



TEST DATA OF PBA15F-24

Regulated DC Power Supply
Sep 29, 2005

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COSEL CO.,LTD.

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(Final Page 24)

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Model

PBA15F-24

Item

Input Current (by Load Current)

Object

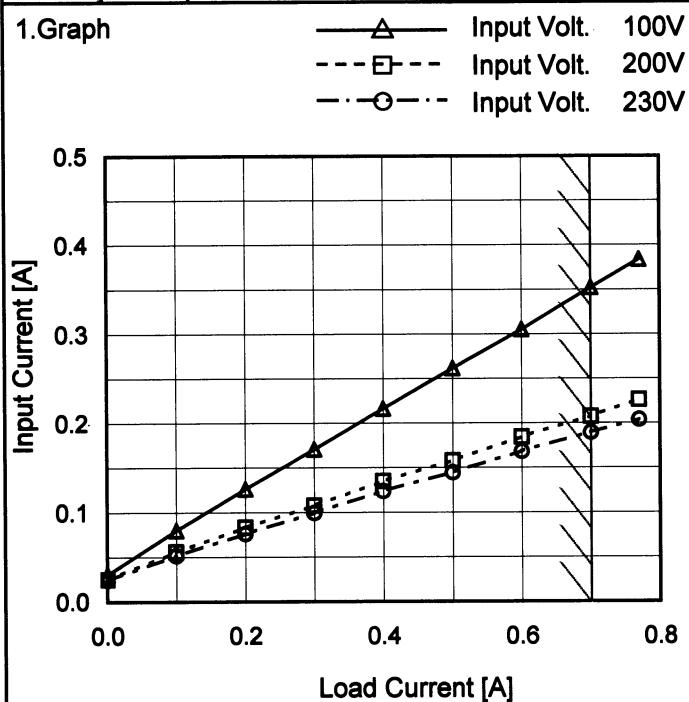
Temperature

25°C

Testing Circuitry

Figure A

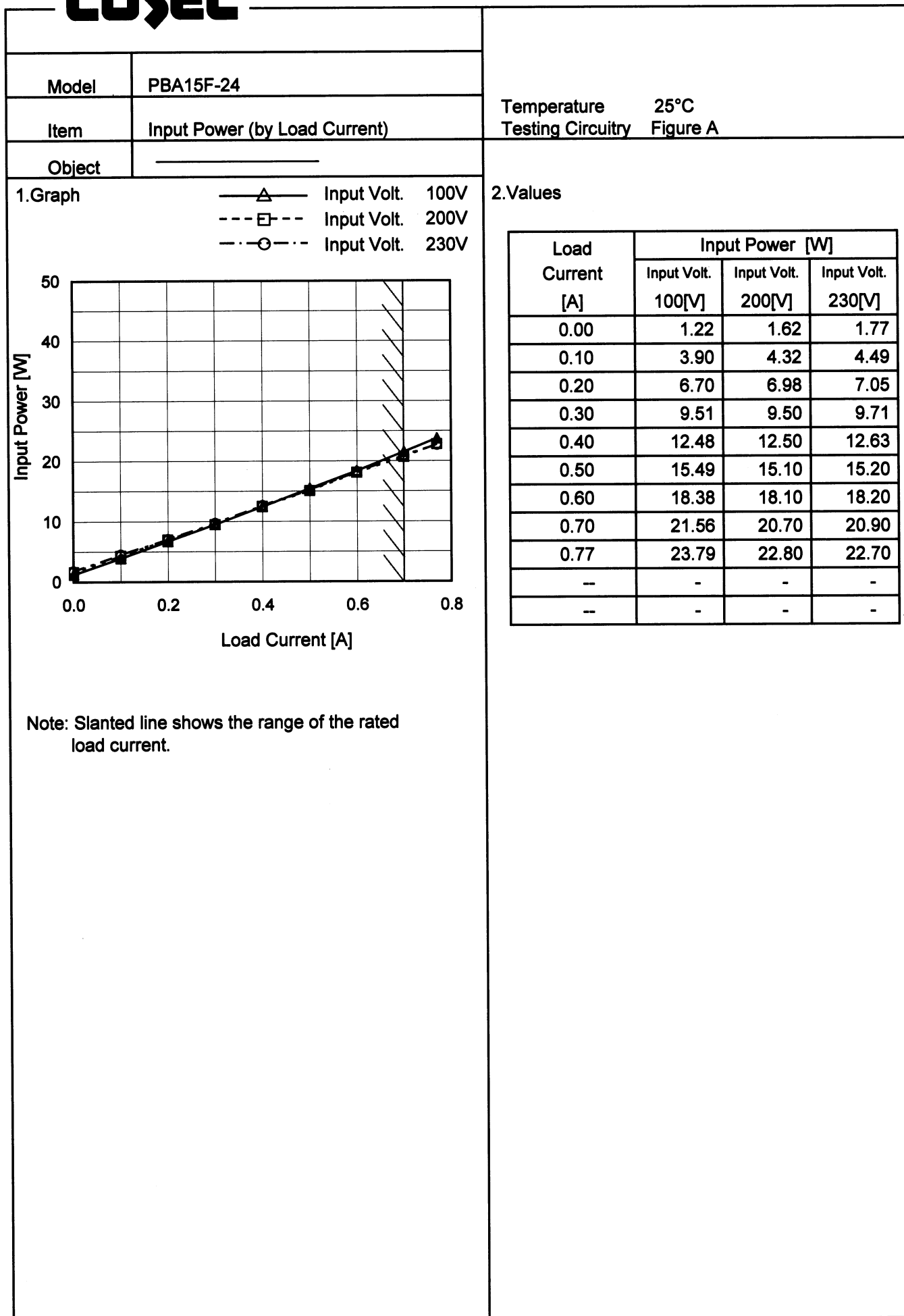
1. Graph



2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.030	0.025	0.025
0.10	0.080	0.056	0.052
0.20	0.126	0.083	0.076
0.30	0.171	0.108	0.099
0.40	0.217	0.135	0.124
0.50	0.262	0.158	0.145
0.60	0.305	0.185	0.168
0.70	0.352	0.208	0.190
0.77	0.384	0.226	0.204
--	-	-	-
--	-	-	-

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Model

PBA15F-24

Item

Efficiency (by Input Voltage)

