



TEST DATA OF PBA15F-48

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-48

Item

Input Current (by Load Current)

Object

Temperature

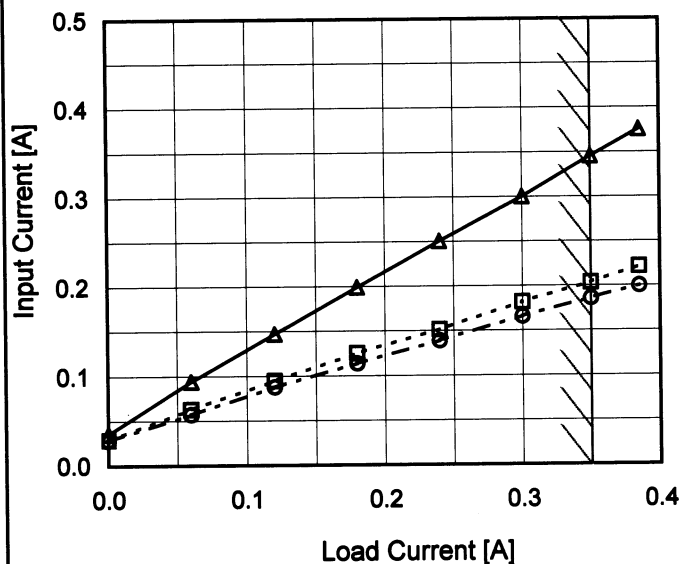
25°C

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]
0.000	0.035	0.029	0.028
0.060	0.094	0.063	0.057
0.120	0.147	0.095	0.088
0.180	0.199	0.125	0.114
0.240	0.251	0.152	0.139
0.300	0.300	0.182	0.166
0.350	0.346	0.204	0.186
0.385	0.376	0.222	0.200
--	-	-	-
--	-	-	-
--	-	-	-

BC-10025

COSEL

Model

PBA15F-48

Item

Efficiency (by Input Voltage)

Object

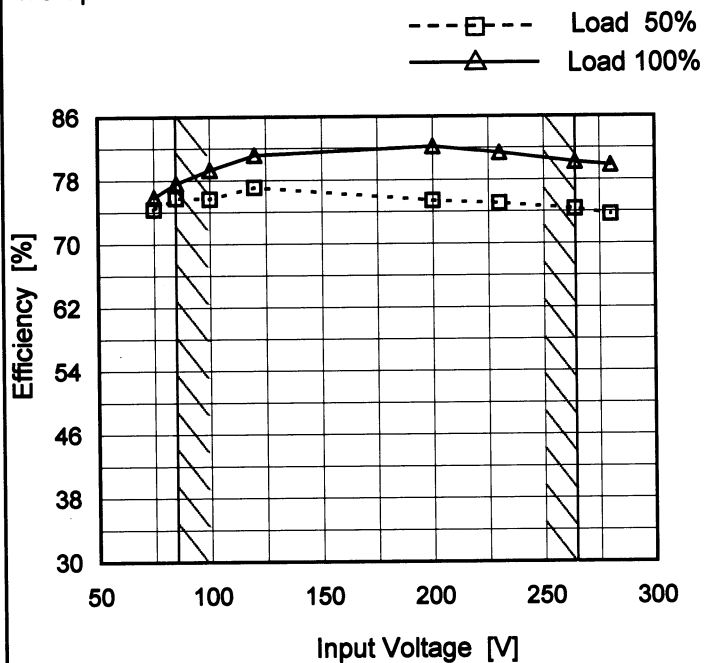
Temperature

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	74.4	75.9
85	75.8	77.6
100	75.7	79.3
120	77.1	81.2
200	75.4	82.2
230	75.0	81.4
264	74.3	80.2
280	73.6	79.8
--	-	-

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Model

PBA15F-48

Item

Efficiency (by Load Current)

Object

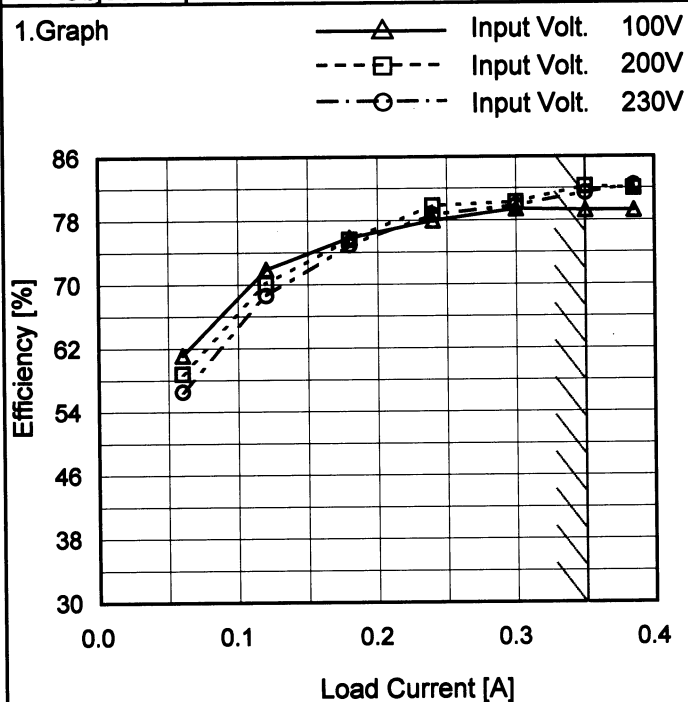
Temperature

25°C

Testing Circuitry

Figure A

1. Graph



2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.000	-	-	-
0.060	61.1	58.8	56.6
0.120	71.9	70.1	68.6
0.180	75.9	75.6	75.0
0.240	78.0	79.8	78.7
0.300	79.5	80.3	79.9
0.350	79.3	82.3	81.4
0.385	79.3	82.0	82.4
--	-	-	-
--	-	-	-
--	-	-	-

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Model

PBA15F-48

Item

Power Factor (by Input Voltage)

