

# TEST DATA OF SPLFA30F-5

Regulated DC Power Supply  
May 18, 2011

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**COSEL CO.,LTD.**

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(Final Page 24)

Model		SPLFA30F-5	
Item		Input Current (by Load Current)	
Object			

1.Graph

—△—

Input Volt.

100V

---□---

Input Volt.

200V

-○-

Input Volt.

230V

Input Current [A]

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	0.027	0.026	0.026
1.0	0.132	0.092	0.085
2.0	0.234	0.148	0.135
3.0	0.330	0.202	0.185
4.0	0.429	0.256	0.234
5.0	0.531	0.311	0.283
6.0	0.634	0.367	0.332
6.6	0.698	0.401	0.362
--	-	-	-
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Model SPLFA30F-5

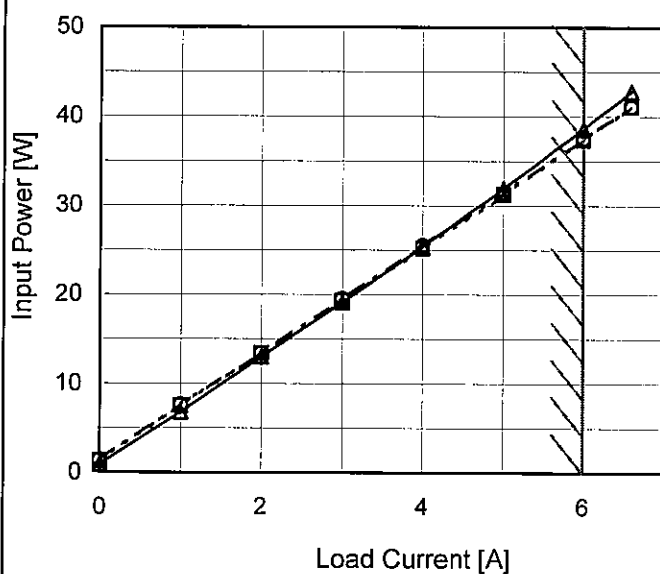
Item Input Power (by Load Current)

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	0.90	1.30	1.40
1.0	6.80	7.50	7.60
2.0	13.00	13.40	13.40
3.0	19.10	19.30	19.50
4.0	25.40	25.20	25.50
5.0	31.90	31.20	31.40
6.0	38.60	37.40	37.50
6.6	42.80	41.10	41.10
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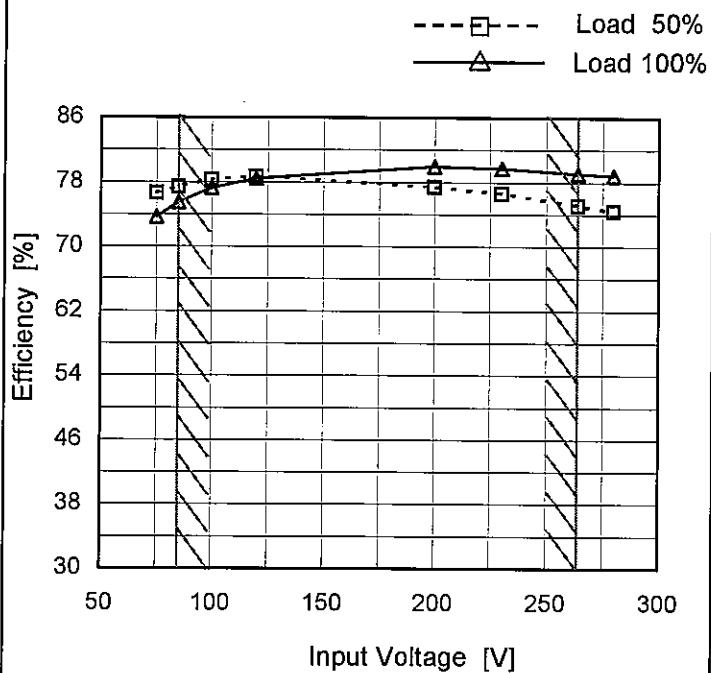
Model SPLFA30F-5

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	76.6	73.7
85	77.4	75.5
100	78.2	77.3
120	78.7	78.5
200	77.4	79.9
230	76.6	79.7
264	75.1	79.1
280	74.4	78.9
--	-	-

Model		SPLFA30F-5		Temperature 25°C																																																				
Item		Efficiency (by Load Current)		Testing Circuitry Figure A																																																				
Object																																																								
1.Graph		<div><div>—△—</div>Input Volt. 100V</div> <div><div>---□---</div>Input Volt. 200V</div> <div><div>-○-</div>Input Volt. 230V</div>		2.Values																																																				
<div><div>Efficiency [%]</div><div><div>Load Current [A]</div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</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>73.8</td><td>66.9</td><td>66.0</td></tr><tr><td>2.0</td><td>77.1</td><td>74.8</td><td>74.8</td></tr><tr><td>3.0</td><td>78.2</td><td>77.4</td><td>76.6</td></tr><tr><td>4.0</td><td>78.4</td><td>79.0</td><td>78.1</td></tr><tr><td>5.0</td><td>78.0</td><td>79.7</td><td>79.2</td></tr><tr><td>6.0</td><td>77.3</td><td>79.7</td><td>79.5</td></tr><tr><td>6.6</td><td>76.6</td><td>79.7</td><td>79.7</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]	Efficiency [%]			Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]	0.0	-	-	-	1.0	73.8	66.9	66.0	2.0	77.1	74.8	74.8	3.0	78.2	77.4	76.6	4.0	78.4	79.0	78.1	5.0	78.0	79.7	79.2	6.0	77.3	79.7	79.5	6.6	76.6	79.7	79.7	--	-	-	-	--	-	-	-	--	-	-	-		
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Model		SPLFA30F-5	
Item		Power Factor (by Input Voltage)	
Object			
1.Graph		2.Values	

</

Model

SPLFA30F-5

Item

Power Factor (by Load Current)

