参考資料

COSEL

TEST DATA OF PLA150F-15

Regulated DC Power Supply
June 26, 2013

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COSEL CO.,LTD.

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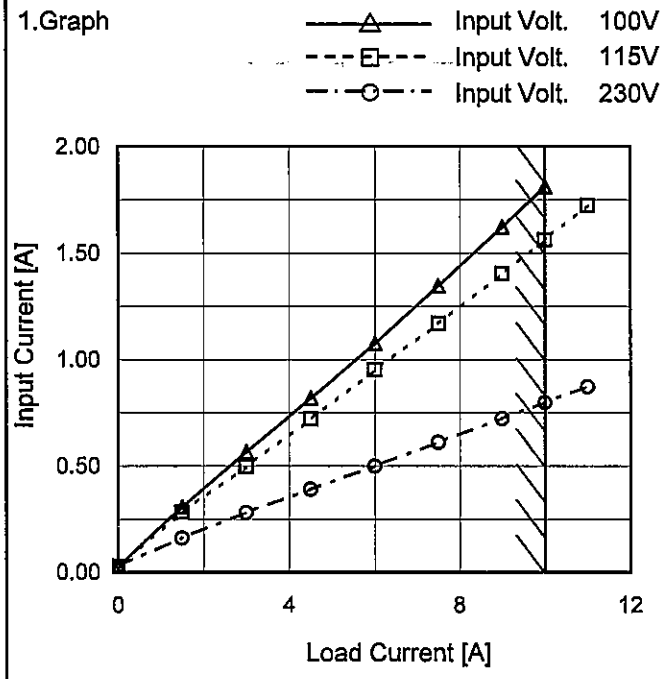
COSEL

Model	PLA150F-15
Item	Input Current (by Load Current)
Object	———

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]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.030	0.027	0.030
1.50	0.309	0.283	0.163
3.00	0.567	0.497	0.281
4.50	0.819	0.720	0.391
6.00	1.078	0.951	0.500
7.50	1.347	1.169	0.611
9.00	1.624	1.404	0.724
10.00	1.812	1.562	0.799
11.00	-	1.724	0.874
--	-	-	-
—	-	-	-

BC - 10755

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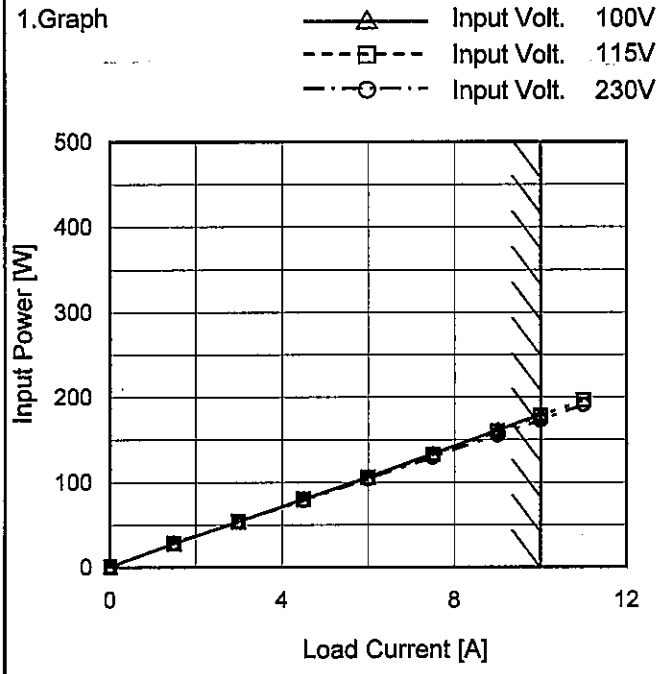
Model	PLA150F-15
Item	Input Power (by Load Current)
Object	———————

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]	Input Power [W]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	1.2	1.2	0.7
1.50	28.5	28.0	28.7
3.00	54.3	54.0	53.8
4.50	80.1	79.6	78.8
6.00	106.4	105.6	104.0
7.50	133.5	132.2	129.6
9.00	161.1	159.4	155.7
10.00	179.8	177.7	173.3
11.00	-	196.3	191.0
--	-	-	-
--	-	-	-

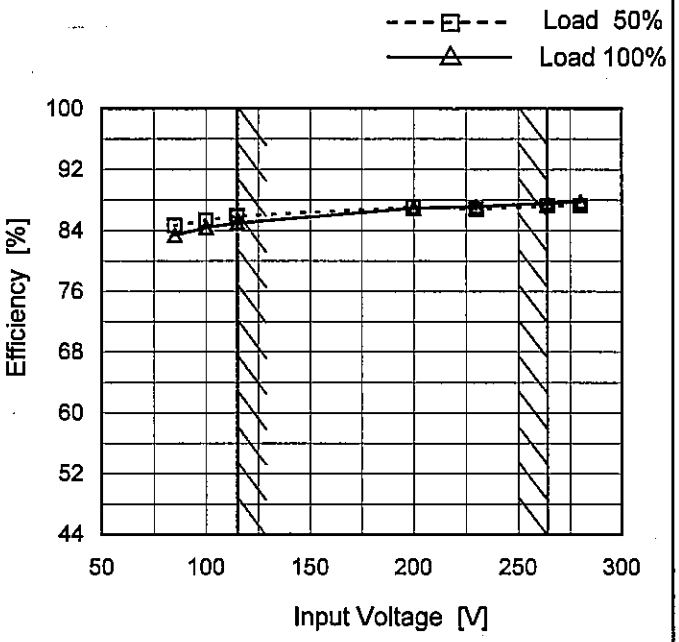
BC - 10755

COSEL

Model	PLA150F-15
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%
85	84.6	83.4 ※1
100	85.4	84.4 ※2
115	85.9	85.0
200	87.1	86.9
230	86.7	87.1
264	87.2	87.6
280	87.2	87.8
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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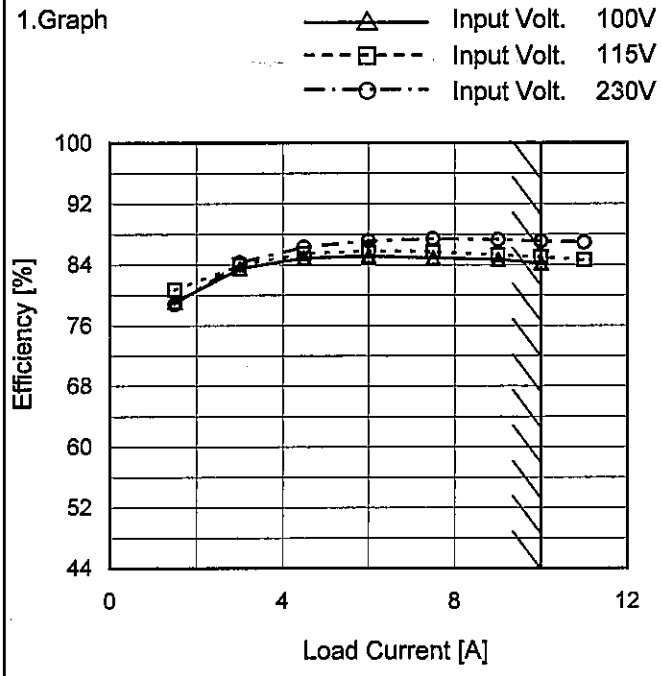
Model	PLA150F-15
Item	Efficiency (by Load Current)
Object	———————

