

# PSS1R5-12-\*

## EVALUATION DATA

### 型式データ

DWG.No. C181-53-01		
承認	査閲	担当
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27. Jan. '05	27. Jan. '05	27. Jan. '05

DENSEI-LAMBDA

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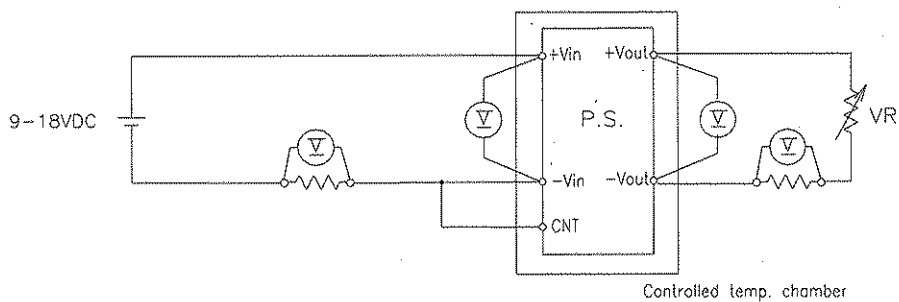
## 使用記号 Terminology used

	Definition		
$V_{in}$	.....	入力電圧	Input Voltage
$V_{out}$	.....	出力電圧	Output Voltage
$I_{in}$	.....	入力電流	Input Current
$I_{out}$	.....	出力電流	Output Current
$T_a$	.....	周囲温度	Ambient Temperature

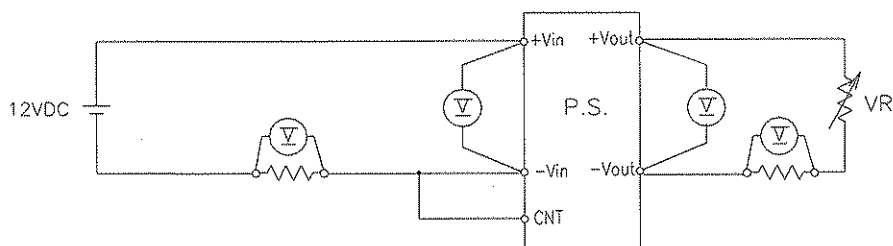
1. 測定方法 Evaluation Method

1.1 測定回路 Circuits used for determination

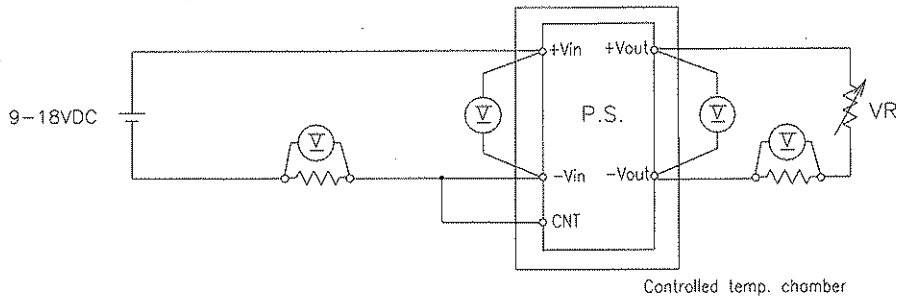
(1) 静特性 Steady state data



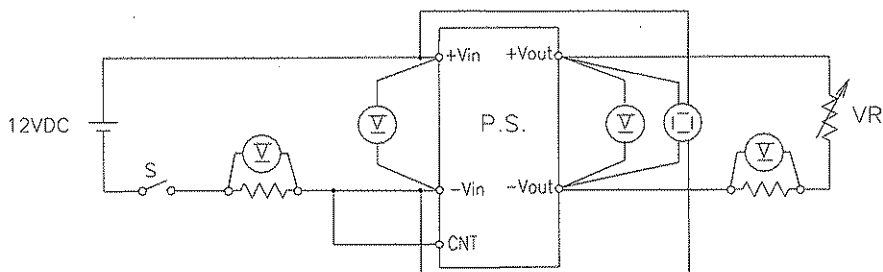
(2) 通電ドリフト特性 Warm up voltage drift characteristics



