

JWT100

EVALUATION DATA

型式データ

INDEX

1. 測定方法 Evaluation Method	PAGE
1.1 測定回路 Circuit used for determination	T-1~5
(1) 静特性 Steady state data	
(2) 通電ドリフト特性 Warm up voltage drift characteristics	
(3) 過電流保護特性 Over current protection (OCP) characteristics	
(4) 過電圧保護特性 Over voltage protection (OVP) characteristics	
(5) 出力立ち上がり特性 Output rise characteristics	
(6) 出力立ち下がり特性 Output fall characteristics	
(7) ON/OFFコントロール時出力立ち上がり特性 Output rise characteristics with ON/OFF CONTROL 準標準品 JWT100-*/R にて対応 For alternative standard model JWT100-*/R	
(8) ON/OFFコントロール時出力立ち下がり特性 Output fall characteristics with ON/OFF CONTROL 準標準品 JWT100-*/R にて対応 For alternative standard model JWT100-*/R	
(9) 過渡応答（入力急変）特性 Dynamic line response characteristics	
(10) 過渡応答（負荷急変）特性 Dynamic load response characteristics	
(11) 入力サージ電流（突入電流）特性 Inrush current characteristics	
(12) リーク電流特性 Leakage current characteristics	
(13) 出力リップル、ノイズ波形 Output ripple and noise waveform	
(14) EMI特性 Electro-Magnetic Interference characteristics	
1.2 使用測定機器 List of equipment used	T-6
2. 特性データ Characteristics	
2.1 静特性 Steady state data	
(1) 入力・負荷・温度変動 Regulation - line and load, temperature drift	T-7
(2) 出力電圧・リップル電圧対入力電圧 Output voltage and ripple voltage vs. input voltage	T-8
(3) 効率・入力電流対出力電流 Efficiency and input current vs. output current	T-9
(4) 力率・入力電流対出力電流 Power factor and input current vs. output current	T-10
2.2 通電ドリフト特性 Warm up voltage drift characteristics	T-11
2.3 過電流保護特性 Over current protection (OCP) characteristics	T-12
2.4 過電圧保護特性 Over voltage protection (OVP) characteristics	T-13
2.5 出力立ち上がり特性 Output rise characteristics	T-14~17
2.6 出力立ち下がり特性 Output fall characteristics	T-18~21

2.7	ON/OFFコントロール時出力立ち上がり特性 Output rise characteristics with ON/OFF CONTROL	T-22
	準標準品 JWT100-*/R にて対応 For alternative standard model JWT100-*/R	
2.8	ON/OFFコントロール時出力立ち下がり特性 Output fall characteristics with ON/OFF CONTROL	T-23
	準標準品 JWT100-*/R にて対応 For alternative standard model JWT100-*/R	
2.9	出力保持時間特性 Hold up time characteristics	T-24
2.10	過渡応答（入力急変）特性 Dynamic line response characteristics ...	T-25
2.11	過渡応答（負荷急変）特性 Dynamic load response characteristics ..	T-26～28
2.12	入力電圧瞬停特性 Response to brown out characteristics	T-29～30
2.13	入力サージ電流（突入電流）特性 Inrush current waveform	T-31～32
2.14	瞬停時突入電流特性 Inrush current characteristics	T-33
2.15	入力電流波形 Input current waveform	T-34
2.16	高調波成分 Input current harmonics	T-35
2.17	リーク電流特性 Leakage current characteristics	T-36
2.18	出力リップル、ノイズ波形 Output ripple and noise waveform	T-37～38
2.19	EMI特性 Electro-Magnetic Interference characteristics	T-39～40

使用記号 Terminology used

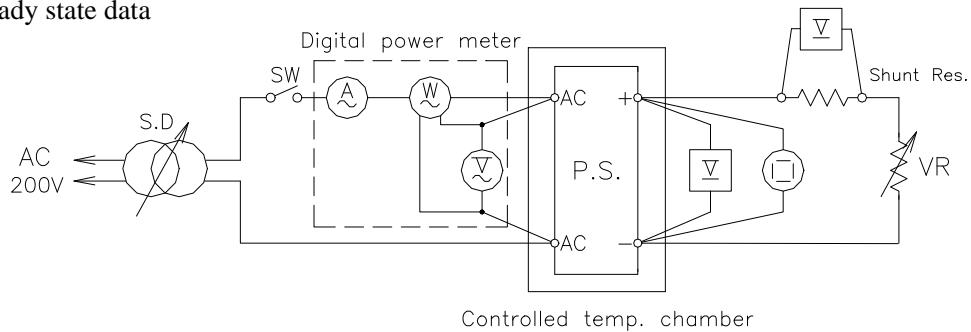
Definition			
Vin	.....	入力電圧	Input voltage
Vout	.....	出力電圧	Output voltage
Iin	.....	入力電流	Input current
Iout	.....	出力電流	Output current
f	.....	周波数	Frequency
Ta	.....	周囲温度	Ambient temperature

1 . 1

測定回路 Circuit used for determination

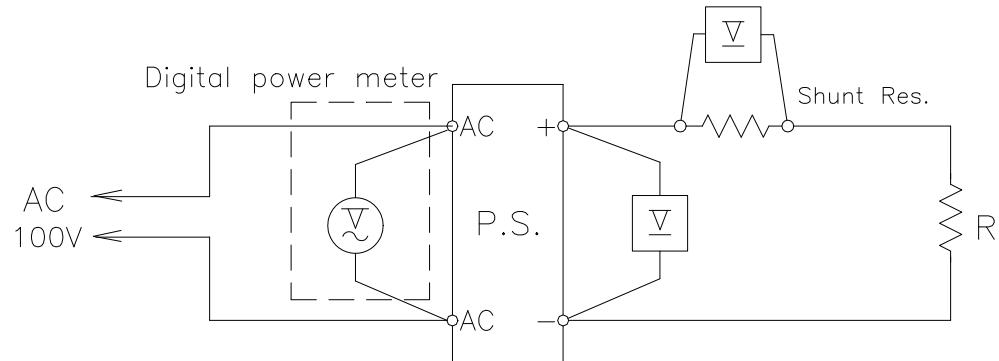
(1) 静特性

Steady state data



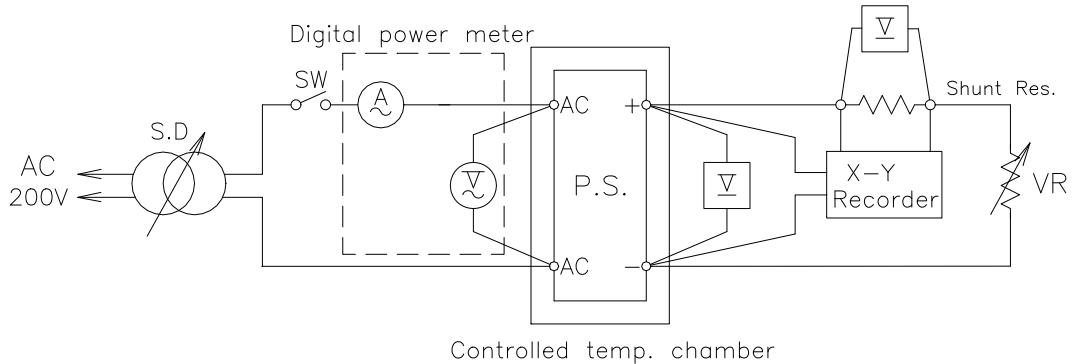
(2) 通電ドリフト特性

Warm up voltage drift characteristics



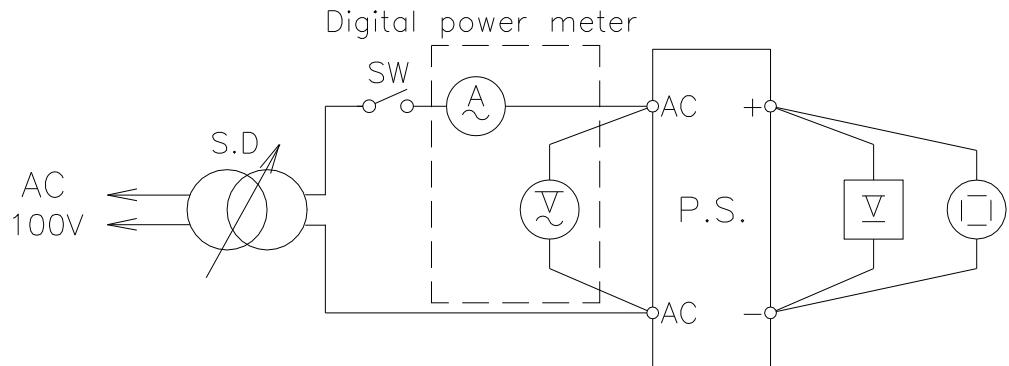
(3) 過電流保護特性

Over current protection (O.C.P.) characteristics



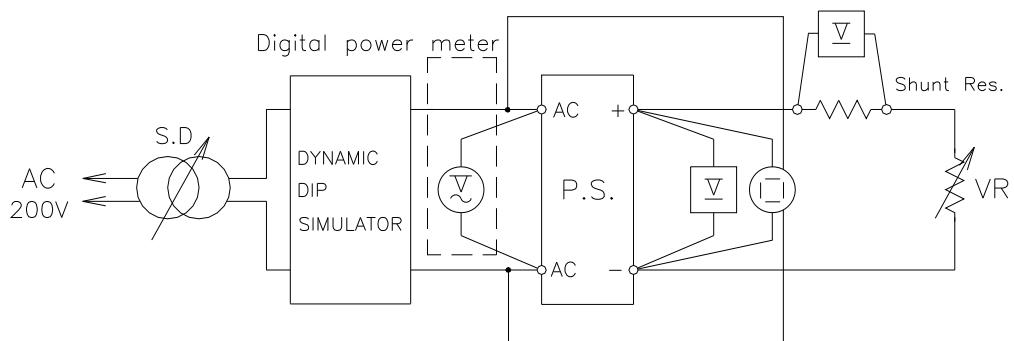
(4) 過電圧保護特性

Over voltage protection (O.V.P.) characteristics



(5) 出力立ち上がり特性

Output rise characteristics



(6) 出力立ち下がり特性

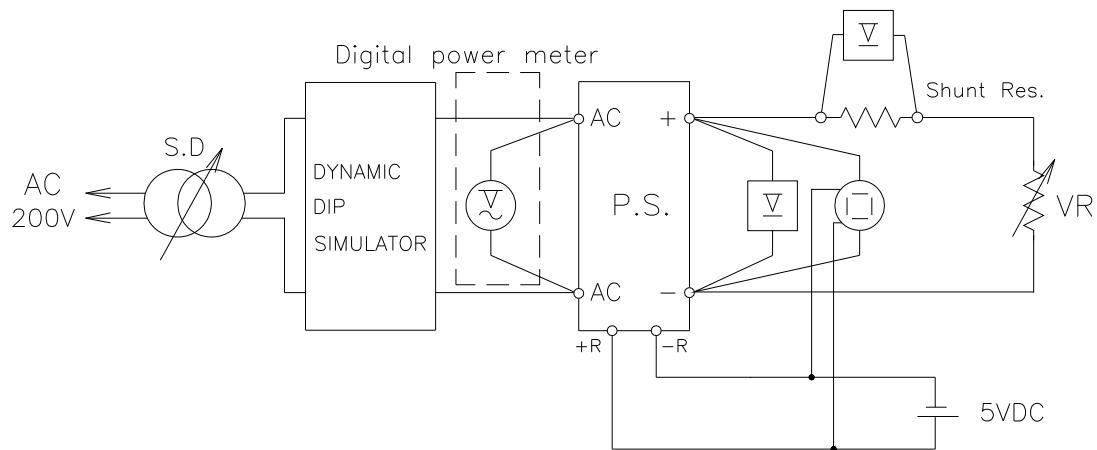
Output fall characteristics

Same as output rise characteristics

(7) 出力立ち上がり特性 (ON/OFF コントロール時)

Output rise characteristics with ON/OFF CONTROL

準標準品 JWT100-*/R にて対応 For alternative standard model JWT100-*/R



(8) 出力立ち下がり特性 (ON/OFF コントロール時)

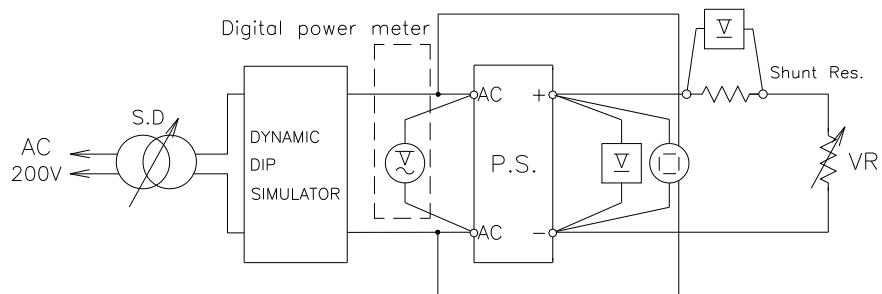
Output fall characteristics with ON/OFF CONTROL

準標準品 JWT100-*/R にて対応 For alternative standard model JWT100-*/R

Same as output rise characteristics with ON/OFF CONTROL

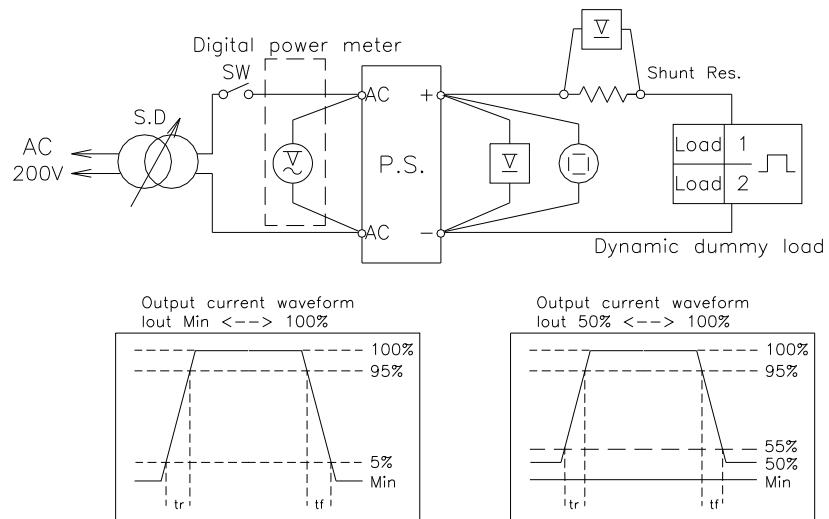
(9) 過渡応答 (入力急変) 特性

Dynamic line response characteristics



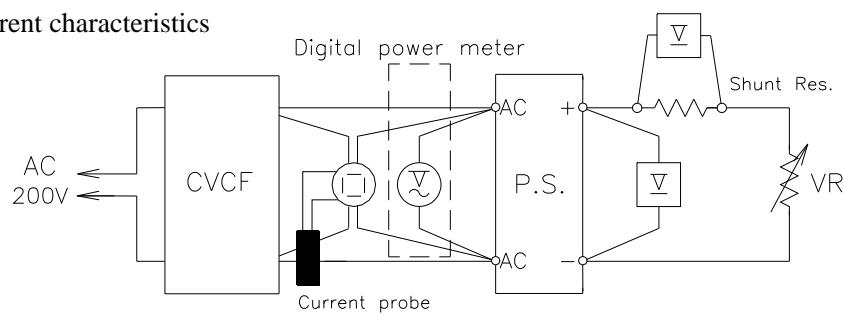
(10) 過渡応答 (負荷急変) 特性

Dynamic load response characteristics



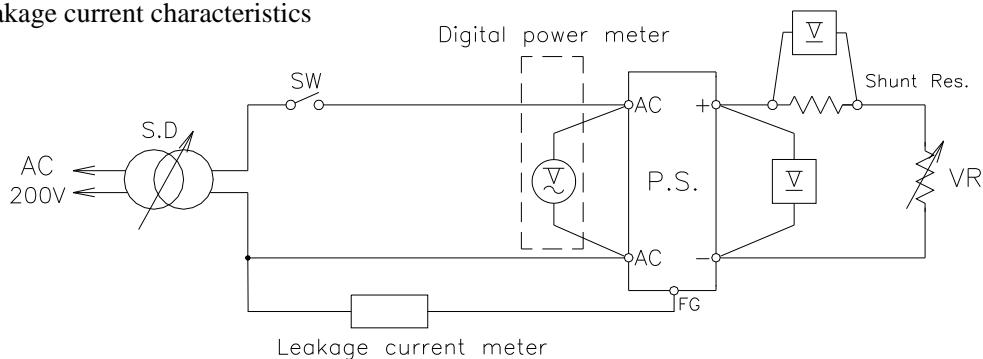
(11) 入力サージ電流 (突入電流) 特性

Inrush current characteristics



(12) リーク電流

Leakage current characteristics



NOTE : Leakage current measured through a 1k ohm resistor.

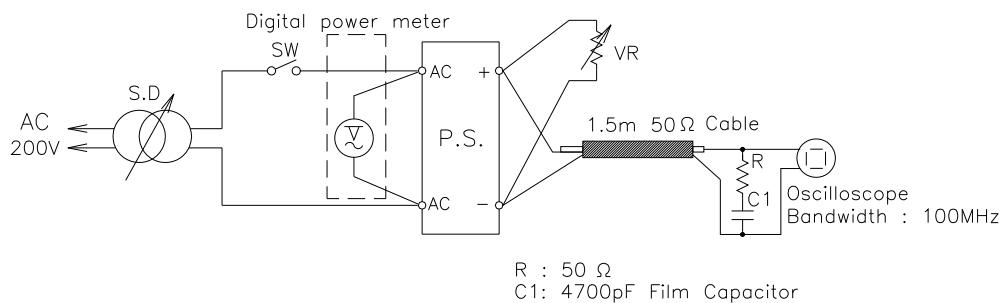
Range used---AC+DC (For YOKOGAWA TYPE 3226)

---AC (For SIMPSON MODEL 229-2)

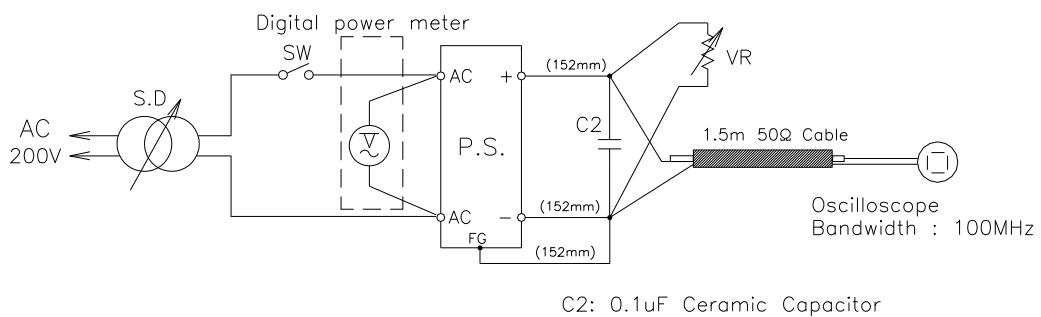
(13) 出力リップルノイズ

Output ripple noise

(a) Normal Mode



(b) Normal + Common Mode



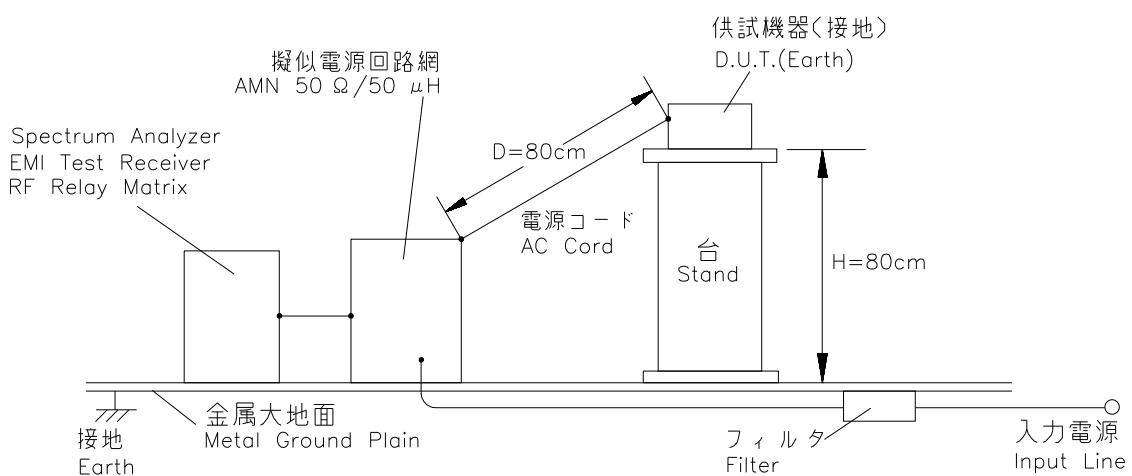
C2: 0.1uF Ceramic Capacitor

(14) EMI 特性

Electro-Magnetic Interference characteristics

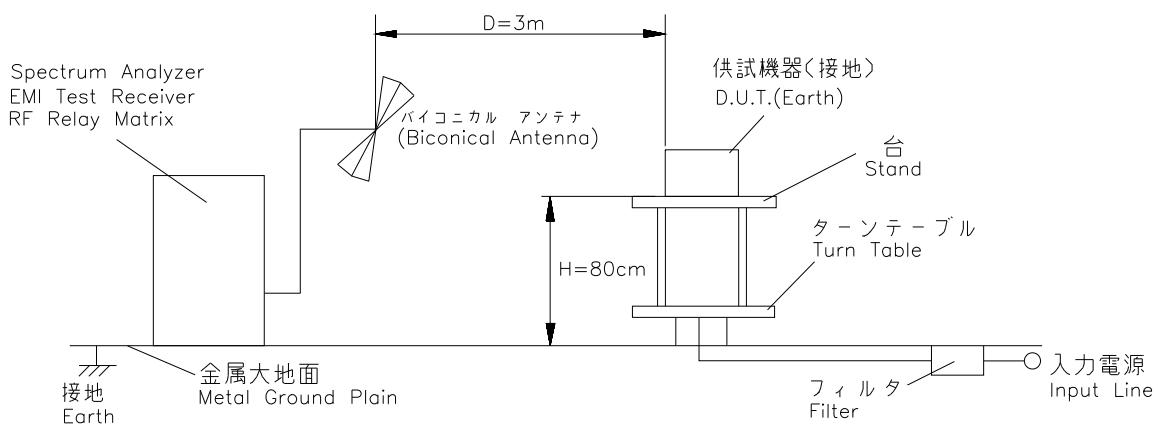
(a) 雜音端子電圧 (帰還ノイズ)