Object

Temperature

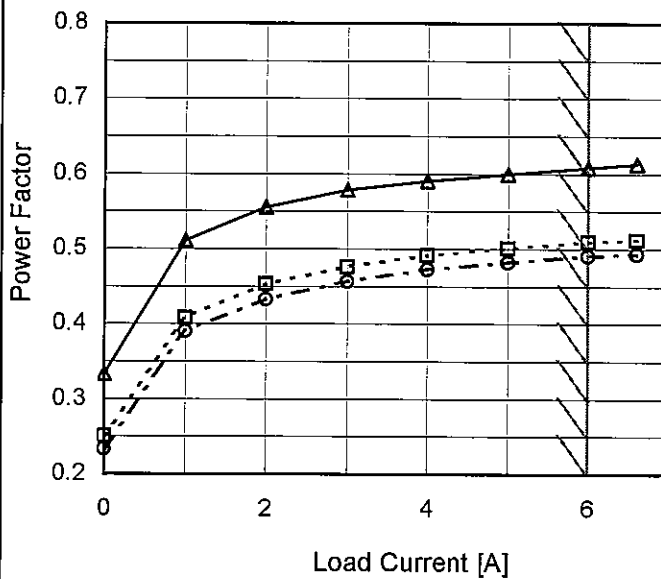
25°C

Testing Circuitry

Figure A

## 1. Graph

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



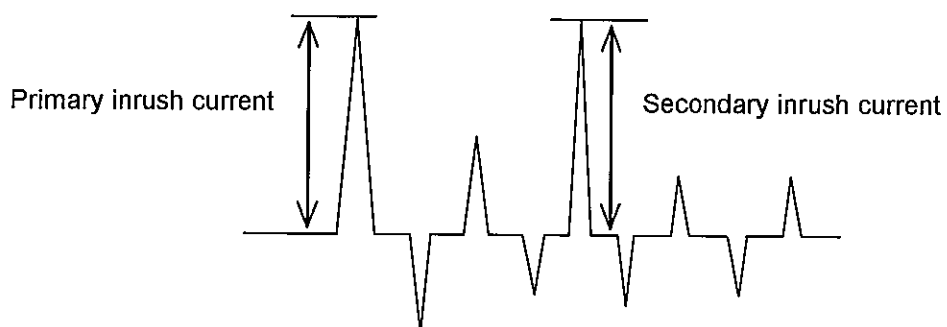
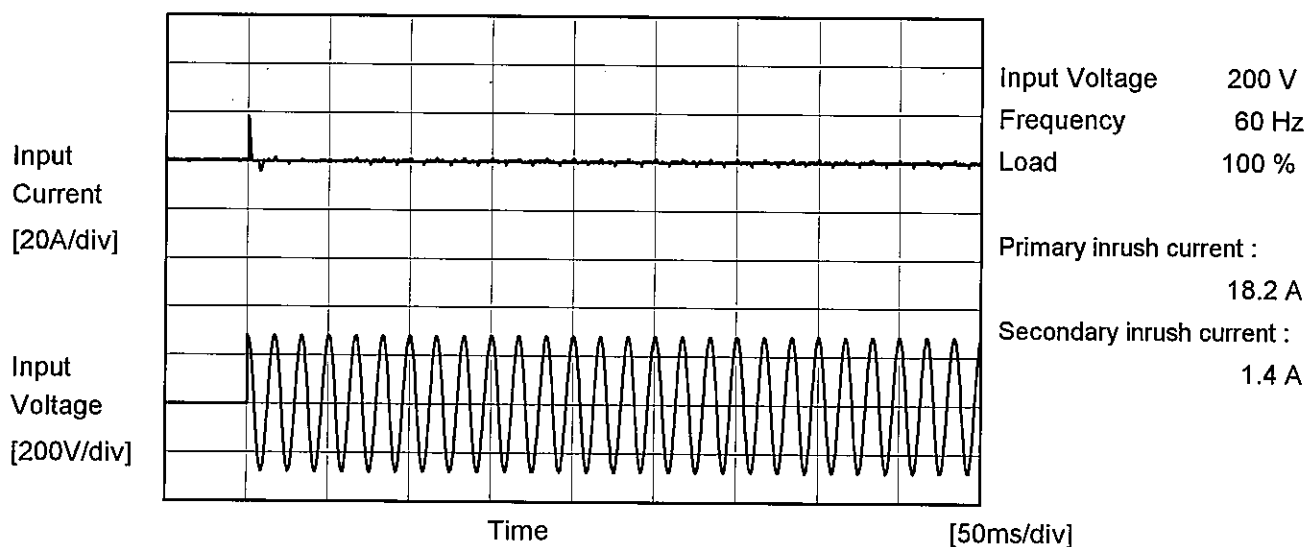
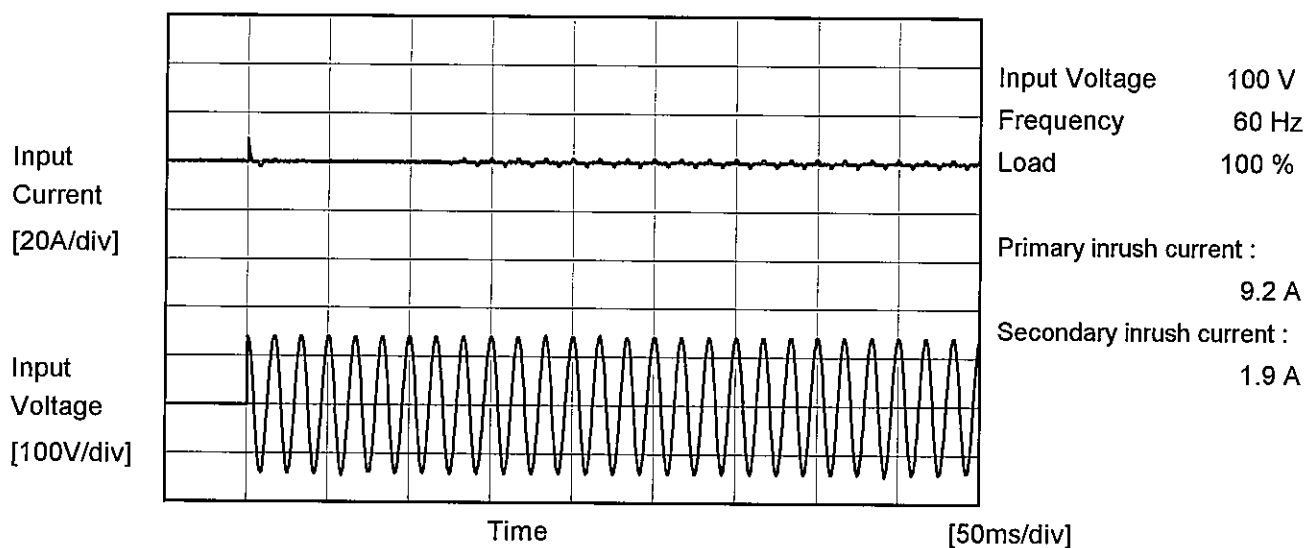
Note: Slanted line shows the range of the rated load current.

