

# **RDS30A-48**

# **EVALUATION DATA**

# 型式データ



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#### 使用記号 Terminology used

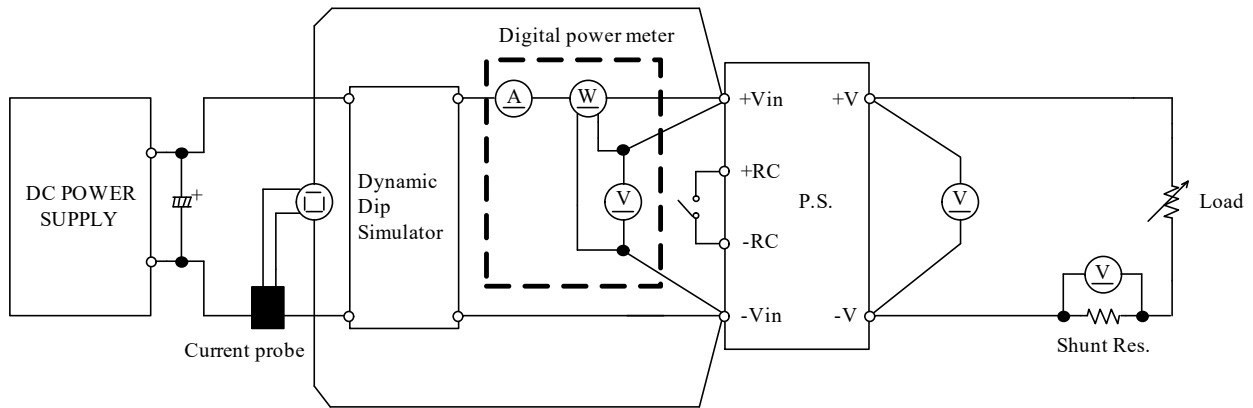
	定義	Definition
V <sub>in</sub> .....	入力電圧	Input voltage
V <sub>out</sub> .....	出力電圧	Output voltage
I <sub>in</sub> .....	入力電流	Input current
I <sub>out</sub> .....	出力電流	Output current
T <sub>a</sub> .....	周囲温度	Ambient temperature
f .....	周波数	Frequency
RC .....	ON/OFFコントロール	ON/OFF Control

※ 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.



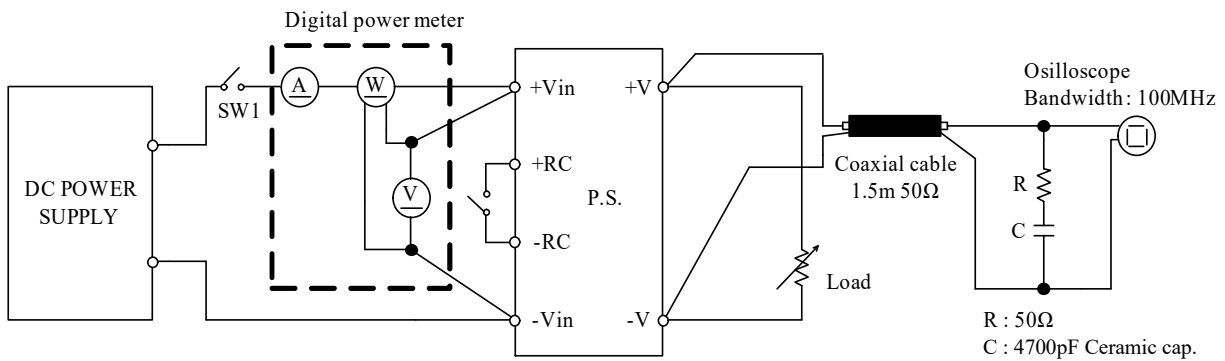
測定回路3 Circuit 3 used for determination

- 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

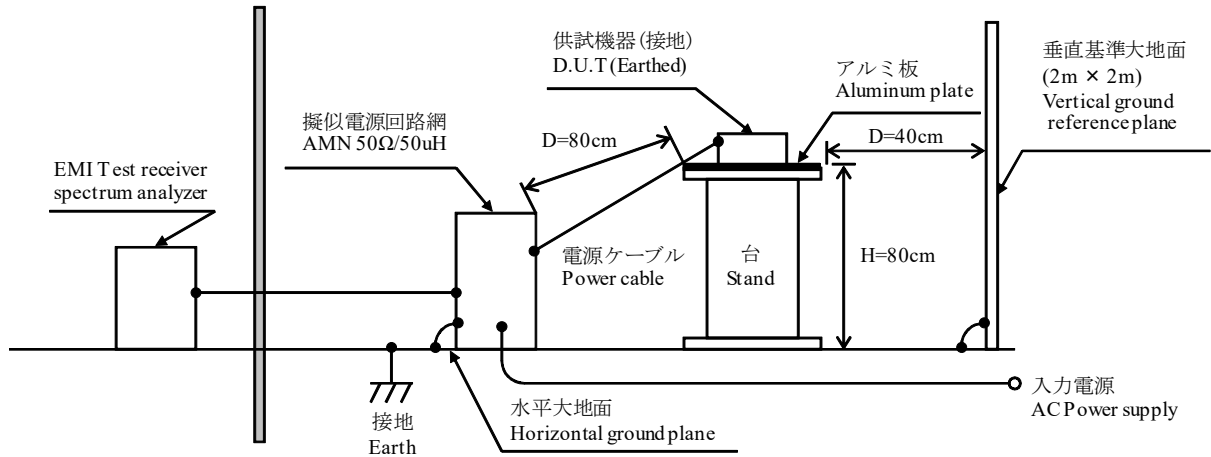
- 出力リップル、ノイズ波形 Output ripple and noise waveform



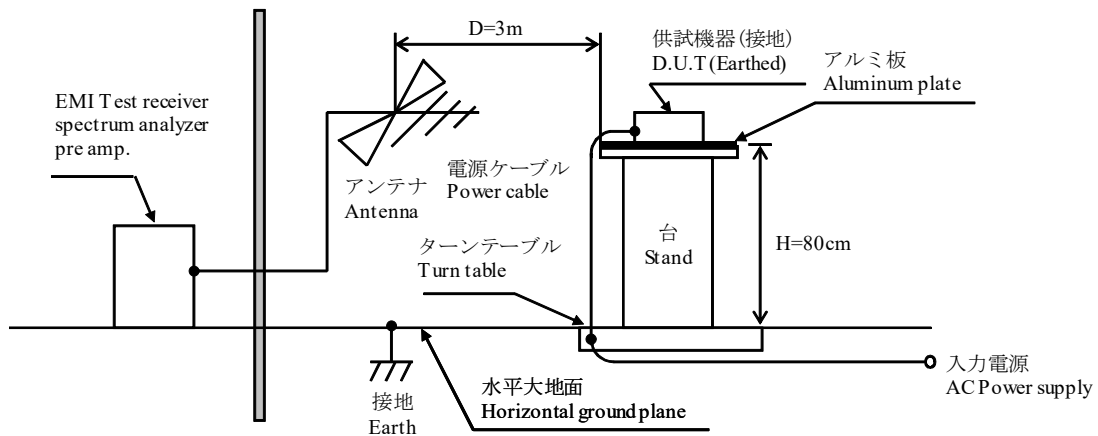
測定構成 Configuration used for determination

- 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

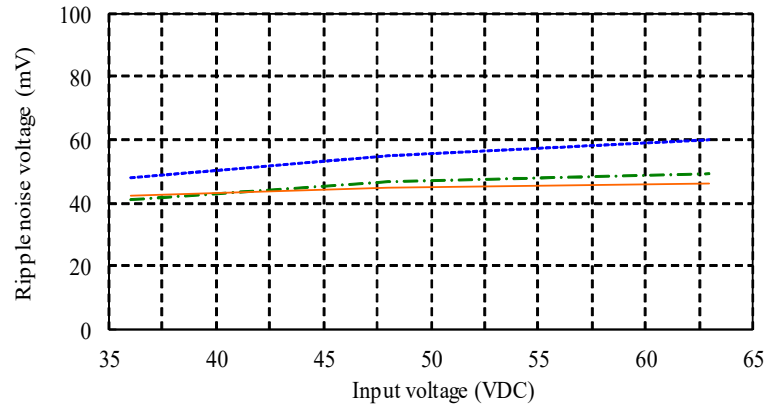
5V		1. Regulation - line and load				Condition		Ta : 25 °C
Iout \ Vin		36VDC	48VDC	63VDC	Line regulation			
0%		5.025V	5.025V	5.025V	0mV	0.000%		
50%		5.016V	5.016V	5.016V	0mV	0.000%		
100%		5.008V	5.008V	5.008V	0mV	0.000%		
Load regulation	Load	17mV	17mV	17mV				
	regulation	0.340%	0.340%	0.340%				
		2. Temperature drift				Conditions		Vin : 48 VDC Iout : 100 %
Ta		-20°C	+25°C	+50°C	Temperature stability			
Vout		4.998V	5.008V	5.010V	12mV	0.240%		
		3. Start up voltage and Drop out voltage				Conditions		Ta : 25 °C Iout : 100 %
Start up voltage (Vin)		34.3VDC						
Drop out voltage (Vin)		28.6VDC						
12V		1. Regulation - line and load				Condition		Ta : 25 °C
Iout \ Vin		36VDC	48VDC	63VDC	Line regulation			
0%		12.012V	12.012V	12.012V	0mV	0.000%		
50%		12.008V	12.008V	12.008V	0mV	0.000%		
100%		12.005V	12.005V	12.005V	0mV	0.000%		
Load regulation	Load	7mV	7mV	7mV				
	regulation	0.058%	0.058%	0.058%				
		2. Temperature drift				Conditions		Vin : 48 VDC Iout : 100 %
Ta		-20°C	+25°C	+50°C	Temperature stability			
Vout		11.984V	12.005V	12.004V	21mV	0.175%		
		3. Start up voltage and Drop out voltage				Conditions		Ta : 25 °C Iout : 100 %
Start up voltage (Vin)		34.1VDC						
Drop out voltage (Vin)		28.6VDC						
24V		1. Regulation - line and load				Condition		Ta : 25 °C
Iout \ Vin		36VDC	48VDC	63VDC	Line regulation			
0%		24.014V	24.015V	24.016V	2mV	0.013%		
50%		24.012V	24.013V	24.013V	1mV	0.007%		
100%		24.012V	24.011V	24.011V	1mV	0.007%		
Load regulation	Load	2mV	4mV	5mV				
	regulation	0.013%	0.027%	0.033%				
		2. Temperature drift				Conditions		Vin : 48 VDC Iout : 100 %
Ta		-20°C	+25°C	+50°C	Temperature stability			
Vout		24.015V	24.011V	23.993V	22mV	0.147%		
		3. Start up voltage and Drop out voltage				Conditions		Ta : 25 °C Iout : 100 %
Start up voltage (Vin)		34.2VDC						
Drop out voltage (Vin)		28.7VDC						