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]	Efficiency [%]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
1.50	79.1	80.6	78.8
3.00	83.5	83.9	84.3
4.50	84.9	85.5	86.3
6.00	85.1	85.8	87.1
7.50	84.9	85.7	87.4
9.00	84.7	85.2	87.3
10.00	84.2	85.0	87.1
11.00	-	84.6	86.9
—	-	-	-
—	-	-	-

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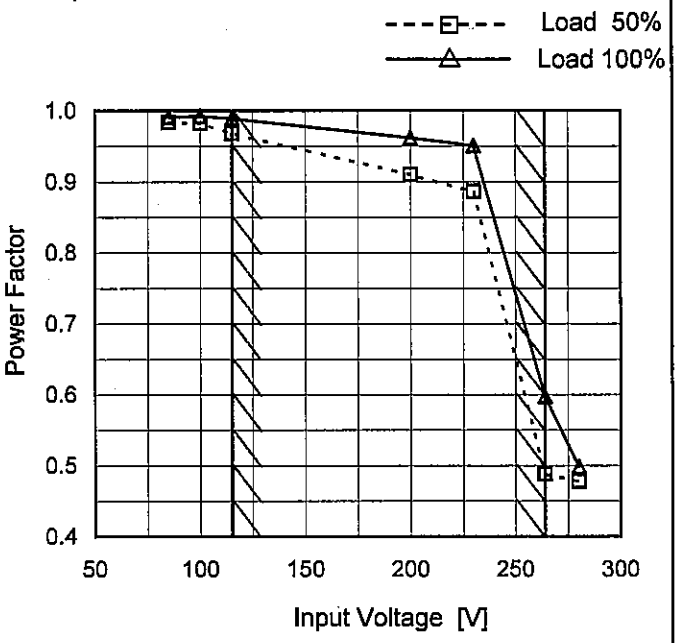
Model	PLA150F-15
Item	Power Factor (by Input Voltage)
Object	———

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%
85	0.983	0.991 ※1
100	0.982	0.993 ※2
115	0.968	0.989
200	0.910	0.962
230	0.886	0.951
264	0.488	0.598
280	0.478	0.499
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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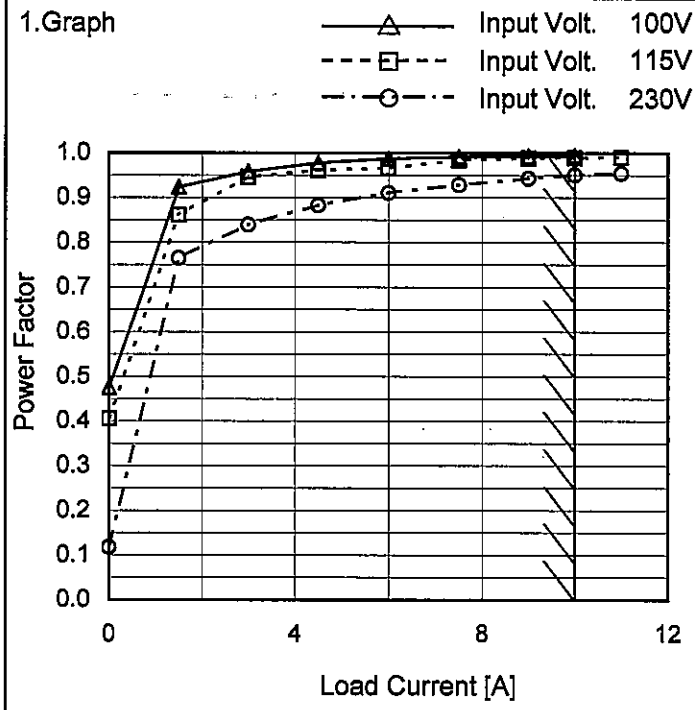
Model	PLA150F-15
Item	Power Factor (by Load Current)
Object	———————

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]	Power Factor		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	0.476	0.406	0.119
1.50	0.924	0.861	0.765
3.00	0.959	0.946	0.840
4.50	0.978	0.961	0.883
6.00	0.988	0.966	0.911
7.50	0.991	0.984	0.929
9.00	0.993	0.988	0.943
10.00	0.993	0.989	0.951
11.00	-	0.990	0.955
--	-	-	-
--	-	-	-

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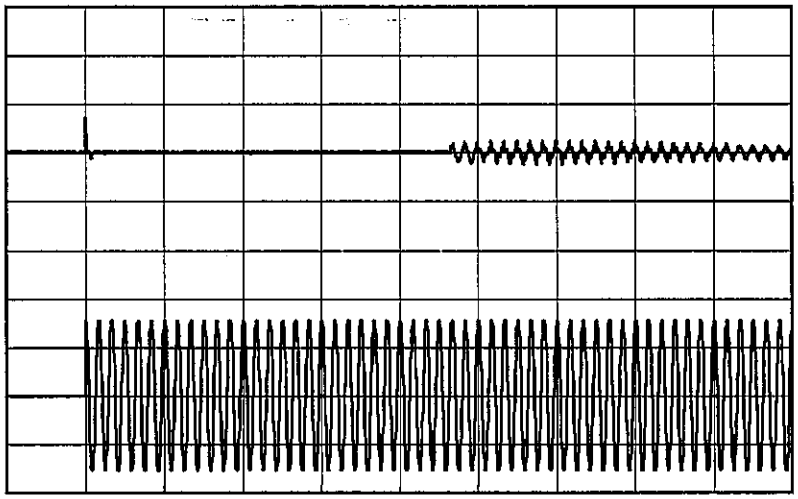
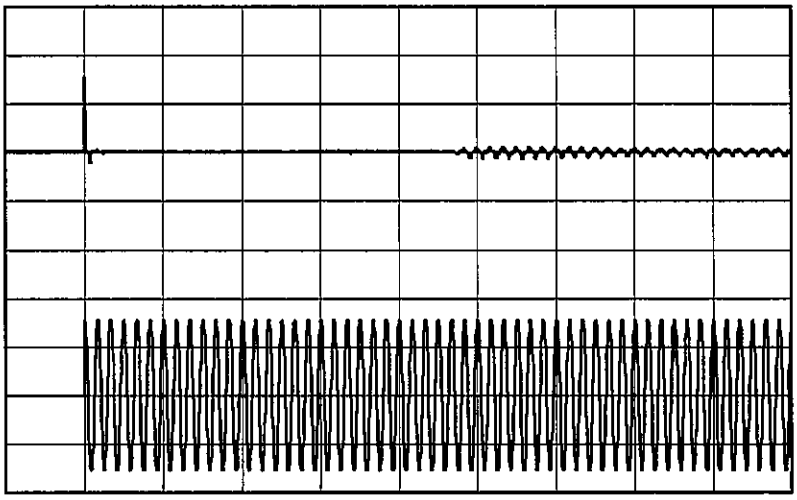
Model	PLA150F-15		
Item	Inrush Current	Temperature	25°C
		Testing Circuitry	Figure A
Object	———————		



