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参考資料

TEST DATA OF GHA300F-12-SNF

Regulated DC Power Supply
June 9, 2016

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Item	Input Current (by Load Current)
Object	————————

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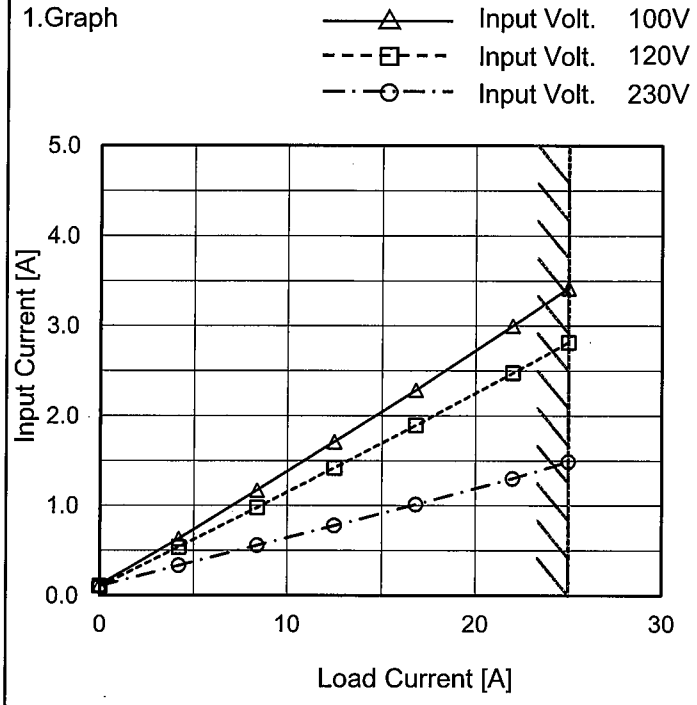

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 120[V]	Input Volt. 230[V]
0.0	0.120	0.103	0.104
4.2	0.631	0.538	0.335
8.4	1.170	0.978	0.558
12.5	1.710	1.419	0.778
16.8	2.284	1.894	1.012
22.0	3.001	2.477	1.302
25.0	3.420	2.816	1.488
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

BC-11110

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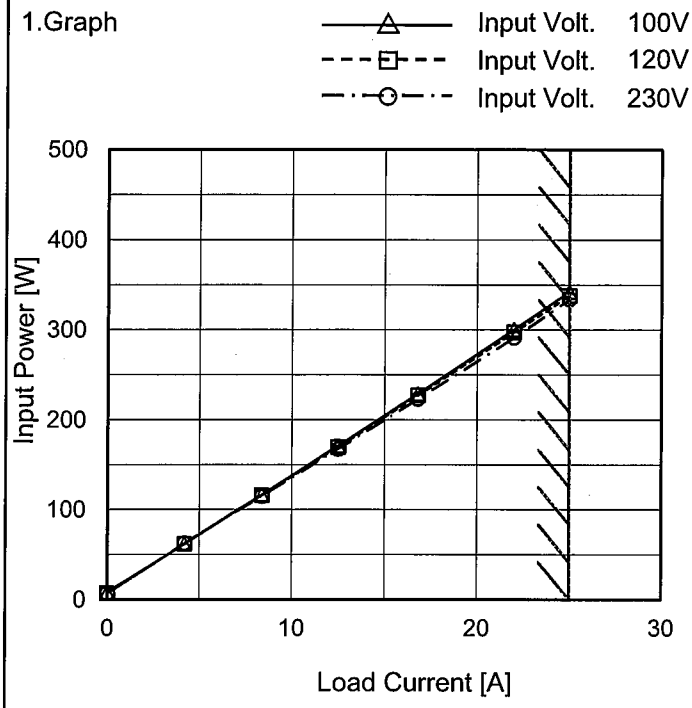
Model	GHA300F-12-SNF
Item	Input Power (by Load Current)
Object	———————

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. 120[V]	Input Volt. 230[V]
0.0	8.0	7.0	6.8
4.2	61.8	62.1	62.5
8.4	116.5	116.0	115.0
12.5	171.0	169.6	167.5
16.8	228.8	227.1	223.1
22.0	300.5	297.3	291.4
25.0	342.3	338.1	334.0
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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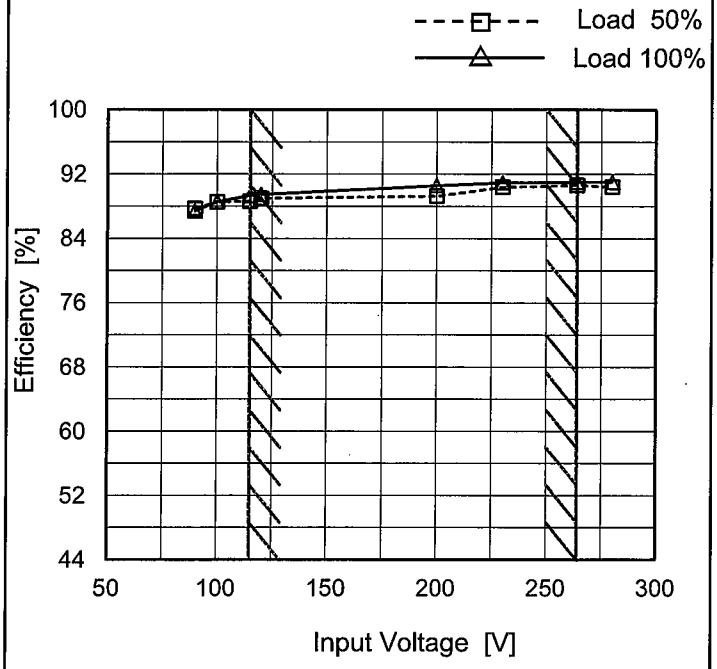
Model	GHA300F-12-SNF
Item	Efficiency (by Input Voltage)
Object	――――――――

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%
90	87.7	87.4 ※1
100	88.5	88.6 ※2
115	88.6	89.3
120	89.0	89.5
200	89.3	90.6
230	90.4	91.0
264	90.6	91.0
280	90.4	91.0
--	-	-