Object

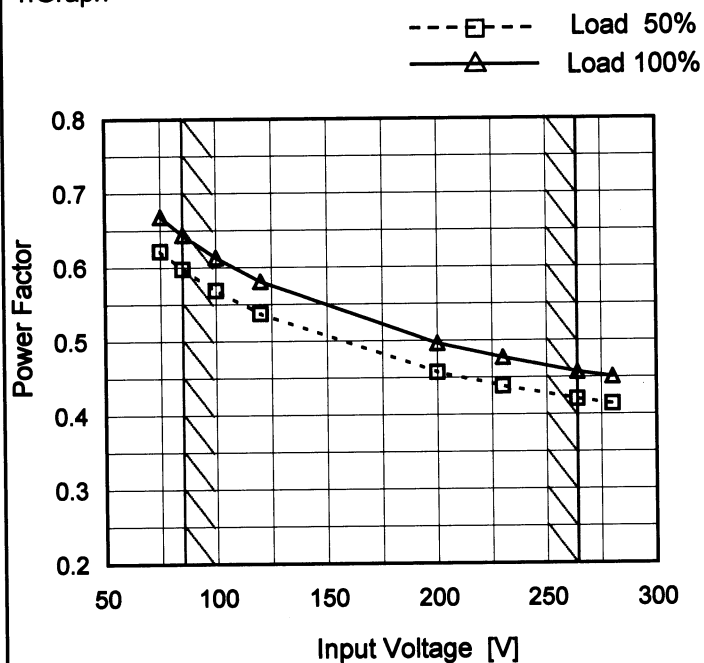
Temperature

25°C

Testing Circuitry

Figure A

1. Graph

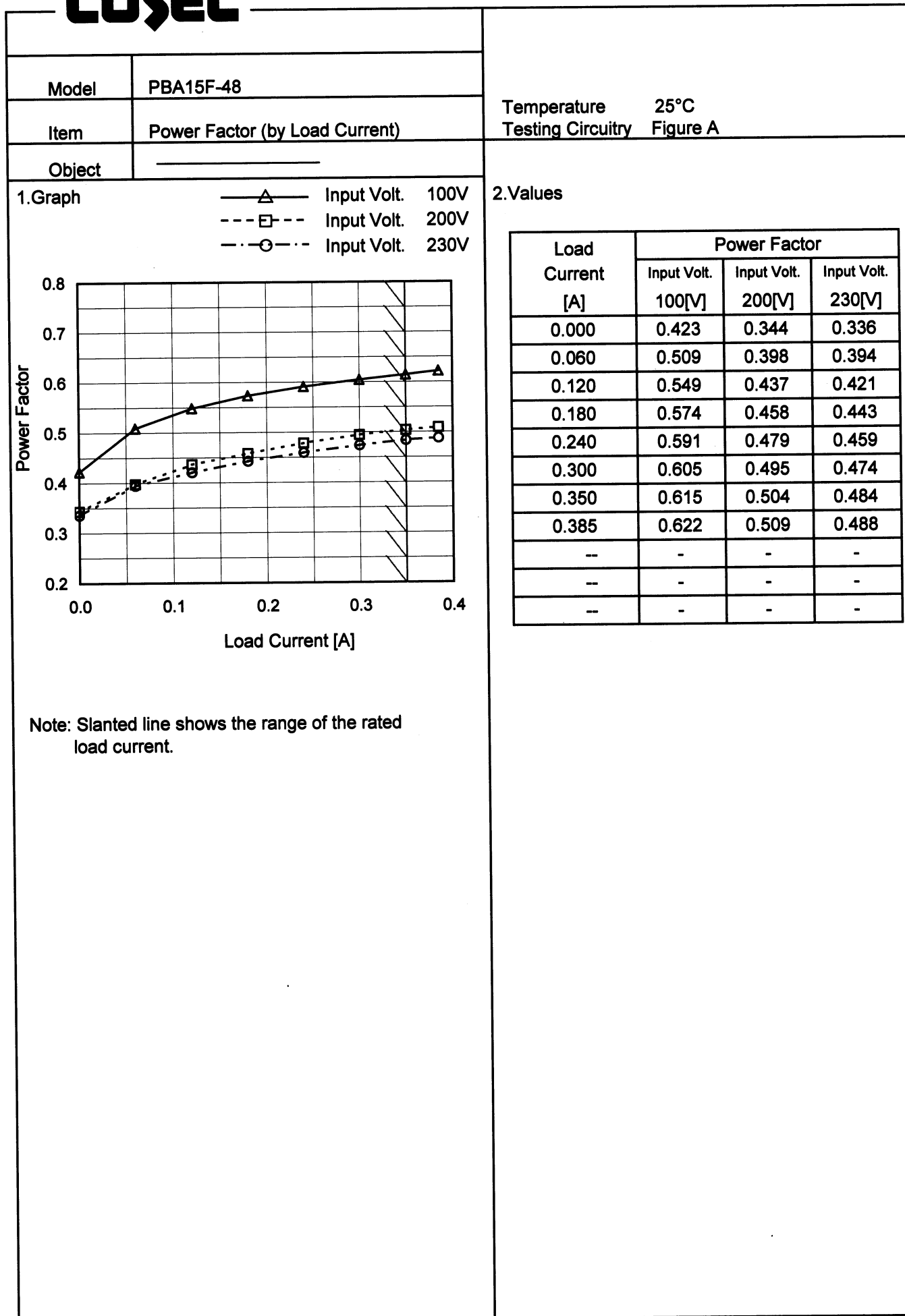


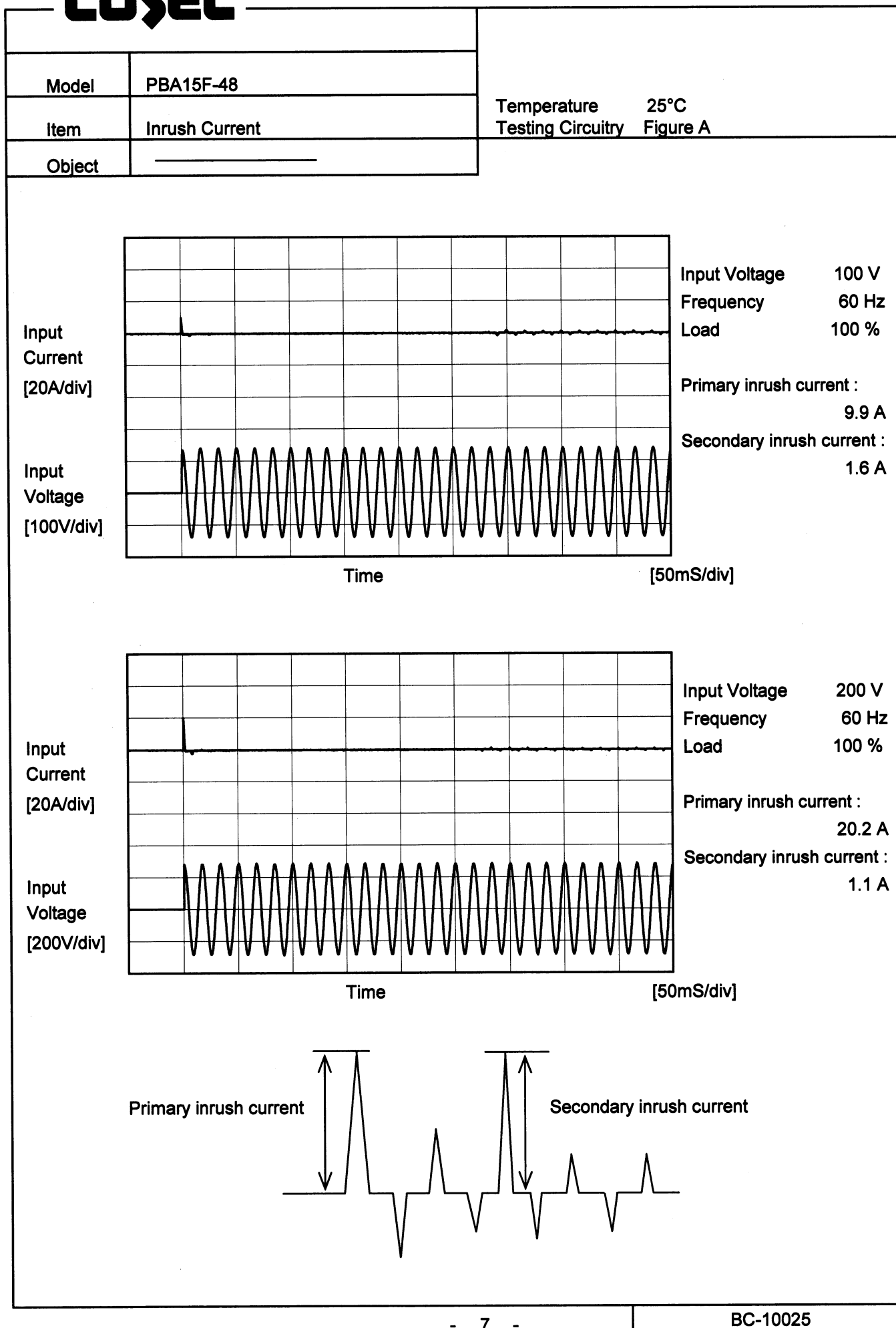
Note: Slanted line shows the range of the rated input voltage.

2. Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.622	0.669
85	0.598	0.644
100	0.569	0.613
120	0.538	0.581
200	0.457	0.496
230	0.438	0.477
264	0.421	0.458
280	0.414	0.451
--	-	-

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		Temperature 25°C Testing Circuitry Figure B
Model	PBA15F-48	
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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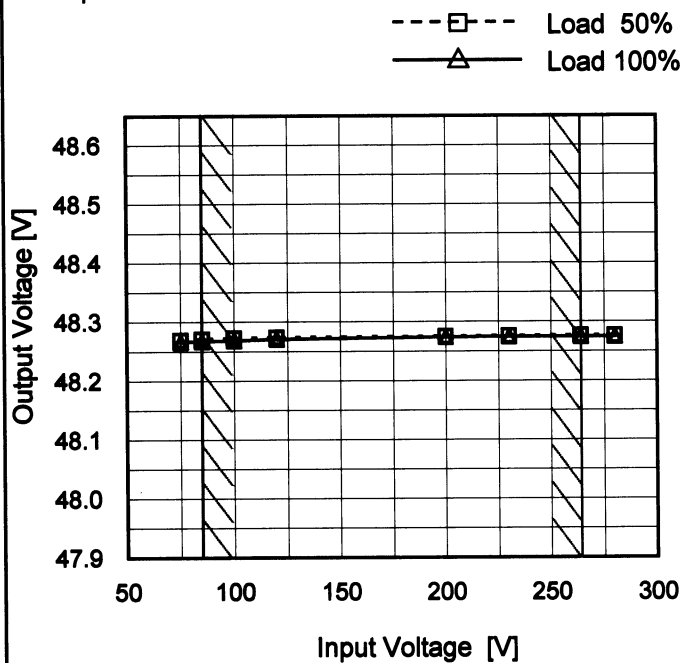
Model PBA15F-48

Item Line Regulation

Object +48V0.35A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	48.269	48.267
85	48.271	48.268
100	48.273	48.269
120	48.273	48.271
200	48.275	48.274
230	48.276	48.275
264	48.276	48.275
280	48.276	48.275
--	-	-

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Model	PBA15F-48																																																					
Item	Load Regulation	Temperature	25°C																																																			
Object	+48V0.35A	Testing Circuitry	Figure A																																																			
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>Input Volt. 100V</div></div><div><div>---□---</div><div>Input Volt. 200V</div></div><div><div>---○---</div><div>Input Volt. 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>0.000</td><td>48.279</td><td>48.280</td><td>48.280</td></tr><tr><td>0.060</td><td>48.277</td><td>48.279</td><td>48.279</td></tr><tr><td>0.120</td><td>48.276</td><td>48.278</td><td>48.278</td></tr><tr><td>0.180</td><td>48.274</td><td>48.277</td><td>48.278</td></tr><tr><td>0.240</td><td>48.272</td><td>48.277</td><td>48.278</td></tr><tr><td>0.300</td><td>48.271</td><td>48.276</td><td>48.277</td></tr><tr><td>0.350</td><td>48.271</td><td>48.276</td><td>48.276</td></tr><tr><td>0.385</td><td>48.271</td><td>48.275</td><td>48.276</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]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.000	48.279	48.280	48.280	0.060	48.277	48.279	48.279	0.120	48.276	48.278	48.278	0.180	48.274	48.277	48.278	0.240	48.272	48.277	48.278	0.300	48.271	48.276	48.277	0.350	48.271	48.276	48.276	0.385	48.271	48.275	48.276	--	-	-	-	--	-	-	-	--	-	-	-
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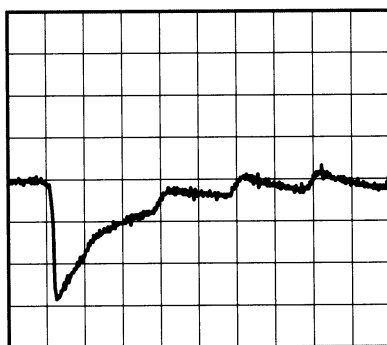
Model	PBA15F-48	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+48V0.35A		

Input Volt. 100 V
Cycle 1000 ms

Load Current

Min. Load (0A) ←→
Load 100% (0.35A)

100 mV/div



5 ms/div



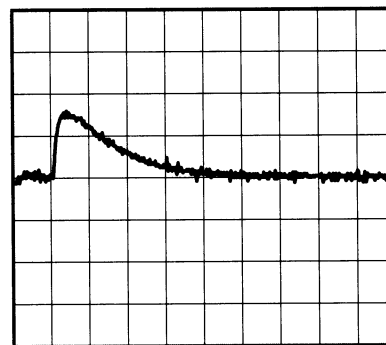
5 ms/div

Min. Load (0A) ←→
Load 50% (0.175A)