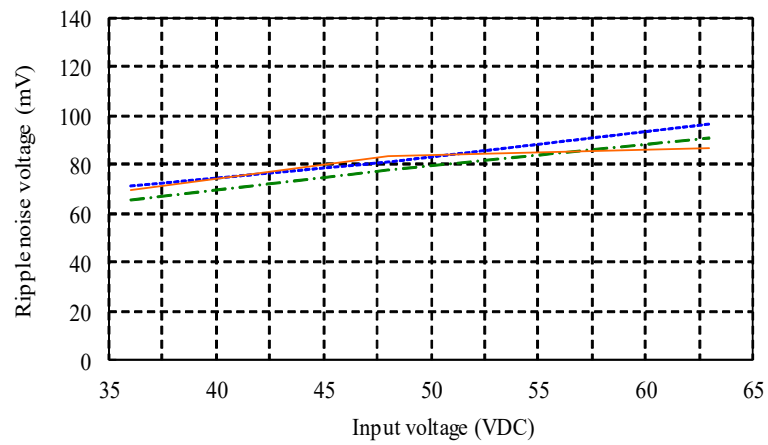
(2) リップルノイズ電圧対入力電圧 Ripple noise voltage vs. Input voltage

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

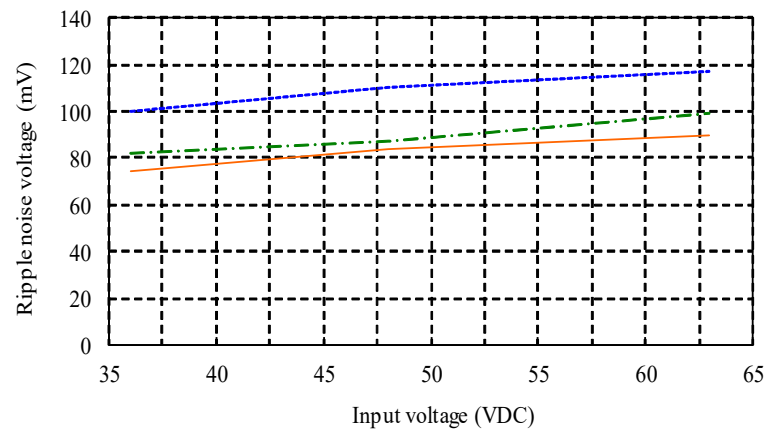
5V



12V



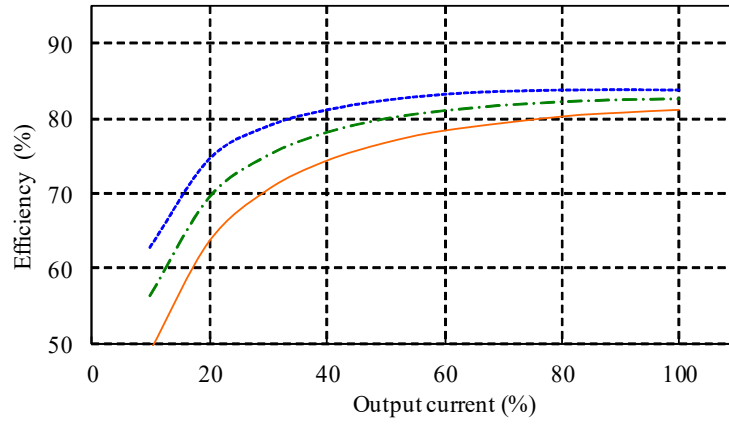
24V



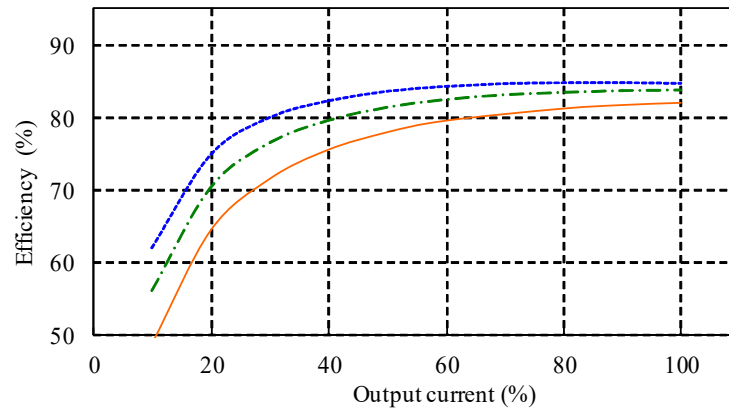
(3) 効率対出力電流 Efficiency vs. Output current

Conditions Vin : 36 VDC ---  
 48 VDC - - -  
 63 VDC ———  
 Ta : 25 °C

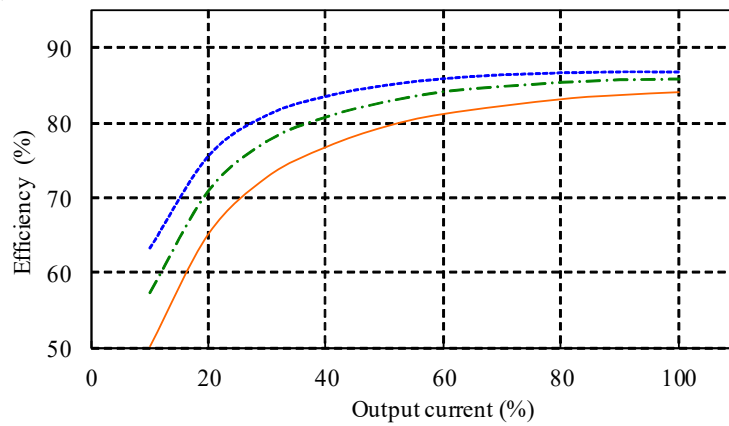
5V



12V



24V



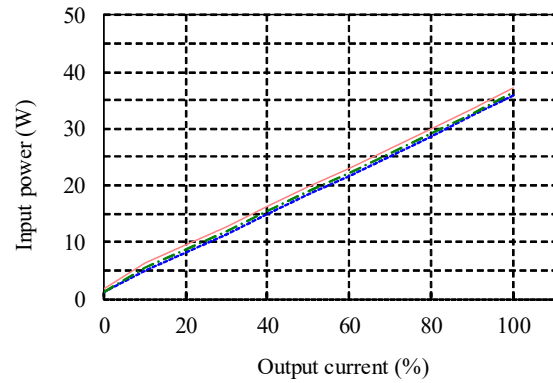
(4) 入力電力対出力電流 Input power vs. Output current

Conditions Vin : 36 VDC ---  
 48 VDC - - -  
 63 VDC ———  
 Ta : 25 °C

5V

Vin	Input power (CNT ON)
	Iout : 0%
36VDC	1.17W
48VDC	1.28W
63VDC	1.81W

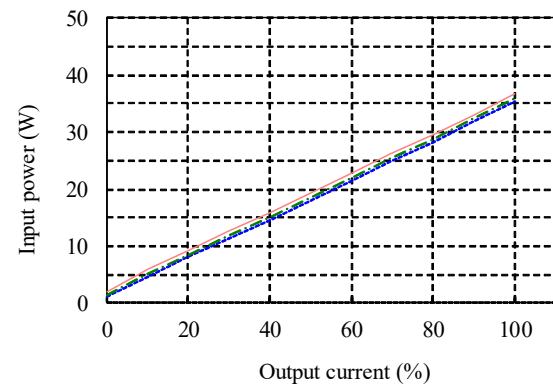
Vin	Input power (CNT OFF)
	Iout : 0%
36VDC	0.25W
48VDC	0.48W
63VDC	0.82W



12V

Vin	Input power (CNT ON)
	Iout : 0%
36VDC	1.30W
48VDC	1.52W
63VDC	2.07W

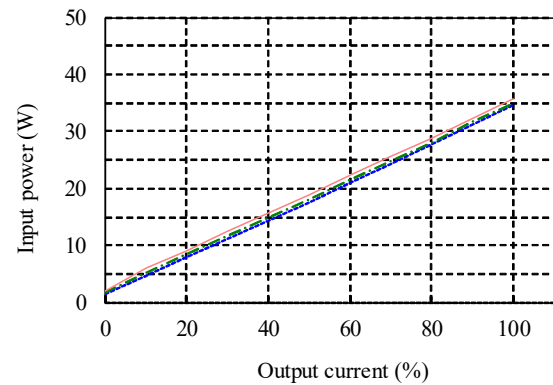
Vin	Input power (CNT OFF)
	Iout : 0%
36VDC	0.26W
48VDC	0.47W
63VDC	0.84W



