

CCGS30-24-xxS

EVALUATION DATA

型式データ

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使用記号 Terminology used

	定義	Definition
V _{in}	入力電圧	Input voltage
V _o	出力電圧	Output voltage
V _{RC}	RC電圧	RC voltage
I _{in}	入力電流	Input current
I _o	出力電流	Output current
T _a	周囲温度	Ambient temperature
f	周波数	Frequency

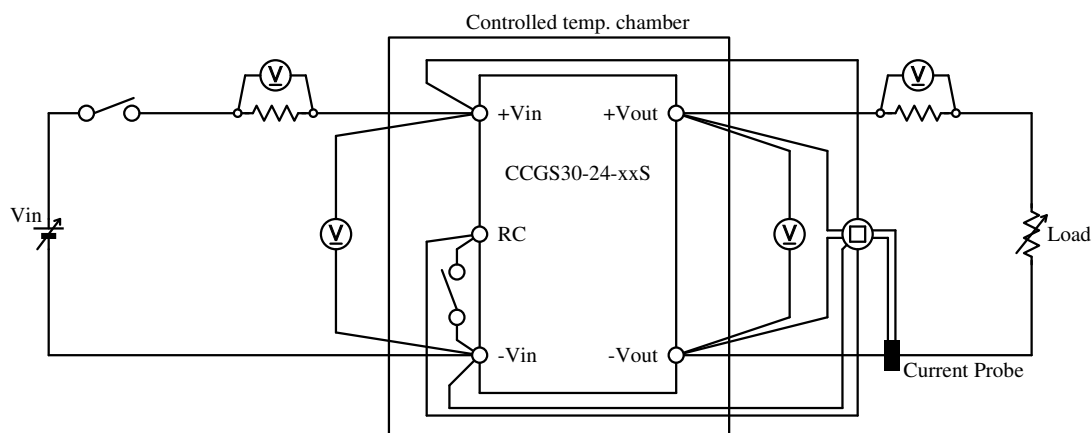
※ 当社測定条件における結果であり、参考値としてお考え願います。
Test results are reference data based on our measurement condition.

1. 測定方法 Evaluation Method

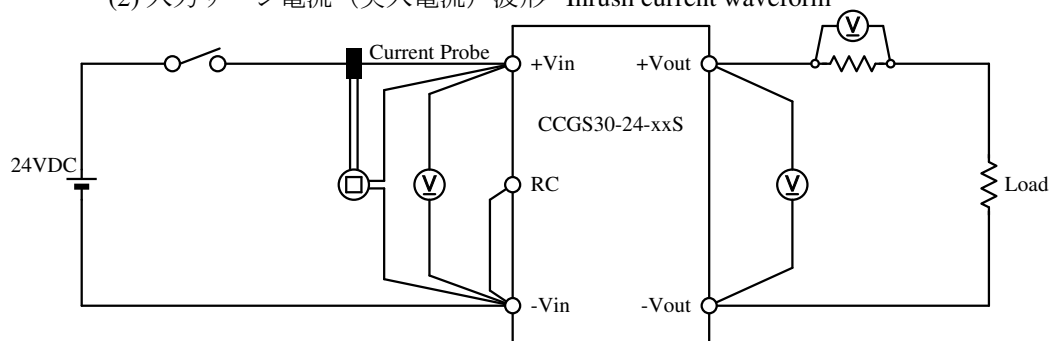
1-1. 測定回路 Measurement Circuits

(1) 静特性、待機電力特性、通電ドリフト特性、その他特性

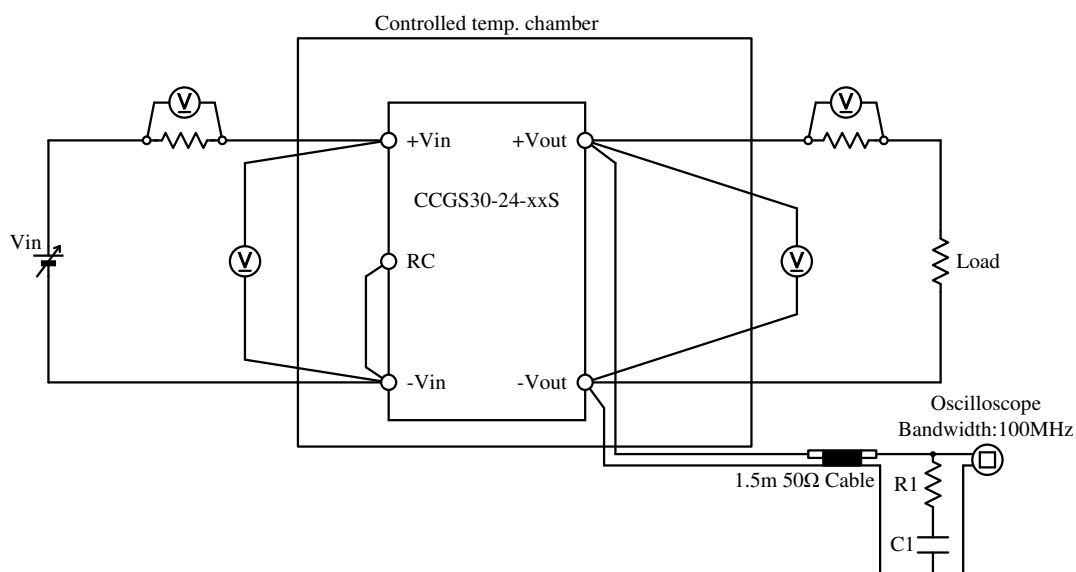
Steady state, Standby power, Warm up voltage drift and Other characteristics



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



(3) 出力リップルノイズ電圧、波形 Output ripple and noise voltage and waveform



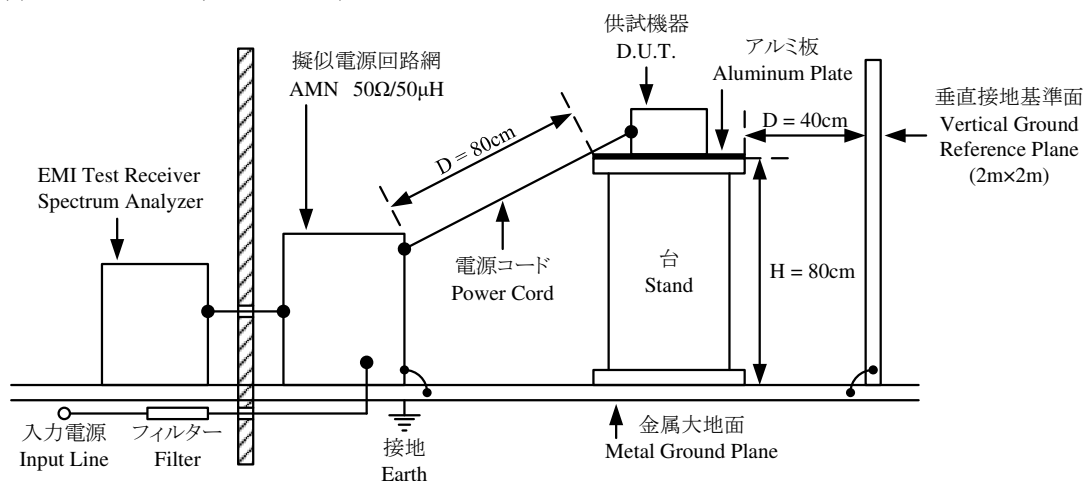
C1 : 4700pF

Ceramic Capacitor

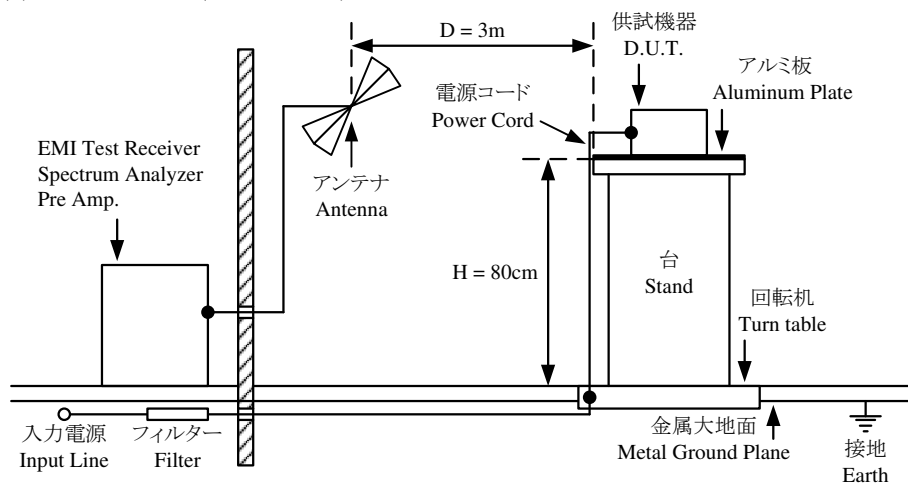
R1 : 50Ω

(4) 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



1-2. 使用測定機器 List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA ELECT.	DLM2054
2	DIGITAL MULTIMETER	AGILENT	34970A
3	CURRENT PROBE	YOKOGAWA ELECT.	70193
4	CURRENT PROBE	HIOKI	3273
5	SHUNT RESISTER	YOKOGAWA ELECT.	2215
6	DYNAMIC DUMMY LOAD	TAKASAGO	FK-200L
7	DYNAMIC DUMMY LOAD	KIKUSUI	PLZ-164WL
8	CVCF	NF	ES10000S
9	DC POWER SUPPLY	TDK-Lambda	Z+100-8
10	CONTROLLED TEMP. CHAMBER	ESPEC	SU-261
11	EMI TEST RECEIVER / SPECTRUM ANALYZER	ROHDE & SCHWARZ	ESR3
12	PRE AMP.	SONOMA	310N
13	AMN	KIKUSUI	KNW-242C
14	ANTENNA	SCHWARZBECK	BBA9106
15	ANTENNA	SCHWARZBECK	UHALP9107

2. 特性データ Characteristics

2-1. 静特性 Steady state characteristics

(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

Io \ Vin	9VDC	12VDC	24VDC	36VDC	Line regulation	
0%	3.2984V	3.2989V	3.2990V	3.2989V	0.6mV	0.018%
50% (3.5A)	3.2742V	3.2745V	3.2745V	3.2745V	0.3mV	0.009%
100% (7A)	3.2497V	3.2498V	3.2498V	3.2497V	0.1mV	0.003%
Load regulation	48.7mV	49.1mV	49.2mV	49.2mV		
	1.476%	1.488%	1.491%	1.491%		

2. Temperature drift

Conditions Vin : 24 VDC

Io : 100 %

Ta	-20°C	25°C	70°C	Temperature stability	
Vo	3.2476V	3.2498V	3.2395V	10.3mV	0.312%

5V

1. Regulation - line and load

Condition Ta : 25 °C

Io \ Vin	9VDC	12VDC	24VDC	36VDC	Line regulation	
0%	5.0258V	5.0275V	5.0277V	5.0277V	1.9mV	0.038%
50% (3A)	5.0057V	5.0067V	5.0070V	5.0070V	1.3mV	0.026%
100% (6A)	4.9859V	4.9863V	4.9864V	4.9863V	0.5mV	0.010%
Load regulation	39.9mV	41.2mV	41.3mV	41.4mV		
	0.798%	0.824%	0.826%	0.828%		

2. Temperature drift

Conditions Vin : 24 VDC

Io : 100 %

Ta	-20°C	25°C	70°C	Temperature stability	
Vo	4.9711V	4.9864V	4.9800V	15.3mV	0.306%

12V

1. Regulation - line and load

Condition Ta : 25 °C

Io \ Vin	9VDC	12VDC	24VDC	36VDC	Line regulation	
0%	12.0435V	12.0442V	12.0445V	12.0445V	1.0mV	0.008%
50% (1.25A)	12.0350V	12.0358V	12.0355V	12.0355V	0.8mV	0.007%
100% (2.5A)	12.0269V	12.0275V	12.0275V	12.0272V	0.6mV	0.005%
Load regulation	16.6mV	16.7mV	17.0mV	17.3mV		
	0.138%	0.139%	0.142%	0.144%		

2. Temperature drift

Conditions Vin : 24 VDC

Io : 100 %

Ta	-20°C	25°C	70°C	Temperature stability	
Vo	12.0431V	12.0275V	12.0215V	21.6mV	0.180%

15V

1. Regulation - line and load

Condition Ta : 25 °C

Io \ Vin	9VDC	12VDC	24VDC	36VDC	Line regulation	
0%	15.0963V	15.0981V	15.0982V	15.0987V	2.4mV	0.016%
50% (1A)	15.0896V	15.0905V	15.0907V	15.0906V	1.1mV	0.007%
100% (2A)	15.0837V	15.0844V	15.0847V	15.0846V	1.0mV	0.007%
Load regulation	12.6mV	13.7mV	13.5mV	14.1mV		
	0.084%	0.091%	0.090%	0.094%		

2. Temperature drift

Conditions Vin : 24 VDC

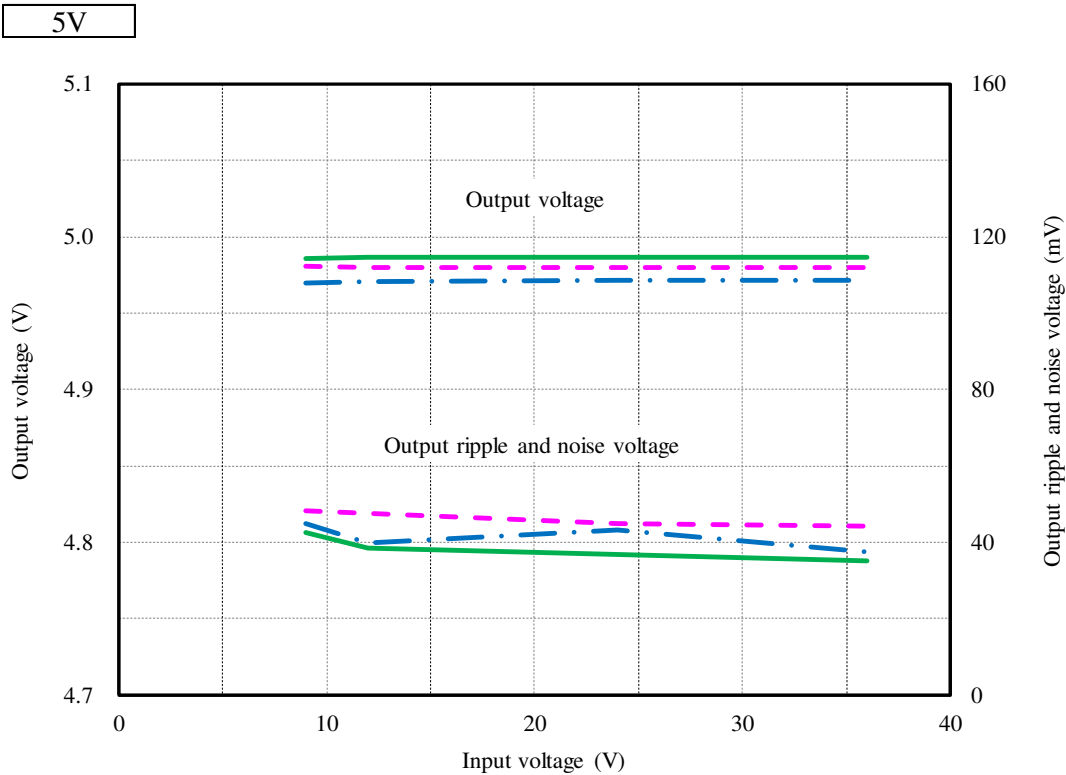
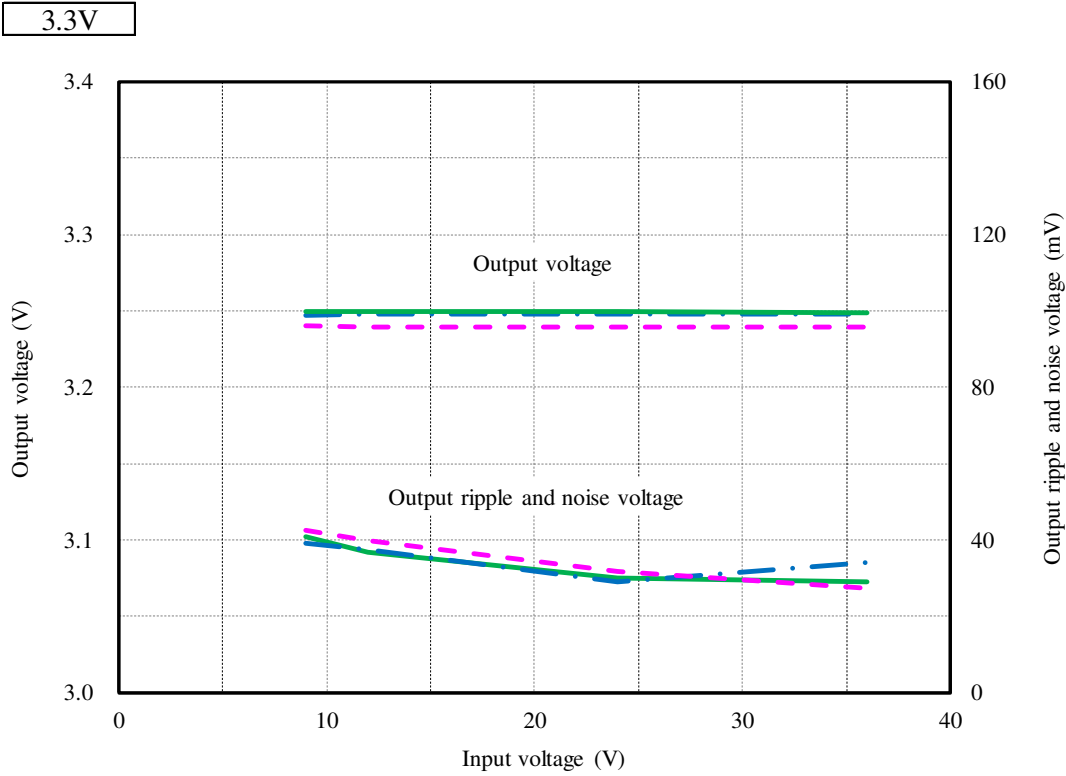
Io : 100 %

Ta	-20°C	25°C	70°C	Temperature stability	
Vo	15.0892V	15.0847V	15.0903V	5.6mV	0.037%

