PP3-5-*

EVALUATION DATA

型式データ

DWG. No. KC005-53-01			
承認	承認	査閲	担当
'95. 4. 25	'95. 4. 14	'95. 4. 14	'95. 4. 14

ΔNEMIC・LAMBDA

I N D E X

Page

使用記号　Terminology used

(1) Vin　：　入力電圧　(Input voltage)
(2) Vout　：　出力電圧　(Output voltage)
(3) Iin　：　入力電流　(Input current)
(4) Iout　：　出力電流　(Output current)

PP3-5-* SPECIFICATIONS

KC005-01-01A

Items	Model		PP3-5-5	PP3-5-12	PP3-5-15
1	Nominal Output Voltage	V	5	12	15
2	Maximum Output Current	A	0.6	0.24	0.2
3	Nominal Output Power	W	3.0	2.88	3.0
4	Efficiency (Typ) (*1)	%	68	70	70
5	Input Voltage Range	—	5VDC(4.5～7.2VDC)		
6	Input Current (Typ) (*1)	A	0.88	0.82	0.86
7	Output Voltage Accuracy(*1)	—	MAX±5%		
8	Maximum Ripple & Noise (*2)	mV	120	150	150
9	Maximum Line Regulation(*3)	mV	20	50	60
10	Maximum Road Regulation(*4)	mV	30	70	90
11	Over Current Protection(*5)	—	Yes		
12	Over Voltage Protection	—	No		
13	Parallel Operation	—	No		
14	Series Operation	—	Yes		
15	Operating Temperature (*6)	—	-20～71℃		
16	Operating Humidity	—	20～95%RH		
17	Storage Temperature	—	-40～85℃		
18	Storage Humidity	—	10～95%RH		
19	Cooling	—	Convection cooled		
20	Temperature Coefficient(%)	—	0.03%/℃		
21	Withstand Voltage	—	Input-Output, Input-Chassis…500VAC 1min(5mA)		
22	Isolation Resistance	—	More than 100MΩ at 25℃ and 70%RH Output-Chassis…500VDC		
23	Vibration	—	At no operating, 10～55～10Hz Amplitude(sweep for 1min) 1.5mm Constant (Maximum 88.3m/s² X,Y,Z 2hours each)		
24	Shock	—	Less than 196.1 m/S²		
25	Weight (Typ)	g	25		
26	Size (W・H・D)	mm	47・8・28 Refer to Outline Drawing		

NOTES

*1 : At 5VDC and Maximum total output power.

*2 : This is specified at the output terminals by EIAJ RC-9131 measuring method.

*3 : From 4.5～7.2VDC, constant load.

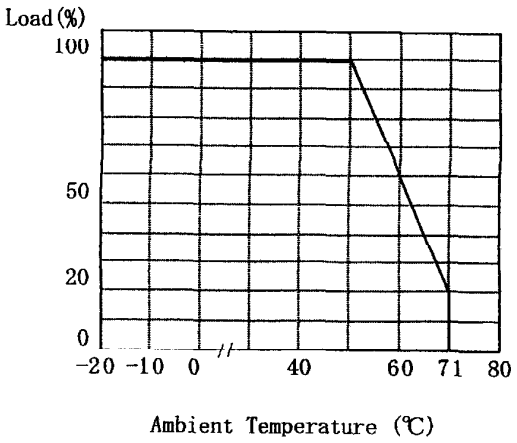
*4 : From No load～Full load, constant input voltage.

*5 : Constant current limiting with automatic recovery.
Avoid to operate over load or dead short for longer than 30 sec.
(Refer to instruction manual for details.)

*6 : Rating - Refer to derating curve on the right.
- Load(%) is percent of maximum output current.

*7 : Additional Fuse is required for operation.
(Refer to instruction manual for details.)

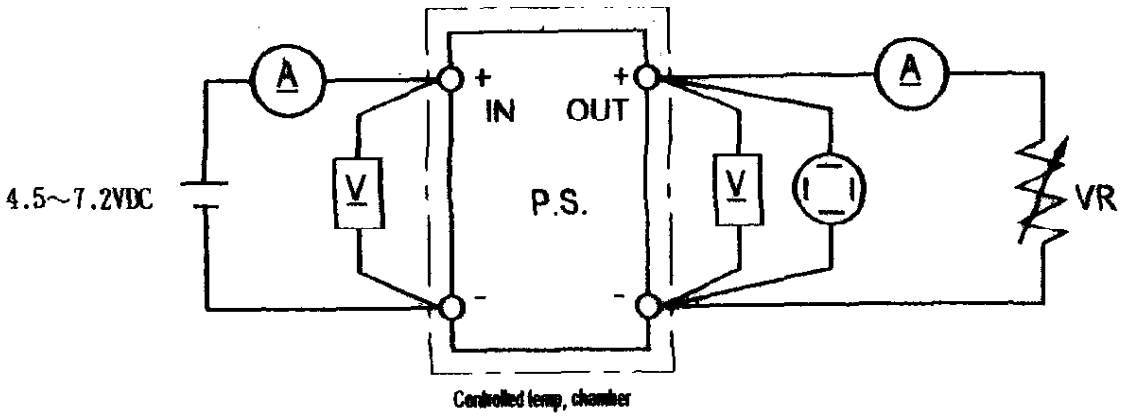
Derating Curve



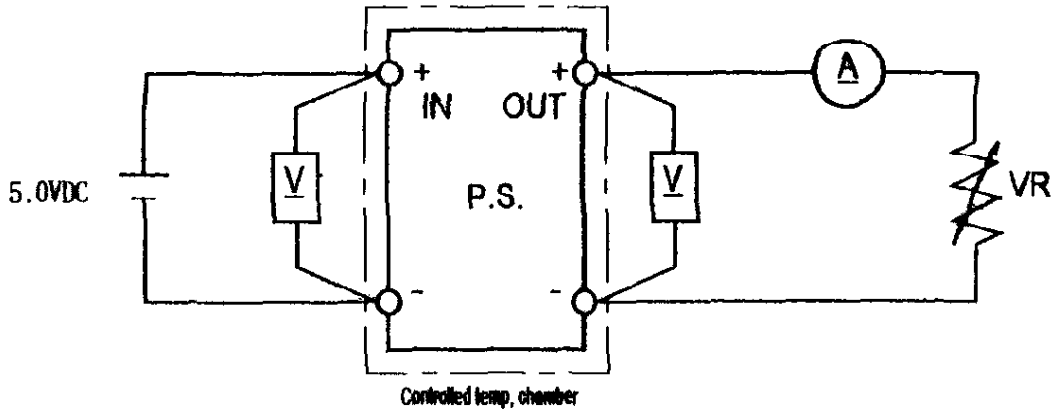
2．評価測定方法　EVALUATION METHOD

2－1　測定回路 Circuits used for determination

(1) 静特性　Steady state data



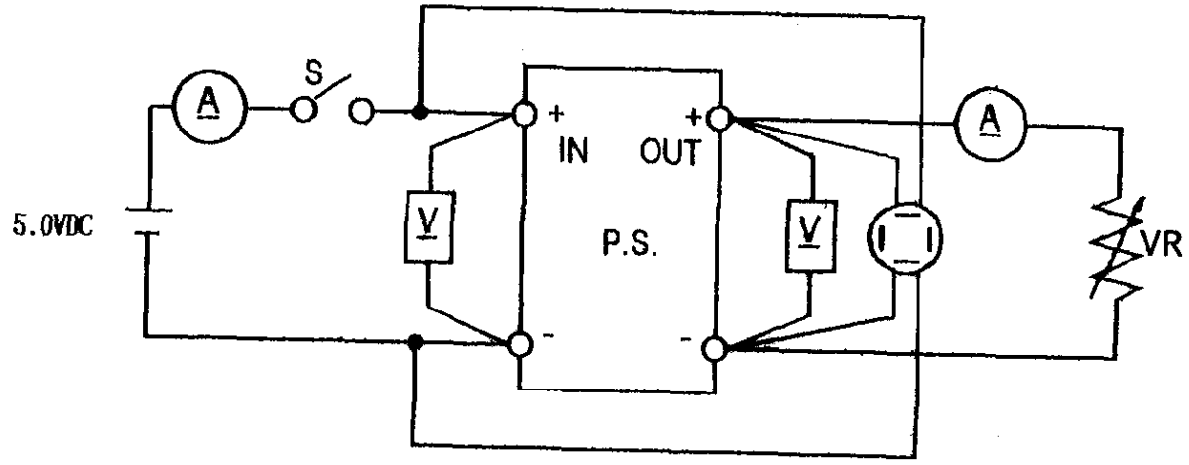
(2) 通電ドリフト特性　Warm up voltage drift characteristics



