COSEL

参考資料

TEST DATA OF TUXS200F32

Regulated DC Power Supply
October 21, 2016

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COSEL CO.,LTD.

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Object	————————

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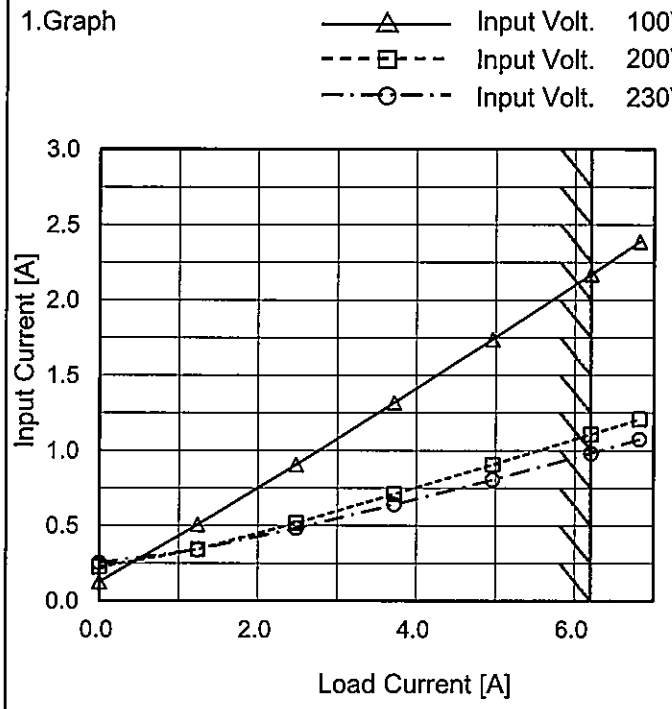

Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
0.00	0.125	0.224	0.253
1.24	0.508	0.343	0.340
2.48	0.906	0.518	0.484
3.72	1.319	0.711	0.642
4.96	1.739	0.906	0.806
6.20	2.170	1.107	0.982
6.82	2.389	1.209	1.075
--	-	-	-
--	-	-	-
--	-	-	-
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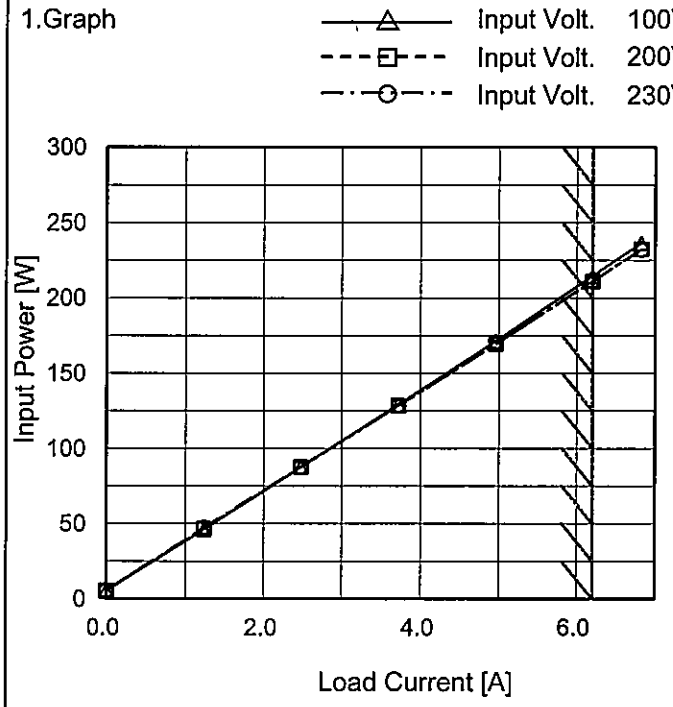
Model	TUXS200F32
Item	Input Power (by Load Current)
Object	———————

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. 200[V]	Input Volt. 230[V]
0.00	5.1	5.5	5.4
1.24	46.2	46.8	47.6
2.48	87.6	87.6	87.9
3.72	129.3	128.3	128.5
4.96	171.5	169.5	169.5
6.20	214.6	211.2	211.1
6.82	236.4	232.4	232.0
--	-	-	-
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--	-	-	-
--	-	-	-

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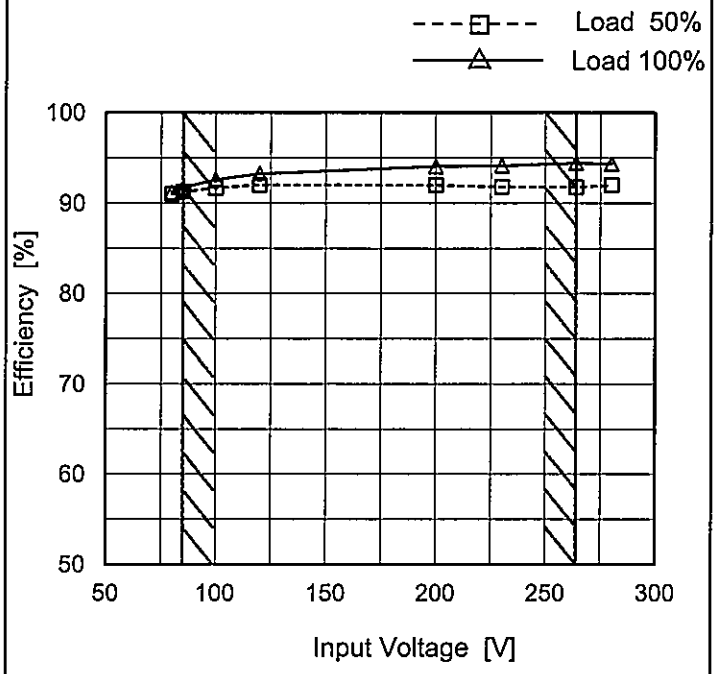
Model	TUXS200F32
Item	Efficiency (by Input Voltage)
Object	———————

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%
80	91.0	91.2
85	91.3	91.7
100	91.7	92.6
120	92.0	93.3
200	92.0	94.1
230	91.8	94.2
264	91.8	94.5
280	92.0	94.4
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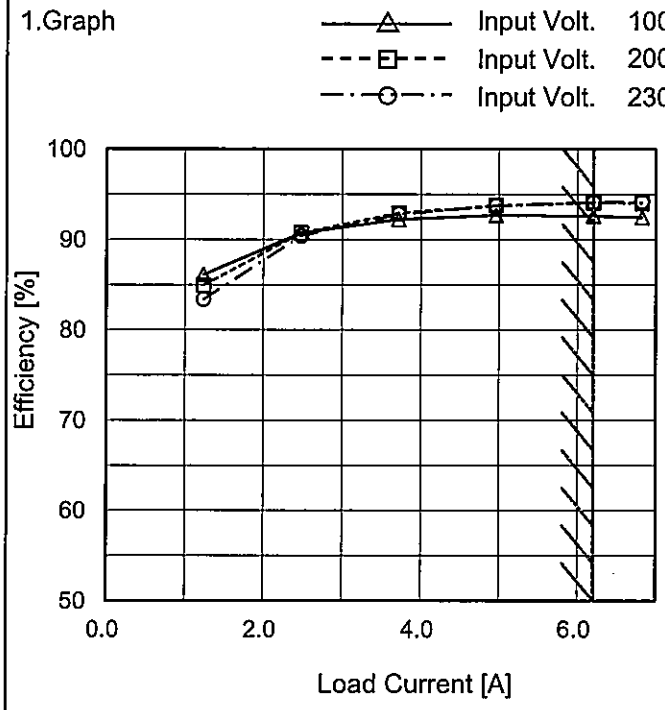
Model	TUXS200F32
Item	Efficiency (by Load Current)
Object	———————

