

# TEST DATA OF PMA30F-3R3

Regulated DC Power Supply  
June 4, 2010

Approved by : Katsumi Ishikawa  
Katsumi Ishikawa Design Manager

Prepared by : Tsutomu Okano  
Tsutomu Okano Design Engineer

**COSEL CO.,LTD.**

## CONTENTS

1.Input Current (by Load Current) . . . . .	1
2.Input Power (by Load Current) . . . . .	2
3.Efficiency (by Input Voltage) . . . . .	3
4.Efficiency (by Load Current) . . . . .	4
5.Power Factor (by Input Voltage) . . . . .	5
6.Power Factor (by Load Current) . . . . .	6
7.Inrush Current . . . . .	7
8.Leakage Current . . . . .	8
9.Line Regulation . . . . .	9
10.Load Regulation . . . . .	10
11.Dynamic Load Response . . . . .	11
12.Ripple Voltage (by Load Current) . . . . .	12
13.Ripple-Noise . . . . .	13
14.Ripple Voltage (by Ambient Temperature) . . . . .	14
15.Ambient Temperature Drift . . . . .	15
16.Output Voltage Accuracy . . . . .	16
17.Time Lapse Drift . . . . .	17
18.Rise and Fall Time . . . . .	18
19.Hold-Up Time . . . . .	19
20.Instantaneous Interruption Compensation . . . . .	20
21.Minimum Input Voltage for Regulated Output Voltage . . . . .	21
22.Overcurrent Protection . . . . .	22
23.Overvoltage Protection . . . . .	23
24.Figure of Testing Circuitry . . . . .	24

(Final Page 24)

# COSEL

Model

PMA30F-3R3

Item

Input Current (by Load Current)

Object

1.Graph

—△—

Input Volt.

100V

---□---

Input Volt.

200V

---○---

Input Volt.

230V

Input Current [A]

0.0

0.2

0.4

0.6

0.8

1.0

0

2

4

6

Load Current [A]

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	0.045	0.040	0.039
1.0	0.118	0.078	0.074
2.0	0.185	0.120	0.112
3.0	0.253	0.158	0.146
4.0	0.323	0.196	0.180
5.0	0.396	0.234	0.214
6.0	0.472	0.274	0.249
6.6	0.520	0.298	0.272
--	-	-	-
--	-	-	-
--	-	-	-

# COSEL

Model PMA30F-3R3

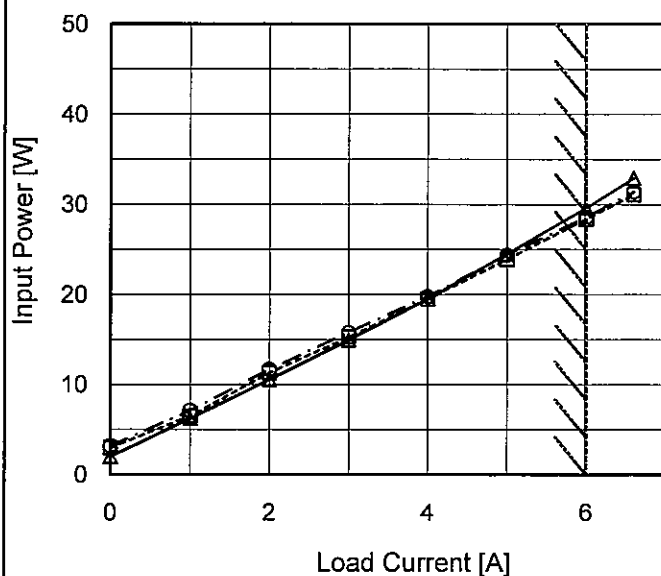
Item Input Power (by Load Current)

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	2.00	3.00	3.20
1.0	6.23	6.50	7.10
2.0	10.55	11.30	11.70
3.0	14.97	15.30	15.80
4.0	19.52	19.50	19.80
5.0	24.50	23.90	24.40
6.0	29.60	28.40	28.60
6.6	32.90	31.10	31.40
--	-	-	-
--	-	-	-
--	-	-	-

Model	PMA30F-3R3																																	
Item	Efficiency (by Input Voltage)	Temperature 25°C Testing Circuitry Figure A																																
Object																																		
1. Graph		2. Values																																
<p>---□--- Load 50% —△— Load 100%</p> <p>Efficiency [%]</p> <p>Input Voltage [V]</p> <p>Note: Slanted line shows the range of the rated input voltage.</p>		<table> <tr> <th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr> <tr> <th>Load 50%</th><th>Load 100%</th></tr> <tr><td>75</td><td>65.2</td><td>62.7</td></tr> <tr><td>85</td><td>66.1</td><td>65.3</td></tr> <tr><td>100</td><td>66.9</td><td>67.8</td></tr> <tr><td>120</td><td>67.1</td><td>69.1</td></tr> <tr><td>200</td><td>64.5</td><td>70.3</td></tr> <tr><td>230</td><td>64.1</td><td>69.8</td></tr> <tr><td>264</td><td>61.7</td><td>68.6</td></tr> <tr><td>280</td><td>60.6</td><td>67.9</td></tr> <tr><td>--</td><td>-</td><td>-</td></tr> </table>	Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	75	65.2	62.7	85	66.1	65.3	100	66.9	67.8	120	67.1	69.1	200	64.5	70.3	230	64.1	69.8	264	61.7	68.6	280	60.6	67.9	--	-	-
Input Voltage [V]	Efficiency [%]																																	
	Load 50%	Load 100%																																
75	65.2	62.7																																
85	66.1	65.3																																
100	66.9	67.8																																
120	67.1	69.1																																
200	64.5	70.3																																
230	64.1	69.8																																
264	61.7	68.6																																
280	60.6	67.9																																
--	-	-																																

# COSEL

Model PMA30F-3R3

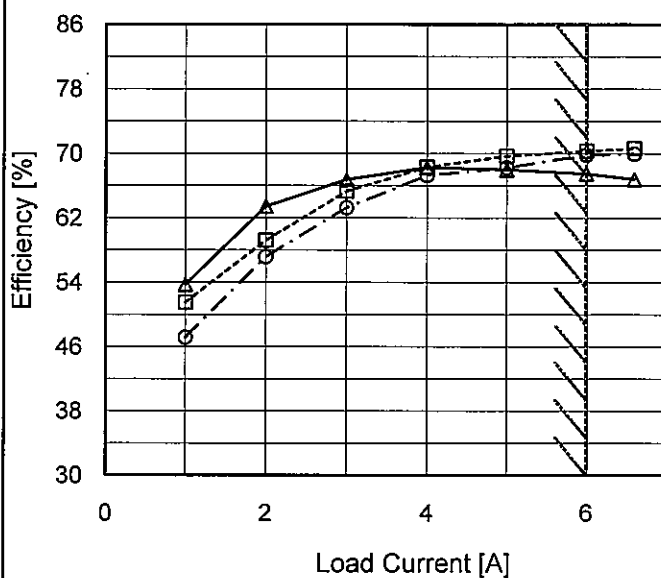
Item Efficiency (by Load Current)

