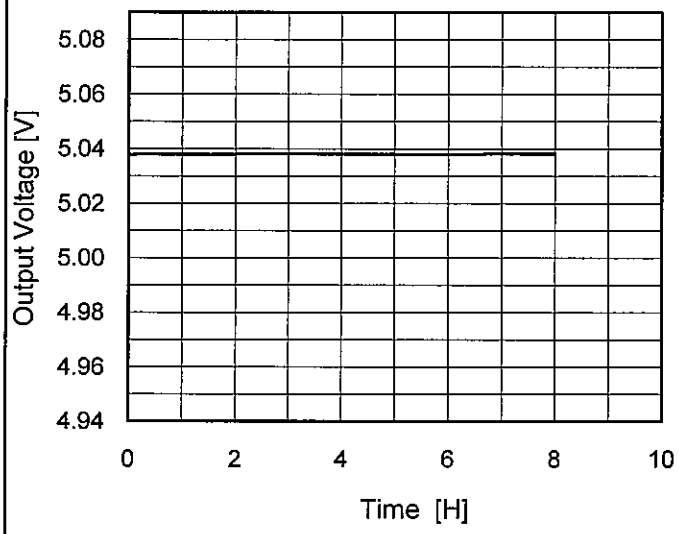
Model	PMA30F-5
Item	Time Lapse Drift
Object	+5V6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 230V
Load 100%

* The characteristic of AC100V is equal.

2.Values

Time since start [H]	Output Voltage [V]
0.0	5.038
0.5	5.038
1.0	5.038
2.0	5.038
3.0	5.038
4.0	5.038
5.0	5.038
6.0	5.038
7.0	5.038
8.0	5.038

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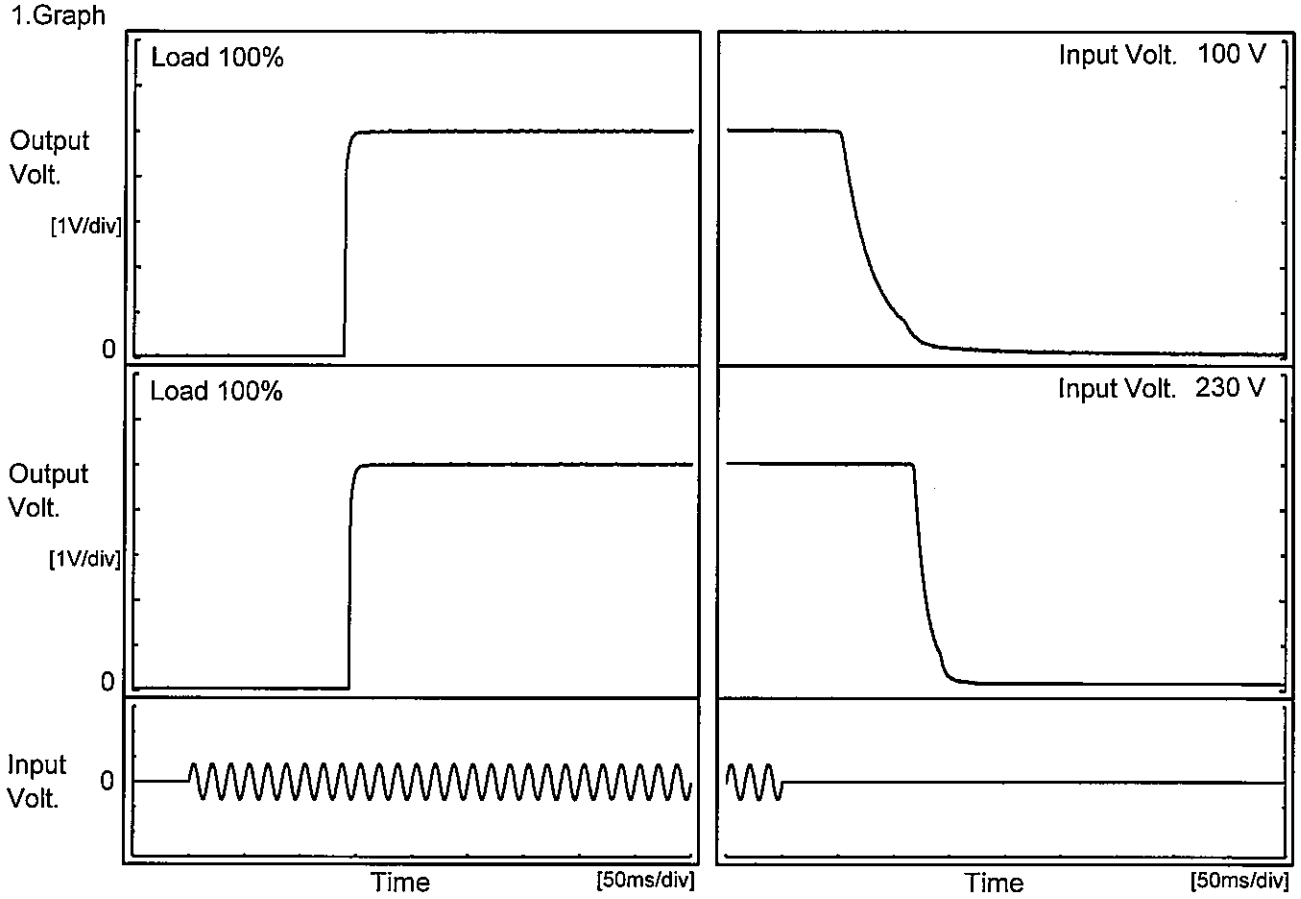
Model	PMA30F-5		
Item	Rise and Fall Time	Temperature	25°C
		Testing Circuitry	Figure A
Object	+5V6A		

