



TEST DATA OF PBA300F-12

Regulated DC Power Supply
May 28, 2004

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Approved by : Takahiro Yoneda
Takahiro Yoneda Design Manager

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Prepared by : Hajime Goto
Hajime Goto Design Engineer

COSEL CO.,LTD.



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Model	PBA300F-12
Item	Input Current (by Load Current)
Object	—

1. Graph

Load Current [A]	Input Current [A] (100V)	Input Current [A] (200V)	Input Current [A] (230V)
0	0.0	0.0	0.0
5	0.7	0.4	0.3
10	1.4	0.8	0.6
15	2.1	1.2	0.9
20	2.8	1.6	1.3
25	3.5	2.0	1.7
30	4.2	2.4	2.1

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

Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.144	0.148	0.157
4.0	0.774	0.420	0.396
8.0	1.330	0.696	0.620
12.0	1.909	0.994	0.870
16.0	2.502	1.278	1.129
20.0	3.119	1.564	1.380
24.0	3.760	1.856	1.632
27.0	4.260	2.084	1.830
29.7	4.720	2.292	2.006
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Item	Input Power (by Load Current)	Temperature 25°C	Testing Circuitry Figure A																																																			
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1. Graph	<p>Graph showing Input Power [W] vs Load Current [A] for PBA300F-12 at 25°C. The graph shows three curves for input voltages 100V, 200V, and 230V. A slanted line indicates the rated load current range.</p> <table border="1"> <thead> <tr> <th>Load Current [A]</th> <th>Input Volt. 100V [W]</th> <th>Input Volt. 200V [W]</th> <th>Input Volt. 230V [W]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>11.5</td><td>13.0</td><td>13.0</td></tr> <tr><td>4.0</td><td>75.6</td><td>74.0</td><td>73.0</td></tr> <tr><td>8.0</td><td>131.4</td><td>129.0</td><td>128.0</td></tr> <tr><td>12.0</td><td>189.3</td><td>185.0</td><td>184.0</td></tr> <tr><td>16.0</td><td>248.4</td><td>242.0</td><td>241.0</td></tr> <tr><td>20.0</td><td>309.9</td><td>300.0</td><td>299.0</td></tr> <tr><td>24.0</td><td>374.0</td><td>360.0</td><td>357.0</td></tr> <tr><td>27.0</td><td>424.0</td><td>405.0</td><td>403.0</td></tr> <tr><td>29.7</td><td>470.0</td><td>447.0</td><td>445.0</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Input Volt. 100V [W]	Input Volt. 200V [W]	Input Volt. 230V [W]	0.0	11.5	13.0	13.0	4.0	75.6	74.0	73.0	8.0	131.4	129.0	128.0	12.0	189.3	185.0	184.0	16.0	248.4	242.0	241.0	20.0	309.9	300.0	299.0	24.0	374.0	360.0	357.0	27.0	424.0	405.0	403.0	29.7	470.0	447.0	445.0	--	-	-	-	--	-	-	-			
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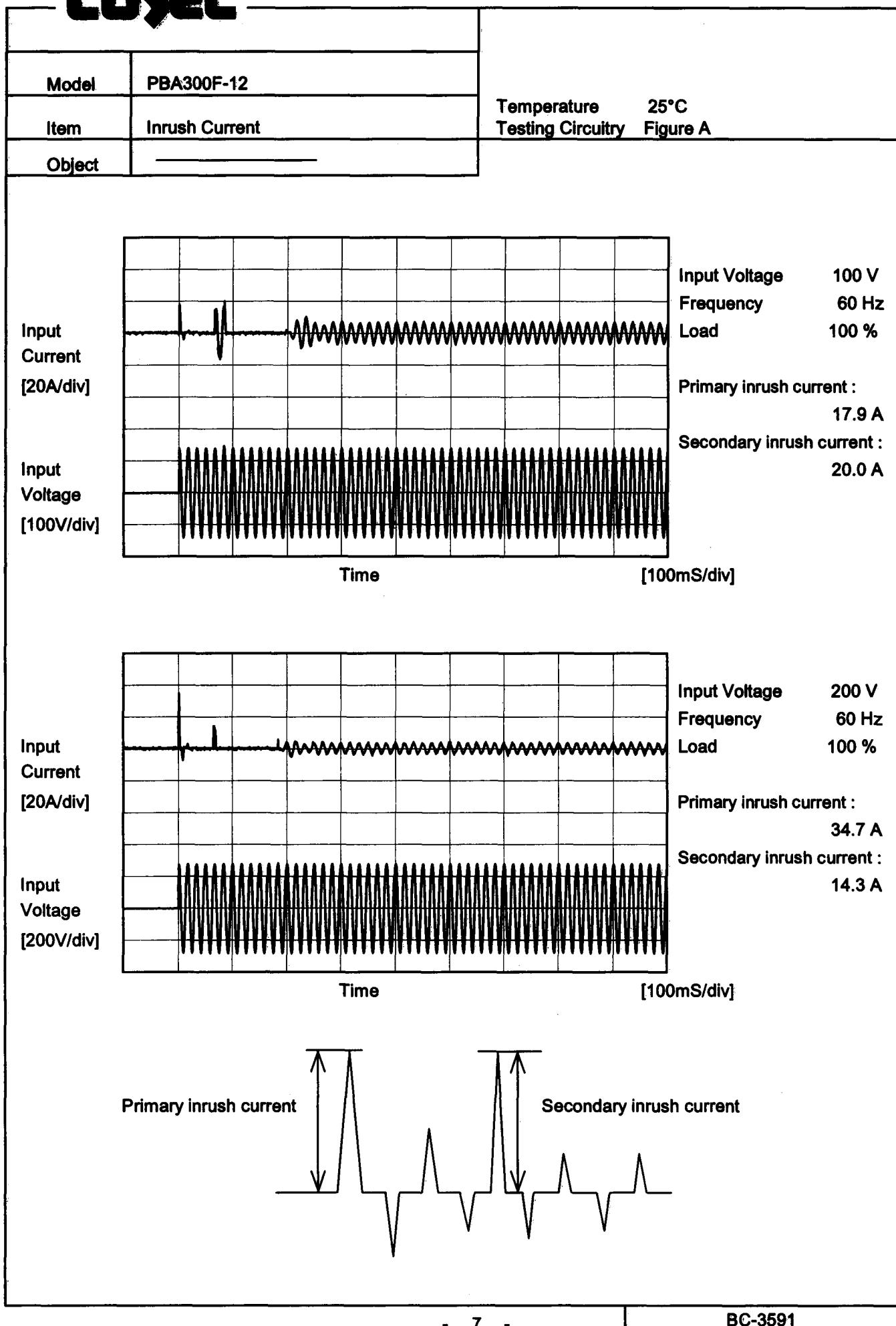
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Model	PBA300F-12	Temperature	25°C
Item	Leakage Current	Testing Circuitry	Figure B
Object	_____		