※1 : Load 80%
※2 : Load 88%

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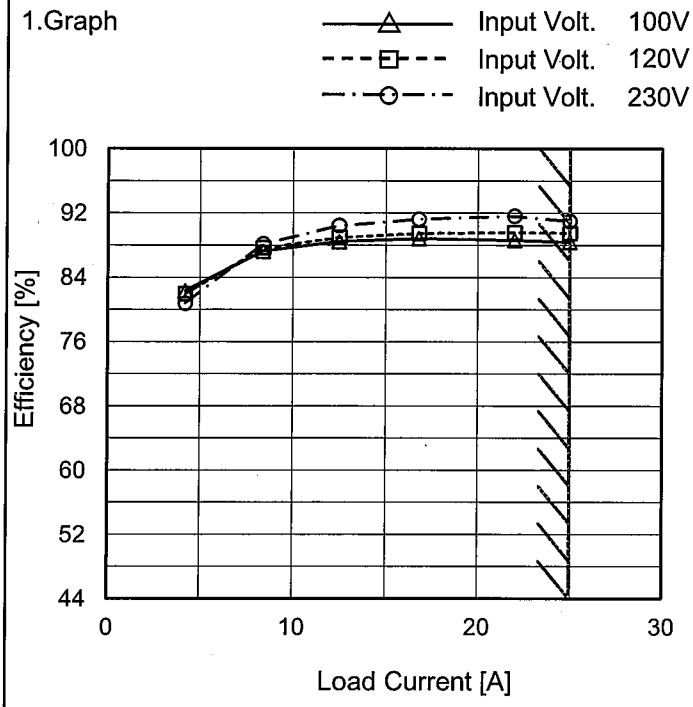
Model	GHA300F-12-SNF
Item	Efficiency (by Load Current)
Object	———————

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. 120[V]	Input Volt. 230[V]
0.0	-	-	-
4.2	82.3	81.9	80.8
8.4	87.3	87.7	88.2
12.5	88.5	89.0	90.4
16.8	88.8	89.5	91.3
22.0	88.6	89.6	91.6
25.0	88.4	89.5	91.0
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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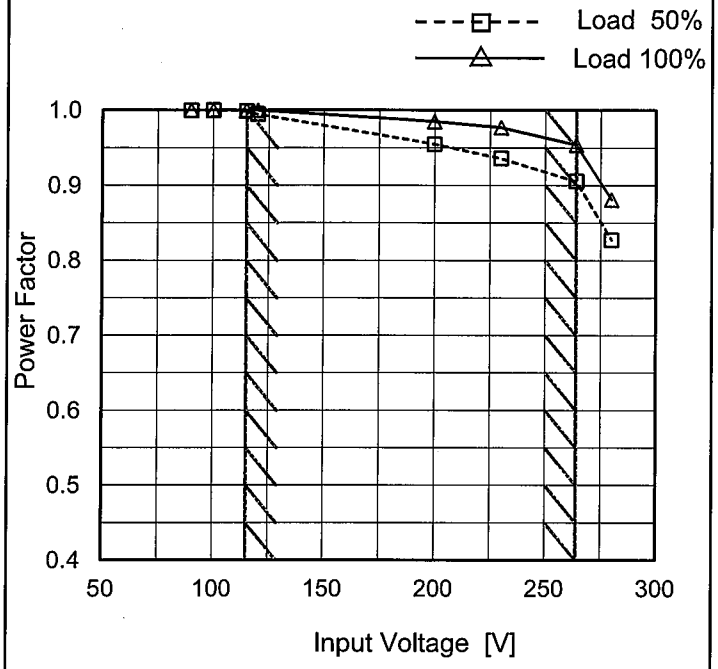
Model	GHA300F-12-SNF
Item	Power Factor (by Input Voltage)
Object	――――――――

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%
90	0.999	0.999 ※1
100	0.999	0.999 ※2
115	0.999	0.999
120	0.995	0.999
200	0.955	0.985
230	0.936	0.977
264	0.906	0.954
280	0.827	0.881
--	-	-

※1 : Load 80%
※2 : Load 88%

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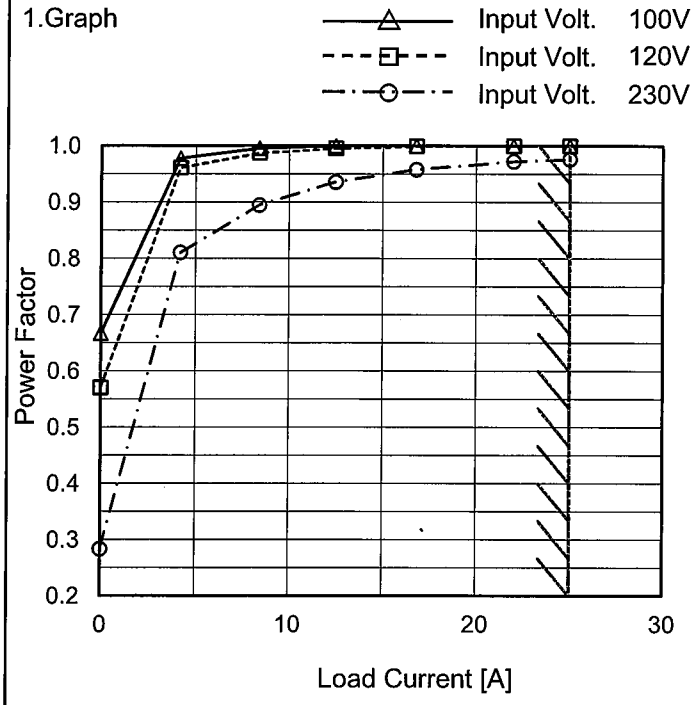
Model	GHA300F-12-SNF
Item	Power Factor (by Load Current)
Object	———————