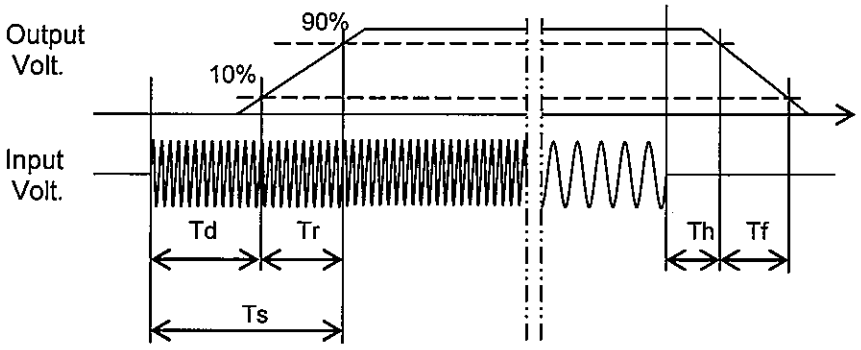
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
100 V	139.0	3.0	142.0	21.9	24.4
230 V	144.0	3.0	147.0	118.7	25.7



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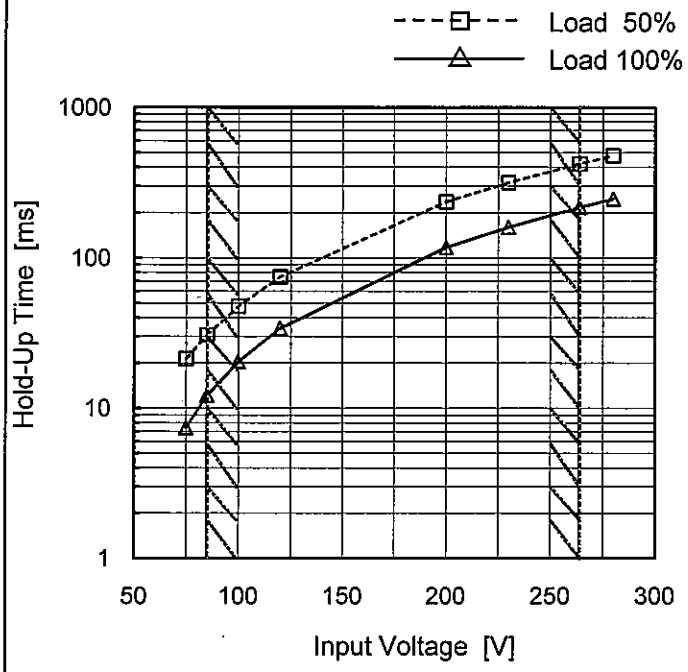
Model	PMA30F-5
Item	Hold-Up Time
Object	+5V6A