1. Results

[mA]

Standards		Input Volt.			Note
		100[V]	200[V]	240[V]	
DEN-AN	Both phases	0.14	0.25	0.29	Operation
	One of phase	0.23	0.45	0.54	stand by
IEC60950	Both phases	0.14	0.25	0.29	Operation
	One of phase	0.23	0.45	0.54	stand by

The value for "One 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.

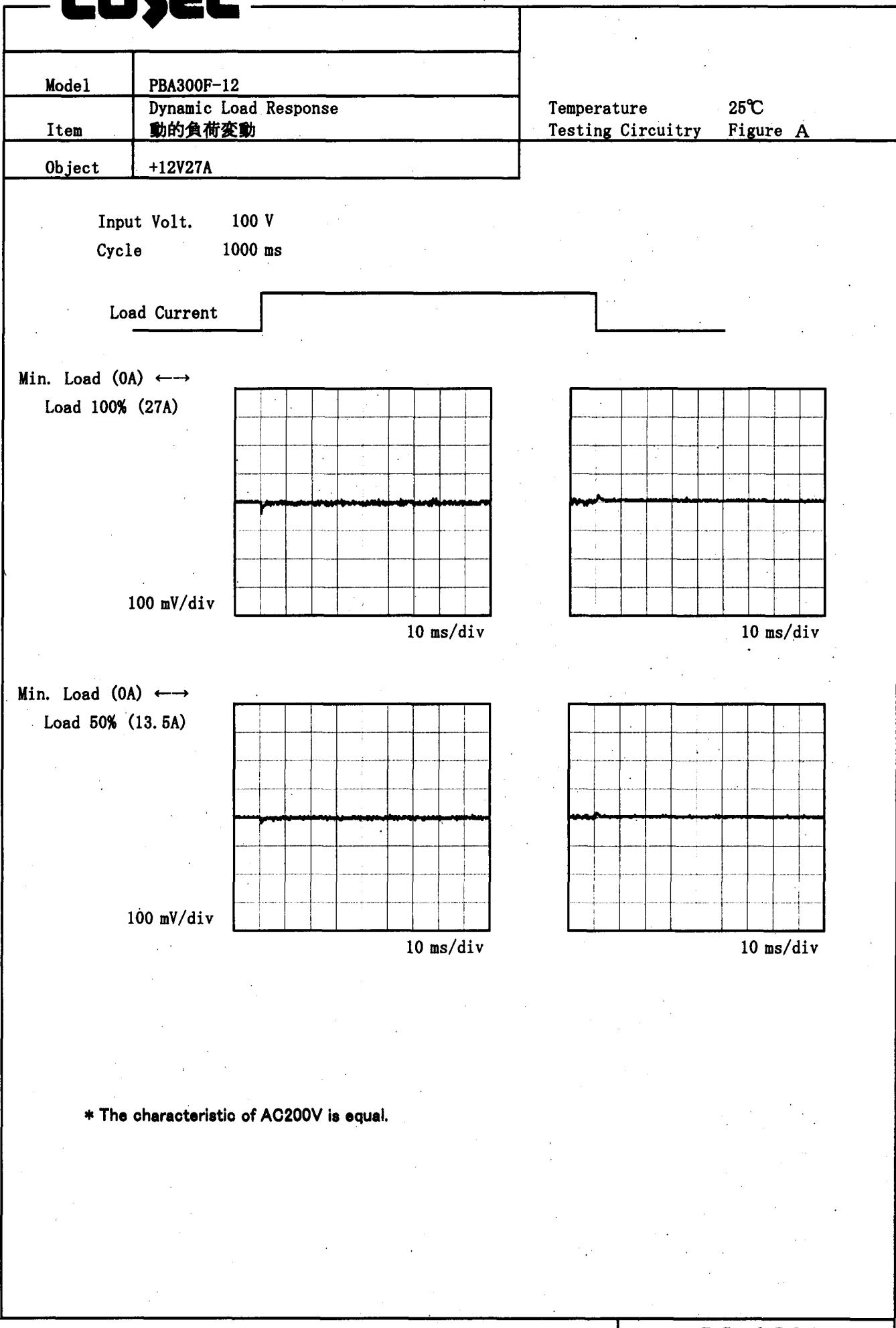
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Object	+12V27A																																																				
1. Graph <div style="display: flex; justify-content: space-between;"> Input Volt. 100V </div> <div style="display: flex; justify-content: space-between;"> Input Volt. 200V </div> <div style="display: flex; justify-content: space-between;"> Input Volt. 230V </div> <p>Output Voltage [V]</p> <p>Load Current [A]</p>																																																					
2. Values <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <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> </thead> <tbody> <tr><td>0.0</td><td>12.222</td><td>12.222</td><td>12.218</td></tr> <tr><td>4.0</td><td>12.221</td><td>12.220</td><td>12.217</td></tr> <tr><td>8.0</td><td>12.221</td><td>12.219</td><td>12.216</td></tr> <tr><td>12.0</td><td>12.220</td><td>12.219</td><td