

# **RDS30A-24**

# **EVALUATION DATA**

# 型式データ

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## 2. 特性データ Characteristics

## 2-1. 静特性 Steady state data

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## 2-3. 出力保持時間特性 Hold up time characteristics .....

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#### 使用記号 Terminology used

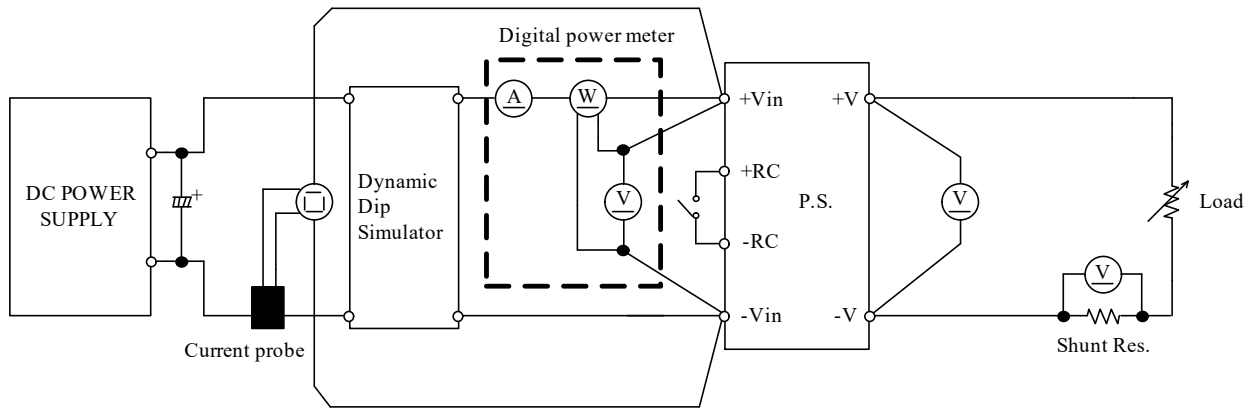
	定義	Definition
V <sub>in</sub> .....	入力電圧	Input voltage
V <sub>out</sub> .....	出力電圧	Output voltage
I <sub>in</sub> .....	入力電流	Input current
I <sub>out</sub> .....	出力電流	Output current
T <sub>a</sub> .....	周囲温度	Ambient temperature
f .....	周波数	Frequency
RC .....	ON/OFFコントロール	ON/OFF Control

※ 当社測定条件における結果であり、参考値としてお考え願います。  
 Test results are reference data based on our measurement condition.



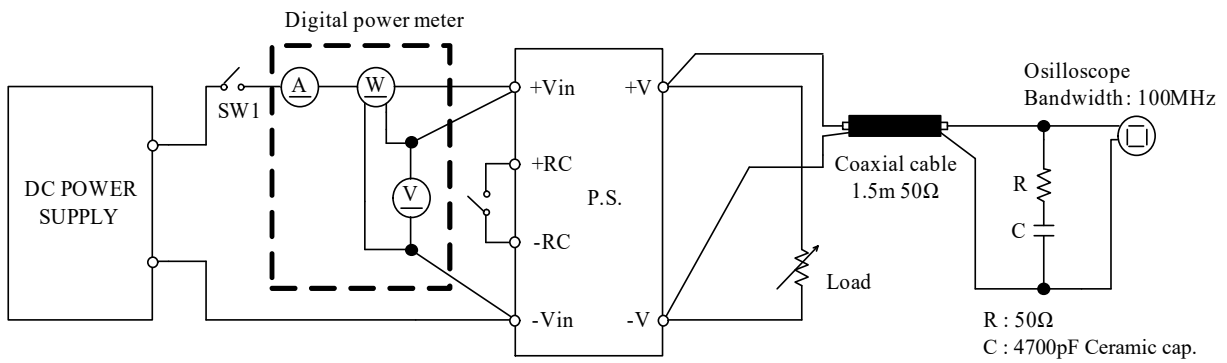
測定回路3 Circuit 3 used for determination

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



測定回路4 Circuit 4 used for determination

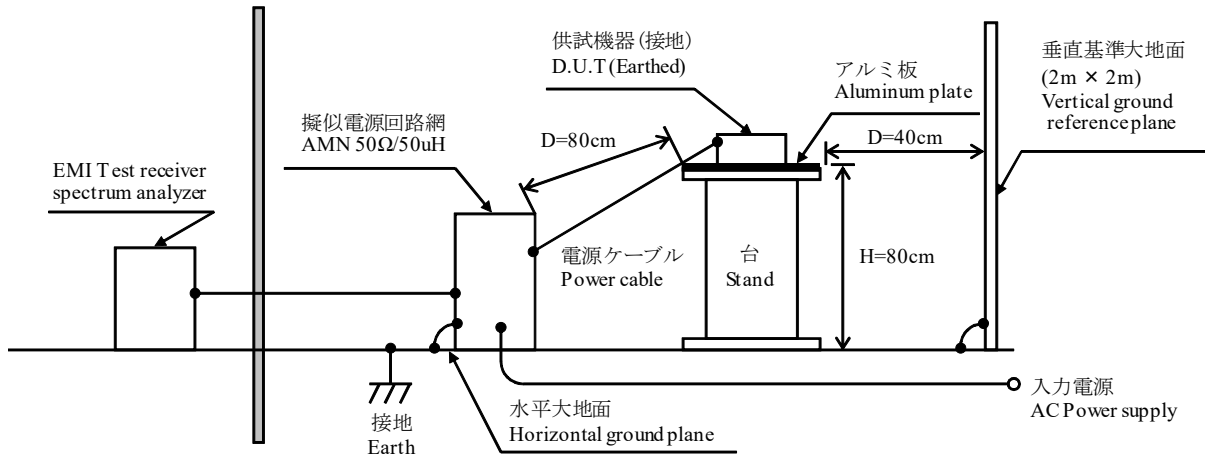
- 出力リップル、ノイズ波形 Output ripple and noise waveform



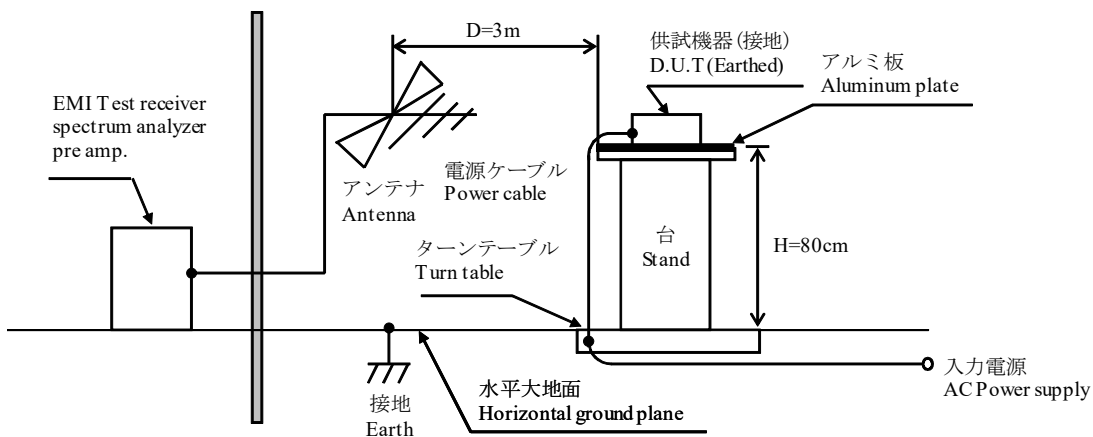
測定構成 Configuration used for determination

- EMI特性 Electro-Magnetic Interference characteristics

(a) 雑音端子電圧(帰還ノイズ) Conducted Emission



(b) 雑音電界強度(放射ノイズ) Radiated Emission



## 1-2. 使用測定機器 List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	LECROY	LeCroy LT345
2	DIGITAL STORAGE OSCILLOSCOPE	TEKTRONIX	TDS3014B
3	DIGITAL MULTIMETER	AGILENT	34970A
4	DIGITAL POWER METER	YOKOGAWA ELECT.	WT210
5	CURRENT PROBE	TEKTRONIX	TCP-312
6	CURRENT AMP	TEKTRONIX	TCPA-300
7	DYNAMIC DUMMY LOAD	CHROMA	Chroma 63103A
8	DYNAMIC DUMMY LOAD	KIKUSUI	PLZ150U
9	CVCF	TDK LAMBDA	TDK Lambda Z-PLUS
10	CVCF	TDK LAMBDA	TDK Lambda GEN40-38
11	CVCF	KIKUSUI	PCR1000LE
12	CVCF	CHROMA	62012P-80-60
13	CONTROLLED TEMP. CHAMBER	ESPEC	SU-261 / SU-262
14	EMI TEST RECEIVER / SPECTRUM ANALYZER	ROHDE & SCHWARZ	ESR EMI Test Receiver
15	LISN	ROHDE & SCHWARZ	ENV216
16	FREQUENCY RESPONSE ANALYZER	NF	FRA51615

## 2. 特性データ Characteristics

## 2-1. 静特性 Steady state data

(1) 入力・負荷・温度変動／出力起動・遮断電圧

Regulation - line and load, Temperature drift / Start up voltage and Drop out voltage