Object

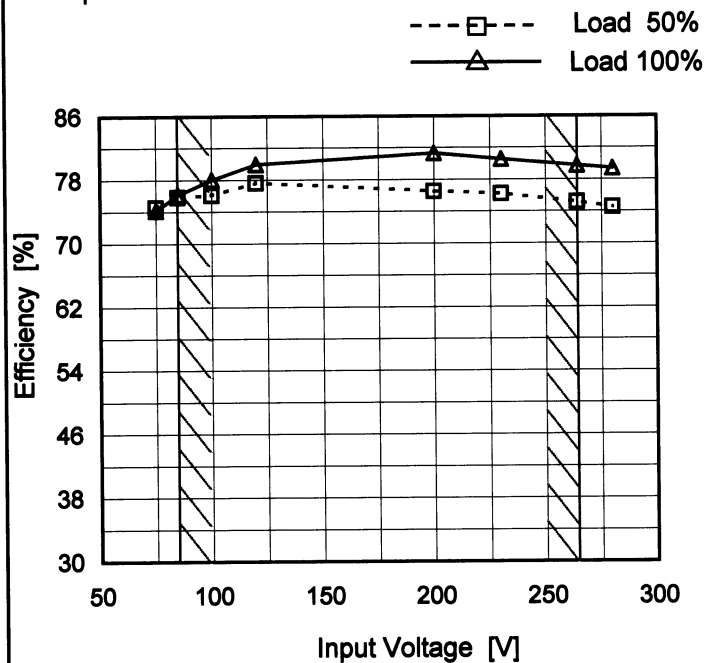
Temperature

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	74.6	74.2
85	75.8	76.2
100	76.1	78.0
120	77.6	80.0
200	76.5	81.3
230	76.2	80.5
264	75.2	79.8
280	74.5	79.4
--	-	-

COSEL

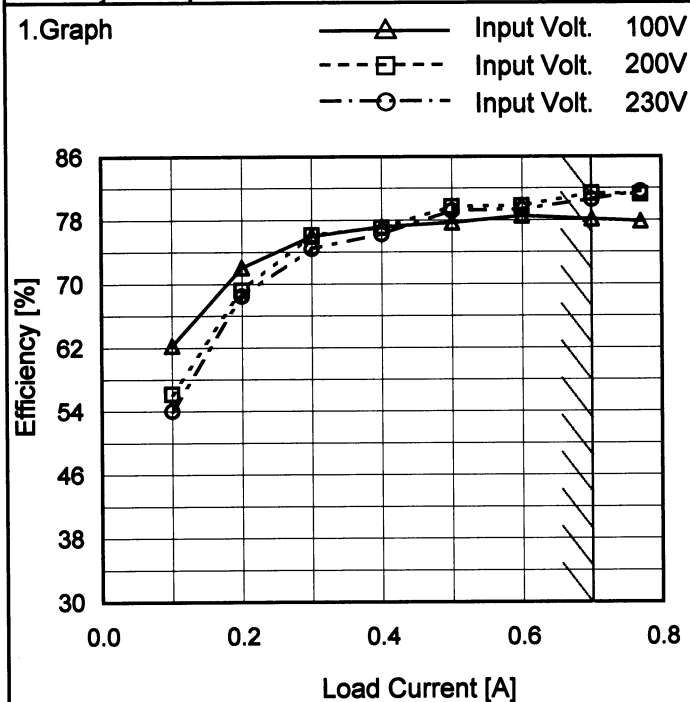
Model PBA15F-24

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]
0.00	-	-	-
0.10	62.3	56.2	54.1
0.20	72.1	69.2	68.5
0.30	76.0	76.1	74.5
0.40	77.2	77.1	76.3
0.50	77.7	79.7	79.2
0.60	78.6	79.8	79.3
0.70	78.1	81.4	80.6
0.77	77.9	81.3	81.6
--	-	-	-
--	-	-	-

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Model

PBA15F-24

Item

Power Factor (by Input Voltage)

Object

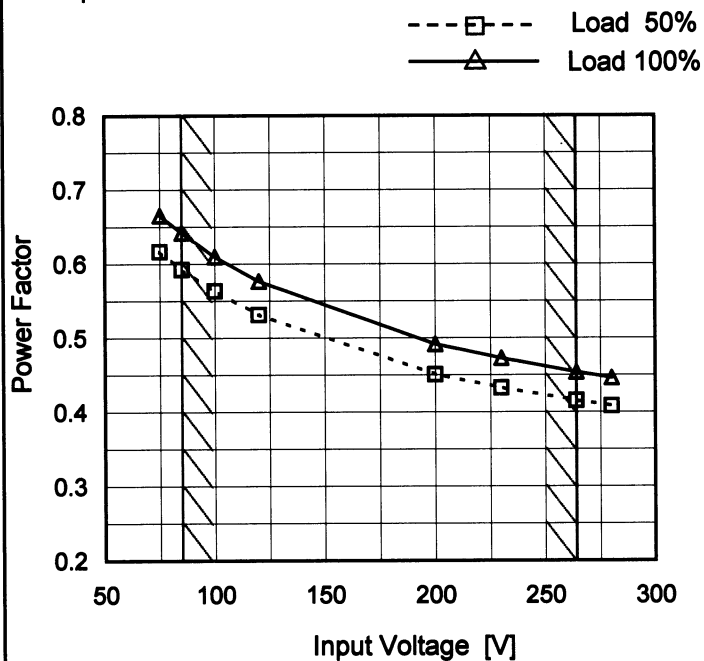
Temperature

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	0.617	0.666
85	0.593	0.642
100	0.564	0.610
120	0.532	0.577
200	0.451	0.492
230	0.433	0.473
264	0.416	0.454
280	0.408	0.446
--	-	-

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Model

PBA15F-24

Item

Power Factor (by Load Current)