(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

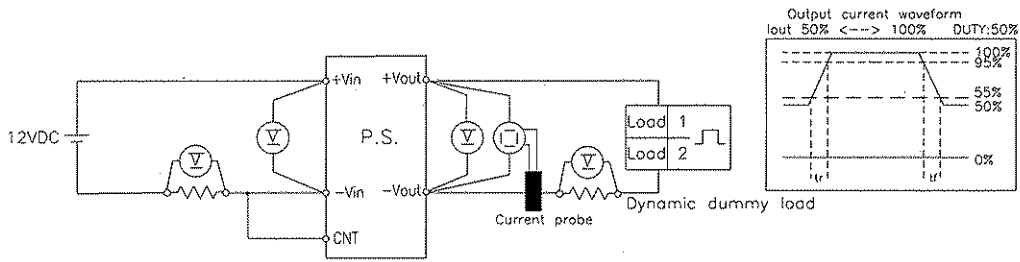


(5) 出力立ち下がり特性 Output fall characteristics

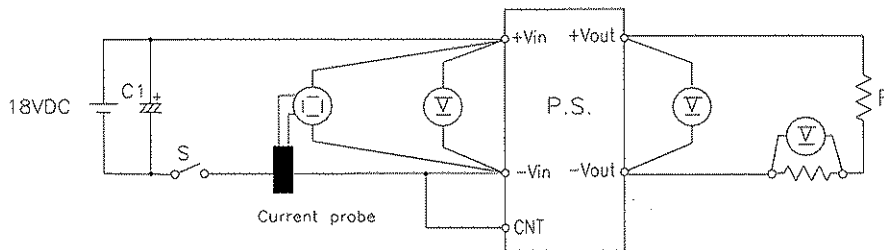
出力立ち上がり特性と同じ

Same as output rise characteristics

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

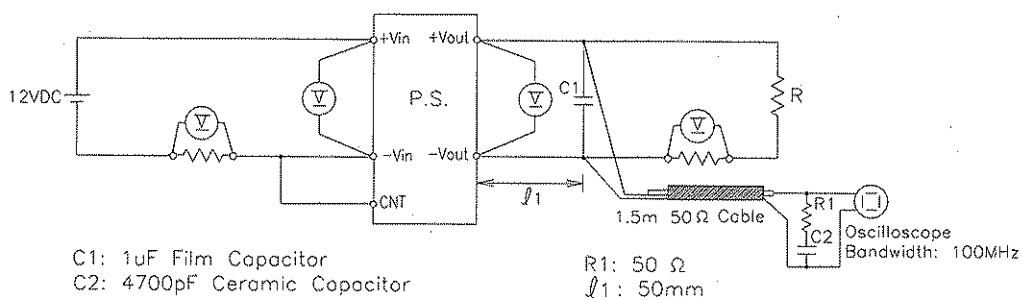


(7) 入力サージ電流(突入電流)特性 Inrush current characteristics

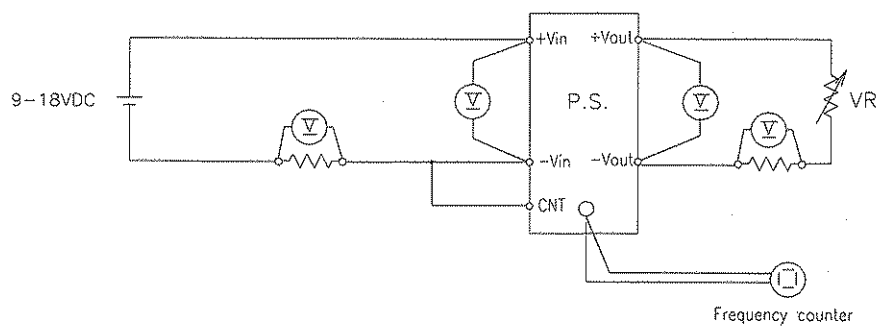


C1: 4000uF Electrolytic Capacitor

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

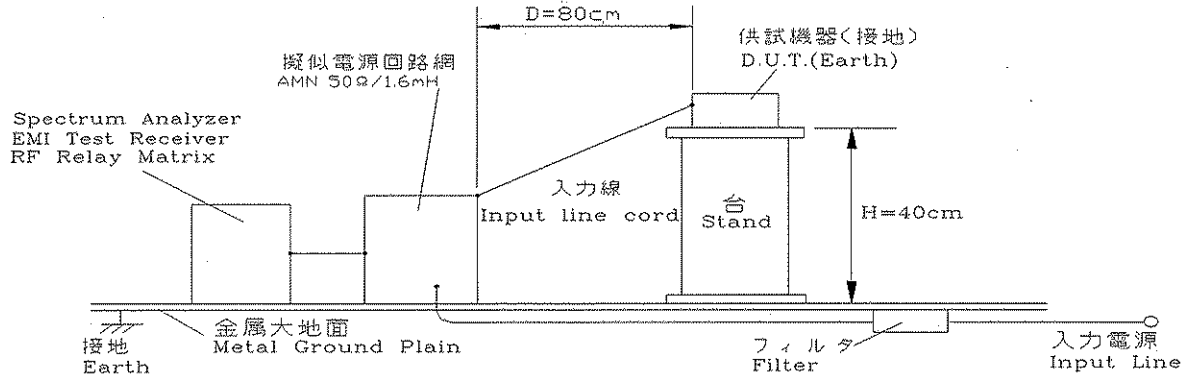


(9) スイッチング周波数対出力電力 Switching frequency v.s. output power

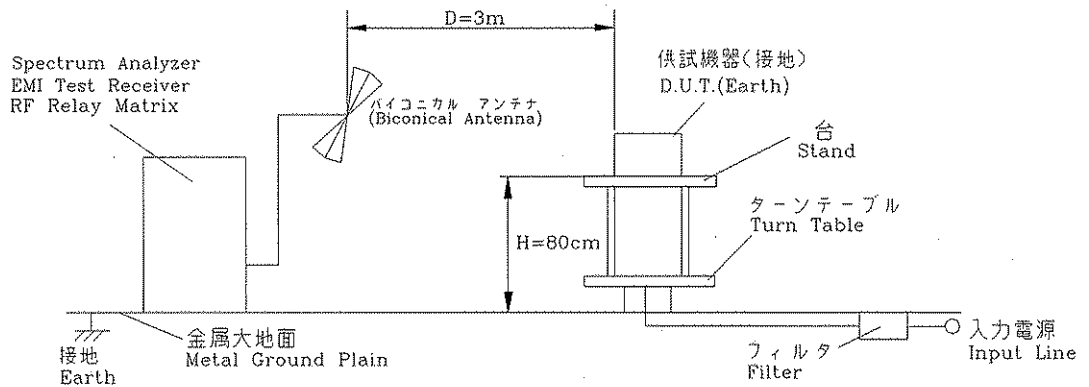


(10) EMI 特性 Electro-Magnetic Interference characteristics

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

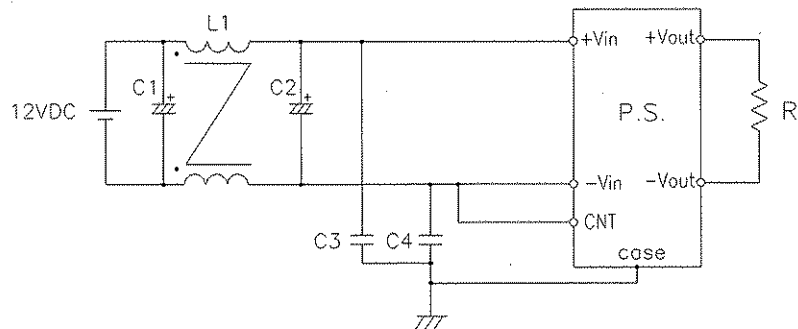


(b) 雑音電界強度 (輻射ノイズ) Radiated Emission Noise



(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: 4.7uF Electrolytic Capacitor  
 C2: 100uF Electrolytic Capacitor  
 C3, C4 : 220OpF 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-1100A
2	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA ELECT.	DL1740
3	DIGITAL MULTIMETER	AGILENT	34970A
4	CURRENT PROBE/AMPLIFIER	TEKTRONIX	A6303/TM503B
5	SHUNT RESISTER	YOKOGAWA ELECT.	2215
6	DYNAMIC DUMMY LOAD	TAKASAGO	FK-400L
7	INPUT POWER SUPPLY	DENSEI-LAMBDA	GEN100-7.5
8	CONTROLLED TEMP. CHAMBER	TABAI ESPEC	SU-261
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°C

Iout \ Vin	9VDC	12VDC	18VDC	line regulation	
0%	3.244V	3.245V	3.245V	1.0mV	0.031%
50%	3.244V	3.244V	3.244V	0.0mV	0.000%
100%	3.243V	3.243V	3.243V	0.0mV	0.000%
load	1.0mV	2.0mV	2.0mV		
regulation	0.03%	0.06%	0.06%		

## 2. Temperature drift

Conditions Vin : 12VDC

Iout : 100%

Ta	-40°C	25°C	85°C	temperature stability	
Vout	3.229V	3.243V	3.240V	14.0mV	0.43%

5V

## 1. Regulation - line and load

Condition Ta : 25°C

Iout \ Vin	9VDC	12VDC	18VDC	line regulation	
0%	5.006V	5.006V	5.007V	1.0mV	0.020%
50%	5.006V	5.006V	5.006V	0.0mV	0.000%
100%	5.005V	5.005V	5.005V	0.0mV	0.000%
load	1.0mV	1.0mV	2.0mV		
regulation	0.02%	0.02%	0.04%		

## 2. Temperature drift

Conditions Vin : 12VDC

Iout : 100%

Ta	-40°C	25°C	85°C	temperature stability	
Vout	4.985V	5.005V	5.000V	20.0mV	0.40%

## 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°C

Iout \ Vin	9VDC	12VDC	18VDC	line regulation	
0%	12.057V	12.059V	12.059V	2.0mV	0.017%
50%	12.057V	12.057V	12.057V	0.0mV	0.000%
100%	12.056V	12.056V	12.056V	0.0mV	0.000%
load regulation	1.0mV	3.0mV	3.0mV		
	0.01%	0.02%	0.02%		

## 2. Temperature drift

Conditions Vin : 12VDC

Iout : 100%

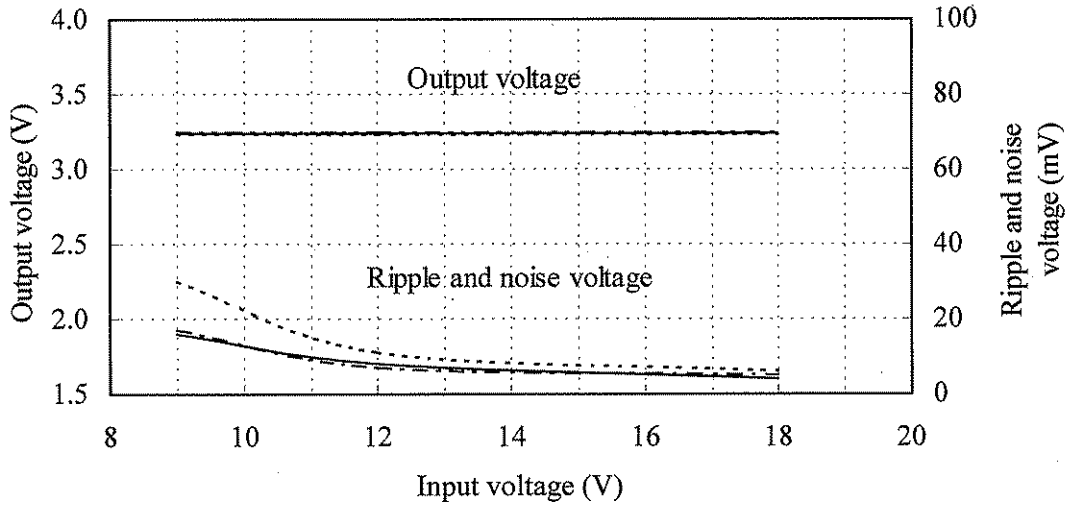
Ta	-40°C	25°C	85°C	temperature stability	
Vout	12.006V	12.056V	12.063V	57.0mV	0.47%

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 %

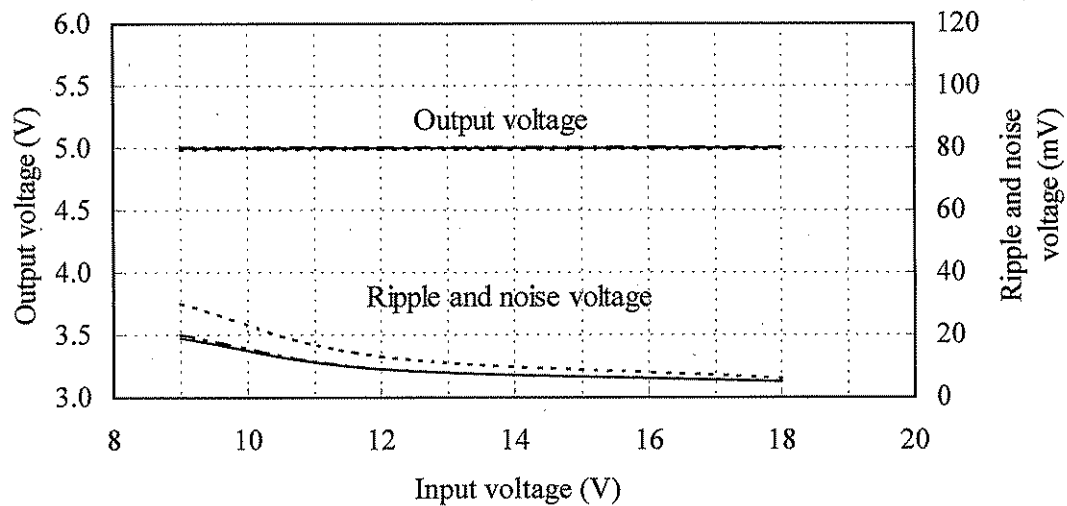
Ta : -40 °C -----  
25 °C - - - - -  
85 °C \_\_\_\_\_

3.3V



Ta : -40 °C -----  
25 °C - - - - -  
85 °C \_\_\_\_\_

5V



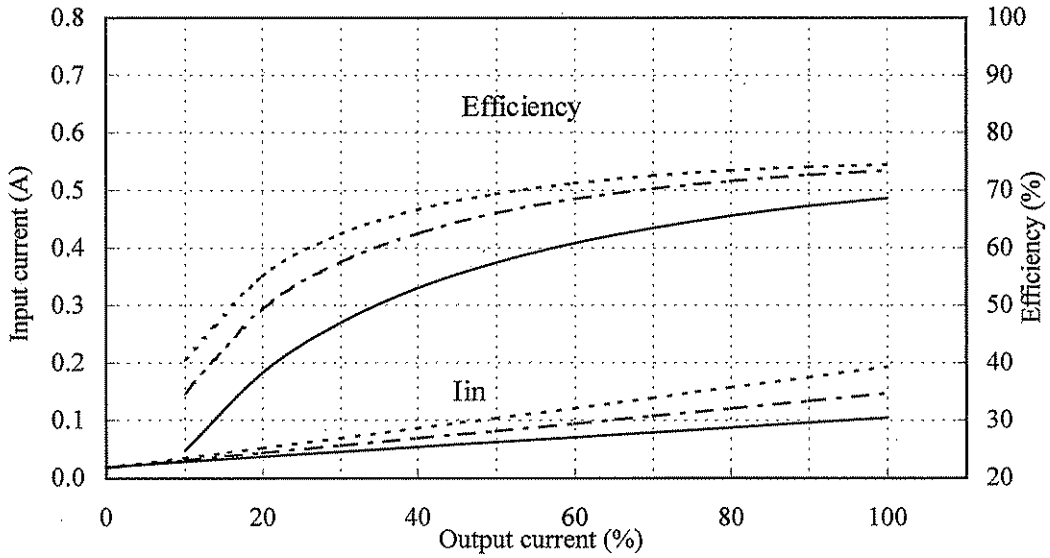


2.1 (3) 効率・入力電流対出力電流

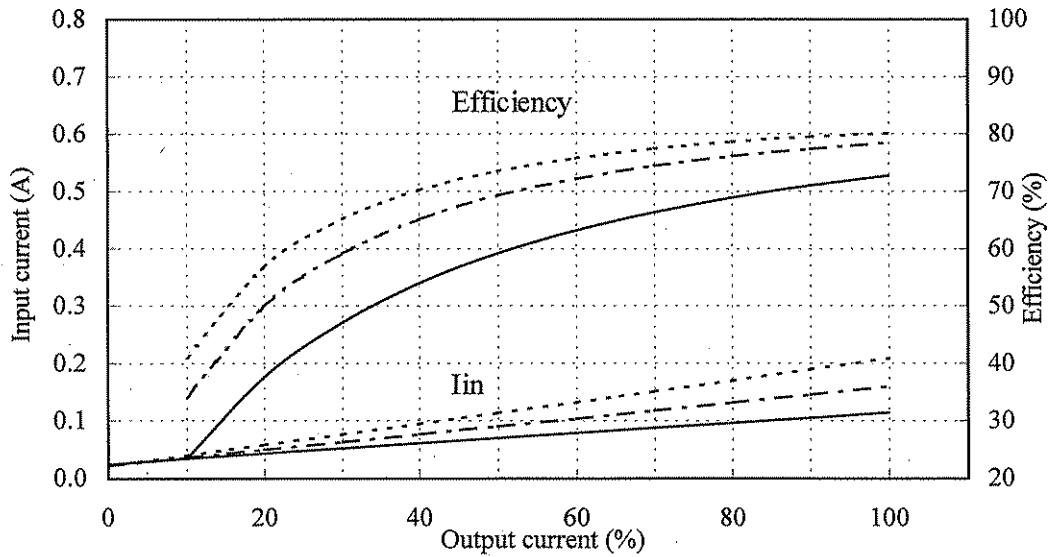
Efficiency and input current v.s. output current