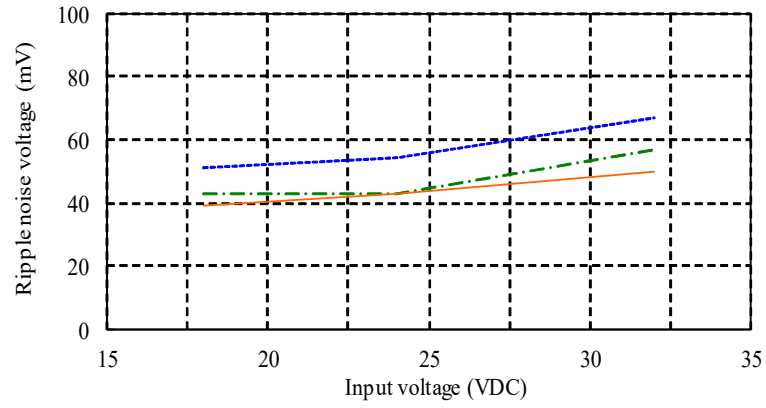
5V		1. Regulation - line and load				Condition	Ta : 25 °C
Iout \ Vin	18VDC	24VDC	32VDC	Line regulation			
0%	5.019V	5.019V	5.019V	0mV	0.000%		
50%	5.010V	5.010V	5.010V	0mV	0.000%		
100%	5.002V	5.002V	5.002V	0mV	0.000%		
Load regulation	17mV	17mV	17mV				
	0.340%	0.340%	0.340%				
		2. Temperature drift				Conditions	Vin : 24 VDC Iout : 100 %
Ta	-20°C	+25°C	+50°C	Temperature stability			
Vout	5.001V	5.002V	4.994V	8mV	0.160%		
		3. Start up voltage and Drop out voltage				Conditions	Ta : 25 °C Iout : 100 %
Start up voltage (Vin)		17VDC					
Drop out voltage (Vin)		14VDC					
12V		1. Regulation - line and load				Condition	Ta : 25 °C
Iout \ Vin	18VDC	24VDC	32VDC	Line regulation			
0%	12.040V	12.040V	12.041V	1mV	0.008%		
50%	12.037V	12.037V	12.037V	0mV	0.000%		
100%	12.033V	12.033V	12.033V	0mV	0.000%		
Load regulation	7mV	7mV	8mV				
	0.058%	0.058%	0.067%				
		2. Temperature drift				Conditions	Vin : 24 VDC Iout : 100 %
Ta	-20°C	+25°C	+50°C	Temperature stability			
Vout	12.090V	12.033V	12.012V	78mV	0.650%		
		3. Start up voltage and Drop out voltage				Conditions	Ta : 25 °C Iout : 100 %
Start up voltage (Vin)		17VDC					
Drop out voltage (Vin)		14VDC					
24V		1. Regulation - line and load				Condition	Ta : 25 °C
Iout \ Vin	18VDC	24VDC	32VDC	Line regulation			
0%	23.972V	23.973V	23.973V	1mV	0.004%		
50%	23.970V	23.970V	23.970V	0mV	0.000%		
100%	23.970V	23.969V	23.969V	1mV	0.004%		
Load regulation	2mV	4mV	4mV				
	0.008%	0.017%	0.017%				
		2. Temperature drift				Conditions	Vin : 24 VDC Iout : 100 %
Ta	-20°C	+25°C	+50°C	Temperature stability			
Vout	24.003V	23.969V	23.976V	34mV	0.142%		
		3. Start up voltage and Drop out voltage				Conditions	Ta : 25 °C Iout : 100 %
Start up voltage (Vin)		17VDC					
Drop out voltage (Vin)		14VDC					



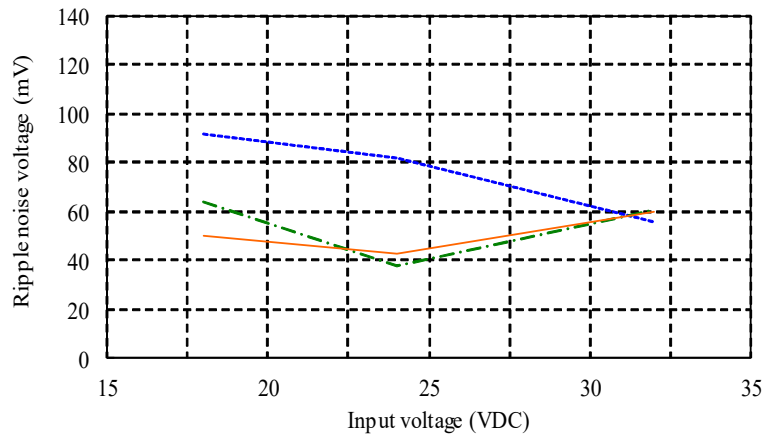
(2) リップルノイズ電圧対入力電圧 Ripple noise voltage vs. Input voltage

Conditions Iout : 100 %  
 Ta : -20 °C ---  
 25 °C - - -  
 50 °C ———

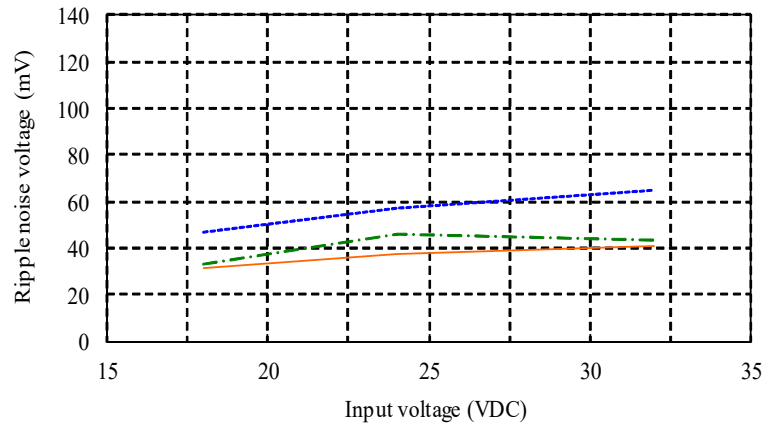
5V



12V



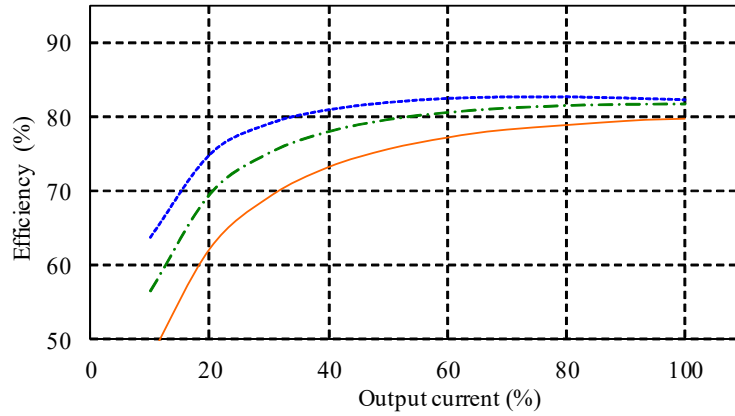
24V



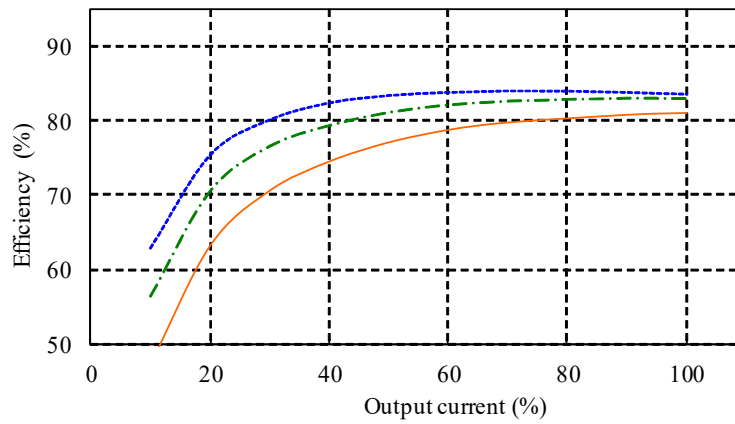
(3) 効率対出力電流 Efficiency vs. Output current

Conditions Vin : 18 VDC ---  
 24 VDC - - -  
 32 VDC —  
 Ta : 25 °C

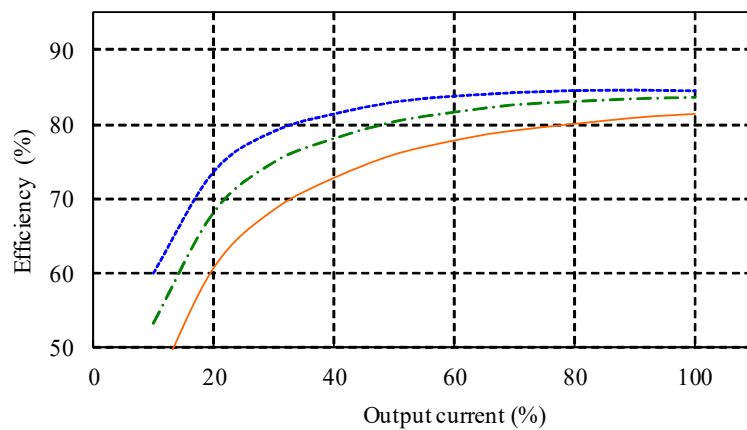
5V



12V



24V



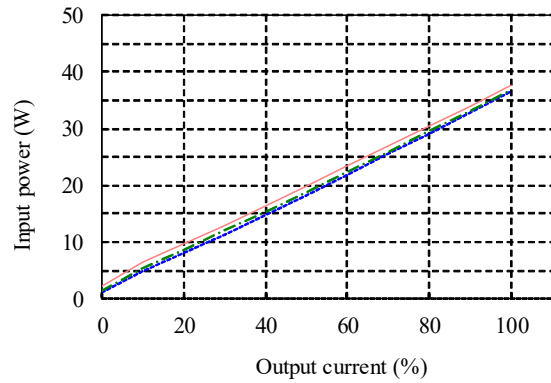
(4) 入力電力対出力電流 Input power vs. Output current

Conditions Vin : 18 VDC ---  
 24 VDC ---  
 32 VDC ---  
 Ta : 25 °C

5V

Vin	Input power (CNT ON)
	Iout : 0%
18VDC	1.10W
24VDC	1.41W
32VDC	2.09W

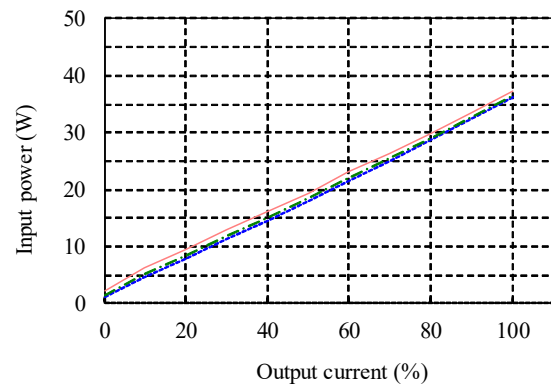
Vin	Input power (CNT OFF)
	Iout : 0%
18VDC	0.20W
24VDC	0.48W
32VDC	1.02W