Object

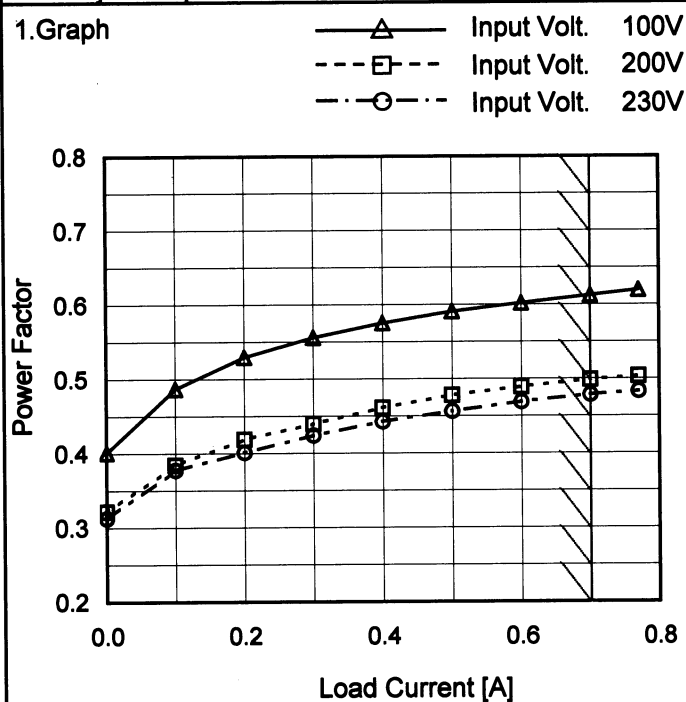
Temperature

25°C

Testing Circuitry

Figure A

1. Graph

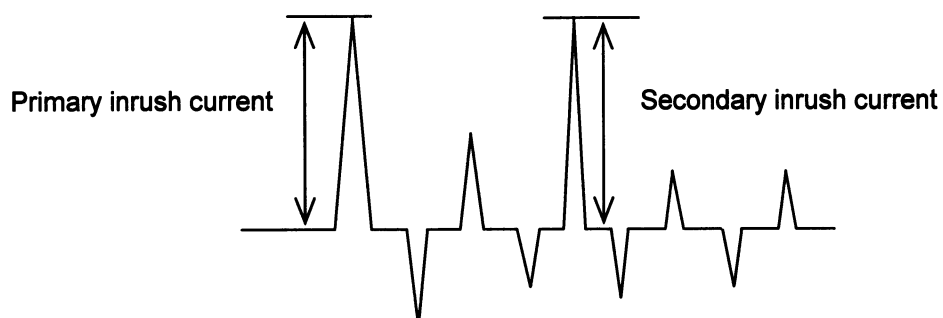
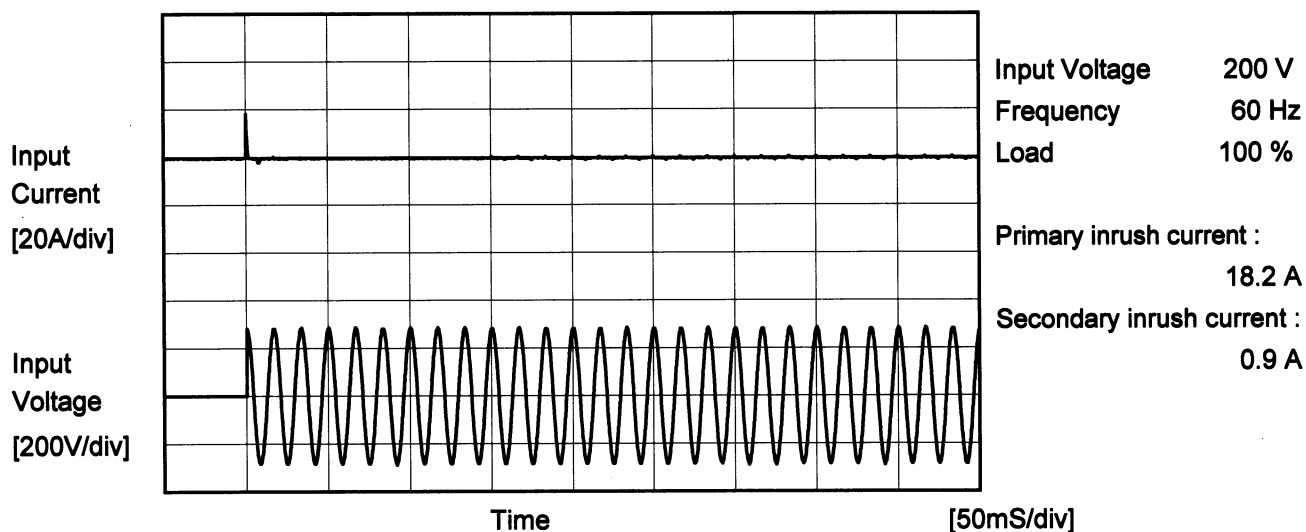
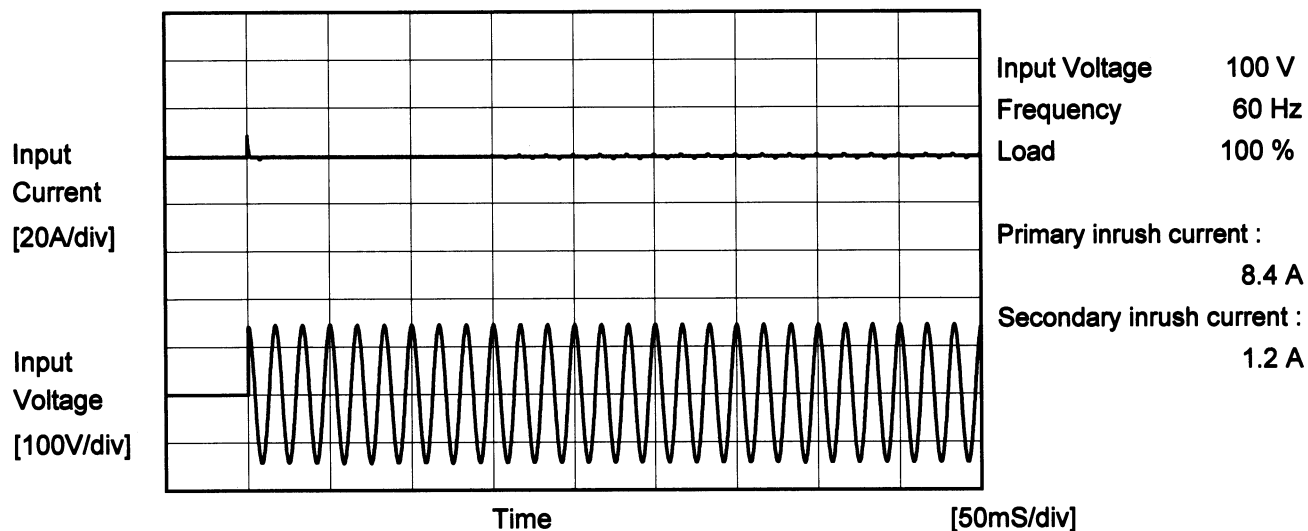


2. Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.401	0.322	0.313
0.10	0.487	0.384	0.378
0.20	0.530	0.419	0.401
0.30	0.556	0.440	0.424
0.40	0.576	0.461	0.443
0.50	0.591	0.478	0.456
0.60	0.602	0.489	0.469
0.70	0.612	0.499	0.478
0.77	0.620	0.503	0.483
--	-	-	-
--	-	-	-

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Model	PBA15F-24	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		



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		Temperature 25°C Testing Circuitry Figure B
Model	PBA15F-24	
Item	Leakage Current	
Object	_____	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.06	0.12	0.14	Operation
	One of phase	0.10	0.22	0.27	stand by
IEC60950	Both phases	0.07	0.15	0.18	Operation
	One of phase	0.10	0.22	0.27	stand by

The value for "One of phase" 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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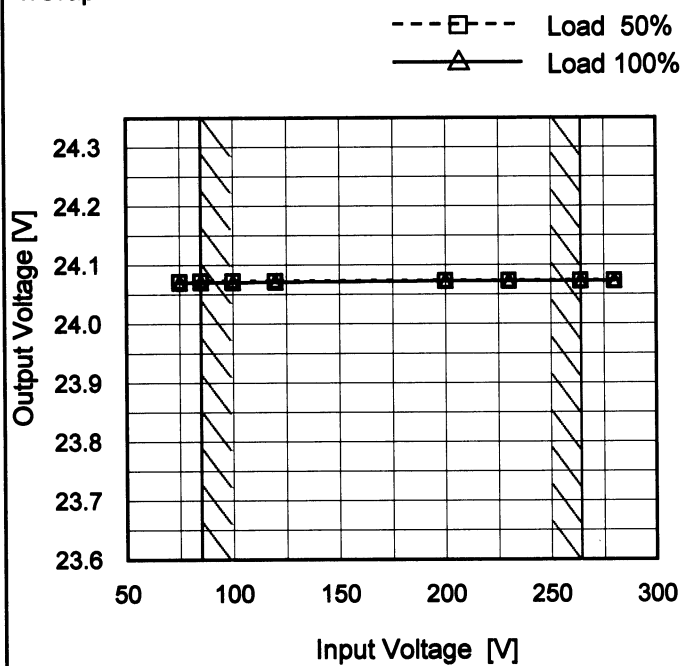
Model PBA15F-24