## 2. Values

Load Current [A]	Power Factor		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	0.333	0.250	0.233
1.0	0.511	0.408	0.390
2.0	0.556	0.453	0.432
3.0	0.579	0.477	0.457
4.0	0.591	0.491	0.473
5.0	0.600	0.501	0.482
6.0	0.608	0.510	0.491
6.6	0.613	0.512	0.493
--	-	-	-
--	-	-	-
--	-	-	-



Model	SPLFA30F-5	Temperature 25°C Testing Circuitry Figure A	
Item	Inrush Current		
Object	_____		



		Temperature 25°C Testing Circuitry Figure B
Model	SPLFA30F-5	
Item	Leakage Current	
Object		

## 1.Results

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.13	0.25	0.34	Operation
	One of phases	0.19	0.48	0.53	Stand by
IEC60950-1	Both phases	0.15	0.28	0.39	Operation
	One of phases	0.20	0.49	0.54	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.

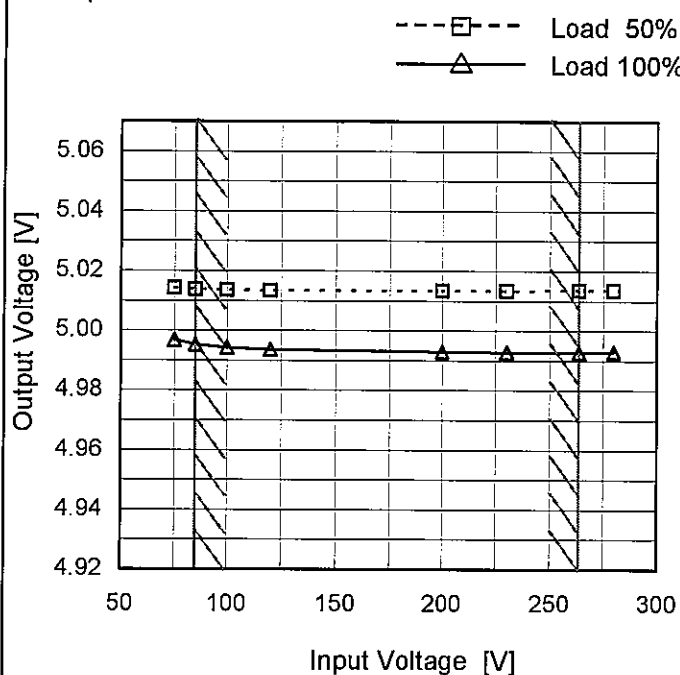
Model SPLFA30F-5

Item Line Regulation

Object +5V6A

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	5.014	4.997
85	5.014	4.995
100	5.014	4.994
120	5.013	4.994
200	5.013	4.993
230	5.013	4.993
264	5.014	4.993
280	5.014	4.993
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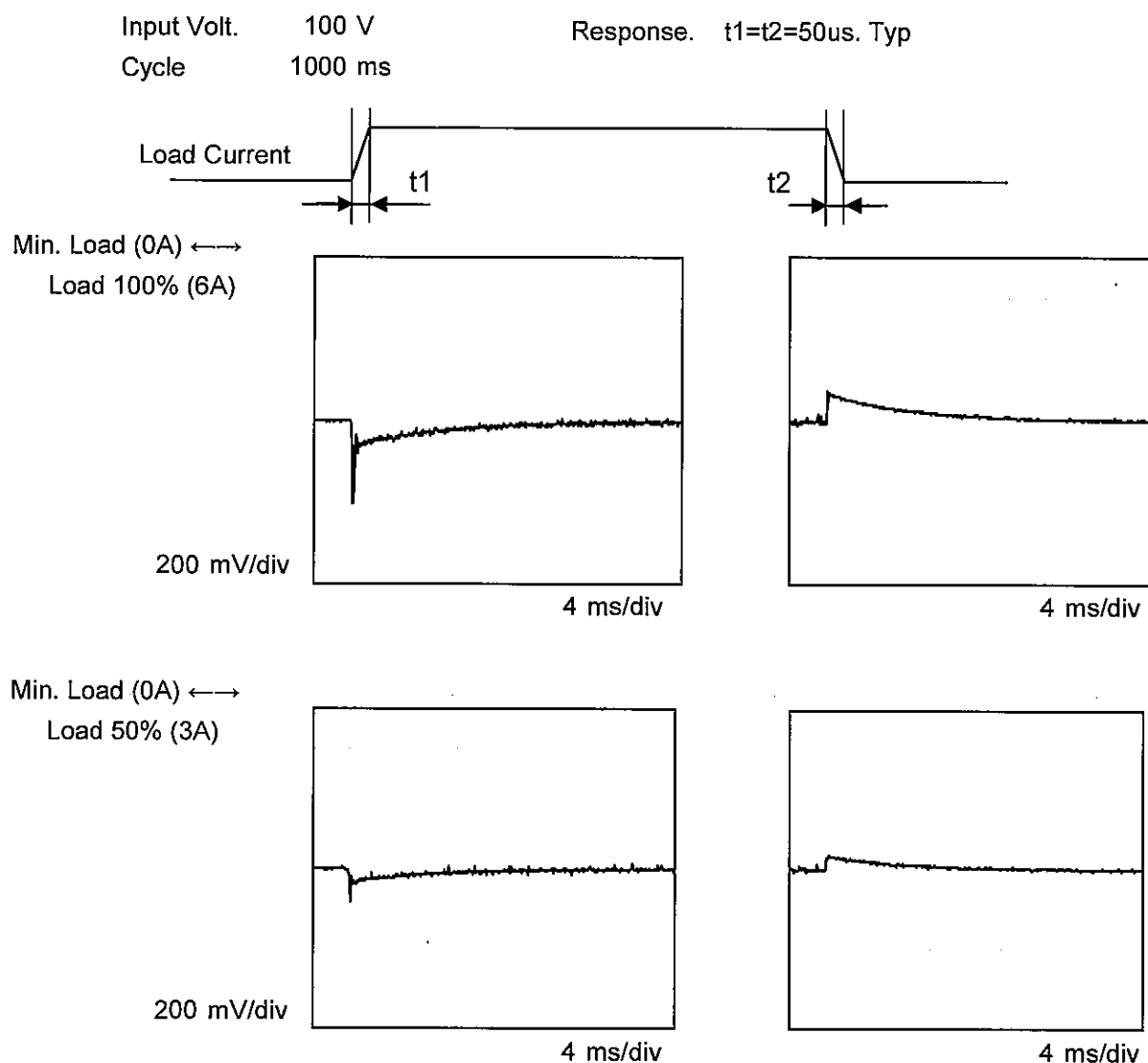
Model	SPLFA30F-5																																																					
Item	Load Regulation	Temperature	25°C																																																			
Object	+5V6A	Testing Circuitry	Figure A																																																			
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<div><div><div>—△—</div><div>---□---</div><div>---○---</div></div><div>Input Volt. 100V</div><div>Input Volt. 200V</div><div>Input Volt. 230V</div></div> <p>Note: Slanted line shows the range of the rated load current.</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>0.0</td><td>5.031</td><td>5.029</td><td>5.029</td></tr><tr><td>1.0</td><td>5.025</td><td>5.025</td><td>5.026</td></tr><tr><td>2.0</td><td>5.019</td><td>5.019</td><td>5.019</td></tr><tr><td>3.0</td><td>5.013</td><td>5.012</td><td>5.013</td></tr><tr><td>4.0</td><td>5.006</td><td>5.006</td><td>5.006</td></tr><tr><td>5.0</td><td>5.000</td><td>4.999</td><td>4.999</td></tr><tr><td>6.0</td><td>4.994</td><td>4.993</td><td>4.993</td></tr><tr><td>6.6</td><td>4.991</td><td>4.989</td><td>4.989</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]	0.0	5.031	5.029	5.029	1.0	5.025	5.025	5.026	2.0	5.019	5.019	5.019	3.0	5.013	5.012	5.013	4.0	5.006	5.006	5.006	5.0	5.000	4.999	4.999	6.0	4.994	4.993	4.993	6.6	4.991	4.989	4.989	--	-	-	-	--	-	-	-	--	-	-	-
Load Current [A]	Output Voltage [V]																																																					
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4.0	5.006	5.006	5.006																																																			
5.0	5.000	4.999	4.999																																																			
6.0	4.994	4.993	4.993																																																			
6.6	4.991	4.989	4.989																																																			
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Model	SPLFA30F-5	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+5V6A		

