PH150S48-*

EVALUATION DATA

型式データ

DWG. No. C094-53-01			
承認	承認	査閲	担当
'93.9.28	'93.9.27	'93.9.25	'93.9.24

NEMIC-LAMBDA

INDEX

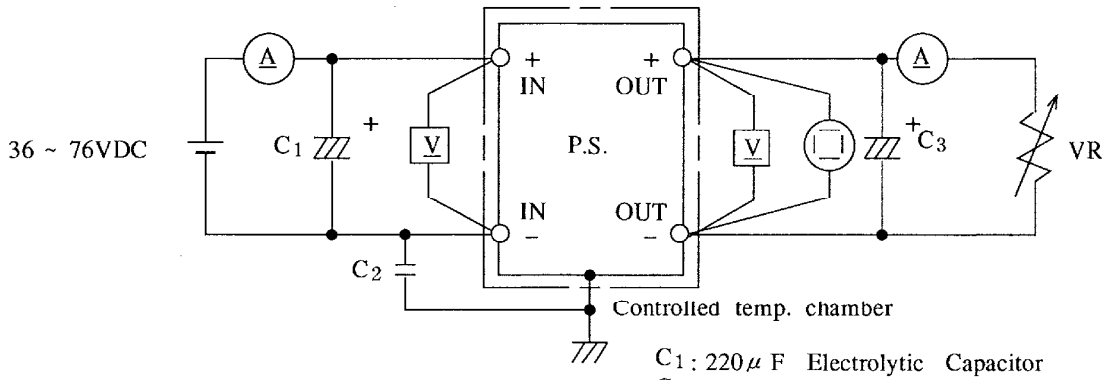
使用記号　Terminology used

	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
Tp.....ベースプレート温度	Base Plate Temperature

1. 評価測定方法　EVALUATION METHOD

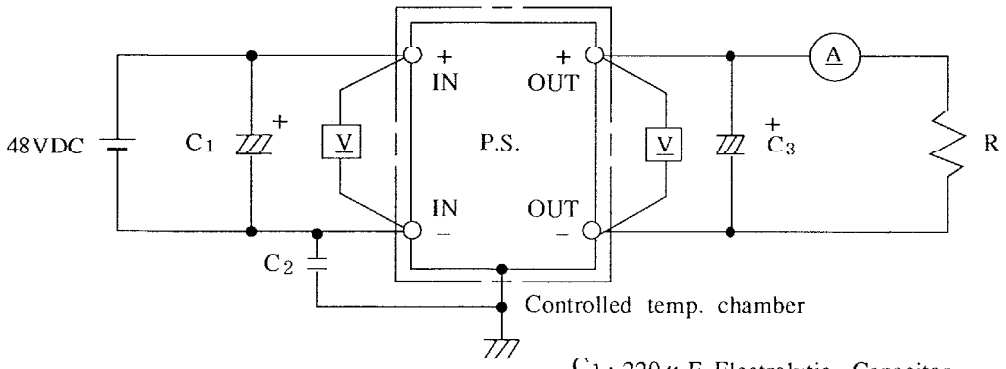
1 - 1　測定回路　Circuits used for determination

(1)　静特性　Steady state data



C_1 : 220μ F Electrolytic Capacitor
C_2 : 4700pF Ceramic Capacitor
C_3 : 5V-1000μ F Electrolytic Capacitor
12V- 470μ F Electrolytic Capacitor
15V- 470μ F Electrolytic Capacitor
24V- 220μ F Electrolytic Capacitor

(2)　通電ドリフト特性　Warm up voltage drift characteristics

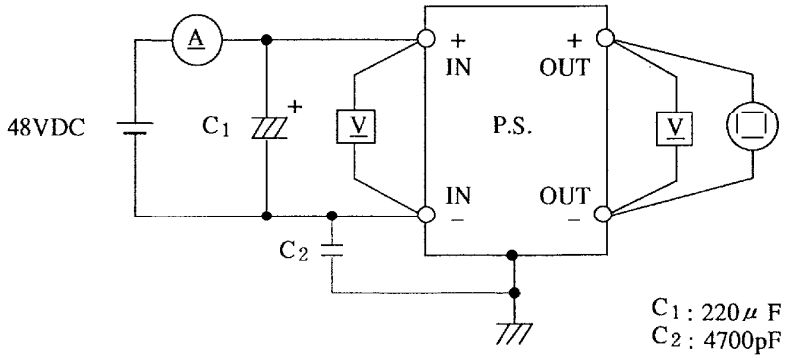


C_1 : 220μ F Electrolytic Capacitor
C_2 : 4700pF Ceramic Capacitor
C_3 : 5V-1000μ F Electrolytic Capacitor
12V- 470μ F Electrolytic Capacitor
24V- 220μ F Electrolytic Capacitor

(3)　過電流保護特性　Over current protection (O.C.P.) characteristics

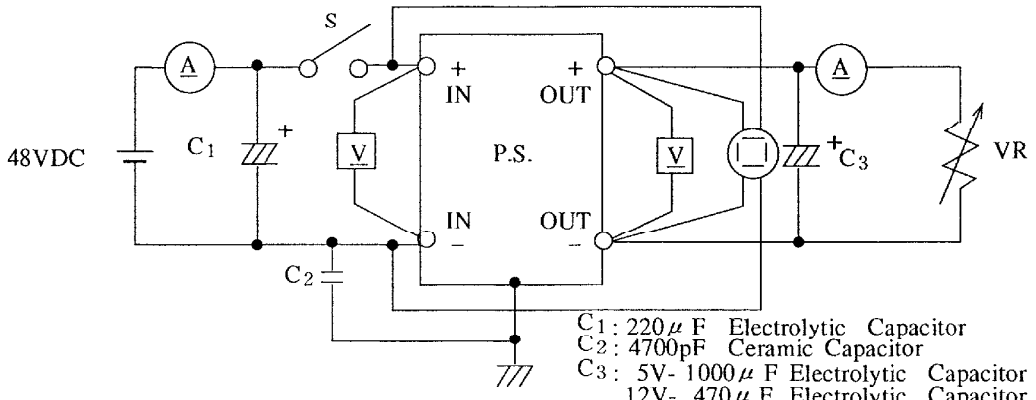
静特性と同じ
Same as steady state data

(4) 過電圧保護特性　Over voltage protection (OVP) characteristics



C1 : 220μF Electrolytic Capacitor
C2 : 4700pF Ceramic Capacitor

(5) 出力立上り特性　Output rise characteristics



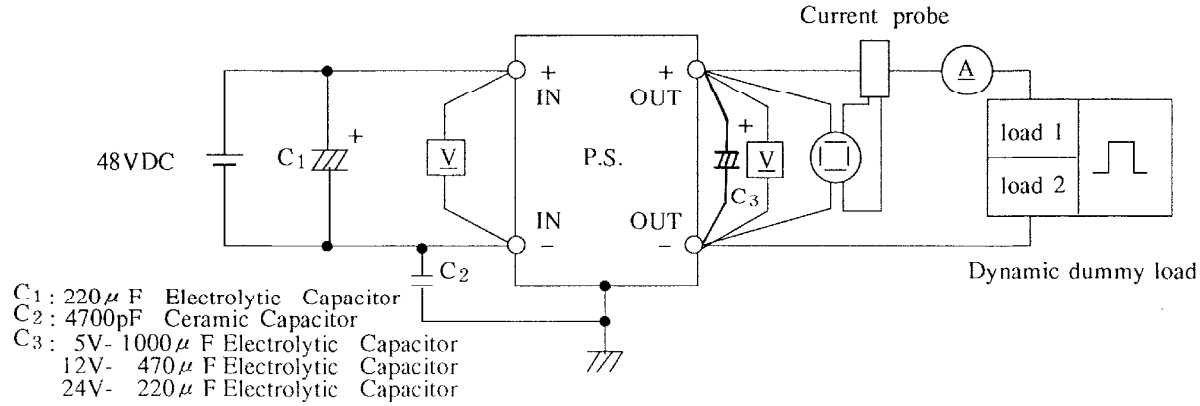
C1 : 220μF Electrolytic Capacitor
C2 : 4700pF Ceramic Capacitor
C3 : 5V- 1000μF Electrolytic Capacitor
12V- 470μF Electrolytic Capacitor
24V- 220μF Electrolytic Capacitor

(6) 出力立下り特性　Output fall characteristics

出力立上り特性と同じ

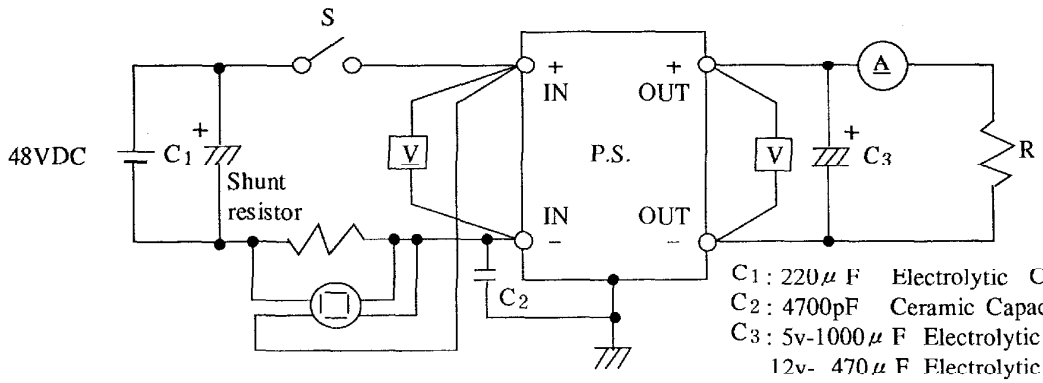
Same as Output rise characteristics

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



C1 : 220μF Electrolytic Capacitor
C2 : 4700pF Ceramic Capacitor
C3 : 5V- 1000μF Electrolytic Capacitor
12V- 470μF Electrolytic Capacitor
24V- 220μF Electrolytic Capacitor

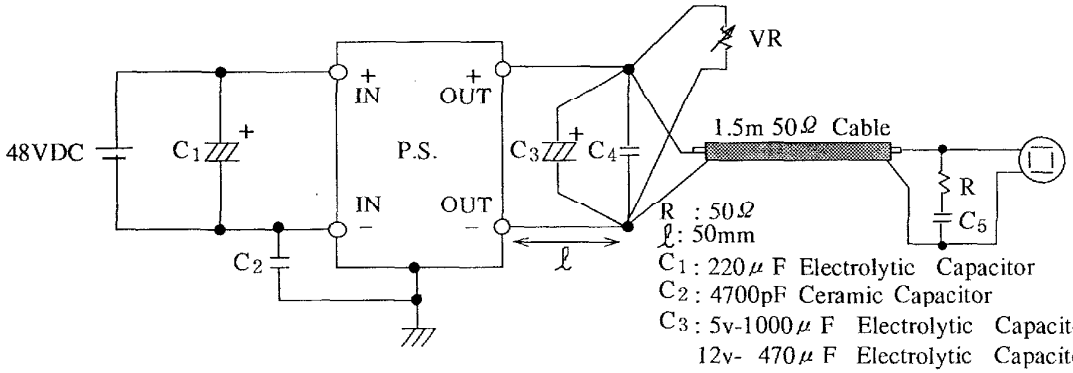
(8) 入力サージ電流 (突入電流) 波形 Inrush current waveform



C_1 : 220μF Electrolytic Capacitor
C_2 : 4700pF Ceramic Capacitor
C_3 : 5v-1000μF Electrolytic Capacitor
12v- 470μF Electrolytic Capacitor
24v- 220μF Electrolytic Capacitor