Item Line Regulation

Object +24V0.7A

Temperature 25°C
Testing Circuitry Figure A

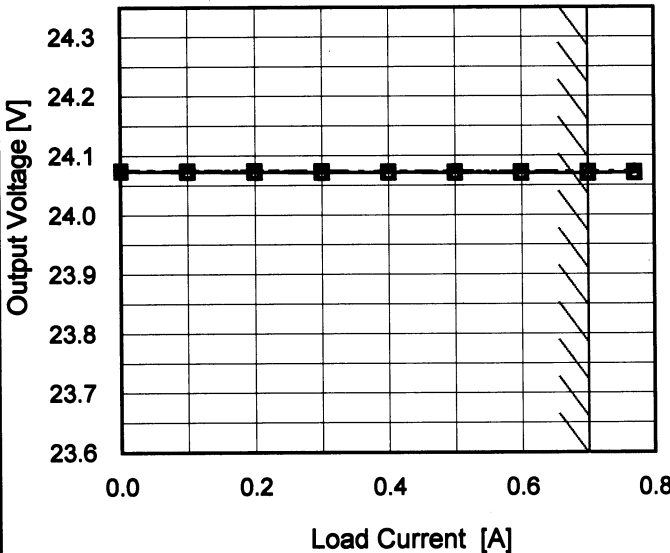
1. Graph



2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	24.072	24.070
85	24.073	24.071
100	24.073	24.071
120	24.073	24.071
200	24.074	24.073
230	24.074	24.073
264	24.074	24.073
280	24.074	24.073
--	-	-

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Model		PBA15F-24		Temperature		25°C																																																				
Item		Load Regulation		Testing Circuitry		Figure A																																																				
Object		+24V0.7A																																																								
1.Graph				2.Values																																																						
<div><div><div>—△—</div><div>Input Volt.</div><div>100V</div></div><div><div>---□---</div><div>Input Volt.</div><div>200V</div></div><div><div>---○---</div><div>Input Volt.</div><div>230V</div></div></div>  <p>Output Voltage [V]</p> <p>Load Current [A]</p>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.00</td><td>24.074</td><td>24.075</td><td>24.075</td></tr><tr><td>0.10</td><td>24.073</td><td>24.074</td><td>24.074</td></tr><tr><td>0.20</td><td>24.072</td><td>24.074</td><td>24.074</td></tr><tr><td>0.30</td><td>24.072</td><td>24.074</td><td>24.074</td></tr><tr><td>0.40</td><td>24.072</td><td>24.073</td><td>24.073</td></tr><tr><td>0.50</td><td>24.071</td><td>24.073</td><td>24.073</td></tr><tr><td>0.60</td><td>24.071</td><td>24.073</td><td>24.073</td></tr><tr><td>0.70</td><td>24.071</td><td>24.072</td><td>24.073</td></tr><tr><td>0.77</td><td>24.071</td><td>24.072</td><td>24.072</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>				Load Current [A]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.00	24.074	24.075	24.075	0.10	24.073	24.074	24.074	0.20	24.072	24.074	24.074	0.30	24.072	24.074	24.074	0.40	24.072	24.073	24.073	0.50	24.071	24.073	24.073	0.60	24.071	24.073	24.073	0.70	24.071	24.072	24.073	0.77	24.071	24.072	24.072	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																									
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Note: Slanted line shows the range of the rated load current.																																																										

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BC-10024

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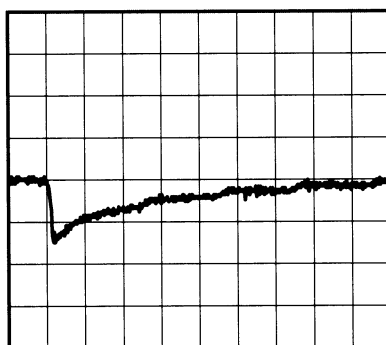
Model	PBA15F-24	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+24V0.7A		

Input Volt. 100 V
Cycle 1000 ms

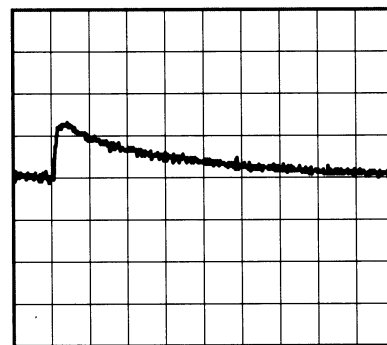
Load Current

Min. Load (0A) ←→
Load 100% (0.7A)

100 mV/div



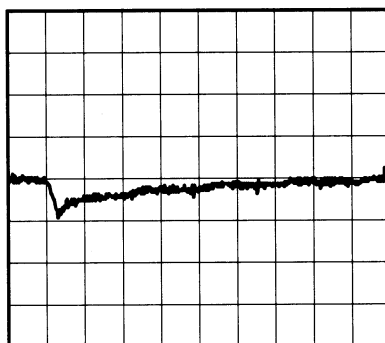
5 ms/div



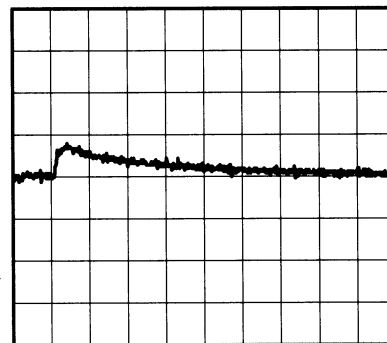
5 ms/div

Min. Load (0A) ←→
Load 50% (0.35A)

100 mV/div



5 ms/div



5 ms/div

* The characteristic of AC200V is equal.

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Model

PBA15F-24

Item

Ripple Voltage (by Load Current)

Object

+24V0.7A

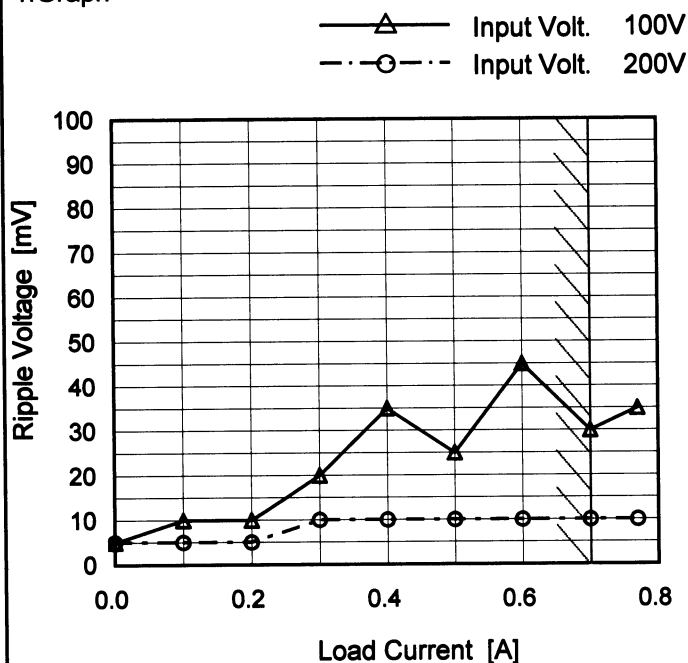
Temperature

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.