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. 200[V]	Input Volt. 230[V]
0.00	-	-	-
1.24	86.1	84.9	83.4
2.48	90.7	90.7	90.4
3.72	92.2	92.9	92.8
4.96	92.7	93.8	93.8
6.20	92.6	94.1	94.2
6.82	92.5	94.0	94.2
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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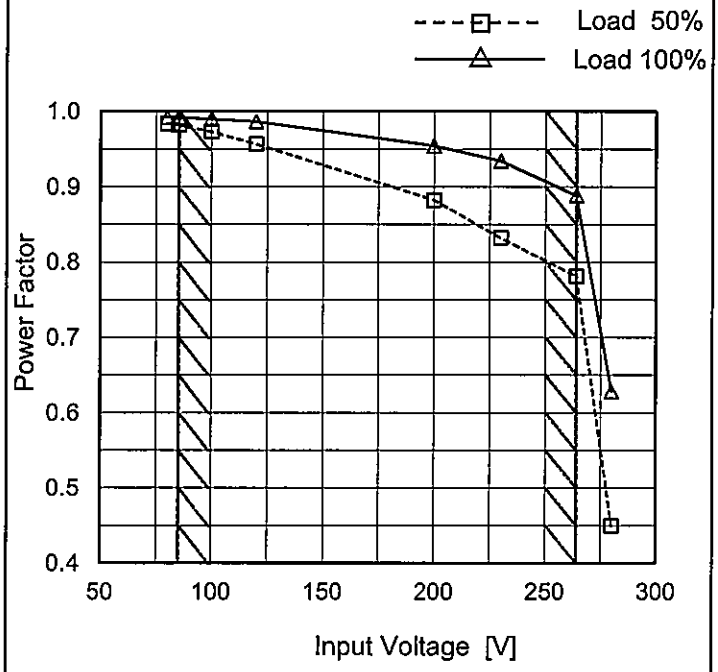
Model	TUXS200F32
Item	Power Factor (by Input Voltage)
Object	————————

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%
80	0.984	0.992
85	0.982	0.992
100	0.973	0.990
120	0.957	0.987
200	0.882	0.954
230	0.832	0.934
264	0.781	0.889
280	0.450	0.628
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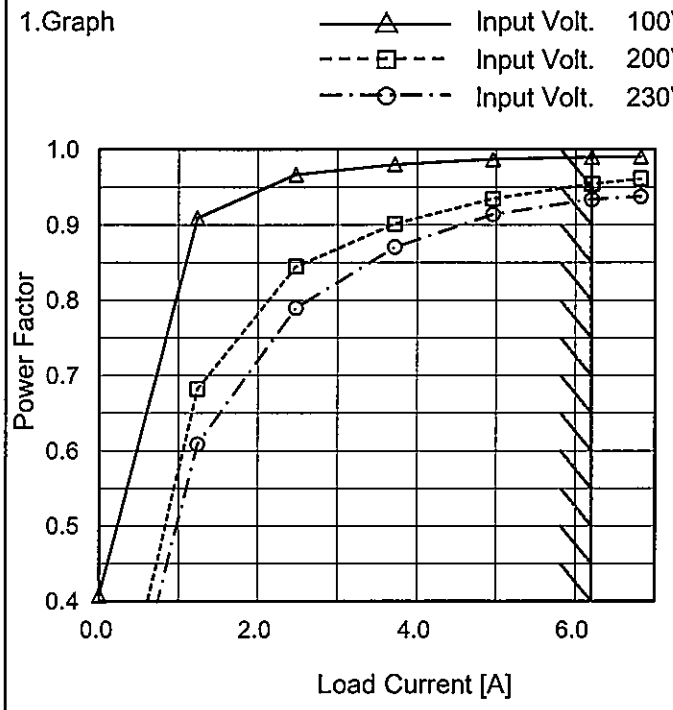
Model	TUXS200F32
Item	Power Factor (by Load Current)
Object	————————

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. 200[V]	Input Volt. 230[V]
0.00	0.407	0.123	0.093
1.24	0.909	0.682	0.609
2.48	0.967	0.845	0.790
3.72	0.980	0.902	0.871
4.96	0.987	0.935	0.914
6.20	0.990	0.954	0.934
6.82	0.991	0.962	0.938
--	-	-	-
--	-	-	-
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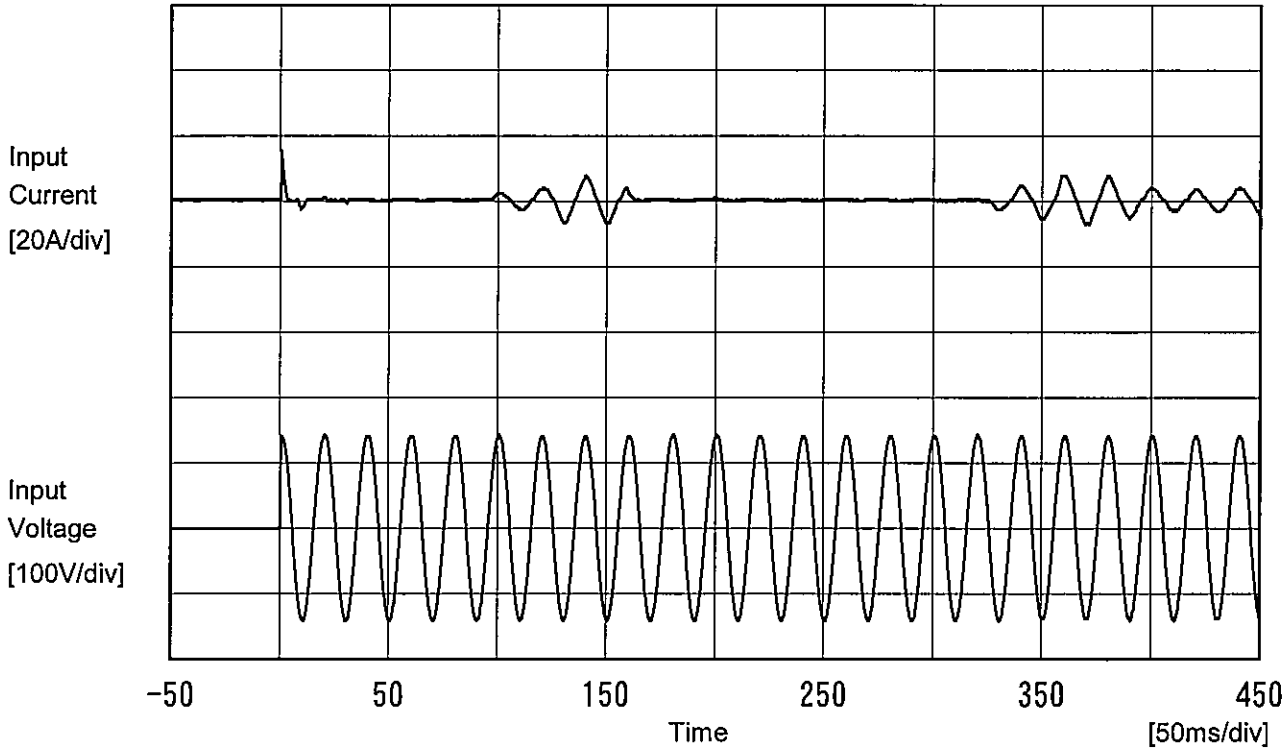
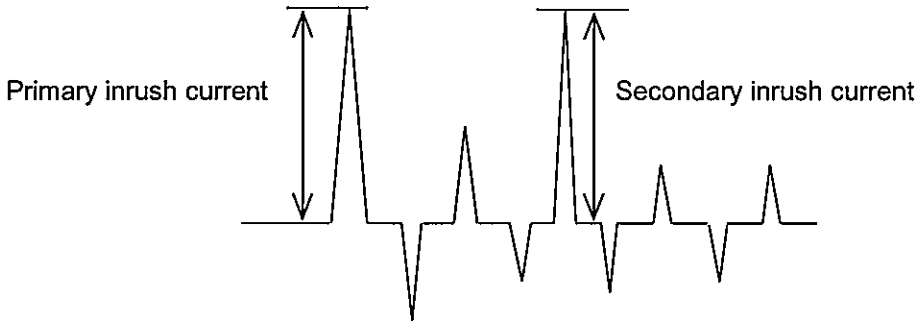
Model	TUXS200F32
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	100 V
Frequency	50 Hz
Load	100 %
Primary inrush current	15.4 A
Secondary inrush current	7.6 A