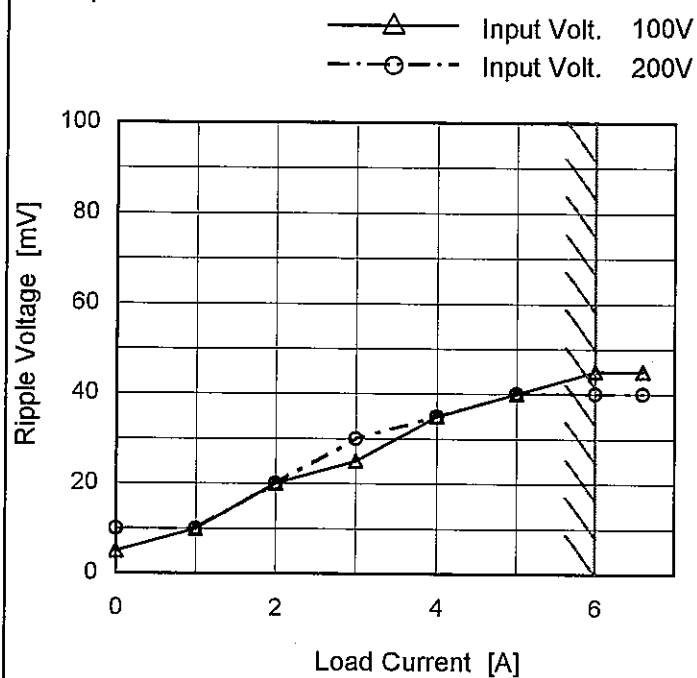


# COSEL

Model	SPLFA30F-5
Item	Ripple Voltage (by Load Current)
Object	+5V6A

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	5	10
1.0	10	10
2.0	20	20
3.0	25	30
4.0	35	35
5.0	40	40
6.0	45	40
6.6	45	40
--	-	-
--	-	-
--	-	-

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.

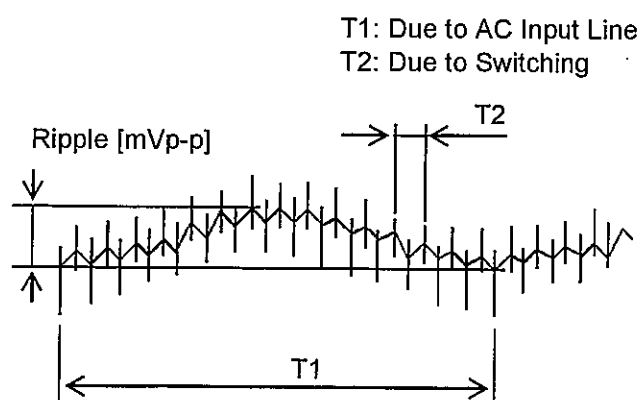


Fig. Complex Ripple Wave Form

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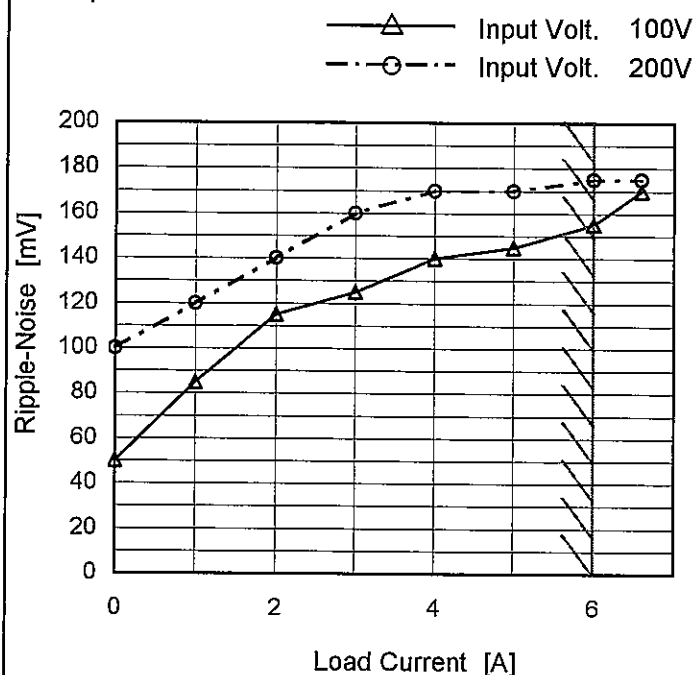
Model SPLFA30F-5