(2) 出力電圧・出力リップルノイズ電圧 対 入力電圧

Output voltage and Output ripple and noise voltage vs. Input voltage

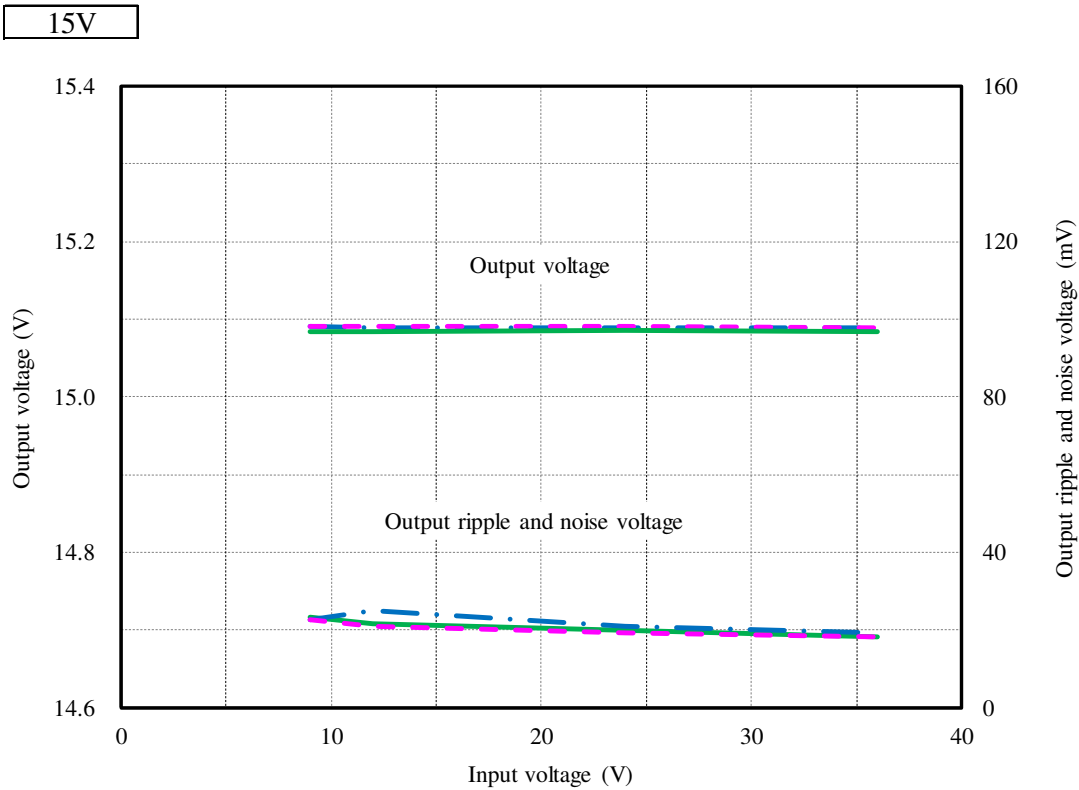
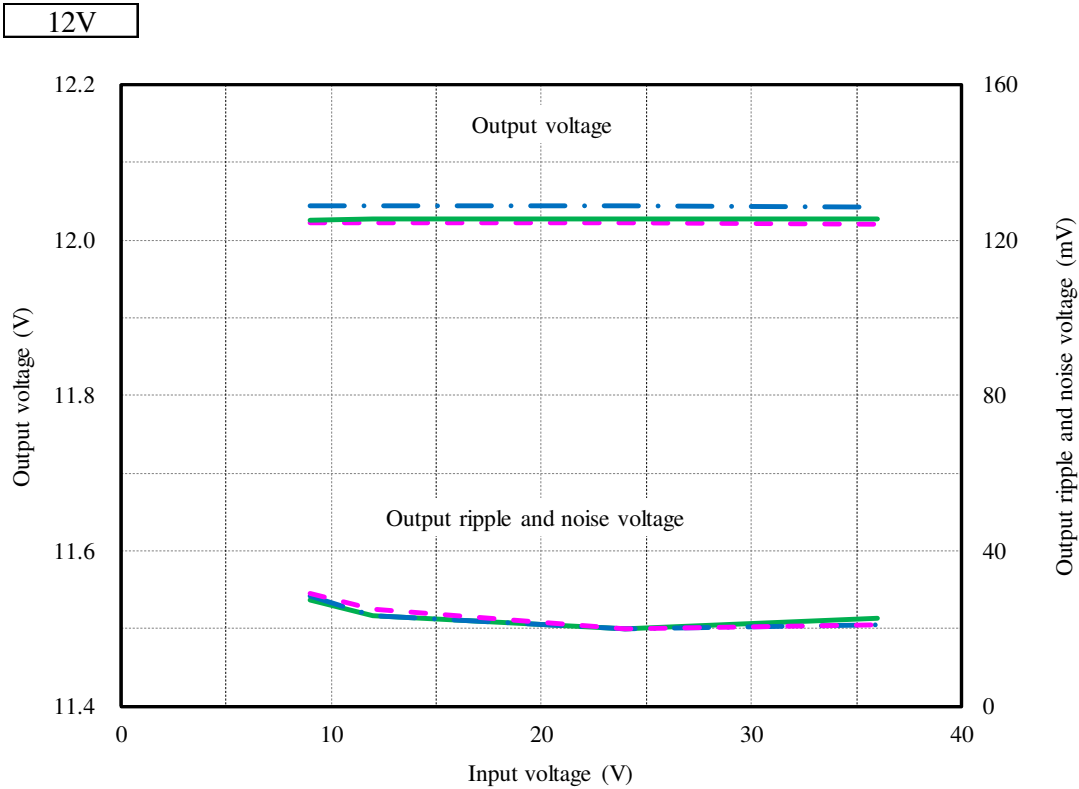
Conditions Io : 100 %
Ta : -20 °C
 : 25 °C
 : 70 °C



(2) 出力電圧・出力リップルノイズ電圧 対 入力電圧

Output voltage and Output ripple and noise voltage vs. Input voltage

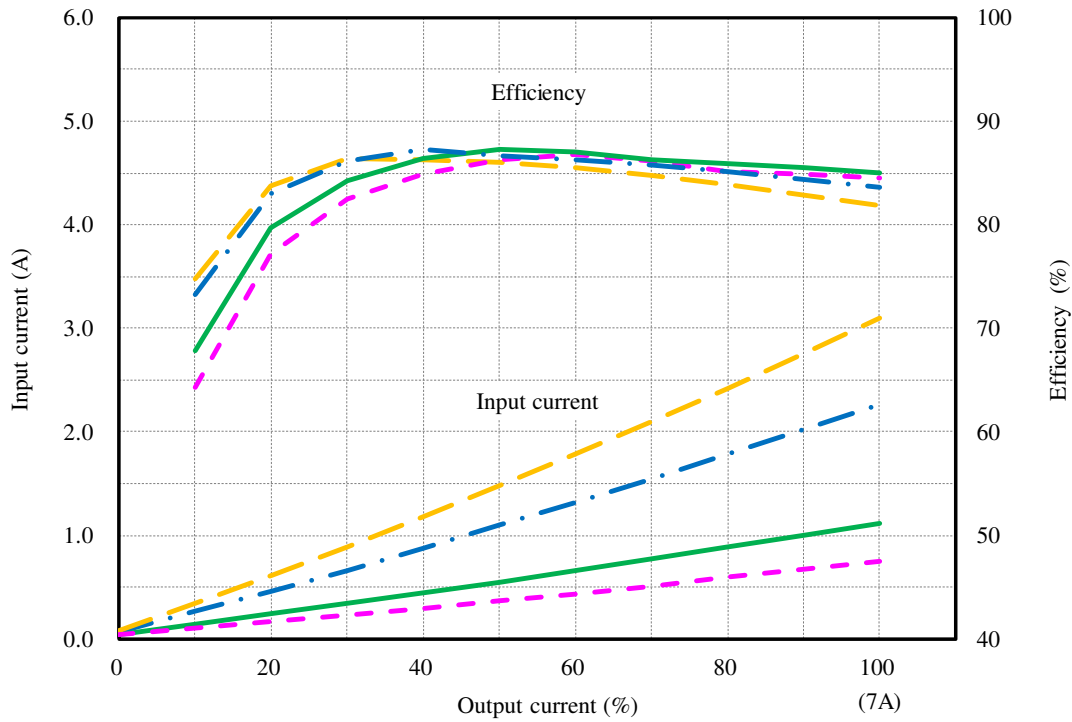
Conditions Io : 100 %
Ta : -20 °C
 : 25 °C
 : 70 °C



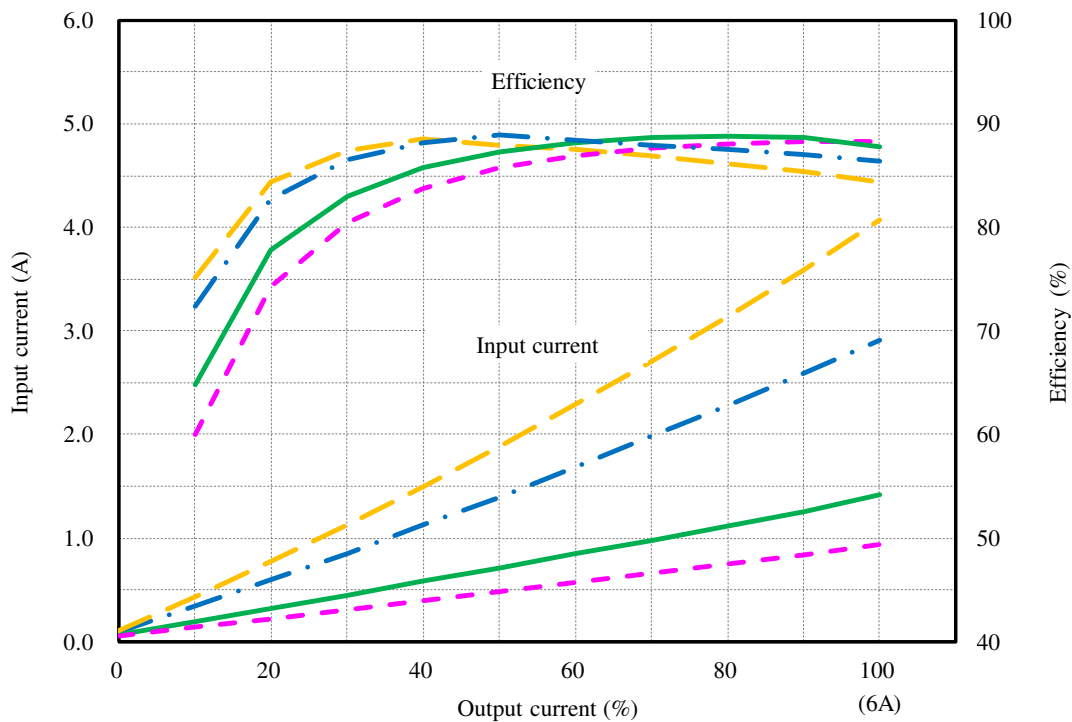
(3) 入力電流・効率 対 出力電流 Input current and Efficiency vs. Output current

Conditions Vin : 9 VDC
 : 12 VDC
 : 24 VDC
 : 36 VDC
Ta : 25 °C

3.3V



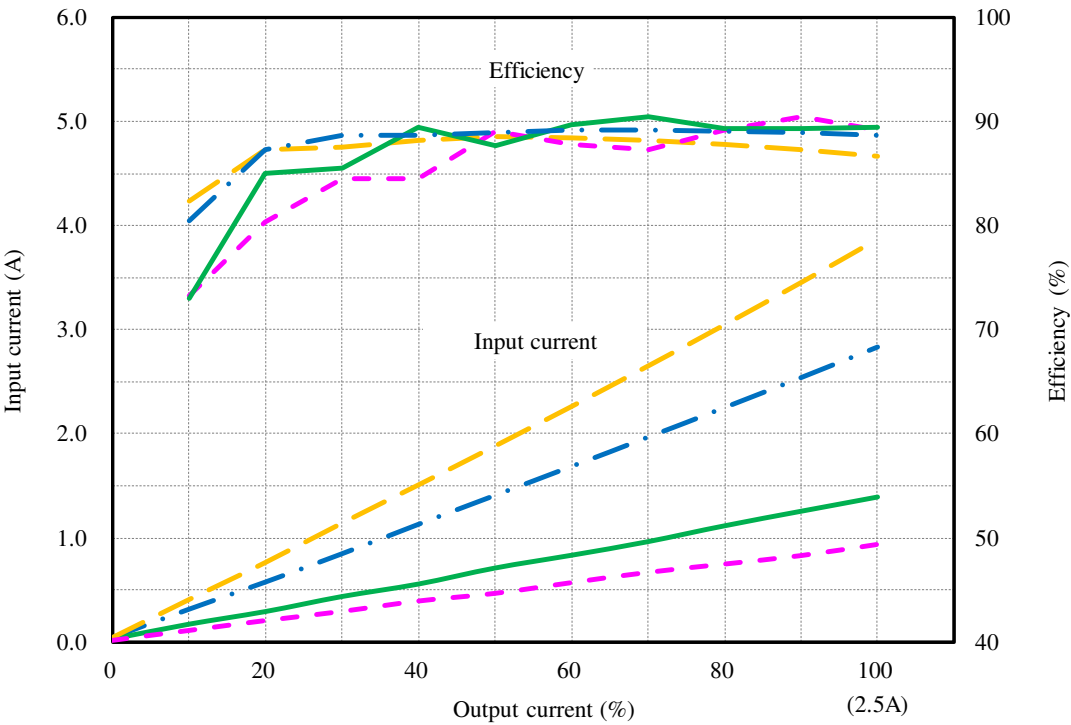
5V



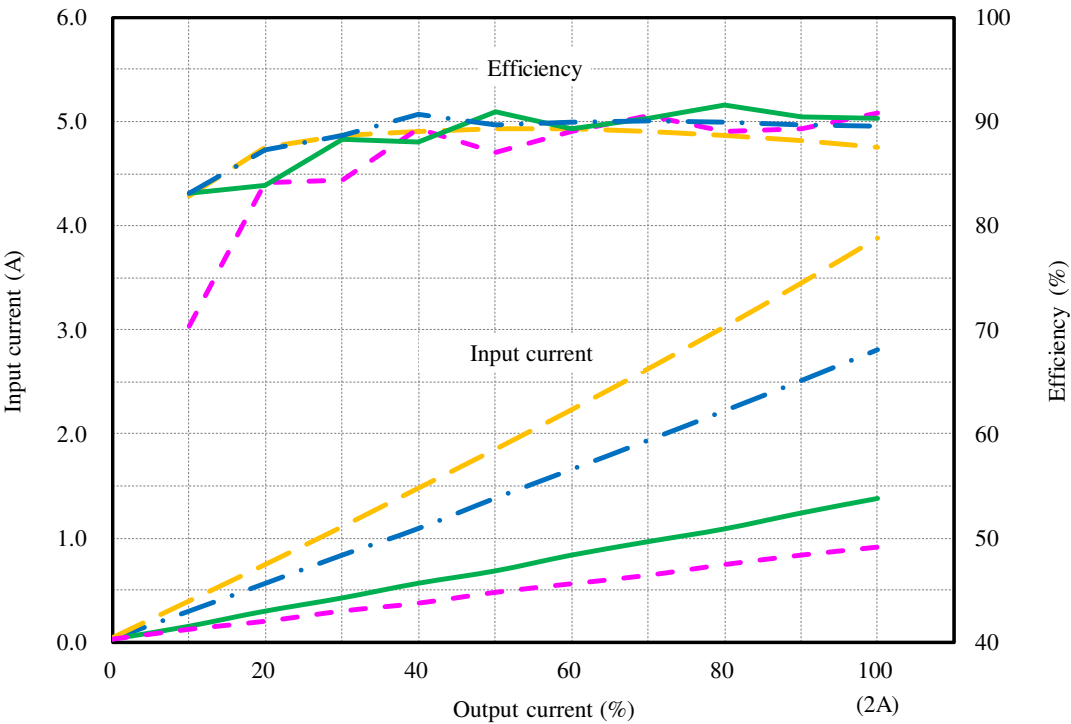
(3) 入力電流・効率 対 出力電流 Input current and Efficiency vs. Output current

Conditions Vin : 9 VDC
 : 12 VDC
 : 24 VDC
 : 36 VDC
Ta : 25 °C

12V



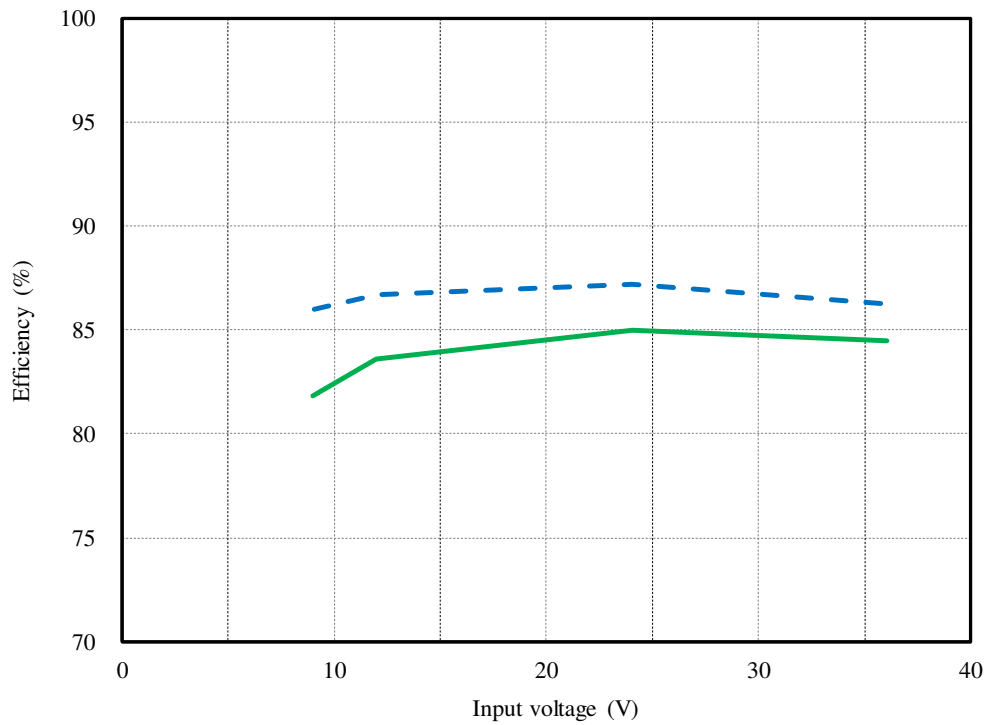
15V



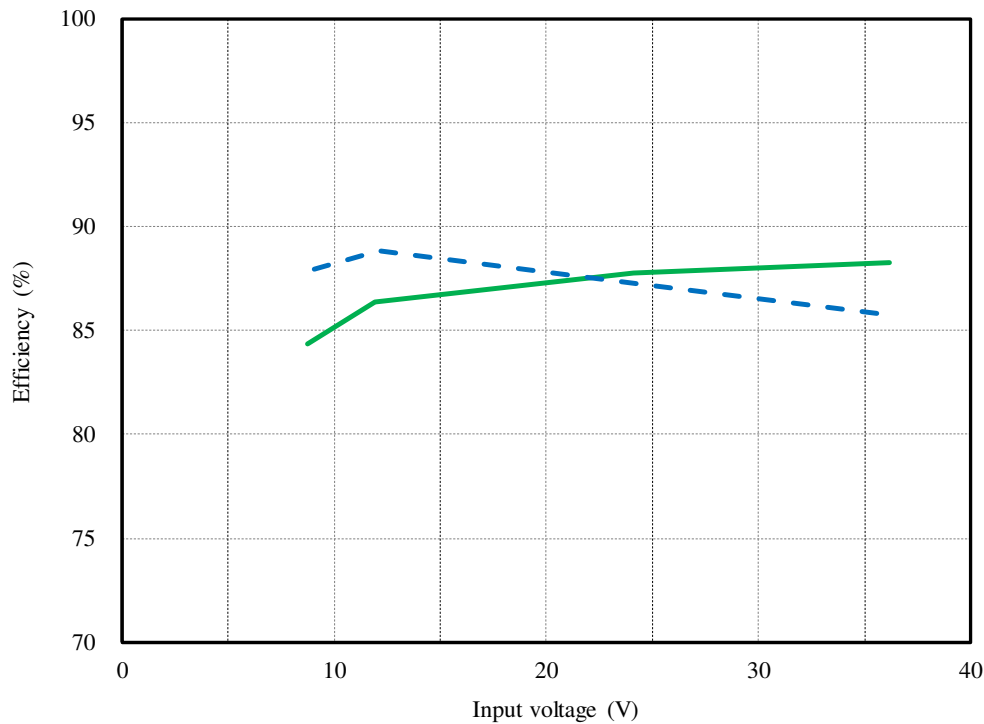
(4) 効率 対 入力電圧 Efficiency vs. Input voltage