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

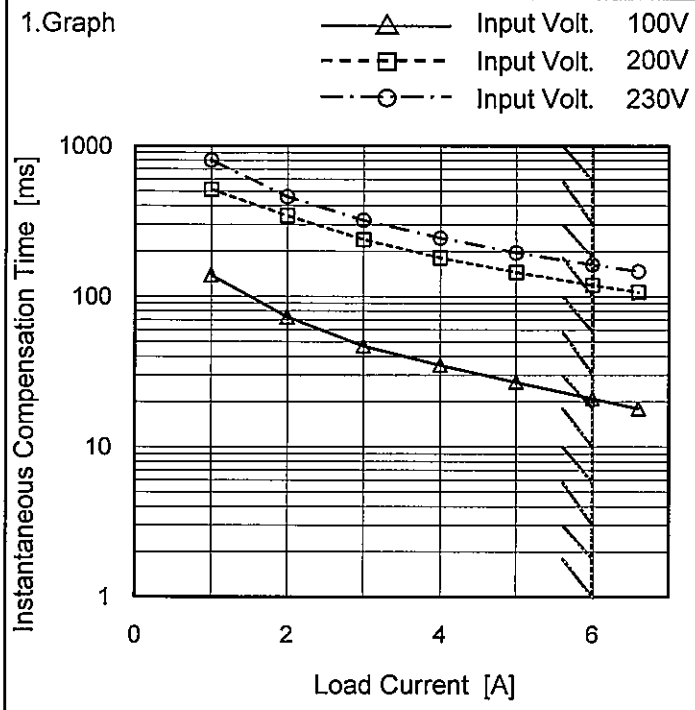
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	21	7
85	31	12
100	48	20
120	75	34
200	236	117
230	317	160
264	422	217
280	477	247
--	-	-

COSEL

Model	PMA30F-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. 200[V]	Input Volt. 230[V]
0.0	-	-	-
1.0	139	514	805
2.0	73	344	460
3.0	47	239	321
4.0	35	181	245
5.0	27	145	196
6.0	21	119	163
6.6	18	107	147
---	-	-	-
--	-	-	-
--	-	-	-