Item Ripple-Noise

Object +5V6A

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	50	100
1.0	85	120
2.0	115	140
3.0	125	160
4.0	140	170
5.0	145	170
6.0	155	175
6.6	170	175
--	-	-
--	-	-
--	-	-

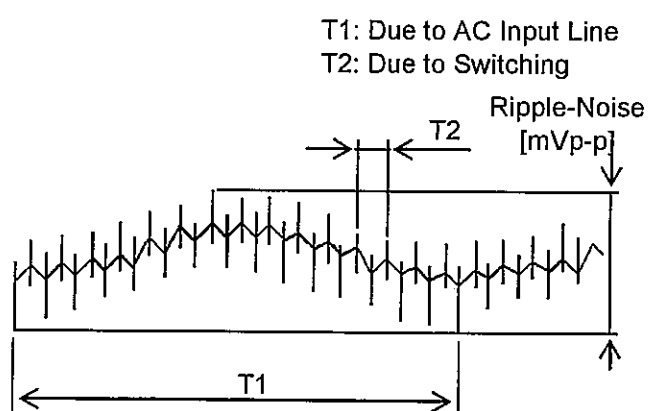


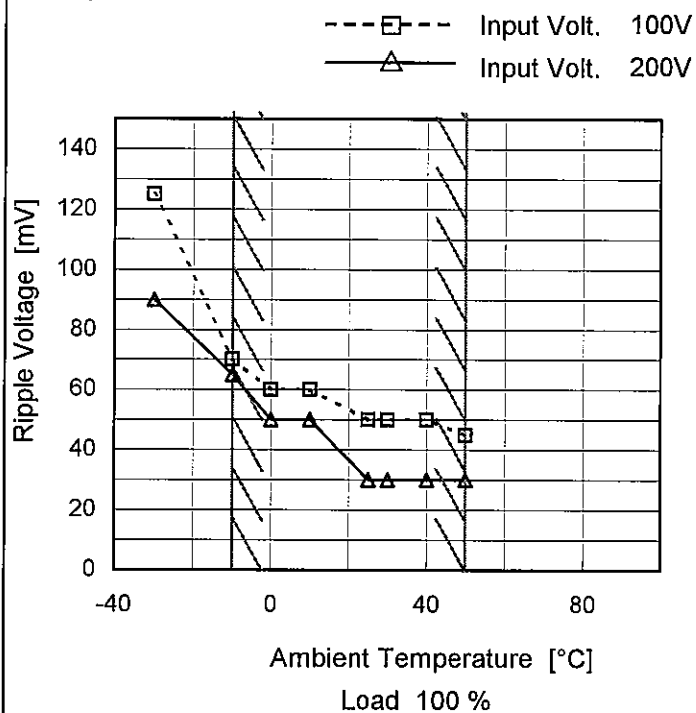
Fig. Complex Ripple Wave Form

Model SPLFA30F-5

Item Ripple Voltage (by Ambient Temp.)

Object +5V6A

## 1. Graph



Measured by 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	125	90
-10	70	65
0	60	50
10	60	50
25	50	30
30	50	30
40	50	30
50	45	30
--	-	-
--	-	-
--	-	-



Model		SPLFA30F-5	
Item		Ambient Temperature Drift	
Object		+5V6A	

1.Graph

△

Input Volt. 100V

□

Input Volt. 200V

○

Input Volt. 230V

Output Voltage [V]

Ambient Temperature [°C]

Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	5.002	5.001	5.001
-10	5.001	5.000	5.000
0	4.999	4.998	4.998
10	4.999	4.997	4.997
25	4.998	4.996	4.996
30	4.997	4.996	4.996
40	4.995	4.994	4.994
50	4.992	4.990	4.990
60	4.987	4.986	4.986
65	4.985	4.983	4.983
---	-	-	-

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

		Testing Circuitry Figure A
Model	SPLFA30F-5	
Item	Output Voltage Accuracy	
Object	+5V6A	

### 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

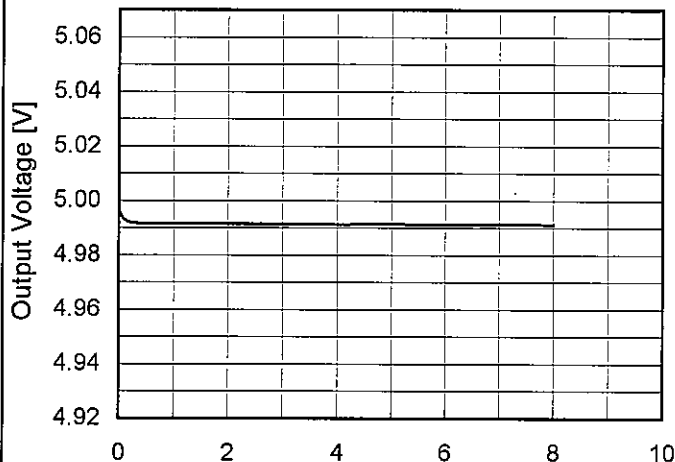
\* Output Voltage Accuracy =  $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

\* 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	-10	85	0	5.037	±24	±0.5
Minimum Voltage	50	200	6	4.990		