24V

Vin	Input power (CNT ON)
	Iout : 0%
36VDC	1.41W
48VDC	1.65W
63VDC	2.08W

Vin	Input power (CNT OFF)
	Iout : 0%
36VDC	0.26W
48VDC	0.47W
63VDC	0.84W

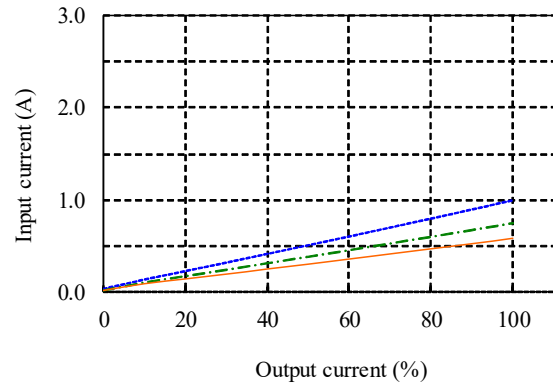


(5) 入力電流対出力電流 Input current vs. Output current

Conditions Vin : 36 VDC ---  
 48 VDC - - -  
 63 VDC —  
 Ta : 25 °C

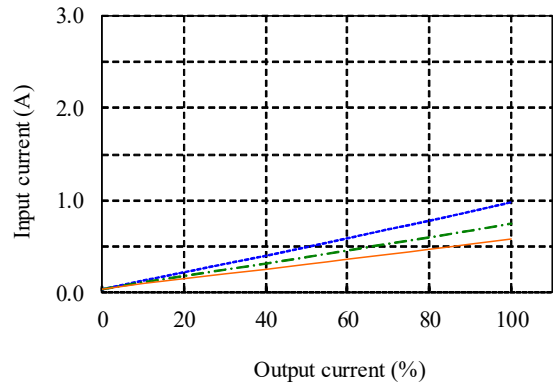
5V

Vin	Input current
	Iout : 0%
36VDC	0.03A
48VDC	0.03A
63VDC	0.03A



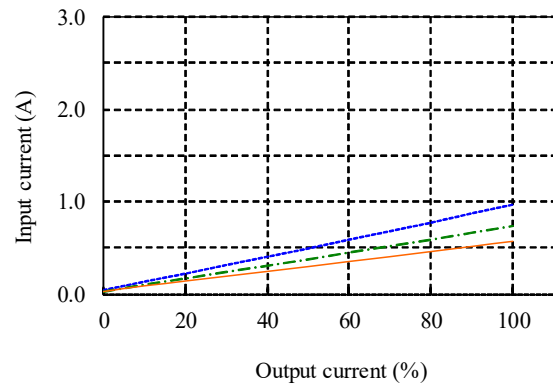
12V

Vin	Input current
	Iout : 0%
36VDC	0.04A
48VDC	0.03A
63VDC	0.03A



24V

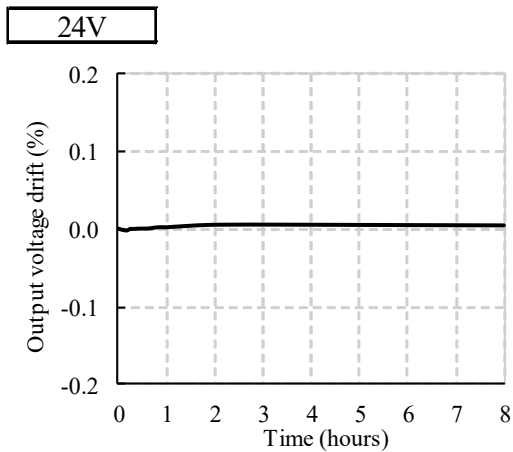
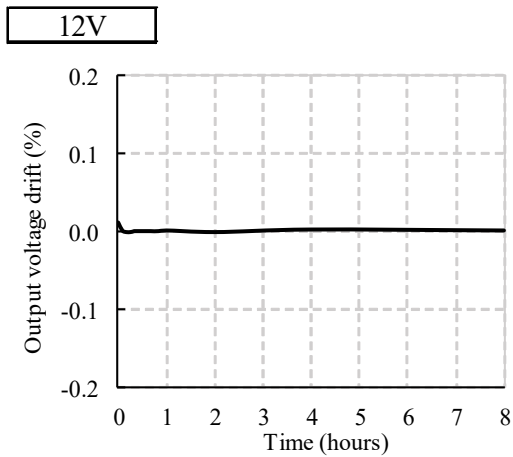
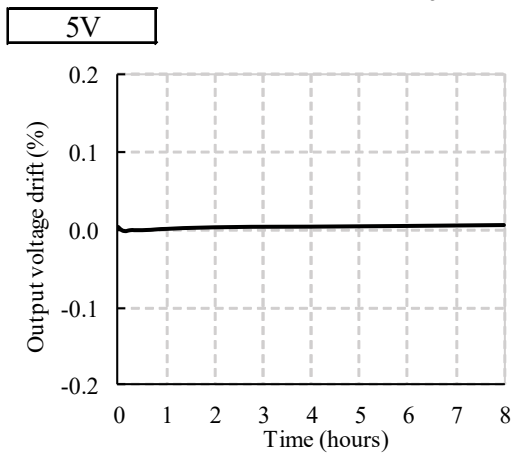
Vin	Input current
	Iout : 0%
36VDC	0.04A
48VDC	0.03A
63VDC	0.03A



2-2. 通電ドリフト特性

Warm up voltage drift characteristics

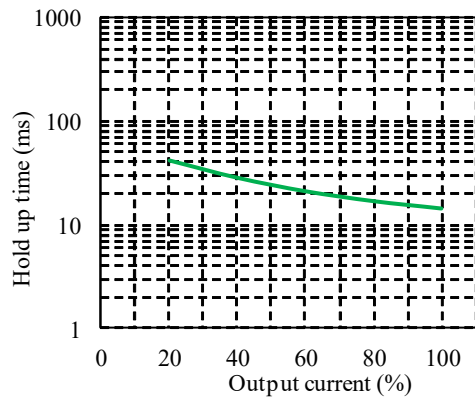
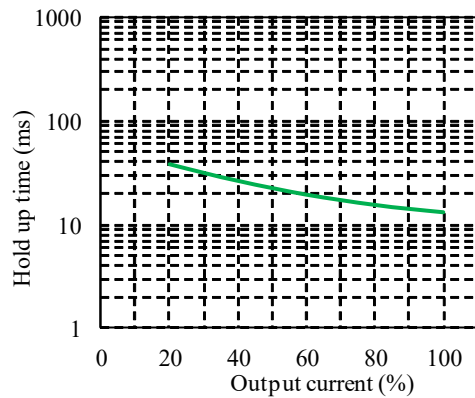
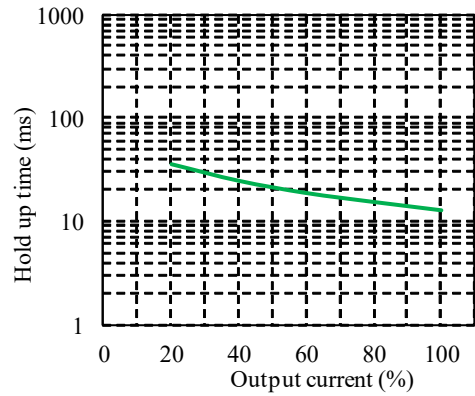
Conditions  $V_{in}$  : 48 VDC  
 $I_{out}$  : 100 %  
 $T_a$  : 25 °C