12V

Vin	Input power (CNT ON)
	Iout : 0%
18VDC	1.13W
24VDC	1.49W
32VDC	2.19W

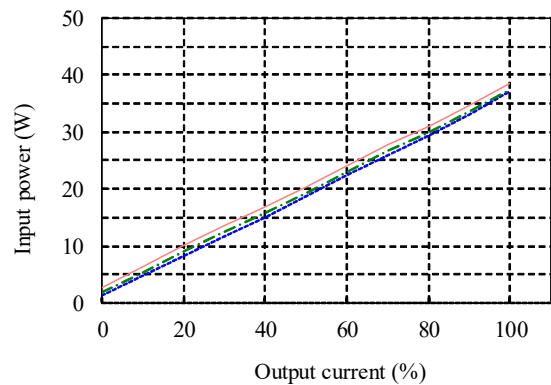
Vin	Input power (CNT OFF)
	Iout : 0%
18VDC	0.20W
24VDC	0.50W
32VDC	1.02W



24V

Vin	Input power (CNT ON)
	Iout : 0%
18VDC	1.42W
24VDC	1.92W
32VDC	2.74W

Vin	Input power (CNT OFF)
	Iout : 0%
18VDC	0.20W
24VDC	0.46W
32VDC	1.02W

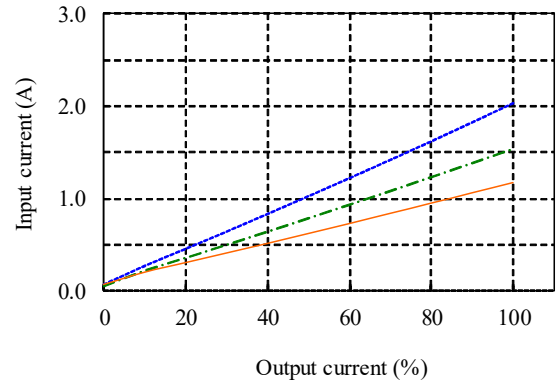


(5) 入力電流対出力電流 Input current vs. Output current

Conditions Vin : 18 VDC ---  
 24 VDC - - -  
 32 VDC —  
 Ta : 25 °C

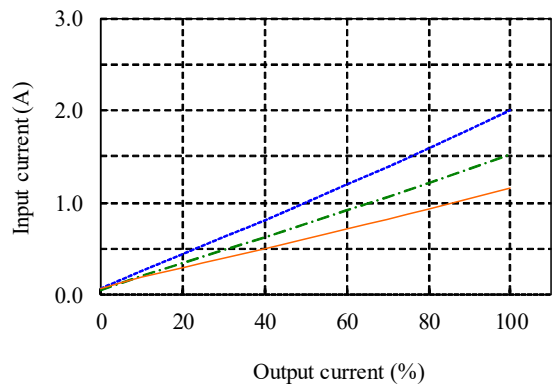
5V

Vin	Input current
	Iout : 0%
18VDC	0.06A
24VDC	0.06A
32VDC	0.07A



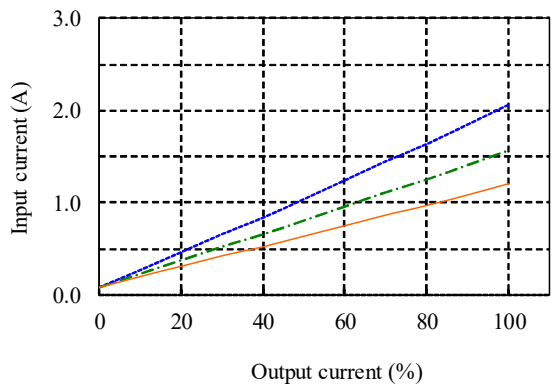
12V

Vin	Input current
	Iout : 0%
18VDC	0.06A
24VDC	0.06A
32VDC	0.07A



24V

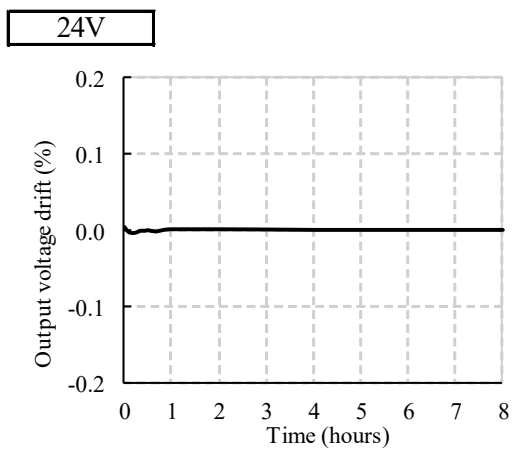
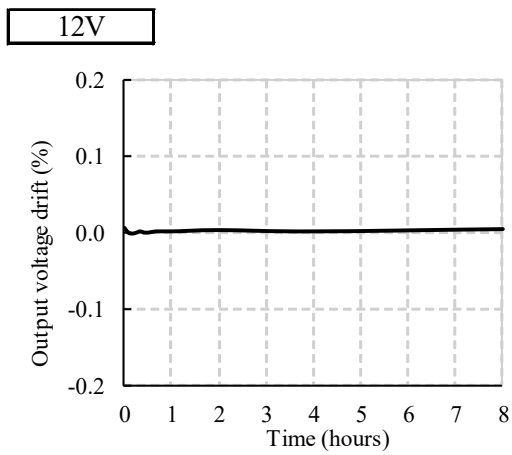
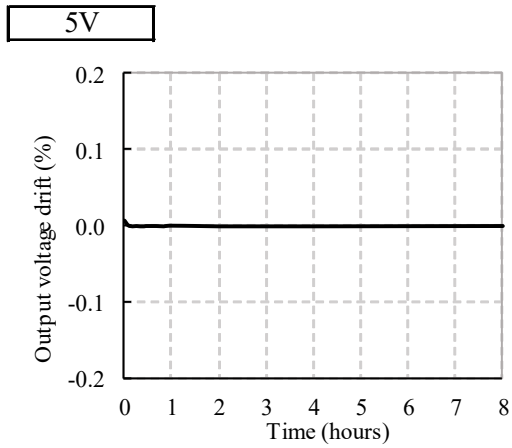
Vin	Input current
	Iout : 0%
18VDC	0.08A
24VDC	0.08A
32VDC	0.09A



2-2. 通電ドリフト特性

Warm up voltage drift characteristics

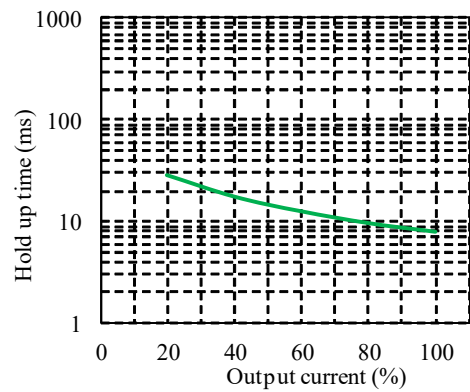
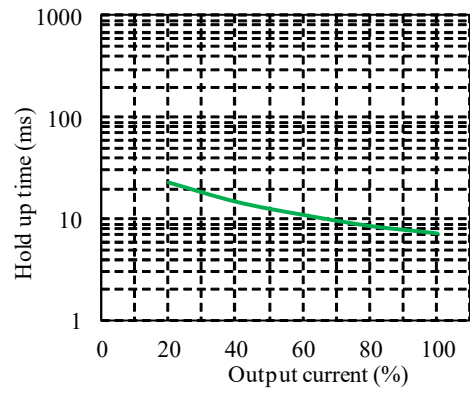
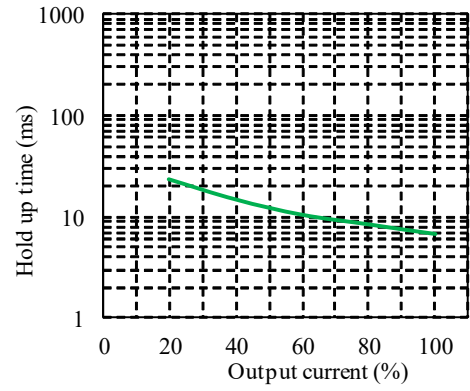
Conditions Vin : 24 VDC  
 Iout : 100 %  
 Ta : 25 °C