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	-	-	-
1.0	53.7	51.5	47.1
2.0	63.4	59.2	57.2
3.0	66.8	65.3	63.3
4.0	68.3	68.3	67.3
5.0	68.0	69.7	68.3
6.0	67.5	70.3	69.8
6.6	66.8	70.6	70.0
--	-	-	-
--	-	-	-
--	-	-	-

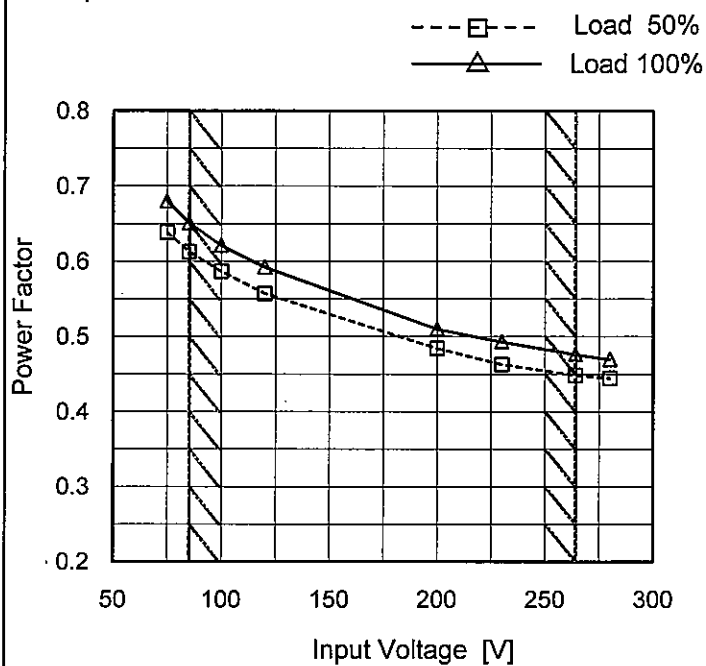
Model PMA30F-3R3

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	0.639	0.680
85	0.613	0.651
100	0.587	0.621
120	0.557	0.592
200	0.484	0.510
230	0.463	0.493
264	0.449	0.476
280	0.445	0.470
--	-	-

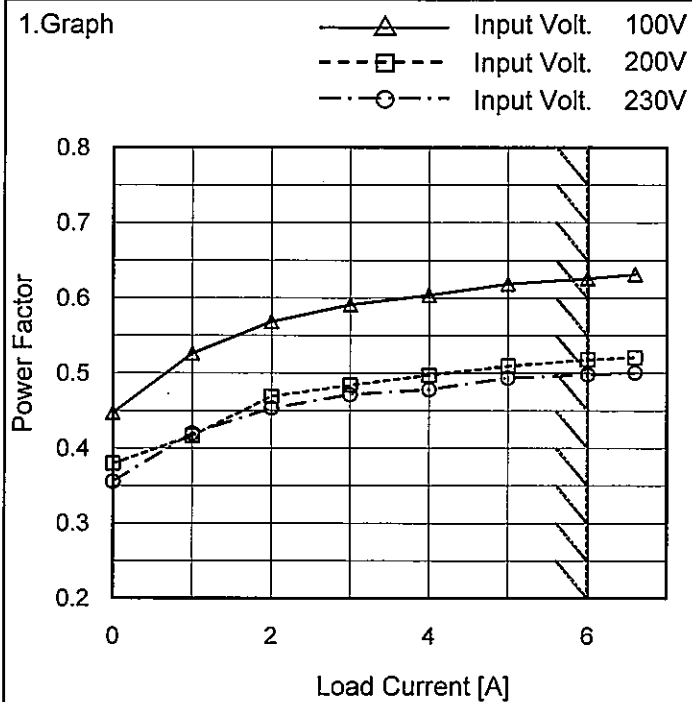
Model PMA30F-3R3

Item Power Factor (by Load Current)