Conducted Emission Noise



(b) 雜音電界強度 (輻射ノイズ)

Radiated Emission Noise



	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	OSCILLOSCOPE	HITACHI DENSHI	V-1100A
2	DIGITAL STORAGE OSCILLOSCOPE	TEKTRONIX	TDS540D
3	DIGITAL MULTIMETER	ADVANTEST	R6341A
4	DIGITAL POWER METER	YOKOGAWA ELECT.	WT110
5	DC AMPERE METER	YOKOGAWA ELECT.	TYPE2051
6	CURRENT PROBE/AMPLIFIER	TEKTRONIX	A6303/AM503
7	DYNAMIC DUMMY LOAD	TAKASAGO	FK-2000L
8	SLIDE REGULATOR	MATSUNAGA	SD-1520
9	CVCF	KIKUSUI	PCR6000
10	LEAKAGE CURRENT METER	SIMPSON	229-2
11	LEAKAGE CURRENT METER	YOKOGAWA	TYPE3226
12	X-Y RECORDER	GRAPHTEC	WX3000
13	DYNAMIC DIP SIMULATOR	TAKAMISAWA CYBERNETICS	PSA-300
14	CONTROLLED TEMP. CHAMBER	TABAI ESPEC	SH-240
15	SPECTRUM ANALYZER	ROHDE & SCHWARZ	FSA
16	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESHS10
17	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESVS10
18	RF RELAY MATRIX	ROHDE & SCHWARZ	PSU
19	AMN	KYORITU DENSHI	KNW-242
20	ANTENA(BICONICAL ANTENA)	SCHWARZBECK	BBA9106

2. 特性データ

2.1 静特性 Steady state data

(1) 入力、負荷、温度変動 Regulation - line and load, temperature drift

V1 : 5V

conditions Ta : 25°C

Iout

V1 : -A

V2 : 2A

V3 : 1A

1. Regulation - line and load

Iout \ Vin	85VAC	100VAC	200VAC	265VAC	line regulation	
1.3A	5.032V	5.032V	5.032V	5.032V	0mV	0.00%
6.5A	5.024V	5.024V	5.024V	5.024V	0mV	0.00%
13A	5.013V	5.013V	5.013V	5.013V	0mV	0.00%
load	19mV	19mV	19mV	19mV		
regulation	0.38%	0.38%	0.38%	0.38%		

2. Temperature drift

conditions Vin : 100VAC

V1 : 13A

V2 : 2A

V3 : 1A

Ta	-10°C	+25°C	+50°C	temperature stability
Vo	5.011V	5.013V	5.014V	3mV 0.06%

V2 : +12V

conditions Ta : 25°C

Iout

V1 : 4.6A

V2 : -A

V3 : 1A

1. Regulation - line and load

Iout \ Vin	85VAC	100VAC	200VAC	265VAC	line regulation	
0A	12.082V	12.082V	12.082V	12.082V	0mV	0.00%
2.75A	12.078V	12.078V	12.078V	12.078V	0mV	0.00%
5.5A	12.074V	12.074V	12.074V	12.074V	0mV	0.00%
load	8mV	8mV	8mV	8mV		
regulation	0.07%	0.07%	0.07%	0.07%		

2. Temperature drift

conditions Vin : 100VAC

V1 : 4.6A

V2 : 5.5A

V3 : 1A

Ta	-10°C	+25°C	+50°C	temperature stability
Vo	12.055V	12.074V	12.084V	29mV 0.24%

V3 : -12V

conditions Ta : 25°C

Iout

V1 : 13A

V2 : 2A

V3 : -A

1. Regulation - line and load

Iout \ Vin	85VAC	100VAC	200VAC	265VAC	line regulation	
0A	-11.967V	-11.967V	-11.967V	-11.967V	0mV	0.00%
0.5A	-11.955V	-11.955V	-11.955V	-11.955V	0mV	0.00%
1A	-11.940V	-11.940V	-11.940V	-11.940V	0mV	0.00%
load	27mV	27mV	27mV	27mV		
regulation	0.23%	0.23%	0.23%	0.23%		

2. Temperature drift

conditions Vin : 100VAC

V1 : 13A

V2 : 2A

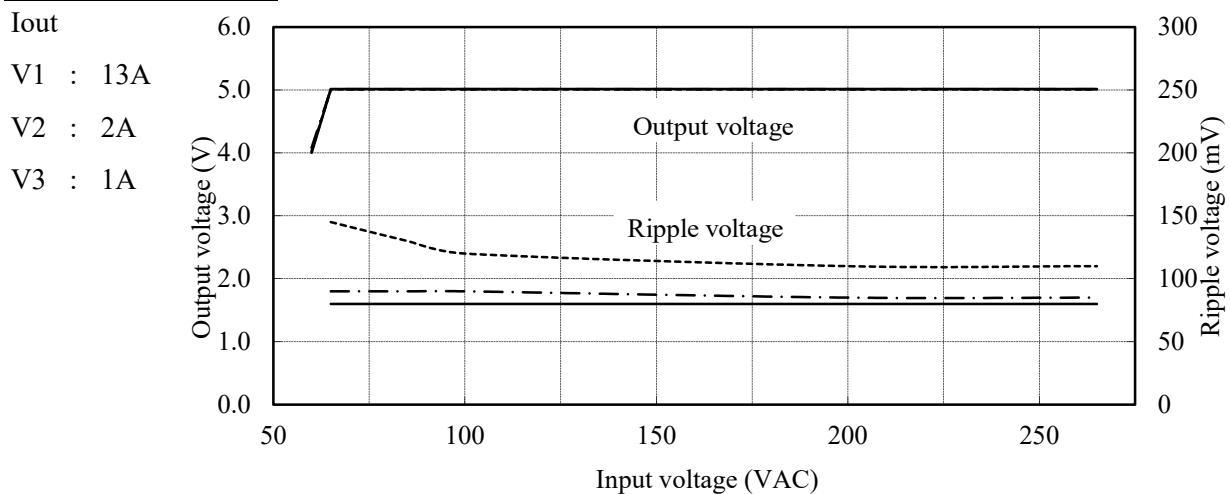
V3 : 1A

Ta	-10°C	+25°C	+50°C	temperature stability
Vo	-11.916V	-11.940V	-11.930V	24mV 0.20%

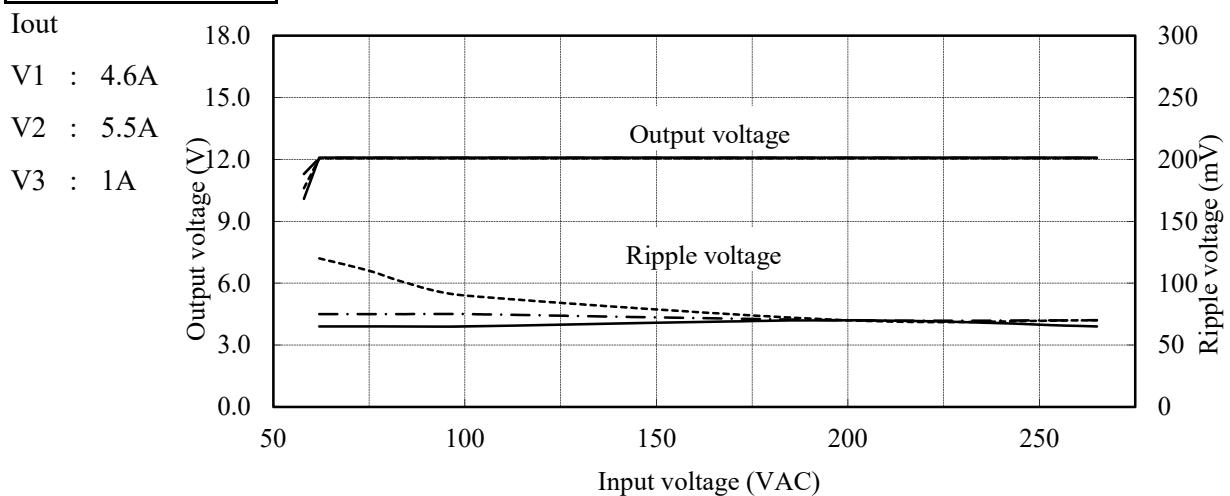
2.1 (2) 出力電圧、リップル電圧対入力電圧
 Output voltage and Ripple voltage v.s. Input voltage

Conditions Ta : -10°C -----
 : 25°C - - - -
 : 50°C —————

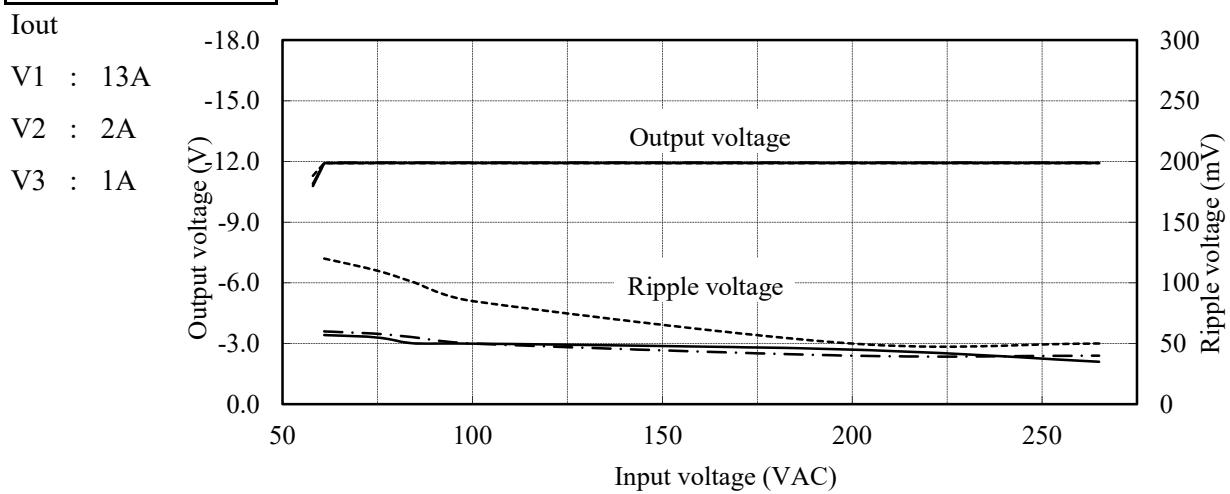
V1 : 5V



V2 : +12V



V3 : -12V



2.1 (3) 効率、入力電流対出力電流

Efficiency and Input current v.s. Output current

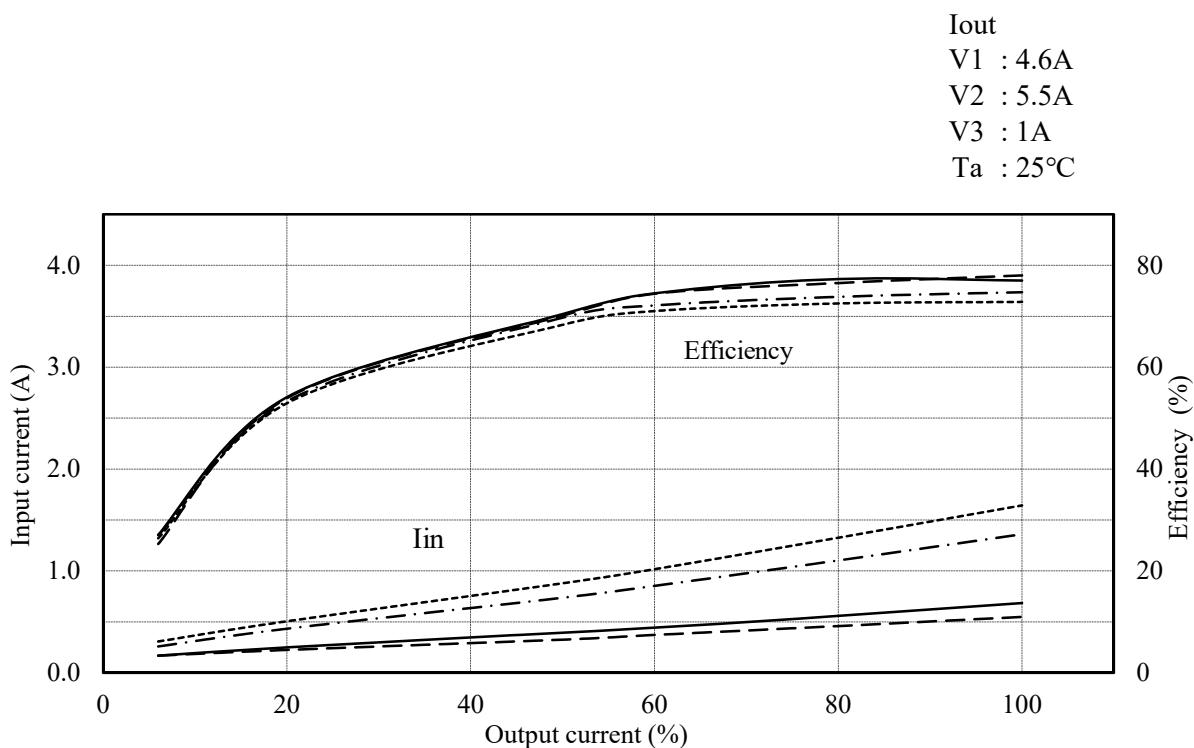
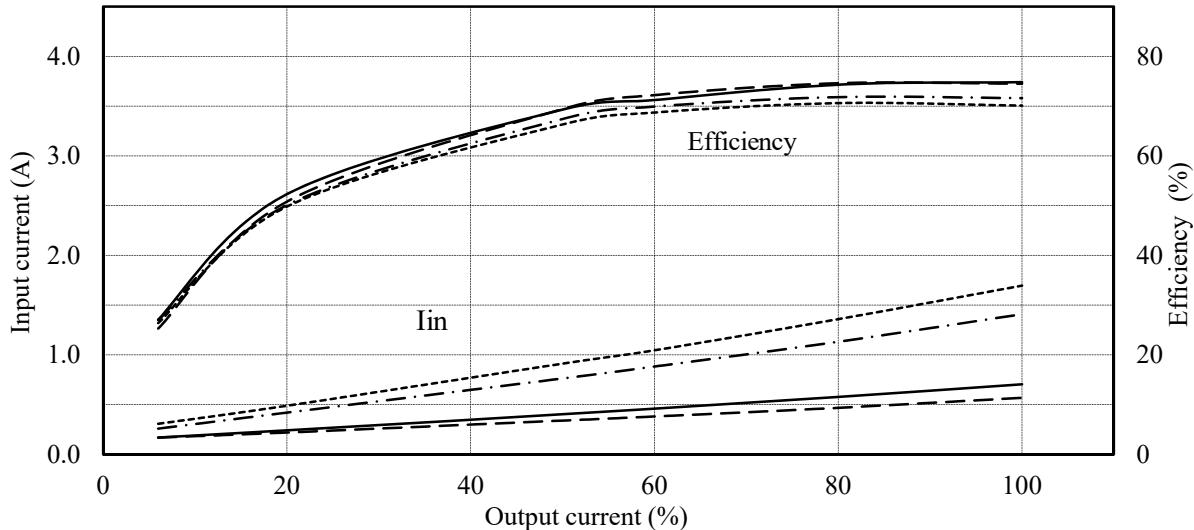
Conditions

- Vin : 85VAC
- : 100VAC
- : 200VAC
- : 265VAC

Iout

- V1 : 13A
- V2 : 2A
- V3 : 1A

Ta : 25°C



2.1 (4) 力率、入力電流対出力電流

Power factor and Input current v.s. Output current

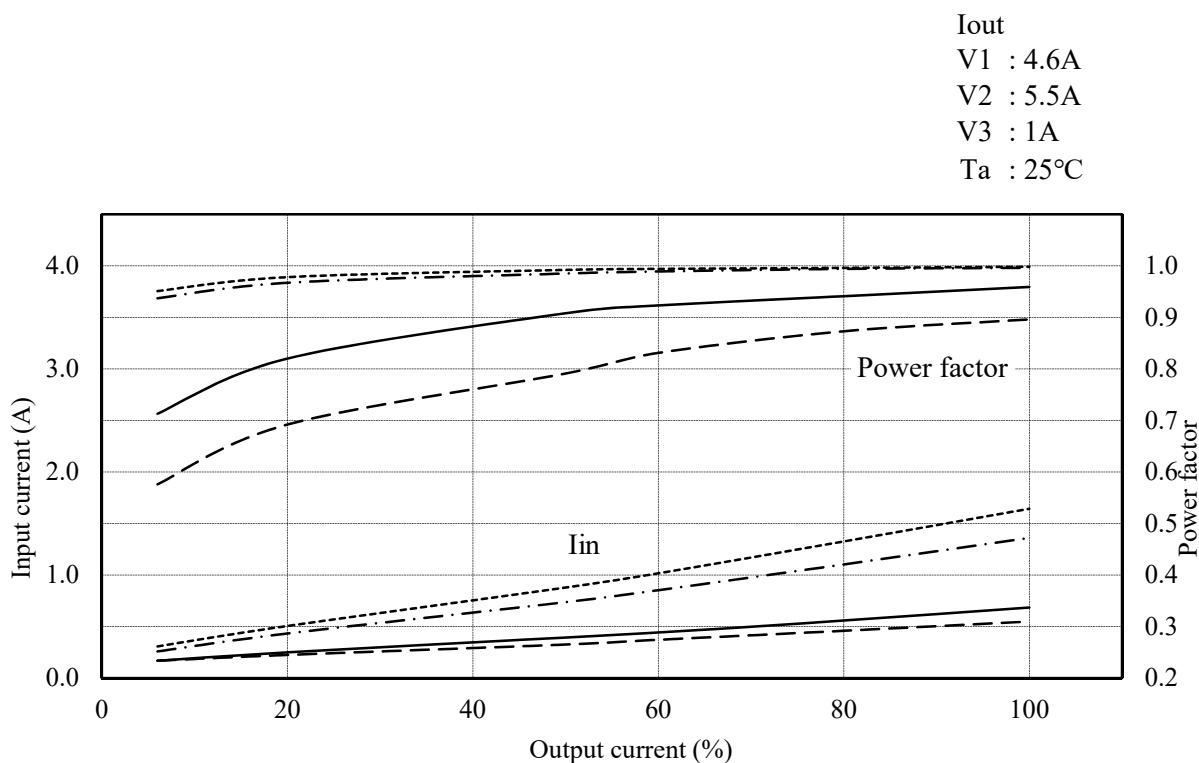
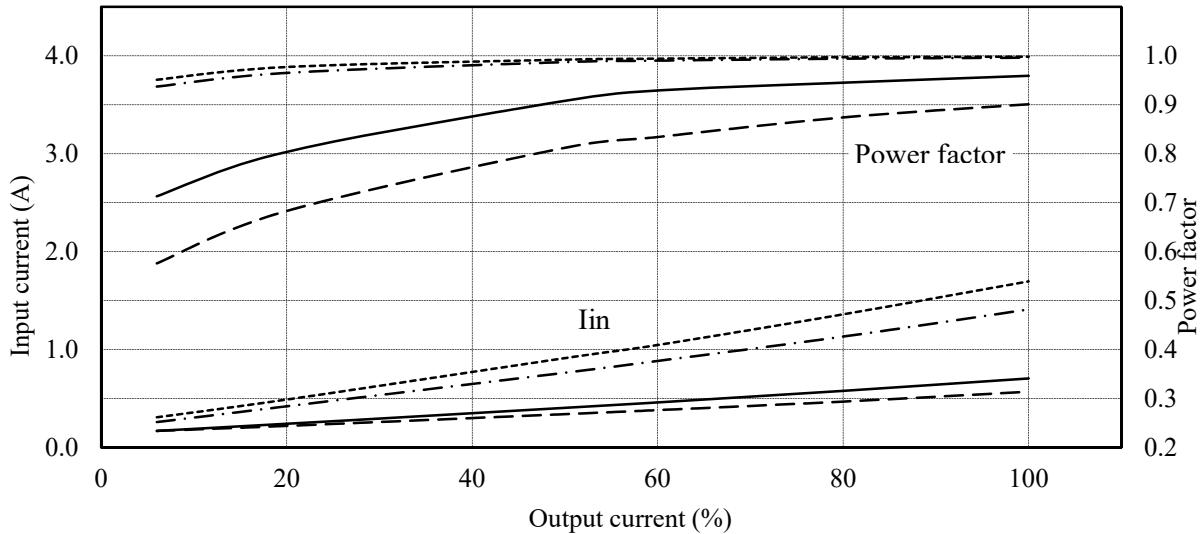
Conditions