>12.216</td></tr> <tr><td>16.0</td><td>12.219</td><td>12.218</td><td>12.215</td></tr> <tr><td>20.0</td><td>12.218</td><td>12.216</td><td>12.214</td></tr> <tr><td>24.0</td><td>12.217</td><td>12.215</td><td>12.213</td></tr> <tr><td>27.0</td><td>12.217</td><td>12.214</td><td>12.212</td></tr> <tr><td>29.7</td><td>12.216</td><td>12.212</td><td>12.212</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	12.222	12.222	12.218	4.0	12.221	12.220	12.217	8.0	12.221	12.219	12.216	12.0	12.220	12.219	12.216	16.0	12.219	12.218	12.215	20.0	12.218	12.216	12.214	24.0	12.217	12.215	12.213	27.0	12.217	12.214	12.212	29.7	12.216	12.212	12.212	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																				
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																		
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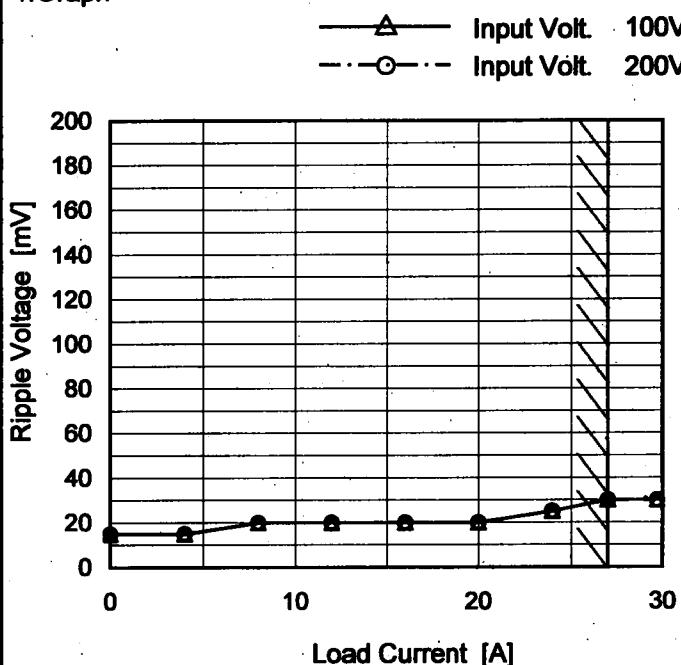
Note: Slanted line shows the range of the rated load current.

COSEL

COSEL

Model	PBA300F-12
Item	Ripple Voltage (by Load Current)
Object	+12V27A

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.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	15	15
4.0	15	15
8.0	20	20
12.0	20	20
16.0	20	20
20.0	20	20
24.0	25	25
27.0	30	30
29.7	30	30
—	—	—
—	—	—