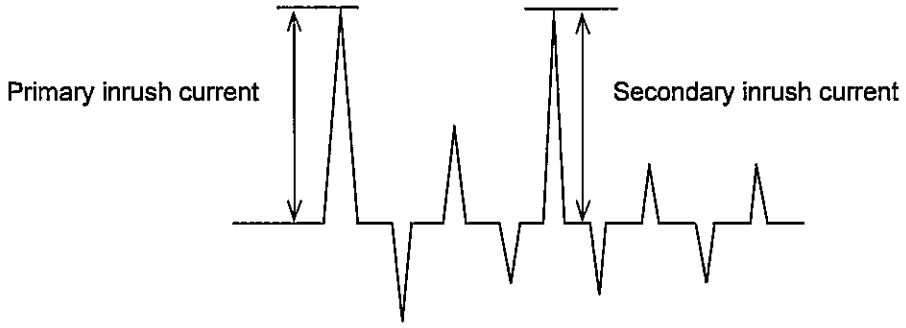
Input Voltage 115 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
14.3 A
Secondary inrush current :
4.9 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

Primary inrush current :
31.1 A
Secondary inrush current :
2.5 A



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Model	PLA150F-15		
Item	Leakage Current	Temperature	25°C
		Testing Circuitry	Figure B
Object	———————		

1.Results

[mA]

Standards		Input Volt.			Note
		100[V]	115[V]	240[V]	
DEN-AN	Both phases	0.45	0.50	0.65	Operation
	One of phases	0.30	0.35	0.78	Stand by
IEC60950-1	Both phases	0.30	0.31	0.55	Operation
	One of phases	0.27	0.31	0.72	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.

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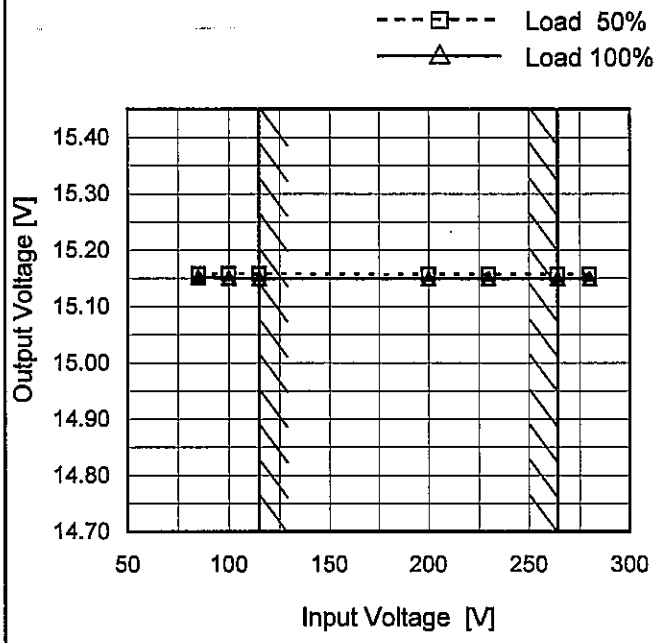
Model	PLA150F-15
Item	Line Regulation
Object	+15V10A

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%
85	15.158	15.153 ※1
100	15.158	15.151 ※2
115	15.158	15.150
200	15.157	15.150
230	15.157	15.150
264	15.157	15.150
280	15.157	15.150
--	-	-
--	-	-

※1:Load 80%
※2:Load 90%

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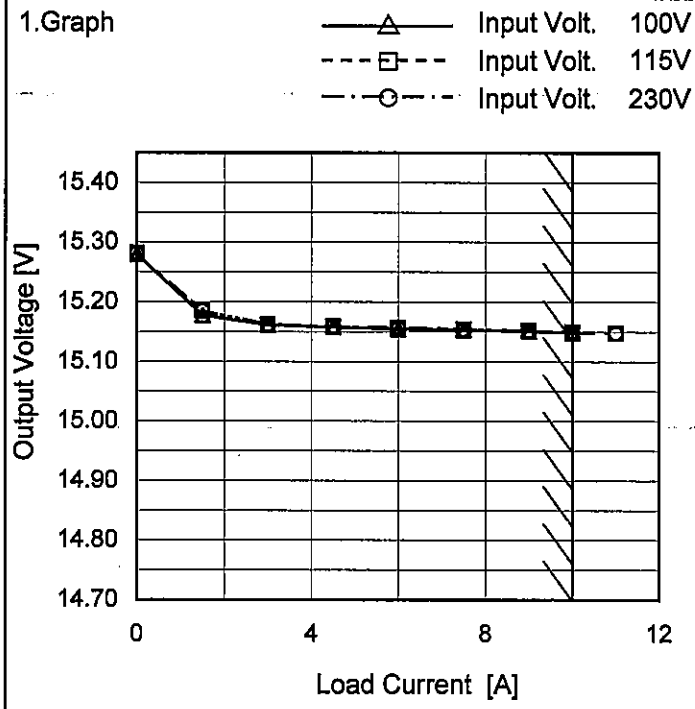
Model	PLA150F-15
Item	Load Regulation
Object	+15V10A

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]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	15.280	15.282	15.282
1.50	15.178	15.185	15.185
3.00	15.161	15.162	15.162
4.50	15.158	15.159	15.159
6.00	15.155	15.156	15.157
7.50	15.153	15.154	15.154
9.00	15.151	15.152	15.151
10.00	15.149	15.150	15.149
11.00	-	15.148	15.148
---	-	-	-
---	-	-	-