Conditions  $V_{in}$  : 9 VDC -----  
 : 12 VDC - - - - -  
 : 18 VDC ————  
 $T_a$  : 25 °C

3.3V



5V

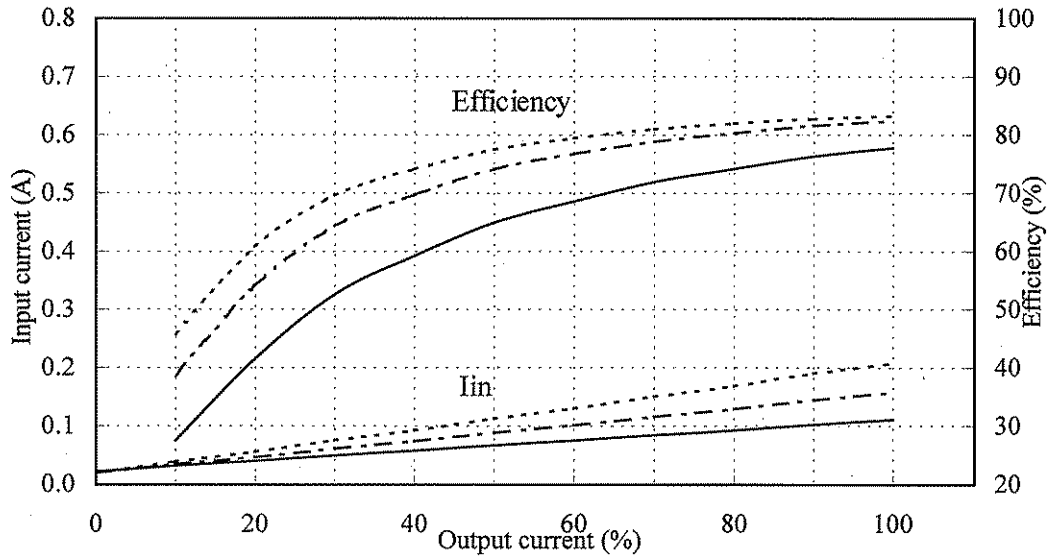


2.1 (3) 効率・入力電流対出力電流

Efficiency and input current v.s. output current

Conditions  $V_{in}$  : 9 VDC -----  
 : 12 VDC - - - - -  
 : 18 VDC ————  
 $T_a$  : 25 °C

12V



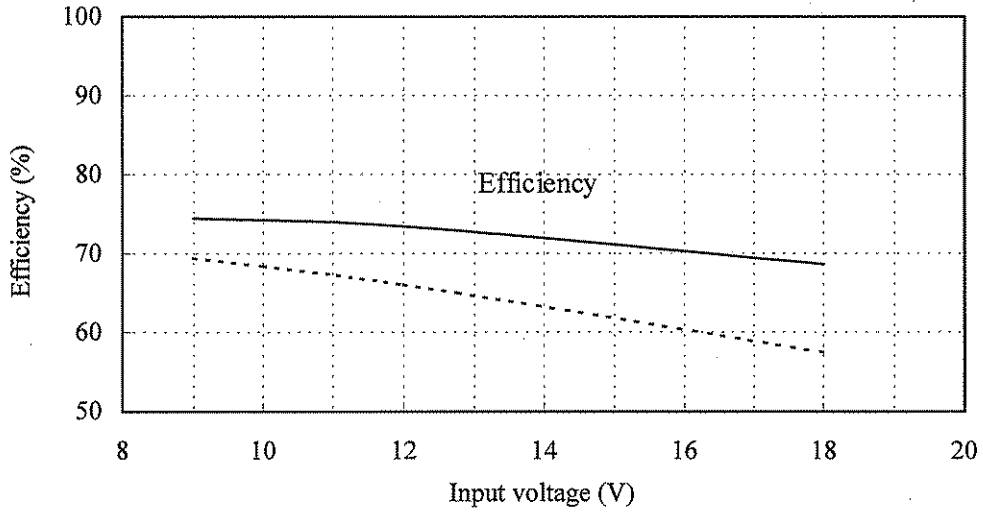
2.1 (4) 効率対入力電圧  
Efficiency v.s. input voltage

Conditions Ta : 25 °C

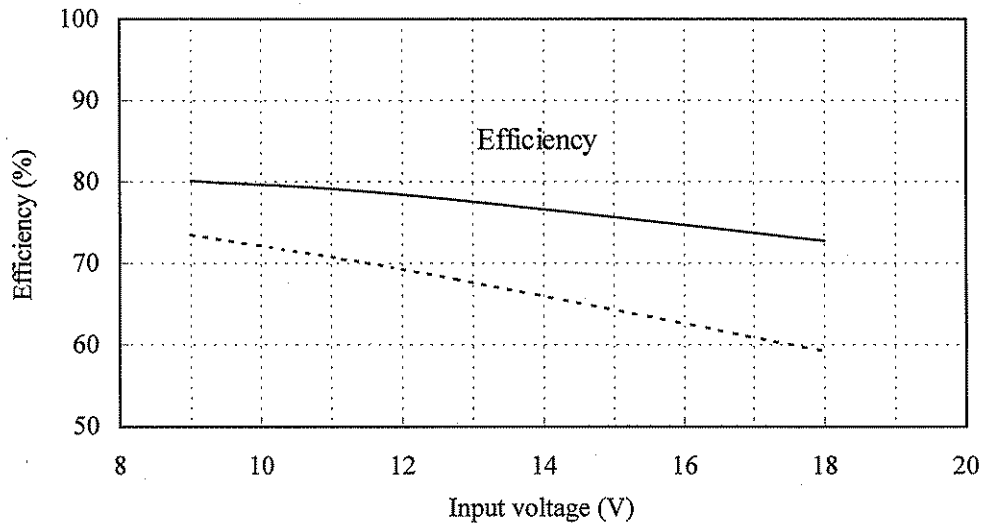
Iout : 50 % -----

100 % \_\_\_\_\_

3.3V



5V



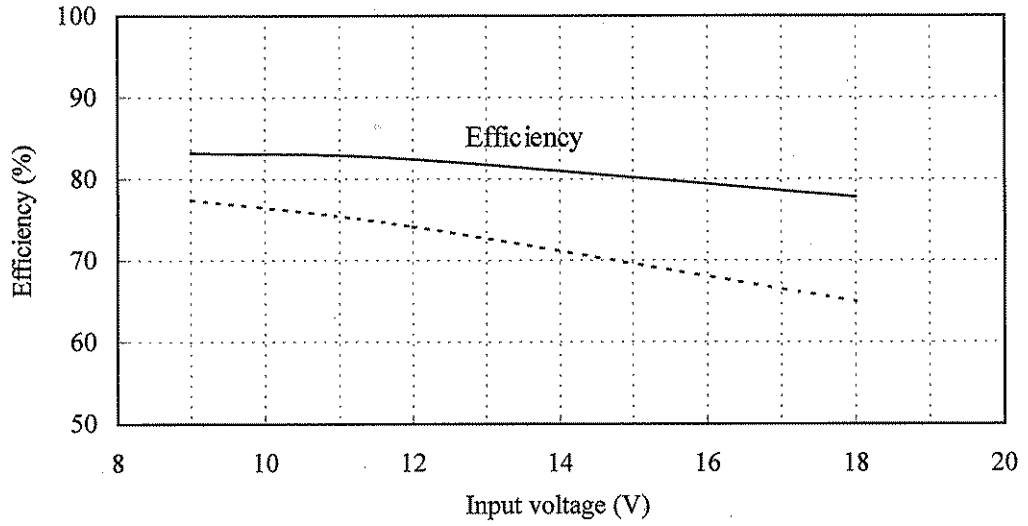
2.1 (4) 効率対入力電圧  
Efficiency v.s. input voltage

Conditions Ta : 25 °C

Iout : 50 % -----

100 % \_\_\_\_\_

12V

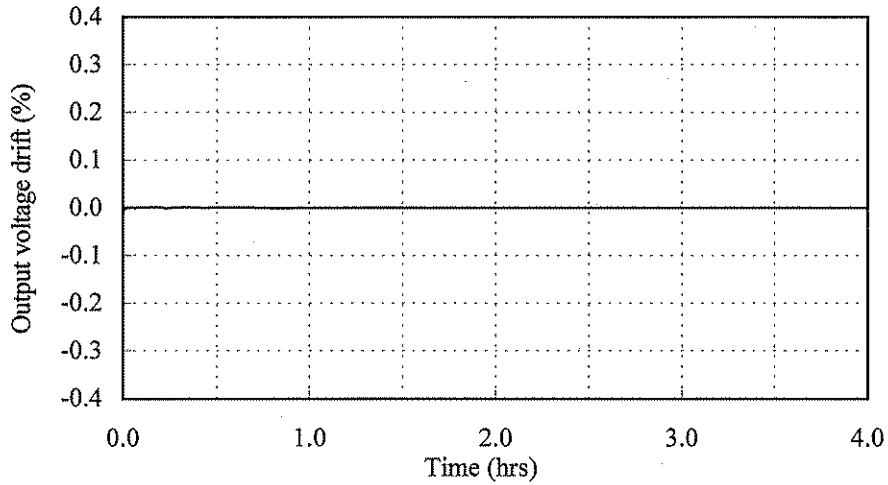




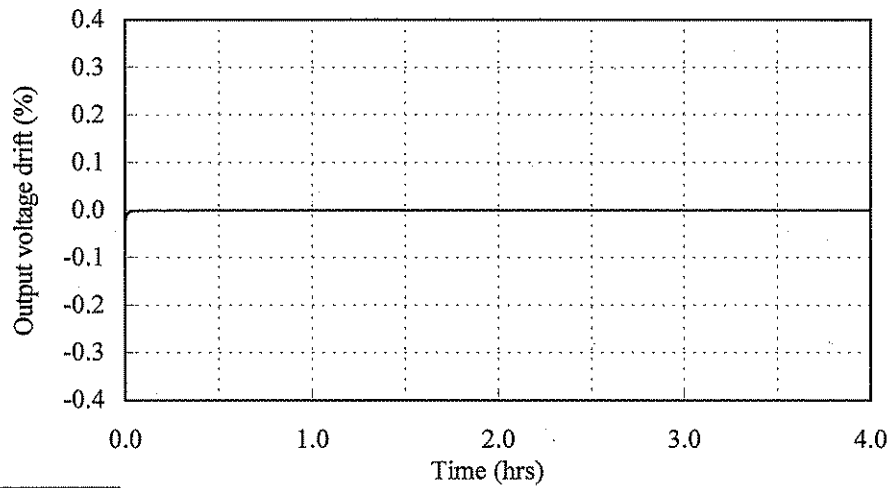
2.2 通電ドリフト特性  
Warm up voltage drift characteristics