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Model	TUXS200F32	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	————————	

1.Results

[mA]

Standards		Input Volt.			Note
		100 [V]	200 [V]	240 [V]	
DEN-AN	Both phases	0.17	0.34	0.41	Operation
	One of phases	0.27	0.54	0.65	Stand by
IEC60950-1	Both phases	0.14	0.29	0.36	Operation
	One of phases	0.28	0.56	0.68	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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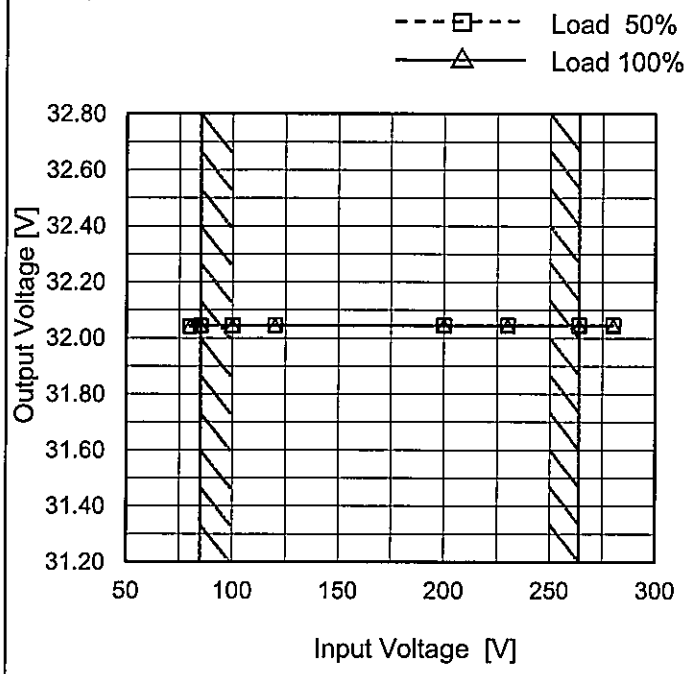
Model	TUXS200F32
Item	Line Regulation
Object	+32V6.2A

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%
80	32.042	32.044
85	32.044	32.044
100	32.045	32.045
120	32.046	32.045
200	32.046	32.045
230	32.046	32.045
264	32.047	32.045
280	32.047	32.045
--	-	-

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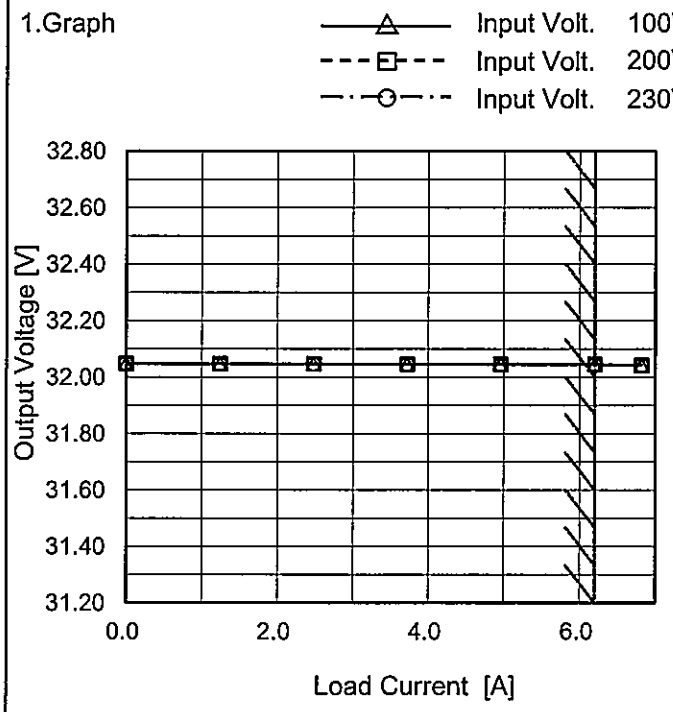
Model	TUXS200F32
Item	Load Regulation
Object	+32V6.2A

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. 200[V]	Input Volt. 230[V]
0.00	32.048	32.048	32.048
1.24	32.047	32.047	32.047
2.48	32.047	32.047	32.047
3.72	32.046	32.046	32.046
4.96	32.046	32.046	32.045
6.20	32.045	32.045	32.045
6.82	32.043	32.043	32.043
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	TUXS200F32		
Item	Dynamic Load Response	Temperature	25℃
		Testing Circuitry	Figure A
Object	+32V6.2A		