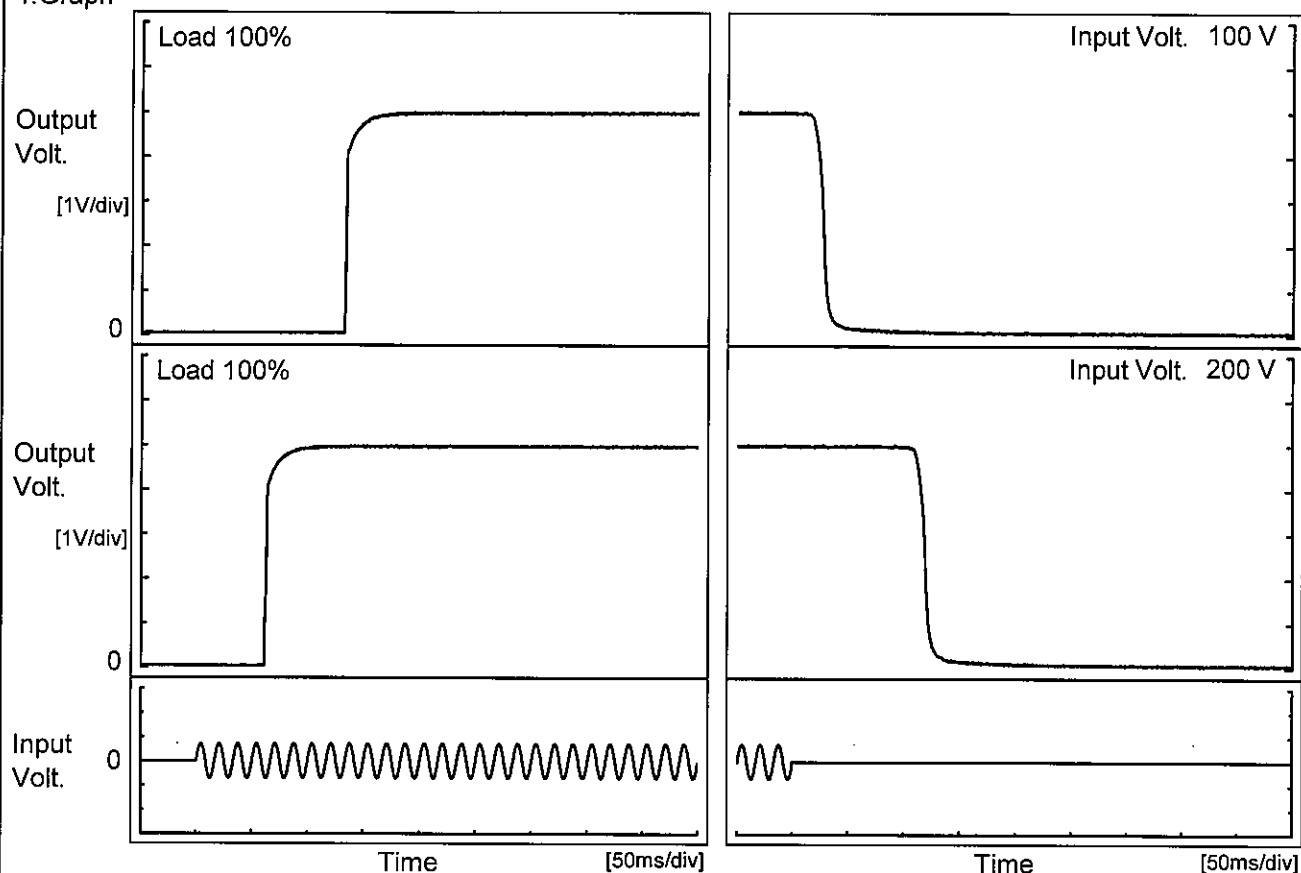
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Model	SPLFA30F-5	Temperature 25°C Testing Circuitry Figure A																							
Item	Time Lapse Drift																								
Object	+5V6A																								
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 100V Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>4.997</td></tr><tr><td>0.5</td><td>4.991</td></tr><tr><td>1.0</td><td>4.992</td></tr><tr><td>2.0</td><td>4.991</td></tr><tr><td>3.0</td><td>4.991</td></tr><tr><td>4.0</td><td>4.991</td></tr><tr><td>5.0</td><td>4.991</td></tr><tr><td>6.0</td><td>4.991</td></tr><tr><td>7.0</td><td>4.991</td></tr><tr><td>8.0</td><td>4.991</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	4.997	0.5	4.991	1.0	4.992	2.0	4.991	3.0	4.991	4.0	4.991	5.0	4.991	6.0	4.991	7.0	4.991	8.0	4.991
Time since start [H]	Output Voltage [V]																								
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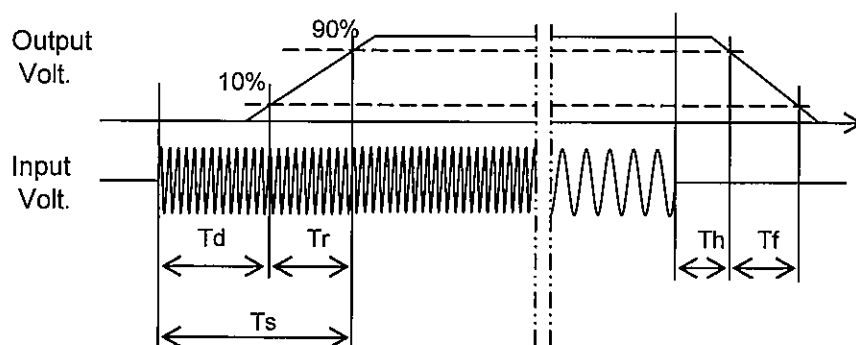
Model	SPLFA30F-5	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+5V6A		

## 1. Graph



## 2. Values

Input Volt.	Time	Td	Tr	Ts	Th	Tf
100 V		132.5	10.3	142.8	20.8	11.8
200 V		61.5	10.3	71.8	112.5	12.5



Model	SPLFA30F-5																																		
Item	Hold-Up Time	Temperature	25°C																																
Object	+5V6A	Testing Circuitry	Figure A																																
1.Graph		2.Values																																	
<div><div>---□--- Load 50%</div><div>—△— Load 100%</div></div> <div>Hold-Up Time [ms]</div> <div>Input Voltage [V]</div>		<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Hold-Up Time [ms]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>75</td><td>25</td><td>6</td></tr><tr><td>85</td><td>35</td><td>10</td></tr><tr><td>100</td><td>51</td><td>18</td></tr><tr><td>120</td><td>78</td><td>31</td></tr><tr><td>200</td><td>237</td><td>111</td></tr><tr><td>230</td><td>319</td><td>154</td></tr><tr><td>264</td><td>426</td><td>209</td></tr><tr><td>280</td><td>483</td><td>239</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	75	25	6	85	35	10	100	51	18	120	78	31	200	237	111	230	319	154	264	426	209	280	483	239	--	-	-
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<p>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</p> <p>Note: Slanted line shows the range of the rated input voltage.</p>																																			