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

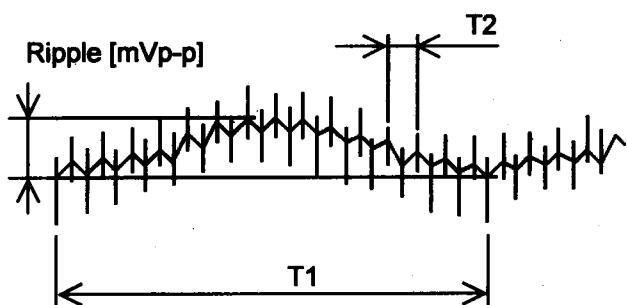


Fig. Complex Ripple Wave Form

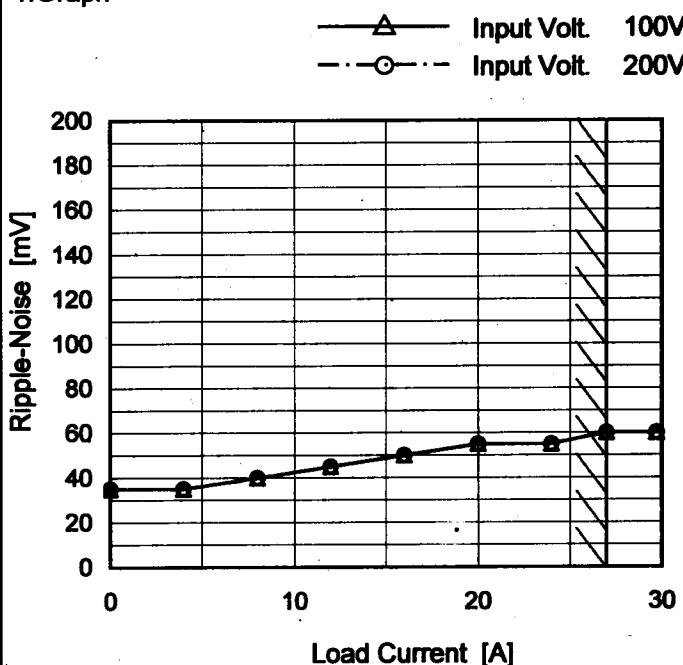
COSEL

Model PBA300F-12

Item Ripple-Noise

Object +12V27A

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.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	35	35
4.0	35	35
8.0	40	40
12.0	45	45
16.0	50	50
20.0	55	55
24.0	55	55
27.0	60	60
29.7	60	60
-	-	-
-	-	-

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

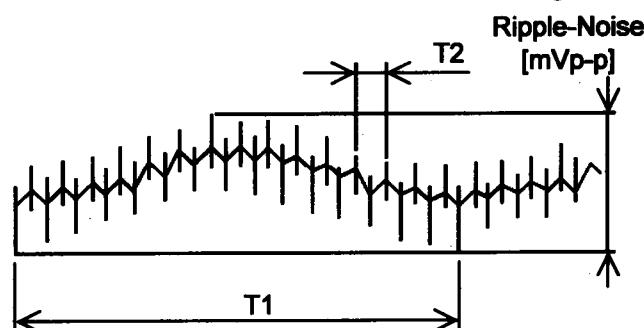


Fig. Complex Ripple Wave Form

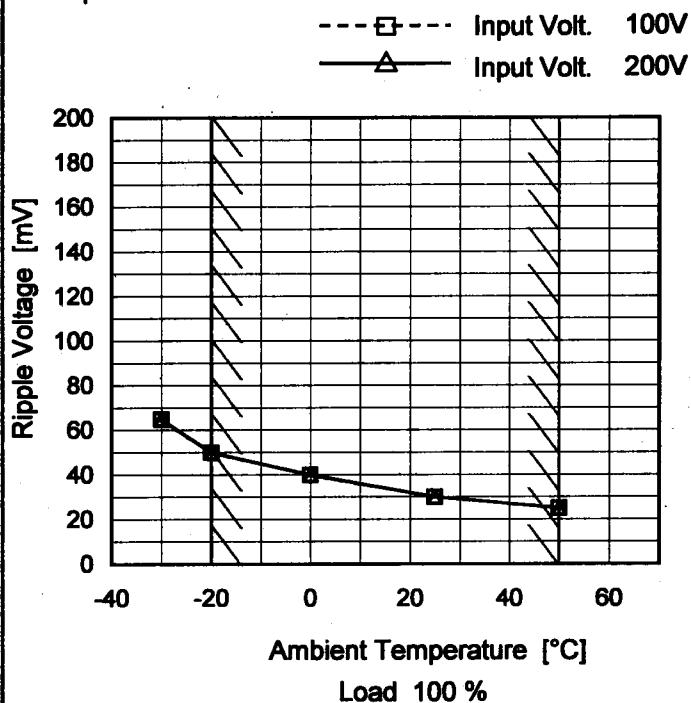
COSEL

Model PBA300F-12

Item Ripple Voltage (by Ambient Temp.)

Object +12V27A

1. Graph



Measured by 20 MHz Oscilloscope.

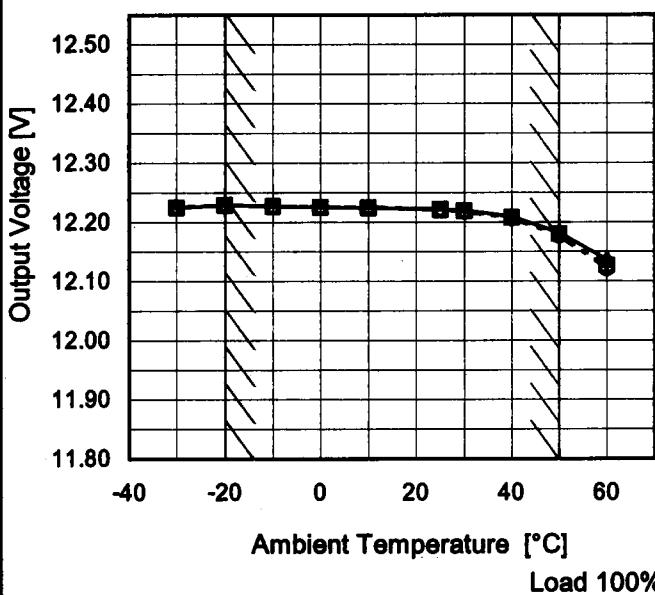
Note: Slanted line shows the range of the rated ambient temperature.

Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
-30	65	65
-20	50	50
0	40	40
25	30	30
50	25	25
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model	PBA300F-12	Testing Circuitry Figure A																																																					
Item	Ambient Temperature Drift																																																						
Object	+12V27A																																																						
1.Graph	<p>—▲— Input Volt. 100V - - -□- Input Volt. 200V - - -○- Input Volt. 230V</p> 																																																						
2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</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> </thead> <tbody> <tr> <td>-30</td><td>12.225</td><td>12.225</td><td>12.226</td></tr> <tr> <td>-20</td><td>12.229</td><td>12.229</td><td>12.229</td></tr> <tr> <td>-10</td><td>12.227</td><td>12.227</td><td>12.227</td></tr> <tr> <td>0</td><td>12.226</td><td>12.226</td><td>12.226</td></tr> <tr> <td>10</td><td>12.225</td><td>12.225</td><td>12.225</td></tr> <tr> <td>25</td><td>12.222</td><td>12.222</td><td>12.222</td></tr> <tr> <td>30</td><td>12.220</td><td>12.219</td><td>12.218</td></tr> <tr> <td>40</td><td>12.210</td><td>12.208</td><td>12.206</td></tr> <tr> <td>50</td><td>12.183</td><td>12.180</td><td>12.177</td></tr> <tr> <td>60</td><td>12.137</td><td>12.127</td><td>12.121</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>				Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	-30	12.225	12.225	12.226	-20	12.229	12.229	12.229	-10	12.227	12.227	12.227	0	12.226	12.226	12.226	10	12.225	12.225	12.225	25	12.222	12.222	12.222	30	12.220	12.219	12.218	40	12.210	12.208	12.206	50	12.183	12.180	12.177	60	12.137	12.127	12.121	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																						
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																				
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-10	12.227	12.227	12.227																																																				
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10	12.225	12.225	12.225																																																				
25	12.222	12.222	12.222																																																				
30	12.220	12.219	12.218																																																				
40	12.210	12.208	12.206																																																				
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60	12.137	12.127	12.121																																																				
--	-	-	-																																																				
Note:	Slanted line shows the range of the rated ambient temperature.																																																						



Model	PBA300F-12	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+12V27A	

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 : -20 - 50°C

Input Voltage : 85 - 264V

Load Current : 0 - 27A

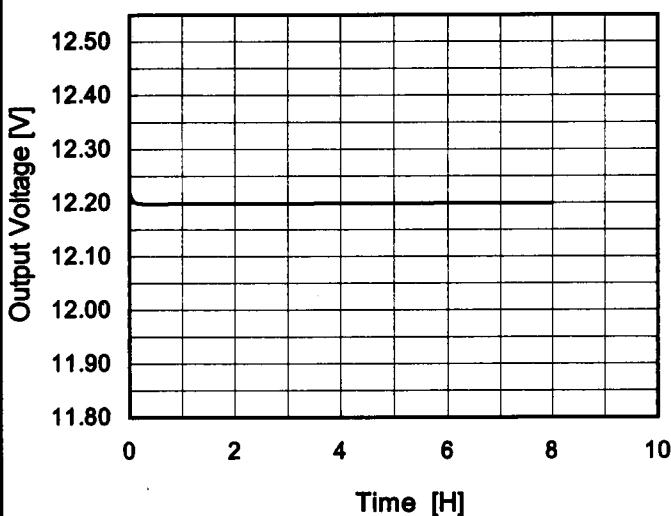
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