100 mV/div



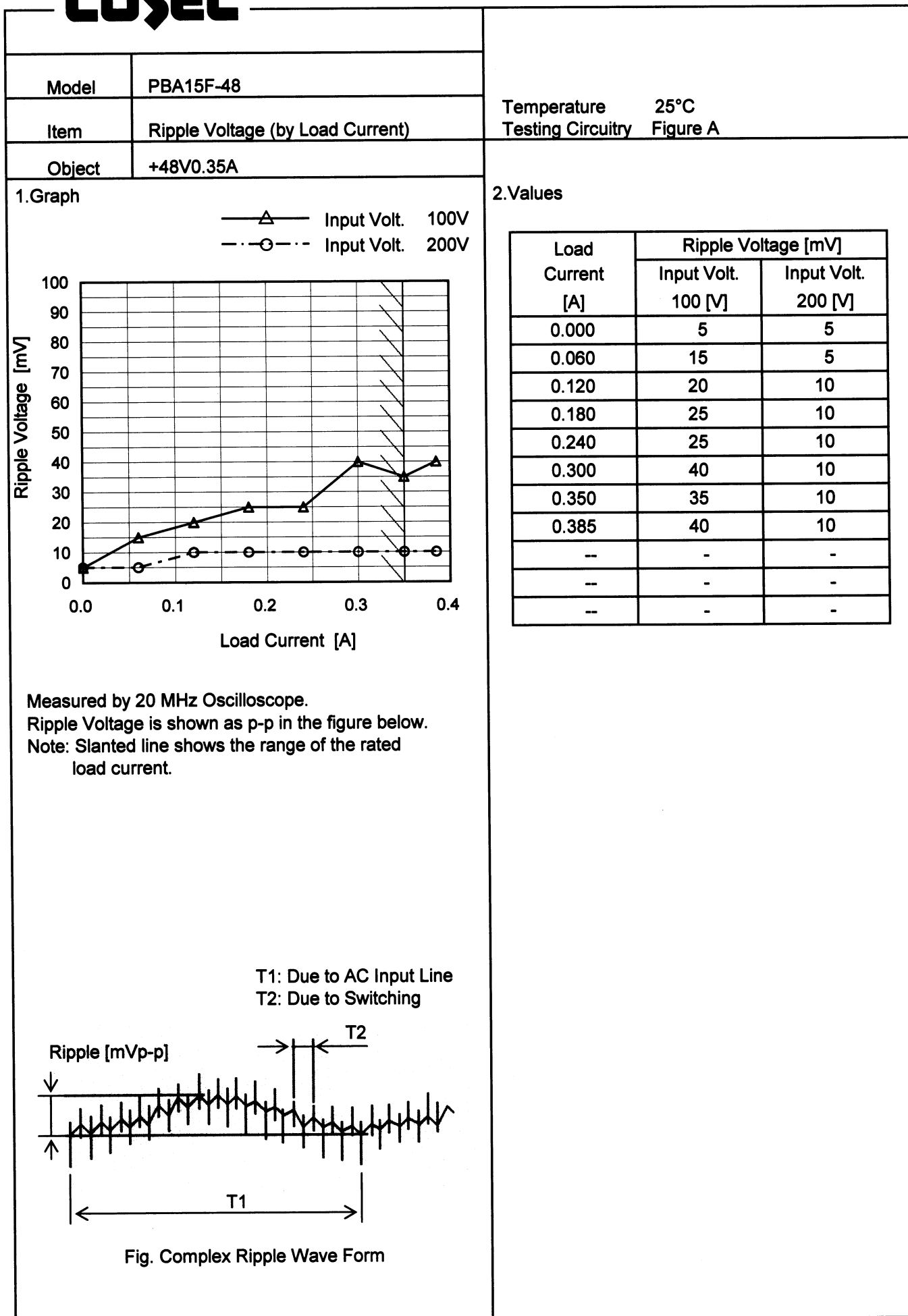
5 ms/div



5 ms/div

* The characteristic of AC200V is equal.

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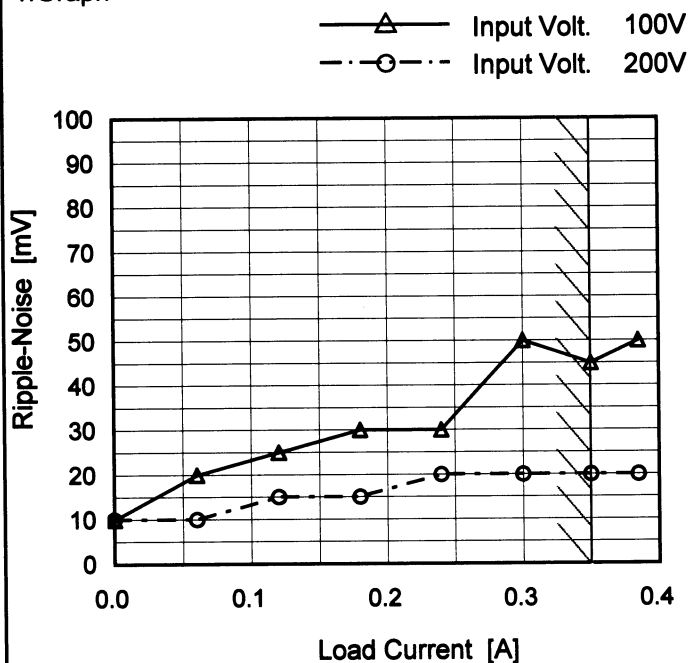
Model PBA15F-48

Item Ripple-Noise

Object +48V0.35A

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]
0.000	10	10
0.060	20	10
0.120	25	15
0.180	30	15
0.240	30	20
0.300	50	20
0.350	45	20
0.385	50	20
--	-	-
--	-	-
--	-	-