2-3. 出力保持時間特性

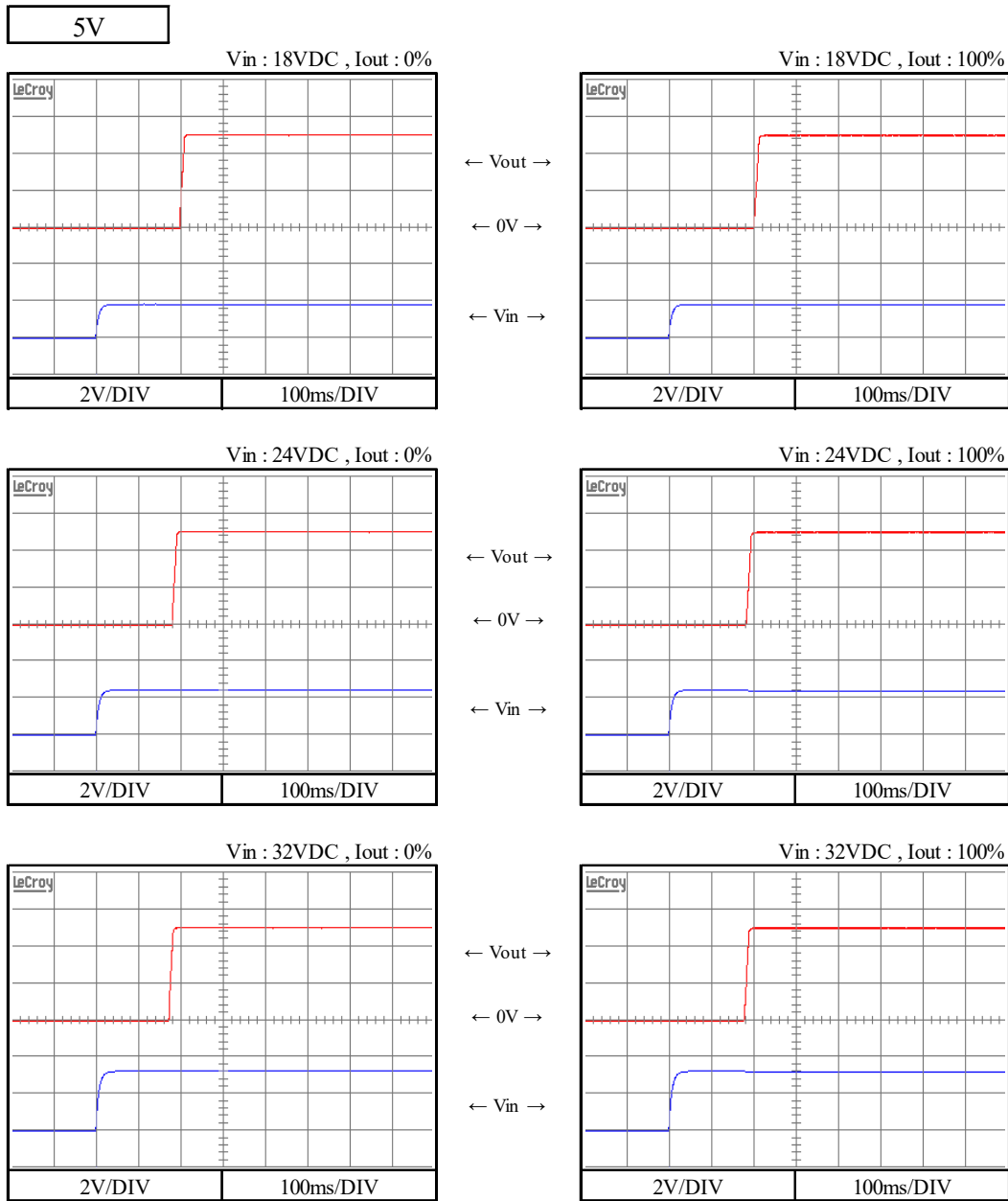
Hold up time characteristics

Conditions Vin : 24 VDC  
 Ta : 25 °C



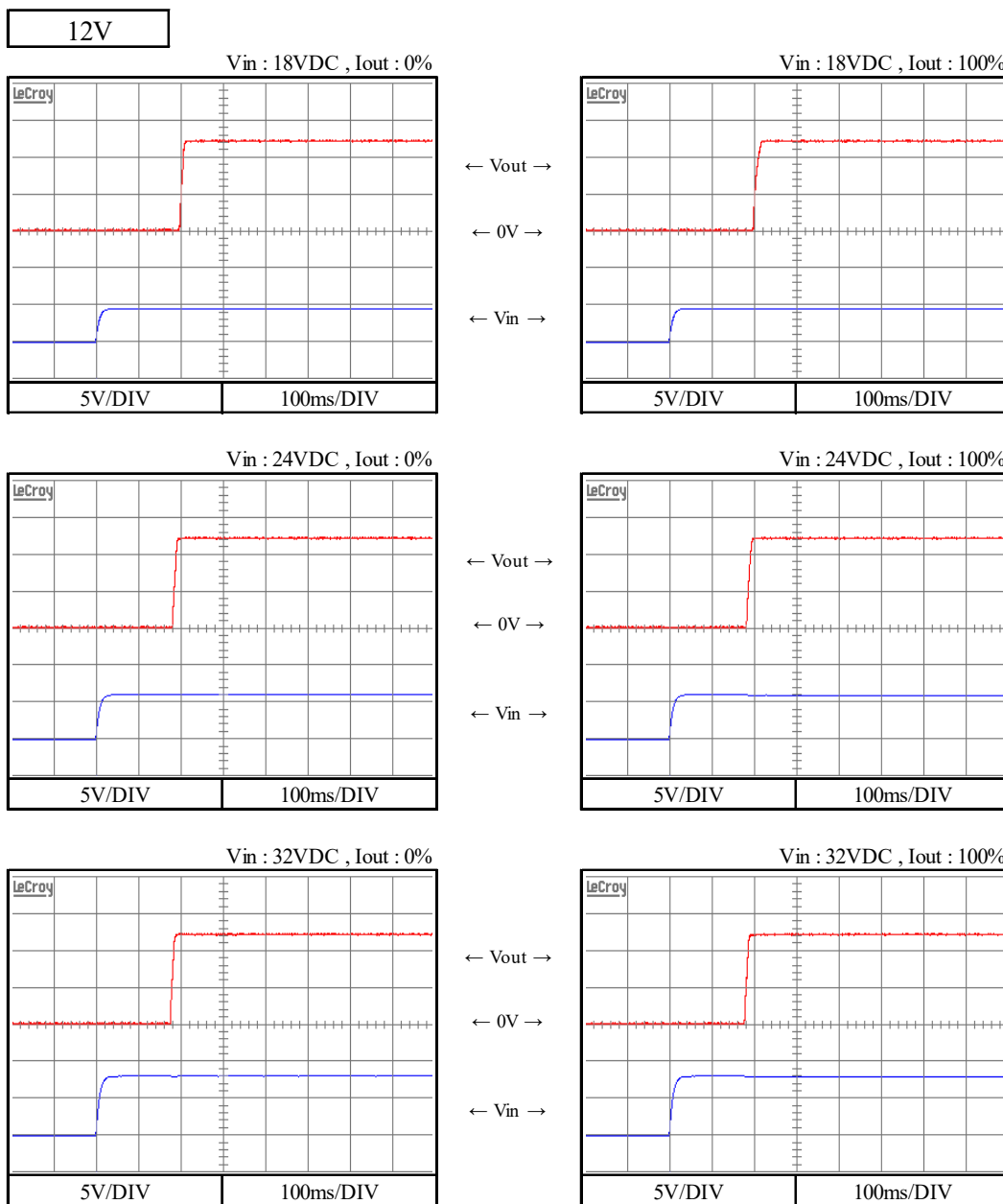
2-4. 出力立ち上がり特性 Output rise characteristics

Condition Ta : 25 °C



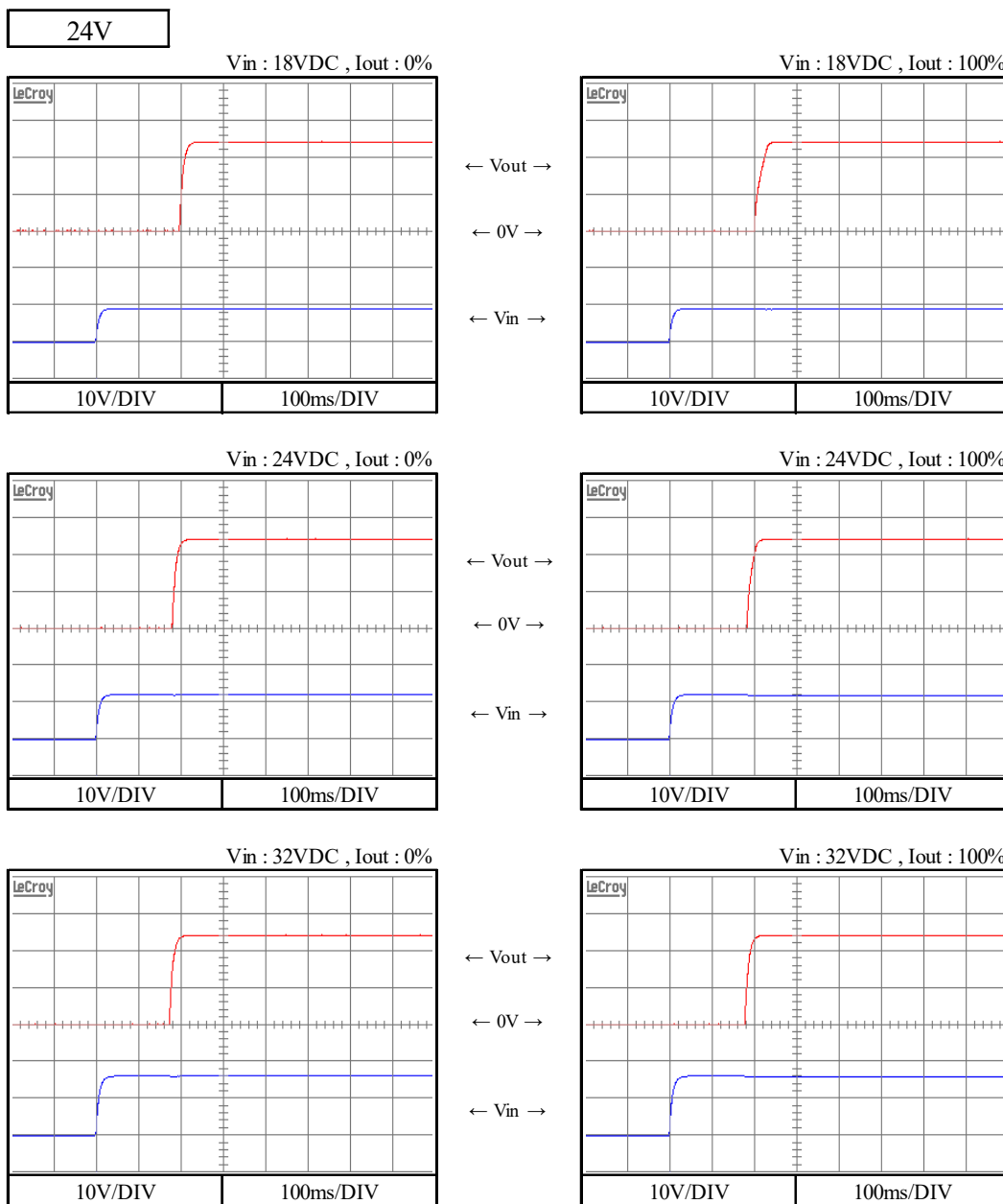
2-4. 出力立ち上がり特性 Output rise characteristics