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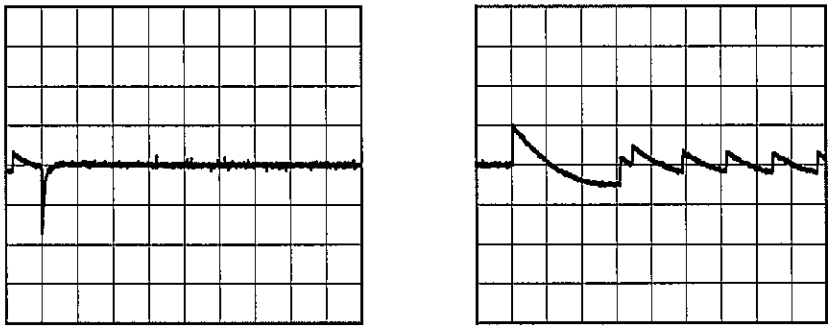
Model	PLA150F-15		
Item	Dynamic Load Response	Temperature	25˚C
		Testing Circuitry	Figure A
Object	+15V10A		

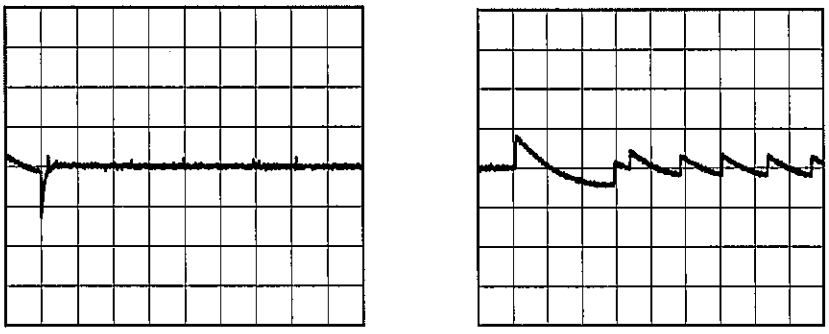
Input Volt. 115 V
Cycle 1000 ms

Response. t1=t2=50us. Typ

Min. Load (0A) ⟷
Load 100% (10A)



Min. Load (0A) ⟷
Load 50% (5A)



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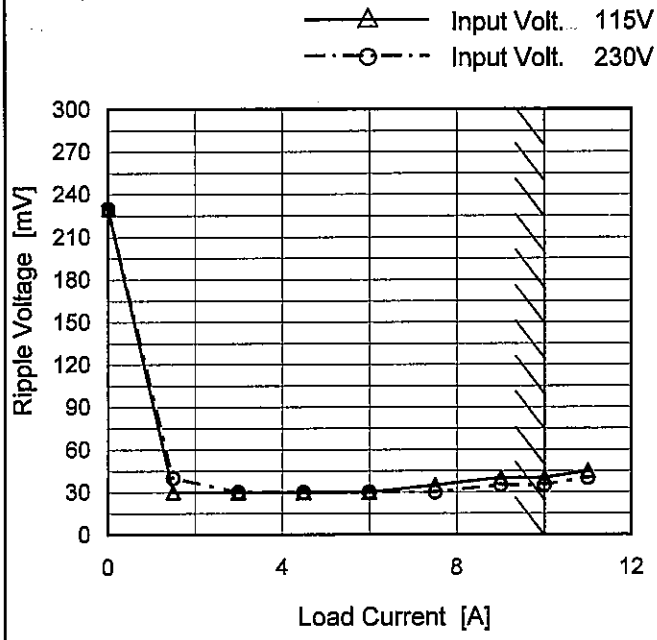
Model	PLA150F-15
Item	Ripple Voltage (by Load Current)
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure C

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.

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

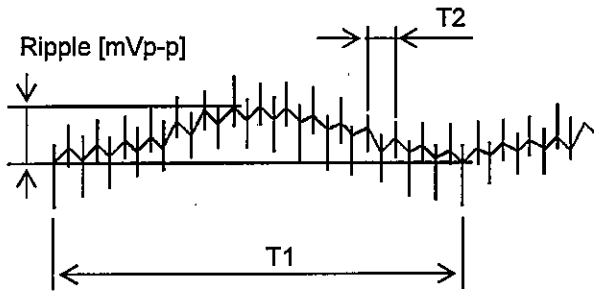


Fig. Complex Ripple Wave Form

2.Values

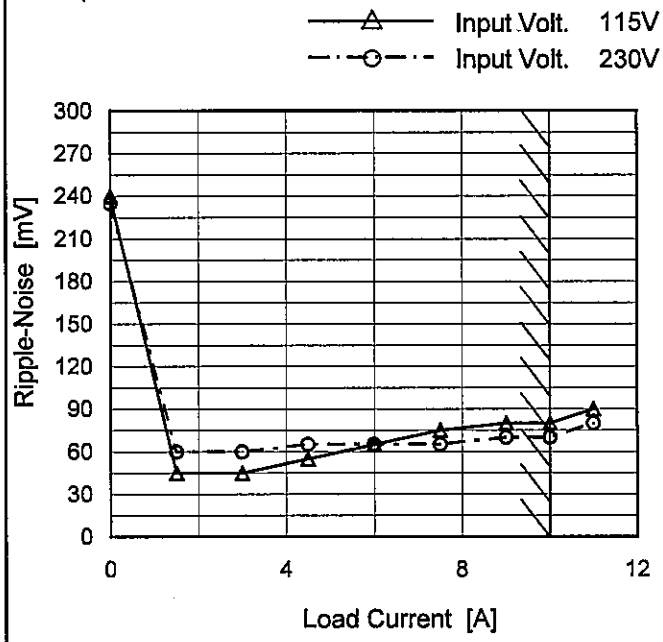
Load Current [A]	Ripple Voltage [mV] Input Volt. 115 [V]	Input Volt. 230 [V]
0.00	230	230
1.50	30	40
3.00	30	30
4.50	30	30
6.00	30	30
7.50	35	30
9.00	40	35
10.00	40	35
11.00	45	40
--	-	-
--	-	-

COSEL

Model	PLA150F-15
Item	Ripple-Noise
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure C

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. 115 [V]	Input Volt. 230 [V]
0.00	240	235
1.50	45	60
3.00	45	60
4.50	55	65
6.00	65	65
7.50	75	65
9.00	80	70
10.00	80	70
11.00	90	80
--	-	-
--	-	-