2-3. 出力保持時間特性

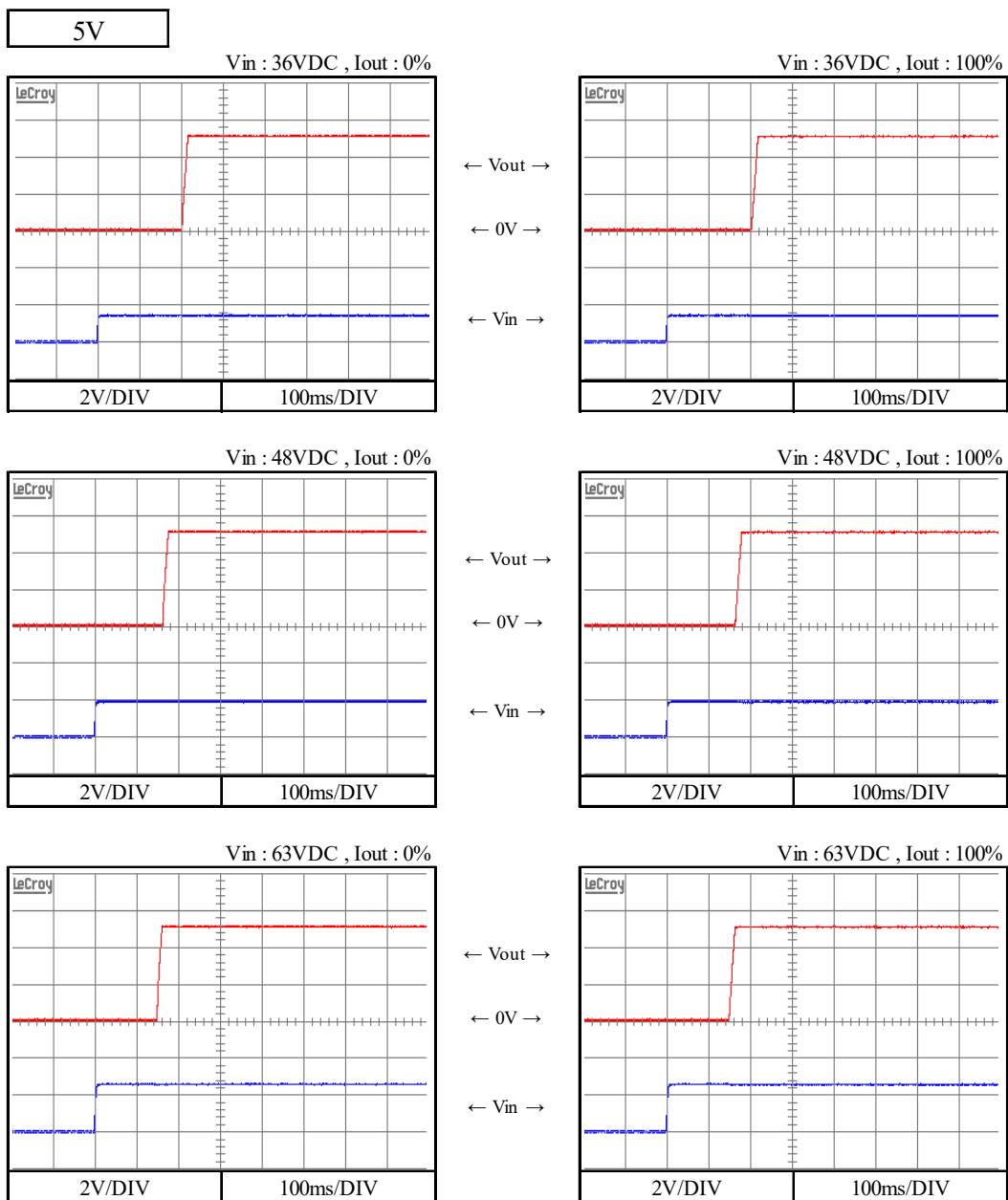
Hold up time characteristics

Conditions  $V_{in}$  : 48 VDC  
 $T_a$  : 25 °C



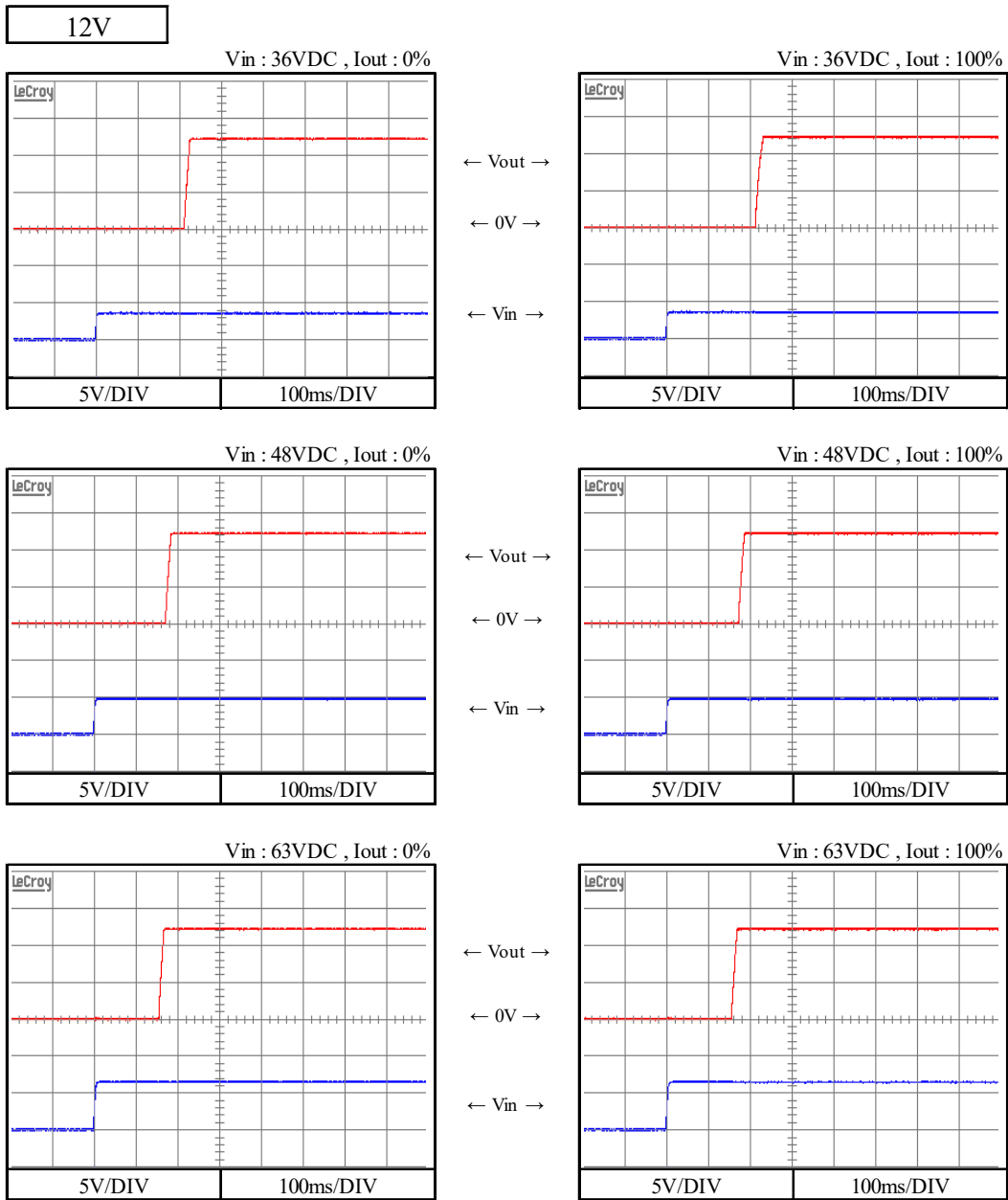
2-4. 出力立ち上がり特性 Output rise characteristics

Condition Ta : 25 °C



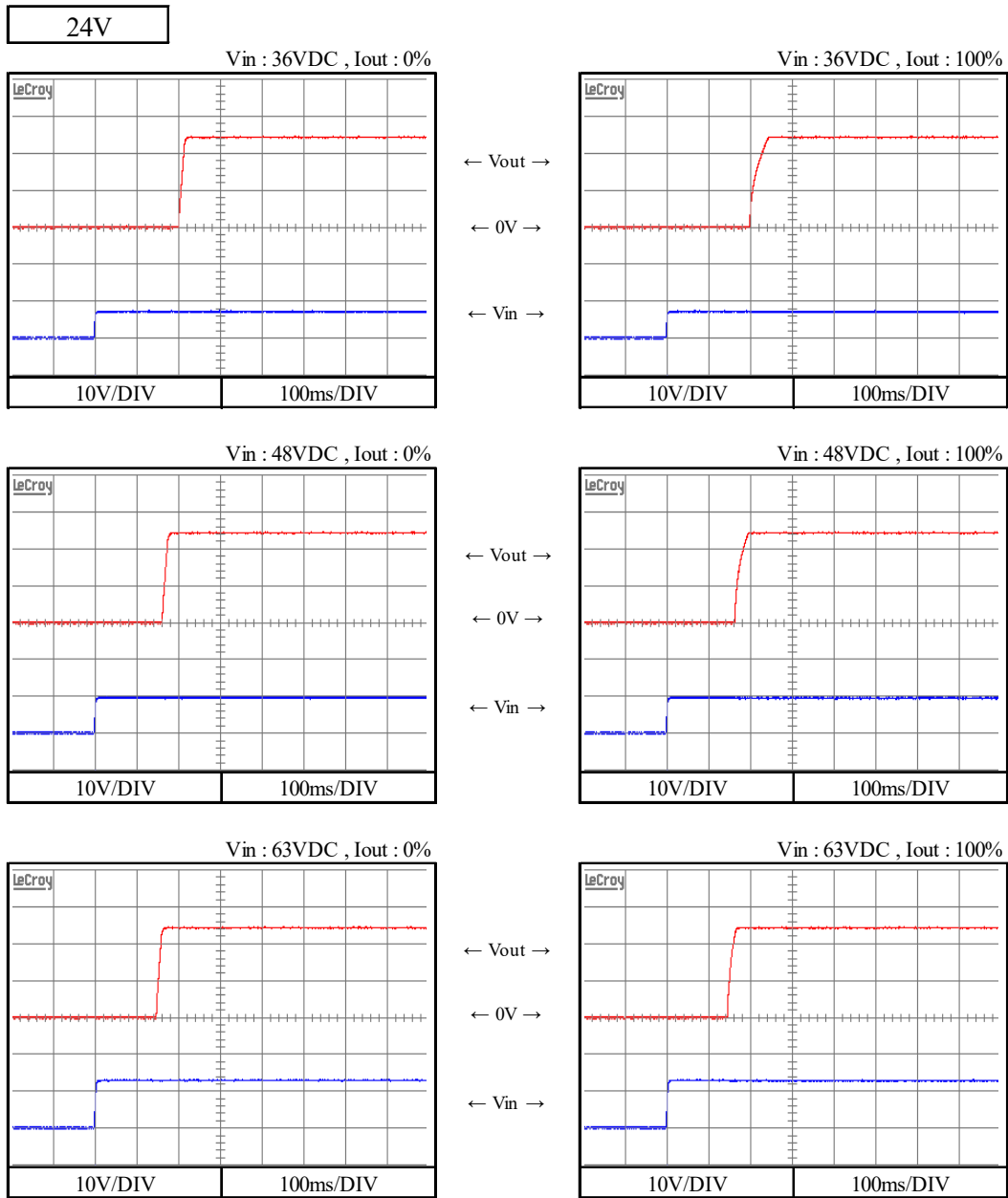
2-4. 出力立ち上がり特性 Output rise characteristics