Condition Ta : 25 °C



2-4. 出力立ち上がり特性 Output rise characteristics

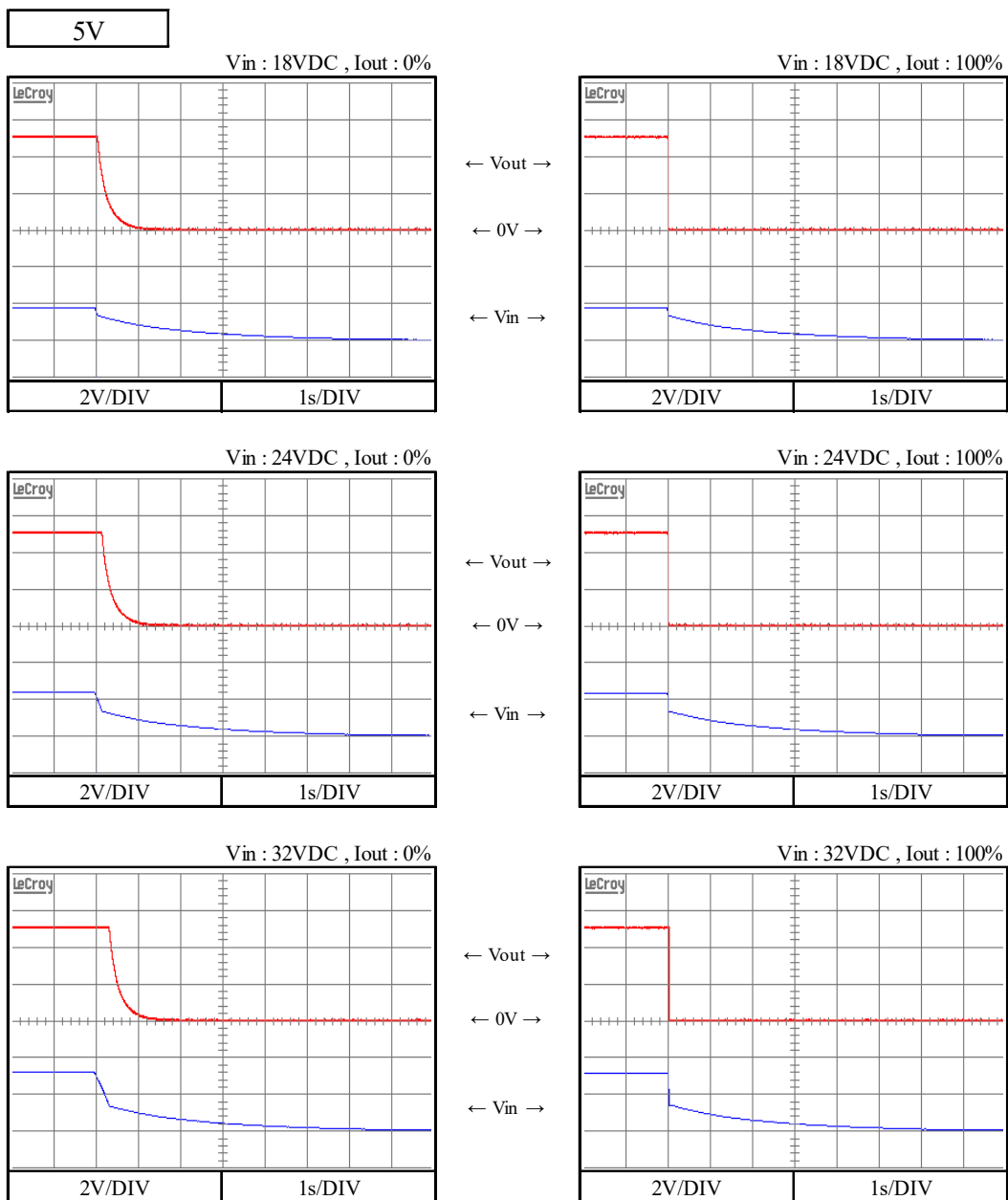
Condition Ta : 25 °C





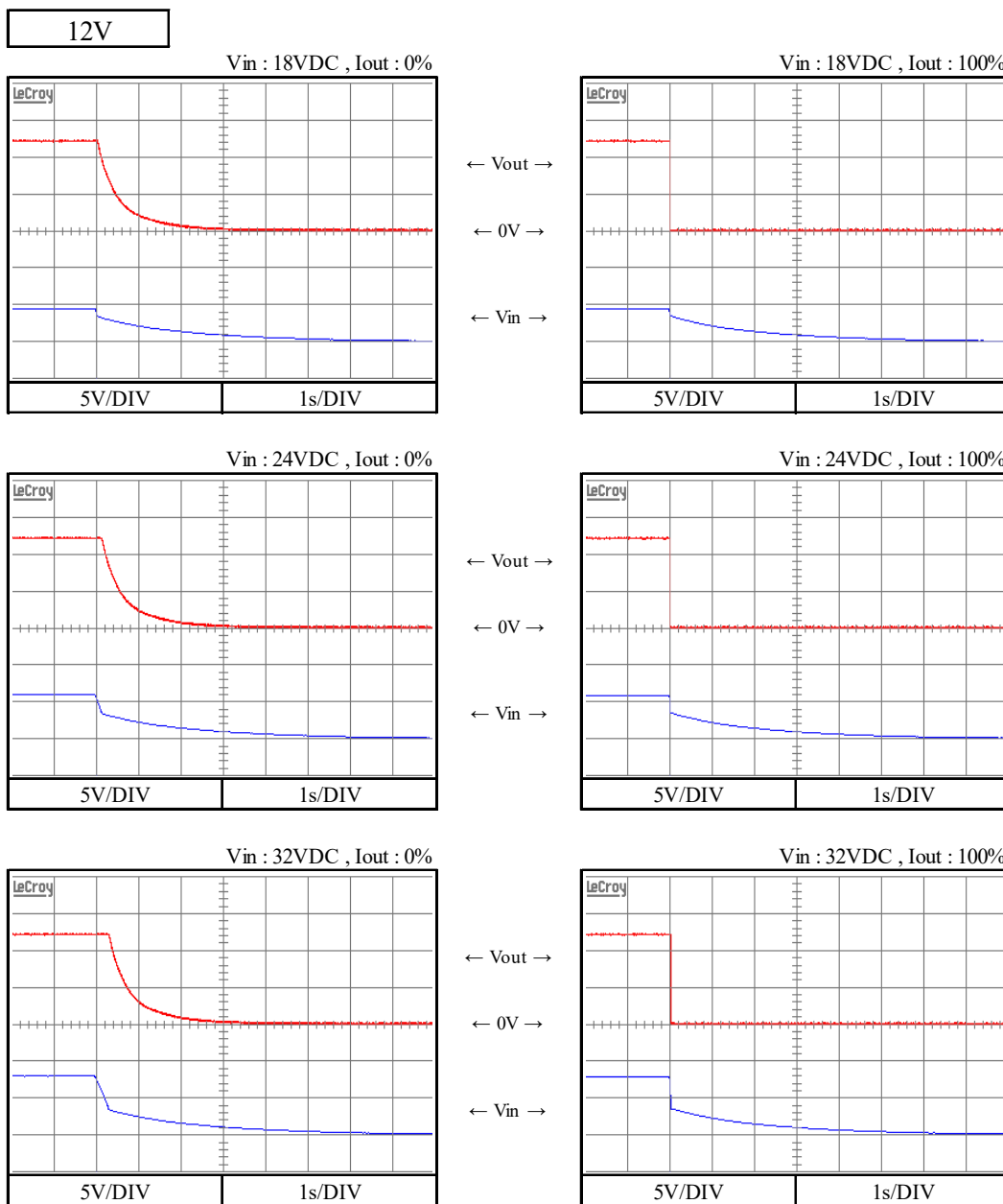
2-5. 出力立ち下がり特性 Output fall characteristics

Condition Ta : 25 °C



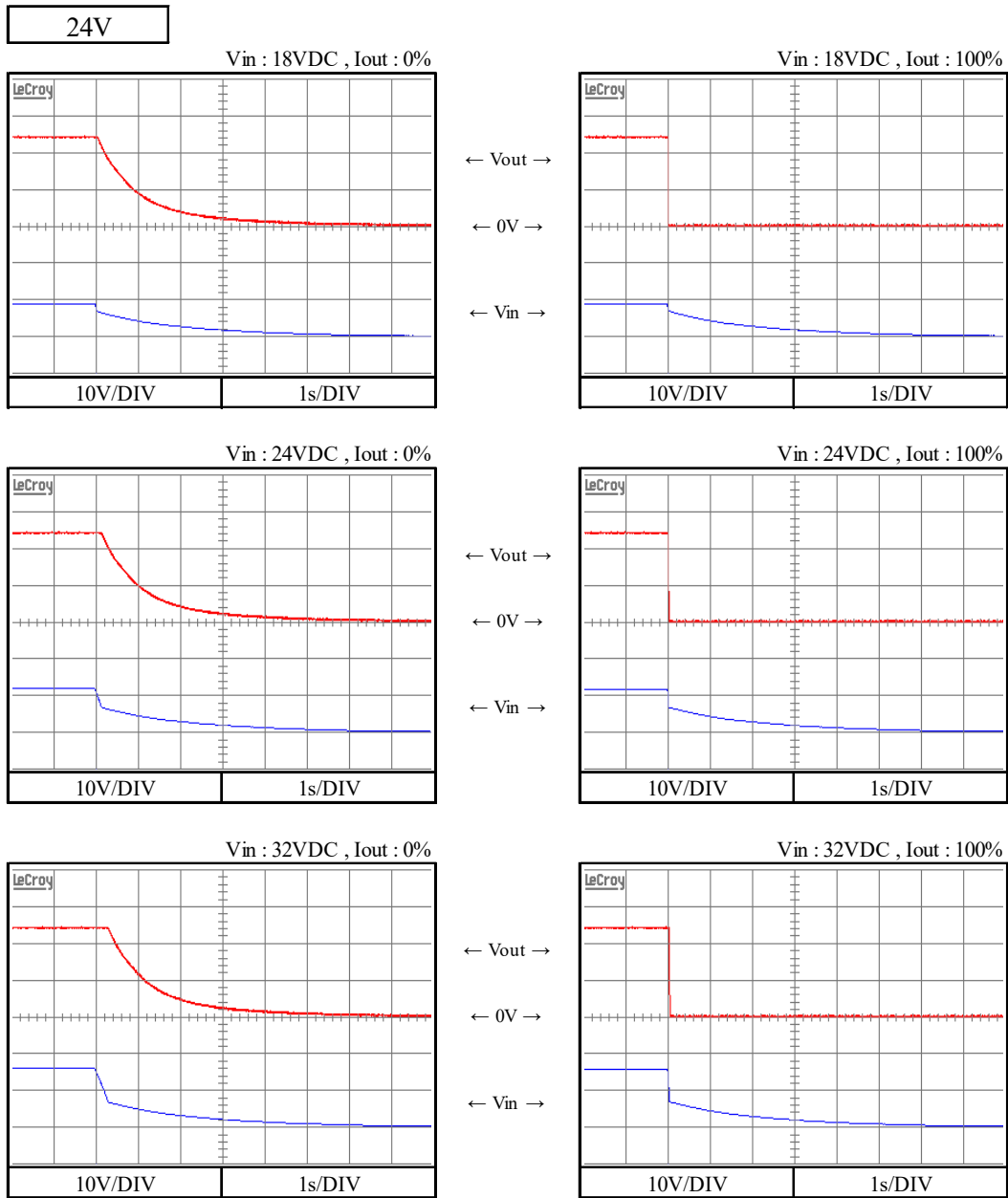
2-5. 出力立ち下がり特性 Output fall characteristics