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	5	5
0.10	10	5
0.20	10	5
0.30	20	10
0.40	35	10
0.50	25	10
0.60	45	10
0.70	30	10
0.77	35	10
--	-	-
--	-	-

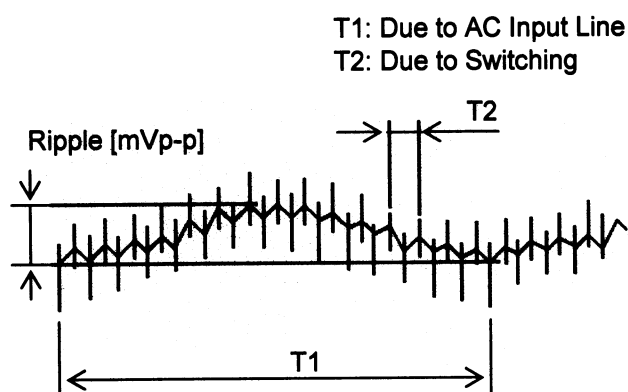


Fig. Complex Ripple Wave Form

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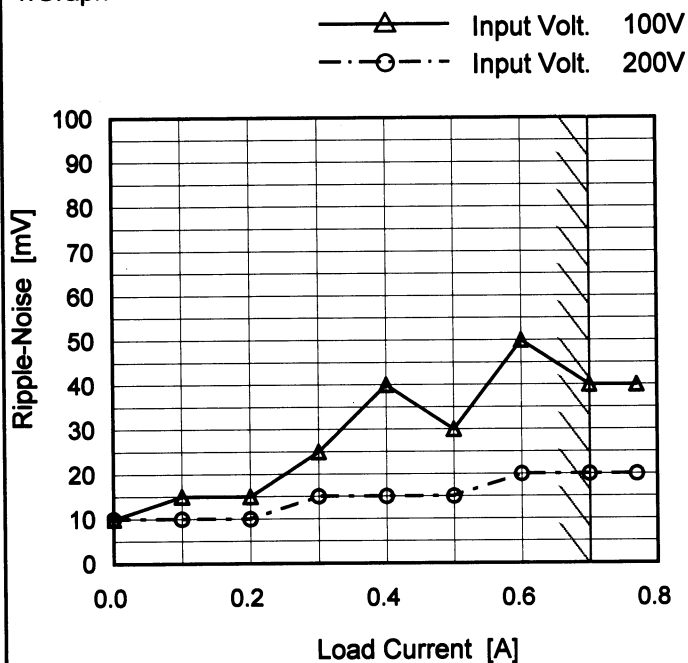
Model PBA15F-24

Item Ripple-Noise

Object +24V0.7A

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.

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	10	10
0.10	15	10
0.20	15	10
0.30	25	15
0.40	40	15
0.50	30	15
0.60	50	20
0.70	40	20
0.77	40	20
--	-	-
--	-	-

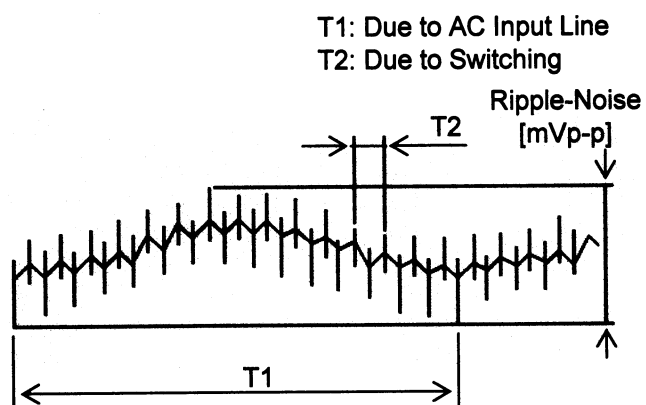


Fig. Complex Ripple Wave Form

COSEL

Model

PBA15F-24

Item

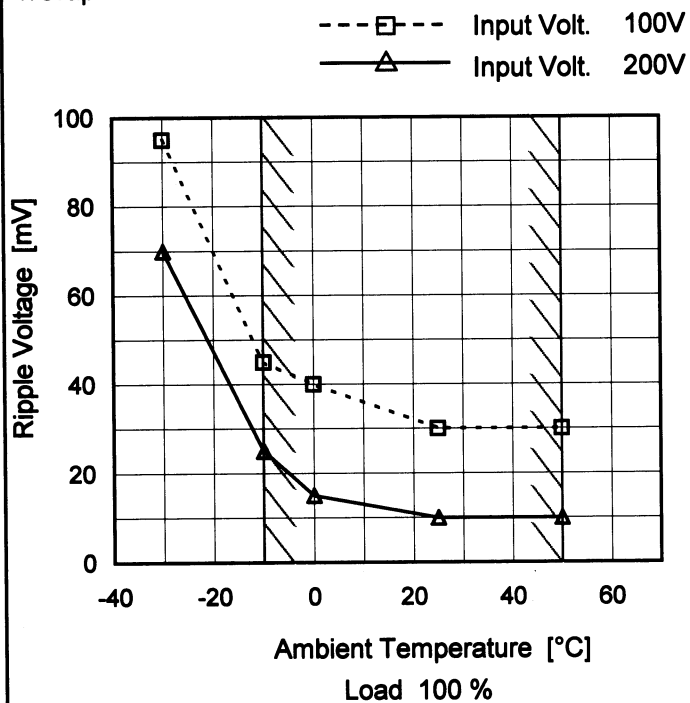
Ripple Voltage (by Ambient Temp.)

Object

+24V0.7A

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	95	70
-10	45	25
0	40	15
25	30	10
50	30	10
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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Model PBA15F-24

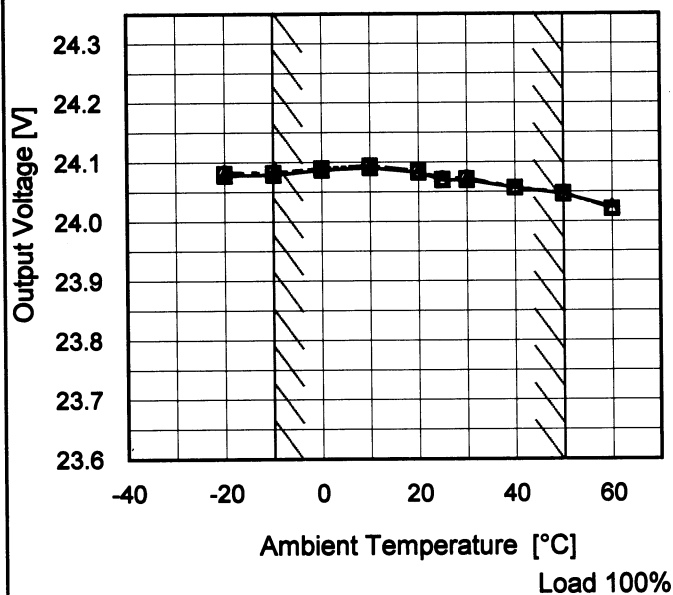
Item Ambient Temperature Drift

Object +24V0.7A

Testing Circuitry Figure A

1. Graph

—△— Input Volt. 100V
 ---□--- Input Volt. 200V
 ---○--- Input Volt. 230V



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	24.078	24.081	24.082
-10	24.079	24.082	24.083
0	24.087	24.090	24.090
10	24.091	24.094	24.094
20	24.083	24.085	24.085
25	24.070	24.071	24.072
30	24.070	24.072	24.073
40	24.057	24.057	24.057
50	24.046	24.048	24.047
60	24.024	24.021	24.021
--	-	-	-