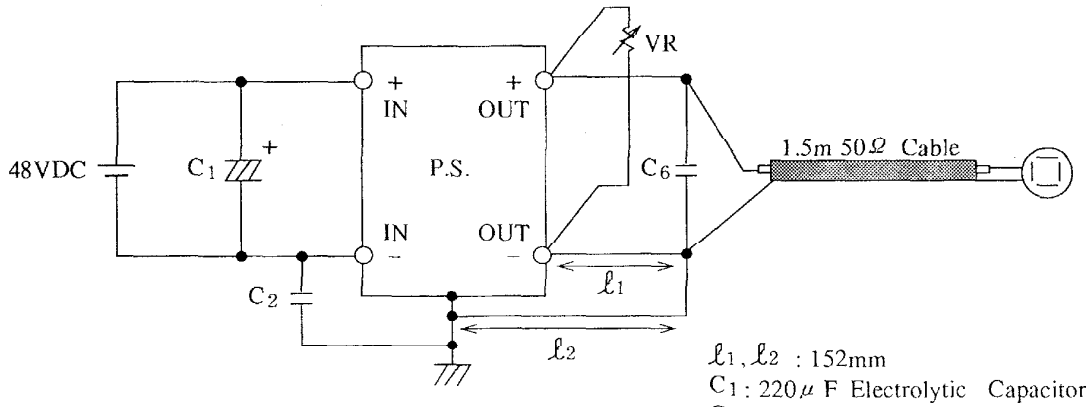
(9) 出力リップル、ノイズ波形 Output-ripple, noise waveform

NORMAL MODE (EIAJ Standard RC-9002A)



R : 50Ω
ℓ: 50mm
C_1 : 220μF Electrolytic Capacitor
C_2 : 4700pF Ceramic Capacitor
C_3 : 5v-1000μF Electrolytic Capacitor
12v- 470μF Electrolytic Capacitor
24v- 220μF Electrolytic Capacitor
C_4 : 1μF Film Capacitor
C_5 : 4700pF Film Capacitor

NORMAL + COMMON MODE



ℓ_1, ℓ_2 : 152mm
C_1 : 220μF Electrolytic Capacitor
C_2 : 4700pF Ceramic Capacitor
C_6 : 0.1μF Ceramic Capacitor

1 - 2　使用測定機器　List of equipment used

No.	DESCRIPTION	MANUFACTURER	MODEL No.
1	Oscilloscope	TEKTRONIX	2465B
2		IIITACIII	V-1050F
3	Digital oscilloscope	YEW	DL2140
4		HITACHI	VC-6041
5	Digital volt meter	SANWA	9100EA
6	D.C. Ampere meter	YOKOGAWA ELEC.	2051
7	Dynamic dummy load	TAKAMIZAWA	PSA-150D
8	Variable resistive load	MATSUNAGA	44 / 11 Ω
9	Variable resistive load	MATSUNAGA	2.4 / 0.6 Ω
10	Controlled temp. chamber	JEC	303D
11	Shunt resistor	KUWANO	100mV, 1A
12	Current probe amplifier	TEKTRONIX	TM503
13	Current probe	TEKTRONIX	A6303

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 , temp . drift

5V

1. Regulation - line and load , temp . drift Condition Tp : 25℃

Iout \ Vin	36VDC	48VDC	76VDC	line regulation	
0%	5.009V	5.010V	5.010V	1mV	0.02%
50%	5.009V	5.009V	5.009V	0mV	0%
100%	5.008V	5.008V	5.009V	1mV	0.02%
load regulation	1mV	2mV	1mV		
	0.02%	0.04%	0.02%		

2. Temperature drift Conditions Vin :48VDC
Iout :100%

Tp	-20℃	25℃	85℃	Temp. stability	
Vout	4.997V	5.008V	5.004V	11mV	0.22%

12V

1. Regulation - line and load , temp . drift Condition Tp : 25℃

Iout \ Vin	36VDC	48VDC	76VDC	line regulation	
0%	12.010V	12.012V	12.012V	2mV	0.02%
50%	12.008V	12.009V	12.010V	2mV	0.02%
100%	12.007V	12.008V	12.009V	2mV	0.02%
load regulation	3mV	4mV	3mV		
	0.03%	0.03%	0.03%		

2. Temperature drift Vin :48VDC
Iout :100%

Tp	-20℃	25℃	85℃	Temp. stability	
Vout	11.994V	12.008V	12.011V	17mV	0.14%

入力・負荷・温度変動　Regulation - line and load , temp . drift

24V

1. Regulation - line and load , temp . drift　　Condition　　Tp　: 25℃

Iout \ Vin	36VDC	48VDC	76VDC	line regulation	
0%	24.00V	24.01V	24.02V	20mV	0.08%
50%	24.00V	24.01V	24.01V	10mV	0.04%
100%	24.00V	24.00V	24.01V	10mV	0.04%
load regulation	0mV	10mV	10mV		
	0%	*0.04%*	*0.04%*		

2. Temperature drift　　Conditions　　Vin :48VDC
Iout :100%

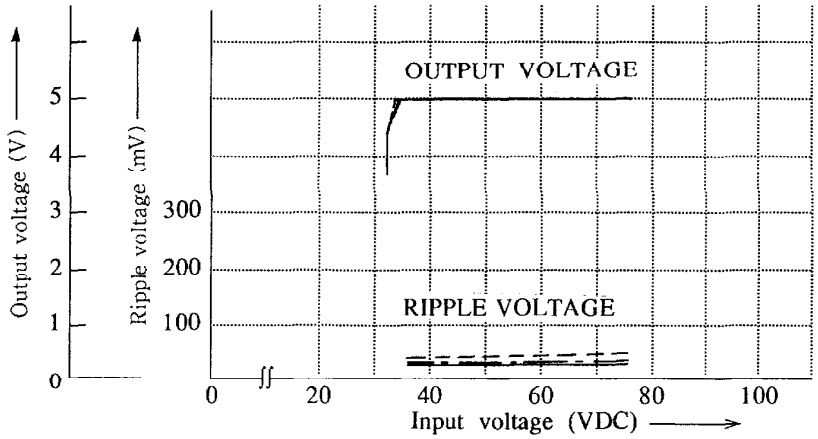
Tp	-20℃	25℃	85℃	Temp. stability	
Vout	23.96V	24.00V	23.96V	40mV	0.17%

(2) 出力電圧・リップル電圧対入力電圧

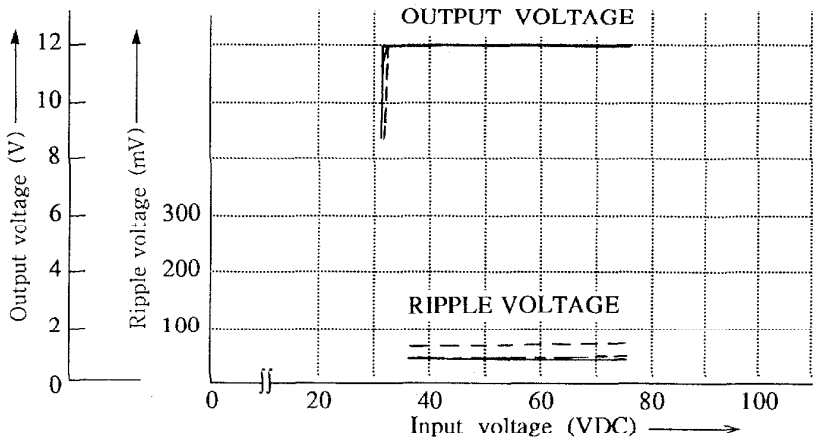
Output voltage and ripple voltage v.s. input voltage

Conditions Iout : 100%
Tp : -20℃ - - -
25℃ —— -
85℃ ——

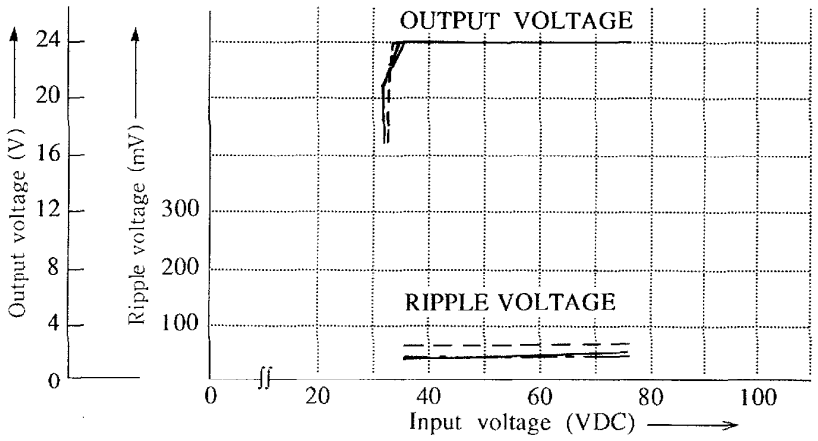
5V



12V



24V

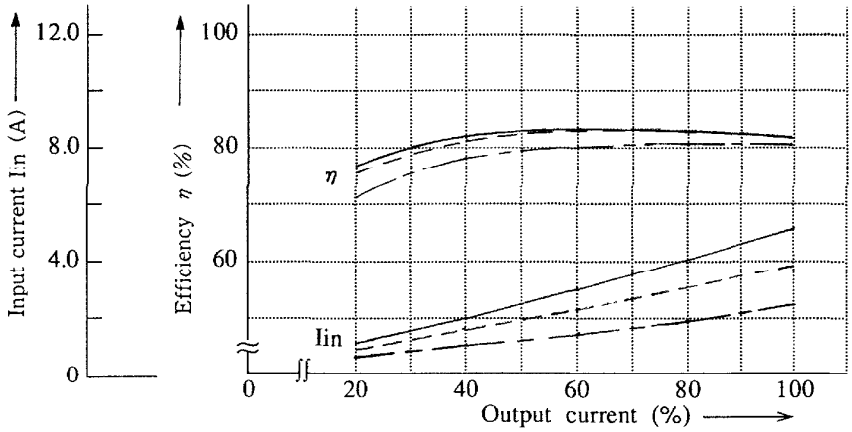


(3) 効率・入力電流対出力電流

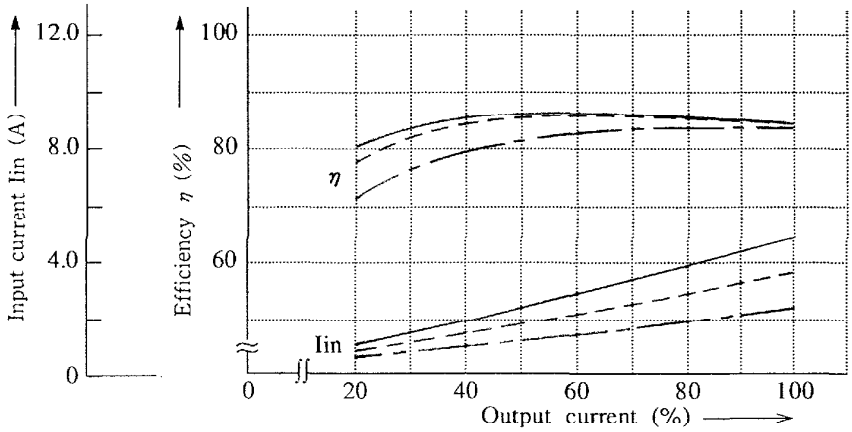
Efficiency and input current v.s. output current