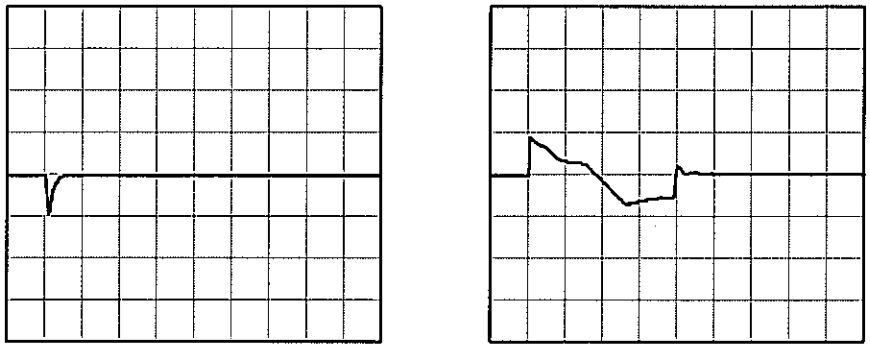
Input Volt. 100 V
Cycle 1000 ms

t1,t2=10 μ S

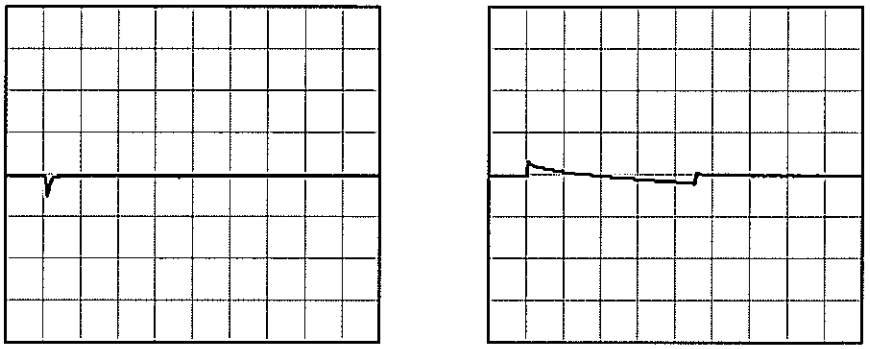
Load Current

t1 t2

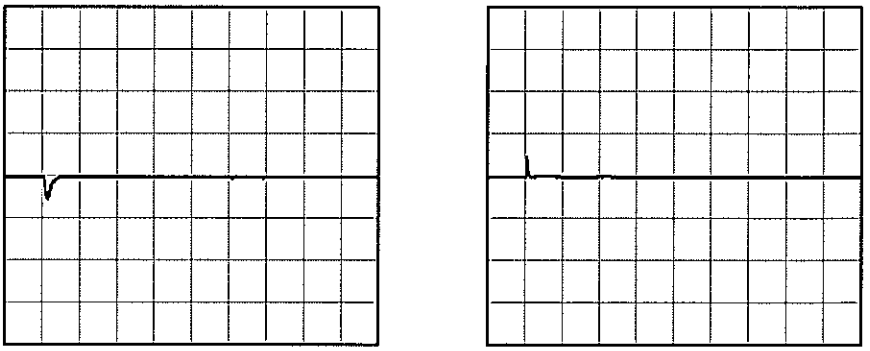
Min. Load (0A) ⟷
Load 100% (6.2A)



Min. Load (0A) ⟷
Load 50% (3.1A)



Load 50% (3.1A) ⟷
Load 100% (6.2A)



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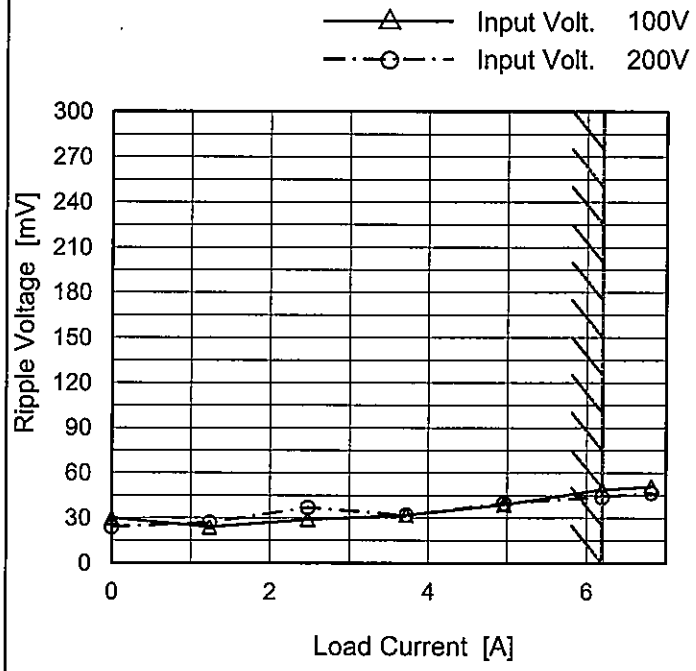
Model	TUXS200F32
Item	Ripple Voltage (by Load Current)
Object	+32V6.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 100 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

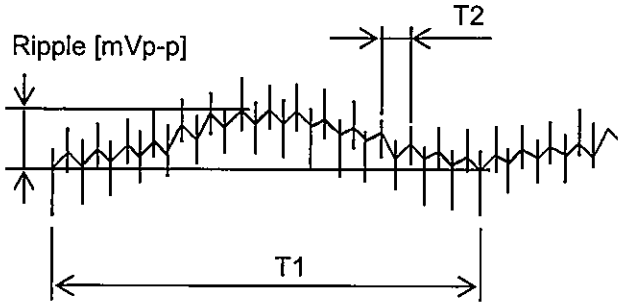


Fig. Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.00	30	24
1.24	24	27
2.48	29	37
3.72	32	32
4.96	39	40
6.20	49	44
6.82	51	47
--	-	-
--	-	-
--	-	-
--	-	-

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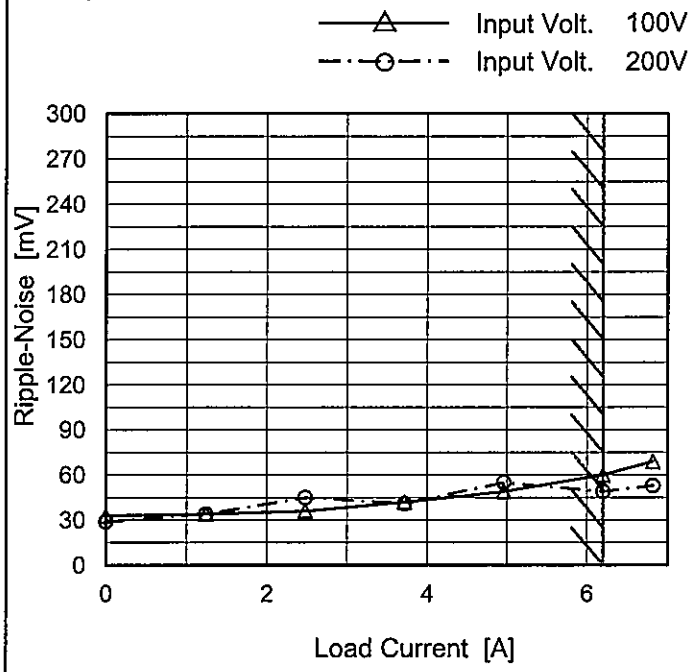
Model	TUXS200F32
Item	Ripple-Noise
Object	+32V6.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 100 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]
0.00	33	29
1.24	34	34
2.48	36	45
3.72	42	41
4.96	49	55
6.20	60	49
6.82	69	53
---	-	-
--	-	-
--	-	-
--	-	-