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. 120[V]	Input Volt. 230[V]
0.0	0.667	0.570	0.283
4.2	0.978	0.961	0.811
8.4	0.996	0.987	0.895
12.5	0.999	0.995	0.936
16.8	0.999	0.999	0.958
22.0	0.999	0.999	0.973
25.0	0.999	0.999	0.977
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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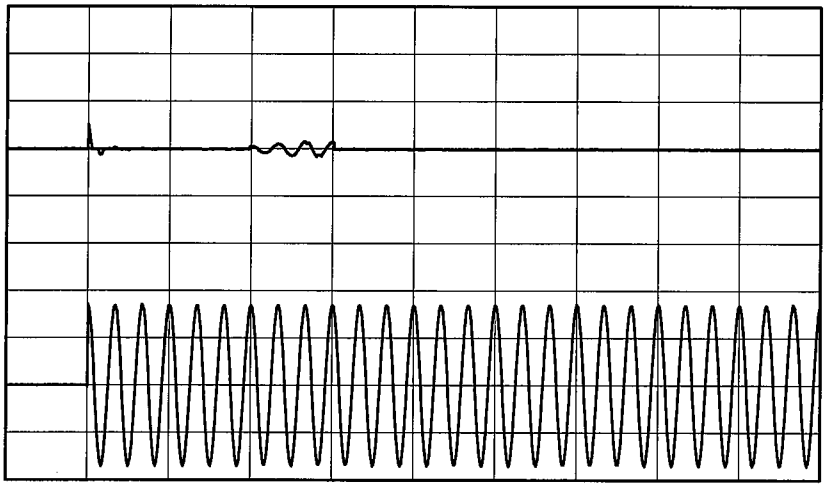
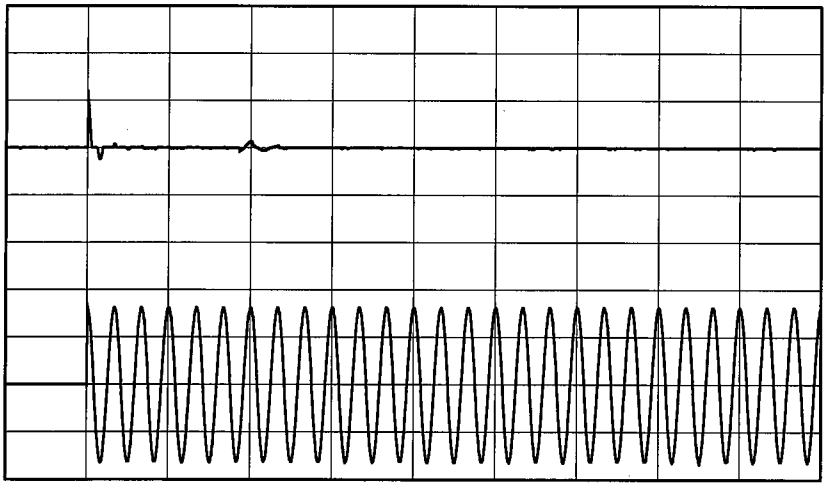
Model	GHA300F-12-SNF
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



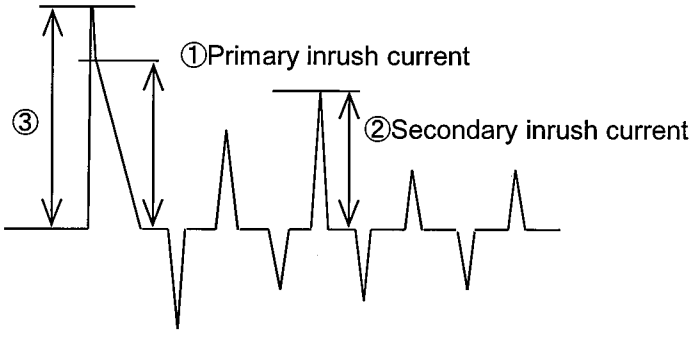
Input Voltage 120 V
Frequency 60 Hz
Load 100 %

①Primary inrush current :
21.2 A
②Secondary inrush current :
8.2 A
③Surge current ※1:
25.8 A



Input Voltage 230 V
Frequency 60 Hz
Load 100 %

①Primary inrush current :
39.2 A
②Secondary inrush current :
6.4 A
③Surge current ※1:
60.2 A



※1 The specification of the primary inrush current means that the surge current to a built-in noise filter (0.4msec or less: waveform ③) is excluded.

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Model	GHA300F-12-SNF	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	――――――――	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	120 [V]	240 [V]	
IEC60601	Both phases	0.05	0.06	0.13	Operation
	One of phases	0.10	0.11	0.26	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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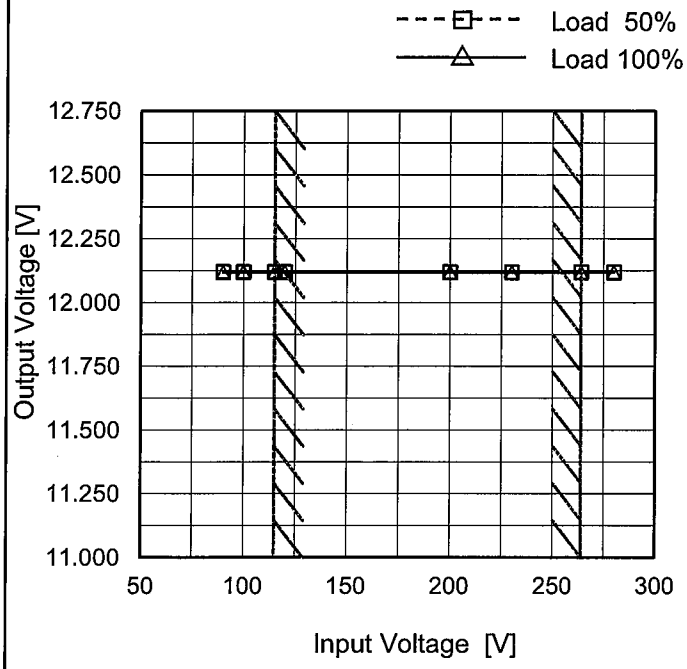
Model	GHA300F-12-SNF
Item	Line Regulation
Object	+12V25A

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%
90	12.119	12.118 ※1
100	12.119	12.119 ※2
115	12.119	12.118
120	12.120	12.118
200	12.120	12.118
230	12.119	12.118
264	12.120	12.119
280	12.120	12.119
--	-	-

※1 : Load 80%
※2 : Load 88%

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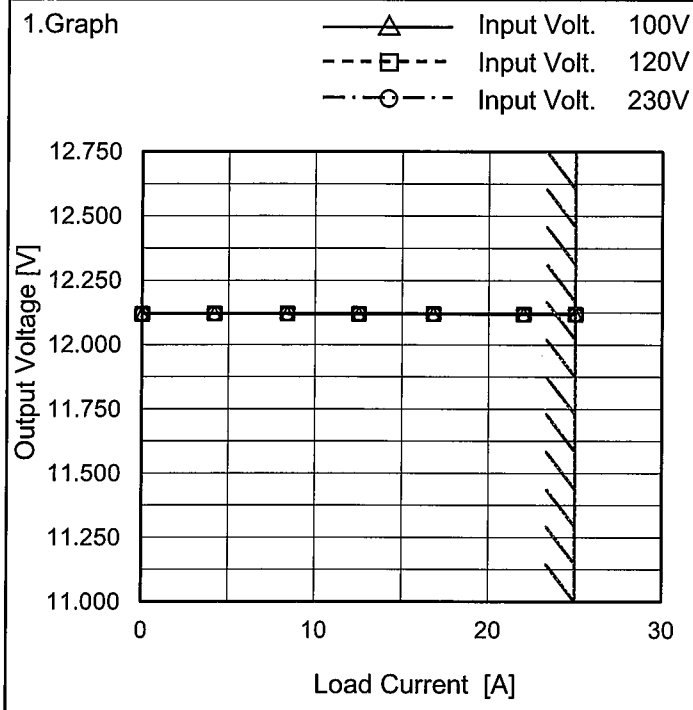
Model	GHA300F-12-SNF
Item	Load Regulation
Object	+12V25A