Model		PBA15F-24	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+24V0.7A	

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 - 0.7A

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* Output Voltage Accuracy (Ratio) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	10	264	0	24.081	±25	±0.1
Minimum Voltage	50	85	0.7	24.031		

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Model

PBA15F-24

Item

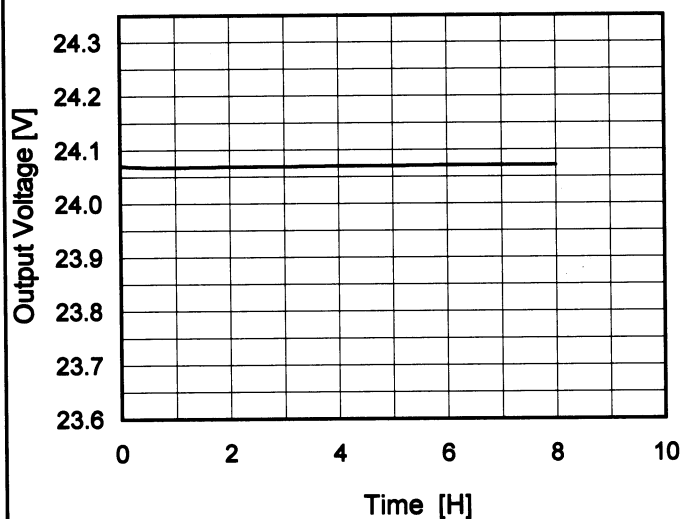
Time Lapse Drift

Object

+24V0.7A

Temperature
Testing Circuitry25°C
Figure A

1. Graph



Input Volt. 100V
Load 100%

* The characteristic of AC200V is equal.

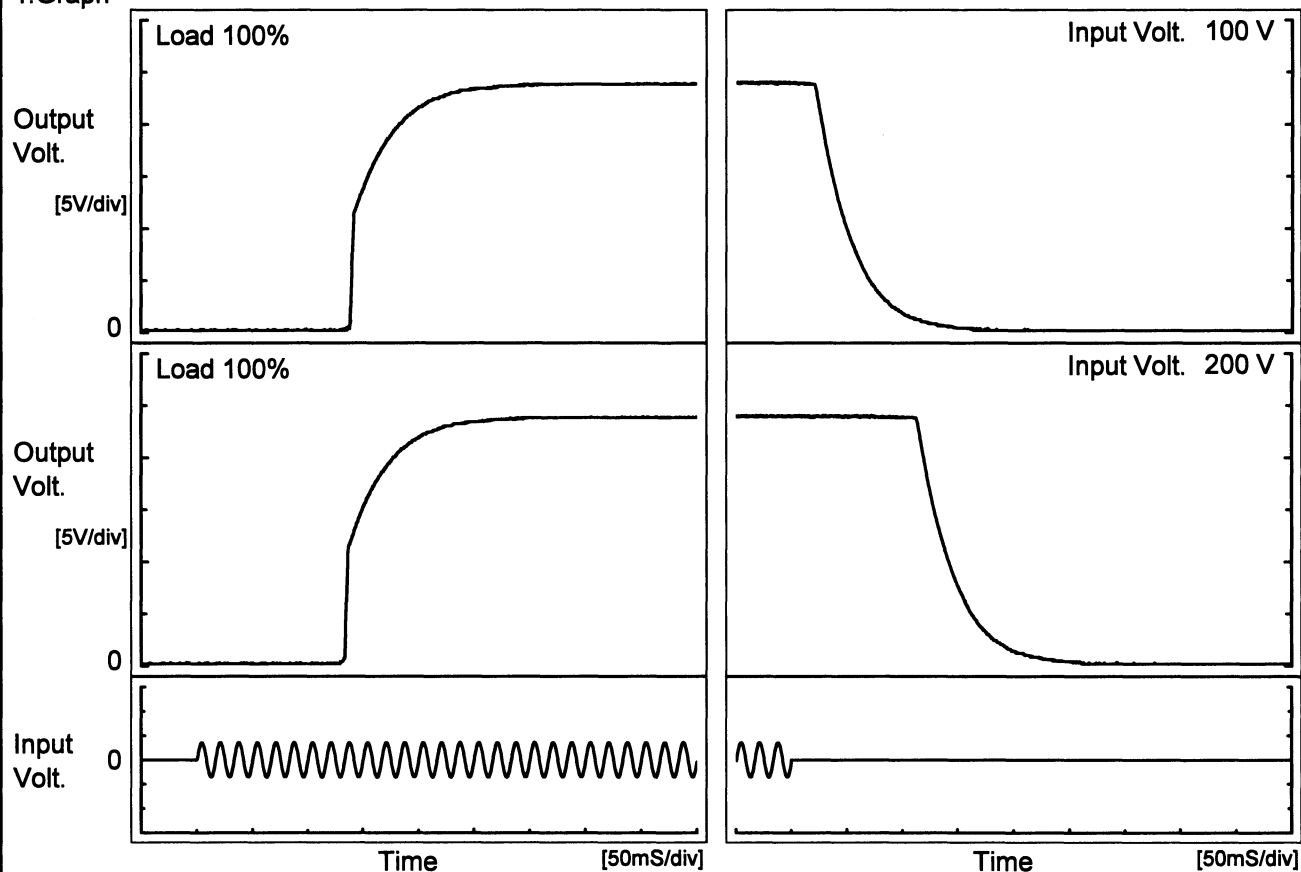
2. Values

Time since start [H]	Output Voltage [V]
0.0	24.072
0.5	24.068
1.0	24.068
2.0	24.069
3.0	24.069
4.0	24.070
5.0	24.070
6.0	24.071
7.0	24.071
8.0	24.071

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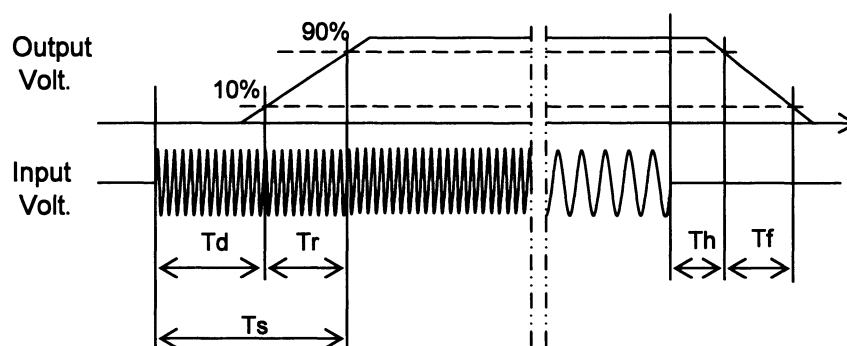
Model	PBA15F-24	Temperature 25°C Testing Circuitry Figure A
Item	Rise and Fall Time	
Object	+24V0.7A	