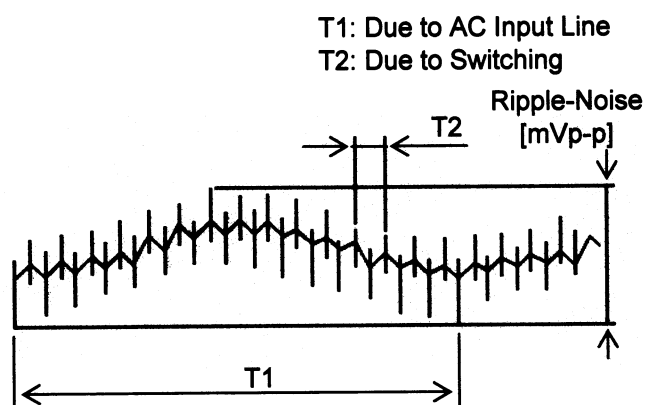


Fig. Complex Ripple Wave Form

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Model

PBA15F-48

Item

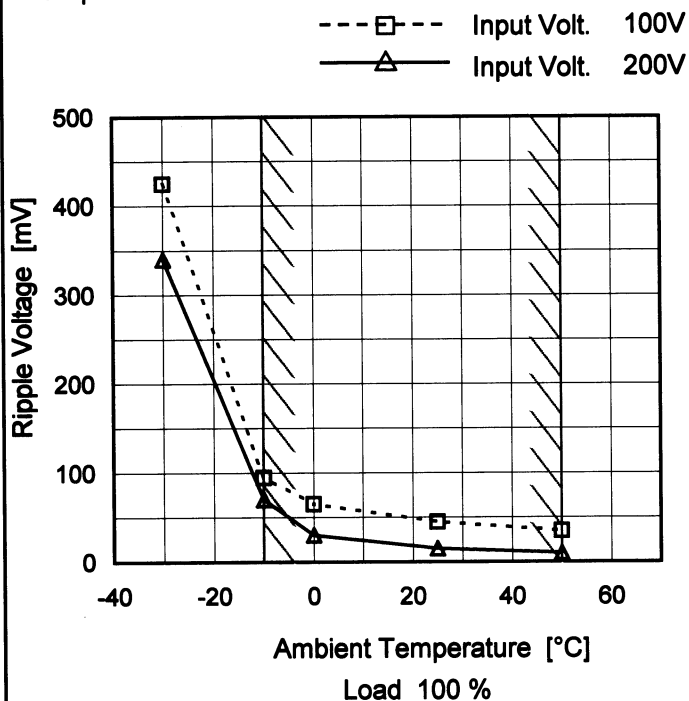
Ripple Voltage (by Ambient Temp.)

Object

+48V0.35A

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	425	340
-10	95	70
0	65	30
25	45	15
50	35	10
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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Model		PBA15F-48		Testing Circuitry Figure A																																												
Item		Ambient Temperature Drift																																														
Object		+48V0.35A																																														
1.Graph																																																
		—△—	Input Volt. 100V	2.Values																																												
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		-·-○-·-	Input Volt. 230V																																													
<div><div>Output Voltage [V]</div><div><table><thead><tr><th>Ambient Temperature [°C]</th><th>100V [V]</th><th>200V [V]</th><th>230V [V]</th></tr></thead><tbody><tr><td>-20</td><td>48.334</td><td>48.343</td><td>48.344</td></tr><tr><td>-10</td><td>48.304</td><td>48.312</td><td>48.313</td></tr><tr><td>0</td><td>48.282</td><td>48.289</td><td>48.290</td></tr><tr><td>10</td><td>48.283</td><td>48.289</td><td>48.291</td></tr><tr><td>20</td><td>48.292</td><td>48.298</td><td>48.299</td></tr><tr><td>25</td><td>48.283</td><td>48.289</td><td>48.290</td></tr><tr><td>30</td><td>48.278</td><td>48.284</td><td>48.285</td></tr><tr><td>40</td><td>48.246</td><td>48.251</td><td>48.253</td></tr><tr><td>50</td><td>48.229</td><td>48.235</td><td>48.236</td></tr><tr><td>60</td><td>48.203</td><td>48.209</td><td>48.211</td></tr></tbody></table></div><div>Ambient Temperature [°C]</div><div>Load 100%</div></div>					Ambient Temperature [°C]	100V [V]	200V [V]	230V [V]	-20	48.334	48.343	48.344	-10	48.304	48.312	48.313	0	48.282	48.289	48.290	10	48.283	48.289	48.291	20	48.292	48.298	48.299	25	48.283	48.289	48.290	30	48.278	48.284	48.285	40	48.246	48.251	48.253	50	48.229	48.235	48.236	60	48.203	48.209	48.211
Ambient Temperature [°C]	100V [V]	200V [V]	230V [V]																																													
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<div>Note: Slanted line shows the range of the rated ambient temperature.</div>																																																

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	48.334	48.343	48.344
-10	48.304	48.312	48.313
0	48.282	48.289	48.290
10	48.283	48.289	48.291
20	48.292	48.298	48.299
25	48.283	48.289	48.290
30	48.278	48.284	48.285
40	48.246	48.251	48.253
50	48.229	48.235	48.236
60	48.203	48.209	48.211
--	-	-	-

- 15 -

BC-10025

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Model		PBA15F-48	Testing Circuitry Figure A
Item	Output Voltage Accuracy		
Object	+48V0.35A		

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 - 0.35A

* 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	-10	264	0	48.307	±44	±0.1
Minimum Voltage	50	85	0.35	48.219		

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Model

PBA15F-48

Item

Time Lapse Drift

Object

+48V0.35A

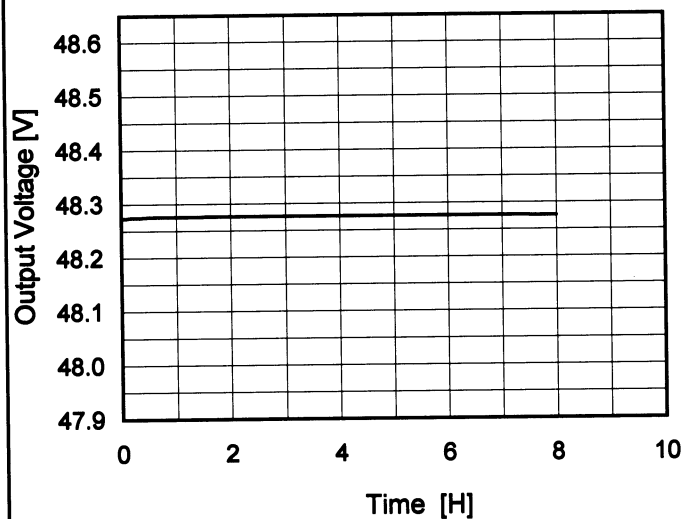
Temperature

25°C

Testing Circuitry

Figure A

1.Graph



* The characteristic of AC200V is equal.