Condition Ta : 25 °C



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

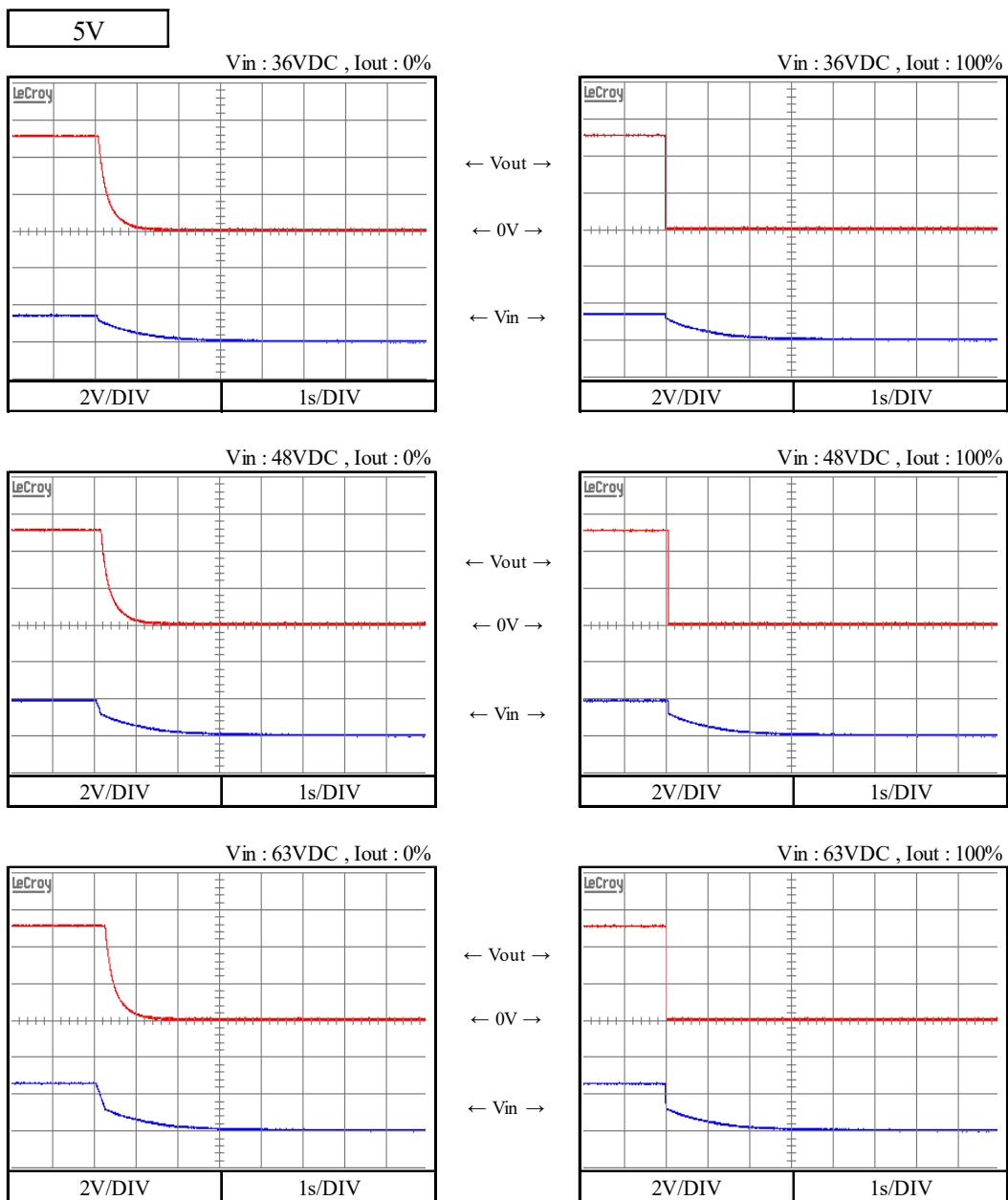
Condition Ta : 25 °C





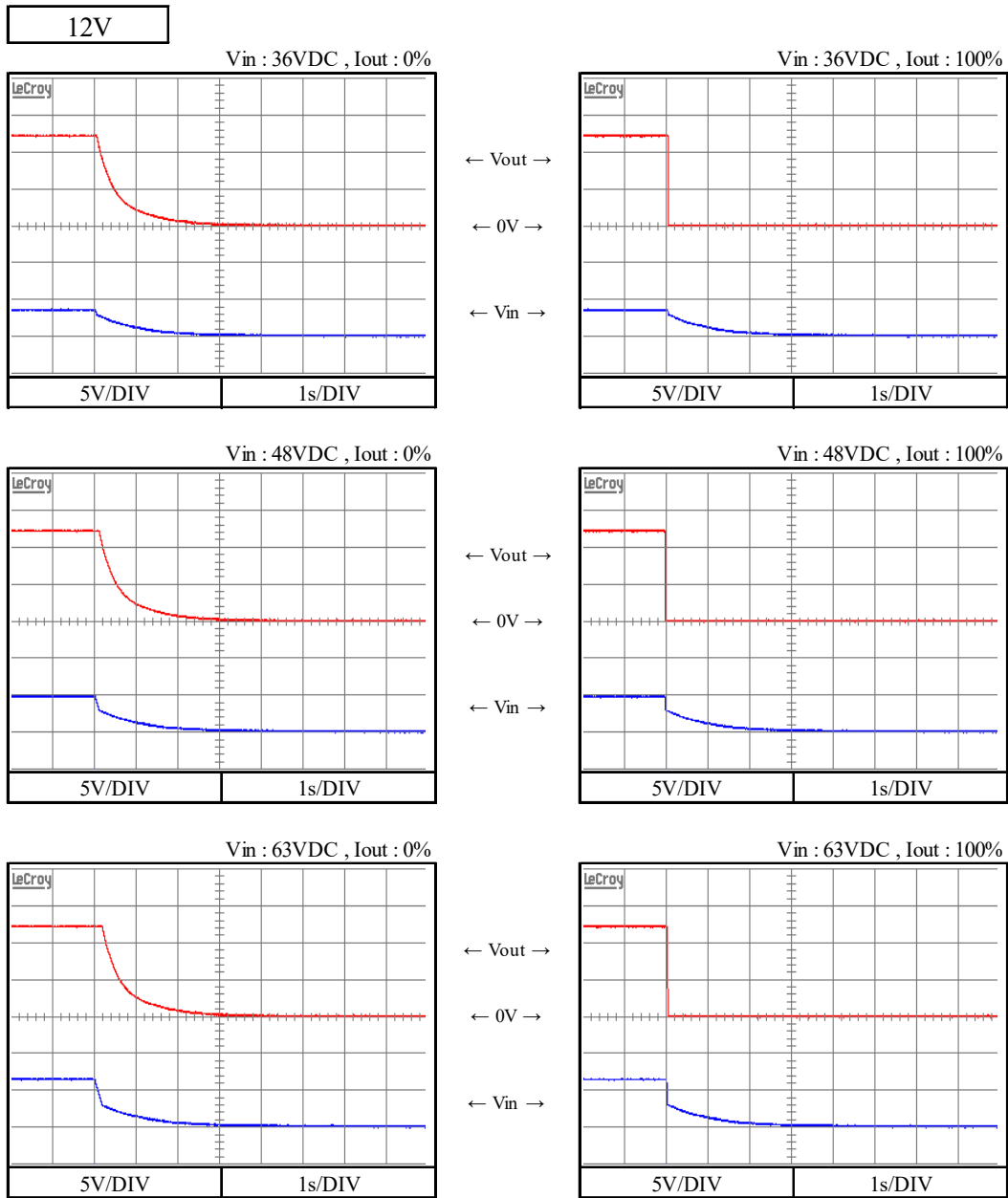
2-5. 出力立ち下がり特性 Output fall characteristics

Condition Ta : 25 °C



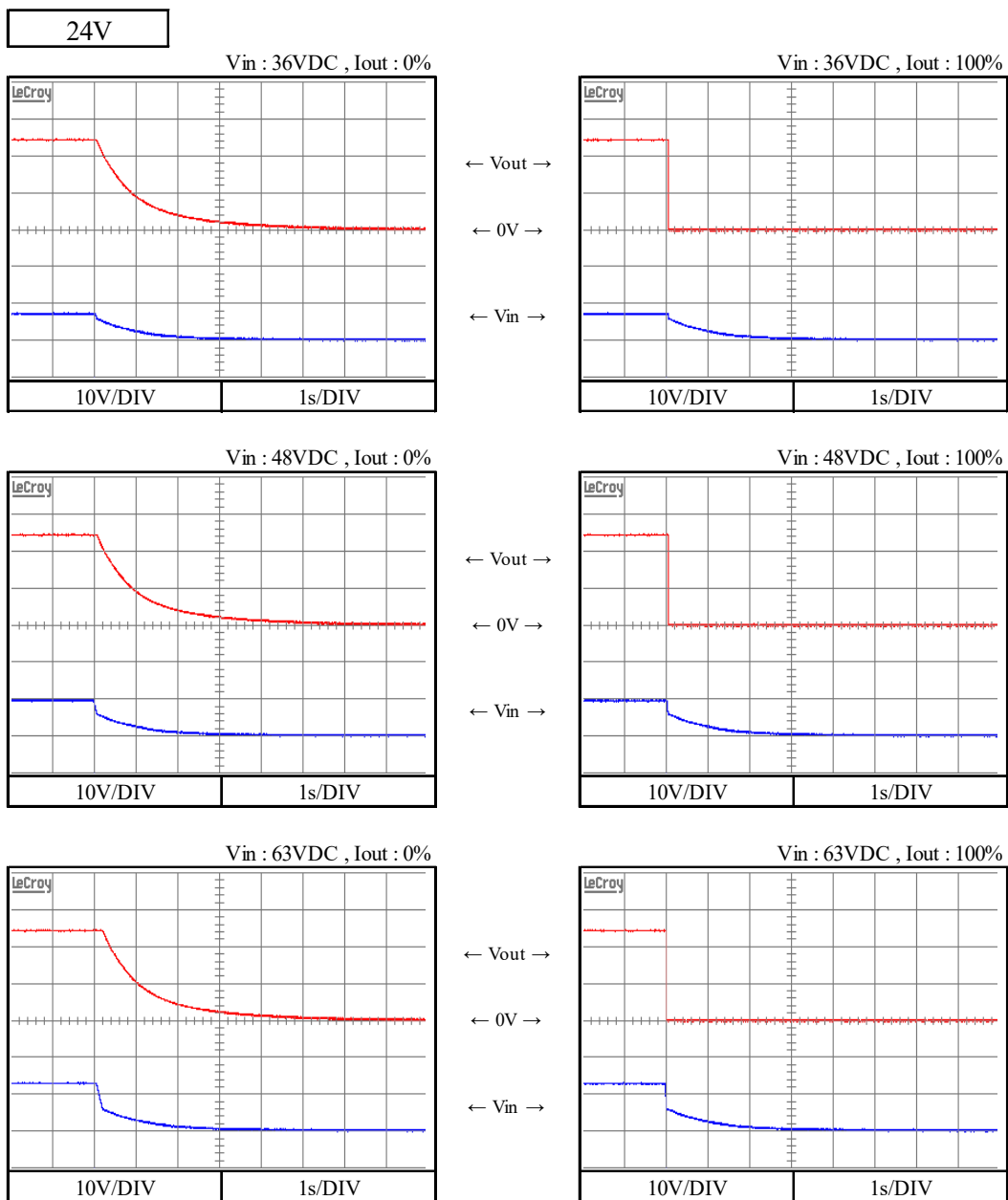
2-5. 出力立ち下がり特性 Output fall characteristics