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

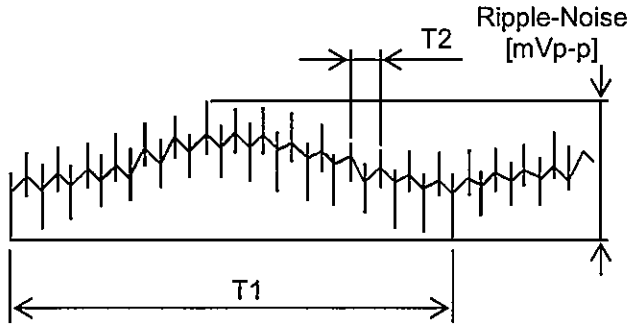


Fig. Complex Ripple Wave Form

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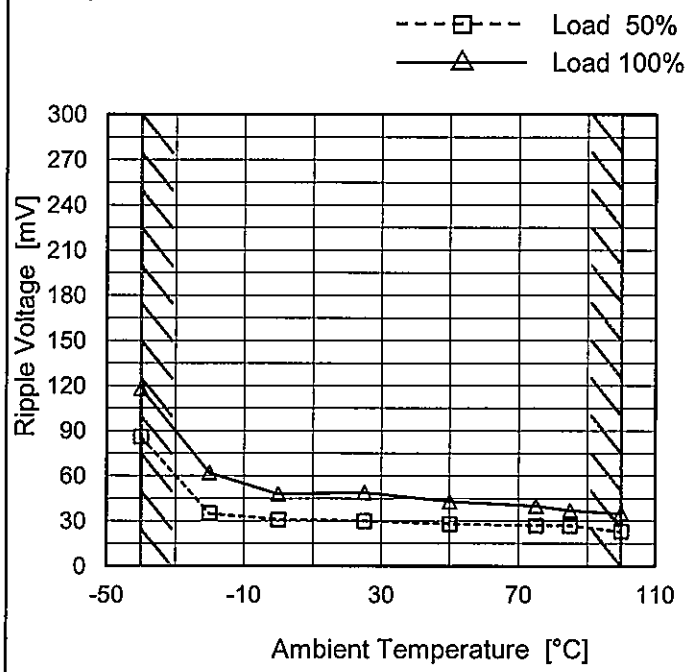
Model	TUXS200F32
Item	Ripple Voltage (by Ambient Temp.)
Object	+32V6.2A

Testing Circuitry Figure A

1.Graph



Input Volt. 100V

Measured by 100 MHz Oscilloscope.

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

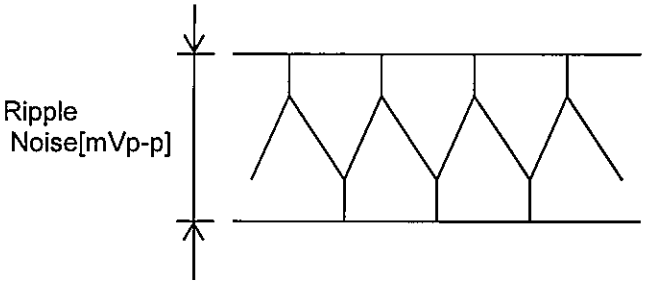


Fig.Complex Ripple Noise Wave Form

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	86	118
-20	35	62
0	31	48
25	30	49
50	28	43
75	27	40
85	27	37
100	23	35
--	-	-
--	-	-
--	-	-

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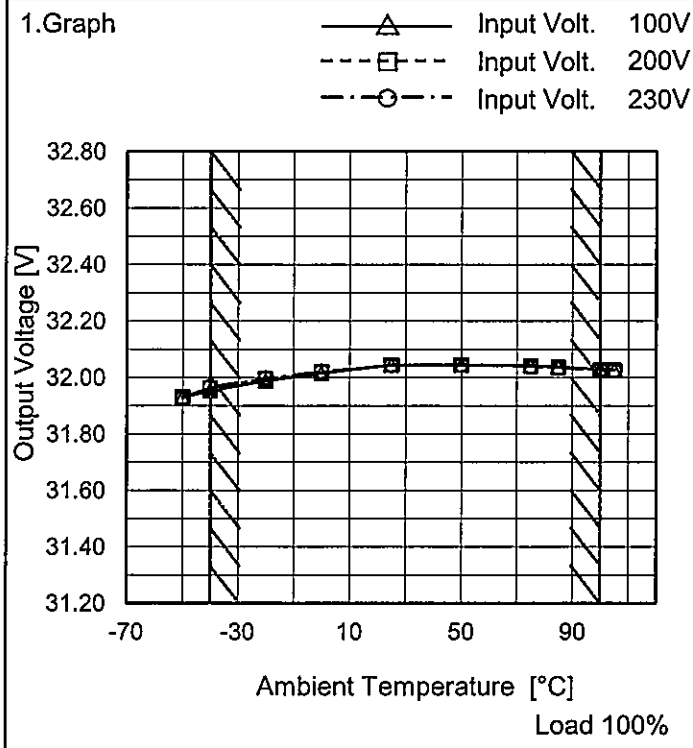
Model	TUXS200F32
Item	Ambient Temperature Drift
Object	+32V6.2A

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]
-50	31.930	31.931	31.929
-40	31.954	31.963	31.967
-20	31.989	31.995	31.999
0	32.016	32.020	32.022
25	32.045	32.045	32.045
50	32.045	32.045	32.045
75	32.043	32.041	32.040
85	32.038	32.036	32.035
100	32.030	32.028	32.028
105	32.026	32.026	32.026
--	-	-	-

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Model	TUXS200F32	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+32V6.2A	

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 : -40 - 85°C
Input Voltage : 100 - 230V
Load Current : 0 - 6.2A

* 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	50	230	6.2	32.045	±46	±0.1
Minimum Voltage	-40	100	6.2	31.954		

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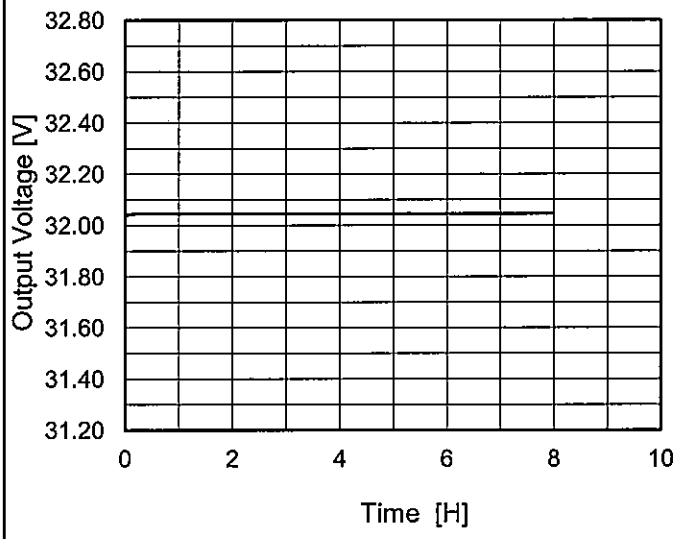
Model	TUXS200F32
Item	Time Lapse Drift
Object	+32V6.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	32.025
0.5	32.045
1.0	32.045
2.0	32.045
3.0	32.045
4.0	32.045
5.0	32.045
6.0	32.045
7.0	32.045
8.0	32.045