- Vin : 85VAC
- : 100VAC
- : 200VAC
- : 265VAC

Iout

- V1 : 13A
- V2 : 2A
- V3 : 1A

Ta : 25°C



2.2 通電ドリフト特性

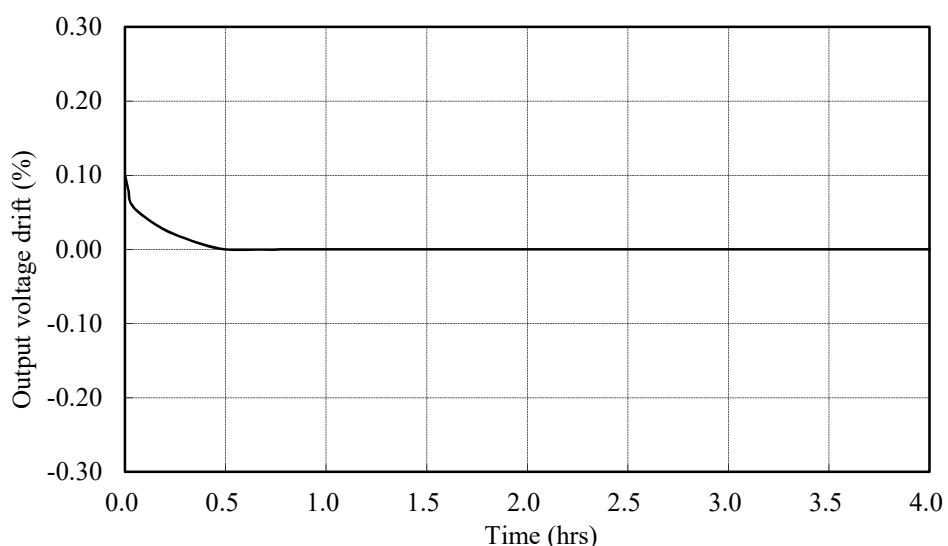
Warm up voltage drift characteristics

Conditions Vin : 100VAC

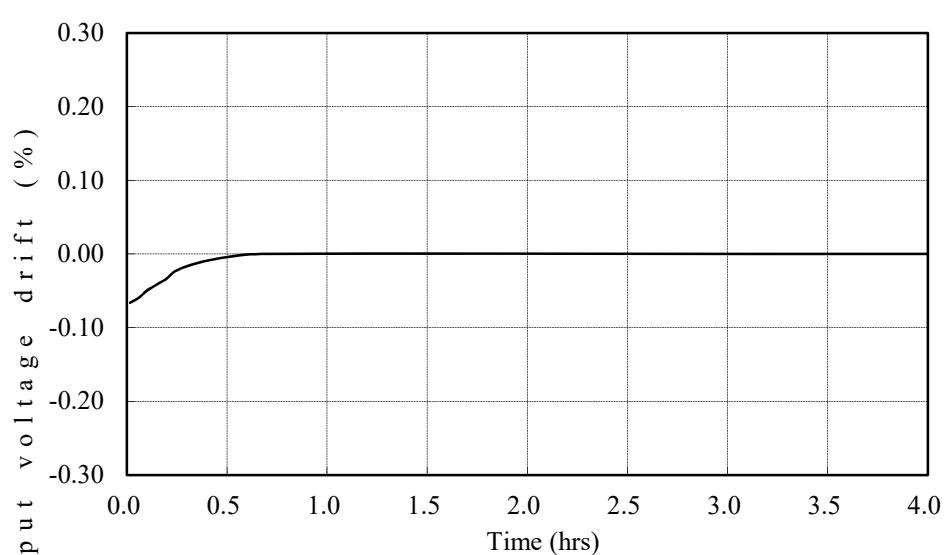
Ta : 25°C

V1 : 5V

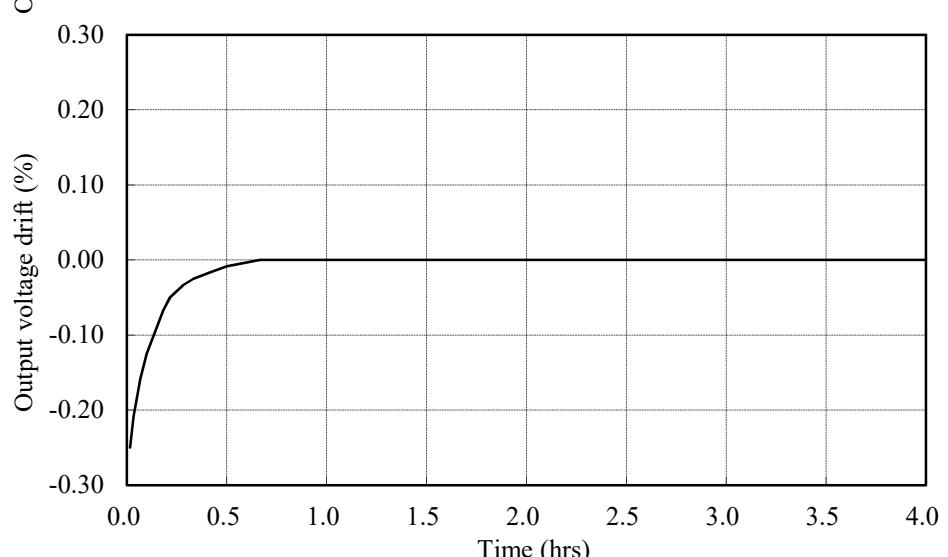
Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A

**V2 : +12V**

Iout
 V1 : 4.6A
 V2 : 5.5A
 V3 : 1A

**V3 : -12V**

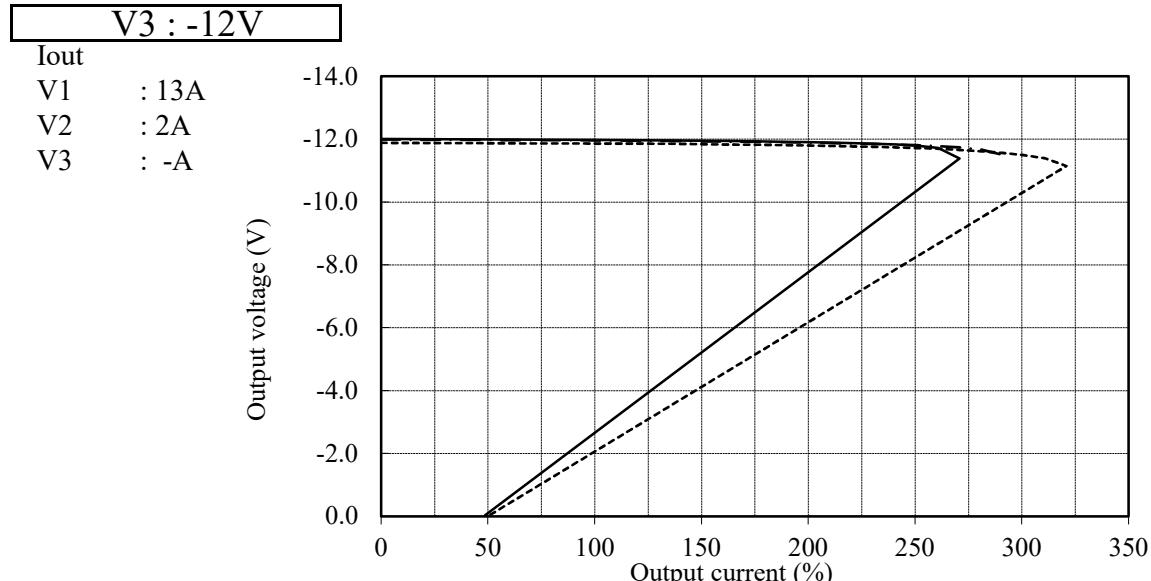
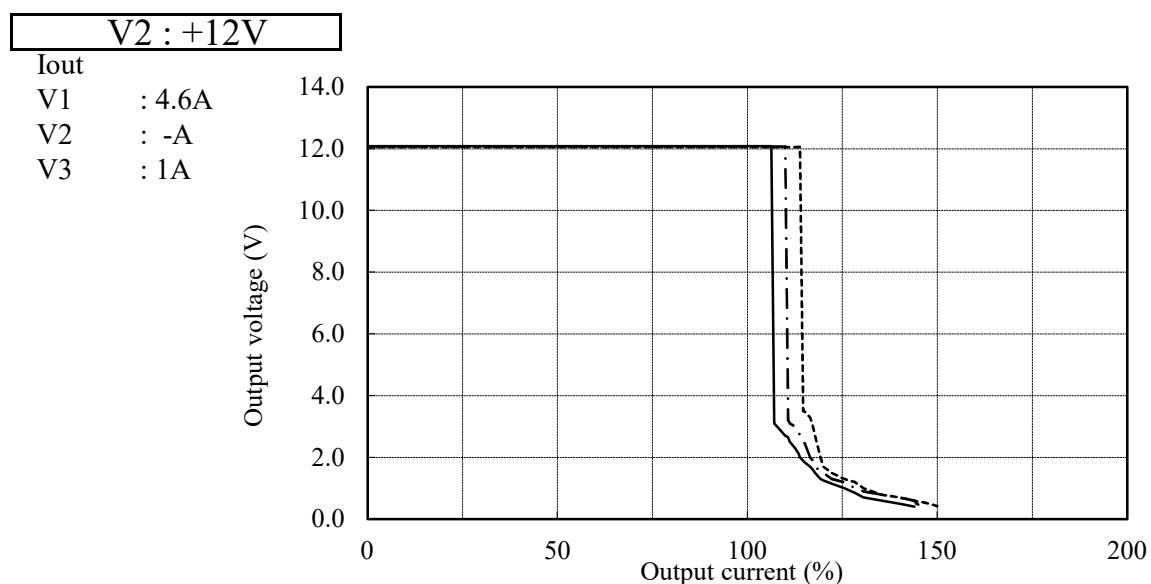
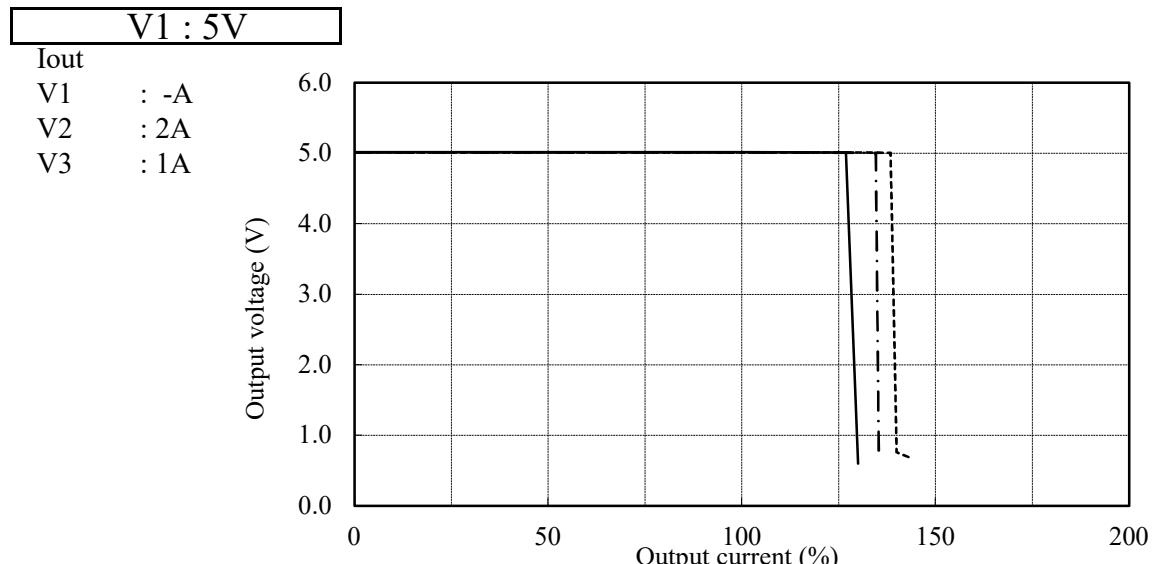
Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A



2.3 過電流保護特性

Over current protection (OCP) characteristics

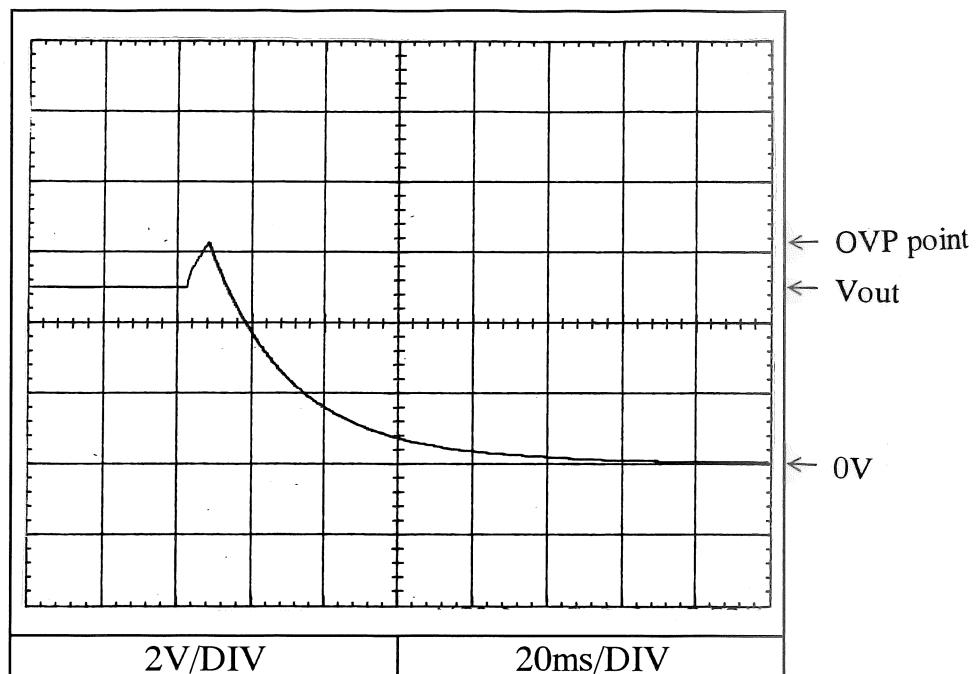
Conditions Ta : -10°C -----
 : 25°C - - - - -
 : 50°C —————
 Vin : 85-265VAC



2.4 過電圧保護特性

Over voltage protection (OVP) characteristics

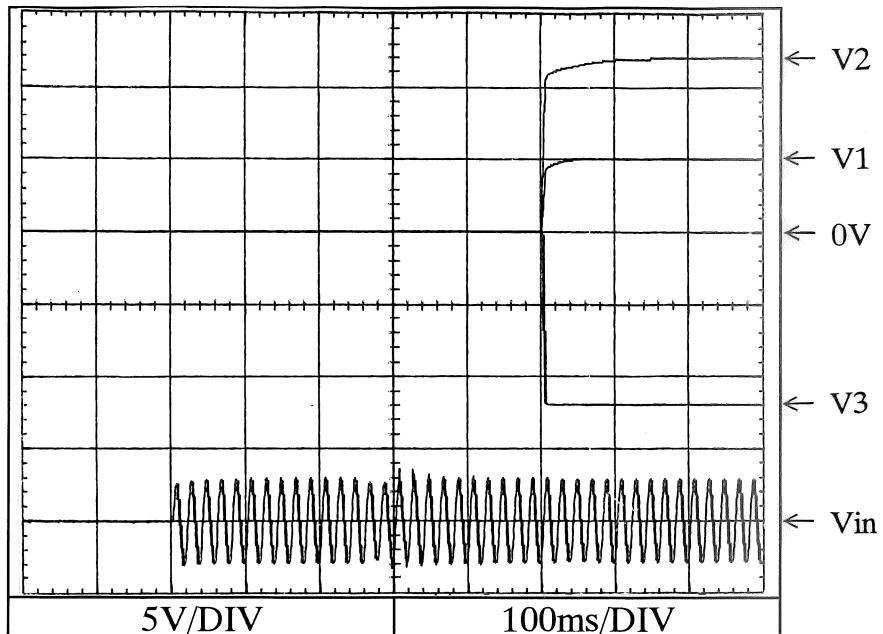
Conditions Vin : 100VAC
 Iout
 V1 : 1.3A
 V2 : 0A
 V3 : 0A
 Ta : 25°C



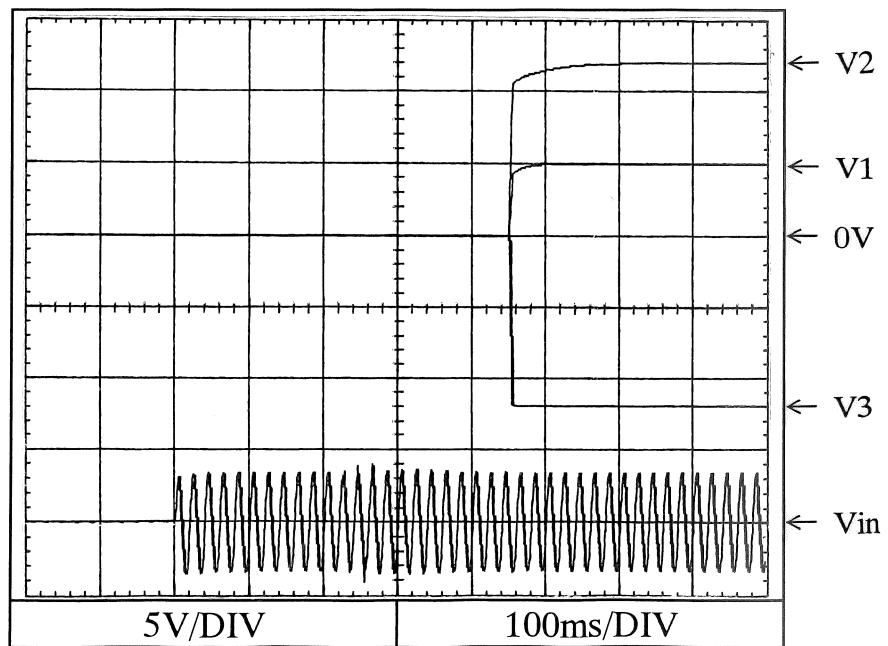
2.5 出力立ち上がり特性
Output rise characteristics

Conditions Ta : 25°C
 Iout
 V1 : 1.3A
 V2 : 0A
 V3 : 0A

Vin : 85VAC



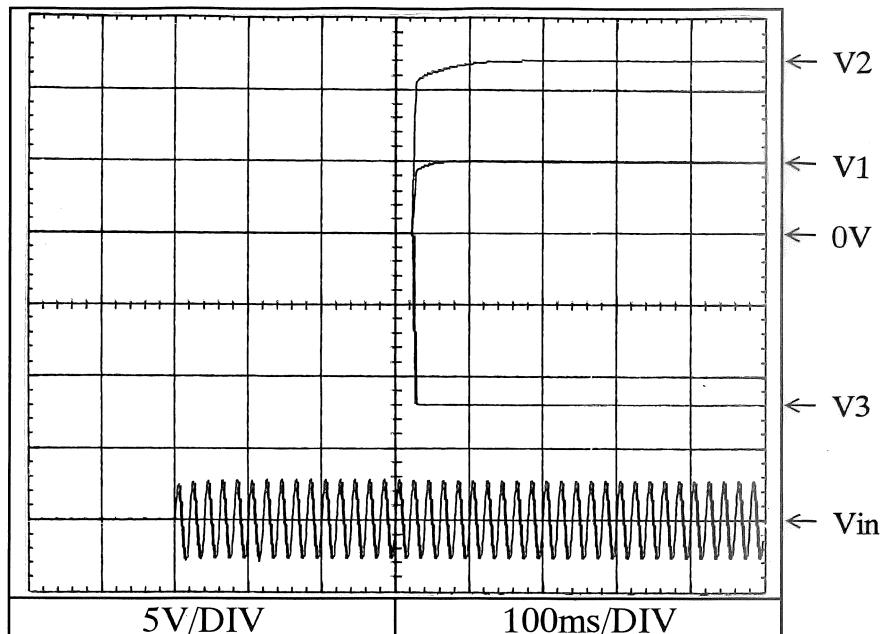
Vin : 100VAC



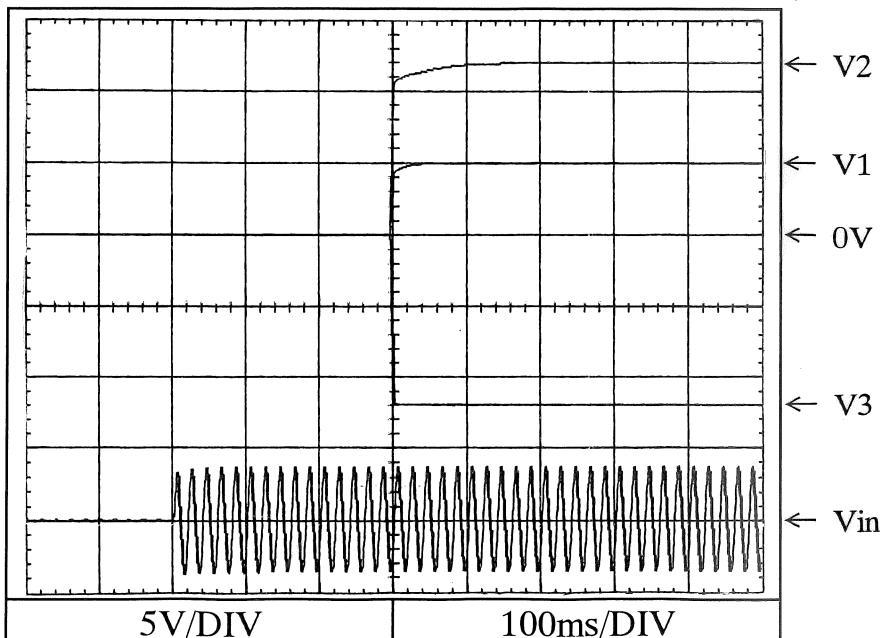
2.5 出力立ち上がり特性
Output rise characteristics