1. Graph



2. Values

		[mS]				
Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		138.8	64.8	203.6	24.0	65.3
200 V		133.8	64.3	198.1	115.8	66.3



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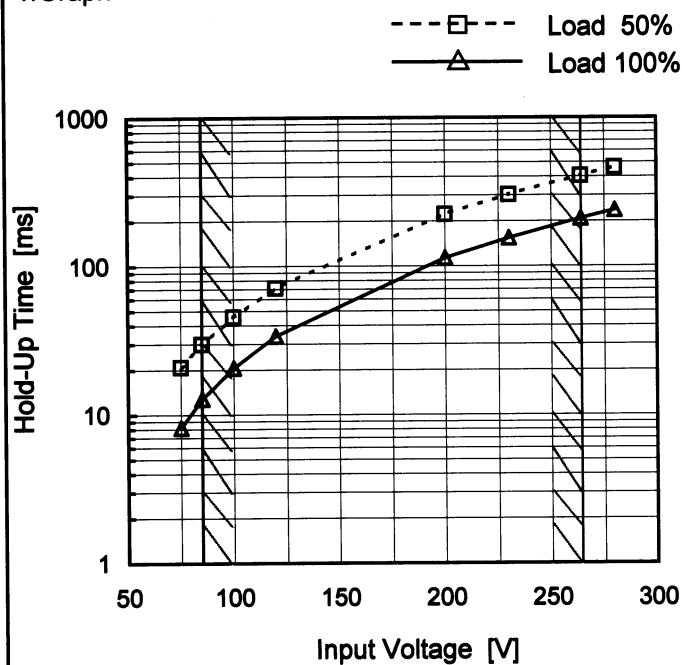
Model PBA15F-24

Item Hold-Up Time

Object +24V0.7A

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	8
85	30	13
100	46	21
120	71	34
200	224	114
230	302	155
264	406	209
280	461	238
--	-	-

COSEL

Model

PBA15F-24

Item

Instantaneous Interruption Compensation

Object

+24V0.7A

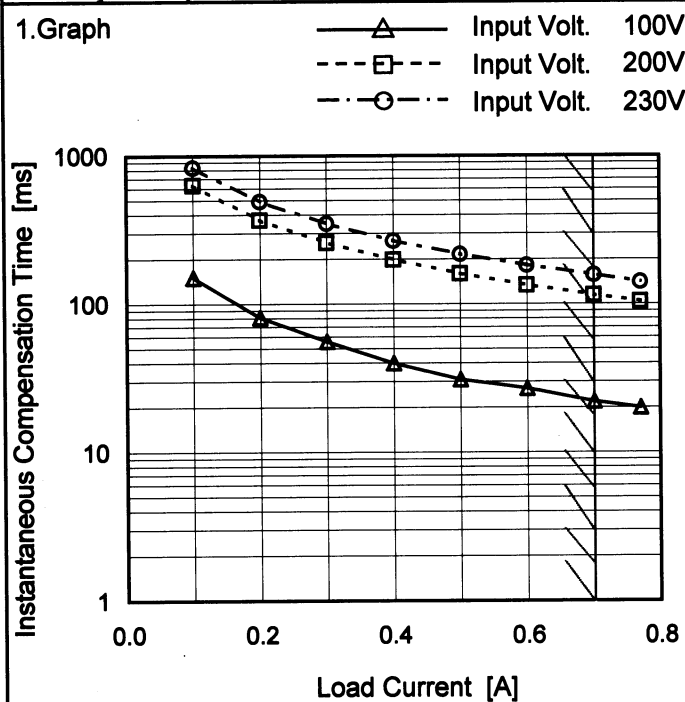
Temperature

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]
0.00	-	-	-
0.10	151	632	832
0.20	81	368	493
0.30	56	259	349
0.40	40	199	267
0.50	31	160	217
0.60	27	134	182
0.70	22	115	157
0.77	20	104	141
--	-	-	-
--	-	-	-

COSEL

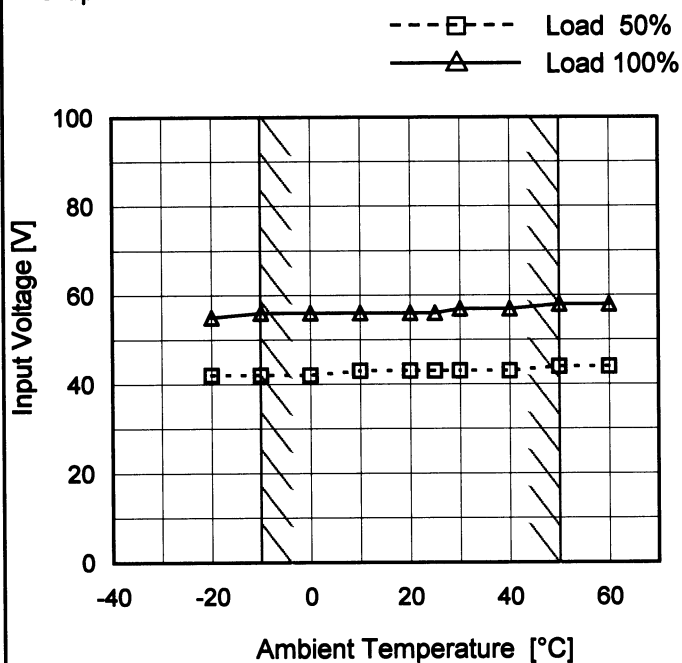
Model PBA15F-24

Item Minimum Input Voltage
for Regulated Output Voltage

Object +24V0.7A

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	55
-10	42	56
0	42	56
10	43	56
20	43	56
25	43	56
30	43	57
40	43	57
50	44	58
60	44	58
--	-	-

COSEL

Model		PBA15F-24	
Item		Overcurrent Protection	
Object		+24V0.7A	

1.Graph

△

Input Volt. 100V

○

Input Volt. 200V

Output Voltage [V]

30

20

10

0

0.0

0.4

0.8

1.2

1.6

2.0

Load Current [A]

△

○

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

Intermittent operation occurs when the output voltage is less than rated output voltage.