Conditions Io : 50 %
 : 100 %
Ta : 25 °C

3.3V



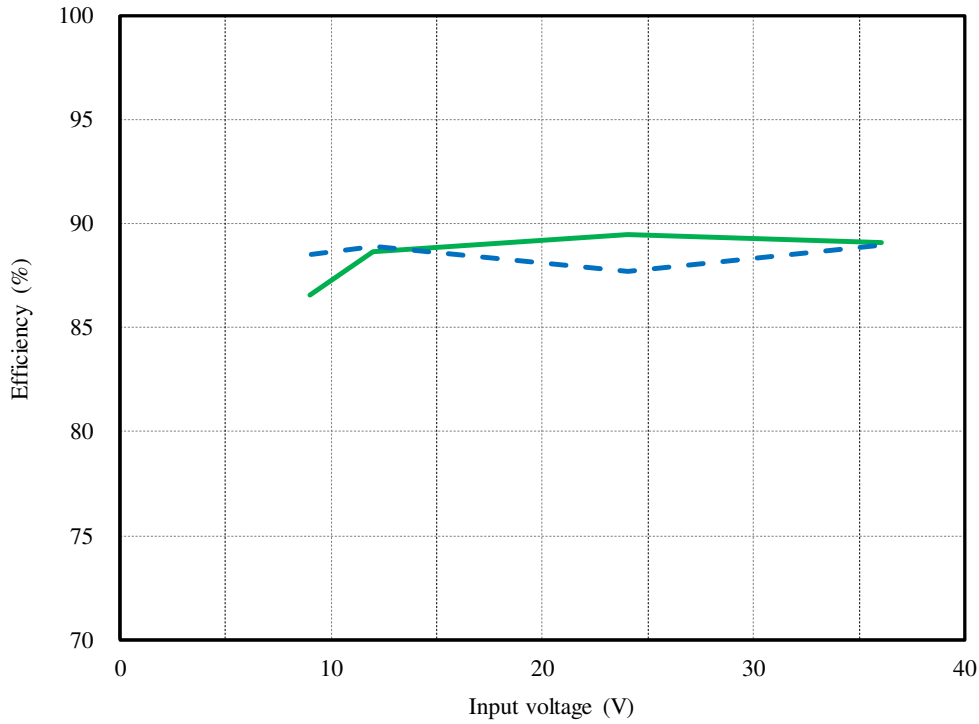
5V



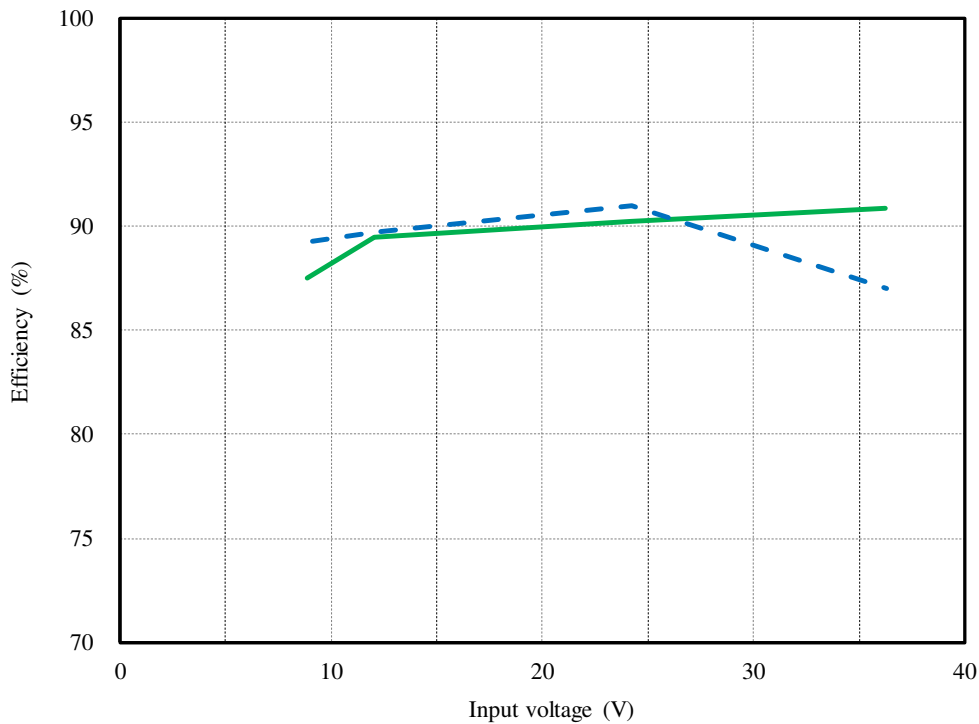
(4) 効率 対 入力電圧 Efficiency vs. Input voltage

Conditions Io : 50 %
 : 100 %
Ta : 25 °C

12V



15V



(5) 起動・遮断電圧特性 Start up and Drop out voltage characteristics

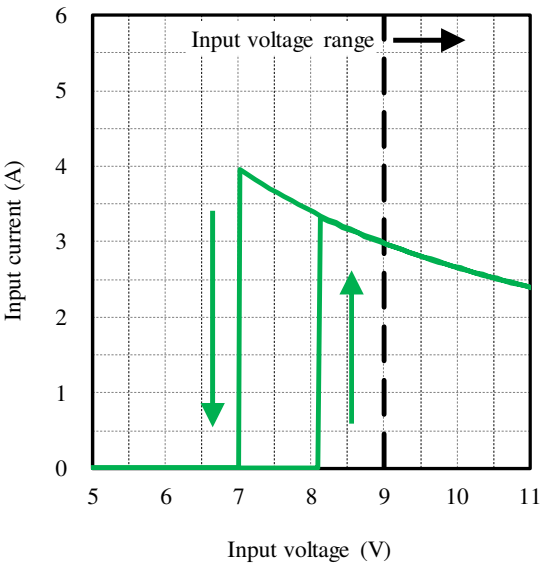
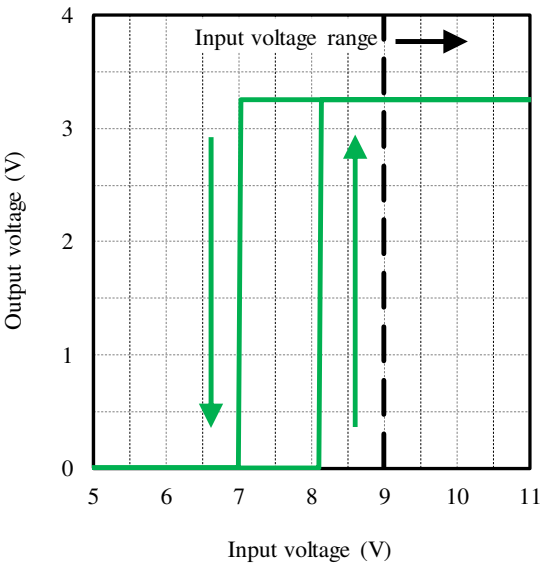
出力電圧 対 入力電圧
Output voltage vs. Input voltage

入力電流 対 入力電圧
Input current vs. Input voltage

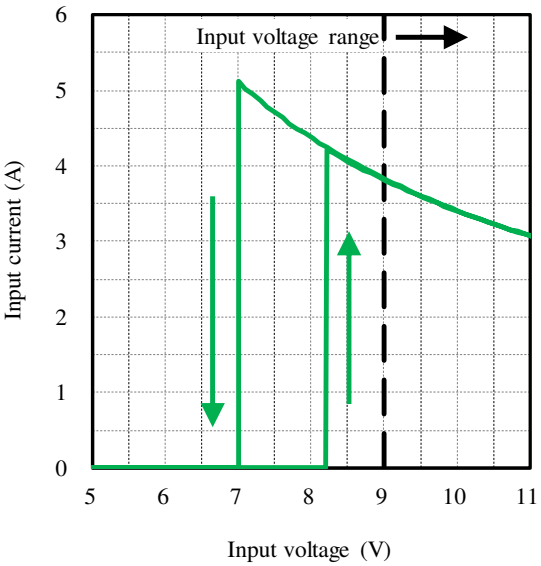
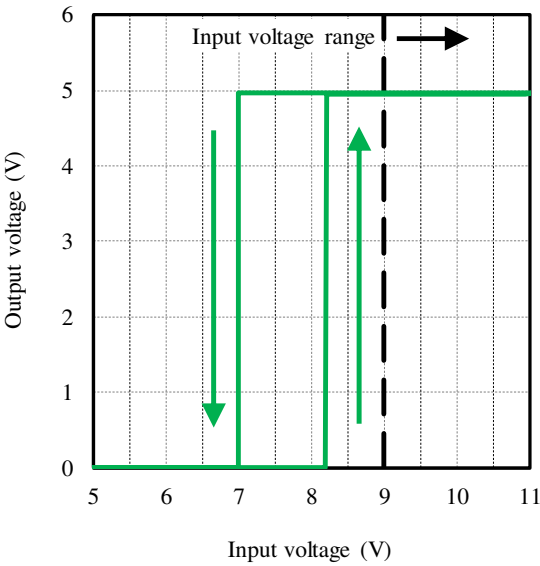
Conditions I_o : 100 %
 T_a : 25 °C

Conditions I_o : 100 %
 T_a : 25 °C

3.3V



5V



(5) 起動・遮断電圧特性 Start up and Drop out voltage characteristics

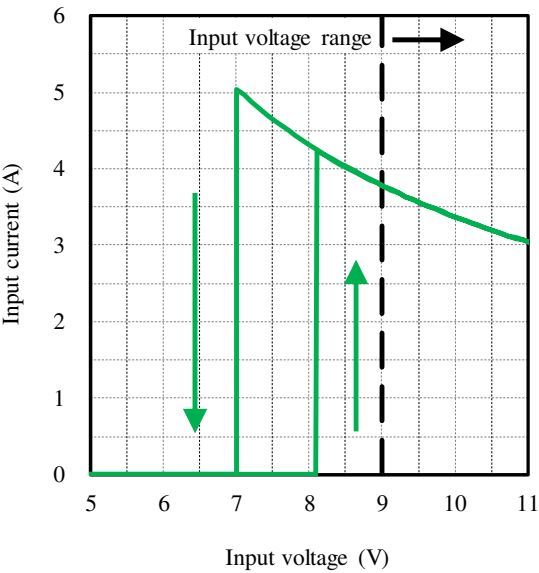
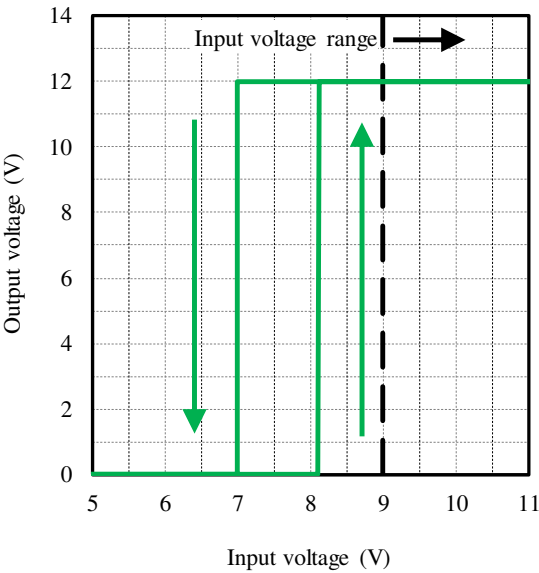
出力電圧 対 入力電圧
Output voltage vs. Input voltage

Conditions I_o : 100 %
 T_a : 25 °C

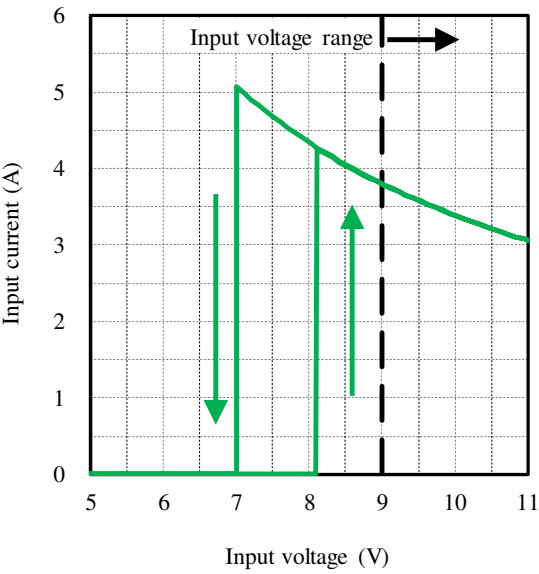
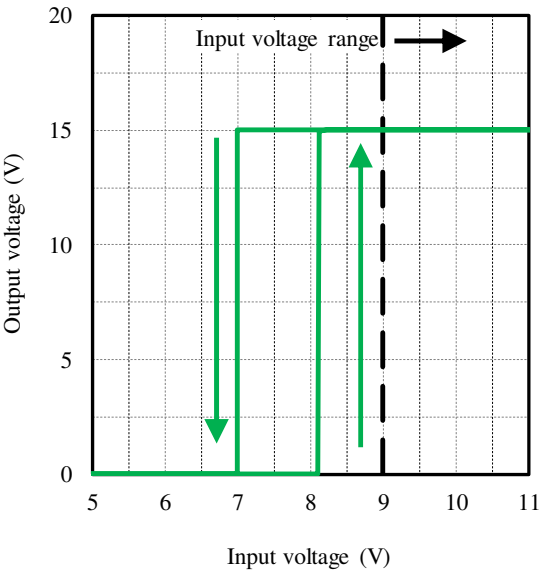
入力電流 対 入力電圧
Input current vs. Input voltage

