PSS6-12- ＊

EVALUATION DATA

型式データ

DWG.No. C189-53-01		
承認	査閲	担当
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DENSEI-LAMBDA

INDEX

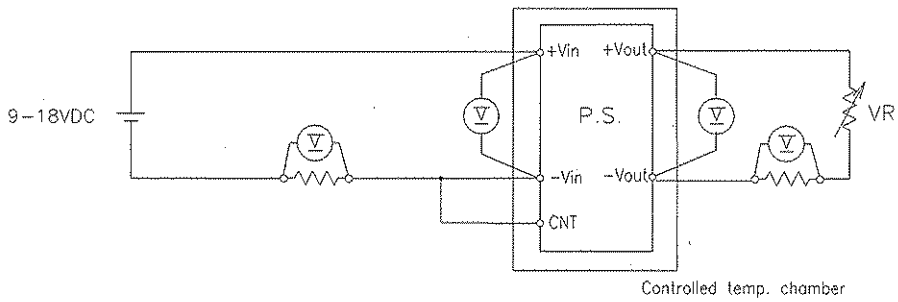
使用記号　Terminology used

	Definition		
Vin	.....	入力電圧	Input Voltage
Vout	.....	出力電圧	Output Voltage
Von/off	.....	ON/OFF電圧	ON/OFF Voltage
Iin	.....	入力電流	Input Current
Iout	.....	出力電流	Output Current
Ta	.....	周囲温度	Ambient Temperature

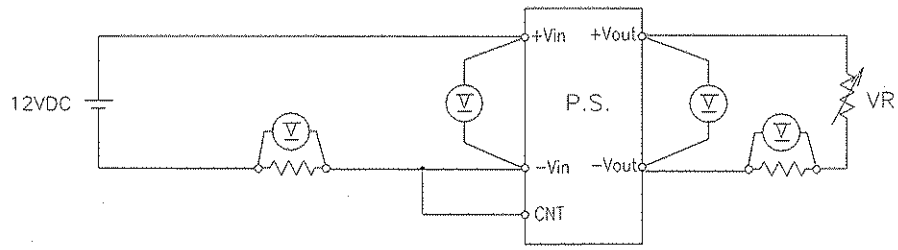
1. 測定方法　　Evaluation Method

1. 1 測定回路　　Circuits used for determination

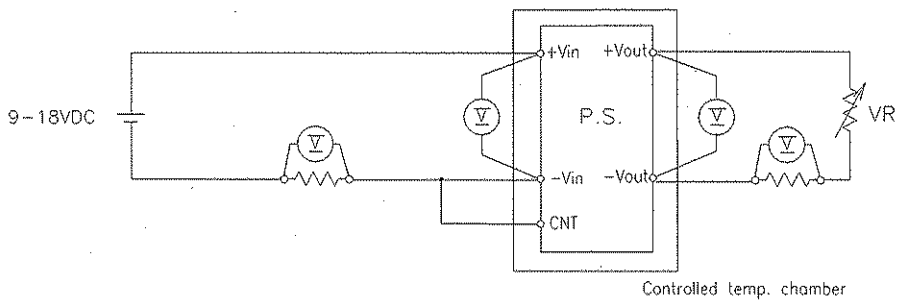
(1) 静特性　Steady state data



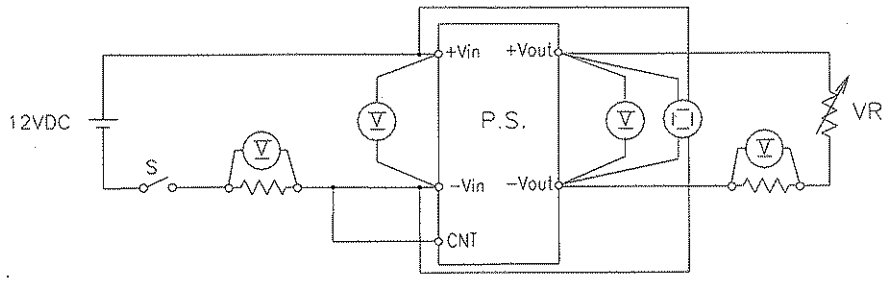
(2) 通電ドリフト特性　Warm up voltage drift characteristics



(3) 過電流保護特性　Over current protection (OCP) characteristics



(4) 出力立ち上がり特性　Output rise characteristics



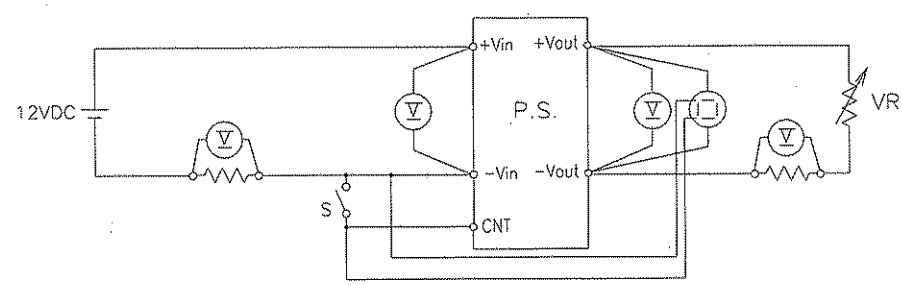
(5) 出力立ち下がり特性 Output fall characteristics

出力立ち上がり特性と同じ

Same as output rise characteristics

(6) 出力立ち上がり特性　（ＯＮ/ＯＦＦコントロール時）

Output rise characteristics with CONTROL ON/OFF



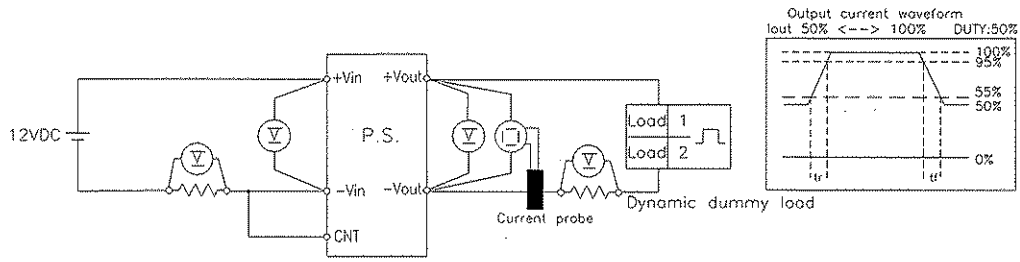
(7) 出力立ち下がり特性　（ ON/OFFコントロール時）

Output fall characteristics with CONTROL ON/OFF

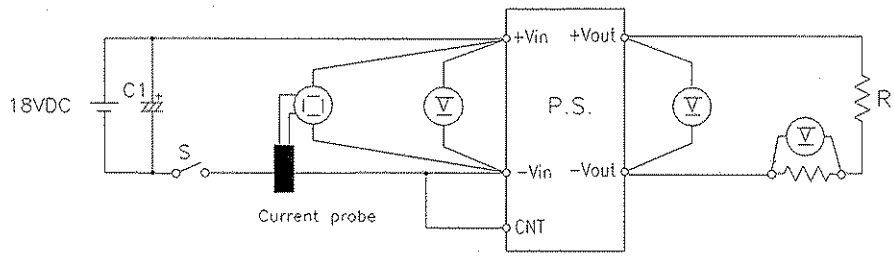
出力立ち上がり特性（ ON/OFFコントロール時）と同じ

Same as output rise characteristics with CONTROL ON/OFF

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

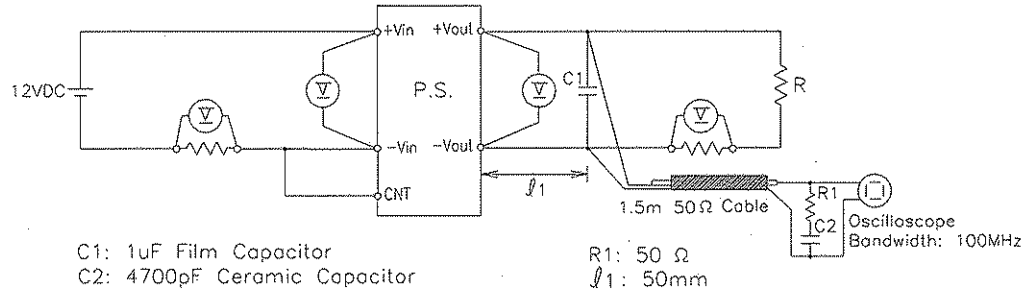


(9) 入力サージ電流（突入電流）特性　Inrush current characteristics

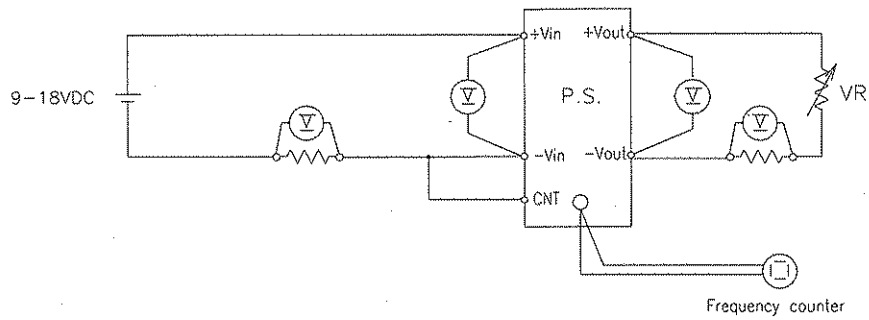


C1: 4000uF Electrolytic Capacitor

(10) 出力リップル、ノイズ波形　Output ripple and noise waveform

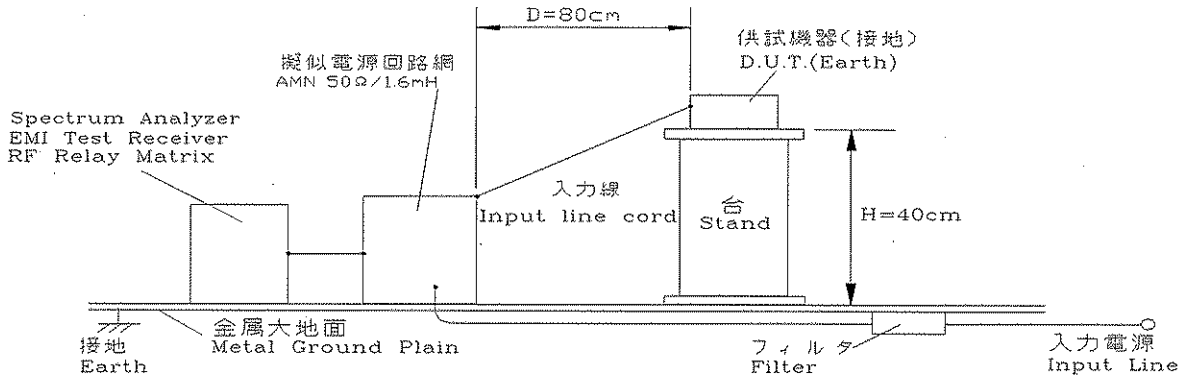


(11) スイッチング周波数対出力電力　Switching frequency　v.s. output power

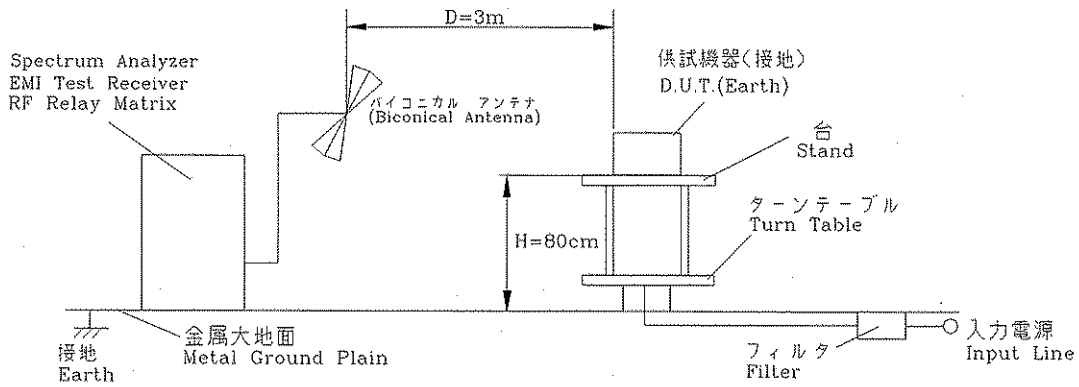


(12) ＥＭＩ特性　Electro-Magnetic Interference characteristics

(a)　雑音端子電圧（帰還ノイズ）　Conducted Emission Noise

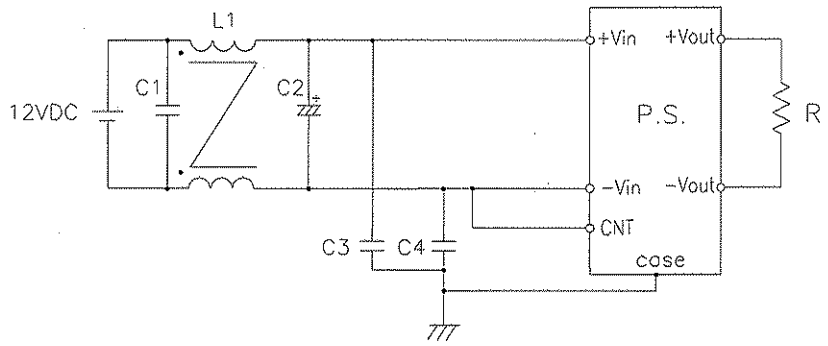


(b)　雑音電界強度（輻射ノイズ）　Radiated Emission Noise



(1) VCCI class A 対応アプリケーションシステム

VCCI class A application system



L1: 0.2mH
C1: 10uF Chip Ceramic Capacitor
C2: 220uF Electrolytic Capacitor
C3,C4 : 4700pF Ceramic Capacitor