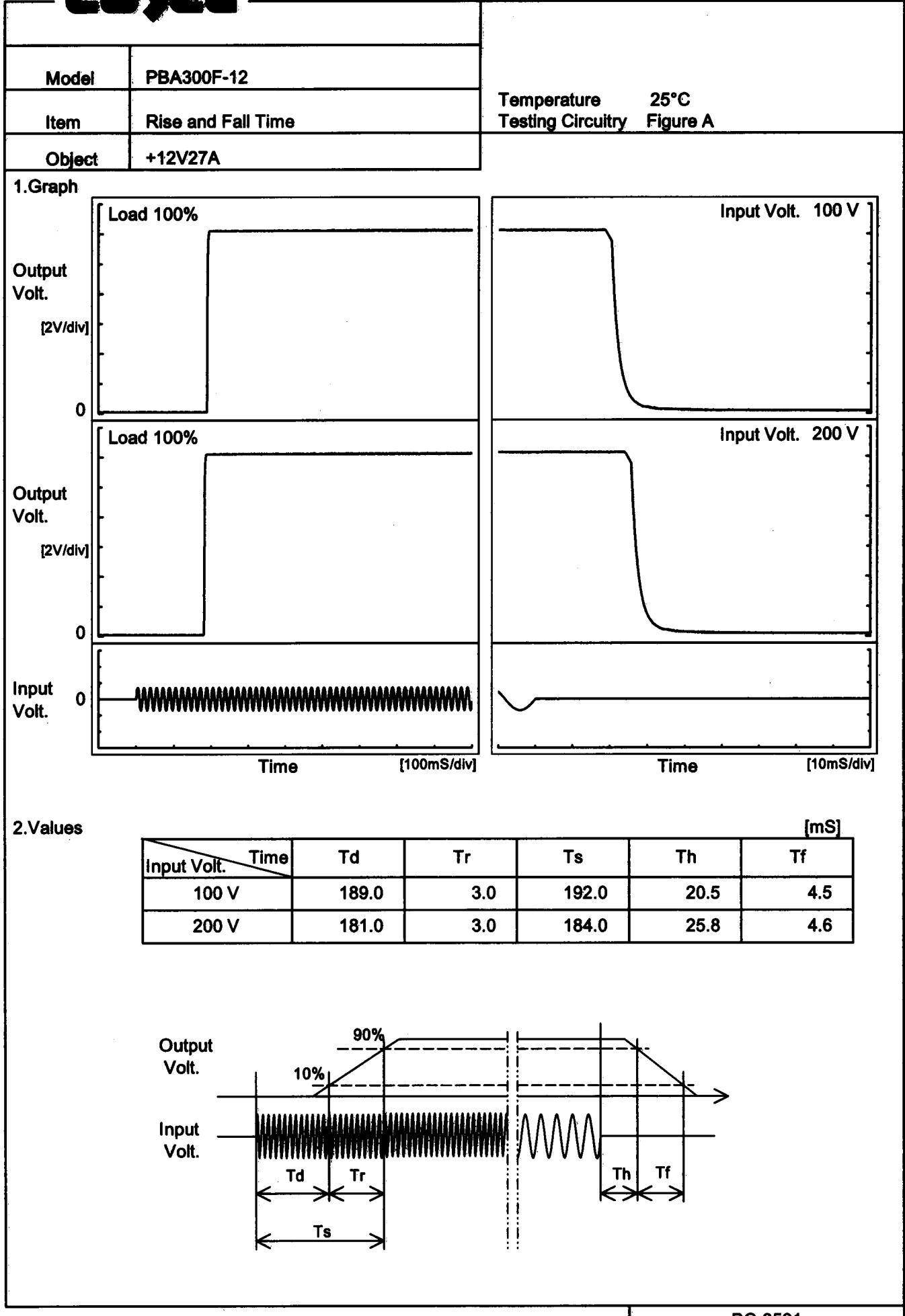
$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-20	85	0	12.234	±35	±0.3
Minimum Voltage	50	264	27	12.164		

COSEL

Model	PBA300F-12	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+12V27A																								
1.Graph			2.Values																						
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 100V Load 100%</p>			<table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>12.220</td></tr> <tr><td>0.5</td><td>12.198</td></tr> <tr><td>1.0</td><td>12.199</td></tr> <tr><td>2.0</td><td>12.199</td></tr> <tr><td>3.0</td><td>12.199</td></tr> <tr><td>4.0</td><td>12.199</td></tr> <tr><td>5.0</td><td>12.199</td></tr> <tr><td>6.0</td><td>12.200</td></tr> <tr><td>7.0</td><td>12.200</td></tr> <tr><td>8.0</td><td>12.199</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	12.220	0.5	12.198	1.0	12.199	2.0	12.199	3.0	12.199	4.0	12.199	5.0	12.199	6.0	12.200	7.0	12.200	8.0	12.199
Time since start [H]	Output Voltage [V]																								
0.0	12.220																								
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6.0	12.200																								
7.0	12.200																								
8.0	12.199																								

COSEL

COSEL

Model	PBA300F-12
Item	Hold-Up Time
Object	+12V27A

1. Graph

Legend: ---□--- Load 50%
—△— Load 100%

Input Voltage [V]	Load 50% [mS]	Load 100% [mS]
80	42	18
85	43	18
100	45	20
120	47	21
200	55	25
230	57	26
264	58	27
280	62	29
--	-	-

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.

 Temperature 25°C
 Testing Circuitry Figure A

2. Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
80	42	18
85	43	18
100	45	20
120	47	21
200	55	25
230	57	26
264	58	27
280	62	29
--	-	-

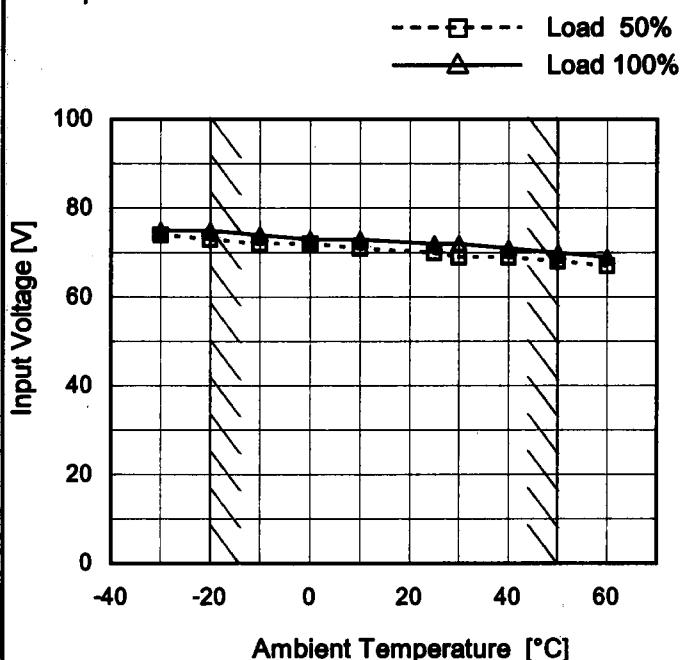
COXEL

Model	PBA300F-12	Temperature	25°C																																																			
Item	Instantaneous Interruption Compensation	Testing Circuitry	Figure A																																																			
Object	+12V27A																																																					
1.Graph	<p>—△— Input Volt. 100V - -□--- Input Volt. 200V - -○--- Input Volt. 230V</p>																																																					
2.Values	<table border="1"> <thead> <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> </thead> <tbody> <tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>4.0</td><td>139</td><td>167</td><td>172</td></tr> <tr><td>8.0</td><td>73</td><td>90</td><td>94</td></tr> <tr><td>12.0</td><td>48</td><td>61</td><td>63</td></tr> <tr><td>16.0</td><td>36</td><td>45</td><td>46</td></tr> <tr><td>20.0</td><td>28</td><td>35</td><td>37</td></tr> <tr><td>24.0</td><td>22</td><td>29</td><td>30</td></tr> <tr><td>27.0</td><td>18</td><td>24</td><td>25</td></tr> <tr><td>29.7</td><td>15</td><td>22</td><td>23</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>			Load Current [A]	Time [mS]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	-	-	-	4.0	139	167	172	8.0	73	90	94	12.0	48	61	63	16.0	36	45	46	20.0	28	35	37	24.0	22	29	30	27.0	18	24	25	29.7	15	22	23	--	-	-	-	--	-	-	-
Load Current [A]	Time [mS]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
0.0	-	-	-																																																			
4.0	139	167	172																																																			
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12.0	48	61	63																																																			
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27.0	18	24	25																																																			
29.7	15	22	23																																																			
--	-	-	-																																																			
--	-	-	-																																																			
Note:	Slanted line shows the range of the rated load current.																																																					

COSEL

Model	PBA300F-12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V27A

1.Graph



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

Testing Circuitry Figure A

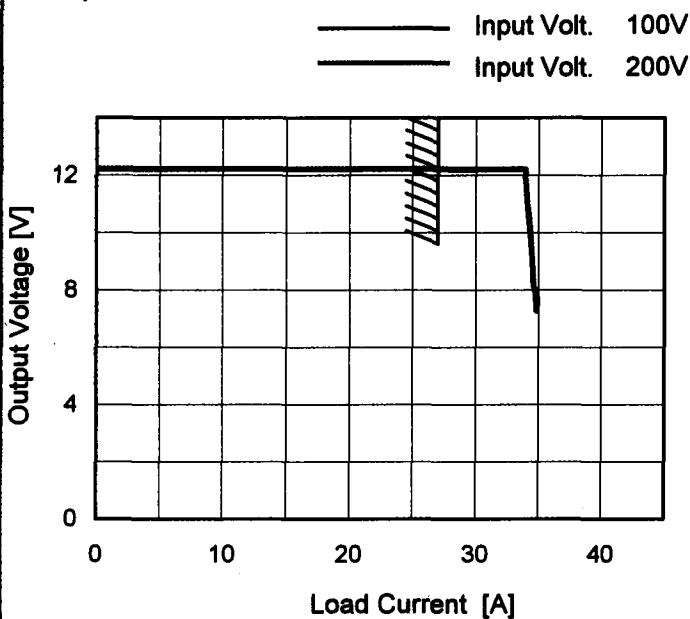
2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-30	74	75
-20	73	75
-10	72	74
0	72	73
10	71	73
25	70	72
30	69	72
40	69	71
50	68	70
60	67	69
--	-	-

COSEL

Model	PBA300F-12
Item	Overcurrent Protection
Object	+12V27A

1. Graph



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

Intermittent operation occurs when the output voltage is from 7.2V to 0V.

Temperature 25°C
Testing Circuitry Figure A

2. Values

Output Voltage [V]	Load Current [A]	
	Input Volt. 100[V]	Input Volt. 200[V]
12.0	33.93	33.97
11.4	33.99	34.07
10.8	34.08	34.20
9.6	34.34	34.43
8.4	34.57	34.58
7.2	34.89	34.77
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

COSEL

Model	PBA300F-12
Item	Overvoltage Protection
Object	+12V27A

1. Graph

Operating Point [V]

Ambient Temperature [°C]

Load 0%

Legend:

- △— Input Volt. 100V
- Input Volt. 200V

Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 200[V]
-30	16.57	16.57
-20	16.63	16.63
-10	16.75	16.75
0	16.86	16.87
10	17.04	17.04
25	17.16	17.16
30	17.27	17.27
40	17.33	17.33
50	17.45	17.45
60	17.57	17.57
--	-	-