Condition Ta : 25 °C



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

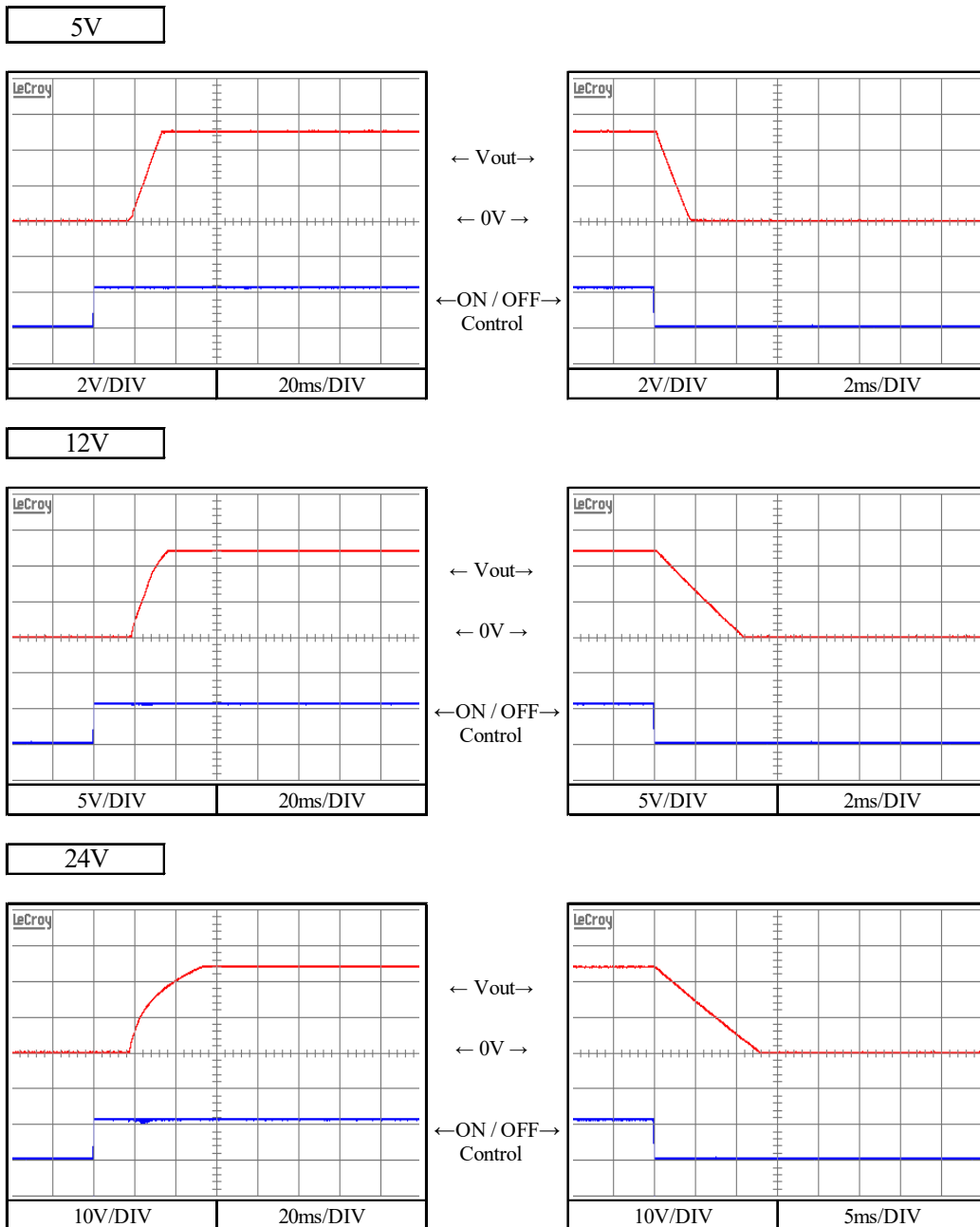
Condition Ta : 25 °C



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 : 48 VDC  
Iout : 100 %  
Ta : 25 °C

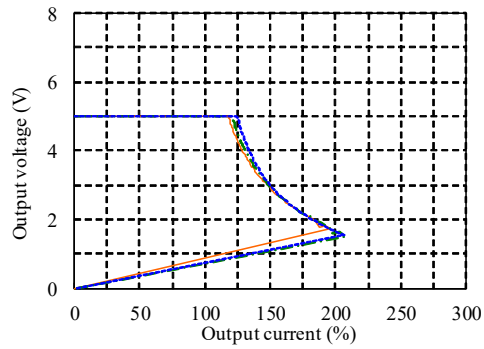


2-7. 過電流保護特性

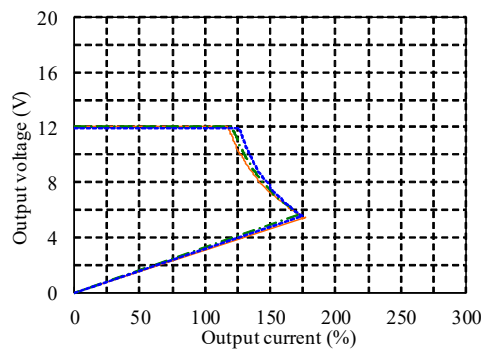
Over current protection (OCP) characteristics

Conditions Vin : 48 VDC  
 Ta : -20 °C (---)  
 25 °C (---)  
 50 °C (—)

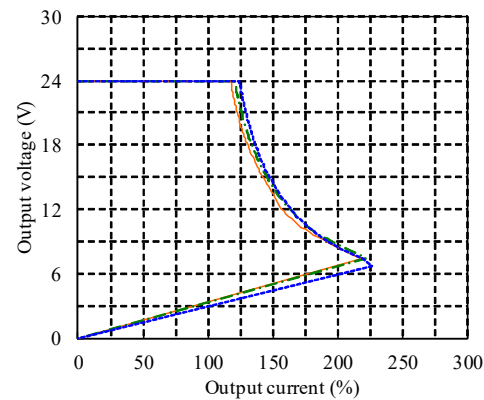
5V



12V



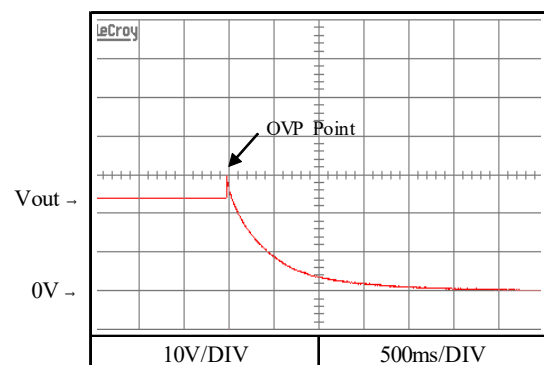
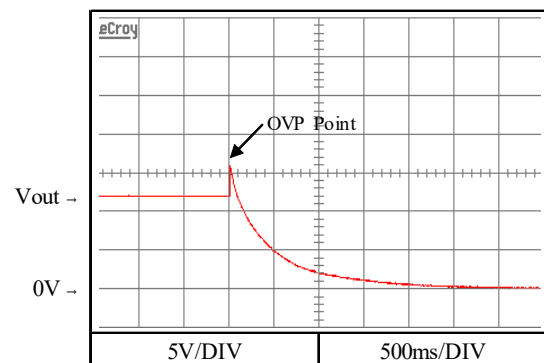
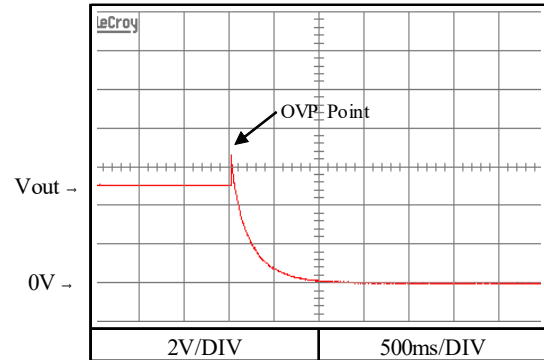
24V



2-8. 過電圧保護特性

Over voltage protection (OVP) characteristics

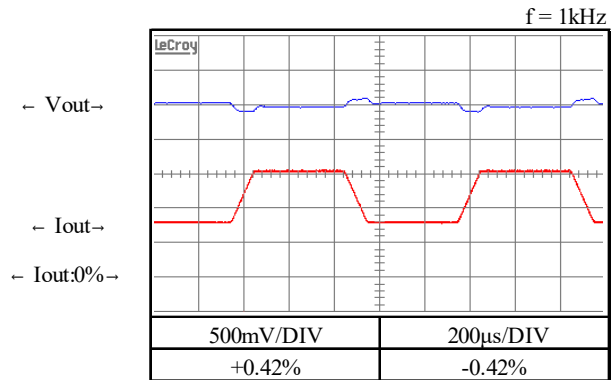
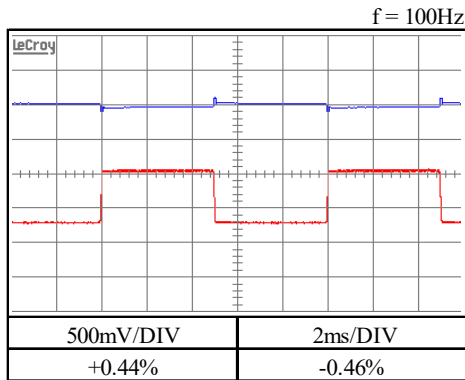
Conditions Vin : 48 VDC  
 Iout : 0 %  
 Ta : 25 °C



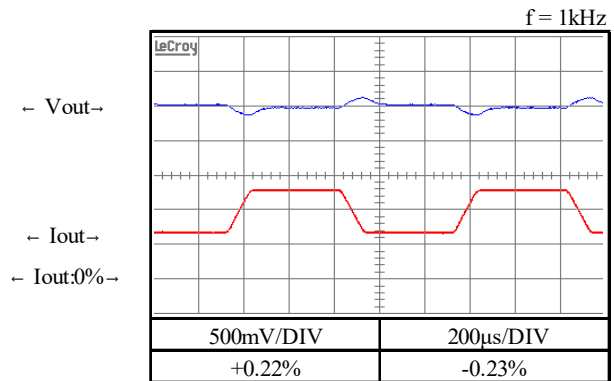
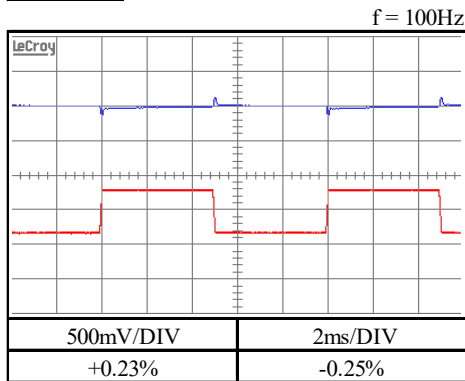
2-9. 過渡応答(負荷急変)特性 Dynamic load response characteristics