1.2 使用測定機器　　List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	OSCILLO SCOPE	HITACHI DENSHI	V-1565
2	DIGITAL STORAGE OSCILLOSCOPE	TEKTRONIX	TDS 540D
3	DIGITAL MULTIMETER	AGILENT	34970A
4	CURRENT PROBE/AMPLIFIER	TEKTRONIX	A6303/TM502A
5	SHUNT RESISTER	YOKOGAWA ELECT.	2215
6	DYNAMIC DUMMY LOAD	TAKASAGO	FK-400L
7	INPUT POWER SUPPLY	KIKUSUI ELECTRONICS CORP.	PAD 110-10L
8	CONTROLLED TEMP. CHAMBER	TABAI ESPEC	SH-240
9	SPECTRUM ANALYZER	ROHDE & SCHWARZ	FSA
10	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESHS10
11	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESVS10
12	RF RELAY MATRIX	ROHDE & SCHWARZ	PSU
13	AMN	KYORITU DENSHI	KNW-242
14	ANTENNA(BICONICAL ANTENNA)	SCHWARZBECK	BBA9106

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

3.3V

1. Regulation - line and load　Condition Ta : 25℃

Iout \ Vin	9VDC	12VDC	18VDC	line regulation	
0%	3.241V	3.241V	3.241V	0.0mV	0.000%
50%	3.240V	3.240V	3.240V	0.0mV	0.000%
100%	3.238V	3.238V	3.238V	0.0mV	0.000%
load	3.0mV	3.0mV	3.0mV		
regulation	0.09%	0.09%	0.09%		

2. Temperature drift　Conditions Vin : 12VDC
Iout : 100%

Ta	-40℃	25℃	85℃	temperature stability	
Vout	3.222V	3.238V	3.237V	16.0mV	0.49%

5V

1. Regulation - line and load　Condition Ta : 25℃

Iout \ Vin	9VDC	12VDC	18VDC	line regulation	
0%	5.009V	5.010V	5.010V	1.0mV	0.020%
50%	5.009V	5.009V	5.009V	0.0mV	0.000%
100%	5.007V	5.007V	5.008V	1.0mV	0.020%
load	2.0mV	3.0mV	2.0mV		
regulation	0.04%	0.06%	0.04%		

2. Temperature drift　Conditions Vin : 12VDC
Iout : 100%

Ta	-40℃	25℃	85℃	temperature stability	
Vout	4.989V	5.007V	5.004V	18.0mV	0.36%

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

12V

1. Regulation - line and load　Condition Ta : 25℃

Iout \ Vin	9VDC	12VDC	18VDC	line regulation	
0%	12.088V	12.089V	12.090V	2.0mV	0.017%
50%	12.088V	12.089V	12.090V	2.0mV	0.017%
100%	12.088V	12.089V	12.089V	1.0mV	0.008%
load	0.0mV	0.0mV	1.0mV		
regulation	0.00%	0.00%	0.01%		

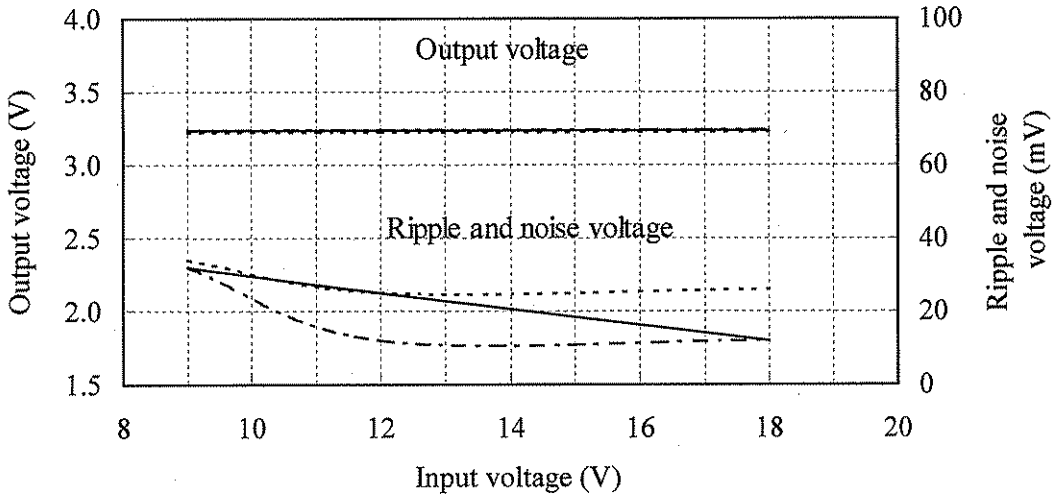
2. Temperature drift　Conditions Vin : 12VDC
Iout : 100%

Ta	-40℃	25℃	85℃	temperature stability	
Vout	12.023V	12.089V	12.105V	82.0mV	0.68%

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

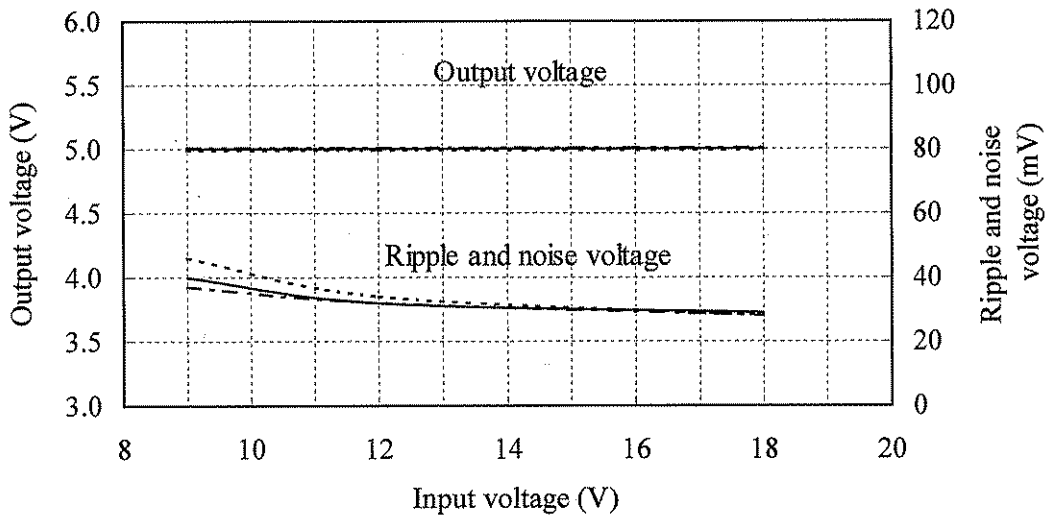
Conditions Iout : 100 %
Ta : -40 ℃
25 ℃
85 ℃

3.3V



Ta : -40 ℃
25 ℃
85 ℃

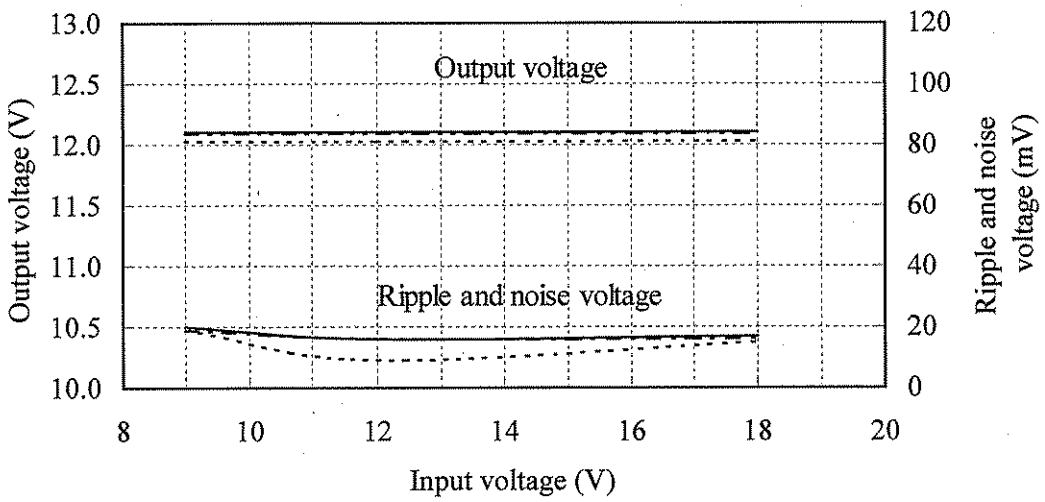
5V



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 Iout : 100 %
Ta : -40 ℃
25 ℃
85 ℃

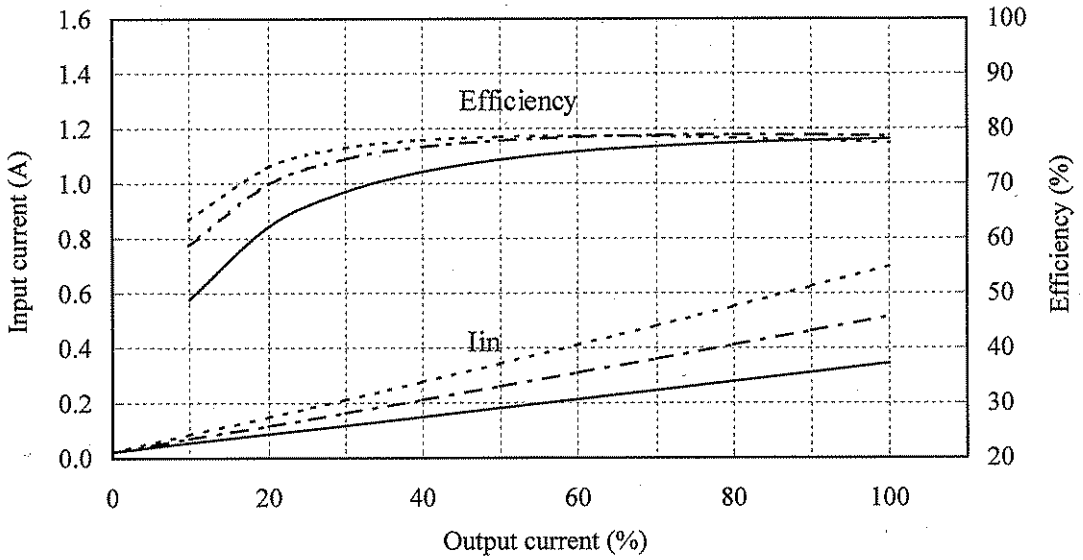
12V



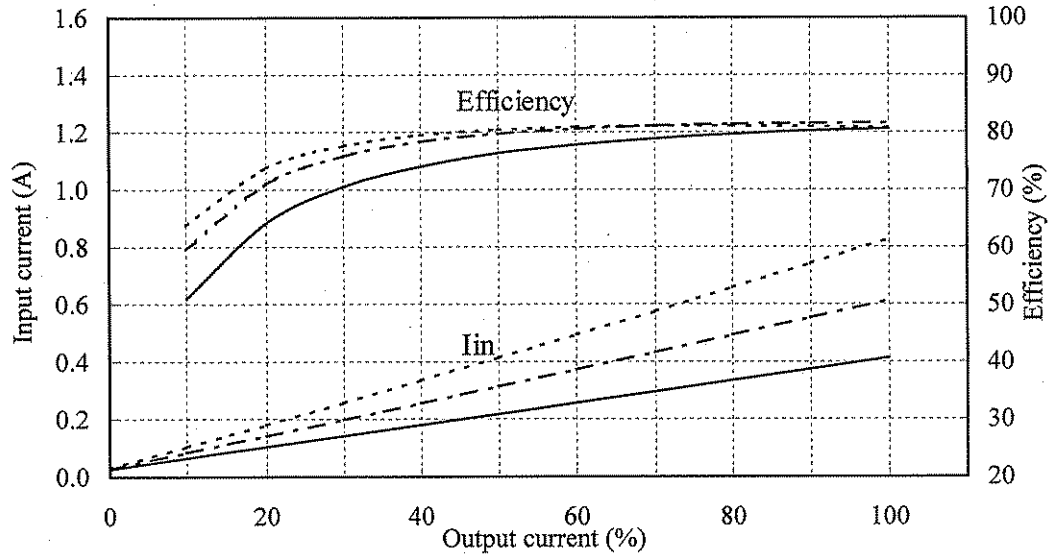
2.1 (3) 効率・入力電流対出力電流
Efficiency and input current v.s. output current