Conditions  $V_{in}$  : 12 VDC  
 $I_{out}$  : 100 %  
 $T_a$  : 25 °C

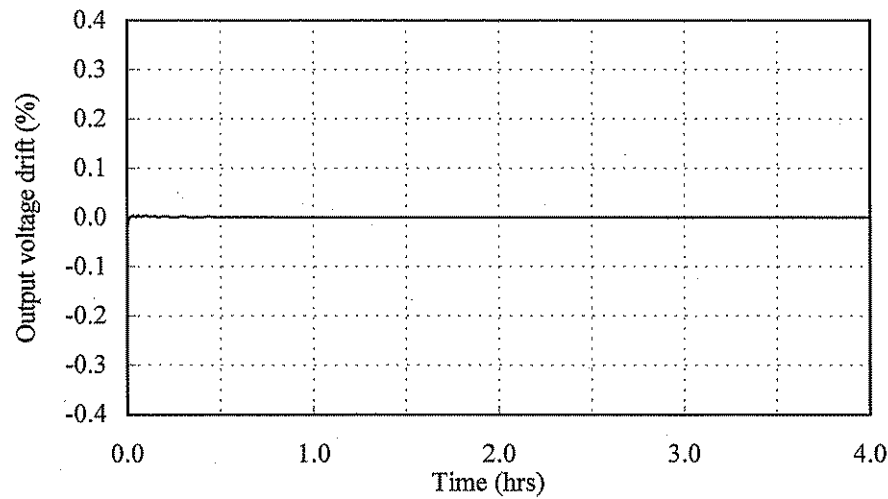
3.3V



5V



12V



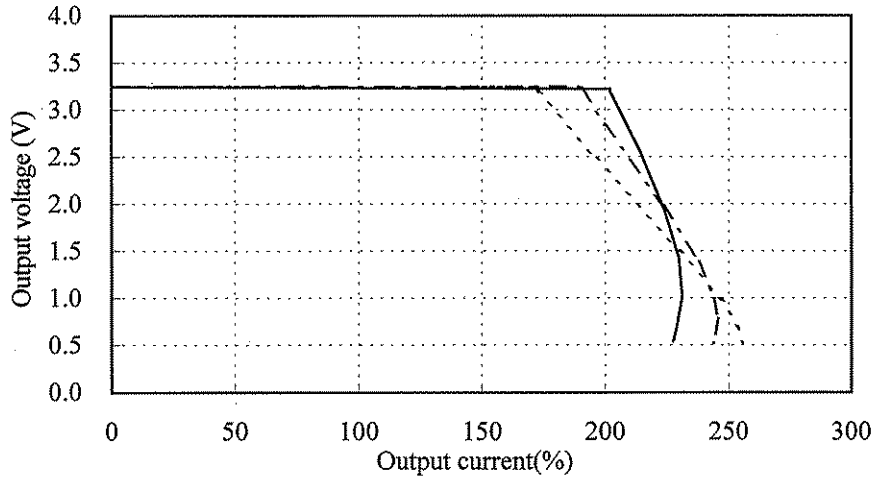
2.3 過電流保護特性

Over current protection (OCP) characteristics

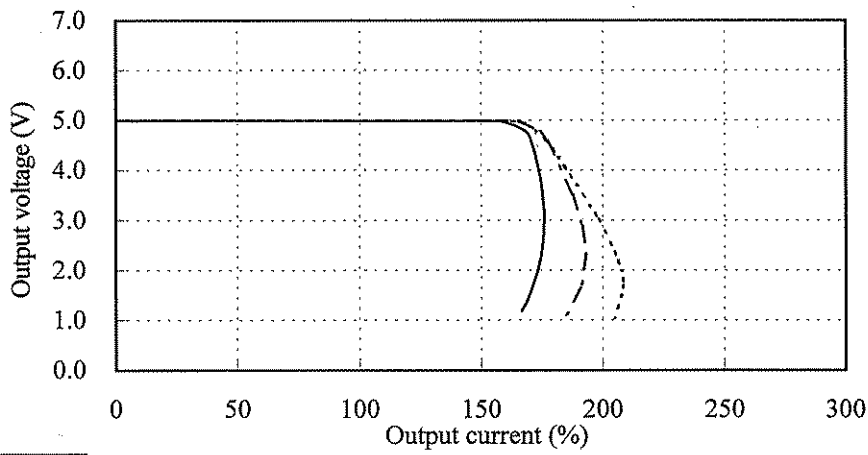
Conditions Vin : 9 VDC -----  
 12 VDC - - - - -  
 18 VDC ————