Conditions Ta : 25°C
 Iout
 V1 : 1.3A
 V2 : 0A
 V3 : 0A

Vin : 200VAC



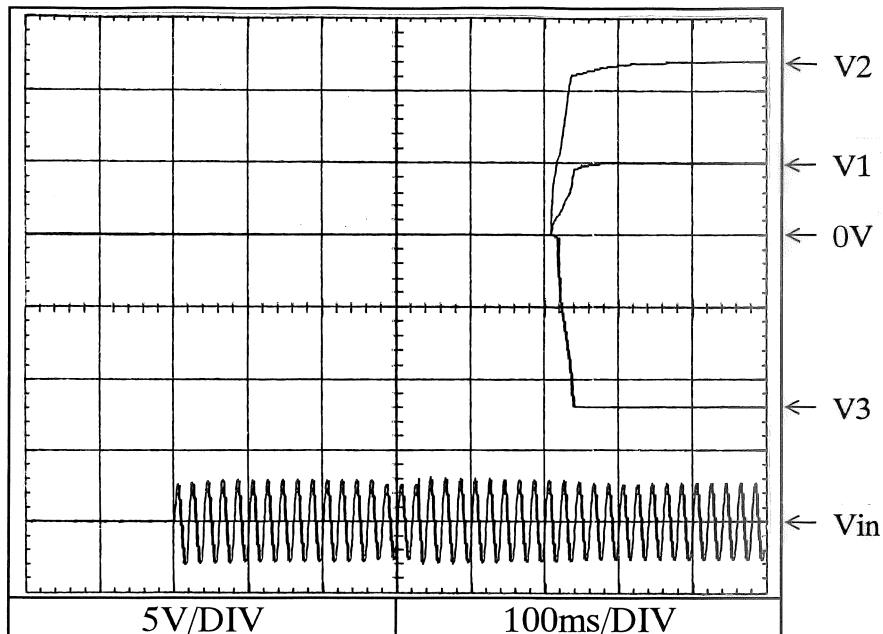
Vin : 265VAC



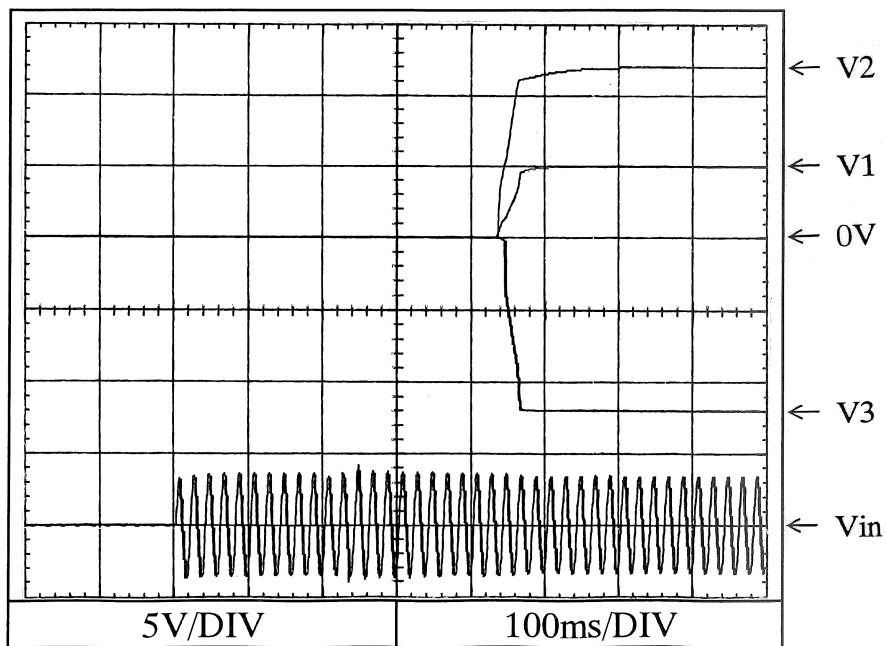
2.5 出力立ち上がり特性
Output rise characteristics

Conditions Ta : 25°C
 Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A

Vin : 85VAC



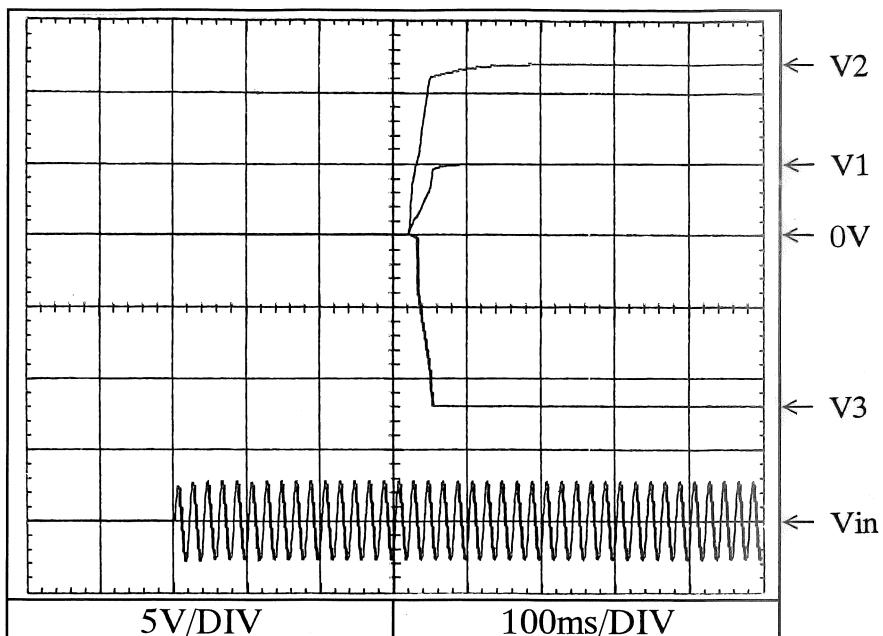
Vin : 100VAC



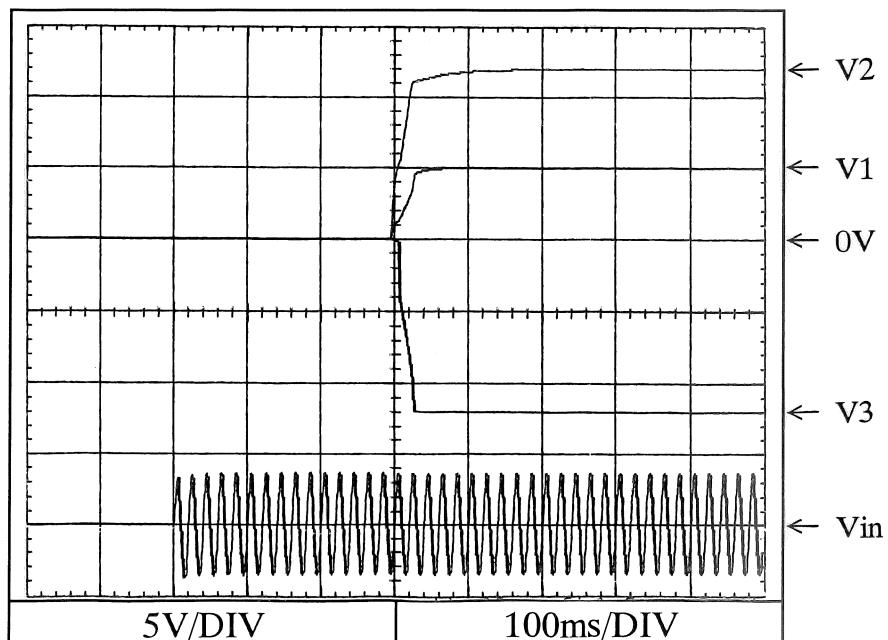
2.5 出力立ち上がり特性
Output rise characteristics

Conditions Ta : 25°C
 Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A

Vin : 200VAC



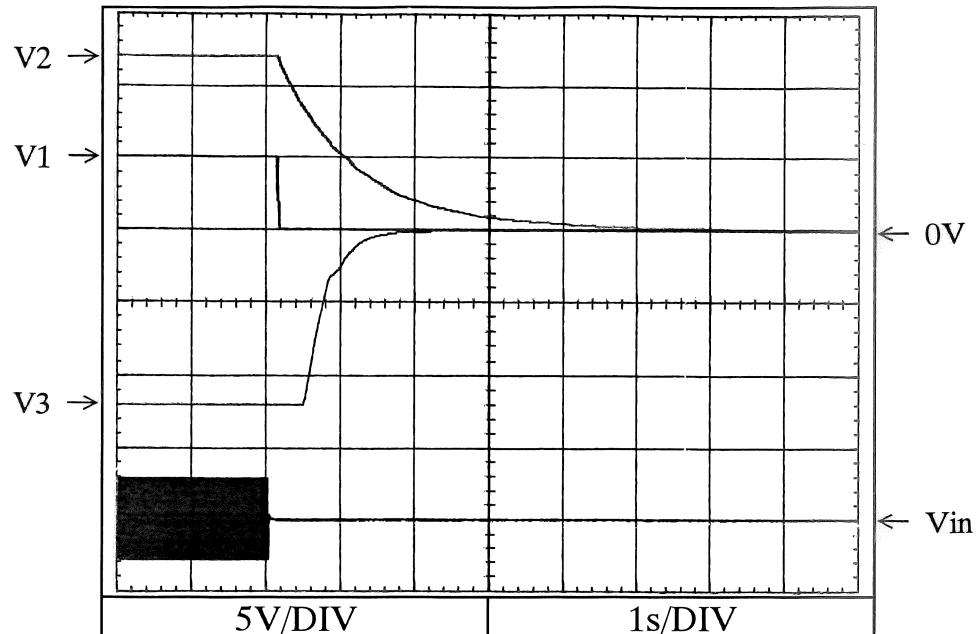
Vin : 265VAC



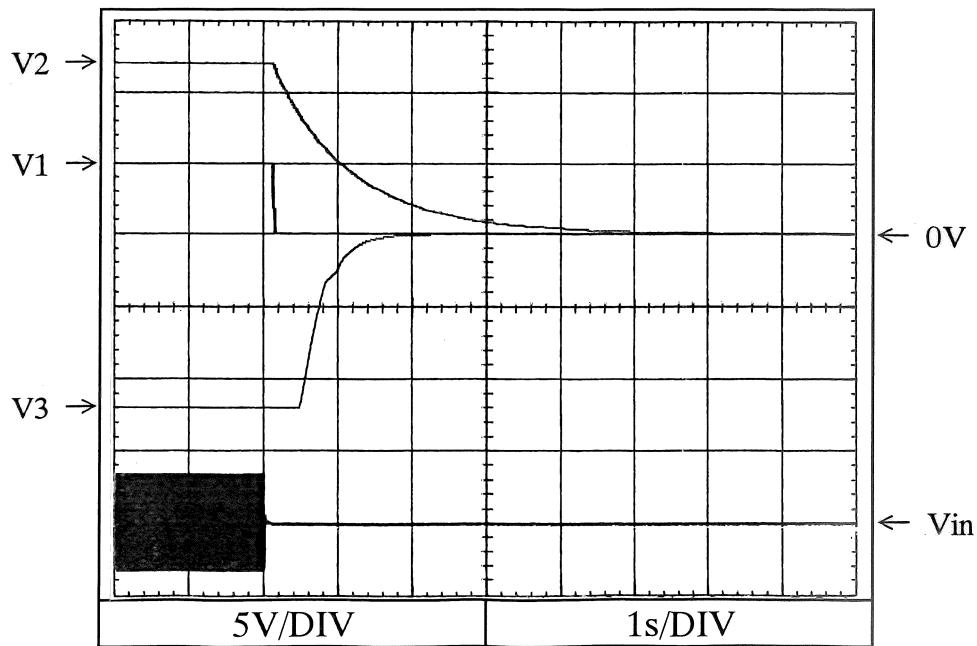
2.6 出力立ち下がり特性
Output fall characteristics

Conditions	Ta	: 25°C
	Iout	
	V1	: 1.3A
	V2	: 0A
	V3	: 0A

Vin : 85VAC



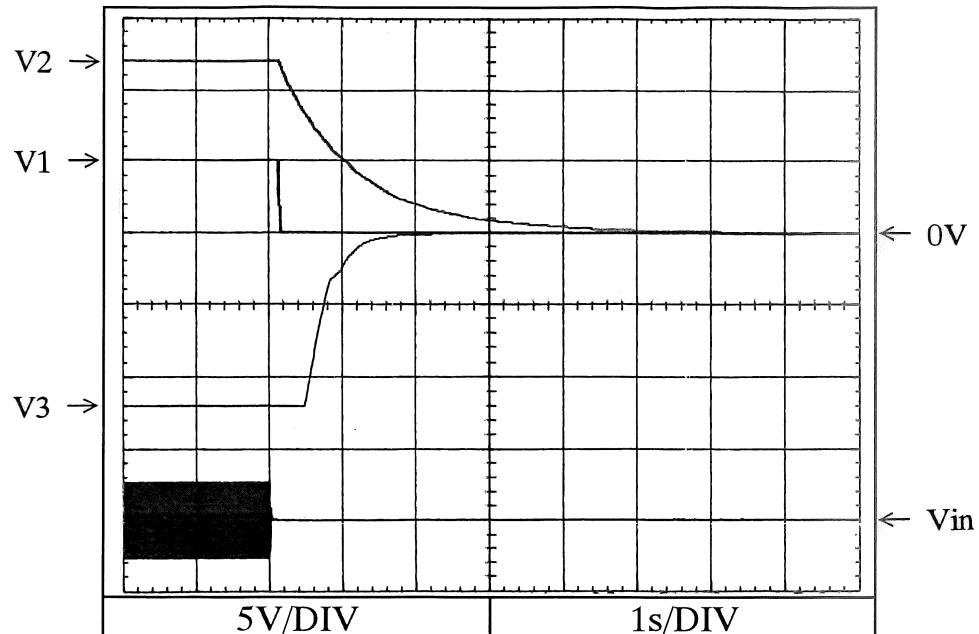
Vin : 100VAC



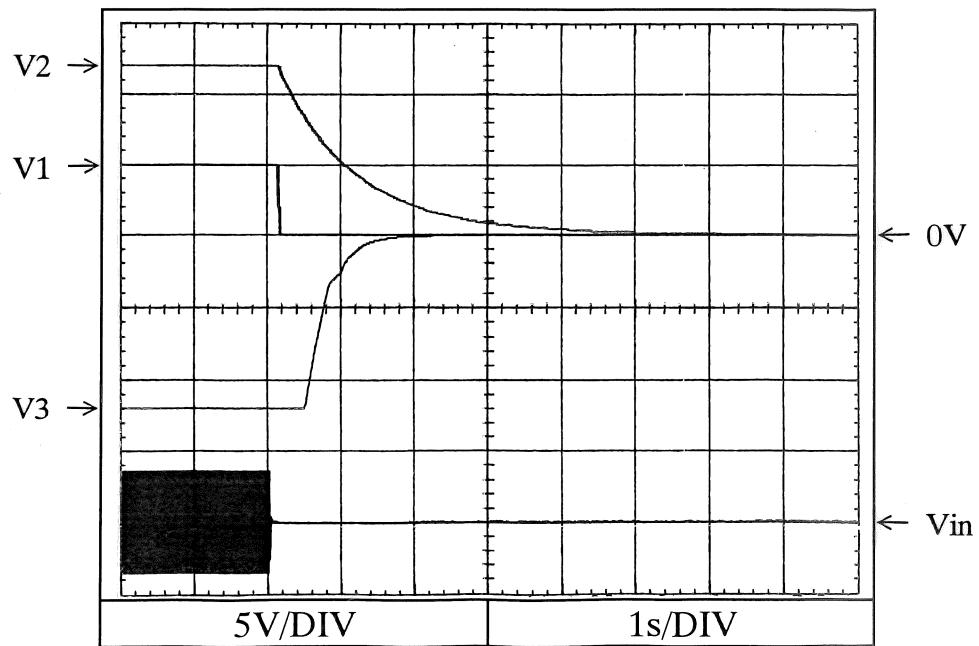
2.6 出力立ち下がり特性
Output fall characteristics

Conditions Ta : 25°C
 Iout
 V1 : 1.3A
 V2 : 0A
 V3 : 0A

Vin : 200VAC



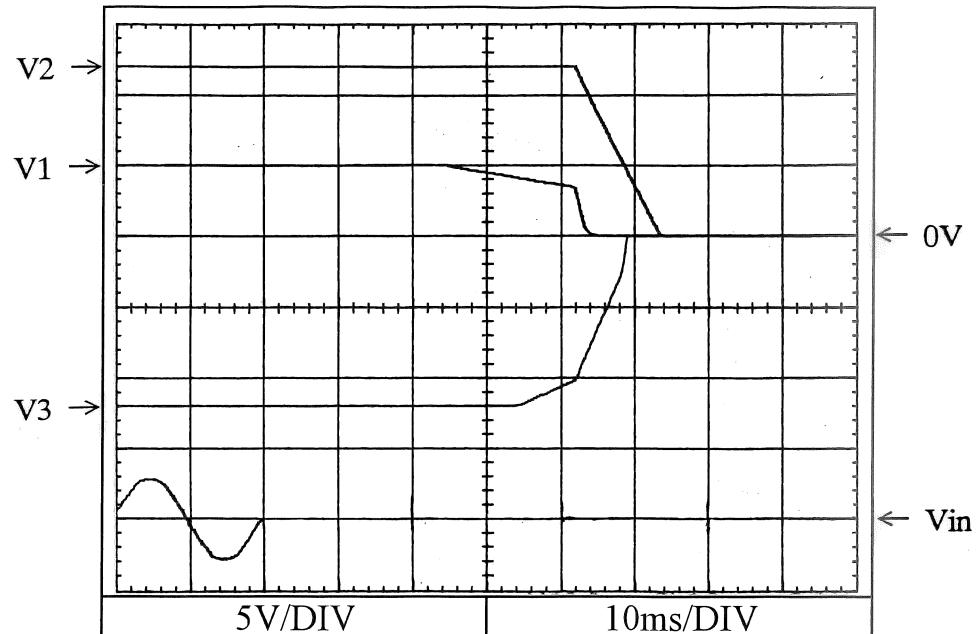
Vin : 265VAC



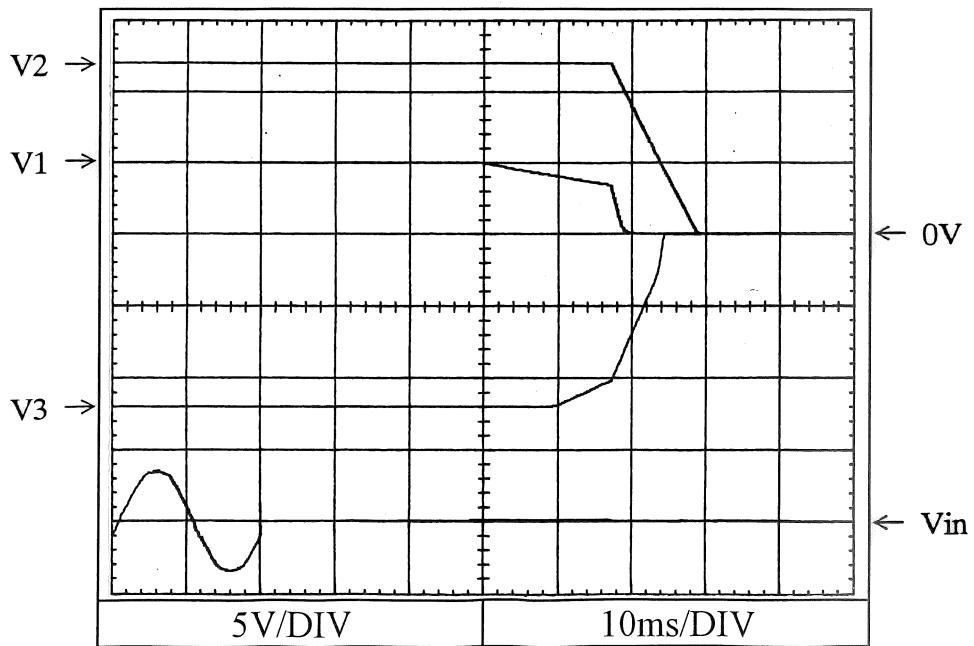
2.6 出力立ち下がり特性
Output fall characteristics

Conditions	Ta : 25°C
	Iout
	V1 : 13A
	V2 : 2A
	V3 : 1A

Vin : 85VAC



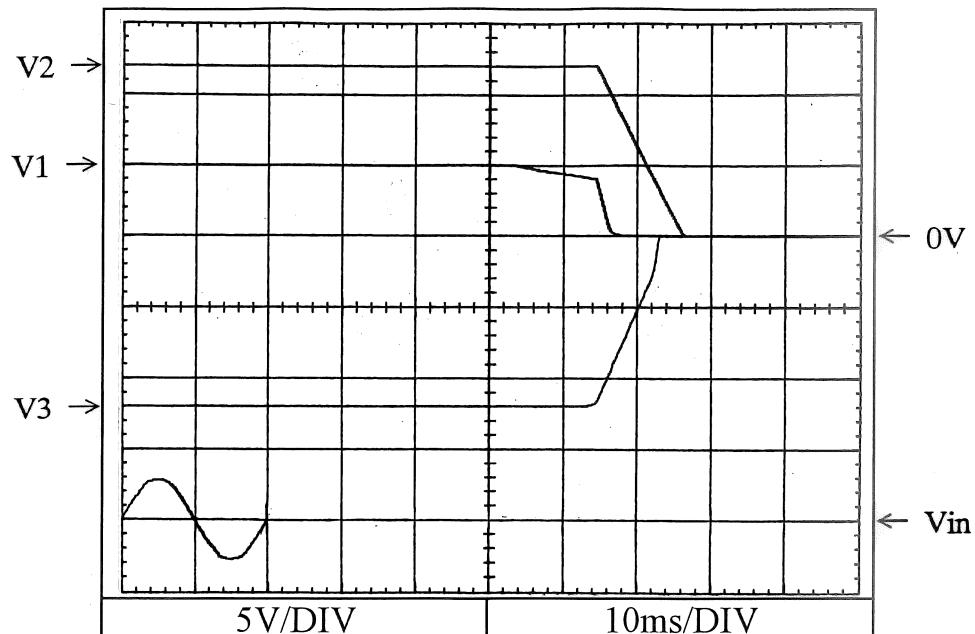
Vin : 100VAC



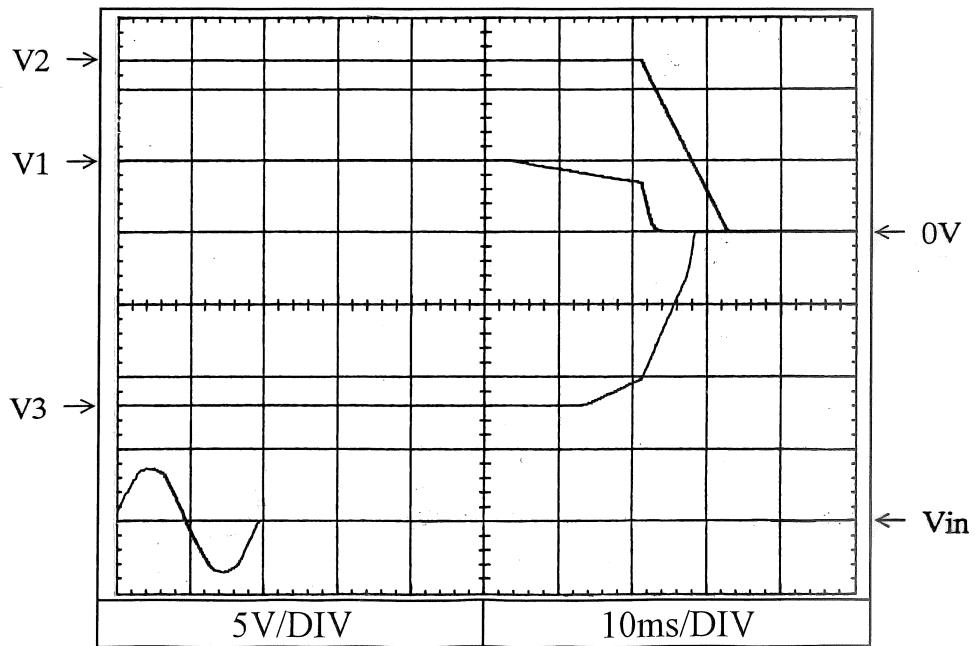
2.6 出力立ち下がり特性
Output fall characteristics

Conditions Ta : 25°C
 Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A

Vin : 200VAC

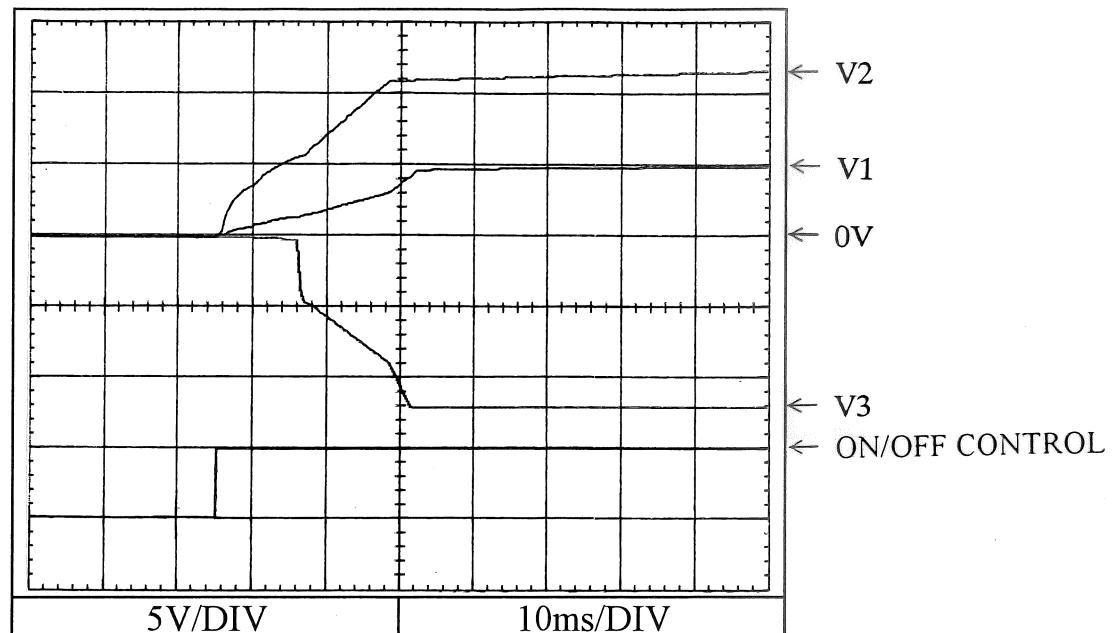


Vin : 265VAC



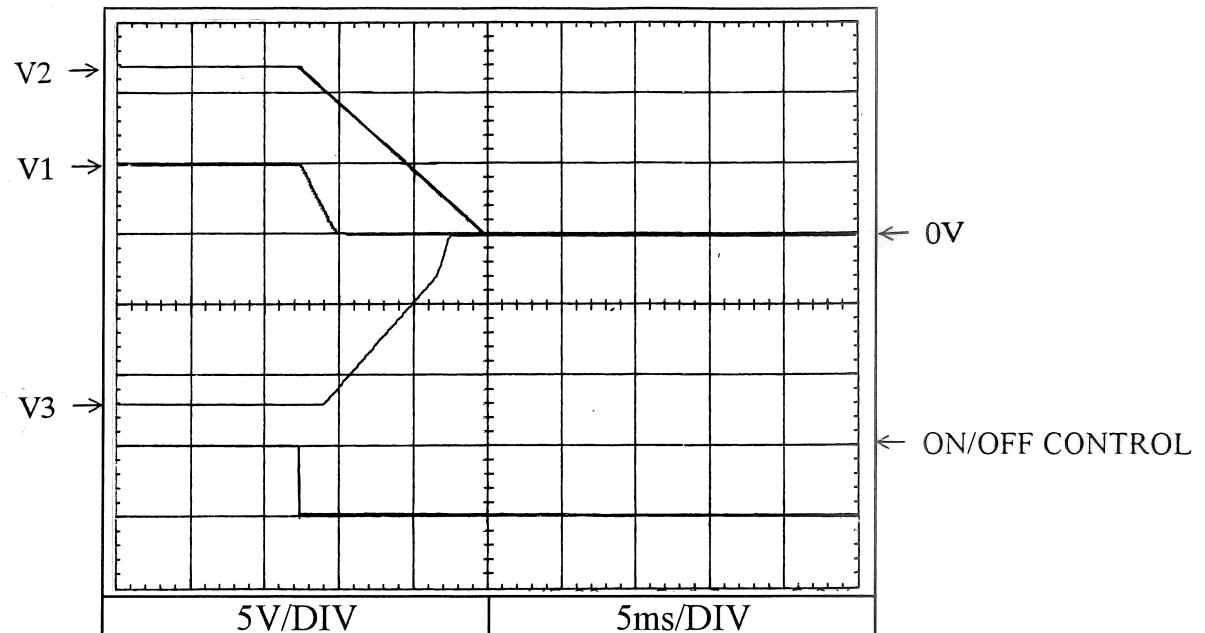
2.7 ON/OFFコントロール時出力立ち上がり特性
Output rise characteristics with ON/OFF CONTROL
準標準品 JWT100-*/R にて対応
For alternative standard model JWT100-*/R

Conditions Vin : 100VAC
Iout
V1 : 13A
V2 : 2A
V3 : 1A
Ta : 25°C



2.8 ON/OFFコントロール時出力立ち下がり特性
Output fall characteristics with ON/OFF CONTROL
準標準品 JWT100-*/R にて対応
For alternative standard model JWT100-*/R

Conditions Vin : 100VAC
Iout
V1 : 13A
V2 : 2A
V3 : 1A
Ta : 25°C

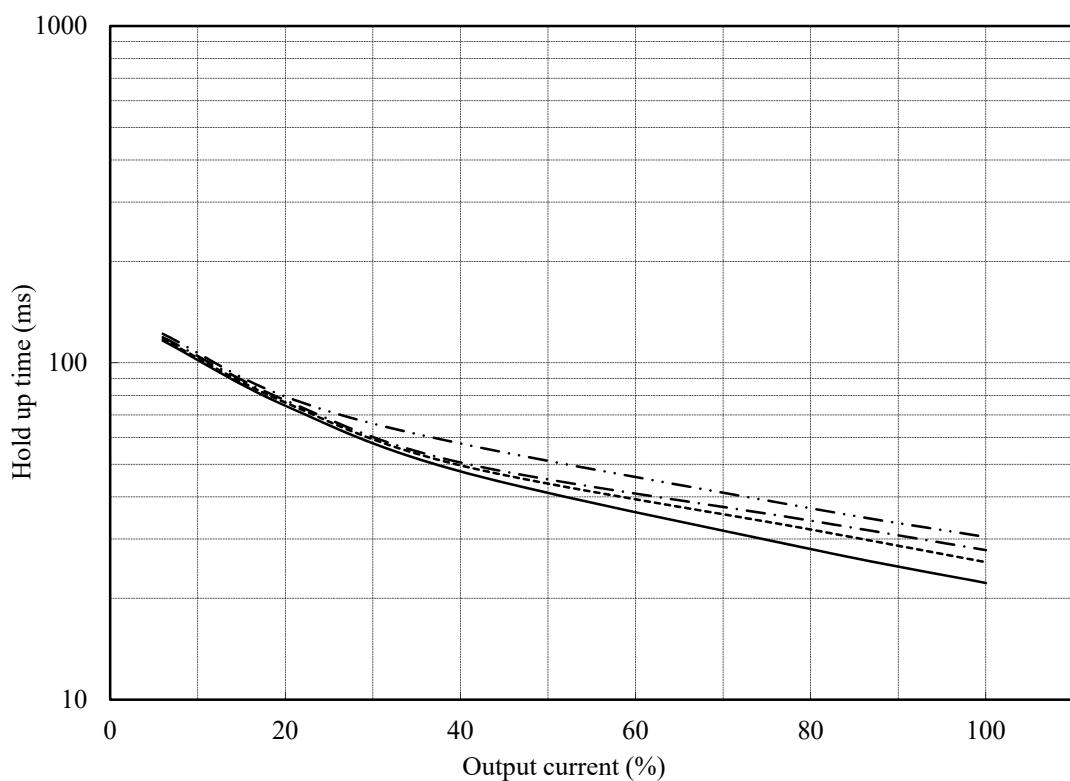


2.9 出力保持時間特性

Hold up time characteristics

Conditions
Vin : 85VAC
: 100VAC
: 200VAC
: 265VAC
Iout
V1 : 13A
V2 : 2A
V3 : 1A
Ta : 25°C

V1 : 5V



2.10 過渡応答（入力急変）特性
Dynamic line response characteristics

Conditions Vin : 85VAC \leftrightarrow 132VAC(A)
 170VAC \leftrightarrow 265VAC(B)
 Ta : 25°C

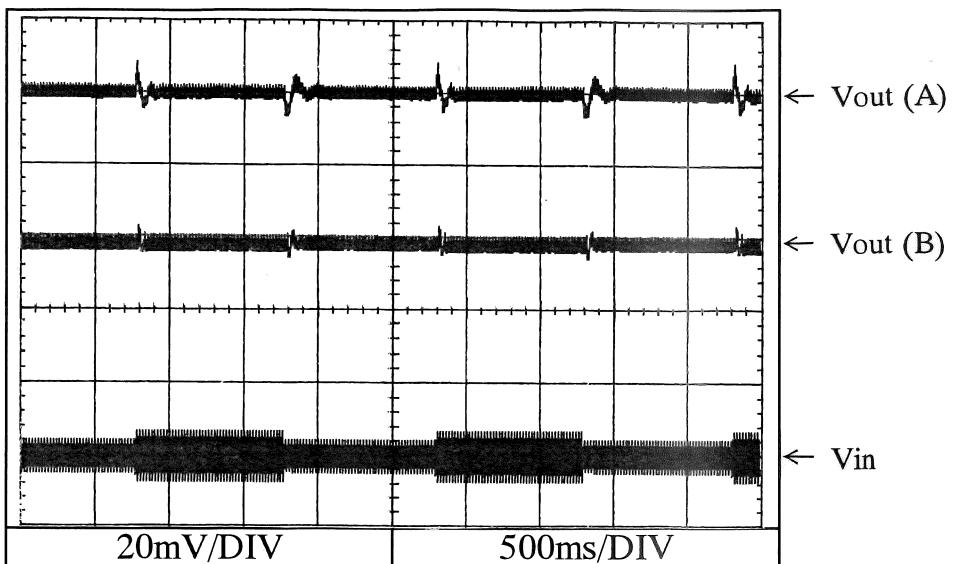
V1 : 5V

Iout

V1 : 13A

V2 : 2A

V3 : 1A



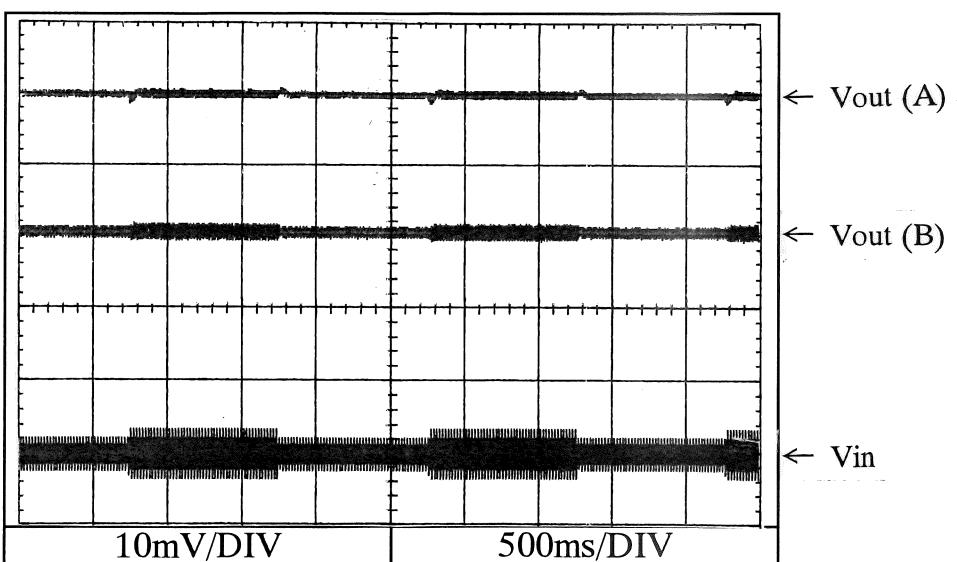
V2 : +12V

Iout

V1 : 4.6A

V2 : 5.5A

V3 : 1A



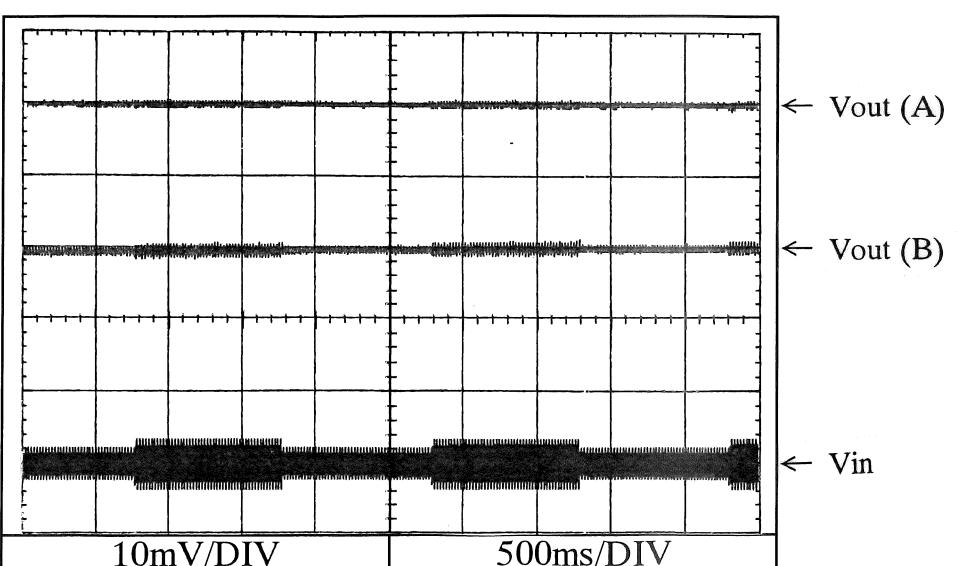
V3 : -12V

Iout

V1 : 13A

V2 : 2A

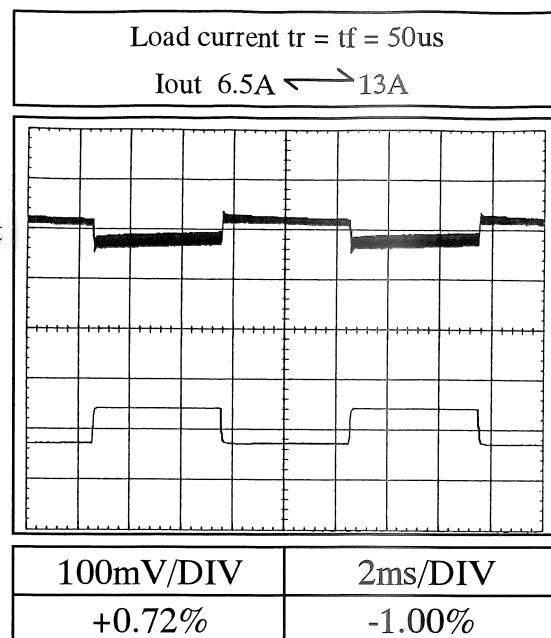
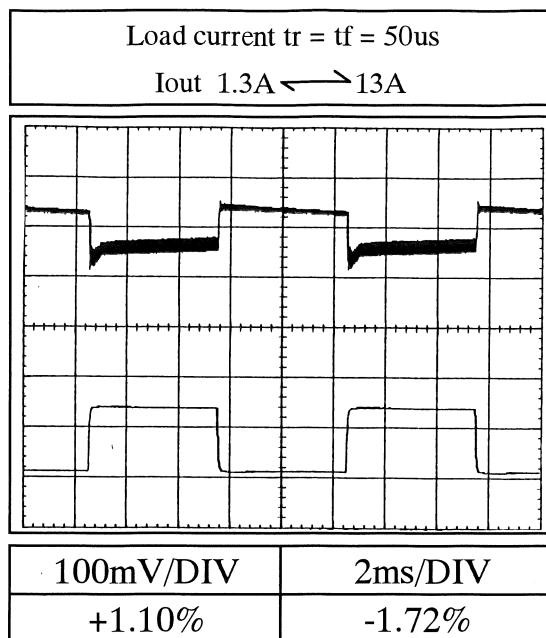
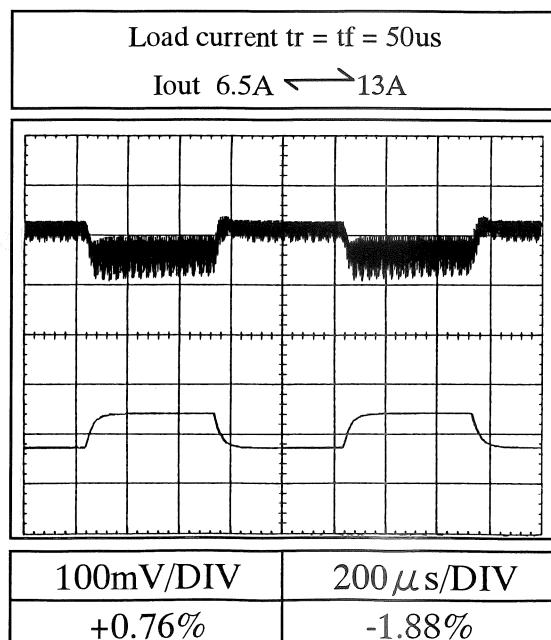
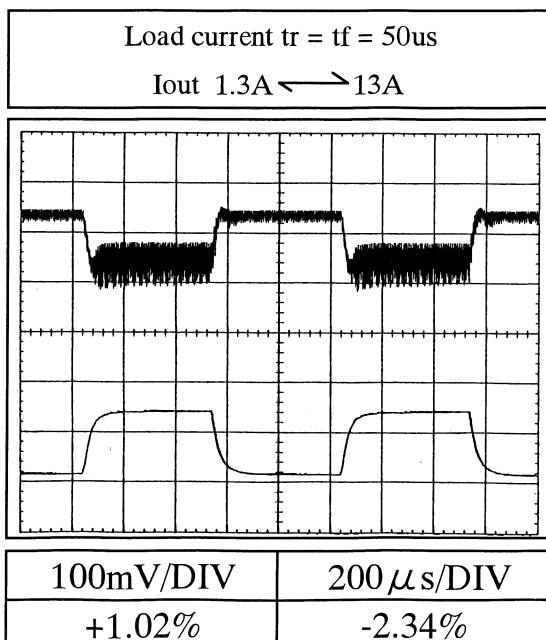
V3 : 1A