Conditions Vin : 9 VDC -------
: 12 VDC – – – –
: 18 VDC ———
Ta : 25 ℃

3.3V



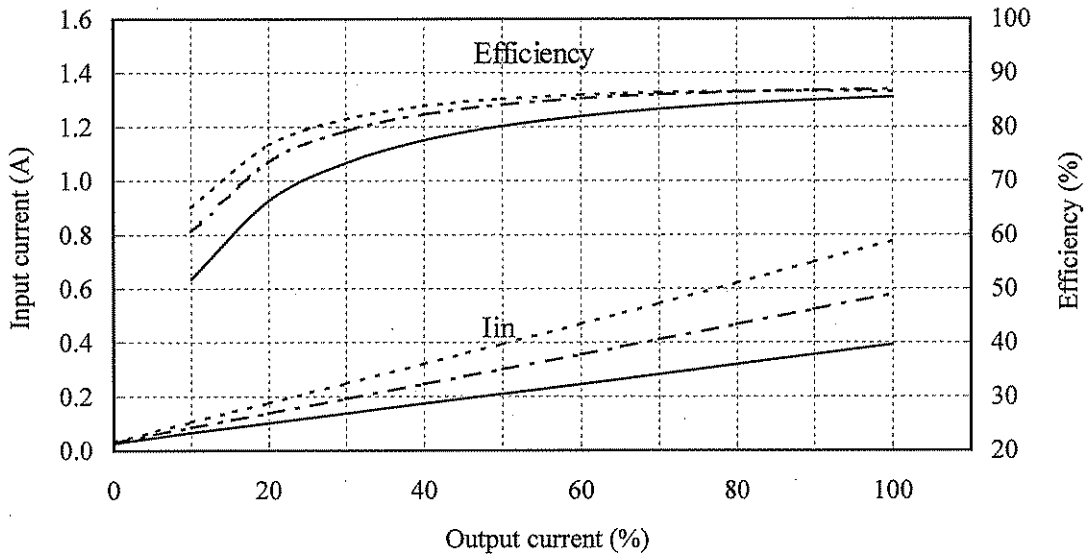
5V



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

Conditions Vin : 9 VDC -------
: 12 VDC - - - - -
: 18 VDC ———
Ta : 25 ℃

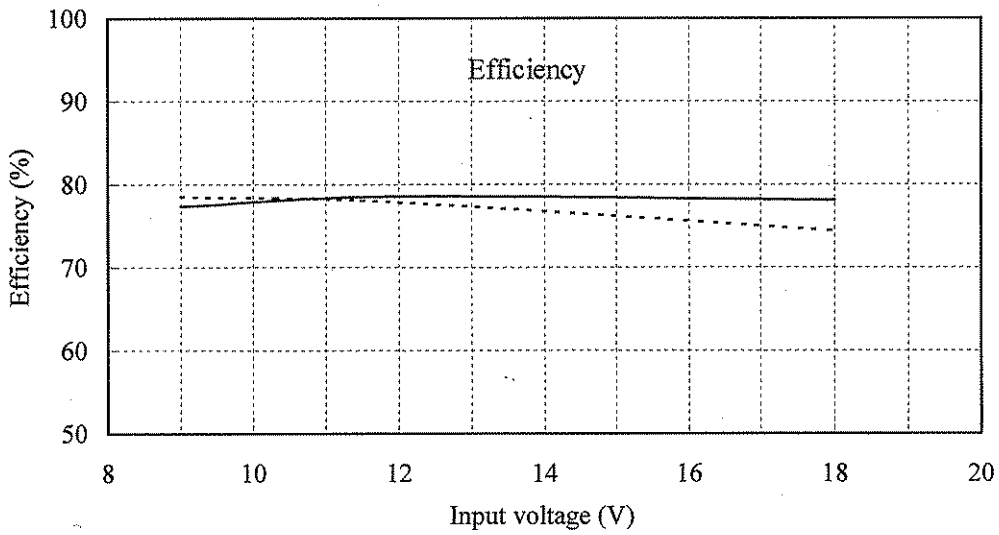
12V



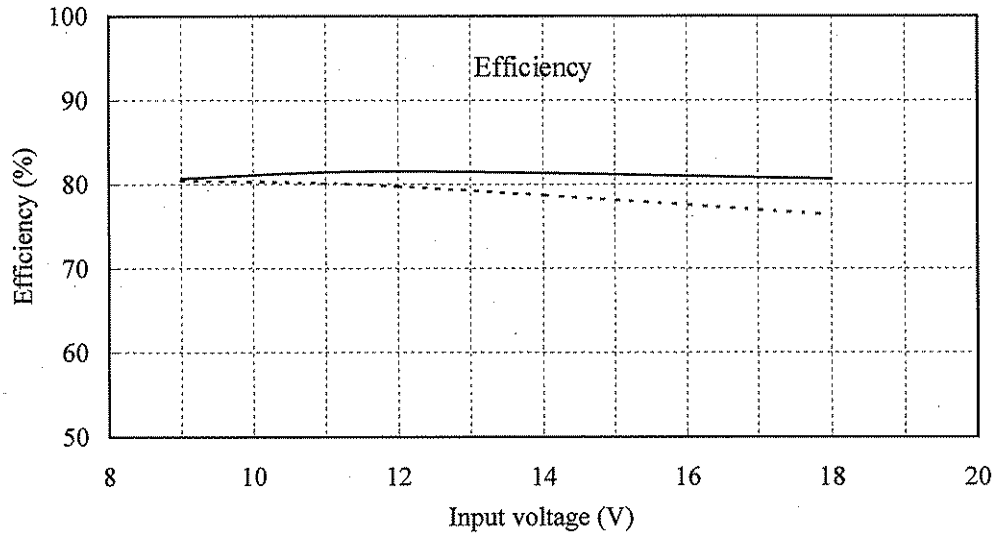
2.1 (4) 効率対入力電圧
Efficiency v.s. input voltage

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

3.3V



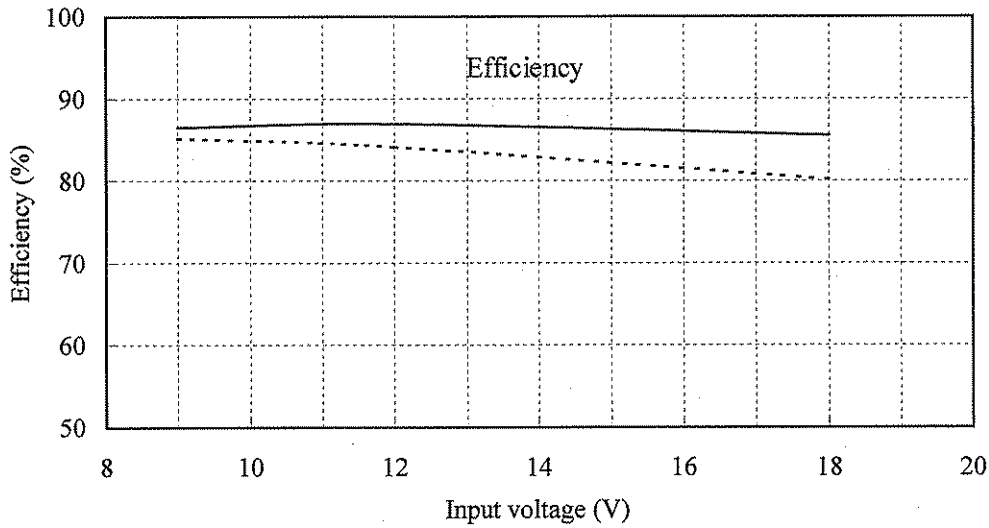
5V



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

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

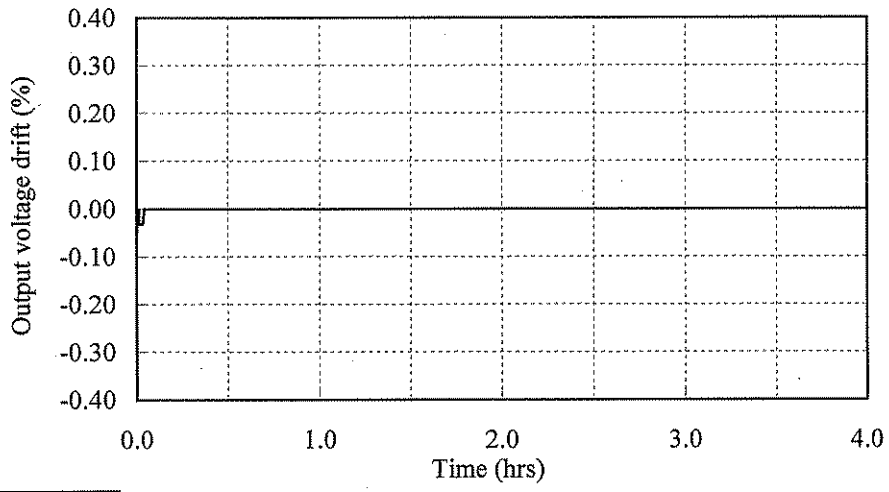
12V



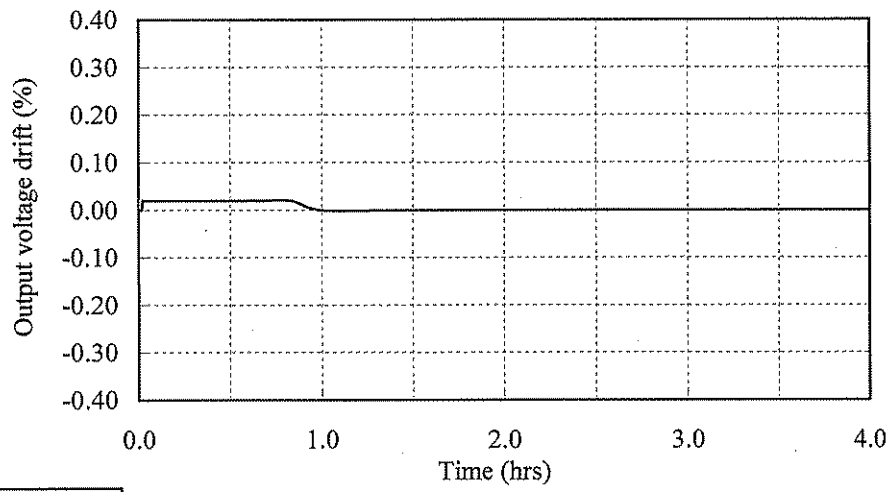
2. 2 通電ドリフト特性
Warm up voltage drift characteristics

Conditions Vin : 12 VDC
Iout : 100 %
Ta : 25 ℃

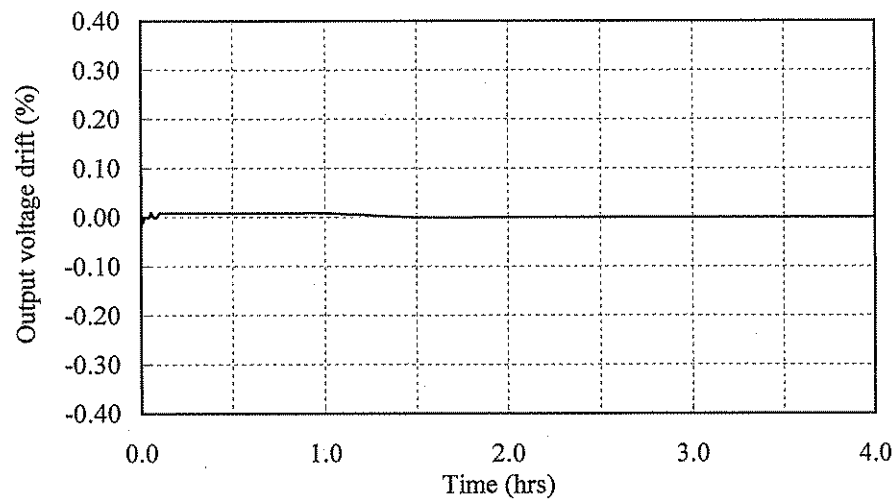
3.3V



5V



12V

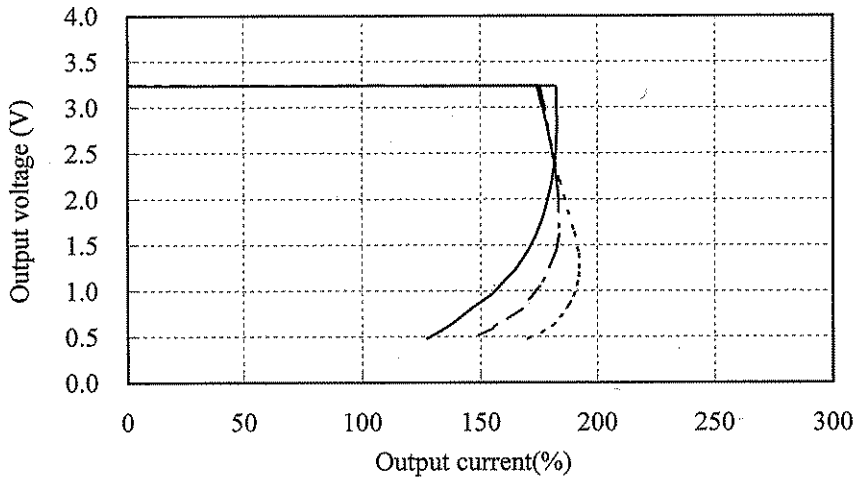


2. 3 過電流保護特性
Over current protection (OCP) characteristics

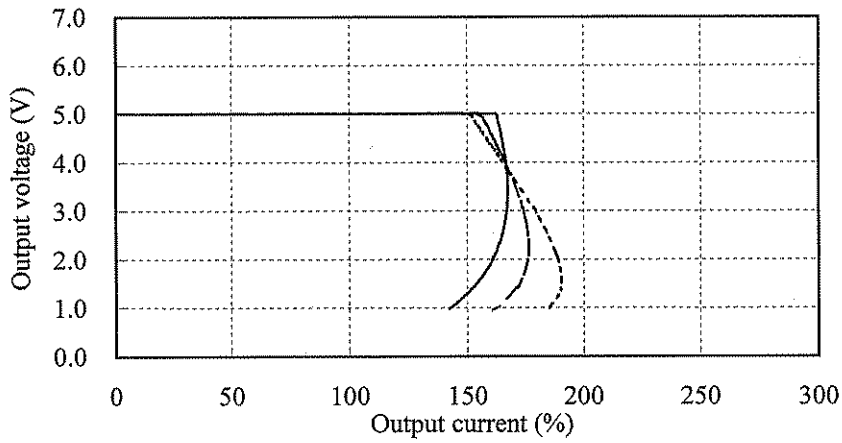
Conditions Vin : 9 VDC -------
12 VDC - - - - -
18 VDC ———