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

COSEL

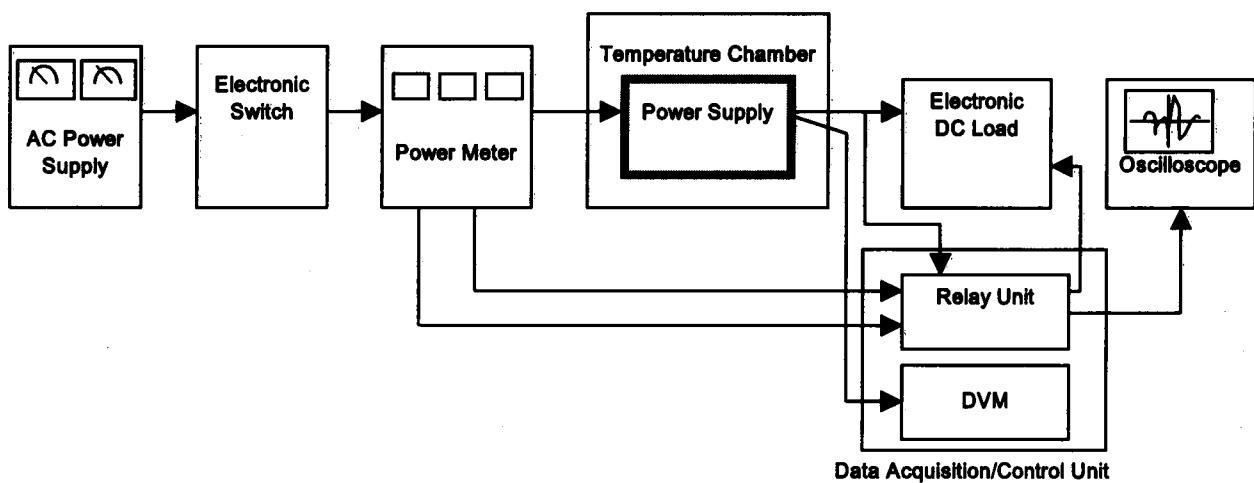


Figure A

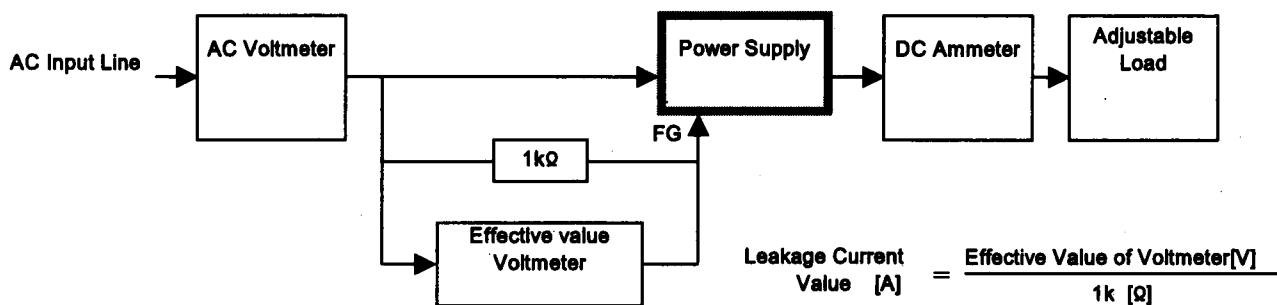


Figure B (DEN-AN)

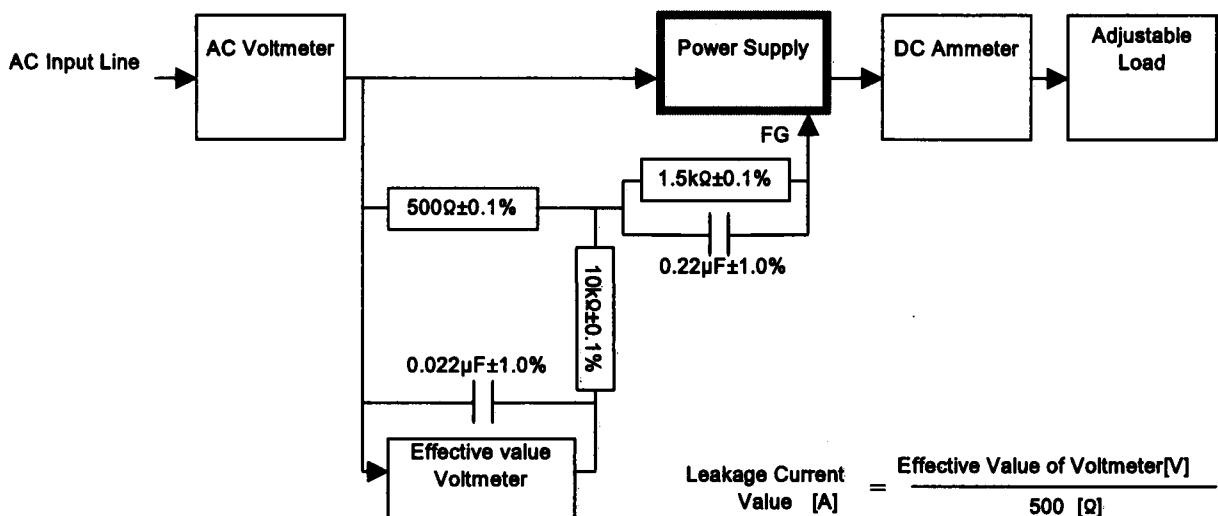


Figure B (IEC60950)