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. 120[V]	Input Volt. 230[V]
0.0	12.120	12.120	12.120
4.2	12.121	12.121	12.121
8.4	12.120	12.120	12.121
12.5	12.119	12.120	12.120
16.8	12.119	12.119	12.119
22.0	12.119	12.119	12.119
25.0	12.119	12.118	12.118
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	GHA300F-12-SNF
Item	Dynamic Load Response
Object	+12V25A

Temperature 25°C
Testing Circuitry Figure A

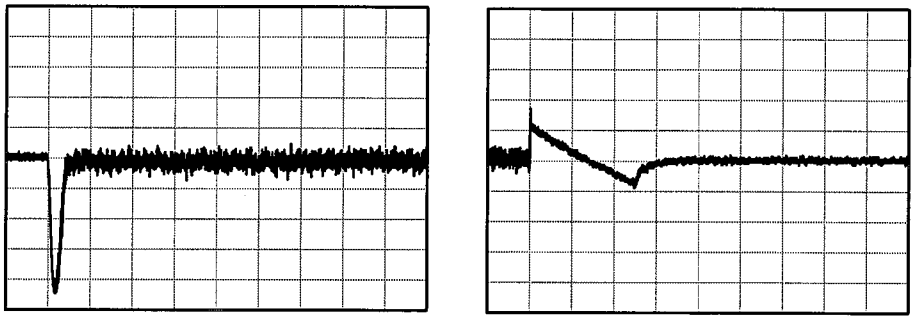
Input Volt. 120 V
Cycle 1000 ms

t1,t2 = 50 μ s

Load Current

t1 t2

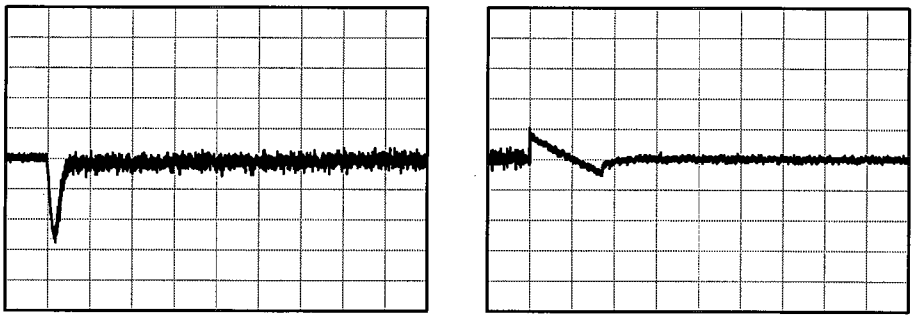
Min.Load (0A)⟷
Load 100% (25A)



200 mV/div

400 us/div 10 ms/div

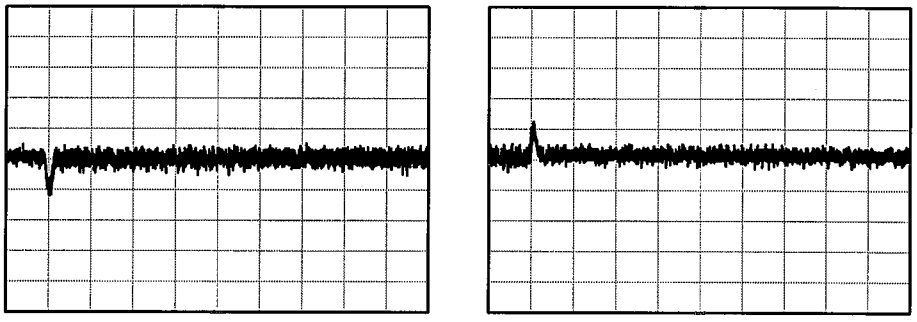
Min.Load (0A)⟷
Load 50% (12.5A)



200 mV/div

400 us/div 10 ms/div

Load 50% (12.5A)⟷
Load 100% (25A)



200 mV/div

400 us/div 400 us/div

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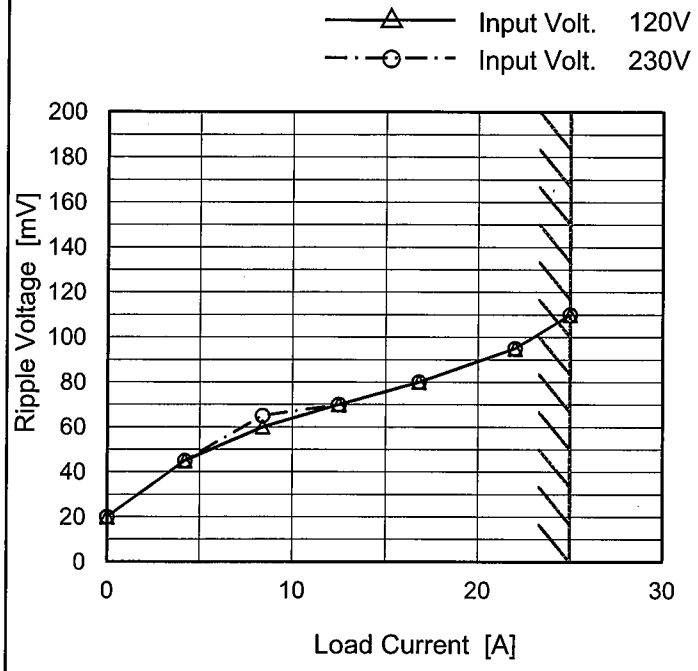
Model	GHA300F-12-SNF
Item	Ripple Voltage (by Load Current)
Object	+12V25A

Temperature 25°C
Testing Circuitry Figure A

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.

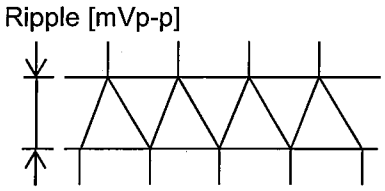


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 120 [V]	Input Volt. 230 [V]
0.0	20	20
4.2	45	45
8.4	60	65
12.5	70	70
16.8	80	80
22.0	95	95
25.0	110	110
--	-	-
--	-	-
--	-	-
--	-	-