Condition Ta : 25 °C



2-5. 出力立ち下がり特性 Output fall characteristics

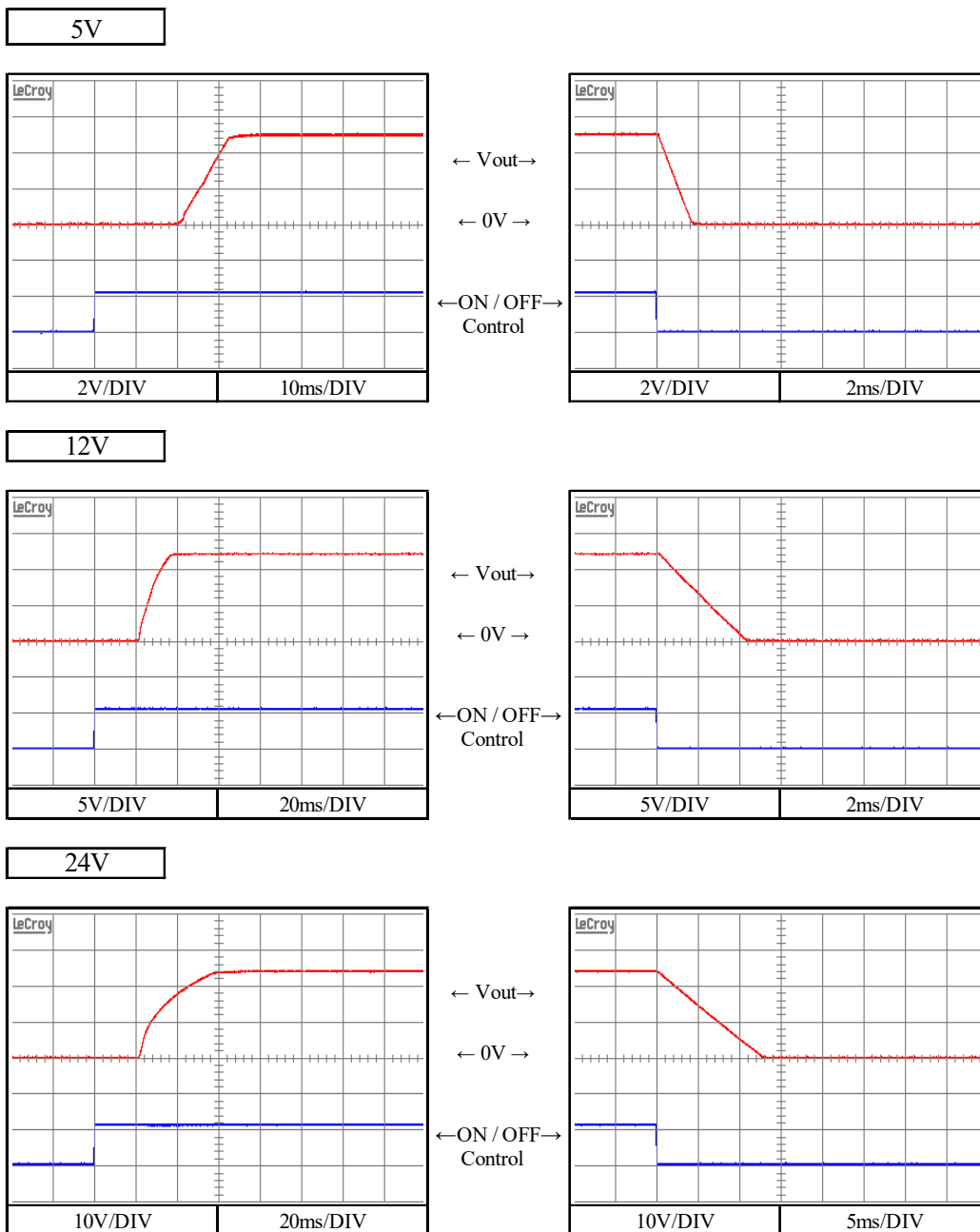
Condition Ta : 25 °C



2-6. ON/OFFコントロール時出力立ち上がり、立下がり特性

Output rise, fall characteristics with ON/OFF RC Control

Conditions Vin : 24 VDC  
 Iout : 100 %  
 Ta : 25 °C

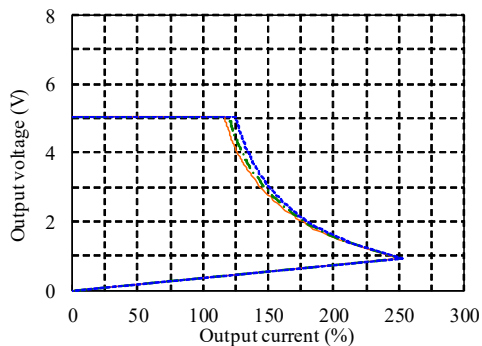


2-7. 過電流保護特性

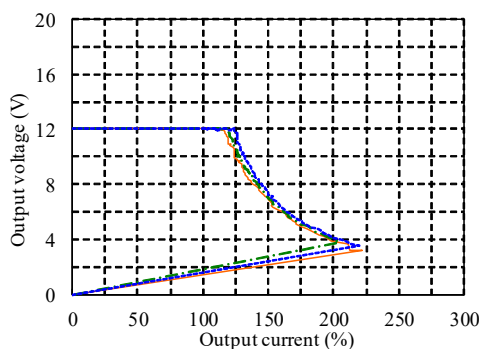
Over current protection (OCP) characteristics

Conditions Vin : 24 VDC  
 Ta : -20 °C (---)  
 25 °C (---)  
 50 °C (—)

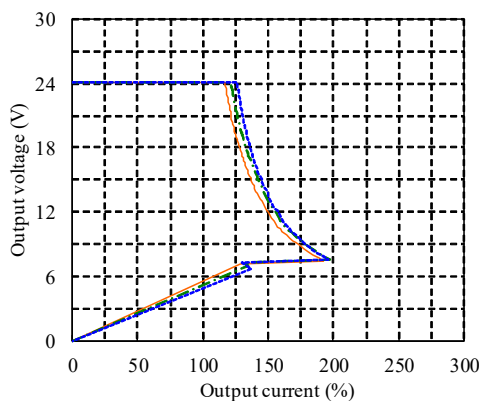
5V



12V



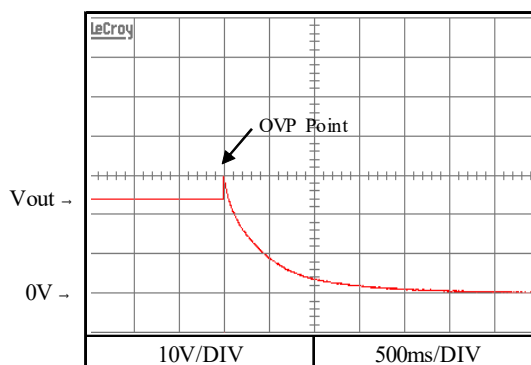
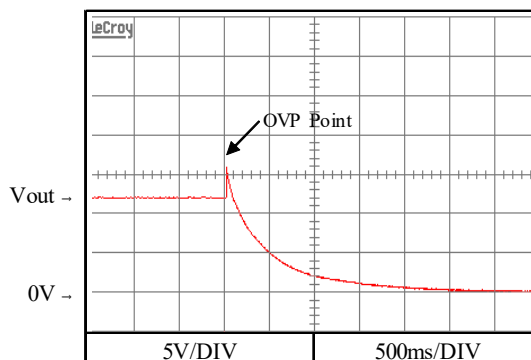
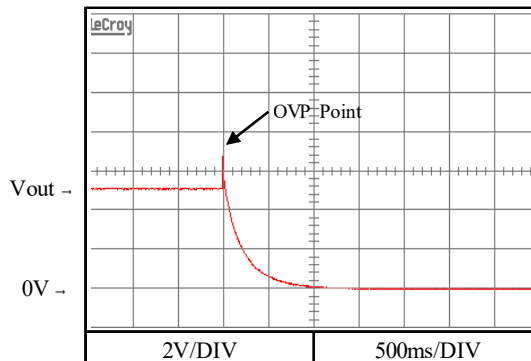
24V



2-8. 過電圧保護特性

Over voltage protection (OVP) characteristics

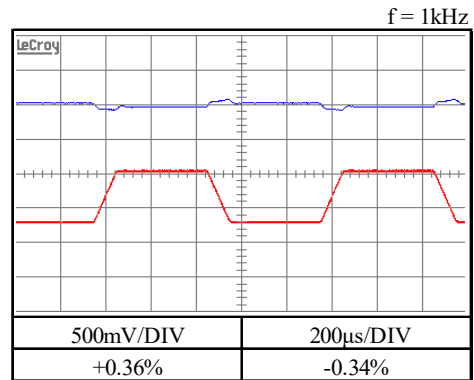
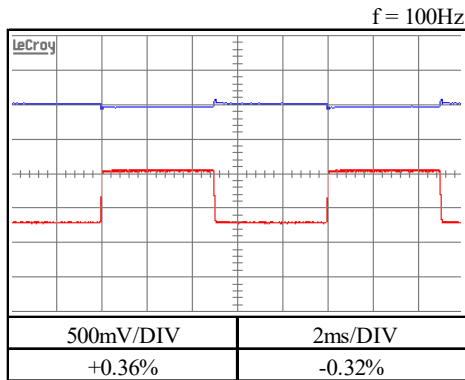
Conditions Vin : 24 VDC  
 Iout : 0 %  
 Ta : 25 °C



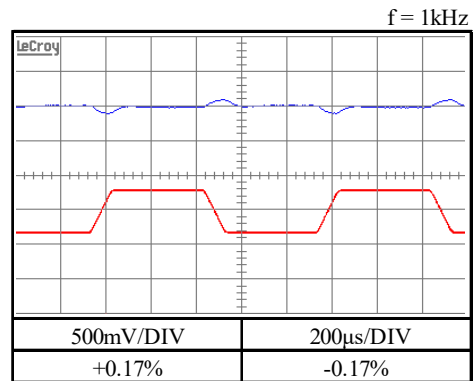
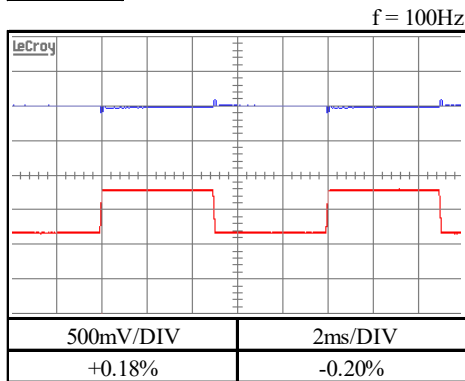
2-9. 過渡応答(負荷急変)特性 Dynamic load response characteristics