Conditions Vin : 36VDC ——————
48VDC - - - - - -
76VDC —— - - ——
Tp : 25℃

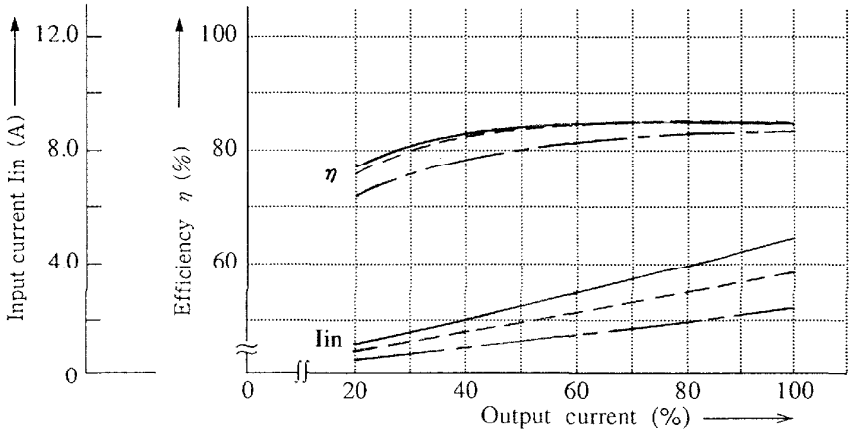
5V



12V

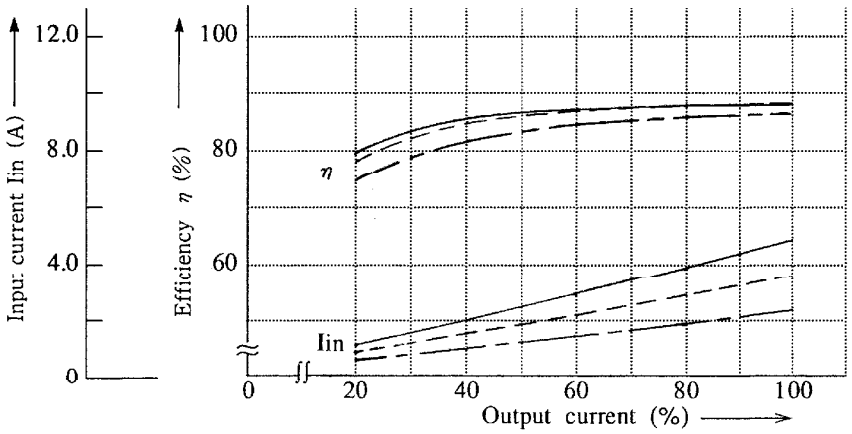


15V



Conditions Vin : 36VDC ————
48VDC - - - - - -
76VDC —— - ——
Tp : 25℃

24V



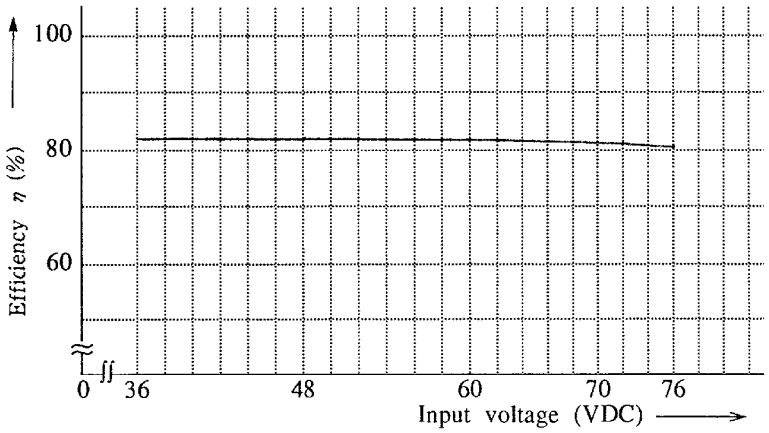
(4) 効率対入力電圧

Efficiency v.s. input voltage

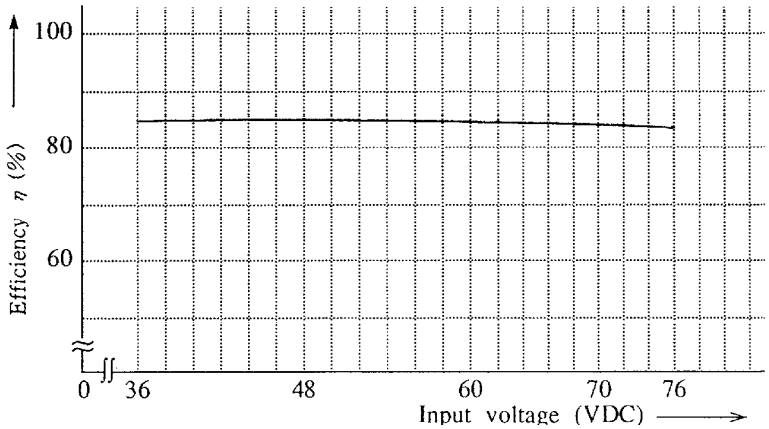
Conditions Iout : 100% ——

Tp : 25℃

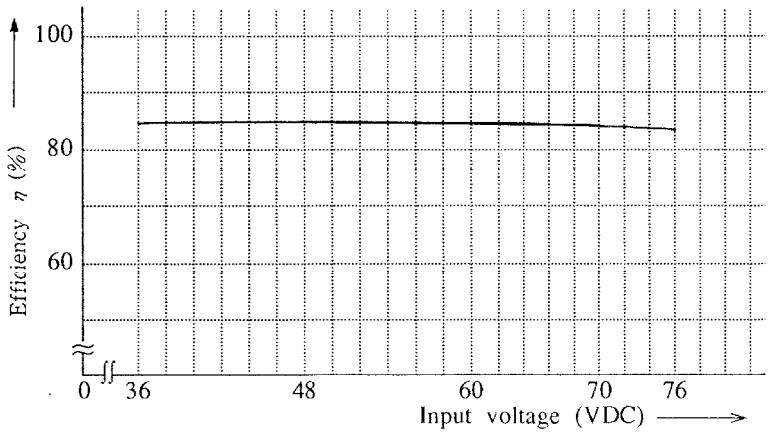
5V



12V



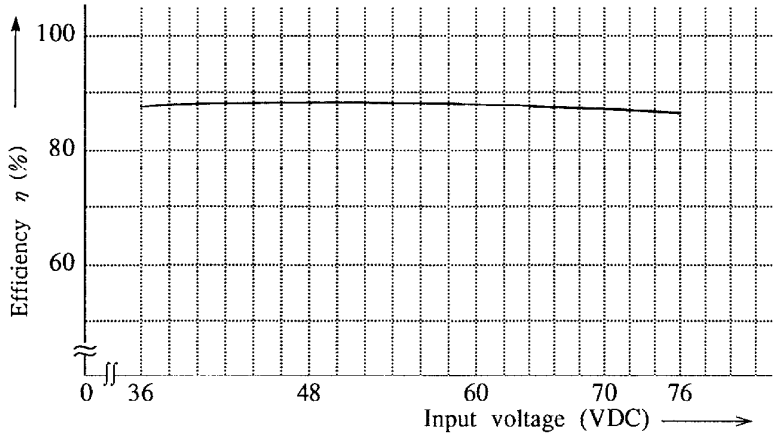
15V



Conditions Iout : 100% ——

Tp : 25℃

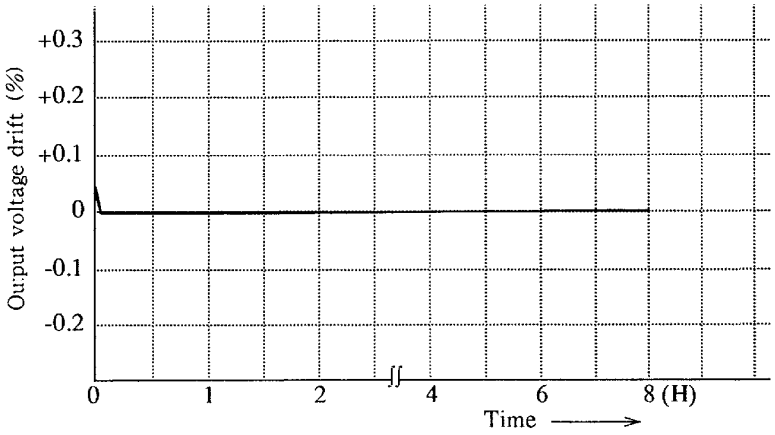
24V



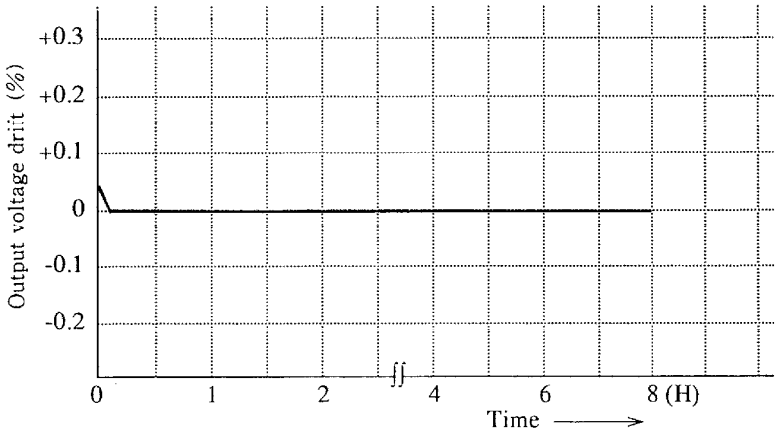
2—2 通電ドリフト特性 Warm up voltage drift Characteristics