Object

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



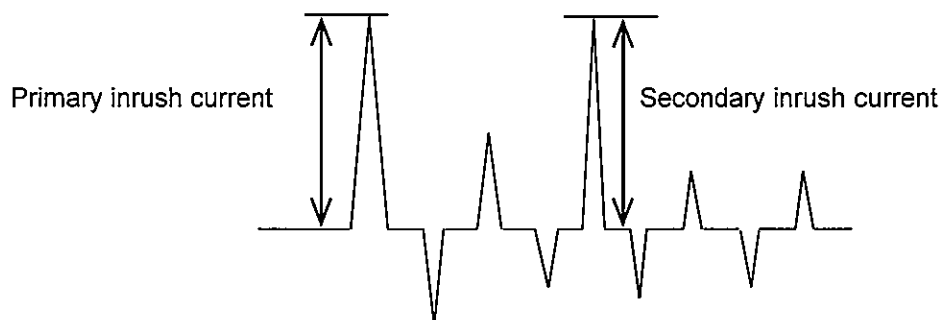
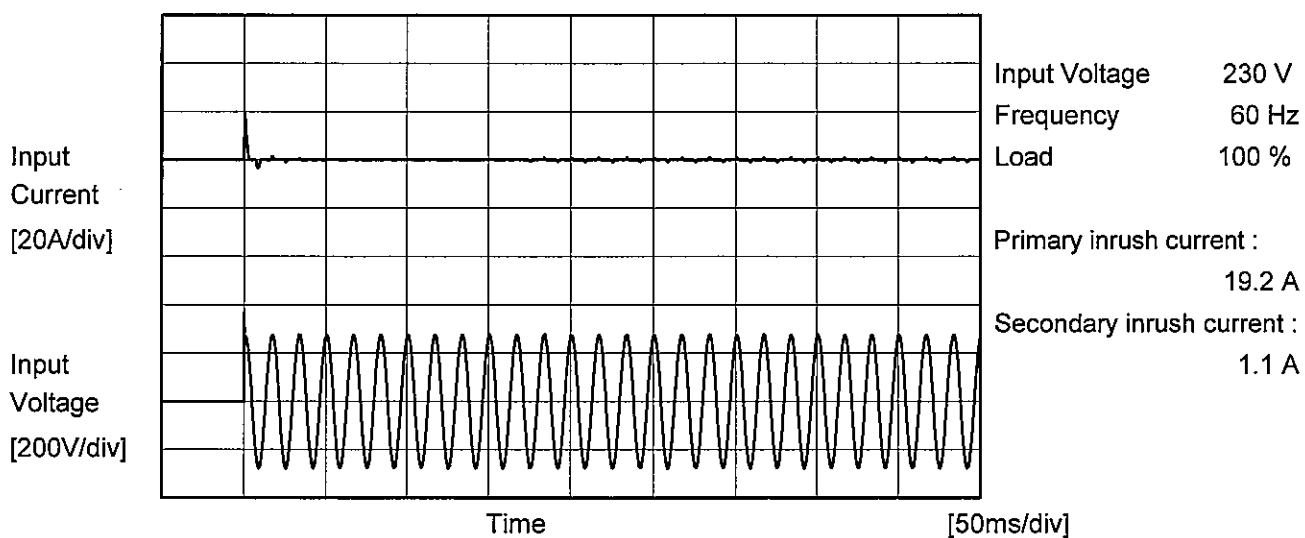
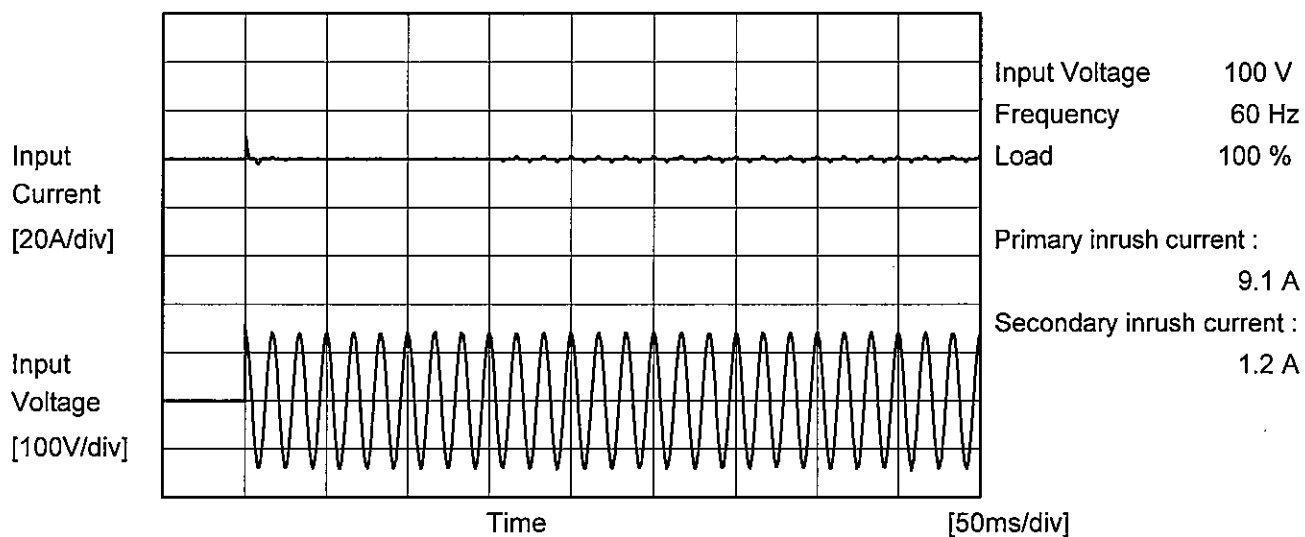
## 2. Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.447	0.380	0.356
1.0	0.526	0.417	0.420
2.0	0.568	0.469	0.453
3.0	0.591	0.484	0.472
4.0	0.604	0.497	0.478
5.0	0.619	0.510	0.494
6.0	0.626	0.518	0.498
6.6	0.631	0.521	0.501
--	-	-	-
--	-	-	-
--	-	-	-



# COSEL

Model	PMA30F-3R3	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		



		Temperature 25°C Testing Circuitry Figure B
Model	PMA30F-3R3	
Item	Leakage Current	
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.