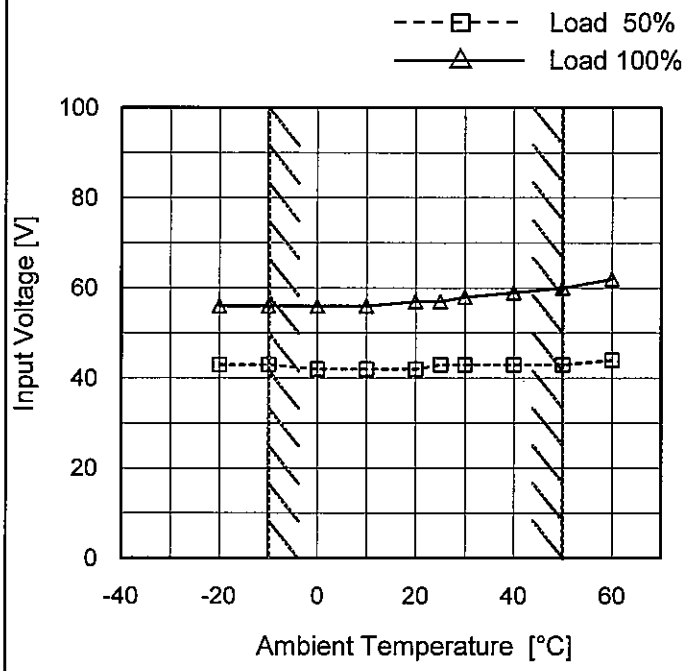
BC-10421

COSEL

Model	PMA30F-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

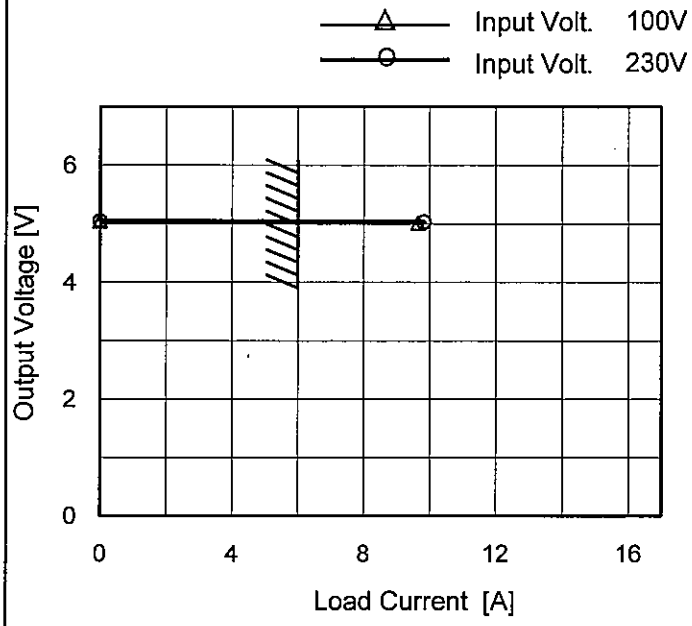
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	43	56
-10	43	56
0	42	56
10	42	56
20	42	57
25	43	57
30	43	58
40	43	59
50	43	60
60	44	62
--	-	-

COSEL

Model	PMA30F-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.

2.Values

Output Voltage [V]	Load Current [A] Input Volt. 100[V]	Load Current [A] Input Volt. 230[V]
5.00	9.64	9.83
4.75	-	-
4.50	-	-
4.00	-	-
3.50	-	-
3.00	-	-
2.50	-	-
2.00	-	-
1.50	-	-
1.00	-	-
0.50	-	-
0.00	-	-

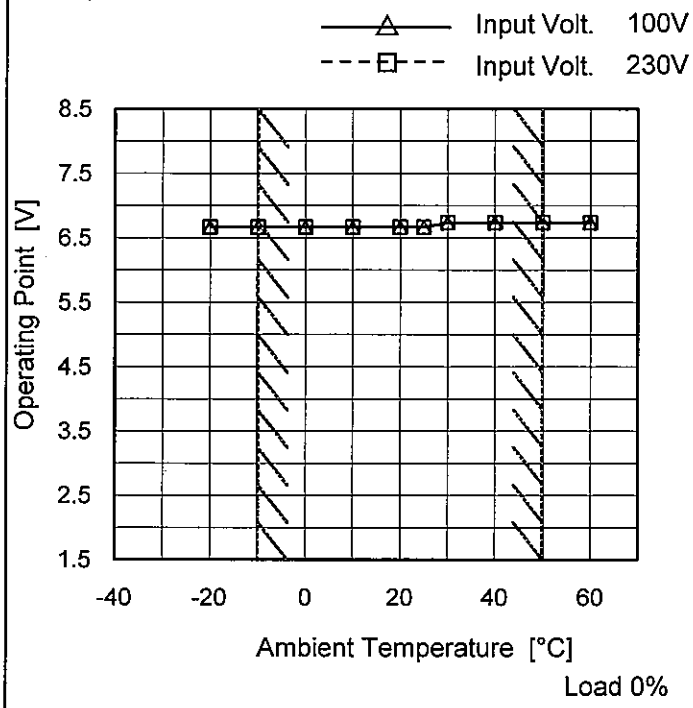
BC-10421

COSEL

Model	PMA30F-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. 100[V]	Input Volt. 230[V]
-20	6.67	6.67
-10	6.67	6.67
0	6.67	6.67
10	6.67	6.67
20	6.67	6.67
25	6.67	6.67
30	6.74	6.74
40	6.74	6.74
50	6.74	6.74
60	6.74	6.74
--	-	-