Conditions Vin : 48VDC
Iout : 100%
Tp : 25℃

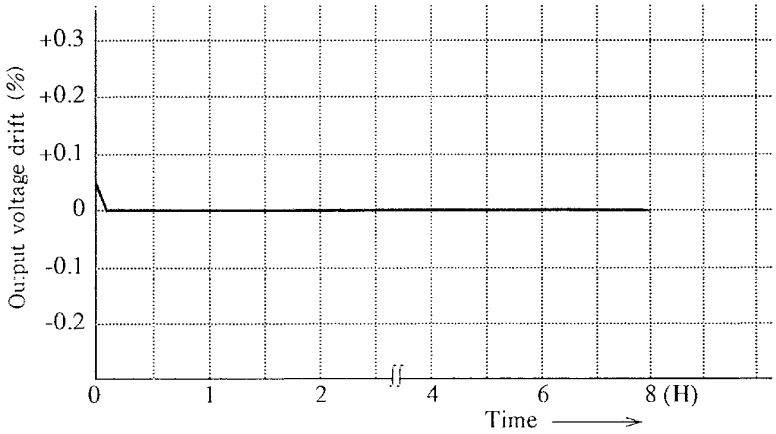
5V



12V



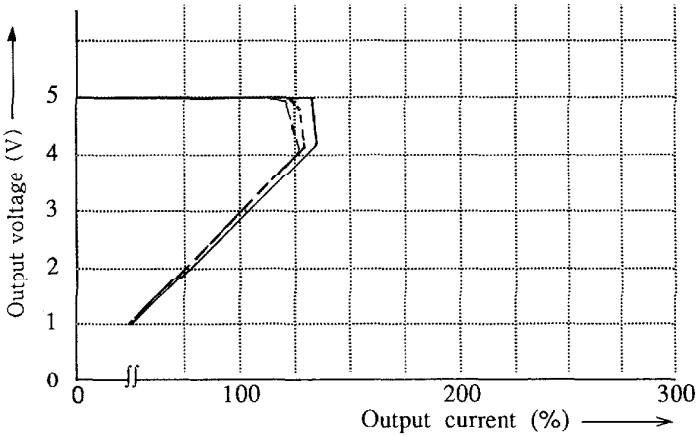
24V



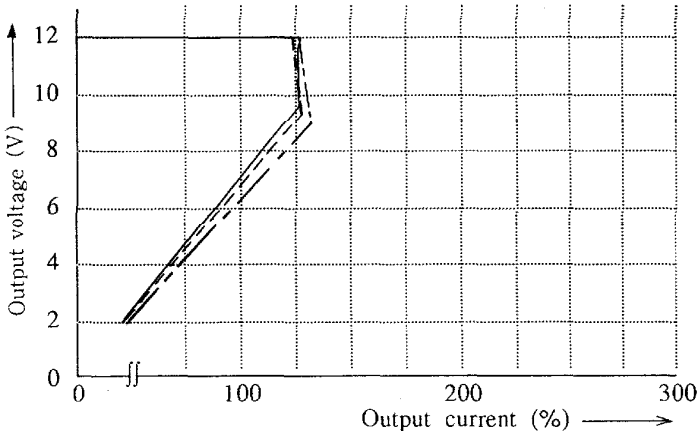
2—3 過電流保護特性 O.C.P.Characteristics

Conditions Vin : 36VDC ——
48VDC - - -
76VDC —— -
Tp : 25℃

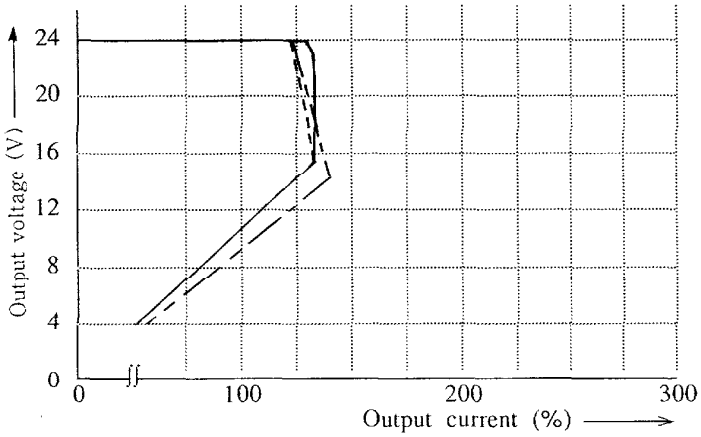
5V



12V



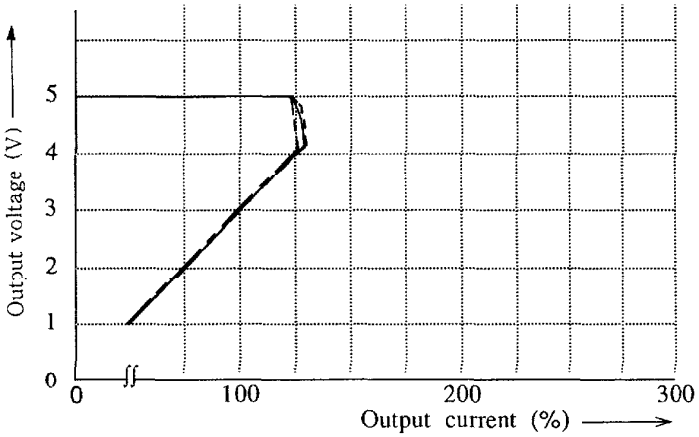
24V



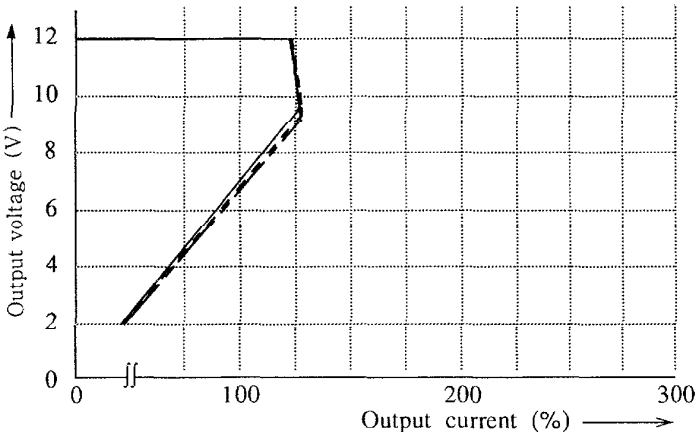
過電流保護特性 O.C.P.Characteristics

Conditions Vin : 48VDC
Tp : -20℃ ——
25℃ - - -
85℃ — - -

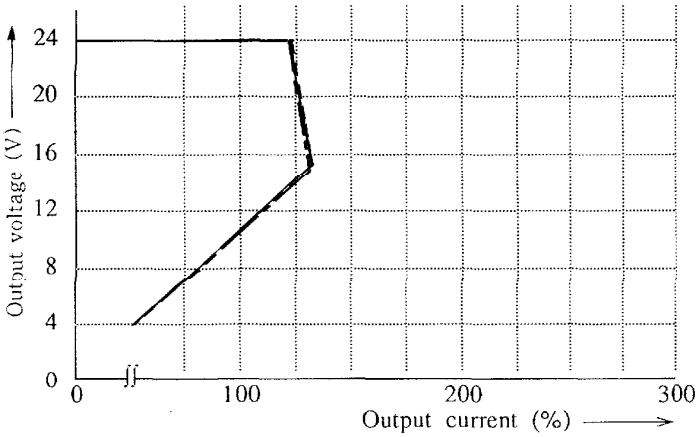
5V



12V



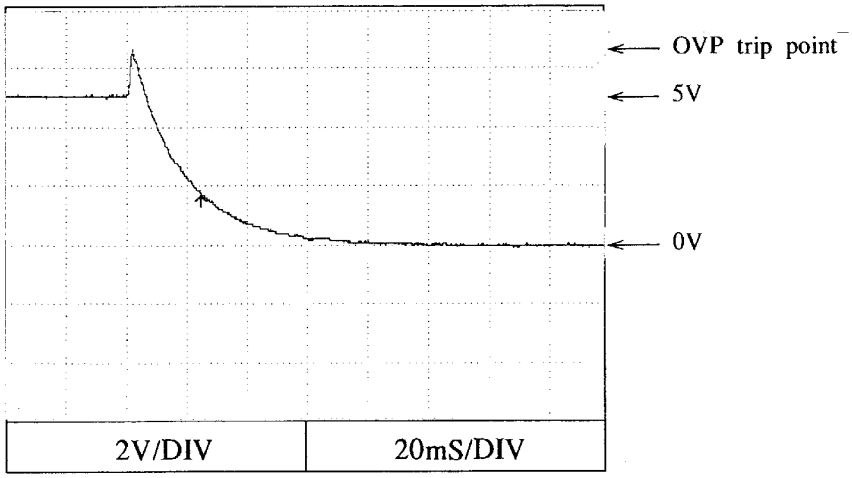
24V



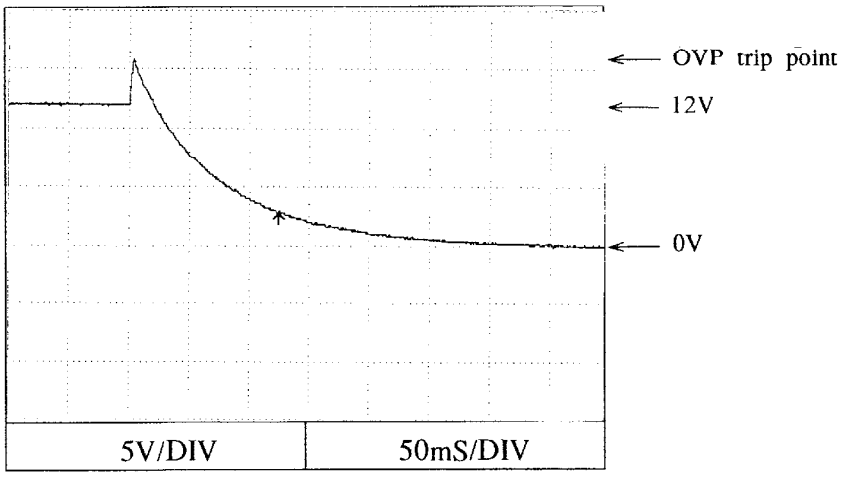
2—4 過電圧保護特性 O.V.P.Characteristics

Conditions Vin : 48VDC
Iout : 0%
Tp : 25℃

5V



12V



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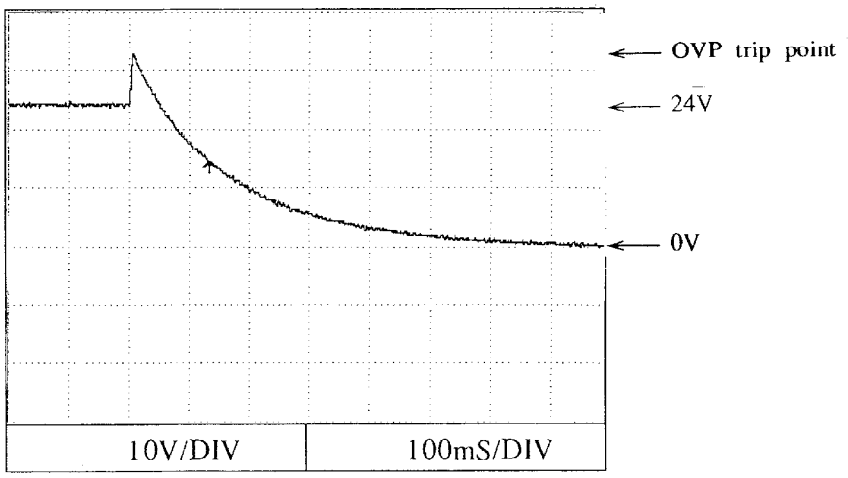
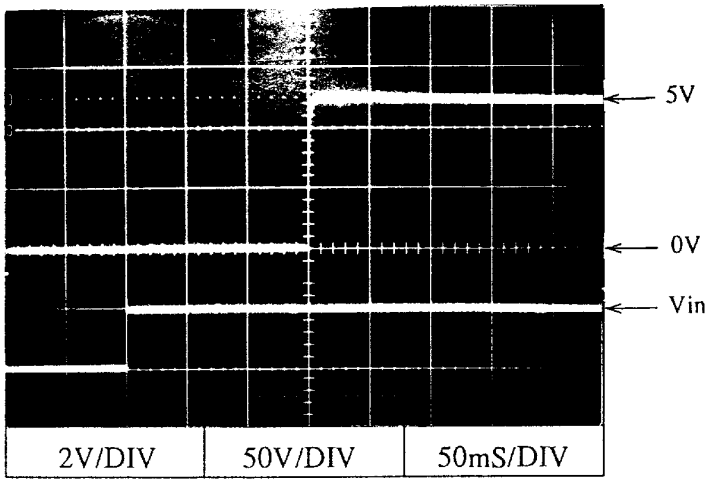