Ta : 25 ℃

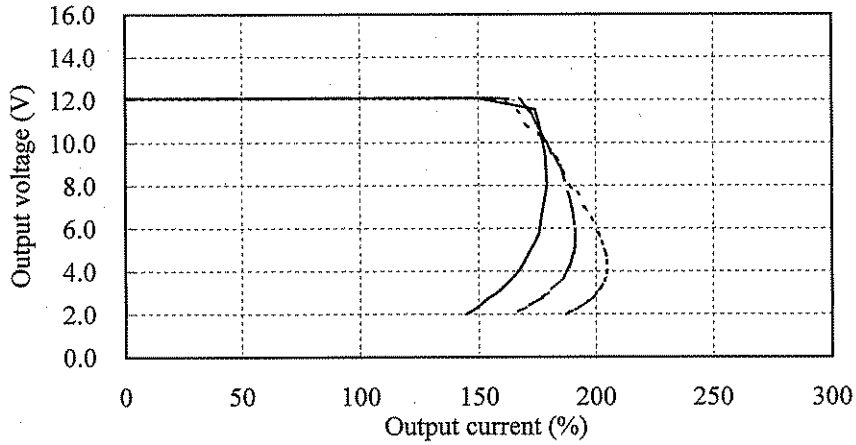
3.3V



5V



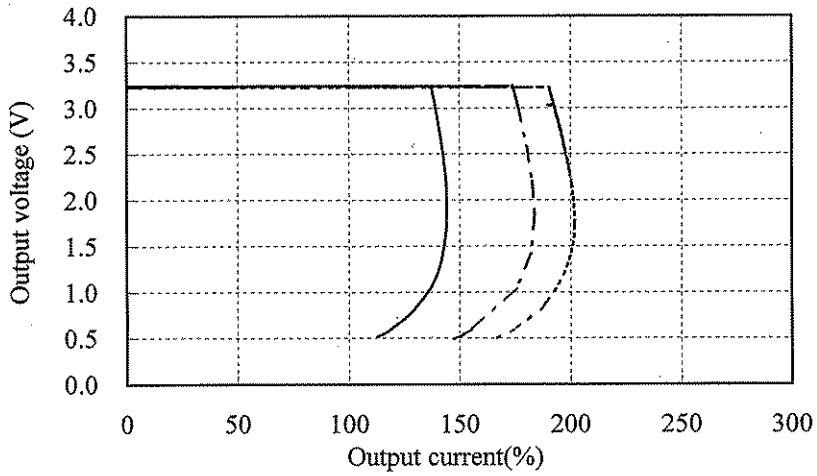
12V



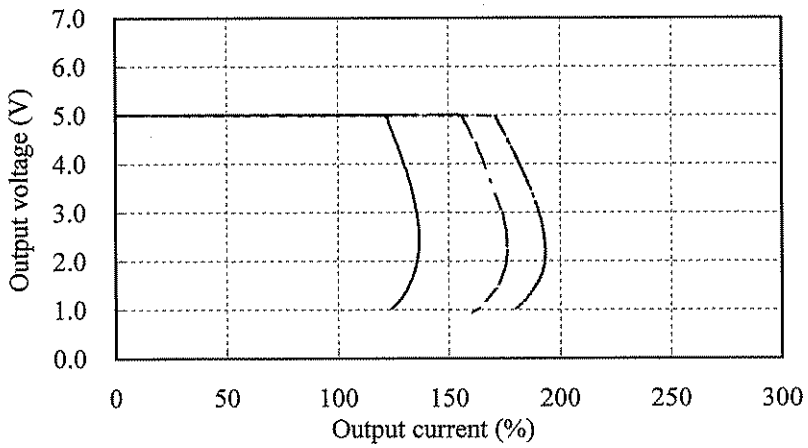
2. 3 過電流保護特性
Over current protection (OCP) characteristics

Conditions Vin : 12 VDC
Ta : -40 ℃ --------
25 ℃ — — — —
85 ℃ ————

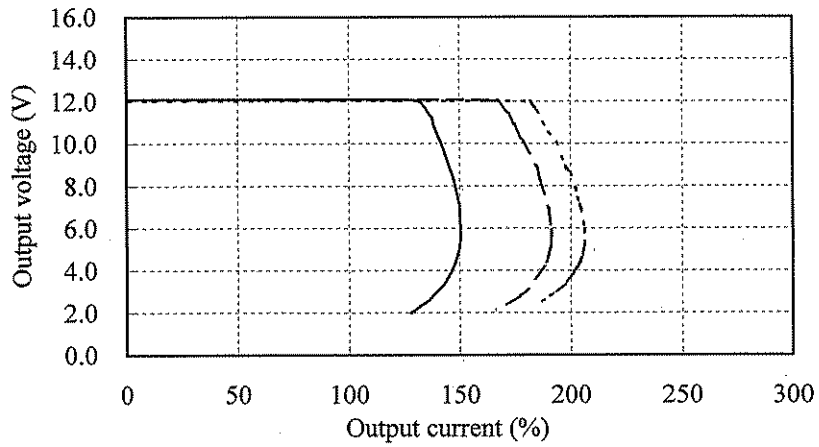
3.3V



5V

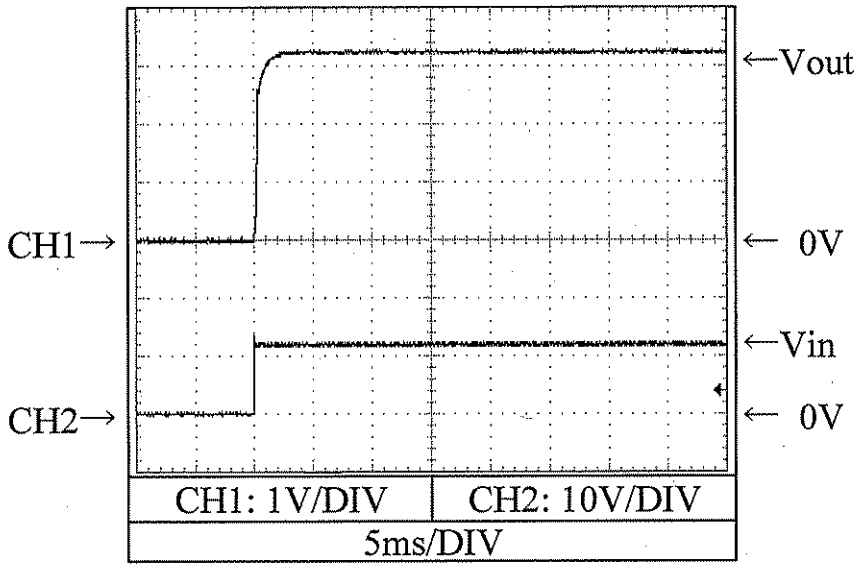


12V

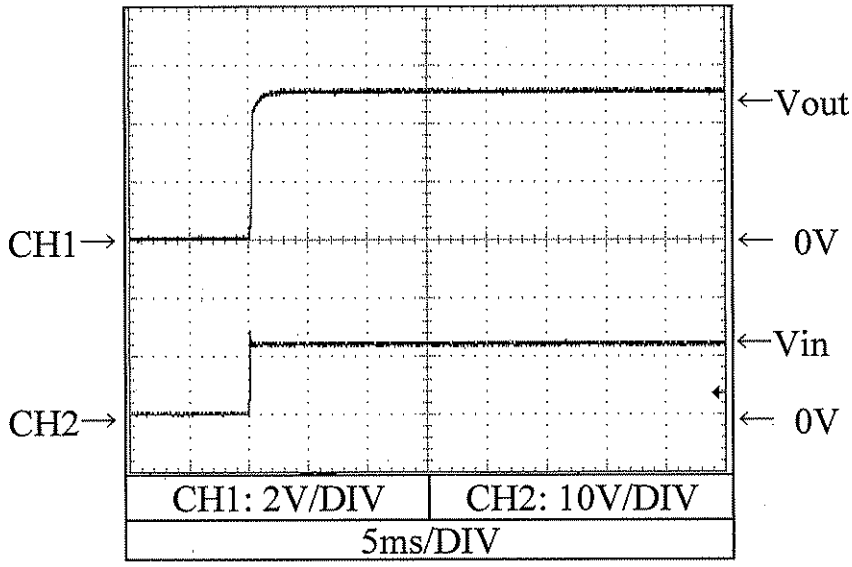


Conditions Vin : 12 VDC
Iout : 0 %
Ta : 25 ℃

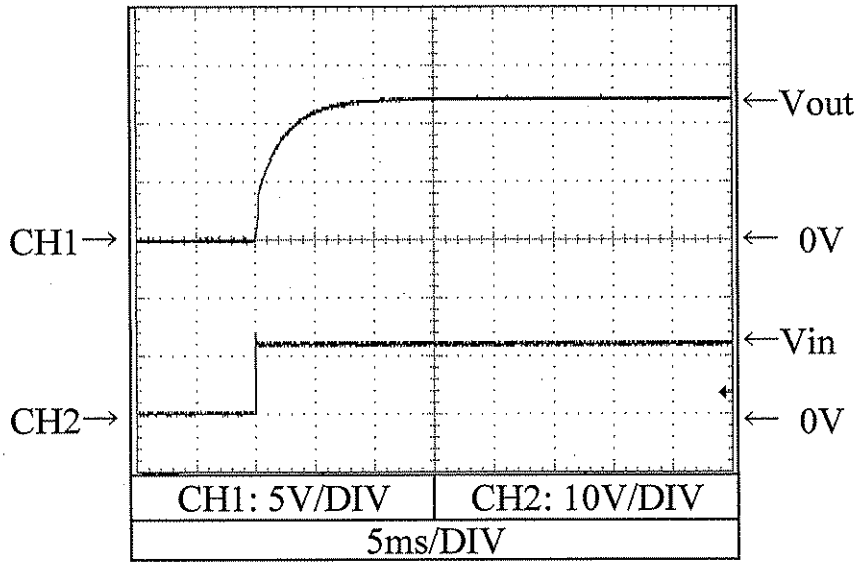
3.3V



5V

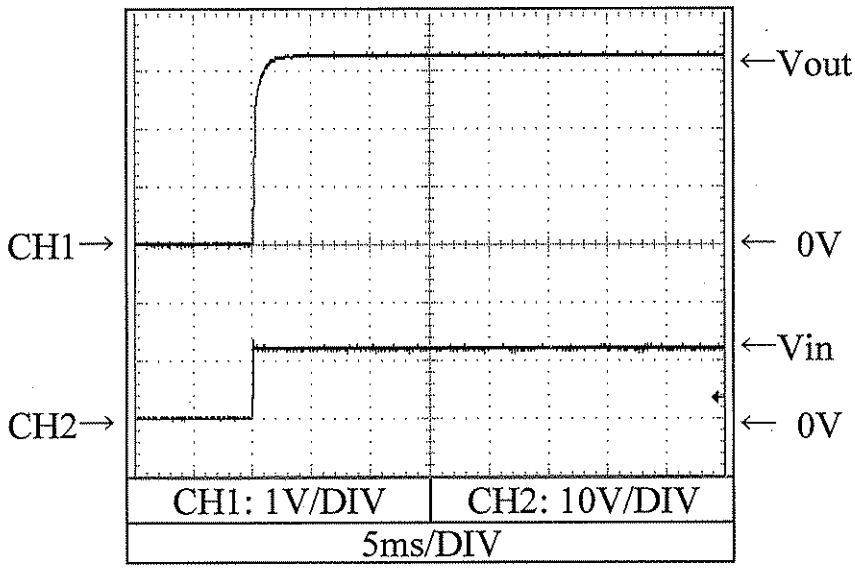


12V

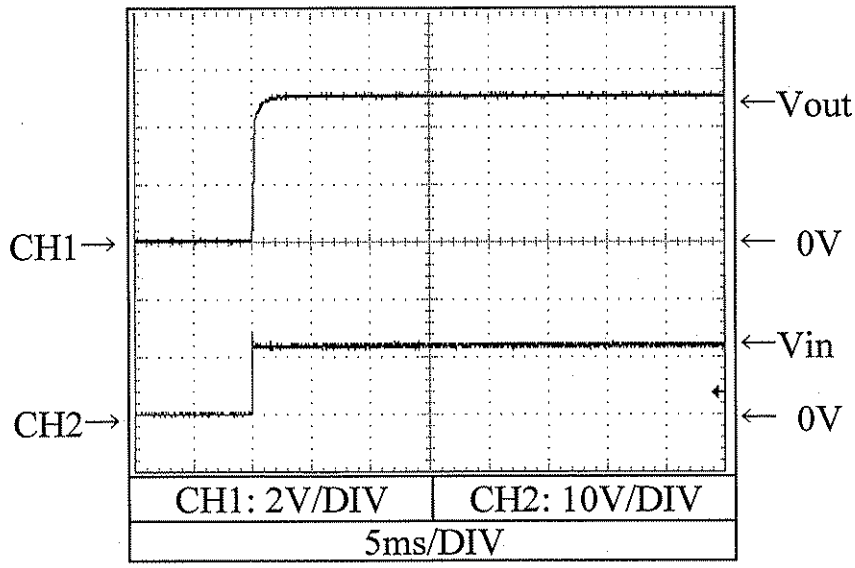


Conditions Vin : 12 VDC
Iout : 100 %
Ta : 25 ℃

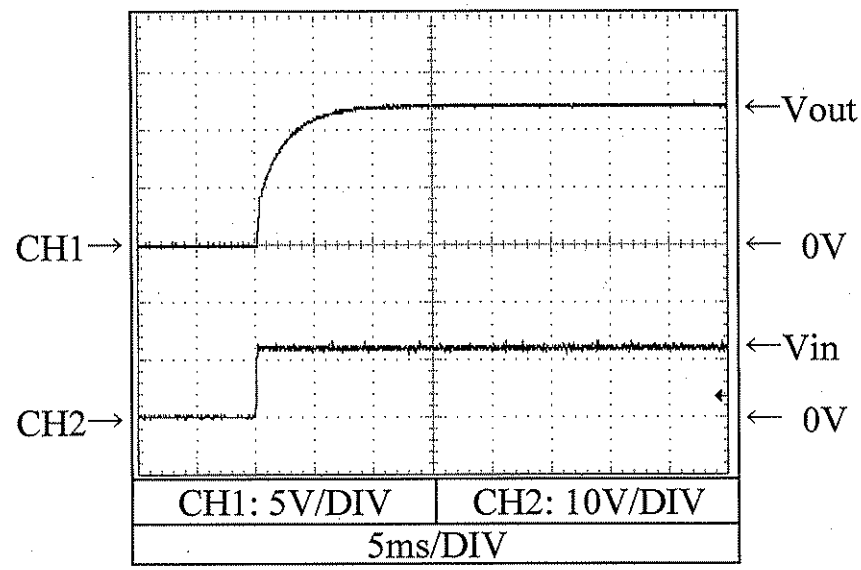
3.3V



5V

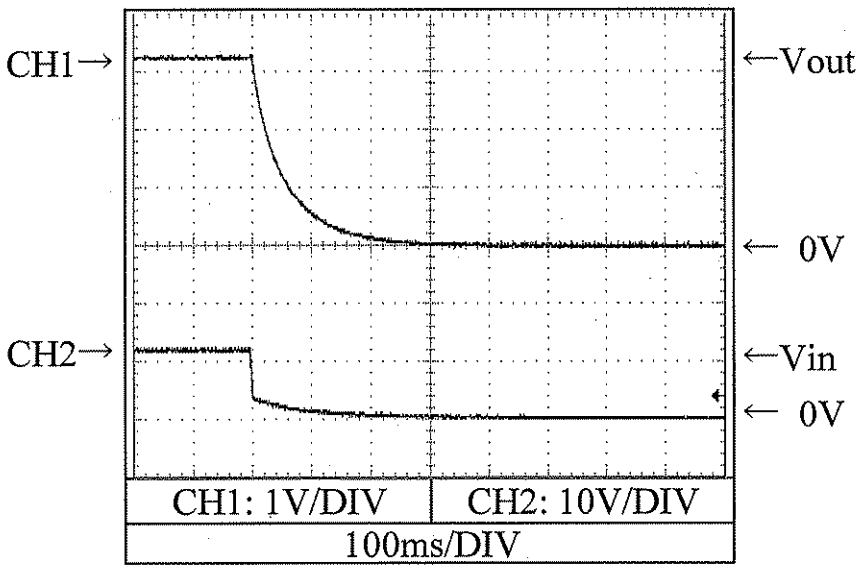


12V

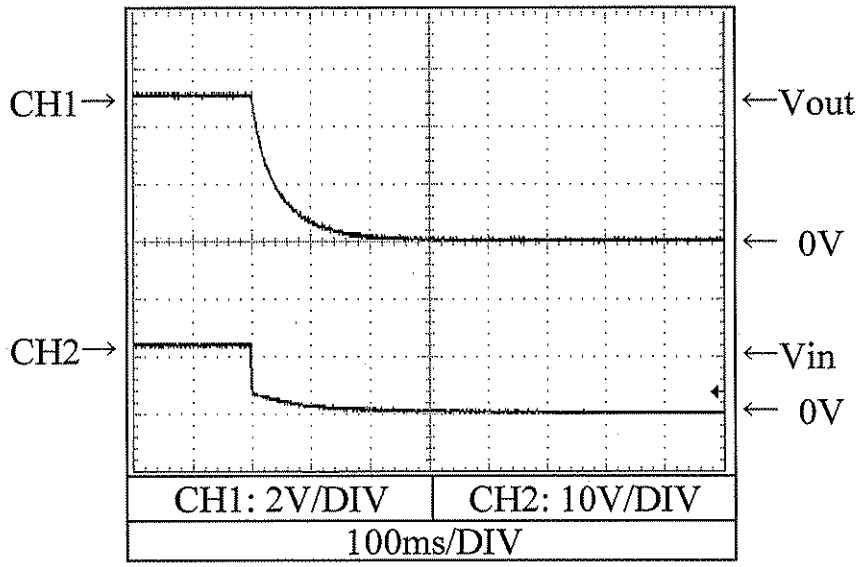


Conditions Vin : 12 VDC
Iout : 0 %
Ta : 25 ℃

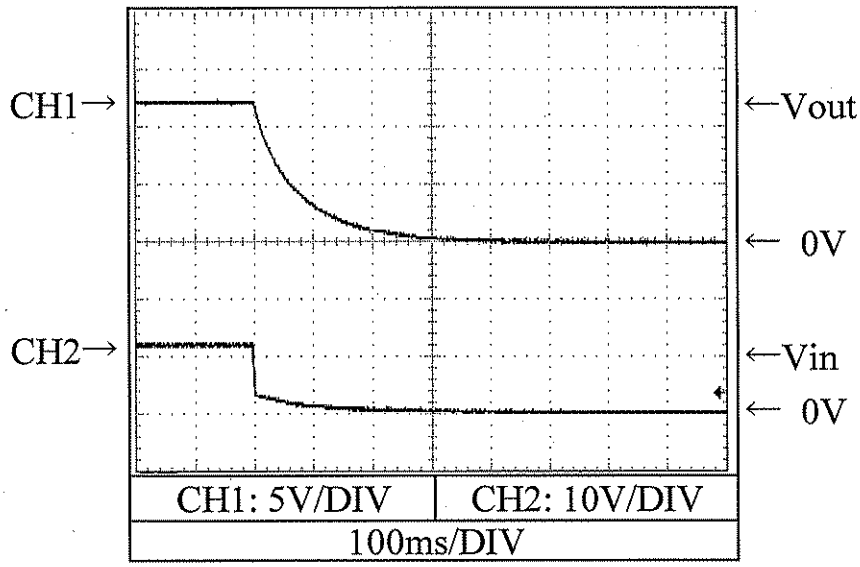
3.3V



5V

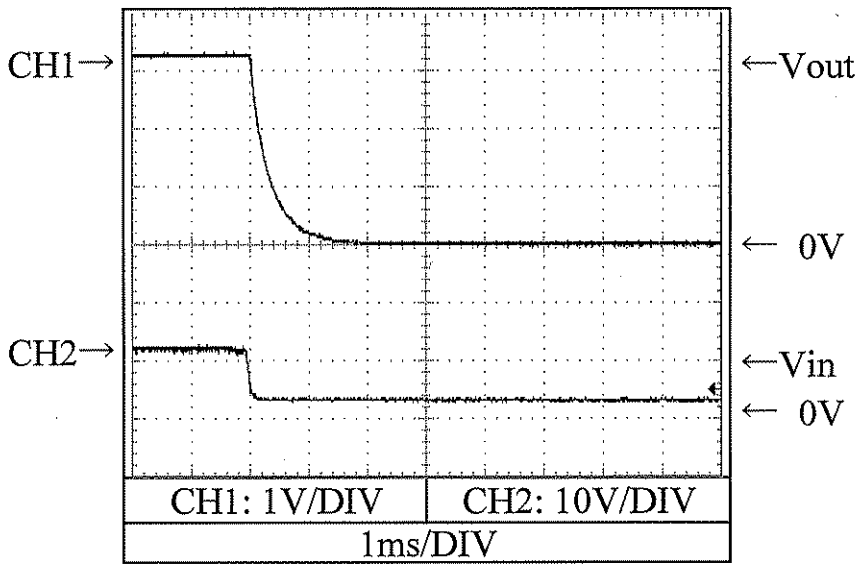


12V

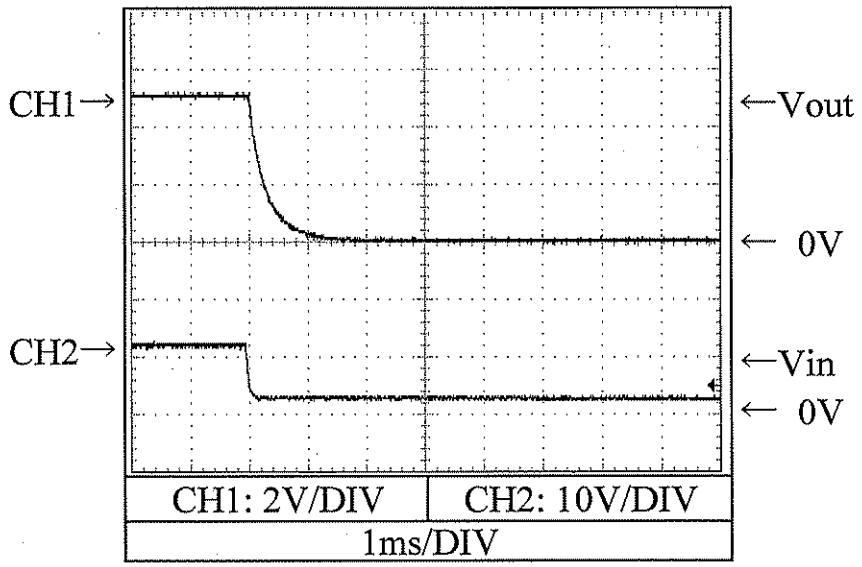


Conditions Vin : 12 VDC
Iout : 100 %
Ta : 25 ℃

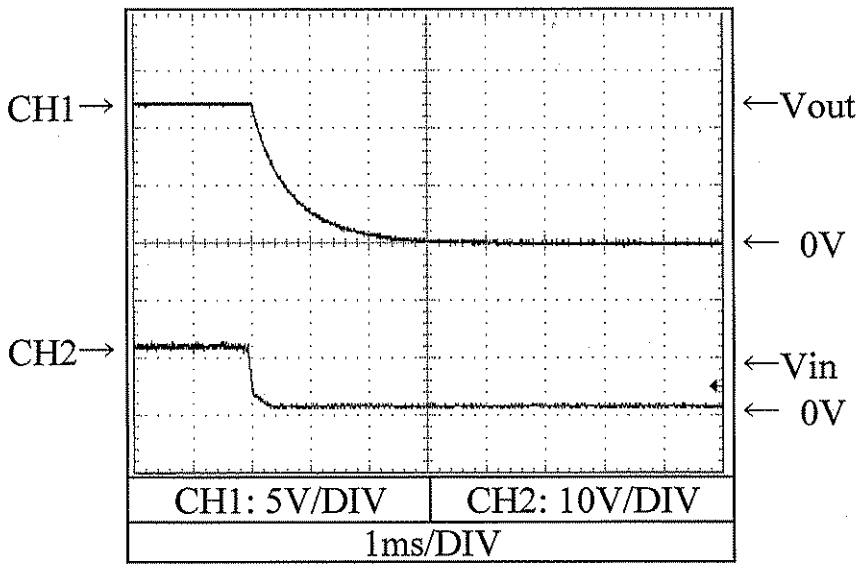
3.3V



5V

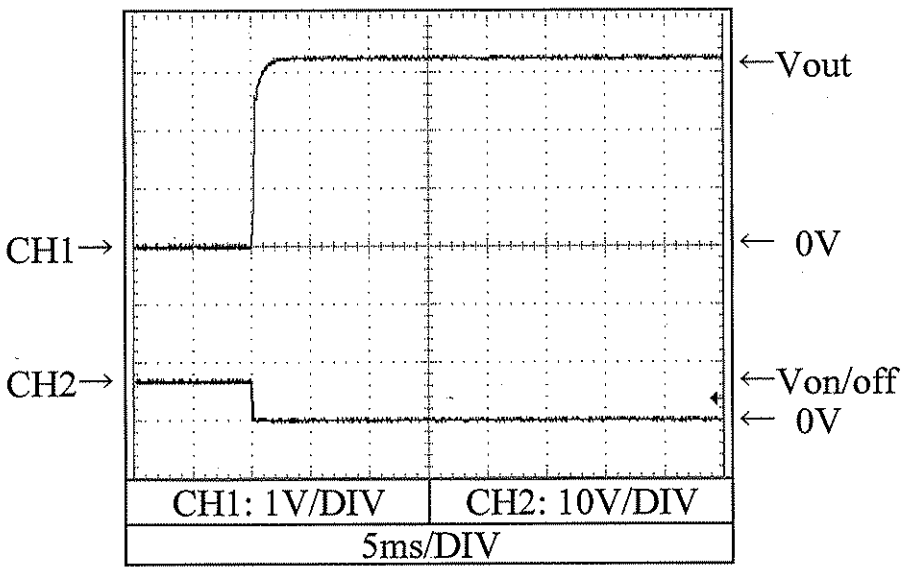


12V

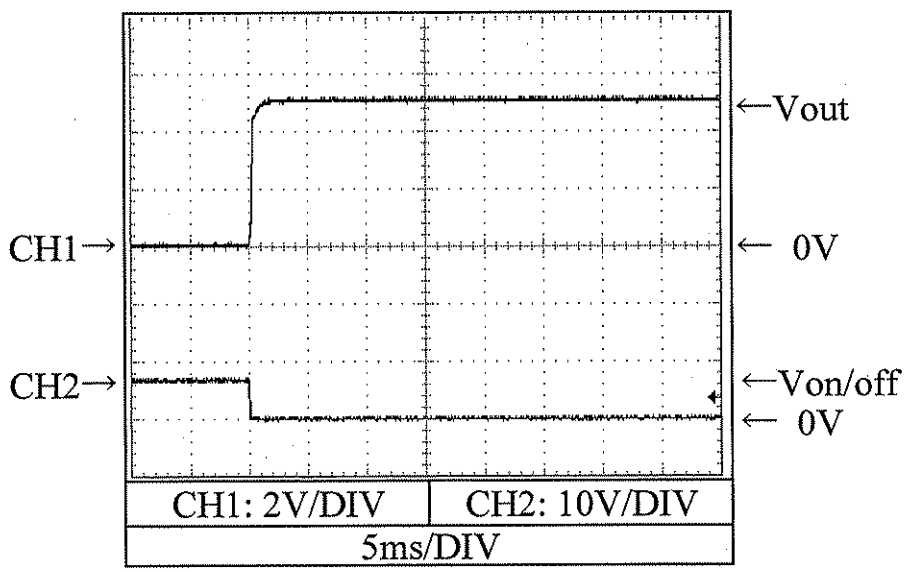


Conditions Vin : 12 VDC
Iout : 0 %
Ta : 25 ℃

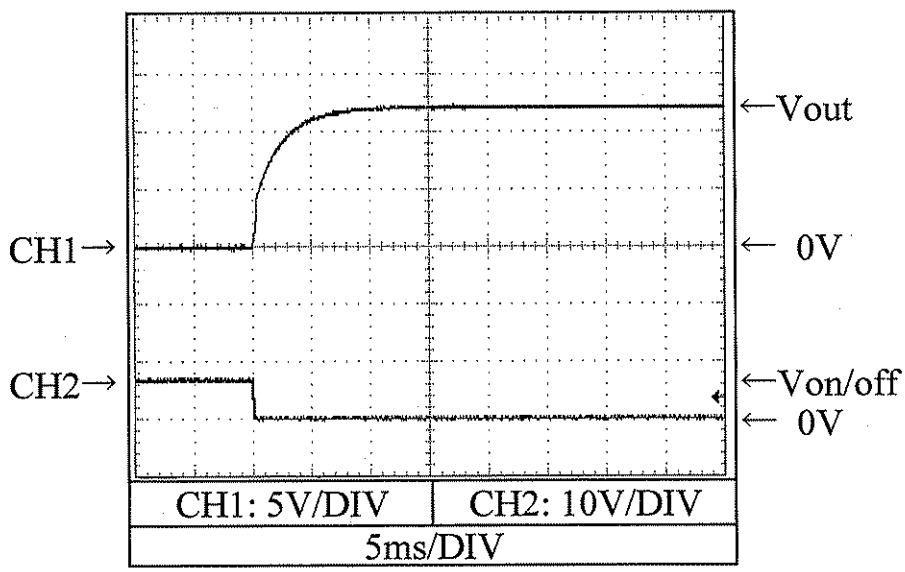
3.3V



5V

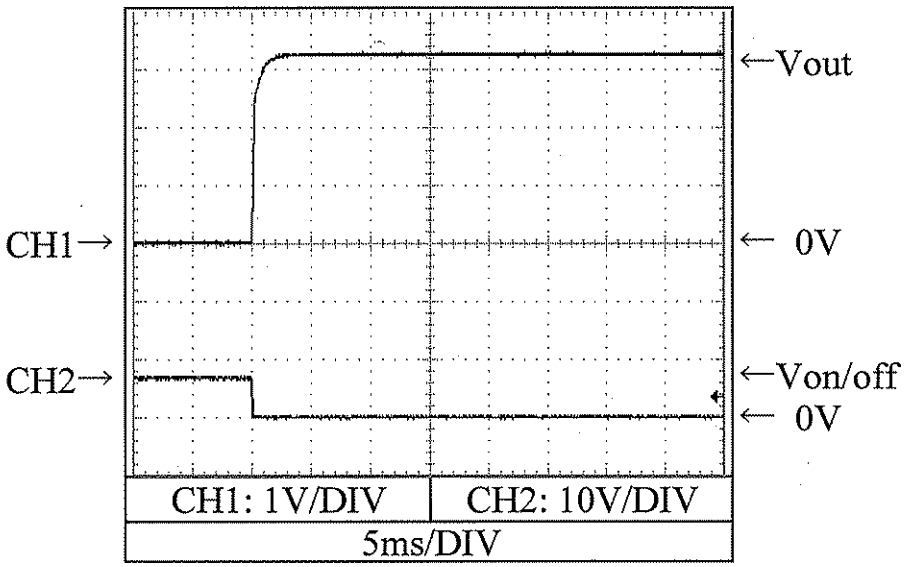


12V

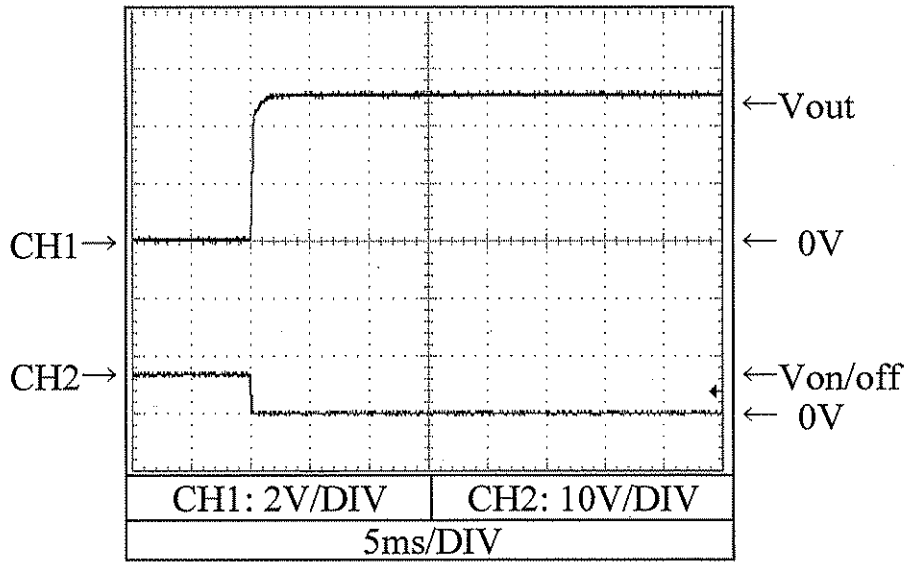


Conditions Vin : 12 VDC
Iout : 100 %
Ta : 25 ℃

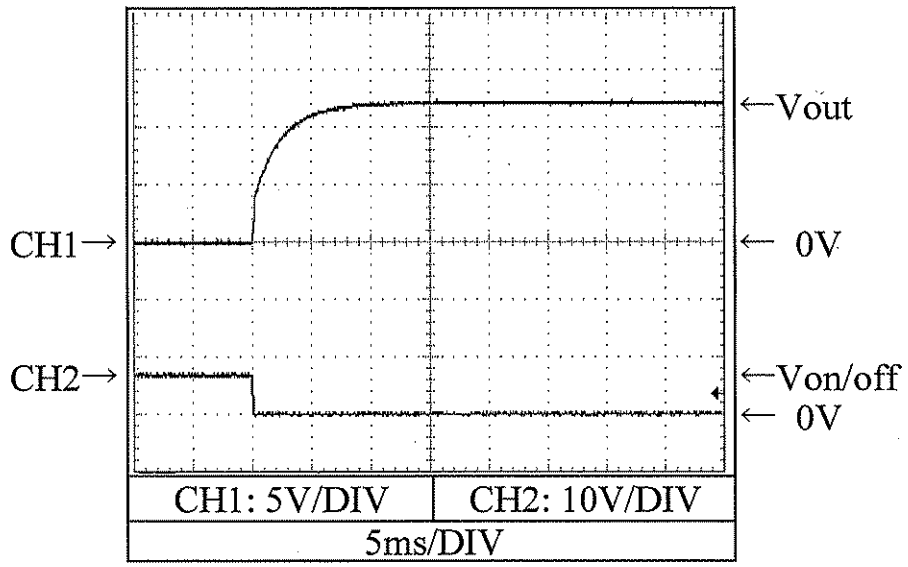
3.3V



5V

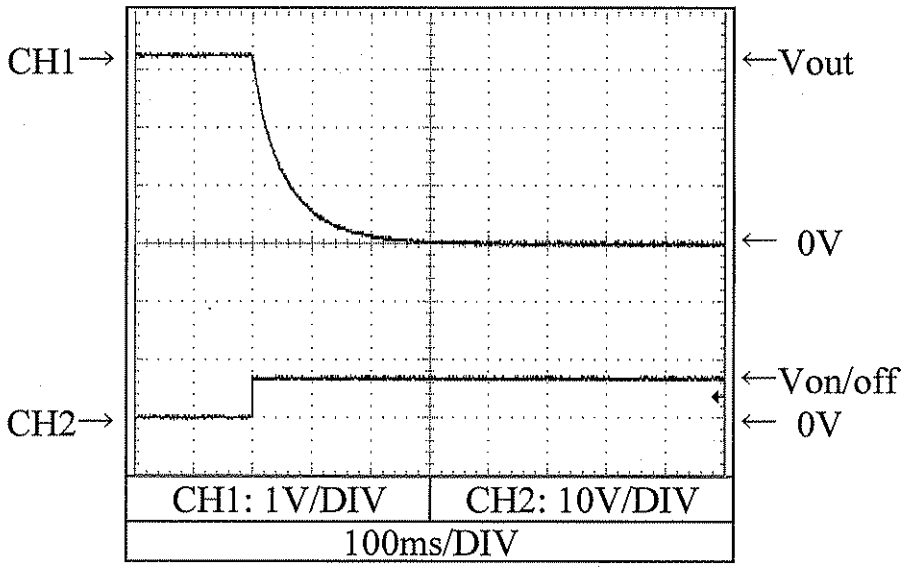


12V

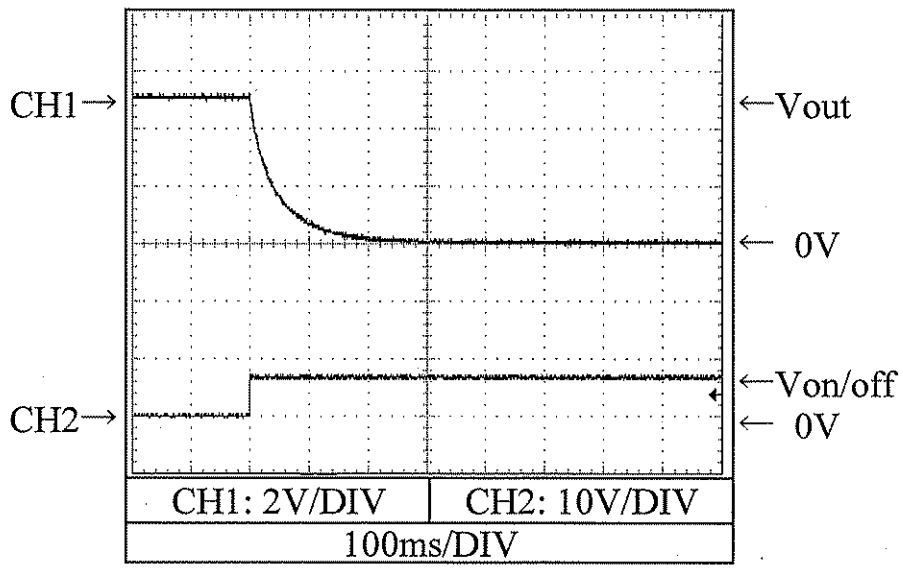


Conditions Vin : 12 VDC
Iout : 0 %
Ta : 25 ℃

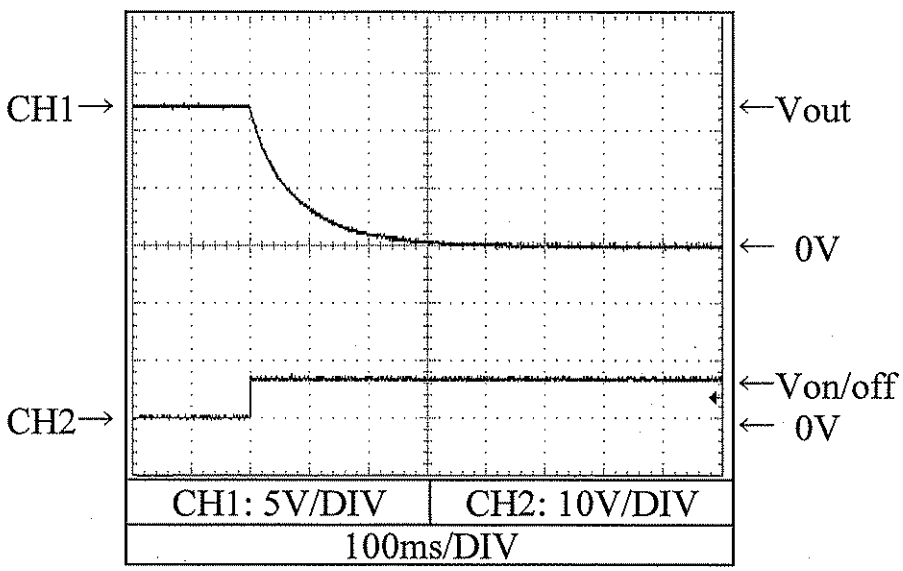