COSEL

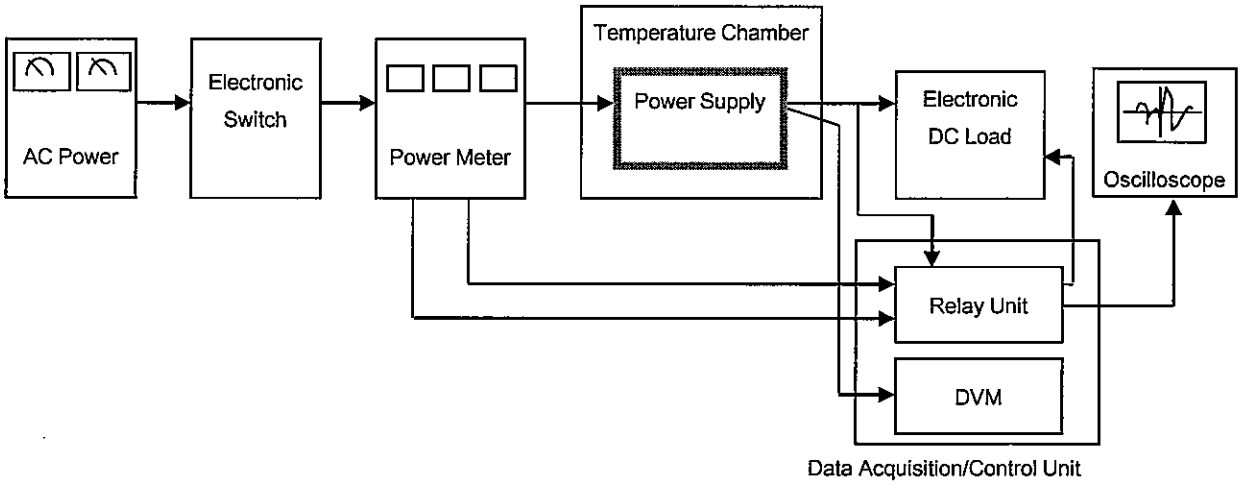


Figure A

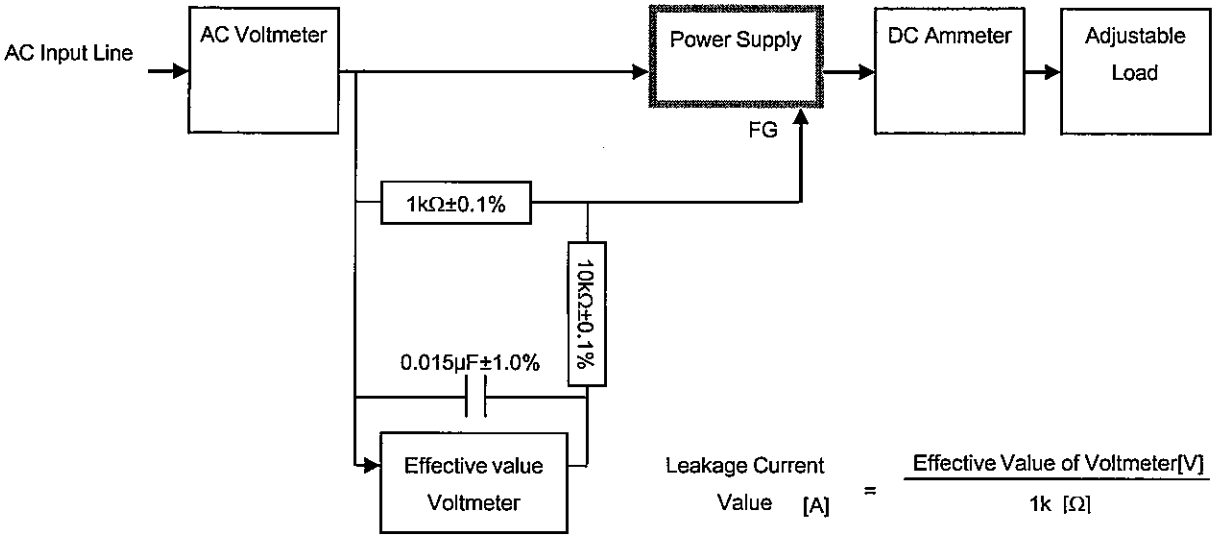


Figure B (IEC60601-1)