2.11 過渡応答（負荷急変）特性
Dynamic load response characteristics

V1 : 5V

Conditions Vin : 100VAC
Iout
V1 : -A
V2 : 2A
V3 : 1A
Ta : 25°C

f=100Hzf=1kHz

2.11 過渡応答（負荷急変）特性
Dynamic load response characteristics

V2 : +12V

f=100Hz

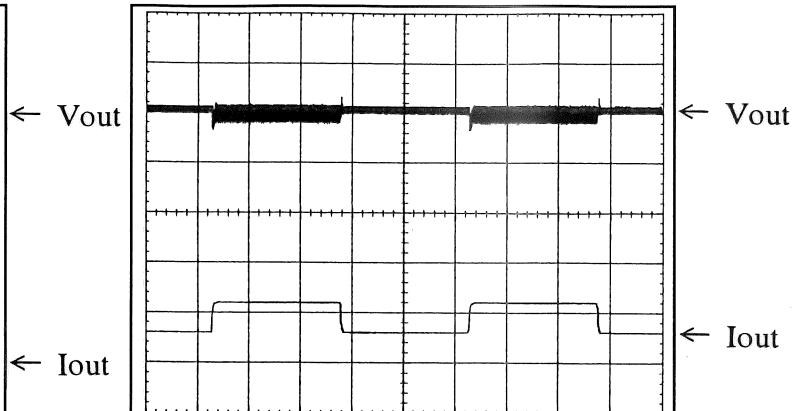
Load current tr = tf = 50us

Iout 0A \longleftrightarrow 5.5A

100mV/DIV	2ms/DIV
+0.34%	-1.53%

Conditions Vin : 100VAC
Iout
V1 : 4.6A
V2 : -A
V3 : 1A
Ta : 25°C

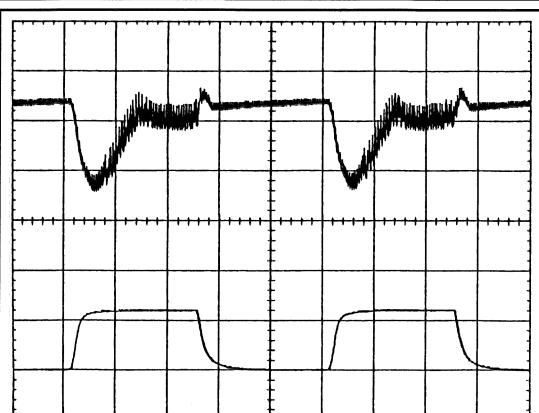
Load current tr = tf = 50us

Iout 2.75A \longleftrightarrow 5.5A

100mV/DIV	2ms/DIV
+0.25%	-0.32%

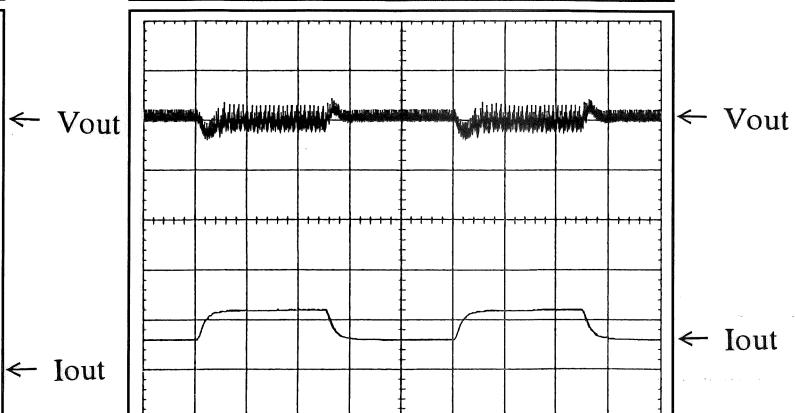
f=1kHz

Load current tr = tf = 50us

Iout 0A \longleftrightarrow 5.5A

100mV/DIV	200μs/DIV
+0.57%	-1.19%

Load current tr = tf = 50us

Iout 2.75A \longleftrightarrow 5.5A

100mV/DIV	200μs/DIV
+0.35%	-0.34%

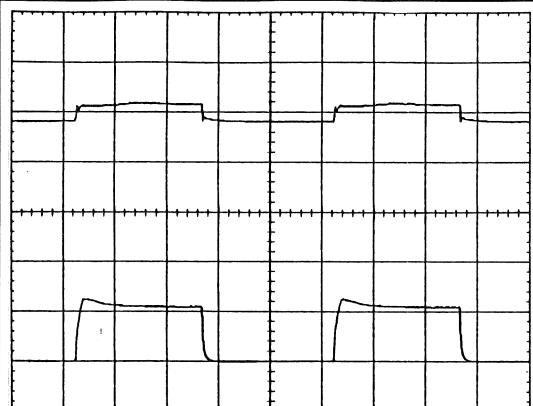
2.11 過渡応答（負荷急変）特性

Dynamic load response characteristics

V3 : -12V

f=100Hz

Load current tr = tf = 50us

Iout 0A \longleftrightarrow 1A

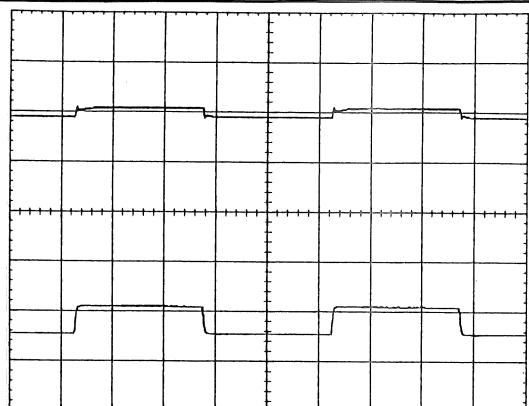
100mV/DIV

+0.14%

2ms/DIV

-0.18%

Load current tr = tf = 50us

Iout 0.5A \longleftrightarrow 1A

100mV/DIV

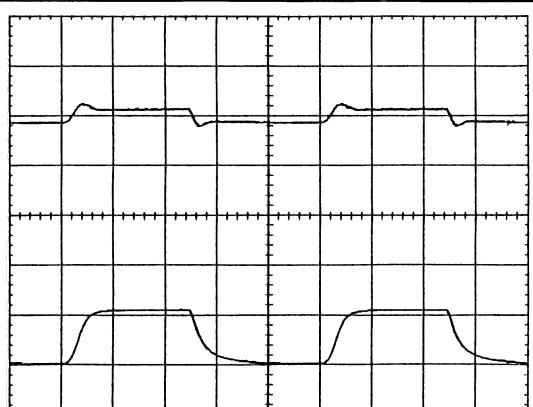
2ms/DIV

+0.08%

-0.12%

f=1kHz

Load current tr = tf = 50us

Iout 0A \longleftrightarrow 1A

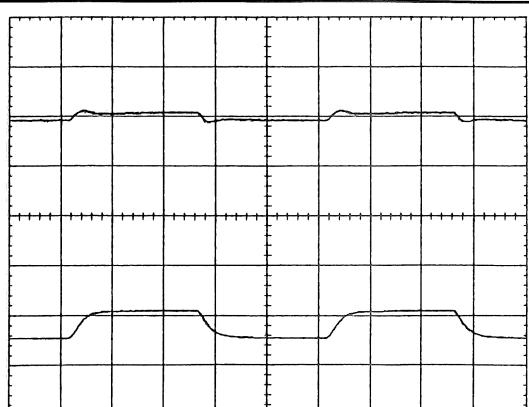
100mV/DIV

+0.20%

200 μs/DIV

-0.20%

Load current tr = tf = 50us

Iout 0.5A \longleftrightarrow 1A

100mV/DIV

200 μs/DIV

+0.09%

-0.13%

Conditions Vin : 100VAC

Iout

V1 : 13A

V2 : 2A

V3 : -A

Ta : 25°C

2. 12 入力電圧瞬停特性

Response to brown out characteristics

Conditions Vin : 100VAC

Ta : 25°C

V1 : 5V

Iout

V1 : 13A

V2 : 2A

V3 : 1A

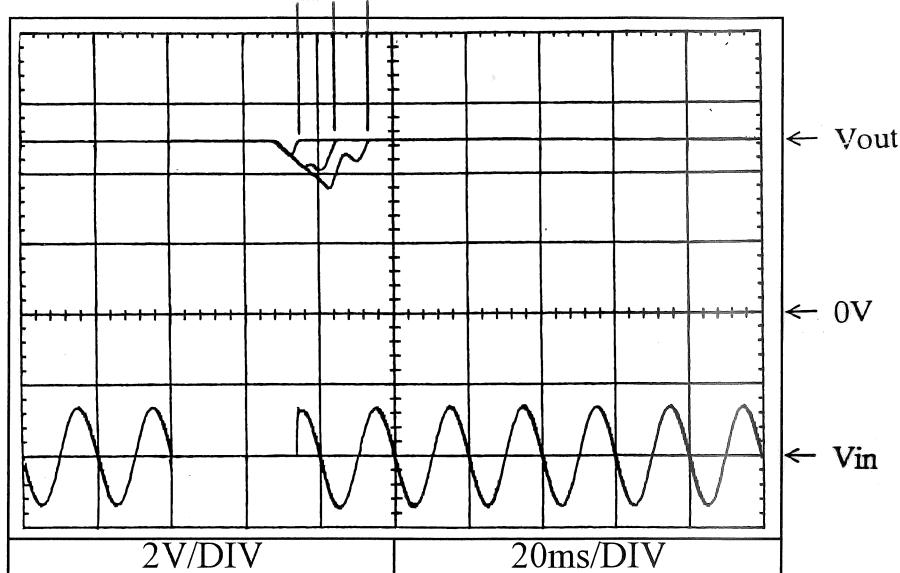
Brown out time

A: 33ms

B: 37ms

C: 44ms

A B C



V2 : +12V

Iout

V1 : 4.6A

V2 : 5.5A

V3 : 1A

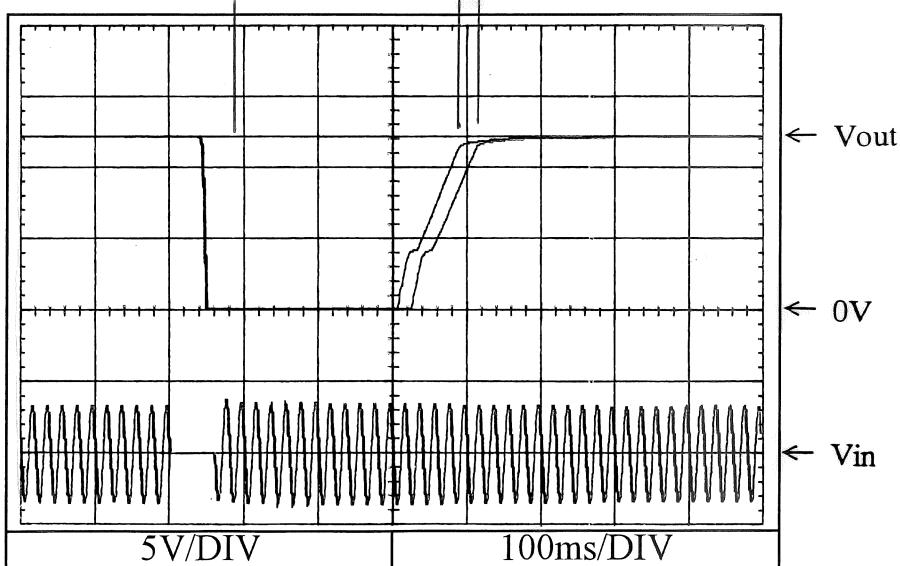
Brown out time

A: 40ms

B: 43ms

C: 60ms

A B C



V3 : -12V

Iout

V1 : 13A

V2 : 2A

V3 : 1A

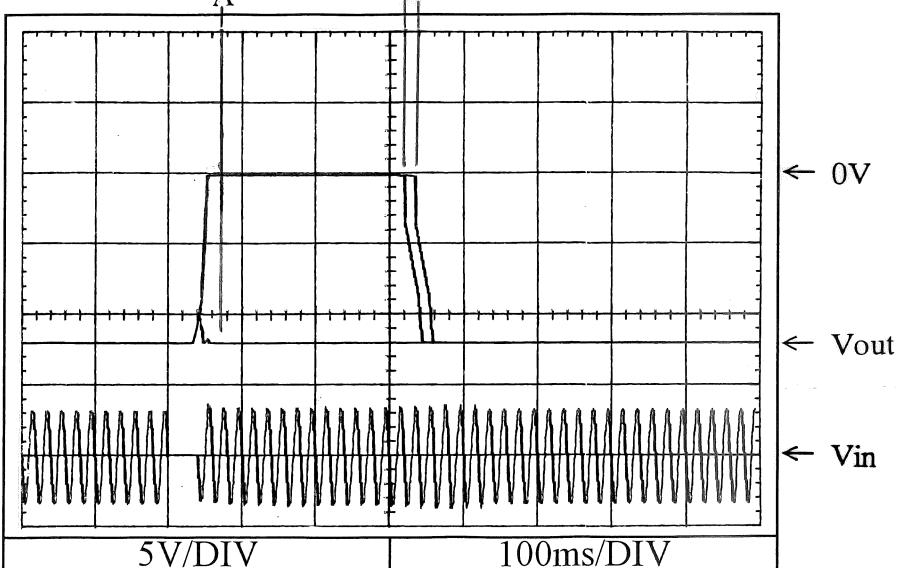
Brown out time

A: 38ms

B: 43ms

C: 55ms

A B C



2. 12 入力電圧瞬停特性

Response to brown out characteristics

Conditions Vin : 200VAC

Ta : 25°C

V1 : 5V

Iout

V1 : 13A

V2 : 2A

V3 : 1A

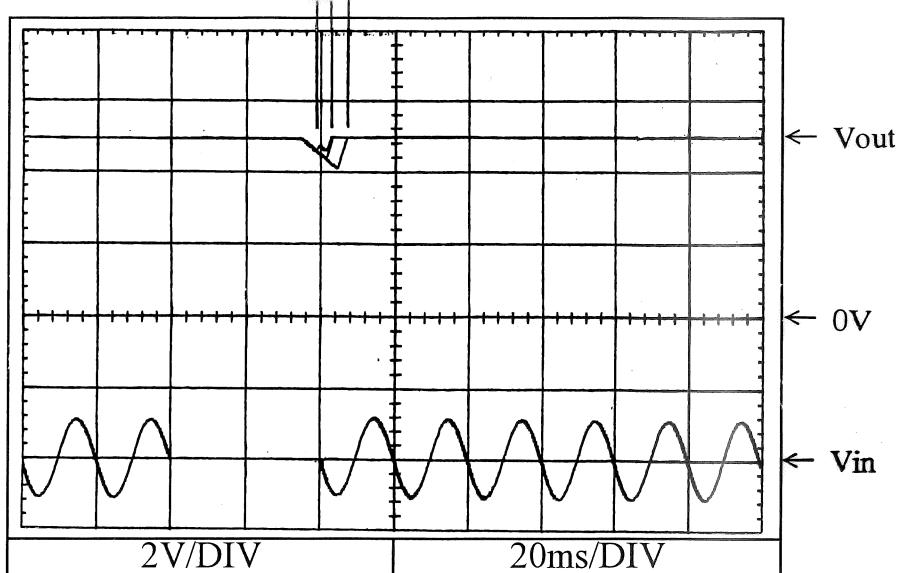
Brown out time

A: 38ms

B: 40ms

C: 44ms

ABC



V2 : +12V

Iout

V1 : 4.6A

V2 : 5.5A

V3 : 1A

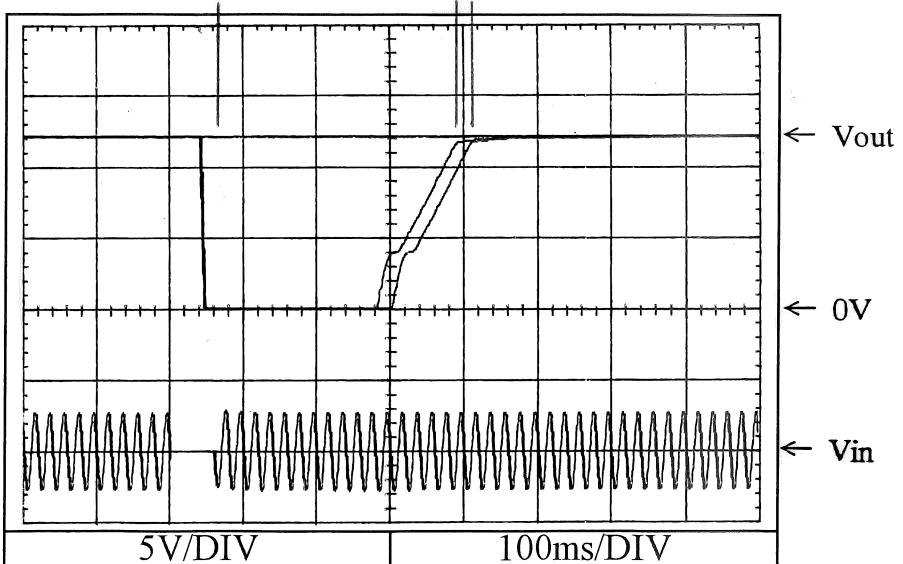
Brown out time

A: 40ms

B: 43ms

C: 60ms

A B C



V3 : -12V

Iout

V1 : 13A

V2 : 2A

V3 : 1A

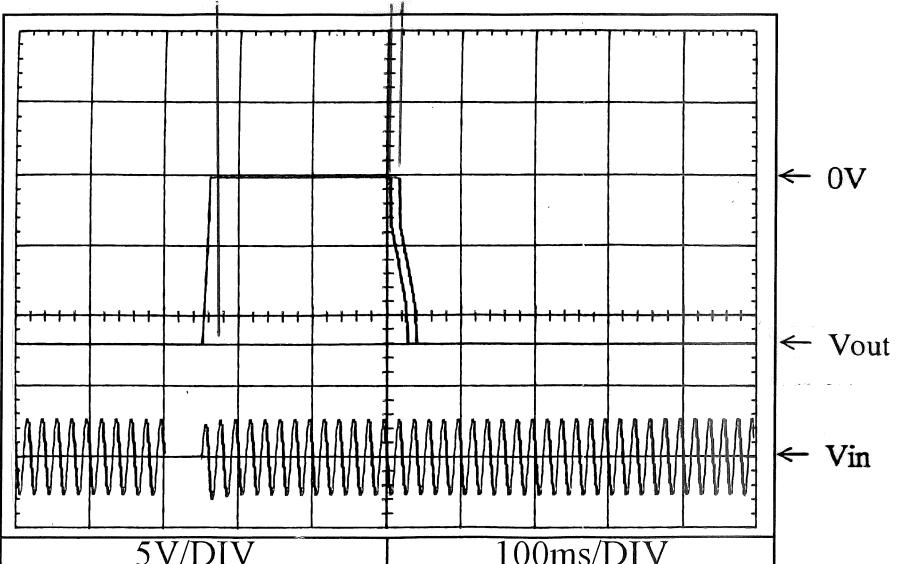
Brown out time

A: 40ms

B: 42ms

C: 55ms

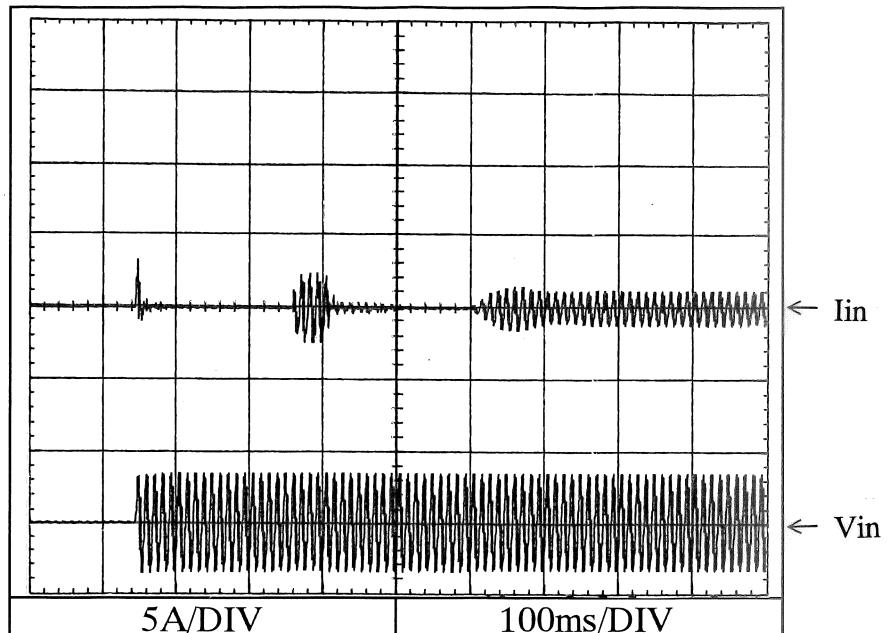
A B C



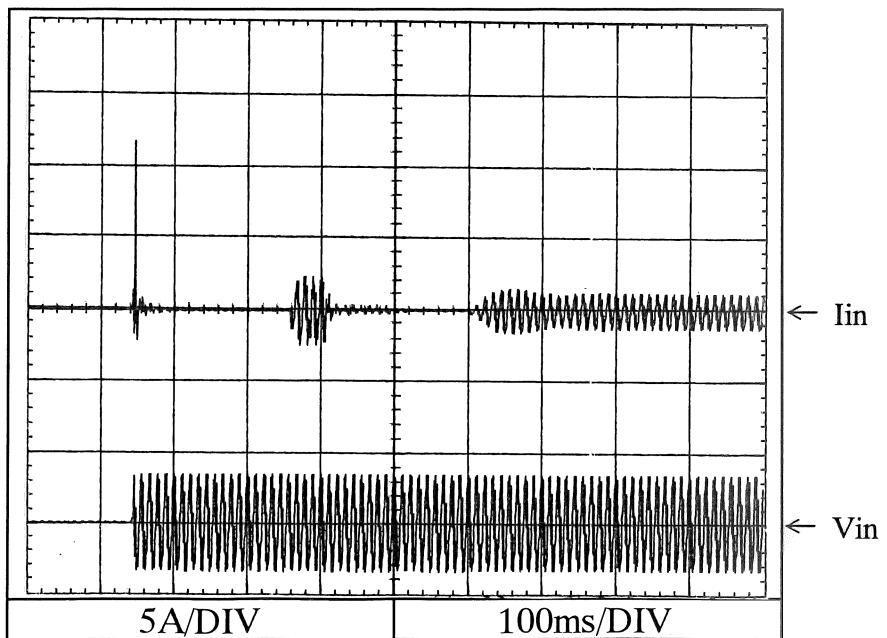
2.13 入力サージ電流（突入電流）特性
Inrush current waveform