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

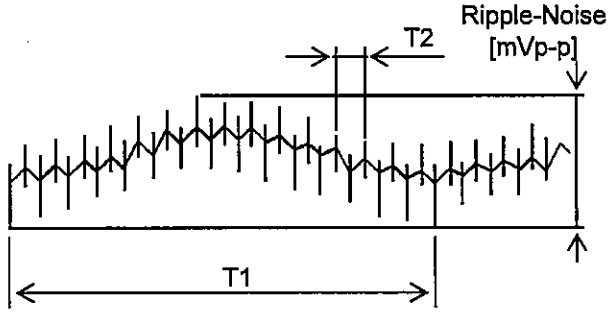


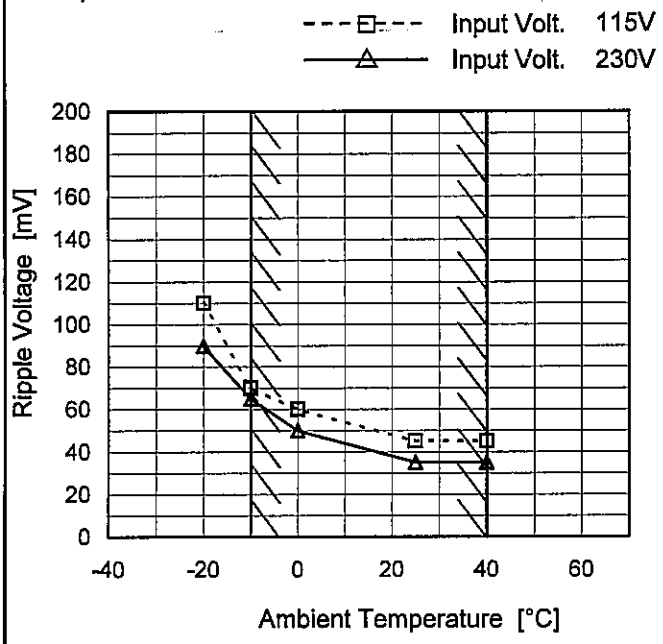
Fig. Complex Ripple Wave Form

COSEL

Model	PLA150F-15
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V10A

Testing Circuitry Figure C

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. 115 [V]	Input Volt. 230 [V]
-20	110	90
-10	70	65
0	60	50
25	45	35
40	45	35
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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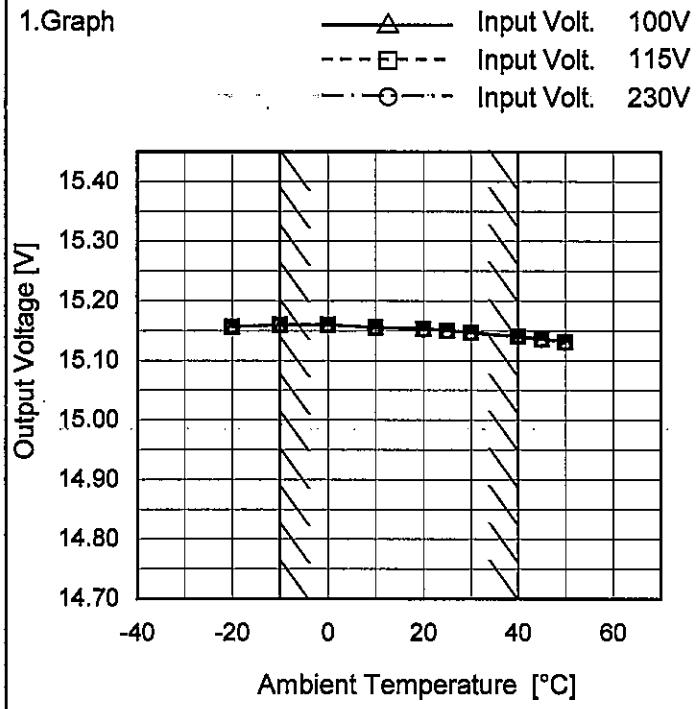
Model	PLA150F-15
Item	Ambient Temperature Drift
Object	+15V40A

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. 115[V]	Input Volt. 230[V]
-20	15.157	15.157	15.157
-10	15.160	15.160	15.160
0	15.160	15.160	15.160
10	15.156	15.156	15.155
20	15.154	15.153	15.152
25	15.151	15.150	15.150
30	15.147	15.147	15.146
40	15.141	15.141	15.140
45	15.137	15.136	15.135
50	15.132	15.131	15.130
--	-	-	-

Note: In case of Input Volt. 100V, Load 90%.
Other case Load 100%.

COSEL

Model	PLA150F-15
Item	Output Voltage Accuracy
Object	+15V10A

Testing Circuitry Figure A

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 - 40°C
Input Voltage : 115 - 264V
Load Current : 3 - 10A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - 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	0	264	3	15.172	±16	±0.1
Minimum Voltage	40	264	10	15.140		

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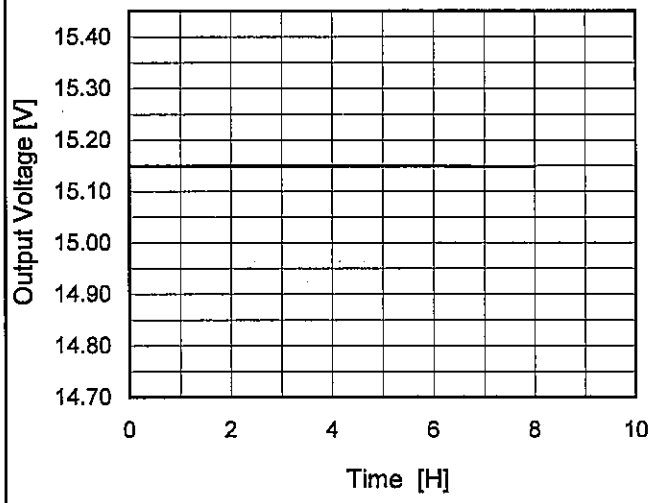
Model	PLA150F-15
Item	Time Lapse Drift
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 230V
Load 100%

* The characteristic of AC115V is equal.