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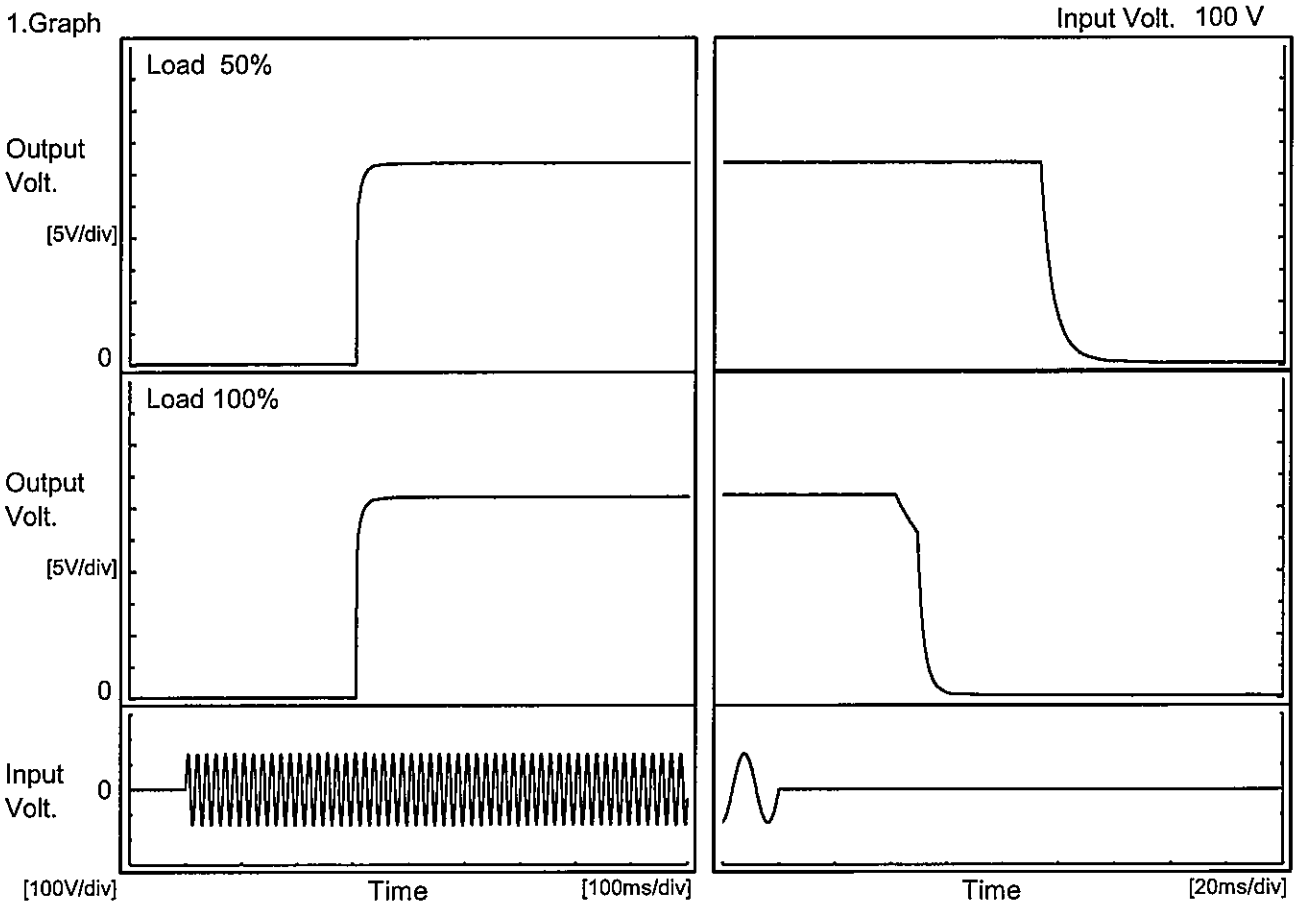
Model	TUXS200F32
Item	Rise and Fall Time
Object	+32V6.2A

Temperature 25°C
Testing Circuitry Figure A

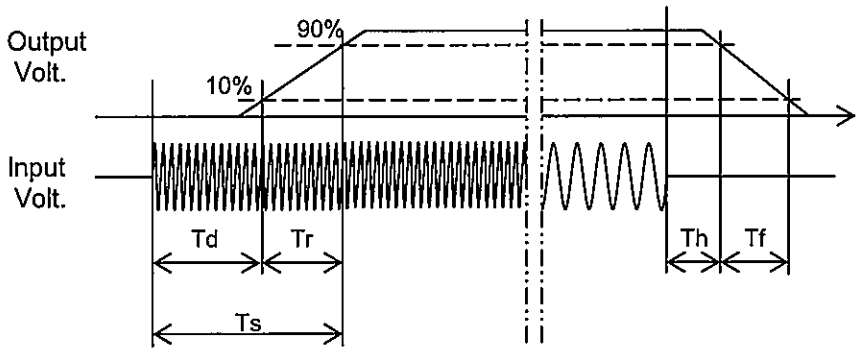
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	306.0	9.5	315.5	93.6	10.4
100 %	306.0	9.5	315.5	44.9	9.5



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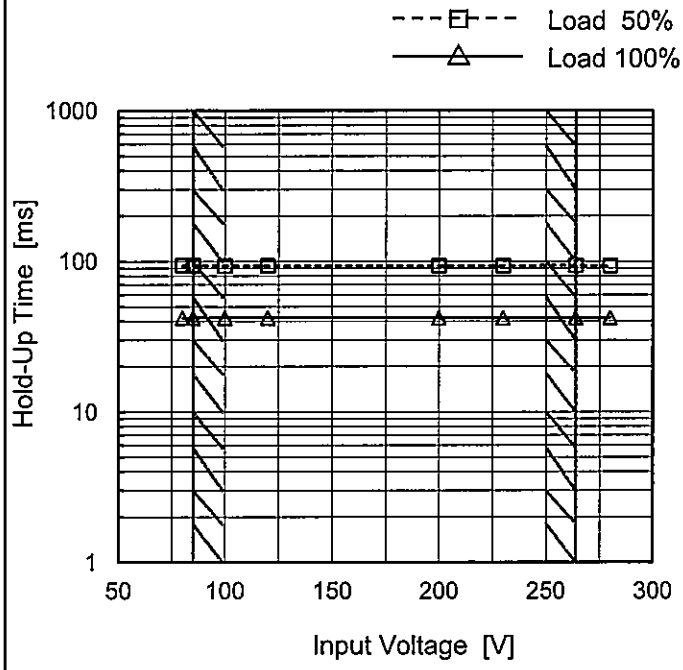
Model	TUXS200F32
Item	Hold-Up Time
Object	+32V6.2A

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%
80	94	42
85	94	42
100	94	42
120	93	42
200	94	42
230	94	42
264	94	42
280	93	42
--	-	-

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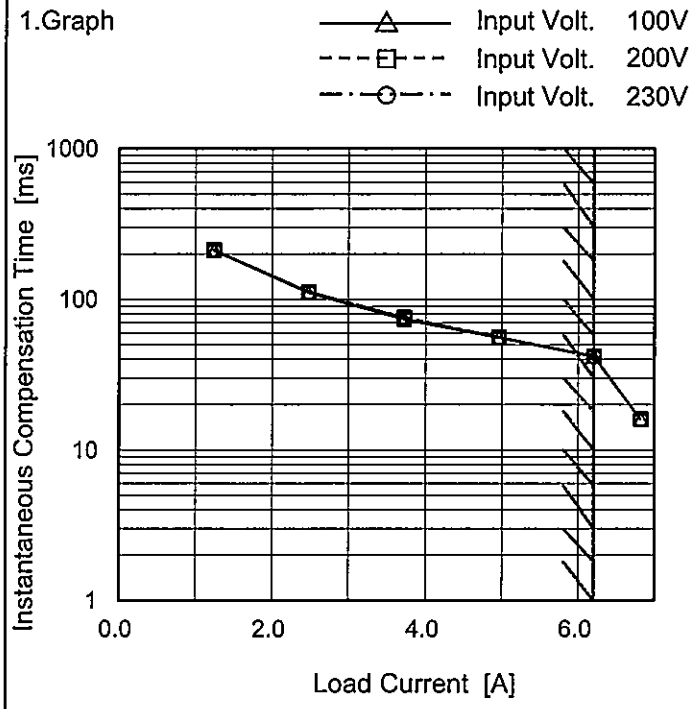
Model	TUXS200F32
Item	Instantaneous Interruption Compensation
Object	+32V6.2A