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

静特性と同じ
Same as steady state data

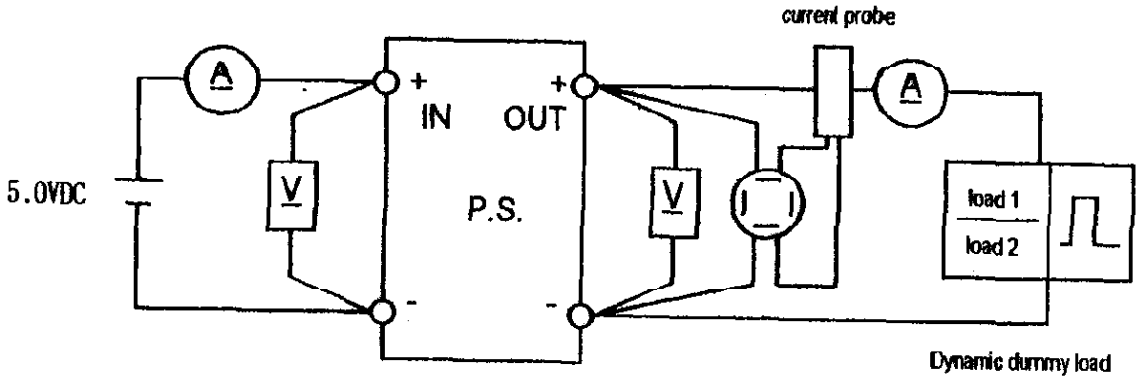
(4) 出力立上り特性 Output rise characteristics



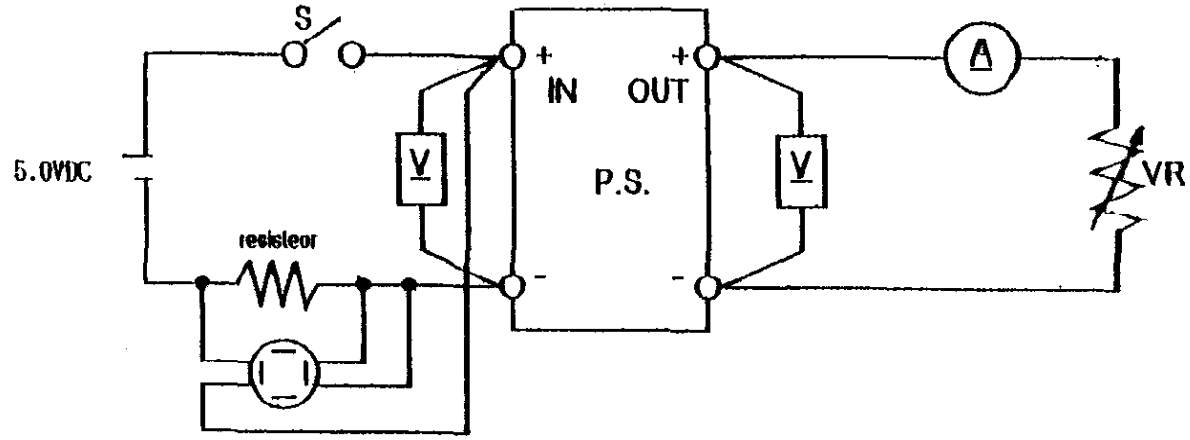
(5) 出力立下り特性 Output fall characteristics

出力立上り特性と同じ
Same as output rise characteristics

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

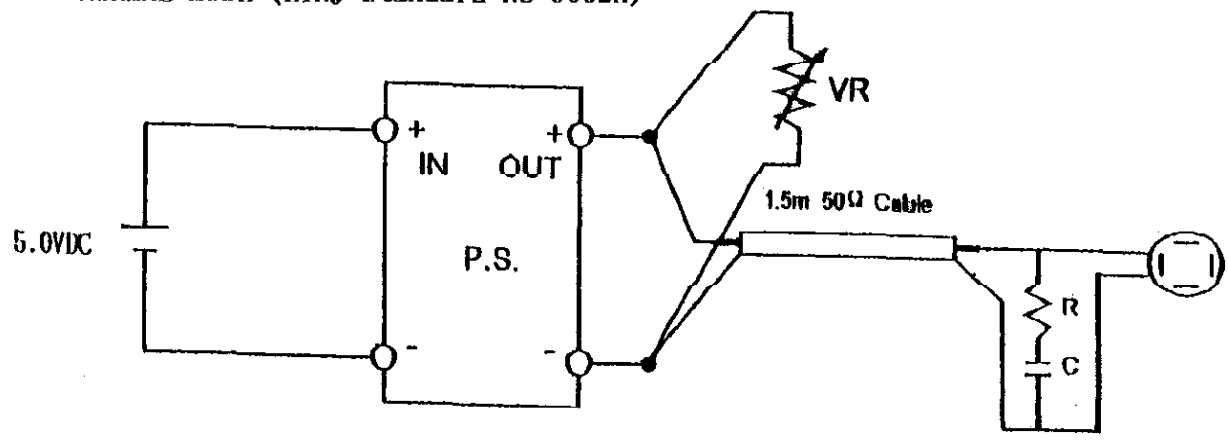


(7) 入力サージ電流（突入電流）波形
Inrush current waveform



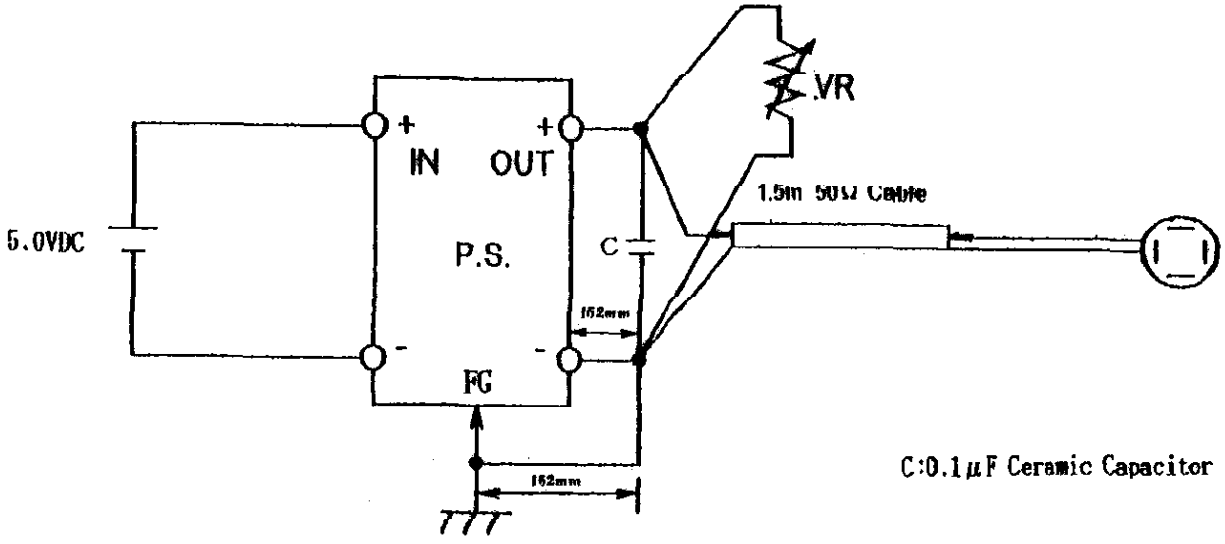
(8) 出力リップル、ノイズ波形
Output-ripple,noise waveform

NORMAL MODE (EIAJ Standard RC-9002A)



C : 4700pF Film Capacitor
R : 68Ω

NORMAL+COMMON MODE



C:0.1μF Ceramic Capacitor

2－2 使用測定機器 List of equipment used

No.	DESCRIPTION	MANUFACTURER	MODEL No.
1	Digital oscilloscope	Panasonic	VP-5741A
2		YEW	DL2148
3	Oscilloscope	TEXTRONIX	2465B
4		HITACHI	V1050F
5	Digital volt meter	SANWA	9100EA
6	Digital multimeter	ADVANTEST	R6551
7	Dynamic dummy load	TAKAMISAWA	PSA-150D
8	Power supply tester	KEISOKU GIKEN	DL-201
9	Dynamic load controller	KEISOKU GIKEN	PT-301B
10	Variable resistive load	MATSUNAGA	2500/525Ω
11	Controlled temp.chamber	TABAI ESPEC	PL-2GT
12	Resistor		0.1Ω
13	Current probe amplifier	TEXTRONIX	TM503
14	Current probe	TEXTRONIX	A6302

3. 特性データ Characteristics

3-1 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 drift

Condition Ta:25℃

Vin / Iout	4.5VDC	5.0VDC	7.2VDC	Line regulation	
0%	4.951	4.951	4.952	0.001	0.02%
50%	4.949	4.949	4.949	0.000	0.00%
100%	4.946	4.946	4.947	0.001	0.02%
Load regulation	0.005	0.005	0.005		
	0.10%	0.10%	0.10%		

2.Temperature drift

Conditions Vin :5VDC
Iout:100%

Ta	-20℃	25℃	50℃	Temp. stability	
Vo	4.945	4.946	4.943	0.003	0.06%

12V

1.Regulation - line and load drift

Condition Ta:25℃

Vin / Iout	4.5VDC	5.0VDC	7.2VDC	Line regulation	
0%	11.972	11.971	11.978	0.007	0.06%
50%	11.968	11.968	11.968	0.000	0.00%
100%	11.966	11.965	11.966	0.001	0.01%
Load regulation	0.006	0.006	0.012		
	0.05%	0.05%	0.10%		

2.Temperature drift

Conditions Vin :5VDC
Iout:100%

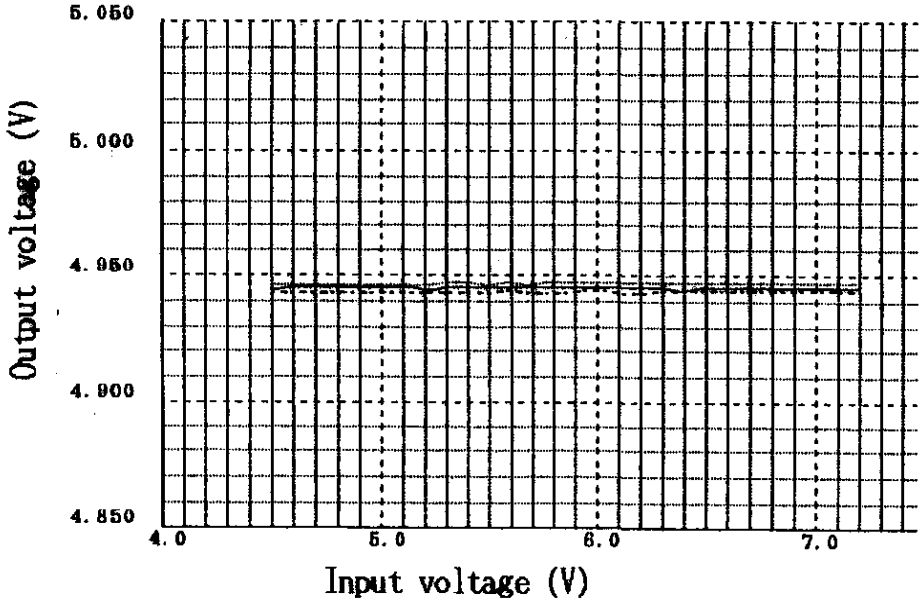
Ta	-20℃	25℃	50℃	Temp. stability	
Vo	11.967	11.965	11.947	0.020	0.17%