Ta : 25 °C

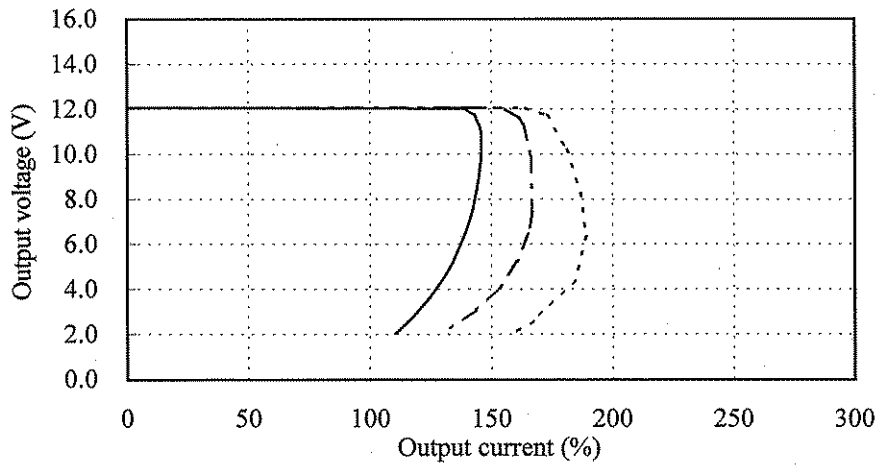
3.3V



5V



12V



2.3 過電流保護特性

Over current protection (OCP) characteristics

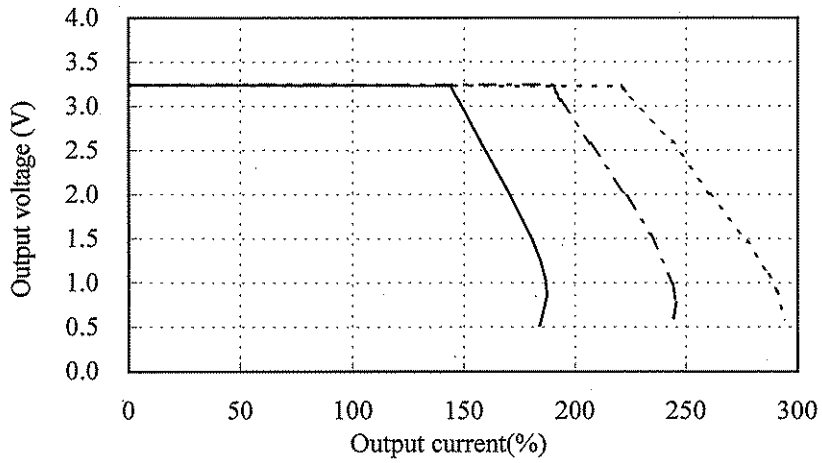
Conditions  $V_{in}$  : 12 VDC

$T_a$  : -40 °C -----

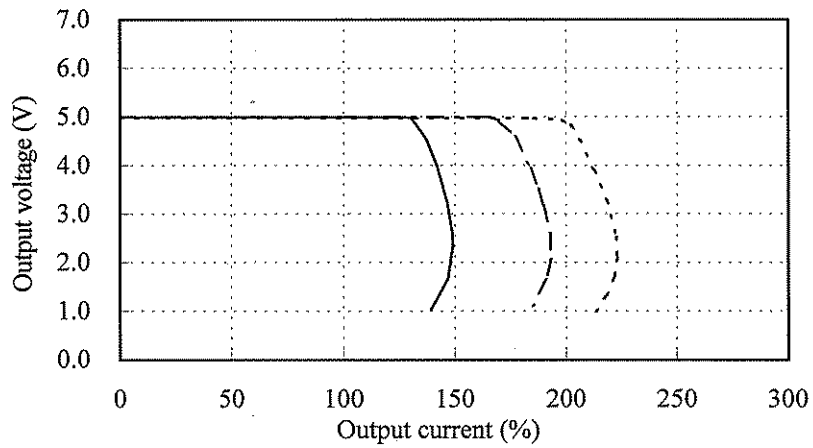
25 °C - - - - -

85 °C \_\_\_\_\_

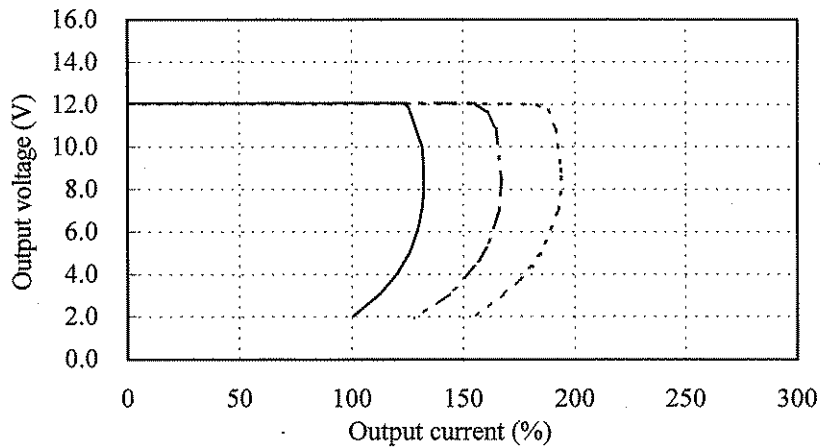
3.3V



5V



12V

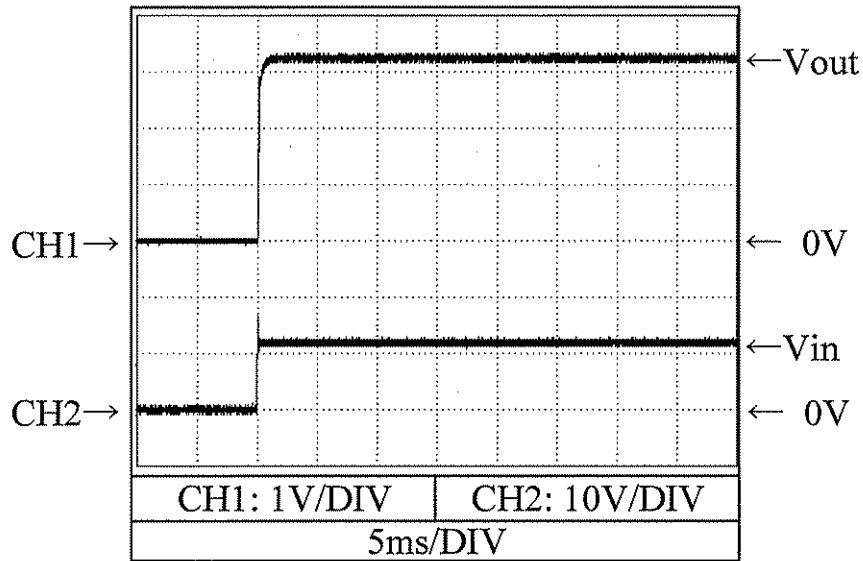


2.4 出力立ち上がり特性  
Output rise characteristics

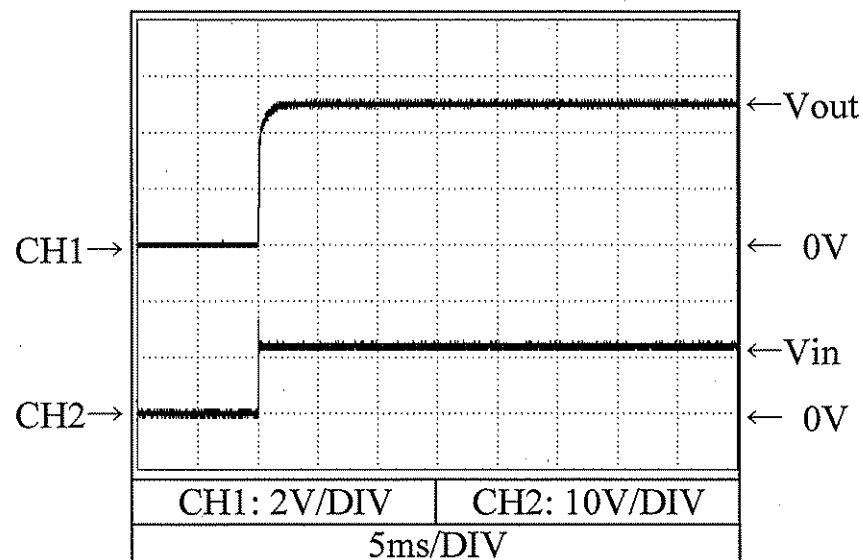
PSS1R5-12-\*