Conditions Vin : 100VAC
 Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A
 Ta : 25°C

Switch on phase angle
of input AC voltage
 $\phi = 0^\circ$



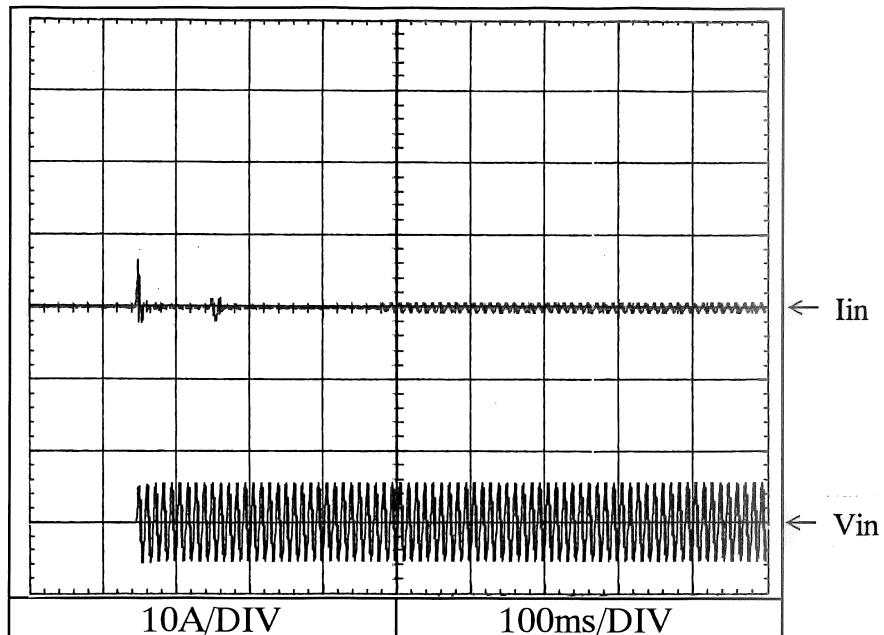
Switch on phase angle
of input AC voltage
 $\phi = 90^\circ$



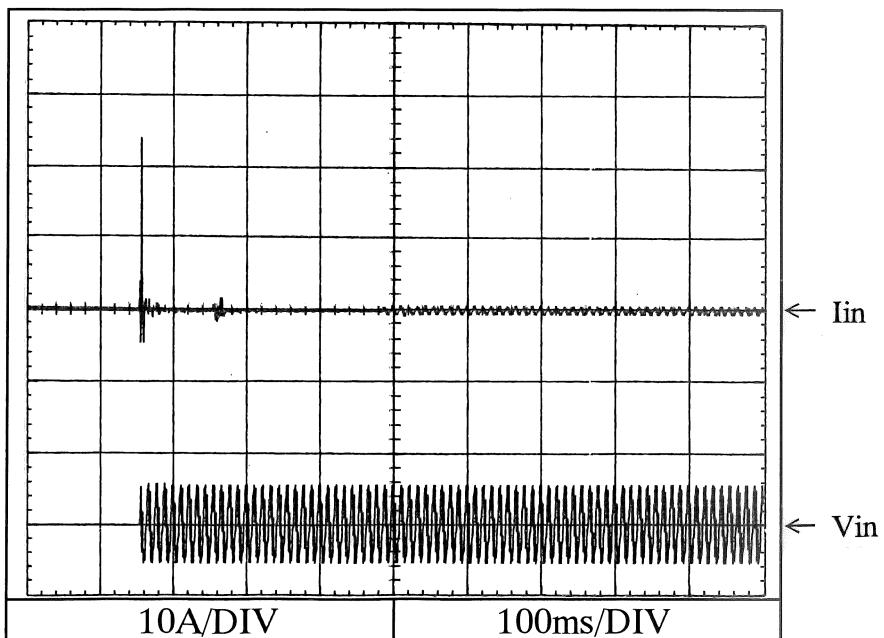
2.13 入力サージ電流（突入電流）特性
Inrush current waveform

Conditions Vin : 200VAC
 Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A
 Ta : 25°C

Switch on phase angle
of input AC voltage
 $\phi = 0^\circ$



Switch on phase angle
of input AC voltage
 $\phi = 90^\circ$

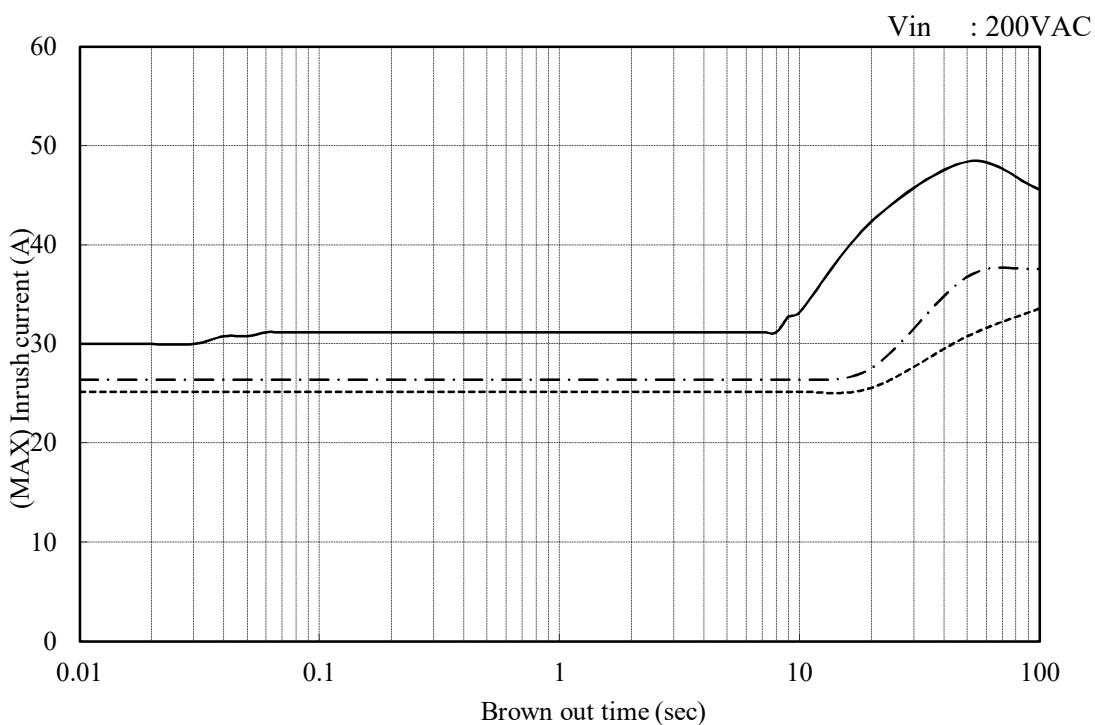
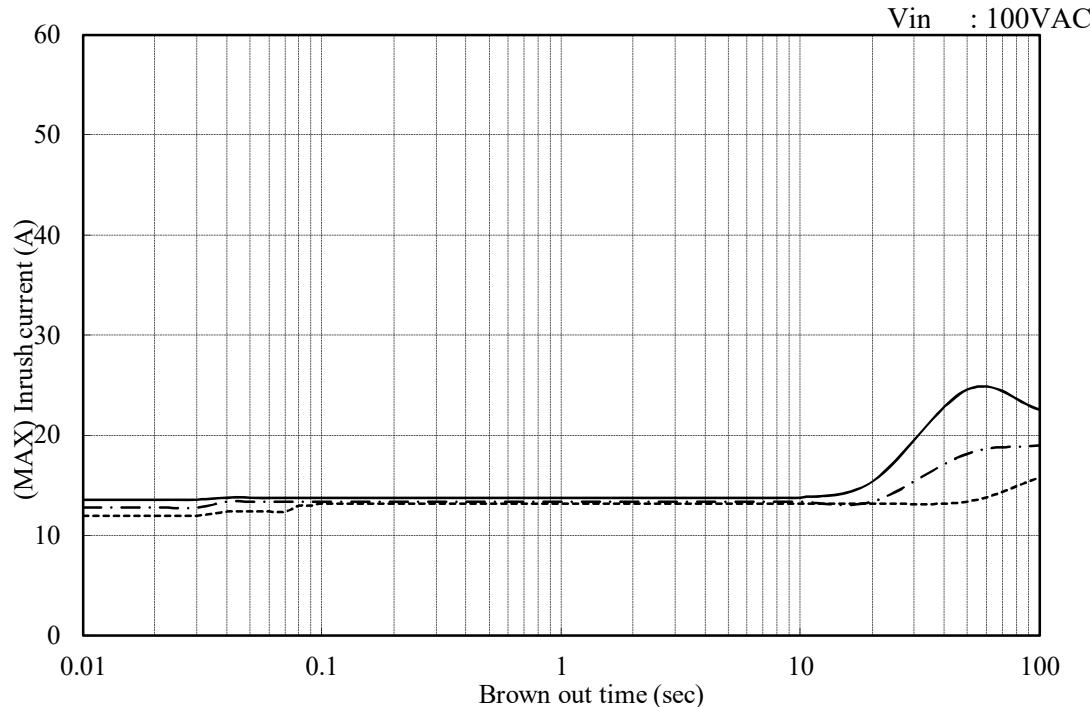


2. 14 瞬停時突入電流特性

Inrush current characteristics

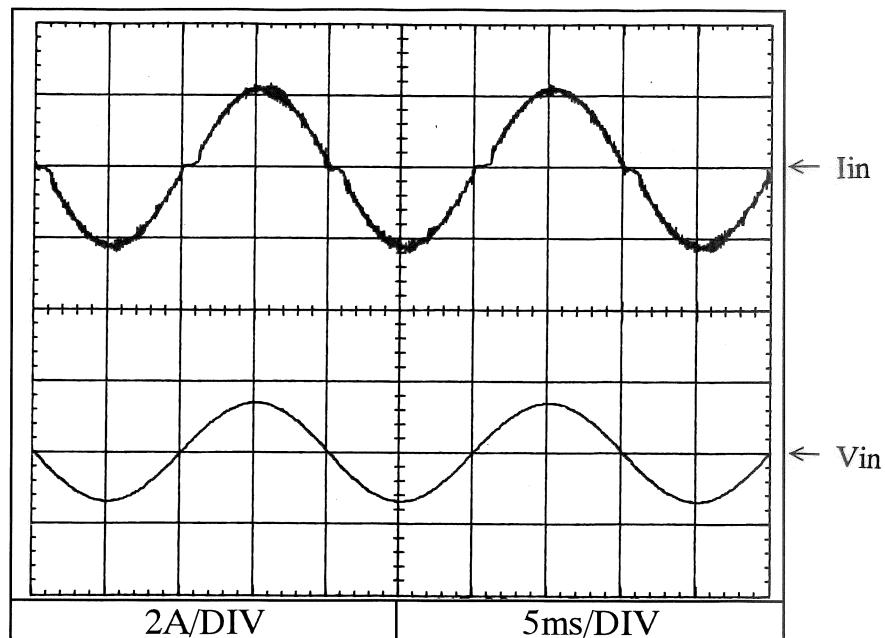
Conditions Ta : 25°C

Iout	V1	V2	V3	
1.3A	0A	0A		-----
6.5A	1A	0.5A		- - - -
13A	2A	1A		———

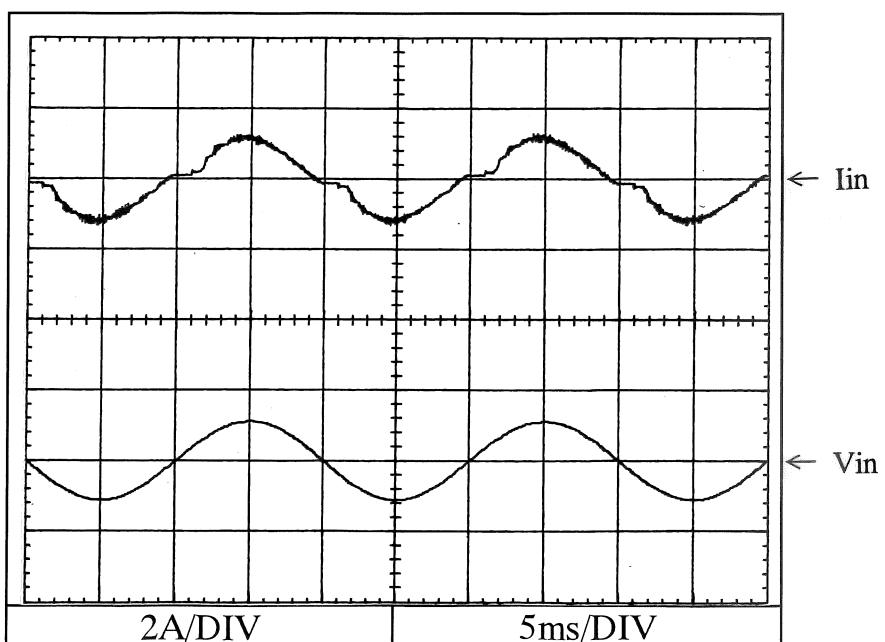


2.15 入力電流波形
Input current waveform

Conditions Vin : 100VAC
 Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A
 Ta : 25°C



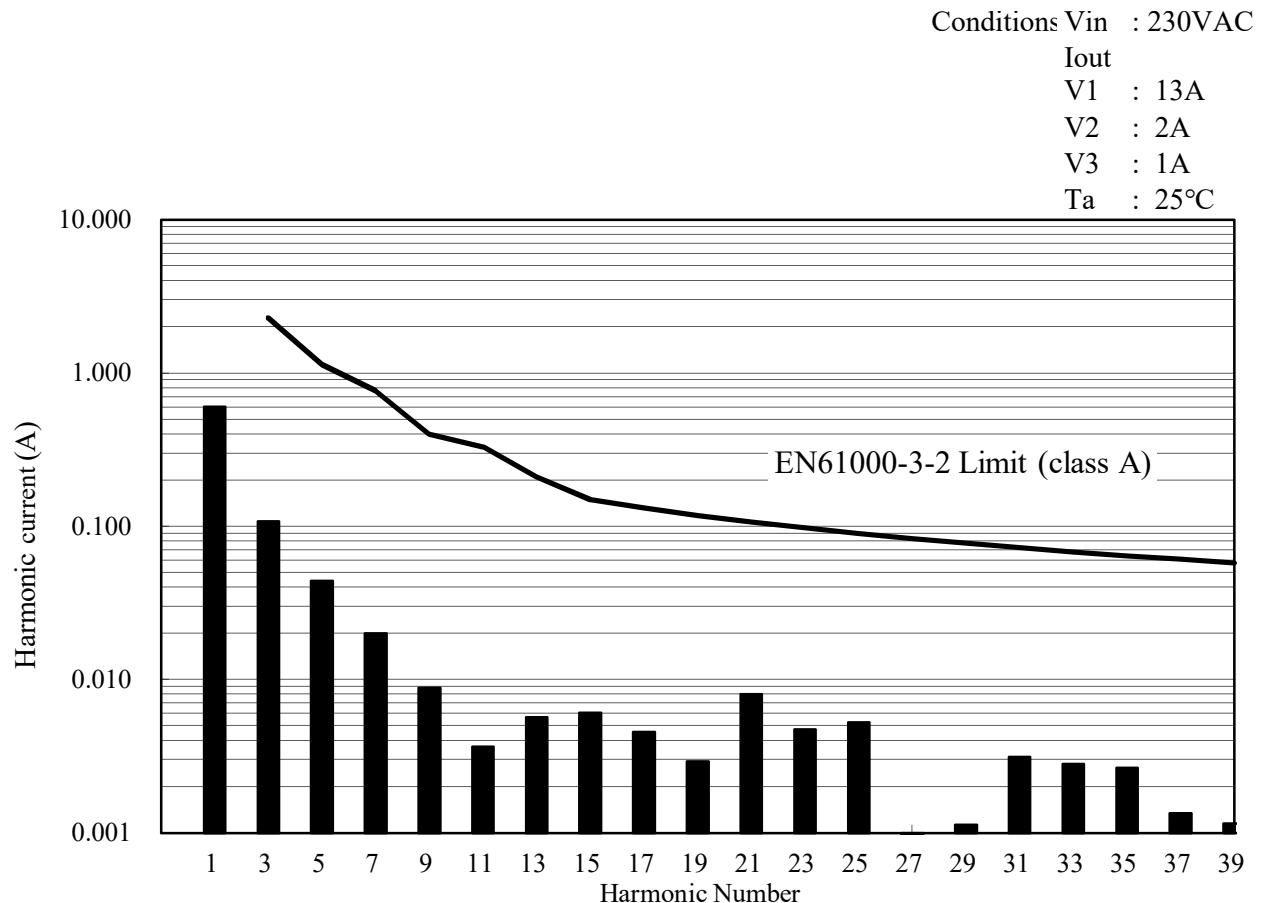
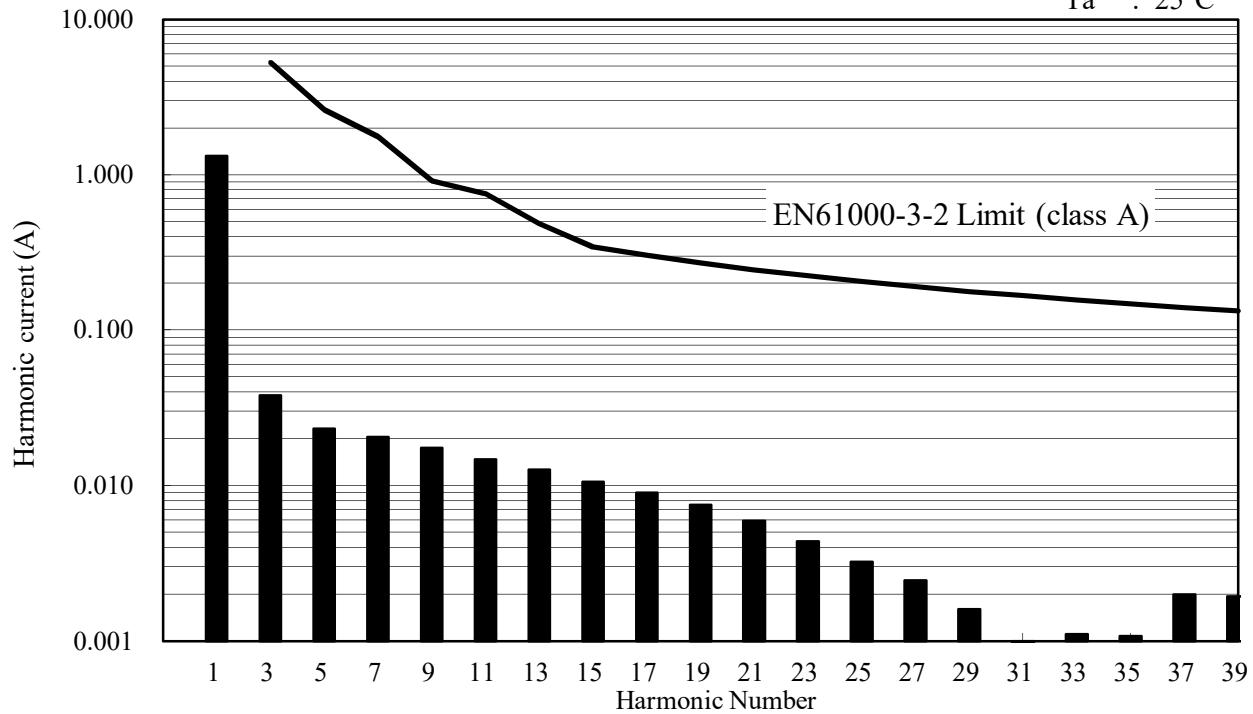
Conditions Vin : 200VAC
 Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A
 Ta : 25°C