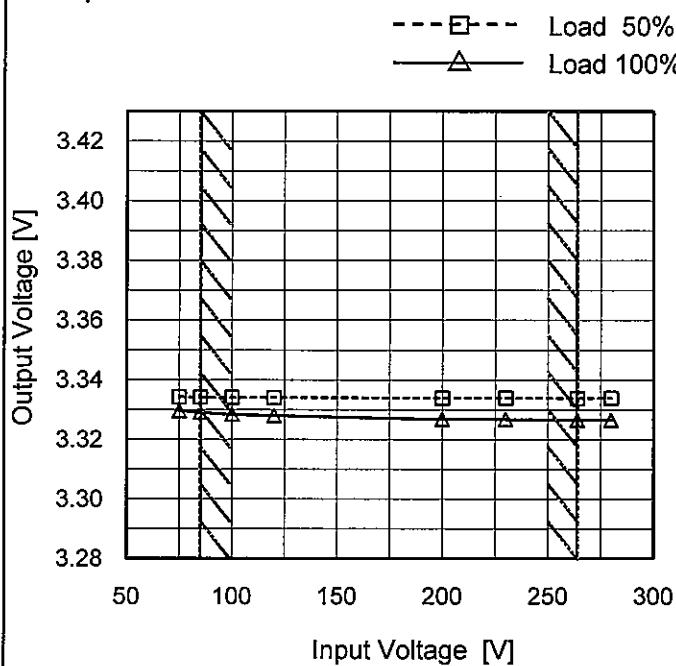
Model PMA30F-3R3

Item Line Regulation

Object +3.3V6A

Temperature 25°C  
Testing Circuitry Figure A

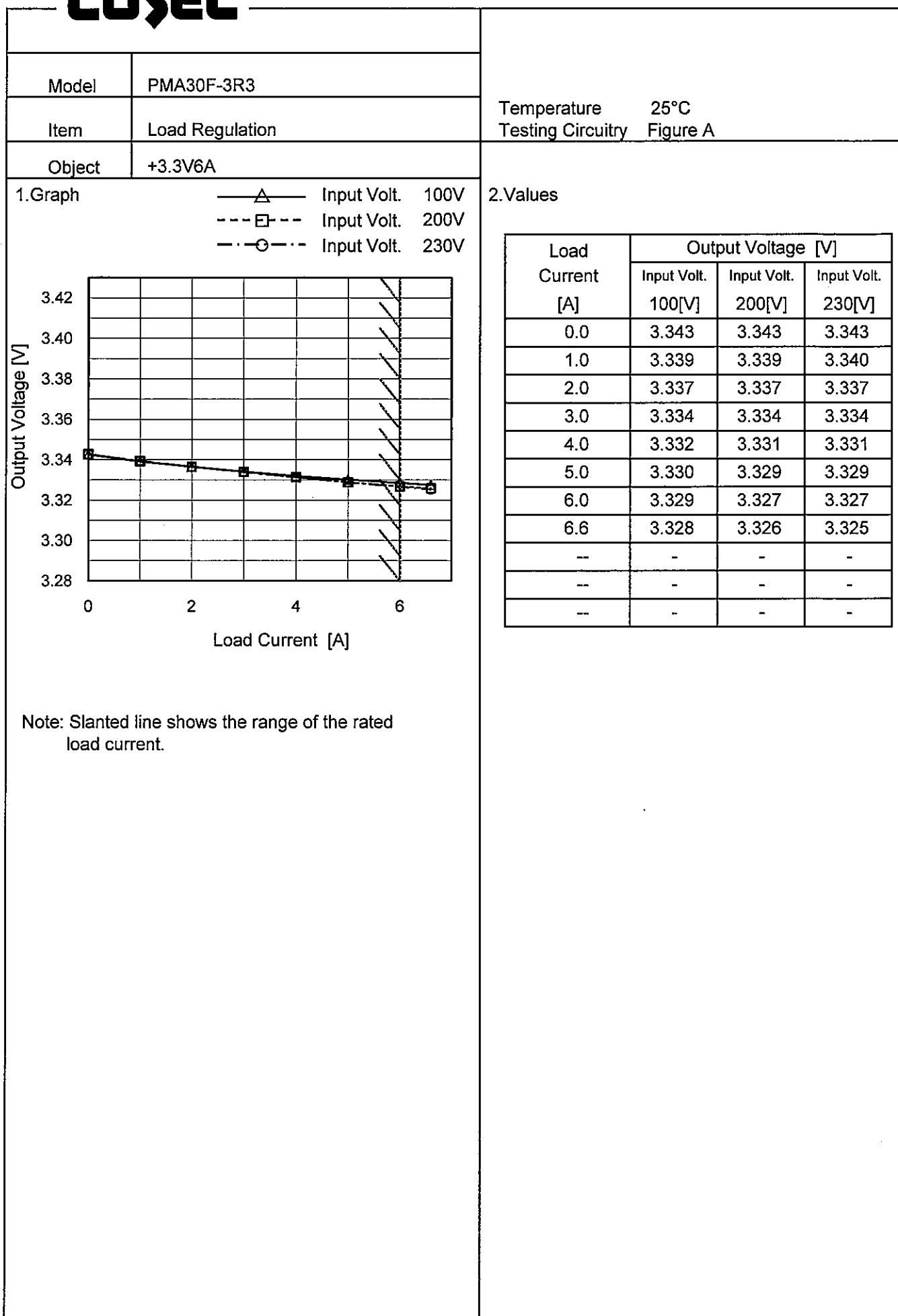
## 1. Graph



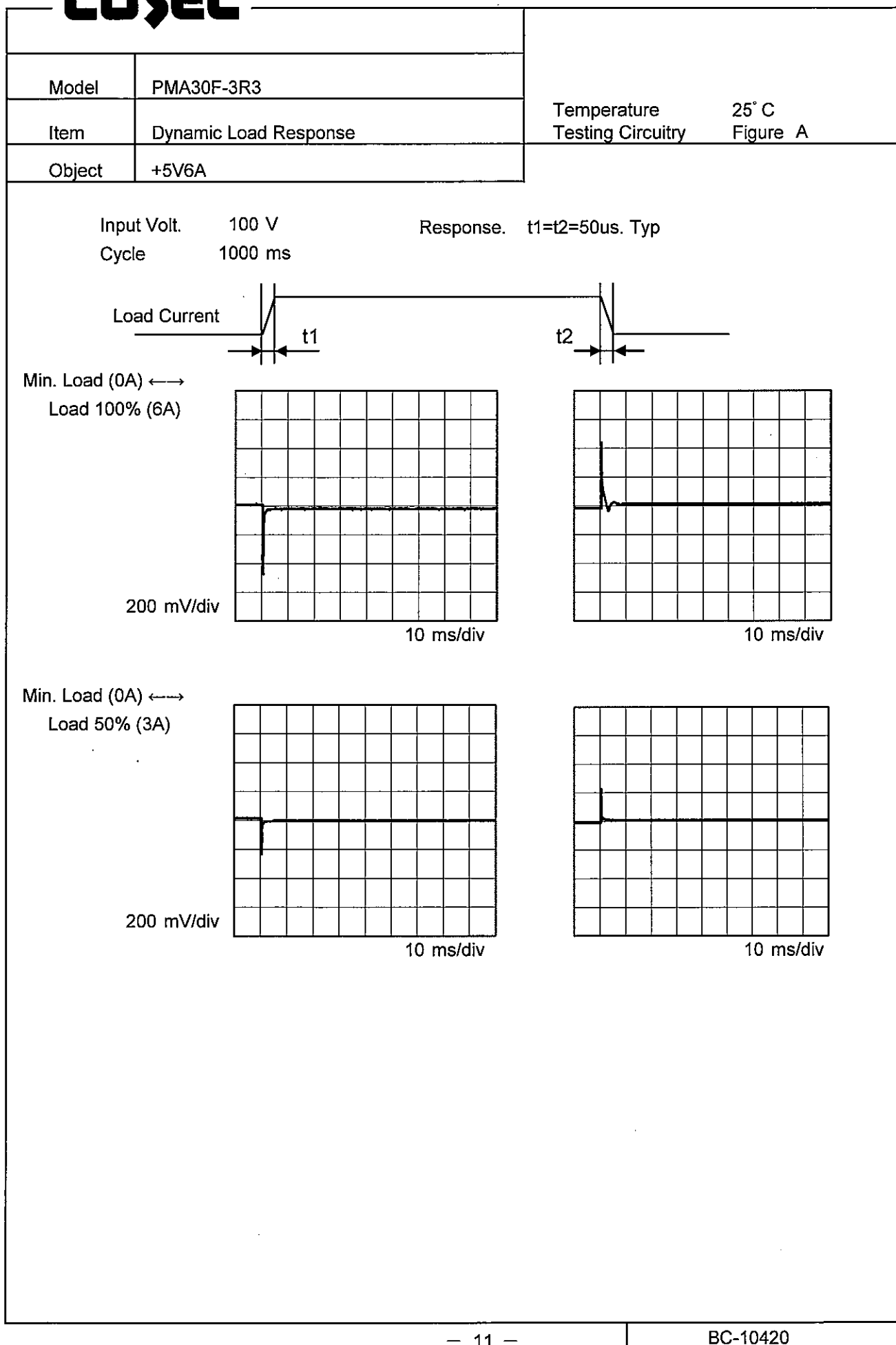
## 2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	3.334	3.330
85	3.334	3.329
100	3.334	3.328
120	3.334	3.328
200	3.334	3.327
230	3.334	3.327
264	3.334	3.327
280	3.334	3.327
--	-	-

# COSEL



# COSEL



Model		PMA30F-3R3	Temperature Testing Circuitry	25°C Figure A
Item		Ripple Voltage (by Load Current)		
Object		+3.3V6A		
1.Graph				
<div><div><div><div></div><div></div></div><div><div></div><div></div></div></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>Ripple Voltage [mV]</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div></div>				

Model	PMA30F-3R3																																								
Item	Ripple-Noise	Temperature	25°C																																						
Object	+3.3V6A	Testing Circuitry	Figure A																																						
1.Graph		2.Values																																							
<div><div><div>—△— Input Volt. 100V</div><div>-·-○-·- Input Volt. 200V</div></div><p>Ripple-Noise [mV]</p><p>Load Current [A]</p></div> <p>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.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 100 [V]</th><th>Input Volt. 200 [V]</th></tr><tr><td>0.0</td><td>15</td><td>15</td></tr><tr><td>1.0</td><td>15</td><td>15</td></tr><tr><td>2.0</td><td>25</td><td>20</td></tr><tr><td>3.0</td><td>30</td><td>25</td></tr><tr><td>4.0</td><td>35</td><td>30</td></tr><tr><td>5.0</td><td>40</td><td>35</td></tr><tr><td>6.0</td><td>40</td><td>40</td></tr><tr><td>6.6</td><td>40</td><td>40</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 100 [V]	Input Volt. 200 [V]	0.0	15	15	1.0	15	15	2.0	25	20	3.0	30	25	4.0	35	30	5.0	40	35	6.0	40	40	6.6	40	40	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
	Input Volt. 100 [V]	Input Volt. 200 [V]																																							
0.0	15	15																																							
1.0	15	15																																							
2.0	25	20																																							
3.0	30	25																																							
4.0	35	30																																							
5.0	40	35																																							
6.0	40	40																																							
6.6	40	40																																							
--	-	-																																							
--	-	-																																							
--	-	-																																							
<div><div><div>T1: Due to AC Input Line</div><div>T2: Due to Switching</div></div><p>Ripple-Noise [mVp-p]</p></div> <p>Fig. Complex Ripple Wave Form</p>																																									

		Testing Circuitry    Figure A																																				
Model	PMA30F-3R3																																					
Item	Ripple Voltage (by Ambient Temp.)																																					
Object	+3.3V6A																																					
1.Graph		2.Values																																				
<div><div><div>--- □ ---</div><div>Input Volt.    100V</div></div><div><div>— △ —</div><div>Input Volt.    200V</div></div></div> <table border="1"><thead><tr><th>Ambient Temperature [°C]</th><th>100V [mV]</th><th>200V [mV]</th></tr></thead><tbody><tr><td>-30</td><td>90</td><td>60</td></tr><tr><td>-10</td><td>40</td><td>30</td></tr><tr><td>0</td><td>40</td><td>30</td></tr><tr><td>25</td><td>20</td><td>15</td></tr><tr><td>50</td><td>20</td><td>15</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table> <p>Measured by 20 MHz Oscilloscope. Note: Slanted line shows the range of the rated ambient temperature.</p>		Ambient Temperature [°C]	100V [mV]	200V [mV]	-30	90	60	-10	40	30	0	40	30	25	20	15	50	20	15	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	
Ambient Temperature [°C]	100V [mV]	200V [mV]																																				
-30	90	60																																				
-10	40	30																																				
0	40	30																																				
25	20	15																																				
50	20	15																																				
--	-	-																																				
--	-	-																																				
--	-	-																																				
--	-	-																																				
--	-	-																																				
--	-	-																																				



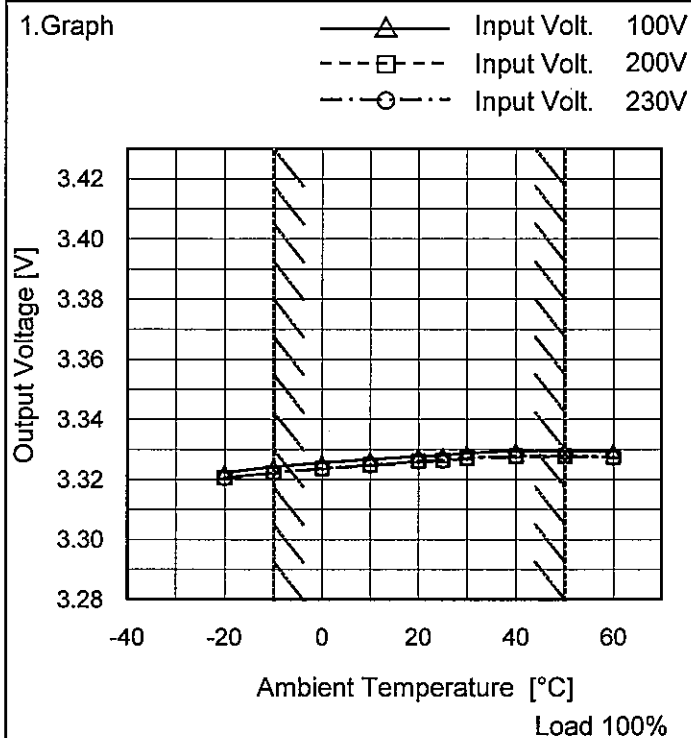
Model PMA30F-3R3

Item Ambient Temperature Drift

Object +3.3V6A

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	3.322	3.321	3.320
-10	3.324	3.322	3.322
0	3.326	3.324	3.324
10	3.327	3.325	3.325
20	3.328	3.326	3.326
25	3.328	3.327	3.326
30	3.329	3.327	3.327
40	3.330	3.328	3.328
50	3.330	3.328	3.328
60	3.329	3.328	3.327
--	-	-	-