Conditions Vin : 24 VDC  
 Iout : 50 % ↔ 100 %  
 (tr = tf = 100μs)  
 Ta : 25 °C

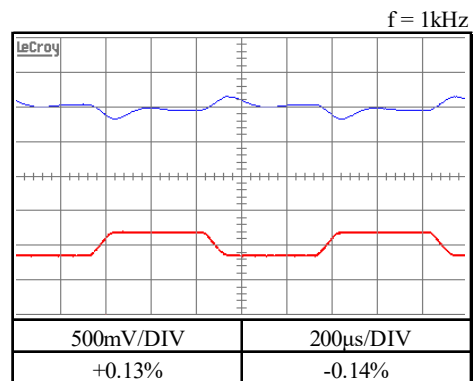
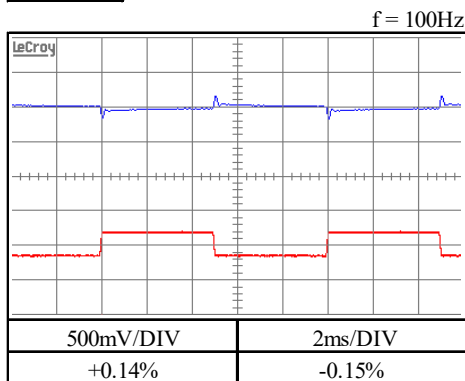
5V



12V



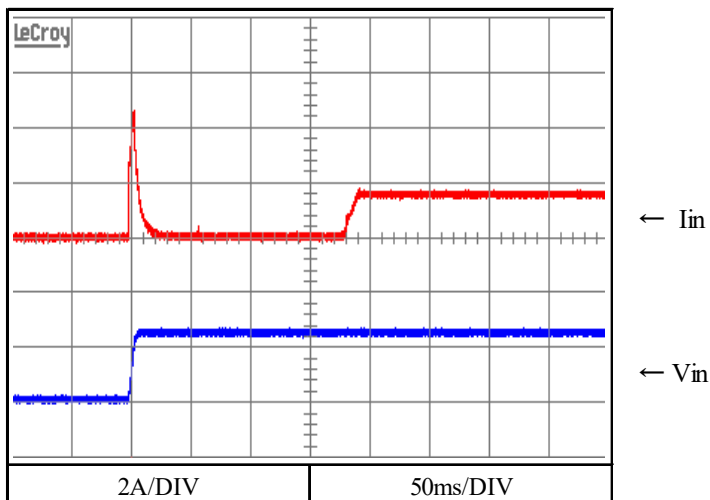
24V



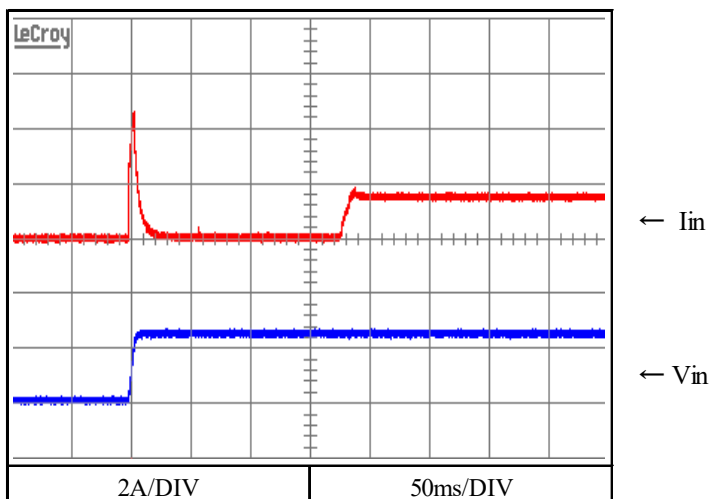
2-10. 入力サージ電流(突入電流)波形 Inrush current waveform

Conditions Vin : 24 VDC  
 Iout : 100 %  
 Ta : 25 °C

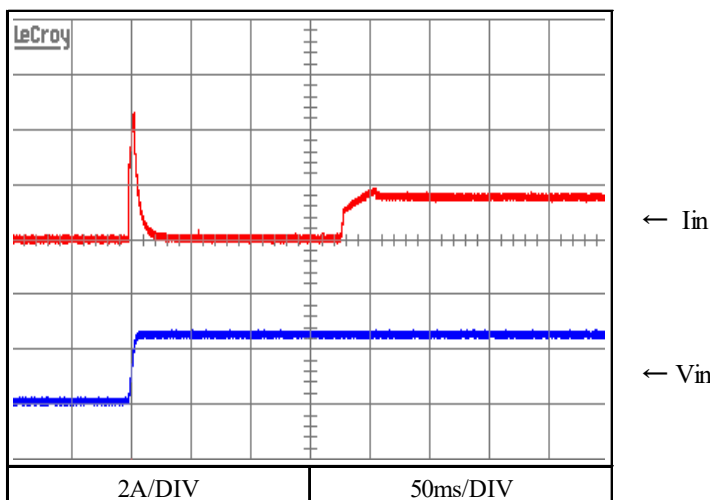
5V



12V



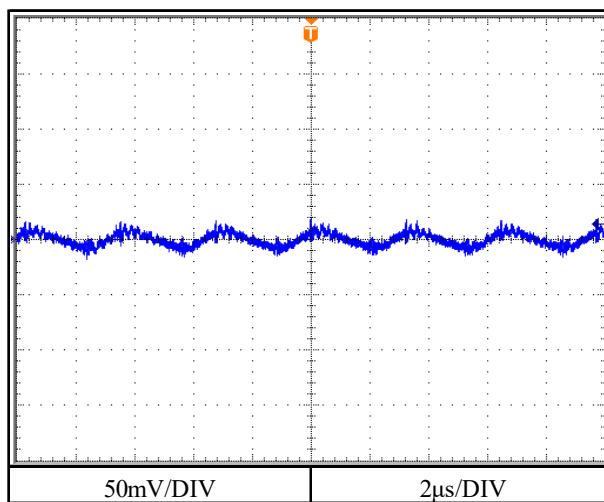
24V



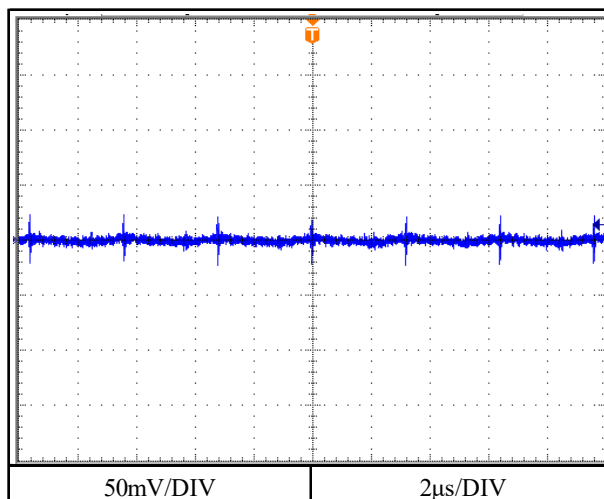
2-11. 出力リップル、ノイズ波形 Output ripple and noise waveform

Conditions Vin : 24 VDC  
 Iout : 100 %  
 Ta : 25 °C

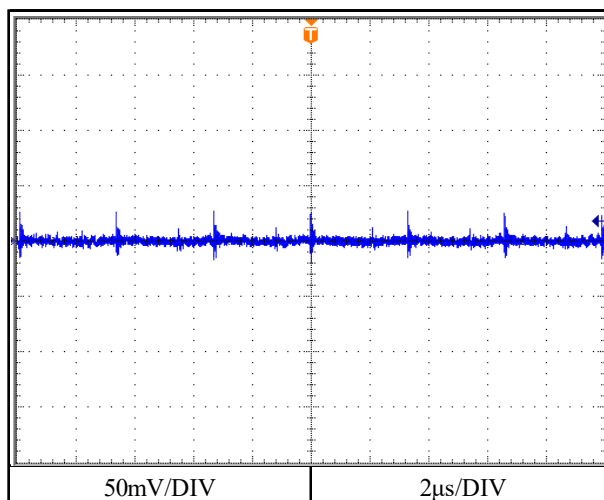
5V



12V



24V





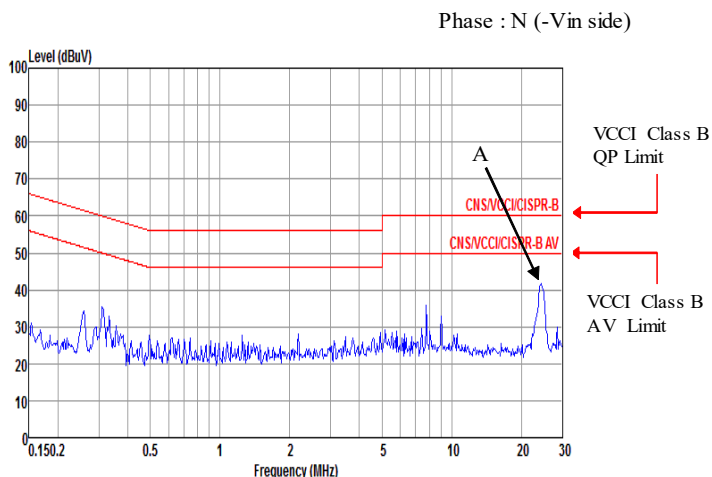
2-12. EMI特性 Electro-Magnetic Interference characteristics

Conditions Vin : 24 VDC  
 Iout : 100 %  
 Ta : 25 °C

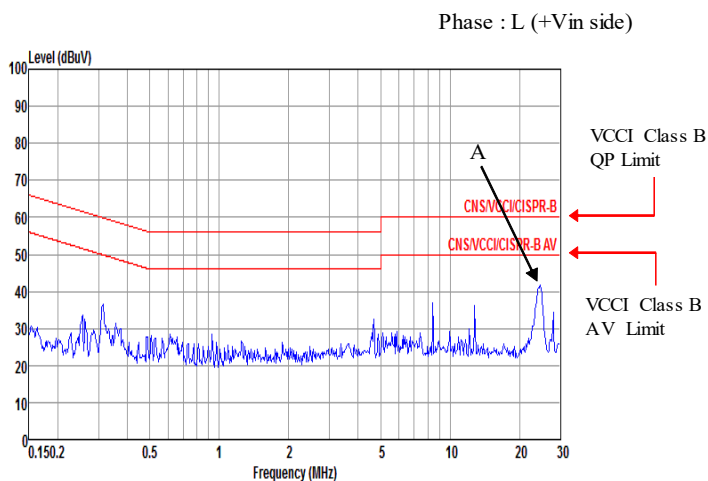
雑音端子電圧  
 Conducted Emission

5V

Ref. Data	Point A (24.62MHz)	
	Limit (dB)	Measure (dB)
QP	60.0	40.4
AV	50.0	35.3



Ref. Data	Point A (24.58MHz)	
	Limit (dB)	Measure (dB)
QP	60.0	41.1
AV	50.0	36.4



EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ

Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

表示はピーク値

Indication is peak values.