Model SPLFA30F-5

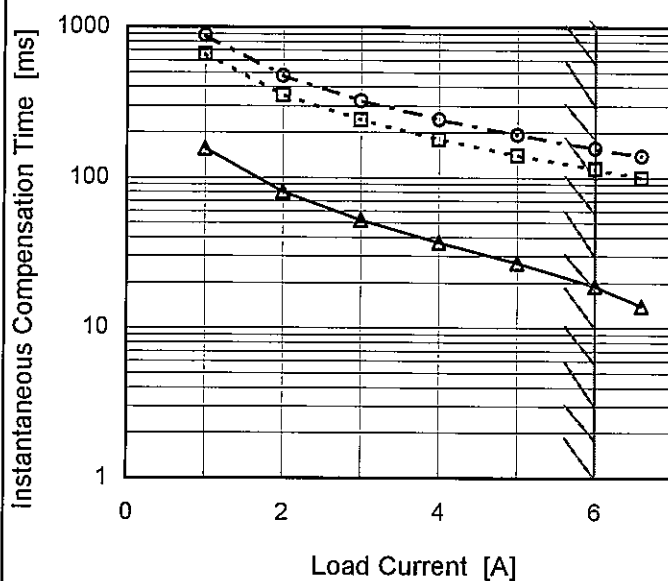
Item Instantaneous Interruption Compensation

Object +5V6A

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]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.0	-	-	-
1.0	157	664	881
2.0	80	355	476
3.0	52	241	324
4.0	37	180	244
5.0	27	141	192
6.0	19	114	156
6.6	14	100	139
--	-	-	-
--	-	-	-
--	-	-	-

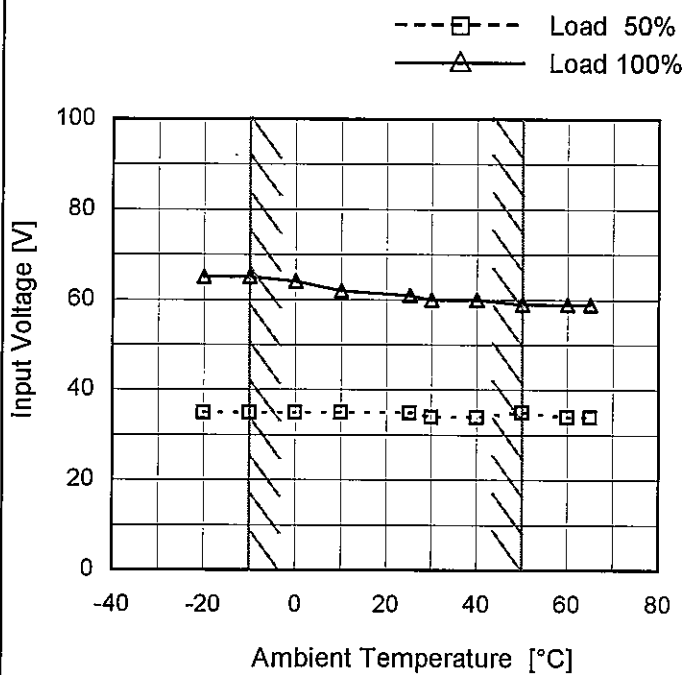
Model SPLFA30F-5

Item Minimum Input Voltage  
for Regulated Output Voltage

Object +5V6A

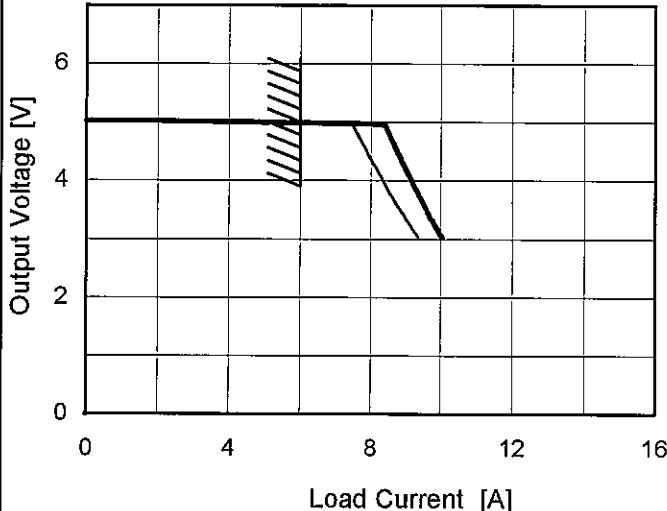
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	35	65
-10	35	65
0	35	64
10	35	62
25	35	61
30	34	60
40	34	60
50	35	59
60	34	59
65	34	59
--	-	-

Model	SPLFA30F-5																																														
Item	Overcurrent Protection																																														
Object	+5V6A																																														
1.Graph		2.Values																																													
<div><div><div></div><div>Input Volt. 100V</div></div><div><div></div><div>Input Volt. 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 from 3V to 0V.</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>4.75</td><td>7.68</td><td>8.58</td></tr><tr><td>4.50</td><td>7.89</td><td>8.76</td></tr><tr><td>4.00</td><td>8.33</td><td>9.14</td></tr><tr><td>3.50</td><td>8.84</td><td>9.59</td></tr><tr><td>3.00</td><td>9.35</td><td>10.03</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><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Output Voltage [V]	Load Current [A]		Input Volt. 100[V]	Input Volt. 200[V]	4.75	7.68	8.58	4.50	7.89	8.76	4.00	8.33	9.14	3.50	8.84	9.59	3.00	9.35	10.03	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Output Voltage [V]	Load Current [A]																																														
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Model

SPLFA30F-5

Item

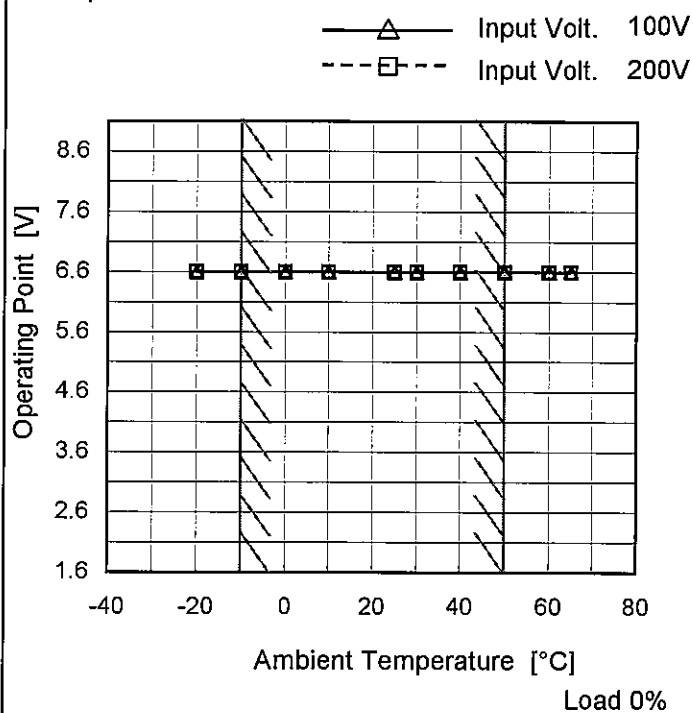
Overvoltage Protection

Object

+5V6A

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	6.65	6.65
-10	6.65	6.65
0	6.65	6.65
10	6.65	6.65
25	6.65	6.65
30	6.65	6.65
40	6.65	6.65
50	6.65	6.65
60	6.65	6.65
65	6.65	6.65
--	-	-