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. 200[V]	Input Volt. 230[V]
0.00	-	-	-
1.24	212	213	212
2.48	111	112	112
3.72	74	76	76
4.96	56	56	56
6.20	42	42	42
6.82	16	16	16
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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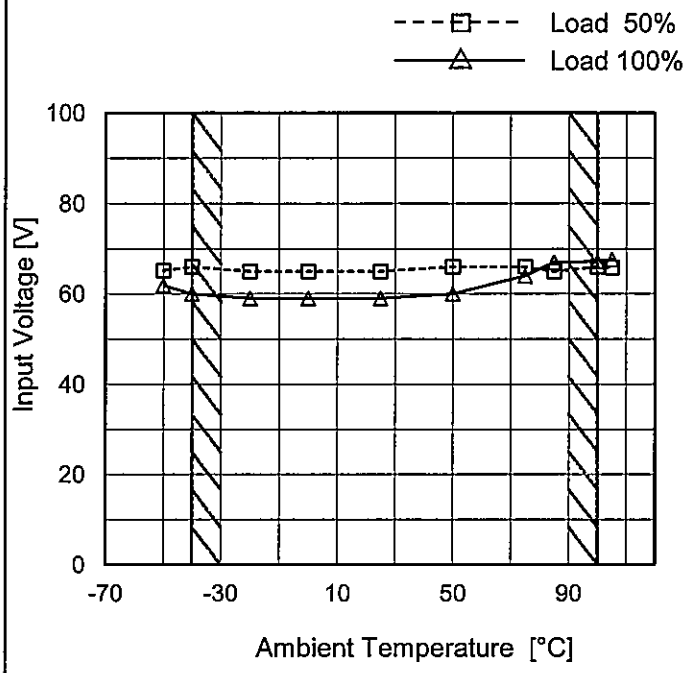
Model	TUXS200F32
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+32V6.2A

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%
-50	66	62
-40	66	60
-20	65	59
0	65	59
25	65	59
50	66	60
75	66	64
85	65	67
100	66	68
105	66	68
--	-	-

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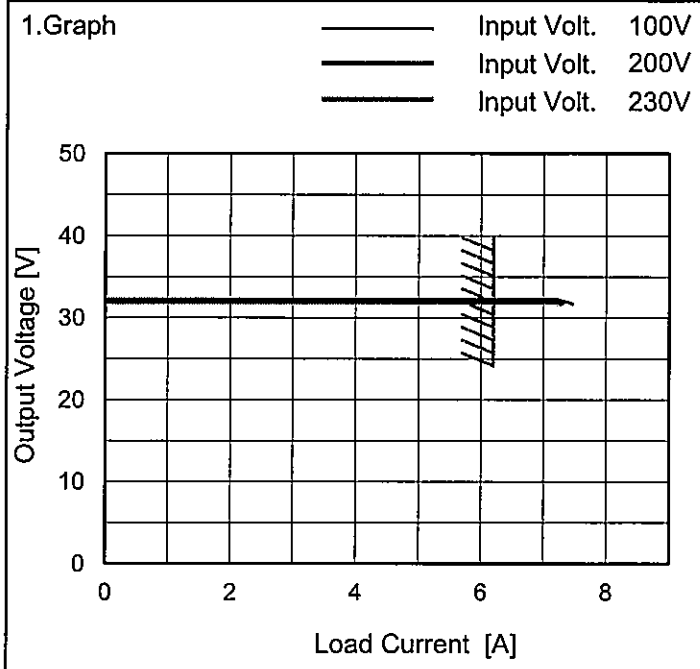
Model	TUXS200F32
Item	Overcurrent Protection
Object	+32V6.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

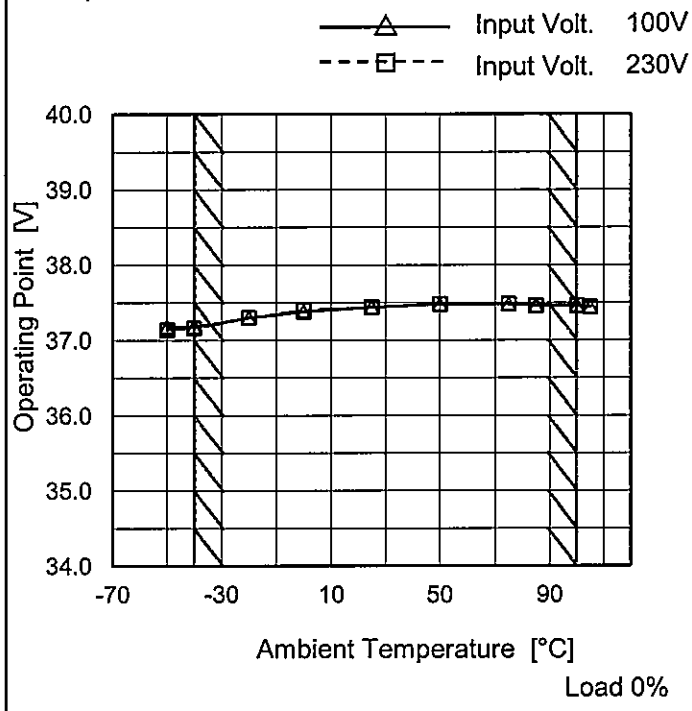
Output Voltage [V]	Load Current [A]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
32.0	7.34	7.30	7.22
30.4	7.47	7.30	7.25
28.8	7.47	7.30	7.25
25.6	0.00	0.00	0.00
22.4	0.00	0.00	0.00
19.2	0.00	0.00	0.00
16.0	0.00	0.00	0.00
12.8	0.00	0.00	0.00
9.6	0.00	0.00	0.00
6.4	0.00	0.00	0.00
3.2	0.00	0.00	0.00
0.0	0.00	0.00	0.00

COSEL

Model	TUXS200F32
Item	Overvoltage Protection
Object	+32V6.2A

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. 230[V]
-50	37.18	37.14
-40	37.18	37.16
-20	37.30	37.30
0	37.38	37.40
25	37.44	37.44
50	37.48	37.48
75	37.48	37.48
85	37.46	37.46
100	37.46	37.46
105	37.44	37.44
--	-	-