Conditions Vin : 12 VDC  
Iout : 0 %  
Ta : 25 °C

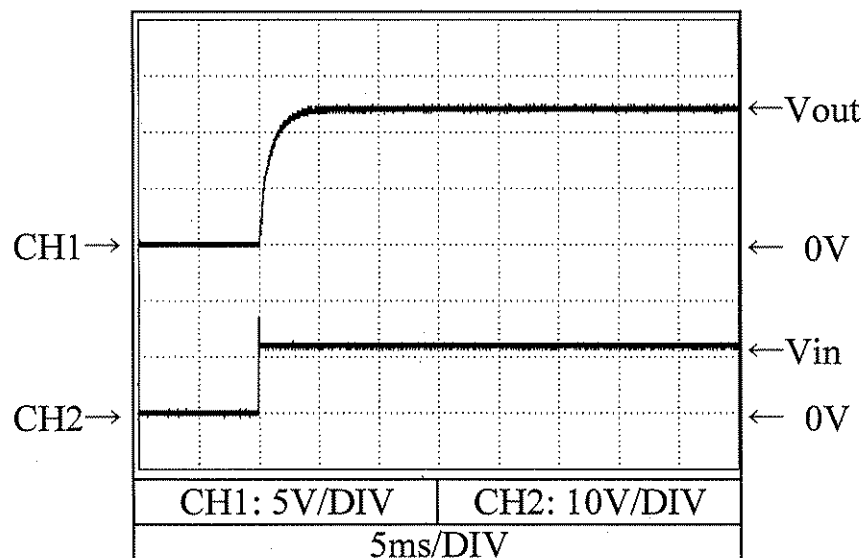
3.3V



5V



12V

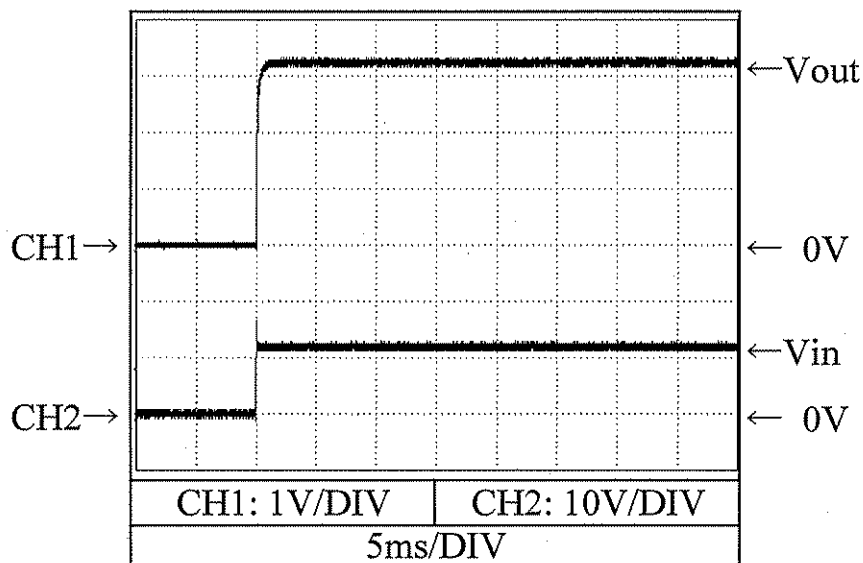


2.4 出力立ち上がり特性  
Output rise characteristics

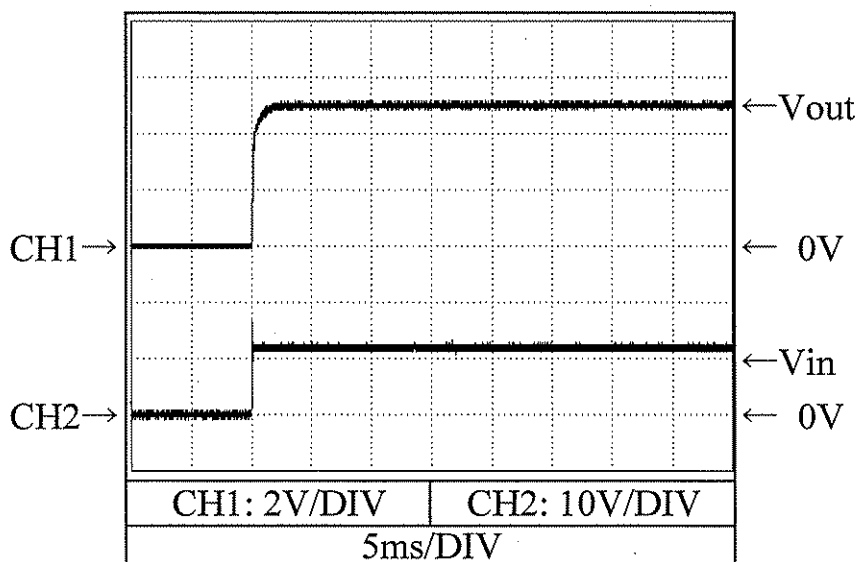
PSS1R5-12-\*

Conditions  $V_{in}$  : 12 VDC  
 $I_{out}$  : 100 %  
 $T_a$  : 25 °C

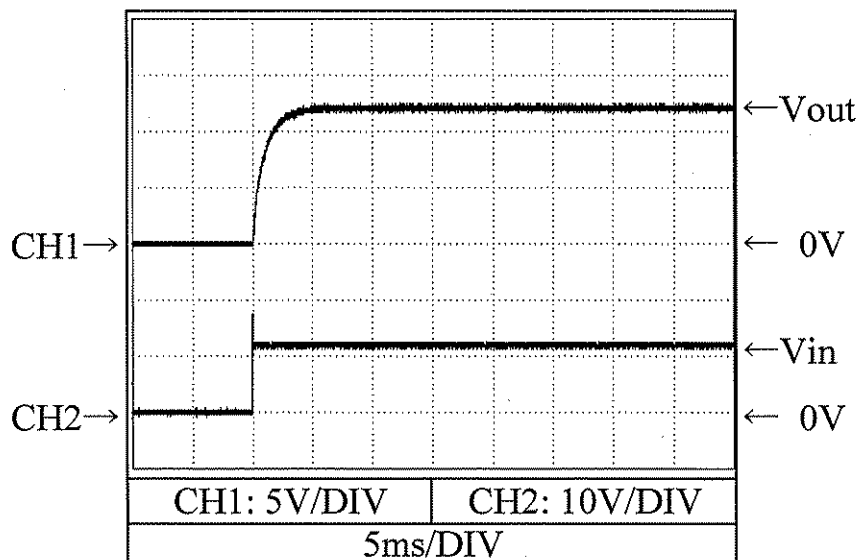
3.3V



5V



12V

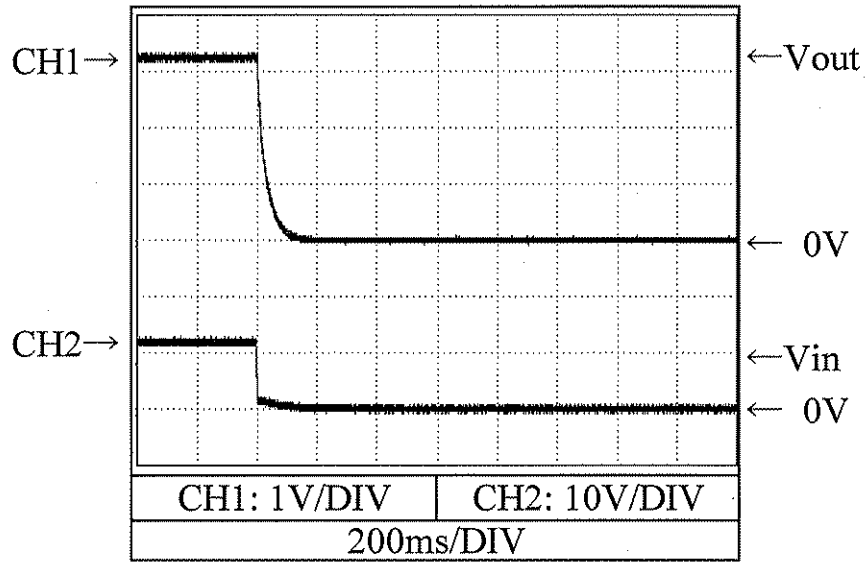


2.5 出力立ち下がり特性  
Output fall characteristics

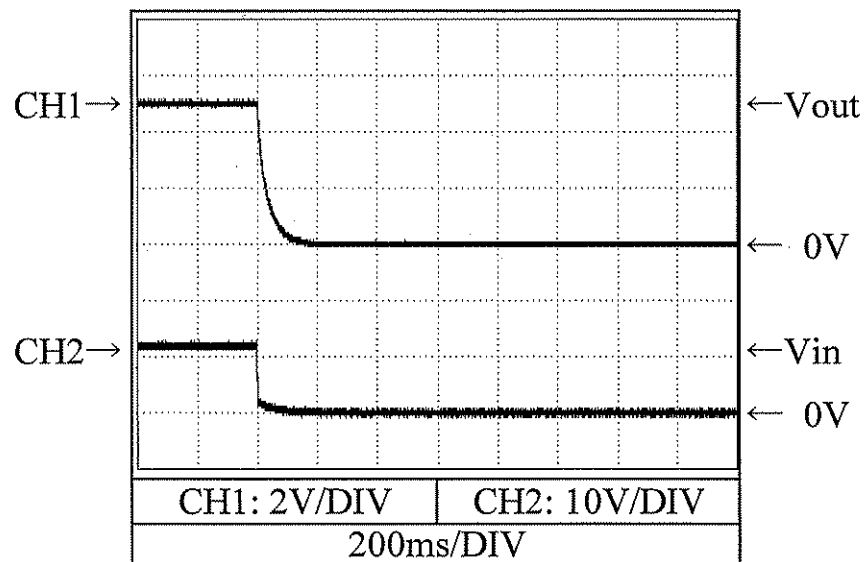
PSS1R5-12-\*