Conditions I_o : 100 %
 T_a : 25 °C

12V

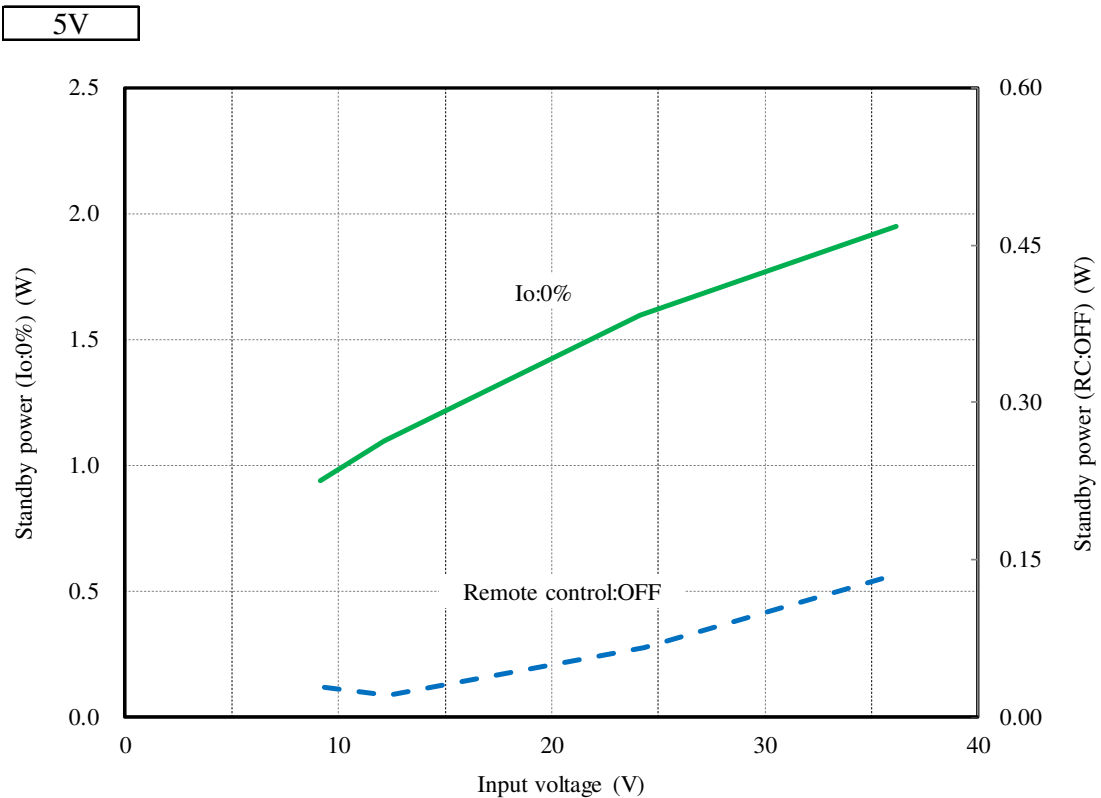
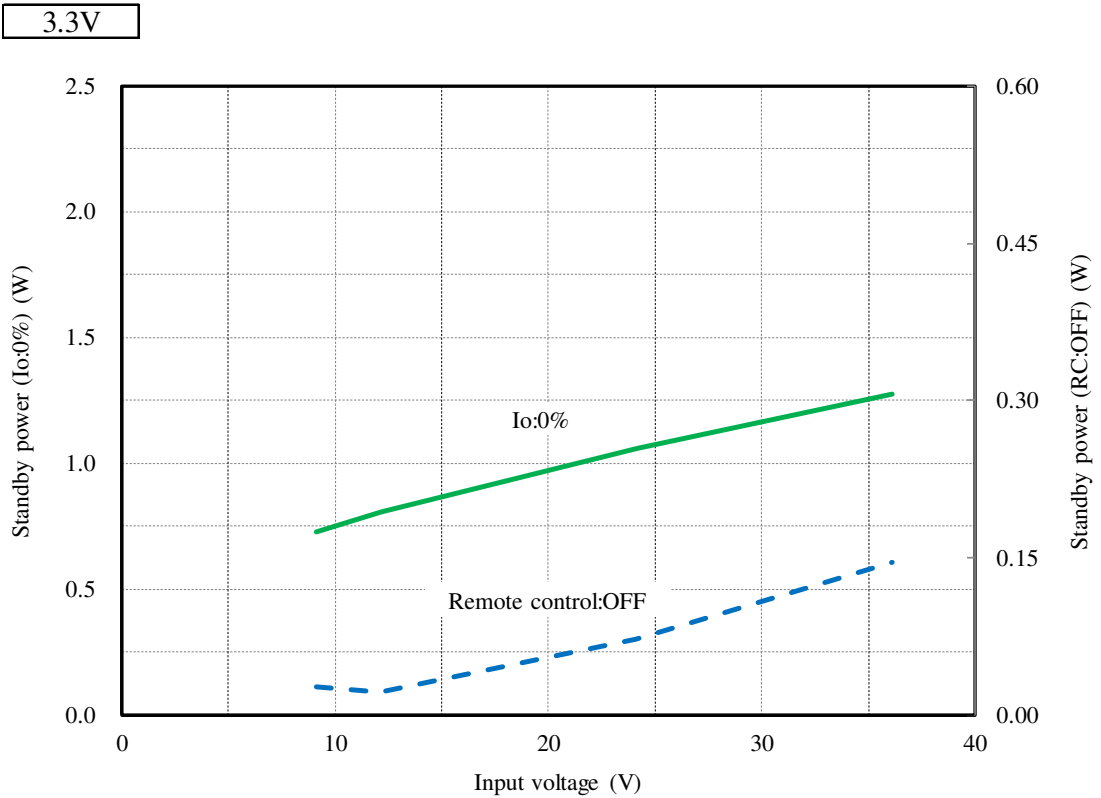


15V



2-2. 待機電力特性 Standby power characteristics

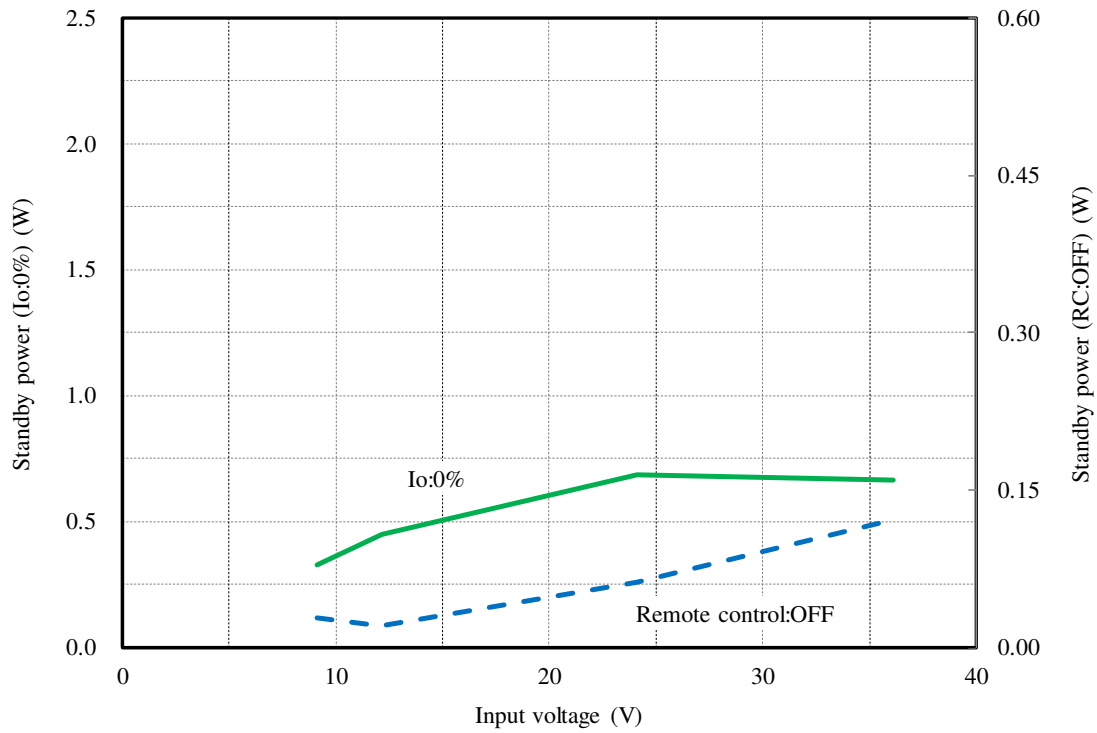
Condition Ta : 25 °C



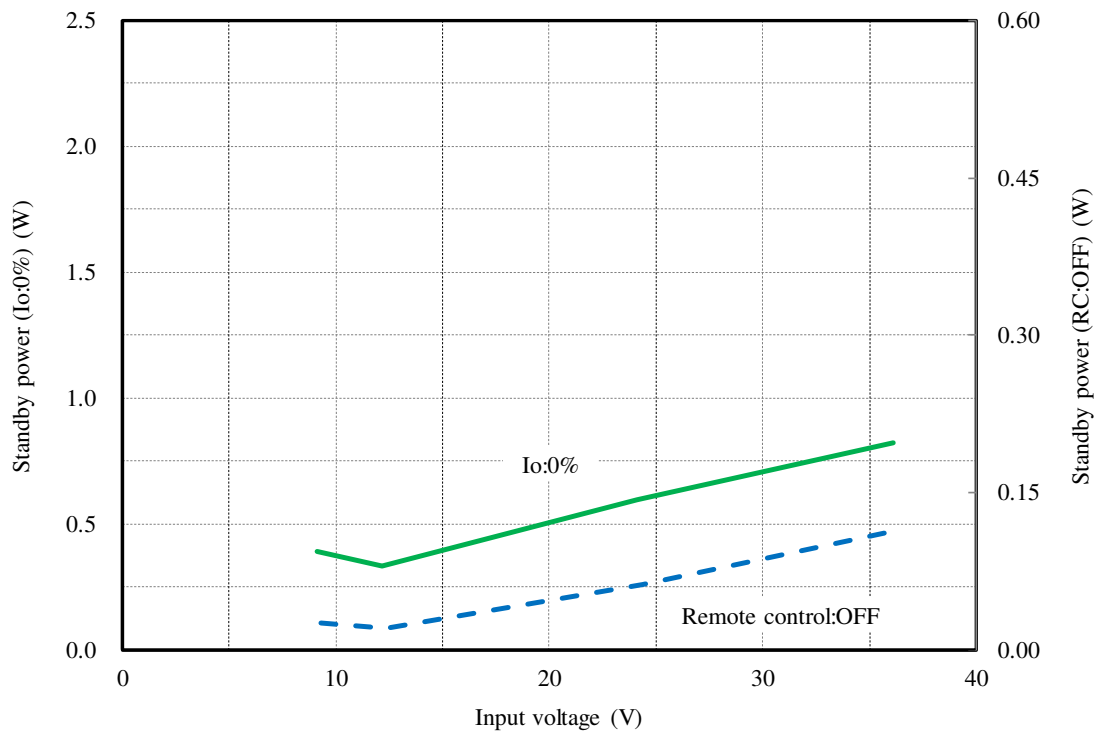
2-2. 待機電力特性 Standby power characteristics

Condition Ta : 25 °C

12V

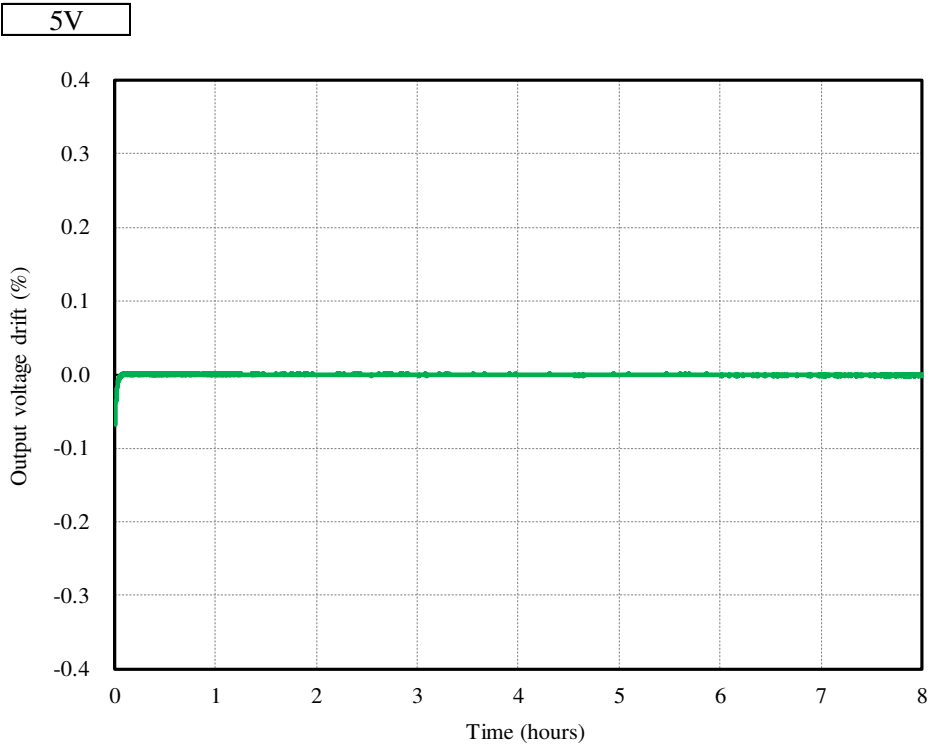
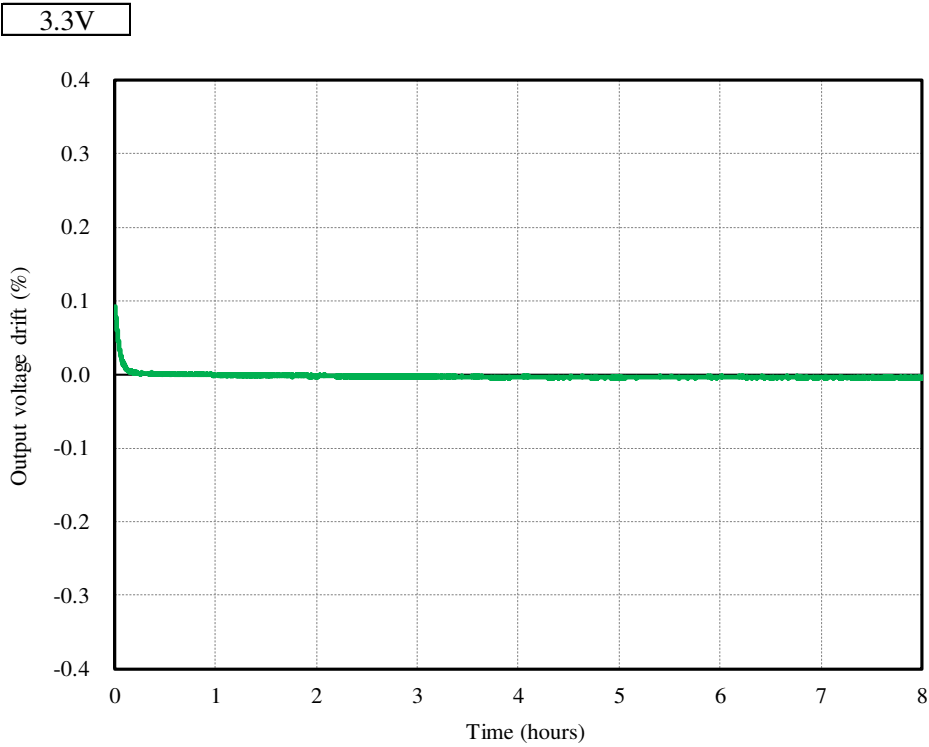


15V



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

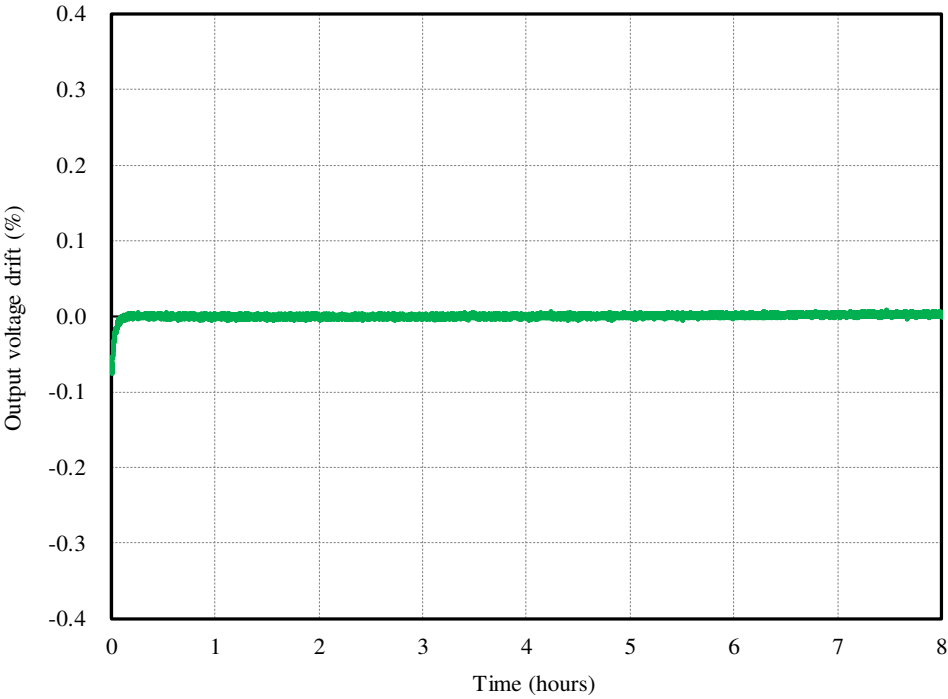
Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 °C



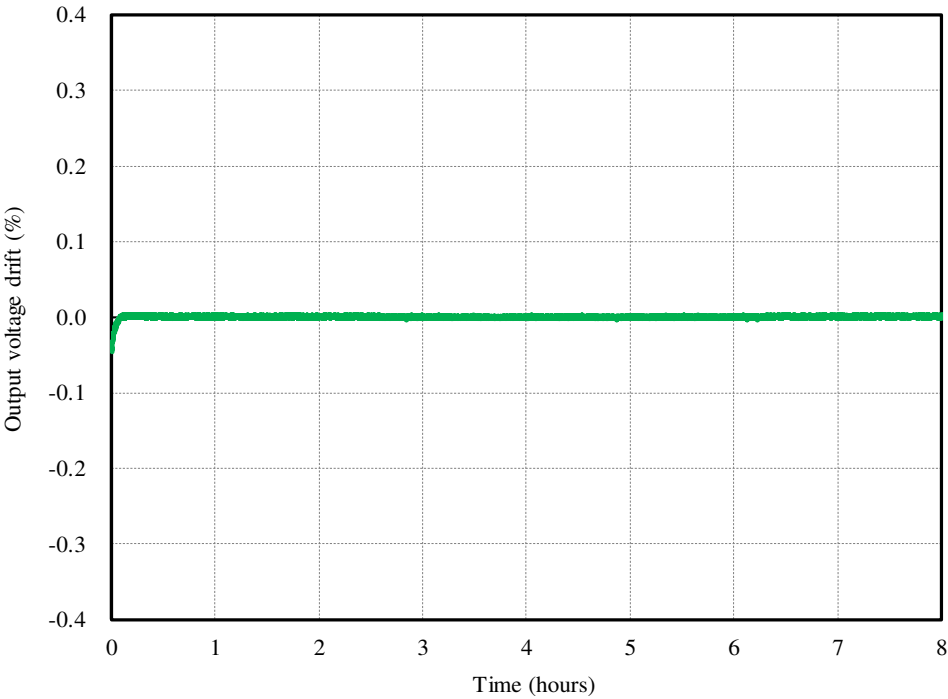
2-3. 通電ドリフト特性 Warm up voltage drift characteristics

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

12V



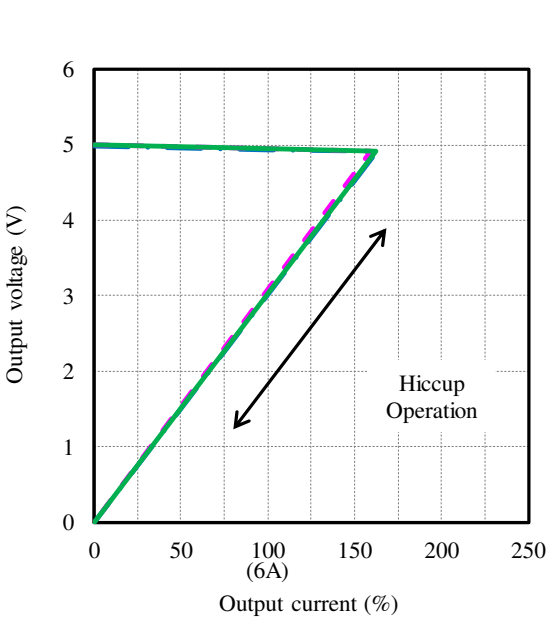
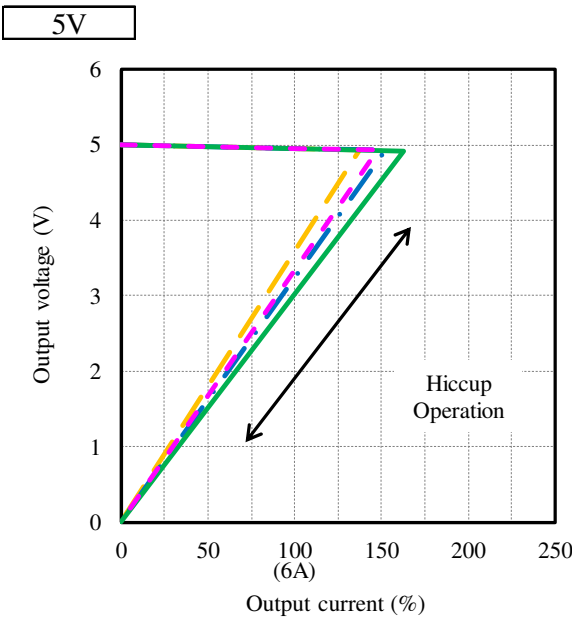
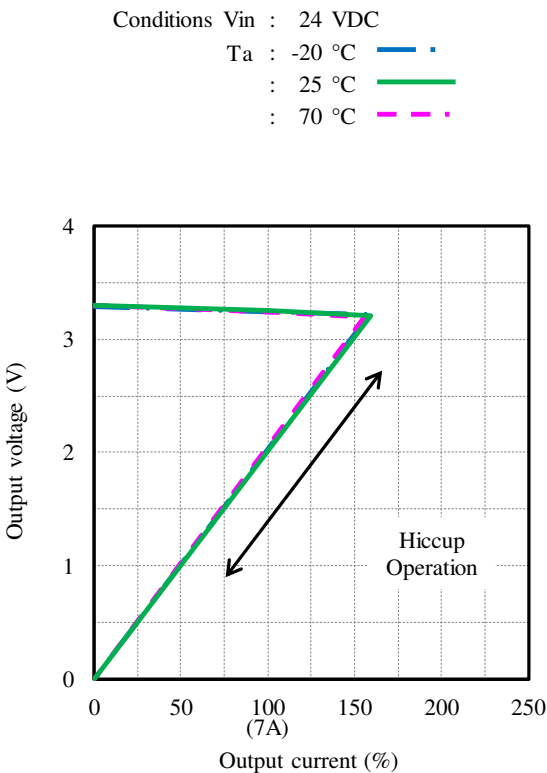
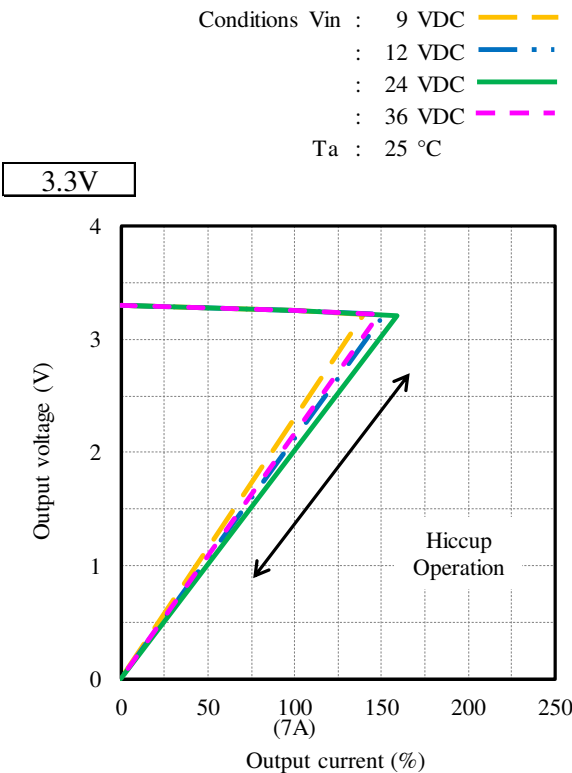
15V



2-4. 過電流保護特性 Over current protection (OCP) characteristics

入力電圧依存性
Input voltage dependence

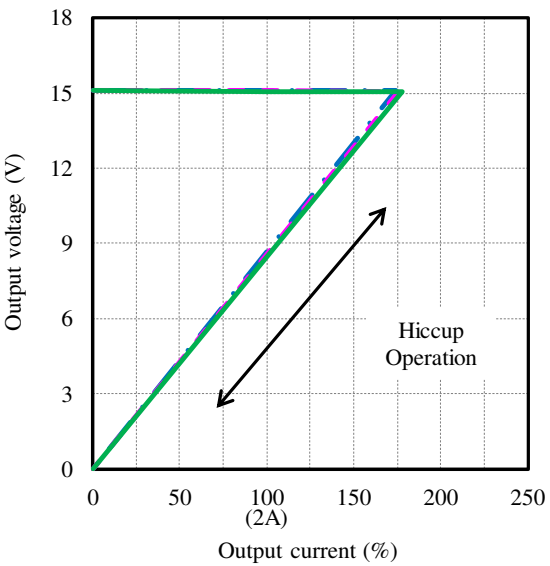
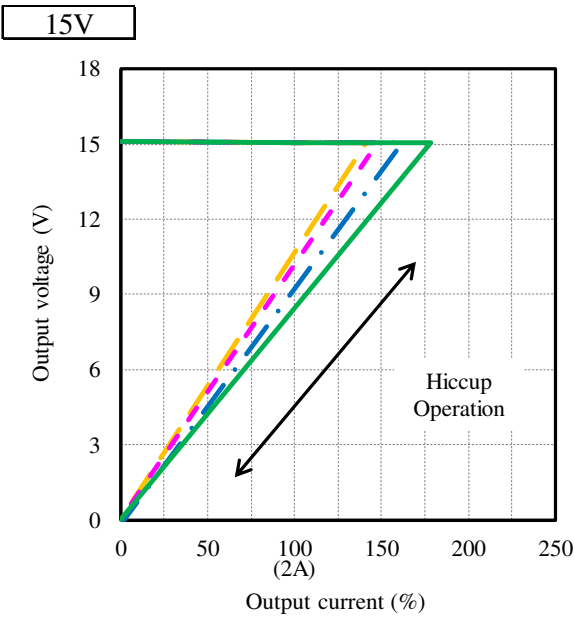
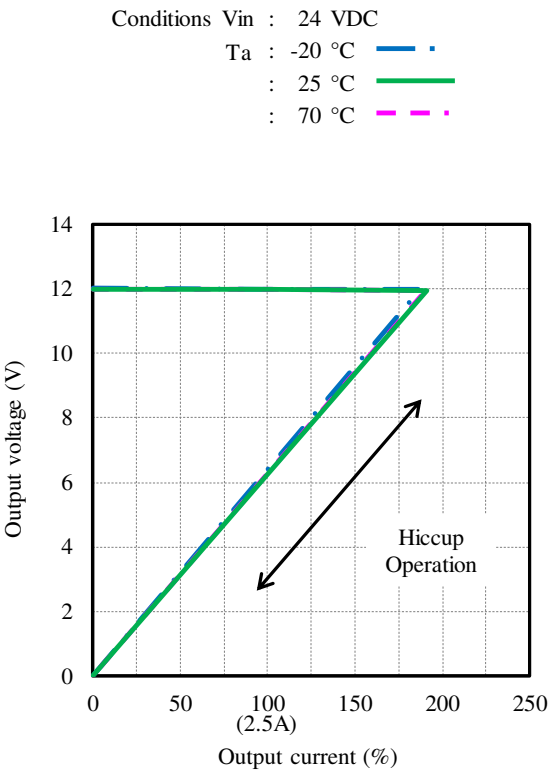
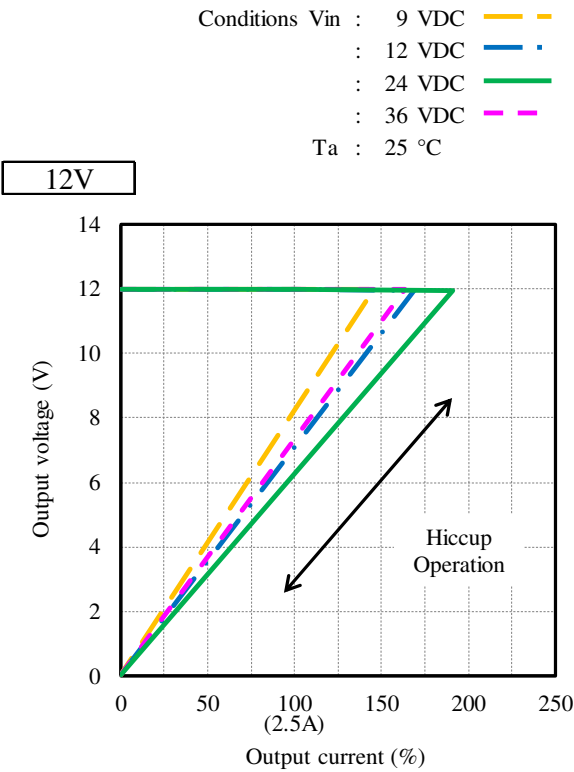
周囲温度依存性
Ambient temperature dependence



2-4. 過電流保護特性 Over current protection (OCP) characteristics

入力電圧依存性
Input voltage dependence

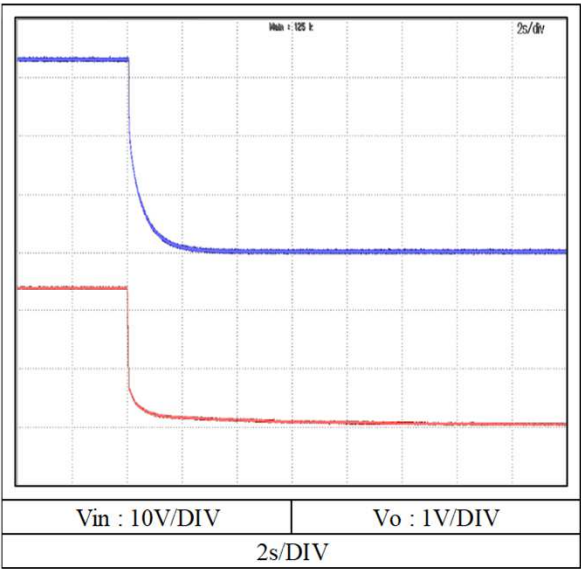
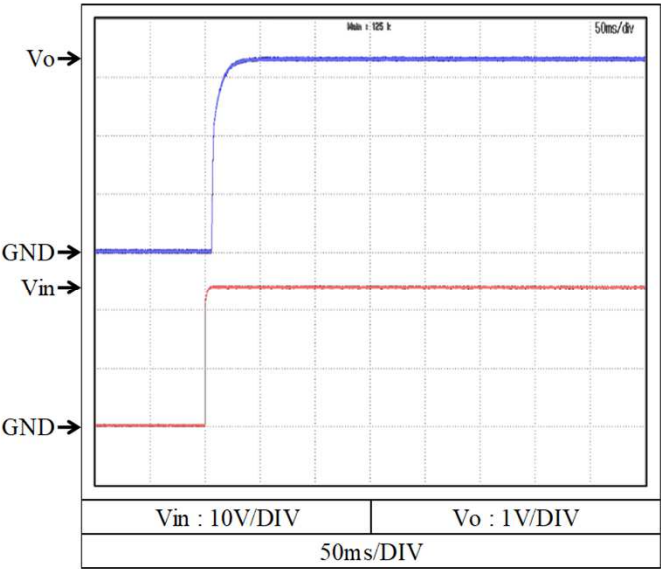
周囲温度依存性
Ambient temperature dependence



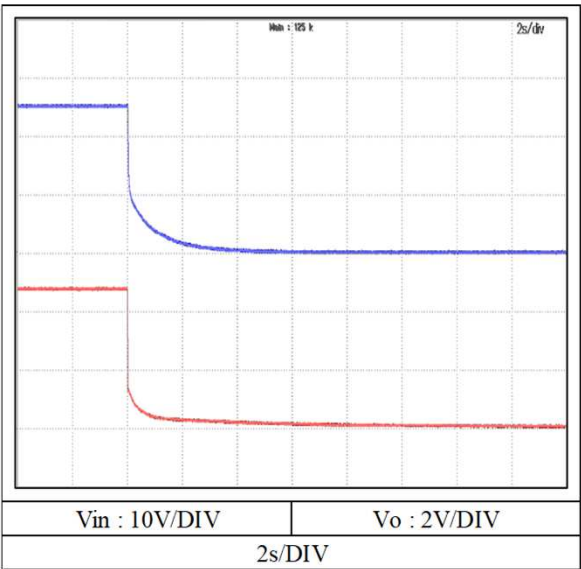
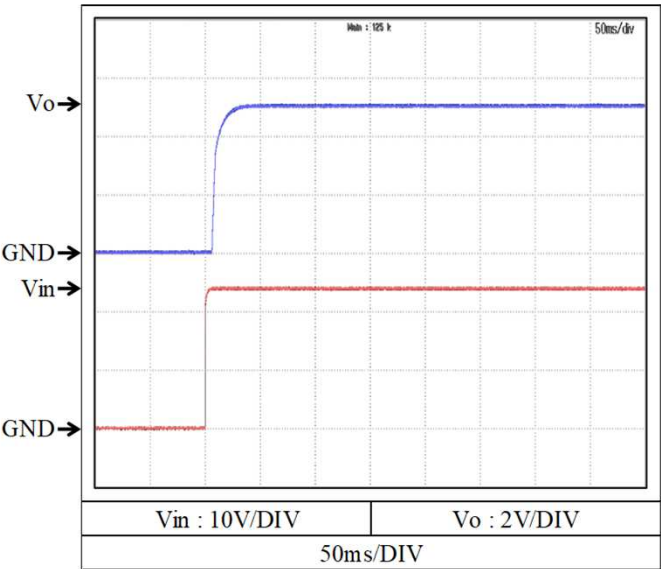
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

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

3.3V

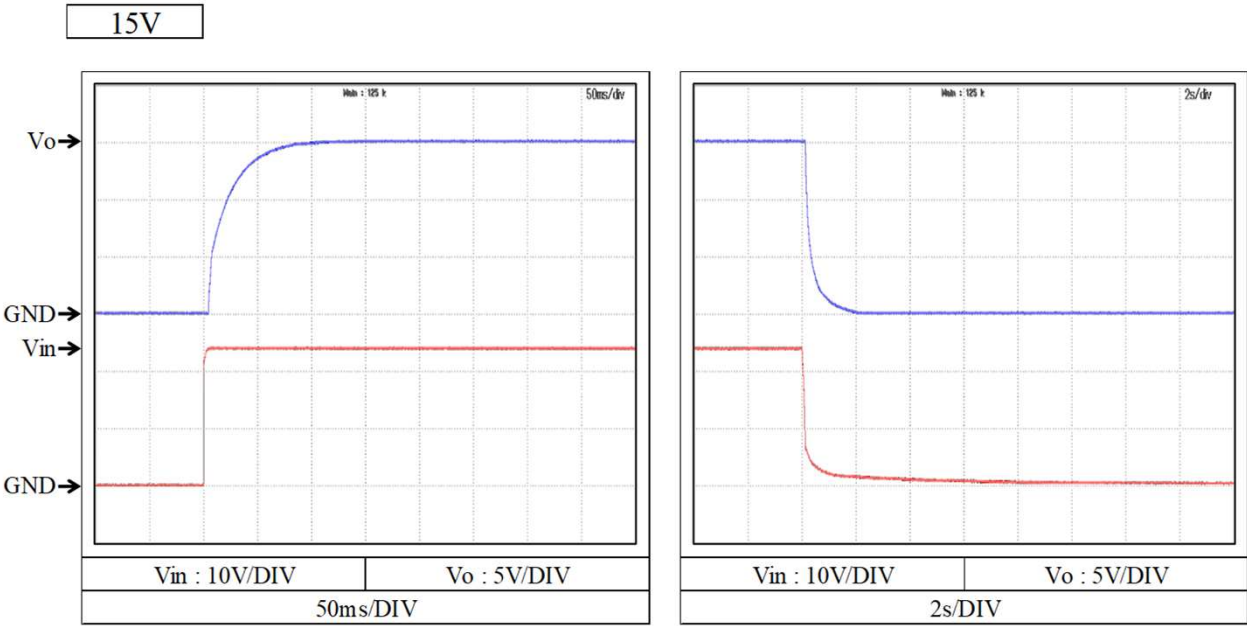
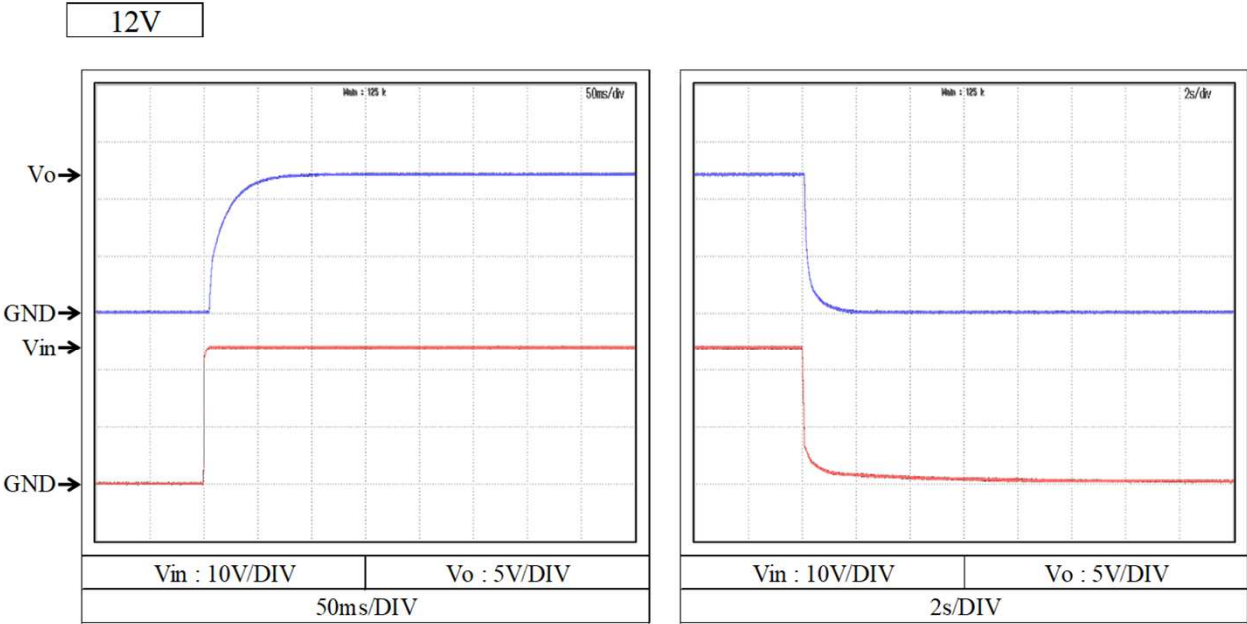


5V



2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

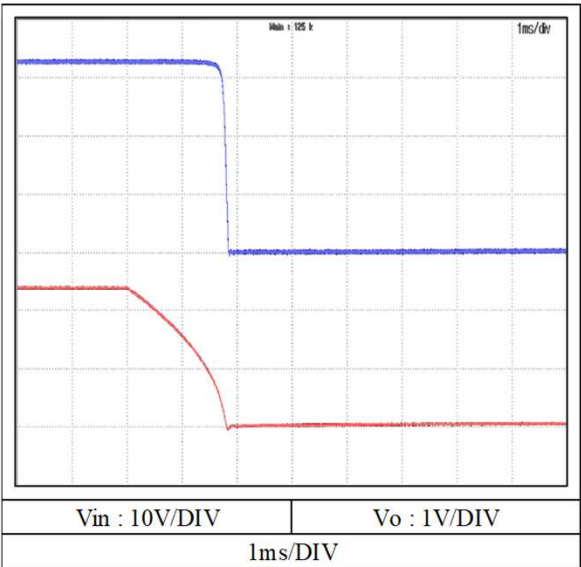
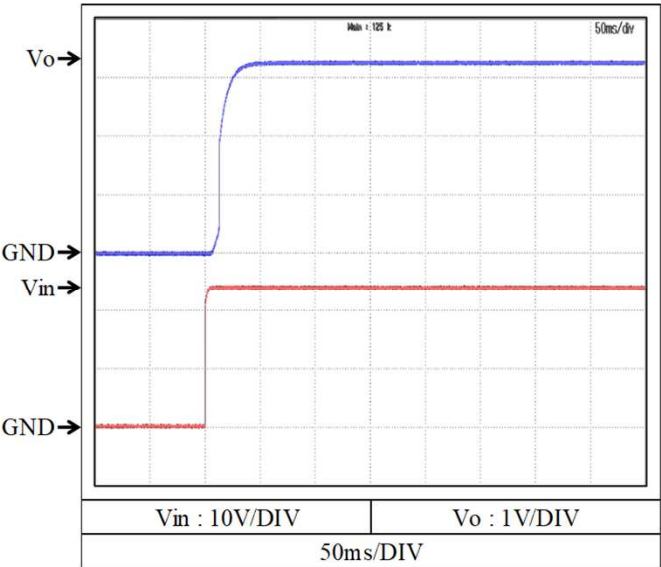
Conditions Vin : 24 VDC
Io : 0 %
Ta : 25 °C



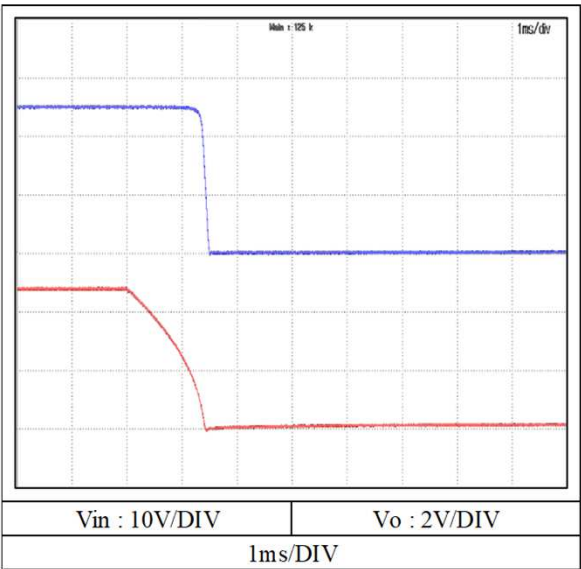
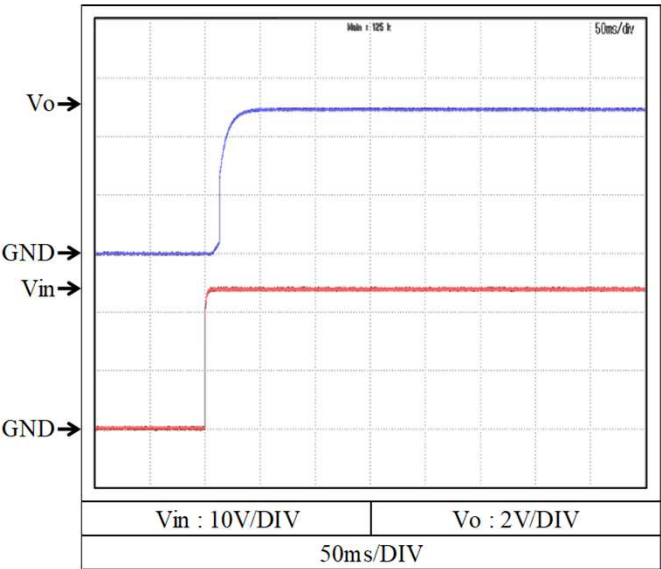
2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

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

3.3V

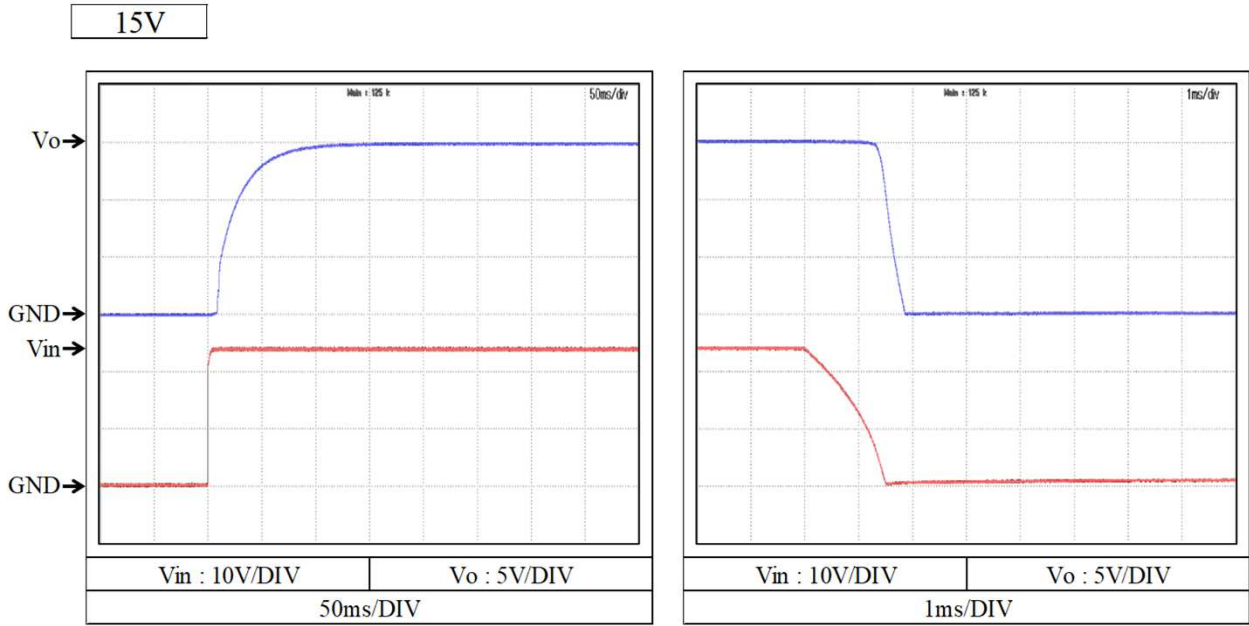
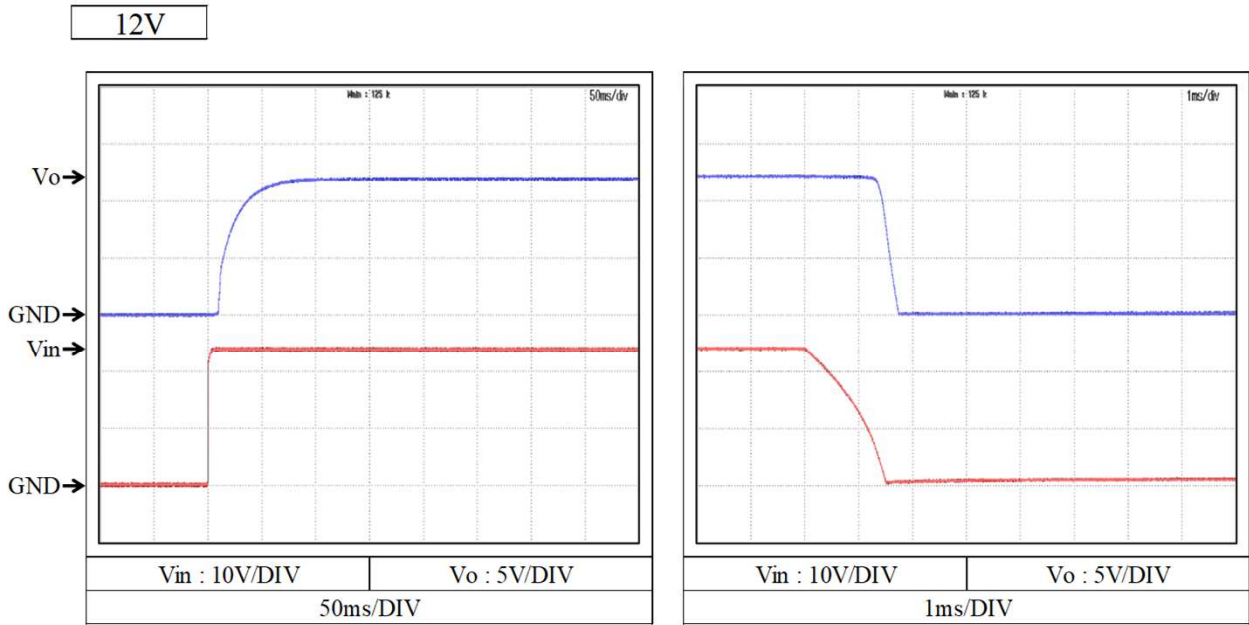


5V



2-5. 出力立ち上がり・立ち下がり特性 Output rise and fall characteristics

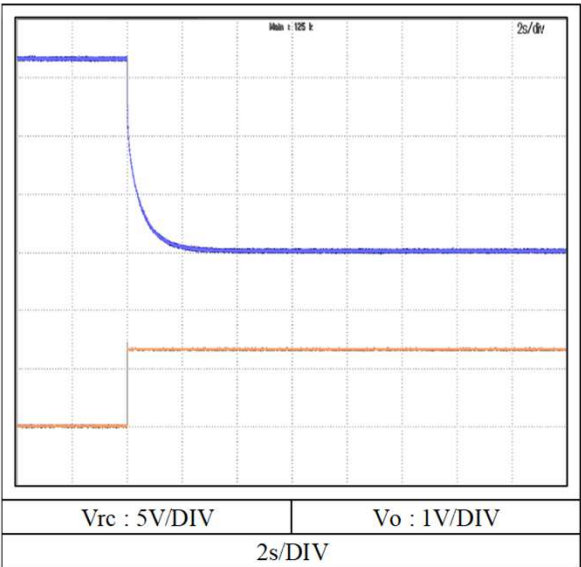
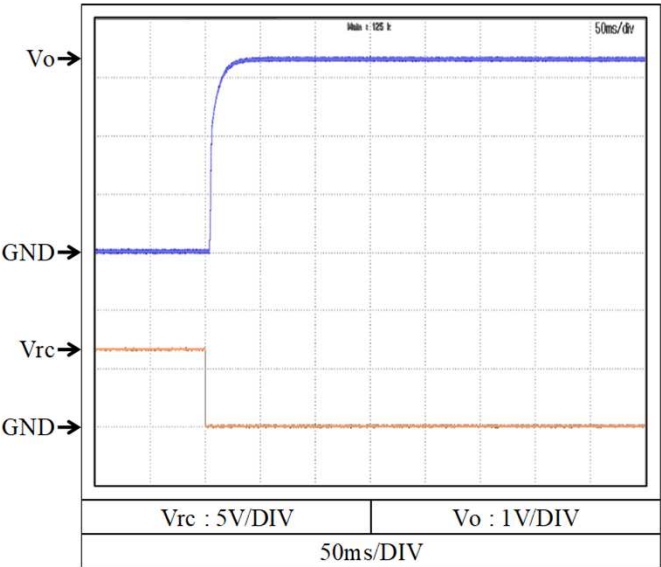
Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 °C



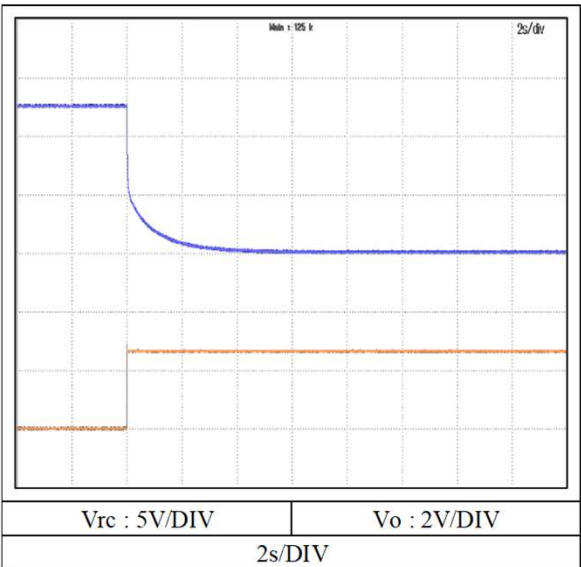
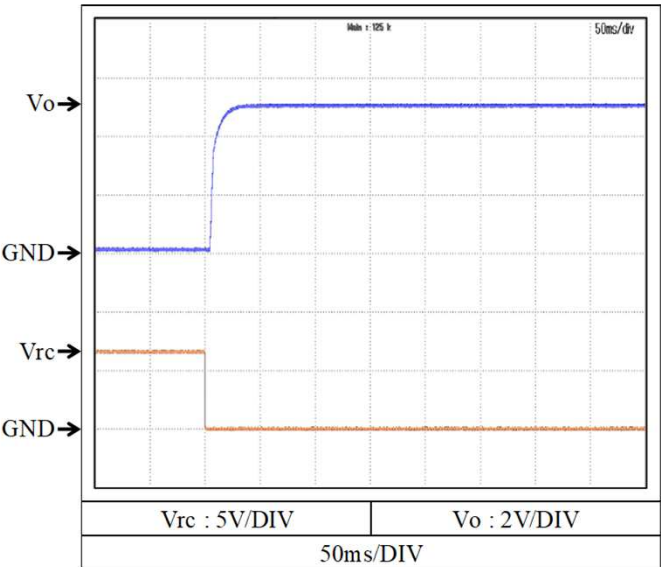
2-5. 出力立ち上がり・立ち下がり特性 (リモートON/OFFコントロール時)
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

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

3.3V

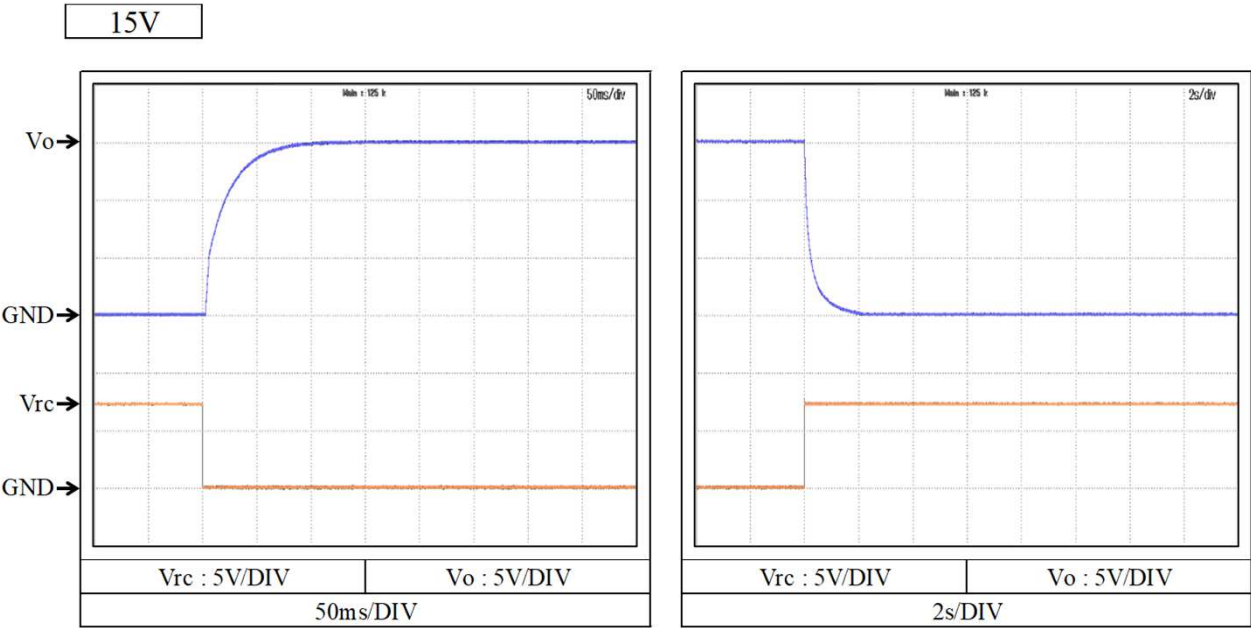
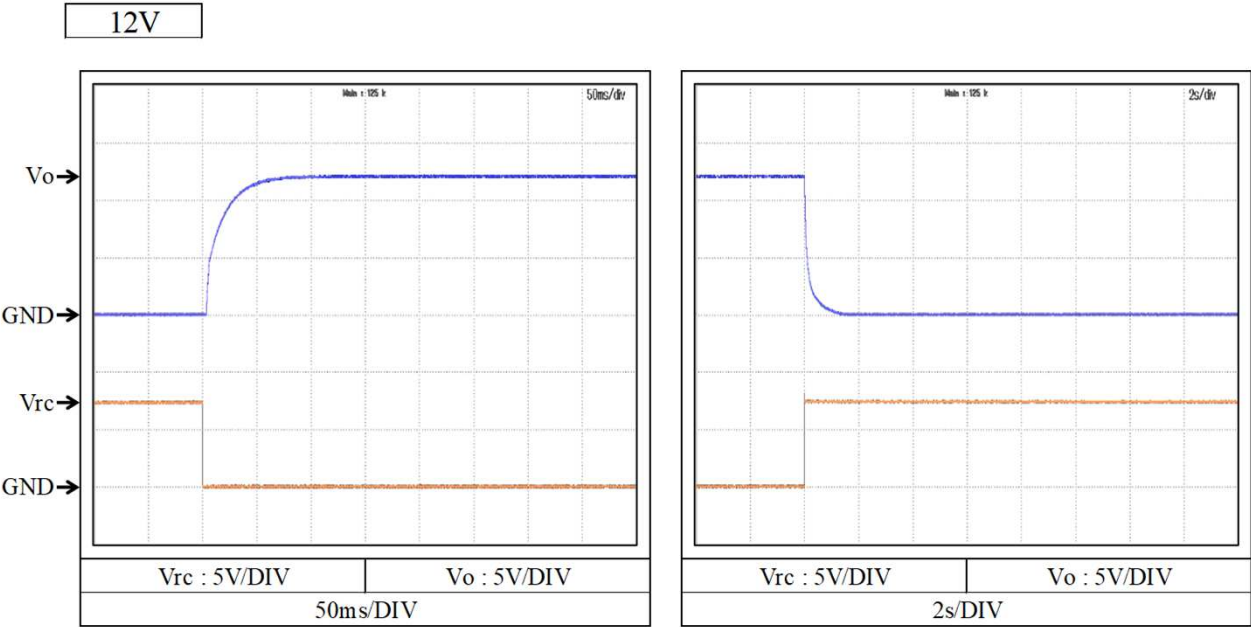


5V



2-5. 出力立ち上がり・立ち下がり特性 (リモートON/OFFコントロール時)
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

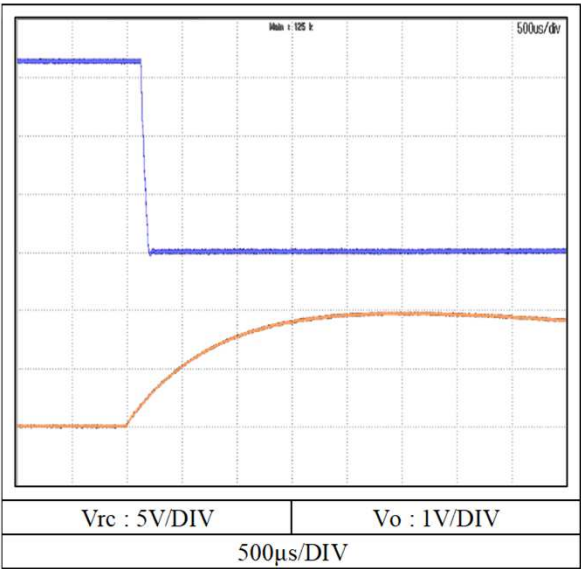
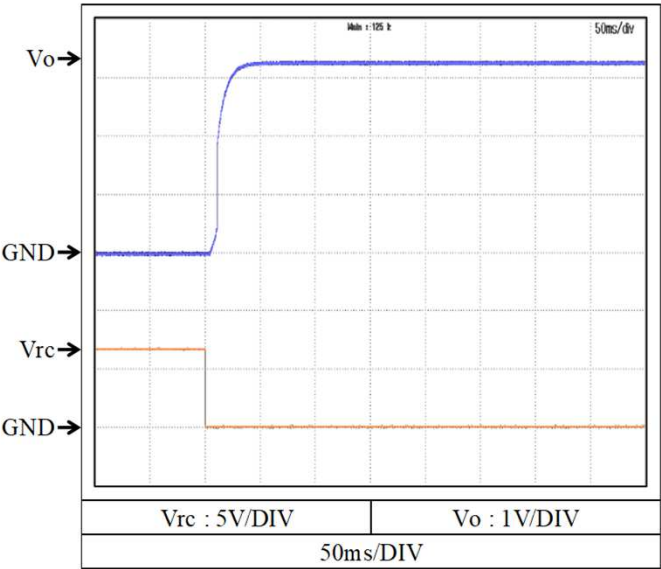
Conditions Vin : 24 VDC
Io : 0 %
Ta : 25 °C



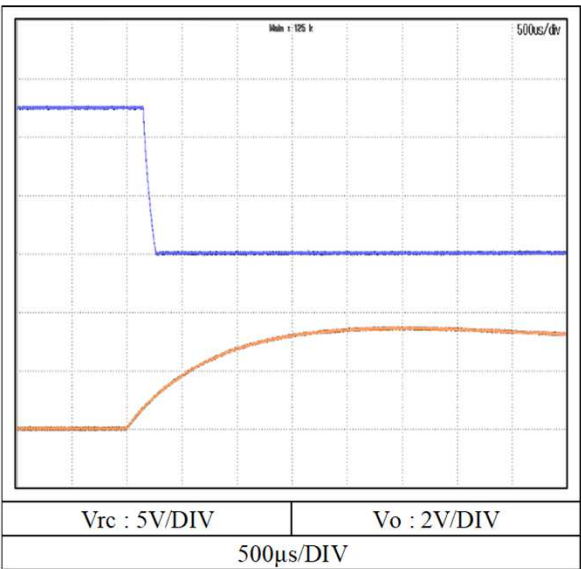
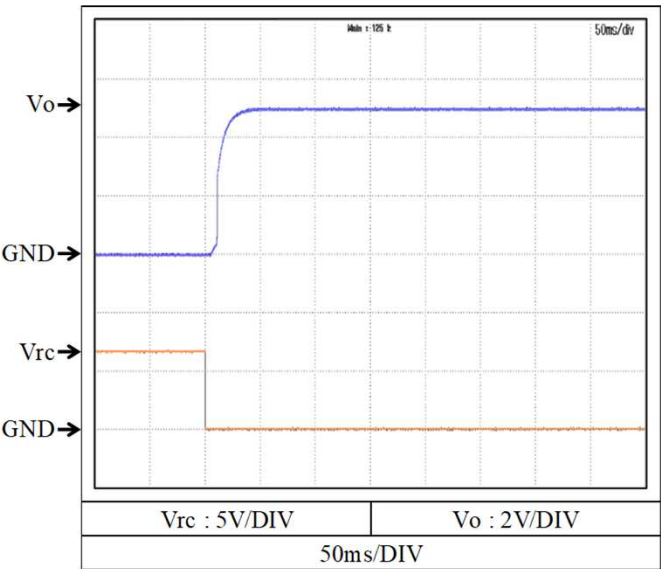
2-5. 出力立ち上がり・立ち下がり特性 (リモートON/OFFコントロール時)
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions V_{in} : 24 VDC
 I_o : 100 %
 T_a : 25 °C

3.3V



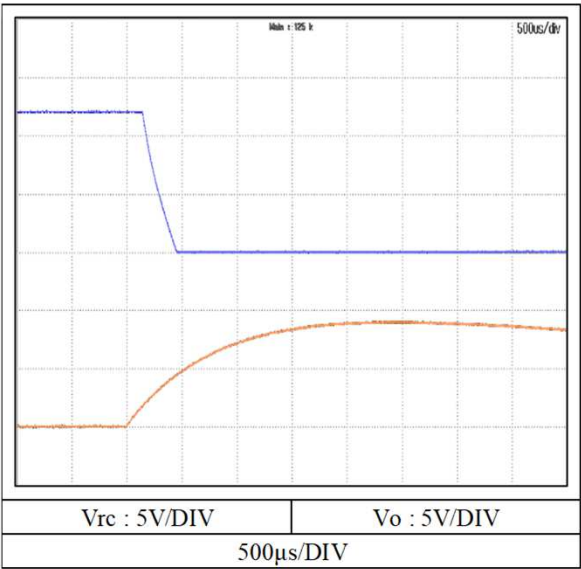
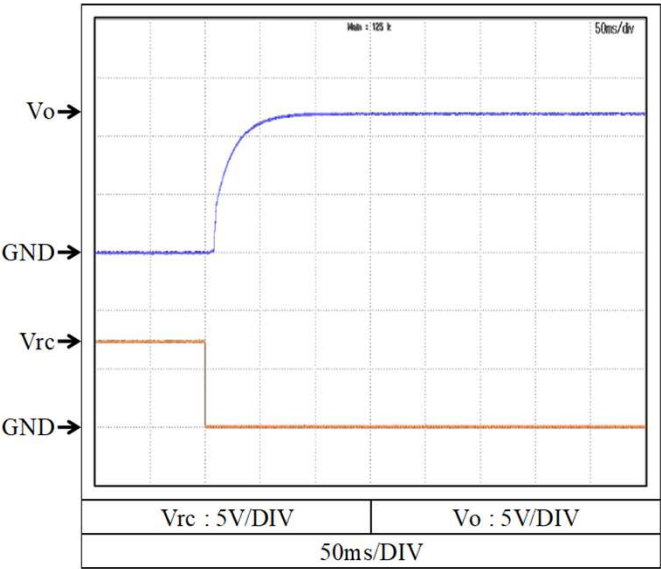
5V



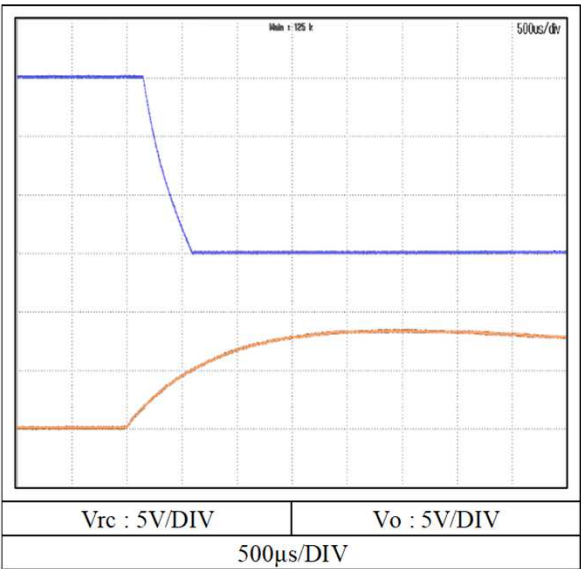
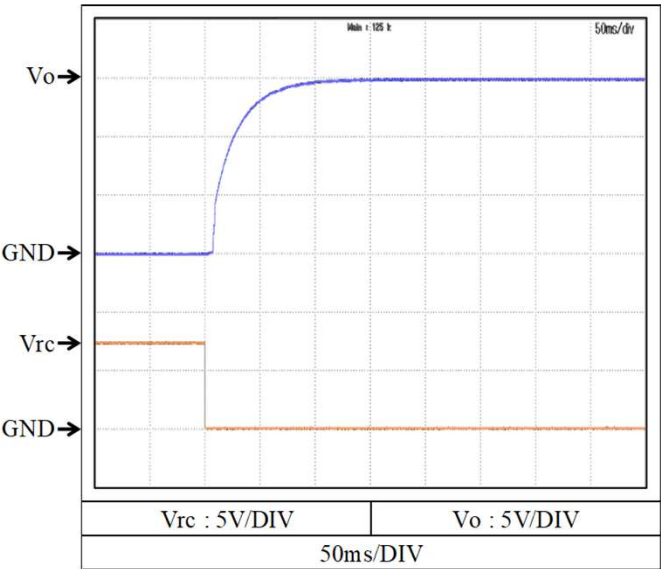
2-5. 出力立ち上がり・立ち下がり特性 (リモートON/OFFコントロール時)
Output rise and fall characteristics with REMOTE ON/OFF CONTROL

Conditions V_{in} : 24 VDC
 I_o : 100 %
 T_a : 25 °C

12V

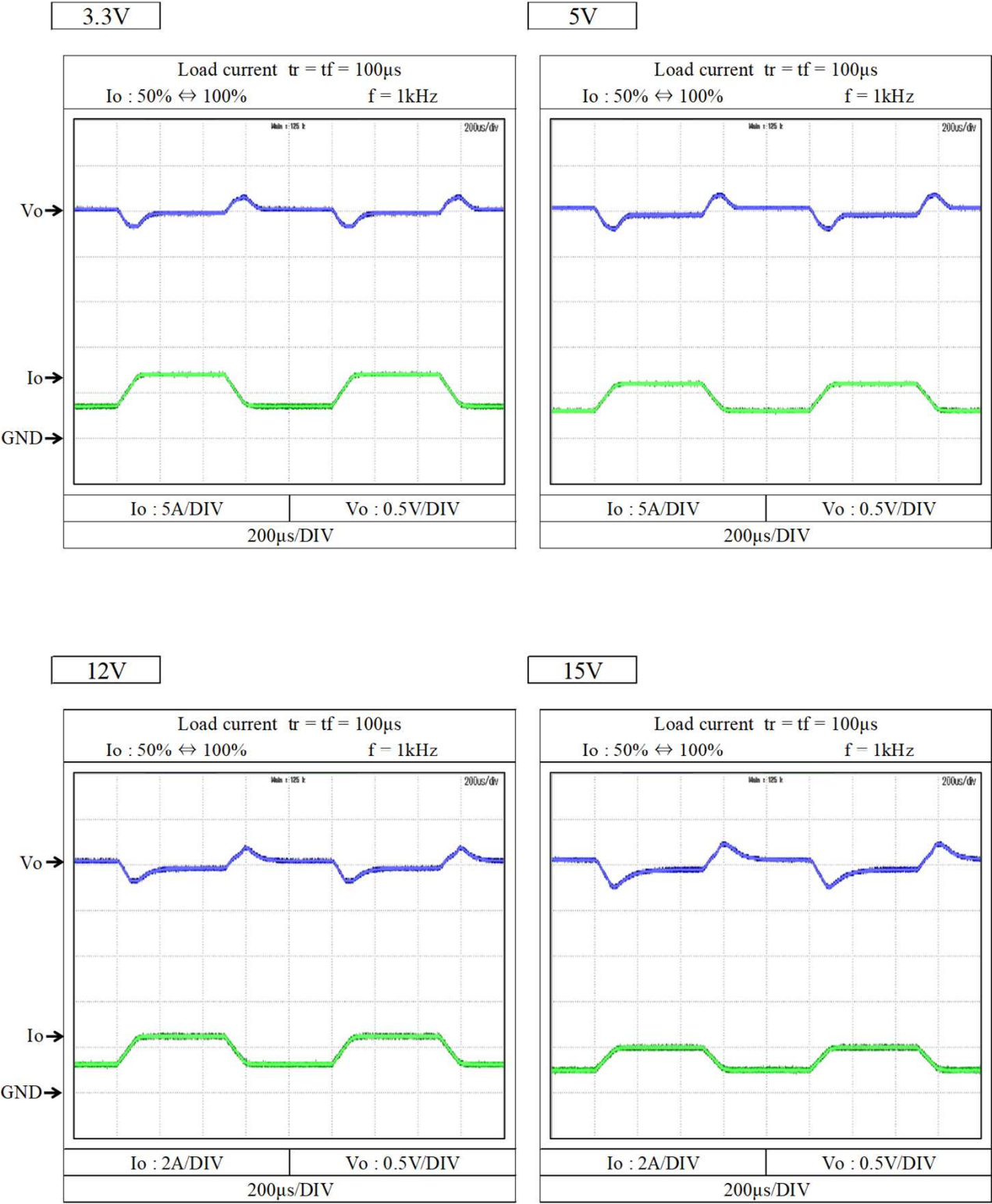


15V



2-6. 過渡応答(負荷急変)特性 Dynamic load response characteristics

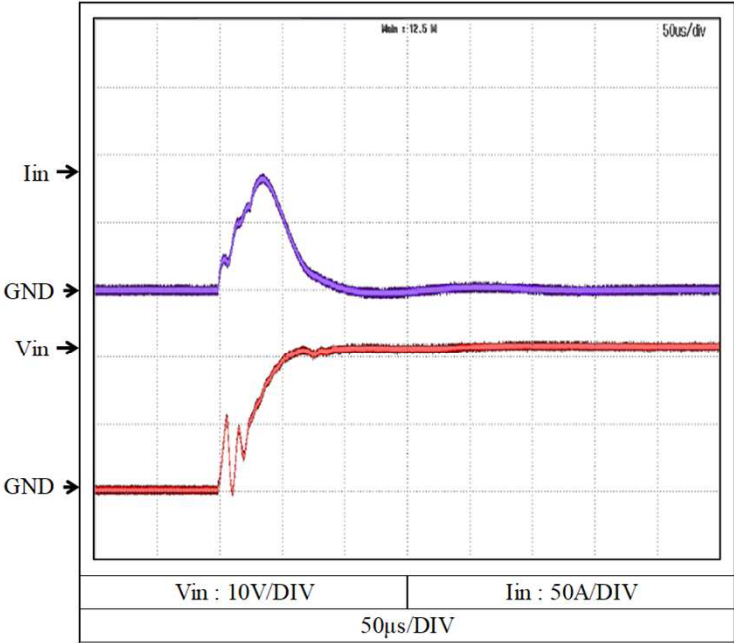
Conditions V_{in} : 24 VDC
 T_a : 25 °C



2-7. 入力サージ電流(突入電流)特性 Inrush current characteristics

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

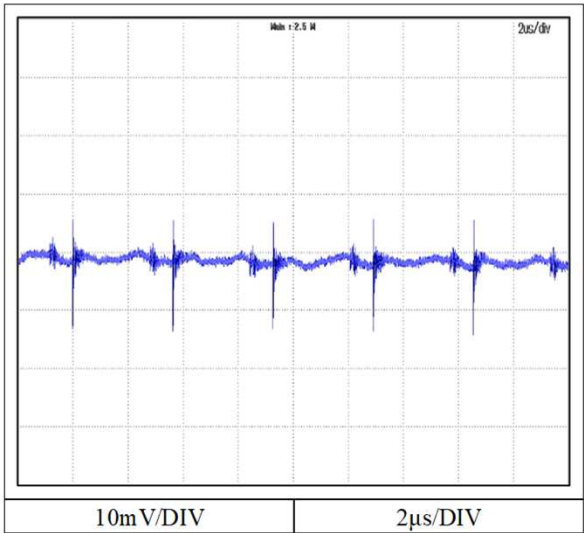
5V



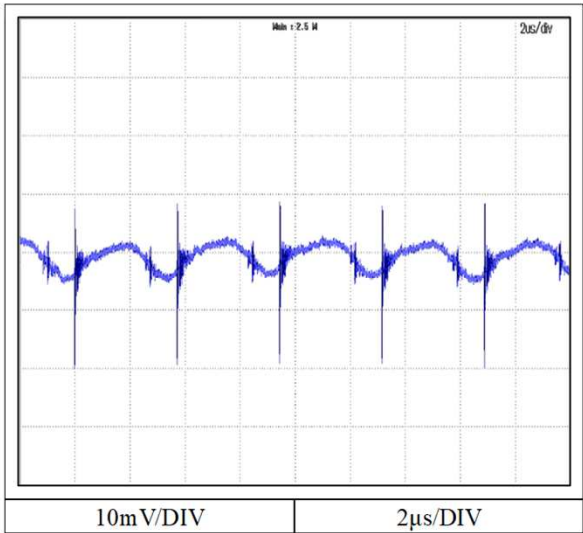
2-8. 出力リップルノイズ波形 Output ripple and noise waveform

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

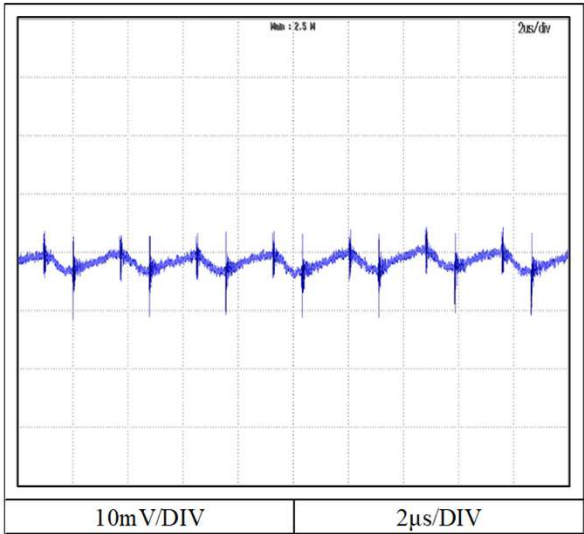
3.3V



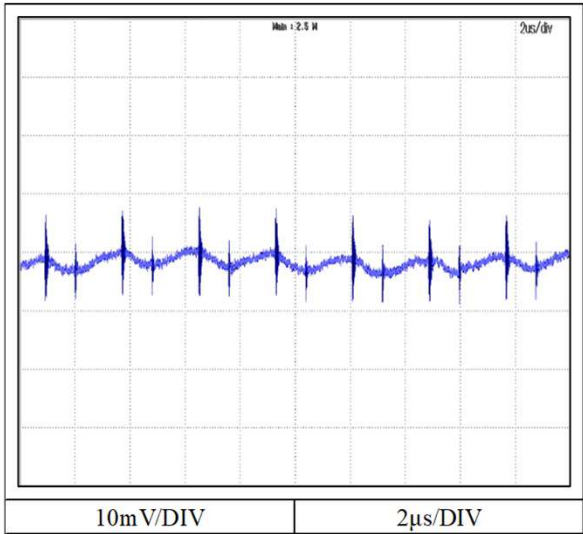
5V



12V



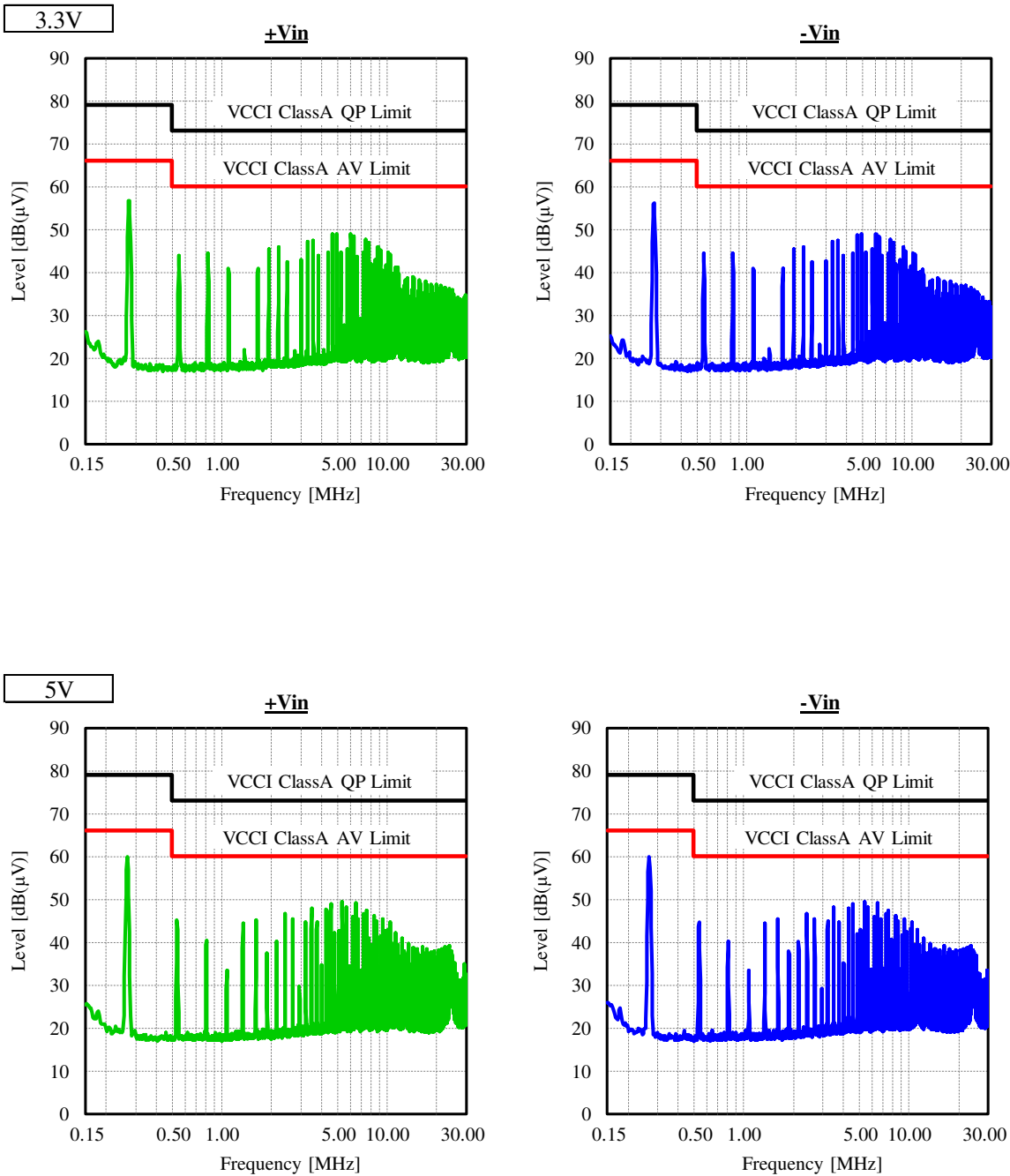
15V



2-9. EMI特性 Electro-Magnetic Interference characteristics

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

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

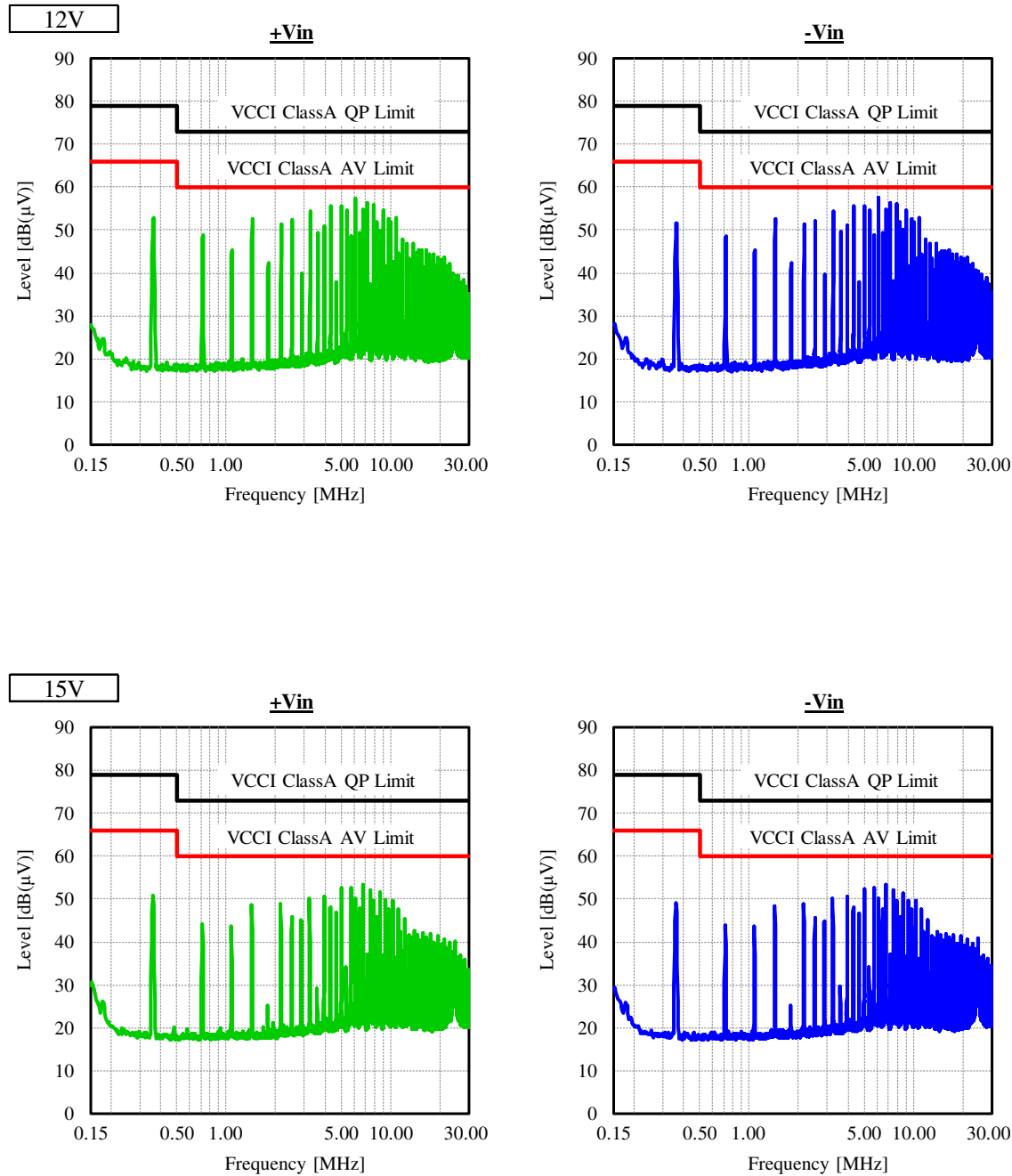


表示はQP値
Indication is QP values.

2-9. EMI特性 Electro-Magnetic Interference characteristics

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

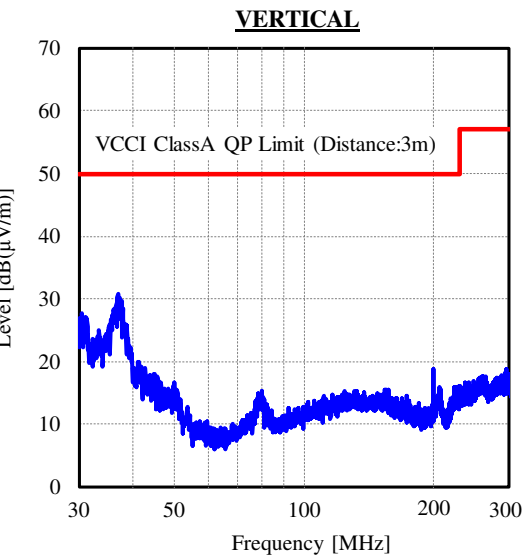
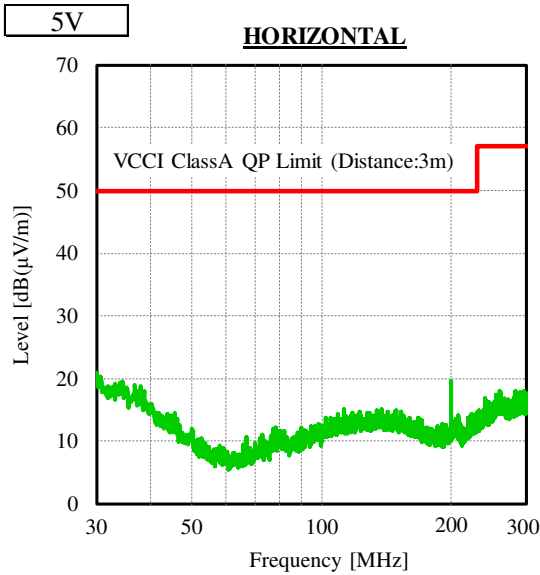
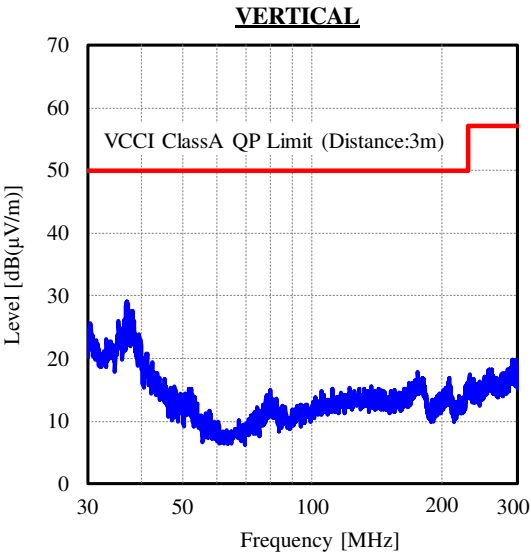
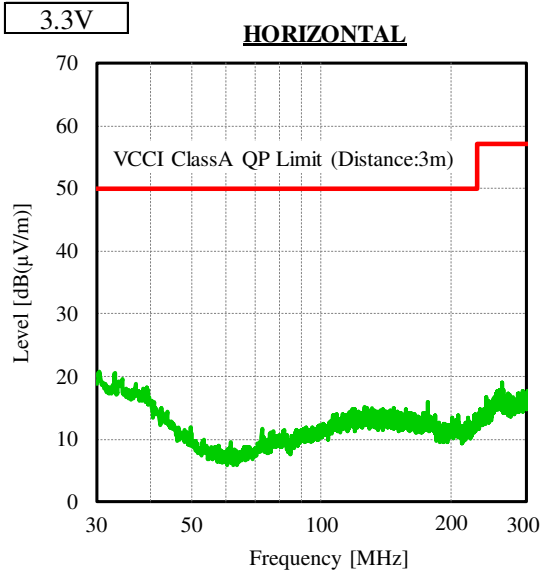
Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 °C



表示はQP値
Indication is QP values.

2-9. EMI特性 Electro-Magnetic Interference characteristics
(b) 雑音電界強度 (輻射ノイズ) Radiated Emission Noise

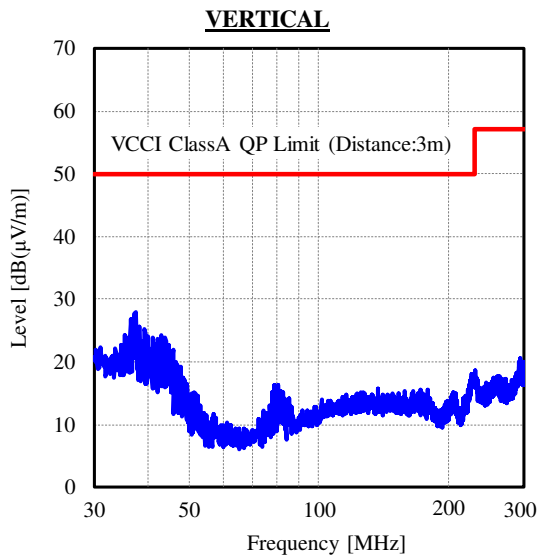
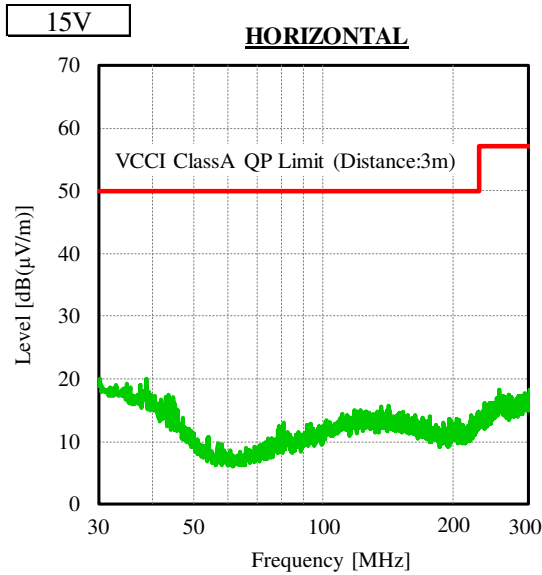
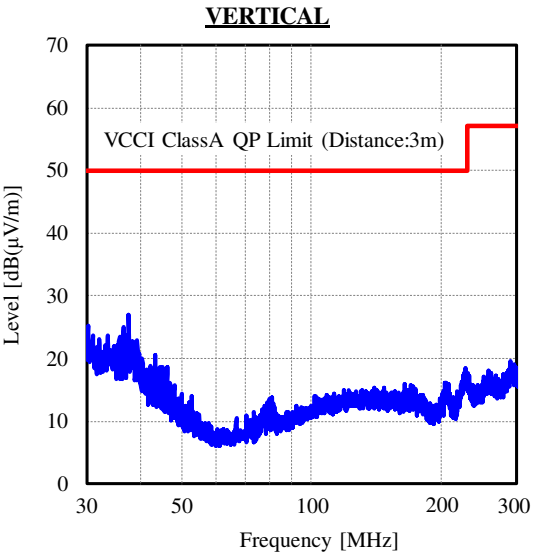
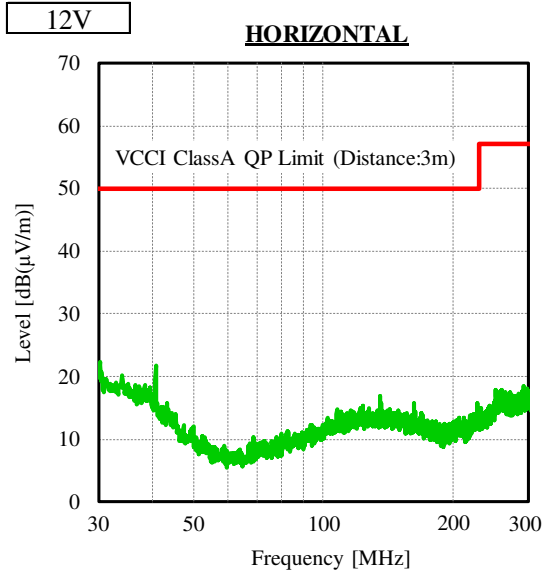
Conditions Vin : 24 VDC
Io : 100 %
Ta : 25 °C



表示はピーク値
Indication is peak values.

2-9. EMI特性 Electro-Magnetic Interference characteristics
(b) 雑音電界強度 (輻射ノイズ) Radiated Emission Noise

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



表示はピーク値
Indication is peak values.