		Testing Circuitry Figure A
Model	PMA30F-3R3	
Item	Output Voltage Accuracy	
Object	+3.3V6A	

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

\* 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]	Ration [%]
Maximum Voltage	40	200	0	3.343	±11	±0.3
Minimum Voltage	-10	264	6	3.322		

# COSEL

Model		PMA30F-3R3	
Item		Time Lapse Drift	
Object		+3.3V6A	

1.Graph

Output Voltage [V]

3.42

3.40

3.38

3.36

3.34

3.32

3.30

3.28

3.26

3.24

0

2

4

6

8

10

Time [H]

Input Volt. 230V

Load 100%

2.Values

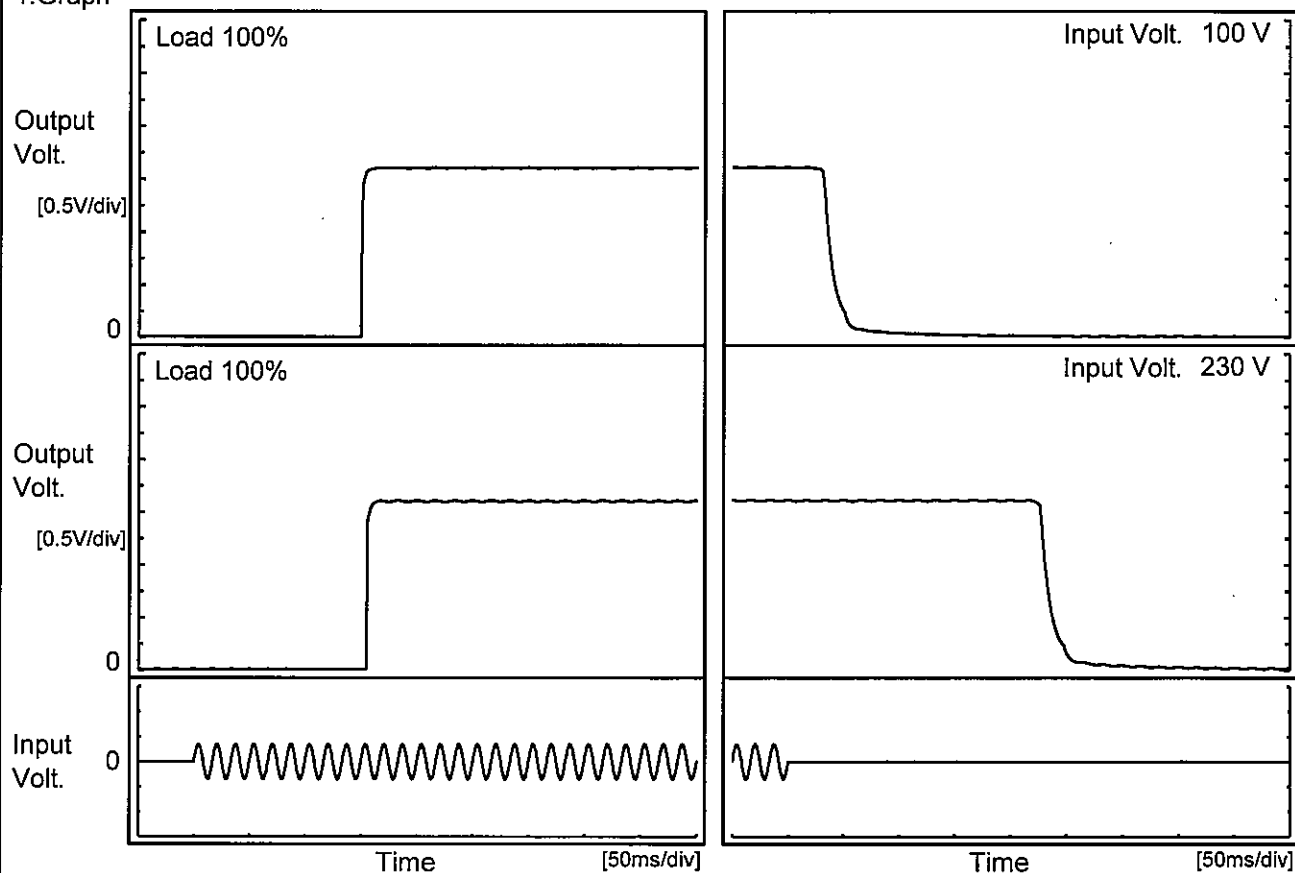
Time since start [H]	Output Voltage [V]
0.0	3.325
0.5	3.326
1.0	3.326
2.0	3.326
3.0	3.326
4.0	3.326
5.0	3.326
6.0	3.326
7.0	3.326
8.0	3.326

\* The characteristic of AC100V is equal.

# COSEL

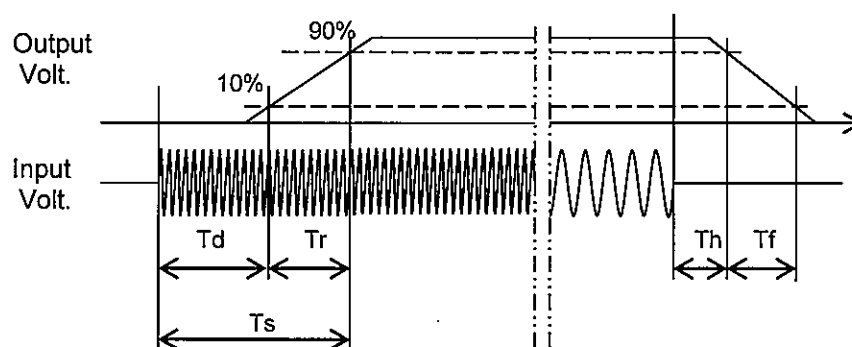
Model	PMA30F-3R3	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+3.3V6A		

## 1. Graph



## 2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		150.0	2.5	152.5	32.0	21.0
230 V		155.0	2.5	157.5	227.0	22.8



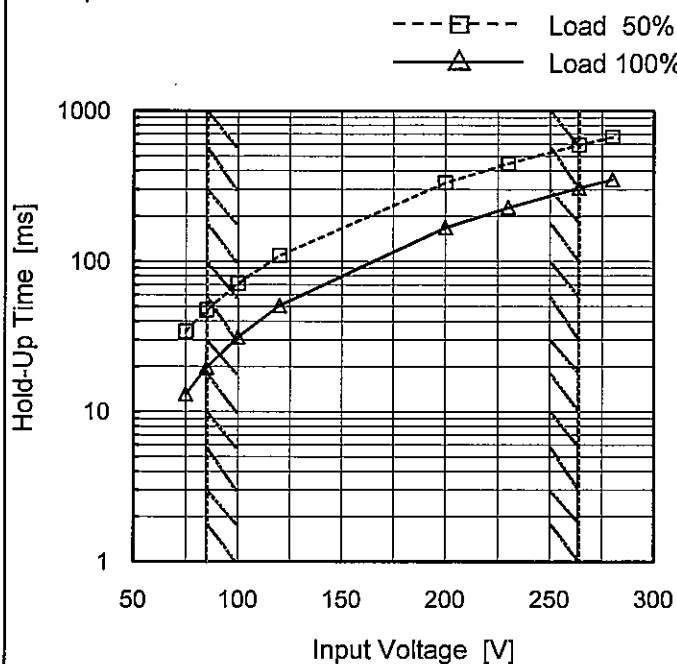
Model PMA30F-3R3

Item Hold-Up Time

Object +3.3V6A

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	34	13
85	48	20
100	71	31
120	109	51
200	334	168
230	446	228
264	593	307
280	670	349
--	-	-

Model	PMA30F-3R3																																																					
Item	Instantaneous Interruption Compensation	Temperature	25°C																																																			
Object	+3.3V6A	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>1.0</td><td>190</td><td>824</td><td>1089</td></tr><tr><td>2.0</td><td>106</td><td>477</td><td>632</td></tr><tr><td>3.0</td><td>73</td><td>338</td><td>450</td></tr><tr><td>4.0</td><td>54</td><td>257</td><td>345</td></tr><tr><td>5.0</td><td>40</td><td>206</td><td>279</td></tr><tr><td>6.0</td><td>31</td><td>171</td><td>231</td></tr><tr><td>6.6</td><td>29</td><td>154</td><td>208</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	-	-	-	1.0	190	824	1089	2.0	106	477	632	3.0	73	338	450	4.0	54	257	345	5.0	40	206	279	6.0	31	171	231	6.6	29	154	208	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]																																																			
0.0	-	-	-																																																			
1.0	190	824	1089																																																			
2.0	106	477	632																																																			
3.0	73	338	450																																																			
4.0	54	257	345																																																			
5.0	40	206	279																																																			
6.0	31	171	231																																																			
6.6	29	154	208																																																			
--	-	-	-																																																			
--	-	-	-																																																			
--	-	-	-																																																			
Note: Slanted line shows the range of the rated load current.																																																						

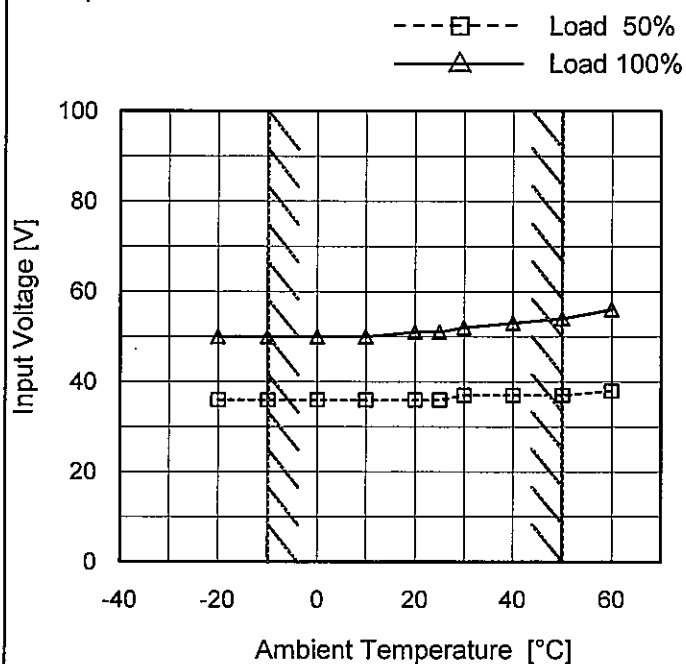
Model PMA30F-3R3

Item Minimum Input Voltage  
for Regulated Output Voltage

Object +3.3V6A

Testing Circuitry Figure A

## 1. Graph

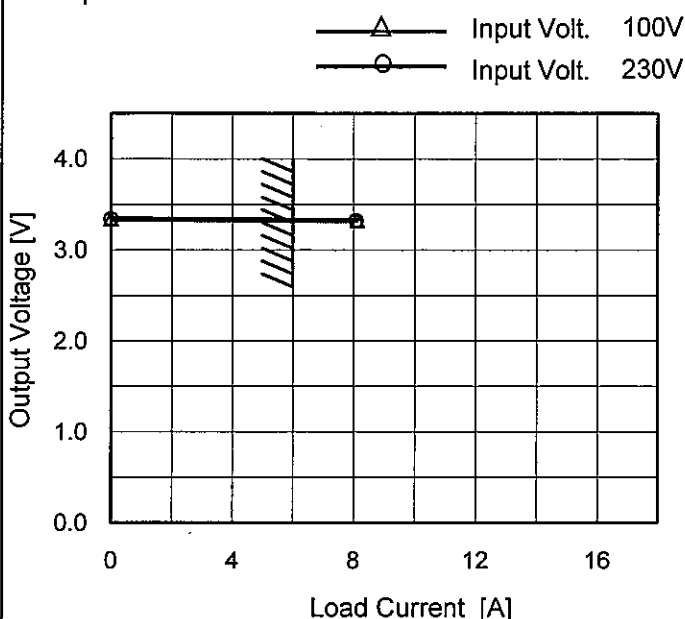


Note: Slanted line shows the range of the rated ambient temperature.