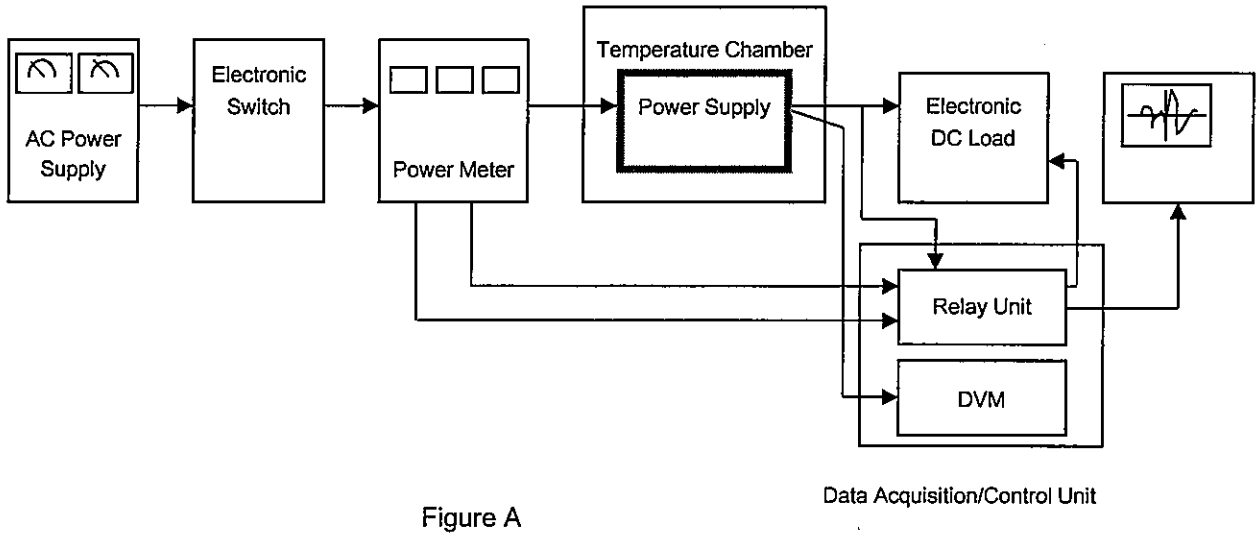


Figure A

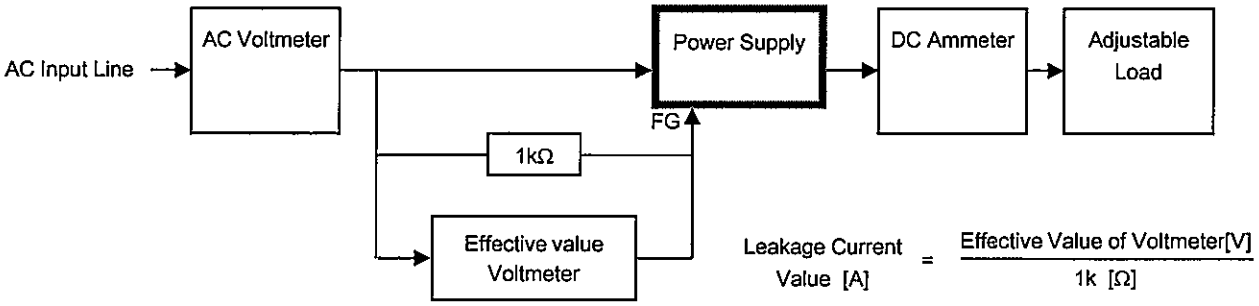


Figure B (DEN-AN)

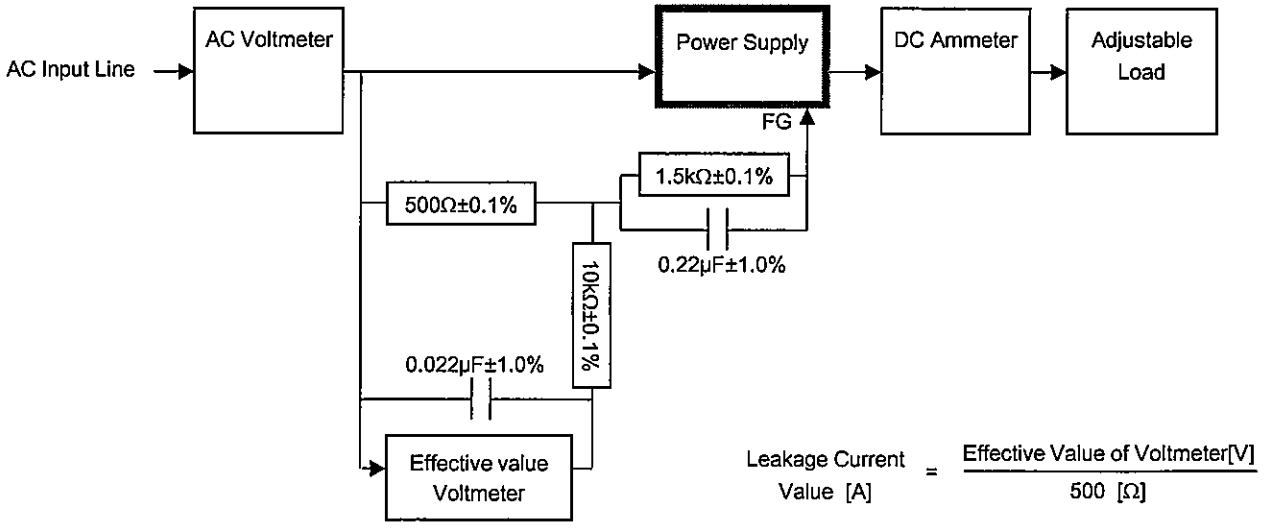
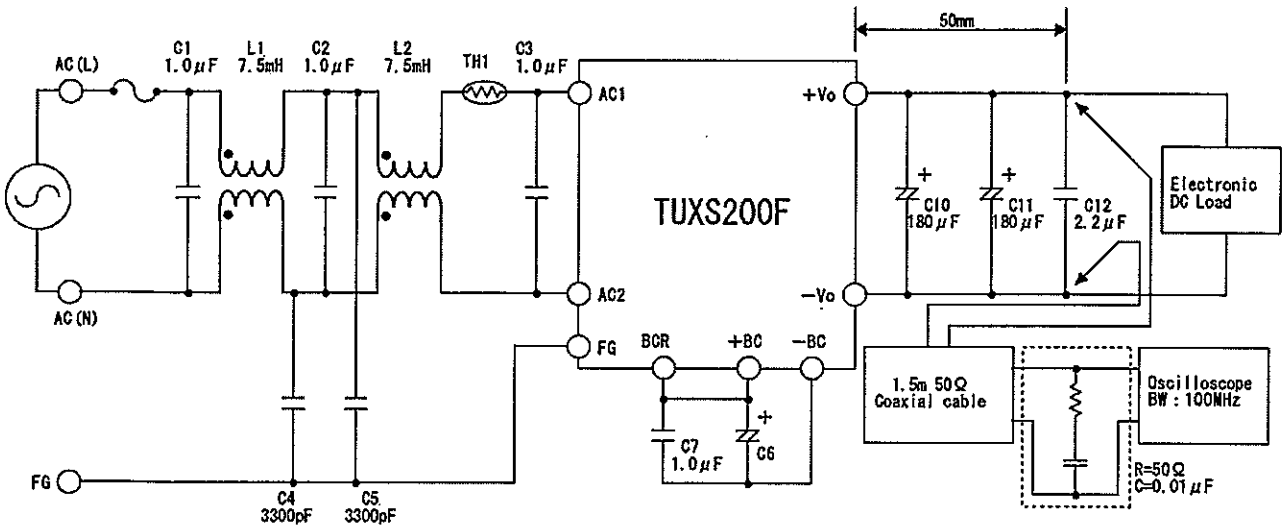


Figure B (IEC60950-1)



L1,L2	:	SCR22-060-1R0A075J(NEC TOKIN)
TH1	:	12D2-15LCS(SEMITEC)
C1,C2,C3	:	LE105-MX(OKAYA)
C4,C5	:	DE1E3KX332M(MURATA)
C6	:	EKXJ421ELL151MM50S(Nippon Chemi-Con)
C7	:	AFS450V105K(OKAYA)
C10,C11	:	PCR1H181MCL1GS(NICHICON)
C12	:	GRM31CR72A225K(MURATA)

Figure C