2.Values

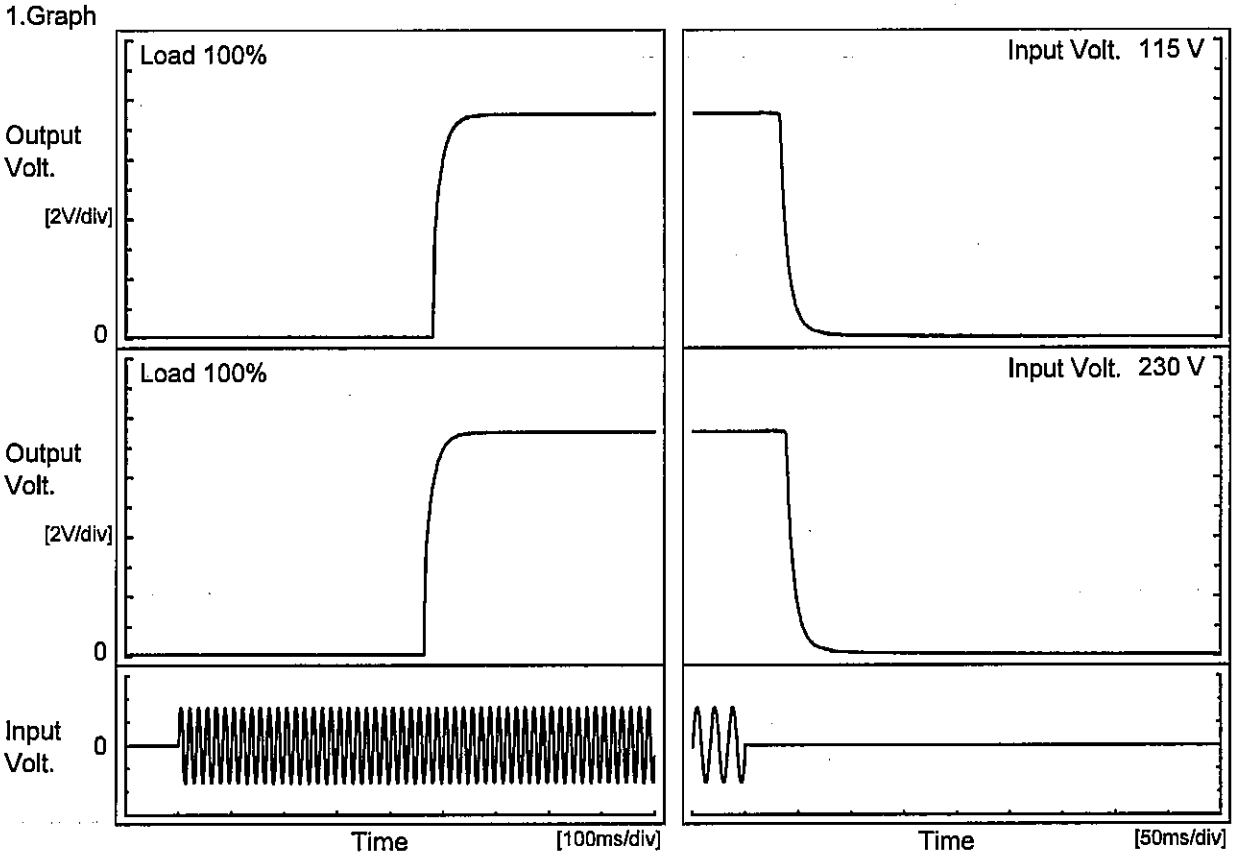
Time since start [H]	Output Voltage [V]
0.0	15.150
0.5	15.149
1.0	15.149
2.0	15.149
3.0	15.149
4.0	15.149
5.0	15.149
6.0	15.149
7.0	15.148
8.0	15.148

COSEL

Model	PLA150F-15
Item	Rise and Fall Time
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure A

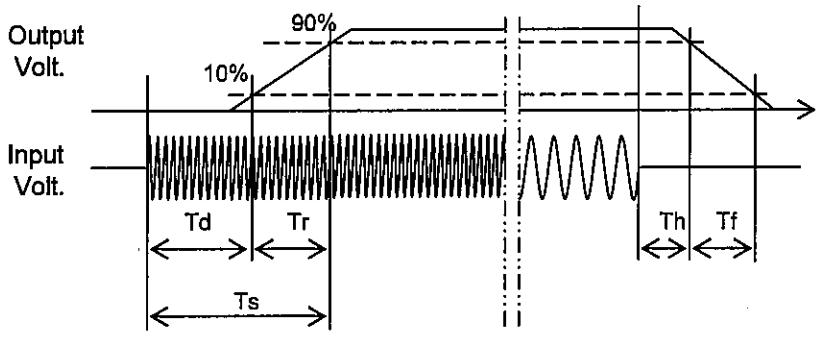
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
115 V	480.0	31.5	511.5	32.5	17.5
230 V	464.0	31.5	495.5	39.0	17.3



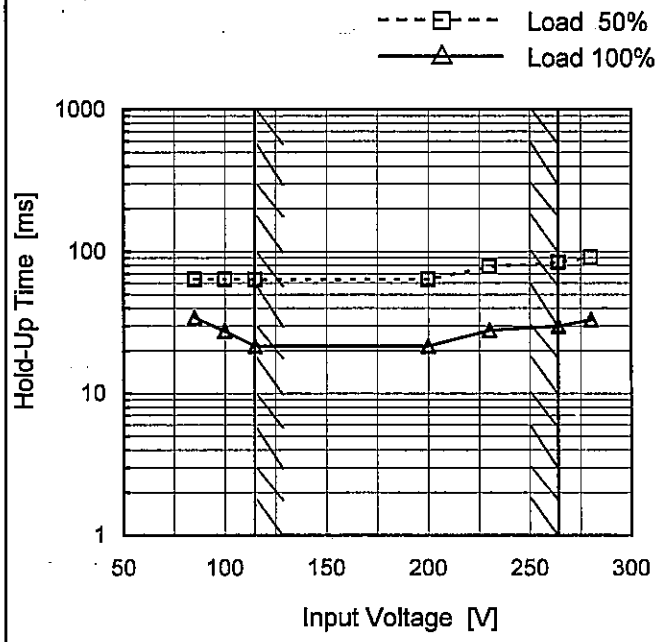
BC - 10755

COSEL

Model	PLA150F-15
Item	Hold-Up Time
Object	+15V10A

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%
85	64	34 ※1
100	64	28 ※2
115	64	22
200	64	22
230	79	28
264	84	30
280	91	33
--	-	-
--	-	-

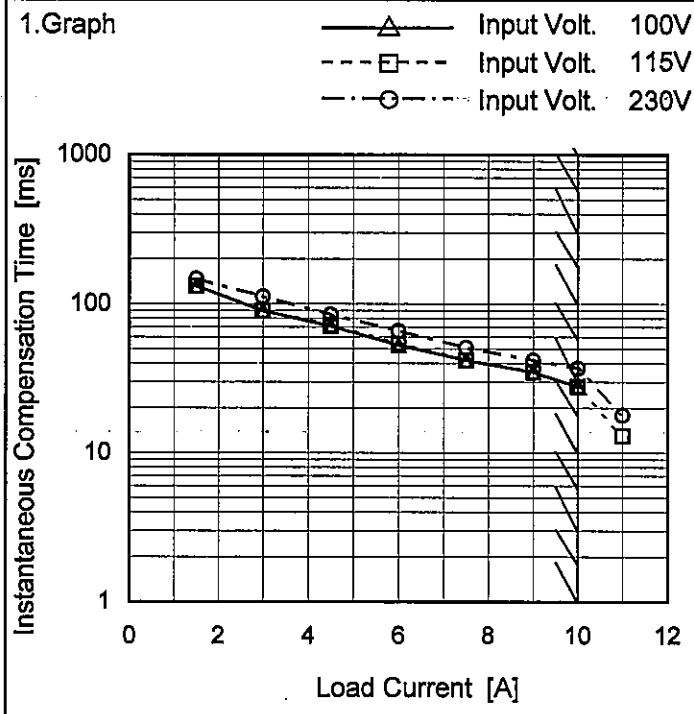
※1:Load 80%
※2:Load 90%

COSEL

Model	PLA150F-15
Item	Instantaneous Interruption Compensation
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