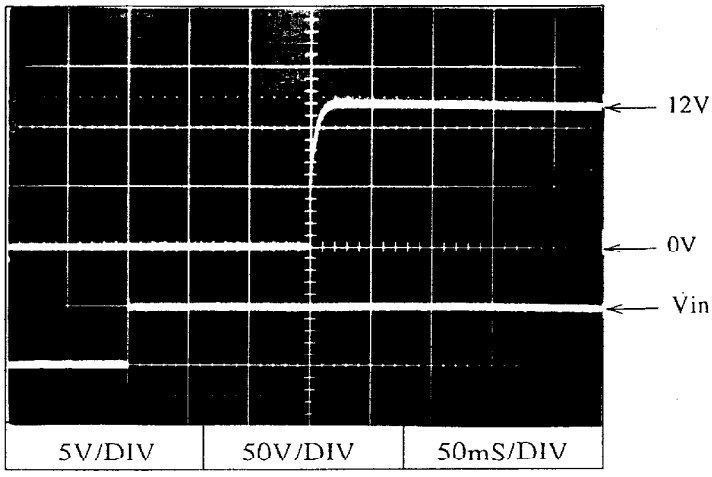
2—5 出力立上り特性 Output rise Characteristics

Conditions Vin : 48VDC
Iout : 0%
Tp : 25℃

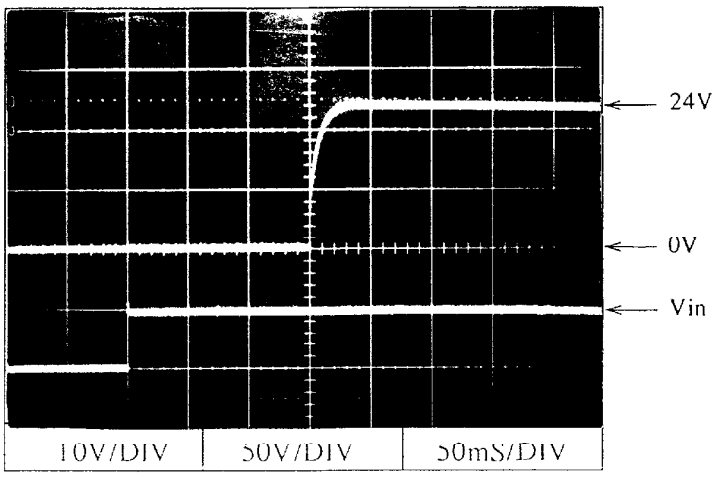
5V



12V



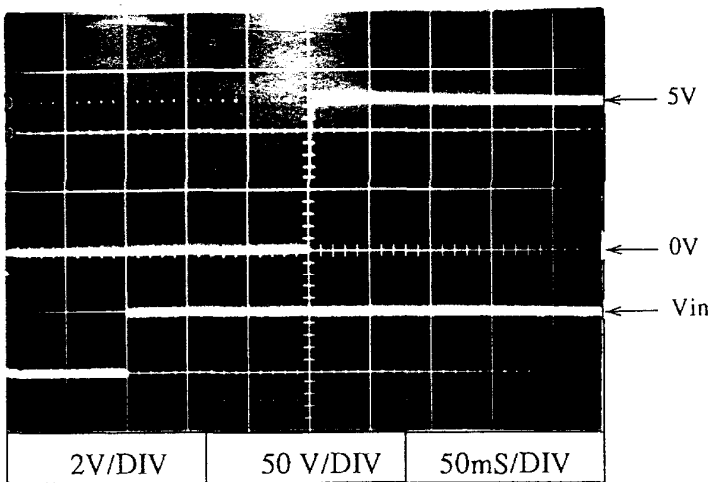
24V



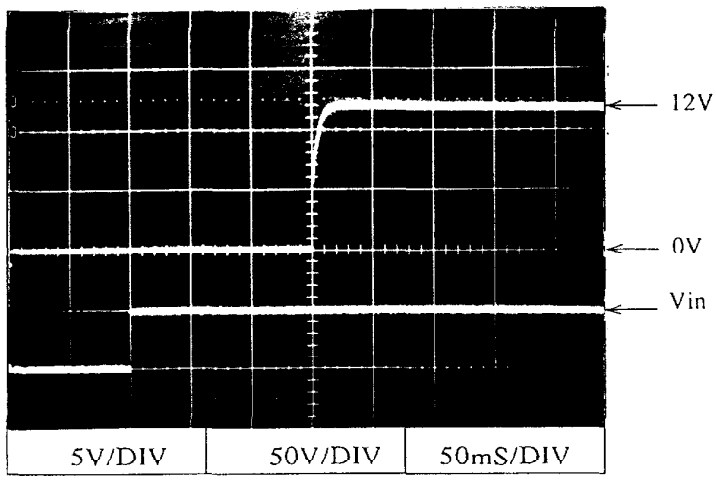
出力立上り特性 Output rise Characteristics

Conditions Vin : 48VDC
Iout : 100%
Tp : 25℃

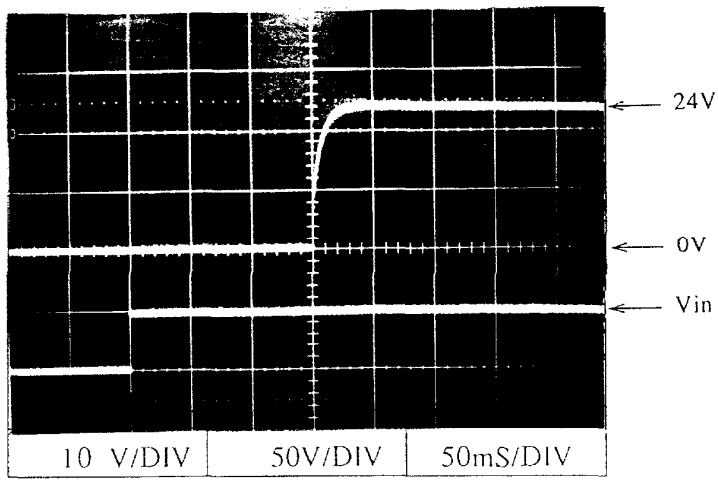
5V



12V



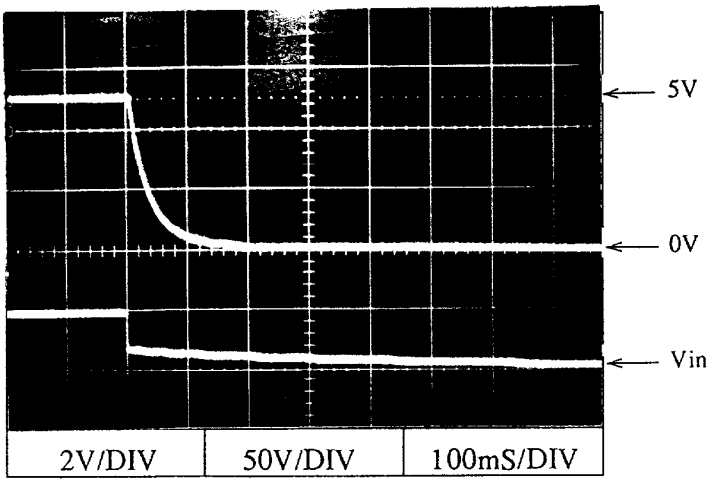
24V



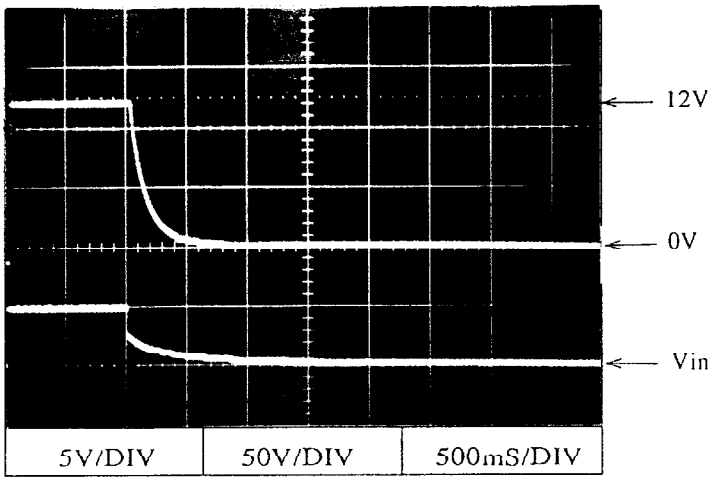
2—6 出力立下り特性 Output fall Characteristics

Conditions Vin : 48VDC
Iout : 0%
Tp : 25℃

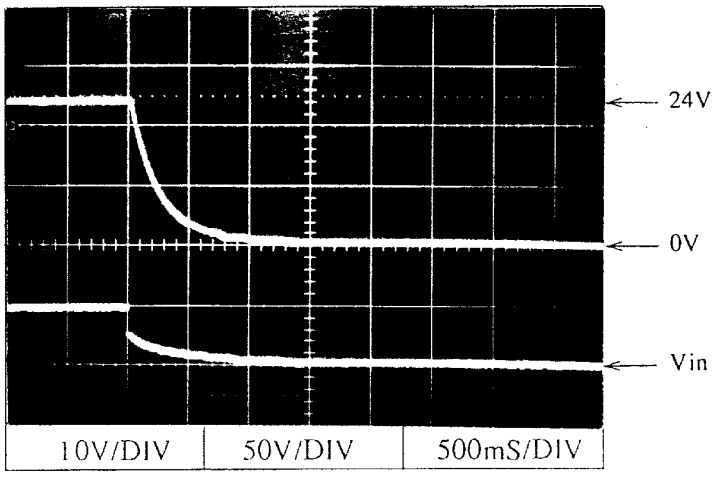
5V



12V



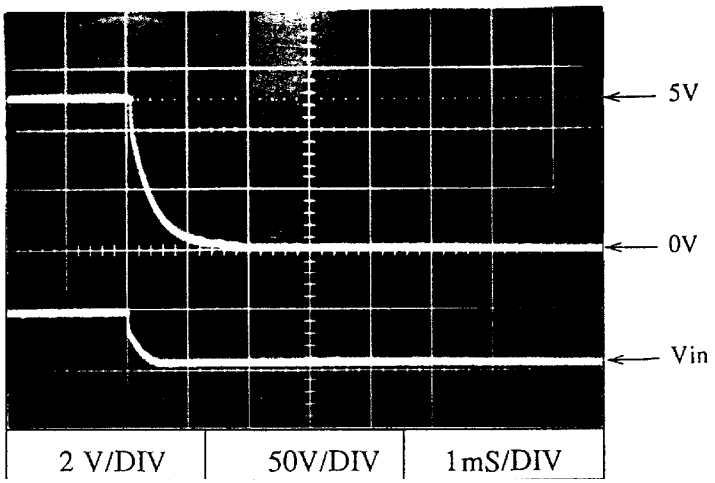
24V



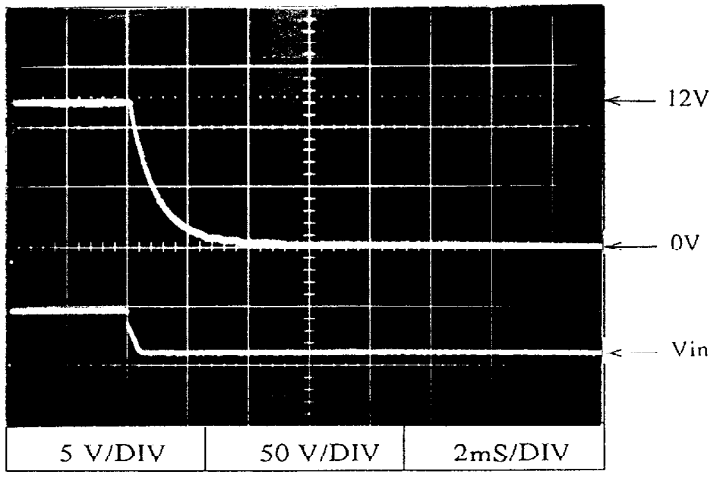