Conditions Vin : 48 VDC  
 Iout : 50 % ↔ 100 %  
 (tr = tf = 100μs)  
 Ta : 25 °C

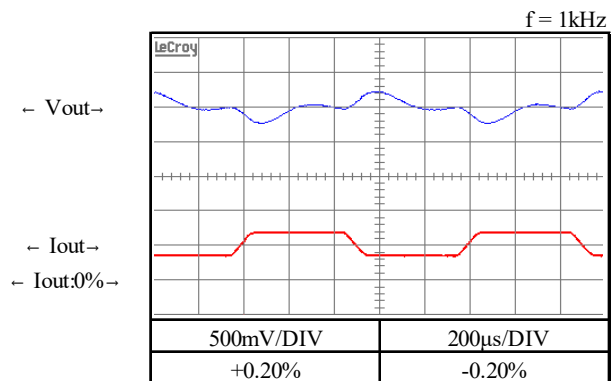
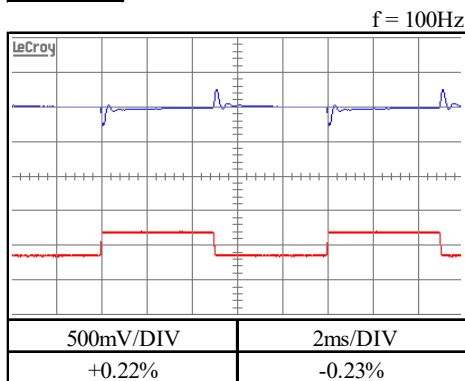
5V



12V



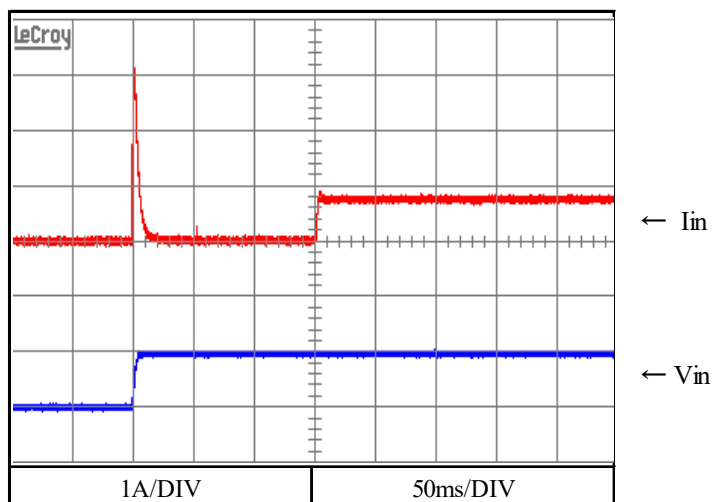
24V



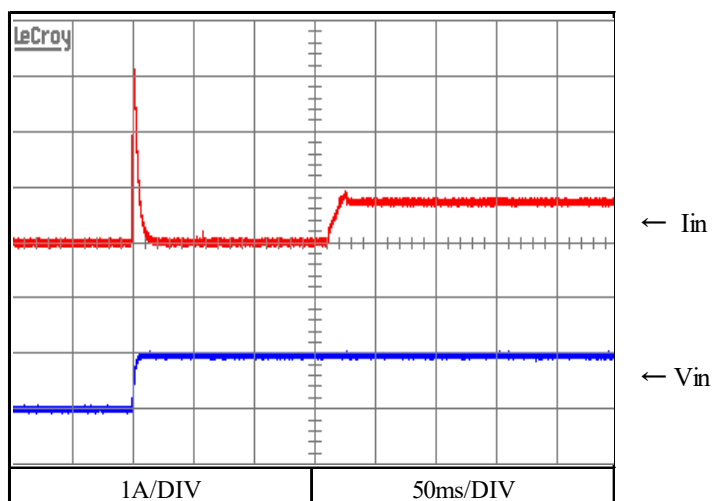
2-10. 入力サージ電流(突入電流)波形 Inrush current waveform

Conditions Vin : 48 VDC  
 Iout : 100 %  
 Ta : 25 °C

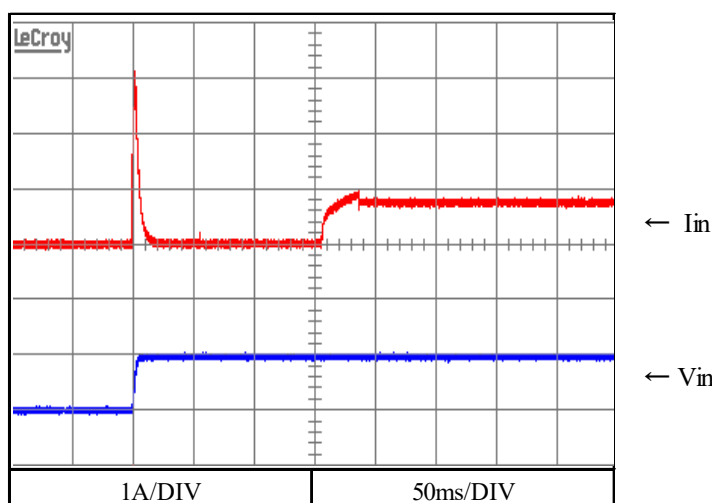
5V



12V



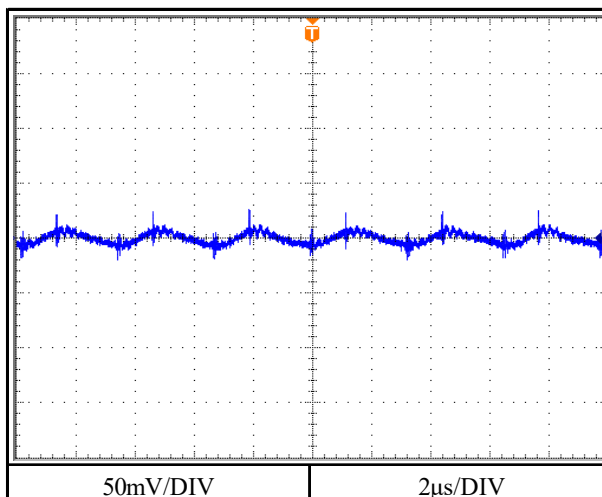
24V



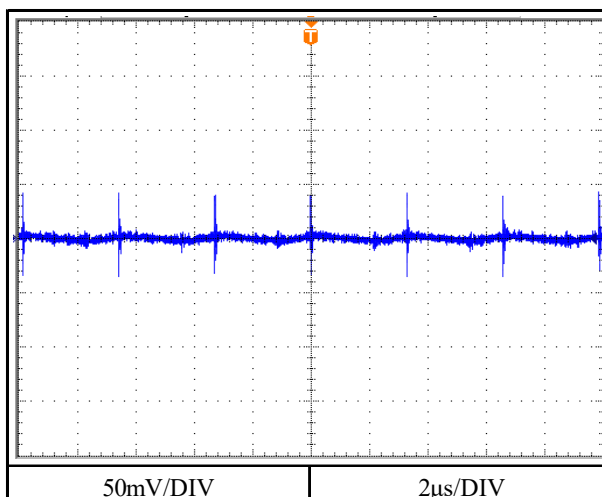
2-11. 出力リップル、ノイズ波形 Output ripple and noise waveform

Conditions Vin : 48 VDC  
 Iout : 100 %  
 Ta : 25 °C

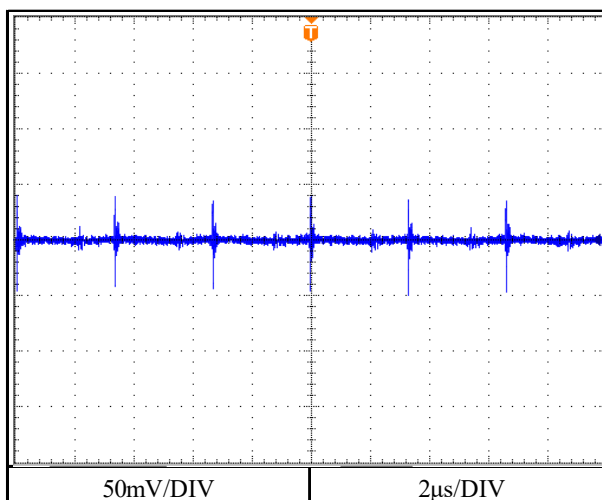
5V



12V



24V





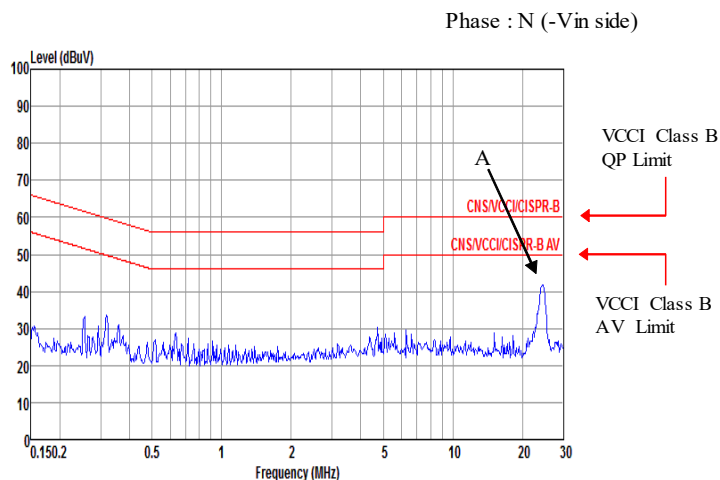
2-12. EMI特性 Electro-Magnetic Interference characteristics

Conditions Vin : 48 VDC  
 Iout : 100 %  
 Ta : 25 °C

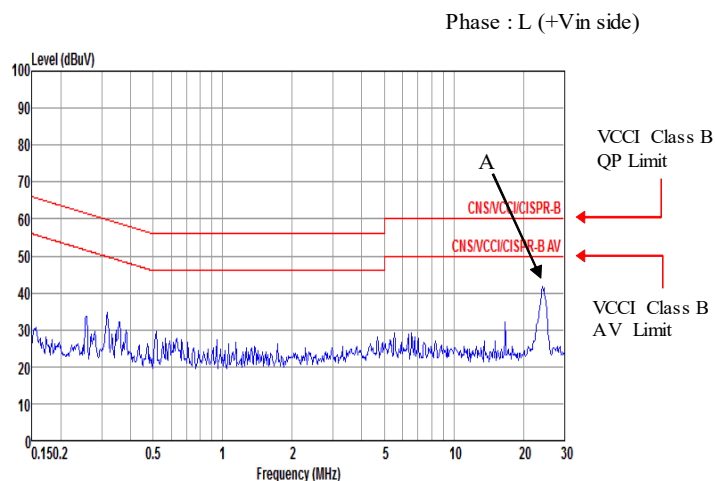
雑音端子電圧  
 Conducted Emission

5V

Ref. Data	Point A (24.58MHz)	
	Limit (dB)	Measure (dB)
QP	60.0	40.5
AV	50.0	35.8



Ref. Data	Point A (24.57MHz)	
	Limit (dB)	Measure (dB)
QP	60.0	41.0
AV	50.0	36.3



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.

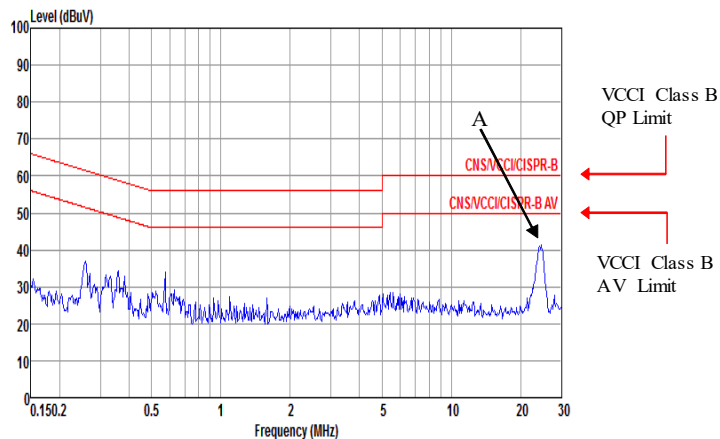
Conditions Vin : 48 VDC  
 Iout : 100 %  
 Ta : 25 °C

雑音端子電圧  
 Conducted Emission

12V

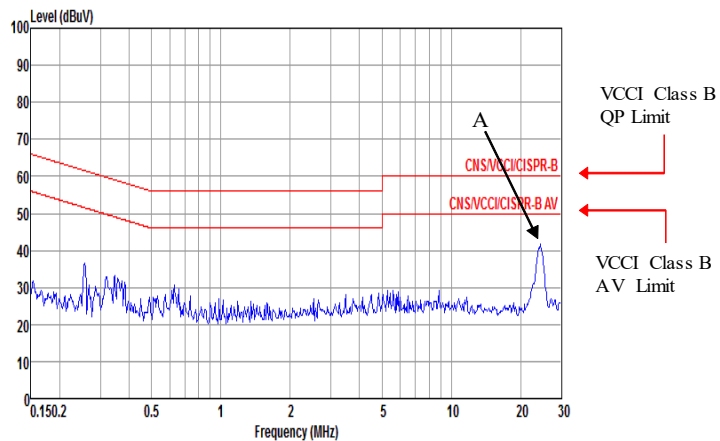
Ref. Data	Point A (24.58MHz)	
	Limit (dB)	Measure (dB)
QP	60.0	40.2
AV	50.0	35.2

Phase : N (-Vin side)



Ref. Data	Point A (24.57MHz)	
	Limit (dB)	Measure (dB)
QP	60.0	39.5
AV	50.0	34.6

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

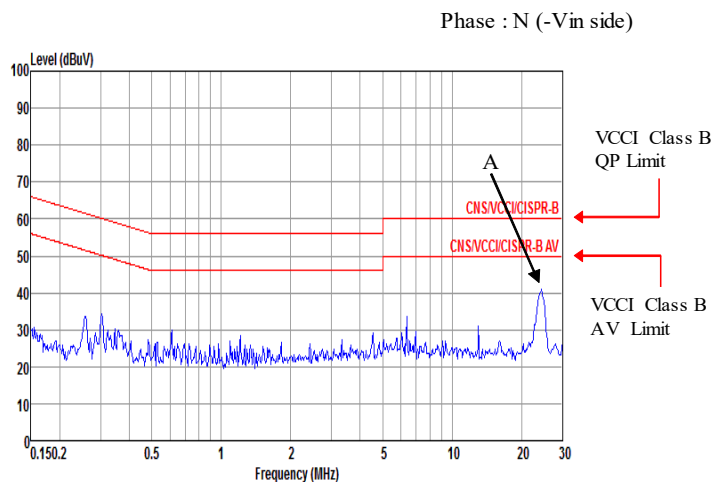
Indication is peak values.

Conditions Vin : 48 VDC  
 Iout : 100 %  
 Ta : 25 °C

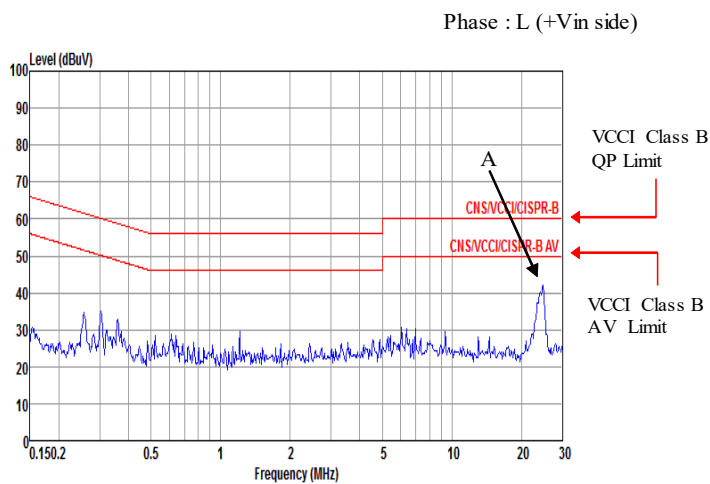
雑音端子電圧  
 Conducted Emission

24V

Ref. Data	Point A (24.18MHz)	
	Limit (dB)	Measure (dB)
QP	60.0	37.9
AV	50.0	32.9



Ref. Data	Point A (24.19MHz)	
	Limit (dB)	Measure (dB)
QP	60.0	37.9
AV	50.0	32.4



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

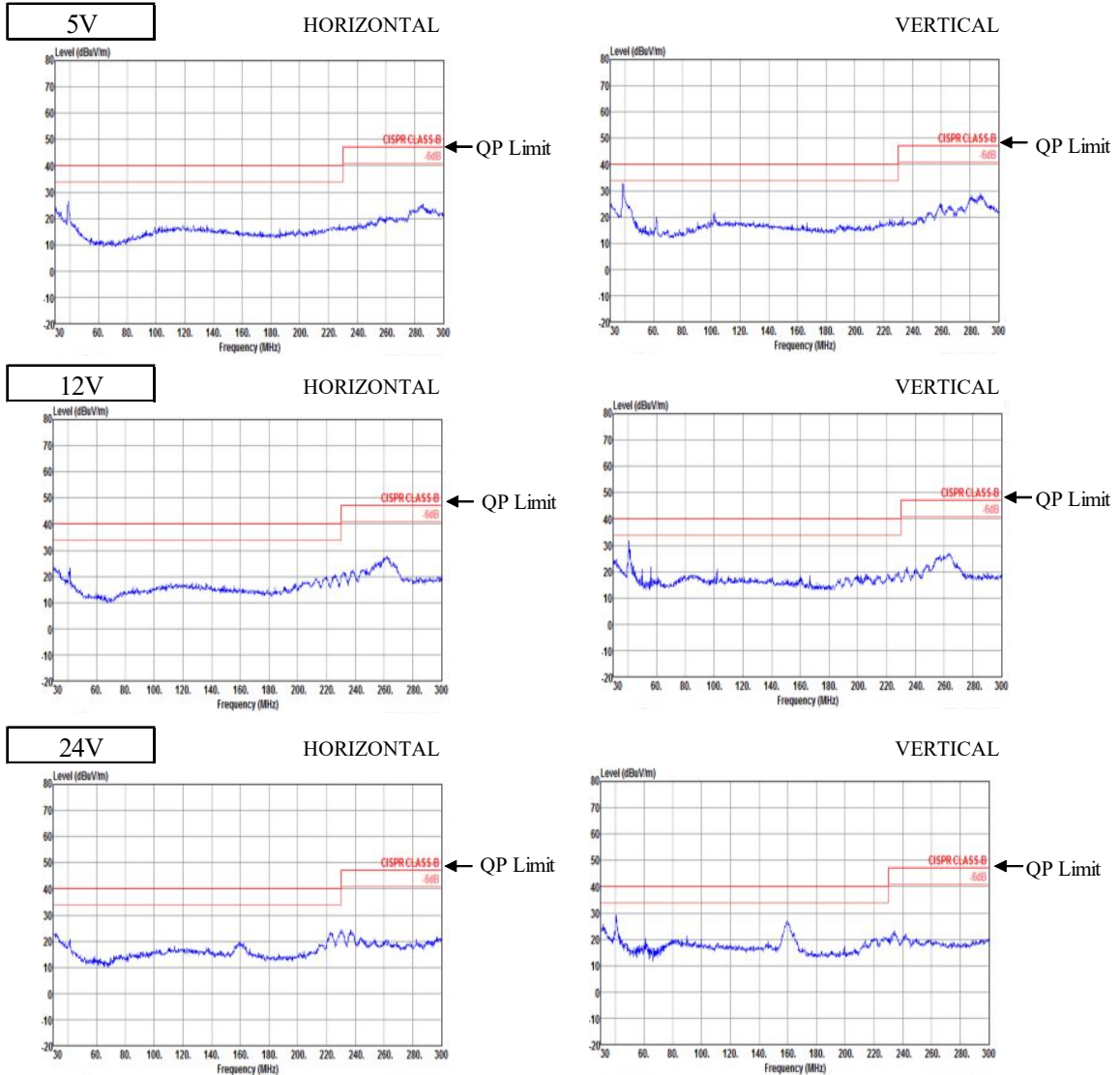
Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

表示はピーク値

Indication is peak values.

Conditions Vin : 48 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.