## 2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	36	50
-10	36	50
0	36	50
10	36	50
20	36	51
25	36	51
30	37	52
40	37	53
50	37	54
60	38	56
---	-	-

**COSEL**

Model	PMA30F-3R3																																											
Item	Overcurrent Protection	Temperature	25°C																																									
Object	+3.3V6A	Testing Circuitry	Figure A																																									
1.Graph		2.Values																																										
<div><div><div><div></div><div>Input Volt. 100V</div></div><div><div></div><div>Input Volt. 230V</div></div></div><p>Note: Slanted line shows the range of the rated load current.</p></div>		<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. 230[V]</th></tr><tr><td>3.300</td><td>8.13</td><td>8.08</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. 230[V]	3.300	8.13	8.08	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. 230[V]																																										
3.300	8.13	8.08																																										
3.135	-	-																																										
2.970	-	-																																										
2.640	-	-																																										
2.310	-	-																																										
1.980	-	-																																										
1.650	-	-																																										
1.320	-	-																																										
0.990	-	-																																										
0.660	-	-																																										
0.330	-	-																																										
0.000	-	-																																										



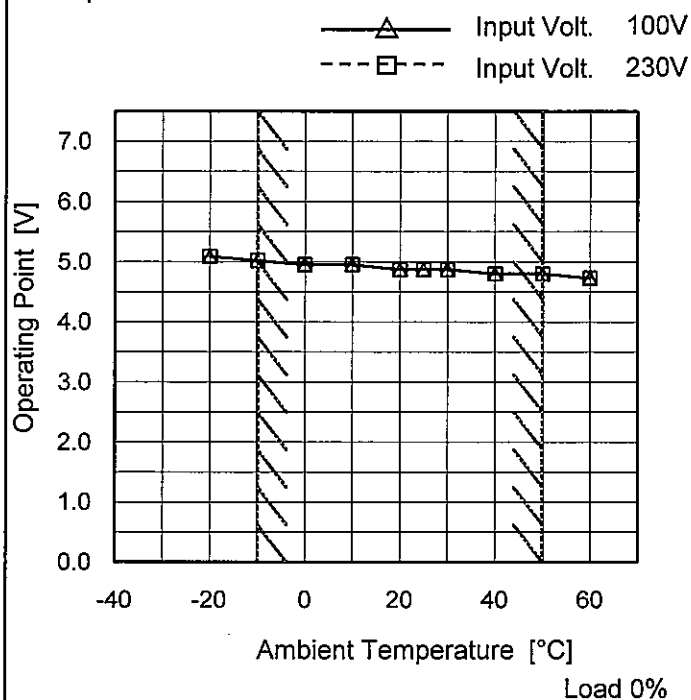
Model PMA30F-3R3

Item Overvoltage Protection

Object +3.3V6A

Testing Circuitry Figure A

## 1. Graph



## 2. Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 100[V]	Input Volt. 230[V]
-20	5.09	5.09
-10	5.02	5.02
0	4.95	4.95
10	4.95	4.95
20	4.87	4.87
25	4.87	4.87
30	4.87	4.87
40	4.80	4.80
50	4.80	4.80
60	4.73	4.73
--	-	-

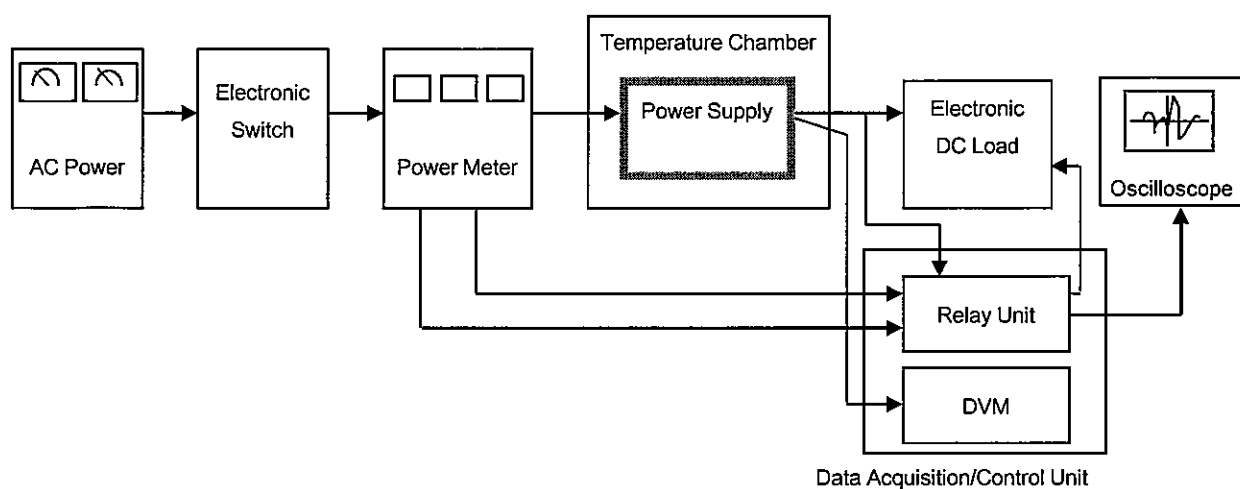


Figure A

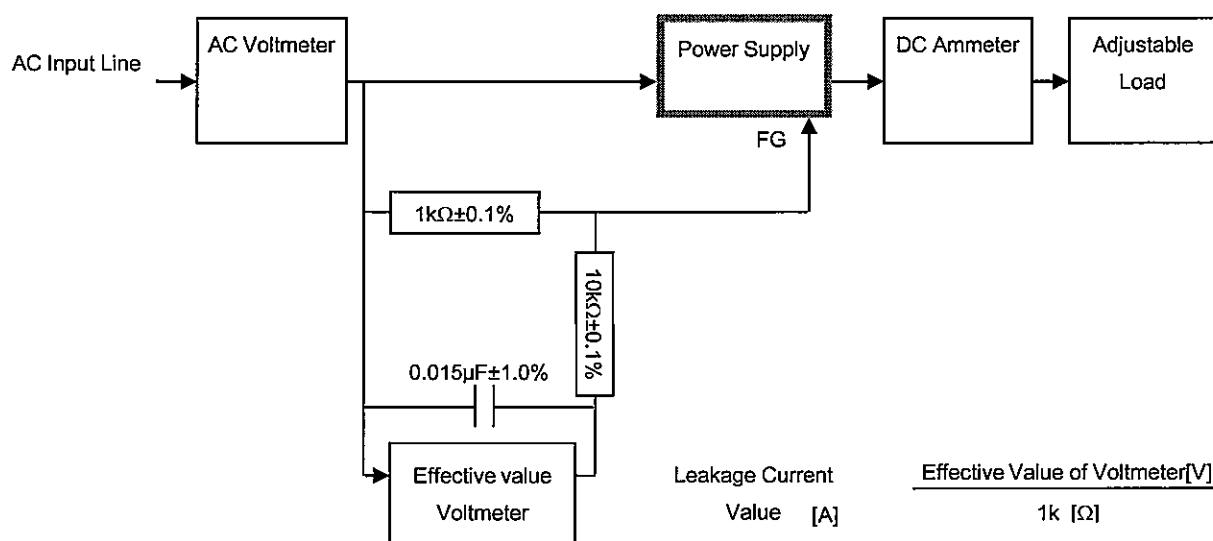


Figure B ( IEC60601-1 )