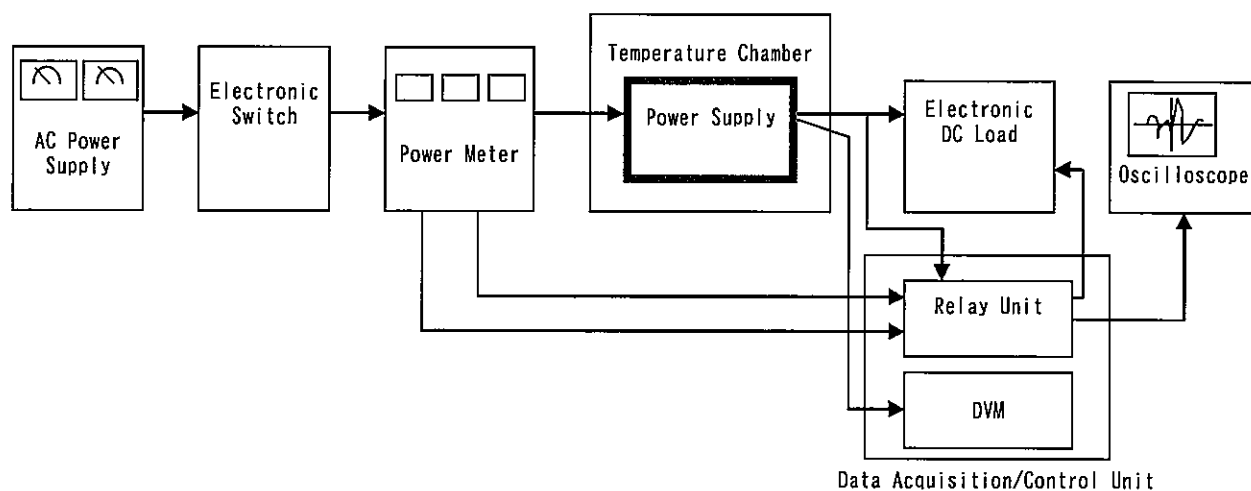


Figure A

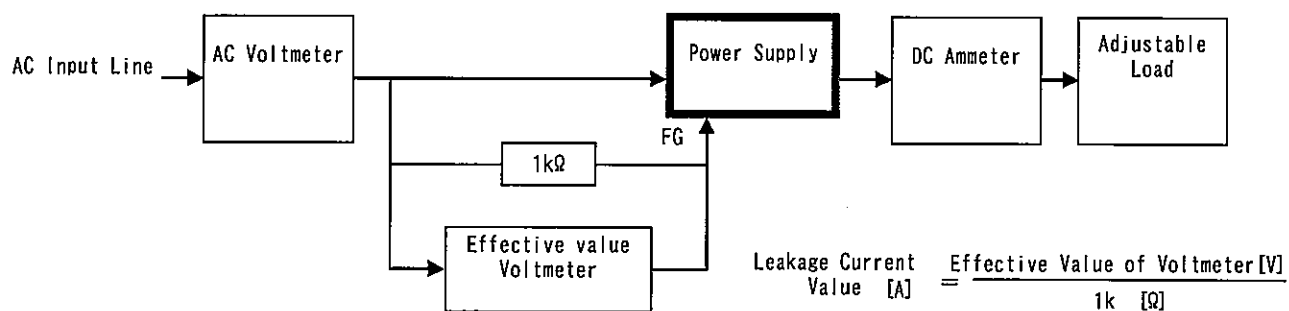


Figure B ( DEN-AN )

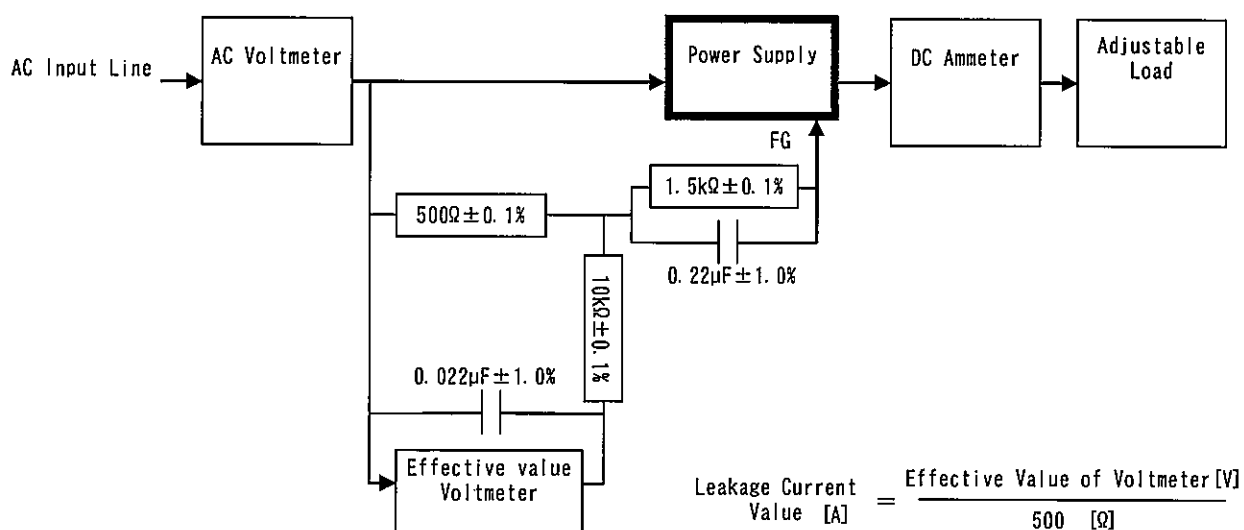


Figure B ( IEC60950-1 )