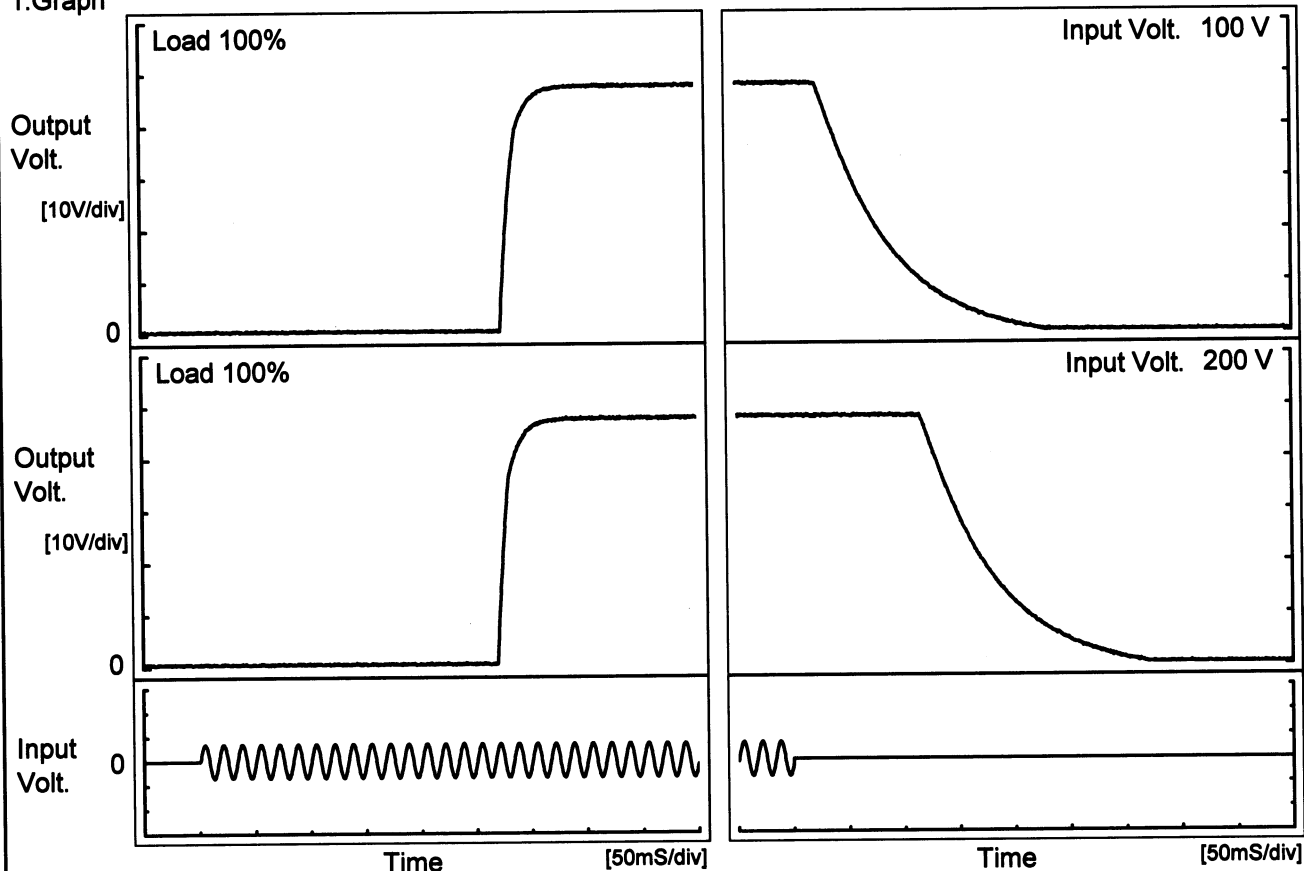
2.Values

Time since start [H]	Output Voltage [V]
0.0	48.273
0.5	48.276
1.0	48.276
2.0	48.277
3.0	48.277
4.0	48.277
5.0	48.277
6.0	48.277
7.0	48.277
8.0	48.276

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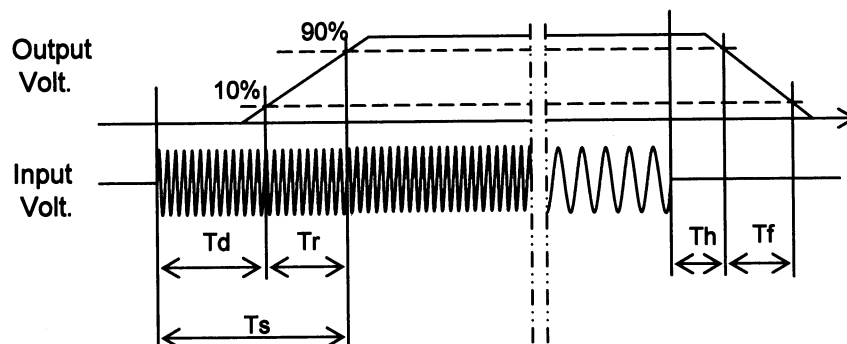
Model	PBA15F-48	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+48V0.35A		

1. Graph



2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		274.8	21.5	296.3	29.0	123.3
200 V		270.8	21.0	291.8	122.5	122.3



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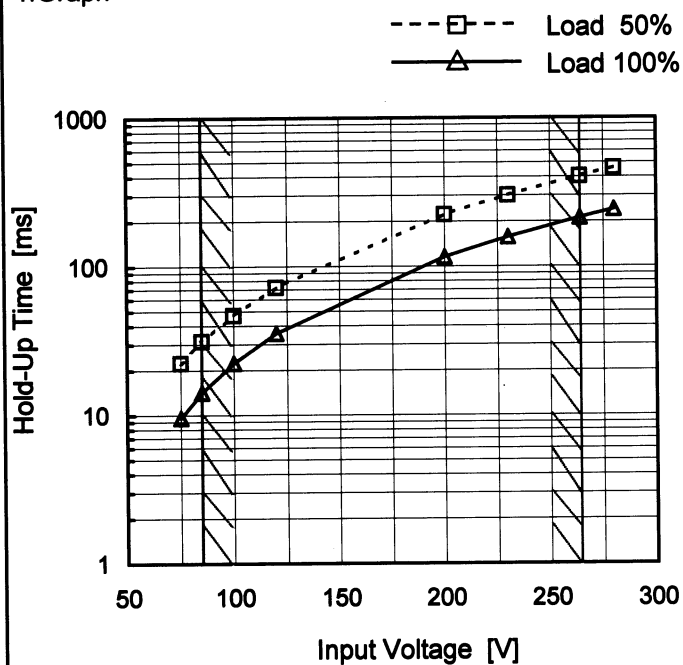
Model PBA15F-48

Item Hold-Up Time

Object +48V0.35A

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	22	10
85	31	14
100	47	22
120	73	36
200	224	116
230	301	158
264	404	213
280	458	242
--	-	-

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Model

PBA15F-48

Item

Instantaneous Interruption Compensation

Object

+48V0.35A

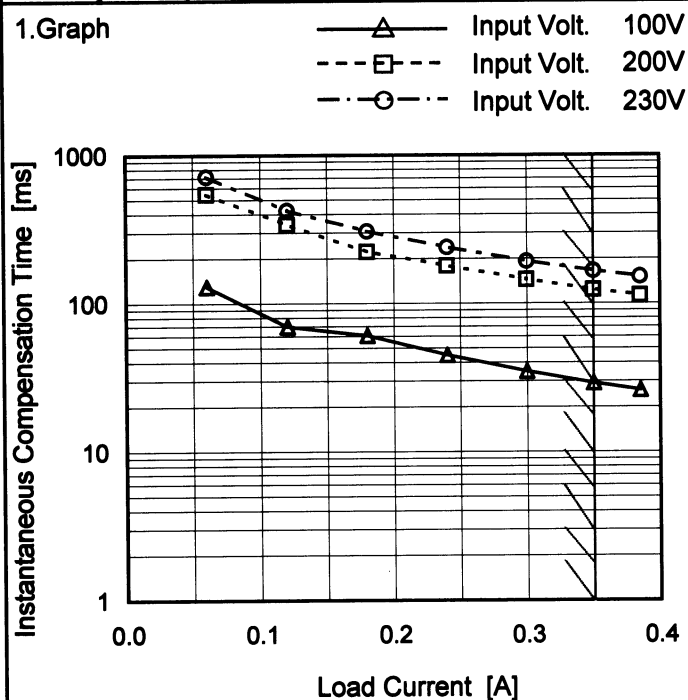
Temperature

25°C

Testing Circuitry

Figure A

1. Graph



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

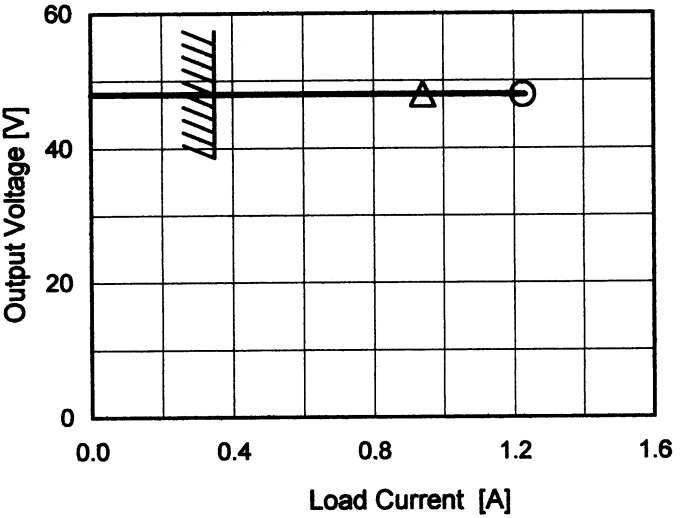
2. Values

Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.000	-	-	-
0.060	130	545	718
0.120	70	340	423
0.180	61	223	307
0.240	45	180	240
0.300	35	145	193
0.350	29	124	166
0.385	26	113	152
--	-	-	-
--	-	-	-
--	-	-	-

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Model	PBA15F-48																																								
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry Figure A																																							
Object	+48V0.35A																																								
1.Graph		2.Values																																							
<div><div><div>Input Voltage [V]</div><div><div>100</div><div>80</div><div>60</div><div>40</div><div>20</div><div>0</div></div><div><div>---□---</div> Load 50%<div>—△—</div> Load 100%</div><div><div><div>40</div><div>41</div><div>42</div><div>43</div><div>44</div><div>45</div><div>46</div><div>47</div><div>48</div><div>49</div><div>50</div><div>51</div><div>52</div><div>53</div></div><div><div>40</div><div>41</div><div>42</div><div>43</div><div>44</div><div>45</div><div>46</div><div>47</div><div>48</div><div>49</div><div>50</div><div>51</div><div>52</div><div>53</div></div></div><div><div>Ambient Temperature [°C]</div><div><div>-40</div><div>-20</div><div>0</div><div>20</div><div>40</div><div>60</div></div></div></div><div>Note: Slanted line shows the range of the rated ambient temperature.</div></div>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Input Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>-20</td><td>41</td><td>48</td></tr><tr><td>-10</td><td>41</td><td>49</td></tr><tr><td>0</td><td>41</td><td>49</td></tr><tr><td>10</td><td>41</td><td>49</td></tr><tr><td>20</td><td>41</td><td>50</td></tr><tr><td>25</td><td>41</td><td>50</td></tr><tr><td>30</td><td>41</td><td>50</td></tr><tr><td>40</td><td>41</td><td>51</td></tr><tr><td>50</td><td>41</td><td>52</td></tr><tr><td>60</td><td>42</td><td>53</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-20	41	48	-10	41	49	0	41	49	10	41	49	20	41	50	25	41	50	30	41	50	40	41	51	50	41	52	60	42	53	--	-	-
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COSEL

Model	PBA15F-48	Temperature 25°C Testing Circuitry Figure A																																									
Item	Overcurrent Protection																																										
Object	+48V0.35A																																										
<p>1.Graph</p> <div style="text-align: right; margin-bottom: 10px;"> —△— Input Volt. 100V —○— Input Volt. 200V </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>		<p>2.Values</p> <table border="1" data-bbox="912 481 1444 1108"> <thead> <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> </thead> <tbody> <tr><td>48.0</td><td>0.94</td><td>1.23</td></tr> <tr><td>45.6</td><td>-</td><td>-</td></tr> <tr><td>43.2</td><td>-</td><td>-</td></tr> <tr><td>38.4</td><td>-</td><td>-</td></tr> <tr><td>33.6</td><td>-</td><td>-</td></tr> <tr><td>28.8</td><td>-</td><td>-</td></tr> <tr><td>24.0</td><td>-</td><td>-</td></tr> <tr><td>19.2</td><td>-</td><td>-</td></tr> <tr><td>14.4</td><td>-</td><td>-</td></tr> <tr><td>9.6</td><td>-</td><td>-</td></tr> <tr><td>4.8</td><td>-</td><td>-</td></tr> <tr><td>0.0</td><td>-</td><td>-</td></tr> </tbody> </table>	Output Voltage [V]	Load Current [A]		Input Volt. 100[V]	Input Volt. 200[V]	48.0	0.94	1.23	45.6	-	-	43.2	-	-	38.4	-	-	33.6	-	-	28.8	-	-	24.0	-	-	19.2	-	-	14.4	-	-	9.6	-	-	4.8	-	-	0.0	-	-
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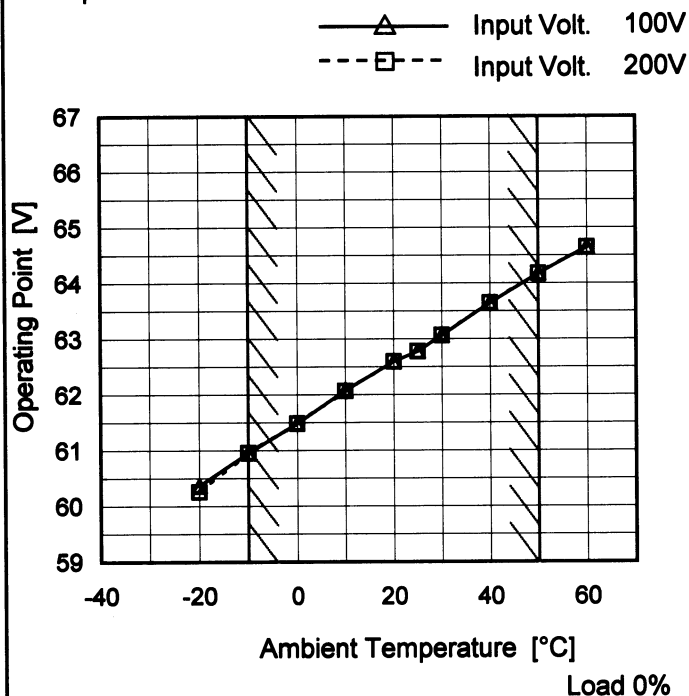
Model PBA15F-48