Conditions Vin : 24 VDC  
 Iout : 100 %  
 Ta : 25 °C

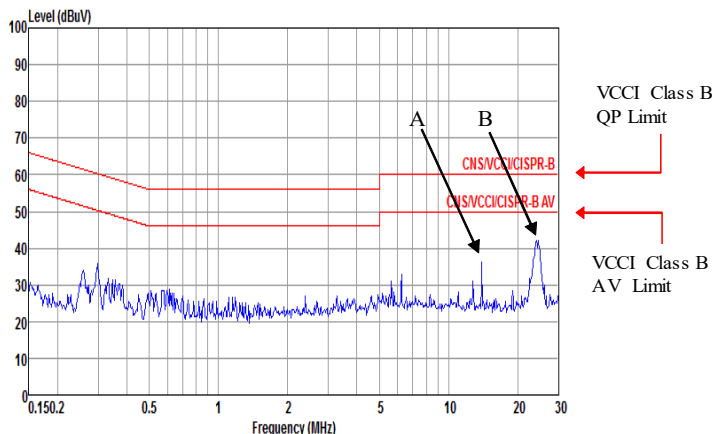
雑音端子電圧  
 Conducted Emission

12V

Point A (14.01MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	34.3
AV	50.0	34.0

Point B (24.74MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	38.3
AV	50.0	33.5

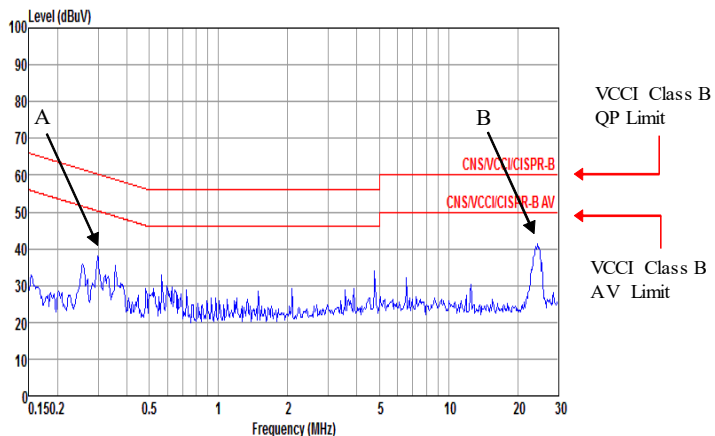
Phase : N (-Vin side)



Point A (0.3MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.3	35.5
AV	50.3	35.5

Point B (24.2MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	39.2
AV	50.0	34.3

Phase : L (+Vin side)



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

表示はピーク値

Indication is peak values.

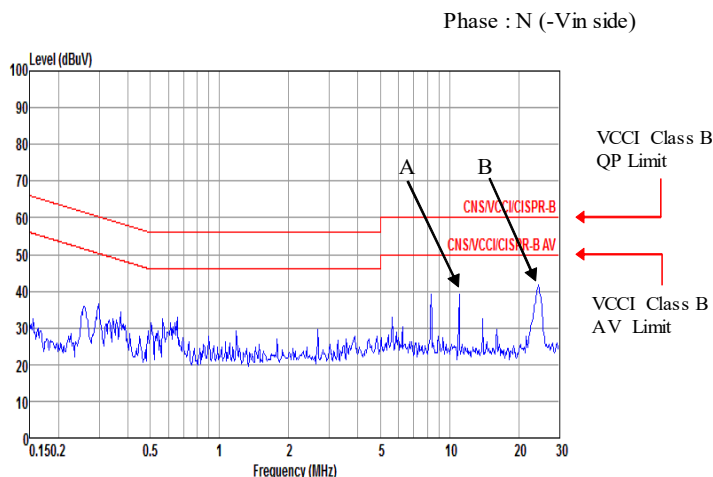
Conditions Vin : 24 VDC  
 Iout : 100 %  
 Ta : 25 °C

雑音端子電圧  
 Conducted Emission

24V

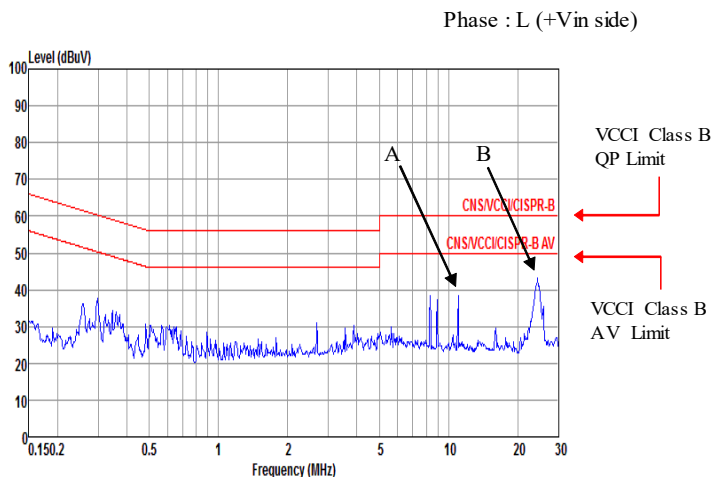
Point A (11.04MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	37.6
AV	50.0	37.2

Point B (24.57MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	39.7
AV	50.0	34.8



Point A (11.04MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	37.7
AV	50.0	37.8

Point B (24.57MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	40.6
AV	50.0	35.8

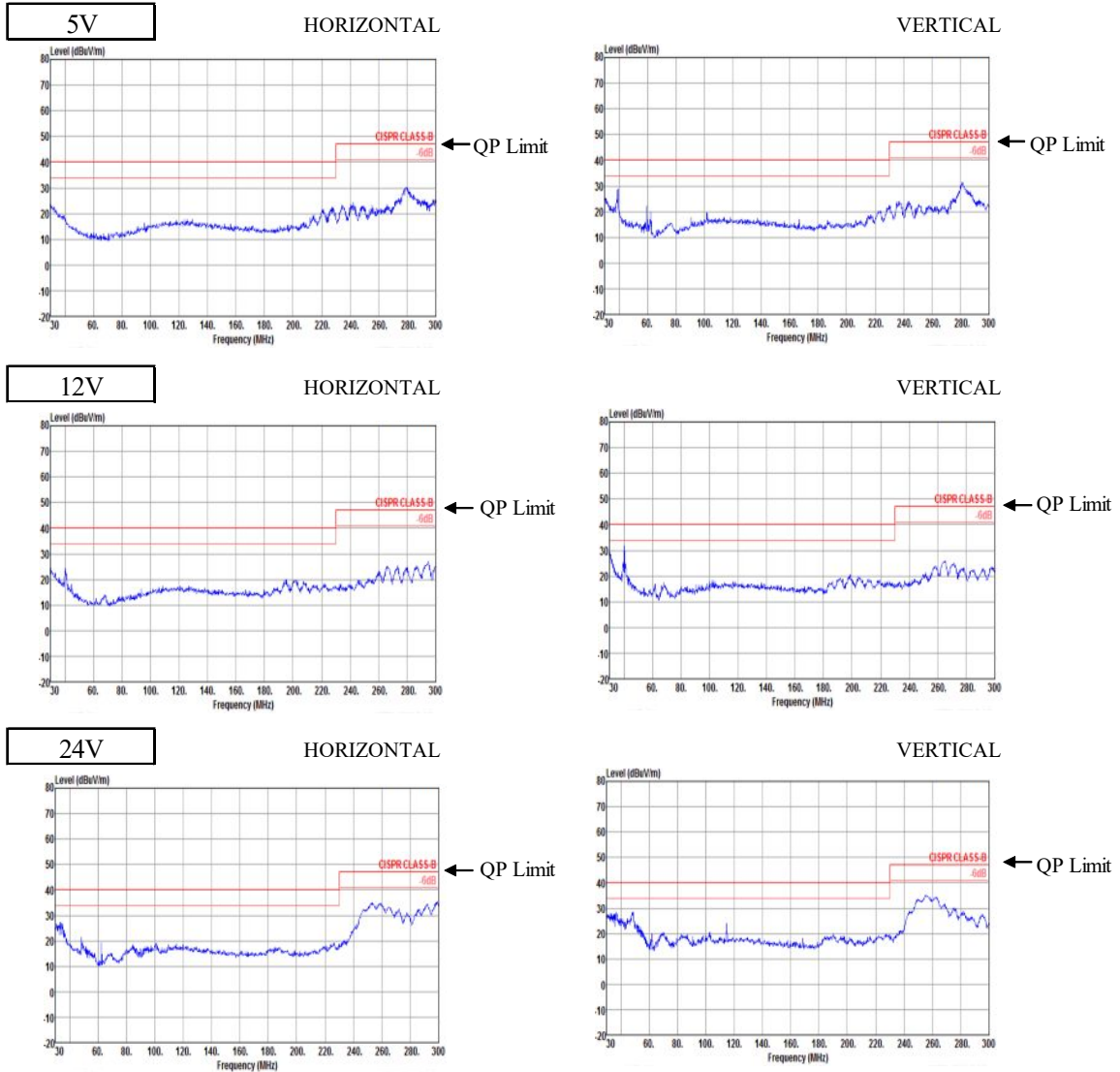


EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ  
 Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

表示はピーク値  
 Indication is peak values.

Conditions Vin : 24 VDC  
 Iout : 100 %  
 Ta : 25 °C

雑音電界強度  
 Radiated Emission



EN55011-B,EN55032-Bの限界値はVCCI class Bの限界値と同じ  
 Limit of EN55011-B,EN55032-B are same as its VCCI class B.  
 表示はピーク値  
 Indication is peak values.