Conditions Vin : 12 VDC  
Iout : 0 %  
Ta : 25 °C

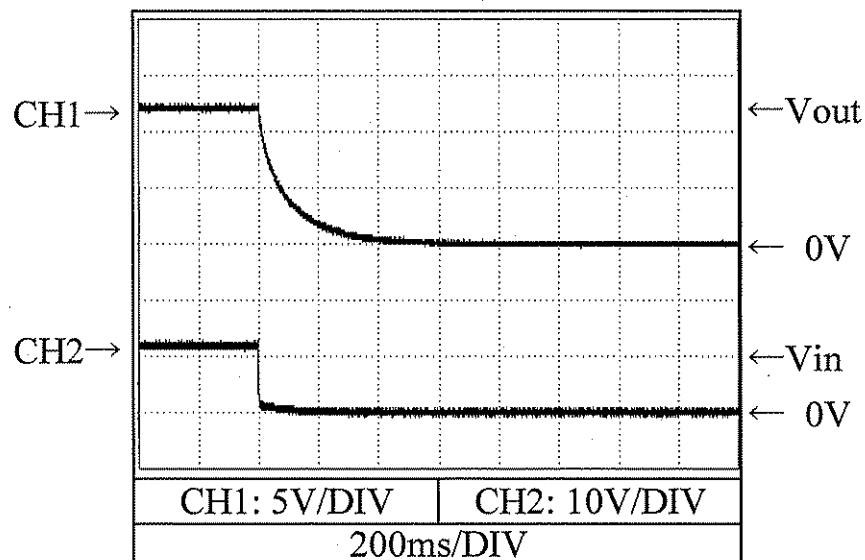
3.3V



5V



12V

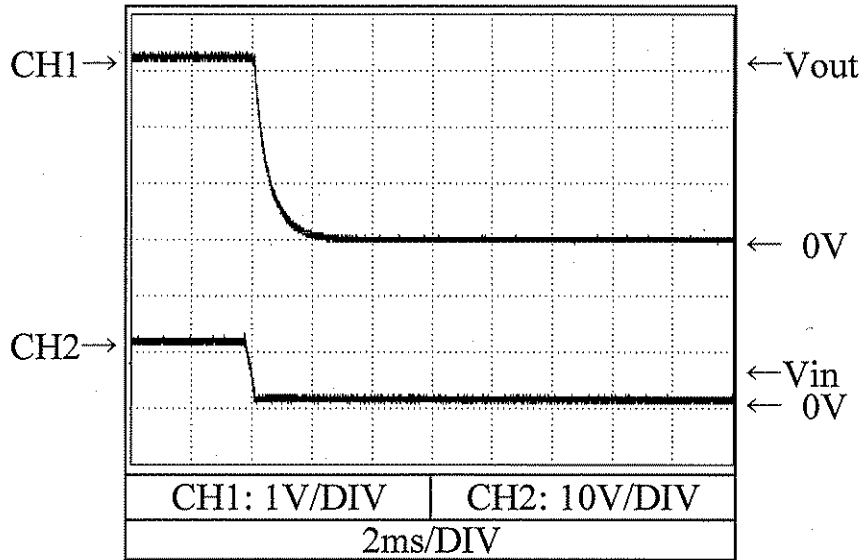


2.5 出力立ち下がり特性  
Output fall characteristics

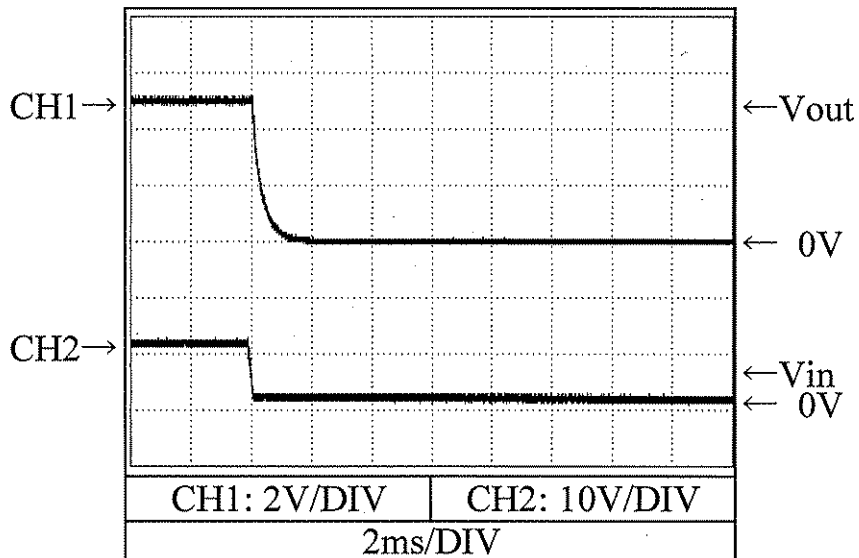
PSS1R5-12-\*

Conditions  $V_{in}$  : 12 VDC  
 $I_{out}$  : 100 %  
 $T_a$  : 25 °C

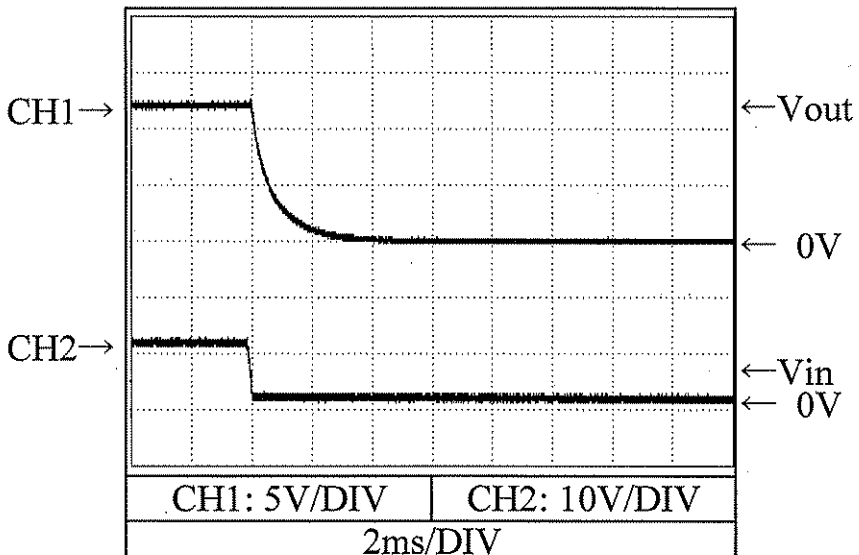
3.3V



5V



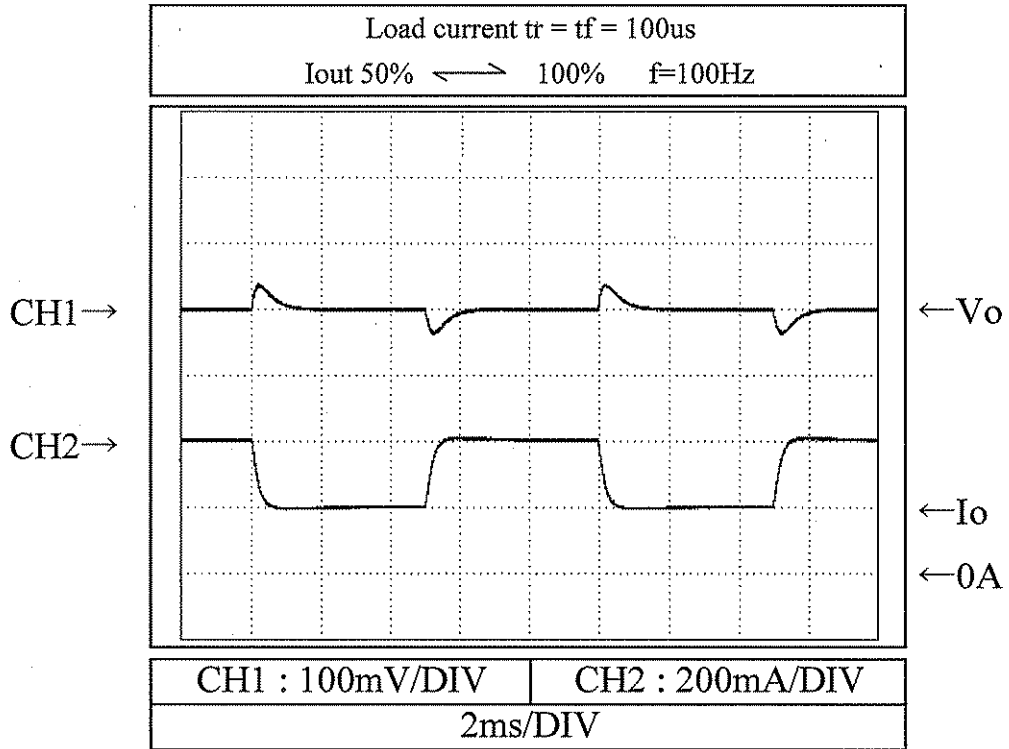
12V



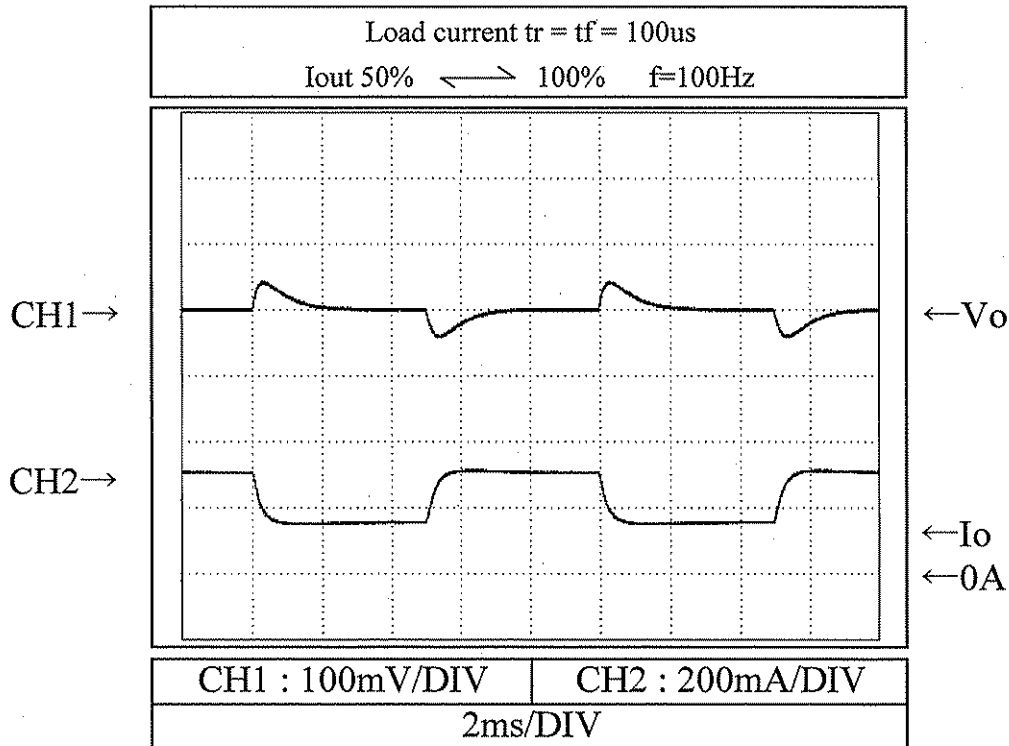
2.6 過渡応答（負荷急変）特性  
Dynamic load response characteristics