PP3-5-*

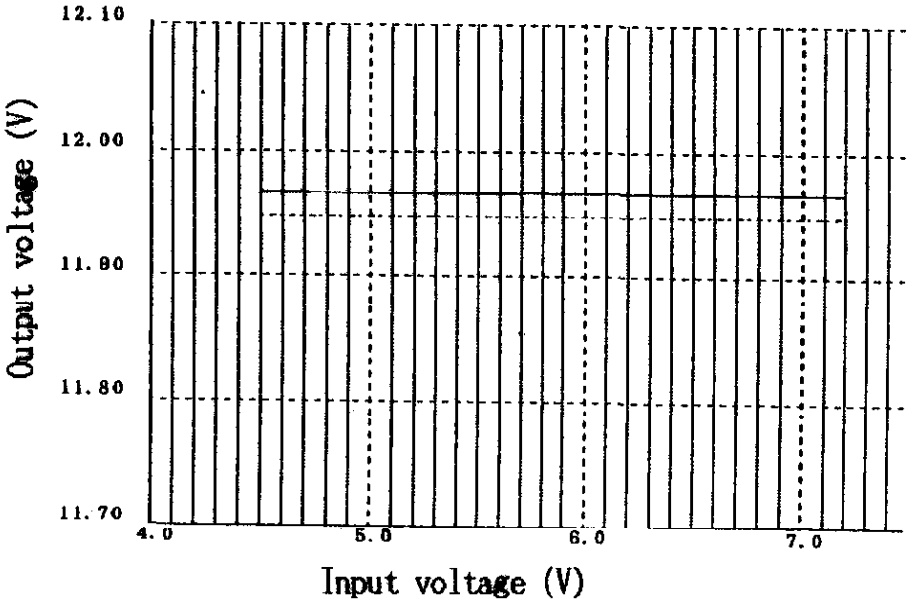
(2) 出力電圧対入力電圧
Output voltage v.s. input voltage

Conditions Iout : 100%
Ta : -20℃ ——
25℃ ·····
50℃ - - - - -

5V



12V

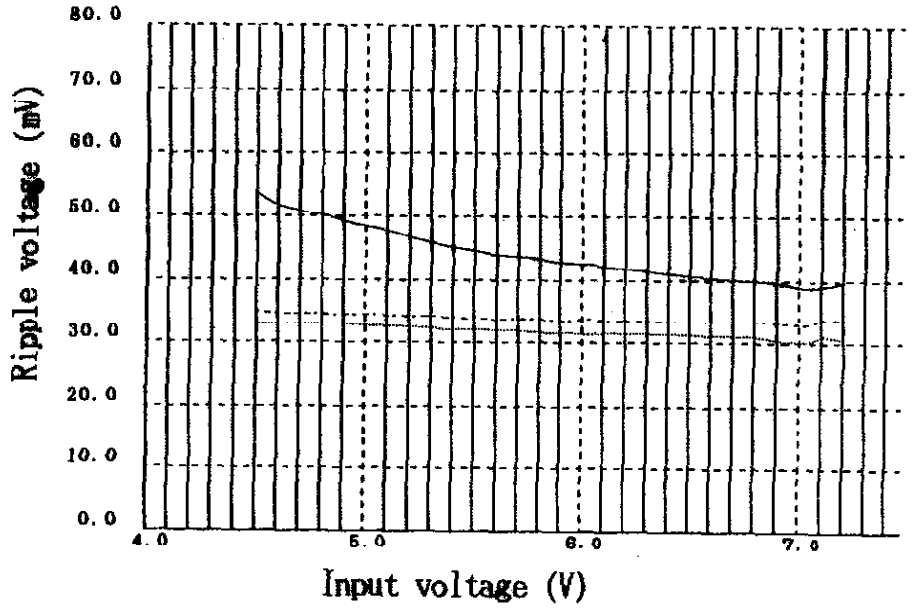


PP3-5-*

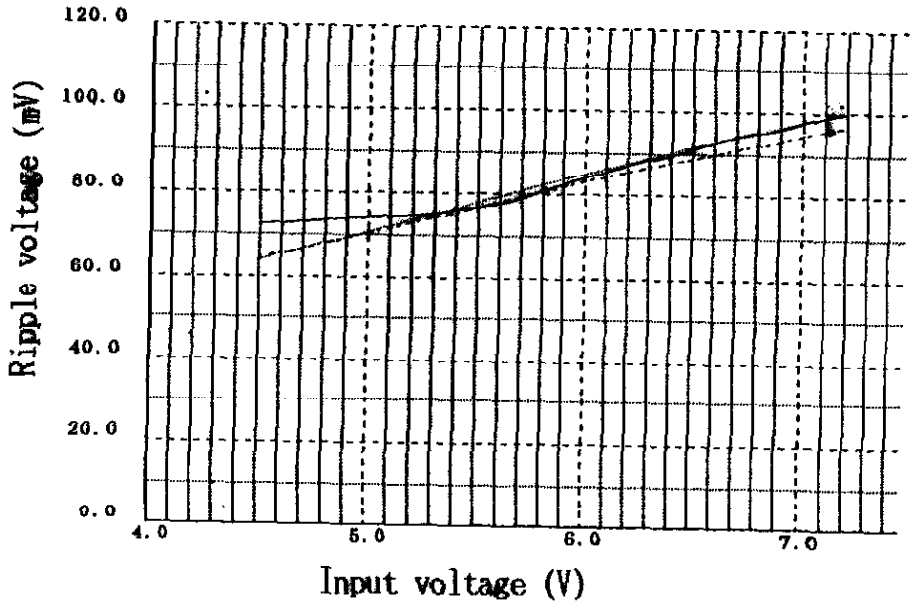
（3） リップル電圧対入力電圧
Ripple voltage v.s. input voltage

Conditions Iout : 100%
Ta :-20℃ ——
25℃ ·····
50℃ - - - -

5V



12V



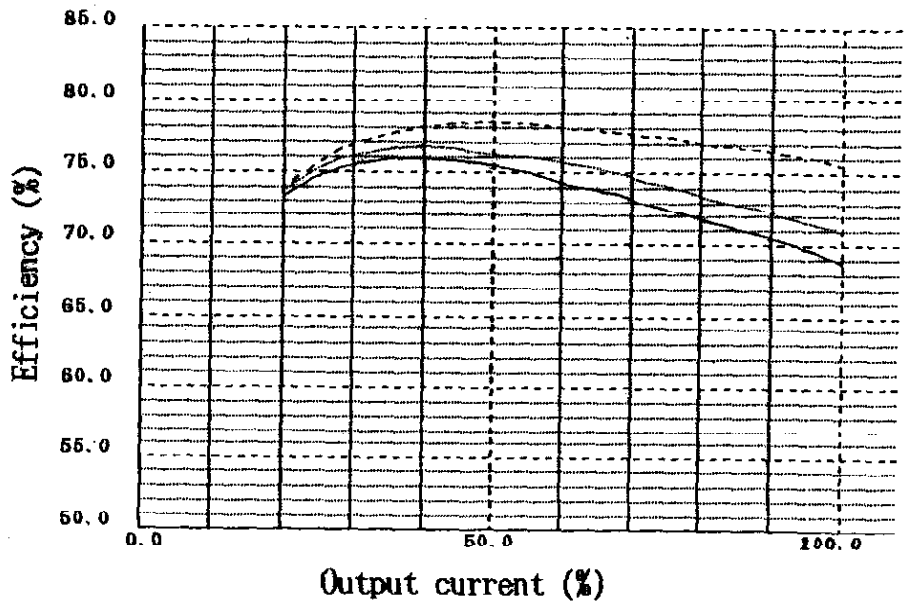
PP3-5-*

（4）効率・入力電流対出力電流
Efficiency and input current v.s. output current

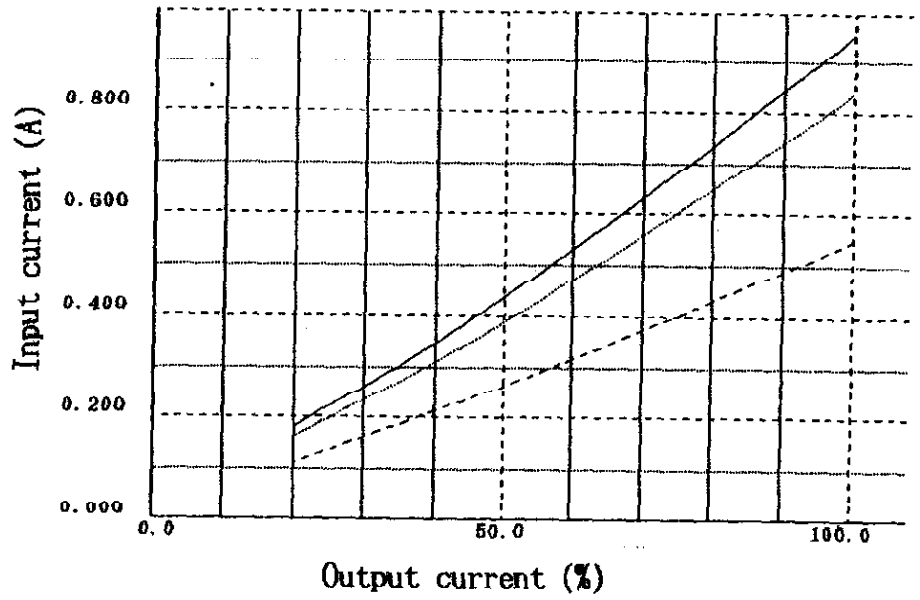
Conditions Vin :4.5VDC ——
5.0VDC ·····
7.2VDC - - - -
Ta : 25℃

5V

1. Efficiency v.s. output current



2. Input current v.s. output current



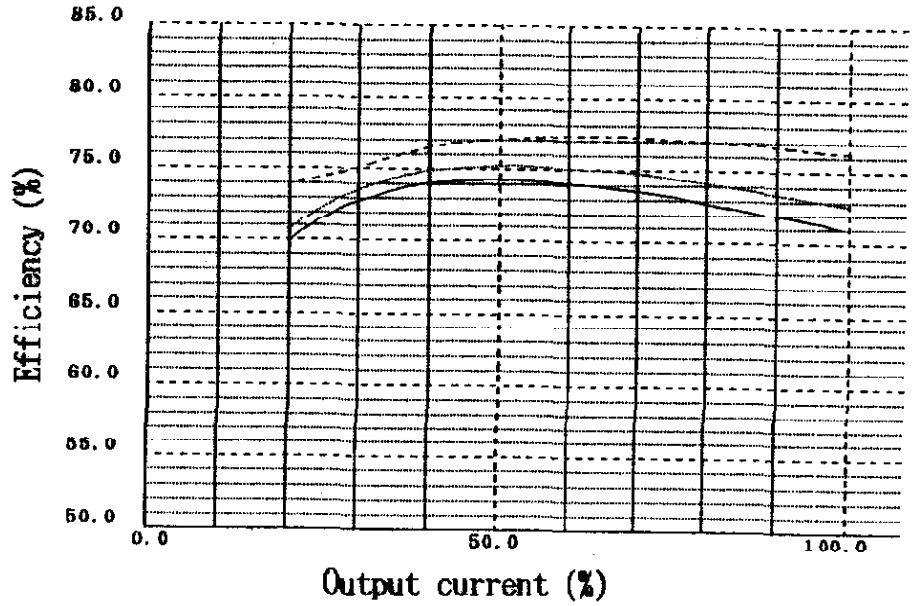
PP3-5-*

効率・入力電流対出力電流
Efficiency and input current v.s. output current

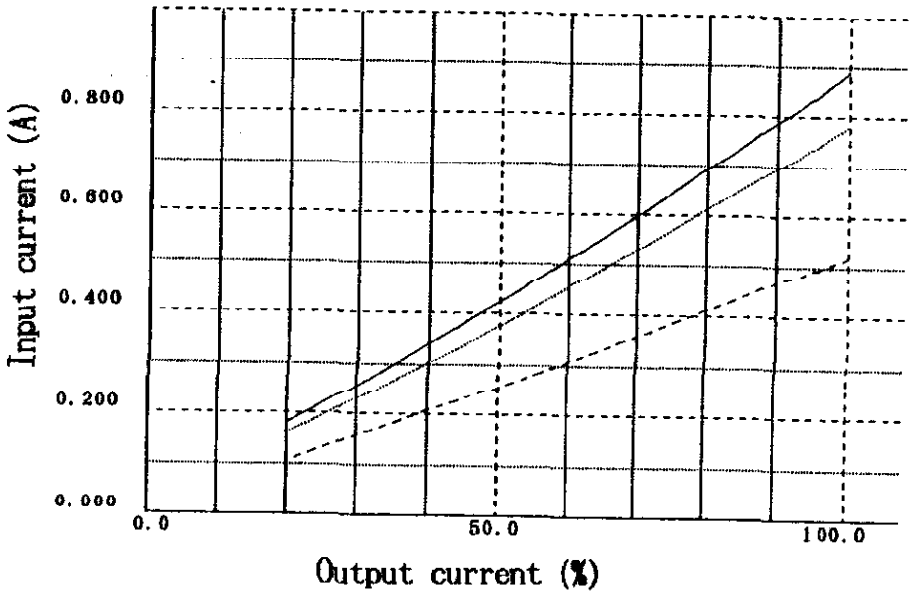
Conditions Vin :4.5VDC ——
5.0VDC ·····
7.2VDC - - - -
Ta : 25℃

12V

1. Efficiency v.s. output current



2. Input current v.s. output current

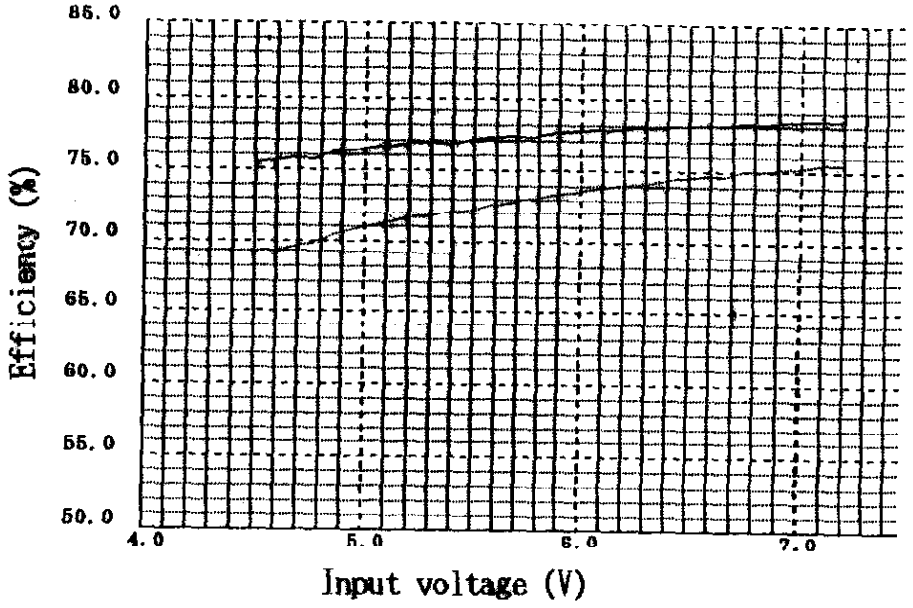


PP3-5-*

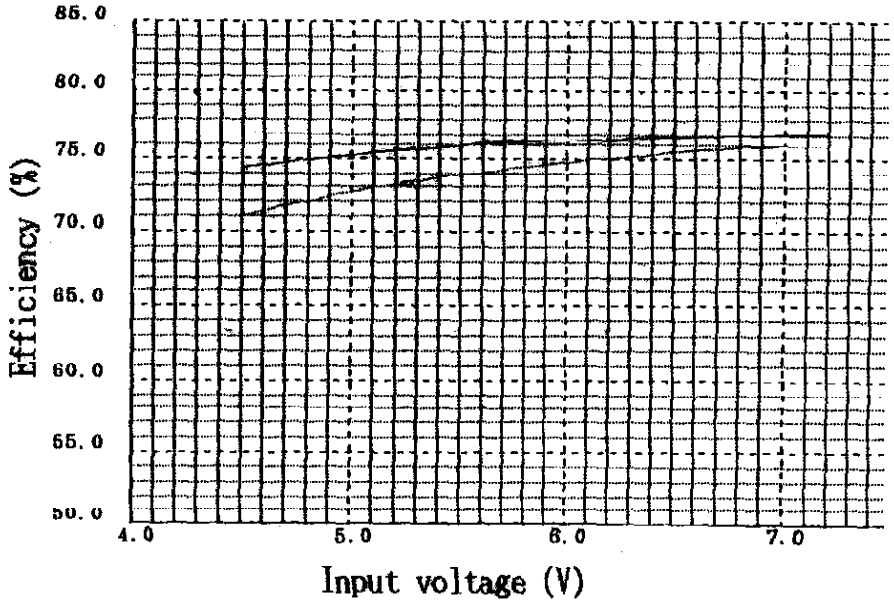
(5) 効率対入力電圧
Efficiency v.s. input voltage

Conditions Iout: 50% ——
100% ·····
Ta : 25℃

5V



12V

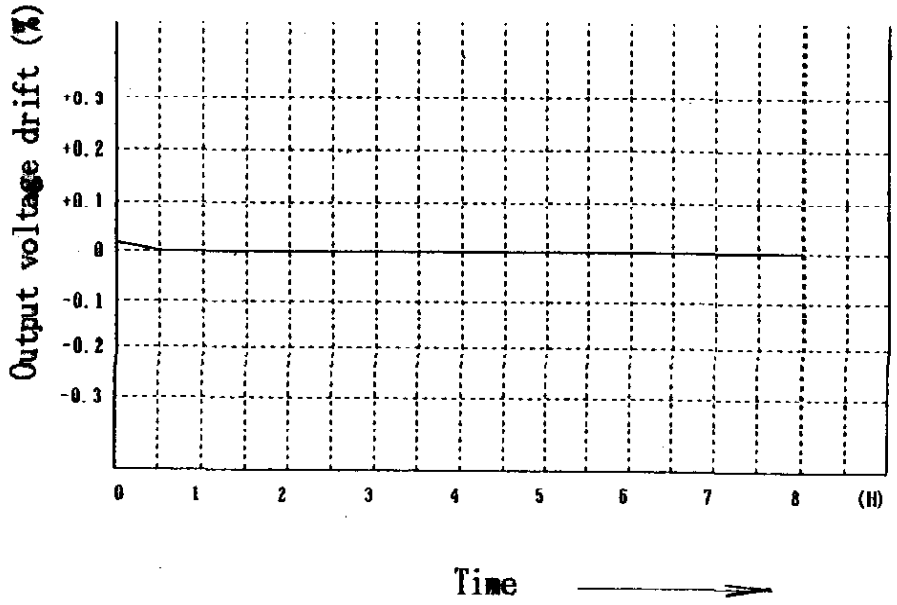


PP3-5-*

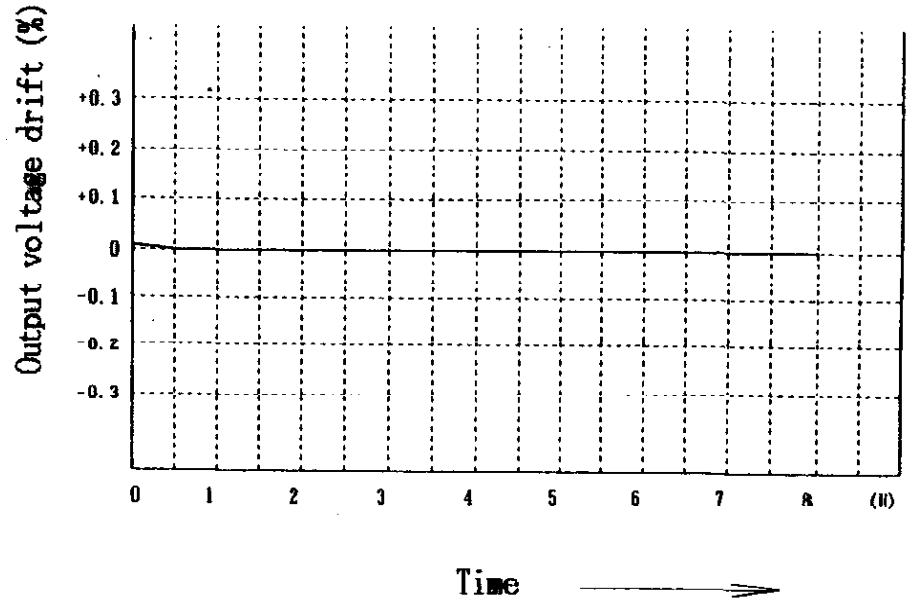
3－2 通電ドリフト特性
Warm up voltage drift characteristics

Conditions Vin :5.0VDC
Iout:100%
Ta : 25℃

5V



12V

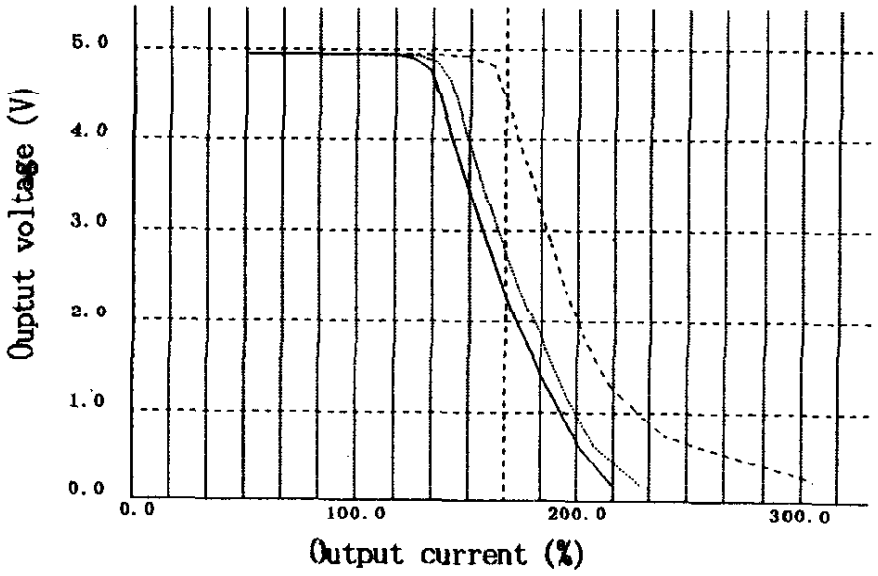


PP3-5-*

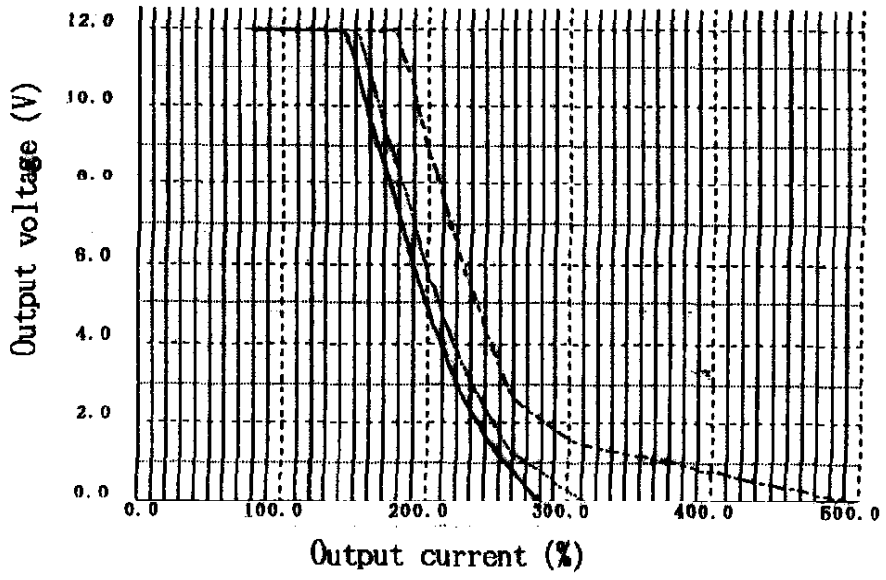
3－3 過電流保護特性
O.C.P.characteristics

Conditions Vin :4.5VDC ——
5.0VDC .....
7.2VDC - - - -
Ta : 25℃

5V



12V

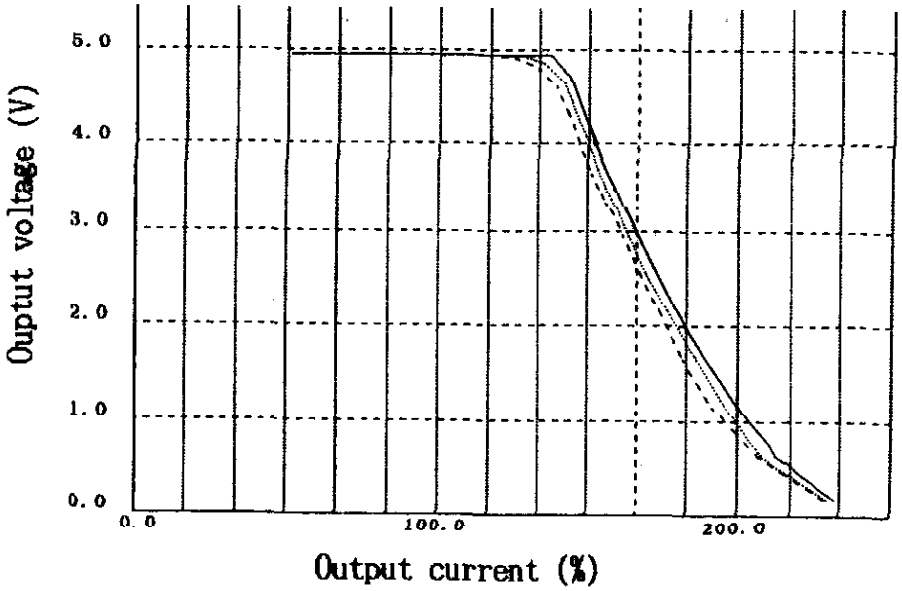


PP3-5-*

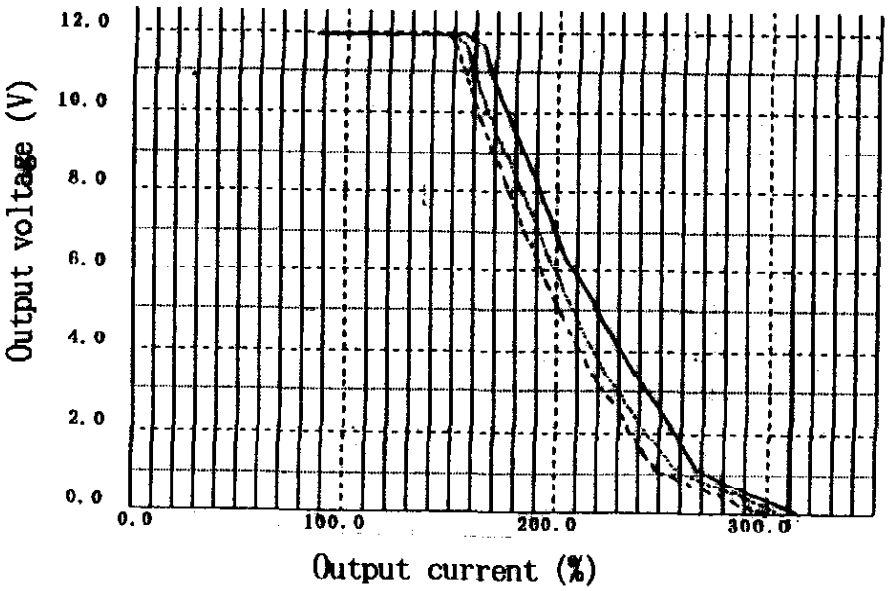
過電流保護特性
O.C.P.characteristics

Conditions Vin : 5VDC
Ta :-20℃ ——
25℃ .....
50℃ - - - -

5V



12V

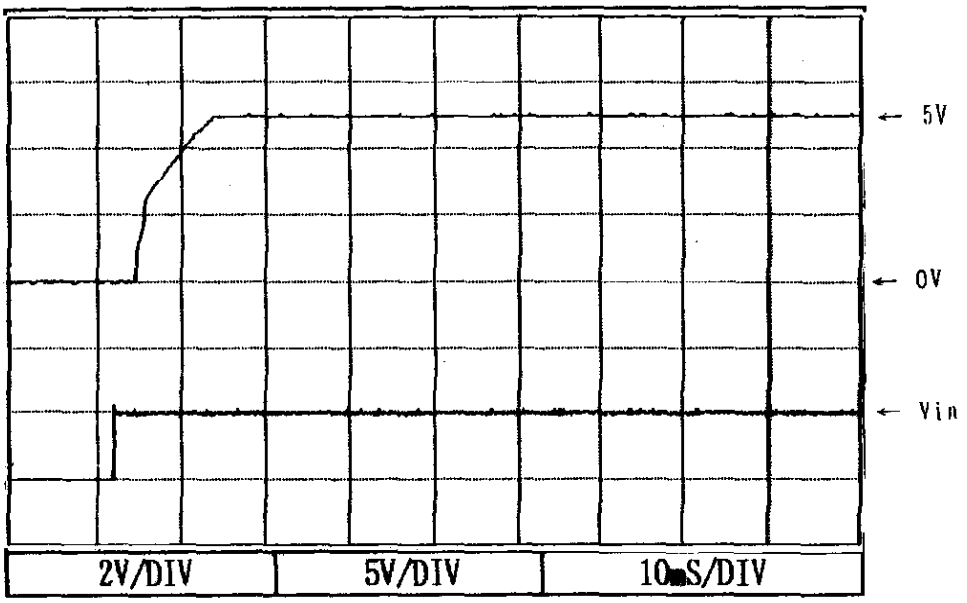


PP3-5-*

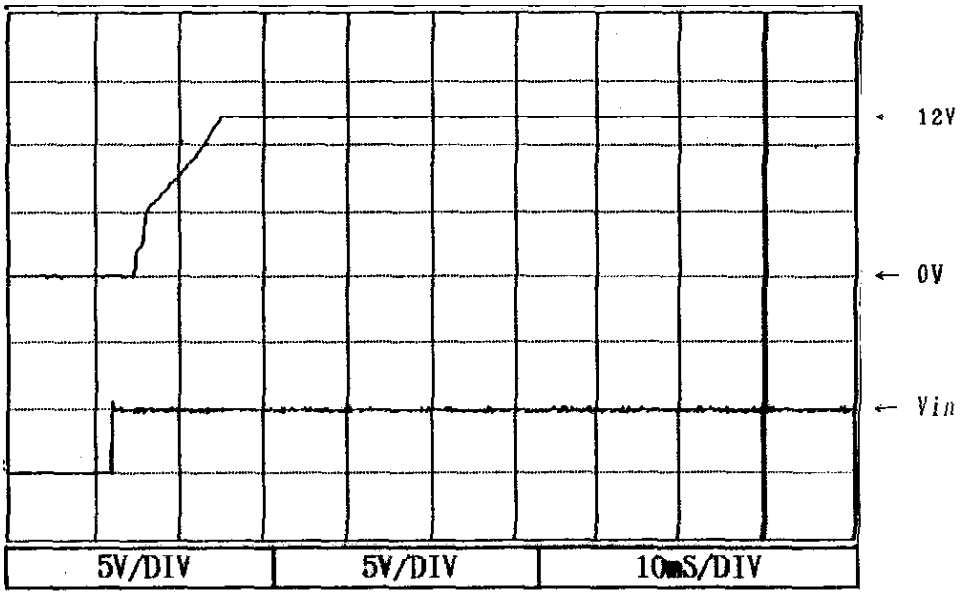
3－4　出力立上り特性
Output rise characteristics

Conditions Vin :5.0VDC
Iout: 0%
Ta : 25℃

5V



12V

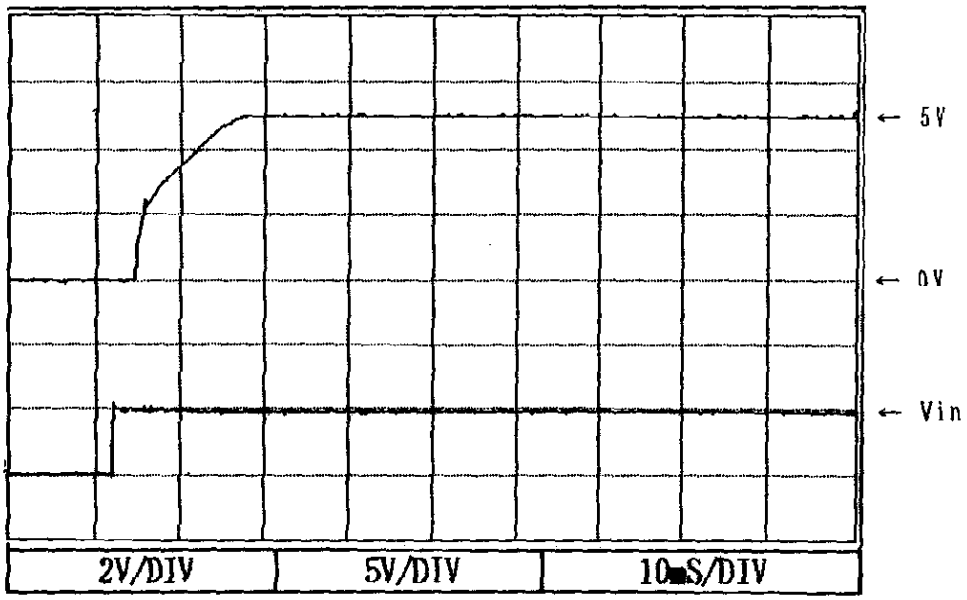


PP3-5-*

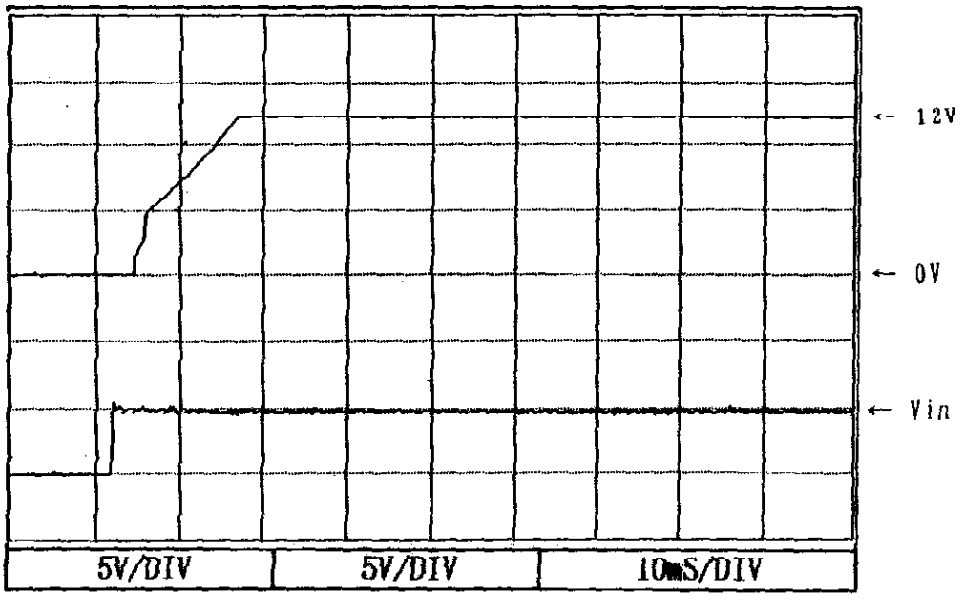
出力立上り特性
Output rise characteristics

Conditions Vin :5.0VDC
Iout:100%
Ta : 25℃

5V



12V

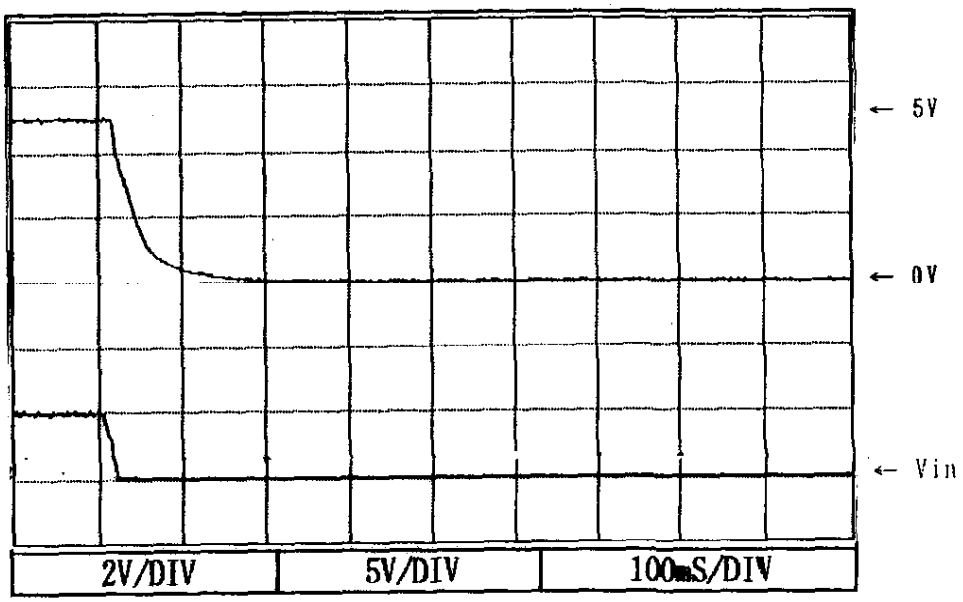


PP3-5-*

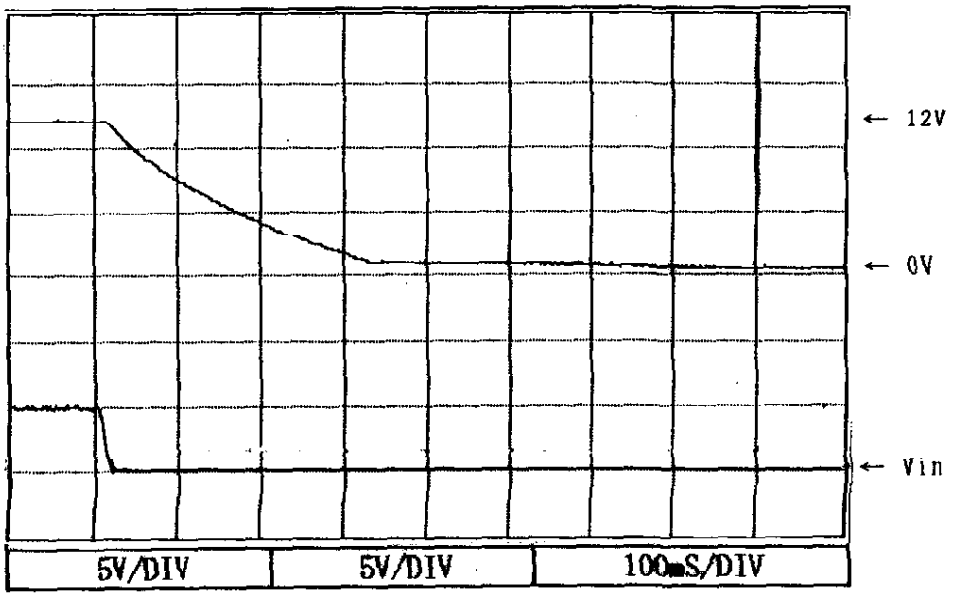
3－5　出力立下り特性
Output fall characteristics

Conditions　Vin :5.0VDC
Iout: 0%
Ta : 25℃

5V



12V

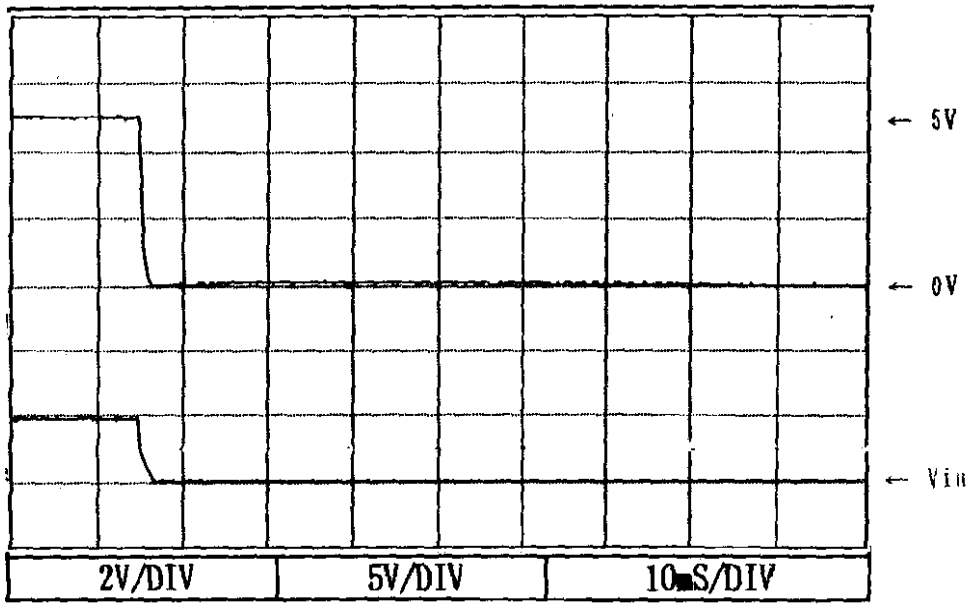


PP3-5-*

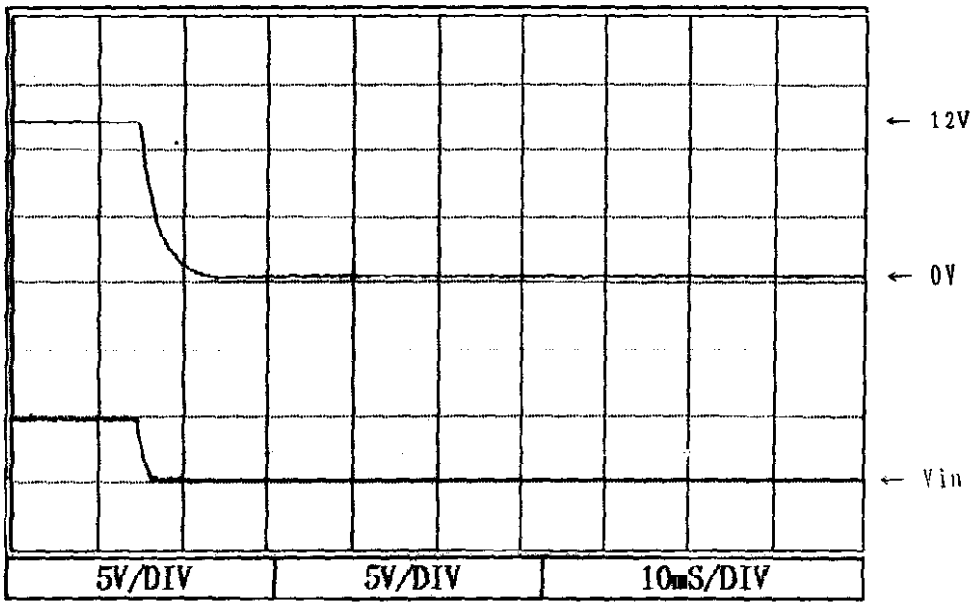
出力立下り特性