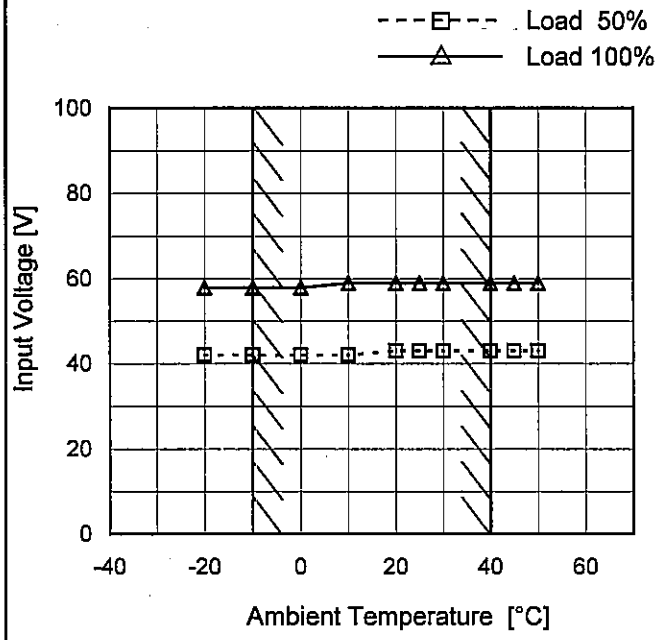
Load Current [A]	Time [ms]		
	Input Volt. 100[V]	Input Volt. 115[V]	Input Volt. 230[V]
0.00	-	-	-
1.50	132	132	147
3.00	90	90	112
4.50	71	72	85
6.00	53	54	66
7.50	42	42	51
9.00	35	35	42
10.00	28	28	37
11.00	-	13	18
---	-	-	-
---	-	-	-

COSEL

Model	PLA150F-15
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V10A

Testing Circuitry Figure A

1.Graph



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

2.Values

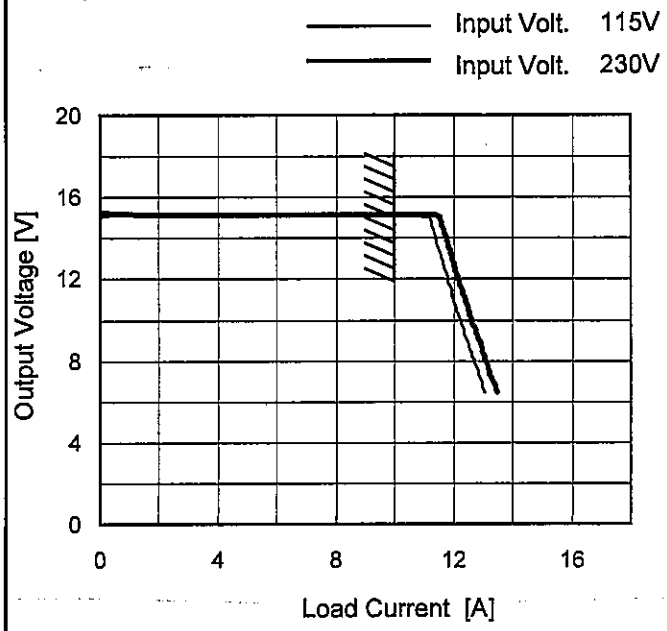
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	42	58
-10	42	58
0	42	58
10	42	59
20	43	59
25	43	59
30	43	59
40	43	59
45	43	59
50	43	59
--	-	-

COSEL

Model	PLA150F-15
Item	Overcurrent Protection
Object	+15V10A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

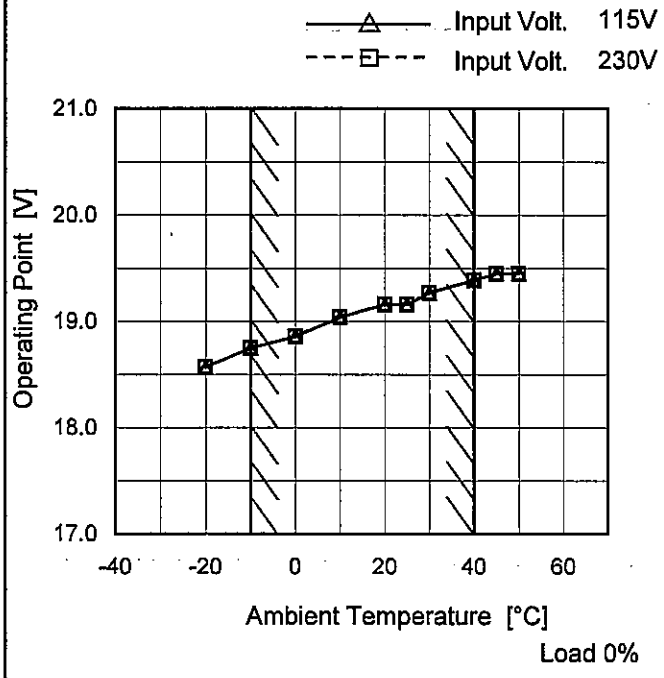
Output Voltage [V]	Load Current [A]	
	Input Volt. 115[V]	Input Volt. 230[V]
14.25	11.34	11.68
13.50	11.45	11.85
12.00	11.78	12.16
10.50	12.09	12.51
9.00	12.45	12.87
7.50	12.81	13.19
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	PLA150F-15
Item	Overvoltage Protection
Object	+15V10A

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. 115[V]	Input Volt. 230[V]
-20	18.57	18.57
-10	18.75	18.75
0	18.86	18.86
10	19.04	19.04
20	19.16	19.16
25	19.16	19.16
30	19.27	19.27
40	19.39	19.39
45	19.45	19.45
50	19.45	19.45
--	-	-