Conditions Vin : 12 VDC  
Ta : 25 °C

3.3V



5V

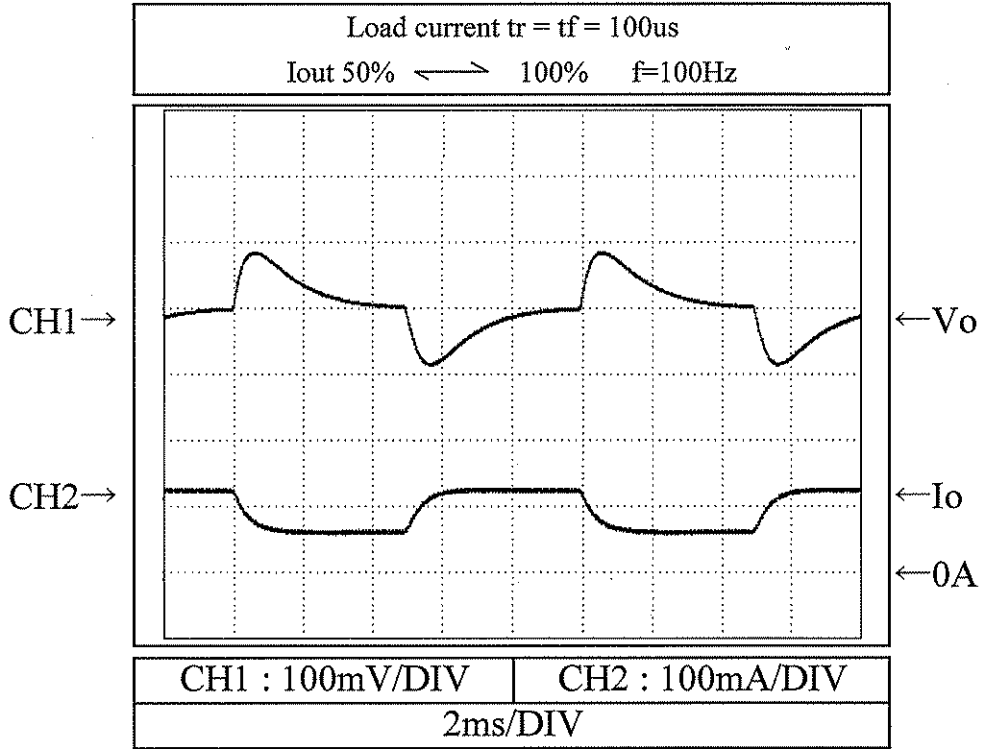




2.6 過渡応答（負荷急変）特性  
 Dynamic load response characteristics

Conditions  $V_{in}$  : 12 VDC  
 $T_a$  : 25 °C

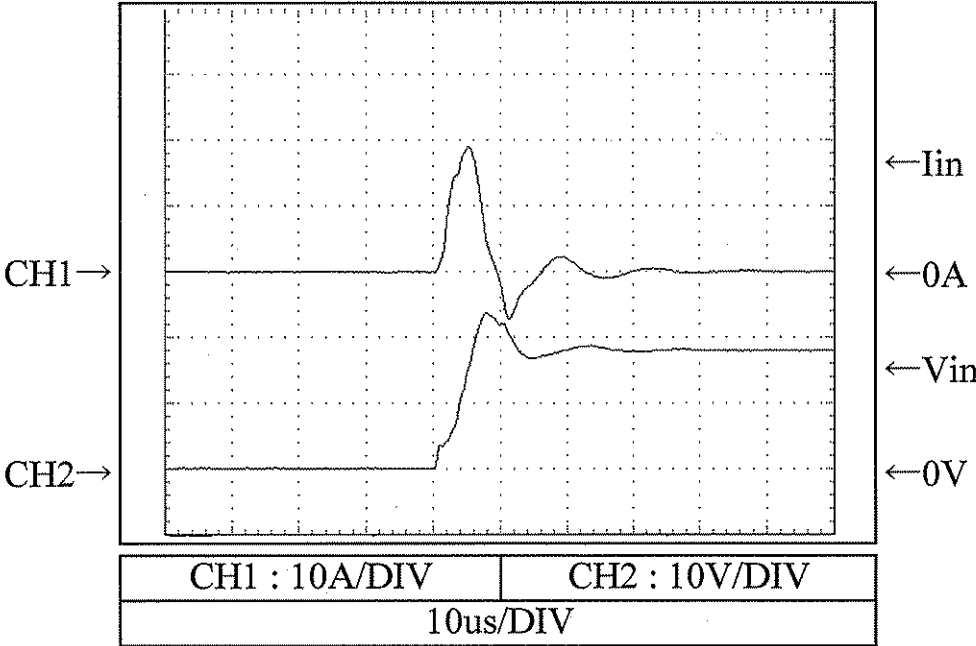
12V



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

Conditions  $V_{in}$  : 18 VDC  
 $I_{out}$  : 100 %  
 $T_a$  : 25 °C

5V



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

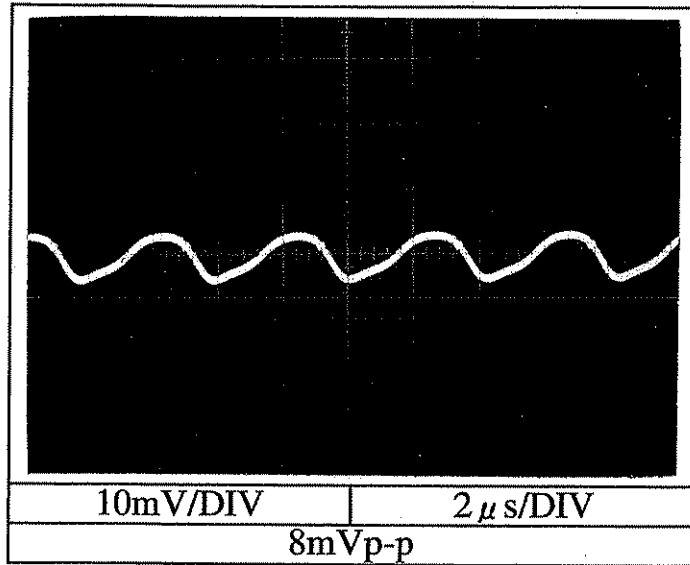
PSS1R5-12-\*

Conditions Vin : 12 VDC

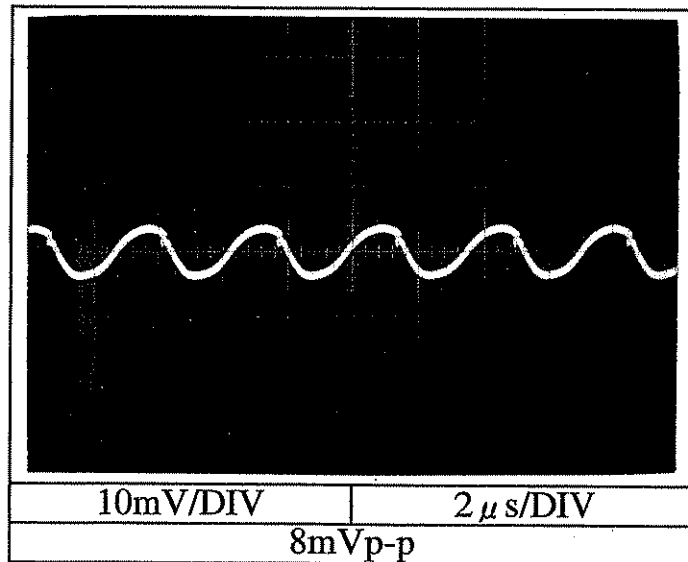
Iout : 100 %

Ta : 25 °C

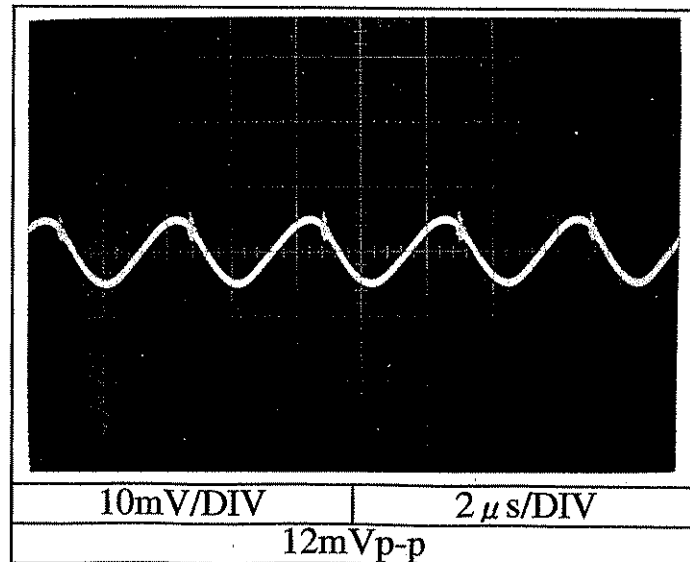
3.3V



5V



12V

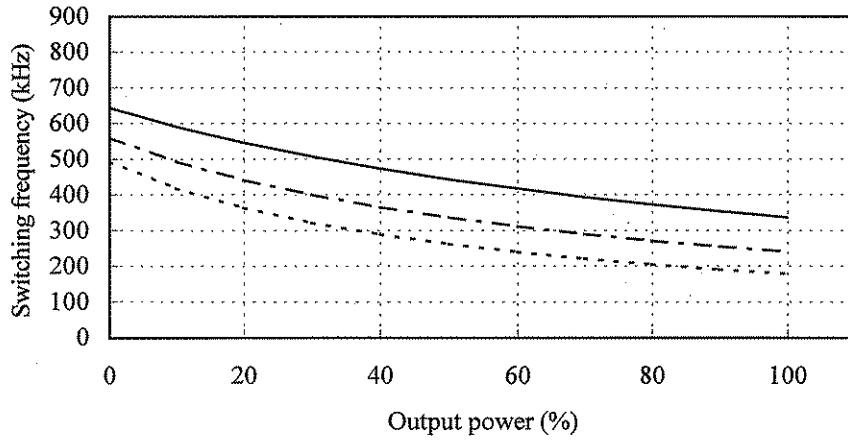


2.9 スイッチング周波数対出力電力  
Switching frequency v.s. output power

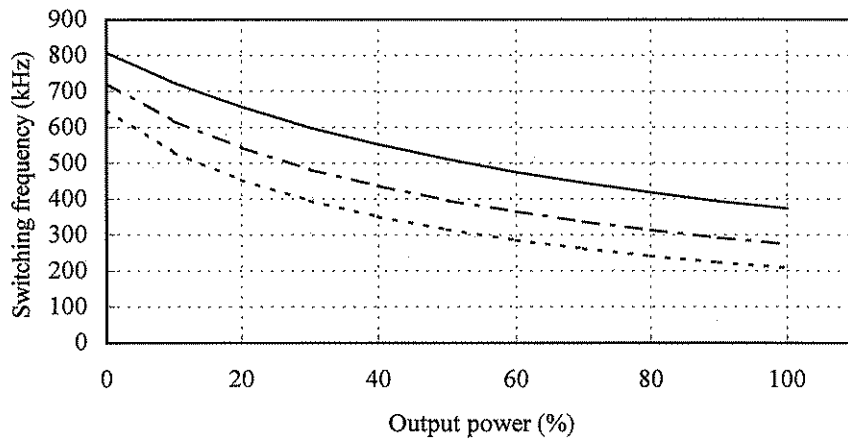
Conditions Vin : 9 VDC -----  
12 VDC -----  
18 VDC -----

Ta : 25 °C

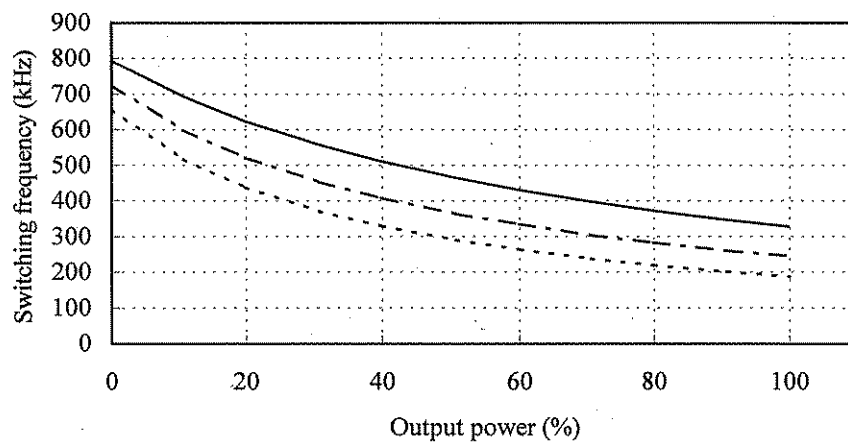
3.3V



5V



12V



2.10 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

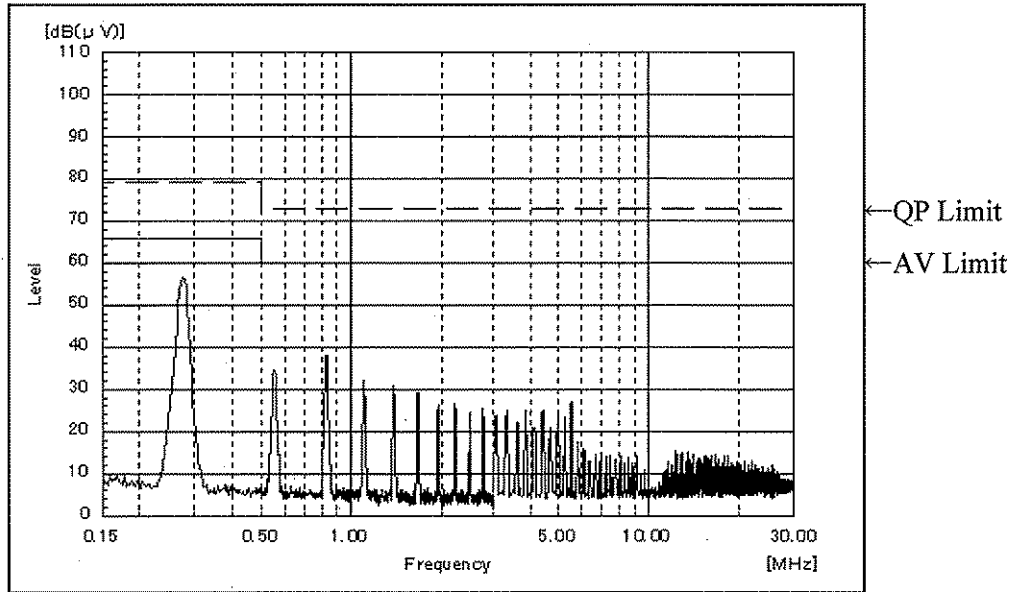
VCCI class A application system

Conditions Vin : 12 VDC

Iout : 100 %

Ta : 25 °C

5V



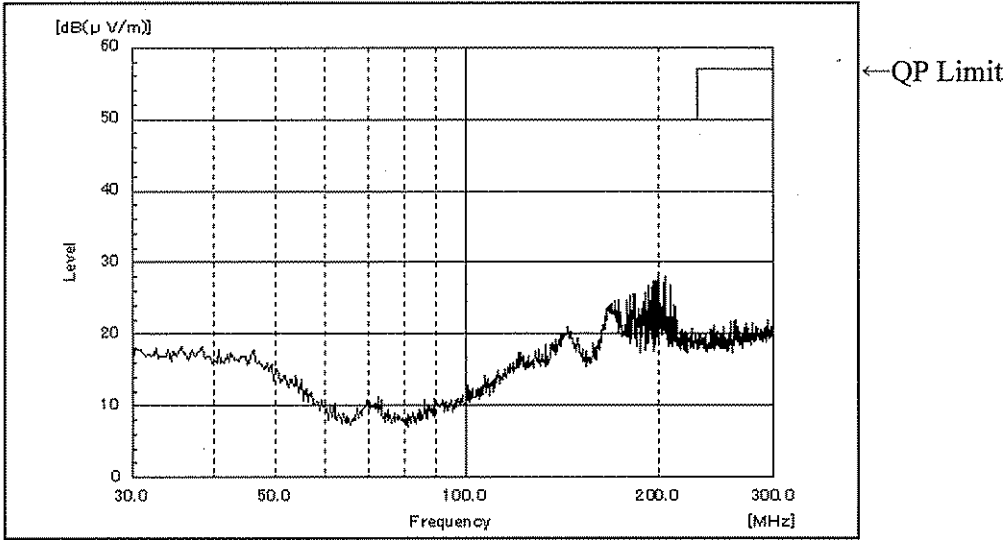
2.10 EMI特性  
Electro-Magnetic Interference characteristics

(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 °C

5V

HORIZONTAL:



VERTICAL:

