



TEST DATA OF PBA15F-3R3

Regulated DC Power Supply
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Kuniaki Nagahara Design Manager

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COSEL CO.,LTD.

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(Final Page 24)

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Model

PBA15F-3R3

Item

Input Current (by Load Current)

Object

Temperature

25°C

Testing Circuitry

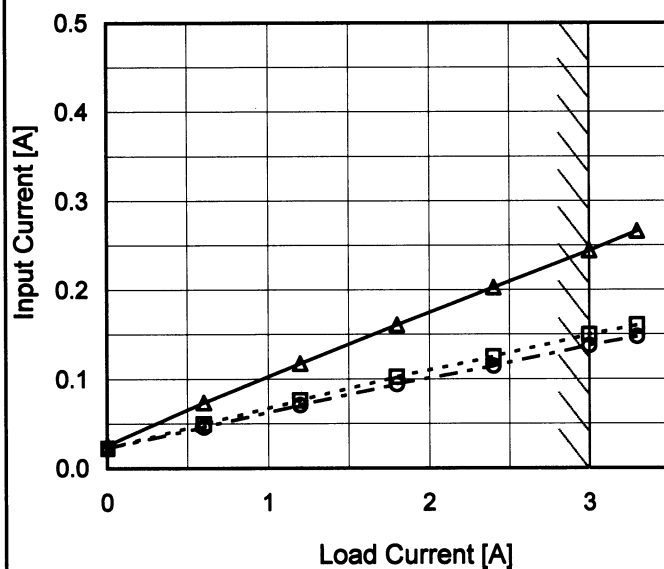
Figure A

1. Graph

—△— Input Volt. 100V

---□--- Input Volt. 200V

---○--- Input Volt. 230V



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	0.026	0.022	0.022
0.6	0.074	0.050	0.046
1.2	0.118	0.076	0.071
1.8	0.161	0.102	0.094
2.4	0.203	0.125	0.115
3.0	0.244	0.150	0.137
3.3	0.266	0.160	0.148
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model PBA15F-3R3

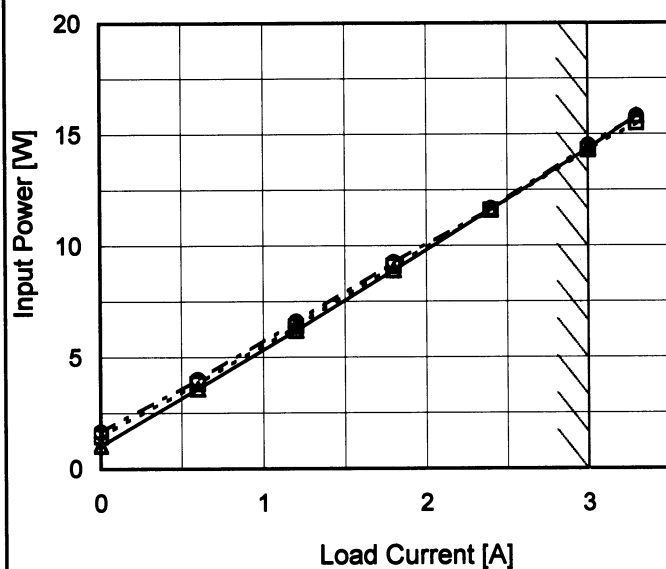
Item Input Power (by Load Current)

Object

Temperature 25°C
Testing Circuitry Figure A

1. Graph

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



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	1.03	1.45	1.65
0.6	3.59	3.82	3.99
1.2	6.21	6.39	6.60
1.8	8.91	9.10	9.26
2.4	11.64	11.60	11.67
3.0	14.37	14.30	14.50
3.3	15.83	15.50	15.80
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--	-	-	-
--	-	-	-
--	-	-	-

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Model

PBA15F-3R3

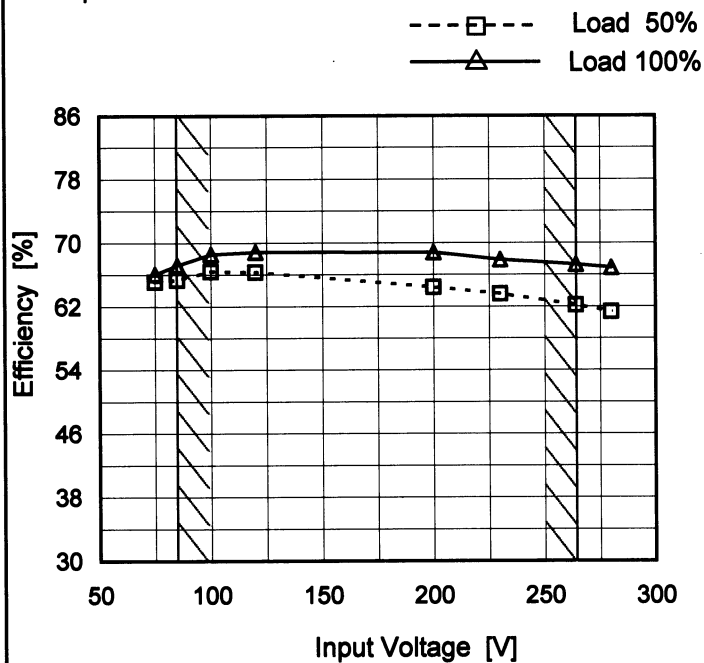
Item

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	65.1	66.1
85	65.4	67.2
100	66.4	68.6
120	66.3	68.9
200	64.4	68.8
230	63.6	67.9
264	62.2	67.3
280	61.3	66.9
--	-	-

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Model

PBA15F-3R3

Item

Efficiency (by Load Current)

Object

Temperature

25°C

Testing Circuitry

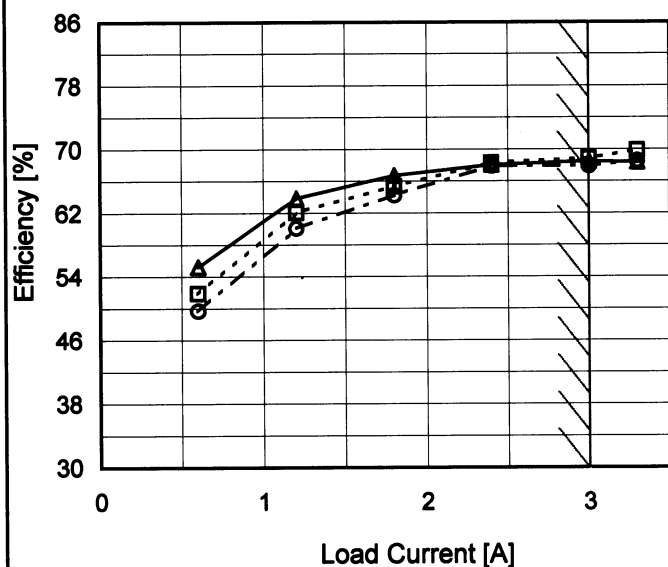
Figure A

1. Graph

—△— Input Volt. 100V

---□--- Input Volt. 200V

-○- - Input Volt. 230V



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

2. Values

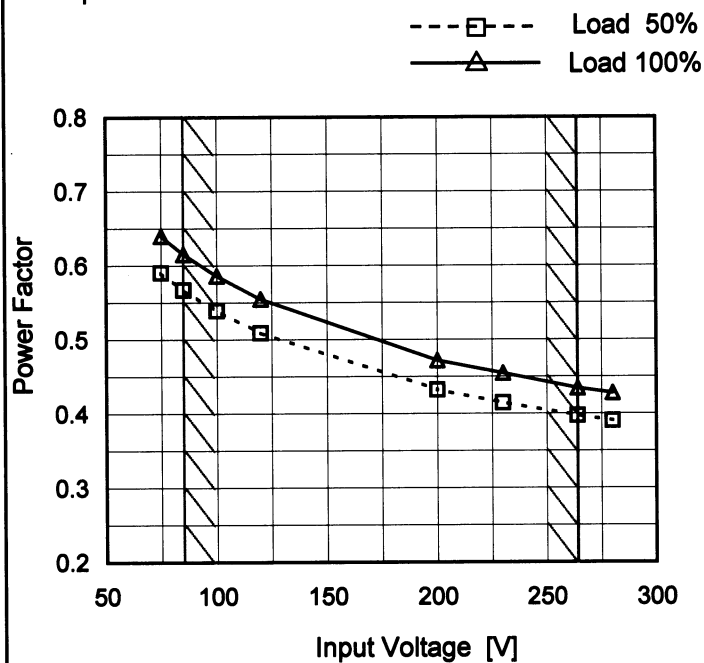
Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
0.6	55.3	51.9	49.7
1.2	63.9	62.1	60.1
1.8	66.7	65.4	64.2
2.4	68.0	68.3	67.9
3.0	68.5	68.8	67.9
3.3	68.4	69.9	68.5
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model PBA15F-3R3

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	0.590	0.640
85	0.567	0.616
100	0.539	0.586
120	0.509	0.555
200	0.433	0.472
230	0.415	0.455
264	0.398	0.435
280	0.391	0.428
--	-	-

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Model

PBA15F-3R3

Item

Power Factor (by Load Current)

Object

Temperature

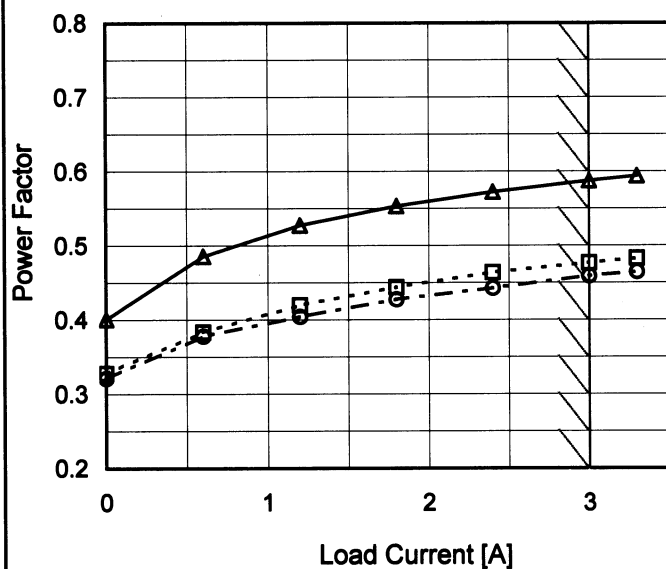
25°C

Testing Circuitry

Figure A

1. Graph

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



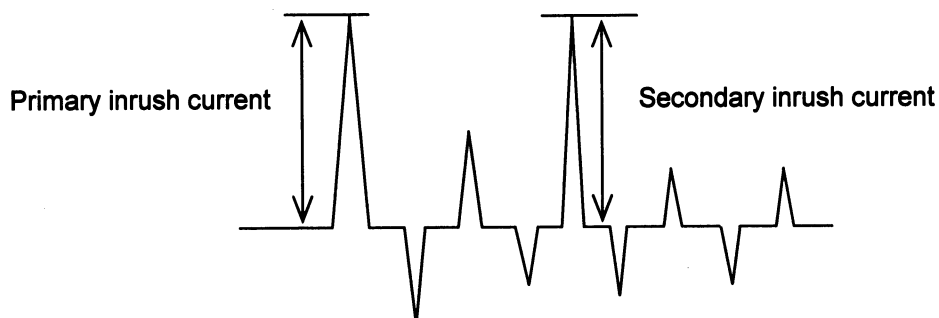
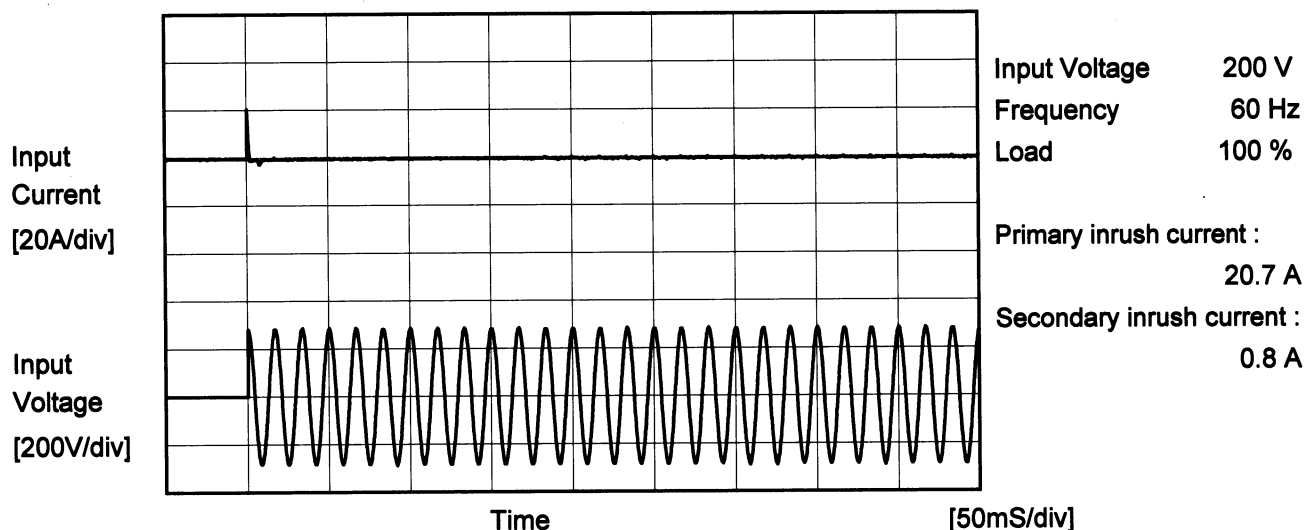
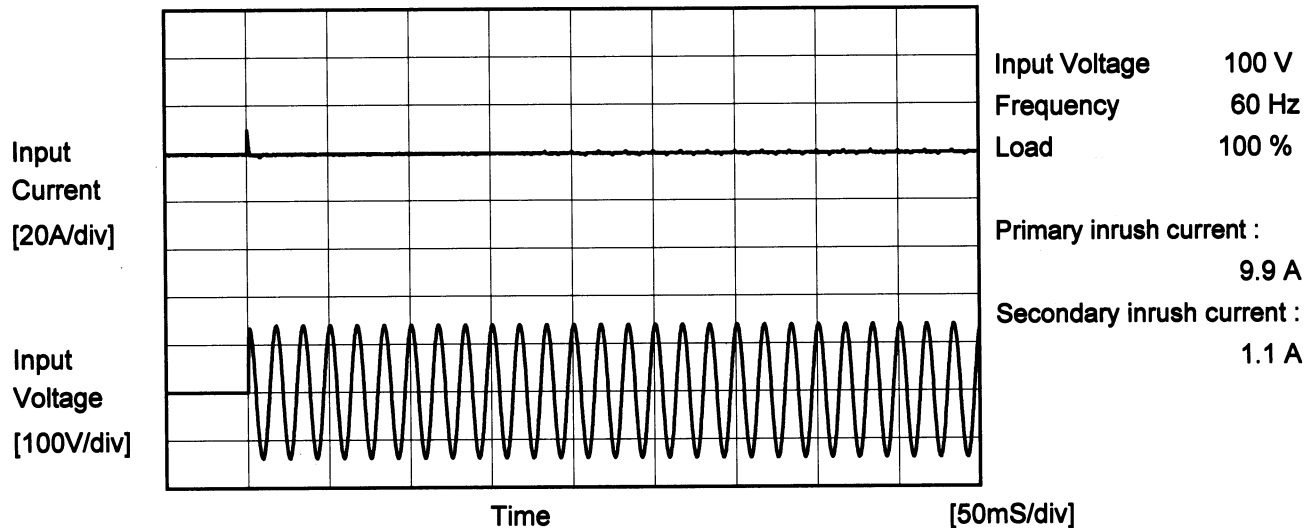
Note: Slanted line shows the range of the rated load current.

2. Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.401	0.328	0.321
0.6	0.486	0.384	0.378
1.2	0.528	0.420	0.404
1.8	0.553	0.444	0.428
2.4	0.573	0.464	0.443
3.0	0.587	0.477	0.459
3.3	0.594	0.483	0.465
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model		PBA15F-3R3	Temperature 25°C Testing Circuitry Figure A
Item		Inrush Current	
Object		_____	





		Temperature 25°C Testing Circuitry Figure B
Model	PBA15F-3R3	
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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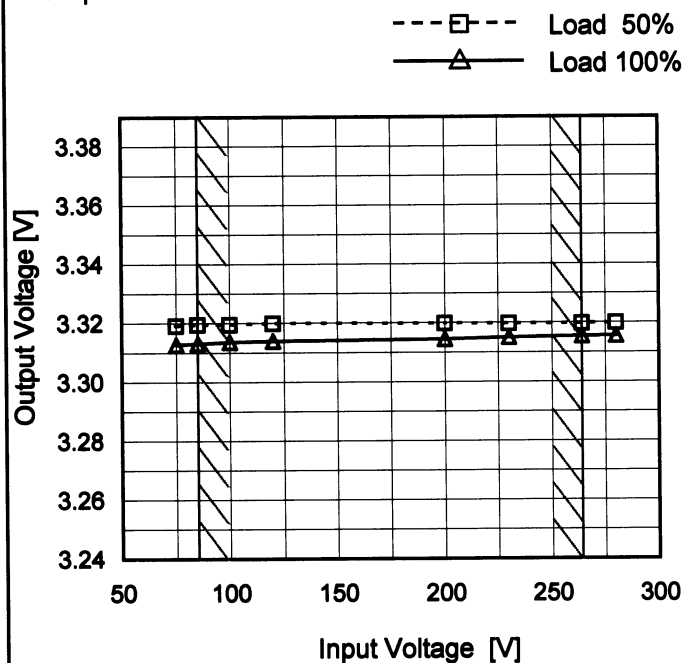
Model PBA15F-3R3

Item Line Regulation

Object +3.3V3A

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	3.319	3.313
85	3.320	3.313
100	3.320	3.314
120	3.320	3.314
200	3.320	3.315
230	3.320	3.315
264	3.320	3.316
280	3.320	3.316
--	-	-

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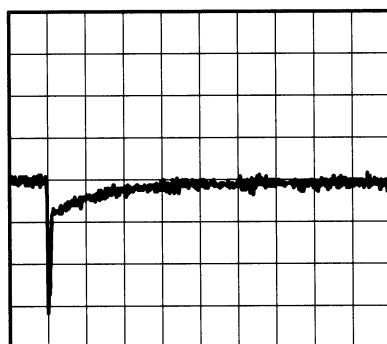
Model	PBA15F-3R3	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+3.3V3A		

Input Volt. 100 V
Cycle 1000 ms

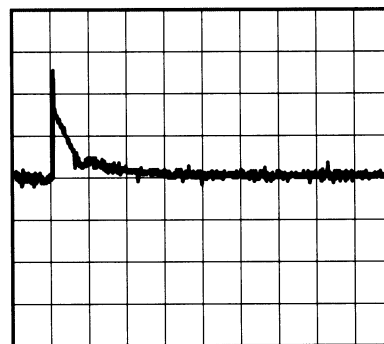
Load Current

Min. Load (0A) ←→
Load 100% (3A)

100 mV/div



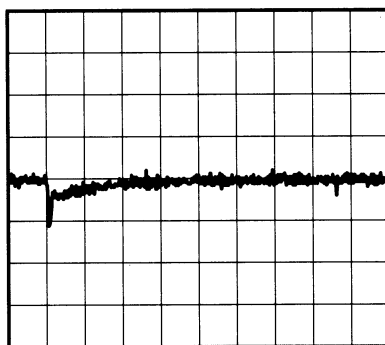
5 ms/div



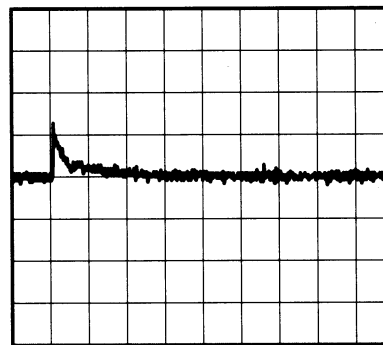
5 ms/div

Min. Load (0A) ←→
Load 50% (1.5A)

100 mV/div



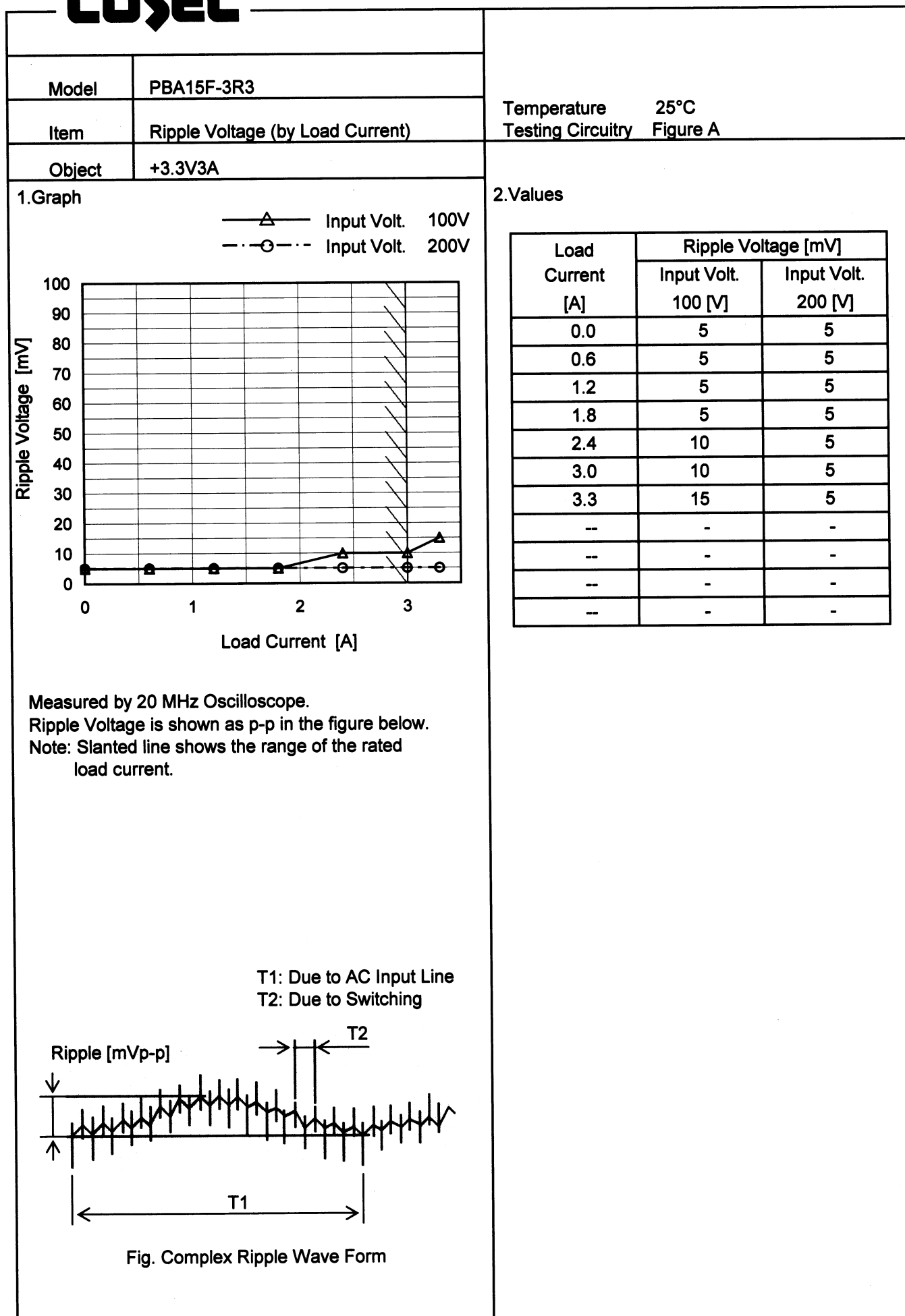
5 ms/div



5 ms/div

* The characteristic of AC200V is equal.

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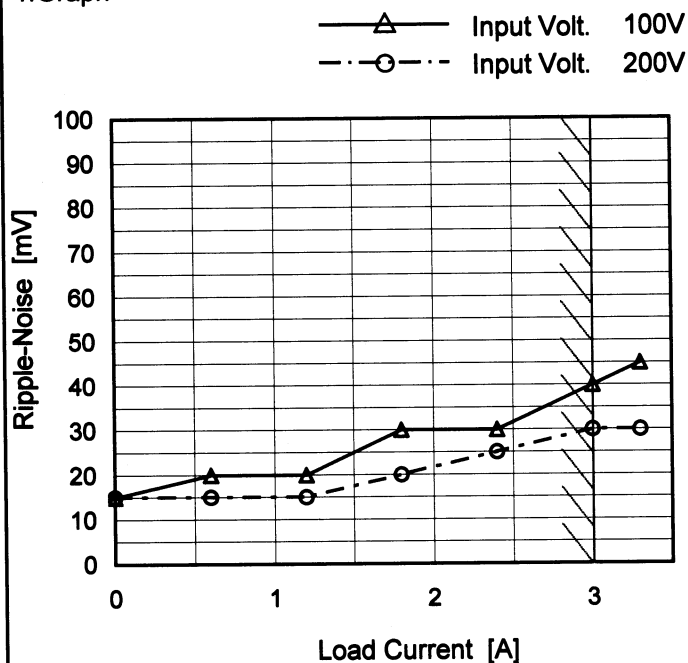
Model PBA15F-3R3

Item Ripple-Noise

Object +3.3V3A

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]
0.0	15	15
0.6	20	15
1.2	20	15
1.8	30	20
2.4	30	25
3.0	40	30
3.3	45	30
--	-	-
--	-	-
--	-	-
--	-	-

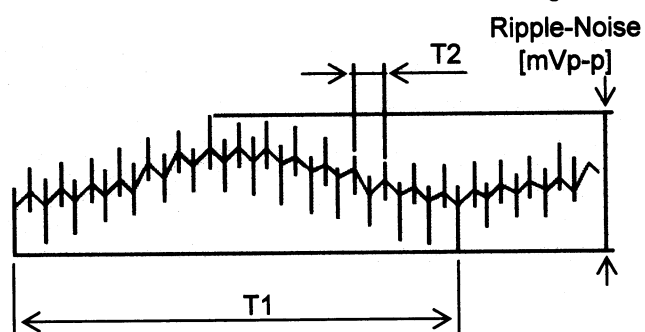
T1: Due to AC Input Line
T2: Due to Switching

Fig. Complex Ripple Wave Form

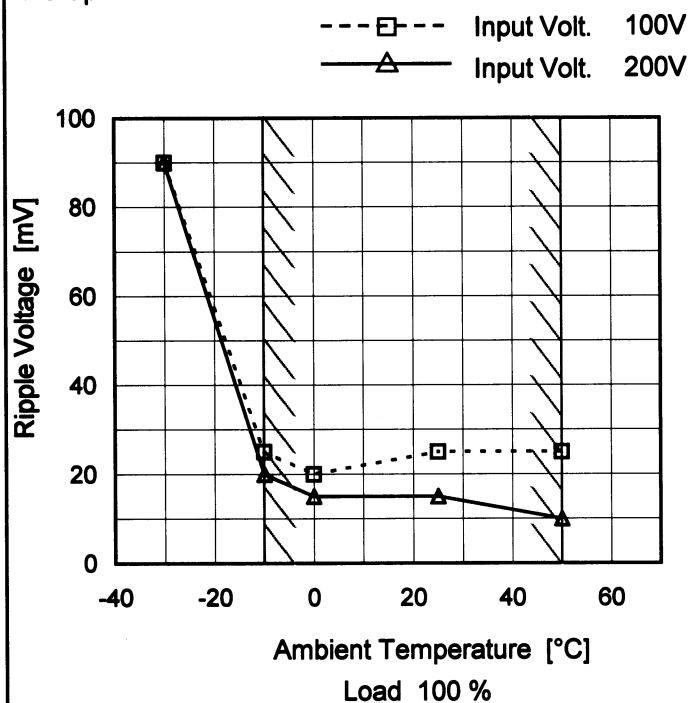
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Model PBA15F-3R3

Item Ripple Voltage (by Ambient Temp.)

Object +3.3V3A

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	90	90
-10	25	20
0	20	15
25	25	15
50	25	10
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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Model

PBA15F-3R3

Item

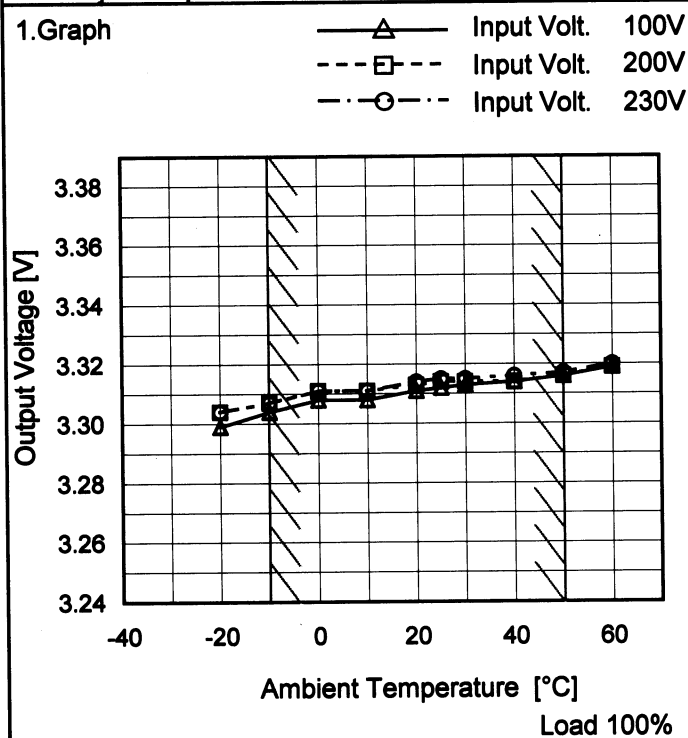
Ambient Temperature Drift

Object

+3.3V3A

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	3.299	3.304	3.304
-10	3.304	3.307	3.307
0	3.308	3.311	3.311
10	3.308	3.311	3.311
20	3.311	3.313	3.314
25	3.312	3.314	3.315
30	3.313	3.314	3.315
40	3.314	3.314	3.316
50	3.316	3.316	3.317
60	3.319	3.319	3.320
--	-	-	-



Model		PBA15F-3R3	Testing Circuitry Figure A
Item		Output Voltage Accuracy	
Object		+3.3V3A	

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

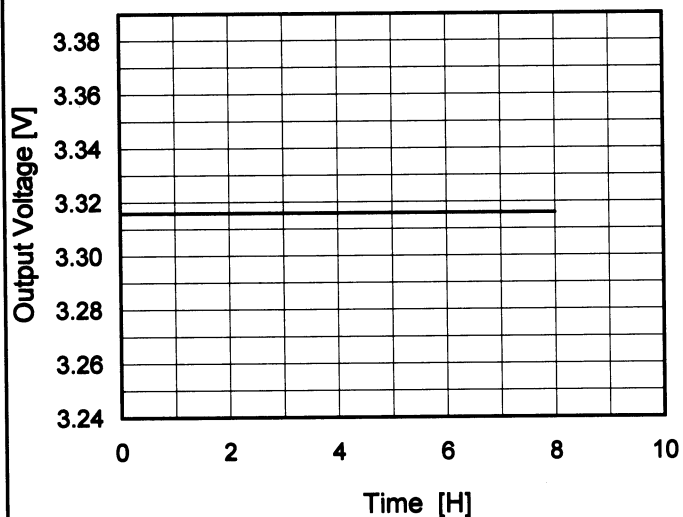
Load Current : 0 - 3A

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

* 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	50	85	0	3.326	±11	±0.3
Minimum Voltage	-10	85	3	3.304		

COSEL**Model****PBA15F-3R3****Item****Time Lapse Drift****Object****+3.3V3A**
Temperature 25°C
Testing Circuitry Figure A
1.Graph**Input Volt.** 100V**Load** 100%

* The characteristic of AC200V is equal.

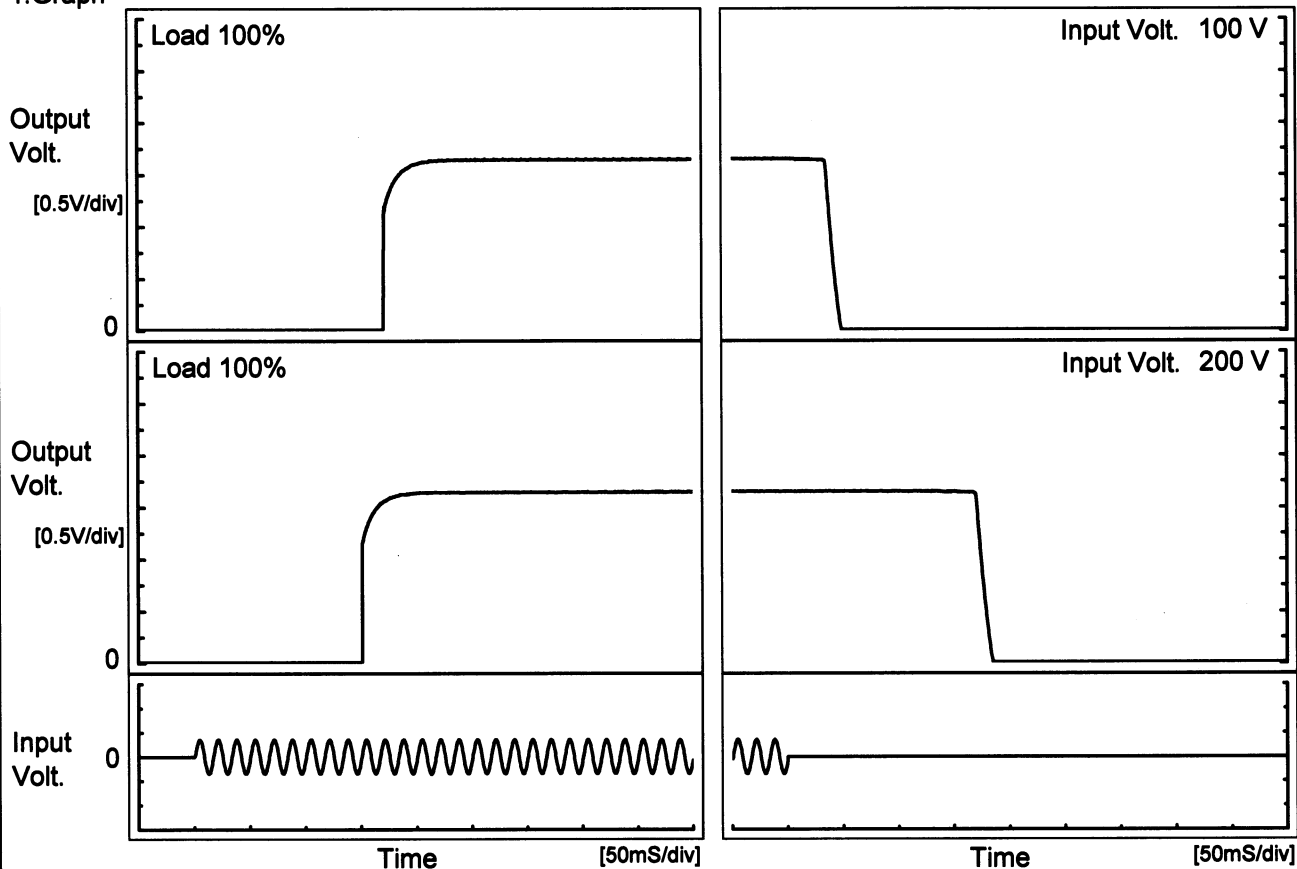
2.Values

Time since start [H]	Output Voltage [V]
0.0	3.316
0.5	3.316
1.0	3.316
2.0	3.316
3.0	3.316
4.0	3.316
5.0	3.316
6.0	3.316
7.0	3.316
8.0	3.316

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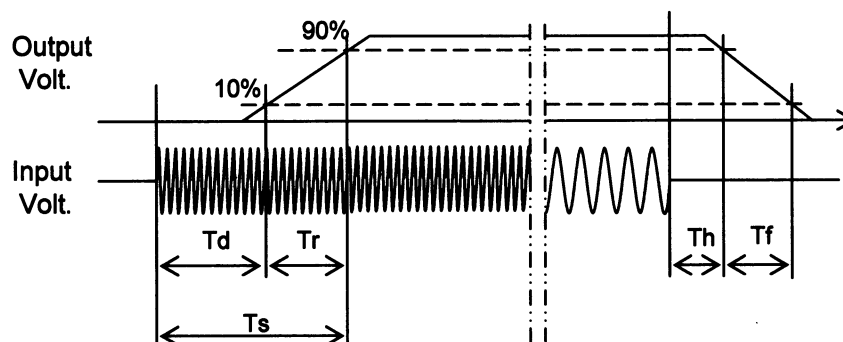
Model	PBA15F-3R3	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+3.3V3A		

1. Graph



2. Values

		[mS]				
Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		170.8	14.5	185.3	35.0	11.5
200 V		151.0	14.0	165.0	171.0	12.0



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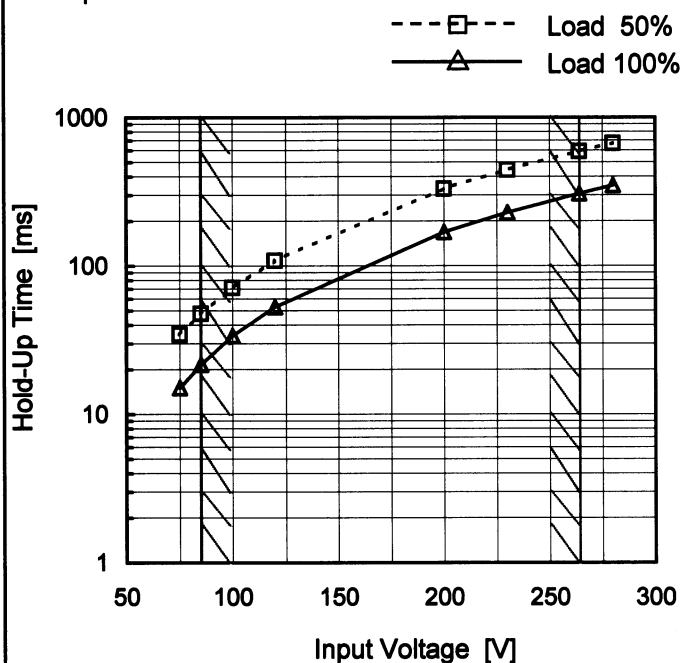
Model PBA15F-3R3

Item Hold-Up Time

Object +3.3V3A

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	35	15
85	48	22
100	71	34
120	109	53
200	330	170
230	444	229
264	592	307
280	670	349
--	-	-

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Model	PBA15F-3R3																																																					
Item	Instantaneous Interruption Compensation	Temperature	25°C																																																			
Object	+3.3V3A	Testing Circuitry	Figure A																																																			
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> <div>Instantaneous Compensation Time [ms]</div> <div>Load Current [A]</div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 230[V]</th></tr><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.6</td><td>164</td><td>704</td><td>927</td></tr><tr><td>1.2</td><td>90</td><td>407</td><td>543</td></tr><tr><td>1.8</td><td>62</td><td>282</td><td>378</td></tr><tr><td>2.4</td><td>45</td><td>215</td><td>291</td></tr><tr><td>3.0</td><td>36</td><td>173</td><td>235</td></tr><tr><td>3.3</td><td>31</td><td>155</td><td>210</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</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]	Time [ms]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	-	-	-	0.6	164	704	927	1.2	90	407	543	1.8	62	282	378	2.4	45	215	291	3.0	36	173	235	3.3	31	155	210	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
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<div>Note: Slanted line shows the range of the rated load current.</div>																																																						

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Model

PBA15F-3R3

Item

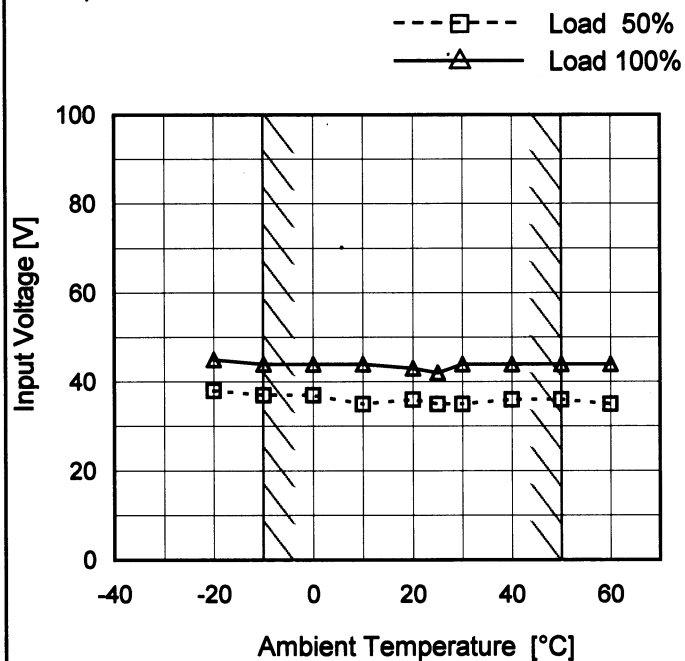
Minimum Input Voltage
for Regulated Output Voltage

Object

+3.3V3A

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	38	45
-10	37	44
0	37	44
10	35	44
20	36	43
25	35	42
30	35	44
40	36	44
50	36	44
60	35	44
--	-	-

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Model	PBA15F-3R3																																											
Item	Overcurrent Protection	Temperature	25°C																																									
Object	+3.3V3A	Testing Circuitry	Figure A																																									
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> <p>Note: Slanted line shows the range of the rated load current.</p> <p>Intermittent operation occurs when the output voltage is less than rated output voltage.</p>		<table><tr><th rowspan="2">Output Voltage [V]</th><th colspan="2">Load Current [A]</th></tr><tr><th>Input Volt. 100[V]</th><th>Input Volt. 200[V]</th></tr><tr><td>3.300</td><td>7.42</td><td>9.01</td></tr><tr><td>3.135</td><td>-</td><td>-</td></tr><tr><td>2.970</td><td>-</td><td>-</td></tr><tr><td>2.640</td><td>-</td><td>-</td></tr><tr><td>2.310</td><td>-</td><td>-</td></tr><tr><td>1.980</td><td>-</td><td>-</td></tr><tr><td>1.650</td><td>-</td><td>-</td></tr><tr><td>1.320</td><td>-</td><td>-</td></tr><tr><td>0.990</td><td>-</td><td>-</td></tr><tr><td>0.660</td><td>-</td><td>-</td></tr><tr><td>0.330</td><td>-</td><td>-</td></tr><tr><td>0.000</td><td>-</td><td>-</td></tr></table>		Output Voltage [V]	Load Current [A]		Input Volt. 100[V]	Input Volt. 200[V]	3.300	7.42	9.01	3.135	-	-	2.970	-	-	2.640	-	-	2.310	-	-	1.980	-	-	1.650	-	-	1.320	-	-	0.990	-	-	0.660	-	-	0.330	-	-	0.000	-	-
Output Voltage [V]	Load Current [A]																																											
	Input Volt. 100[V]	Input Volt. 200[V]																																										
3.300	7.42	9.01																																										
3.135	-	-																																										
2.970	-	-																																										
2.640	-	-																																										
2.310	-	-																																										
1.980	-	-																																										
1.650	-	-																																										
1.320	-	-																																										
0.990	-	-																																										
0.660	-	-																																										
0.330	-	-																																										
0.000	-	-																																										

COSEL

Model

PBA15F-3R3

Item

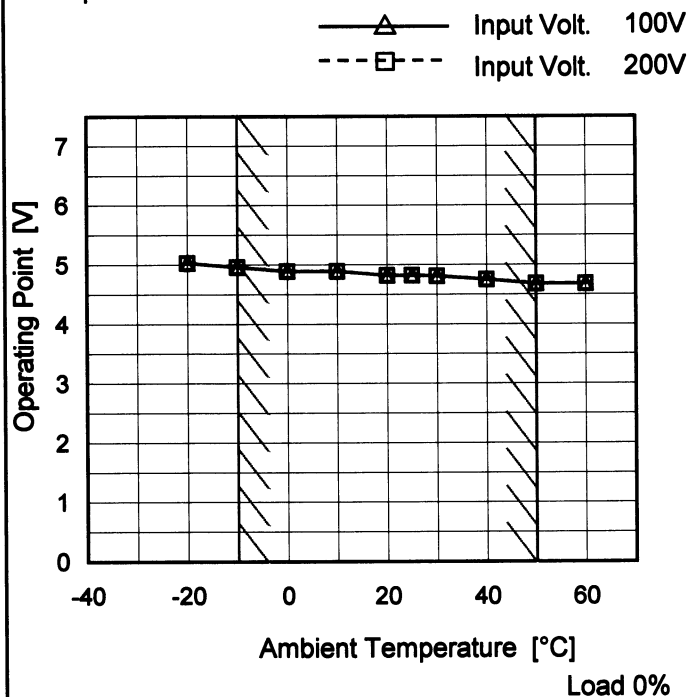
Overvoltage Protection

Object

+3.3V3A

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	5.03	5.03
-10	4.96	4.96
0	4.89	4.89
10	4.89	4.89
20	4.82	4.82
25	4.82	4.82
30	4.81	4.81
40	4.75	4.75
50	4.68	4.68
60	4.68	4.68
--	-	-

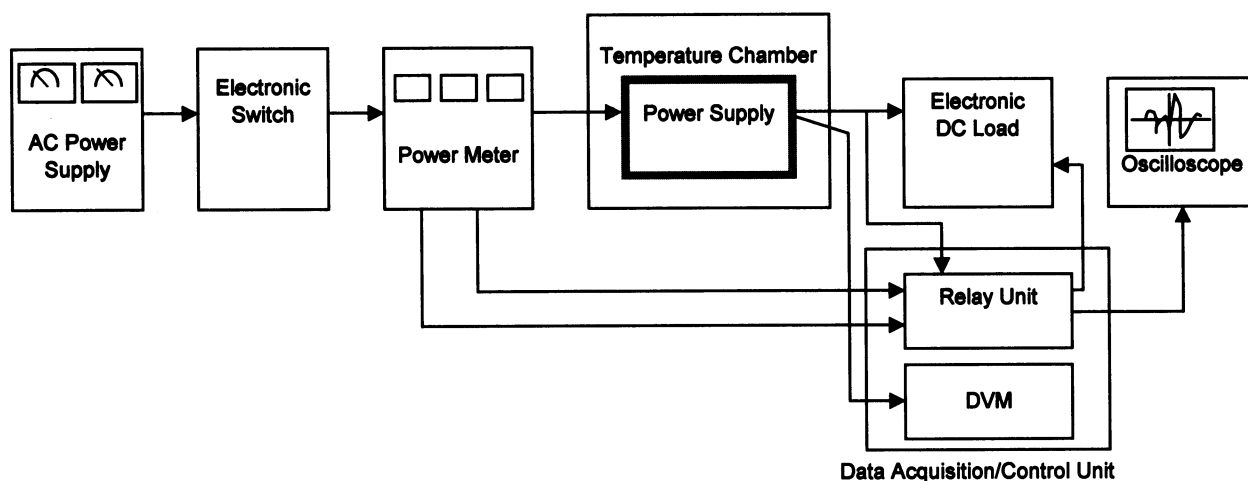


Figure A

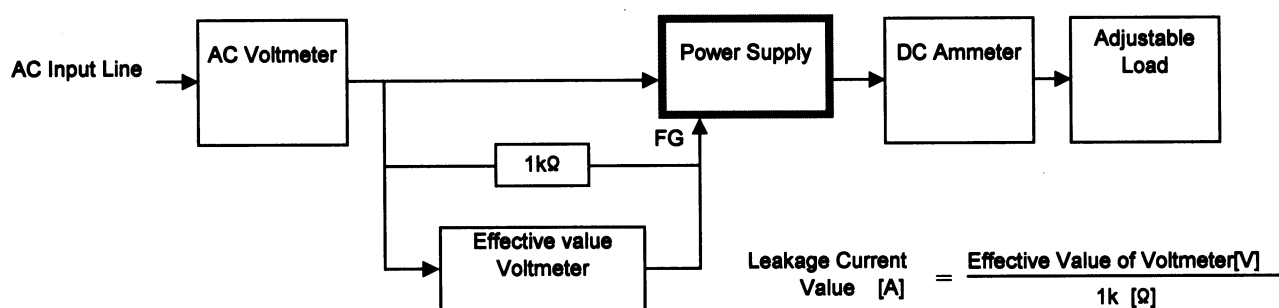


Figure B (DEN-AN)

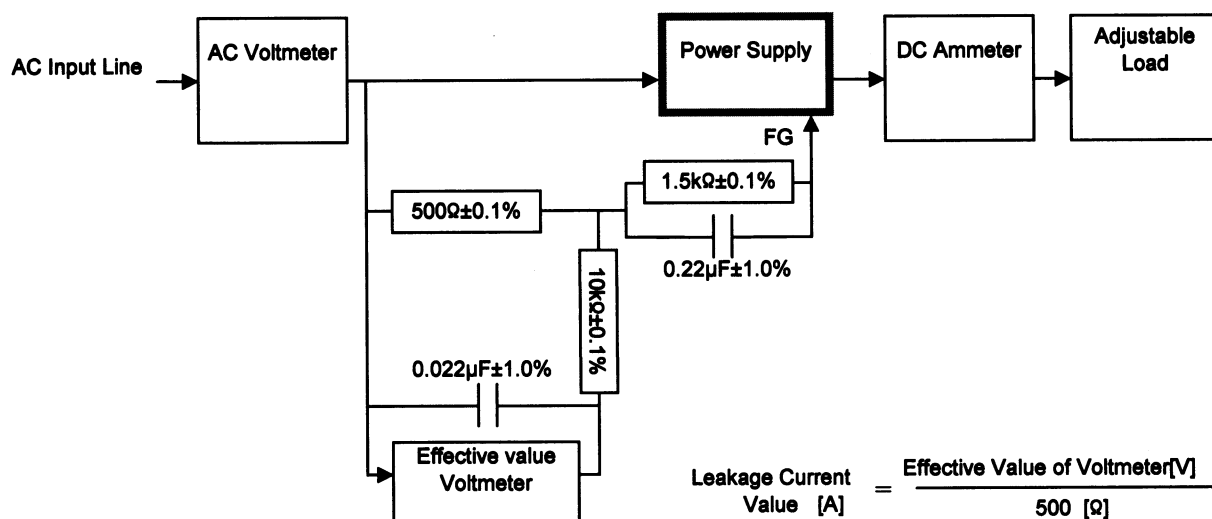


Figure B (IEC60950)