出力立下り特性 Output fall Characteristics

Conditions Vin : 48VDC
Iout : 100%
Tp : 25℃

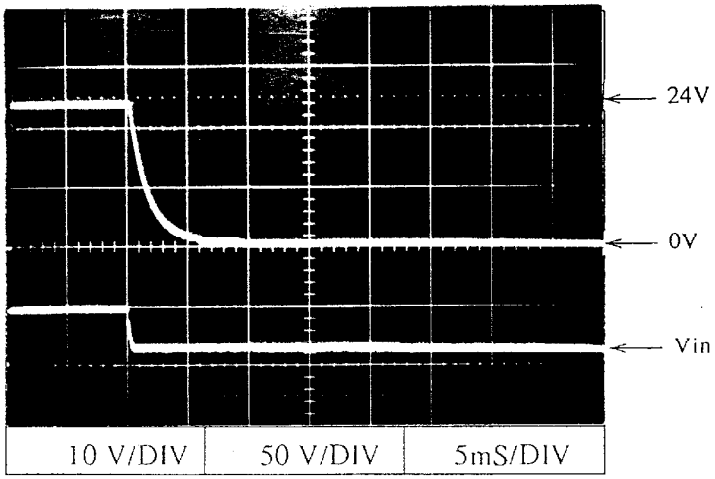
5V



12V



24V

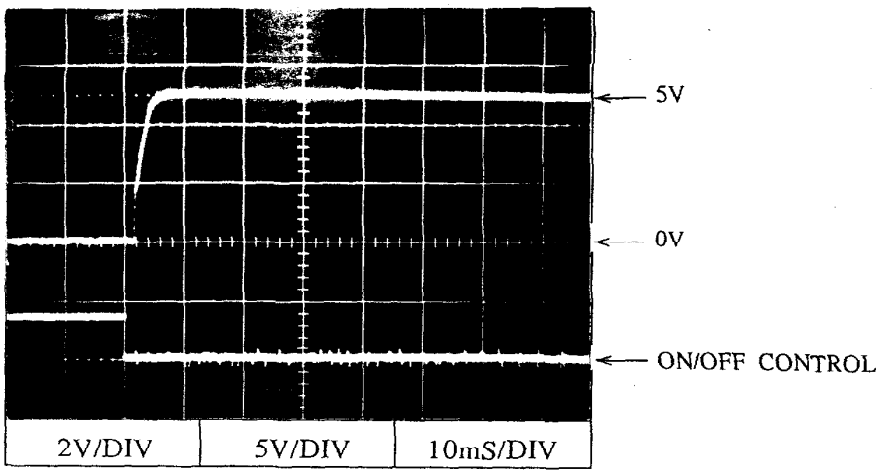


2—7 出力立上り特性(ON/OFF コントロール時)

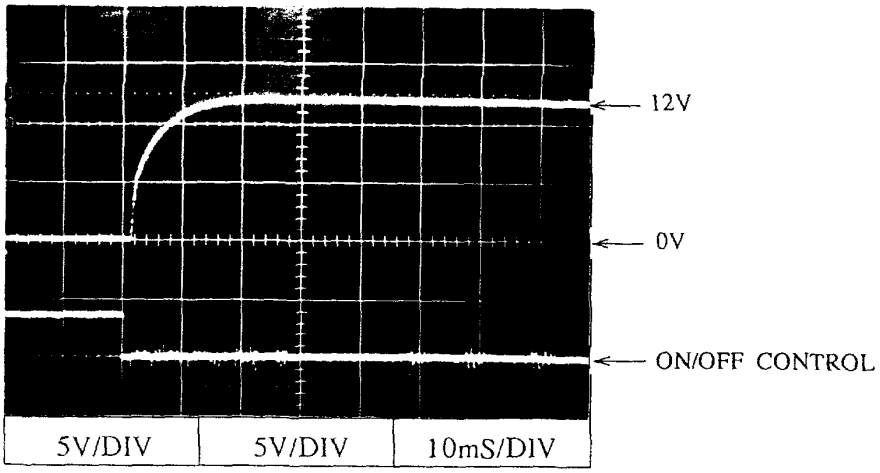
Output rise Characteristics with ON/OFF CONTROL

Conditions Vin : 48VDC
Iout : 0%
Tp : 25℃

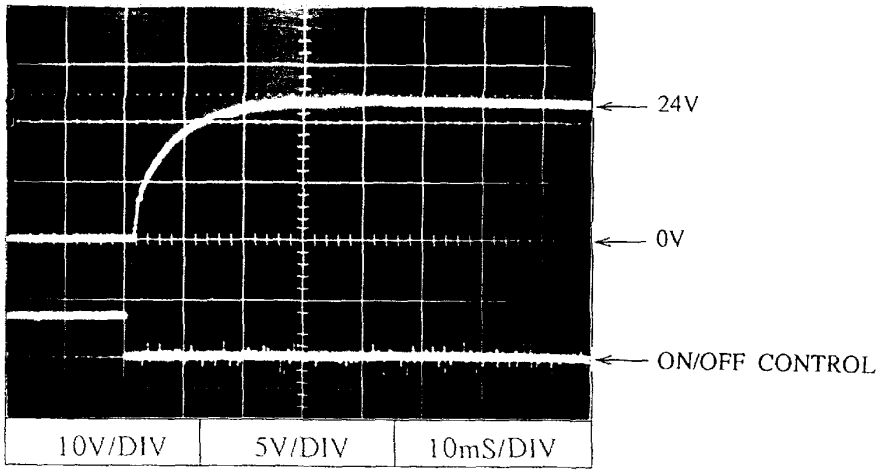
5V



12V



24V

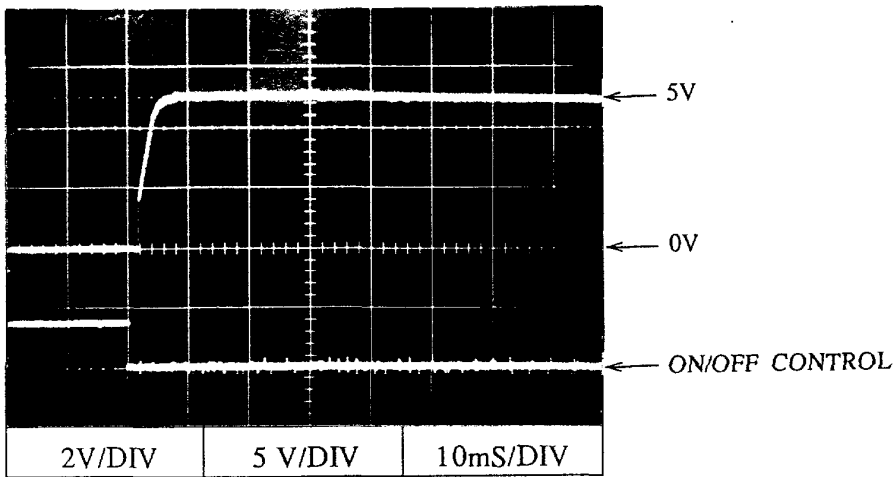


出力立上り特性(ON/OFF コントロール時)

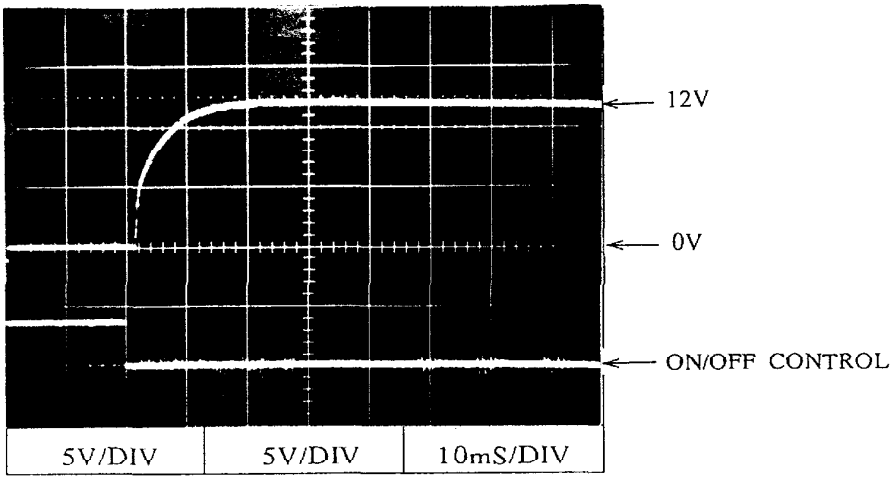
Output rise Characteristics with ON/OFF CONTROL

Conditions Vin : 48VDC
Iout : 100%
Tp : 25℃

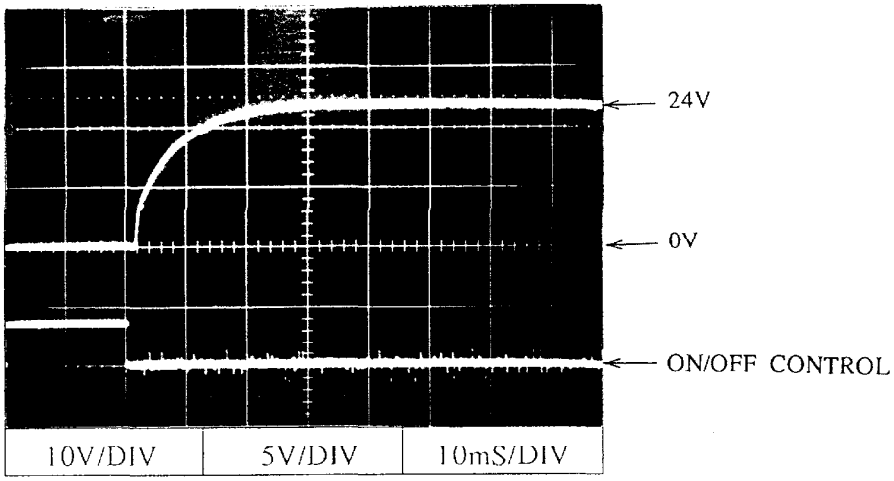
5V



12V



24V

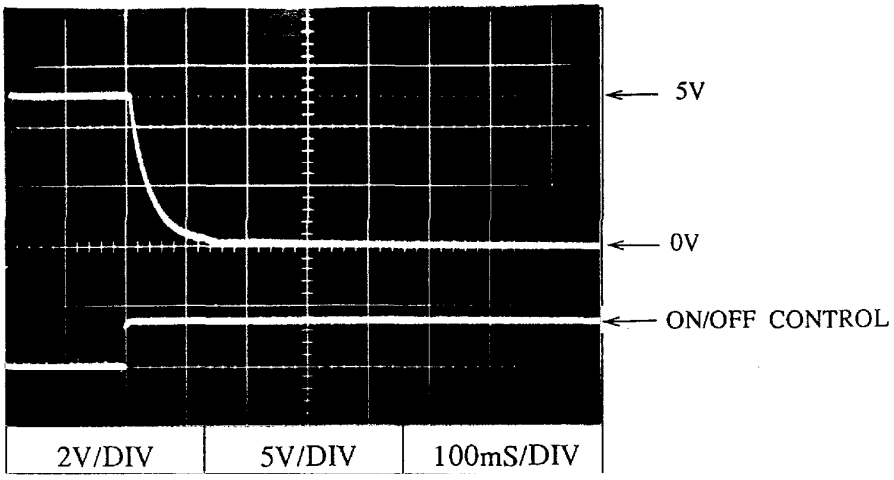


2—8 出力立下り特性(ON/OFF コントロール時)