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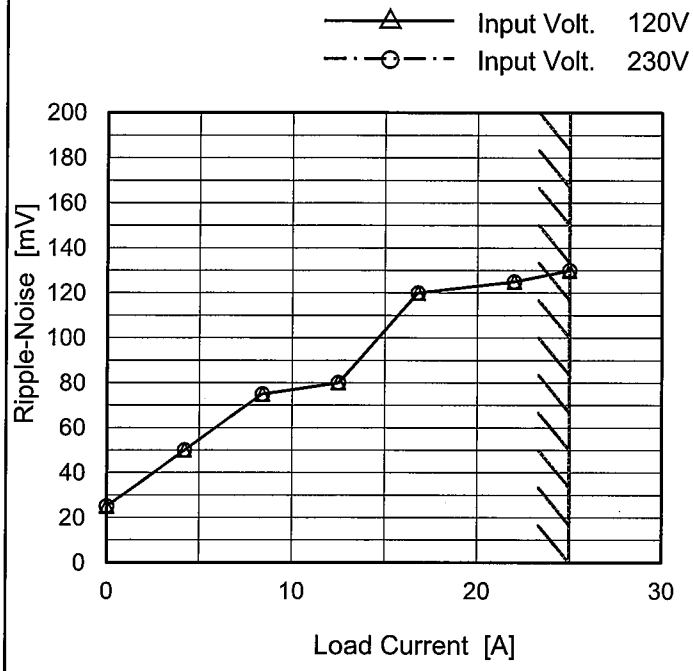
Model	GHA300F-12-SNF
Item	Ripple-Noise
Object	+12V25A

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.

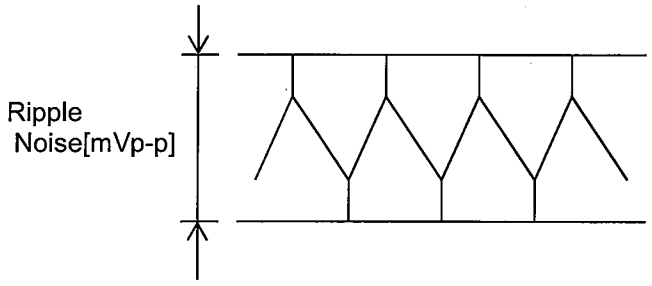


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 120 [V]	Input Volt. 230 [V]
0.0	25	25
4.2	50	50
8.4	75	75
12.5	80	80
16.8	120	120
22.0	125	125
25.0	130	130
--	-	-
--	-	-
--	-	-
--	-	-

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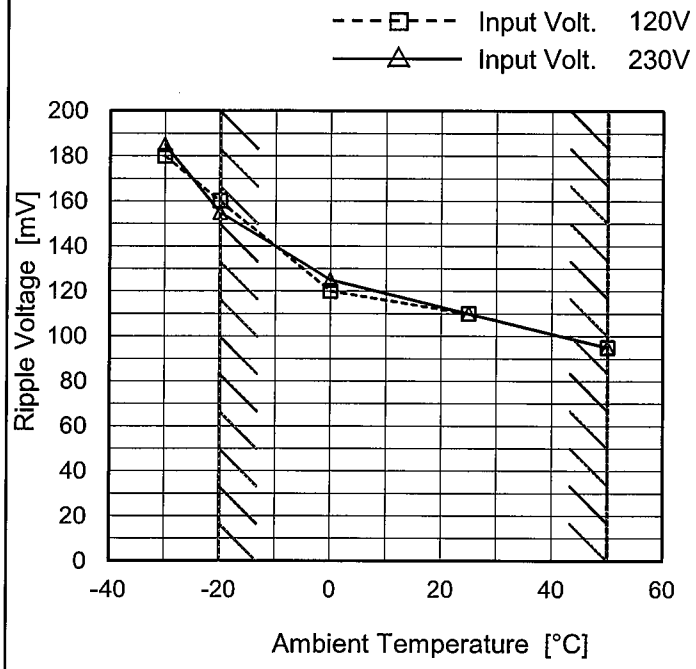
Model	GHA300F-12-SNF
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V25A

Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Input Volt. 120 [V]	Input Volt. 230 [V]
-30	180	185
-20	160	155
0	120	125
25	110	110
50	95	95
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Ripple [mVp-p]

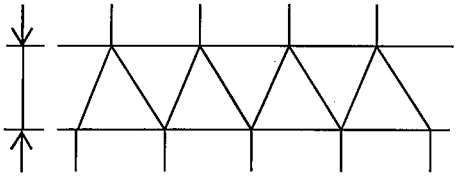


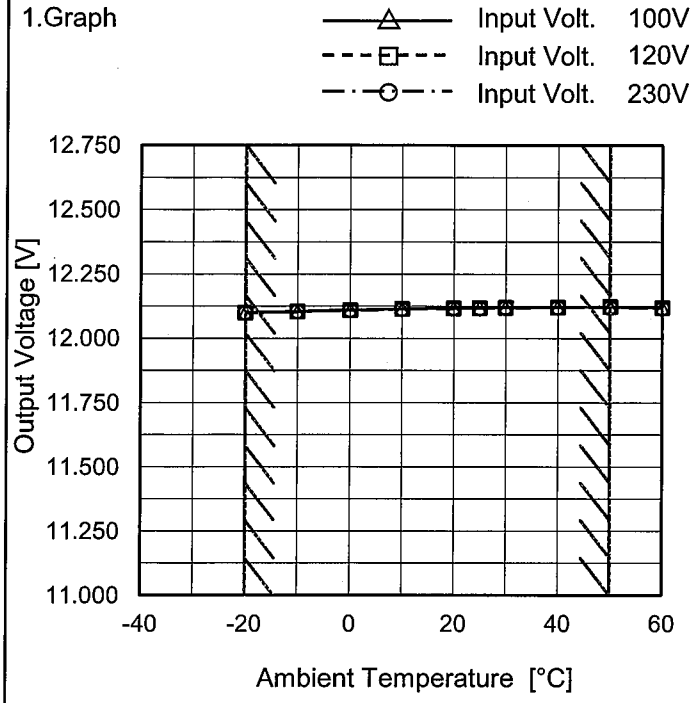
Fig.Complex Ripple Wave Form

COSEL

Model	GHA300F-12-SNF
Item	Ambient Temperature Drift
Object	+12V25A

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. 120[V]	Input Volt. 230[V]
-20	12.101	12.100	12.099
-10	12.105	12.104	12.104
0	12.111	12.110	12.109
10	12.115	12.114	12.114
20	12.118	12.117	12.116
25	12.119	12.118	12.118
30	12.121	12.120	12.119
40	12.122	12.121	12.120
50	12.124	12.123	12.121
60	12.120	12.119	12.118
--	-	-	-

Note: In case of input Volt. 100V, Load 88%, Other case Load 100%.

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Model	GHA300F-12-SNF
Item	Output Voltage Accuracy
Object	+12V25A

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 : -20 - 50°C
Input Voltage : 115 - 264V
Load Current : 0 - 25A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

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

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	50	230	0	12.120	±10	±0.1
Minimum Voltage	-20	115	25	12.100		

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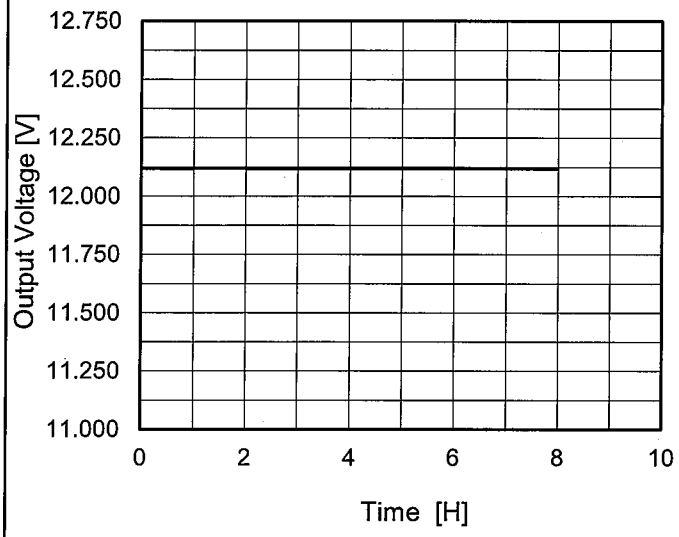
Model	GHA300F-12-SNF
Item	Time Lapse Drift
Object	+12V25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 230V
Load 100%

* The characteristic of AC120V is equal.

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.118
0.5	12.118
1.0	12.119
2.0	12.119
3.0	12.118
4.0	12.118
5.0	12.118
6.0	12.118
7.0	12.118
8.0	12.118

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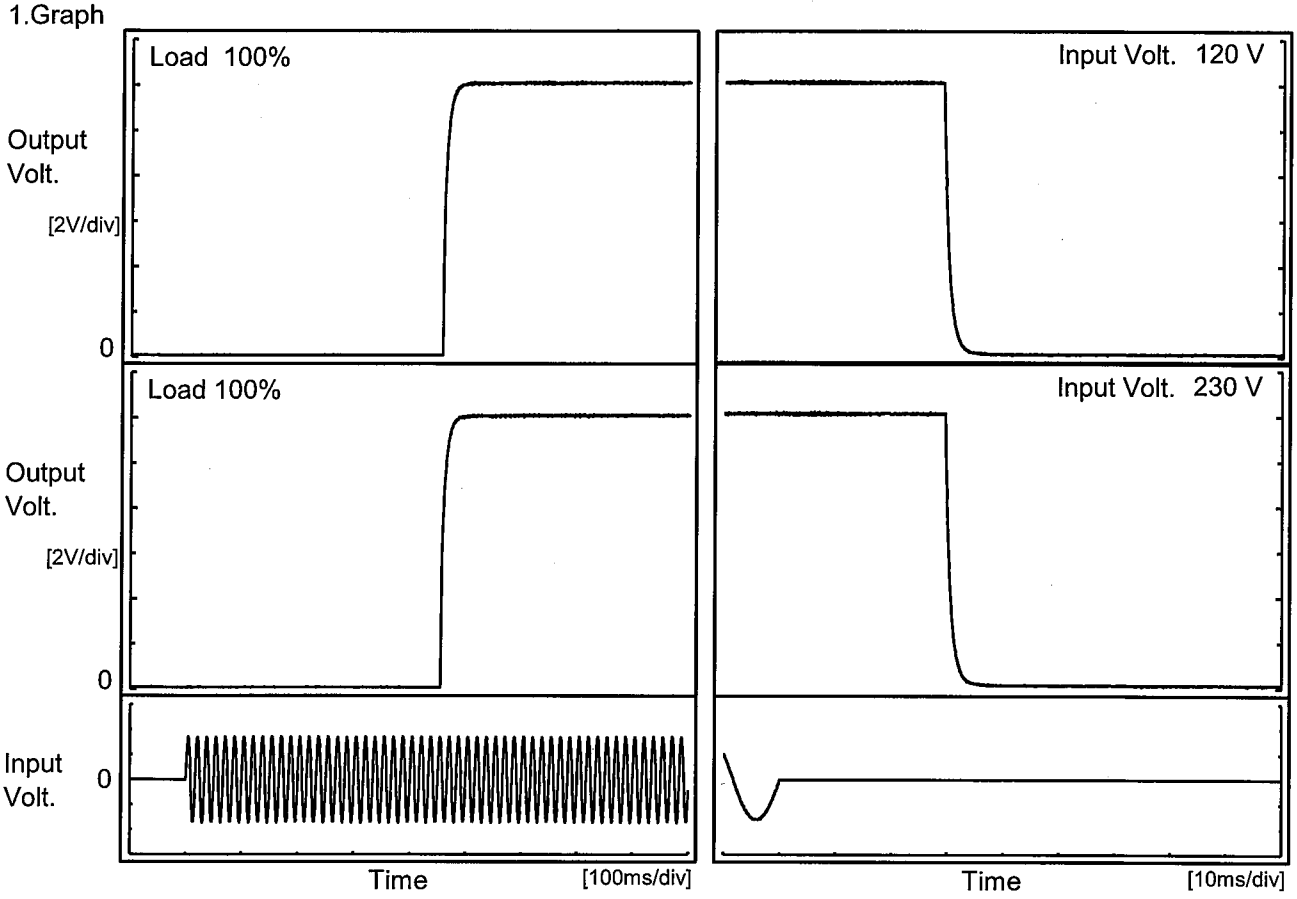
Model	GHA300F-12-SNF
Item	Rise and Fall Time
Object	+12V25A

Temperature 25°C
Testing Circuitry Figure A

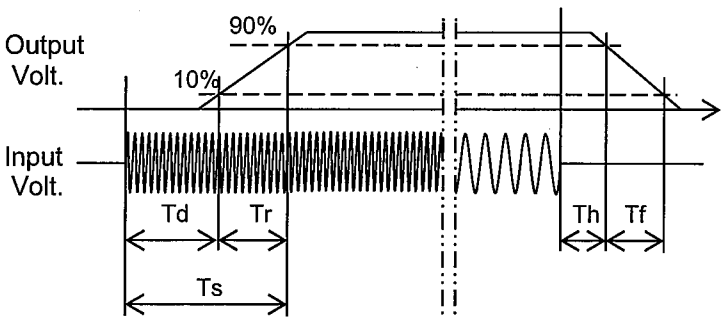
1.Graph



2.Values

[ms]

Input Volt. \ Time	Td	Tr	Ts	Th	Tf
120V	457.0	13.5	470.5	29.3	2.1
230V	454.5	13.5	468.0	29.7	2.1



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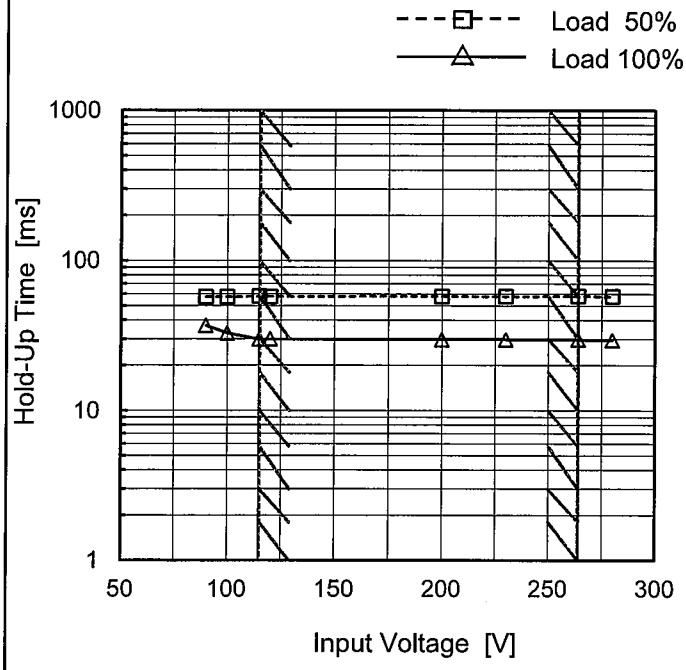
Model	GHA300F-12-SNF
Item	Hold-Up Time
Object	+12V25A

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%
90	57	37 ※1
100	57	33 ※2
115	58	30
120	58	30
200	58	30
230	58	30
264	58	30
280	58	30
--	-	-

※1 : Load 80%
※2 : Load 88%

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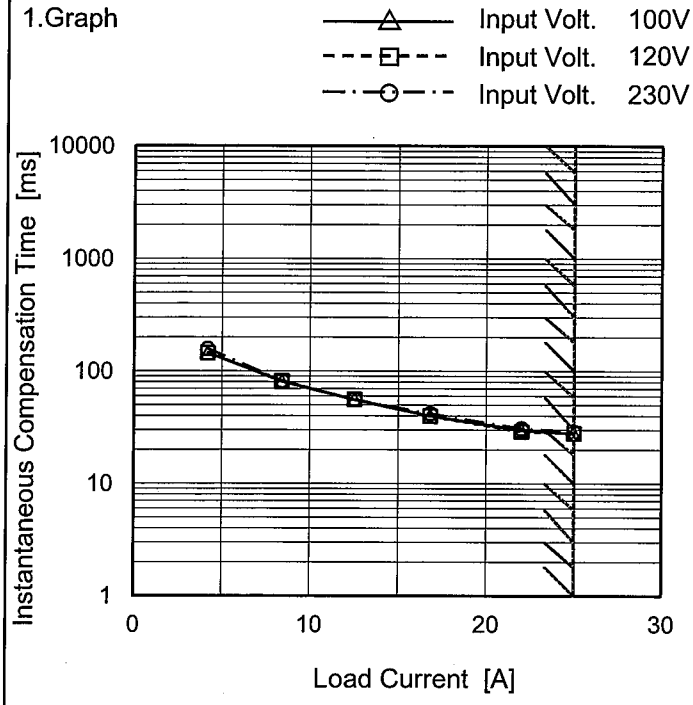
Model	GHA300F-12-SNF
Item	Instantaneous Interruption Compensation
Object	+12V25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

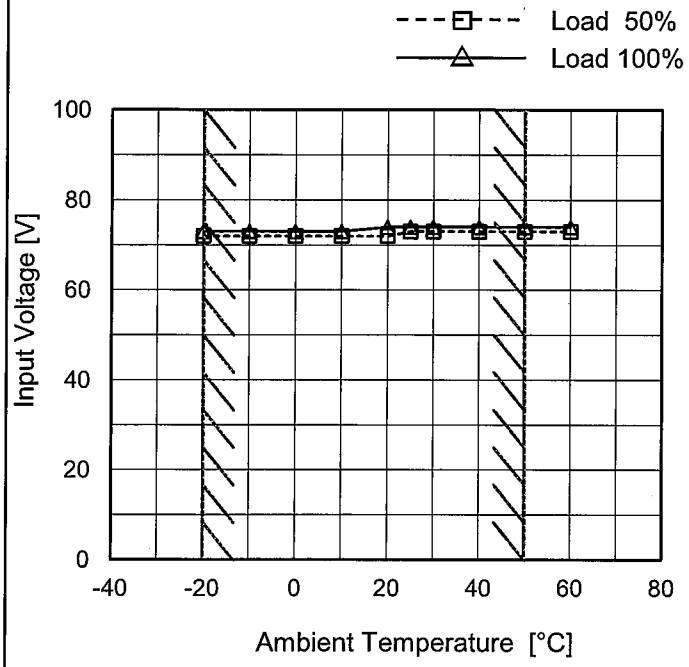
Load Current [A]	Time [ms] Input Volt. 100[V]	Input Volt. 120[V]	Input Volt. 230[V]
0.0	-	-	-
4.2	145	145	158
8.4	81	82	82
12.5	56	56	56
16.8	40	40	42
22.0	30	29	31
25.0	28	28	29
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	GHA300F-12-SNF
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V25A

Testing Circuitry Figure A

1.Graph



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

2.Values

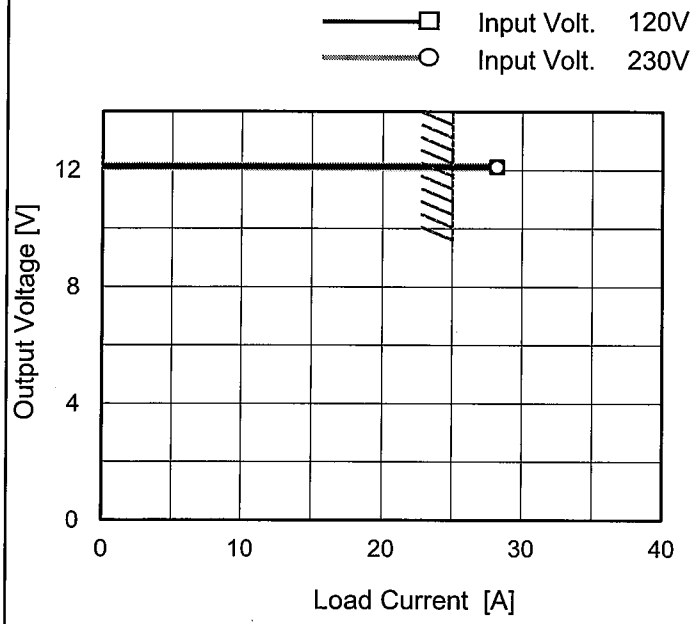
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	72	73
-10	72	73
0	72	73
10	72	73
20	72	74
25	73	74
30	73	74
40	73	74
50	73	74
60	73	74
--	-	-

COSEL

Model	GHA300F-12-SNF
Item	Overcurrent Protection
Object	+12V25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Intermittent operation occurs when overcurrent protection is activated.

2.Values

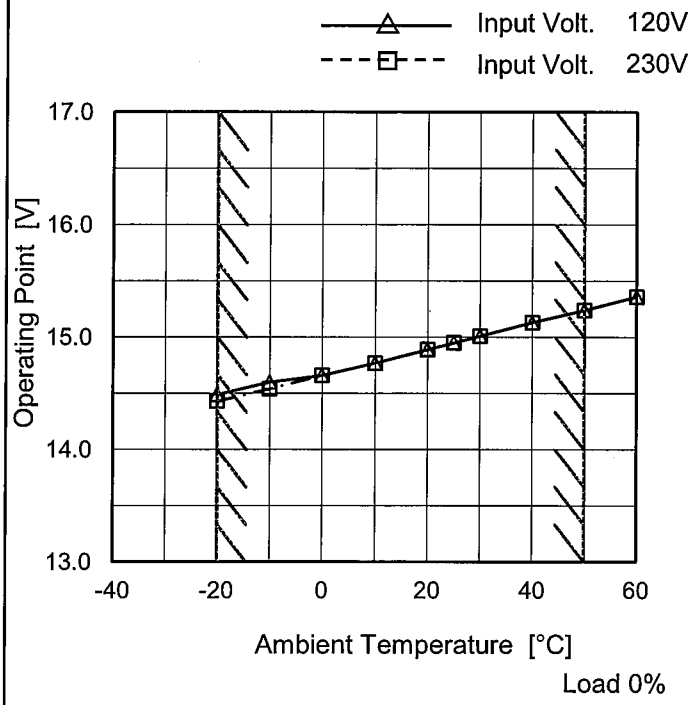
Output Voltage [V]	Load Current [A]	
	Input Volt.	Input Volt.
	120[V]	230[V]
12	28.18	28.18
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GHA300F-12-SNF
Item	Overvoltage Protection
Object	+12V25A

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. 120[V]	Input Volt. 230[V]
-20	14.49	14.43
-10	14.60	14.54
0	14.66	14.66
10	14.77	14.77
20	14.89	14.89
25	14.95	14.95
30	15.01	15.01
40	15.13	15.13
50	15.24	15.24
60	15.36	15.36
--	-	-

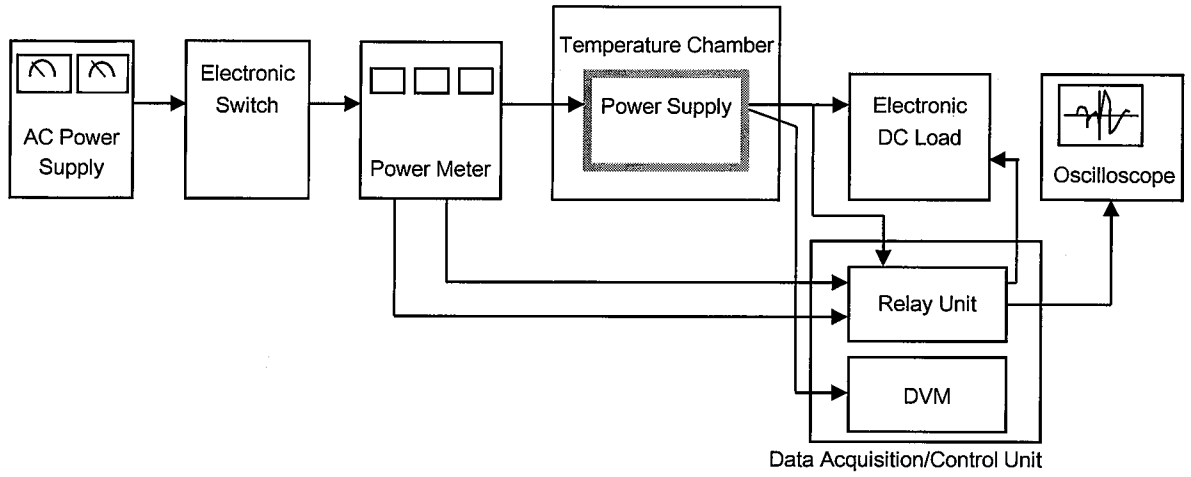


Figure A

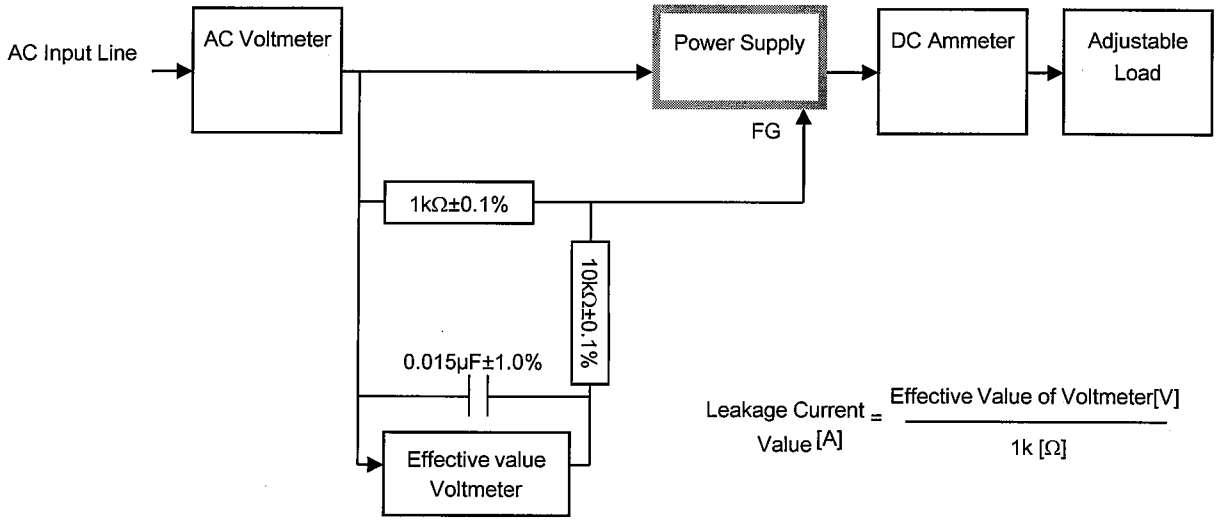


Figure B (IEC60601-1)