2.Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
24.0	1.25	1.53
22.8	-	-
21.6	-	-
19.2	-	-
16.8	-	-
14.4	-	-
12.0	-	-
9.6	-	-
7.2	-	-
4.8	-	-
2.4	-	-
0.0	-	-

COSEL

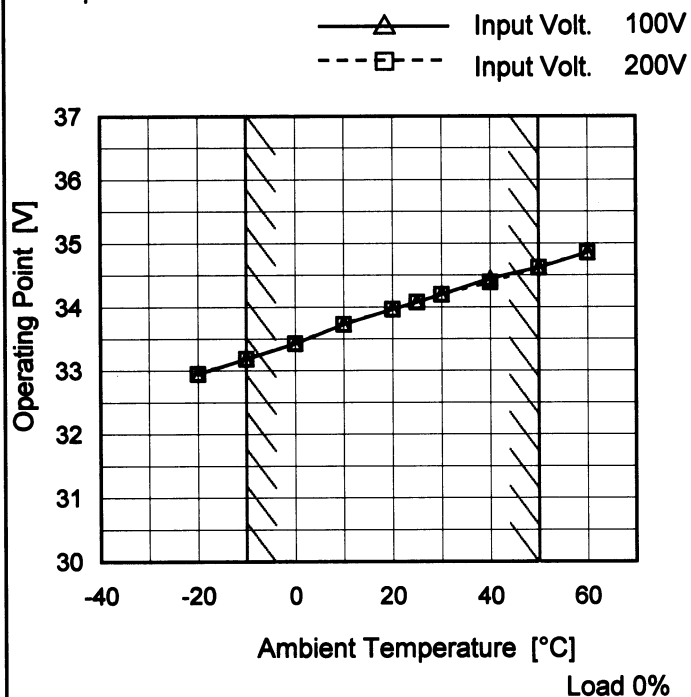
Model PBA15F-24

Item Overvoltage Protection

Object +24V0.7A

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. 200[V]
-20	32.95	32.95
-10	33.19	33.19
0	33.43	33.43
10	33.73	33.73
20	33.97	33.97
25	34.08	34.08
30	34.20	34.20
40	34.45	34.39
50	34.62	34.62
60	34.86	34.86
--	-	-

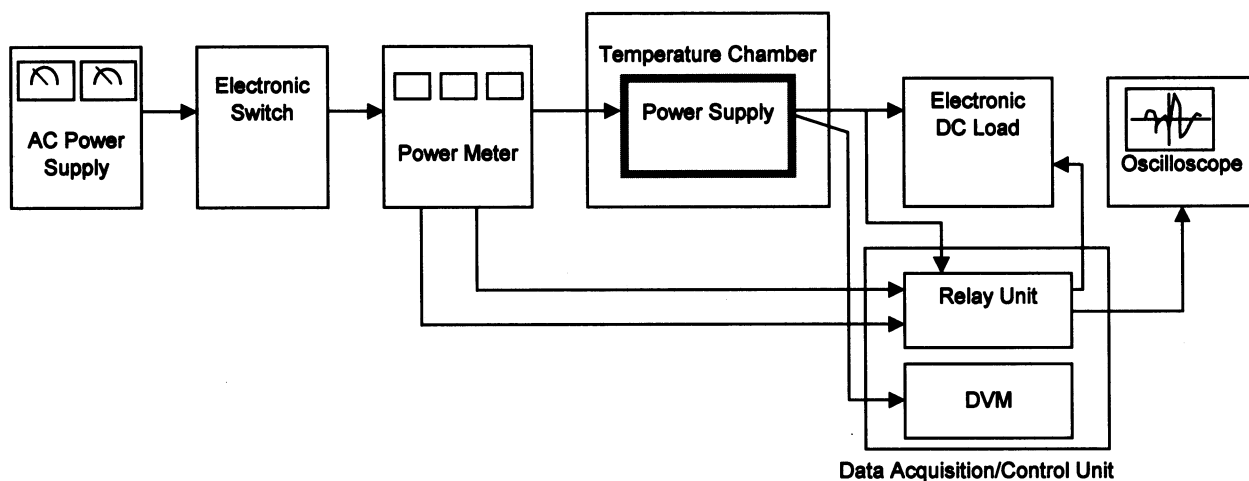


Figure A

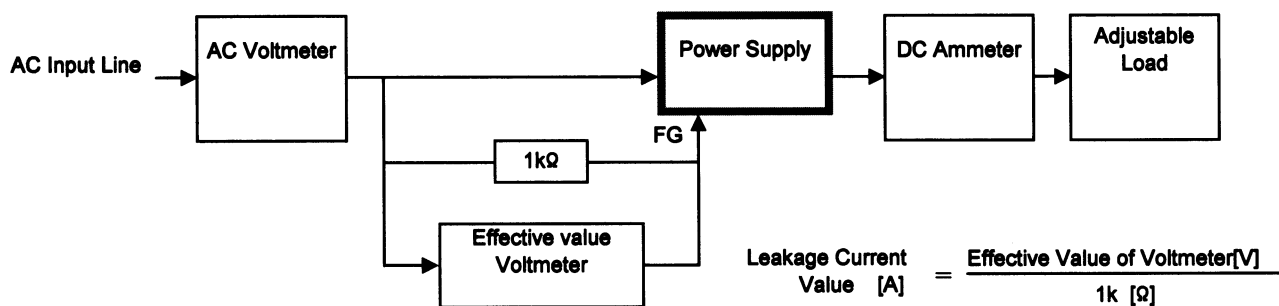


Figure B (DEN-AN)

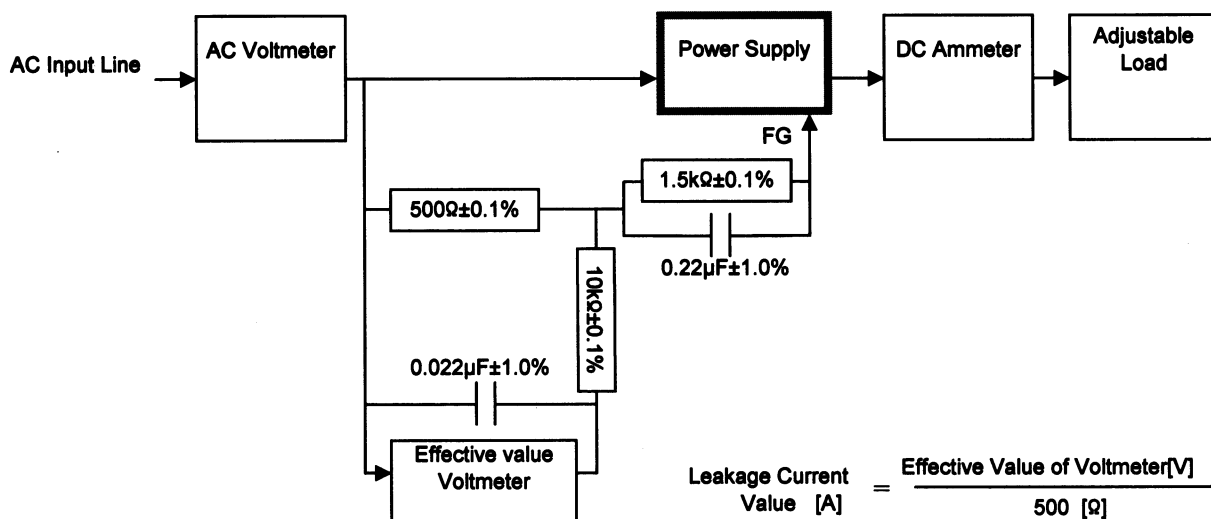


Figure B (IEC60950)