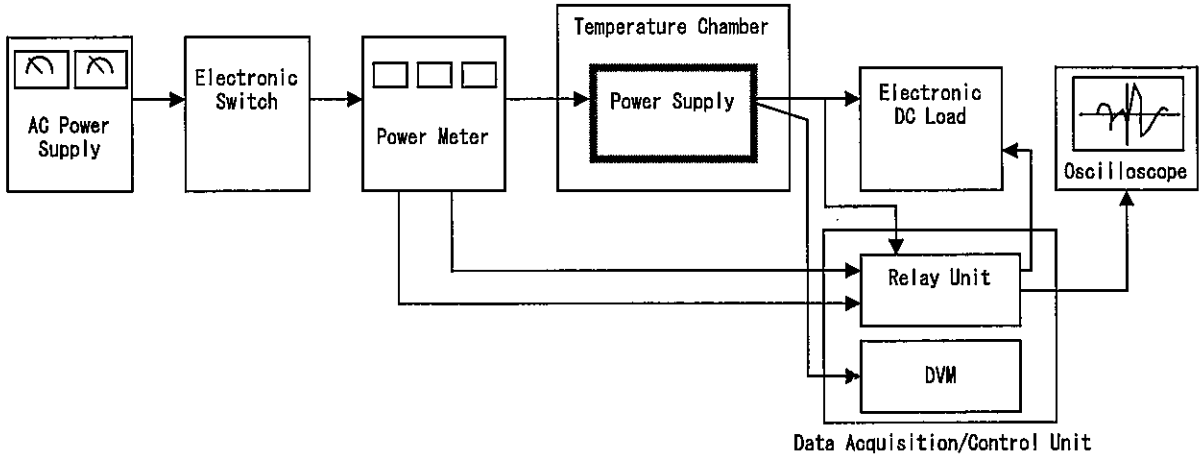


Figure A

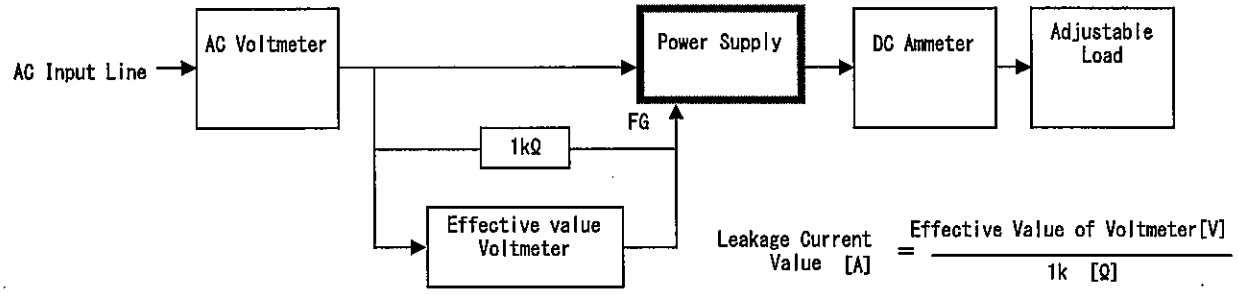


Figure B (DEN-AN)

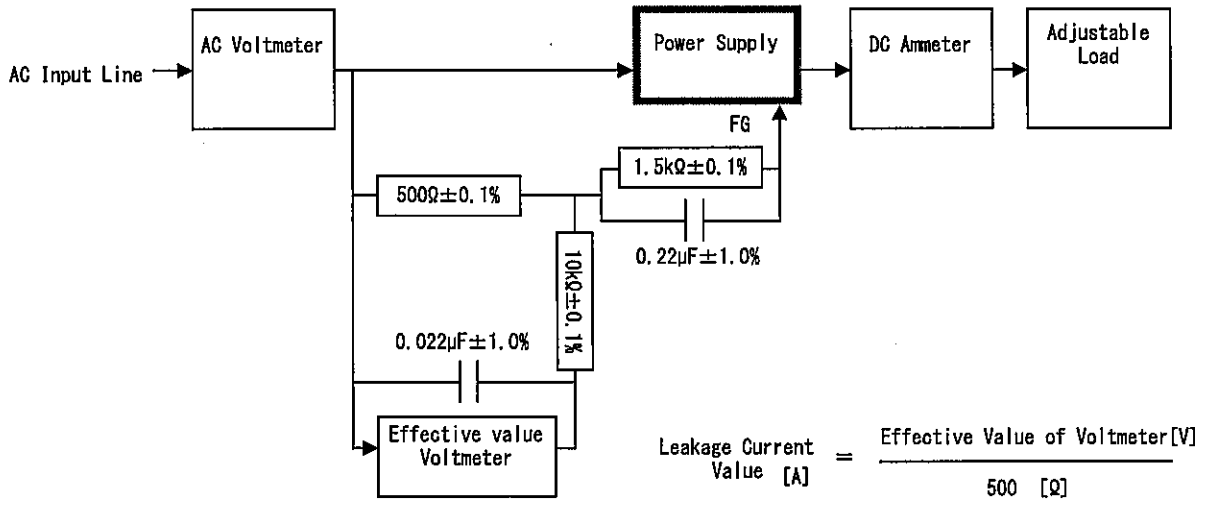


Figure B (IEC60950-1)

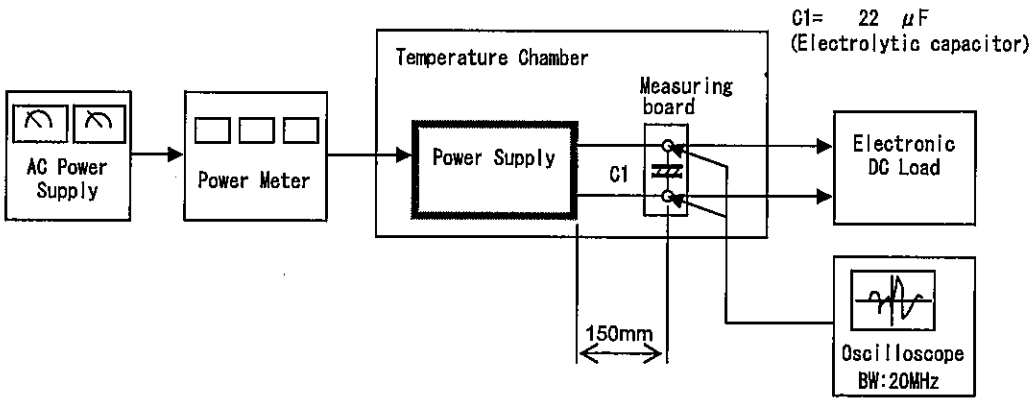

C1= 22 μF
(Electrolytic capacitor)
Temperature Chamber
Measuring board
AC Power Supply
Power Meter
Power Supply
C1
Electronic DC Load
150mm
Oscilloscope
BW:20MHz

Figure C