2.16 高調波成分

Input current harmonics

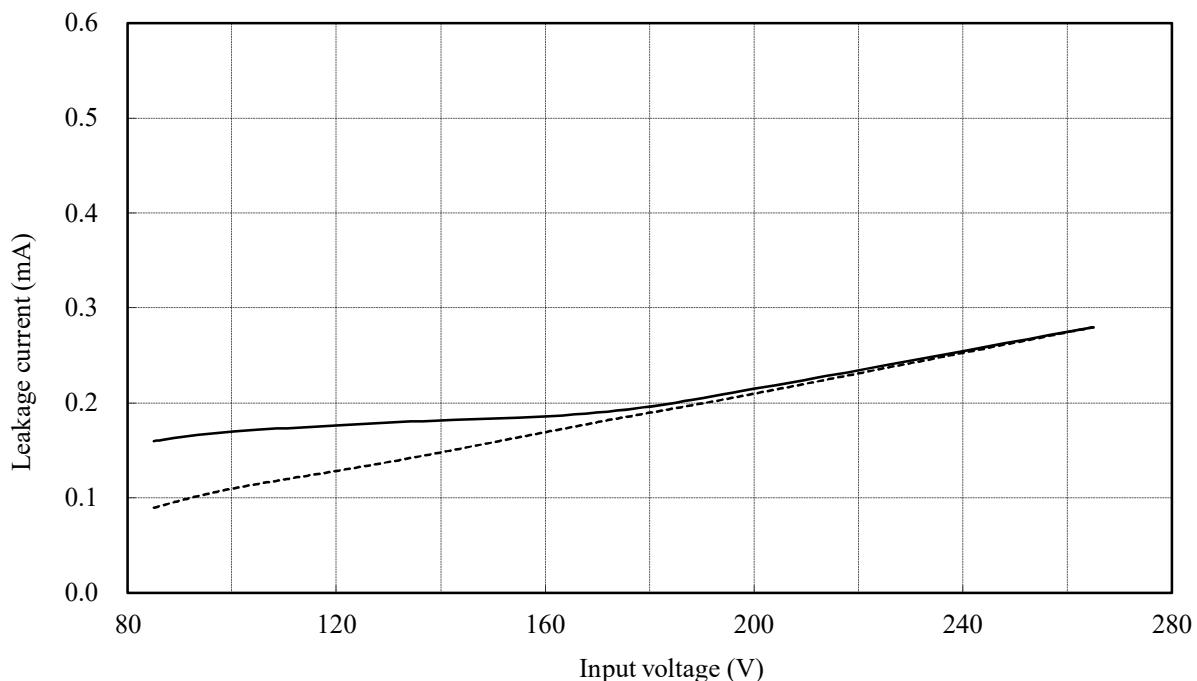
Conditions Vin : 100VAC
 Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A
 Ta : 25°C



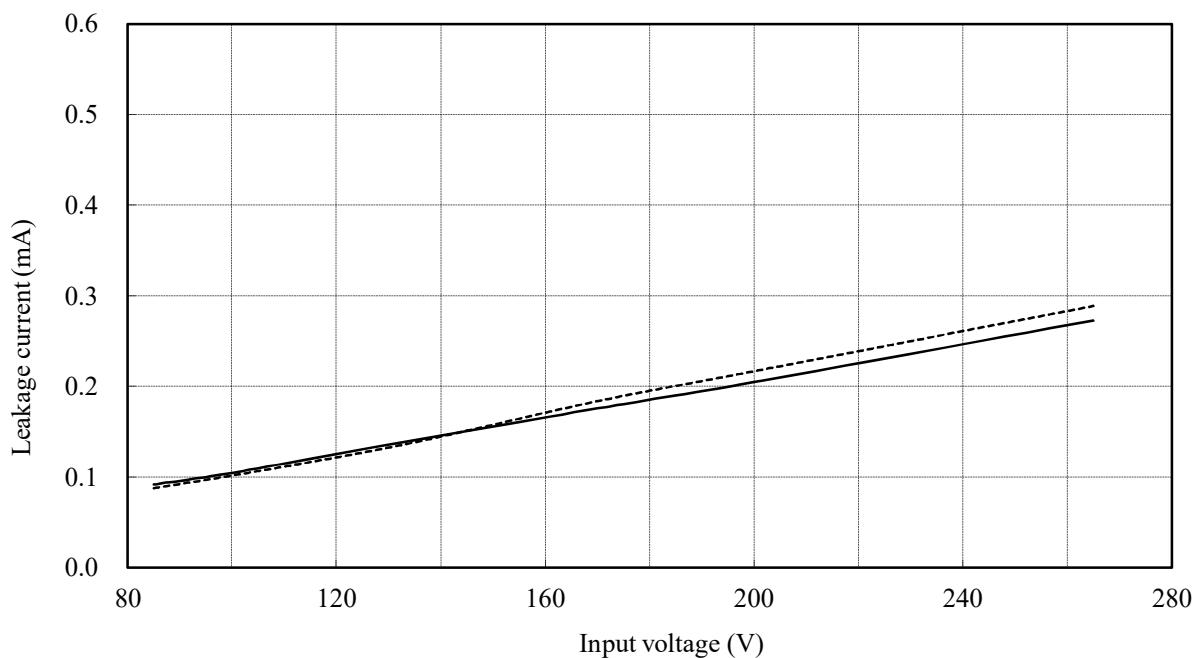
2.17 リーク電流特性
Leakage current characteristics

Conditions I_{out} : -----
 V₁ : 1.3A
 V₂ : 0A
 V₃ : 0A
 I_{out} : _____
 V₁ : 13A
 V₂ : 2A
 V₃ : 1A
 T_a : 25°C
 f : 50Hz

Equipment used : TYPE 3226 (Yokogawa)



Equipment used : MODEL 229-2 (Simpson)



2.18 出力リップル、ノイズ波形
Output ripple and noise waveform

Conditions Vin : 100VAC
Ta : 25°C

NORMAL MODE

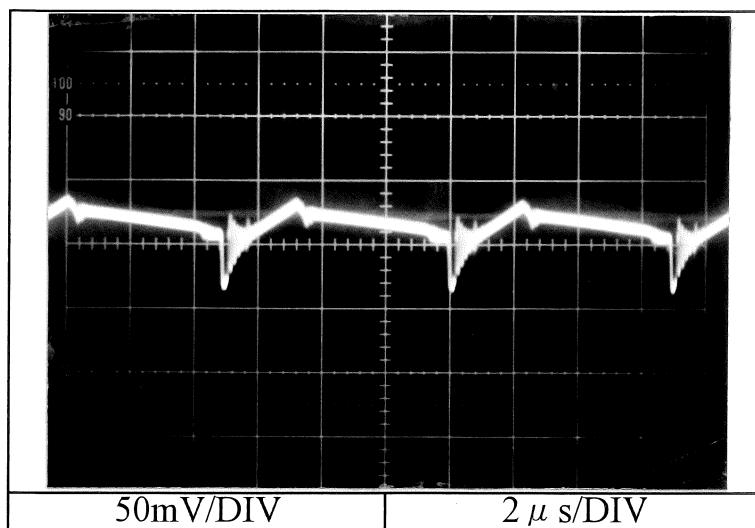
V1 : 5V

Iout

V1 : 13A

V2 : 2A

V3 : 1A



← Vout

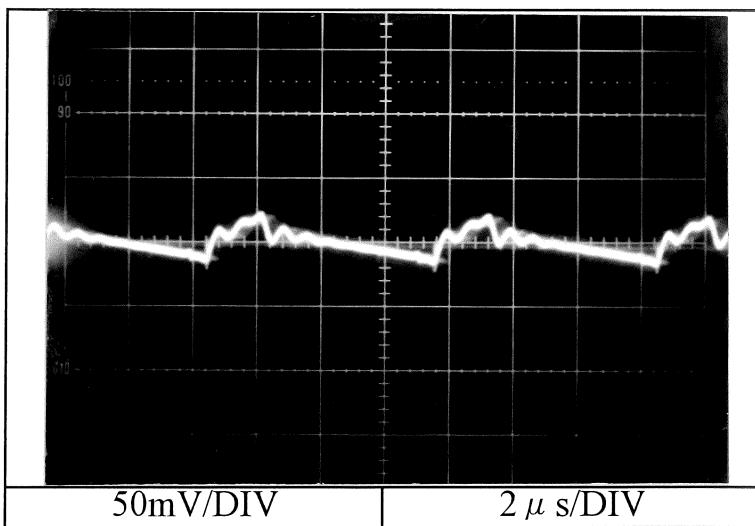
V2 : +12V

Iout

V1 : 4.6A

V2 : 5.5A

V3 : 1A



← Vout

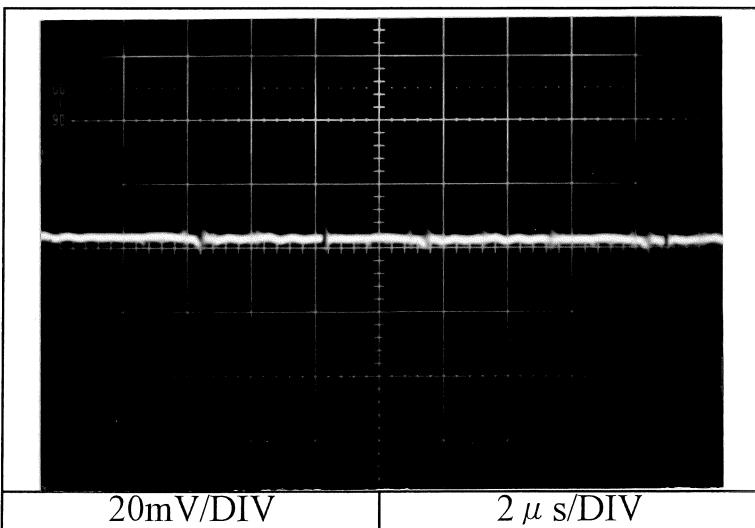
V3 : -12V

Iout

V1 : 13A

V2 : 2A

V3 : 1A



← Vout

2.18 出力リップル、ノイズ波形
Output ripple and noise waveform

Conditions Vin : 100VAC
Ta : 25°C

NORMAL MODE + COMMON MODE

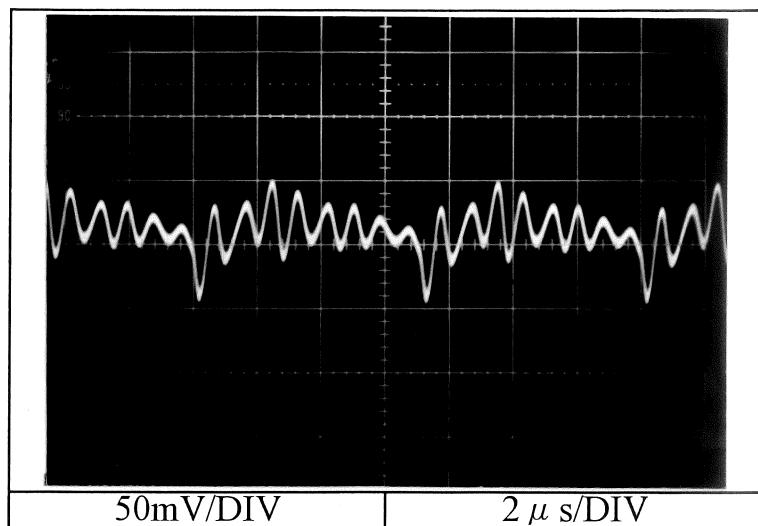
V1 : 5V

Iout

V1 : 13A

V2 : 2A

V3 : 1A



← Vout

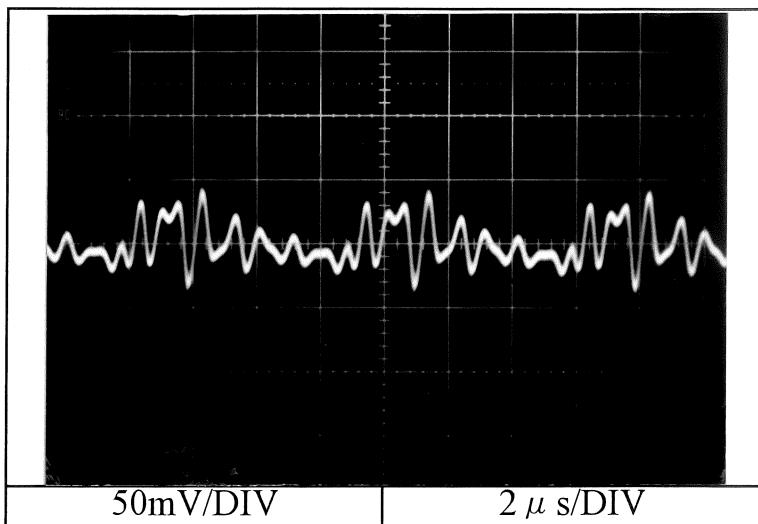
V2 : +12V

Iout

V1 : 4.6A

V2 : 5.5A

V3 : 1A



← Vout

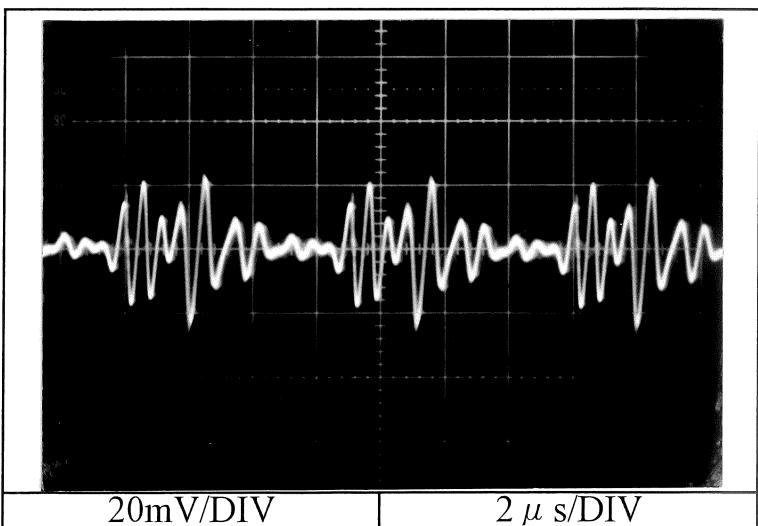
V3 : -12V

Iout

V1 : 13A

V2 : 2A

V3 : 1A



← Vout

2.19 EMI 特性

Electro-Magnetic Interference characteristics

雜音端子電壓

Conducted Emission Noise

Conditions Vin : 100VAC

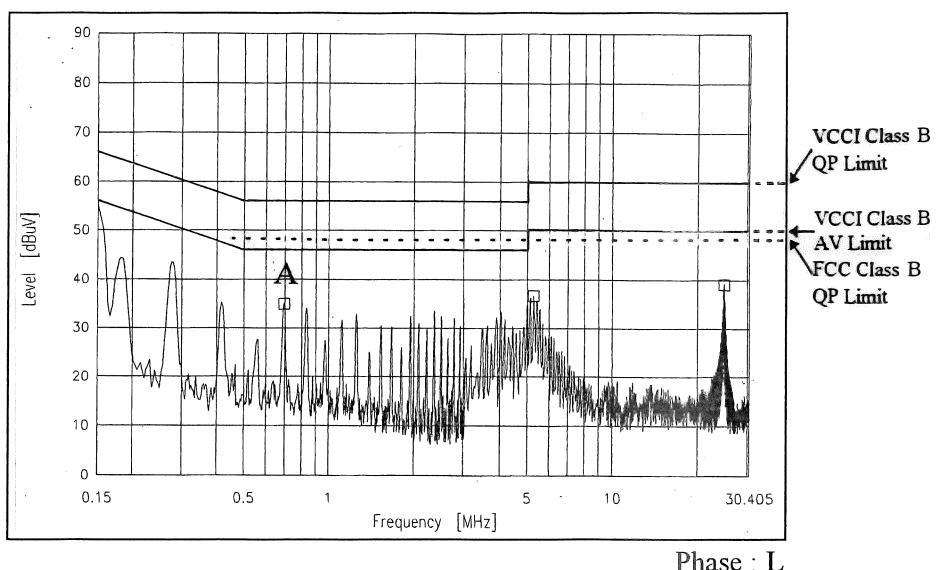
Iout :

V1 : 13A

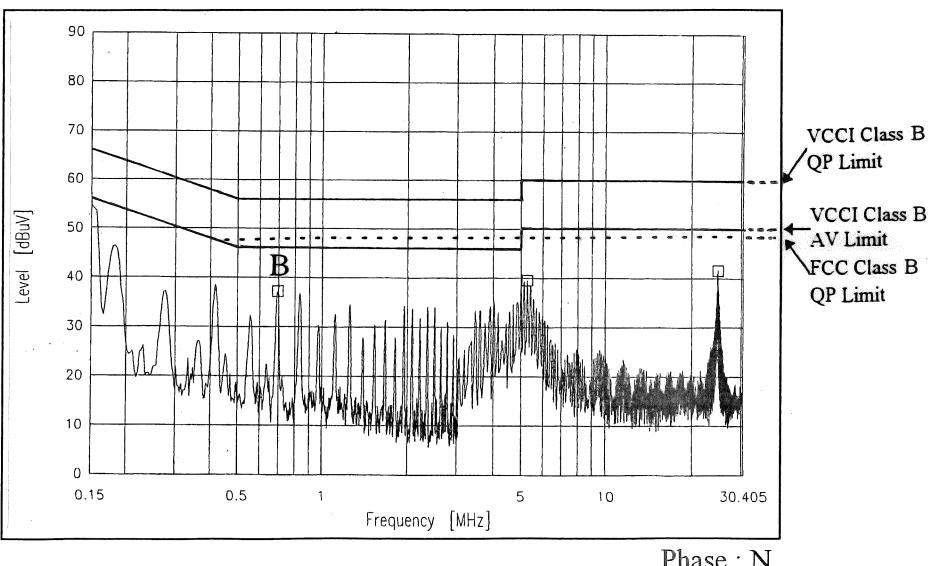
V2 : 2A

V3 : 1A

Point A (690kHz)			
Ref.	Data	Limit (dBuV)	Measure (dBuV)
QP	56.0	34.0	
AV	46.0	33.7	



Point B (689kHz)			
Ref.	Data	Limit (dBuV)	Measure (dBuV)
QP	56.0	36.4	
AV	46.0	36.1	



2.19 E M I 特性

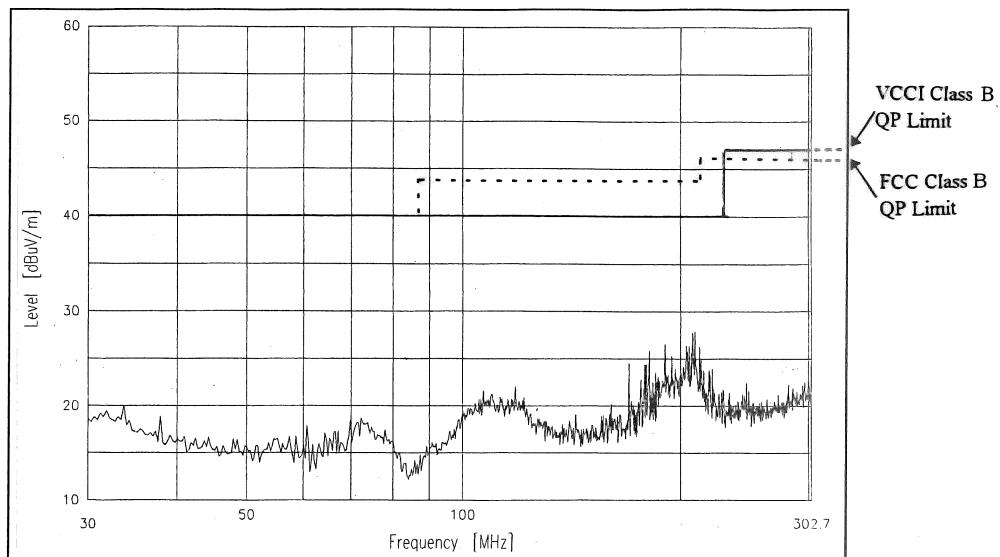
Electro-Magnetic Interference characteristics

Conditions Vin : 100VAC
 Iout
 V1 : 13A
 V2 : 2A
 V3 : 1A

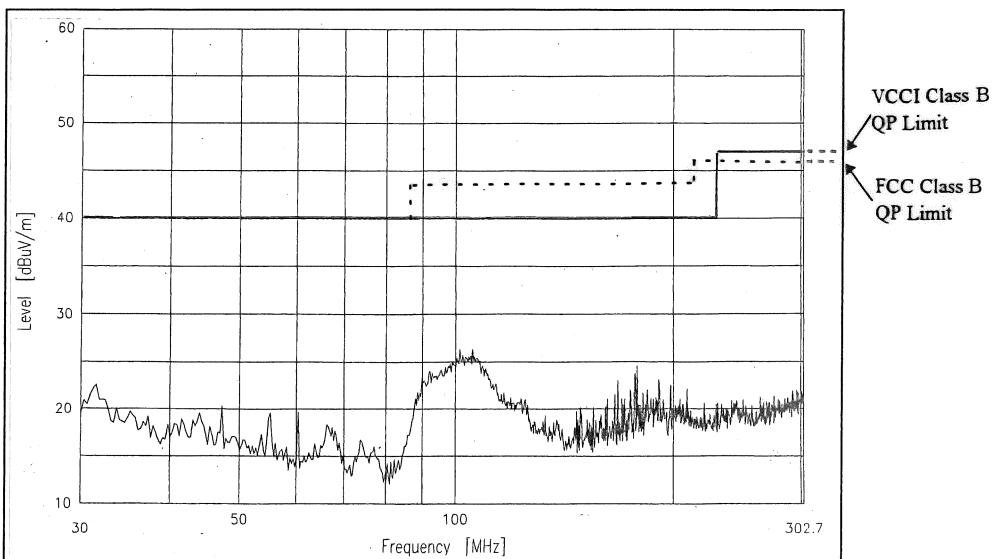
雜音電界強度

Radiated Emission Noise

HORIZONTAL:



VERTICAL:



EN55011-B, EN55032-Bの限界値はVCCI class Bの限界値と同じ
 Limits of EN55032-B are same as its VCCI class B.