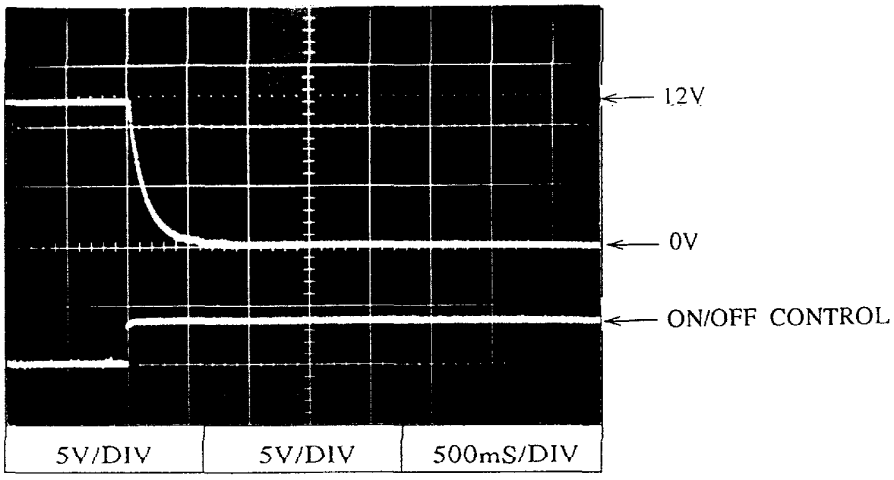
Output fall Characteristics with ON/OFF CONTROL

Conditions Vin : 48VDC
Iout : 0%
Tp : 25℃

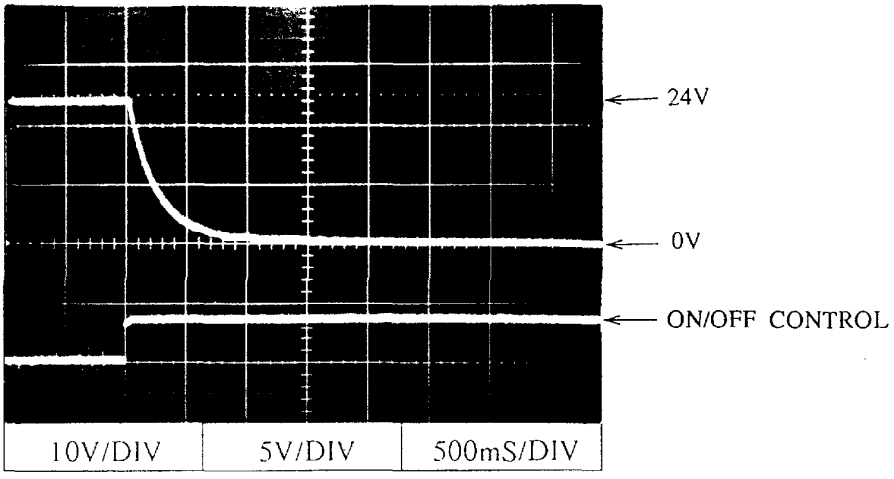
5V



12V



24V

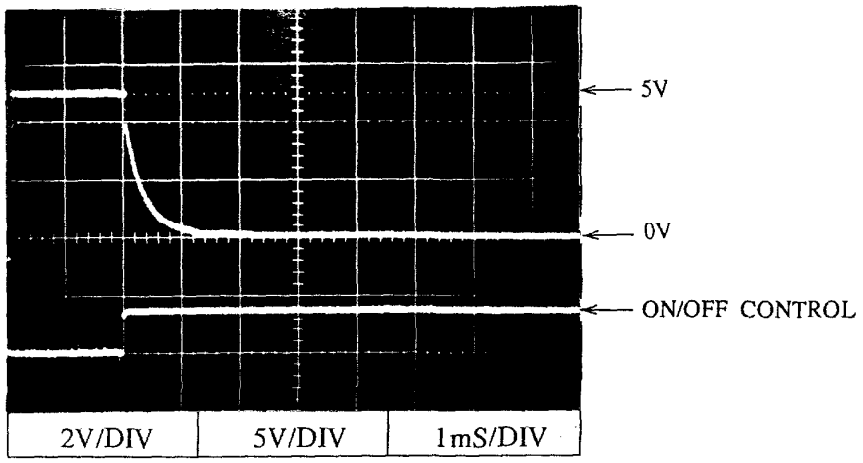


出力立下り特性(ON/OFF コントロール時)

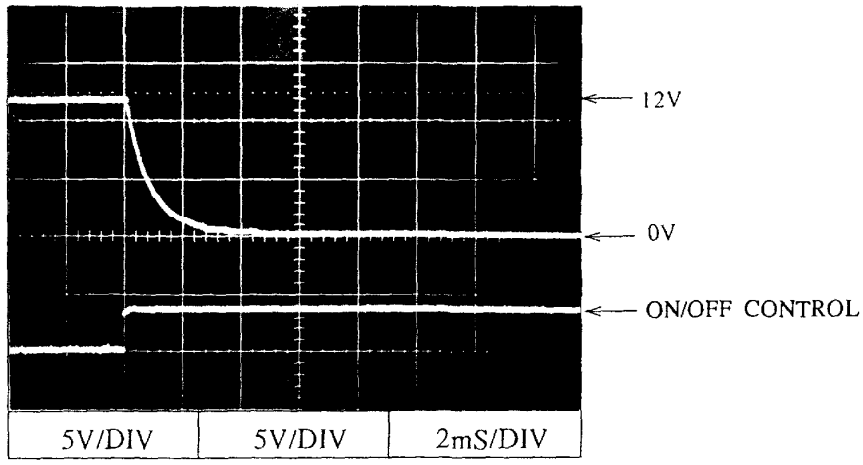
Output fall Characteristics with ON/OFF CONTROL

Conditions Vin : 48VDC
Iout : 100%
Tp : 25℃

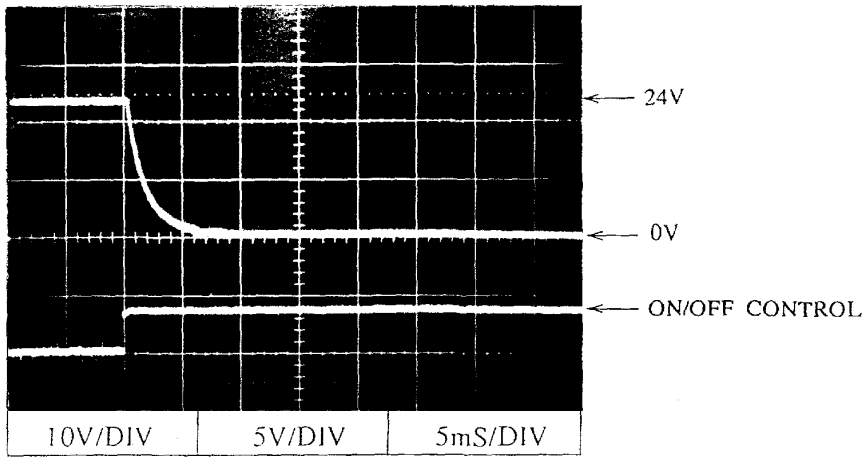
5V



12V



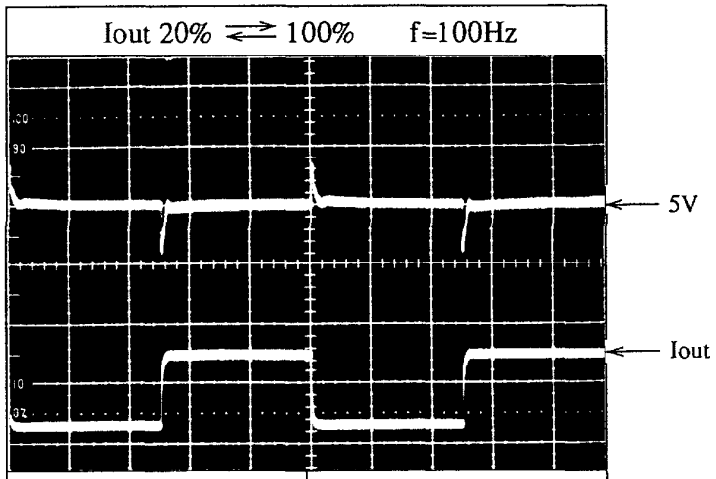
24V

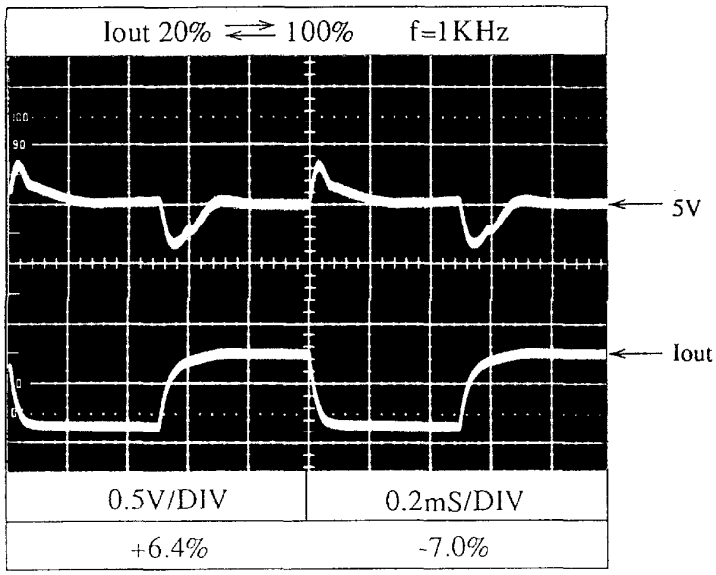


2—9 過渡応答(負荷急変)特性
Dynamic load response characteristics

Conditions Vin : 48VDC
Tp : 25℃

5V

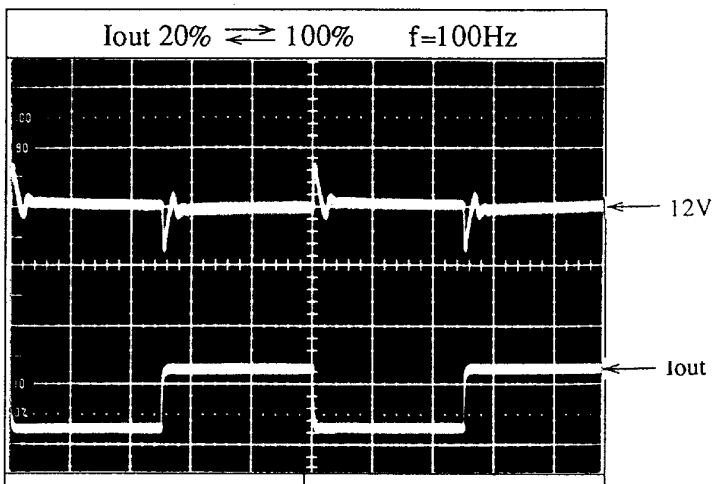




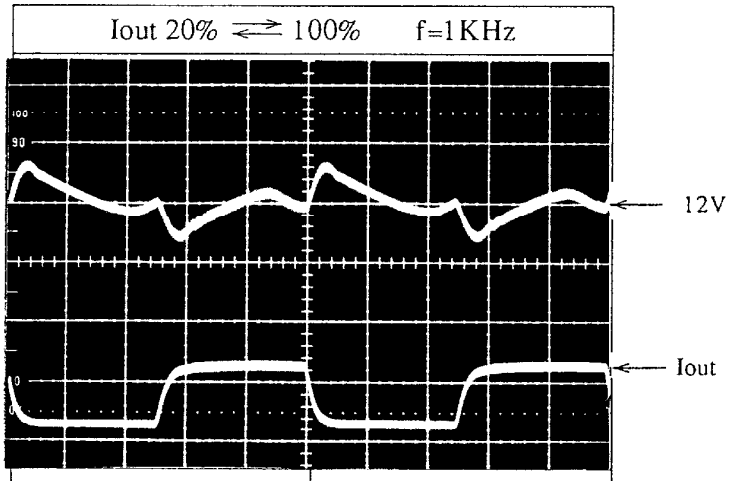
過渡応答(負荷急変)特性
Dynamic load response characteristics

Conditions Vin : 48VDC
Tp : 25℃

12V



0.5V/DIV	2mS/DIV
+2.7%	-3.0%

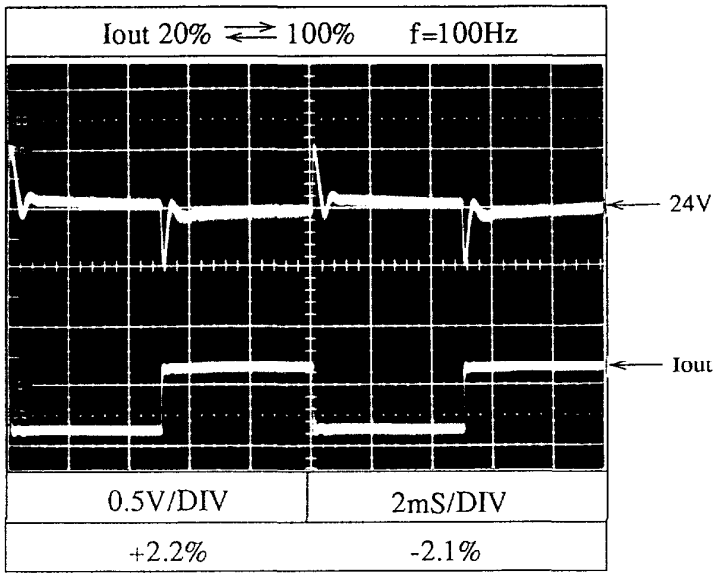


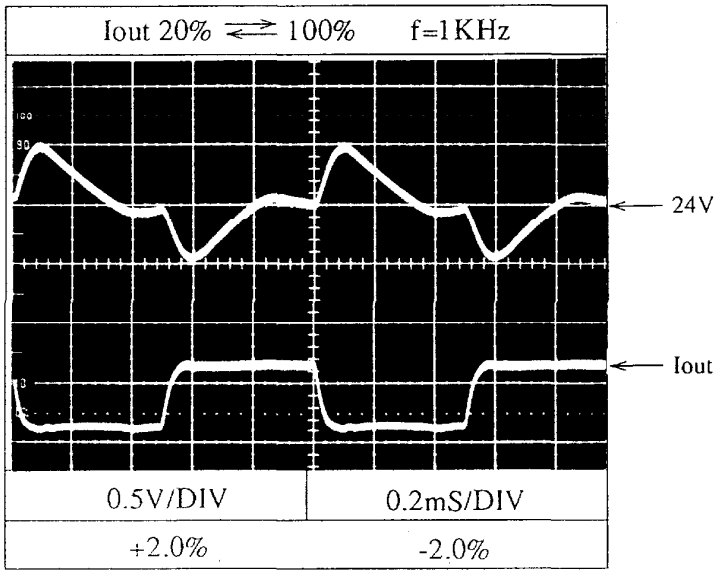
0.5V/DIV	0.2mS/DIV
+2.5%	-2.5%

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

Conditions Vin : 48VDC
Tp : 25℃

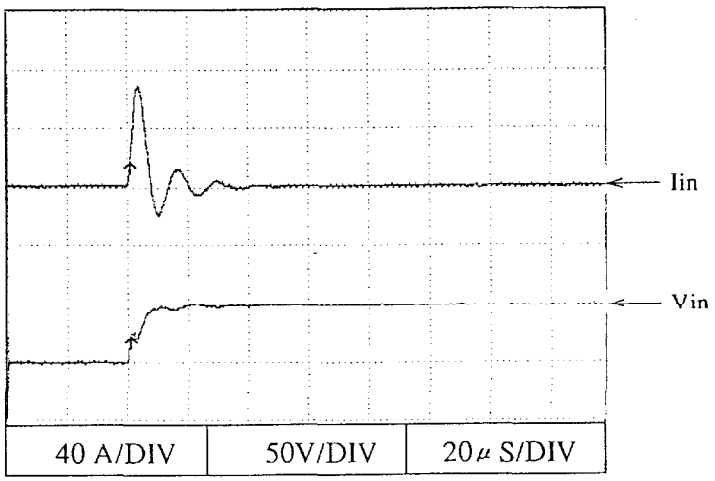
24V





2—10 入力サージ電流(突入電流)波形 Inrush current wave form

Conditions Vin : 48VDC
Iout : 100%
Tp : 25℃

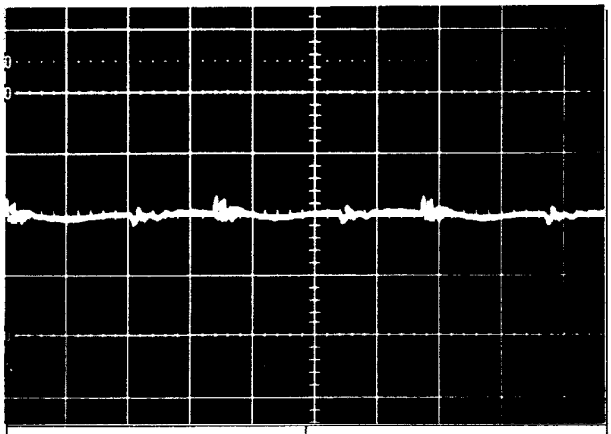


2—11 出力リップル,ノイズ波形
Output - ripple, noise waveform

Conditions Vin : 48VDC
Iout : 100%
Tp : 25℃

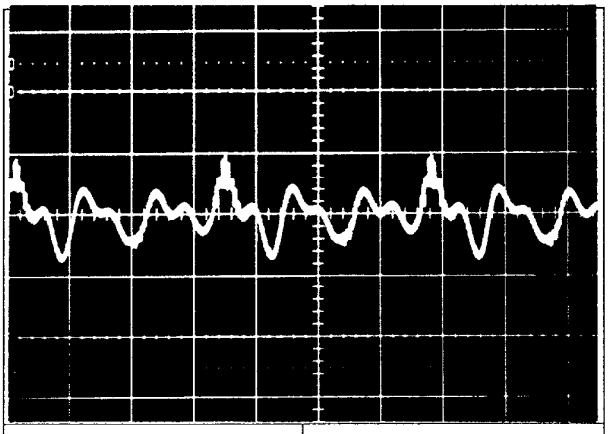
5V

NORMAL MODE



50mV/DIV	1μS/DIV
30mVP-P	

NORMAL + COMMON MODE



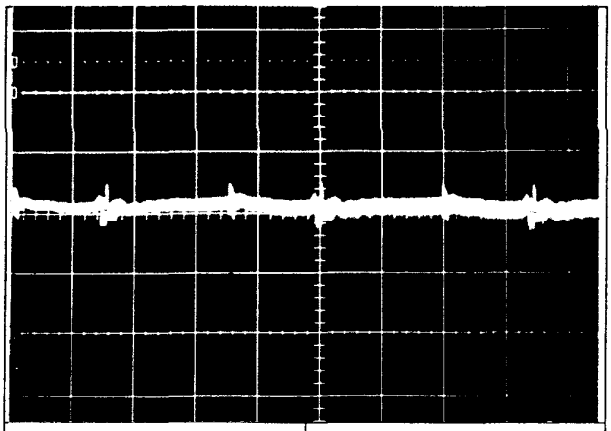
100mV/DIV	1μS/DIV
165mVP-P	

出力リップル,ノイズ波形
Output - ripple, noise waveform

Conditions Vin : 48VDC
Iout : 100%
Tp : 25℃

12V

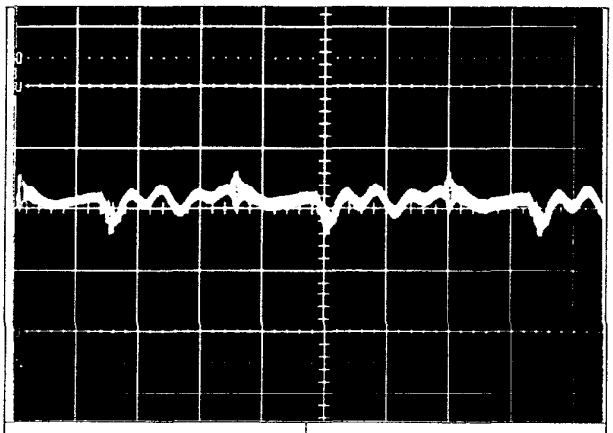
NORMAL MODE



50mV/DIV | 1μS/DIV

50mVP-P

NORMAL + COMMON MODE



100mV/DIV | 1μS/DIV

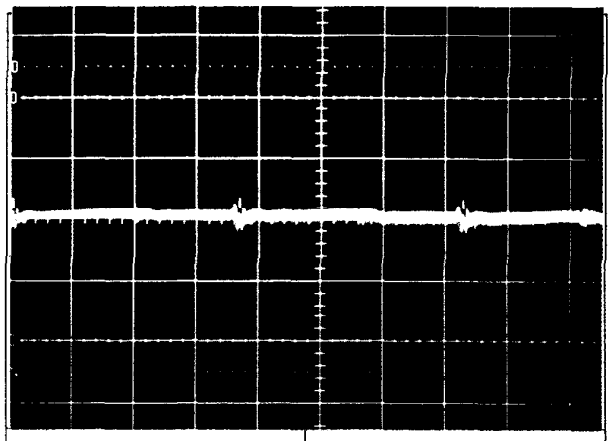
140mVP-P

出力リップル,ノイズ波形
Output - ripple, noise waveform

Conditions Vin : 48VDC
Iout : 100%
Tp : 25℃

24V

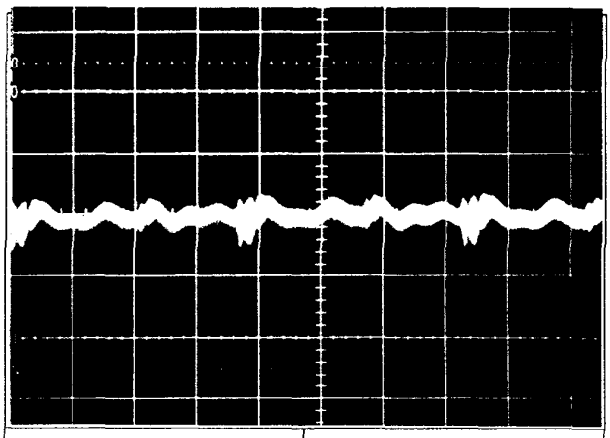
NORMAL MODE



50mV/DIV | 1μS/DIV

45mVP-P

NORMAL + COMMON MODE



100mV/DIV | 1μS/DIV

120mVP-P