Item Overvoltage Protection

Object +48V0.35A

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	60.37	60.26
-10	60.96	60.96
0	61.49	61.49
10	62.08	62.07
20	62.60	62.60
25	62.78	62.78
30	63.07	63.07
40	63.65	63.65
50	64.18	64.18
60	64.65	64.65
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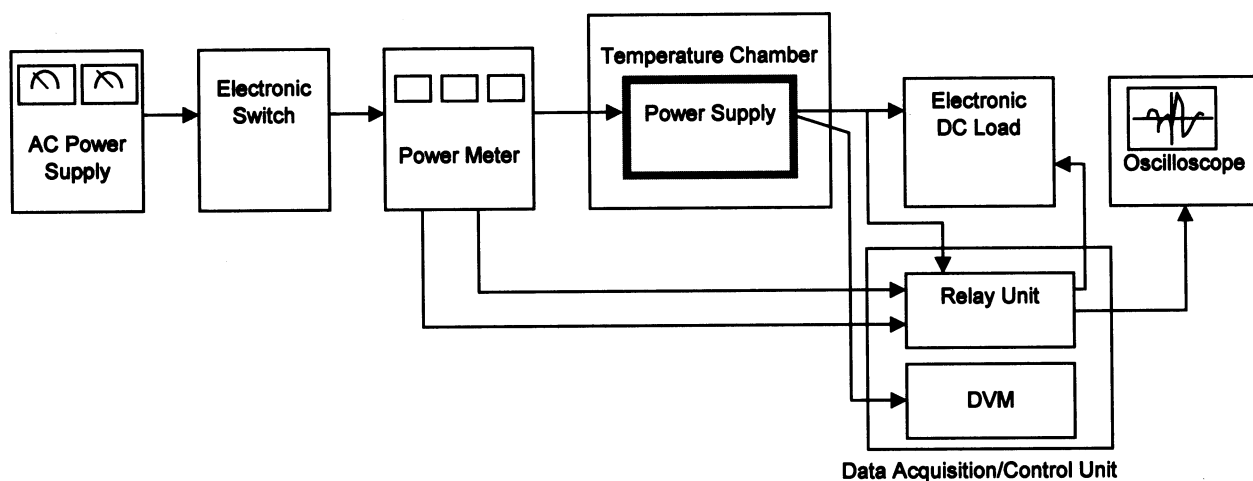


Figure A

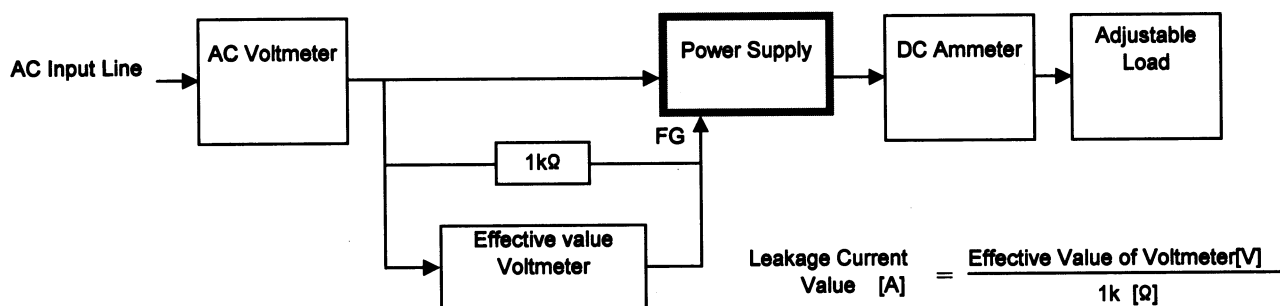


Figure B (DEN-AN)

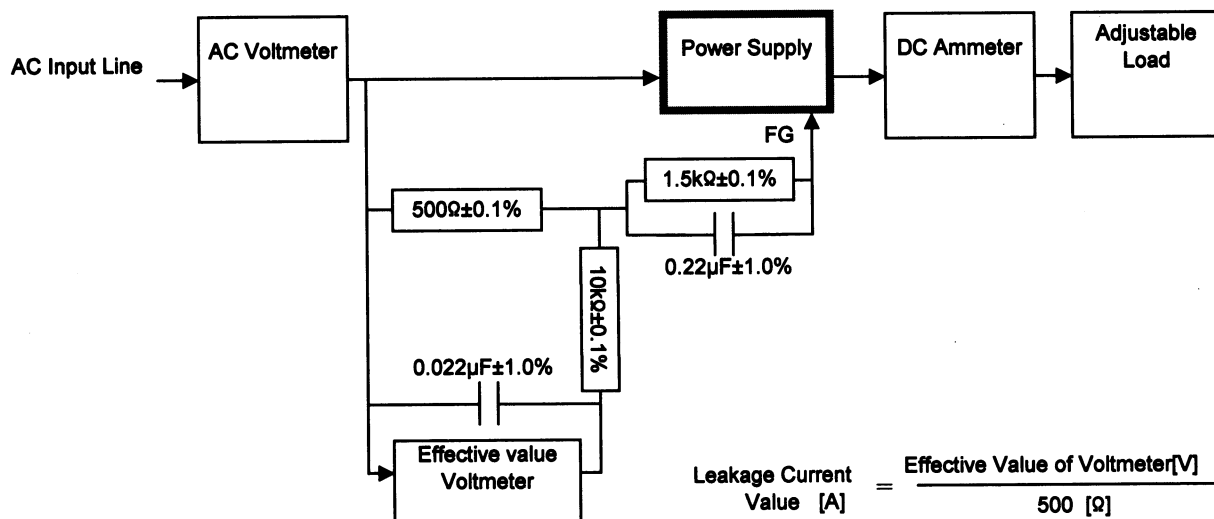


Figure B (IEC60950)