Output fall characteristics

Conditions Vin :5.0VDC
Iout:100%
Ta : 25℃

5V



12V

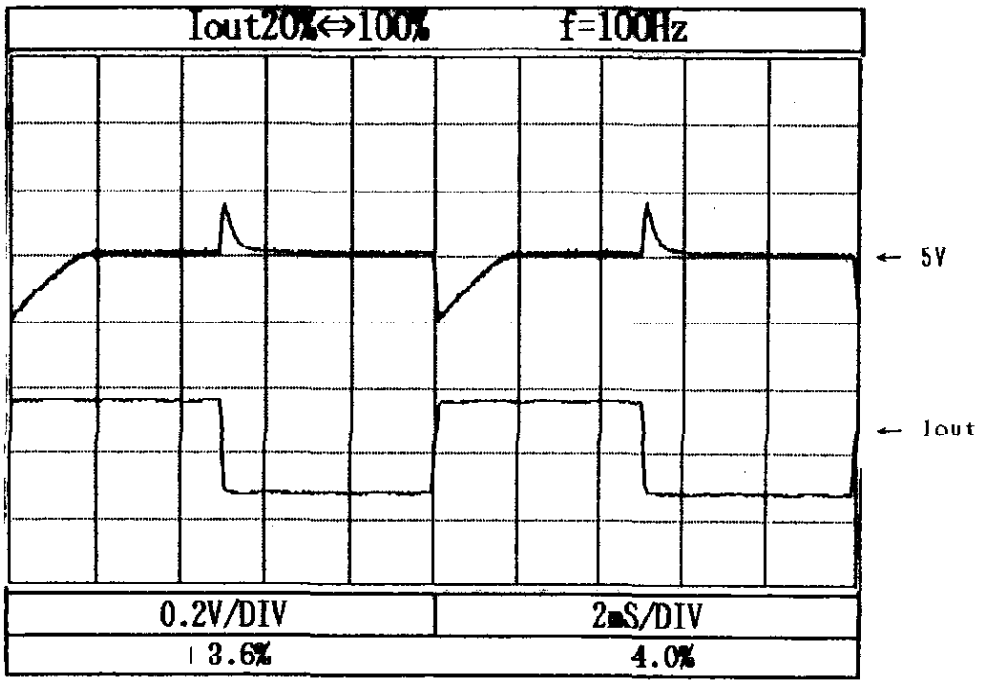


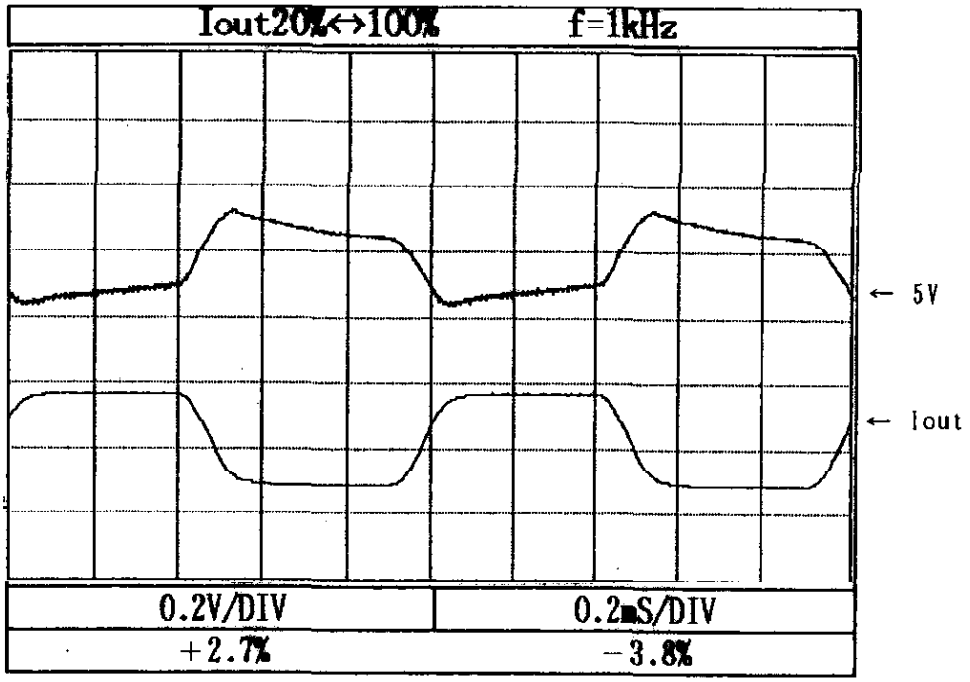
PP3-5-*

3－6　過渡応答（負荷急変）特性
Dynamic load response characteristics

Conditions　Vin :5.0VDC
Ta : 25℃

5V



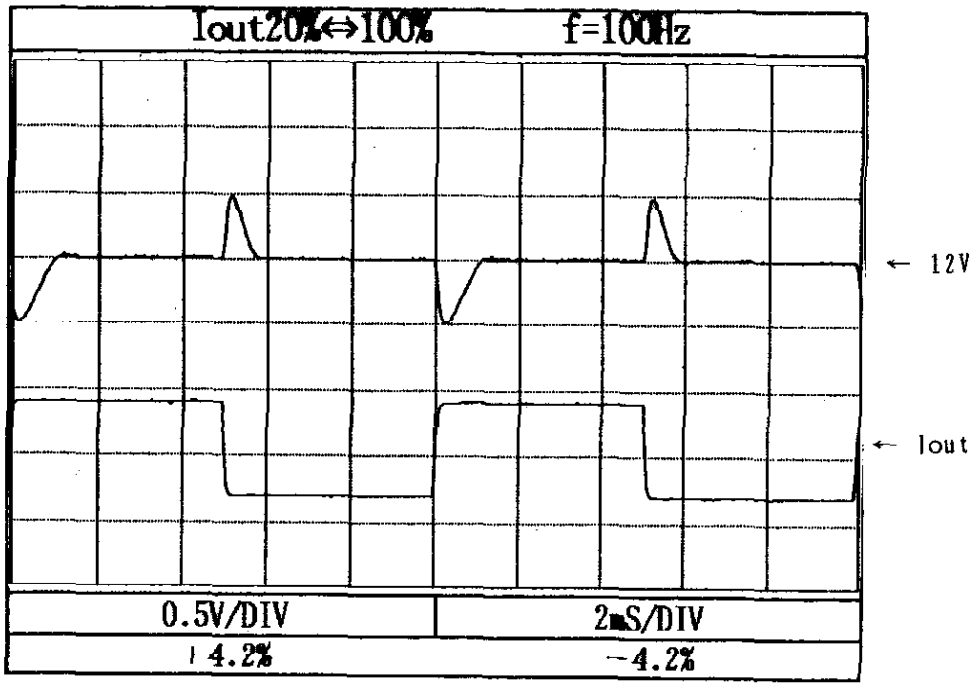


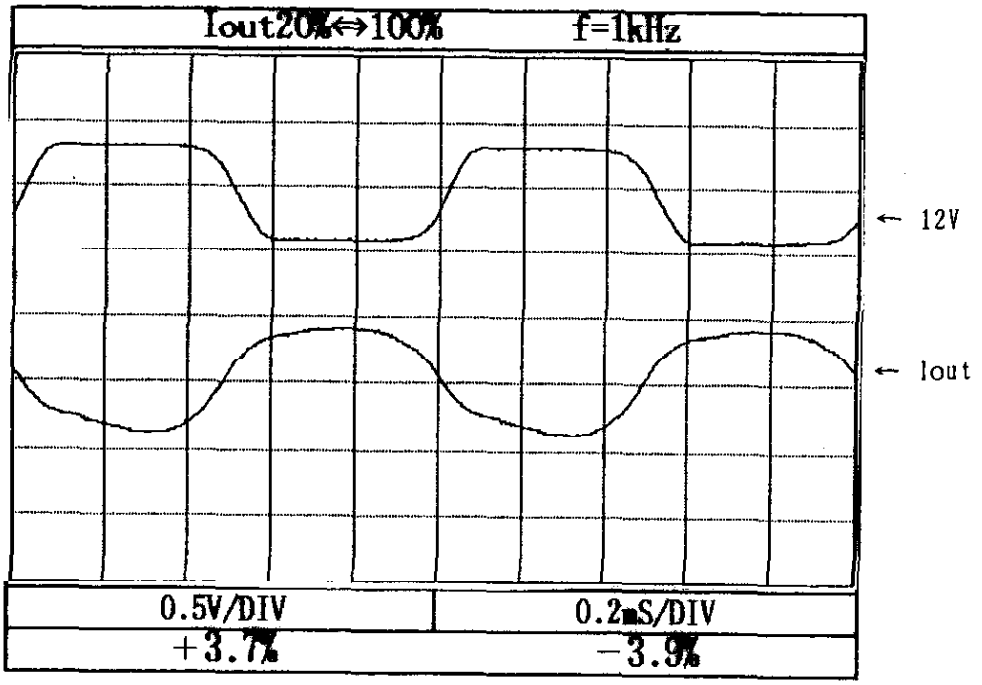
PP3-5-*

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

Conditions Vin :5.0VDC
Ta : 25℃

12V

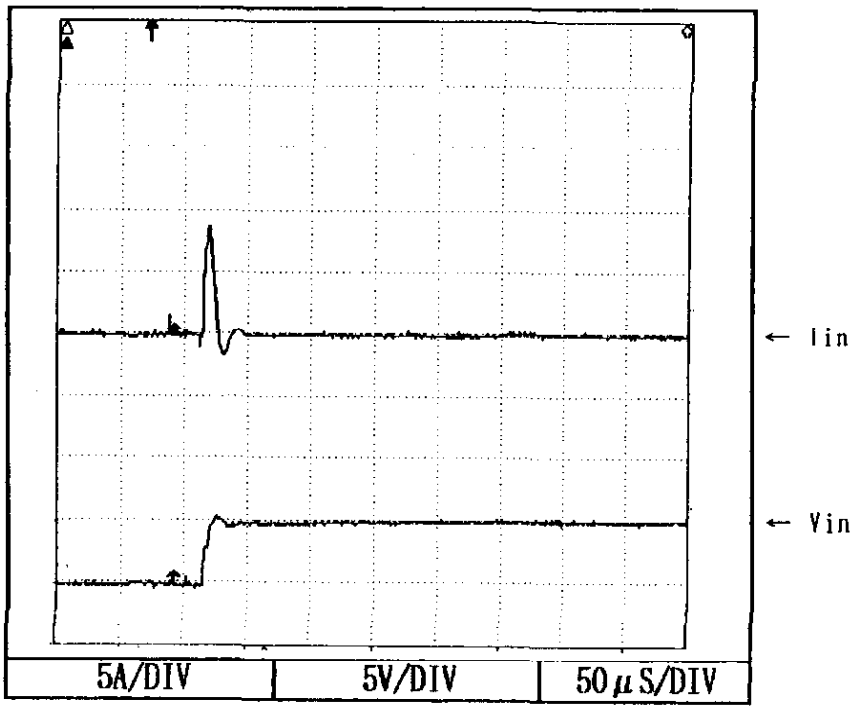




PP3-5-*

3－7　入力サージ電流（突入電流）波形
Inrush current waveform

Conditions　Vin :5.0VDC
Iout:100%
Ta : 25℃



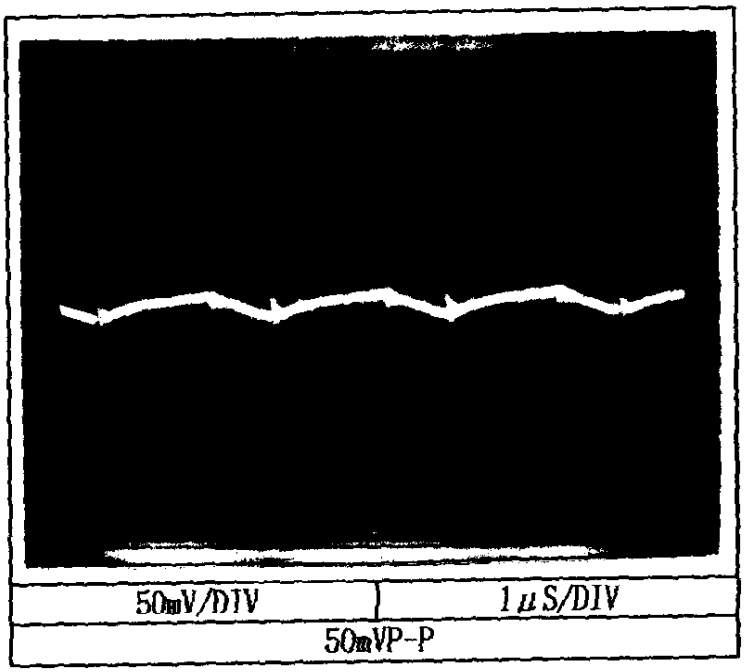
PP3-5-*

3－8　出力リップル、ノイズ波形
Output-ripple,noise waveform

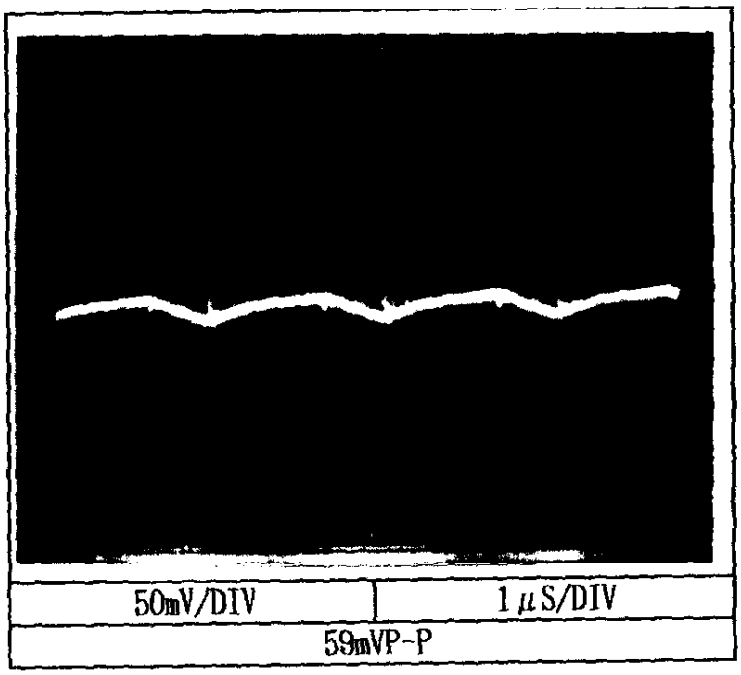
Conditions Vin :5.0VDC
Iout:100%
Ta : 25℃

5V

NORMAL MODE



NORMAL+COMMON MODE



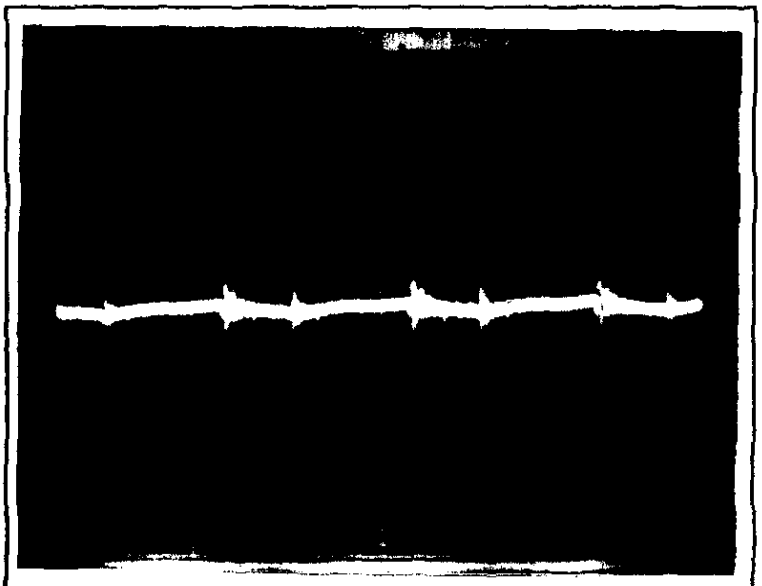
PP3-5-*

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

Conditions Vin :5.0VDC
Iout:100%
Ta : 25℃

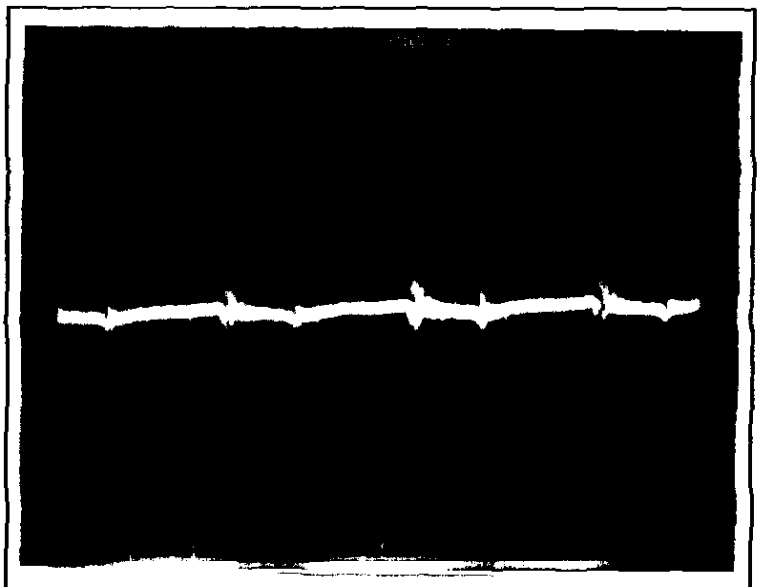
12V

NORMAL MODE



50mV/DIV	1μS/DIV
58mVP-P	

NORMAL+COMMON MODE



50mV/DIV	1μS/DIV
58mVP-P	