3.3V



5V

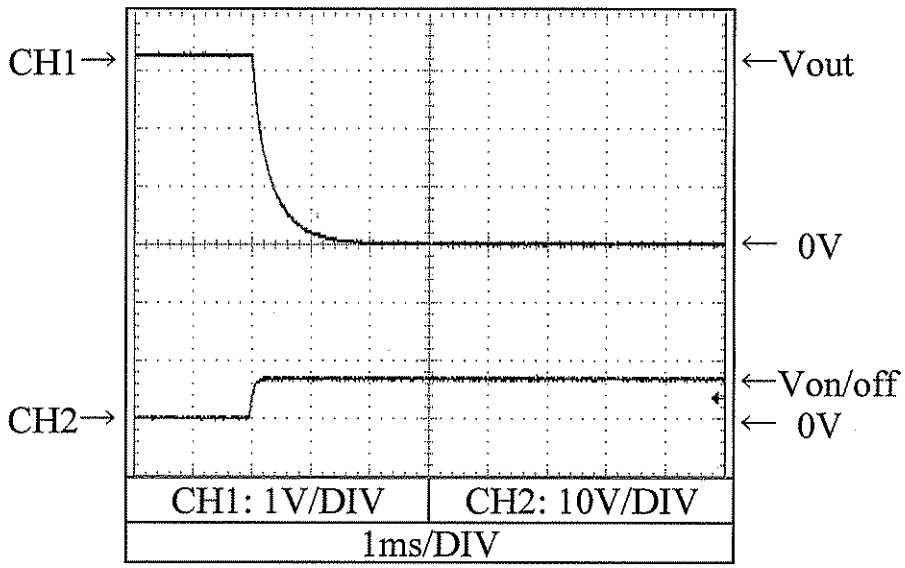


12V

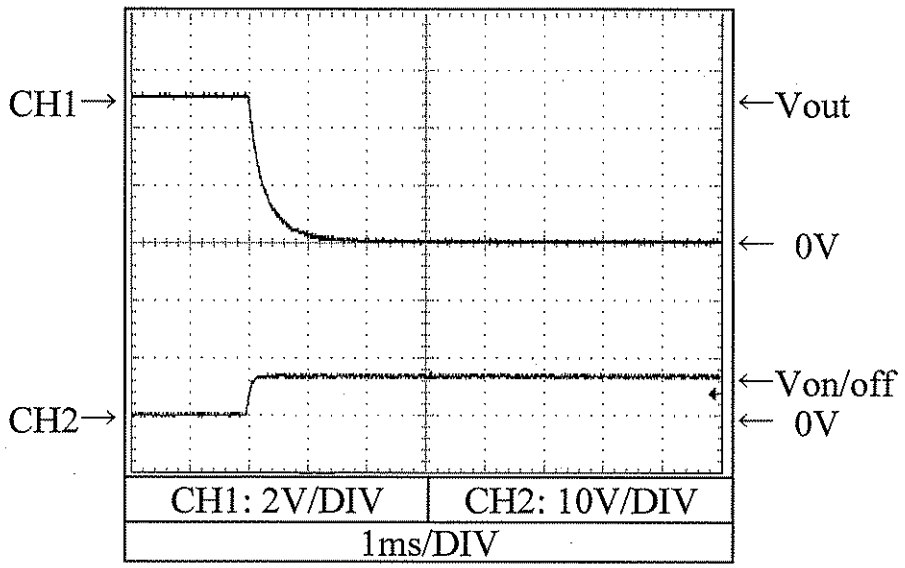


Conditions Vin : 12 VDC
Iout : 100 %
Ta : 25 ℃

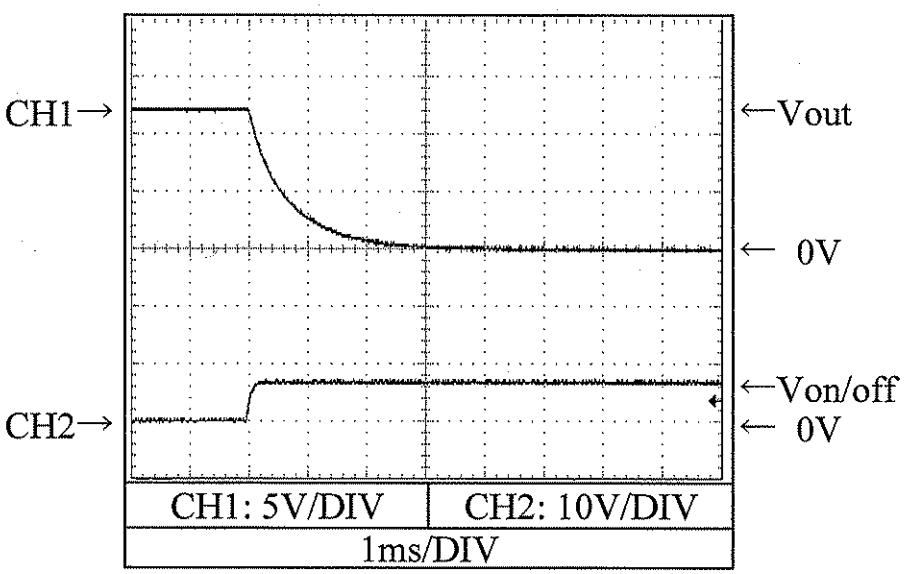
3.3V



5V



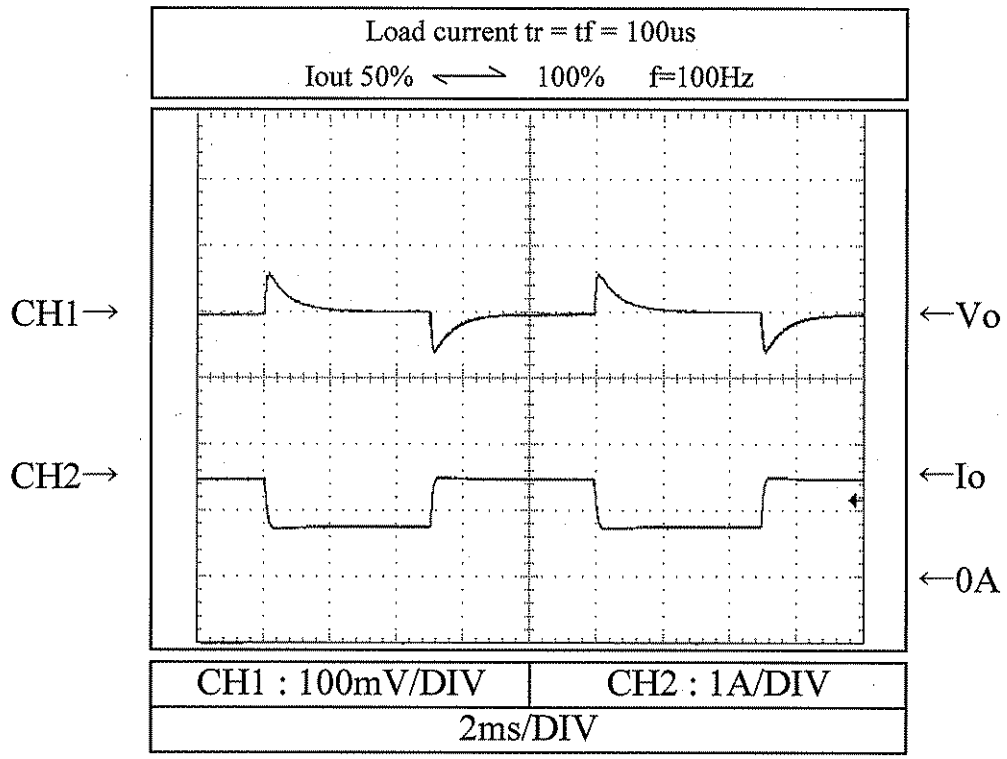
12V



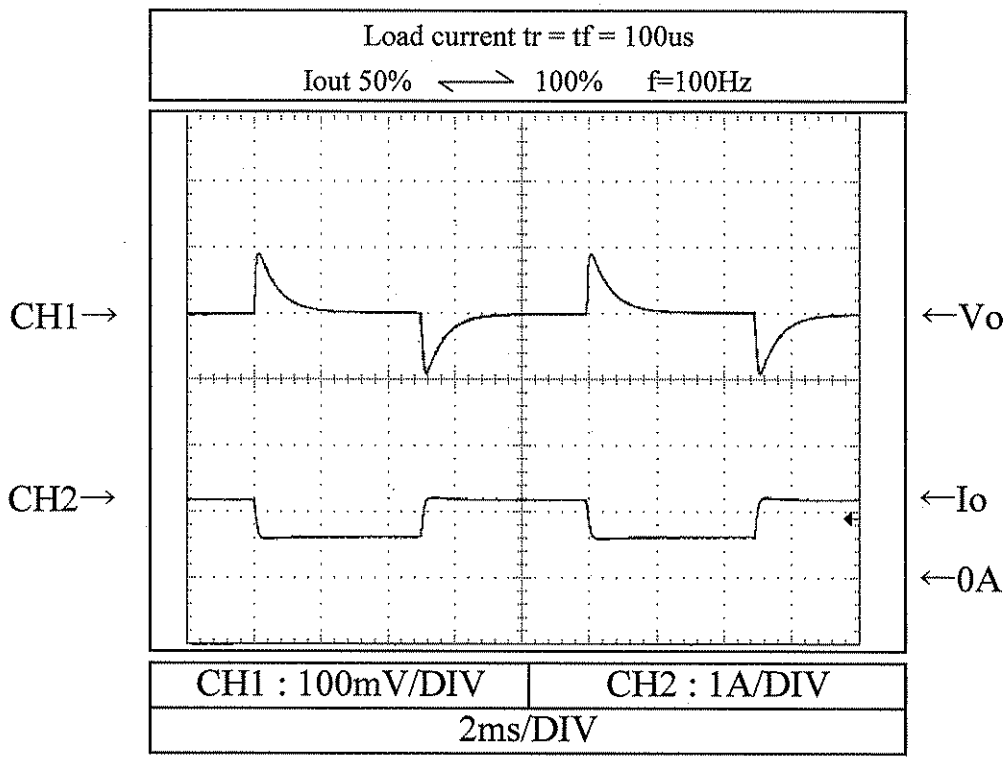
2.8 過渡応答（負荷急変）特性
Dynamic load response characteristics

Conditions Vin : 12 VDC
Ta : 25 ℃

3.3V



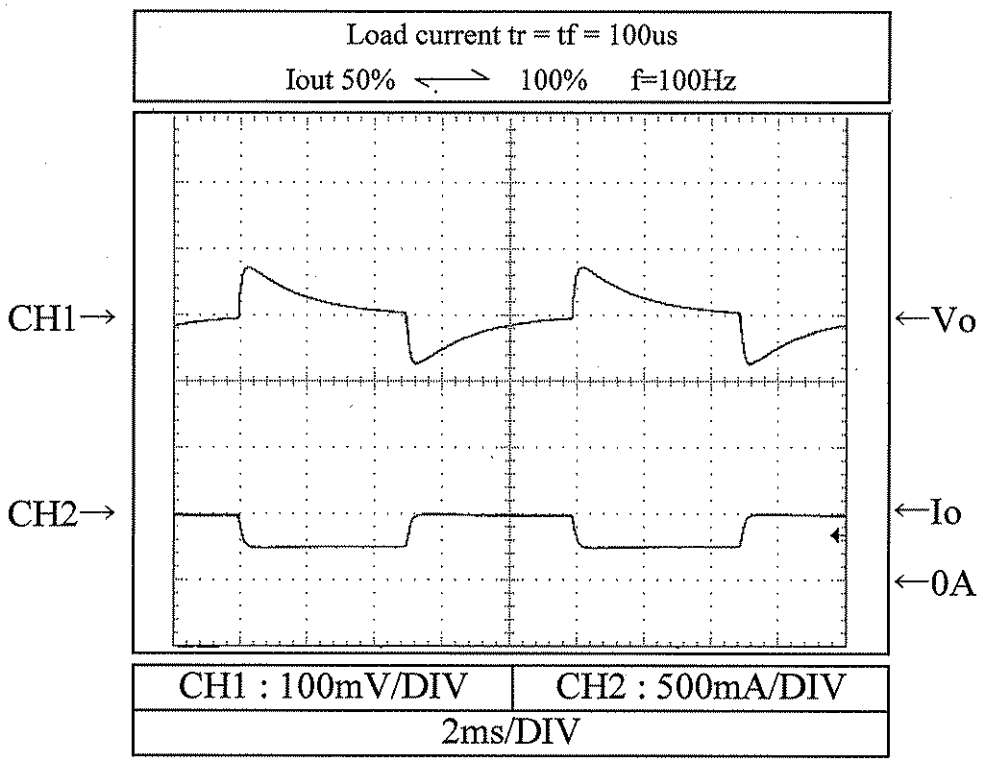
5V



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

Conditions Vin : 12 VDC
Ta : 25 ℃

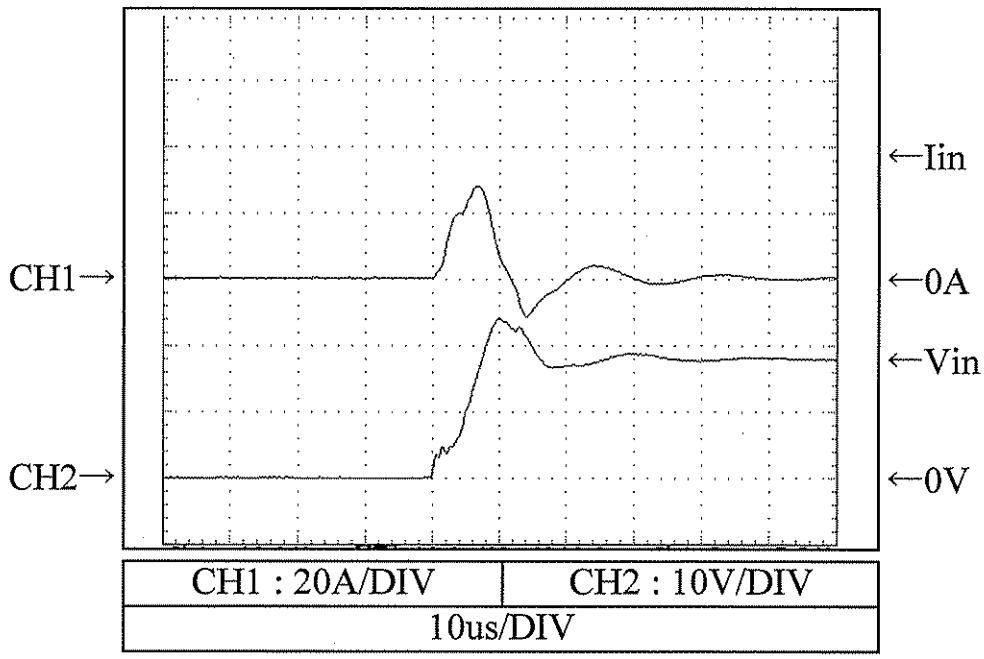
12V



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

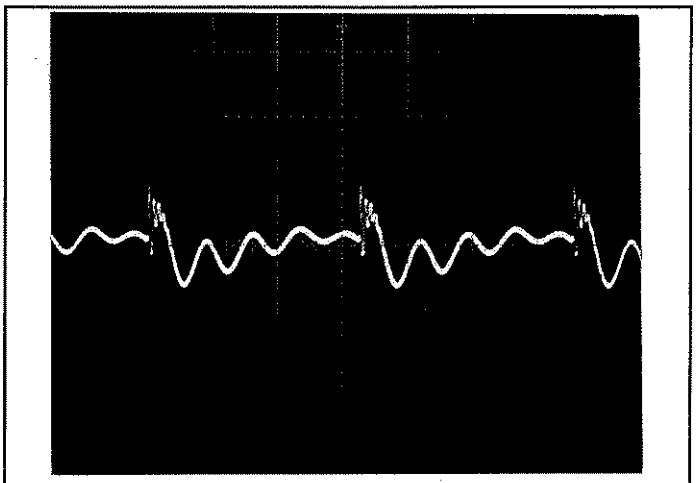
Conditions Vin : 18 VDC
Iout : 100 %
Ta : 25 ℃

5V



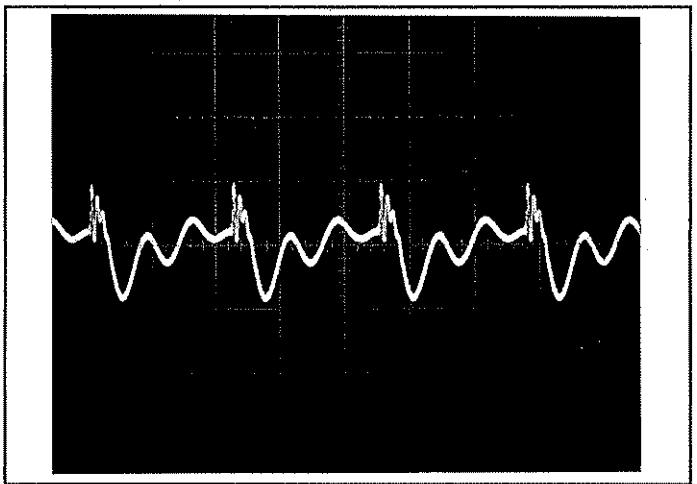
Conditions Vin : 12 VDC
Iout : 100 %
Ta : 25 ℃

3.3V



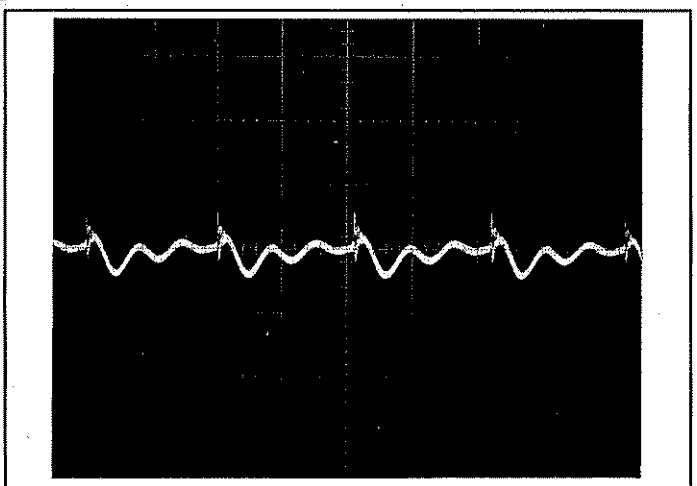
20mV/DIV	2μs/DIV
28mVp-p	

5V



20mV/DIV	2μs/DIV
36mVp-p	

12V

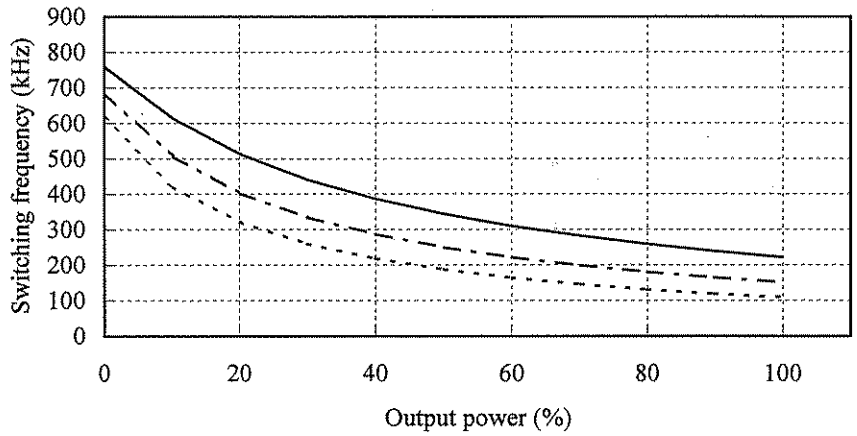


20mV/DIV	2μs/DIV
19mVp-p	

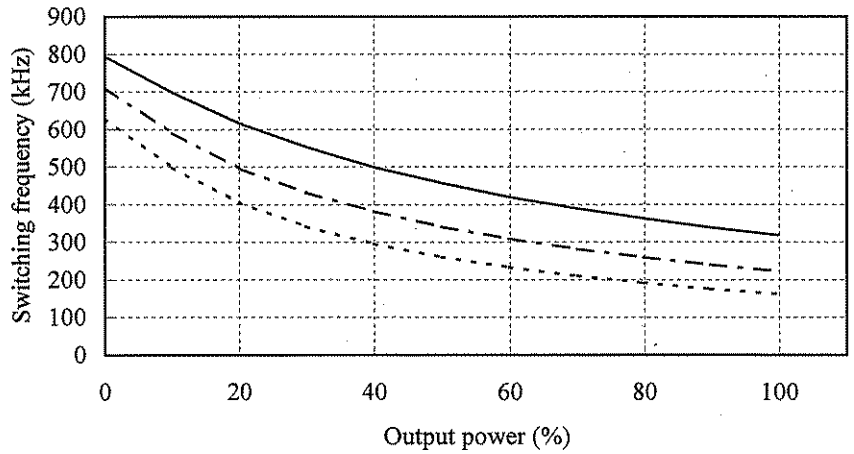
2. 11 スイッチング周波数対出力電力
Switching frequency v.s. output power

Conditions Vin : 9 VDC -------
12 VDC - - - - -
18 VDC ———
Ta : 25 ℃

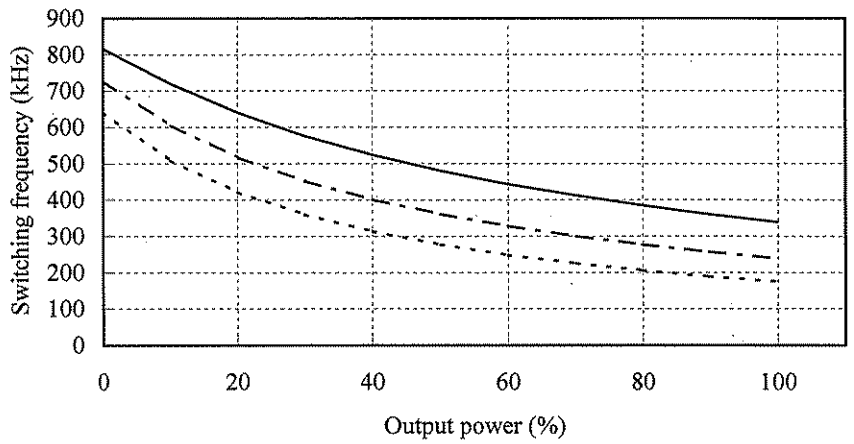
3.3V



5V



12V

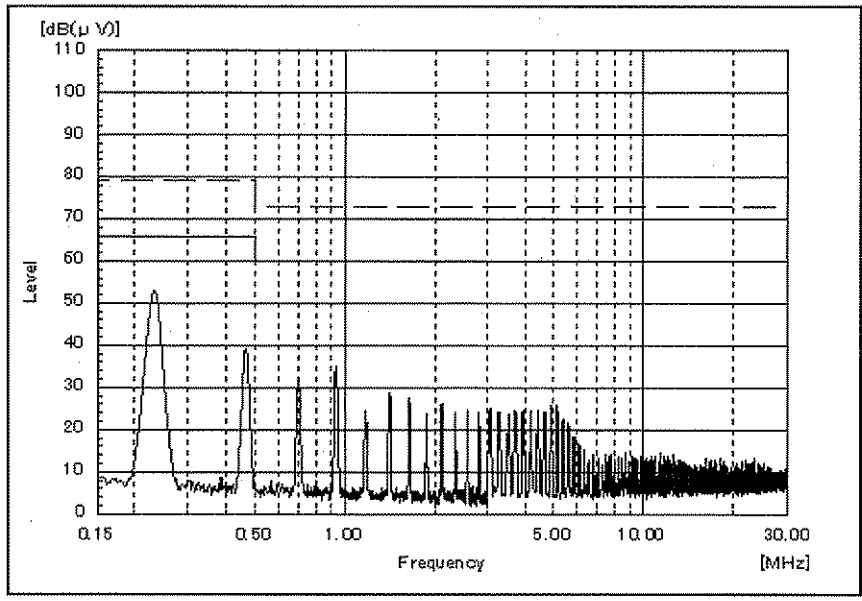


2.12 EMI特性
Electro-Magnetic Interference characteristics

(a) 雑音端子電圧（帰還ノイズ）
Conducted Emission
VCCI class A 対応アプリケーションシステム
VCCI class A application system

Conditions Vin : 12 VDC
Iout : 100 %
Ta : 25 ℃

5V

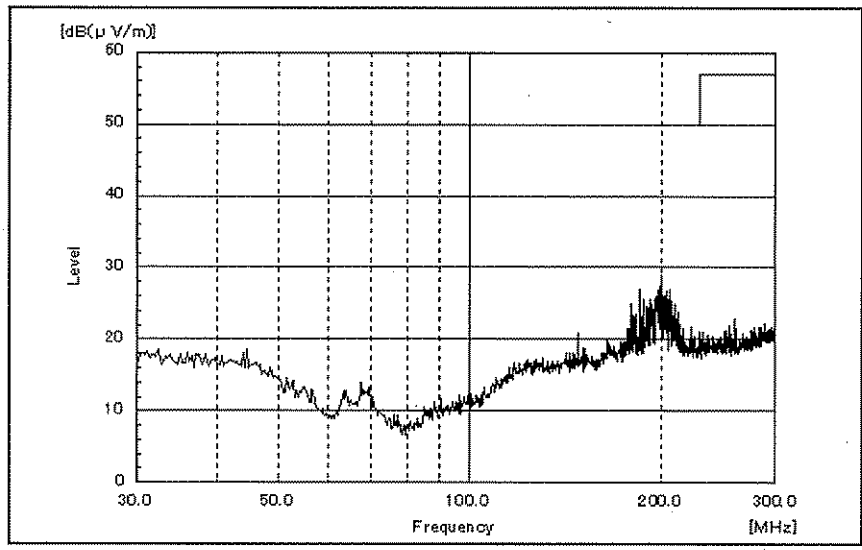


2.12 EMI特性
Electro-Magnetic Interference characteristics
(b) 雑音電界強度（輻射ノイズ）
Radiated Emission
VCCI class A 対応アプリケーションシステム
VCCI class A application system

Conditions Vin : 12 VDC
Iout : 100 %
Ta : 25 ℃

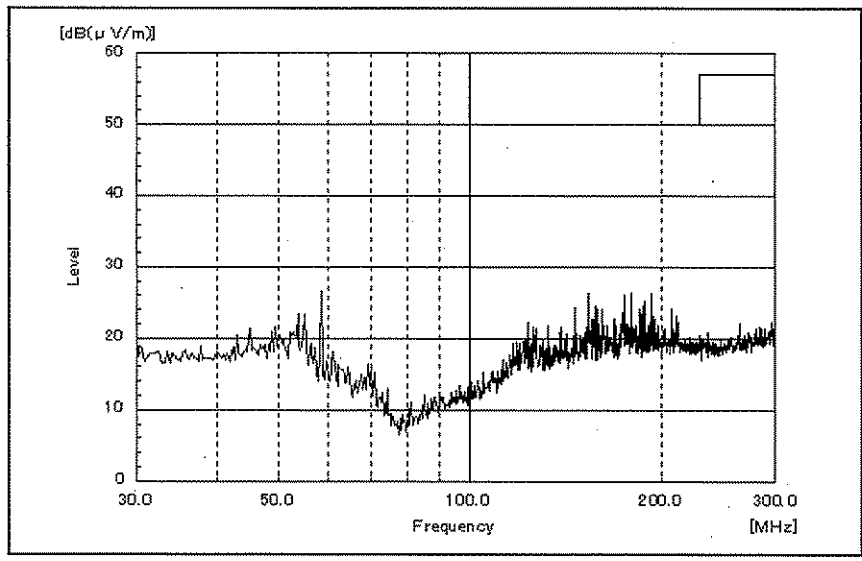
5V

HORIZONTAL:



←QP Limit

VERTICAL:



←QP Limit